APPENDIX 3D
GROUNDWATER
MONITORING DATA

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

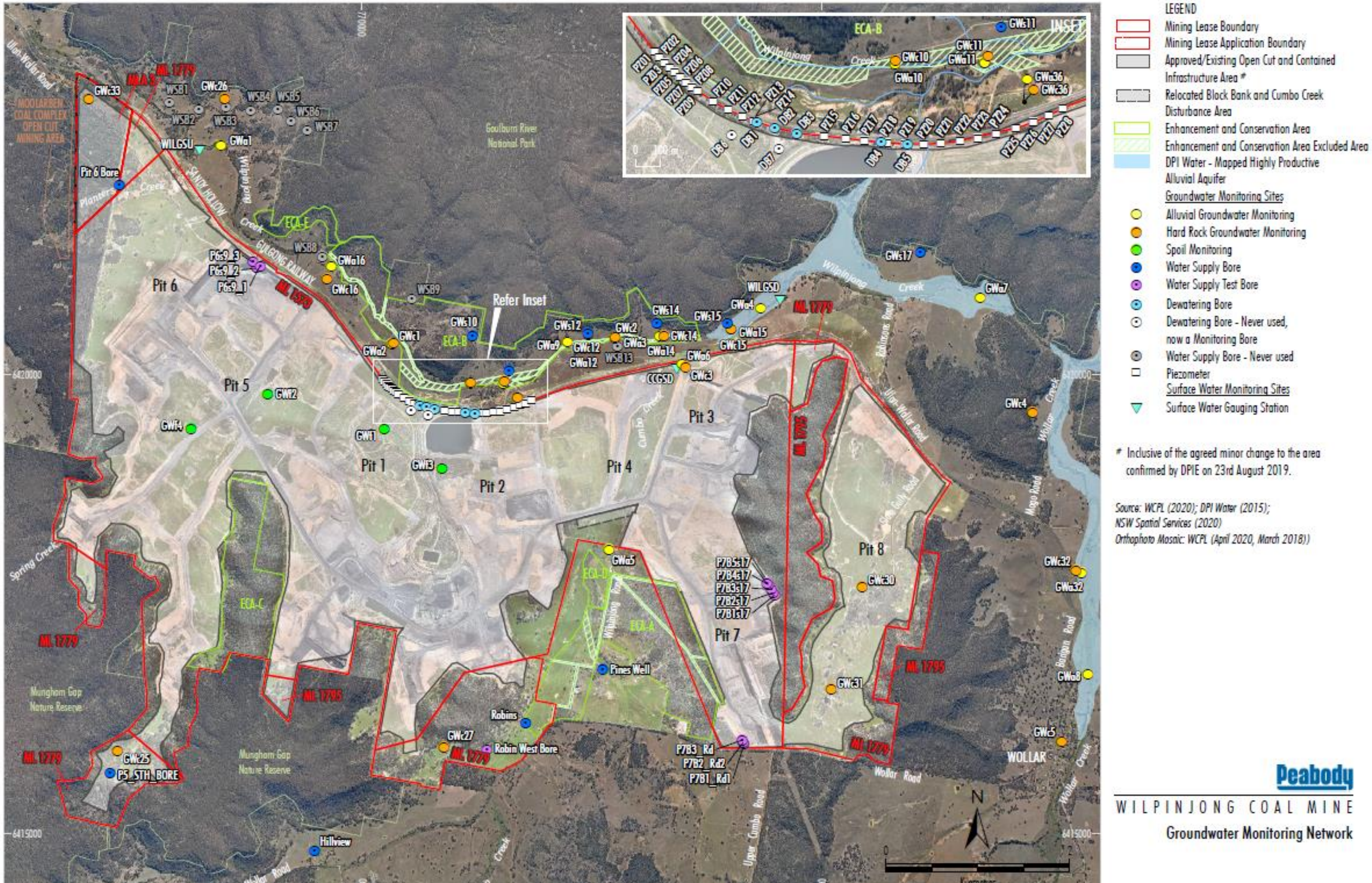

Figure 2

WIL-12-11_GWMP 2020_201A

2021 Groundwater Monitoring Data

Sample Num	Sample Location	Sampling Date	Sampling Time	Aluminium mg/L	Arsenic mg/L	Barium mg/L	Bicarbonate Alkalinity as CaCO3 mg/L	Calcium - Dissolved mg/L	Carbonate Alkalinity as CaCO3 mg/L	Chloride mg/L	Copper mg/L	Depth to Standpipe m	Depth of Dry Bore to Standpipe m	Electrical Conductivity @ 25°C µS/cm (Field)	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	pH - pH Unit (Field)	Potassium - Dissolved mg/L	Selenium mg/L	Sodium - Dissolved mg/L	Strontium mg/L	Sulfate mg/L	Temperature °C	Temperature - Client Supplied °C	Total Alkalinity as CaCO3 mg/L	Total Anions meq/L	Total Cations meq/L	Total Dissolved Solids @180°C -	Turbidity NTU	Zinc mg/L
ME2100039001	GWA1	15-Jan-2021	1352									Dry																									
ME2100039002	GWA2	15-Jan-2021	1312	1.28	0.001	0.038	97	18	<1	170	0.002	1.34		931	<1	1.3	7.48	0.002	25	0.448	<0.001	0.002		6.7	6	<0.01	119	0.202	85	21		97	8.5	8.28		569	0.009
ME2100039003	GWA3	25-Jan-2021	1401	7.63	0.001	0.04	245	26	<1	249	0.01	4.1		1460	<1	1.53	5.73	0.006	30	0.144	<0.001	0.015		7.2	2	<0.01	252	0.27	116	21.5		245	14.3	14.8		1030	0.021
ME2100039004	GWA4	29-Jan-2021	1451									Dry																									
ME2100039005	GWA5	19-Jan-2021	1316									Dry																									
ME2100039006	GWA6	25-Jan-2021	1523	23.2	0.004	0.1	978	142	<1	593	0.019	1.96		5570	<1	1.3	17	0.023	176	0.116	0.004	0.021		8	22	0.01	1010	1.26	1350	21		978	64.4	66.1		4090	0.078
ME2100039007	GWA7	21-Jan-2021	1158	4.96	0.003	0.546	1350	469	<1	3270	0.012	4.39		14300	<1	6.33	9.81	0.014	644	2.86	0.002	0.038		7.3	36	<0.01	1910	7.88	3020	21.5		1350	182	160		11000	0.036
ME2100039008	GWA8	21-Jan-2021	1306	0.68	<0.001	0.053	270	151	<1	411	0.003	1.59		2660	<1	0.57	1.2	0.002	123	17.6	0.002	0.01		7.1	14	<0.01	253	1.28	594	22		270	29.4	29		1980	0.018
ME2100039009	GWC1	15-Jan-2021	1255	0.06	<0.001	0.077	562	152	<1	619	0.001	9.94		3660	<1	2.38	0.38	<0.001	108	0.502	<0.001	0.005		7.1	29	<0.01	506	1.53	598	21		562	41.1	39.2		2270	0.008
ME2100039010	GWC2	25-Jan-2021	1425	0.1	<0.001	0.264	546	77	<1	109	0.002	13.35		1250	<1	1.37	0.39	<0.001	30	0.104	<0.001	0.002		7.2	28	<0.01	161	0.576	21	21		546	14.4	14		776	0.019
ME2100039011	GWC3	25-Jan-2021	1457	14.9	0.018	0.236	615	303	<1	1040	0.037	14.59		6170	<1	3.79	30.8	0.038	218	0.832	0.001	0.03		7	48	<0.01	812	2.53	1100	21.5		615	64.5	69.6		4650	0.094
ME2100039012	GWC4	29-Jan-2021	1520	0.17	<0.001	0.083	656	182	<1	326	0.007	14.97		2420	<1	2.87	2.25	0.002	76	0.046	<0.001	0.002		6.7	48	<0.01	210	1.77	236	21		656	27.2	25.7		1480	0.029
ME2100039013	GWC5	21-Jan-2021	1332	0.05	<0.001	0.196	1990	251	<1	547	0.002	5.56		5690	<1	3.88	0.2	0.002	145	1.23	<0.001	0.024		6.7	82	<0.01	900	7.02	269	20.5		1990	60.8	65.7		3710	0.038
ME2100039014	GWA10	25-Jan-2021	1128	0.65	0.001	0.037	373	156	<1	506	0.011	3.33		2540	<1	0.98	0.78	<0.001	91	0.24	<0.001	0.005		7.2	1	<0.01	284	0.849	311	21		373	28.2	27.6		1680	<0.005
ME2100039015	GWC10	25-Jan-2021	1157	0.03	<0.001	0.037	393	224	<1	407	0.049	3.57		3760	<1	9.07	0.18	<0.001	133	0.371	<0.001	0.011		7	33	<0.01	492	1.82	848	20.5		393	37	44.4		2860	0.023
ME2100039016	GWA11	29-Jan-2021	1121	0.37	0.001	0.039	552	40	<1	69	0.002	3.77		1430	<1	0.38	1.53	<0.001	35	0.595	<0.001	0.002		7.5	15	<0.01	234	0.499	124	20		552	15.6	15.4		922	0.009
ME2100039017	GWC11	29-Jan-2021	1140	0.08	<0.001	0.02	339	150	<1	286	0.009	12.16		3420	<1	3.42	9.5	0.001	128	1.3	<0.001	0.006		6.6	32	<0.01	432	1.17	975	19		339	35.1	37.6		2260	0.031
ME2100039018	GWA12	29-Jan-2021	1206	10.4	0.002	0.048	137	10	<1	31	0.012	3.32		380	<1	1.62	5.05	0.007	6	0.139	0.002	0.019		7.9	1	<0.01	63	0.1	13	20		137	3.88	3.76		468	0.026
ME2100039019	GWC12	29-Jan-2021	1225	0.07	<0.001	0.161	671	59	<1	142	0.028	20.3		1750	<1	3.98	0.35	<0.001	24	0.092	<0.001	<0.001		7.5	20	<0.01	293	0.574	109	20.5		671	19.7	18.2		1140	<0.005
ME2100039020	GWA14	29-Jan-2021	1300									Dry																									
ME2100039021	GWC14	29-Jan-2021	1312	0.12	<0.001	1.46	541	104	<1	150	0.216	18.445		1970	<1	2.14	0.95	0.003	41	0.069	0.002	0.005		7.3	24	<0.01	262	0.985	309	20.5		541	21.5	20.6		1330	0.047
ME2100039022	GWA15	29-Jan-2021	1401	2.88	<0.001	0.026	92	11	<1	144	0.009	2.69		812	<1	0.24	1.72	0.006	5	0.048	<0.001	0.005		6.8	3	<0.01	137	0.084	51	20		92	6.96	7		597	0.022
ME2100039023	GWC15	29-Jan-2021	1435	0.13	<0.001	0.191	562	39	<1	110	0.012	17.87		1310	<1	4.82	0.39	0.001	18	0.047	<0.001	0.031		7.1	20	<0.01	216	0.48	17	20		562	14.7	13.3		822	0.013
ME2100039024	GWC25	15-Jan-2021	957	1	0.005	0.056	493	20	<1	239	0.048	28.75		1580	<1	4.11	3.96	0.032	73	0.504	<0.001	0.1		7.1	6	<0.01	218	0.344	71	22		493	18.1	16.6		859	0.03
ME2100039025	GWC33	15-Jan-2021	1417	1.04	<0.001	0.147	<1	251	50	73	0.005	42.65		3140	416	10.6	0.24	<0.001	<1	0.011	<0.001	0.001		12.1	14	<0.01	44	0.176	28	23		466	12	14.8		875	0.022
ME2100039026	GWC26	21-Jan-2021	831	1.46	<0.001	0.384	482	47	<1	159	0.052	46.74		1400	<1	0.91	2.88	0.014	23	0.12	0.001	0.01		7.4	18	<0.01	241	0.46	38	19		482	14.9	15.2		826	0.08

ME2100039027	GWC16	12-Jan-2021	945									30.69		2010										7.3						20.5							
ME2100039028	GWA16	12-Jan-2021	1030									1.67		20100										7.4						21.5							
ME2100039029	GWC30	08-Jan-2021	1245	0.03	<0.001	0.049	625	219	<1	617	0.005	31.15		3090	<1	7.2	4.71	<0.001	145	0.159	<0.001	0.016		6.8	43	<0.01	170	2.03	304	21		625	36.2	31.4		1680	0.009
ME2100039030	GWC31	08-Jan-2021	1332									Dry																									
ME2100039031	GWC27	08-Jan-2021	1400									Dry																									
ME2100039032	GWC32	08-Jan-2021	1050	0.03	<0.001	0.034	1400	141	<1	347	0.301	3.9		3480	<1	4.34	0.29	0.002	104	0.05	<0.001	0.01		6.8	41	<0.01	533	3.9	273	18.5		1400	43.4	39.8		2040	0.014
ME2100039033	GWA32	08-Jan-2021	1016	<0.01	<0.001	0.027	350	115	<1	527	0.004	1.75		2880	<1	5.9	<0.05	<0.001	124	0.024	0.002	<0.001		7.6	20	<0.01	303	1.38	552	19		350	33.4	29.6		2270	<0.005
ME2100039034	GWA34	08-Jan-2021	1134	20.7	0.001	0.014	<1	422	<1	346	0.085	4.31		5210	<1	4.5	42	0.002	369	6.79	<0.001	0.634		3.8	5	0.01	297	0.81	2920	19.5		<1	70.6	64.5		2620	1.87
ME2100039035	GWC34	08-Jan-2021	1202									Dry																									
ME2100039036	GWA36	25-Jan-2021	1240									Dry																									
ME2100039037	GWC36	25-Jan-2021	1250	0.08	<0.001	0.02	270	152	<1	305	0.002	13.405		3410	<1	4.97	11.5	<0.001	146	1.87	<0.001	0.013		6.6	34	<0.01	436	1.07	1420	20.5		270	43.6	39.4		2690	0.034
ME2100039038	PZ13	15-Jan-2021	1239									Dry																									
ME2100039039	PZ20	15-Jan-2021	1115	1.86	0.002	0.026	288	28	40	33	0.004	1.85		740	<1	4.27	1.78	0.003	27	0.322	0.002	0.01		7.6	14	<0.01	92	0.252	58	21.5		328	8.69	7.98		501	0.016
ME2100039040	PZ21	15-Jan-2021	1143	7.91	0.004	0.066	372	29	<1	47	0.013	2.56		1080	<1	0.98	7.41	0.01	22	0.847	0.002	0.022		7.6	9	<0.01	192	0.309	137	22.5		372	11.6	11.8		820	0.05
ME2100039041	PZ26	15-Jan-2021	1105									Dry																									
ME2100039043	GWF2	29-Jan-2021	949									Dry																									
ME2100039044	GWF3	29-Jan-2021	1007									18.27																									
ME2100039045	GWF4	29-Jan-2021	1027									12.95																									
ME2100039046	Barologger Office	29-Jan-2021	1052									Dry																									
ME2100206001	GWA1	05-Feb-2021	1230									Dry																									
ME2100206002	GWA2	19-Feb-2021	1045	0.27	<0.001	0.019	96	15	<1	106	0.001	1.4		641	<1	0.74	1.37	<0.001	20	0.105	<0.001	0.002		6.7	6	<0.01	88	0.136	66	20.5		96	6.28	6.38		378	0.011
ME2100206003	GWA3	19-Feb-2021	1133	11.5	0.002	0.057	266	32	<1	284	0.012	4.2		1660	<1	2.3	9.44	0.008	33	0.194	0.001	0.024		7.1	3	<0.01	287	0.332	134	21.5		266	16.1	16.9		1040	0.024
ME2100206004	GWA4	16-Feb-2021	1245									Dry																									
ME2100206005	GWA5	03-Feb-2021	1413									Dry																									
ME2100206006	GWA6	19-Feb-2021	1308									Dry																									
ME2100206007	GWA7	19-Feb-2021	1334									Dry																									
ME2100206008	GWA8	19-Feb-2021	1403	1.76	<0.001	0.081	262	160	<1	410	0.003	1.61		2610	<1	0.04	3.19	0.004	122	19.7	<0.001	0.014		7	15	<0.01	252	1.33	605	21		262	29.4	29.4		1900	0.021
ME2100206009	GWC1	19-Feb-2021	1105	0.06	<0.001	0.074	554	184	<1	616	<0.001	9.93		3610	<1	0.47	0.3	<0.001	107	0.526	<0.001	0.005		7.1	30	<0.01	496	1.61	589	19		554	40.7	40.3		2330	0.012
ME2100206010	GWC2	19-Feb-2021	1155	0.08	<0.001	0.29	501	84	<1	113	<0.001	13.08		1270	<1	3.64	0.23	<0.001	30	0.07	<0.001	0.003		7.1	28	<0.01	166	0.631	18	20		501	13.6	14.6		758	0.011
ME2100206011	GWC3	19-Feb-2021	1240	9.09	0.01	0.192	602	330	<1	1040	0.016	14.4		6240	<1	0.8	24.6	0.016	223	0.752	0.001	0.021		7	49	<0.01	846	2.75	1570	21		602	74	72.9		4530	0.056
ME2100206012	GWC4	16-Feb-2021	1322	0.17	<0.001	0.071	665	184	<1	334	0.014	14.92		2320	<1	3.23	2.12	0.002	76	0.048	<0.001	0.004		6.7	56	<0.01	212	1.72	246	21		665	27.8	26.1		1460	0.028
ME2100206013	GWC5	19-Feb-2021	1437	0.06	<0.001	0.212	2300	314	<1	542	<0.001	5.71		5590	<1	3.39	0.31	0.002	162	1.29	<0.001	0.029		6.7	102	<0.01	946	7.91	324	19.5		2300	68	72.8		3720	0.037
ME2100206014	GWA10	11-Feb-2021	1020	0.64	0.001	0.022	254	60	<1	136	0.011	3.18		1060	<1	1.39	1	0.001	33	0.133	<0.001	0.004		7	1	<0.01	127	0.27	98	20.5		254	11	11.2		661	0.01
ME2100206015	GWC10	11-Feb-2021	1048	0.04	<0.001	0.033	378	239	<1	402	0.055	3.31		3790	<1	0.47	0.25	<0.001	133	0.461	<0.001	0.01		6.9	32	<0.01	493	1.61	1240	20		378	44.7	45.1		2750	0.02

ME2100206016	GWA11	11-Feb-2021	1115	2.06	0.001	0.036	496	35	<1	67	0.004	3.57		1310	<1	1.98	2.08	0.002	32	0.406	<0.001	0.003		7.5	15	<0.01	227	0.397	109	20		496	14.1	14.6		848	0.007
ME2100206017	GWC11	11-Feb-2021	1208	0.08	<0.001	0.021	342	165	<1	295	0.003	11.81		3410	<1	0.7	9.87	0.002	136	1.26	0.001	0.005		6.5	33	<0.01	460	1.03	1180	19		342	39.7	40.3		2600	0.025
ME2100206018	GWA12	11-Feb-2021	1244	10.7	0.002	0.043	146	13	<1	39	0.011	3.33		455	<1	3.91	5.33	0.007	7	0.125	0.002	0.018		7.9	1	<0.01	82	0.097	21	20		146	4.45	4.82		536	0.023
ME2100206019	GWC12	11-Feb-2021	1313	0.1	<0.001	0.163	673	64	<1	148	0.049	19.99		1780	<1	0.2	0.48	0.002	26	0.096	<0.001	0.002		7.6	21	<0.01	320	0.511	108	20		673	19.9	19.8		1100	0.008
ME2100206020	GWA14	11-Feb-2021	1359									Dry																									
ME2100206021	GWC14	11-Feb-2021	1418	0.03	<0.001	0.287	476	118	<1	150	0.021	17.79		1990	<1	2	0.68	<0.001	46	0.06	0.002	0.004		7.3	25	<0.01	292	0.817	402	20.5		476	22.1	23		1310	0.008
ME2100206022	GWA15	16-Feb-2021	1120	3.62	<0.001	0.014	102	11	<1	146	0.007	2.71		788	<1	2.45	1.78	0.004	5	0.032	<0.001	0.006		6.8	2	<0.01	147	0.082	43	20		102	7.05	7.4		562	0.019
ME2100206023	GWC15	16-Feb-2021	1202	0.08	<0.001	0.193	556	41	<1	113	0.005	16.56		1300	<1	1.95	0.46	0.001	19	0.064	<0.001	0.16		7.1	21	<0.01	230	0.492	20	19.5		556	14.7	14.2		762	0.014
ME2100206024	GWC25	12-Feb-2021	1332	0.7	0.004	0.12	294	45	<1	167	0.01	25.27		1180	<1	0.64	2.02	0.017	58	2.08	<0.001	0.064		6.7	4	<0.01	140	0.421	118	21		294	13	13.2		697	0.024
ME2100206025	GWC33	05-Feb-2021	1050	1.26	<0.001	0.06	<1	178	20	81	0.004	42.84		2250	429	3.06	0.14	<0.001	<1	0.005	<0.001	0.001		12	15	<0.01	43	0.142	28	23		449	11.8	11.1		651	0.008
ME2100206026	GWC26	05-Feb-2021	1147	0.15	<0.001	0.178	528	52	<1	137	0.017	47.02		1380	<1	0.69	0.96	0.001	22	0.045	0.002	0.003		7.3	18	<0.01	231	0.379	34	21.5		528	15.1	14.9		836	0.009
ME2100206027	GWC16	05-Feb-2021	1259	0.54	<0.001	0.118	683	60	<1	251	0.002	31.04		2040	<1	0.98	2.71	0.002	28	0.046	0.001	<0.001		7.2	22	<0.01	363	0.565	65	22		683	22.1	21.6		1220	0.011
ME2100206028	GWA16	05-Feb-2021	1335	0.7	<0.001	0.107	489	406	<1	6040	0.005	2.03		19900	<1	0.62	0.68	0.001	517	0.027	0.003	0.002		7.4	21	<0.01	3280	4.85	1120	24		489	203	206		13700	0.032
ME2100206029	GWC30	04-Feb-2021	1422	0.02	<0.001	0.044	616	262	<1	545	0.003	31.03		3120	<1	1.86	0.42	<0.001	156	0.15	<0.001	0.026		6.8	48	<0.01	189	2.21	307	21.5		616	34.1	35.4		2240	0.008
ME2100206030	GWC31	04-Feb-2021	1335									Dry																									
ME2100206031	GWC27	04-Feb-2021	1500																																		
ME2100206032	GWC32	04-Feb-2021	1153	0.02	<0.001	0.036	1330	159	<1	305	0.215	4.115		3510	<1	0.73	0.2	<0.001	104	0.052	<0.001	0.01		6.8	41	<0.01	522	4.09	272	19.5		1330	40.8	40.2		2220	0.014
ME2100206033	GWA32	04-Feb-2021	1128	0.01	<0.001	0.037	396	170	<1	565	0.042	1.97		3540	<1	2.84	0.06	<0.001	164	0.235	0.003	0.003		7.3	23	<0.01	401	1.86	670	21		396	37.8	40		2540	0.006
ME2100206034	GWA34	04-Feb-2021	1231	20.3	0.002	0.026	<1	486	<1	312	0.098	4.37		5920	<1	5.02	85.2	0.004	472	12.8	<0.001	0.818		4.4	6	0.02	374	0.849	3800	20		<1	87.9	79.5		3310	2.32
ME2100206035	GWC34	04-Feb-2021	1300	0.15	<0.001	0.076	1590	89	29	219	0.024	20.4		4490	<1	1.83	0.48	0.005	70	0.071	0.002	0.105		7.2	20	<0.01	945	5.28	548	21.5		1620	50	51.8		3050	0.045
ME2100206036	GWA36	05-Feb-2021	1404									Dry																									
ME2100206037	GWC36	05-Feb-2021	1412	0.1	<0.001	0.029	378	136	<1	251	0.002	13.41		3200	<1	3.08	1.12	<0.001	117	0.851	<0.001	0.006		6.6	29	<0.01	452	1.19	960	21.5		378	34.6	36.8		2300	0.02
ME2100206038	PZ13	12-Feb-2021	1449									Dry																									
ME2100206039	PZ20	12-Feb-2021	1156	0.79	0.002	0.027	324	34	<1	33	0.003	1.84		767	<1	2.17	1.05	0.002	30	0.348	0.001	0.006		7.7	17	<0.01	100	0.245	56	22		324	8.57	8.95		539	0.009
ME2100206040	PZ21	12-Feb-2021	1131	3.41	0.003	0.045	365	28	<1	42	0.007	2.86		1050	<1	0.28	3.05	0.005	21	0.395	0.001	0.011		7.5	10	<0.01	190	0.265	149	21.5		365	11.6	11.6		776	0.023
ME2100206041	PZ26	12-Feb-2021	1054									Dry																									
ME2100206042	GWF1	12-Feb-2021	1022									Dry																									
ME2100206043	GWF2	12-Feb-2021	1004									Dry																									
ME2100206044	GWF3	12-Feb-2021	1250	0.04	<0.001	0.053	797	184	<1	240	0.002	17.395		3190	<1	0.71	0.15	<0.001	222	1.04	0.003	0.004		6.9	37	<0.01	290	1.44	852	23		797	40.4	41		2410	0.012
ME2100206045	GWF4	12-Feb-2021	1108									Dry																									
ME2100206046	Barologger Office	16-Feb-2021	1042									Dry																									
ME2100372001	GWA1	04-Mar-2021	1304									Dry																									
ME2100372002	GWA2	19-Mar-2021	1113	0.17	<0.001	0.02	104	13	<1	102	0.002	1.4		608	<1	1.89	0.83	<0.001	18	0.095	<0.001	0.002		6.7	6	<0.01	83	0.156	56	20.5		104	6.12	5.89		346	0.009
ME2100372003	GWA3	19-Mar-2021	1227	9.71	0.002	0.049	307	24	<1	259	0.011	4.28		1600	<1	2.41	7.65	0.006	29	0.151	<0.001	0.018		7.1	4	<0.01	269	0.341	130	22		307	16.1	15.4		994	0.026

ME2100372004	GWA4	19-Mar-2021	1211									Dry																									
ME2100372005	GWA5	10-Mar-2021	1411	11.3	0.099	2.36	597	577	<1	2460	0.024	3.68		13600	<1	1.22	17.2	0.039	796	0.492	0.005	0.05		7.4	31	<0.01	1770	6.09	4160	21		597	168	172		11500	0.199
ME2100372006	GWA6	19-Mar-2021	1344									Dry																									
ME2100372007	GWA7	19-Mar-2021	1404									Dry																									
ME2100372008	GWA8	30-Mar-2021	1212	0.18	<0.001	0.029	246	128	<1	400	0.002	1.34		2500	<1	1.99	0.35	0.002	117	8.68	<0.001	0.008		7	13	<0.01	241	1.26	563	20.5		246	27.9	26.8		1910	0.011
ME2100372009	GWC1	19-Mar-2021	1129	0.04	<0.001	0.072	602	131	<1	566	0.002	10.12		3490	<1	5.56	0.4	<0.001	103	0.576	<0.001	0.005		7	38	<0.01	463	1.64	595	18.5		602	40.4	36.1		1920	0.014
ME2100372010	GWC2	19-Mar-2021	1254	0.07	<0.001	0.296	568	56	<1	124	0.001	13.035		1260	<1	11.7	0.35	<0.001	27	0.09	<0.001	0.002		7.1	31	<0.01	147	0.659	28	20		568	15.4	12.2		732	0.008
ME2100372011	GWC3	19-Mar-2021	1326	0.11	0.008	0.056	766	205	<1	822	<0.001	13.9		5320	<1	3.08	12.7	<0.001	173	0.644	<0.001	0.002		7.1	58	<0.01	735	2.12	1110	20		766	61.6	57.9		2990	0.013
ME2100372012	GWC4	10-Mar-2021	1252	0.14	0.001	0.083	628	171	<1	330	0.005	14.9		2400	<1	2.22	2.1	0.002	81	0.044	<0.001	0.001		6.7	50	<0.01	219	1.69	256	21.5		628	27.2	26		1460	0.023
ME2100372013	GWC5	30-Mar-2021	1219	0.03	<0.001	0.204	2360	246	<1	516	0.002	5.54		5400	<1	3.02	0.22	0.002	145	1.23	<0.001	0.026		6.7	83	<0.01	876	7.47	324	18.5		2360	68.4	64.4		3440	0.025
ME2100372014	GWA10	09-Mar-2021	1106	0.85	0.001	0.033	311	113	<1	353	0.008	3.36		2000	<1	0.53	0.96	<0.001	70	0.246	0.002	0.006		7	1	<0.01	234	0.703	272	21		311	21.8	21.6		1210	<0.005
ME2100372015	GWC10	09-Mar-2021	1133	0.03	<0.001	0.036	402	226	<1	377	0.071	3.66		3750	<1	0.82	0.26	<0.001	137	0.675	<0.001	0.012		6.9	32	<0.01	512	1.94	1260	20.5		402	44.9	45.6		2760	0.015
ME2100372016	GWA11	09-Mar-2021	1209	1.23	<0.001	0.038	574	38	<1	65	0.002	3.65		1330	<1	1.17	1.79	0.001	34	0.472	<0.001	0.003		7.4	13	<0.01	229	0.478	98	20.5		574	15.3	15		850	<0.005
ME2100372017	GWC11	09-Mar-2021	1235	0.09	<0.001	0.023	356	149	<1	287	0.002	12.12		3360	<1	1.11	17.5	0.002	133	1.39	0.002	0.006		6.5	32	<0.01	453	1.25	1180	19.5		356	39.8	38.9		2430	0.027
ME2100372018	GWA12	09-Mar-2021	1306	9.34	0.001	0.034	157	12	<1	36	0.007	3.49		433	<1	0.41	3.72	0.005	6	0.096	0.002	0.015		7.8	1	<0.01	78	0.105	19	21.5		157	4.55	4.51		398	0.02
ME2100372019	GWC12	09-Mar-2021	1402	0.06	<0.001	0.176	755	68	<1	147	0.012	19.69		1790	<1	3.46	0.38	<0.001	28	0.106	<0.001	<0.001		7.5	21	<0.01	313	0.622	98	21		755	21.3	19.8		1080	<0.005
ME2100372020	GWA14	09-Mar-2021	1439									Dry																									
ME2100372021	GWC14	10-Mar-2021	1058	0.03	<0.001	0.182	492	104	<1	156	0.015	17.17		1990	<1	4.47	0.71	0.001	44	0.066	0.007	0.031		7.2	25	<0.01	278	0.884	448	19.5		492	23.6	21.5		1270	0.012
ME2100372022	GWA15	10-Mar-2021	1121	1.92	<0.001	0.02	104	9	<1	141	0.004	2.735		767	<1	2.52	1	0.002	4	0.027	<0.001	0.004		6.8	1	<0.01	138	0.088	53	21		104	7.16	6.81		562	0.012
ME2100372023	GWC15	10-Mar-2021	1200	0.13	<0.001	0.26	529	42	<1	115	0.015	15.98		1320	<1	1.2	0.73	0.004	19	0.055	<0.001	0.006		7.1	19	<0.01	225	0.464	22	20		529	14.3	13.9		772	0.028
ME2100372024	GWC25	16-Mar-2021	1116									Dry																									
ME2100372025	GWC33	04-Mar-2021	1110	1.19	<0.001	0.108	<1	222	19	73	0.003	43.11		2730	429	6.98	0.14	0.001	<1	0.01	0.002	0.002		12.2	14	<0.01	42	0.167	25	20.5		448	11.5	13.3		754	0.015
ME2100372026	GWC26	04-Mar-2021	1208	0.15	<0.001	0.182	492	48	20	147	0.021	47.1		1390	<1	1.43	0.98	0.002	23	0.046	0.002	0.003		7.4	17	<0.01	228	0.397	34	20.5		511	15.1	14.6		798	0.009
ME2100372027	GWC16	04-Mar-2021	1323	0.24	<0.001	0.125	681	57	<1	258	0.001	30.8		2060	<1	2.96	1.94	0.002	30	0.051	0.001	0.002		7.2	20	<0.01	352	0.587	74	21		681	22.4	21.1		1170	0.009
ME2100372028	GWA16	04-Mar-2021	1358	0.72	<0.001	0.118	522	357	<1	5540	0.004	2.17		20400	<1	3	0.66	0.002	533	0.05	0.003	0.003		7.4	19	<0.01	3260	5.17	1220	23		522	192	204		14400	0.031
ME2100372029	GWC30	02-Mar-2021	1432	0.07	<0.001	0.061	673	251	<1	654	0.011	30.79		3140	<1	3.76	1.54	<0.001	162	0.169	<0.001	0.033		6.8	49	<0.01	190	2.24	300	20.5		673	38.1	35.4		2000	0.026
ME2100372030	GWC31	02-Mar-2021	1351									Dry																									
ME2100372031	GWC27	19-Mar-2021	1447	2.11	0.023	0.135	16	35	<1	352	0.732	16.77		1720	<1	3.54	24.9	0.02	42	3.64	0.001	0.065		5.3	42	<0.01	209	0.178	300	19		16	16.5	15.4		964	0.448
ME2100372032	GWC32	02-Mar-2021	1155	0.02	<0.001	0.038	1490	164	<1	352	0.311	4.085		3500	<1	4.16	0.25	0.001	110	0.055	<0.001	0.009		6.7	42	<0.01	535	4.25	264	18.5		1490	45.2	41.6		2220	0.018
ME2100372033	GWA32	02-Mar-2021	1137	0.02	<0.001	0.036	393	154	<1	628	0.042	2		3340	<1	0.68	<0.05	<0.001	156	0.18	0.004	0.006		7.3	21	<0.01	371	1.87	583	20		393	37.7	37.2		2250	0.012
ME2100372034	GWA34	02-Mar-2021	1250	19.4	0.001	0.017	<1	456	<1	366	0.082	4.39		6030	<1	2.95	80	0.002	491	12.1	<0.001	0.864		4.2	6	0.01	379	0.912	3570	21		<1	84.6	79.8		5740	2.63
ME2100372035	GWC34	02-Mar-2021	1313									Dry																									
ME2100372036	GWA36	09-Mar-2021	1020									Dry																									
ME2100372037	GWC36	09-Mar-2021	1035	0.04	<0.001	0.032	433	127	<1	251	<0.001	13.615		3000	<1	1.46	0.31	<0.001	108	1.3	<0.001	0.006		6.6	27	<0.01	449	1.43	898	20		433	34.4	35.4		2110	0.036

ME2100372038	PZ13	16-Mar-2021	1521									Dry																									
ME2100372039	PZ20	16-Mar-2021	1445	1.36	0.002	0.023	296	32	<1	28	0.004	1.77		702	<1	2.63	1.16	0.002	28	0.305	0.002	0.007		7.6	17	<0.01	91	0.266	56	21		296	7.87	8.29		469	0.01
ME2100372040	PZ21	16-Mar-2021	1421	2.03	0.002	0.029	377	29	<1	29	0.005	2.4		912	<1	0.35	1.8	0.002	20	0.438	0.002	0.008		7.5	10	<0.01	165	0.265	108	22.5		377	10.6	10.5		588	0.021
ME2100372041	PZ26	16-Mar-2021	1337									Dry																									
ME2100372042	GWF1	03-Mar-2021	1500																																		
ME2100372043	GWF2	16-Mar-2021	1044									Dry																									
ME2100372044	GWF3	16-Mar-2021	1105									17.625																									
ME2100372045	GWF4	16-Mar-2021	1410									Dry																									
ME2100372046	GWF5	16-Mar-2021	1220									Dry																									
ME2100372047	GWF6	16-Mar-2021	1314	0.15	0.001	0.053	557	282	<1	294	0.002	20.045		3840	<1	1.78	8.39	<0.001	197	2.85	0.011	0.083		6.7	56	<0.01	413	1.48	1540	23.5		557	51.5	49.7		3060	0.026
ME2100372048	GWF7	16-Mar-2021	1203									Dry																									
ME2100372049	Barologger Office	19-Mar-2021	1052																																		
ME2100573001	GWA1	14-Apr-2021	947									Dry																									
ME2100573002	GWA2	14-Apr-2021	1109	0.18	<0.001	0.017	115	12	<1	97	0.001	1.22		607	<1	6.09	0.8	<0.001	17	0.062	<0.001	<0.001		6.9	5	<0.01	79	0.139	60	18.5		115	6.28	5.56		362	0.012
ME2100573003	GWA3	14-Apr-2021	1305	19.7	0.003	0.073	177	14	<1	142	0.02	3.9		972	<1	2.54	11.6	0.014	18	0.25	<0.001	0.032		7.2	2	<0.01	149	0.21	78	21		177	9.17	8.71		762	0.037
ME2100573004	GWA4	26-Apr-2021	1322									Dry																									
ME2100573005	GWA5	15-Apr-2021	1444	5.87	0.026	1.01	738	508	<1	2390	0.011	3.32		14200	<1	3.52	7.28	0.01	817	0.411	0.003	0.035		7.5	32	<0.01	1750	6.4	4790	19.5		738	182	170		11100	0.102
ME2100573006	GWA6	14-Apr-2021	1349	35.1	0.006	0.161	407	62	<1	154	0.024	1.46		1880	<1	7	23.1	0.028	61	0.239	0.001	0.032		7.7	13	<0.01	224	0.686	406	18.5		407	20.9	18.2		1290	0.105
ME2100573007	GWA7	19-Apr-2021	1359	2.49	0.002	0.314	1150	518	<1	3040	0.007	4.08		13900	<1	2.67	8.21	0.007	668	2.89	0.002	0.027		7.2	37	<0.01	1910	8.77	3130	21		1150	174	165		10400	0.02
ME2100573008	GWA8	19-Apr-2021	1435	0.26	<0.001	0.035	256	136	<1	398	0.003	1.48		2520	<1	4.25	0.46	0.002	117	3.94	<0.001	0.008		7.2	13	<0.01	237	1.31	630	19		256	29.4	27		1770	0.015
ME2100573009	GWC1	14-Apr-2021	1123	0.03	<0.001	0.069	533	119	<1	589	0.002	9.84		3500	<1	8.05	0.38	<0.001	92	0.634	<0.001	0.004		7.1	32	<0.01	426	1.61	545	17.5		533	38.6	32.8		2190	0.012
ME2100573010	GWC2	14-Apr-2021	1250	0.08	<0.001	0.259	473	56	<1	111	0.001	12.49		1200	<1	7.34	0.14	<0.001	25	0.06	<0.001	0.002		7.2	26	<0.01	134	0.561	27	19.5		473	13.1	11.3		700	0.012
ME2100573011	GWC3	14-Apr-2021	1425	0.26	0.001	0.057	573	226	<1	1110	0.002	10.99		6640	<1	1.08	2.19	<0.001	226	0.17	<0.001	0.004		7.1	65	0.02	1010	2.75	1650	20		573	77.1	75.5		4580	0.019
ME2100573012	GWC4	26-Apr-2021	1354	0.05	<0.001	0.047	625	176	<1	328	0.003	14.85		2310	<1	3.21	1.66	0.002	75	0.038	<0.001	<0.001		6.7	54	<0.01	200	1.68	238	19.5		625	26.7	25		1510	0.016
ME2100573013	GWC5	19-Apr-2021	1456	0.05	<0.001	0.203	2430	282	<1	513	0.004	5.5		5400	<1	2.19	0.34	0.003	147	1.23	<0.001	0.027		6.8	82	<0.01	884	7.62	321	18.5		2430	69.7	66.7		3640	0.029
ME2100573014	GWA10	26-Apr-2021	1218	0.89	0.002	0.037	312	106	<1	405	0.009	3.14		2110	<1	3.9	1.18	0.002	72	0.963	<0.001	0.009		7.1	2	<0.01	240	0.708	279	20		312	23.5	21.7		1350	0.007
ME2100573015	GWC10	19-Apr-2021	1035	0.04	<0.001	0.038	398	204	<1	386	0.064	3.04		3670	<1	4.1	0.49	<0.001	129	0.963	<0.001	0.015		6.9	32	<0.01	462	1.9	1270	20		398	45.3	41.7		2770	0.027
ME2100573016	GWA11	19-Apr-2021	1206	0.94	<0.001	0.038	556	38	<1	80	0.005	3.49		1300	<1	2.83	1.55	0.001	35	0.378	<0.001	0.003		7.5	15	<0.01	212	0.476	89	19.5		556	15.2	14.4		844	0.008
ME2100573017	GWC11	19-Apr-2021	1142	0.15	0.002	0.024	362	142	<1	298	0.006	11.61		3340	<1	3.79	14.5	0.003	128	1.31	0.002	0.006		6.6	32	<0.01	433	1.25	1180	19.5		362	40.2	37.3		2290	0.027
ME2100573018	GWA12	19-Apr-2021	1317	0.1	<0.001	0.196	169	11	<1	45	0.035	3.1		507	<1	1.9	0.66	0.001	7	0.116	<0.001	0.002		7.9	2	<0.01	91	0.618	33	20.5		169	5.33	5.13		428	0.006
ME2100573019	GWC12	19-Apr-2021	1254	9.04	0.002	0.044	657	65	<1	155	0.015	17.73		1780	<1	0.84	4.34	0.006	28	0.111	0.002	0.017		7.6	22	<0.01	305	0.12	106	19.5		657	19.7	19.4		1120	0.022
ME2100573020	GWA14	23-Apr-2021	1310									Dry																									
ME2100573021	GWC14	23-Apr-2021	1245	0.05	<0.001	0.094	475	114	<1	154	0.026	14.44		2020	<1	2.22	0.6	0.002	46	0.081	0.016	0.082		7.4	25	<0.01	275	0.933	444	18		475	23.1	22.1		1140	0.034
ME2100573022	GWA15	23-Apr-2021	1345	3.15	<0.001	0.042	144	14	<1	116	0.016	2.57		754	<1	2.82	1.8	0.01	5	0.05	<0.001	0.006		7.2	2	<0.01	125	0.094	40	18		144	6.98	6.6		521	0.026

ME2100573 023	GWC15	23-Apr- 2021	1330	0.07	<0.00 1	0.20 2	567	45	<1	111	0.022	13.99		1310	<1	4.1 5	1.18	0.003	20	0.06 2	<0.00 1	0.002		7	19	<0.0 1	215	0.45 3	22	17. 5		567	14. 9	13. 7		772	0.029
ME2100573 024	GWC25	29-Apr- 2021	1219																																		
ME2100573 025	GWC33	09-Apr- 2021	1041	1.22	<0.00 1	0.12 3	<1	19 6	56	94	0.006	43.415		2800	42 8	3.6 3	0.14	<0.00 1	<1	0.00 7	<0.00 1	0.002		12. 2	15	<0.0 1	40	0.16 1	23	21		484	12. 8	11. 9		719	0.02
ME2100573 026	GWC26	09-Apr- 2021	1247	0.07	<0.00 1	0.16 2	512	46	<1	148	0.013	46.45		1320	<1	8.0 4	0.63	<0.00 1	22	0.03 7	<0.00 1	0.001		7.2	20	<0.0 1	190	0.41 5	35	20. 5		512	15. 1	12. 9		742	0.006
ME2100573 027	GWC16	14-Apr- 2021	1013	0.23	<0.00 1	0.12 2	611	46	<1	355	0.004	29.01		2170	<1	7.8 4	2.17	0.002	24	0.02 8	<0.00 1	0.002		7.3	23	<0.0 1	356	0.68 1	76	19. 5		611	23. 8	20. 3		1230	0.015
ME2100573 028	GWA16	14-Apr- 2021	1047	1.44	<0.00 1	0.12 4	509	30 3	<1	627 0	0.008	1.78		1980 0	<1	0.9 4	1.04	0.002	455	0.03 7	0.003	0.003		7.5	35	0.01	345 0	5.18	977	19. 5		509	20 7	20 4		1290 0	0.035
ME2100573 029	GWC30	01-Apr- 2021	1307	0.25	<0.00 1	0.11	626	26 7	<1	536	0.019	30.51		3190	<1	0.0 4	3.11	0.003	158	0.17 9	<0.00 1	0.013		6.9	48	<0.0 1	180	2.63	374	20		626	35. 4	35. 4		1980	0.04
ME2100573 030	GWC31	01-Apr- 2021	1354									Dry																									
ME2100573 031	GWC27	01-Apr- 2021	1425	4.12	0.026	0.18 8	16	50	<1	324	2.72	16.79		1720	<1	1.2 7	36.5	0.027	48	3.69	0.002	0.086		5.7	36	<0.0 1	200	0.15 2	298	19		16	15. 7	16. 1		1010	0.322
ME2100573 032	GWC32	01-Apr- 2021	1040	1.56	0.001	0.03	70	13	<1	7	0.485	3.86		183	<1		1.88	0.003	8	0.02 1	0.002	0.011		6.8	16	<0.0 1	9	0.12 5	<1	19		70	1.6	2.1 1		175	0.018
ME2100573 033	GWA32	01-Apr- 2021	1010	0.01	<0.00 1	0.03 2	364	14 8	<1	535	0.004	1.71		3270	<1	5.3 8	0.08	<0.00 1	161	0.28 9	0.004	0.004		7.4	24	<0.0 1	382	1.74	559	18. 5		364	34	37. 9		2110	0.008
ME2100573 034	GWA34	01-Apr- 2021	1124	27.7	0.006	0.05 5	<1	45 8	<1	269	0.322	4.18		5450	<1	2.9 9	98.8	0.014	454	10.8	<0.00 1	0.77		4.8	6	0.02	347	0.74 9	305 0	19. 5		<1	71. 1	75. 5		4570	2.25
ME2100573 035	GWC34	01-Apr- 2021	1226	0.79	0.001	0.13 2	176 0	46	<1	214	0.024	20.29		4430	<1	1.1 7	1.57	0.008	72	0.11 1	0.003	0.099		7.2	21	0.01	960	5.49	505	20		176 0	51. 7	50. 5		3030	0.043
ME2100573 036	GWA36	14-Apr- 2021	1213									Dry																									
ME2100573 037	GWC36	14-Apr- 2021	1155	0.12	<0.00 1	0.03 8	404	10 2	<1	271	0.003	13.21		3050	<1	0.7 2	0.74	<0.00 1	105	1.88	<0.00 1	0.008		6.7	33	<0.0 1	436	1.57	833	19		404	33	33. 5		2110	0.07
ME2100573 038	PZ13	26-Apr- 2021	1138									Dry																									
ME2100573 039	PZ20	29-Apr- 2021	1432	0.16	0.002	0.02 2	371	38	18	32	0.001	2.38		903	<1	2.0 1	0.58	0.002	38	0.25 9	0.002	0.006		7.6	17	<0.0 1	116	0.32 3	68	20		389	10. 1	10. 5		648	0.014
ME2100573 040	PZ21	29-Apr- 2021	1414	2.69	0.002	0.02 7	454	31	12	36	0.003	3.37		1100	<1	0.6 6	2.54	0.002	26	0.26	0.002	0.008		7.4	10	<0.0 1	197	0.29 1	112	20. 5		467	12. 7	12. 5		745	0.024
ME2100573 041	PZ26	29-Apr- 2021	1344									Dry																									
ME2100573 042	GWF1	29-Apr- 2021	1353																																		
ME2100573 043	GWF2	27-Apr- 2021	1022									Dry																									
ME2100573 044	GWF3	27-Apr- 2021	1042									18.37																									
ME2100573 045	GWF4	29-Apr- 2021	1353									12.94																									
ME2100573 046	GWF5	27-Apr- 2021	1219																																		
ME2100573 047	GWF6	29-Apr- 2021	1310	0.13	0.003	0.03 2	502	24 1	<1	256	<0.00 1	16.51		3710	<1	3.1 8	5.11	<0.00 1	191	2.67	0.005	0.145		6.7	52	<0.0 1	373	1.26	149 0	30. 5		502	48. 3	45. 3		3110	0.022
ME2100573 048	GWF7	27-Apr- 2021	1201									Dry																									
ME2100573 049	Barologger Office	26-Apr- 2021	1113																																		
ME2100762 001	GWA1	07-May- 2021	1318									Dry																									
ME2100762 002	GWA2	19-May- 2021	1045	0.13	<0.00 1	0.01 5	112	12	<1	89	0.002	1.245		600	<1	1.5 7	0.54	<0.00 1	18	0.08	<0.00 1	<0.00 1		6.8	5	<0.0 1	81	0.12 9	56	16		112	5.9 1	5.7 3		390	<0.00 5
ME2100762 003	GWA3	19-May- 2021	1138	2.12	<0.00 1	0.02 9	247	19	<1	202	0.009	4.07		1310	<1	0.5	1.4	0.005	25	0.10 1	<0.00 1	0.008		7.2	2	<0.0 1	221	0.22 9	104	19. 5		247	12. 8	12. 7		947	0.01
ME2100762 004	GWA4	18-May- 2021	1105									Dry																									
ME2100762 005	GWA5	20-May- 2021	1505	4.92	0.034	0.99 9	680	70 1	<1	374 0	0.012	3.505		1800 0	<1	0.7 1	8.31	0.014	125 0	0.34 1	0.003	0.032		7.6	42	<0.0 1	245 0	7.66	624 0	17. 5		680	24 9	24 6		1560 0	0.105
ME2100762 006	GWA6	19-May- 2021	1309	2.51	0.002	0.11 1	676	19 8	<1	658	0.011	1.89		5760	<1	3.5 2	1.04	0.013	215	0.13	0.003	0.004		7.8	22	<0.0 1	870	1.68	186 0	16. 5		676	70. 8	66		4400	0.008
ME2100762 007	GWA7	20-May- 2021	1325									Dry																									

ME2100762008	GWA8	18-May-2021	1311	0.19	<0.001	0.043	284	131	<1	411	0.001	1.525		2530	<1	6.8	0.43	<0.001	115	14.9	<0.001	0.008		7	12	<0.01	238	1.35	638	18		284	30.6	26.7		1660	0.013
ME2100762009	GWC1	19-May-2021	1105	0.02	<0.001	0.058	559	141	<1	542	0.001	10.27		3270	<1	5.34	0.24	<0.001	95	0.529	<0.001	0.002		7.2	25	<0.01	436	1.33	571	17		559	38.3	34.4		2100	0.01
ME2100762010	GWC2	19-May-2021	1205	0.13	<0.001	0.261	465	65	<1	100	0.001	10.92		1180	<1	0.55	0.16	0.001	28	0.068	<0.001	0.004		7.2	24	<0.01	151	0.487	23	18.5		465	12.6	12.7		705	0.008
ME2100762011	GWC3	19-May-2021	1231	0.3	<0.001	0.055	550	242	<1	1060	0.004	10.83		6600	<1	2.62	2.38	0.001	219	0.07	0.001	0.006		7	48	0.02	944	2.4	1700	18.5		550	76.3	72.4		4700	0.018
ME2100762012	GWC4	18-May-2021	1139	0.12	<0.001	0.048	669	178	<1	354	0.003	14.87		2390	<1	5.19	1.77	<0.001	79	0.067	<0.001	0.002		6.7	50	<0.01	213	2	260	19		669	28.8	25.9		1360	0.02
ME2100762013	GWC5	18-May-2021	1342	0.03	<0.001	0.215	2460	274	<1	538	0.002	5.63		5500	<1	5.27	0.41	0.002	140	1.33	<0.001	0.027		6.7	82	<0.01	858	8.14	359	18		2460	71.8	64.6		3180	0.021
ME2100762014	GWA10	14-May-2021	1114	0.52	<0.001	0.026	310	96	<1	344	0.006	3.12		2070	<1	2.64	0.45	<0.001	69	0.571	<0.001	0.006		7	1	<0.01	233	0.61	281	17.5		310	21.7	20.6		1430	<0.005
ME2100762015	GWC10	14-May-2021	1156	0.09	<0.001	0.027	368	178	<1	332	0.045	4.21		3620	<1	3.33	2.54	<0.001	125	0.298	<0.001	0.003		6.9	31	<0.01	447	1.63	1220	17.5		368	42.1	39.4		2640	<0.005
ME2100762016	GWA11	14-May-2021	1220	2.26	<0.001	0.042	580	35	<1	78	0.004	3.51		1380	<1	2.95	3.03	0.002	36	0.465	<0.001	0.004		7.5	14	<0.01	218	0.459	79	17.5		580	15.4	14.5		891	0.005
ME2100762017	GWC11	14-May-2021	1319	0.1	<0.001	0.02	336	136	<1	275	0.004	11.6		3430	<1	2.98	9.21	0.001	128	1.24	0.001	0.005		6.6	32	<0.01	433	1.12	1190	17.5		336	39.2	37		2490	0.016
ME2100762018	GWA12	25-May-2021	1228	2.7	<0.001	0.069	146	10	<1	36	0.007	3.42		453	<1	3.98	0.92	0.003	7	0.06	0.001	0.006		8	1	<0.01	84	0.109	22	18.5		146	4.39	4.75		368	0.012
ME2100762019	GWC12	25-May-2021	1243	0.07	<0.001	0.204	692	66	<1	155	0.012	16.49		1870	<1	0.64	0.42	<0.001	31	0.134	<0.001	0.001		7.6	22	<0.01	322	0.694	119	18.5		692	20.7	20.4		1140	0.011
ME2100762020	GWA14	25-May-2021	1147									Dry																									
ME2100762021	GWC14	25-May-2021	1202	0.22	<0.001	0.481	460	120	<1	157	0.017	13.67		2100	<1	0.39	0.67	0.003	53	0.045	0.015	0.068		7.5	27	<0.01	291	1.12	493	18.5		460	23.9	23.7		1210	0.038
ME2100762022	GWA15	27-May-2021	1447	3.5	<0.001	0.013	164	17	<1	112	0.007	2.64		770	<1	0.84	1.7	0.004	6	0.037	<0.001	0.003		7.3	1	<0.01	139	0.12	41	16.5		164	7.29	7.41		534	0.015
ME2100762023	GWC15	27-May-2021	1503	0.11	<0.001	0.177	577	41	<1	104	0.015	13.78		1320	<1	4.2	2.88	0.003	21	0.056	<0.001	0.003		7.1	18	<0.01	218	0.524	22	17.5		577	14.9	13.7		774	0.012
ME2100762024	GWC25	21-May-2021	1147	1.81	0.001	0.083	216	26	<1	107	0.008	22.14		770	<1	1.58	1.57	0.019	38	0.044	<0.001	0.029		6.7	6	<0.01	92	0.322	47	18.5		216	8.31	8.58		468	0.03
ME2100762025	GWC33	07-May-2021	1216	1.36	<0.001	0.178	<1	262	60	102	0.008	43.7		3000	518	1.28	0.48	0.003	<1	0.023	0.001	0.003		12.3	16	<0.01	44	0.176	28	21		578	15	15.4		845	0.024
ME2100762026	GWC26	27-May-2021	1330	0.14	<0.001	0.154	453	47	<1	134	0.02	46.57		1290	<1	1.52	0.82	0.001	24	0.039	0.002	0.002		7.3	17	<0.01	194	0.429	37	19.5		453	13.6	13.2		752	0.015
ME2100762027	GWC16	07-May-2021	1400	0.35	<0.001	0.138	696	80	<1	288	0.004	30.14		2170	<1	0.09	3.83	0.006	36	0.148	0.002	0.002		7.3	22	<0.01	381	0.685	101	20.5		696	24.1	24.1		1300	0.023
ME2100762028	GWA16	11-May-2021	1035	0.97	0.002	0.119	576	374	<1	6050	0.007	1.815		20000	<1	0.15	0.66	0.002	530	0.031	0.002	0.003		7.4	19	<0.01	3310	5.54	1210	18.5		576	207	207		12600	0.033
ME2100762029	GWC30	04-May-2021	1302	0.14	<0.001	0.064	589	246	<1	559	0.013	30.26		3150	<1	0.92	3.72	0.002	162	0.162	<0.001	0.017		6.8	46	<0.01	185	2.41	320	19		589	34.2	34.8		2140	0.027
ME2100762030	GWC31	04-May-2021	1347									Dry																									
ME2100762031	GWC27	14-May-2021	1410	1.69	0.013	0.116	12	31	<1	326	1.53	16.68		1760	<1	5.87	29.7	0.01	46	3.58	<0.001	0.063		5.7	35	<0.01	185	0.132	318	17		12	16	14.3		1160	0.277
ME2100762032	GWC32	11-May-2021	1206	1.43	0.001	0.036	90	14	<1	9	0.631	4.02		209	<1		1.52	0.004	8	0.018	0.001	0.013		6.5	15	<0.01	14	0.156	<10	18.5		90	2.05	2.35		172	0.022
ME2100762033	GWA32	11-May-2021	1147	0.02	<0.001	0.048	452	161	<1	652	0.018	1.73		3870	<1	1.7	0.11	<0.001	175	0.104	0.002	0.002		7.6	23	<0.01	415	2.22	724	16.5		452	42.5	41.1		2600	0.008
ME2100762034	GWA34	04-May-2021	1116	21.3	0.003	0.022	<1	434	<1	321	0.091	4.29		6180	<1	9.06	95	0.005	470	14.6	<0.001	0.926		4.8	10	0.01	345	0.967	3920	18.5		<1	90.7	75.6		6590	2.59
ME2100762035	GWC34	04-May-2021	1158	0.57	<0.001	0.122	1690	77	<1	212	0.025	20.37		4350	<1	1.31	1.25	0.007	74	0.138	0.002	0.105		7.2	21	<0.01	970	5.34	555	18		1690	51.3	52.7		3150	0.048
ME2100762036	GWA36	14-May-2021	1018									Dry																									
ME2100762037	GWC36	14-May-2021	1029	0.06	<0.001	0.031	403	106	<1	240	0.003	13.29		3030	<1	2.7	1.84	<0.001	99	1.58	<0.001	0.006		6.6	26	<0.01	414	1.37	916	18		403	33.9	32.1		2150	0.045
ME2100762038	PZ13	21-May-2021	1500									Dry																									
ME2100762039	PZ20	21-May-2021	1428	1.68	0.003	0.042	477	43	<1	35	0.002	3.13		1050	<1	0.77	2.68	0.003	45	0.792	0.002	0.008		7.7	19	<0.01	133	0.425	86	18.5		477	12.3	12.1		662	0.02
ME2100762040	PZ21	21-May-2021	1412	2.49	0.003	0.031	513	29	<1	38	0.004	3.55		1180	<1	1.31	2.75	0.003	26	0.415	0.002	0.008		7.5	10	<0.01	223	0.31	124	18.5		513	13.9	13.5		774	0.024
ME2100762041	PZ26	21-May-2021	1329									Dry																									

ME2100762042	GWF1	21-May-2021	1040									Dry																									
ME2100762043	GWF2	21-May-2021	1057									Dry																									
ME2100762044	GWF3	21-May-2021	1113	0.83	0.002	0.104	766	189	<1	510	0.013	18.87		4170	<1	1.44	9.17	0.005	262	1.29	0.005	0.012		6.8	41	<0.01	466	1.8	1160	21		766	53.8	52.3		3030	0.046
ME2100762045	GWF4	21-May-2021	1358									Dry																									
ME2100762046	GWF5	21-May-2021	1346									Dry																									
ME2100762047	GWF6	21-May-2021	1257	0.18	0.002	0.034	544	250	<1	280	<0.001	16.44		3770	<1	2.73	6.4	<0.001	196	2.71	0.005	0.133		6.8	58	<0.01	392	1.37	1490	29		544	49.8	47.1		2920	0.018
ME2100762048	GWF7	21-May-2021	1243									Dry																									
ME2100762049	Barologger Office	27-May-2021	1420																																		
ME2100780001	GWC25	07-May-2021	1109	0.78	0.004	0.135	258	31	<1	152	0.01			1040	<1	0.86	2.68	0.041	47	0.449	<0.001	0.039		6.7	6	<0.01	124	0.427	64	20		258	10.8	11		562	0.029
ME2100781001	GWC25	07-May-2021	1033									21.51																									
ME2100948001	GWA1	08-Jun-2021	1244									Dry																									
ME2100948002	GWA2	24-Jun-2021	1153	0.04	<0.001	0.018	118	14	<1	98	0.002	1.15		628	<1	2.63	0.24	<0.001	20	0.112	<0.001	0.002		6.7	5	<0.01	93	0.144	51	14		118	6.18	6.52		395	0.015
ME2100948003	GWA3	24-Jun-2021	1252	1.56	<0.001	0.022	289	18	<1	175	0.007	4.19		1280	<1	1.64	1.31	0.004	22	0.131	<0.001	0.007		7.2	2	<0.01	237	0.165	93	18		289	12.6	13.1		966	0.008
ME2100948004	GWA4	18-Jun-2021	1349									Dry																									
ME2100948005	GWA5	25-Jun-2021	1426	0.43	0.006	0.12	849	788	<1	4660	0.007	3.21		21200	<1	2.25	0.8	0.001	1560	0.104	0.001	0.017		7.6	48	<0.01	2970	8.74	6560	16		849	285	298		14500	0.05
ME2100948006	GWA6	25-Jun-2021	1144	2.06	<0.001	0.068	464	88	<1	205	0.006	1.32		2360	<1	0.86	1.55	0.004	83	0.064	0.001	0.004		7.8	9	<0.01	370	0.759	623	13		464	28	27.5		1640	0.012
ME2100948007	GWA7	25-Jun-2021	1209									Dry																									
ME2100948008	GWA8	25-Jun-2021	1320	0.08	<0.001	0.026	263	146	<1	379	0.001	1.435		2580	<1	0.47	0.24	0.001	122	8.44	<0.001	0.008		7.1	12	<0.01	256	1.4	629	15		263	29	28.8		1450	0.008
ME2100948009	GWC1	24-Jun-2021	1205	0.03	<0.001	0.06	536	144	<1	503	0.001	10.35		3280	<1	0.17	0.64	<0.001	98	0.585	<0.001	0.004		7.1	26	<0.01	464	1.48	544	17.5		536	36.2	36.1		2080	0.016
ME2100948010	GWC2	24-Jun-2021	1319	0.08	<0.001	0.262	479	65	<1	98	0.002	10.64		1190	<1	1.06	0.15	<0.001	27	0.071	<0.001	0.002		7.2	25	<0.01	162	0.545	26	18		479	12.9	13.2		660	0.017
ME2100948011	GWC3	25-Jun-2021	1122	0.35	0.012	0.042	572	191	<1	739	0.005	10.35		5100	<1	3.26	18.4	0.003	173	0.208	<0.001	0.023		6.9	41	0.01	804	1.85	1140	18.5		572	56	59.8		3420	0.042
ME2100948012	GWC4	25-Jun-2021	1238	0.04	<0.001	0.039	659	178	<1	316	0.002	15.76		2380	<1	0.8	1.84	0.001	81	0.038	<0.001	0.001		6.7	48	<0.01	227	1.83	240	19		659	27.1	26.6		1530	0.015
ME2100948013	GWC5	25-Jun-2021	1340	0.02	<0.001	0.198	2240	273	<1	470	0.002	5.535		5400	<1	3.17	0.29	0.002	148	1.24	<0.001	0.024		6.7	85	<0.01	938	6.74	314	17.5		2240	64.6	68.8		3800	0.023
ME2100948014	GWA10	11-Jun-2021	1052	1.76	0.002	0.032	232	53	<1	208	0.008	3		1280	<1	1.64	1.19	0.002	44	0.411	<0.001	0.009		6.9	<1	<0.01	160	0.429	152	15		232	13.7	13.2		867	0.011
ME2100948015	GWC10	11-Jun-2021	1123	0.04	<0.001	0.034	370	182	<1	360	0.022	3.98		3540	<1	0.69	0.93	<0.001	125	0.189	0.001	0.002		7	29	<0.01	469	1.78	1130	16		370	41.1	40.5		2420	<0.005
ME2100948016	GWA11	11-Jun-2021	1145	4.69	0.002	0.052	490	36	<1	79	0.008	3.52		1290	<1	3.13	4.41	0.004	37	0.386	<0.001	0.005		7.5	13	<0.01	217	0.501	82	16		490	13.7	14.6		856	0.008
ME2100948017	GWC11	11-Jun-2021	1209	0.16	0.002	0.027	321	135	<1	297	0.007	12.06		3310	<1	0.51	11.5	0.002	129	1.31	0.001	0.006		6.6	30	<0.01	454	1.27	1090	17		321	37.5	37.9		2400	0.025
ME2100948018	GWA12	18-Jun-2021	1024	8.25	<0.001	0.027	154	12	<1	43	0.004	3.55		450	<1	2.47	3.64	0.004	7	0.053	0.002	0.012		8	2	<0.01	86	0.107	21	16.5		154	4.73	4.97		454	0.018
ME2100948019	GWC12	18-Jun-2021	1056	0.32	<0.001	0.259	669	66	<1	165	0.061	15.62		1900	<1	1.43	0.9	0.003	31	0.134	<0.001	0.006		7.6	24	<0.01	335	0.664	116	17.5		669	20.4	21		1160	0.015
ME2100948020	GWA14	18-Jun-2021	1132									Dry																									
ME2100948021	GWC14	18-Jun-2021	1144	0.16	<0.001	1.61	492	121	<1	165	0.014	12.87		2140	<1	1.49	0.23	0.002	55	0.013	0.014	0.042		7.6	28	<0.01	305	1.16	519	17.5		492	25.3	24.5		1380	0.026
ME2100948022	GWA15	18-Jun-2021	1226	8.78	<0.001	0.038	135	9	<1	90	0.007	2.495		585	<1	0.1	4.43	0.006	4	0.074	<0.001	0.014		6.9	<1	<0.01	120	0.073	36	16		135	5.98	6		462	0.019
ME2100948023	GWC15	18-Jun-2021	1304	0.12	<0.001	0.201	591	40	<1	109	0.006	13.42		1310	<1	4.14	1.33	0.002	21	0.051	<0.001	0.002		7	20	<0.01	229	0.497	26	17.5		591	15.4	14.2		764	0.01
ME2100948024	GWC25	23-Jun-2021	1054	0.94	0.004	0.153	254	29	<1	178	0.01	24.455		1080	<1	1.19	4.08	0.023	48	1.47	<0.001	0.059		6.7	6	<0.01	139	0.404	59	18		254	11.3	11.6		642	0.034

ME2100948025	GWC33	08-Jun-2021	1046	0.98	<0.001	0.175	<1	207	33	105	0.011	44.09		3260	516		0.24	0.003	<1	0.033	0.001	0.004		12.3	16	<0.01	43	0.195	22	19.5		548	14.4	12.6		921	0.038
ME2100948026	GWC26	08-Jun-2021	1143	0.14	<0.001	0.165	434	48	<1	145	0.02	47.26		1300	<1	1.13	0.74	0.001	22	0.038	0.002	0.002		7.2	22	<0.01	195	0.396	38	19.5		434	13.6	13.2		756	0.037
ME2100948027	GWC16	08-Jun-2021	1309	0.74	0.001	0.138	688	62	<1	299	0.003	30.64		2200	<1	5.87	4.32	0.005	31	0.082	0.001	0.001		7.2	28	<0.01	345	0.642	89	19		688	24	21.4		1300	0.02
ME2100948028	GWA16	08-Jun-2021	1340	0.26	0.001	0.11	525	393	<1	6300	0.004	1.85		20500	<1	1.61	0.22	0.001	581	0.028	0.002	0.004		7.5	19	<0.01	3490	5.09	1180	15		525	213	220		13400	0.022
ME2100948029	GWC30	03-Jun-2021	1129	0.05	<0.001	0.049	585	236	<1	614	0.013	30.24		3150	<1	5.33	4.02	<0.001	145	0.172	<0.001	0.027		6.8	45	<0.01	162	2.32	312	18.5		585	35.5	31.9		2080	0.03
ME2100948030	GWC31	03-Jun-2021	1210									Dry																									
ME2100948031	GWC27	03-Jun-2021	1326	1.59	0.013	0.11	11	32	<1	363	1.2	16.74		1740	<1	13.8	26	0.009	42	3.69	<0.001	0.081		5.7	34	<0.01	166	0.159	331	17.5		11	17.4	13.1		973	0.262
ME2100948032	GWC32	10-Jun-2021	1307	0.14	<0.001	0.044	1080	150	<1	306	0.084	3.99		3320	<1	4.89	1.86	0.006	103	0.056	0.002	0.012		6.7	39	<0.01	509	4.25	252	15		1080	35.4	39.1		2040	0.012
ME2100948033	GWA32	10-Jun-2021	1236	0.03	0.001	0.058	468	175	<1	804	0.008	2.17		4360	<1	0.32	0.09	<0.001	212	0.174	0.002	0.006		7.3	22	<0.01	511	2.54	829	13.5		468	49.3	49		2960	<0.005
ME2100948034	GWA34	11-Jun-2021	1327	24.1	0.003	0.02	<1	486	<1	354	0.102	4.33		6210	<1	5.59	100	0.002	499	11	<0.001	1.04		3.9	5	0.02	404	0.787	3980	18		<1	92.8	83		6480	2.99
ME2100948035	GWC34	11-Jun-2021	1349									Dry																									
ME2100948036	GWA36	08-Jun-2021	1402									Dry																									
ME2100948037	GWC36	08-Jun-2021	1411	0.09	<0.001	0.035	418	115	<1	258	<0.001	13.7		3050	<1	2.62	2.78	<0.001	104	1.36	<0.001	0.007		6.7	36	<0.01	438	1.55	984	18		418	36.1	34.3		2180	0.051
ME2100948038	PZ13	23-Jun-2021	1513																																		
ME2100948039	PZ20	23-Jun-2021	1410	1.18	<0.001	0.022	237	26	<1	34	0.005	2.2		677	<1	4.2	0.82	0.002	26	0.144	0.002	0.005		7.7	13	<0.01	88	0.258	62	16		237	6.98	7.6		435	0.012
ME2100948040	PZ21	23-Jun-2021	1342	1.2	0.001	0.026	299	21	<1	32	0.005	3.04		862	<1	3.83	1.27	0.004	17	0.479	0.001	0.006		7.6	7	<0.01	162	0.239	100	16.5		299	8.96	9.67		562	0.025
ME2100948041	PZ26	23-Jun-2021	1315									Dry																									
ME2100948042	GWF1	03-Jun-2021	1500																																		
ME2100948043	GWF2	23-Jun-2021	1020									Dry																									
ME2100948044	GWF3	23-Jun-2021	1033									18.645																									
ME2100948045	GWF4	23-Jun-2021	1328									12.95																									
ME2100948046	GWF5	23-Jun-2021	1225									Dry																									
ME2100948047	GWF6	23-Jun-2021	1236	0.08	0.002	0.035	415	239	<1	277	<0.001	16.05		3620	<1	2.25	4.81	<0.001	185	2.51	0.004	0.131		6.7	51	<0.01	384	1.4	1300	28		415	43.2	45.2		2300	0.025
ME2100948048	GWF7	07-Jun-2021	1205									Dry																									
ME2100948049	Barologger Office	07-Jun-2021	1213																																		
ME2101121001	GWA1	13-Jul-2021	1011									Dry																									
ME2101121002	GWA2	12-Jul-2021	1034	0.18	<0.001	0.019	123	15	<1	100	<0.001	1.08		629	<1	0.79	0.79	<0.001	21	0.135	<0.001	0.002		6.7	6	<0.01	92	0.155	60	12.5		123	6.53	6.63		358	<0.005
ME2101121003	GWA3	12-Jul-2021	1117	10.4	0.002	0.052	264	21	<1	209	0.014	4.16		1400	<1	0.96	7.13	0.008	24	0.188	<0.001	0.02		7.2	2	<0.01	239	0.27	123	17.5		264	13.7	13.5		958	0.021
ME2101121004	GWA4	12-Jul-2021	1146	16.9	0.03	0.247	637	418	<1	158	0.034	4.22		4390	<1	2.86	36.6	0.042	257	8.6	0.003	0.086		7.2	35	<0.01	363	3.44	2160	17.5		637	62.2	58.7		3690	0.129
ME2101121005	GWA5	13-Jul-2021	1429	0.65	0.007	0.054	885	630	<1	4460	0.006	3.07		20700	<1	0.33	1.3	0.003	1480	0.173	<0.001	0.022		7.5	38	<0.01	2680	8.85	6200	15.5		885	272	271		17600	0.068
ME2101121006	GWA6	12-Jul-2021	1315	4.08	0.001	0.057	491	66	<1	99	0.005	0.99		1710	<1	1.1	2.76	0.003	58	0.048	0.002	0.004		7.8	7	<0.01	262	0.541	359	13		491	20.1	19.6		1100	0.013
ME2101121007	GWA7	12-Jul-2021	1407	5.97	0.006	0.563	1240	492	<1	2820	0.014	4.01		13500	<1	1.12	14.3	0.016	658	2.52	0.003	0.035		7.5	38	<0.01	1950	8.92	3070	18.5		1240	168	164		9990	0.046
ME2101121008	GWA8	13-Jul-2021	1331	0.61	<0.001	0.06	301	166	<1	386	0.006	1.29		2700	<1	2.34	1.62	0.007	118	13.8	<0.001	0.012		7.2	12	<0.01	236	1.64	626	15		301	29.9	28.6		1840	0.014
ME2101121009	GWC1	12-Jul-2021	1014	0.03	<0.001	0.062	502	154	<1	506	<0.001	10.3		3350	<1	1.69	0.6	<0.001	102	0.554	<0.001	0.004		7.1	29	<0.01	462	1.49	547	16.5		502	35.7	36.9		2100	0.007

ME2101121010	GWC2	12-Jul-2021	1102	0.13	<0.001	0.272	492	66	<1	106	0.002	9.91		1200	<1	2.35	0.19	<0.001	27	0.055	<0.001	0.003		7.2	26	<0.01	151	0.584	26	17.5		492	13.4	12.7		695	0.012
ME2101121011	GWC3	12-Jul-2021	1220	2.21	0.041	0.098	545	211	<1	792	0.013	10.33		5500	<1	1.53	78.2	0.011	187	0.269	0.004	0.029		7.1	46	0.02	826	2.17	1340	18.5		545	61.1	63		3700	0.071
ME2101121012	GWC4	13-Jul-2021	1255	0.02	<0.001	0.034	665	182	<1	318	0.001	14.72		2410	<1	3.49	1.86	<0.001	77	0.055	<0.001	0.001		6.7	45	<0.01	206	2.01	246	19		665	27.4	25.5		1460	0.009
ME2101121013	GWC5	13-Jul-2021	1349	0.01	<0.001	0.194	2770	290	<1	493	0.001	5.53		5540	<1	6.94	0.27	0.001	141	1.35	<0.001	0.026		6.6	80	<0.01	886	8.07	353	17.5		2770	76.6	66.7		3580	0.022
ME2101121014	GWA10	08-Jul-2021	1005	0.75	0.001	0.041	371	139	<1	490	0.005	3.11		2760	<1	0.91	0.71	0.002	104	0.776	<0.001	0.008		7.1	2	<0.01	341	0.878	413	14.5		371	29.8	30.4		1710	0.006
ME2101121015	GWC10	08-Jul-2021	1038	0.05	<0.001	0.03	354	197	<1	338	0.032	3.82		3520	<1	0.8	0.48	<0.001	124	0.2	<0.001	0.003		7.1	32	<0.01	471	1.66	1220	15.5		354	42	41.3		2520	0.007
ME2101121016	GWA11	08-Jul-2021	1055	1.06	<0.001	0.032	454	36	<1	80	0.003	3.49		1220	<1	1.88	4.29	0.001	33	0.22	<0.001	0.002		7.5	16	<0.01	204	0.404	94	15.5		454	13.3	13.8		742	0.006
ME2101121017	GWC11	08-Jul-2021	1115	0.11	<0.001	0.024	346	136	<1	273	0.005	11.95		3310	<1	5.14	13.6	0.002	120	1.4	0.001	0.006		6.6	30	<0.01	412	1.16	1180	17		346	39.2	35.4		2310	0.022
ME2101121018	GWA12	08-Jul-2021	1158	6.05	0.001	0.034	197	17	<1	56	0.007	3.63		633	<1	0.54	3.91	0.004	11	0.083	0.002	0.011		7.9	2	<0.01	107	0.14	42	15.5		197	6.39	6.46		446	0.016
ME2101121019	GWC12	08-Jul-2021	1221	0.14	<0.001	0.183	752	49	<1	163	0.028	16.14		1940	<1	8.67	0.67	0.002	27	0.127	<0.001	0.002		7.5	21	<0.01	307	0.599	118	17.5		752	22.1	18.6		1170	0.013
ME2101121020	GWA14	08-Jul-2021	1257									Dry																									
ME2101121021	GWC14	08-Jul-2021	1314	0.06	<0.001	0.54	456	121	<1	164	0.012	12.97		2210	<1	0.51	0.2	0.001	52	0.078	0.009	0.038		7.5	28	<0.01	302	1.03	513	17.5		456	24.4	24.2		1470	0.023
ME2101121022	GWA15	08-Jul-2021	1330	8.12	<0.001	0.056	105	8	<1	89	0.01	2.48		554	<1	1.46	4.61	0.005	3	0.061	<0.001	0.01		6.9	<1	<0.01	110	0.066	32	15		105	5.27	5.43		535	0.02
ME2101121023	GWC15	08-Jul-2021	1350	0.06	<0.001	0.19	536	47	<1	112	0.006	13.24		1360	<1	0.19	0.9	0.002	22	0.052	<0.001	0.001		7	20	<0.01	238	0.469	58	17		536	15.1	15		826	0.011
ME2101121024	GWC25	23-Jul-2021	1026	0.33	0.002	0.132	318	37	<1	228	0.015	25.73		1400	<1	2.64	1.61	0.021	63	1.25	<0.001	0.073		6.7	6	<0.01	175	0.43	60	17.5		318	14	14.8		772	0.028
ME2101121025	GWC33	07-Jul-2021	1018	0.89	<0.001	0.221	<1	301	35	127	0.013	44.7		3700	597	1.82	0.31	0.002	<1	0.015	<0.001	0.002		12.3	18	<0.01	43	0.247	25	19		632	16.7	17.4		922	0.013
ME2101121026	GWC26	07-Jul-2021	1113	0.96	<0.001	0.25	439	52	<1	146	0.09	48.87		1270	<1	1.82	2.56	0.007	21	0.071	0.002	0.01		7.3	16	<0.01	194	0.43	37	18		439	13.7	13.2		782	0.044
ME2101121027	GWC16	07-Jul-2021	1232	2.24	0.001	0.149	674	71	<1	304	0.005	31.18		2110	<1	2.15	4.04	0.01	31	0.055	0.001	0.001		7.3	20	<0.01	367	0.69	73	18.5		674	23.6	22.6		1260	0.014
ME2101121028	GWA16	07-Jul-2021	1308	0.26	<0.001	0.125	517	396	<1	7000	0.003	1.42		20800	<1	3.72	0.23	<0.001	578	0.012	0.002	0.002		7.5	16	<0.01	3450	6.21	1290	13		517	235	218		14100	0.014
ME2101121029	GWC30	06-Jul-2021	1337	0.03	<0.001	0.05	600	246	<1	561	0.005	30.29		3110	<1	1.09	2.12	<0.001	157	0.168	<0.001	0.025		6.8	48	<0.01	186	2.45	286	18.5		600	33.8	34.5		1990	0.015
ME2101121030	GWC31	06-Jul-2021	1308									Dry																									
ME2101121031	GWC27	06-Jul-2021	1411	0.74	0.003	0.054	<1	34	<1	335	0.732	16.73		1680	<1	0.5	3.22	0.023	36	3.27	0.001	0.075		4.4	34	<0.01	224	0.196	287	17.5		<1	15.4	15.3		1120	0.722
ME2101121032	GWC32	06-Jul-2021	1125	0.16	<0.001	0.047	1360	145	<1	297	0.102	4.01		3390	<1	0.41	2.13	0.004	106	0.066	<0.001	0.01		6.8	43	<0.01	538	4.09	252	17		1360	40.8	40.5		2130	0.016
ME2101121033	GWA32	06-Jul-2021	1103	0.01	<0.001	0.069	555	228	<1	899	0.009	2.61		5240	<1	5.8	<0.05	<0.001	274	0.276	0.003	0.004		7.3	25	<0.01	620	3.08	881	14.5		555	54.8	61.5		3680	0.006
ME2101121034	GWA34	06-Jul-2021	1211	11.6	0.002	0.017	<1	273	<1	194	0.114	4.25		3750	<1	0.59	49.7	0.004	289	7.5	<0.001	0.526		4.7	5	0.02	250	0.57	2090	17		<1	49	48.4		3510	1.44
ME2101121035	GWC34	06-Jul-2021	1235									Dry																									
ME2101121036	GWA36	07-Jul-2021	1350									Dry																									
ME2101121037	GWC36	07-Jul-2021	1402	0.17	<0.001	0.048	406	118	<1	287	0.002	13.645		2960	<1	3.09	4.76	0.002	99	1.1	<0.001	0.005		6.7	24	<0.01	440	1.65	948	17.5		406	35.9	33.8		2140	0.038
ME2101121038	PZ13	13-Jul-2021	1148									Dry																									
ME2101121039	PZ20	23-Jul-2021	1320	0.19	<0.001	0.013	151	19	<1	25	0.003	1.45		483	<1	4.9	0.13	<0.001	18	0.04	<0.001	0.003		7.6	10	<0.01	58	0.154	48	13		151	4.72	5.21		344	0.006
ME2101121040	PZ21	23-Jul-2021	1257	0.36	0.001	0.016	355	22	<1	28	0.002	2.88		841	<1	0.38	0.56	0.001	17	0.287	0.001	0.004		7.7	8	<0.01	148	0.203	57	14		355	9.07	9.14		536	0.011
ME2101121041	PZ26	23-Jul-2021	1231									Dry																									
ME2101121042	GWF1	06-Jul-2021	1500																																		
ME2101121043	GWF2	23-Jul-2021	952									Dry																									

ME2101121044	GWF3	23-Jul-2021	1007									17.48																									
ME2101121045	GWF4	23-Jul-2021	1247									Dry																									
ME2101121046	GWF5	23-Jul-2021	1237									Dry																									
ME2101121047	GWF6	23-Jul-2021	1202	0.09	0.002	0.034	414	252	<1	254	<0.001	17.11		3720	<1	0.22	4.36	<0.001	180	2.69	0.004	0.132		6.8	51	<0.01	365	1.29	1390	25		414	44.4	44.6		2850	0.018
ME2101121048	GWF7	23-Jul-2021	1150									Dry																									
ME2101121049	Barologger Office	23-Jul-2021	1417																																		
ME2101284001	GWA1	06-Aug-2021	1134									Dry																									
ME2101284002	GWA2	10-Aug-2021	1154	0.15	<0.001	0.016	125	14	<1	96	<0.001	1.16		635	<1	1.12	0.48	<0.001	20	0.069	<0.001	0.002		6.7	5	<0.01	85	0.146	53	13		125	6.31	6.17		360	<0.005
ME2101284003	GWA3	10-Aug-2021	1242	25	0.004	0.082	170	12	<1	109	0.026	3.86		861	<1	1.97	21.4	0.021	16	0.373	<0.001	0.041		7.2	1	<0.01	142	0.155	64	16		170	7.8	8.12		702	0.047
ME2101284004	GWA4	11-Aug-2021	1152									Dry																									
ME2101284005	GWA5	24-Aug-2021	1330	4.12	0.014	0.575	843	587	<1	3930	0.01	3.25		18600	<1	5.22	5.81	0.006	1090	0.541	0.002	0.04		7.5	35	<0.01	2260	7.83	5500	13.5		843	242	218		15300	0.097
ME2101284006	GWA6	10-Aug-2021	1352	3.99	0.002	0.054	619	58	<1	92	<0.001	1.19		2190	<1	0.47	3.13	0.003	59	0.084	0.003	0.004		8.1	8	<0.01	376	0.48	460	13		619	24.5	24.3		1460	0.014
ME2101284007	GWA7	11-Aug-2021	1401	1.49	0.002	0.18	1220	462	<1	2570	0.004	3.96		12700	<1	0.63	5.66	0.003	596	1.62	0.001	0.014		7.3	31	<0.01	1870	7.74	2850	18.5		1220	156	154		9730	0.011
ME2101284008	GWA8	10-Aug-2021	1429	0.23	<0.001	0.027	286	150	<1	382	<0.001	1.38		2710	<1	2.97	0.2	<0.001	122	8.69	<0.001	0.007		7.2	13	<0.01	248	1.35	668	13.5		286	30.4	28.6		1840	0.005
ME2101284009	GWC1	10-Aug-2021	1139	0.02	<0.001	0.056	567	141	<1	498	<0.001	10.19		3390	<1	2.66	0.53	<0.001	96	0.524	<0.001	0.004		7.1	26	<0.01	450	1.37	563	17.5		567	37.1	35.2		2170	<0.005
ME2101284010	GWC2	10-Aug-2021	1300	0.04	<0.001	0.25	515	64	<1	107	<0.001	11.72		1220	<1	4.28	0.07	<0.001	27	0.041	<0.001	0.002		7.2	26	<0.01	152	0.526	25	18.5		515	13.8	12.7		700	0.009
ME2101284011	GWC3	10-Aug-2021	1328	0.82	0.008	0.06	561	204	<1	840	0.001	9.66		5990	<1	0.7	38.6	0.006	185	0.199	0.001	0.01		7.3	42	0.02	875	2.18	1380	17		561	63.6	64.5		4110	0.035
ME2101284012	GWC4	24-Aug-2021	1146	0.03	<0.001	0.034	674	165	<1	337	<0.001	14.75		2380	<1	6.27	1.84	<0.001	77	0.037	<0.001	<0.001		6.6	46	<0.01	206	1.99	242	18.5		674	28	24.7		1450	0.007
ME2101284013	GWC5	10-Aug-2021	1455	<0.01	<0.001	0.195	2200	278	<1	464	<0.001	5.5		5580	<1	0.82	0.24	<0.001	142	1.24	<0.001	0.024		6.7	83	<0.01	864	7.75	344	17		2200	64.2	65.3		3610	0.01
ME2101284014	GWA10	10-Aug-2021	945	0.53	<0.001	0.048	375	148	<1	567	<0.001	3.11		3270	<1	0.84	0.65	<0.001	116	1.17	<0.001	0.008		7.1	2	<0.01	390	1.1	530	14.5		375	34.5	33.9		2090	0.007
ME2101284015	GWC10	10-Aug-2021	1014	0.05	<0.001	0.032	386	183	<1	320	0.022	3.3		3540	<1	6.73	0.84	<0.001	119	0.211	<0.001	0.002		6.8	31	<0.01	452	1.72	849	15.5		386	34.4	39.4		2560	<0.005
ME2101284016	GWA11	10-Aug-2021	1107	4.36	0.001	0.047	429	33	<1	85	<0.001	3.51		1200	<1	0.1	6.36	0.004	32	0.367	<0.001	0.006		7.5	13	<0.01	185	0.439	80	15		429	12.6	12.6		673	0.012
ME2101284017	GWC11	10-Aug-2021	1042	0.34	<0.001	0.021	349	134	<1	269	<0.001	12.23		3340	<1	1.43	17.2	0.002	124	1.48	0.001	0.006		6.6	31	<0.01	435	1.14	1110	17.5		349	37.7	36.6		2160	0.019
ME2101284018	GWA12	11-Aug-2021	1306	4.96	0.001	0.034	198	15	<1	51	0.006	3.61		515	<1	4.22	2.34	0.004	8	0.061	0.002	0.009		7.9	1	<0.01	96	0.128	34	15.5		198	6.1	5.61		391	0.01
ME2101284019	GWC12	11-Aug-2021	1235	0.21	<0.001	0.225	820	73	<1	158	0.09	17.27		1980	<1	1.4	0.77	0.003	31	0.147	<0.001	0.002		7.6	22	<0.01	365	0.724	117	18.5		820	23.3	22.6		1080	0.011
ME2101284020	GWA14	11-Aug-2021	1028									Dry																									
ME2101284021	GWC14	11-Aug-2021	954	0.05	<0.001	0.581	492	159	<1	171	0.014	13.38		2370	<1	2.05	0.93	0.002	61	0.086	0.004	0.017		7.3	28	<0.01	327	1.22	692	18.5		492	29.1	27.9		1440	0.011
ME2101284022	GWA15	11-Aug-2021	1104	5.46	<0.001	0.038	224	21	<1	97	0.014	2.58		737	<1	3.79	3.25	0.005	6	0.132	<0.001	0.01		7.4	<1	<0.01	136	0.135	40	16		224	8.04	7.46		533	0.018
ME2101284023	GWC15	11-Aug-2021	1044	0.08	<0.001	0.213	623	48	<1	109	0.01	13.01		1330	<1	5.72	0.56	0.001	22	0.053	<0.001	0.004		7	19	<0.01	236	0.556	60	18		623	16.8	15		754	0.006
ME2101284024	GWC25	25-Aug-2021	1041	0.62	0.002	0.11	360	29	<1	242	0.005	26.12		1380	<1	8.38	1.36	0.011	58	1.28	<0.001	0.088		6.6	5	<0.01	154	0.428	68	18.2		360	15.4	13		784	0.011
ME2101284025	GWC33	06-Aug-2021	952	0.66	<0.001	0.355	<1	355	20	124	0.015	45.48		4200	814	1.66	0.17	0.002	<1	0.019	<0.001	0.002		12.3	18	<0.01	44	0.282	29	19.5		834	20.8	20.1		1060	0.02
ME2101284026	GWC26	06-Aug-2021	1054	0.07	<0.001	0.164	499	47	<1	142	0.014	48.66		1300	<1	2.76	0.49	0.001	23	0.04	0.002	0.01		7.2	19	<0.01	214	0.436	41	19.5		499	14.8	14		724	0.024
ME2101284027	GWC16	06-Aug-2021	1155	1.77	<0.001	0.14	712	59	<1	265	0.002	31.28		2090	<1	0.91	2.52	0.007	31	0.041	0.001	0.004		7.2	23	<0.01	374	0.706	51	19		712	22.8	22.4		1220	0.01
ME2101284028	GWA16	06-Aug-2021	1244	0.44	<0.001	0.128	583	408	<1	5950	0.002	1.47		21000	<1	3.88	0.36	<0.001	565	0.013	0.002	0.003		7.5	19	0.01	3400	6.14	944	13		583	199	215		14000	0.016

ME2101284029	GWC30	05-Aug-2021	1259	0.08	<0.001	0.051	650	245	<1	563	0.005	30.31		3250	<1	0.16	1.09	0.001	159	0.152	<0.001	0.031		6.9	50	<0.01	189	2.68	291	18		650	34.9	34.8		2080	0.011
ME2101284030	GWC31	05-Aug-2021	1337									Dry																									
ME2101284031	GWC27	05-Aug-2021	1413	1.33	0.006	0.079	<1	31	<1	339	0.058	16.37		1780	<1	2.7	2.74	0.029	26	2.52	<0.001	0.019		3.8	31	<0.01	264	0.2	267	17		<1	15.1	16		999	0.232
ME2101284032	GWC32	05-Aug-2021	1040	0.13	<0.001	0.044	1450	149	<1	294	0.164	3.99		3490	<1	2.36	1.3	0.006	106	0.059	<0.001	0.007		6.8	44	<0.01	528	4.8	237	16.5		1450	42.2	40.2		2130	0.013
ME2101284033	GWA32	05-Aug-2021	1014	0.02	<0.001	0.047	476	159	<1	599	0.006	1.68		3800	<1	1.18	0.06	0.003	178	0.04	0.002	0.002		7.3	24	<0.01	436	2.24	805	13		476	43.2	42.2		2500	0.006
ME2101284034	GWA34	05-Aug-2021	1117	23.5	0.002	0.022	<1	460	<1	311	0.112	4.17		5960	<1	1.49	90.5	0.005	467	11	<0.001	0.931		4.5	6	0.03	379	0.853	3440	16		<1	80.4	78		4290	2.6
ME2101284035	GWC34	05-Aug-2021	1159	0.21	<0.001	0.081	1780	73	<1	218	0.022	20.38		4480	<1	0.94	0.72	0.007	71	0.08	0.002	0.106		7.4	23	0.01	972	5.74	559	17		1780	53.4	52.4		2960	0.042
ME2101284036	GWA36	06-Aug-2021	1335	16.2	0.012	0.163	1350	35	<1	1060	0.048	5.38		6830	<1	1.7	22.1	0.028	150	0.577	0.001	0.027		7.5	40	<0.01	1350	0.626	937	16		1350	76.4	73.8		4490	0.115
ME2101284037	GWC36	06-Aug-2021	1315	0.13	<0.001	0.04	396	109	<1	240	0.002	13.89		2980	<1	7.99	6.27	0.001	103	1.03	0.001	0.007		6.6	28	<0.01	435	1.54	668	17.5		396	28.6	33.6		2020	0.05
ME2101284038	PZ13	25-Aug-2021	1041									Dry																									
ME2101284039	PZ20	31-Aug-2021	1245	0.31	<0.001	0.023	364	33	<1	53	0.001	1.83		952	<1	6.82	0.26	<0.001	37	0.205	<0.001	0.003		7.6	15	<0.01	108	0.363	117	16		364	11.2	9.77		578	0.008
ME2101284040	PZ21	31-Aug-2021	1305	1.83	0.002	0.019	359	17	<1	35	0.002	3.26		881	<1	7.1	1.4	0.002	16	0.539	0.001	0.005		7.6	7	<0.01	152	0.234	104	16		359	10.3	8.96		599	0.014
ME2101284041	PZ26	31-Aug-2021	1215									Dry																									
ME2101284042	GWF1	31-Aug-2021	1024	2.16	0.004	0.021	111	187	<1	297	0.017	16.22		3940	<1	7.1	61	0.071	269	13.5	0.004	0.066		6.1	36	0.02	297	1.19	2000	21.5		111	52.2	45.3		3340	2.34
ME2101284043	GWF2	31-Aug-2021	1011									Dry																									
ME2101284044	GWF3	31-Aug-2021	1111	0.36	<0.001	0.076	622	170	<1	504	0.008	18.74		4080	<1	6.13	2.04	0.006	231	1.3	0.001	0.012		6.9	36	<0.01	405	1.83	1220	21.5		622	52	46		3110	0.032
ME2101284045	GWF4	31-Aug-2021	1233									Dry																									
ME2101284046	GWF5	31-Aug-2021	1224									Dry																									
ME2101284047	GWF6	31-Aug-2021	1154	0.07	0.004	0.027	457	212	<1	279	0.01	18.59		3600	<1	4.89	1.59	<0.001	173	2.79	0.002	0.166		6.7	50	<0.01	349	1.29	1370	25		457	45.5	41.3		2730	0.029
ME2101284048	GWF7	31-Aug-2021	1144									Dry																									
ME2101284049	Barologger Office	31-Aug-2021	1319																																		
ME2101437001	GWA1	10-Sep-2021	1116									Dry																									
ME2101437002	GWA2	10-Sep-2021	1328	0.05	<0.001	0.017	135	16	<1	102	<0.001	1.2		648	<1	10	0.38	<0.001	18	0.054	<0.001	<0.001		6.8	4	<0.01	72	0.149	56	14.5		135	6.74	5.51		404	<0.005
ME2101437003	GWA3	10-Sep-2021	1405	1.26	<0.001	0.025	212	16	<1	184	0.009	3.91		1150	<1	2.71	0.91	0.005	19	0.135	<0.001	0.008		7.2	1	<0.01	193	0.19	94	16.5		212	11.4	10.8		825	0.007
ME2101437004	GWA4	29-Sep-2021	1340									Dry																									
ME2101437005	GWA5	17-Sep-2021	1454	2.72	0.01	0.429	841	584	<1	3980	0.008	3.39		18900	<1	8.3	3.15	0.003	1160	0.223	0.008	0.026		7.5	34	<0.01	2290	7.32	6570	15		841	266	225		16200	0.054
ME2101437006	GWA6	13-Sep-2021	1410	11.3	0.003	0.082	820	70	<1	144	0.01	1.36		3100	<1	3.52	9.33	0.01	78	0.073	0.003	0.011		7.9	10	<0.01	542	0.689	757	14		820	36.2	33.7		2210	0.034
ME2101437007	GWA7	29-Sep-2021	1035	1.18	0.001	0.144	1510	294	<1	2890	0.003	3.97		13100	<1	7.68	5.2	0.003	596	1.66	0.001	0.011		7.2	32	<0.01	1850	7.14	2760	16.5		1510	169	145		9670	0.012
ME2101437008	GWA8	21-Sep-2021	1148	4.52	<0.001	0.099	286	160	<1	376	0.006	1.48		2660	<1	4.54	5.94	0.006	134	13.5	<0.001	0.014		7.1	14	<0.01	268	1.4	577	13.5		286	28.3	31		1860	0.018
ME2101437009	GWC1	10-Sep-2021	1315	0.01	<0.001	0.06	542	143	<1	576	<0.001	10.12		3460	<1	3.64	0.49	<0.001	96	0.53	<0.001	0.004		7.1	27	<0.01	442	1.49	505	18		542	37.6	35		2120	0.006
ME2101437010	GWC2	10-Sep-2021	1425	0.03	<0.001	0.231	477	61	<1	111	<0.001	12.23		1170	<1	4.36	0.06	<0.001	25	0.078	<0.001	0.002		7.2	24	<0.01	145	0.51	22	19		477	13.1	12		748	<0.005
ME2101437011	GWC3	13-Sep-2021	1337	2.38	0.016	0.082	555	169	<1	771	0.01	9.14		5130	<1	4.9	45.9	0.011	152	0.271	0.001	0.015		7.1	38	0.02	723	1.74	1250	17.5		555	58.9	53.4		3490	0.039
ME2101437012	GWC4	21-Sep-2021	1108	0.02	<0.001	0.034	663	193	<1	320	<0.001	14.8		2420	<1	2.45	1.59	<0.001	90	0.045	<0.001	<0.001		6.7	59	<0.01	232	1.82	240	19.5		663	27.3	28.6		1370	0.006
ME2101437013	GWC5	21-Sep-2021	1221	0.01	<0.001	0.188	2250	327	<1	488	<0.001	5.55		5570	<1	6.02	0.28	<0.001	159	1.25	<0.001	0.024		6.6	104	<0.01	969	7.39	339	16		2250	65.8	74.2		3590	0.007

ME2101437014	GWA10	13-Sep-2021	1016	0.72	0.002	0.049	347	144	<1	679	0.006	3.11		3360	<1	6.53	0.62	<0.001	115	1.01	<0.001	0.008		7.1	1	<0.01	386	1.14	579	14.5		347	38.1	33.5		2180	0.006
ME2101437015	GWC10	13-Sep-2021	1044	0.02	<0.001	0.033	371	176	<1	360	0.012	3.24		3540	<1	5.5	0.61	<0.001	116	0.264	0.006	0.288		6.8	30	<0.01	433	1.72	1190	15.5		371	42.3	37.9		2580	0.006
ME2101437016	GWA11	13-Sep-2021	1150	7.72	0.002	0.063	441	35	<1	93	0.016	3.54		1200	<1	3.86	11.1	0.007	32	0.419	<0.001	0.013		7.4	12	<0.01	175	0.474	89	15		441	13.3	12.3		700	0.028
ME2101437017	GWC11	13-Sep-2021	1120	0.08	0.001	0.021	373	135	<1	320	0.003	12.31		3400	<1	5.39	23.9	0.002	122	1.46	0.002	0.007		6.5	31	<0.01	426	1.23	1140	17		373	40.2	36.1		2410	0.02
ME2101437018	GWA12	13-Sep-2021	1254	7.36	0.001	0.038	167	11	<1	43	0.008	3.73		500	<1	2.85	3.93	0.005	6	0.09	0.002	0.013		7.9	1	<0.01	86	0.121	26	15.5		167	5.09	4.81		410	0.016
ME2101437019	GWC12	13-Sep-2021	1232	0.06	<0.001	0.226	841	67	<1	178	0.029	18.17		2040	<1	4.33	0.4	<0.001	30	0.132	<0.001	0.002		7.5	23	<0.01	345	0.708	73	18.5		841	23.3	21.4		1240	<0.005
ME2101437020	GWA14	29-Sep-2021	1212									Dry																									
ME2101437021	GWC14	29-Sep-2021	1145	0.06	<0.001	1.2	491	147	<1	199	0.016	13.96		2550	<1	3.13	1.54	0.002	62	0.079	0.001	0.002		7.5	28	<0.01	322	1.2	648	18		491	28.9	27.2		1710	<0.005
ME2101437022	GWA15	29-Sep-2021	1311	4.06	<0.001	0.03	234	26	<1	134	0.012	2.64		917	<1	3.48	2.67	0.005	8	0.129	<0.001	0.008		7.7	<1	<0.01	160	0.169	53	15		234	9.56	8.92		592	0.016
ME2101437023	GWC15	29-Sep-2021	1253	0.19	<0.001	0.227	568	43	<1	118	0.012	13.31		1410	<1	6.54	4.04	0.002	20	0.072	0.009	0.1		7.2	18	<0.01	223	0.529	59	17.5		568	15.9	14		884	0.013
ME2101437024	GWC25	28-Sep-2021	1123	0.77	0.004	0.095	324	31	<1	229	0.005	25.61		1320	<1	1.1	2.63	0.012	63	0.743	<0.001	0.088		6.6	5	<0.01	165	0.454	68	20.5		324	14.3	14		694	0.011
ME2101437025	GWC33	10-Sep-2021	1036	0.44	<0.001	0.357	<1	380	19	143	0.01	46.02		4610	857	1.73	0.06	<0.001	<1	0.006	<0.001	0.001		12.4	17	<0.01	42	0.234	20	19.5		877	22	21.2		1230	0.01
ME2101437026	GWC26	10-Sep-2021	1155	0.06	<0.001	0.146	482	46	<1	157	0.008	48.56		1310	<1	5.78	0.61	<0.001	22	0.034	0.001	0.002		7.2	17	<0.01	198	0.382	34	19.5		482	14.8	13.2		756	0.006
ME2101437027	GWC16	06-Sep-2021	1454	3.67	<0.001	0.15	702	63	<1	291	0.007	31.29		2120	<1	5.34	4.72	0.017	32	0.055	<0.001	<0.001		7.3	20	<0.01	347	0.654	75	19		702	23.8	21.4		1180	0.024
ME2101437028	GWA16	06-Sep-2021	1418	0.42	<0.001	0.113	573	410	<1	6770	0.005	1.61		21600	<1	3.76	0.33	<0.001	575	0.016	0.002	0.003		7.5	16	<0.01	3290	5.75	1220	13.5		573	228	211		14400	0.018
ME2101437029	GWC30	06-Sep-2021	1214	0.08	<0.001	0.052	640	238	<1	615	0.008	30.58		3210	<1	4.68	0.63	<0.001	150	0.141	<0.001	0.028		6.8	48	<0.01	180	2.46	308	18.5		640	36.5	33.3		2060	0.01
ME2101437030	GWC31	06-Sep-2021	1244									Dry																									
ME2101437031	GWC27	06-Sep-2021	1105	0.74	0.007	0.073	20	31	<1	352	4.43	16.49		1720	<1	7.25	27.4	0.007	46	3.49	<0.001	0.065		5.7	34	<0.01	189	0.139	305	17.5		20	16.7	14.4		1060	0.216
ME2101437032	GWC32	02-Sep-2021	1110	0.03	<0.001	0.033	1440	142	<1	306	0.028	4.03		3480	<1	6.04	1.22	0.001	101	0.068	0.016	0.103		6.7	40	<0.01	499	4.38	270	17.5		1440	43	38.1		2230	0.024
ME2101437033	GWA32	02-Sep-2021	1042	<0.01	<0.001	0.043	518	150	<1	677	0.007	1.72		4160	<1	5.04	0.06	<0.001	184	0.038	0.003	0.003		7.4	20	<0.01	456	2.19	869	13.5		518	47.5	43		4600	<0.005
ME2101437034	GWA34	02-Sep-2021	1150	22.9	0.003	0.011	<1	400	<1	353	0.033	4.22		5650	<1	7.81	46.5	0.002	394	7.53	<0.001	0.755		3.8	4	0.05	348	0.99	3320	17.5		<1	79.1	67.6		3090	2.17
ME2101437035	GWC34	02-Sep-2021	1210	0.18	<0.001	0.075	1780	78	<1	224	0.021	20.46		4460	<1	5.88	0.5	0.005	67	0.062	0.002	0.106		7.3	19	0.02	862	5.65	549	19.5		1780	53.3	47.4		2910	0.037
ME2101437036	GWA36	06-Sep-2021	1328									Dry																									
ME2101437037	GWC36	06-Sep-2021	1344	0.08	<0.001	0.032	346	100	<1	251	0.002	14.05		2880	<1	1.67	8	<0.001	102	0.831	<0.001	0.002		6.6	26	<0.01	377	1.3	840	18		346	31.5	30.4		1970	0.026
ME2101437038	PZ13	29-Sep-2021	952									Dry																									
ME2101437039	PZ20	28-Sep-2021	1354	0.68	0.001	0.032	401	49	<1	68	0.002	2.27		1160	<1	3.14	0.67	0.002	51	0.436	<0.001	0.004		7.6	18	<0.01	144	0.478	126	17		401	12.6	13.4		692	0.011
ME2101437040	PZ21	28-Sep-2021	1320	4.03	0.002	0.027	384	26	<1	37	0.006	3.64		957	<1	3.84	2.32	0.004	23	0.471	0.002	0.012		7.6	8	<0.01	189	0.254	98	16		384	10.8	11.6		618	0.022
ME2101437041	PZ26	28-Sep-2021	1246									Dry																									
ME2101437042	GWF1	02-Sep-2021	1500																																		
ME2101437043	GWF2	02-Sep-2021	1204									Dry																									
ME2101437044	GWF3	02-Sep-2021	1204									19.08																									
ME2101437045	GWF4	02-Sep-2021	1204									Dry																									
ME2101437046	GWF5	28-Sep-2021	1252									Dry																									
ME2101437047	GWF6	28-Sep-2021	1227	0.06	0.003	0.03	462	233	<1	280	<0.001	19.47		3670	<1	2.4	1.37	<0.001	202	2.46	0.002	0.166		6.6	52	<0.01	391	1.22	1310	25.5		462	44.4	46.6		2870	0.016

ME2101437048	GWF7	28-Sep-2021	1158									Dry																									
ME2101438049	Barologger Office	28-Sep-2021	1411																																		
ME2101668001	GWA1	12-Oct-2021	1052									Dry																									
ME2101668002	GWA2	12-Oct-2021	1139	0.76	0.001	0.019	110	13	<1	92	0.001	1.36		543	<1	4.64	1.56	<0.001	17	0.108	<0.001	0.002		6.7	4	<0.01	68	0.132	39	13		110	5.6	5.11		336	<0.005
ME2101668003	GWA3	12-Oct-2021	1409	2.43	0.001	0.047	176	14	<1	153	0.015	3.99		1010	<1	1.11	1.47	0.008	18	0.157	<0.001	0.012		7.4	1	<0.01	161	0.198	76	14.5		176	9.41	9.21		912	0.017
ME2101668004	GWA4	27-Oct-2021	1120									Dry																									
ME2101668005	GWA5	28-Oct-2021	1402	1.56	0.005	0.202	873	561	<1	3360	0.005	3.39		17500	<1	6.57	2.17	0.002	1060	0.146	0.002	0.017		7.4	34	<0.01	2190	6.91	6190	18		873	241	211		12800	0.05
ME2101668006	GWA6	27-Oct-2021	1232	21.4	0.004	0.124	867	98	43	286	0.015	1.49		4320	<1	5.13	17.5	0.018	112	0.097	0.002	0.019		8	14	<0.01	739	0.981	1220	18		910	51.6	46.6		3130	0.065
ME2101668007	GWA7	27-Oct-2021	1317									Dry																									
ME2101668008	GWA8	27-Oct-2021	1432	6.67	0.003	0.206	304	130	<1	412	0.015	1.47		2640	<1	8.72	12.4	0.015	107	17.2	<0.001	0.027		7.1	11	<0.01	223	1.37	596	16		304	30.1	25.3		1810	0.038
ME2101668009	GWC1	12-Oct-2021	1159	0.02	<0.001	0.061	562	144	<1	571	<0.001	10.15		3450	<1	4.99	0.24	<0.001	96	0.53	<0.001	0.003		7.1	25	<0.01	441	1.51	540	16.5		562	38.6	34.9		2220	<0.005
ME2101668010	GWC2	12-Oct-2021	1332	0.04	<0.001	0.232	473	60	<1	101	<0.001	12.53		1130	<1	4.58	<0.05	<0.001	25	0.08	<0.001	0.002		7.2	22	<0.01	139	0.51	23	17		473	12.8	11.7		631	<0.005
ME2101668011	GWC3	27-Oct-2021	1143	4.16	0.02	0.105	566	144	<1	668	0.017	8.82		4700	<1	5.5	54.4	0.018	131	0.42	0.001	0.028		7.1	33	0.01	643	1.58	1060	19		566	52.2	46.8		3130	0.13
ME2101668012	GWC4	27-Oct-2021	1352	0.07	<0.001	0.039	662	171	<1	347	<0.001	14.81		2460	<1	6.43	2.3	<0.001	75	0.036	<0.001	<0.001		6.7	46	<0.01	204	1.81	247	21		662	28.2	24.8		1490	0.006
ME2101668013	GWC5	27-Oct-2021	1452	0.03	<0.001	0.192	2100	231	<1	536	<0.001	5.58		5640	<1	7.08	0.18	0.001	126	1.22	<0.001	0.025		6.8	74	<0.01	737	7.5	350	18		2100	64.4	55.8		3690	0.009
ME2101668014	GWA10	15-Oct-2021	1015	1.63	0.001	0.064	370	144	<1	625	0.01	3.11		3310	<1	2.58	1.29	0.002	121	1.08	<0.001	0.01		7.2	2	<0.01	396	1.13	539	13.5		370	36.2	34.4		2190	0.009
ME2101668015	GWC10	15-Oct-2021	1038	0.02	<0.001	0.03	374	180	<1	331	0.016	3.4		3490	<1	1	1.17	<0.001	121	0.23	0.002	0.064		6.9	32	<0.01	450	1.64	1120	15.5		374	40.1	39.3		2540	<0.005
ME2101668016	GWA11	15-Oct-2021	1139	4.48	<0.001	0.043	461	38	<1	99	0.007	3.51		1200	<1	2.03	4.32	0.004	36	0.387	<0.001	0.008		7.5	13	<0.01	181	0.461	77	16		461	13.6	13.1		780	0.013
ME2101668017	GWC11	15-Oct-2021	1115	0.09	0.002	0.023	373	143	<1	301	0.002	12.44		3420	<1	1.2	41.5	0.002	132	1.54	0.003	0.007		6.5	33	<0.01	448	1.34	1120	18		373	39.3	38.3		2490	0.025
ME2101668018	GWA12	15-Oct-2021	1213	9.83	0.002	0.047	166	12	<1	39	0.01	3.8		462	<1	3.14	5.57	0.006	6	0.127	0.002	0.018		8	1	<0.01	80	0.118	23	15.5		166	4.9	4.6		450	0.018
ME2101668019	GWC12	15-Oct-2021	1239	0.02	<0.001	0.243	882	68	<1	169	0.007	18.55		2020	<1	2.48	0.37	<0.001	30	0.126	<0.001	0.018		7.6	24	<0.01	366	0.685	55	18.5		882	23.5	22.4		1250	<0.005
ME2101668020	GWA14	15-Oct-2021	1307									Dry																									
ME2101668021	GWC14	15-Oct-2021	1322	0.26	<0.001	2.1	484	149	<1	185	0.03	14.04		2510	<1	1.9	2.09	0.004	64	0.097	<0.001	0.052		7.5	29	<0.01	326	1.25	663	18		484	28.7	27.6		1790	0.019
ME2101668022	GWA15	15-Oct-2021	1434	8.59	0.001	0.063	238	26	<1	139	0.025	2.64		936	<1	4.23	5.72	0.009	8	0.272	<0.001	0.019		7.6	<1	<0.01	166	0.193	63	15		238	9.99	9.18		659	0.03
ME2101668023	GWC15	15-Oct-2021	1412	0.09	<0.001	0.209	559	48	<1	115	0.021	13.77		1390	<1	2.68	4.21	0.003	21	0.075	0.014	0.164		7.1	20	<0.01	237	0.533	65	17.5		559	15.8	14.9		876	0.01
ME2101668024	GWC25	21-Oct-2021	1047	0.63	0.003	0.084	347	28	<1	226	0.004	25.83		1370	<1	6.94	2.21	0.01	58	0.515	<0.001	0.085		6.5	4	<0.01	152	0.421	72	19.5		347	14.8	12.9		790	0.008
ME2101668025	GWC33	12-Oct-2021	1021	0.47	<0.001	0.359	<1	366	20	84	0.018	46.45		4720	805	3.15	0.08	<0.001	<1	0.008	<0.001	0.002		12.5	16	<0.01	41	0.246	17	18		825	19.2	20.4		1150	0.011
ME2101668026	GWC26	27-Oct-2021	1005	0.36	<0.001	0.193	460	48	<1	149	0.034	49.01		1310	<1	6.27	1.55	0.003	21	0.047	0.001	0.007		7.2	15	<0.01	184	0.437	38	19		460	14.2	12.5		744	0.034
ME2101668027	GWC16	14-Oct-2021	1044	3.24	<0.001	0.16	694	64	<1	282	0.009	31.41		2140	<1	2.91	3.9	0.02	30	0.063	<0.001	0.002		7.2	22	<0.01	364	0.644	75	21.5		694	23.4	22		1280	0.03
ME2101668028	GWA16	14-Oct-2021	1150	0.66	<0.001	0.117	552	418	<1	6380	0.004	1.66		21700	<1	1.82	0.68	<0.001	623	0.032	0.002	0.002		7.3	18	<0.01	3500	5.81	1240	17		552	217	225		14700	0.017
ME2101668029	GWC30	08-Oct-2021	1224	0.02	<0.001	0.044	629	248	<1	586	0.003	31.11		3200	<1	1.91	1.06	<0.001	155	0.129	0.002	0.052		6.8	49	<0.01	181	2.36	312	20.5		629	35.6	34.2		2160	0.008
ME2101668030	GWC31	08-Oct-2021	1252									Dry																									
ME2101668031	GWC27	08-Oct-2021	1431									Dry																									
ME2101668032	GWC32	08-Oct-2021	1028	0.01	<0.001	0.03	1200	158	<1	307	0.062	4.06		3420	<1	3.28	0.67	<0.001	106	0.062	0.026	0.145		6.7	43	<0.01	532	4.23	270	17.5		1200	38.2	40.8		2220	0.024

ME2101668033	GWA32	08-Oct-2021	1003	<0.01	<0.001	0.042	479	161	<1	703	0.008	1.79		4090	<1	0.57	<0.05	<0.001	195	0.069	0.004	0.002		7.4	22	<0.01	466	2.15	770	15		479	45.4	44.9		2890	0.008
ME2101668034	GWA34	08-Oct-2021	1106	25.6	0.001	0.012	<1	470	<1	383	0.052	4.27		5830	<1	5.91	35.3	0.001	429	7.25	<0.001	0.788		3.7	4	0.02	377	1.07	3550	17		<1	84.7	75.3		5970	2.26
ME2101668035	GWC34	08-Oct-2021	1131	0.37	<0.001	0.099	1750	88	<1	232	0.026	20.44		4410	<1	1.69	1.21	0.007	70	0.082	0.002	0.108		7.2	20	0.01	936	5.89	559	20		1750	53.1	51.4		3110	0.047
ME2101668036	GWA36	12-Oct-2021	1224									Dry																									
ME2101668037	GWC36	12-Oct-2021	1236	0.1	<0.001	0.032	370	101	<1	258	0.003	14.27		2830	<1	5.86	10.1	0.001	104	0.795	<0.001	0.003		6.6	25	<0.01	351	1.12	889	17		370	33.2	29.5		1870	0.028
ME2101668038	PZ13	15-Oct-2021	944									Dry																									
ME2101668039	PZ20	21-Oct-2021	1302	0.68	<0.001	0.025	363	34	<1	48	0.002	1.77		951	<1	4.3	0.53	0.001	35	0.583	<0.001	0.005		7.6	14	<0.01	105	0.342	84	16.5		363	10.4	9.5		586	0.01
ME2101668040	PZ21	21-Oct-2021	1323	6.28	0.002	0.035	366	20	<1	30	0.008	3.37		916	<1	4.97	3.59	0.005	18	0.437	0.001	0.011		7.6	7	<0.01	149	0.243	93	16.5		366	10.1	9.14		620	0.026
ME2101668041	PZ26	21-Oct-2021	1218									Dry																									
ME2101668042	GWF1	08-Oct-2021	1500																																		
ME2101668043	GWF2	08-Oct-2021	1500									Dry																									
ME2101668044	GWF3	08-Oct-2021	1500									19.2																									
ME2101668045	GWF4	08-Oct-2021	1500									Dry																									
ME2101668046	GWF5	21-Oct-2021	1225									Dry																									
ME2101668047	GWF6	21-Oct-2021	1159	0.05	0.003	0.029	434	199	<1	263	<0.001	19.99		3670	<1	5.31	1.67	<0.001	170	2.81	0.002	0.159		6.6	46	<0.01	341	1.27	1360	25		434	44.4	39.9		2780	0.024
ME2101668048	GWF7	21-Oct-2021	1140									Dry																									
ME2101668049	GWc37	21-Oct-2021	1448	10.7	0.07	0.214	217	112	<1	177	0.06	25.11		2500	<1	2.58	15.8	0.048	95	1.24	0.01	0.04		6.4	46	<0.01	233	1.29	802	20.5		217	26	24.7		1770	0.164
ME2101669049	Barologger Office	27-Oct-2021	1052																																		
ME2101810001	GWA1	05-Nov-2021	1054									Dry																									
ME2101810002	GWA2	05-Nov-2021	1335	0.5	<0.001	0.017	97	13	<1	86	<0.001	1.61		533	<1	1.36	1.57	<0.001	19	0.151	<0.001	0.003		6.8	5	<0.01	62	0.113	39	15		97	5.18	5.04		312	<0.005
ME2101810003	GWA3	17-Nov-2021	1341	10.9	0.002	0.058	317	24	<1	241	0.015	3.87		1590	<1	5.61	7.15	0.009	29	0.178	<0.001	0.02		7.1	2	<0.01	256	0.317	163	17.5		317	16.5	14.8		1020	0.022
ME2101810004	GWA4	17-Nov-2021	1241									Dry																									
ME2101810005	GWA5	16-Nov-2021	1439	3.96	0.009	0.749	914	553	<1	3400	0.008	2.85		17600	<1	5.76	5.15	0.004	1080	0.752	0.002	0.049		7.4	36	<0.01	2190	6.8	5980	17		914	239	213		15000	0.087
ME2101810006	GWA6	17-Nov-2021	1433	1.67	0.002	0.104	488	114	<1	156	0.003	0.95		2390	<1	1.92	1.24	0.001	89	0.148	0.001	0.004		7.5	16	<0.01	273	0.898	583	17		488	26.3	25.3		1370	0.007
ME2101810007	GWA7	30-Nov-2021	1330									Dry																									
ME2101810008	GWA8	26-Nov-2021	1158	3.47	0.002	0.114	292	142	<1	382	0.008	0.94		2570	<1	1.81	5.41	0.012	113	13.1	<0.001	0.017		7	14	<0.01	240	1.33	556	16.5		292	28.2	27.2		1750	0.026
ME2101810009	GWC1	26-Nov-2021	953	0.05	<0.001	0.061	505	150	<1	543	<0.001	10.01		3420	<1	1.35	0.39	<0.001	96	0.552	<0.001	0.003		7	27	<0.01	445	1.49	528	18.5		505	36.4	35.4		2130	0.006
ME2101810010	GWC2	17-Nov-2021	1323	0.16	<0.001	0.24	464	57	<1	103	0.002	12.65		1150	<1	5.91	0.26	0.001	24	0.059	<0.001	0.002		7.2	22	<0.01	136	0.498	26	19.5		464	12.7	11.3		706	0.011
ME2101810011	GWC3	17-Nov-2021	1405	7.41	0.026	0.274	583	134	<1	592	0.02	8.26		4610	<1	0.63	45.4	0.027	129	0.719	0.001	0.022		7.5	32	0.02	666	1.6	872	17		583	46.5	47.1		3280	0.052
ME2101810012	GWC4	30-Nov-2021	1318																																		
ME2101810013	GWC5	26-Nov-2021	1228	0.02	0.001	0.203	2260	287	<1	504	<0.001	5.45		5630	<1	0.69	0.18	0.002	141	1.25	<0.001	0.026		6.6	84	<0.01	865	7.43	348	17.5		2260	66.6	65.7		3610	0.03
ME2101810014	GWA10	09-Nov-2021	1309	1.34	0.001	0.056	334	129	<1	616	0.007	3.06		3130	<1	5.59	1.12	0.002	104	0.881	<0.001	0.008		7.2	1	<0.01	363	1.03	500	17		334	34.5	30.8		1950	<0.005
ME2101810015	GWC10	09-Nov-2021	1331	0.02	<0.001	0.031	368	188	<1	357	0.028	3.73		3550	<1	1.06	0.84	<0.001	120	0.229	0.002	0.054		6.9	32	<0.01	446	1.7	1100	17.5		368	40.3	39.5		2540	<0.005
ME2101810016	GWA11	09-Nov-2021	1430	8.92	0.002	0.071	493	43	<1	109	0.012	3.4		1320	<1	1.81	8.42	0.008	37	0.454	<0.001	0.014		7.6	13	<0.01	191	0.538	68	16.5		493	14.3	13.8		738	0.024

ME2101810017	GWC11	09-Nov-2021	1402	0.1	0.003	0.024	370	149	<1	330	0.002	12.92		3490	<1	2.3	36	0.002	128	1.57	0.004	0.006		6.6	33	<0.01	437	1.41	1100	19.5		370	39.6	37.8		2480	0.028
ME2101810018	GWA12	17-Nov-2021	1018	11	0.002	0.051	162	10	<1	41	0.009	3.45		424	<1	4.95	5.81	0.007	6	0.118	0.002	0.019		7.8	1	<0.01	75	0.109	16	16		162	4.73	4.28		464	0.022
ME2101810019	GWC12	17-Nov-2021	1041	0.06	<0.001	0.27	821	64	<1	170	0.014	18.37		2090	<1	2.56	0.5	<0.001	30	0.128	<0.001	0.014		7.5	22	<0.01	349	0.716	64	18.5		821	22.5	21.4		1310	<0.005
ME2101810020	GWA14	17-Nov-2021	1123									Dry																									
ME2101810021	GWC14	17-Nov-2021	1114	0.06	<0.001	0.183	486	145	<1	182	0.008	13.69		2570	<1	1.8	1.53	0.001	62	0.086	0.001	0.246		7.4	26	<0.01	316	1.15	619	19.5		486	27.7	26.7		1680	0.008
ME2101810022	GWA15	17-Nov-2021	1144									Dry																									
ME2101810023	GWC15	17-Nov-2021	1220	0.1	<0.001	0.202	573	44	<1	119	0.021	13.7		1420	<1	7.55	5.44	0.003	21	0.079	0.016	0.205		7	18	<0.01	221	0.542	71	18.5		573	16.3	14		928	0.014
ME2101810024	GWC33	05-Nov-2021	1022	0.67	<0.001	0.316	<1	395	57	103	0.015	46.74		4770	779	4.71	0.08	<0.001	<1	0.008	<0.001	<0.001		12.4	20	<0.01	42	0.226	22	20.5		836	20.1	22		1220	0.008
ME2101810025	GWC26	29-Nov-2021	1445																																		
ME2101810026	GWA16	05-Nov-2021	1227	1.25	<0.001	0.116	566	447	<1	6580	0.006	1.86		22100	<1	0.44	1.32	0.003	614	0.196	0.001	<0.001		7.6	20	<0.01	3370	4.91	1200	16		566	222	220		14400	0.024
ME2101810027	GWC16	05-Nov-2021	1156	5.05	0.002	0.305	690	63	<1	271	0.024	31.43		2120	<1	2.95	7.71	0.037	31	0.141	<0.001	0.008		7.3	25	<0.01	354	0.624	78	20		690	23	21.7		1270	0.076
ME2101810028	GWC30	02-Nov-2021	1236	0.1	<0.001	0.062	635	244	<1	652	0.01	31.5		3300	<1	4.78	3.65	<0.001	159	0.134	<0.001	0.06		6.9	49	<0.01	185	2.38	334	21		635	38	34.6		2150	0.01
ME2101810029	GWC31	02-Nov-2021	1305									Dry																									
ME2101810030	GWc37	09-Nov-2021	1117	4.28	0.049	0.094	213	126	<1	186	0.039	25.11		2460	<1	3.59	14.5	0.028	98	1.17	0.007	0.026		6.4	49	<0.01	237	1.43	881	21		213	27.8	25.9		1780	0.099
ME2101810031	GWC27	09-Nov-2021	1036									Dry																									
ME2101810032	GWA32	02-Nov-2021	953	0.09	<0.001	0.041	474	163	<1	692	0.012	1.82		3870	<1	2.74	0.08	<0.001	176	0.094	0.002	<0.001		7.3	25	<0.01	413	1.78	699	17		474	43.5	41.2		2060	<0.005
ME2101810033	GWC32	02-Nov-2021	1023	0.02	<0.001	0.032	1400	151	<1	344	0.058	4.11		3530	<1	3.4	0.59	<0.001	108	0.065	0.008	0.115		6.7	45	<0.01	534	3.63	288	18		1400	43.7	40.8		1880	0.014
ME2101810034	GWA34	02-Nov-2021	1116	24.3	0.004	0.027	3	503	<1	371	0.08	4.35		6410	<1	5.08	107	0.008	513	14	<0.001	0.921		5.2	7	0.02	409	0.908	4030	17.5		3	94.4	85.3		6780	2.44
ME2101810035	GWC34	02-Nov-2021	1049									Dry																									
ME2101810036	GWa36	09-Nov-2021	1223									Dry																									
ME2101810037	GWc36	09-Nov-2021	1212	0.16	<0.001	0.023	228	161	<1	316	0.003	14.71		3630	<1	1.83	27.1	0.001	160	2.41	0.002	0.017		6.5	38	<0.01	407	1.26	1340	20.5		228	41.4	39.9		2730	0.042
ME2101810038	GWC25	29-Nov-2021	1120	1.08	0.004	0.075	359	29	<1	249	0.013	26.89		1420	<1	6.23	3.21	0.02	61	0.201	<0.001	0.096		6.8	5	<0.01	169	0.431	77	19		359	15.8	13.9		777	0.015
ME2101810039	PZ13	29-Nov-2021	1444									Dry																									
ME2101810040	PZ20	29-Nov-2021	1346	0.72	0.002	0.022	202	17	<1	19	0.002	1.14		460	<1	3.96	0.67	0.002	17	0.725	<0.001	0.008		7.5	11	<0.01	54	0.159	34	17.5		202	5.28	4.88		329	0.011
ME2101810041	PZ21	29-Nov-2021	1310	2.79	0.002	0.022	312	28	<1	31	0.003	2.17		913	<1	3.4	1.77	0.002	20	0.363	<0.001	0.006		7.5	9	<0.01	154	0.264	106	16.5		312	9.32	9.97		604	0.019
ME2101810042	PZ26	29-Nov-2021	1236																																		
ME2101810043	GWF1	29-Nov-2021	1029									Dry																									
ME2101810044	GWF2	29-Nov-2021	1045																																		
ME2101810045	GWF3	29-Nov-2021	1051									17.6																									
ME2101810046	GWF4	29-Nov-2021	1242									Dry																									
ME2101810047	GWF5	29-Nov-2021	1234									Dry																									
ME2101810048	GWF6	29-Nov-2021	1217	0.33	0.003	0.046	426	229	<1	274	0.006	18.98		3600	<1	1.46	2.3	0.003	180	2.82	0.001	0.147		6.7	51	<0.01	357	1.32	1350	24.5		426	44.3	43.1		2760	0.076
ME2101810049	GWF7	29-Nov-2021	1235																																		
ME2101811050	Barologger Office	29-Nov-2021	1019																																		

ME2102013001	GWA1	09-Dec-2021	1027									Dry																									
ME2102013002	GWA2	13-Dec-2021	1306	2.71	<0.001	0.034	98	15	<1	120	0.002	0.99		674	<1	2.41	3.78	0.002	21	0.559	<0.001	0.006		6.6	5	<0.01	85	0.163	61	17.5		98	6.61	6.3		452	<0.005
ME2102013003	GWA3	13-Dec-2021	1412	1.81	<0.001	0.062	103	18	<1	78	0.012	2.7		604	<1	3.87	1.1	0.005	19	0.321	<0.001	0.016		6.8	1	<0.01	76	0.228	53	19		103	5.36	5.79		532	0.012
ME2102013004	GWA4	30-Dec-2021	1328	17.3	0.018	0.241	476	208	<1	417	0.03	3.67		3300	<1	4.45	24.8	0.038	129	2.51	0.001	0.05		7.2	22	0.02	288	1.92	768	19		476	37.3	34.1		2410	0.08
ME2102013005	GWA5	17-Dec-2021	1308	3.62	0.008	0.441	676	474	<1	2520	0.01	2.62		14500	<1	5.84	4.47	0.004	839	0.818	0.001	0.049		7.4	31	<0.01	1740	5.4	5070	19		676	190	169		13000	0.107
ME2102013006	GWA6	21-Dec-2021	1128	0.22	0.005	0.137	511	141	<1	240	0.003	0.93		3230	<1	0.03	0.82	<0.001	114	1.61	0.003	0.007		7.4	22	<0.01	436	1.25	910	20.5		511	35.9	35.9		2250	0.011
ME2102013007	GWA7	30-Dec-2021	1440									No access																									
ME2102013008	GWA8	16-Dec-2021	1056	0.05	<0.001	0.022	276	123	<1	415	<0.001	1.18		2570	<1	9.12	0.1	<0.001	102	9.11	<0.001	0.006		7	11	<0.01	218	1.22	574	19		276	29.2	24.3		1860	<0.005
ME2102013009	GWC1	13-Dec-2021	1324	0.03	<0.001	0.06	474	135	<1	605	<0.001	9.23		3450	<1	4.04	0.28	<0.001	94	0.551	<0.001	0.003		7	28	<0.01	447	1.5	529	19.5		474	37.6	34.6		2230	0.008
ME2102013010	GWC2	13-Dec-2021	1352	0.05	<0.001	0.241	391	58	<1	118	<0.001	11.59		1200	<1	1.82	0.08	<0.001	26	0.025	<0.001	0.002		7.1	26	<0.01	152	0.514	35	20.5		391	11.9	12.3		724	0.009
ME2102013011	GWC3	16-Dec-2021	1010	3.96	0.01	0.117	510	149	<1	788	0.018	5.75		5190	<1	6.78	20.4	0.013	140	0.465	<0.001	0.014		7.4	35	0.02	704	1.72	1220	18		510	57.8	50.5		3600	0.028
ME2102013012	GWC4	30-Dec-2021	1416	0.1	<0.001	0.04	562	166	<1	337	<0.001	14.65		2440	<1	1.91	2.84	<0.001	76	0.036	<0.001	<0.001		6.6	46	<0.01	204	1.8	231	22		562	25.5	24.6		1400	0.008
ME2102013013	GWC5	16-Dec-2021	1129	<0.01	<0.001	0.176	2040	259	<1	538	<0.001	5.22		5650	<1	1.64	0.07	0.001	133	1.08	<0.001	0.024		6.5	81	<0.01	813	7.08	356	19.5		2040	63.3	61.3		3670	0.033
ME2102013014	GWA10	10-Dec-2021	1117	2.87	0.004	0.053	304	96	<1	632	0.017	2.49		2830	<1	7.1	2.04	0.008	87	0.689	0.002	0.011		7.1	2	0.02	366	0.844	398	17		304	32.2	27.9		2360	0.017
ME2102013015	GWC10	10-Dec-2021	1141	0.03	<0.001	0.035	383	183	<1	374	0.02	2.02		3520	<1	2.18	0.14	<0.001	119	0.247	0.003	0.055		6.8	32	<0.01	437	1.78	1070	18		383	40.5	38.8		2730	0.026
ME2102013016	GWA11	21-Dec-2021	1037	2.09	<0.001	0.041	483	37	<1	110	0.004	3.39		1360	<1	4.27	2.33	0.002	35	0.317	<0.001	0.004		7.4	12	<0.01	186	0.574	74	19		483	14.3	13.1		775	0.009
ME2102013017	GWC11	21-Dec-2021	1017	0.08	<0.001	0.023	340	130	<1	318	0.004	10.49		3460	<1	6.69	12.3	0.003	118	1.68	0.001	0.007		6.5	28	<0.01	397	1.38	1120	19		340	39.1	34.2		2360	0.035
ME2102013018	GWA12	30-Dec-2021	1040	1.2	<0.001	0.035	293	38	<1	139	0.002	2.45		1350	<1	0.52	0.67	<0.001	25	0.024	0.002	0.001		7.4	2	<0.01	208	0.4	164	18		293	13.2	13		822	0.005
ME2102013019	GWC12	30-Dec-2021	1103	0.02	<0.001	0.278	758	64	<1	169	0.004	14.1		2100	<1	0.86	0.44	<0.001	30	0.131	<0.001	0.008		7.4	23	<0.01	342	0.759	76	19		758	21.5	21.1		1260	0.007
ME2102013020	GWA14	30-Dec-2021	1151	37.9	0.002	0.136	528	26	<1	16	0.046	2.39		1100	<1	3.16	12.3	0.011	12	0.564	<0.001	0.073		7.2	11	<0.01	216	0.346	11	20		528	11.2	12		1810	0.07
ME2102013021	GWC14	30-Dec-2021	1135	0.09	<0.001	1.62	405	142	<1	189	0.016	10.54		2520	<1	3.55	0.53	0.002	60	0.098	0.004	0.286		7.3	26	<0.01	306	1.23	696	19.5		405	27.9	26		1730	0.014
ME2102013022	GWA15	30-Dec-2021	1256	8.97	0.002	0.057	165	18	<1	119	0.017	2.36		799	<1	2.96	5.36	0.009	6	0.206	0.001	0.016		7.2	<1	<0.01	132	0.154	44	20		165	7.57	7.13		584	0.029
ME2102013023	GWC15	30-Dec-2021	1229	0.12	<0.001	0.196	472	43	<1	120	0.029	12.21		1430	<1	0.76	6.46	0.002	22	0.095	0.017	0.224		7	21	<0.01	218	0.544	66	19.5		472	14.2	14		832	0.016
ME2102013024	GWC33	09-Dec-2021	953	0.62	<0.001	0.323	<1	403	20	108	0.015	46.64		4850	888	1.76	0.07	<0.001	<1	0.006	<0.001	0.002		12.3	19	<0.01	42	0.268	23	21		907	21.6	22.4		1060	0.013
ME2102013025	GWC26	30-Dec-2021	1451									No access																									
ME2102013026	GWA16	16-Dec-2021	918	0.59	<0.001	0.132	513	377	<1	7080	0.003	1.35		21800	<1	8.68	0.68	0.001	551	0.417	0.001	0.004		7.2	16	<0.01	3070	5.47	1240	19.5		513	236	198		16500	0.021
ME2102013027	GWC16	09-Dec-2021	1101	0.16	0.001	0.103	524	54	<1	321	0.001	28.72		2090	<1	0.37	2.09	0.001	24	0.023	<0.001	0.076		7.2	20	<0.01	363	0.578	62	21		524	20.8	21		1200	0.006
ME2102013028	GWC30	02-Dec-2021	1250	0.66	<0.001	0.079	531	351	<1	452	0.046	31.41		3050	<1	4.74	3.39	0.007	112	0.108	<0.001	0.067		6.9	45	<0.01	129	2.47	647	22.5		531	36.8	33.5		2200	0.056
ME2102013029	GWC31	02-Dec-2021	1320									Dry																									
ME2102013030	GWc37	10-Dec-2021	1322	1.17	0.062	0.039	227	125	<1	189	0.03	25.1		2460	<1	2.98	11.9	0.021	102	1.14	0.004	0.016		6.3	51	<0.01	241	1.35	873	21		227	28	26.4		1950	0.058
ME2102013031	GWC27	16-Dec-2021	1344	2.03	0.011	0.19	<1	11	<1	390	0.028	15.03		1800	<1	13.8	6.92	0.015	29	1.29	<0.001	0.025		3.5	32	<0.01	221	0.084	319	21.5		<1	17.6	13.4		1190	0.261
ME2102013032	GWA32	02-Dec-2021	1411	0.02	<0.001	0.035	445	143	<1	656	0.006	1.52		3530	<1	4.6	<0.05	<0.001	158	0.026	0.002	<0.001		7.3	21	<0.01	381	1.8	646	19		445	40.8	37.2		2200	0.006
ME2102013033	GWC32	02-Dec-2021	1431	0.02	<0.001	0.032	1400	151	<1	349	0.041	3.92		3560	<1	2.76	0.32	<0.001	110	0.056	0.008	0.105		6.6	45	<0.01	538	4.19	272	18.5		1400	43.5	41.1		2210	0.014
ME2102013034	GWA34	16-Dec-2021	1225	3.42	0.001	0.124	57	6	<1	12	0.019	5.89		166	<1		2.74	0.003	9	0.094	<0.001	0.007		6.2	2	<0.01	12	0.105	20	20		57	1.89	1.61		148	0.018

ME2102013035	GWC34	16-Dec-2021	1258									Dry																									
ME2102013036	GWa36	10-Dec-2021	1215									Dry																									
ME2102013037	GWc36	10-Dec-2021	1226	0.04	<0.001	0.03	344	105	<1	276	0.001	12.95		2930	<1	2.68	6.36	<0.001	108	0.756	<0.001	0.003		6.5	29	<0.01	394	1.27	918	19		344	33.8	32		2130	0.025
ME2102013038	GWC25	22-Dec-2021	1028	0.06	<0.001	0.12	135	37	<1	58	0.003	8.28		551	<1	0.27	0.08	0.002	16	0.012	<0.001	0.002		6.7	10	<0.01	40	0.371	41	20		135	5.19	5.16		332	0.012
ME2102013039	PZ13	16-Dec-2021	952									Dry																									
ME2102013040	PZ20	22-Dec-2021	1344	0.52	0.002	0.025	265	24	<1	24	0.002	1.69		662	<1	1.53	0.96	0.001	23	0.506	<0.001	0.006		7.5	12	<0.01	75	0.232	43	21		265	6.87	6.66		444	0.01
ME2102013041	PZ21	22-Dec-2021	1320	2.01	0.002	0.026	361	29	<1	35	0.003	2.67		1080	<1	1.44	1.57	0.002	23	0.873	0.001	0.007		7.5	8	<0.01	164	0.302	134	21.5		361	11	10.7		702	0.016
ME2102013042	PZ26	22-Dec-2021	1251									Dry																									
ME2102013043	GWF1	02-Dec-2021	1500																																		
ME2102013044	GWF2	22-Dec-2021	1137									Dry																									
ME2102013045	GWF3	22-Dec-2021	1108	0.06	<0.001	0.056	663	185	<1	229	0.002	17.42		3500	<1	0.69	0.11	<0.001	242	1.17	0.002	0.007		6.8	36	0.01	256	1.7	1060	25		663	41.8	41.2		2520	0.015
ME2102013046	GWF4	22-Dec-2021	1354									No access																									
ME2102013047	GWF5	22-Dec-2021	1259									Dry																									
ME2102013048	GWF6	22-Dec-2021	1229	0.09	<0.001	0.034	380	224	<1	285	0.004	15.31		3790	<1	2.54	1.08	<0.001	180	2.92	0.002	0.137		6.6	49	<0.01	343	1.36	1380	30.5		380	44.4	42.2		2770	0.042
ME2102013049	GWF7	22-Dec-2021	1206									Dry																									
ME2102014050	Barologger Office	30-Dec-2021	953																																		

Groundwater Review & Water Licence Review

ANNUAL ENVIRONMENTAL MONITORING REVIEW WILPINJONG COAL MINE

Groundwater Compliance 2021

Prepared for:

Wilpinjong Coal Pty Ltd
1434 Ulan-Wollar Road,
Wilpinjong

SLR

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BASIS OF REPORT

DOCUMENT CONTROL

Reference	Date	Prepared	Checked	Authorised
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Executive Summary

The annual groundwater review for Wilpinjong Coal Mine (WCM) contributes to the requirements of the Annual Review (AR) for WCM for the 2021 calendar year. It also contains the analysis and information required to address the relevant water licence conditions 'water year' 01 July 2020 - 30 June 2021. The report addresses the following objectives:

1. Provide commentary and demonstrate progress on actions developed in response to recommendations from the 2021 Independent Environmental Audit (IEA).
2. Reporting against the commitments in the WCM Groundwater Monitoring Program (GWMP) – 01 January 2021 to 31 December 2021.
3. Reporting against water licence conditions for WAL41862 – 01 July 2020 to 30 June 2021 with review of inferred inflows from water balance modelling and groundwater modelling.

In 2021, WCPL have proactively commissioned a number of groundwater investigations in response to actions from the 2021 IEA including:

- Periodic assessment of groundwater compliance against trigger levels (September and December 2021).
- Evaluating the groundwater source and recharge mechanism of select monitoring bores.
- Completion of core testing for hydraulic conductivity

Since the first quarter of 2020 and throughout 2021 the area has experienced significantly above average rainfall following the intense drought from 2017 to early 2020. This has resulted in the widespread increase in groundwater levels across many alluvial and coal measures monitoring sites, and in some cases has enabled a clearer separation of climatic and mining effects. The following assessment has been made with respect to compliance triggers:

- Alluvium bores GWa4, GWa5 and GWa14 have exceeded the lower depth-to-water trigger level during 2021, and indicate the possible impact of mining activity at WCM. However, a lack of bore construction and lithology information, and apparent inconsistencies in monitoring limit the reliability of the collected data.
- Shallow alluvial bores GWa4, GWa5 and GWa7 have exceeded the EC trigger level during 2021. A reduction in inflow from Permian strata, caused by WCM operations, and ongoing evaporation/ evapotranspiration may be resulting in increased EC observations at these sites. A lack of construction and lithology information limits the ability to evaluate the groundwater source and the cause of the trigger exceedance at these sites.
- Coal measures bores GWc1, GWc3 and GWc5 have exceeded the EC trigger level during 2021. EC at GWc1 and GWc3 may be influenced by downwards seepage from overlying strata or lateral flow from backfilled open cuts, However, understanding correlation between water quality in overlying or adjacent strata compared with GWc1 and GWc3 could be improved with further investigation. GWc5 has been recording stable observations above the trigger level since 2015 and shows limited impacts to WCM operations. The observed EC is likely to be representative of normal conditions at this site and a review of the EC trigger level should be considered.
- No pumping occurred from the WCPL supply borefield in 2021 and none of the cease-to-pump trigger levels were exceeded.

The approved numerical modelling predictions indicate approximately 1 m drawdown is expected for the life of approved mining at alluvium monitoring locations surrounding WCM. The assessment of modelled vs observed levels for 2021 within the shallow groundwater system indicates the timing and magnitude of predicted WCM impacts generally correlate well, often predicting a repressed response to rainfall that is also seen in the observed data. Modelled groundwater levels at the coal monitoring bores generally continue 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),the high rainfall experienced in 2020/21 is not captured in the model used for this verification exercise. The observed responses to wetter climatic conditions during this time are therefore not reproduced by the groundwater model.

WCPL holds a groundwater licence for 3,212 ML/a under WAL 41862 for the Sydney Basin North Coast Groundwater Source. For the 2020-2021 water year the numerical model predicts an inflow of 910 ML/a while the water balance model estimates groundwater inflow of 840 ML/a (SLR, 2022). Both these values are considerably below WCPL's entitlement indicating WCPL is compliant with licence conditions for WAL 41862.

WCPL holds a groundwater licence for 474 ML/a for the Wollar Creek Water Source to account for alluvial groundwater take. The SLR (2020a) numerical model predicts alluvial groundwater take of about 155 ML/year, this take is well below and compliant with the licence volume held by WCM.

As an outcome of this annual groundwater review, the following key recommendations have been made:

- After identifying the presence of a sump (blank PVC below the screened interval) in GWa4 as a result of downhole camera investigation, it is recommended that groundwater sampling methodology be reviewed.
- Supplementary / replacement bores are recommended for installation near GWa4, GWa14 and GWa5. These sites appear to show impacts associated with WCM operations. However, as geology and construction detail not well understood, there is reduced confidence in the data collected. There will be improved confidence in monitoring data collected at sites where bore construction and intersected geology is well understood.
- It is recommended that GWc1, GWc3, and GWc5 undergo further investigation to evaluate the groundwater source and recharge mechanism at each site. It is intended for this investigation to also serve as review of EC trigger levels at each site, fulfilling the WCM action to do so in response to the IEA recommendations
- It is recommended that further investigation be undertaken to understand the hydrochemistry at key groundwater monitoring sites. Based on the outcome of the investigation, appropriate metal species concentration levels could be developed to help identify any WCM related effects on water quality.
- Prior to the widespread use of water supply bores installed in 2019, a review of the detailed recommendations provided in the 2020 Annual Review (SLR, 2021b) are recommended.

CONTENTS

CONTENTS

CONTENTS

DOCUMENT REFERENCES

TABLES

FIGURES

CONTENTS

APPENDICES

1 Introduction

SLR Consulting Australia Pty Ltd (SLR) was commissioned by Wilpinjong Coal Pty Ltd (WCPL) to conduct the Groundwater Annual Review 2021 for the Wilpinjong Coal Mine (WCM).

This report contributes to the requirements of the Annual Review (AR) for the WCM for the 2021 calendar year. It also contains the analysis and information required to address the relevant water licence conditions 'water year' 01 July 2020 - 30 June 2021. The report addresses three main objectives:

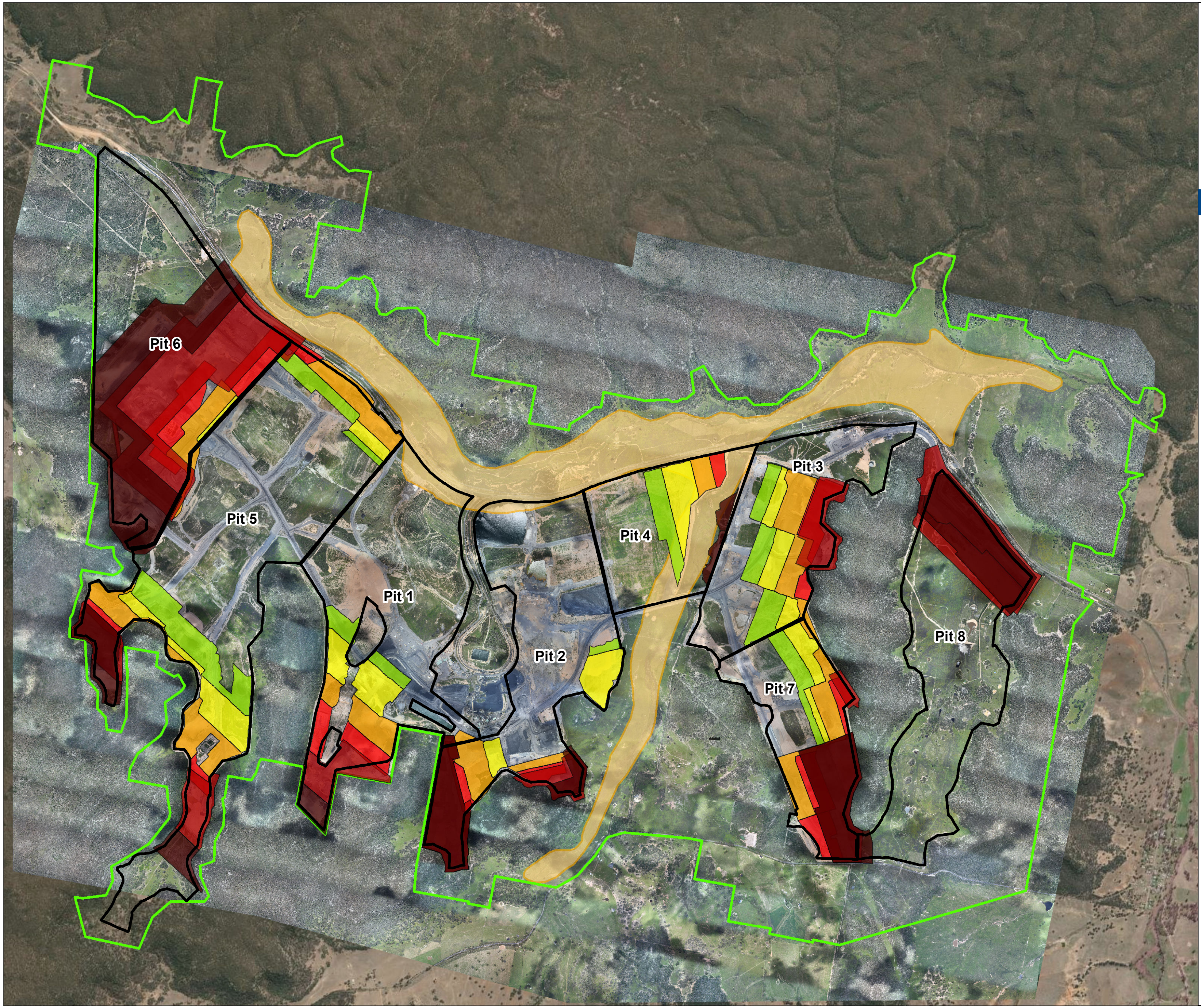
1. Provide commentary and demonstrate progress on actions developed in response to recommendations from the 2021 Independent Environmental Audit (IEA).
2. Reporting against the commitments in the WCM Groundwater Monitoring Program (GWMP)[1] – 01 January 2021 to 31 December 2021.
3. Reporting against water licence conditions for WAL41862 – 01 July 2020 to 30 June 2021 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 pit progression during 2021 are presented in **Figure 1**. Groundwater monitoring bore locations are shown in **Figure 2**.

It should be noted that since the first quarter of 2020 and throughout 2021 the area has experienced significantly above average rainfall. Prior to this, from 2017 to early 2020, there was an extended period of intense drought conditions that made the separation of mining and climatic effects difficult when conducting the cause-and-effect analysis.

[1] Currently approved GWMP (Version 3) August 2017



WILPINJONG COAL

Open Cut Progression 2020-2021

FIGURE 1

- 2021 Mining
- 2020 Mining
- 2019 Mining
- 2018 Mining
- 2017 Mining
- 2016 Mining
- WEP DA Boundary
- Approved Pit Extent

Western Coalfield Geological Mapping

- Quaternary

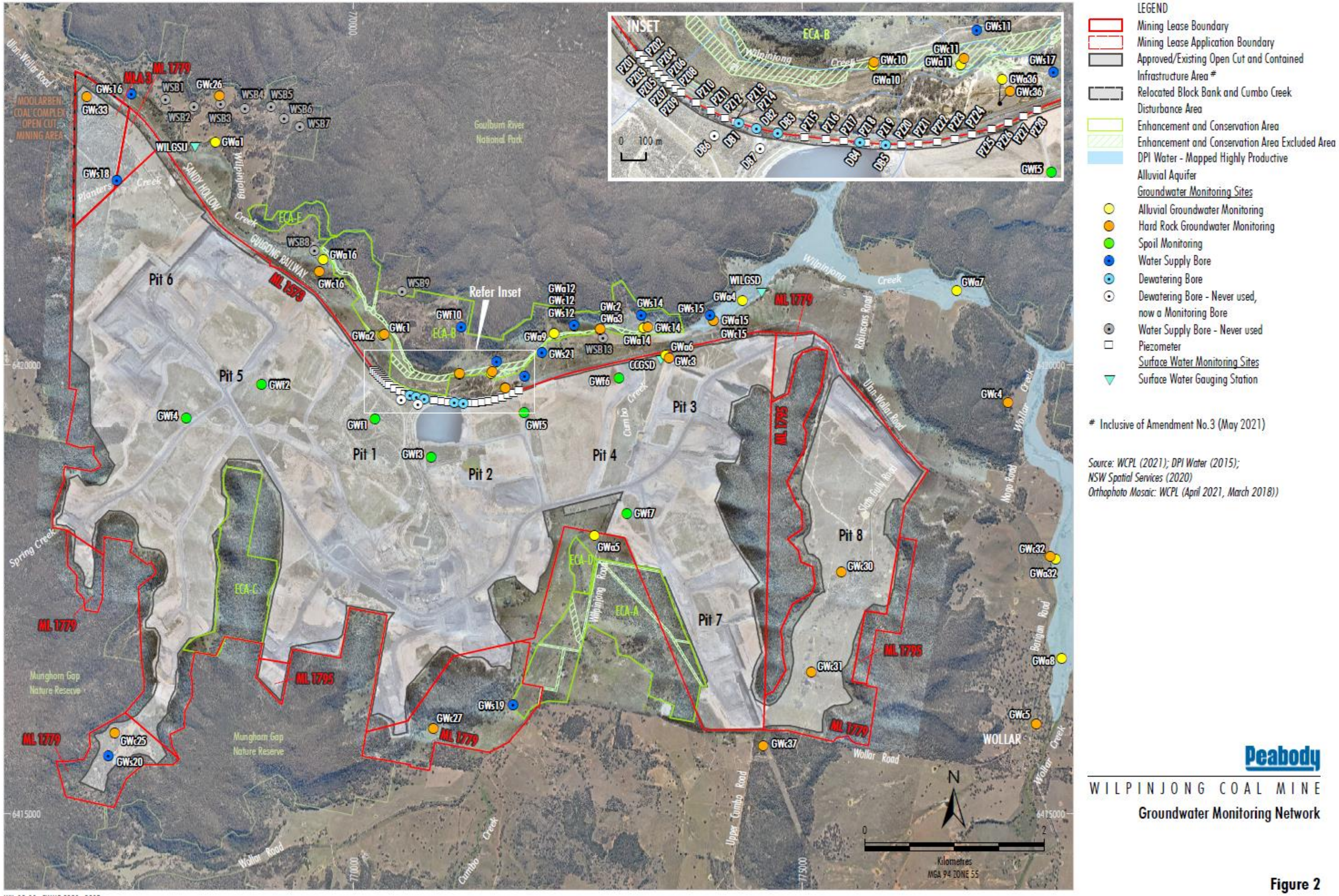
0 0.5 1 km

Coordinate System:	GDA 1994 MGA Zone 55
Scale:	1:52,000 at A4
Project Number:	665.10014
Date:	18-Mar-2022
Drawn by:	ANP

SLR

\\au.slr.local\corporate\Projects-SLR\620-BNE\665-WOL\665.10014\GIS\66510014 F01 Open Cut Progression 2020-2021_002.mxd

Figure 2 Groundwater Monitoring Network



2 Response to Independent Environmental Audit Actions

An Independent Environmental Audit (IEA) was undertaken for WCM in 2021. As an outcome of the IEA WCM proposed a series of actions to address recommendations and respond to queries from the IEA. Groundwater related actions proposed by WCM are listed below, with the following sections providing an overview on progress against these in 2021.

1. Review of historical chemistry data to evaluate likely recharge source at Wilpinjong monitoring bores.
2. Provide detail on core sampling undertaken during the year with a focus on:
    - Measured hydraulic conductivity values in comparison with those used in the groundwater model.
    - The solubility of key metal species.
3. Undertaking quarterly data reviews.
4. Review and consider updating EC triggers at GWc1, GWc3, GWc5.
5. More frequent consideration of cease-to-pump trigger levels at coal measures bores defined in the GWMP.

2.1 Action 1 – Evaluate Recharge Source

Wilpinjong Coal Pty Ltd commissioned SLR (2021e) to characterise groundwater and recharge mechanisms at four alluvial and six spoil monitoring bores within the WCM monitoring network. The steps undertaken in this investigation are provided below:

- Review available geological and monitoring bore construction information.
- Analysis of available groundwater level and quality observations in comparison to local climatic influence, and nearby surface water data (where available).
- Piper diagrams were developed to help understand the dominant water characteristics and identify other bores within the monitoring network with similar water characteristics.
- Trends and concentrations of additional water quality parameters, such as dissolved metals, were considered if groundwater source and recharge mechanisms were not readily identifiable.
- The water chemistry suite was reviewed to determine if additional parameters should be included in the routine sampling rounds.
- Recommendations were made for other bores in the monitoring network that would benefit from a similar detailed analysis in future.

Key findings from the investigation (SLR 2021e) are summarised in **Table 1** to provide a preliminary conceptualisation of the recharge source at each investigated site. The findings from this investigation have informed this year's Annual Review.

Table 1 Preliminary Conceptualisation of Groundwater Source and Recharge Mechanism

Bore ID	Targeted Strata/ Location	Preliminary Conceptualisation
GWf3	Pit 5 Spoil	Likely recharged by groundwater released from the hills to the south-west of Pit 5. Some mixing of water through spoil may increase EC above values observed outside the mine footprint.
GWf6	Pit 4 Spoil	Strong water level and quality relationship with Pit 4 in-pit water storage. Additional information on use/ operation of Pit 4 dam will help evaluate whether the dam is a source of water or is just representing the broader saturation level of spoil within Pit4.
GWa4	Wilpinjong Creek Alluvium near Pit 3	Recharged by groundwater in the broader Wilpinjong Creek alluvium. May have been recharged historically by upward flow from underling coal measures. Inferred low permeability strata at GWa4 means the bore may have limited response to flow events in Wilpinjong Creek. Groundwater salinity at GWa4 is likely related to evapo-concentration of surface water or discharging Permian groundwater.
GWa5	Cumbo Creek Alluvium near Pits 2, 4 and 7	Recharged by groundwater within the Cumbo Creek Alluvium. May have been recharged historically by upward flow from underling coal measures. Salinity at GWa5 related to evapo-concentration of surface water in Cumbo Creek. Road culvert downstream of GWa5 may be facilitating additional evaporation, resulting in elevated EC observations compared with historical data.
GWa7	Wilpinjong Creek Alluvium 1.8 km north of Pit 8	Recharged by groundwater in the broader Wilpinjong Creek alluvium. May have been recharged historically by upward flow from underling coal measures. Low permeability strata inferred at GWa7 by reviewing time-series EC and GWL data (SLR, 2021e). Salinity at GWa7 likely related to similar evapo-concentration process as observed at GWa4 with brackish/ saline flow from Cumbo Creek or discharging Permian groundwater contributing to higher EC observations.
GWa16	Wilpinjong Creek Alluvium near Pit 5	Recharged by groundwater and surface water in the broader Wilpinjong Creek alluvium. May have been recharged historically by upward flow from underling coal measures. Distance from the Wilpinjong Creek channel (230 m) and inferred low-permeability strata (or shallow depth to bedrock) may facilitate the evapo-concentration driving the high EC observations at this site.

The SLR (2021e) investigation indicates WCM have started to address this action. Additional characterisation work for key monitoring locations is scheduled to be undertaken in 2022.

2.2 Action 2 – Provide Detail on Core Sampling

The following section provides an overview on progress made against Wilpinjong 2021 IEA actions regarding core, waste and reject sampling.

2.2.1 Hydraulic Conductivity

Core sampling in 2021 included 40 horizontal and 20 vertical hydraulic conductivity measurements taken from varying lithologies and depths from five (5) cored exploration boreholes. Results from the core testing undertaken in 2021 has been added to the database of testing data, which will be used to constrain and validate model parameters. A review of the groundwater model is scheduled for 2023, consistent with commitments in Section 6.4 of the GWMP.

A comparison of modelled and observed hydraulic conductivity data is shown in **Figure 3** including hydraulic conductivity data collected in 2021.

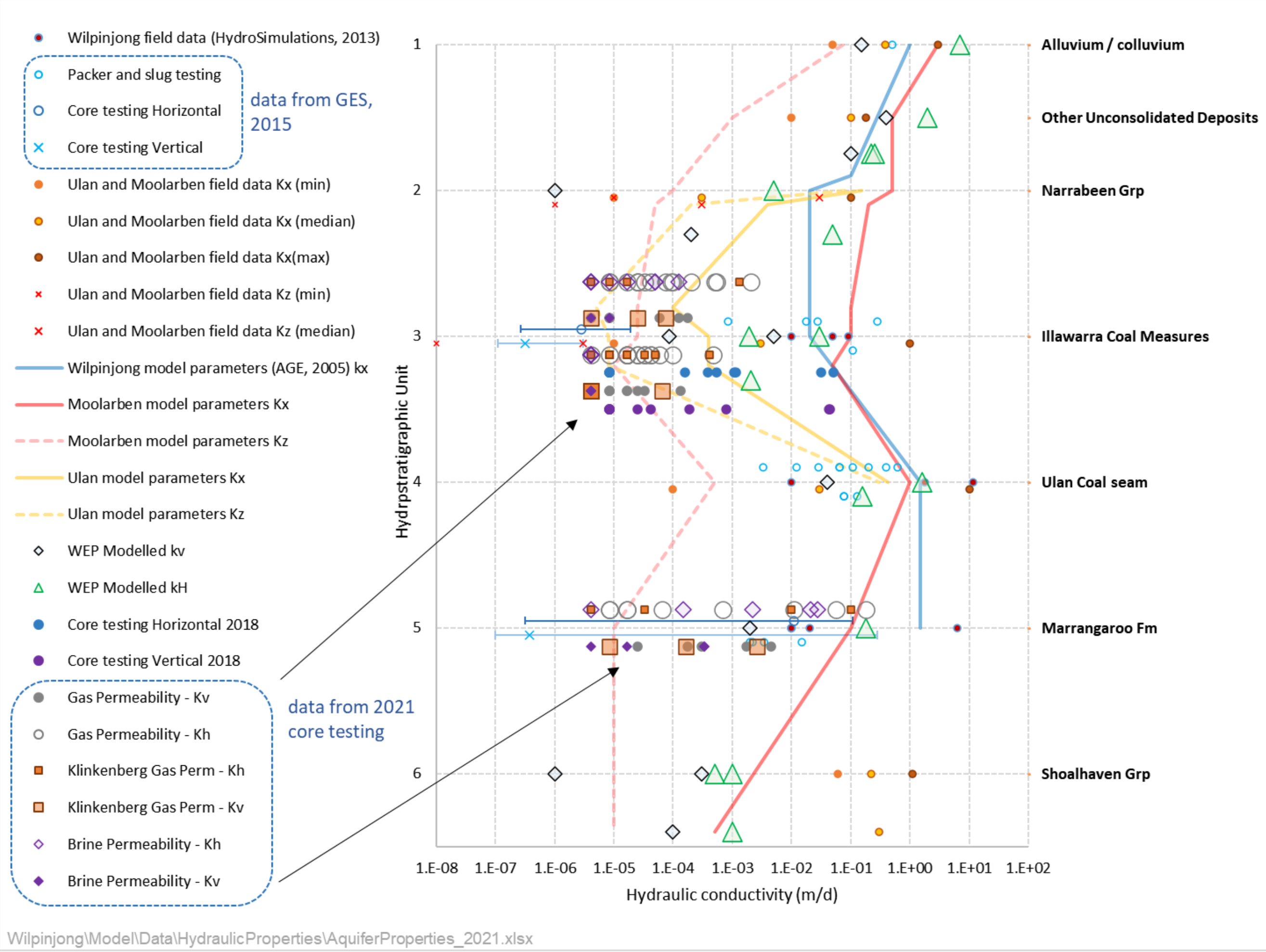


Figure 3 Comparison of Modelled and Observed Hydraulic Conductivity Data

The hydraulic conductivity testing undertaken in 2021 indicates horizontal and vertical hydraulic conductivity values slightly lower than calibrated model parameters. Core testing generally measures only the primary porosity of discrete geological material (the original porosity of the material when formed), while the hydraulic performance of an aquifer unit will also be informed by secondary porosity, which includes joints and fractures. It is therefore normal for core testing to indicate lower hydraulic conductivity compared with larger scale hydraulic testing methods such as packer tests and pumping tests, which can capture the effects of secondary porosity.

2.2.2 Solubility of Key Metal Species

Leachability tests on spoil and reject material for key metals (i.e. arsenic, selenium and molybdenum) identified in past geochemistry assessments for WCM (GEM, 2015) will be undertaken in 2022. Findings from these tests will be compared with groundwater and surface water monitoring data to assess to what extent (if any) spoil and other waste material may have impacted water quality. See **Section 5** for discussion of metal species at Wilpinjong monitoring locations.

2.3 Action 3 - Undertaking Quarterly Data Reviews

Two reviews of WCM groundwater data were undertaken in 2021 (SLR 2021c, 2021d), focused on evaluating breaches of monitoring compliance triggers. Findings from these investigations helped inform which bores were selected for more detailed assessment of likely groundwater recharge mechanism (SLR, 2021e), see **Section 2.1**.

Periodic reviews to evaluate any groundwater trigger level exceedances will be undertaken through 2022 as required.

2.4 Action 4 - Updating EC Triggers at GWc1, GWc3, and GWc5

Bores GWc1, GWc3 and GWc5 are planned for inclusion in the next evaluation of likely groundwater recharge mechanism and the appropriateness of current trigger levels at these sites used to detect possible changes in water quality due to WCM operations.

2.5 Action 5 - More Frequent Consideration of Cease-to-Pump Trigger Levels

Cease-to-pump trigger levels will be monitored as part of any periodic groundwater reviews (**Section 2.3**). **Section 8.2** provides a review of groundwater level at these locations with respect to cease-to-pump triggers levels throughout 2021. However, given the high rainfall over the last 2 years, the availability of surface water and the observed widespread recovery of groundwater levels it is highly unlikely these triggers will be breached in 2022.

3 Groundwater Monitoring Program

This section presents key groundwater level and groundwater quality data for the 2021 AR reporting period to address the conditions within the WCM GWMP (Peabody, 2017) relating to:

- Groundwater cause and effect analysis (**Section 3.1**);
- Assessment of groundwater trigger Levels (**Section 4**); and
- Groundwater modelling verification (**Section 5**).

3.1 Cause and Effect Analysis

A groundwater monitoring network has been in place at the WCM since April 2006, as illustrated in **Figure 2**. 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 Slate Gully and along Wollar Creek (**Figure 2**).

The numerical modelling conducted for the Wilpinjong Coal Mine predicts minimal drawdown (approximately 1 m) in the shallow alluvial groundwater system along Wilpinjong Creek. Drawdowns are predicted to be even 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. Accordingly, trigger levels for water levels in the coal measures are considered unwarranted (Peabody, 2017).

For monitoring bores with sufficient records of groundwater levels around the WCM site, a cause-and-effect assessment of temporal changes in groundwater levels has been completed, with potential causes being variation in rainfall recharge, creek flow, short-term dewatering/production pumping, and mining effects. The hydrographs for all bores are included in **Appendix A** (**Figure 14** to **Figure 32**).

3.1.1 Review of Climate Data

Table 2 displays monthly and annual rainfall compared to the long-term average at the Wollar (Barrigan St) BOM station for 2016-2021, which clearly demonstrates the wet conditions experienced through 2020 and 2021 following drought conditions between 2017 to the end of 2019. The annual total rainfall recorded in 2021 was 927 mm, 55% higher than the long-term average of 598.5 mm and just over three times the total rainfall in 2019. Rainfall recorded on-site at WCM is slightly higher with a total for 2021 of 942.2 mm.

Notably wet years during WCM operations, not included in **Table 2** are 2007 (840 mm), 2008 (785.5 mm) 2010 (1084 mm), 2012 (712.2 mm).

Notably dry years during WCM operations not included in **Table 2** are 2006 (330.9 mm) and 2009 (481.2 mm)

Significant variation in annual rainfall is a key influence on groundwater levels and trends.

Table 2 BOM rainfall station 062032 (Wollar, Barrigan St), recent monthly and annual rainfall vs long term average

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Avg	67.2	63	54.3	39.1	37.2	44.1	42.5	40.6	41.5	51.5	56.5	61	**598.5**
2016	101.2	10.4	21.4	3.0	67.0	114.2	82.4	44.0	181.2	74.2	41.0	36.2	**776.2**
2017	13*	31.0	127.0	19.0	24.4	12.0	1.4	25.6	2.0	30.0	62.6	86.4	**421.4**
2018	13.4	66.2	41.4	47.0	12.6	22.0	6.5	25.5	51.0	48.5	44.4	117.6	**496.1**
2019	72.0	5.0	110.5	0.0	20.0	6.0	4.0	10.0	23.0	7.0	30.0	6.0	**293.5**
2020	37	151.0	110.2	118.0	35.0	31.3	86.0	36.0	75.7	128.0	21.5	149.3	**979**
2021	43.8	107	157.5	2.5	11	82	68.2	21	45	72	183	134	**927**
* No rainfall recorded at Wollar (Barrigan St). Rainfall from Bylong (Glenview) – 062107 used.													

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.

For the calendar years 2020- 2021 WCM experienced significantly above average rainfall conditions, as indicated by a sharp upward trend in the CRD. This contrasts with the declining CRD trend preceding this period from mid-2017 to the end of 2019 (**Figure 4**).

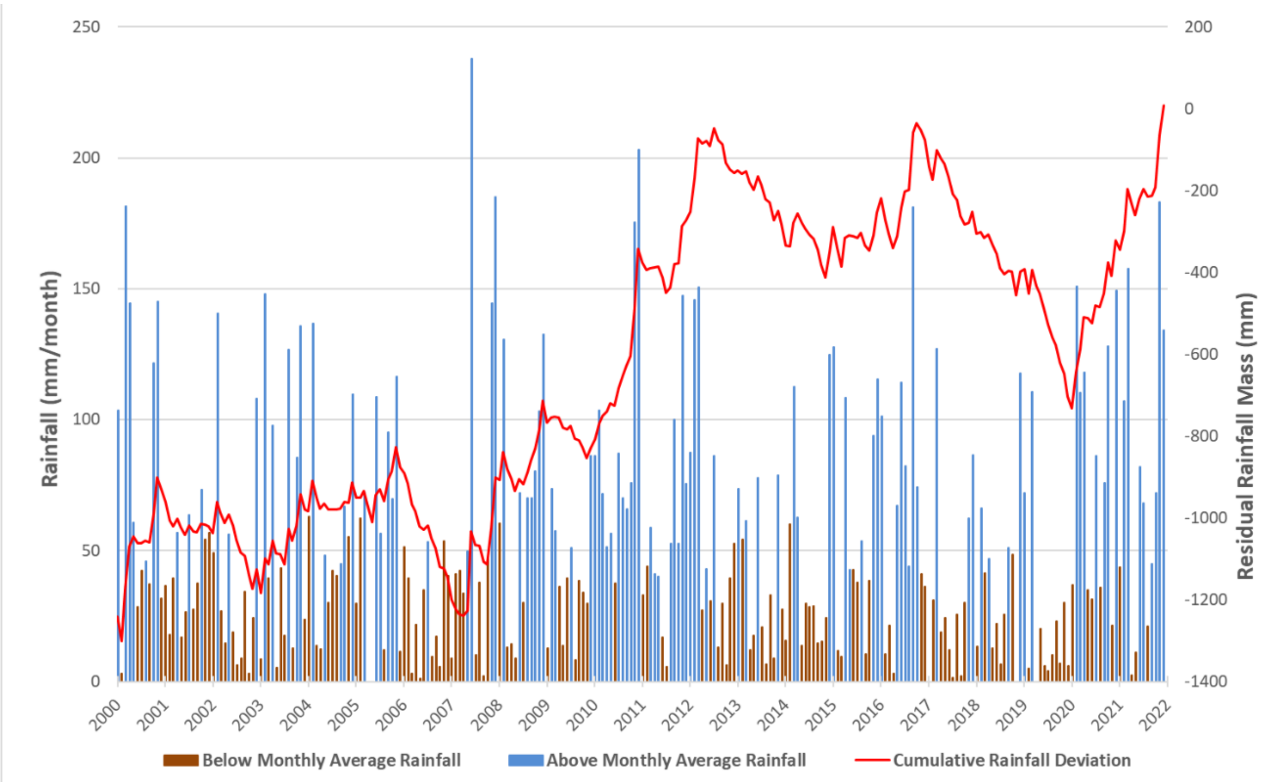


Figure 4 Monthly rainfall and CRD

3.1.2 Review of Groundwater Level Data

Figure 5 presents the groundwater hydrographs for all alluvial bores from the west (higher elevations) to the east (lower elevations) along Wilpinjong Creek, in relation to the long-term rainfall trend. The groundwater table in the alluvium varies between approximately 385 mAHD and 345 mAHD over approximately 8.4 km, from GWa1 in the east to GWa7 in the west, with a hydraulic gradient of 0.5% (0.005) towards the east.

Water table increases are evident at most bores and correlate with the significantly higher than average rainfall through 2021, confirming that rainfall is a key recharge mechanism for the alluvial aquifer. There is also historical evidence of upward hydraulic gradients from Permian strata to the Wilpinjong Creek alluvium which would have provided a source of recharge. Drawdown due to WCM operations (see **Section 3.1.2**) has reversed this hydraulic gradient at some locations, with coal measures no longer recharging the alluvium.

Given the proximity of the alluvium to the elevated Goulburn River National Park (GRNP) to the north, groundwater discharge from the GRNP Narrabeen sediments may also provide some recharge to the alluvium .

3.1.2.1 Mining impacted groundwater levels - Wilpinjong alluvium and Cumbo Creek alluvium

Based on the analysis of the hydrographs in the Wilpinjong alluvium and Cumbo Creek alluvium some mining effects are considered to have occurred, or are ongoing, at the bores discussed below. A mining effect may be considered to have occurred when a groundwater level decline is observed outside of a bores normal variation with climate, and in the absence of other known stresses. A limited or muted increase in groundwater level in response to a period of high rainfall, when compared to historic responses to similar periods of high rainfall, could be interpreted as a mining effect taking into consideration the location of the bore in relation to mining activity and mine progression as well as the behaviour of nearby bores.

The Groundwater Assessment for the approved and operational Wilpinjong Extension Project (WEP) (HydroSimulations, 2015) predicted approximately 1 m drawdown (groundwater level decline) in alluvial monitoring sites along Wilpinjong Creek due to WCM operations. Further assessment of groundwater level observations against model predictions are provided in **Section** 6.2.:

- GWa14 (**Figure 20**) is 300 m north of Pit 4; a groundwater level decline of approximately 1 m is observed during 2013 and 2014 before the bore was dry from 2014 to late 2016, and again from 2017 to early 2020, possibly due to a combination of climate and mining. GWa14 reported as dry for all but the December 2021 observation, which is approximately 1 m lower than peak levels seen in the early part of the monitoring record between 2007 and 2011 (360-362 mAHD), noting that rainfall in 2010 was similar to that observed in 2020 and 2021. This suggests a degree of impact from mining.
- GWa5 (**Figure 13**) is located at Cumbo Creek between Pit 2 and Pit 3, 500 m south of Pit 4; groundwater levels declined in the order of approximately 3 m between 2013 to 2019. Groundwater levels have since recovered by approximately 2.2 m to the end of 2021 but are still approximately 1.5 mm below observations during similarly wet periods prior to 2012 (e.g. 2010) and the development of Pit 3 and 4, indicating impacts from mining.
- GWa1 is located 660 m north of Pit 6. Downhole camera investigation undertaken during 2020 identified the presence of roots within the screen which are inhibiting the sampling of this bore. GWa1 was replaced by a bore of the same depth and screened interval adjacent to GWa1. Observations at GWa1 were dry for the entire monitoring period which may indicate an impact from mining Pit 6. Information on the strata intersected at GWa1 and confirmation that the replacement site is being sampled from will help inform the likelihood and magnitude of WCM impacts at this location.

- GWa7 (**Figure 23**) is located over 1.6 km north-east of current mining at WCM. Recovery associated with above average rainfall in 2020-21 has not quite reached the peak observations in 2012 and 2016. At other sites closer to active mining, similar responses have been interpreted as a mining effect. However, it is noted that levels for late 2021 were not recorded and may have shown further recovery in response to the high rainfall at the end of 2021.
- GWa4 **(Figure 4**) is 450 m north of Pit 3; groundwater declined in the order of 1 m from 2014 to 2016 and then was reported dry or near-dry through to the end of 2020. While groundwater levels have rebounded from April 2020 to the end of 2021 by approximately 1.5 m, this is still approximately 1.5m below levels associated with similarly wet periods prior to 2014 (e.g. 2007/08, 2010) and is considered indicative of mining related impact.
- GWa6 (**Figure 21**) at the northern junction of Pit 3 and Pit 4; groundwater level declined approximately 1 m during 2014 and was dry until mid-2016, before again drying out from 2017-2020, likely due to a combination of climate and mining impacts. From early-2020 to the end of 2021, groundwater levels have risen by 2 m , to within 0.25 m of the levels associated with the extended wet period from 2007 to mid-2012. This is consistent with approved impacts at GWa6 where a decrease in peak groundwater levels of a similar magnitude was predicted. .
- GWa11 (**Figure 17**) is 500m north of Pit 4; groundwater level at GWa11 declined by ~1 m, likely associated with the nearby Pit 4 extraction in 2012, and subsequently went dry in 2019 likely related to the period of below average rainfall. Water levels in 2020 have risen by 1.25 m, to an elevation consistent with observations following the interpreted Pit 4 mining effect (360mAHD), but did not continue to rise through late 2020 and 2021 to levels seen pre Pit 4 development (367 mAHD).
- GWa12 (**Figure 18**) is 300m north of Pit 4; groundwater level at GWa12 may have shown minor impacts (<0.5 m) due to Pit 2 extraction in 2008 before declining ~3 m in 2014 likely due to the excavation of Pit 4 and below average rainfall conditions, before reporting dry in early 2015. Recovery to ~1 m below the pre-mining water levels was observed in mid-2016, before reporting dry from mid-2018 to early 2020 associated with below average rainfall. As observed in 2016, groundwater levels in 2020 recovered by 2.5 m, to a level ~1 m below pre-mining observations in wet periods (2007/08, 2010, 2012), and declined slightly from late 2020 to late 2021 before increasing by approximately 2 m with the late 2021 rainfall. Levels are 0.5-1 m below pre-2013 levels suggesting some component of ongoing mining impact.

Wilpinjong Creek alluvium bores which had previously been identified as showing mining impacts (GWa3 **Figure 19**, GWa10 **Figure 16**, and GWa15 **Figure 22**) have recovered in 2021 to near pre-2013 levels. While recovery has occurred during a period of above average rainfall, ongoing review of monitoring data will help to understand whether groundwater level response to climate has changed after mining at these sites.

GWa2 (**Figure 15**) in the Wilpinjong Creek alluvium does not show any obvious mining impacts, although mining started in Pit 1 at a similar time to the commencement of monitoring at GWa2, limiting the baseline dataset.

GWa32 (**Figure 25**) and GWa8 (**Figure 24**) to the east of Pit 8, on Wollar Creek show limited variation against the CRD, but may fluctuate in response to discrete rainfall events. These sites are not interpreted as showing a mining effect, although monitoring at GWa32 only started in 2014 and therefore, no pre-mining data is available for comparison.

Similarly there is no pre mining data for GWa34 (**Figure 31**) which also shows a very limited response to the CRD. GWa34 showed a recovery response of approximately 0.5 m at the start of 2020 with the return of wet conditions but showed very little further recovery to the continued wet conditions in 2021 and actually abruptly declined by 1.5m at the end of 2021. GWa34 is 4.5km south east of active mining in Pit 7 and is unlikely to affected by mining. An in investigation into bore function, nearby landholder pumping or possible connection with WCM operations should be undertaken to better understand the abrupt change in water level observed at GWa34. It is noted that the paired coal measures monitoring site, GWc34, has been near-dry since 2017.

Mining-related drawdown is apparent in coal seam hydrographs, typically within a few hundred metres of active mine areas, but drawdown is much less, in alluvial bore hydrographs due to the following:

- alluvial bodies not being directly connected to mined areas;
- direct recharge from rainfall and stream flow events, including RO plant discharge on Wilpinjong Creek;
- rock strata overlying the coal seams and underlying the alluvium serving to mitigate the drawdown response because of lower vertical hydraulic conductivity than in the alluvium; and
- unconfined conditions and a greater aquifer storage in the alluvium than in the confined coal seams resulting in much lower head variation (drawdown) in the alluvium.

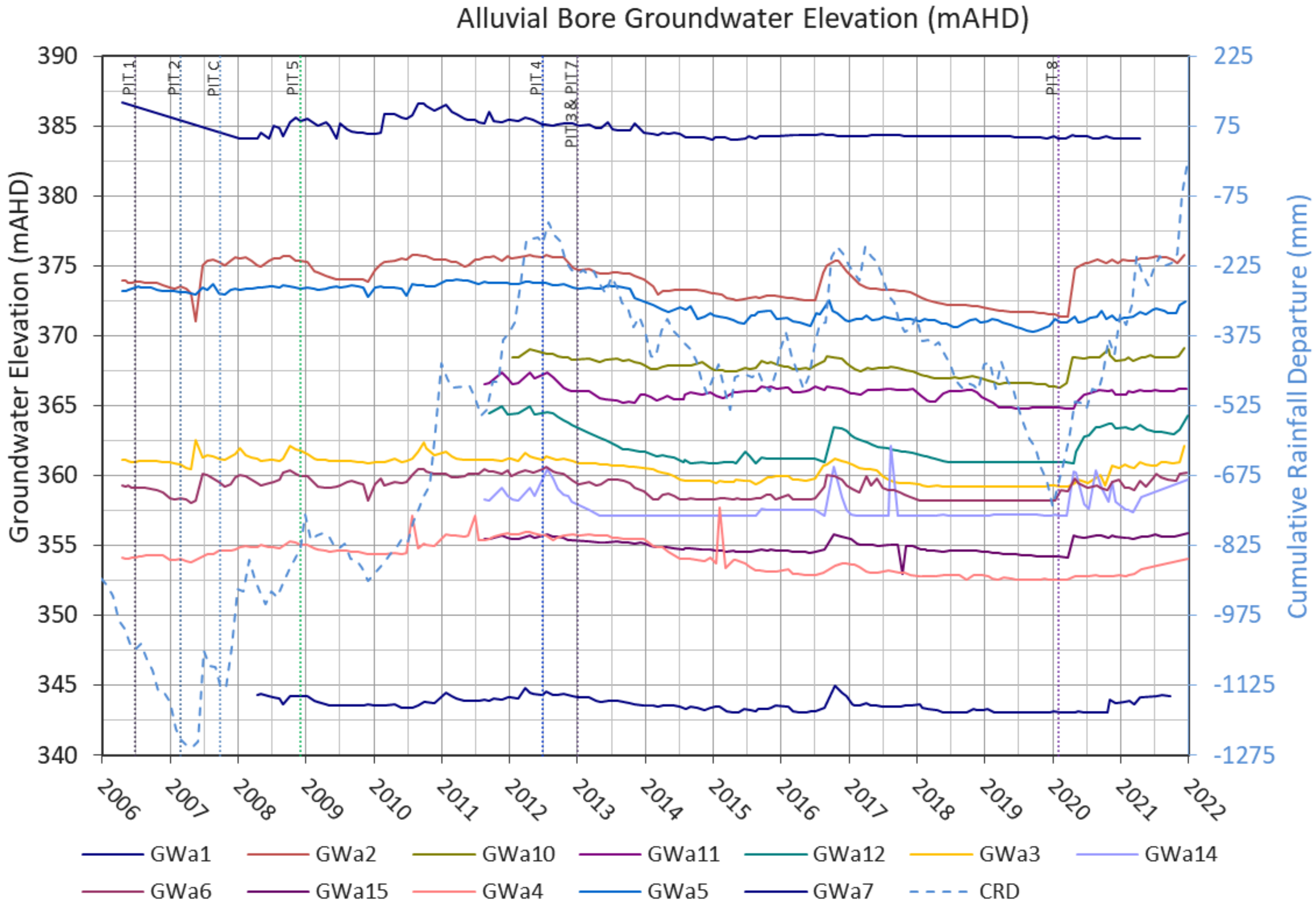


Figure 5 Transition in Alluvial Bore Groundwater Levels from West to East along Wilpinjong Creek

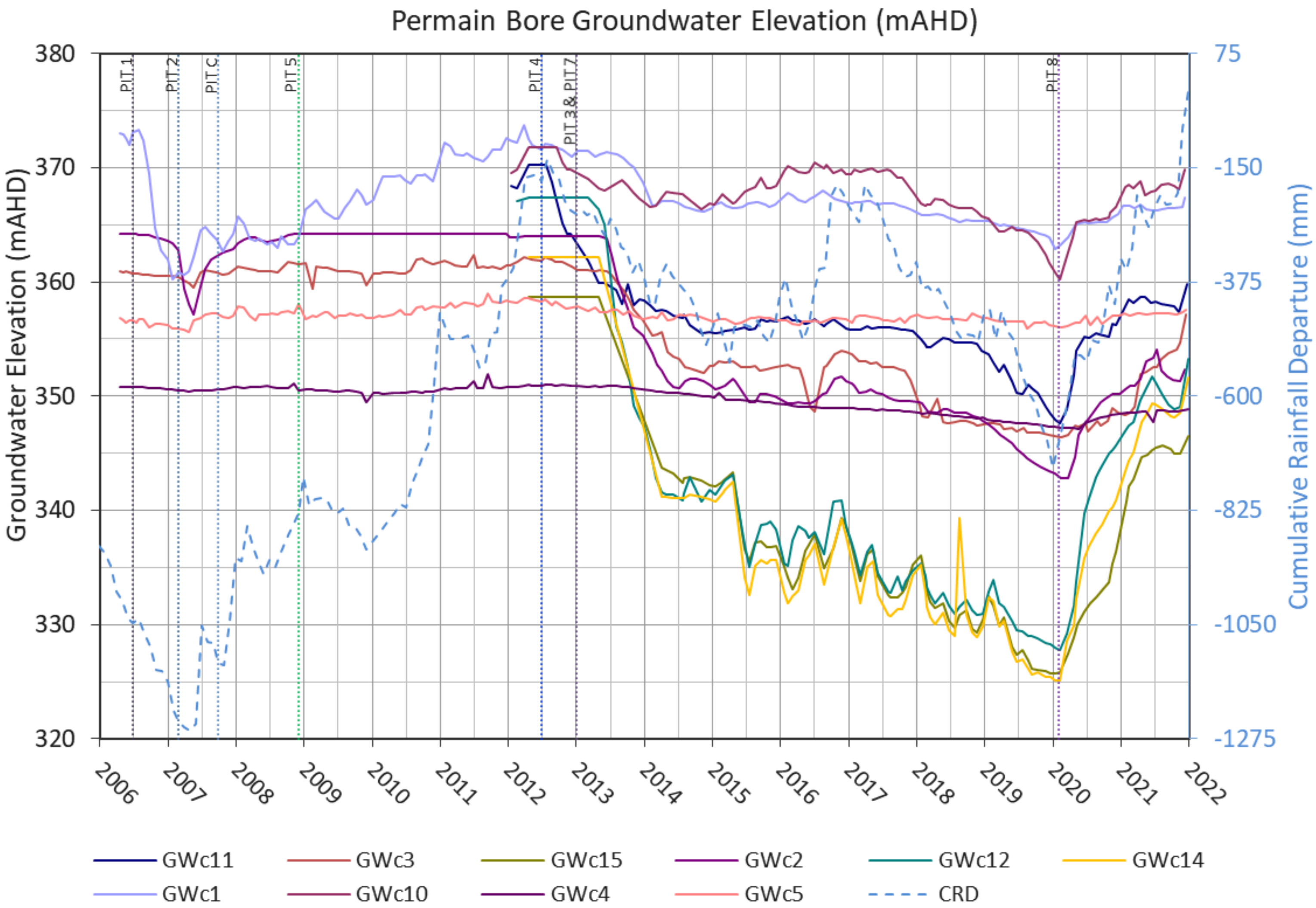


Figure 6 Coal Bore Groundwater Levels from West to East along Wilpinjong Creek

Figure 6 presents the groundwater hydrographs for all coal monitoring bores from the west (higher elevations) to the east (lower elevations), in relation to rainfall residual mass and the commencement of mining in each Pit.

The hydrographs show the expected response of drawdown varying with distance from mining activity, with many sites showing recovery in response to the above average rainfall experienced in 2020 and 2021 The most distant site (GWc5 at Wollar) shows a muted response to above average rainfall conditions in 2021 which may reflect a mining impact at the south of Pit 7 and Pit 8.

Some monitoring bores, for example GWc14 and GWc15, have historically shown responses to pumping from WCM production bores. This is exemplified by short-term sharp drawdowns and subsequent recovery seen in early to mid-2007 as well as in mid to late-2019.

3.1.2.2 Mining Impacted Groundwater Levels – Coal Measures

In **Appendix A**, mining effects on monitored coal groundwater levels are noted at the following bores:

- GWc1 – impacted primarily by Pit 1 and Pit 5 (**Figure 15**) – an approximate 4.5 m increase in groundwater levels through 2020-21 after a sustained, long-term drawdown of 4 to 5 m in the bore from mid-2013 to 2019, 1 m of which occurred in 2019. Levels have recovered back to similar levels observed before the 2017-2019 NSW drought.
- GWc10 – a 10m recovery from 2020-21 after a 10 m decline water level since July 2017 (**Figure 16**). The water levels in this bore correlate with the rainfall trend and the start of declining water levels corresponding with the start of the 2017-2019 NSW drought. However, despite the heavy rainfall over the last 2 years, levels have not recovered to pre-drought levels, with GWc10 showing a ~2 m decline in water level since 2012 which is likely due to WCM mining activity.
- GWc11 – impacted primarily by Pit 2 and Pit 4 (**Figure 17**); 12.5 m of recovery observed since the beginning of 2020 with levels recovering to 3 m above those observed just before the 2017-2019 NSW drought. Ground water levels through 2021 are approximately 8 to 10 m lower compared to pre-Pit 4 mining levels.
- GWc12 - impacted primarily by Pit 4 (**Figure 18**); 25 m recovery since the start of 2020 however there is still an observable drawdown of approximately 18 m since the commencement of mining in Pit 4.
- GWc2 - impacted primarily by Pit 4 (**Figure 19**); groundwater levels decreased by 22 m from late 2013 to the start of 2020 since when they have only recovered by approximately 10m to the end of 2021, which is still ~12 m below pre-mining levels.
- GWc14 - impacted primarily by Pit 3 and Pit 4 (**Figure 20**); Following a 37 m decline between 2012 and the start of 2020 groundwater levels have recovered by 27 m to the end of 2021 in response to the above average rainfall. Current levels are still ~10 m lower than those seen prior to the commencement of mining in Pit 3 and Pit 4.
- GWc3 – impacted primarily by Pit 3 and Pit 4 (**Figure 21**); Following a 40 m decline between mid-2012 and the start of 2020 groundwater levels have recovered by 27.5 m to the end of 2021 (~22m within 2021) in response to the above average rainfall. However, current levels are still 10-12 m lower than those seen prior to the commencement of mining in Pit 3 and Pit 4.
- GWc15 - primarily due to Pit 3 and Pit 4 (**Figure 22**); ~22 m recovery has occurred since the start of 2020 to the end of 2021, likely in response to the above average rainfall, however there is still a drawdown of 10 m compared to levels recorded before the commencement of mining in Pit 3 and Pit 4.
- GWc4 – primarily due to Pit 3 and Pit 8 (**Figure 23**); relatively small drawdown has been observed at GWc4 (~3-4 m), located 2.9km east of Pit 3. Approximately 2 m recovery has now been observed since the start of 2020 in response to above average rainfall.

- GWc32 – primarily due to Pit 3 and Pit 8 (**Figure 25**); relatively small drawdown has been observed since monitoring started in 2014 to the end of 2019 (~2 m), located 1.8km south-east of the workings at the northern end of Pit 8. Approximately 1.2 m recovery occurred in early 2021 in response to above average rainfall but the continued high rainfall to the end of 2021 has not resulted in additional recovery and levels are still 0.8 m below those at the start of monitoring (2014) in a period of rainfall deficit.
- GWc5 (**Figure 24**) - 3km east of Pit 7; there is a possible mining impact is although it is not obvious, and the bore is located a significant distance (2.8km) east of mining activity. There is a muted response to the high rainfall periods of 2016 and 2020-21 compared to levels recorded at the end of the previous high rainfall period from 2007-12 prior to mining in Pit 7. However, current levels are in line with the earliest levels recorded at this location from 2006-09.
- The monitoring bores GWc16, GWc17, GWc25, GWc26, GWc27, GWc30, GWc31, GWc33, and GWc34 all show mining effects although monitoring has only been present since late-2013 or early-2014. Therefore, it is not possible to determine total decline from mining vs rainfall conditions. These bores show limited or no recovery in response to the above average rainfall in 2020-21 which is interpreted as a mining impact.

Other bores not previously discussed:

- The monitoring bores GWc28 and GWc29 in Slate Gully were decommissioned in May 2019 to allow initial support infrastructure (**Figure 27**).

3.1.3 Review of Groundwater Quality Data

Groundwater electrical conductivity (EC) statistics have been computed from 2,017 measurements from April 2006 to December 2021 (**Table 3**). The median value of the measurements at the 13 monitoring sites is about 2,500 micro-Siemens per centimetre (µS/cm). The average for all monitoring sites is approximately 4,100 µS/cm, considerably higher than the median. However, the standard deviation of approximately 3,400 µS/cm is commensurate with the mean.

The lowest mean salinity in the alluvium monitoring bores is 1,400 µS/cm at GWa2, whereas the highest mean is 11,600 µS/cm at GWa5. The lowest mean salinity in the coal monitoring bores is 1,200 µS/cm at GWc2, whereas the highest mean is 5,200 µS/cm at GWc5. Box and Whisker plots of alluvial and coal measures EC observations are also presented in **Figure 7**. These plots enable visual comparison of water quality differences between coal measures and alluvial sites, and are presented from upstream to downstream along Wilpinjong Creek.

Overall, groundwater at alluvial monitoring sites is more saline than groundwater at coal seam monitoring sites. This suggests that the alluvial waters are sourced from Permian sediments and are concentrated through evapotranspiration.

Table 3 Groundwater Electrical Conductivity Statistics

Alluvium Monitoring Bores	Mean (µS/cm)	Standard Deviation (µS/cm)	Coal Monitoring Bores	Mean (µS/cm)	Standard Deviation (µS/cm)	Location
GWa1	8100	3200	-	-	-	North of Pit 6: Far west
GWa2	1400	500	**GWc1**	2600	700	North of Pit 1
GWa3	1700	500	**GWc2**	1200	100	North of Pit 4
GWa4	2500	800	-	-	-	North-east of Pit 3

Alluvium Monitoring Bores	Mean (µS/cm)	Standard Deviation (µS/cm)	Coal Monitoring Bores	Mean (µS/cm)	Standard Deviation (µS/cm)	Location
GWa5	11600	3500	-	-	-	South of Pit 4 on Cumbo Ck
GWa6	5900	2900	**GWc3**	4000	900	Northern end of Cumbo Ck
GWa7	10400	2400	**GWc4**	2400	200	North-east of Slate Gully
GWa8	2300	400	**GWc5**	5200	500	Wollar: SE of Slate Gully

The highest salinities recorded occur near Cumbo Creek to the south of Pit 4, near Wilpinjong Creek near Pit 6 and near Wilpinjong Creek to the north-east of Slate Gully. 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 for the 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. This is examined further in **Section 4**. The salinities in the coal monitoring bores are generally more stable. The different salinity signatures for shallow and deep groundwater reflect evapotranspiration affecting shallow groundwater quality.

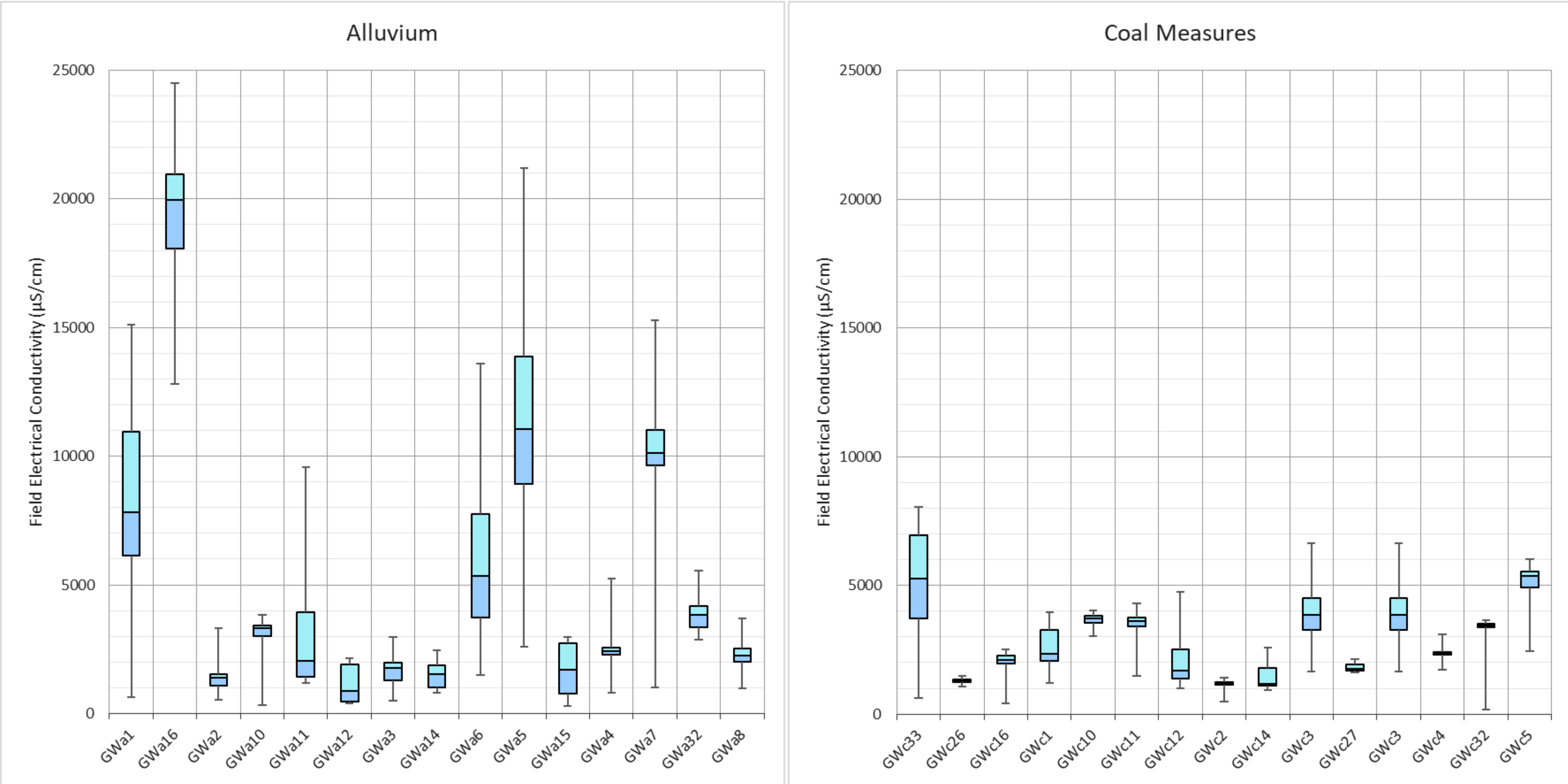


Figure 7 Box Plots for Electrical Conductivity in Alluvium and Coal Measures Monitoring Bores

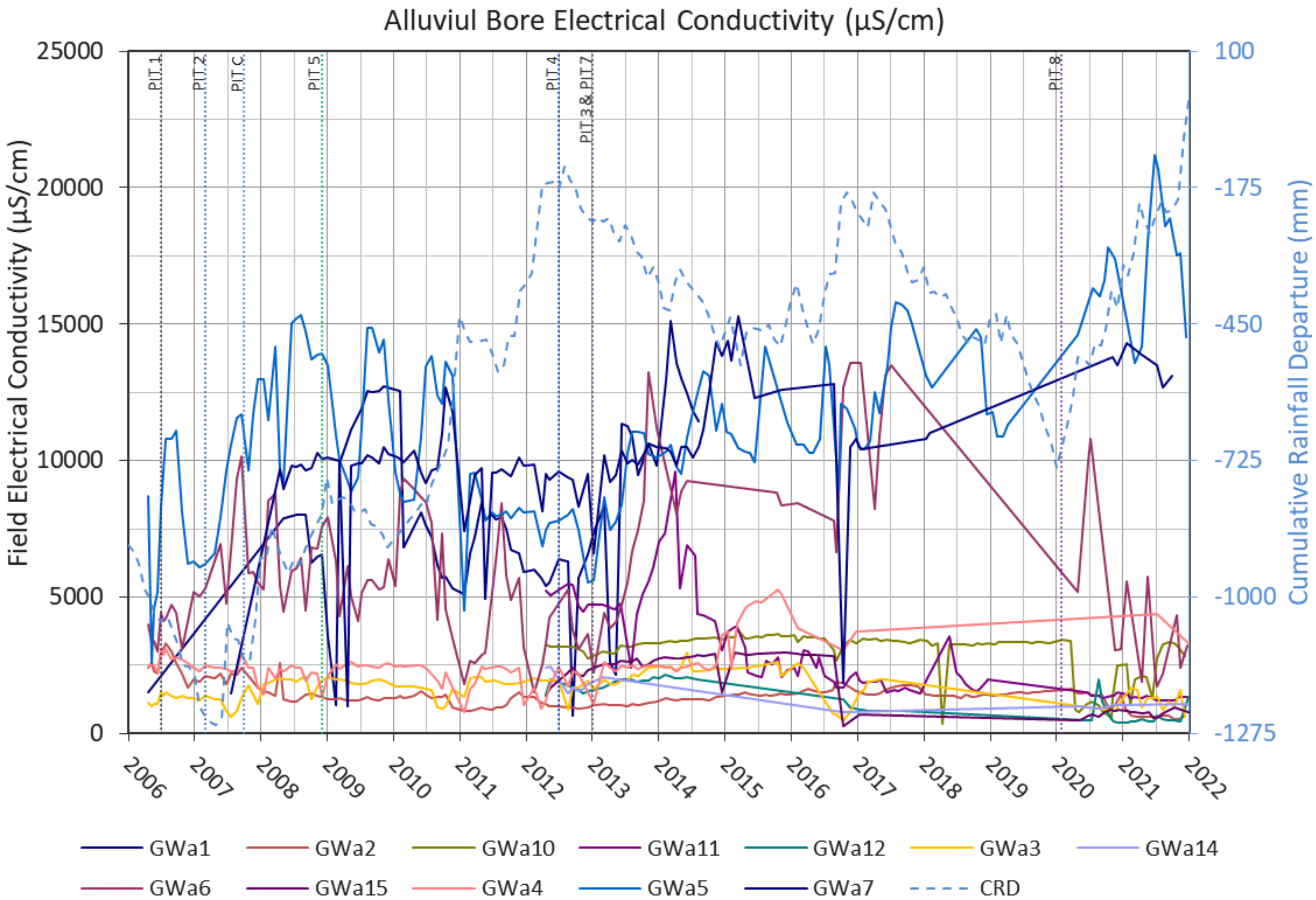


Figure 8 Alluvial Bore Groundwater Electrical Conductivity along Wilpinjong Creek

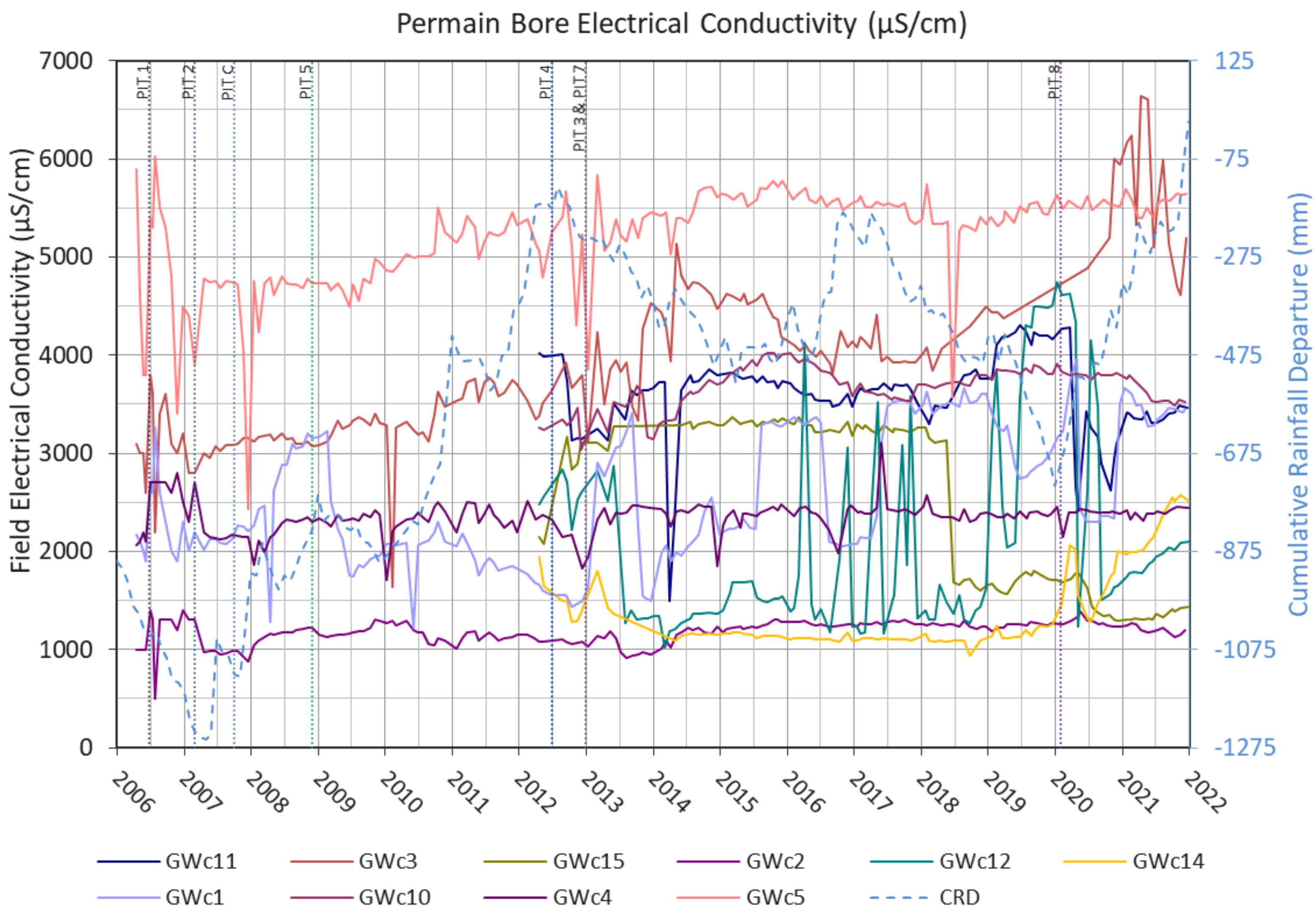


Figure 9 Coal Bore Groundwater Electrical Conductivity along Wilpinjong Creek

3.2 Spoil Monitoring Bores

Details relating to the location, depth, and sampling frequency of the GWf series, spoil monitoring bores, are provided in **Table 4**. These bores have been constructed at in-pit spoil locations with the intent of monitoring saturation and water quality within spoil on site at WCM.

The following comments are made on the conditions observed at the spoil monitoring bores during 2021:

- GWf1 – bore likely drilled to the base of spoil as determined by review of bore depth, pit floor elevation and ground elevation. Generally dry conditions at bore likely due to historical Pit 1 floor elevation north of GWf1 being around 10 m lower than the base of GWf1. 10 m of saturation in the spoil is likely required before groundwater will be observed at GWf1. The bore was wet in August 2021 and a sample was recovered for laboratory analysis. EC was 3940 µS/cm.
- GWf2 – bore may not be drilled to the base of the spoil as determined by review of bore depth, pit floor elevation and ground elevation. There may be around 4 m of spoil between the base of GWf2 and the pit floor elevation, limiting the ability to observe some saturation if it is present. Nearby Pit 5 and Pit 6 mining is also likely to be limiting groundwater recovery in the spoil at this location. This bore remained dry throughout 2021.
- GWf3 – Saturated spoil was observed throughout 2021 and 4 groundwater samples were collected for analysis. Average EC in 2021 was 3735 µS/cm, approximately 1000 µS/cm lower than in 2020, likely due to increased rainfall recharge infiltrating the spoil during 2020.
- GWf4 - bore likely drilled to the base of spoil as determined by review of bore depth, pit floor elevation and ground elevation. Saturated levels within the spoil near GWf4 are likely to be strongly influenced by Pit 2 dam water storage elevation, which has a historical maximum storage level of 372 mAHD. This below the inferred base elevation of GWf4 (~373.5 mAHD). This bore remained dry during 2021.
- GWf5 – dry throughout 2021. A review of pit floor survey surfaces indicates GWf5 may intersect an area of the pit that has not been extracted to the floor of the Ulan Seam. The base of GWf5 is 5-10 m above adjacent pit floor depths, and may be too high to capture saturation level and quality within the spoil at this location.
- GWf6 – Saturated spoil was observed throughout 2021 and 12 groundwater samples were collected for analysis. Average EC in 2021 was at 3699 µS/cm. There is also a good relationship between the observed groundwater level in GWf6 and the measured water level in the Pit 4 void. It is understood that the Pit 4 Void is not actively used for the storage of mine water. GWf6 and the Pit 4 void are likely representative of the broader level of saturation within the spoil in this area.
- GWf7 – dry throughout 2021.

Casing stickup should be measured for GWf1 and GWf2 to allow water level measurements to be converted to m AHD to allow accurate determination of saturation within the spoil.

Table 4 WCM Spoil Monitoring bores

Bore ID	WCM Mine Area	Easting	Northing	Top of Casing (mAHD)	Bore Depth (m)	Bore Installed (estimated)	Sampling Frequency
GWF1	Pit 1	770237	6419400	n/a	16.97	2014	Monthly
GWF2	Pit 5 (Centre)	768969	6419776	n/a	23.98		
GWF3	Pit 5 (South)	768130	6419405	408.49	21.05	2018	
GWF4	Pit 2	770864	6418970	386.93	12.97		
GWf5	Pit 4	771896	6419463	384.14	20.00	Q1 2021	
GWf6	Pit 4	772956	6419852	369.31	30.15		
GWf7	Pit 7	773046	6418344	379.73	9.70		

4 Trigger Compliance

The following section addresses the compliance of groundwater level and groundwater quality observations in relation to trigger levels during the 2021 reporting period. **Table 5** 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 5 Peabody (2017) Groundwater Level and Quality Trigger Levels

<table>
<tr><th rowspan="2">Monitoring Site</th><th rowspan="2">Aquifer Type</th><th>Groundwater Level</th><th colspan="3">Groundwater Quality</th></tr>
<tr><th>Trigger RWL (mAHD)</th><th>EC (µS/cm)</th><th>pH min</th><th>pH max</th></tr>
<tr><td>GWa1</td><td>Alluvium</td><td>No Trigger[1]</td><td>12,272</td><td rowspan="8">6.5</td><td rowspan="8">8</td></tr>
<tr><td>GWa2</td><td>Alluvium</td><td>372.4</td><td>2,280</td></tr>
<tr><td>GWa3</td><td>Alluvium</td><td>Dry[2]</td><td>1,970</td></tr>
<tr><td>GWa4</td><td>Alluvium</td><td>Dry[2]</td><td>2,596</td></tr>
<tr><td>GWa5</td><td>Alluvium</td><td>371.4</td><td>13,926</td></tr>
<tr><td>GWa6</td><td>Alluvium</td><td>N/A#</td><td>6,720</td></tr>
<tr><td>GWa7</td><td>Alluvium</td><td>No Trigger[1]</td><td>10,126</td></tr>
<tr><td>GWa8</td><td>Alluvium</td><td>Dry[2]</td><td>2,898</td></tr>
<tr><td>GWa10</td><td>Alluvium</td><td>366.1</td><td rowspan="5">N/A#</td><td rowspan="5">N/A#</td><td rowspan="5">N/A#</td></tr>
<tr><td>GWa11</td><td>Alluvium</td><td>Dry[2]</td></tr>
<tr><td>GWa12</td><td>Alluvium</td><td>361.3</td></tr>
<tr><td>GWa14</td><td>Alluvium</td><td>Dry[2]</td></tr>
<tr><td>GWa15</td><td>Alluvium</td><td>Dry[2]</td></tr>
<tr><td>GWc1</td><td>Coal</td><td rowspan="5">N/A#</td><td>2,844</td><td rowspan="5">6.5</td><td rowspan="5">8</td></tr>
<tr><td>GWc2</td><td>Coal</td><td>1,290</td></tr>
<tr><td>GWc3</td><td>Coal</td><td>3,304</td></tr>
<tr><td>GWc4</td><td>Coal</td><td>2,412</td></tr>
<tr><td>GWc5</td><td>Coal</td><td>4,798</td></tr>
</table>

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

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

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

4.1 Trigger Level Exceedances Summary

As stated in **Section 6**, numerical modelling conducted for WCM (SLR, 2020a) predicts minimal drawdown (approximately 1m) to the alluvial groundwater system along Wilpinjong Creek, and less in the more distant alluvial aquifers associated with Wollar Creek.

Trigger levels are required for alluvial monitoring bores to detect impacts and effects greater than those predicted by the groundwater modelling. As such, trigger levels have been established for alluvial monitoring bores at 1m below the minimum recorded water level during the baseline period. Three consecutive monthly exceedances (or two successive quarterly exceedances) of the lower threshold level 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 5**). 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 2021 monitoring period due to the recovery of water levels in many alluvial bores.

The persistent dry period that occurred from 2017 to early 2020 had caused bores not impacted by mining to go dry and exceed the defined trigger level, as reported in the 2019 AR (SLR, 2020b).

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.

- EC trigger levels are based on 80^{th} percentile values from the baseline monitoring period.
- The 20^{th} and 80^{th} 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 6 presents trigger level exceedances for the 2021 AR monitoring period. Exceedances are discussed in **Section 4.2**.

Table 6 Trigger Level exceedances in the 2021 monitoring year

Bore	Trigger Level Exceedance in 2021 Observations			
	Minimum RWL (mAHD)	EC	pH min	pH max
GWa1^	N/A#	Dry through 2021		
GWa2	N	N	N	N
GWa3	N	N	N	N
GWa4^	Y	Y	N	N
GWa5	Y	Y	N	N
GWa6	N/A#	N	N	N
GWa7	N/A#	Y	N	N
GWa8	N	N	N	N
GWa10	N			

<table>
<tr><th rowspan="2">Bore</th><th colspan="4">Trigger Level Exceedance in 2021 Observations</th></tr>
<tr><th>Minimum RWL (mAHD)</th><th>EC</th><th>pH min</th><th>pH max</th></tr>
<tr><td>GWa11</td><td>N</td><td rowspan="4">N/A#</td><td rowspan="4">N/A#</td><td rowspan="4">N/A#</td></tr>
<tr><td>GWa12</td><td>N</td></tr>
<tr><td>GWa14^</td><td>Y^</td></tr>
<tr><td>GWa15</td><td>N</td></tr>
<tr><td>GWc1</td><td rowspan="5">N/A#</td><td>Y</td><td>N</td><td>N</td></tr>
<tr><td>GWc2</td><td>N</td><td>N</td><td>N</td></tr>
<tr><td>GWc3</td><td>Y</td><td>N</td><td>N</td></tr>
<tr><td>GWc4</td><td>Y</td><td>N</td><td>N</td></tr>
<tr><td>GWc5</td><td>Y</td><td>N</td><td>N</td></tr>
</table>

#Not applicable, Y= Yes (trigger exceedances recorded), N= No (trigger exceedances not recorded), ^Bore was dry/near dry during most of 2021

4.2 Groundwater Level Trigger Exceedances

The following section discusses trigger exceedances in alluvial monitoring bores during the 2021 AR monitoring period (**Table 6)**, 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**.

With the continued wetter than average conditions through 2021 most of the bores where breaches of the low groundwater level trigger had occurred have now seen groundwater level recovery above the trigger value. Only GWa4, GWa5 and Gwa14 exceeded their groundwater level trigger in early 2021.

4.2.1 GWa4

GWa4 was dry or near-dry from early 2017 through to April 2021. The recovery response to high rainfall seen through 2021 has resulted in levels which are still significantly below the levels associated with similarly wet periods prior to mining at Pit 3 and Pit 4 and this is considered a likely ongoing mining effect. The progression of mining at Pit 8 to the south and at Pit 3 to the north is expected to lower groundwater levels below baseline levels, even during periods of above average rainfall.

Additional investigation was commissioned by WCM in 2021 (SLR, 2021e) to further understand why GWa4 was showing an apparent ongoing mining effect while other nearby sites (GWa15) had recovered to near pre mining levels. The investigation concluded the following for GWa4:

- A nearby alluvial transect (GES, 2014) infers strata is likely be of low permeability at GWa4 (clay with a shallow depth to bedrock), meaning the bore may have limited or slower response to flow/ rainfall recharge events in Wilpinjong Creek.
- Upward flow from underlying coal measures may have been a key recharge source at this location, and drawdown in underlying strata reversing this flow gradient, is the likely mechanism for mining impacts at this site.

As groundwater levels recovered above the trigger level through 2021, no further investigation is recommended. However, a replacement or supplementary bore at this location targeting permeable strata, as indicated in GES (2014) would help evaluate the above conclusions.

4.2.2 GWa5

Groundwater levels at GWa5, located along Cumbo Creek, continued to exceed the trigger level in early 2021. A potential mining effect has been identified, beginning in late 2011 due to mining in Pit 2, Pit 3, and Pit 7, and the excavation in the lower reaches of Cumbo Creek. This effect intensified during 2014 with groundwater levels falling by around 3 m from early 2014 to the end of 2019.

Although recovery of groundwater levels at GWa5 has continued during the very wet conditions in 2021, levels are still significantly below those observed in similarly wet periods prior to the commencement of mining at Pit 2, Pit 3, and Pit 7, suggesting an on-going mining effect at GWa5. Consistent water level observations from 2006 to 2013 indicate baseflow/ upward flow from underlying strata may have provided a stable source of recharge to GWa5. Drawdown within adjacent Permian strata is likely the mechanism of impact at GWa5.

Mining in Pit 7 near the upstream reach of Cumbo Creek may be limiting flow from Permian strata into the Cumbo Creek alluvium, resulting in an ongoing mining effect at GWa5. Until Pit 7 is complete, it is expected that groundwater level may fall below the trigger level during periods of low rainfall.

As groundwater levels recovered above the trigger level through 2021, no further investigation is recommended. However, a supplementary/ replacement site could be considered for installation in the vicinity of GWa5. It is understood that there is persistent ponding and flow of water at the causeway downstream of GWa5 somewhat independent of rainfall conditions. This indicates a possible shallow depth to groundwater within permeable Cumbo Creek alluvium that is not currently being monitored by GWa5.

4.2.3 GWa14

Observations at GWa14 (located 340 m north of Pit 4) were dry or near dry and exceeding the trigger level for all 2021, other than the December observation which was 1.75 m above the trigger level. This followed erratic levels (mostly above the trigger level), in 2020 at elevations similar to those observed in 2012. Between 2013 and 2020, levels at this bore had mostly been in breach of the trigger level.

As with other alluvial sites along Wilpinjong Creek, historical data indicates an upward gradient from Permian to overlying alluvial strata that has been reversed (to a downward gradient) due to WCM mining activity. It is possible that a lack of recharge from underlying strata has caused the change in groundwater behaviour at GWa14. It is likely that rainfall and flow in Wilpinjong Creek are now the dominant recharge mechanisms at this location, which is evident in the peaky response to above average rainfall events.

Some impact to alluvial groundwater levels at GWa14 is approved, as predicted in the WEP EIS groundwater assessment (HydroSimulations, 2015). However, groundwater levels in 2020-21 in response to above average rainfall recover to elevations observed in 2012 (prior to the excavation of nearby Pit 4) which indicates groundwater level can recover to levels recorded prior to mining of Pit 4.

It is unknown why dry observations were recorded at GWa14 in 2021, when more consistent groundwater response was observed to similar rainfall conditions in 2020. The construction bore log (AGE, 2007) also indicated that the base of alluvium was not encountered during construction. Investigation into the function of GWa14 or consideration of a replacement monitoring site that is installed to full depth of alluvium at this location may provide more consistent groundwater data and help evaluate the presence and magnitude of any mining effect at GWa14.

4.3 EC Trigger Exceedances

The following section discusses the EC trigger exceedances summarised in **Table 3** based on the time series plots in **Appendix B**.

4.3.1 Alluvial Bores

The following EC trigger level exceedances were recorded during the 2021 AR reporting period:

- Gwa4 – on the 2 occasions when water samples could be collected: July and December;
- GWa5 – 9 of 10 monthly samples: April to December inclusive; and
- GWa7 – on all 5 occasions when samples could be collected: January, April, July, August, September.

4.3.1.1 GWa4

Prior to late 2015, EC at GWa4 was relatively consistent at around 2500 µS/cm with sporadic declines in EC that may be linked to high rainfall events. In late 2014 EC increased significantly to a high of around 5000 µS/cm in late 2016 which corresponded with a significant decline in groundwater levels which appears to have resulted from a combination of mining impacts and lower than average rainfall, with the bore eventually drying completely. Since late 2016 the bore has largely remained dry or near dry resulting in insufficient or no water for sample collection. With the high rainfall in 2020-21 and the re-wetting of the bore in 2021 the first two EC measurements since 2016 were recorded and remain significantly above the trigger level.

Downhole camera investigation was undertaken at GWa4 in 2021, this identified the presence of a sump below the base of the screened interval (below 3.4 m depth). It is noted that the initial EC trigger exceedance occurred in GWa4 when groundwater first fell below the base of this observed screened interval, and that all EC observations above the trigger level, other than the December 2021 observation, occurred when the water level was within the sump, not the screened interval.

Observations when water levels are within the sump will not be representative of surrounding aquifer water. The bore should be considered dry when the water level is below the base of the screen. This should be considered in ongoing monitoring and trigger investigations into the future. Monitoring under wetter climatic conditions in 2022 where groundwater may be within the screened interval, will help evaluate the reliability of the data indicating ongoing trigger exceedances. Ongoing monitoring with the return of wetter conditions may see EC reduce further

A replacement/ supplementary bore targeting permeable strata near Wilpinjong Creek is recommended in **Section 4.2.1.** Construction and lithology information collected at the recommended replacement site should help collect representative groundwater data and help evaluate GWa4 observations.

4.3.1.2 GWa5

EC at GWa5 is high and variable (Generally >7,500 µS/cm) with an overall rising EC trend since 2013. The highest EC levels in this bore have been observed in 2020-21 which corresponds with a high rainfall period where an influx of fresh water and reduction of EC might be expected. During the second half of 2021 EC reduced significantly (from >20,000 µS/cm) with the last measurement in 2021 just exceeding the trigger level (<15,000 µS/cm).

Investigation into the source of the elevated EC at GWa5 was commissioned by WCM in 2021 (SLR, 2021). This work identified that evapo-concentration was likely the driver behind the observed increase in EC, with the following factors potentially driving the change:

- A reduction in groundwater flow volume through the strata intersected by GWa5 (upward leakage and mixing) due to mining related drawdown in the underlying Permian strata.
- Localised evapo-concentration of surface water in Cumbo Creek associated with the ponding of water behind a causeway near GWa5.
- Drier climatic conditions from 2017-2020 resulting in less rainfall recharge and lower surface water flow volumes.

Continued monitoring is required to assess the response to ongoing wet conditions that may see a further reduction of EC below the trigger level.

A supplementary/ replacement site has also been recommended for GWa5 (**Section 4.2.2**). Review of groundwater quality data within this replacement site compared with surface water and groundwater intercepted at GWa5 may help evaluate the mechanism driving high EC observations.

4.3.1.3 GWa7

All EC measurements at GWa7 from late 2020 through 2021 exceed the trigger level, following the bore being mostly dry from mid-2017 to late 2020. With the bore having been dry during this period it is uncertain how EC in the alluvium at this location has responded to the full range of rainfall variations seen in recent years. It is also uncertain to what extent groundwater levels have been affected by mining activity vs climate with the elevated rainfall in 2020-21 resulting in a recovery of groundwater levels towards those recorded during similar climatic conditions prior to mining at Pit 3 and Pit 8. However, EC has steadily fallen through 2021 with no measurements made in the last months of 2021 when even lower EC observations would have been expected at this location in response to continued high rainfall.

The increased EC in the alluvium at this location may be due to the general reduction of less saline groundwater in the Permian migrating into alluvium up catchment of GWa7. Groundwater level decline and a muted recovery to above average rainfall at the nearest Permian monitoring bore, GWc4 (**Figure 23**) indicates some mining impact may also be occurring at GWa7.

Continued monitoring is required to assess the response to ongoing wet conditions that may see a further reduction of EC below the trigger level.

4.3.2 Coal Measures Bores

Exceedances of the EC trigger value at coal monitoring bores in 2021 occurred at GWc1, GWc3, GWc4, and GWc5 (**Appendix B**).

The increases in EC observed at GWc1, GWc3, GWc4 and GWc5 appear to be occurring independently of climatic and groundwater level influences.

4.3.2.1 GWc1

EC at 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 1000 µS/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:

- 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. There is a continual downward hydraulic gradient from the alluvium to the coal measures, and it is noted that two sudden step increases in groundwater levels in the alluvium seen at GWa2 in mid-2016 and early 2020 in response to rainfall correspond to step reductions in EC in GWc1. However, this relationship is not clear as the other step reductions in EC at GWc1 occur without a step change in alluvial groundwater levels at nearby GWa2.
- Periodic lateral flow from backfilled WCM open cut mining areas may also have the ability to drive these step changes in EC. EC observed within spoil monitoring bore GWf6 is approximately 3,700 µS/cm, which is similar to the EC observed at GWc1 when it is exceeding the trigger level, although GWf6 is not within the backfilled pit adjacent to GWc1. Periods of increased recovery or saturation within the spoil may result in a gradient sufficient to cause lateral flow from the historical pit area to GWc1. Horizontal conductivity through the former pit highwall may be higher than the vertical conductivity from Wilpinjong Creek alluvium to the underlying coal measures.

Ongoing monitoring and more evaluation of groundwater levels and EC within the spoil adjacent to GWc1 may help identify the cause of the fluctuations. The cause may also be related to bore construction or integrity. It is likely that EC will drop below the trigger level in due course as it always has done in the past following a period of elevated EC.

Regionally, EC in the coal measures and alluvium are higher than observed at GWc1. It is unlikely there will be environmental harm due to current elevated water EC at GWc1.

4.3.2.2 GWc3

EC has been exceeding the defined trigger level at GWc3 since 2013 and has previously been suggested to be occurring due to WCM mining activity, corresponding to the 8 m decline in groundwater level following extraction at Pit 3 (HydroSimulations, 2018). Review of the 2021 data suggests that EC may slowly be declining at GWc3, from a new maximum EC of 6,600 µS/cm in May 2021 to EC observations closer to 5,000 µS/cm near the end of the reporting period.

EC observations at GWa6 in 2021, monitoring the overlying Cumbo Creek alluvium, have shown similar trends to those at GWc3. EC at GWa6 in 2021 is slightly fresher, with EC observations ~500 µS/cm lower than at GWc3 outside of periods of high rainfall, where the overlying alluvium freshens to ~2,000 µS/cm. Continuous monitoring of EC at the Cumbo Creek upstream gauging station (CCGSU) also shows similar trends and EC concentration to GWc3.

Mining related drawdown may have allowed groundwater from more saline, surficial aquifers, such as the Cumbo Creek Alluvium, to enter the area monitored by GWc3. High EC observations may also be related to re-saturation of the strata intersected by GWc3 after the NSW 2017-2019 drought and remobilisation of salinity in the subsurface. High EC caused by this re-saturation may be temporary, with a general declining trend in EC observed over 2021.

Further review of available water chemistry data is recommended in 2022 to further identify the recharge source and mechanism behind the observed EC increase at GWc3.

4.3.2.3 GWc5

GWc5 is located on Wollar Creek, upstream of the confluence of Wilpinjong Creek and 3.5 km from active mining in Pit 7. EC increased gradually from early 2010 to 2018, separate to climatic or groundwater level influence, and stabilised around 5,500 µS/cm at the end of 2017 through to 2021. GWc5 is continuing to show EC levels consistently above the trigger level set for this bore, but below the maximum values observed before and during Pit 1 extraction.

As the EC observations at GWc5 are within the bounds of other coal measures and alluvial monitoring bores at WCM, the revision of the EC trigger level at GWc5 in 2022 is recommended so that it is not constantly in exceedance.

4.4 pH Trigger Exceedances

No exceedances of pH trigger levels were observed during the 2021 AR monitoring period.

5 Analysis of Metal Concentrations

This section addresses the Independent Expert Scientific Committee (IESC) advice on the Wilpinjong Extension Project (EPBC 2015/7431, SSD6764) which was provided in two documents in 2016 (IESC 2016-075, and IESC 2016-78). The advice was in relation to potential effects on water resources within Wilpinjong and Wollar Creek catchments and requested the presentation of baseline data for metal concentrations and comparison with ANZECC/ ARMCANZ guidelines. The GWMP does not have any trigger levels for metals but in consideration of the IESC advice, the groundwater quality data has been compared to the following guidelines:

- Default guideline values for freshwater - 90% species protection (ANZG, 2018); and,
- ANZECC stock watering guideline (ANZECC & ARMCANZ, 2000) for cattle. The WEP groundwater investigation report (Hydrosimulations, 2015) states that dryland grazing of cattle and sheep is a relevant land use surrounding the mine. Beef cattle are more sensitive to water salinity and therefore the beef cattle guideline value has been used.

There are a range of default water quality guidelines for freshwater, which afford different levels of ecosystem protection depending on how disturbed or modified the environment is. For this comparison, the freshwater values for 90% ecosystem protection have been used, on the basis that the waters are in a moderately to highly disturbed environment.

The metal concentrations in comparison with these two guidelines are presented in **Appendix C.** Note that only bores that had a 2021 observation available are included. Five alluvial bores, sixteen coal bores and one spoil bore were selected based on the continuity of their dataset up to December 2021.

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, EC and pH are also displayed for context together with the cumulative rainfall departure (CRD).

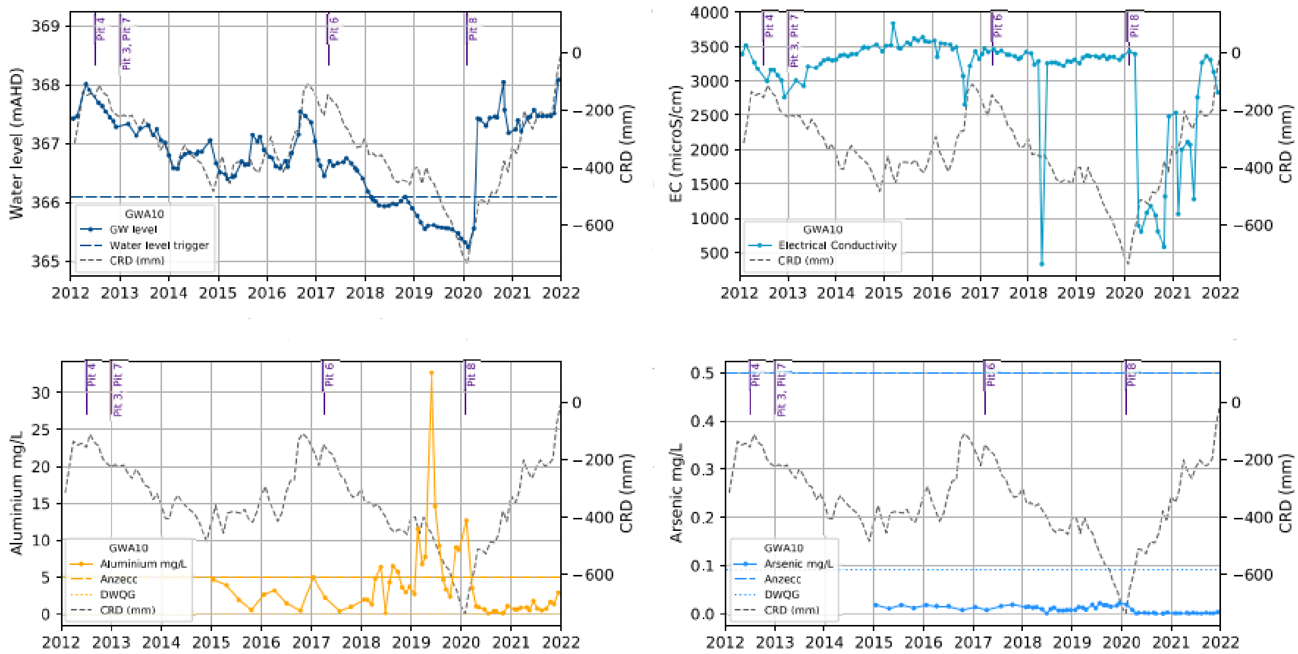


Figure 10 Example plot of water quality versus CRD as presented in Appendix C for selected bores

5.1 Alluvial bores

Of the five alluvial bores presented GWa2 and GWa10 show a primarily climate related influence with regard to groundwater levels; GWa5 shows a combination of climate and mining impacts; and GWa32 and GWa8 appear to show very little response to rainfall trends or mining.

Groundwater from GWa2 and GWa10, which show a clear water level response to the CRD, exhibit metals concentrations that also respond to rainfall trends with significant increase in some metals observed towards the end of the 2017-19 drought period followed by a decrease in concentration with the increased rainfall from early 2020. The effect is more pronounced in GWa2 than GWa10 and the increases are considered likely to be due to evapo-concentration. During the period of poorer water quality, several metals (aluminium, arsenic, manganese, lead, copper, nickel, and selenium) breach the guideline values for freshwater protection, but the water quality is mostly acceptable for stock watering (beef cattle).

At GWa5, which shows a water level response to both the CRD and mining, the water quality response to the drought period observed at GWa2 and GWa10 is not seen although it should be noted that there are gaps in the sampling record during this period. There are however some smaller increases in metals concentrations observed in late 2020 / early 2021. Lead and nickel typically breach their guideline values for freshwater protection, but the water quality is unacceptable for stock watering due to high salinity. High salinity in alluvial sites near WCM occurs naturally. Time-series trends (**Figure 8**) and box plots (**Figure 7**) are presented in **Section 3.1.3**.

Groundwater from GWa32 and GWa8, which appear to show very little response to rainfall trends or mining, don't appear to exhibit significant trends in metals concentrations over time or in response to the CRD. Water quality is generally good with the exception of concentrations of aluminium, manganese and nickel which typically breach the guideline values for freshwater protection at GWa8. Water quality is acceptable for stock watering (beef cattle).

5.2 Coal Bores

Similar to the alluvial bores, those coal bores that show a stronger response to the CRD trend also show a higher variability in the metal concentrations, with the highest metal concentrations observed when the water levels were low in 2019 but sometimes also persisting into 2020. During these times there are exceedances of some of the default guideline values for freshwater protection with aluminium being the most common exceedance. The default guidelines for copper, nickel and to a lesser extent lead are also regularly exceeded in some bores although none of the bores appear to indicate increasing trends over time. Metals concentrations are well below the ANZECC stock watering guidelines.

Typically, through 2021, metals concentrations are either reducing from highs associated with the preceding 2017-2019 drought or stable and in line with historic concentrations. There are still exceedances of the default guideline values in 2021 with aluminium being the most common exceedance followed by exceedances for copper, nickel and to a lesser extent lead. Bores GWc14 and GWc15 are noted to show increases in nickel and molybdenum concentrations during 2021 against a historic record of low concentrations.

5.3 Tailings Storage and Spoil Bores

Limited groundwater quality data is available for GWF3 from late 2019 to late 2021. This bore showed an increase in groundwater level in 2020 of three metres, which also resulted in a reduction of EC from over 6,000 µS/cm to approximately 4,000 µS/cm. Metal concentrations also decreased through 2020 with aluminium, copper, lead, and nickel falling below the default guidelines for freshwater protection. This reduction in concentrations is likely due to the high rainfall over this period and the associated infiltration of fresher water to the spoil. All metal concentrations are well below the ANZECC stock watering guidelines.

5.4 Summary

Bores which show a strong response to the CRD trend generally show higher variability in the metal concentrations. The highest concentrations were found at times when the water levels were at their lowest towards the end of the 2017-19 drought period with elevated concentrations persisting into 2020 at some locations. Bores with elevated metal concentrations during this period show declining concentrations through 2021. Concentrations of those metals analysed are generally well within the stock watering guidelines but there are exceedances in 2021 of the default guideline values for freshwater (90% ecosystem protection), with aluminium being the most commonly exceeded guideline followed copper, nickel and to a lesser extent lead.

Ongoing 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.

6 Groundwater Model Refinement and Prediction vs Observation

Previous reporting (HydroSimulations, 2015a; Peabody, 2016) has utilised the HydroSimulations (2013) and (2015) 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 and revising mine progression to reflect actual extraction.

As is required by the GWMP (Peabody, 2017), the following section reports on the new model (SLR, 2020a) and presents the results of the model verification. SLR is also required to assess the performance and suitability of the model triennially to ensure predictions are consistent with observed data. The assessment of model performance and suitability is due to be undertaken in 2023.

6.1 Updated Groundwater Model

6.1.1 Model Updates (2015)

The WCM numerical model was rebuilt in 2015 to be compatible with MODFLOW_USG (HydroSimulations, 2015b). This allowed refinement of the model grid to allow greater detail to be obtained from areas of interest. Further information on the model can be found in Section 5 of the SLR (2015b) report for the proposed Wilpinjong Extension Project (WEP). Key features of the model revision were as follows:

- The active model extent is centred on Wilpinjong Coal Mine and includes the full extent of the neighbouring Moolarben Coal Complex as part of the cumulative impact assessment. The Wilpinjong and Cumbo Creek catchments as well as most of the Upper Goulburn River catchment are also included within the active model extent.
- The hydrostratigraphy is represented by eight (8) layers.

- The model domain is discretised into 56,430 cells for each layer, using a Voronoi-based mesh. This has the advantage being irregular while maintaining the property that a line connecting adjacent cell-centres is perpendicular to the shared cell boundary. The mesh was generated using the proprietary HydroAlgorithmics (2014) software 'AlgoMesh', which provides significant control over the mesh generation process.
- Model grid resolution in key areas of interest is as follows:
  - 70 m in most WCM open cut pit areas;
  - 80 and 100 m in Moolarben longwalls and 100 m in Moolarben open cut areas;
  - 20 m in the area between Pit 4 and Pit 3, which is the area of the mine lease through which Cumbo Creek flows;
  - 30 m regular hexagonal grid in alluvium near to WCM (Wilpinjong Creek, Wollar Creek and Cumbo Creek); and
  - 100 m regular hexagonal grid in alluvium in areas away from the WCM.
- Maximum cell dimension of about 1 km in areas away from the WCM.
- Spatially and temporally variable groundwater recharge rates based upon outcropping geology.
- Temporal variation in rainfall recharge based on a daily timestep water balance that accounts for runoff, soil moisture deficit and recharge from inputs of rainfall and potential evaporation.

6.1.2 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.
- 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.
- 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.
- Incorporation of pumping from water supply bores using pumping rates based on site data.
- Update of the observation target file with new monitoring bores and new observed groundwater level data.

6.2 Model Verification

Hydrographs of observed and modelled groundwater levels are presented in **Appendix D**. The following section contains an assessment of the modelled vs observed groundwater levels where potential mining impacts are observed. It is noted that the above average rainfall experienced in 2020/21 is not captured in the model used for this verification exercise. The model updates were completed in early 2020, prior to this period.

6.2.1 Model Performance at Alluvium Monitoring Bores

The SLR (2020a) modelling predictions are consistent with HydroSimulations (2015) 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 alluvial bores examined in this section have been identified from the cause-and-effect analysis (**Section 3.1**) or the trigger level analysis (**Section 4**) as likely to show a WCM mining effect. The performance of the model at these sites can be seen in **Appendix D**.

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. The performance of the SLR (2020a) model has improved at GWa3 (Wilpinjong Creek) and GWa6 (Cumbo Creek) where modelled groundwater levels better capture the observed groundwater responses to rainfall recharge after 2015.

Amplitudes following rain and flow events are generally well represented for the alluvium monitoring bores along Wilpinjong Creek, for example GWa1, GWa2 (in the west) through GWa12, GW14 and GWa15.

Groundwater levels along Cumbo Creek are generally well represented in the alluvium (GWa5 and GWa6), although the recent observations at GWa5 are not well replicated by the groundwater model due to an underestimation of Pit 3 and 7 impacts, or unreliable data being collected from GWa5.

The observed desaturation of the alluvium (GWa4, GWa5, GWa6, GWa12, GWa14) occurs earlier than was predicted by the model. Differences between observations and the model simulation at GWa6, GWa12, and GWa14 (**Figure 38, Figure 39, Figure 40**) 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. However, groundwater level response in most alluvial bores following rainfall events in 2017 and 2020-21 is well matched by model predictions.

This may be attributed to transferring the hydraulic, storage and climatic parameters from the (HydroSimulations, 2015b) model into the (SLR, 2020a) model. Some improvements to model performance may be made by making minor revisions to the aquifer properties of the alluvium. A calibration exercise could be undertaken in the future.

6.2.1.1 Comments on possible discrepancies

Large discrepancies that were thought to exist between observed and modelled groundwater levels for GWa1(**Figure 33**), for the period from 2015 to 2017 (HydroSimulations, 2018, 2019 and SLR, 2020b) now require review and reconsideration. A downhole camera investigation in 2020 identified roots within the screens of GWa1, which may have resulted in the collection of non-representative data for some time. GWa1 has been replaced in June 2021. Observations at the new bore will hopefully provide the more reliable data to verify model predictions in that area of the Wilpinjong Creek alluvium.

Observed drawdown at GWa5 (**Figure 36**) 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 to determine whether it is still connected to the Cumbo Creek alluvial aquifer and returning representative data. The installation of a supplementary bore should be considered in this area to better help understand potential impacts to the Cumbo Creek alluvium.

While the model captures alluvial groundwater response to periods of above average rainfall, low/ 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), should be considered in future revisions of the groundwater model.

6.2.2 Model Performance at Coal Monitoring Bores

Figure 41 to **Figure 50** compare modelled and observed groundwater levels at coal monitoring bores identified as being affected by mining. The largest drawdowns predicted by the model were during the excavation of Pit 3 and Pit 4, with continued drawdown predicted at several bores following mining at Pit 5. Noting the uncertainty in distinguishing between climate and mining-related drawdown in the observed data, modelled groundwater levels at the coal monitoring bores generally show a good correlation with the timing and magnitude of observed drawdown.

It is noted that many bores within the coal measures have significantly recovered in response to above average rainfall in 2020 and 2021. As this has not been captured within the SLR (2020a) updated model, similar responses are not expected within the modelled groundwater levels.

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

Revised model predictions (SLR, 2020a) improved the timing of drawdown after mining Pit 4 and following below average rainfall conditions at GWc1 and GWc2. The maximum predicted drawdown better aligns with the observed depressurisation at GWc3 (Cumbo Creek) and matches the drawdown gradient at GWc15 following the mining of Pits 4, 3 and 7.

The observed data at Slate Gully 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 between 2013 and 2019 is generally lower than the observed data in the revised model (SLR, 2020a) at GWc12, GWc15, GWc14, GWc28 and higher at GWc1, GWc2 and GWc3. Predicted recovery in 2020-21 is generally lower than that observed at all coal monitoring bores, as discussed above, this will be a function of the rainfall recharge series in the model only updated to the end of 2019. As such, the model used long term quarterly averages throughout 2020-21.

A comparison of maximum predicted and observed drawdowns at coal bores following mining at Pits 1 to 5 (Jan 2006 to Dec 2011) and Pits 3 to 7 (from Jan 2012 to Dec 2021) is presented in **Table 7** and **Table 8** respectively.

Table 7 Maximum Predicted and Observed Drawdown (m) at Coal Monitoring Bores due to mining at Pits 1-5 (Jan 2006 to Dec 2011).

	GWc1	GWc2	GWc3	GWc11	GWc12	GWc14	GWc15
Predicted	14	7	6	11	8	6.5	5
Observed	12	4	-	9^	-^	-^	-^

*No drawdown observed at this bore. ^Monitoring began after mining had commenced

Table 8 Maximum Predicted and Observed Drawdown (m) at Coal Monitoring Bores due to mining at Pits 3-7 (Jan 2012 to Dec 2021).

	GWc1	GWc2	GWc3	GWc11	GWc12	GWc14	GWc15	GWc28[1]	GWc29[1]
Predicted	12	25	29	11	22	26	25	17	13
Observed	7.5	12.5	5	10	15	12.5	22.5	22.5	18

Note: Wet climatic conditions experienced in 2020/21 are not captured in the model. Future model updates including these events will improve the understanding of how the model is capturing observed impacts.

*No drawdown observed at this bore. ^Monitoring began after mining had commenced. [1] GWc28 and GWc29 have been decommissioned.

7 Review of Water Balance and Groundwater 'Take'

The following section describes a review of historical dewatering/pumping records and water balance model outputs at WCM, and the method used to estimate 'groundwater take' from those records and water balance model outputs.

7.1 Trends in Inflow

Figure 11 presents the 'inferred groundwater inflow' at WCM, with the most recent values for the 2019-2021 water year provided by SLR (2022), which estimated the gross inflow at 2.3 ML/day. The 'Rainfall Residual Mass' (or cumulative rainfall departure), shows rainfall trends over time relative to long term average rainfall. A positive slope indicates a period of above average rainfall and a negative slope lower than average rainfall.

Figure 11 also includes the historical data used in previous groundwater licensing audits for 2013-2014 and 2014-2015 water years (SLR, 2014; SLR 2015a). Moving average trends of 6-months and 12-months have also been plotted for these years.

It should be noted that the 2006-2011 data is not corrected for runoff or other processes, and so represents all water extracted from open cut areas and is inferred as 'maximum groundwater inflow'. The monthly data for 2006-2011 is distinguishable from both:

- the daily data in the period late-2012 to 2014; and
- the 2014-2015 data, that is presented as a daily average based on the WRM (2015) estimated upper limit of total annual inflow.

Figure 11 suggests that there was some correlation between the mine inflow trend (12-monthly dotted trend line) and the rainfall trend, although the commencement of mining additional Pits at WCM will significantly increase total groundwater inflow. Recent water balance modelling completed in March 2022 (SLR 2022) indicates that inflow estimates of 2.3 ML/day for the 2020-21 water year are influenced by long-term average rainfall conditions. Future predictions, incorporating above the average rainfall from mid-2020 through 2021 may result in higher inflow estimates for the 2020-21 water year.

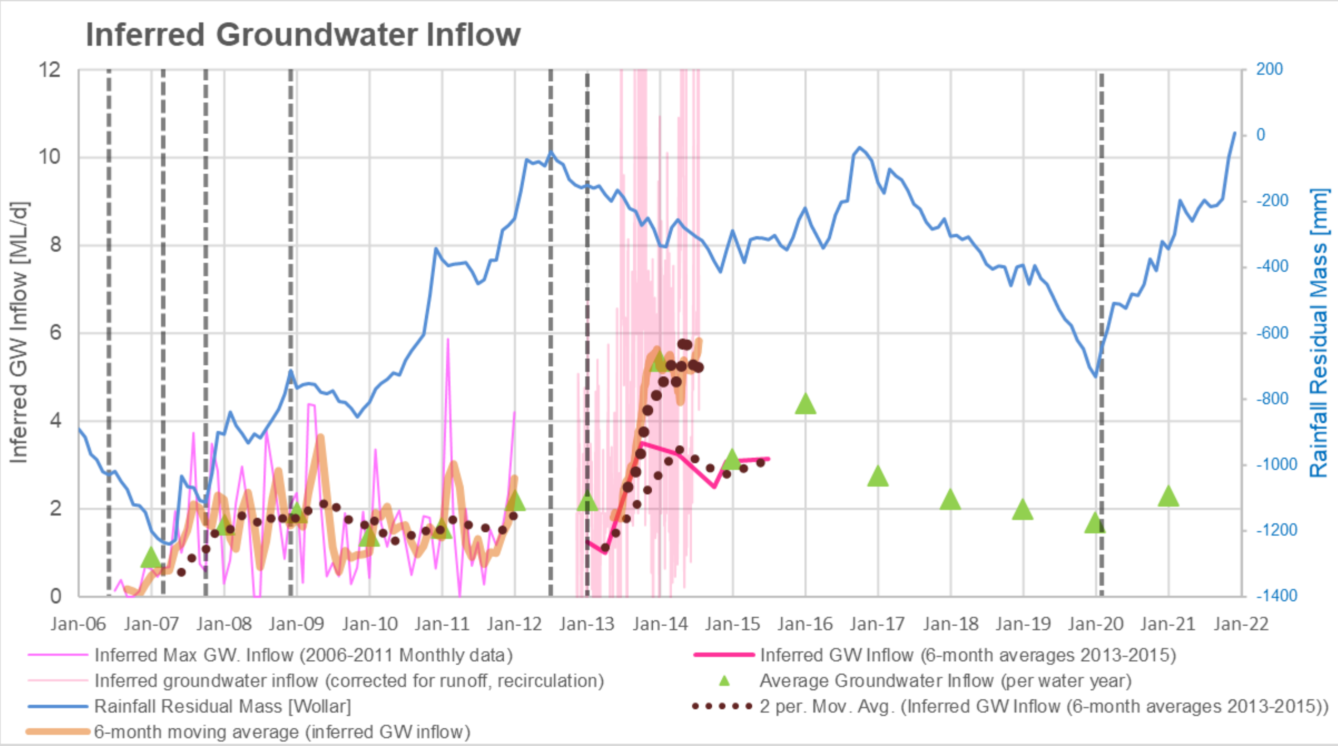


Figure 11 Historical Trends in Inferred Groundwater Inflow

7.2 Assessment of Annualised Groundwater Inflow against License

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[2] which is the combined total of the individual Pit entitlements for the 2019-21 water year (authorised by licences 20BL173513, 20BL173514, 20BL173515, 20BL173516, and 20BL173517).

Previously:

- WCM held two licences from 2006 until 2008 that entitled a combined groundwater take of 697 ML in any 12-month period.
- A third licence was added in 2008 that covered another mine pit, but without additional volume attached (i.e. still a combined 697 ML).
- In 2013 WCPL sought additional licensed volume, to a total of 1,730 ML/a. Licences were granted to cover each of the five active or soon-to-be-active pits (Pits 1-5). The total entitlement held by WCPL at that time was 2,021 ML/a.
- In 2018 WCM sought additional licensed volume, to a total of 1,100 ML/a. Licenses were granted to cover each of the six active pits (i.e. Pits 1-6). The total entitlement held by WCPL from 2018-19 onwards is 3,121 ML/a.

[2] One unit is currently equivalent to 1.0 ML as per the *Available Water Determination Order for Various NSW Unregulated and Alluvial Water Sources (No. 1) 2013*

When annualised from a daily inflow value of 2.3 ML/day, the SLR (2021) March estimate for the 2019-2020 water year is about 840 ML/a. **Table 9** presents the relevant entitlement volume for the consolidated licence, the estimated inflow or 'take' for 2020-21, 2019-20 and 2018-19 Water Years.

The SLR (2022) annualised inflow estimate is within the allocated licence volume for the 2020-21 water year.

The modelled estimate for groundwater take (SLR, 2020a) also indicates the predicted inflow falls beneath the licensed volume for the 2020-21 water year. The groundwater volume extracted by the dewatering bores during the water year 2020-21 are also presented in **Table 9.**

Given the significantly higher than average rainfall though 2020-21 and groundwater level recovery in a number of coal measures monitoring bores (see **Section 3.1.2.2**) future model updates incorporating this climatic data will improve confidence in model predictions.

Table 9 Summary of Annual Volume of Inferred Maximum Groundwater Take (water years: 2018-2021)

Water Access License	Limit [ML/a]	2018-2019		2019-2020		2020-2021	
		WRM Inflow (2020)	Modelled inflow (SLR, 2020)	SLR Water Balance Inflow (SLR, 2021)	Modelled inflow (SLR, 2020)	SLR Water Balance Inflow (SLR, 2022)	Modelled inflow (SLR, 2020)
Pits	3,121 ML/a (WAL 41862)	730	797	621	740	840	910
Dewatering Bores		56.1		275.6*		0	
TOTAL		786	848	897	1,016	840	910

*Volume of water pumped from dewatering bores [ML] for the water year 2019-20, refer to Section **8**.

7.3 Assessment of Annualised Groundwater Take

Comparisons of the annualised total inferred groundwater inflow to the mine (based on pumping records) and WCPL's groundwater extraction licence are made in **Figure 12** using predicted total annual inflows from the updated groundwater model for WCM (SLR, 2020a).

Figure 12 shows the inflow estimates from the SLR (2020a) groundwater model. Inflow in 2020 and 2021 is predicted to be sourced from Pit 6 and Pit 8, this is consistent with conceptual understanding as most new mining during this period occurred in those locations.

Figure 12 displays the total entitlement volumes as a red dashed line and the bar charts show the annualised groundwater inflow estimates from modelling (predicted inflows for Pits 1 to 7). The groundwater inflow estimates from water balance modelling (WRM, 2019 and SLR, 2020c) are shown as a continuous brown line (the "Annualised Inferred GW inflow").

For the 2020-2021 water year the groundwater model predicts an inflow of 910 ML/a. These estimates are marginally greater than the 840 ML/a estimated by SLR for the 2020-2021 water year (SLR, 2022).

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

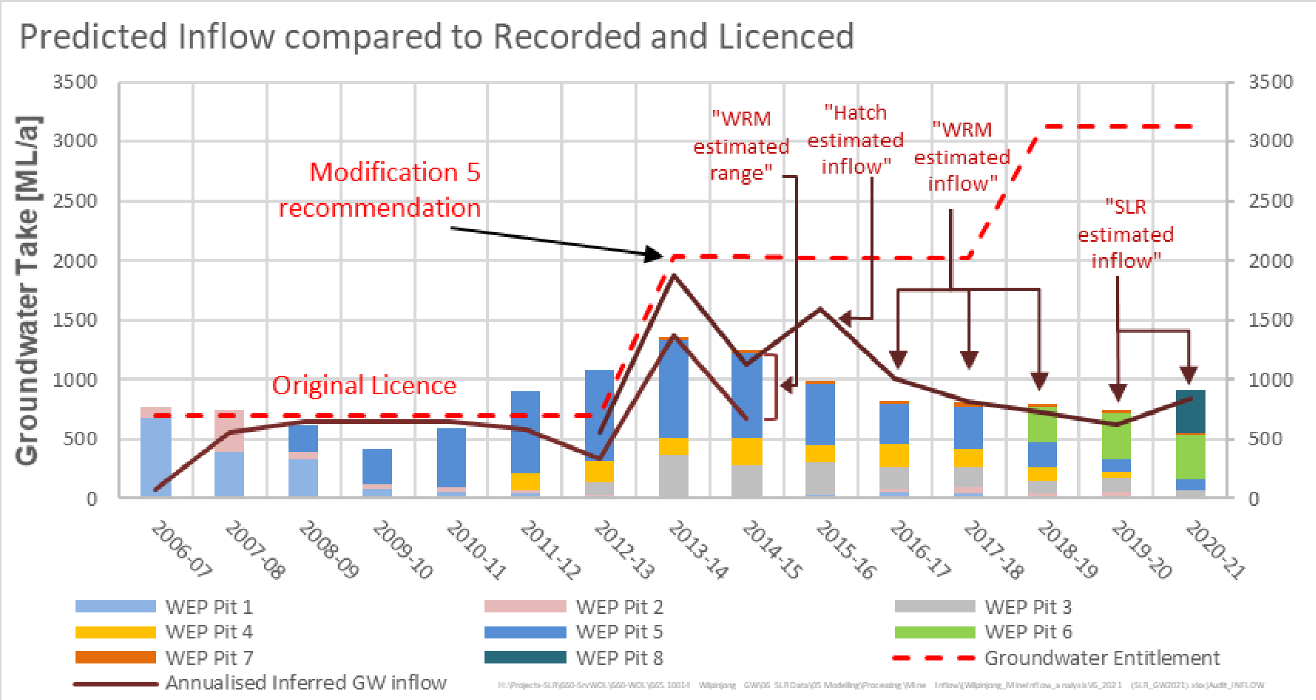


Figure 12 Comparison of Predicted and Pumped Volumes against Groundwater Entitlement for the SLR (2020a) Groundwater Model

7.4 Alluvial Groundwater Inflow

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

The SLR model (2020b) has predicted the likely alluvial take during the 2020-2021 water year, as shown in **Figure 13** for both Wilpinjong Creek alluvium and Cumbo Creek alluvium. The predicted loss from Wollar Creek is negligible.

For the 2020-2021 water year the additional alluvial water loss, over and above what occurs naturally, is estimated to be about 0.24 ML/day from Wilpinjong Creek alluvium and about 0.18 ML/day from Cumbo Creek alluvium. This gives a predicted alluvial groundwater take of about 155 ML/year. WCM holds an allocation of 474 ML for the Wollar Creek Water Source under the *Water Sharing Plan for the Hunter Unregulated and Alluvial Sources, 2009*. This estimated take is within and compliant with the licence volume held by WCM.

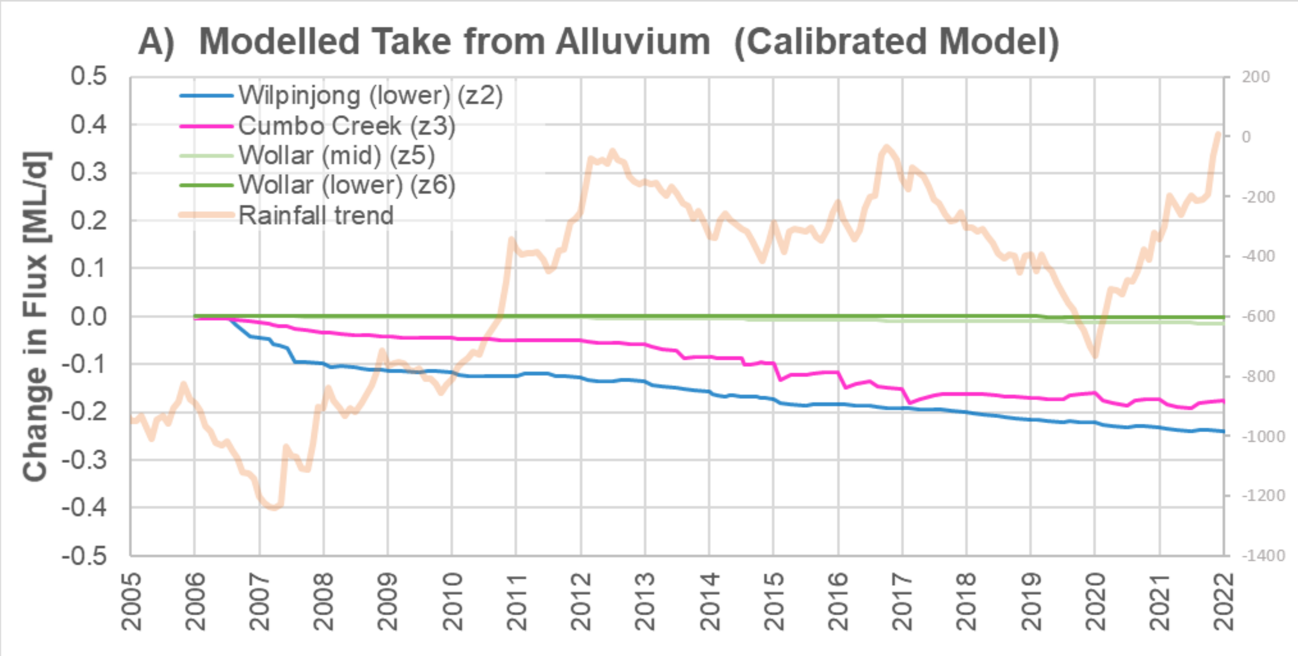


Figure 13 Modelled Take from Alluvium (SLR, 2020a)

8 Dewatering Bores

8.1 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. The bore is screened from a depth of 42 to 84 metres below ground level (mbgl) (**Figure 2**). Of these seven production bores, none were extracted from in the 2020-21 water year, or the 2021 calendar year.

Table 10 Pumping records for production bores for the 2020-21 water year

Production Bores	2020-21 Water Year
	Total Pumped (ML)
GWs10	0
GWs11 (deepened in 2019)	0
GWs12	0
GWs14	0
GWs15	0
PB1[1]	0
TOTAL	**0**

In early 2020, in response to ongoing dry conditions and diminishing operational water supply levels, several additional water supply bores were drilled. The location, screened interval, inferred target geology for these bores year is provided in **Table 11**. The intersected geology has been inferred from groundwater model layering (SLR, 2020a). It is understood that none of these bores were extracted from in the 2020-21 water year or the 2021 calendar year.

Table 11 Detail and pumping records for new production bores

Production Bore ID	Easting	Northing	Screened Interval (mbgl)	Inferred Target Geology	Pump on Bore	2020-21 Water Year Extraction Volume (ML)
WB2 (Turkey Nest)[1]	771906	6149869	42-84	Marrangaroo FM to Shoalhaven GP	Yes	0
WB3 (GWs11 deepened)[1]	771591	6420041	36-78	Ulan Seam to Shoalhaven GP	Yes	0
WB5 (Pit 6 W)	767356	6422058	60-90	Ulan Seam to Shoalhaven GP	Yes	0
WB11 (Robyn Cumbo)	771777	6416204	24-66	Shoalhaven GP	Yes	0
WB15 (Pit 5S)	767262	6415636	30-84	Marrangaroo FM to Shoalhaven GP	No	0
Pit 5N	768844	6421155			Yes	0
Pit 2	770922	6419174			Yes	0
Total						0
Total (including historically installed supply bores, Table 9 + Table 10)						**0**

The consolidated licence WAL 41862 now covers groundwater extraction for both water supply bores and WCM open cut pits. WAL 41862 has an entitlement of 3,121 ML/a.

The water supply production bores have recorded an extraction volume of 0 ML during the 2020-21 water year. Compliance of this extraction with the relevant licence conditions is addressed in **Section 7.2.**

8.2 Cease to Pump Trigger Levels

In 2005, WCPL commissioned AGE to investigate and determine reporting and cease-to-pump trigger levels for licensed production bores GWs10, GWs11, GWs12, GWs14, and GWs15. Trigger levels are designated to coal monitoring bores close to each of the production bores 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 2020-2021 water year are shown in **Table 12**.

Table 12 Water Supply Borefield - Cease to Pump Trigger Level Exceedances

Production Bore	Monitoring Bore	Cease-to-pump trigger level (mAHD)	Lowest observed water level 2020-2021 (mAHD)	Trigger Exceedance (Yes/No)
GWs10	GWc10	346	365.5	No
GWs11	GWc11	348.5	355.0	No
GWs12	GWc12	332.5	341.5	No
GWs14	GWc14	319.5	337.0	No
GWs15	GWc15	314.5	331.5	No

With the continued recovery of groundwater levels through 2021 there were no breaches of the cease-to-pump trigger levels during 2021.

8.2.1 Other Water Supply Bores

The additional water supply bores constructed from mid-2019 to early 2020 are generally screened at a greater depth than the existing groundwater monitoring network. This means there is a lack of observed data available to assess the extent and magnitude of any impacts associated with these new supply bores.

The previous annual review (SLR, 2021) inferred likely impacts due to extraction from these bores and arrived at the following conclusion:

- *While supply bore extraction from units underlying Ulan Seam has not been considered as part of previous assessments, it is unlikely that the short period of extraction, and subsequent above average rainfall conditions has impacted the groundwater level in the units underling the Ulan Seam by greater than predicted in the WEP EIS groundwater assessment (HydroSimulations, 2015).*

The following recommendations are were also provided in the previous annual review (SLR, 2021), to confirm the above inferred impacts, and to enable ongoing monitoring of the groundwater system adjacent to the newly installed supply bores:

- Groundwater level observations should be made at the newly installed supply bore locations where practical.

- The installation of monitoring bores within the units underlying the Ulan Seam should be undertaken prior to further extraction. Trigger levels could be developed at these sites based on approved impacts (HydroSimulations, 2015 and SLR, 2020).
- The representation of the Marangaroo Conglomerate, Nile Sub-Group and Shoalhaven Group within the groundwater model is recommended for review prior to the widespread use of the new supply bores. Revision of these units may provide greater confidence in model predictions and help quantify whether their use will increase impacts to other water sources, such as the Wollar Creek Water Source.

The recommendations should be implemented/ considered prior to ongoing extraction from these new locations.

9 Recommendations

9.1 Groundwater Level Measurements

After identifying the presence of a sump (blank PVC below the screened interval) in GWa4 as a result of downhole camera investigation, it is recommended that groundwater sampling methodology be reviewed. Purging of bores or conducting low-flow sampling, undertaken as per standard guidelines (Geoscience Australia, 2009) (AS/NZS 5667.11.1998) will increase the likelihood of groundwater collected samples being representative of the host aquifer. When a groundwater level in a monitoring bore is measured below the base of the well screen (i.e. just stagnant water sitting in the bore sump below the screen), the bore should be considered dry and not be sampled for water quality.

9.2 Supplementary/ Replacement Bores

Supplementary bores are recommended for installation near GWa4, GWa14 and GWa5. These sites appear to show impacts associated with WCM operations. However, as geology and construction details are unavailable at GWa4 and GWa5, there is reduced confidence in the data. Alluvial saturation and response to climatic or mining effects will be better understood near GWa14 if a replacement bore is drilled to the base of alluvium. There will be improved confidence in monitoring data collected at sites where bore construction and intersected geology is well understood.

9.3 Bore Investigations

- It is recommended that GWc1, GWc3, and GWc5 undergo further investigation, as outlined in **Section 2.1**, to evaluate the groundwater source and recharge mechanism at each site. It is intended for this investigation to also serve as review of EC trigger levels at each site, fulfilling the WCM action to do so in response to the IEA recommendations (**Section 2.4**).
- It is recommended that further investigation be undertaken to understand the hydrochemistry at key groundwater monitoring sites. Based on the outcome of the investigation, appropriate metal species concentration levels could be developed to help identify any WCM related effects on water quality.

9.4 IEA Actions

Section 2 provides an approach to addressing a series of actions WCM had developed in response to recommendations for the IEA in 2021. Progressing these recommendations should adequately address recommendations from the IEA.

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APPENDIX A

Groundwater Level Hydrographs

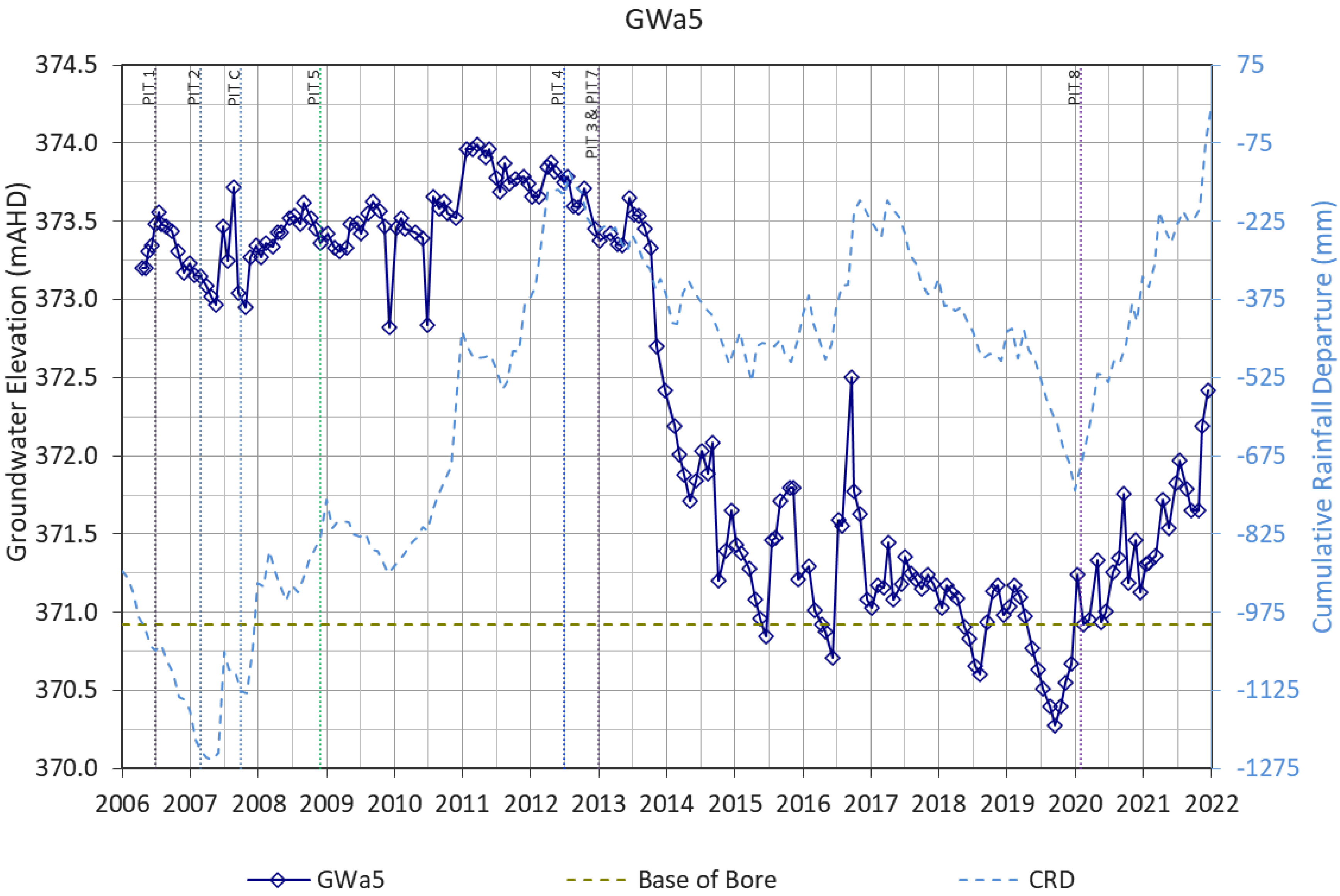


Figure 14 Alluvial Groundwater Hydrograph at GWa5 between Pit 2 and Pit 3, adjacent to Cumbo Creek

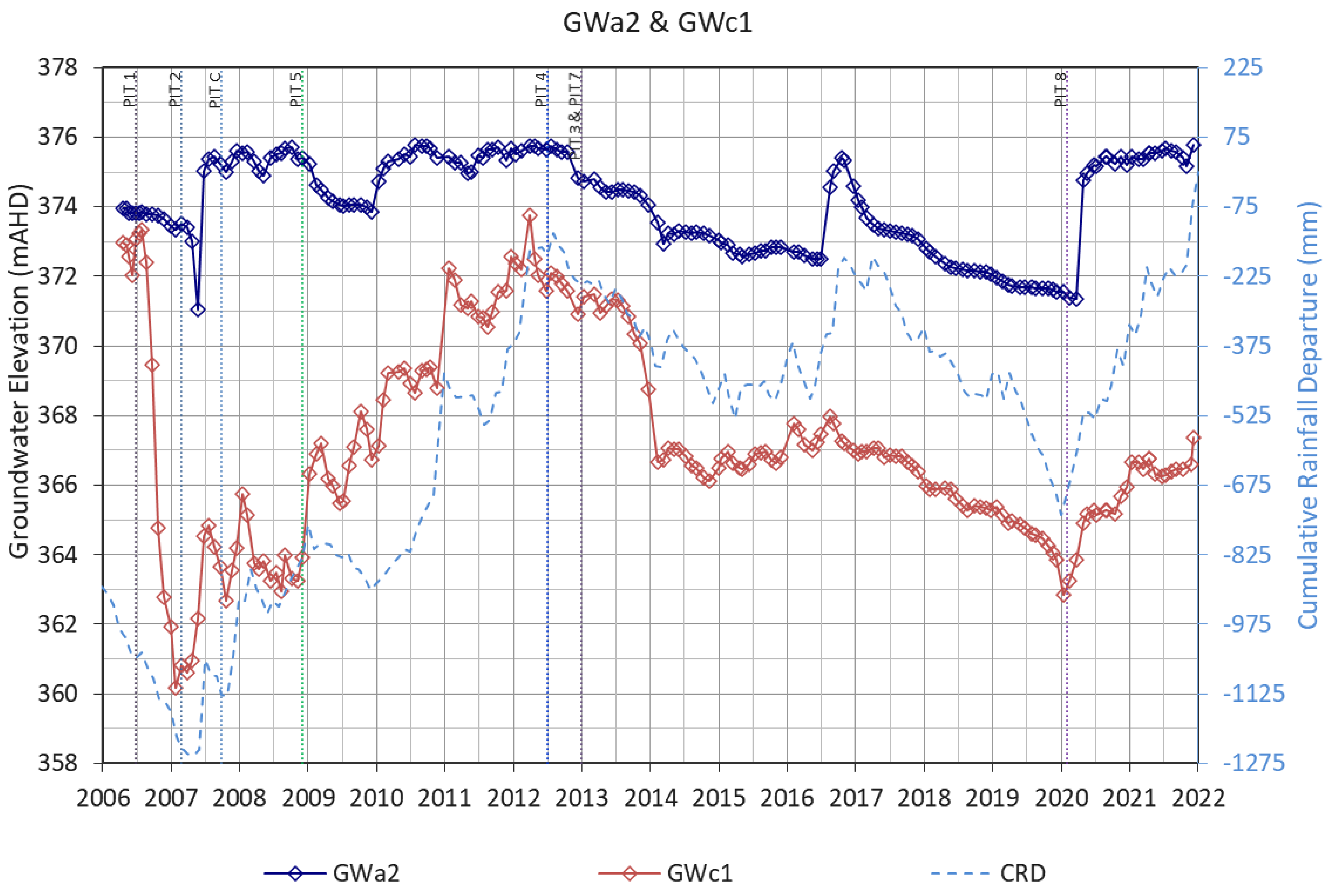


Figure 15 Groundwater Hydrographs at GWa2 and GWc1 at 0.3 km North-West of Pit 1

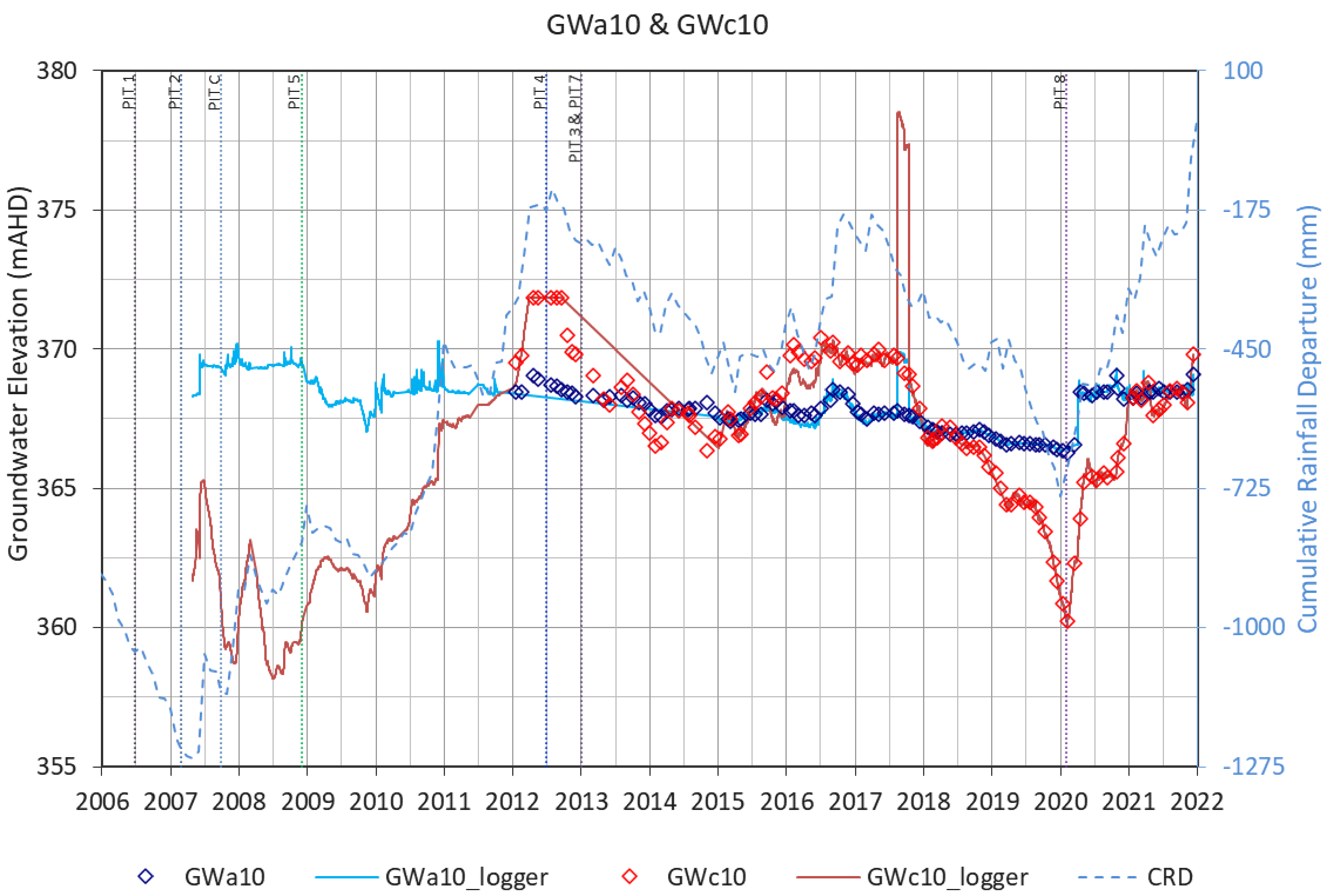


Figure 16 Groundwater Hydrographs at GWa10 and GWc10 at 0.3 km North-East of Pit 1

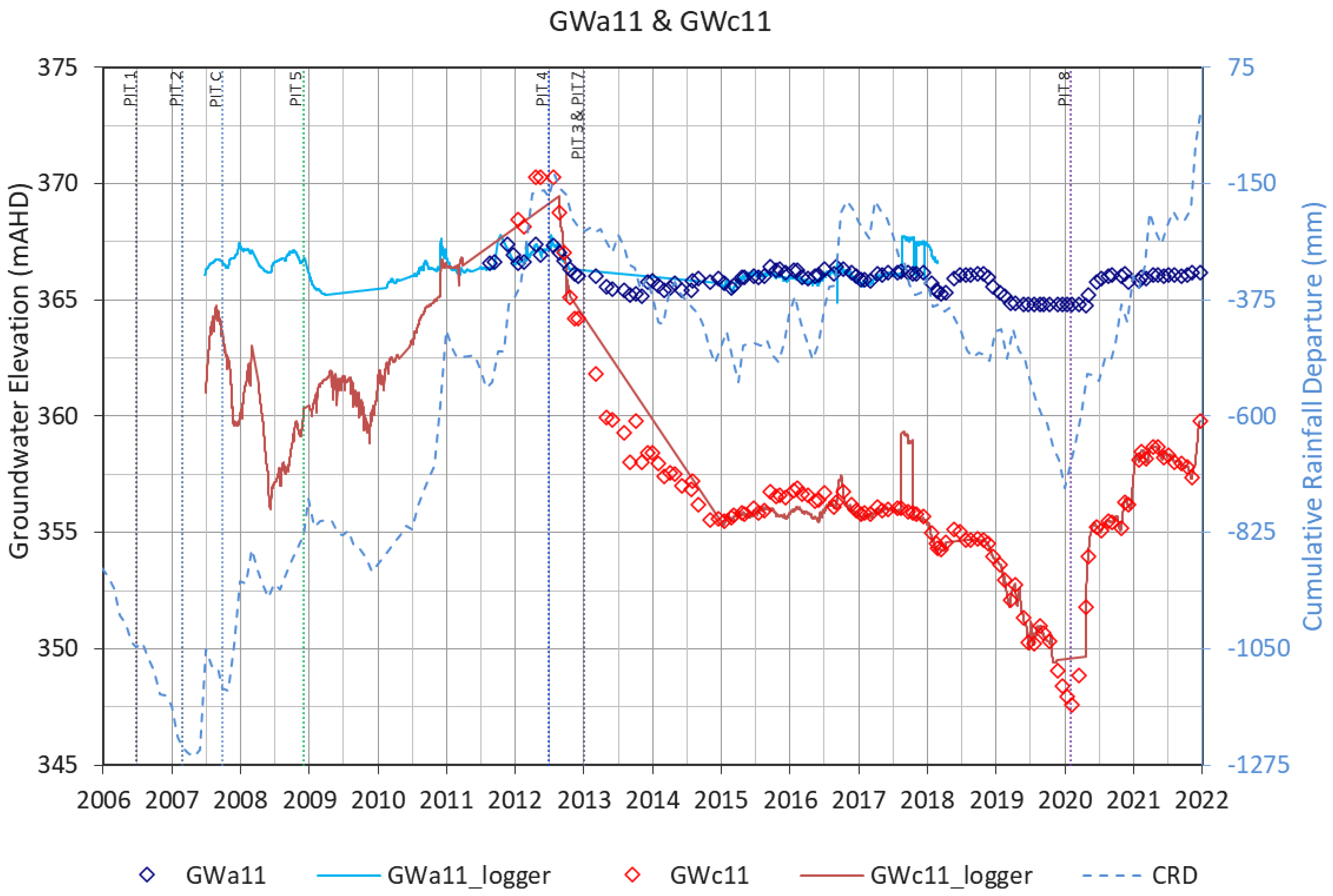


Figure 17 Groundwater Hydrographs at GWa11 and GWc11 at 0.3 km North of Pit 2

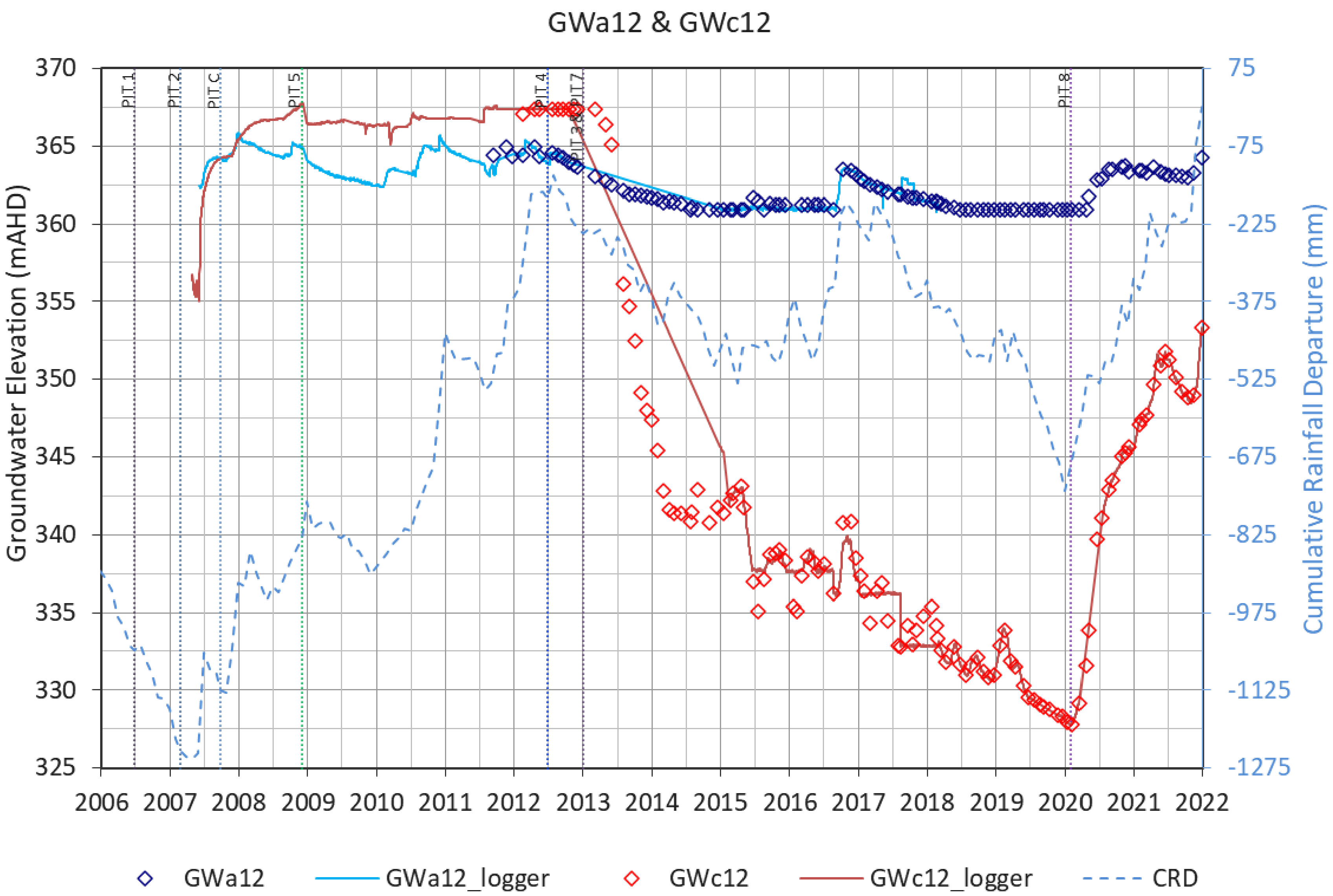


Figure 18 Groundwater Hydrographs at GWa12 and GWc12 at 0.5 km North of Pit 4

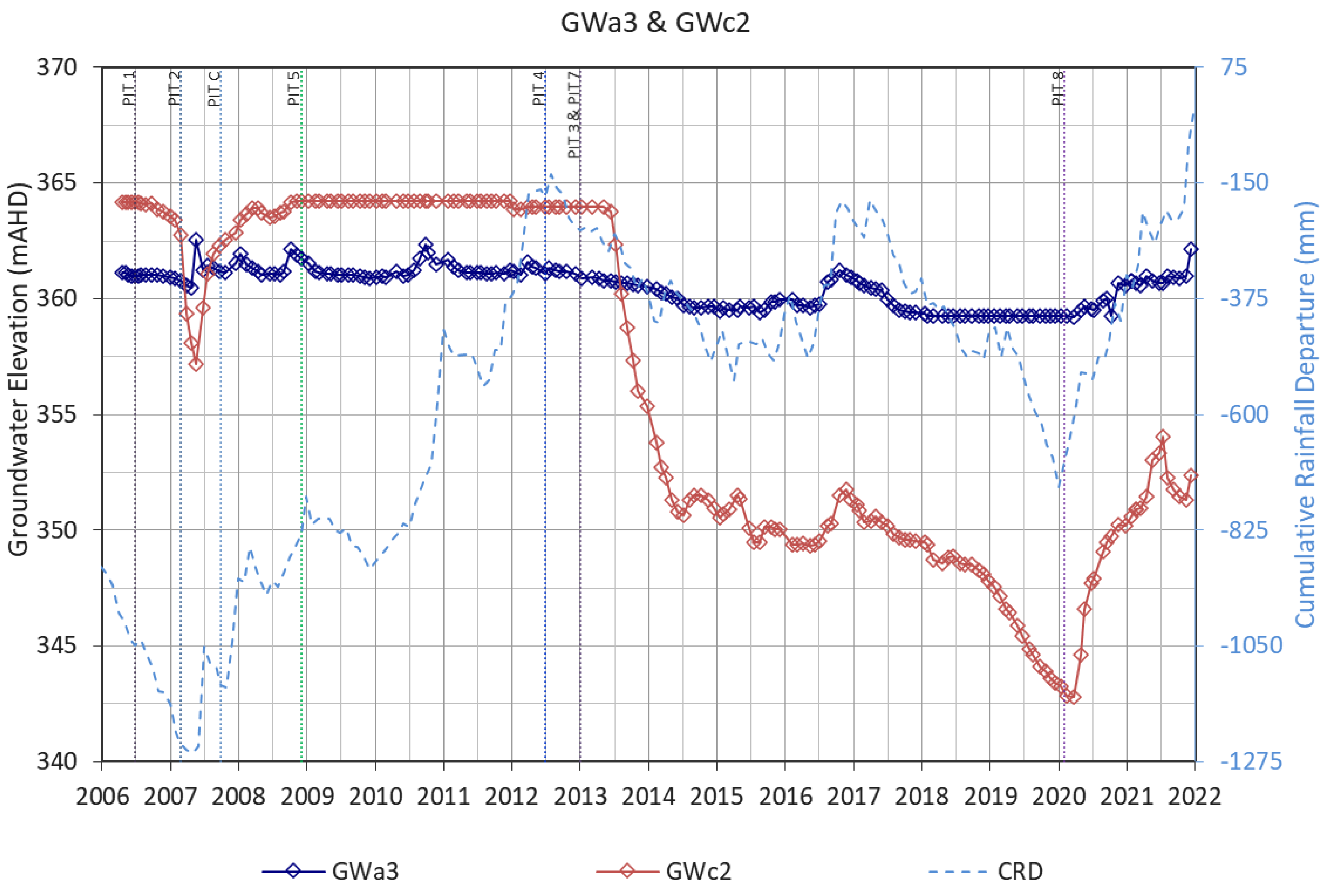


Figure 19 Groundwater Hydrographs at GWa3 and GWc2 at 0.45 km North of Pit 4

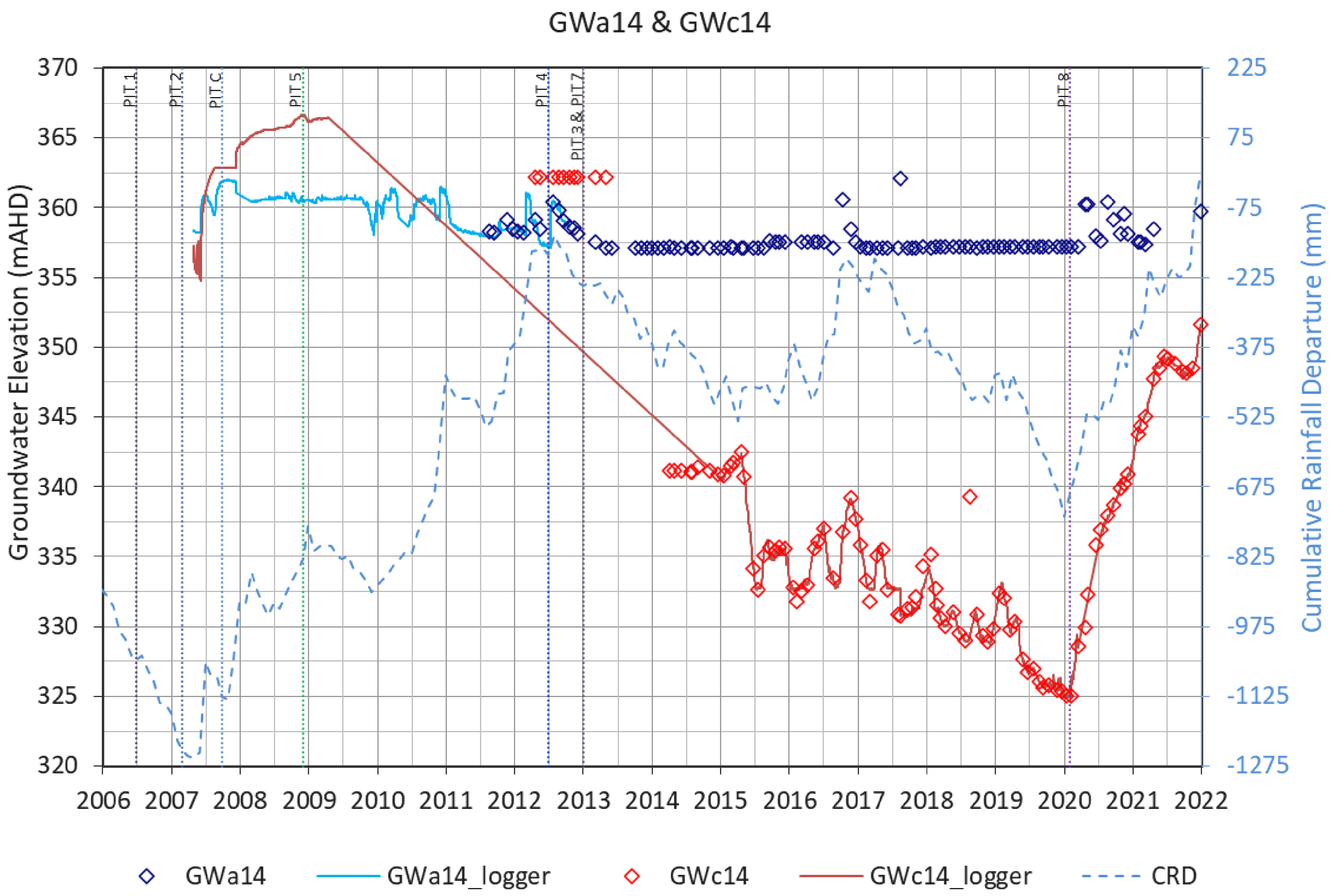


Figure 20 Groundwater Hydrographs at GWa14 and GWc14 at 0.3 km North of Pit 4

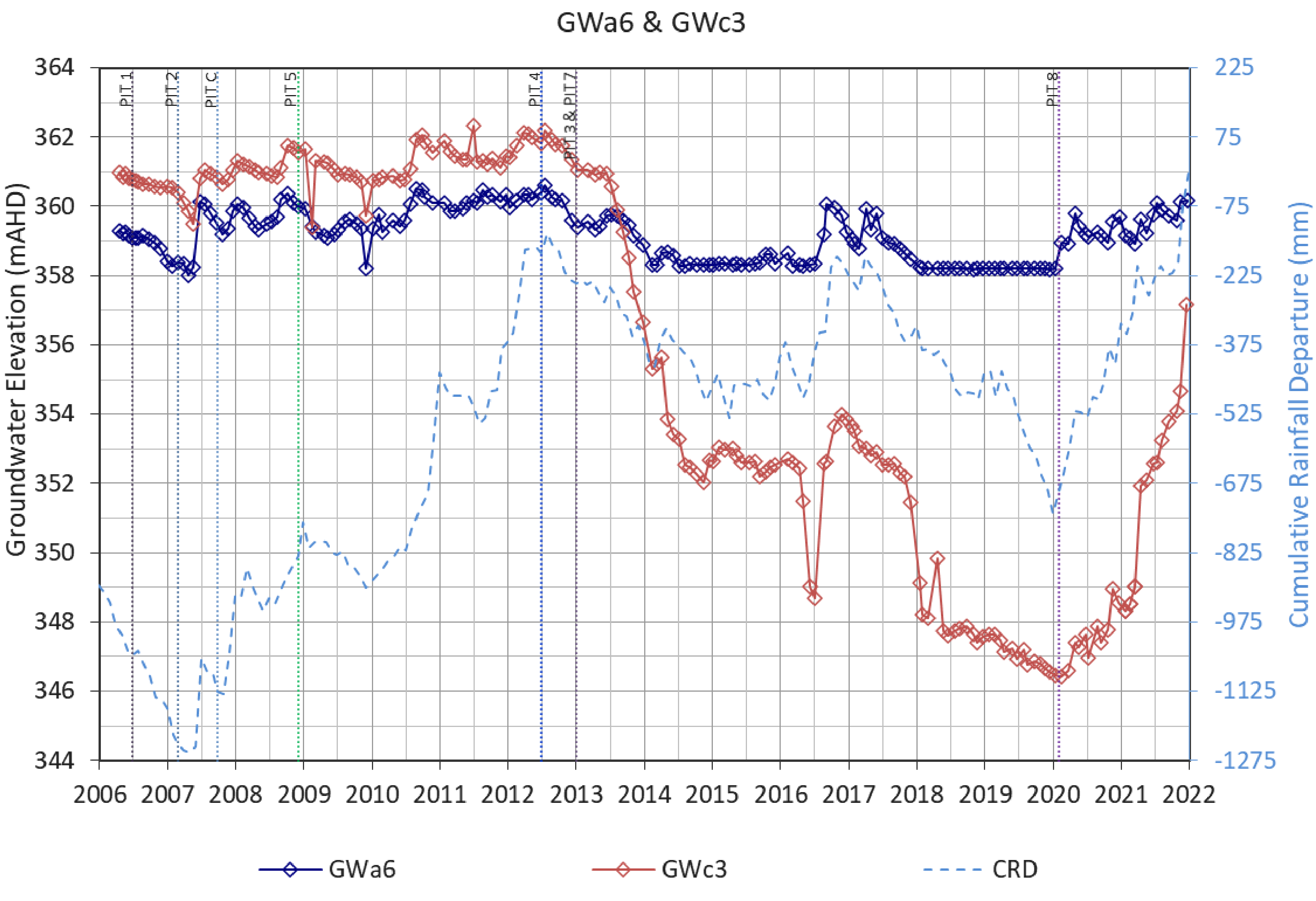


Figure 21 Groundwater Hydrographs at GWa6 and GWc3 at Northern Junction of Pits 3 and 4, adjacent to Cumbo Creek

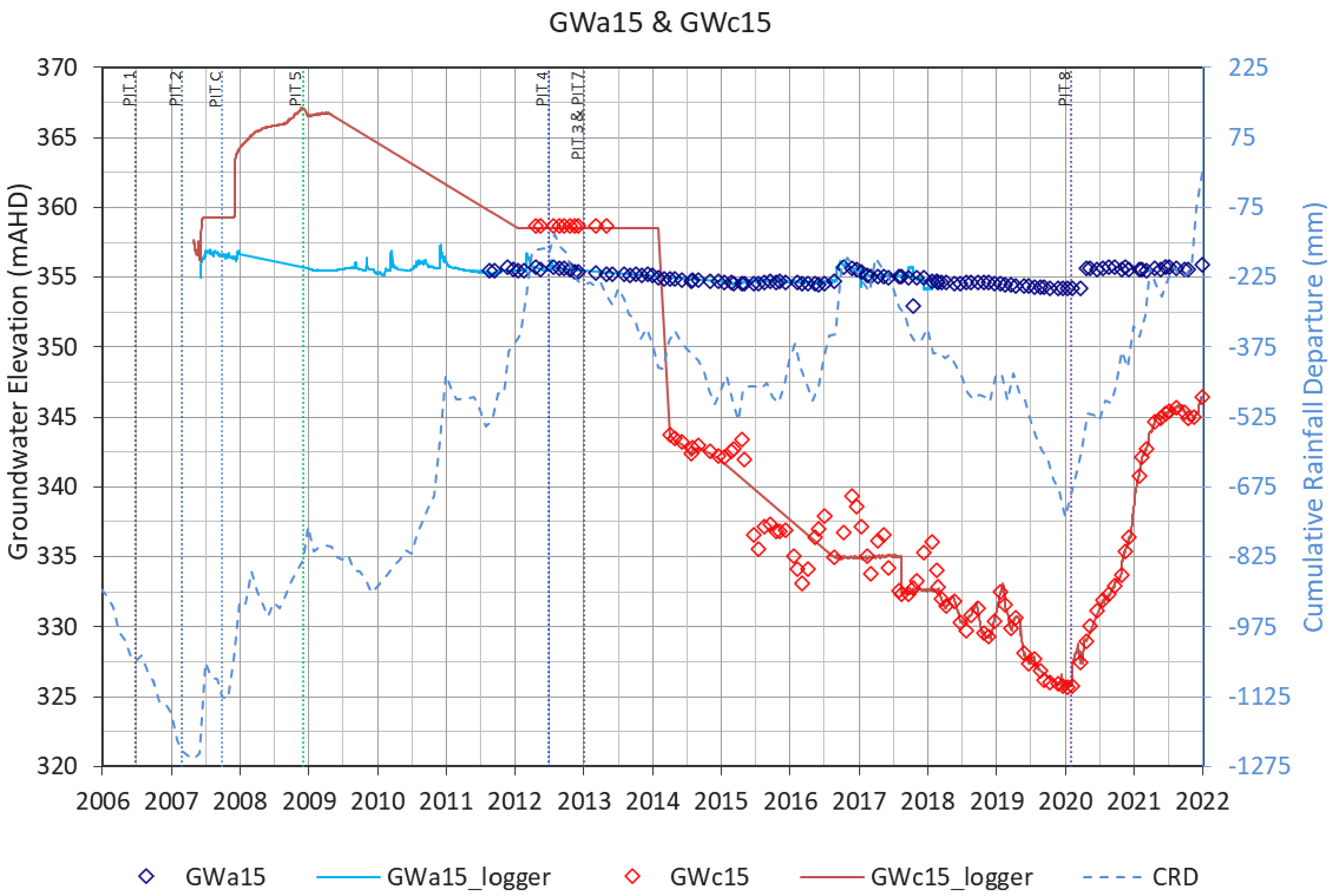


Figure 22 Groundwater Hydrographs at GWa15 and GWc15 at 0.2 km North of Pit 3

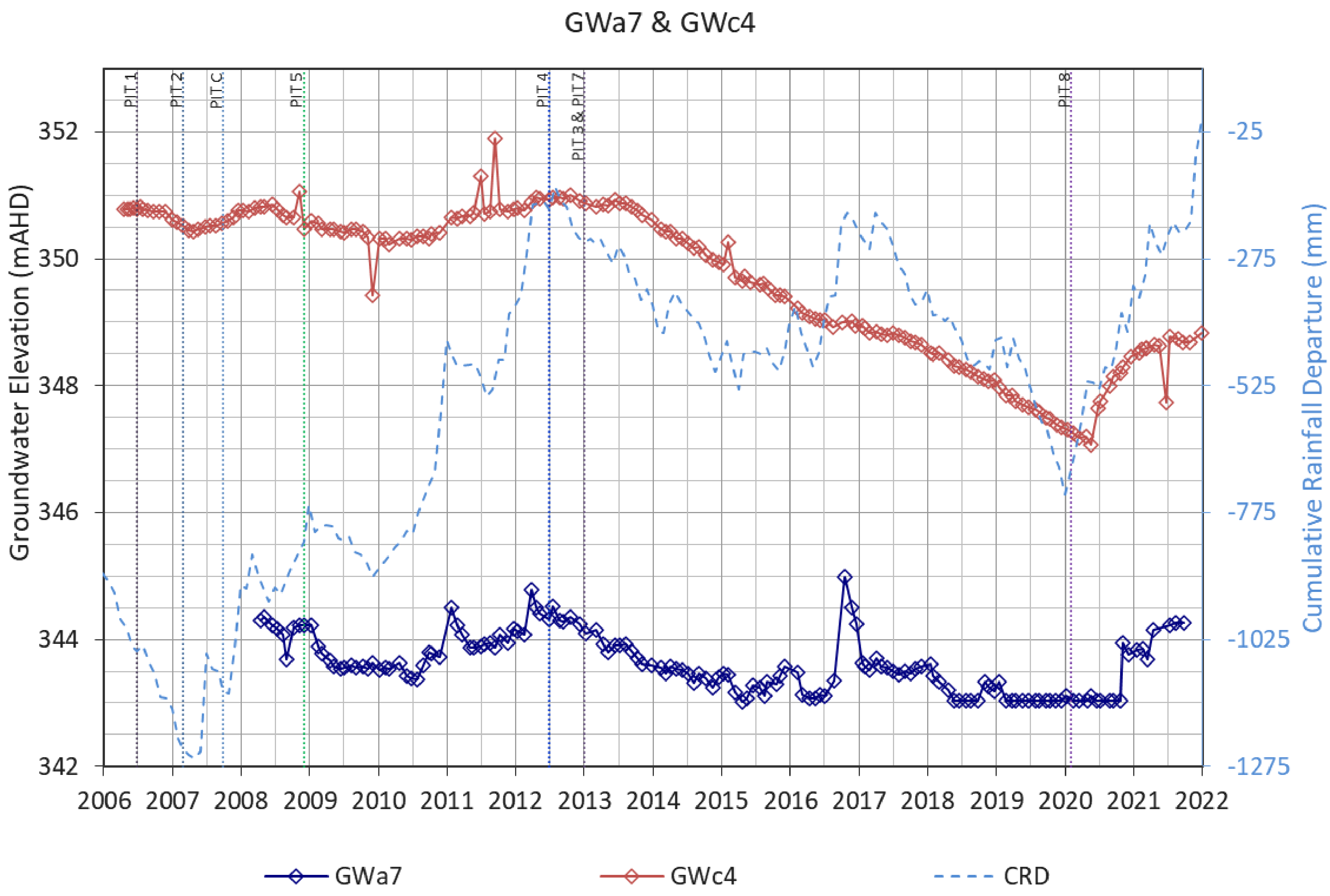


Figure 23 Groundwater Hydrographs at GWa7 and GWc4 near the Confluence of Wilpinjong Creek and Wollar Creek

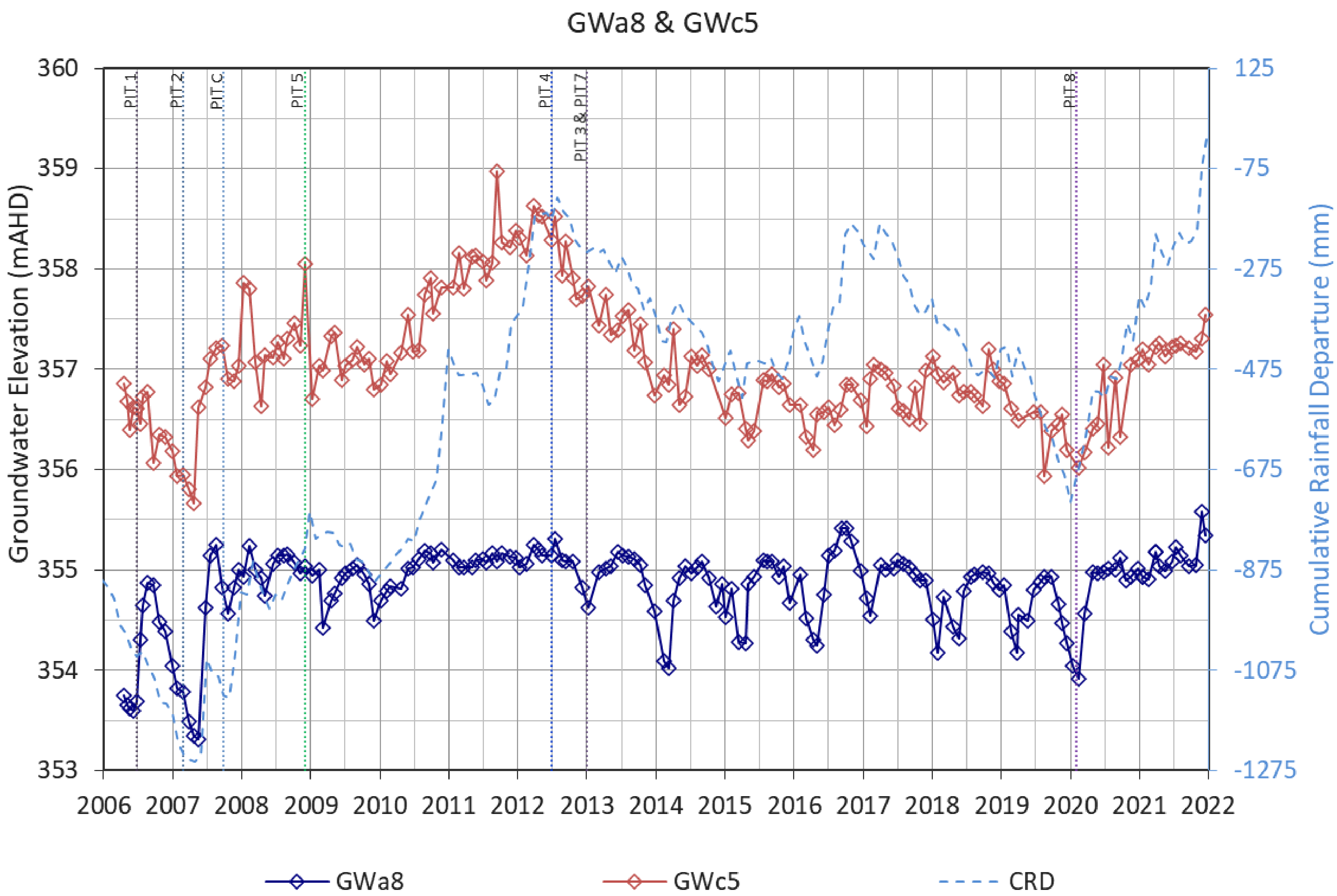


Figure 24 Groundwater Hydrographs at GWa8 and GWc5 near Wollar

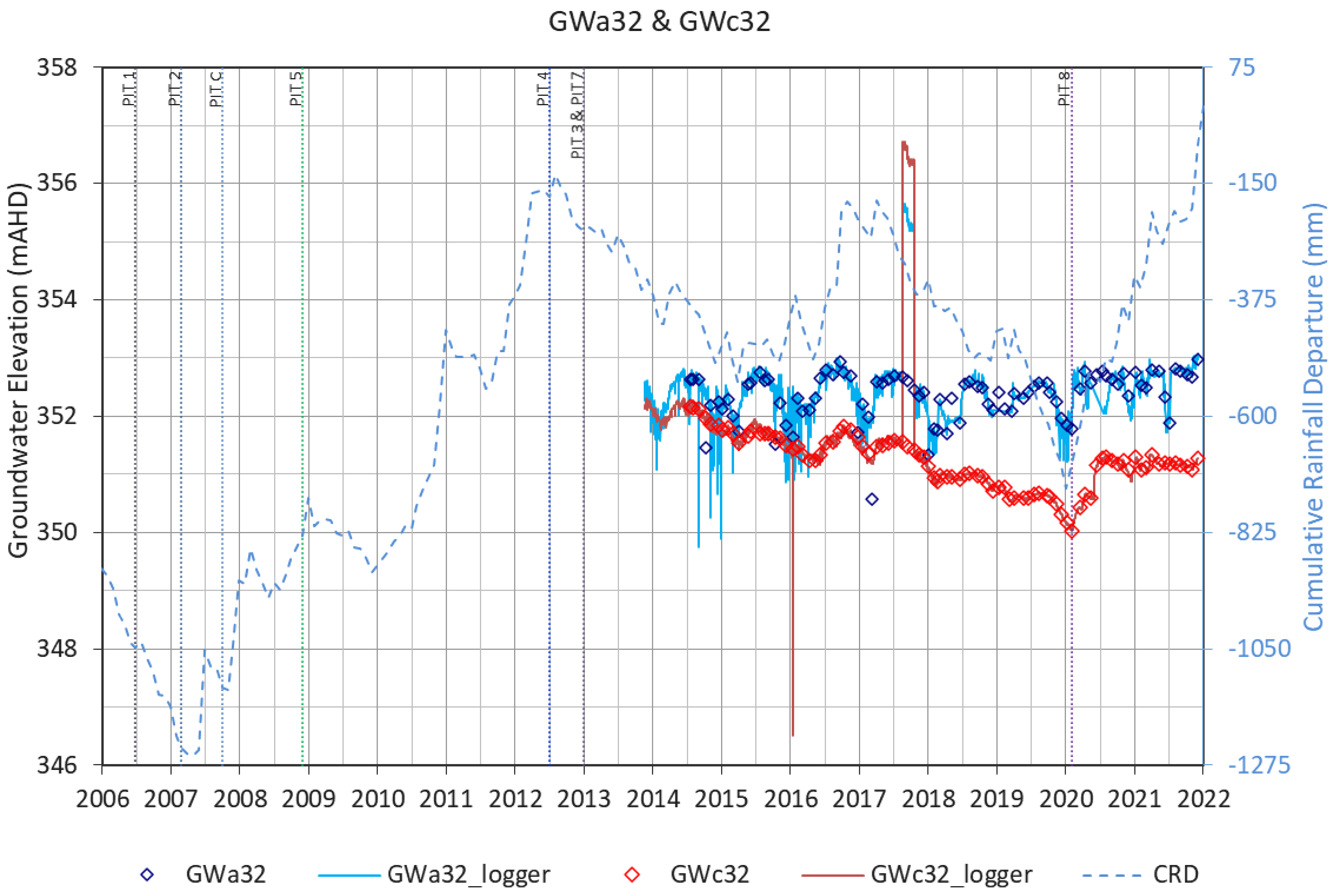


Figure 25 Groundwater Hydrographs at GWa32 and GWc32 adjacent to Wollar Creek

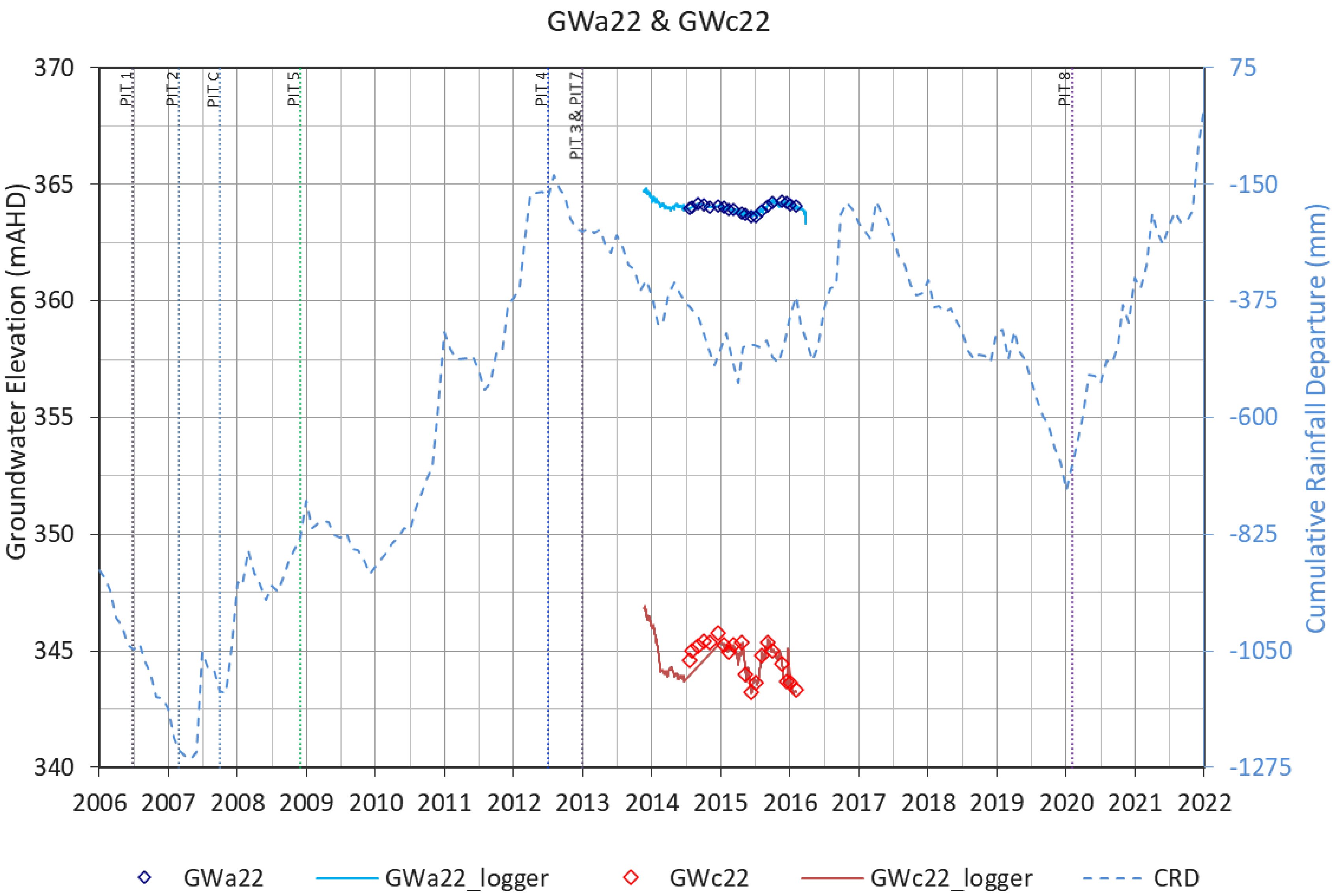


Figure 26 Groundwater Hydrographs at GWa22 and GWc22 adjacent to Cumbo Creek

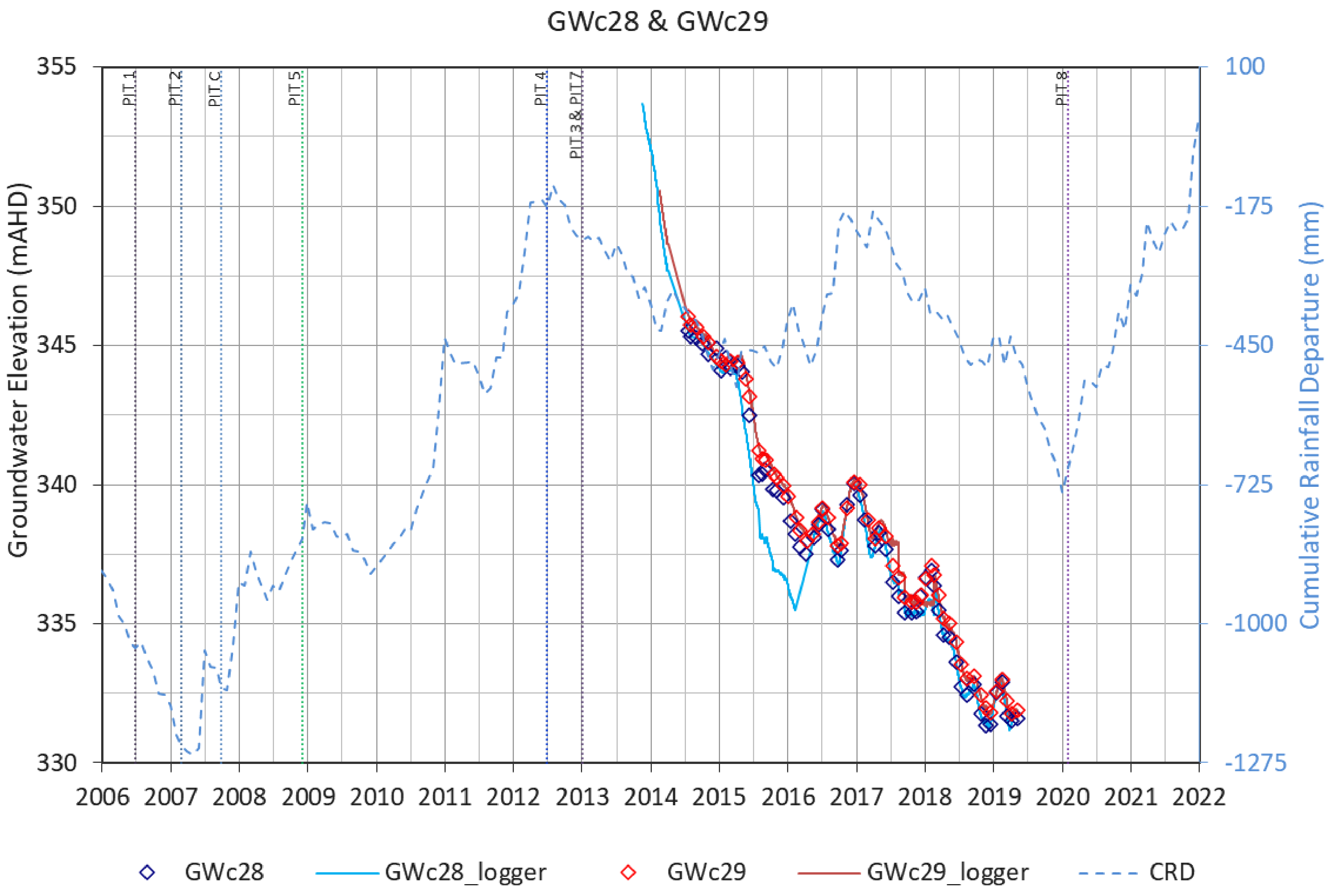


Figure 27 Groundwater Hydrographs at GWc28 and GWc29 in Slate Gully

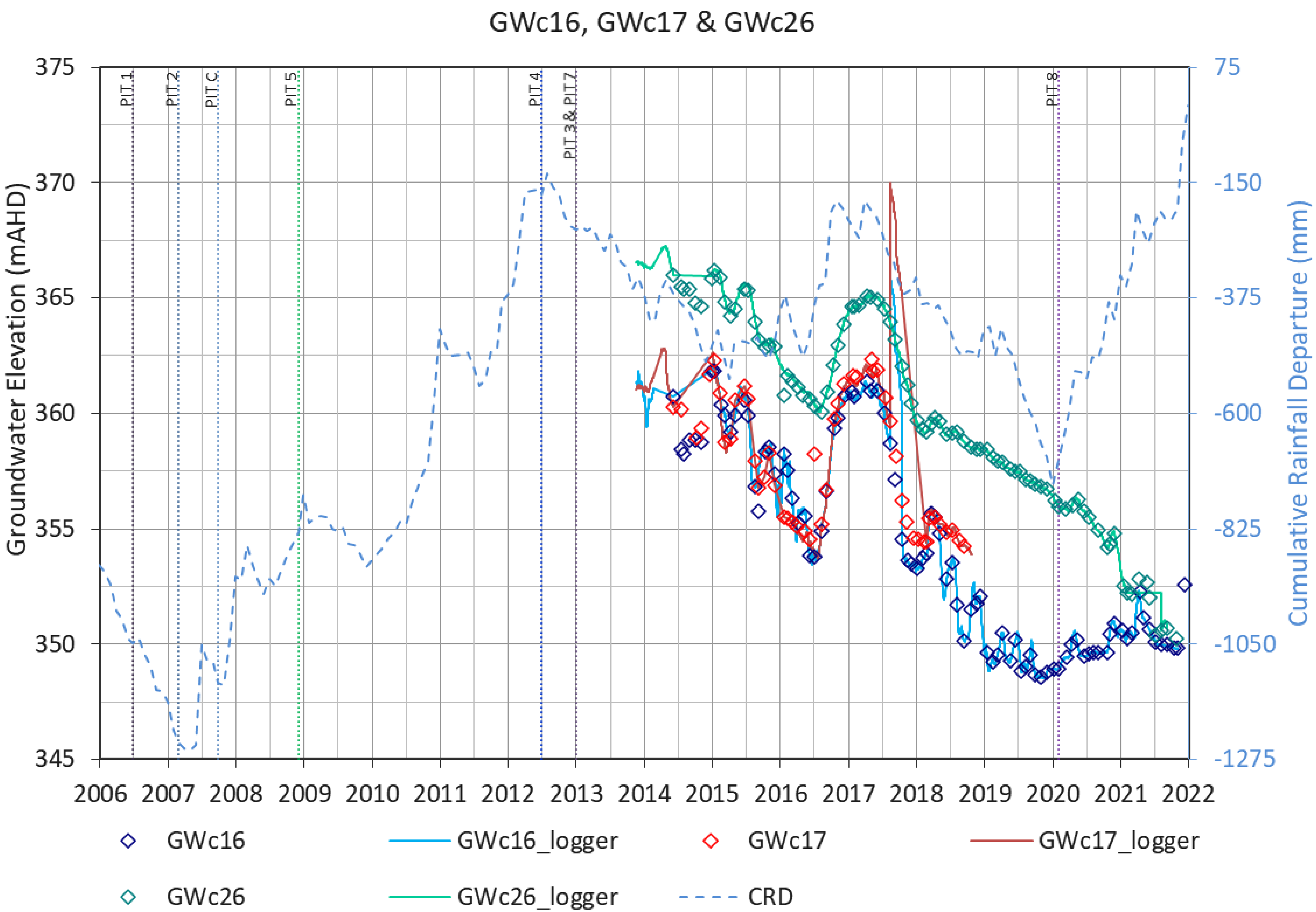


Figure 28 Groundwater Hydrographs at GWc16, GWc17 and GWc26 at Pit 6 and North of Pit 5

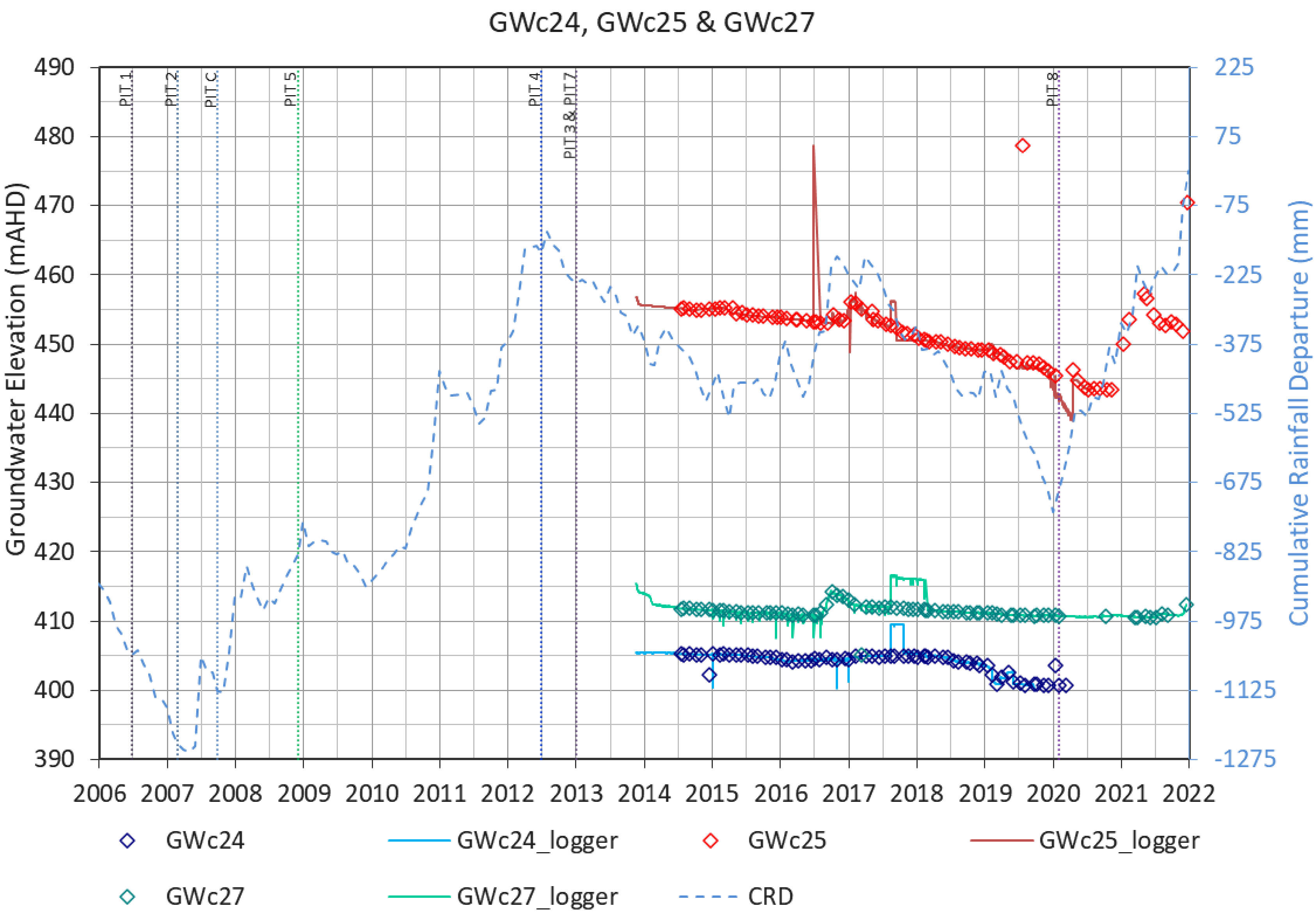


Figure 29 Groundwater Hydrographs at GWc24, GWc25 and GWc27 at the Southern Lease Boundary

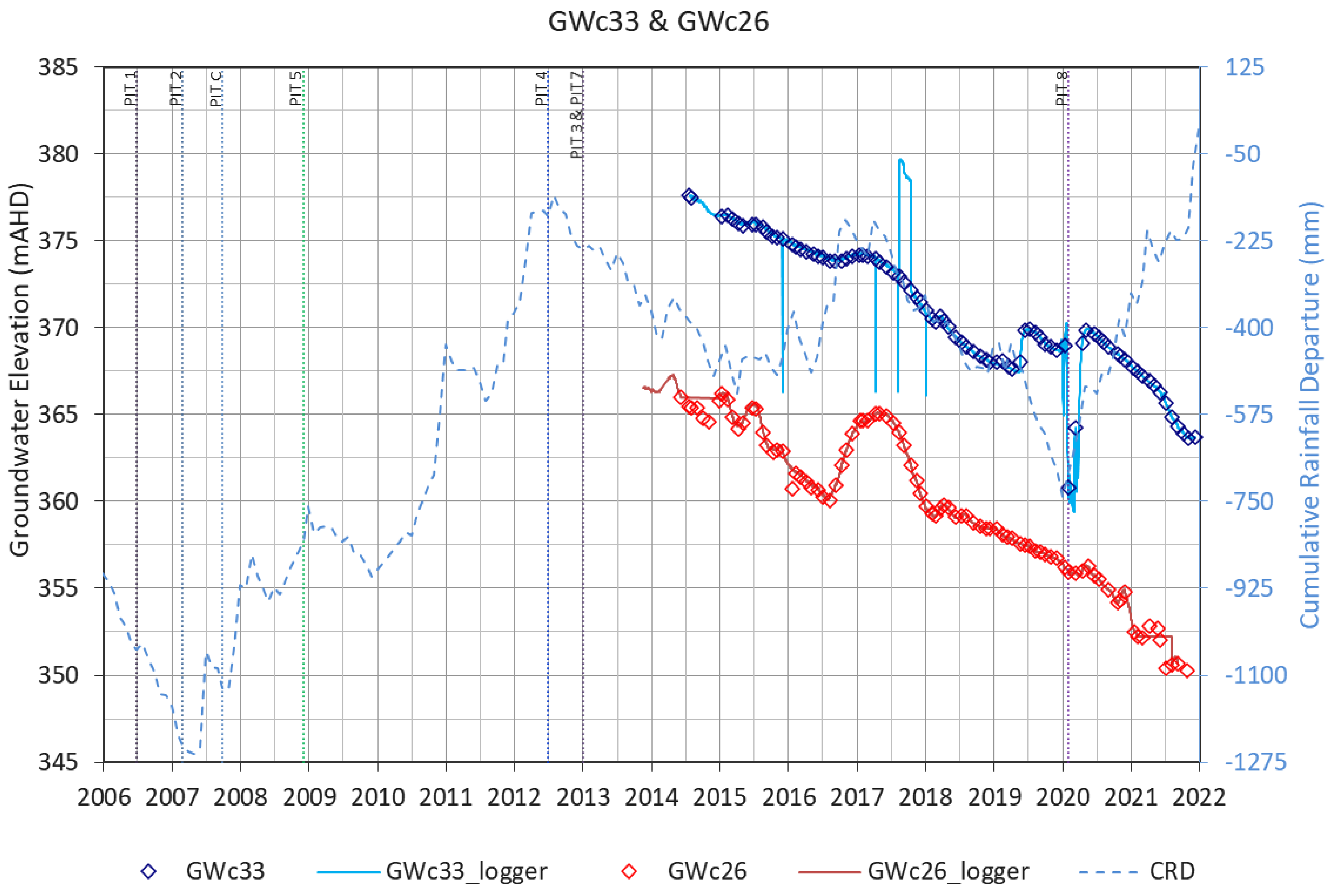


Figure 30 Groundwater Hydrographs at GWc26 and GWc33 near Pit 6 and North of Pit 5

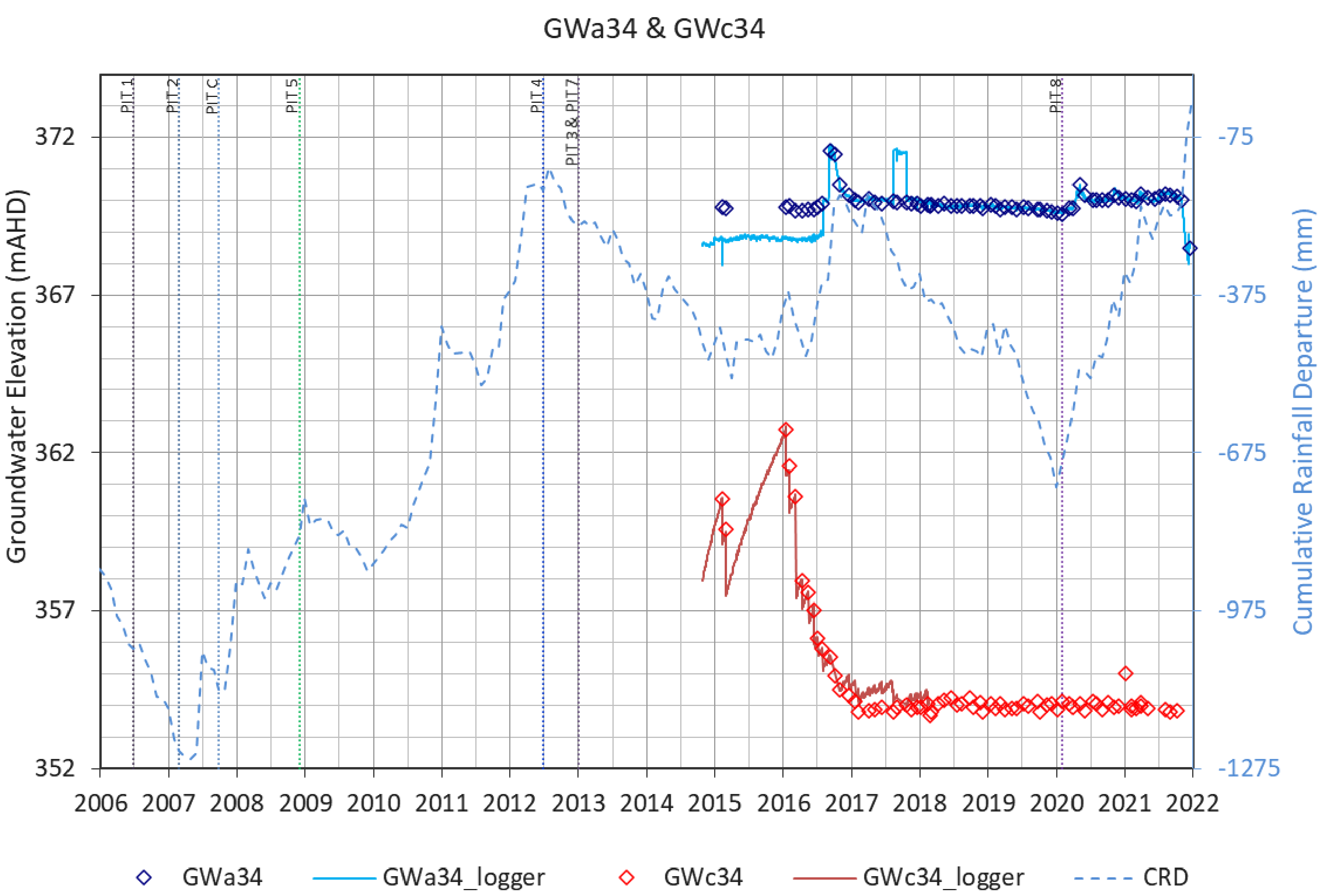


Figure 31 Groundwater Hydrographs at GWa34 and GWc34 adjacent to Wollar Ck ~3km south of Wollar

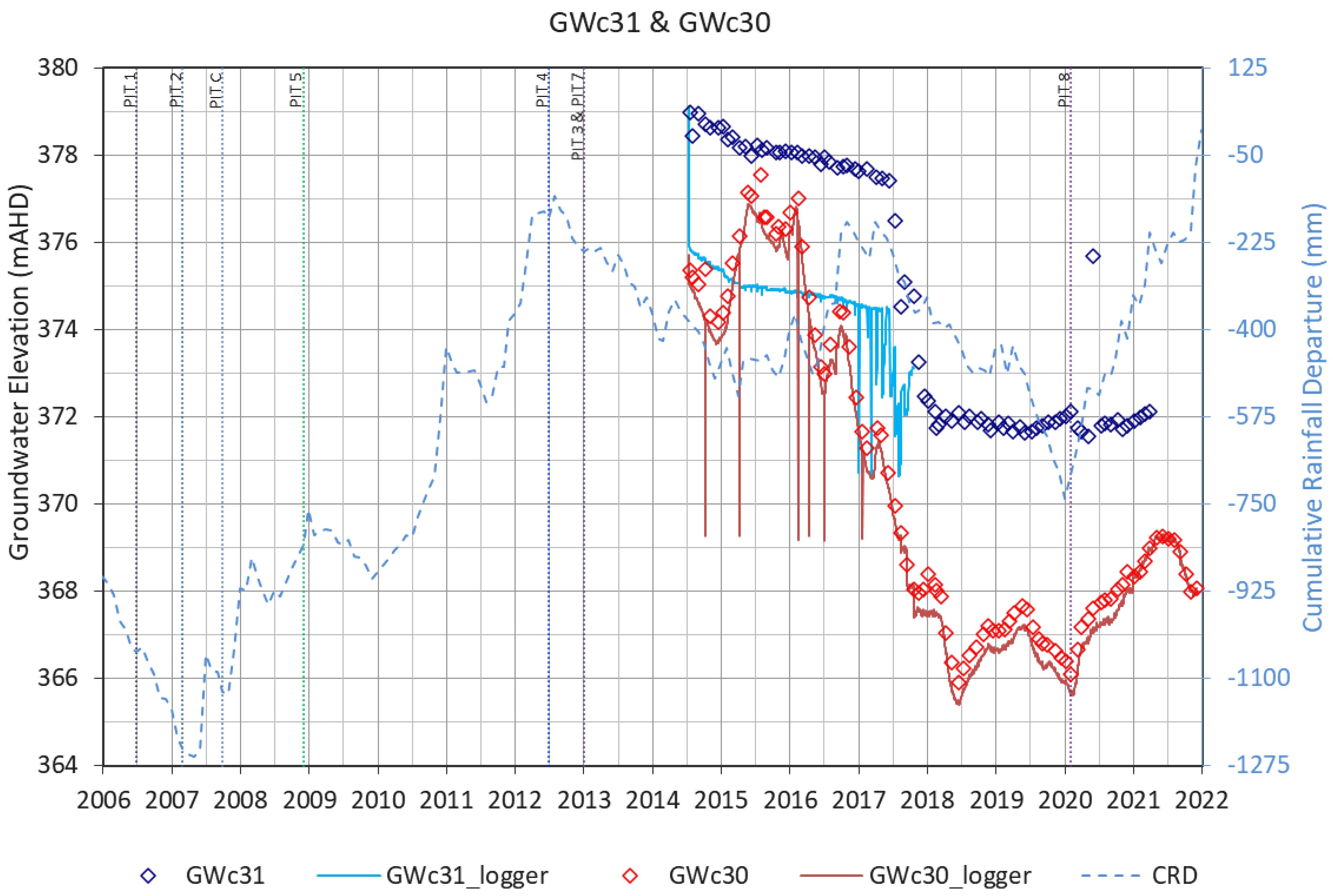
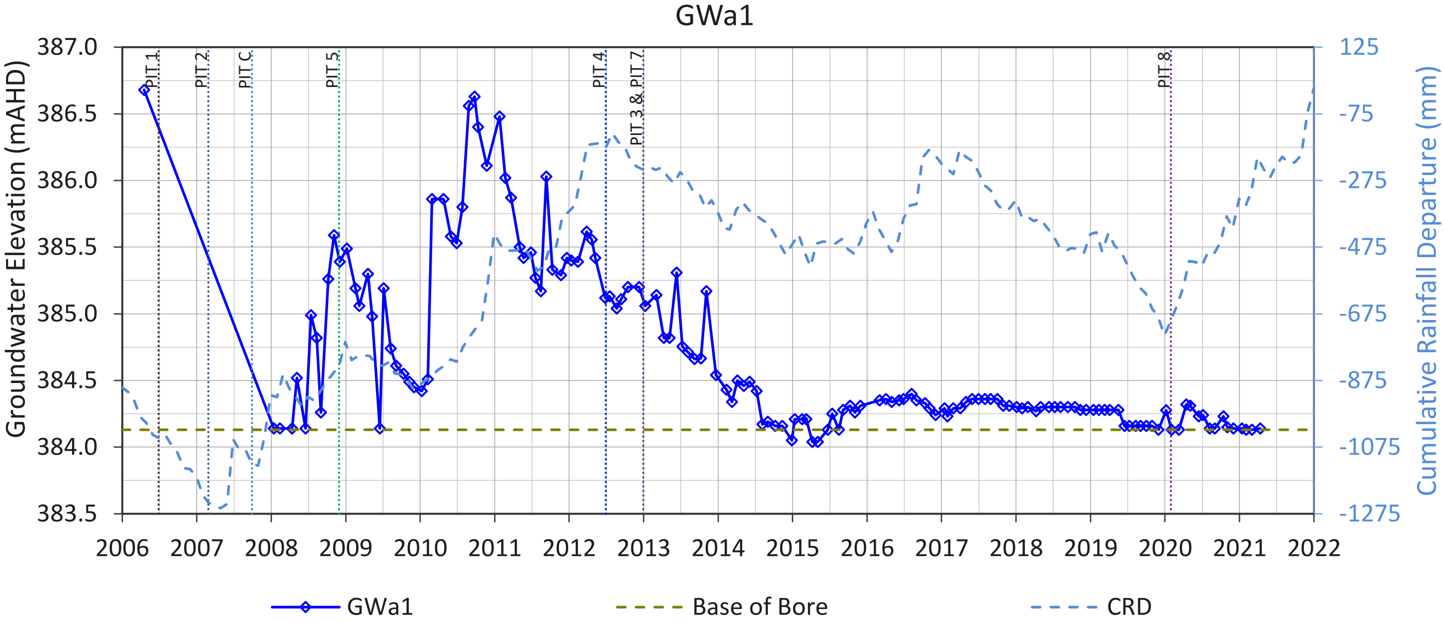
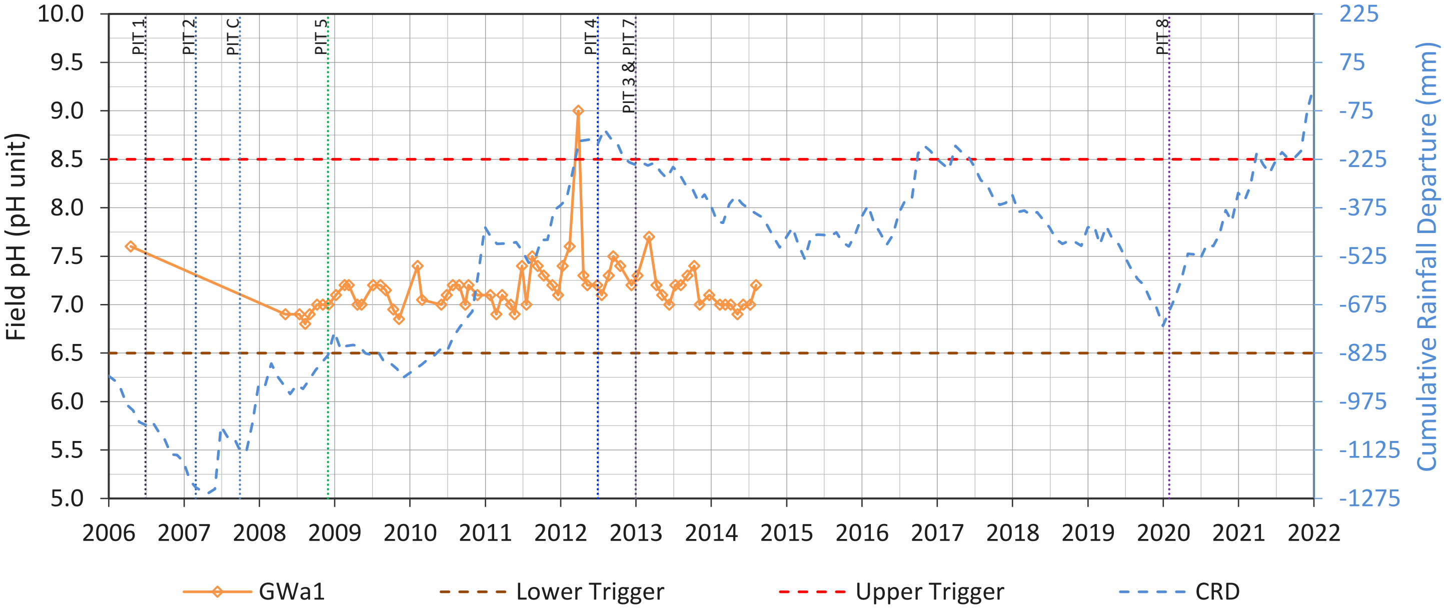


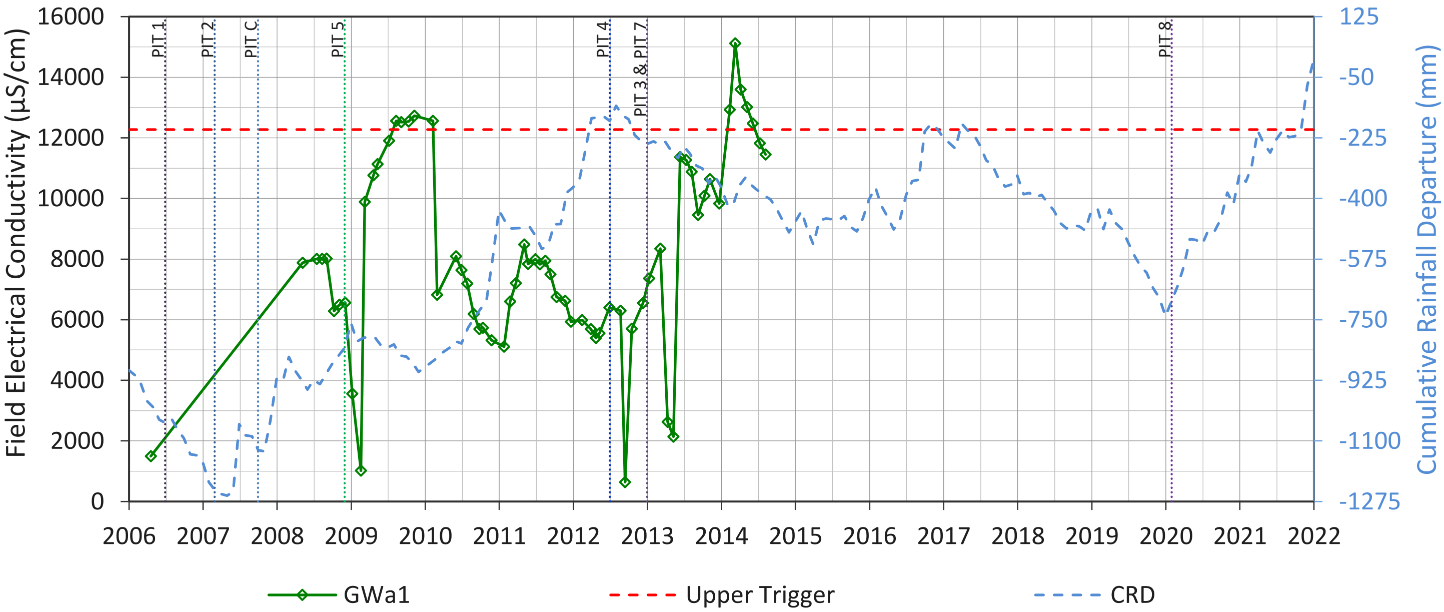
Figure 32 Groundwater Hydrographs at GWc30 and GWc31 within proposed Pit 8 boundary

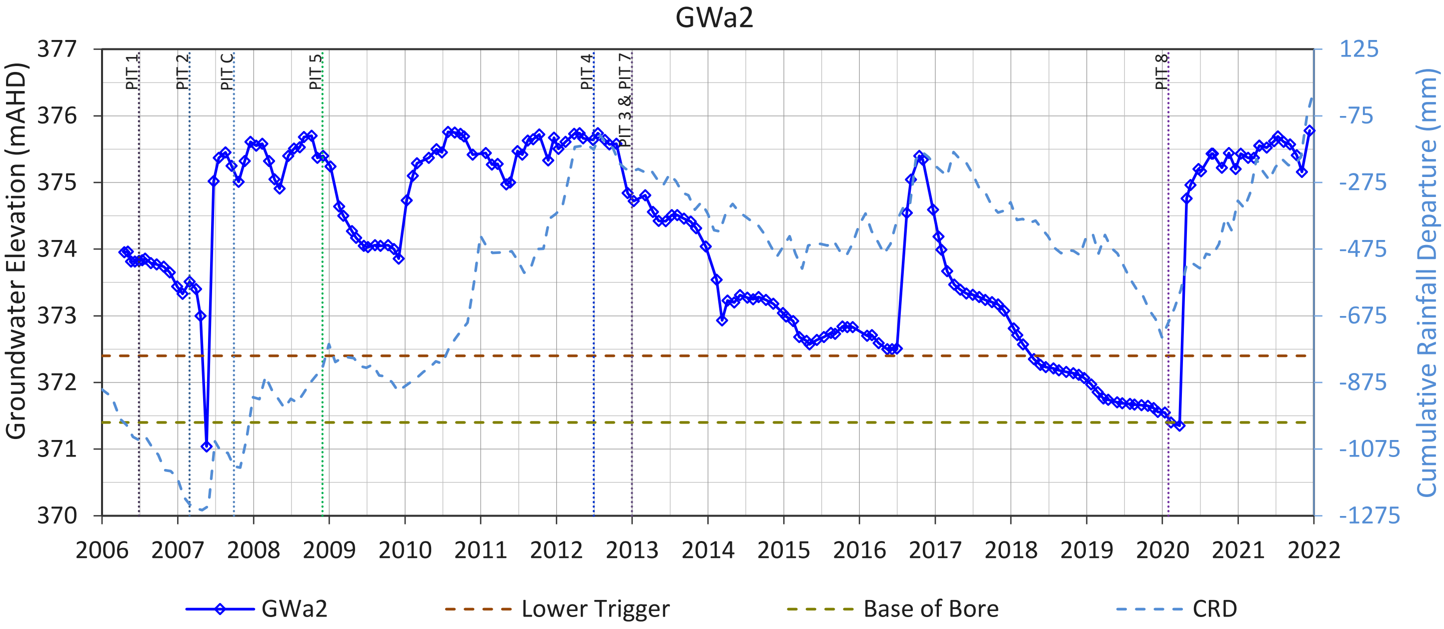
APPENDIX B

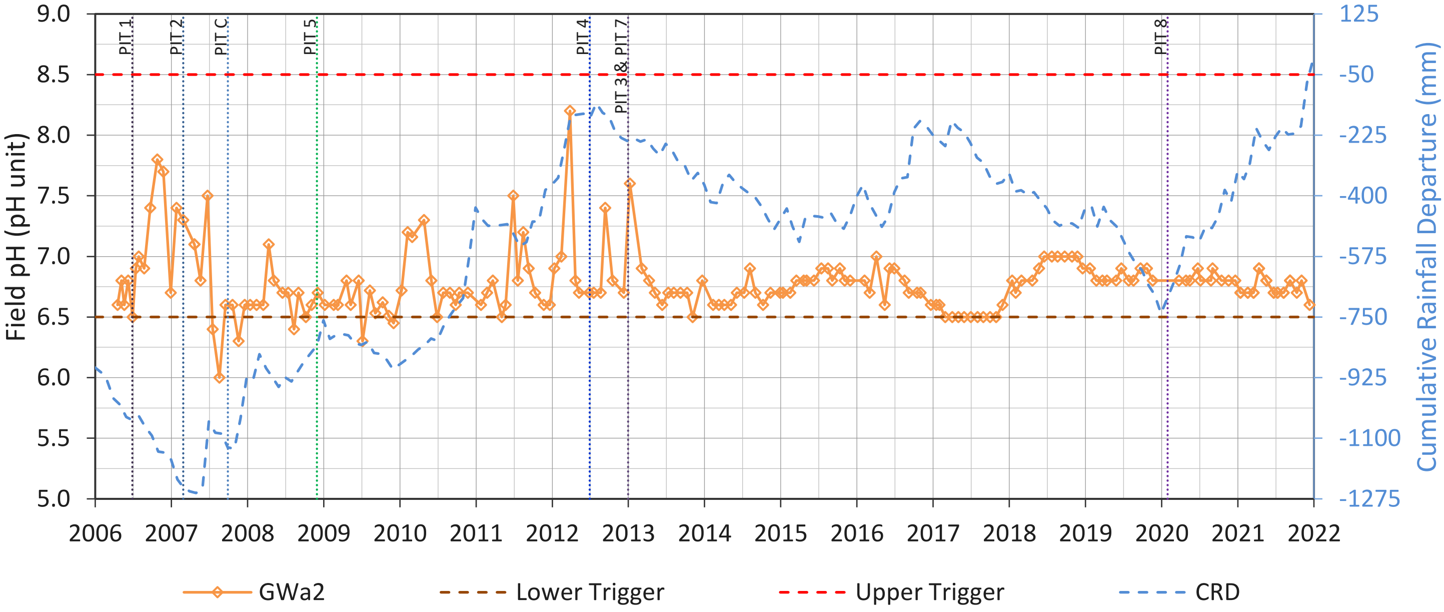
Trigger Level Assessment Charts

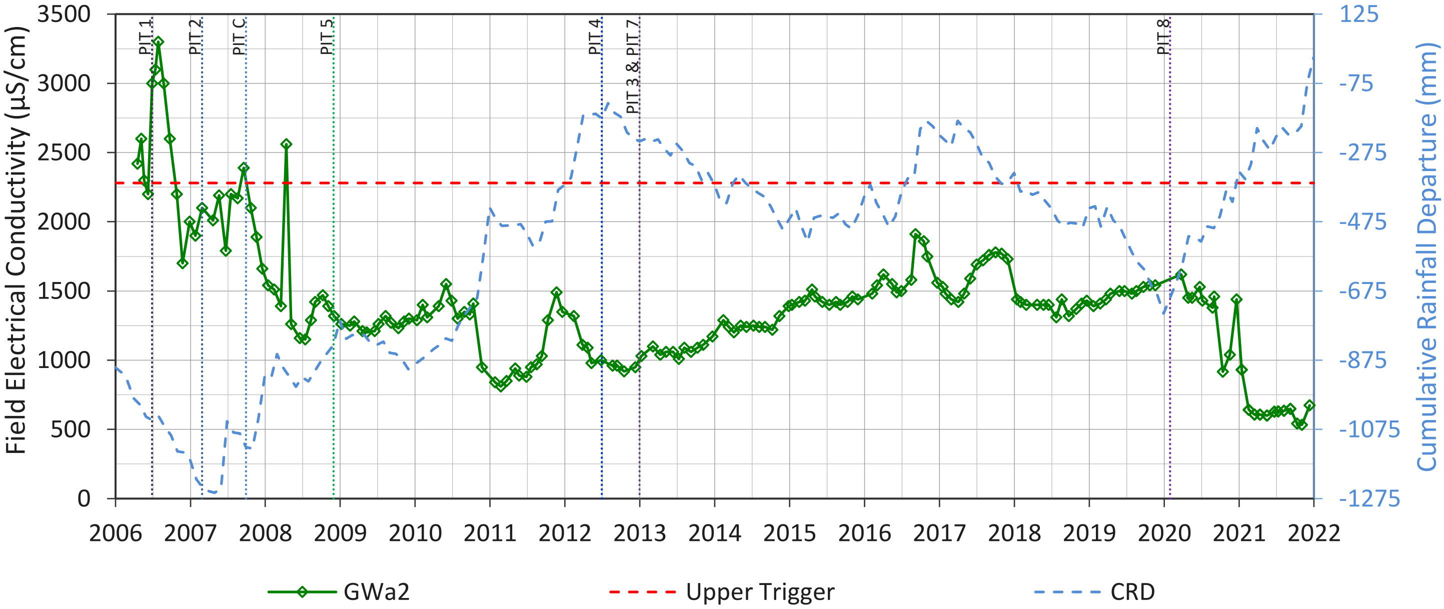

GWa1
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
387.0
386.5
386.0
385.5
385.0
384.5
384.0
383.5
125
-75
-275
-475
-675
-875
-1075
-1275
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
GWa1
Base of Bore
CRD

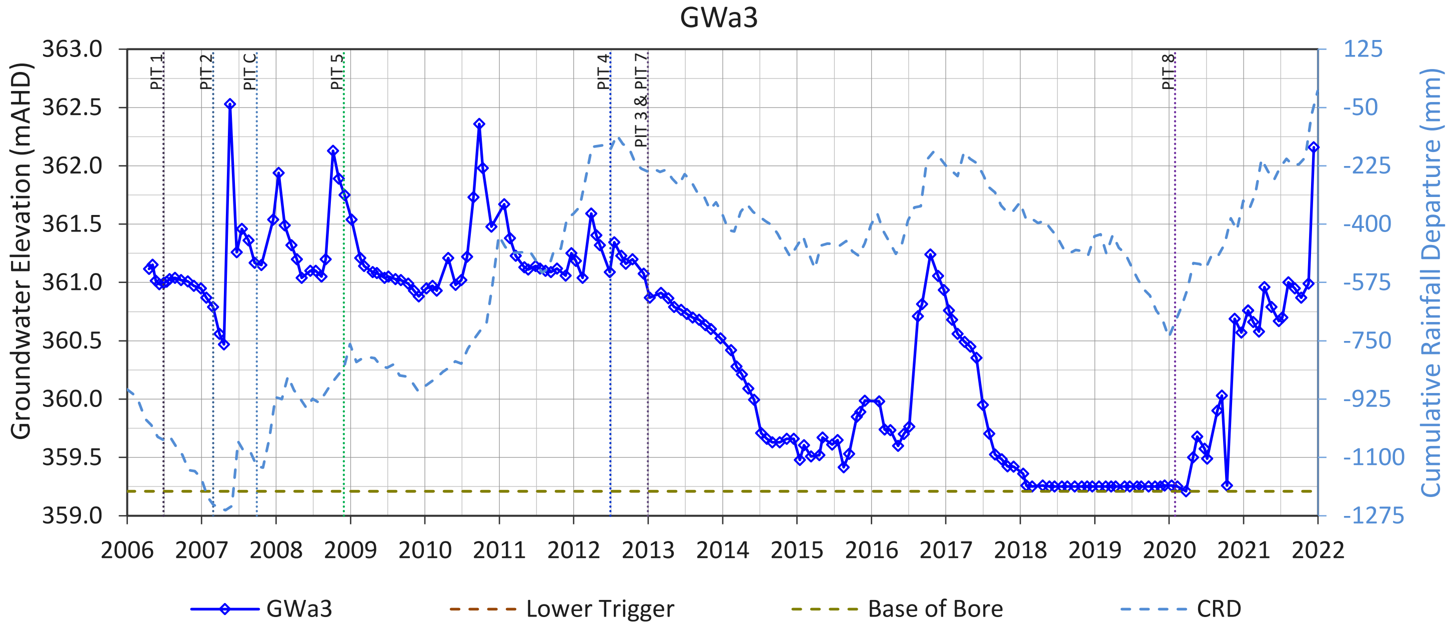

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
10.0
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
225
75
-75
-225
-375
-525
-675
-825
-975
-1125
-1275
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
GWa1
Lower Trigger
Upper Trigger
CRD

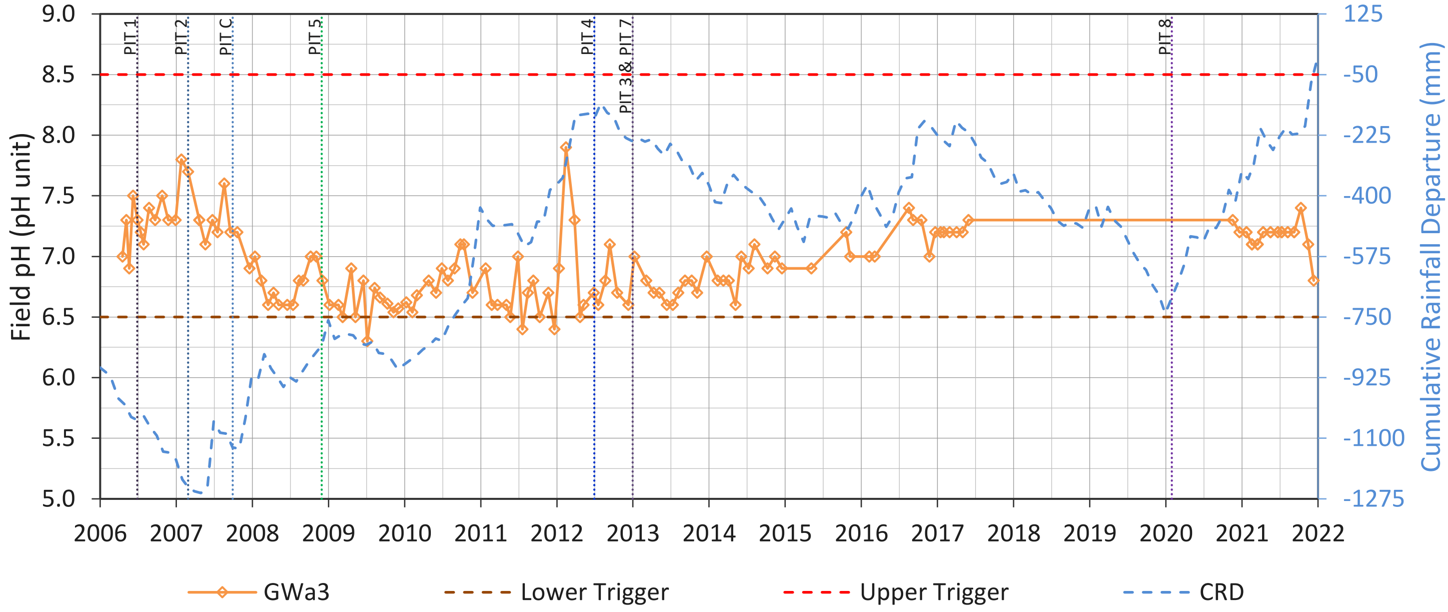

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
16000
14000
12000
10000
8000
6000
4000
2000
0
125
-50
-225
-400
-575
-750
-925
-1100
-1275
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
GWa1
Upper Trigger
CRD

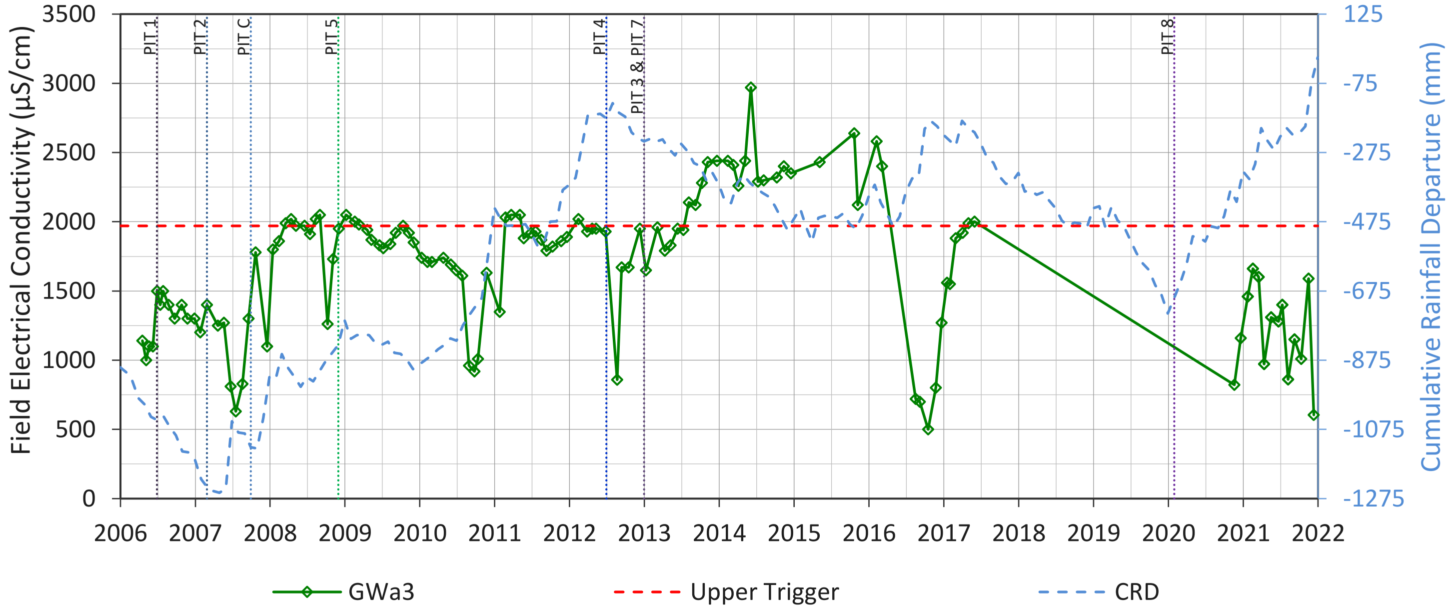

GWa2
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
377
376
375
374
373
372
371
370
125
-75
-275
-475
-675
-875
-1075
-1275
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
GWa2
Lower Trigger
Base of Bore
CRD

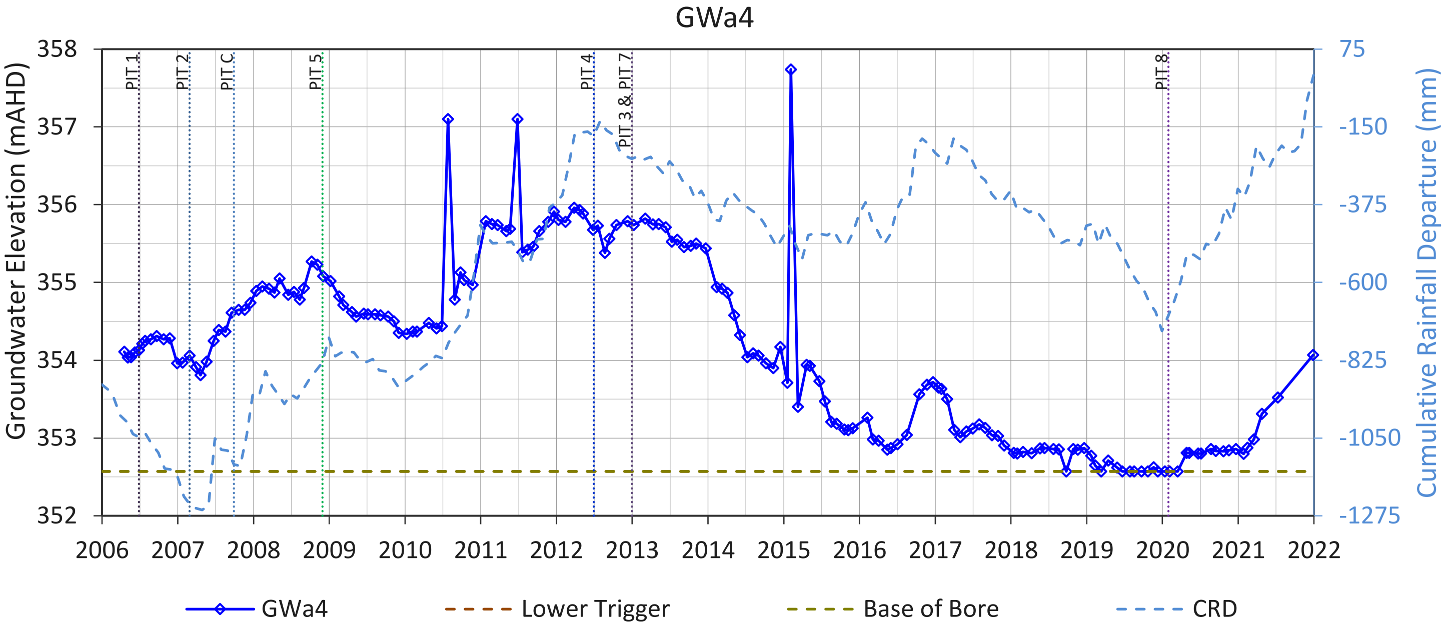

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
125
-50
-225
-400
-575
-750
-925
-1100
-1275
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
GWa2
Lower Trigger
Upper Trigger
CRD

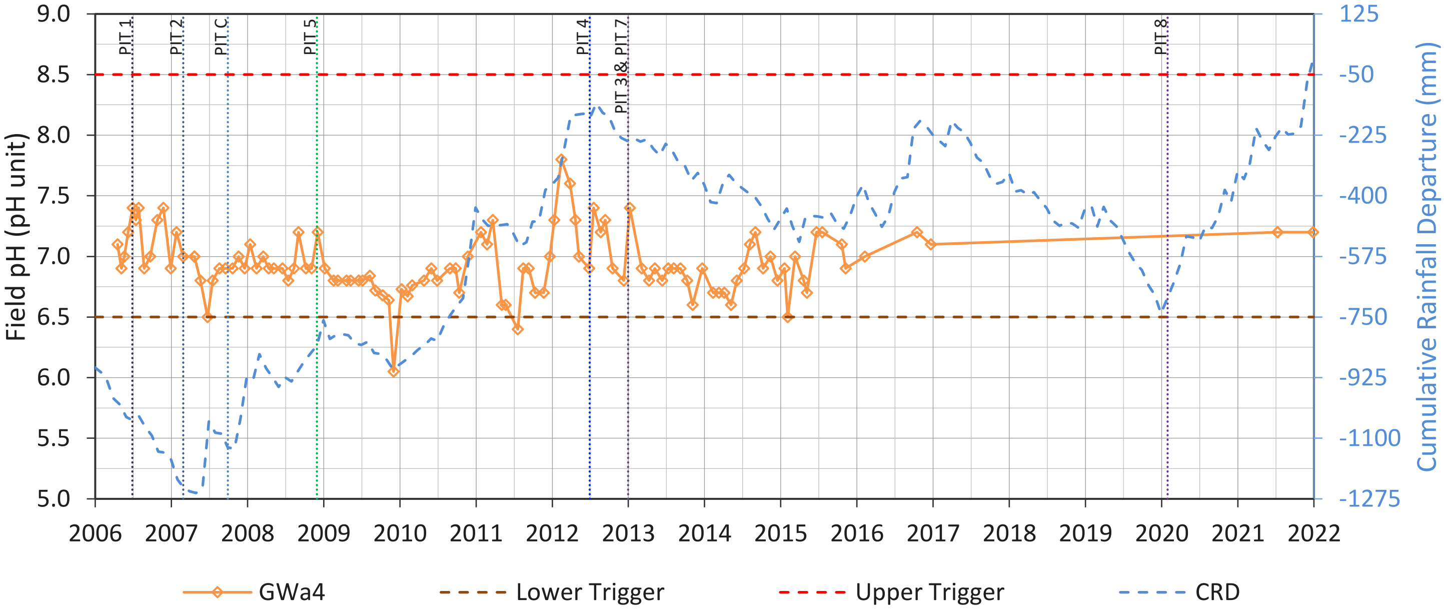

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
3500
3000
2500
2000
1500
1000
500
0
125
-75
-275
-475
-675
-875
-1075
-1275
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
GWa2
Upper Trigger
CRD

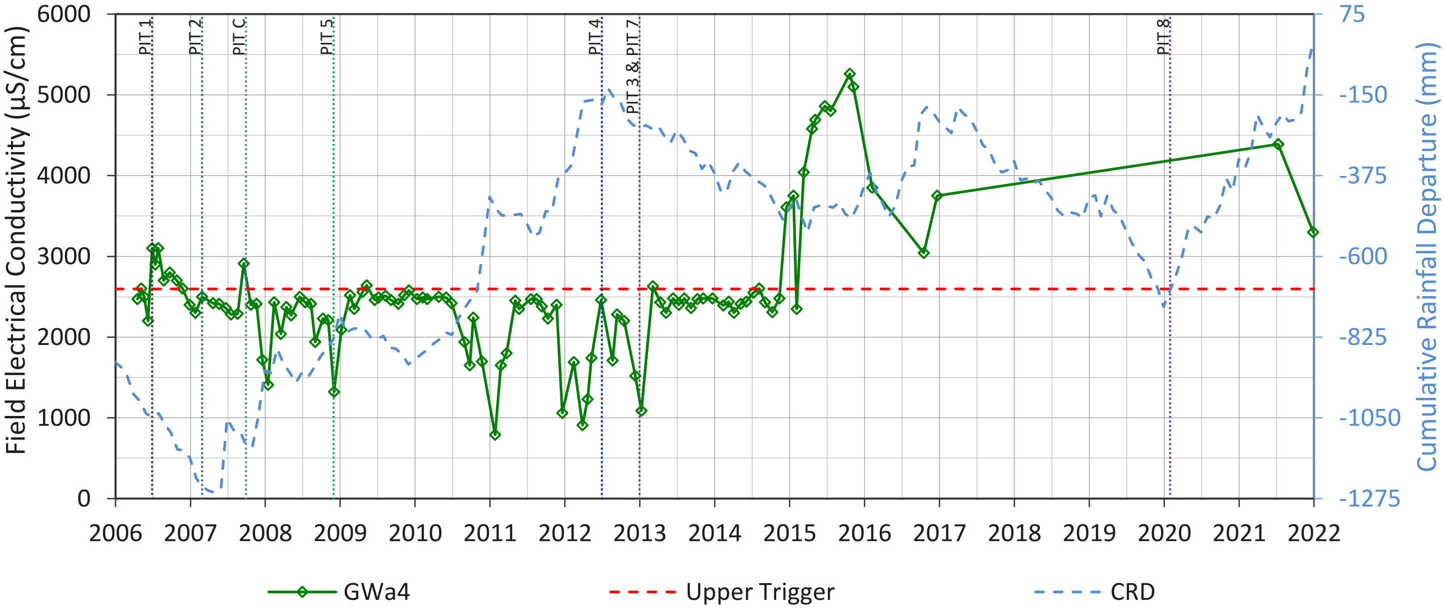

GWa3
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWa3
Lower Trigger
Base of Bore
CRD

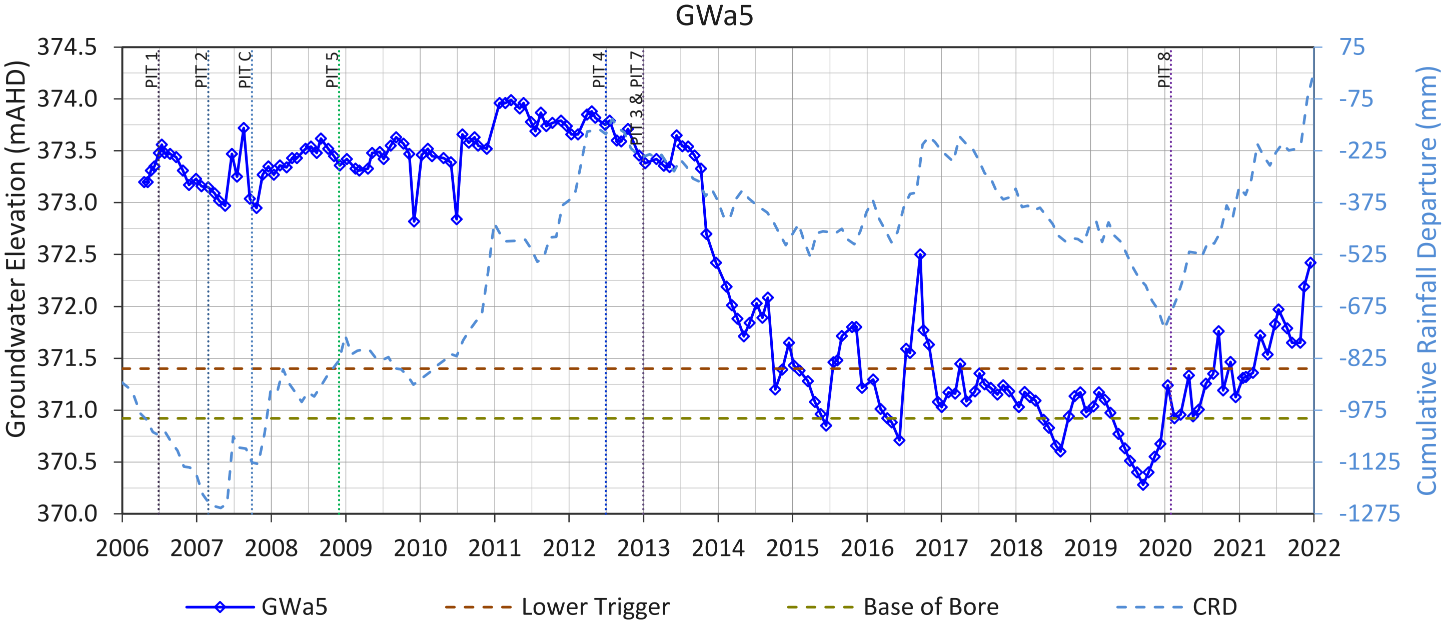

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWa3
Lower Trigger
Upper Trigger
CRD

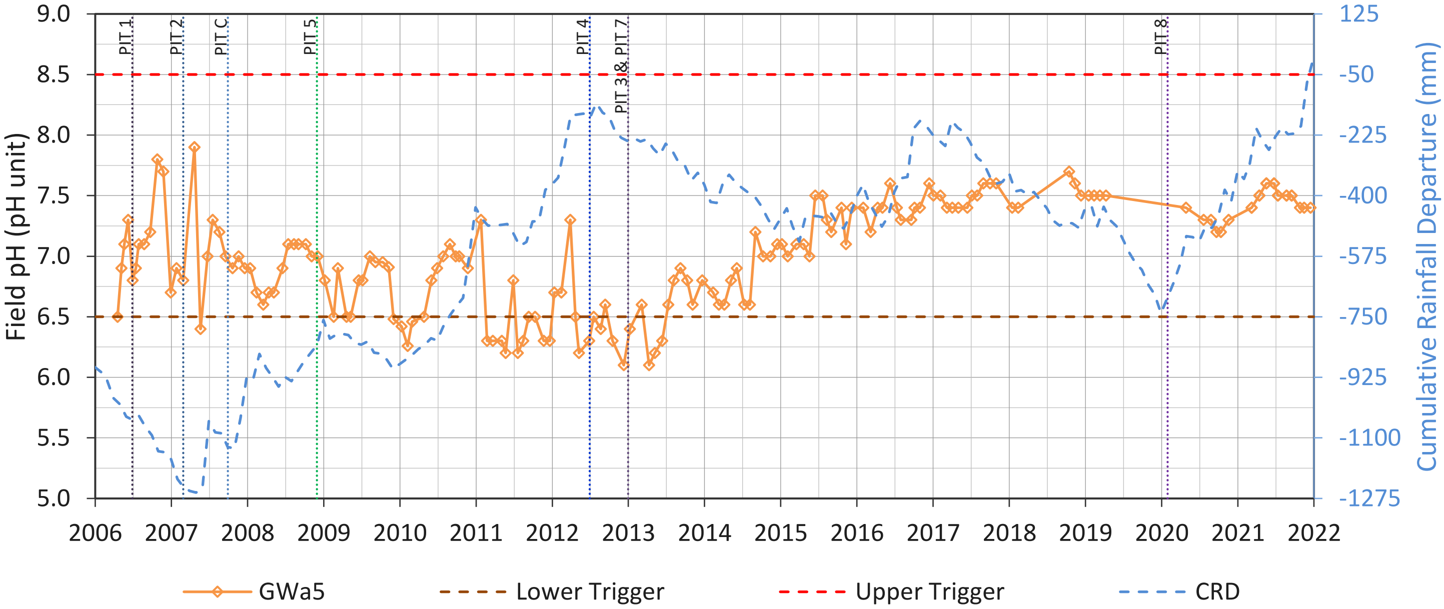

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWa3
Upper Trigger
CRD

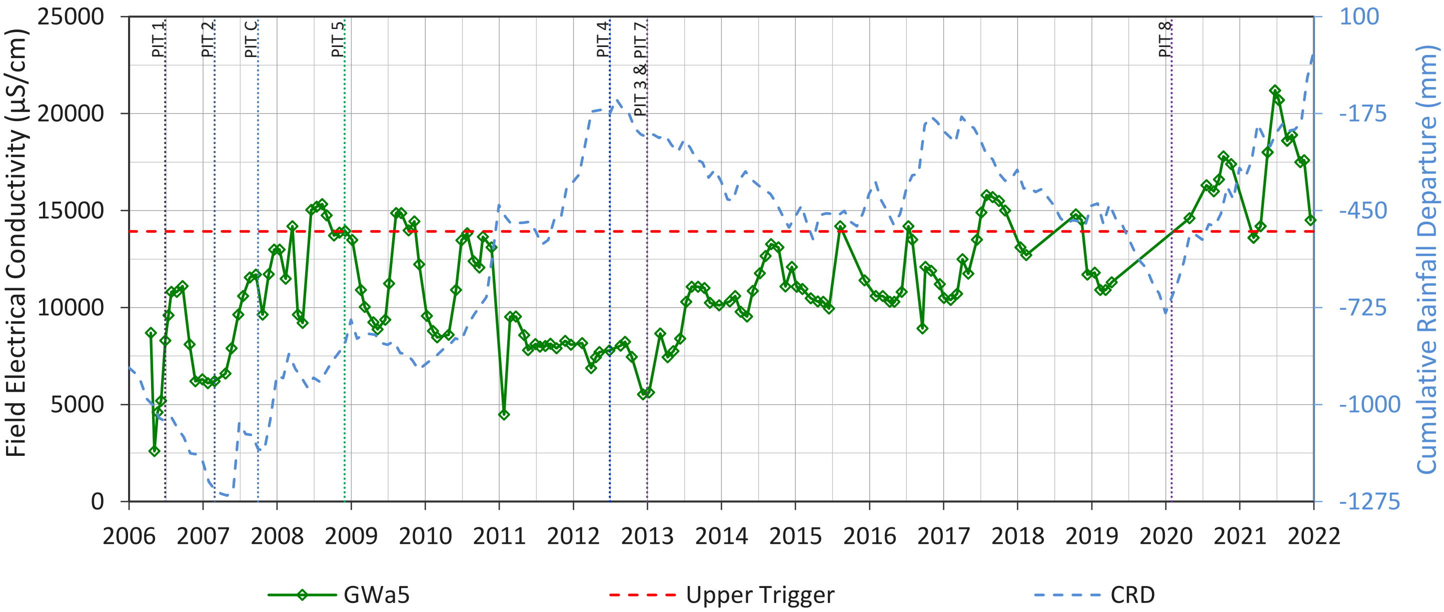

GWa4
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWa4
Lower Trigger
Base of Bore
CRD

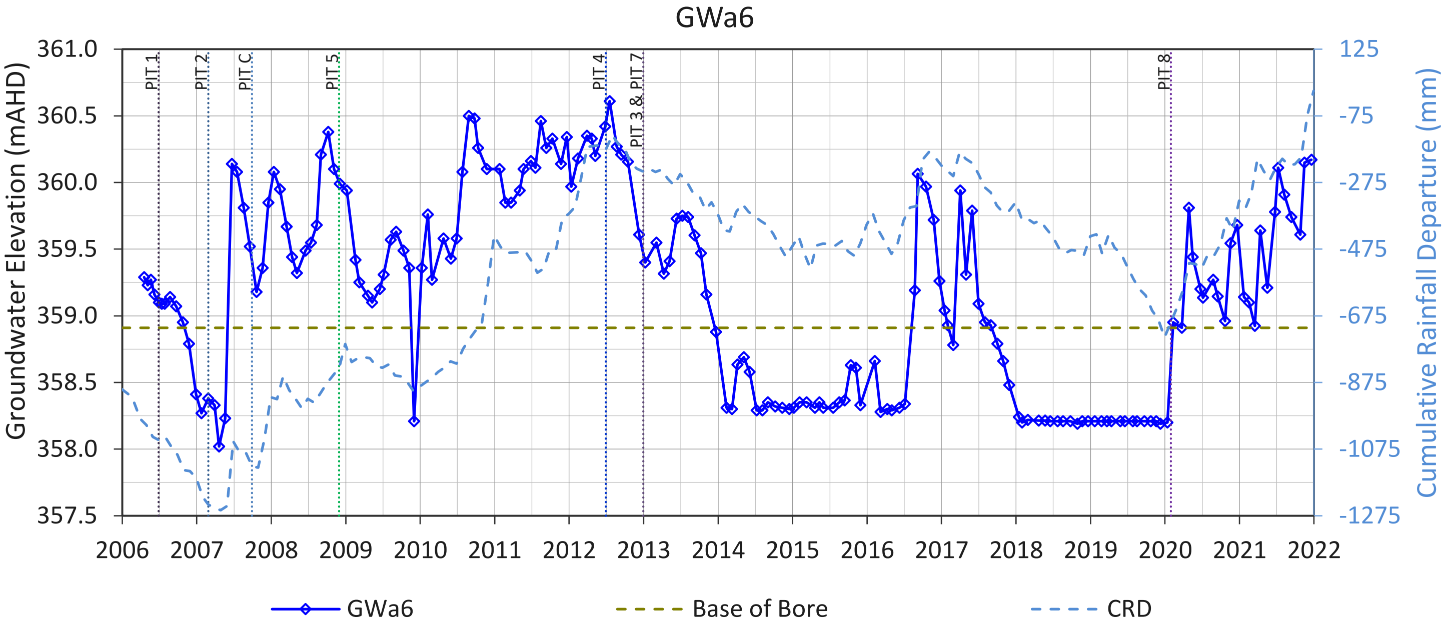

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWa4
Lower Trigger
Upper Trigger
CRD

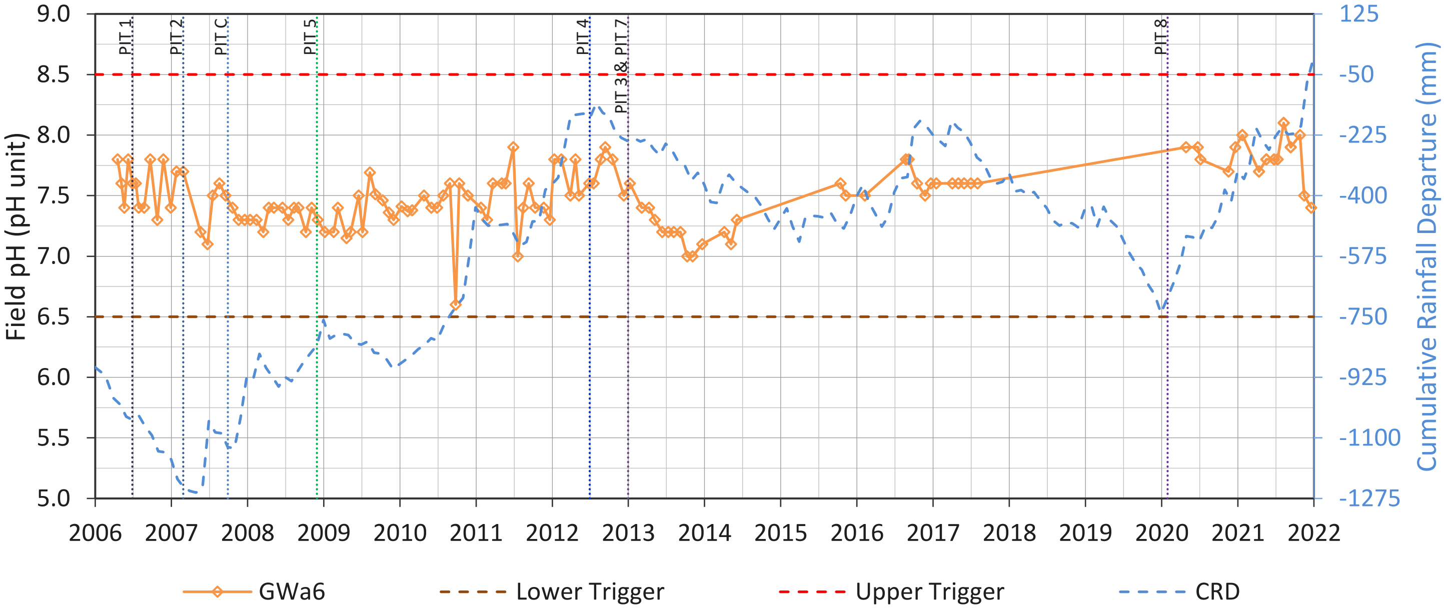

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWa4
Upper Trigger
CRD

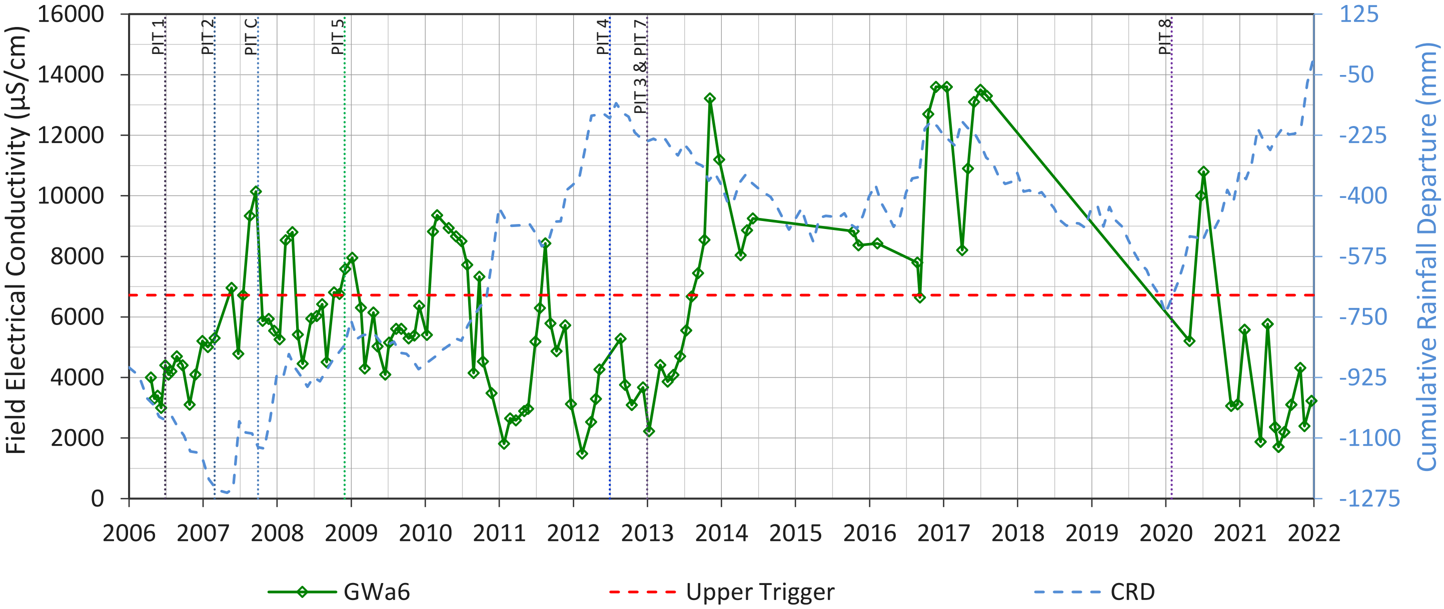

GWa5
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWa5
Lower Trigger
Base of Bore
CRD

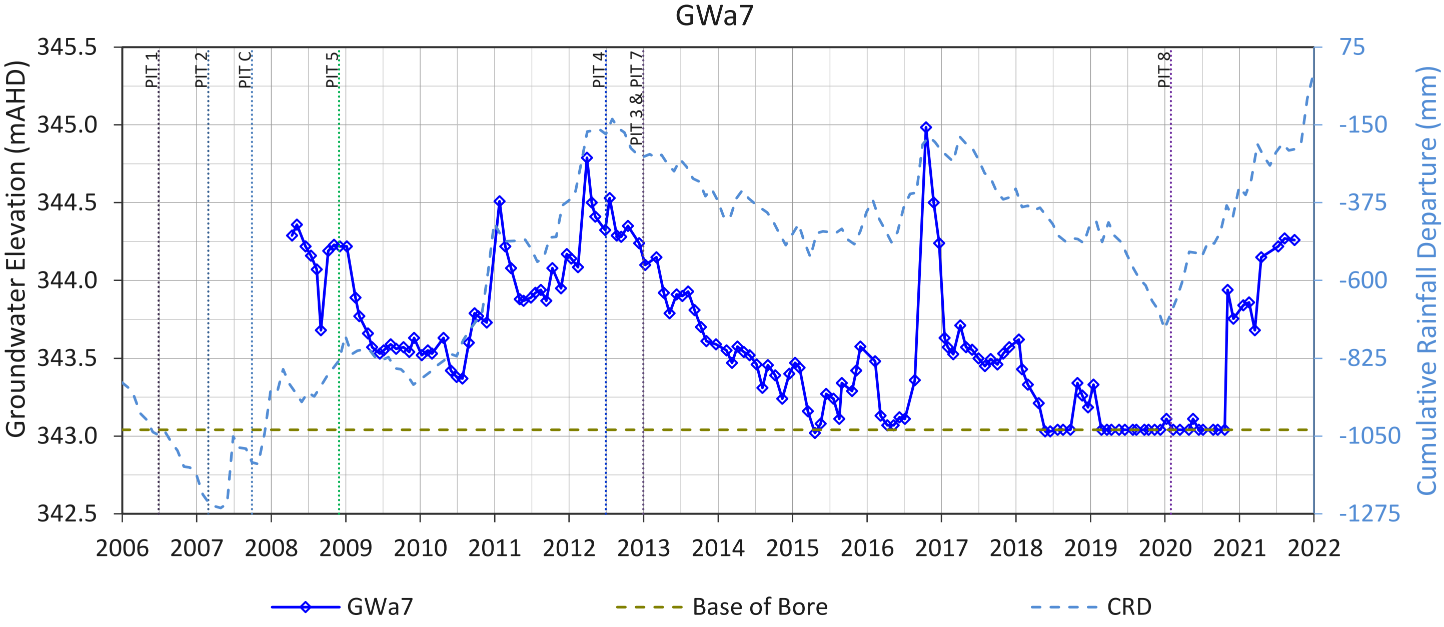

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWa5
Lower Trigger
Upper Trigger
CRD

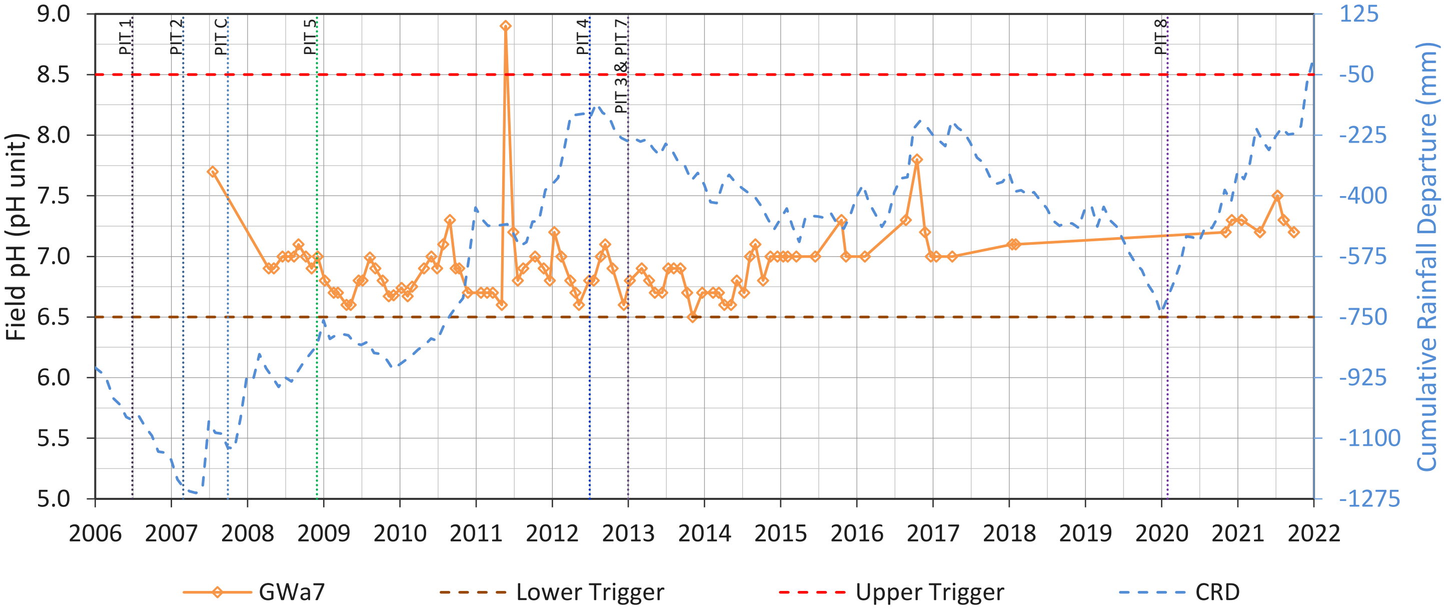

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWa5
Upper Trigger
CRD

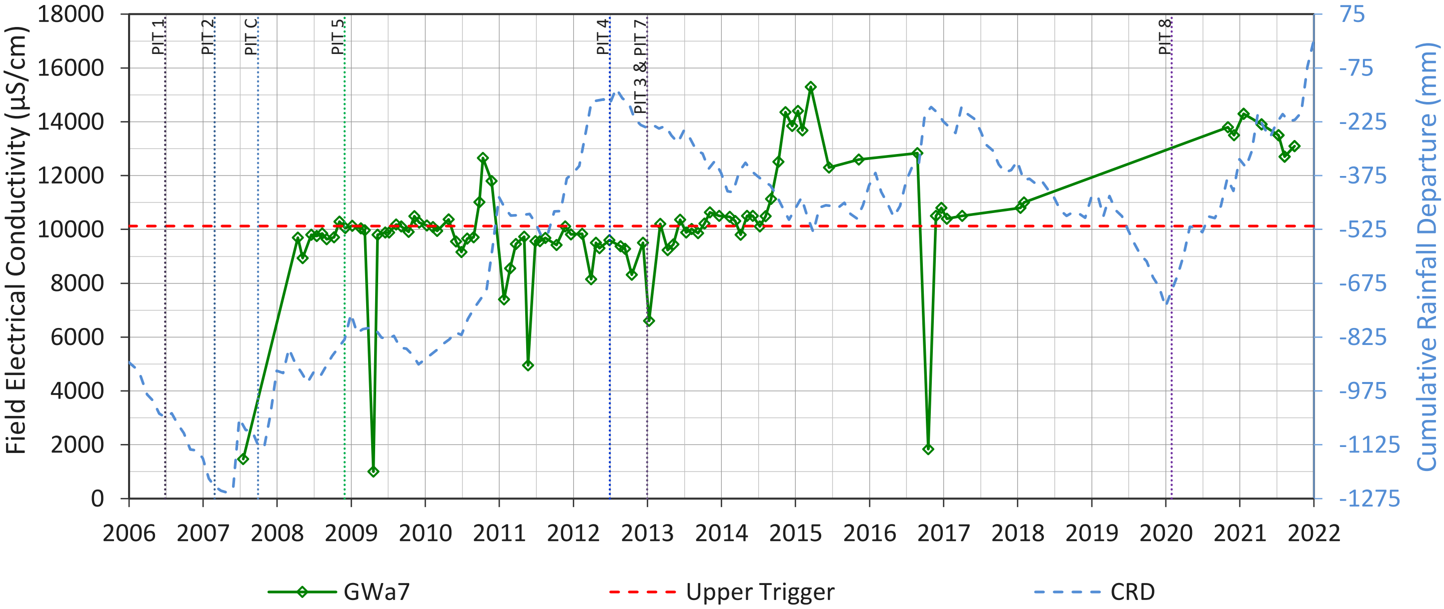

GWa6
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
361.0
360.5
360.0
359.5
359.0
358.5
358.0
357.5
125
-75
-275
-475
-675
-875
-1075
-1275
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
GWa6
Base of Bore
CRD

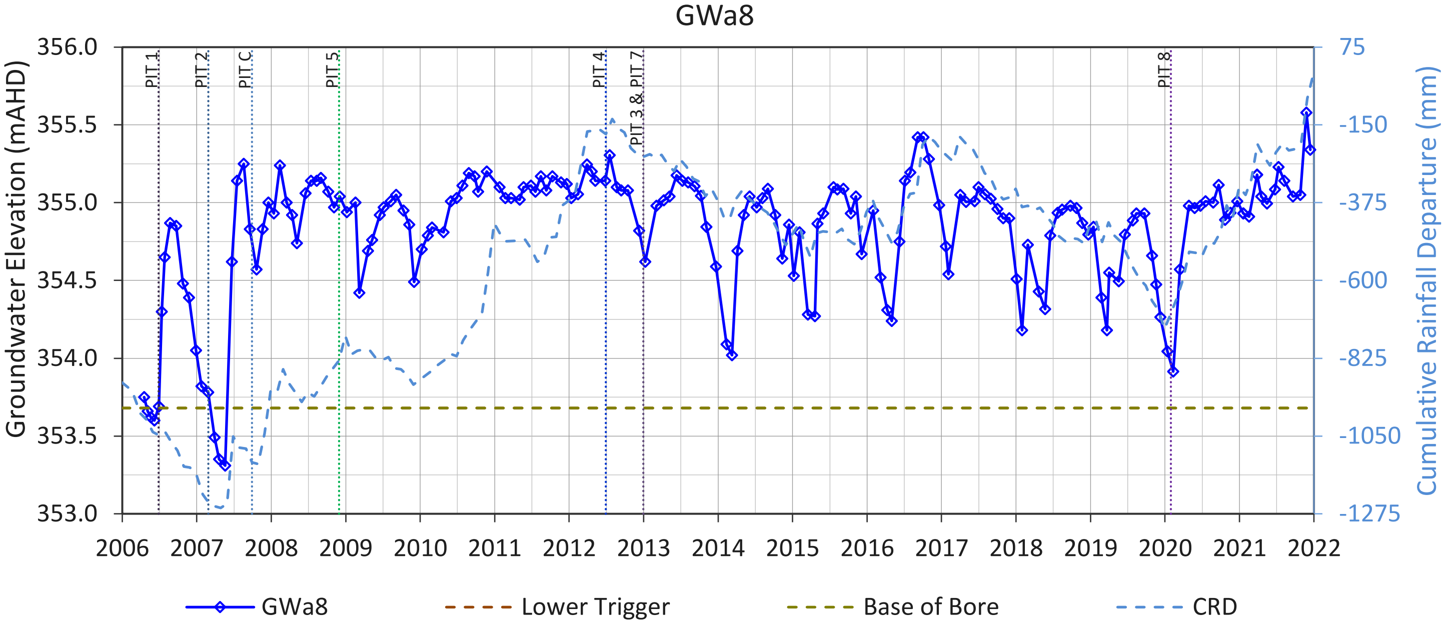

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
125
-50
-225
-400
-575
-750
-925
-1100
-1275
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
GWa6
Lower Trigger
Upper Trigger
CRD

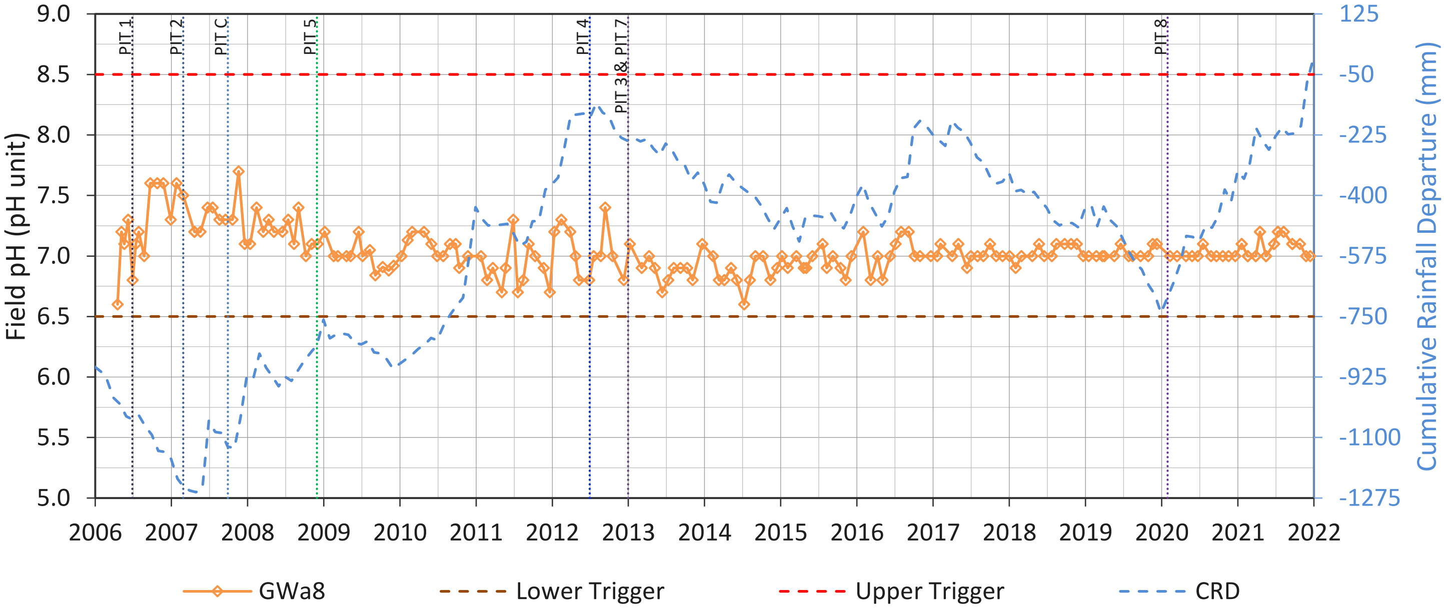

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
16000
14000
12000
10000
8000
6000
4000
2000
0
125
-50
-225
-400
-575
-750
-925
-1100
-1275
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
GWa6
Upper Trigger
CRD

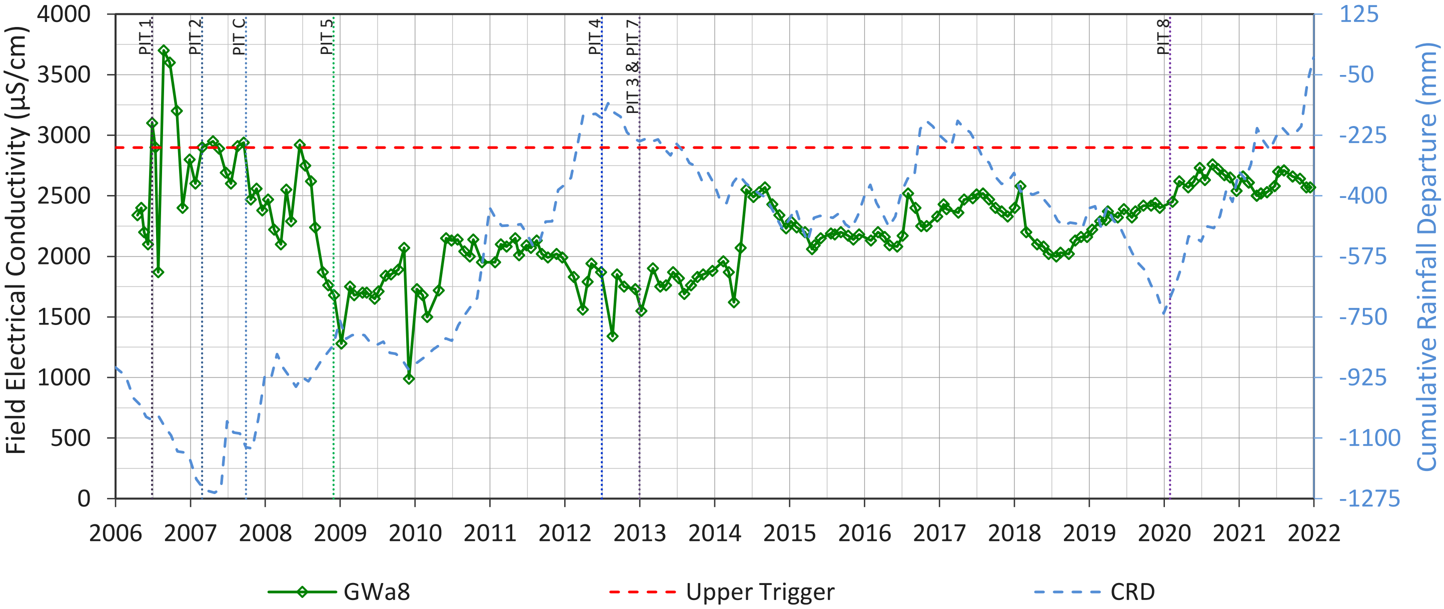

GWa7
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
345.5
345.0
344.5
344.0
343.5
343.0
342.5
75
-150
-375
-600
-825
-1050
-1275
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
GWa7
Base of Bore
CRD

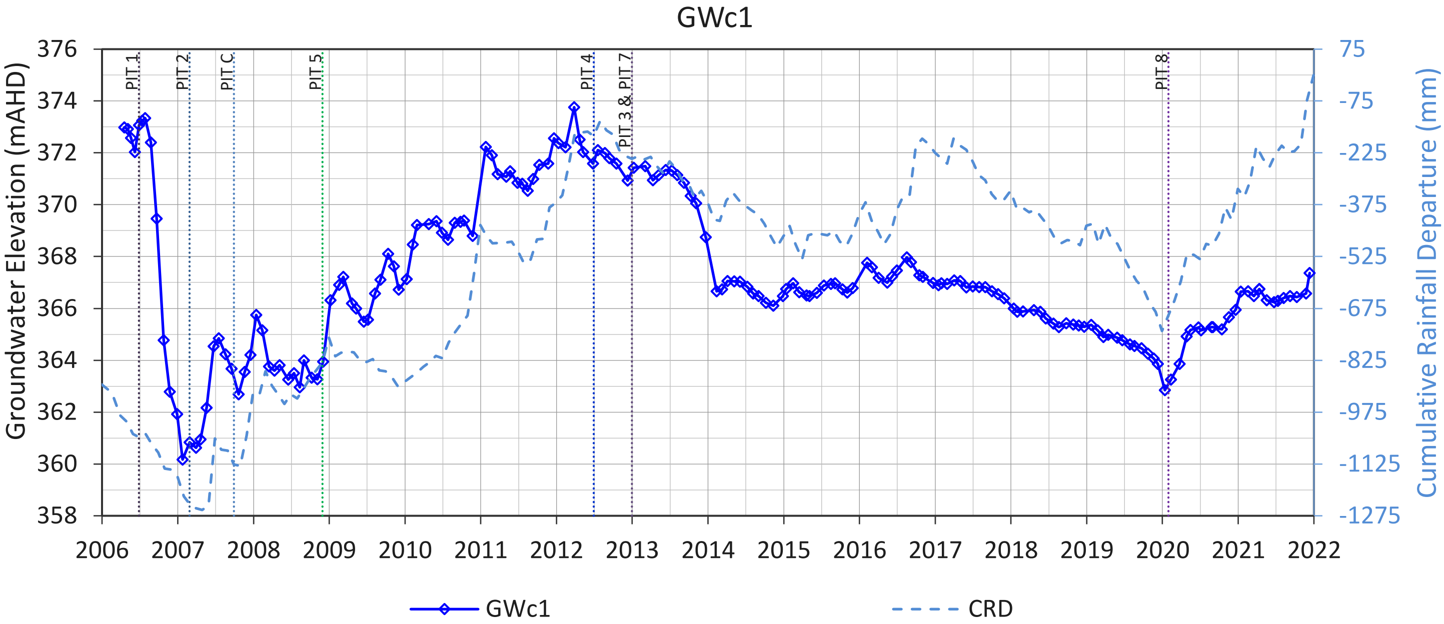

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
125
-50
-225
-400
-575
-750
-925
-1100
-1275
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
GWa7
Lower Trigger
Upper Trigger
CRD

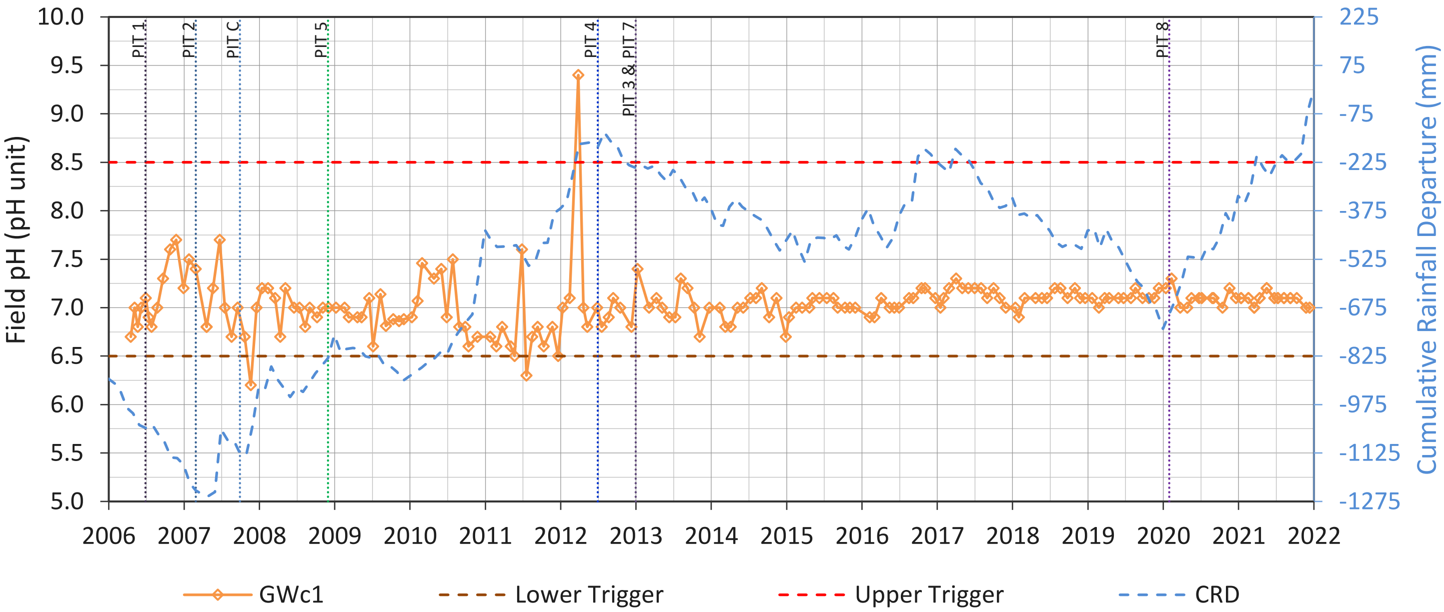

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
75
-75
-225
-375
-525
-675
-825
-975
-1125
-1275
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
GWa7
Upper Trigger
CRD

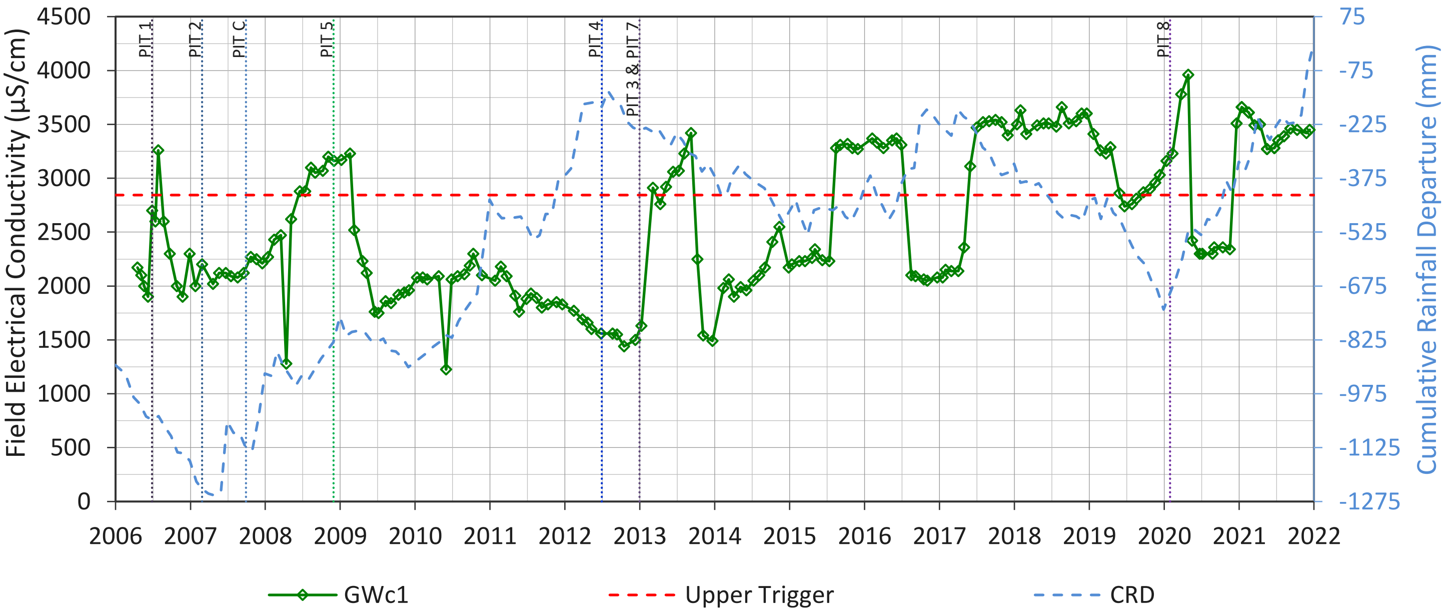

GWa8
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWa8
Lower Trigger
Base of Bore
CRD

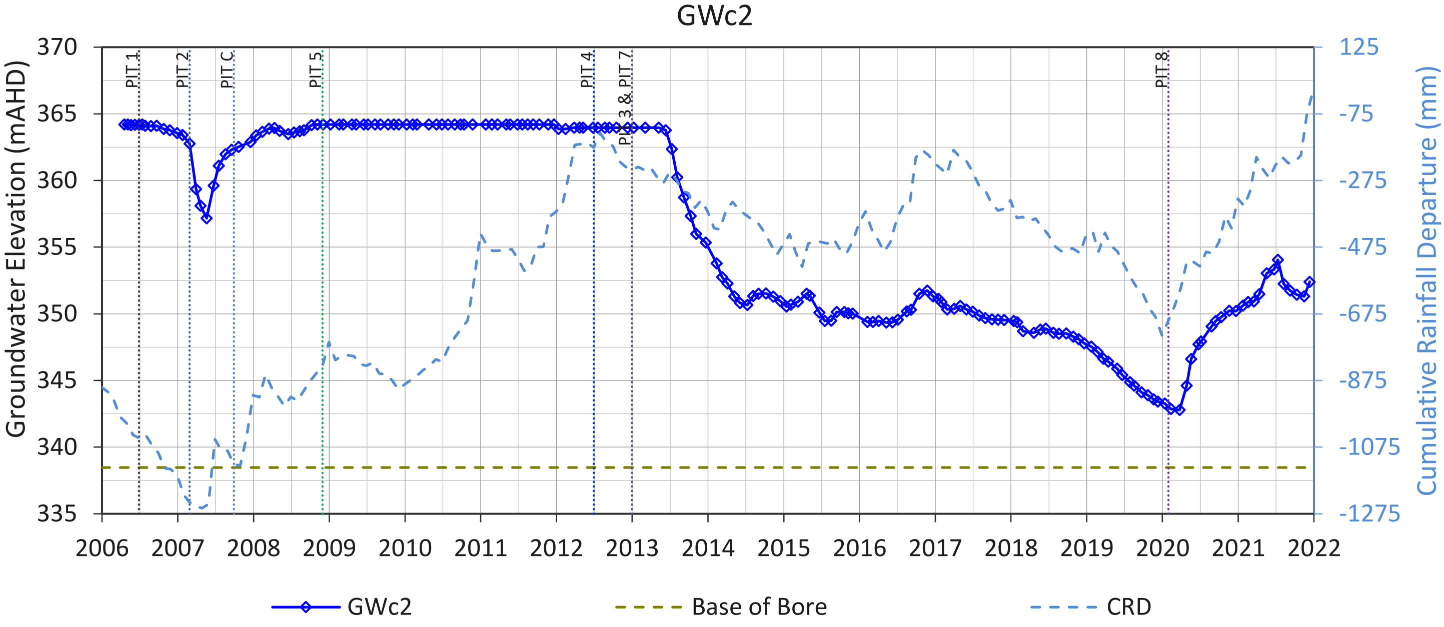

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWa8
Lower Trigger
Upper Trigger
CRD

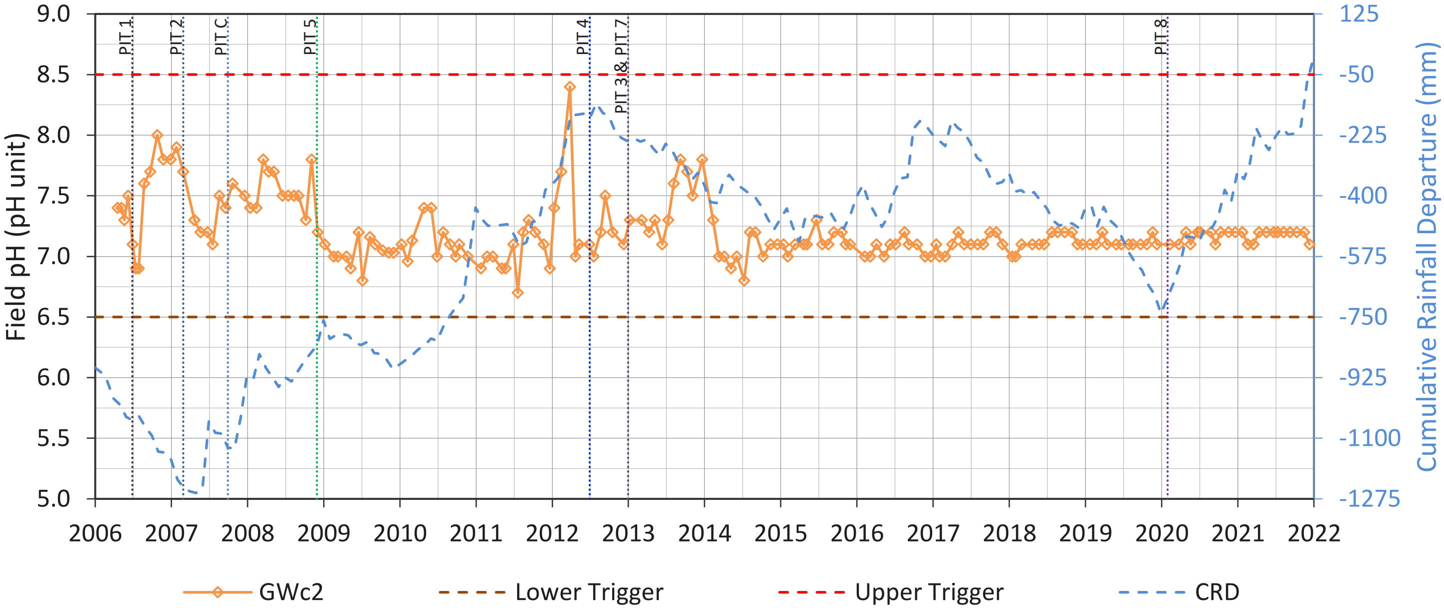

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWa8
Upper Trigger
CRD

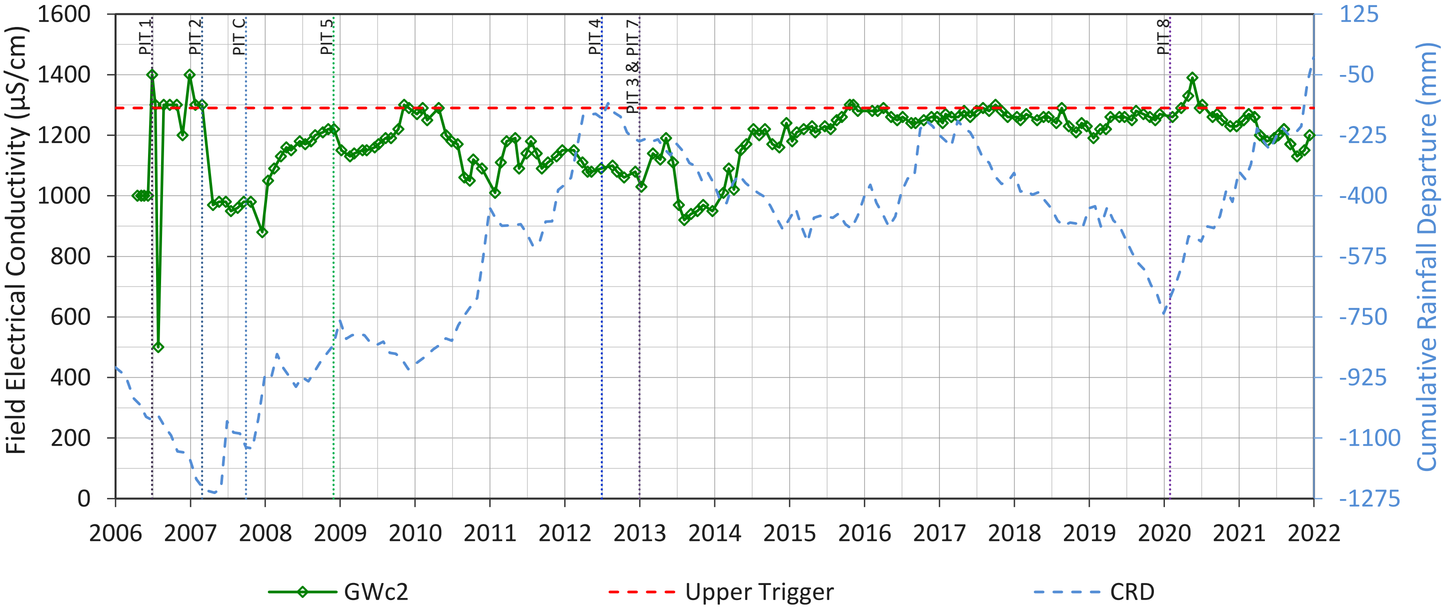

GWc1
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc1
CRD

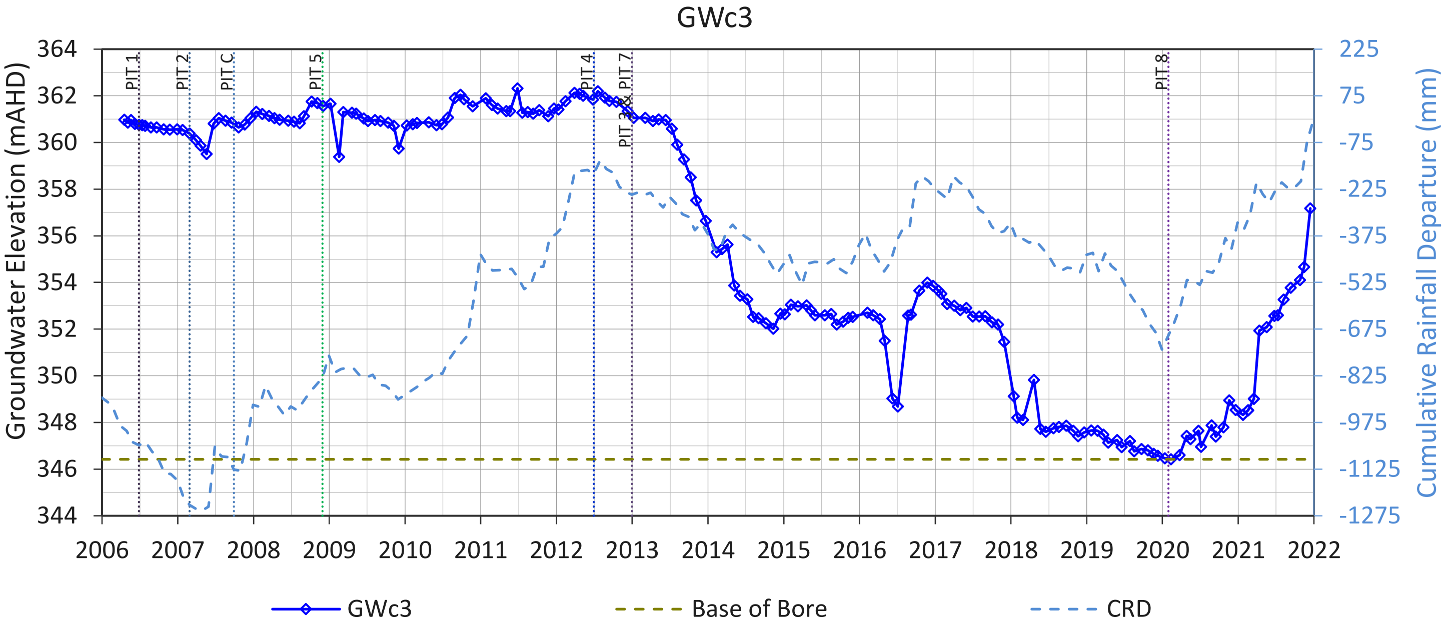

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc1
Lower Trigger
Upper Trigger
CRD

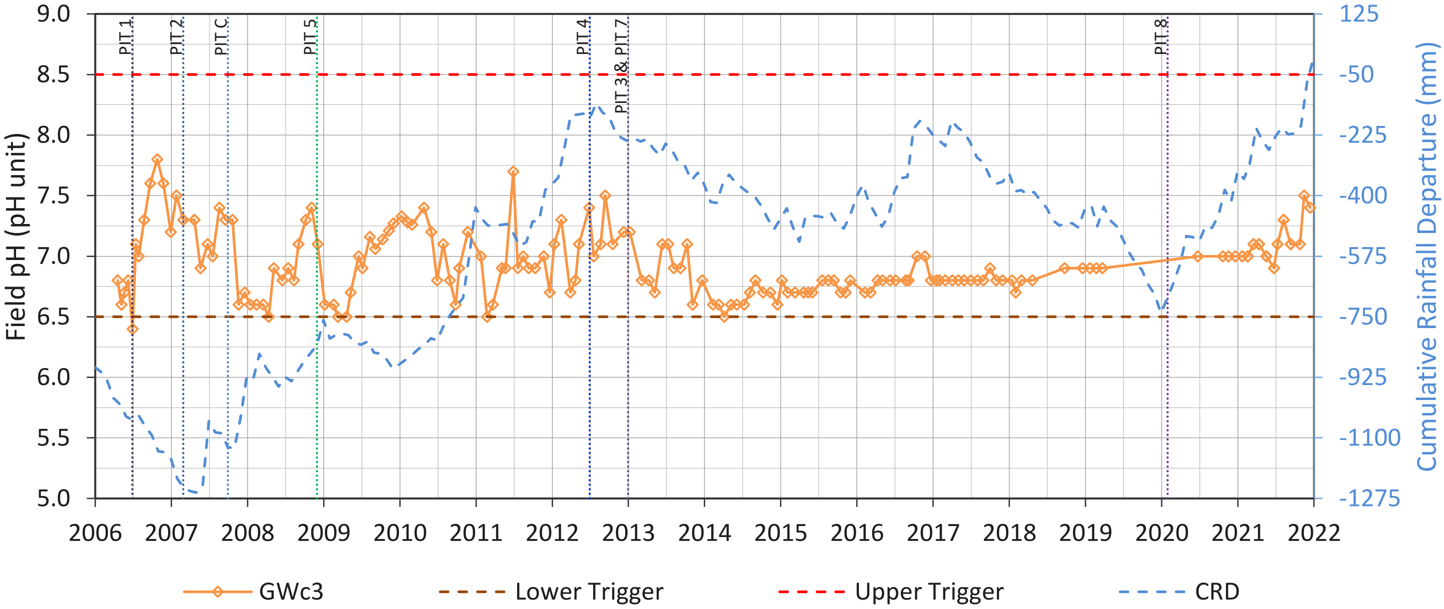

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc1
Upper Trigger
CRD

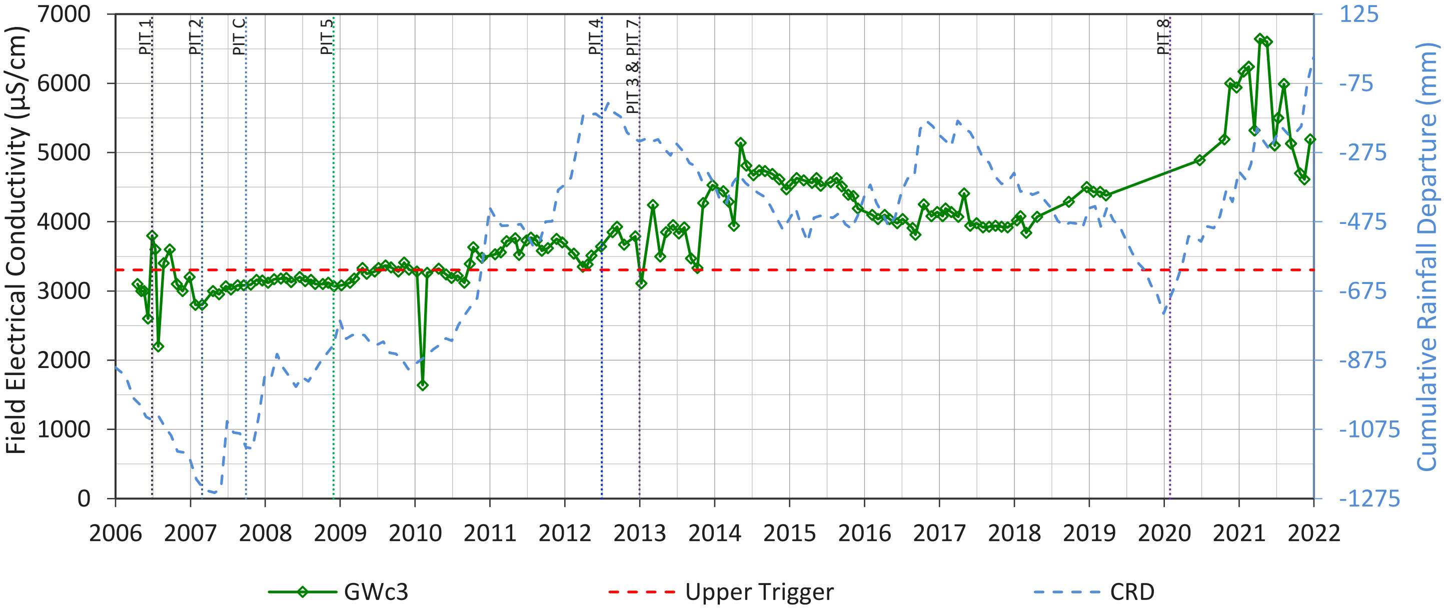

GWc2
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc2
Base of Bore
CRD

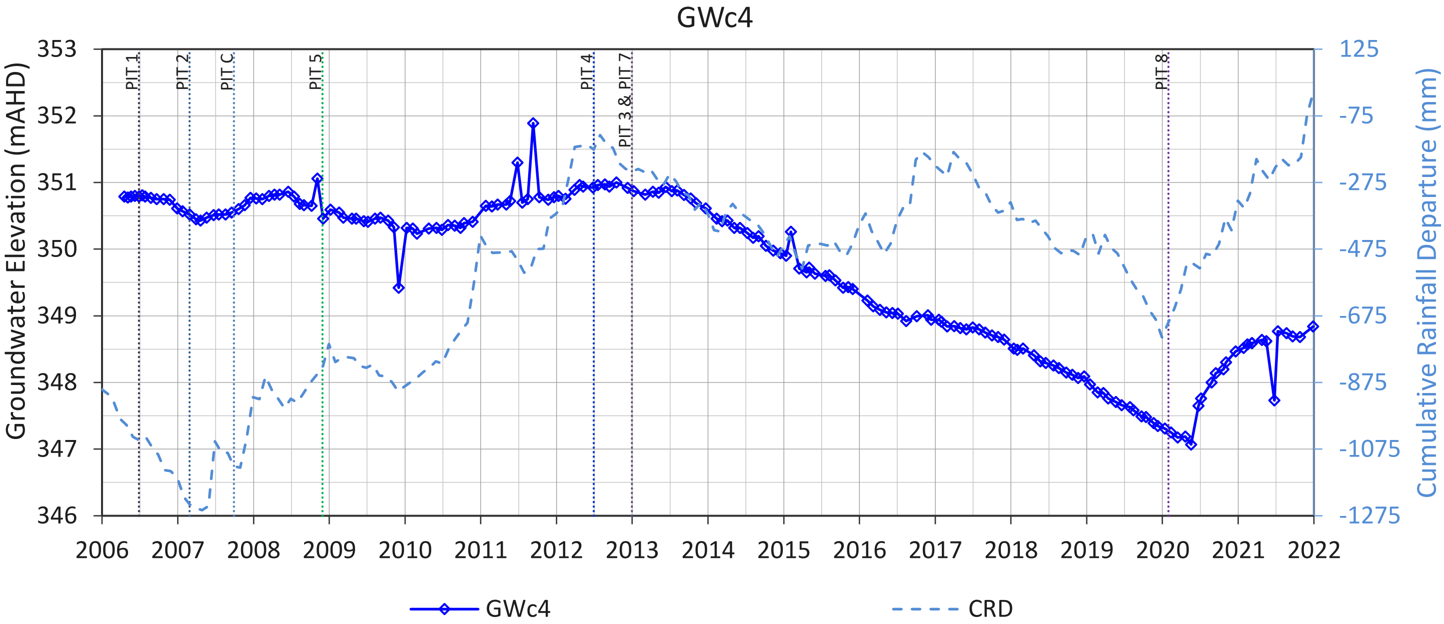

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc2
Lower Trigger
Upper Trigger
CRD

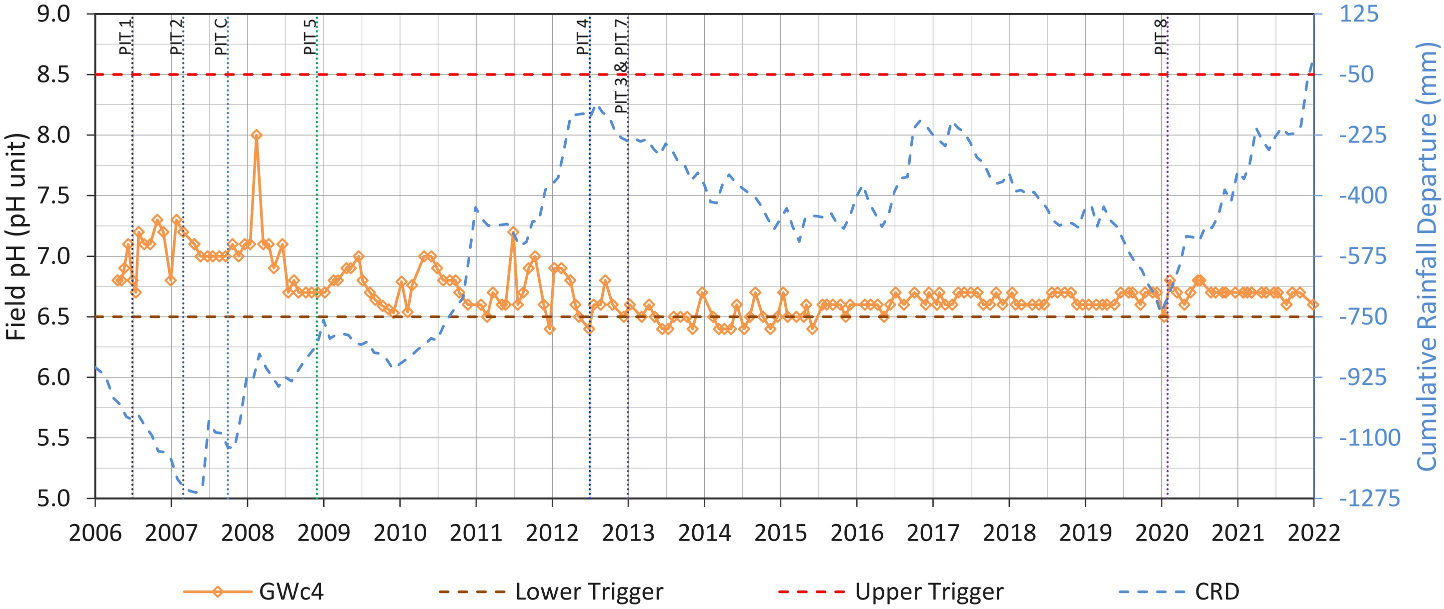

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc2
Upper Trigger
CRD

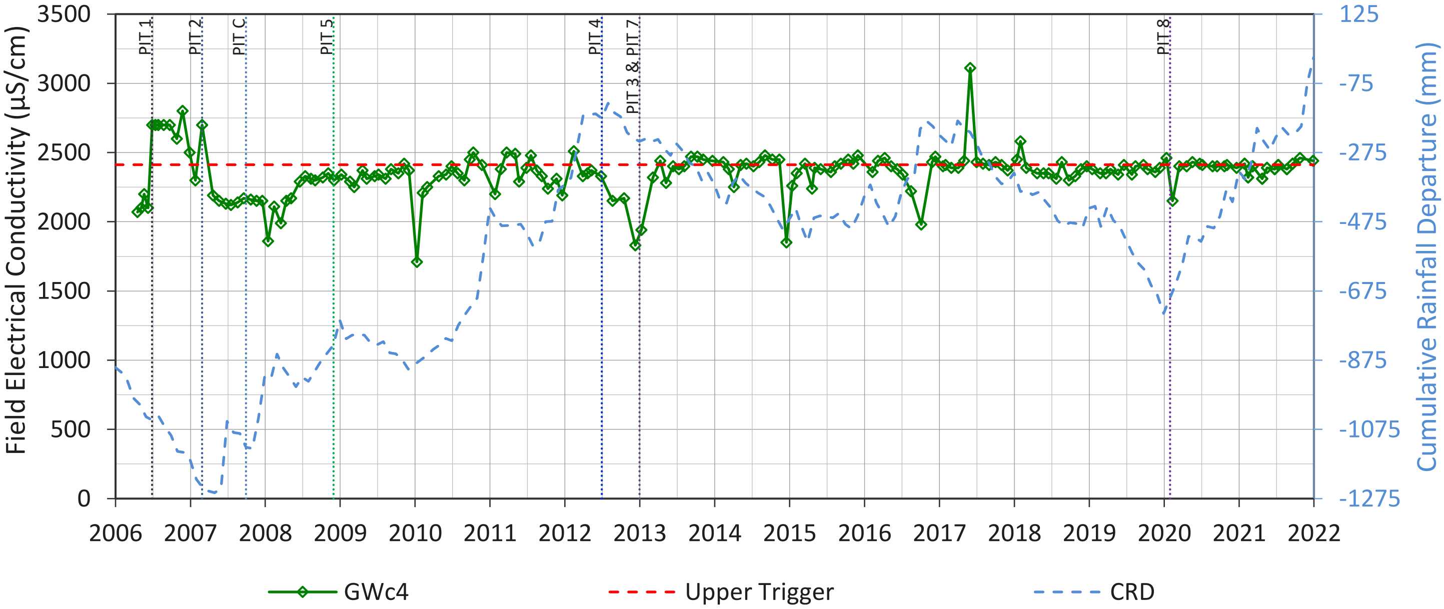

GWc3
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
364
362
360
358
356
354
352
350
348
346
344
225
75
-75
-225
-375
-525
-675
-825
-975
-1125
-1275
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 7
PIT 3 &
PIT 8
GWc3
Base of Bore
CRD

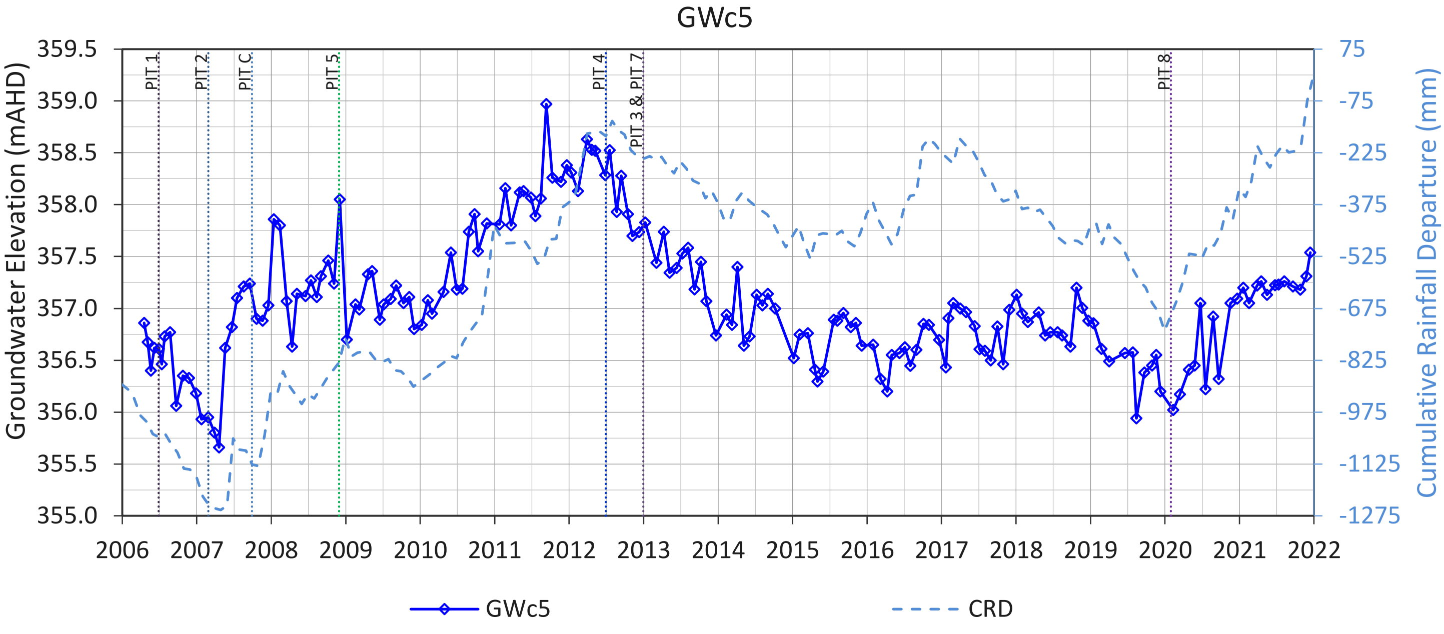

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
125
-50
-225
-400
-575
-750
-925
-1100
-1275
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc3
Lower Trigger
Upper Trigger
CRD

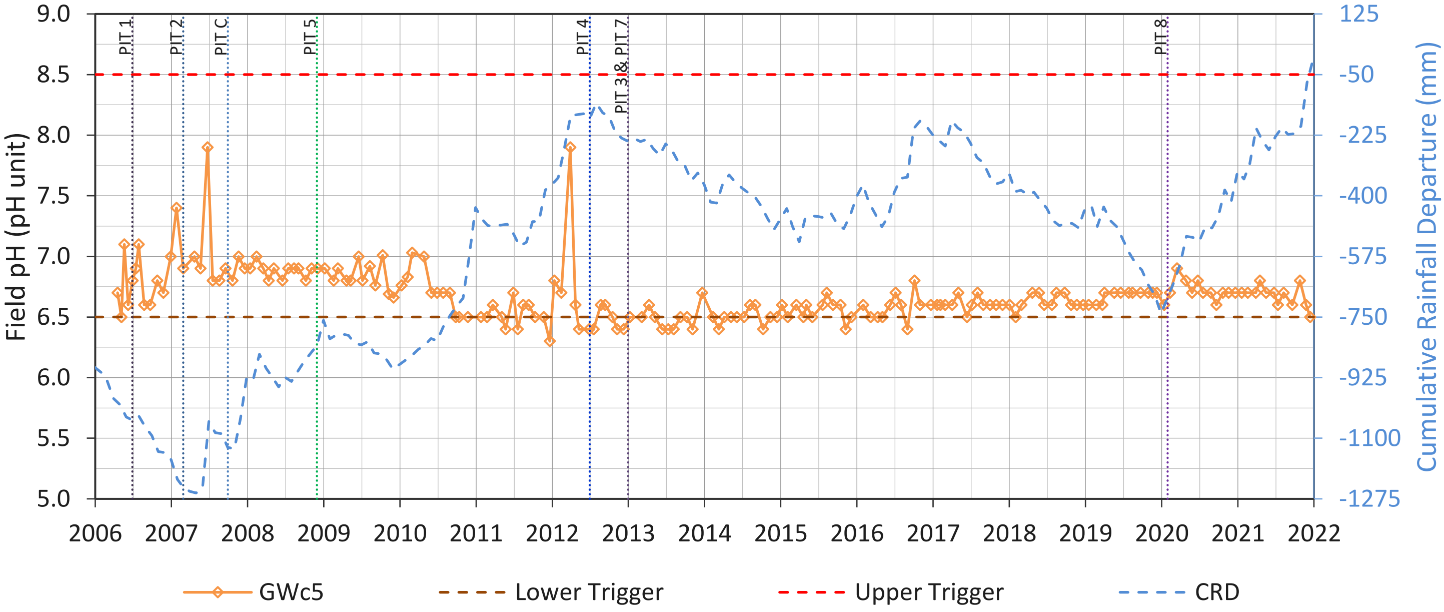

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
7000
6000
5000
4000
3000
2000
1000
0
125
-75
-275
-475
-675
-875
-1075
-1275
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc3
Upper Trigger
CRD

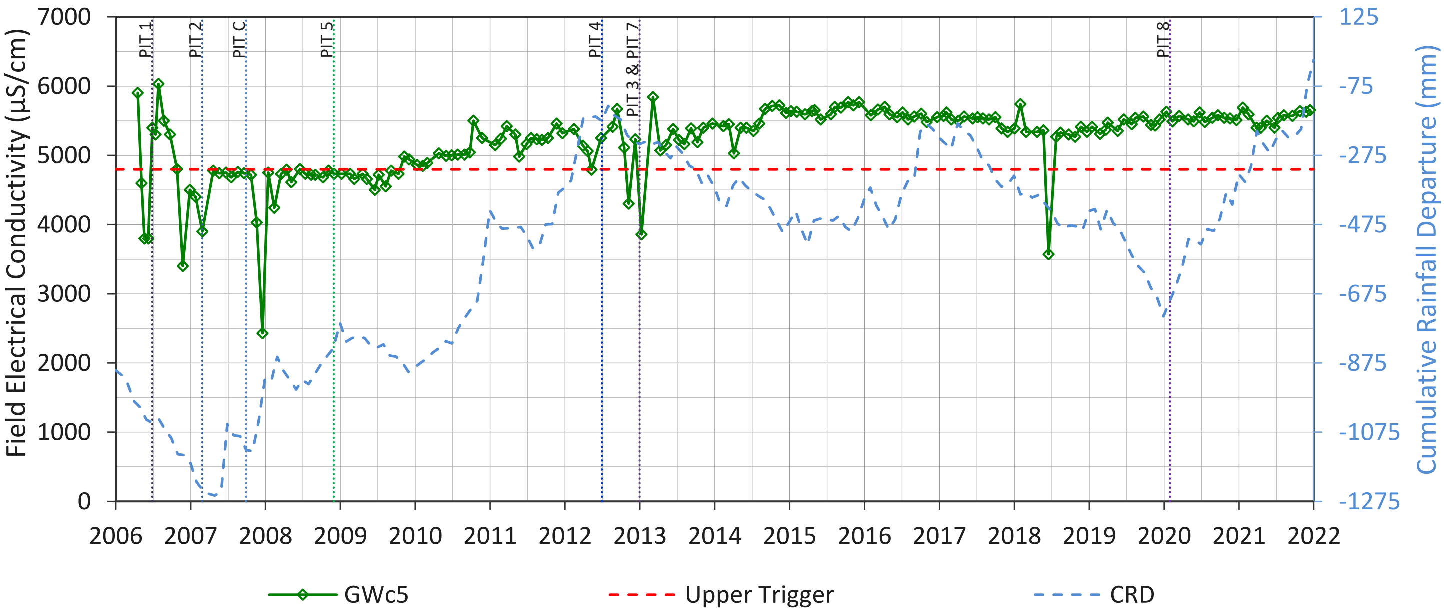

GWc4
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc4
CRD

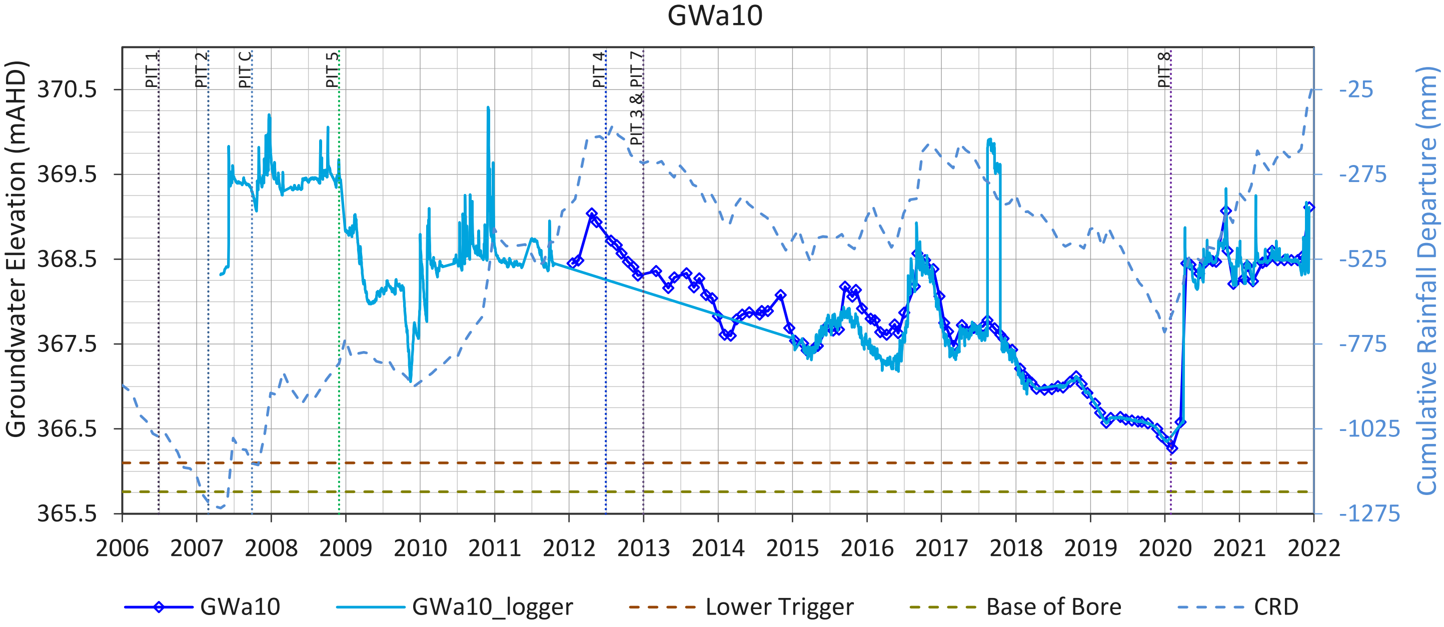

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc4
Lower Trigger
Upper Trigger
CRD

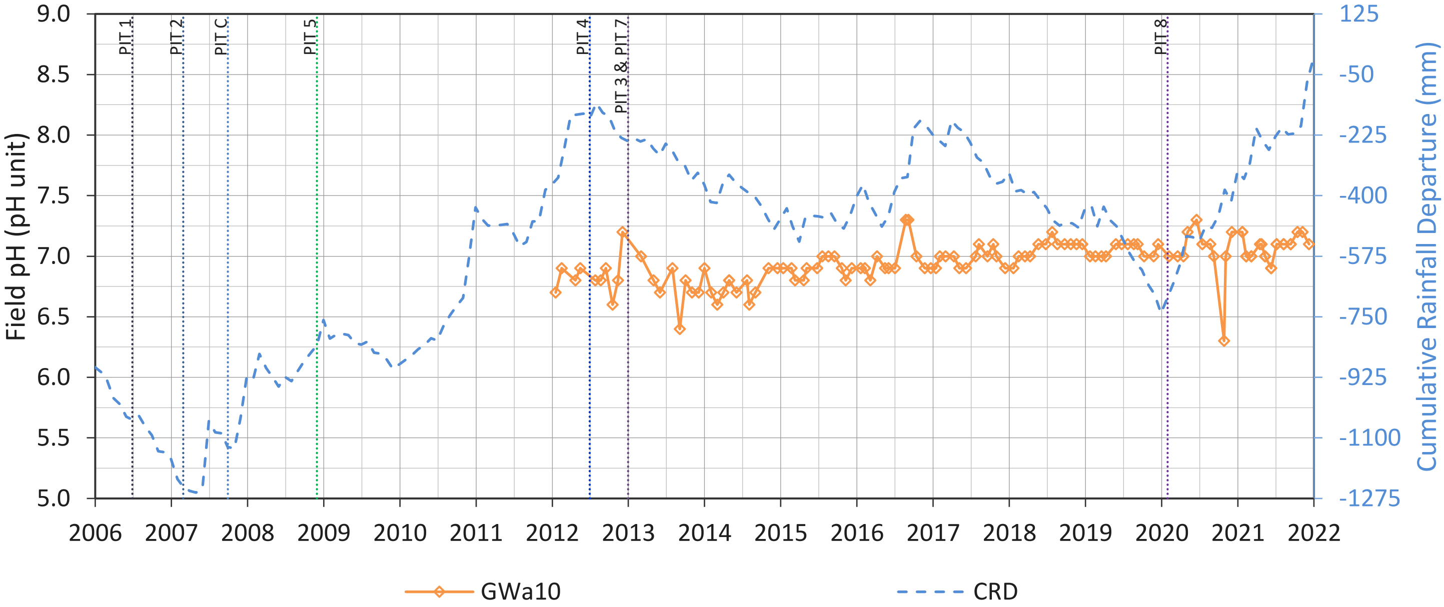

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc4
Upper Trigger
CRD

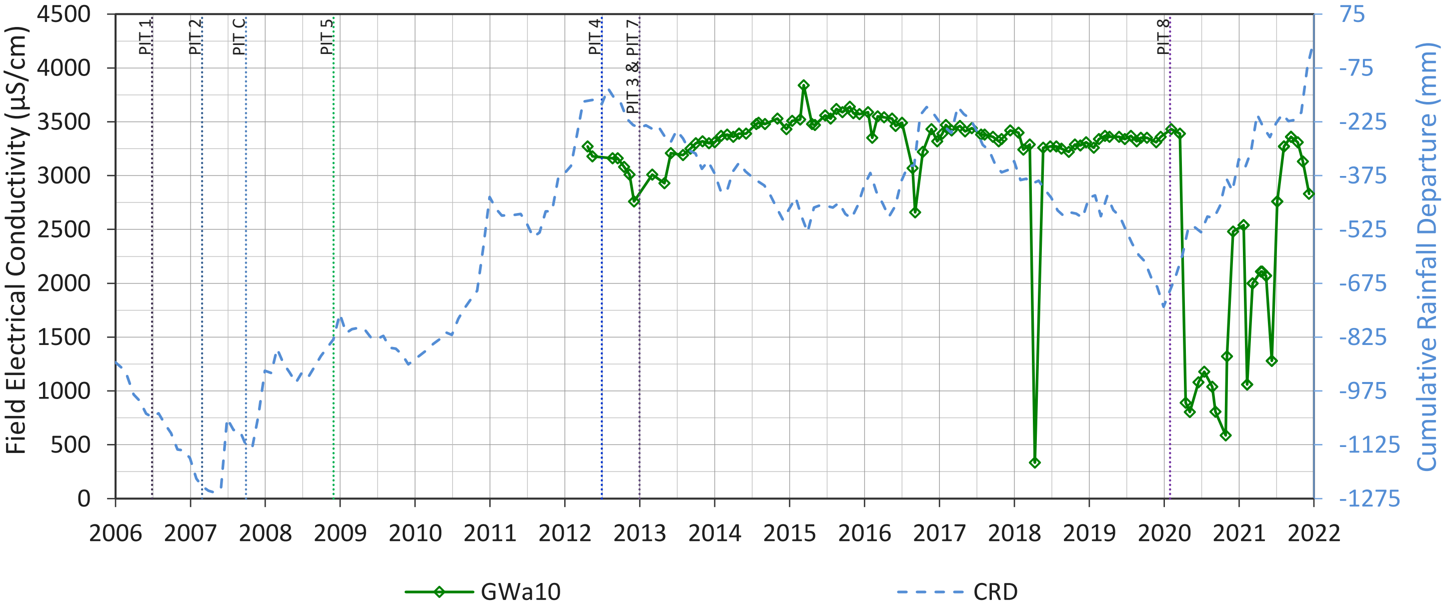

GWc5
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
359.5
359.0
358.5
358.0
357.5
357.0
356.5
356.0
355.5
355.0
75
-75
-225
-375
-525
-675
-825
-975
-1125
-1275
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
GWc5
CRD

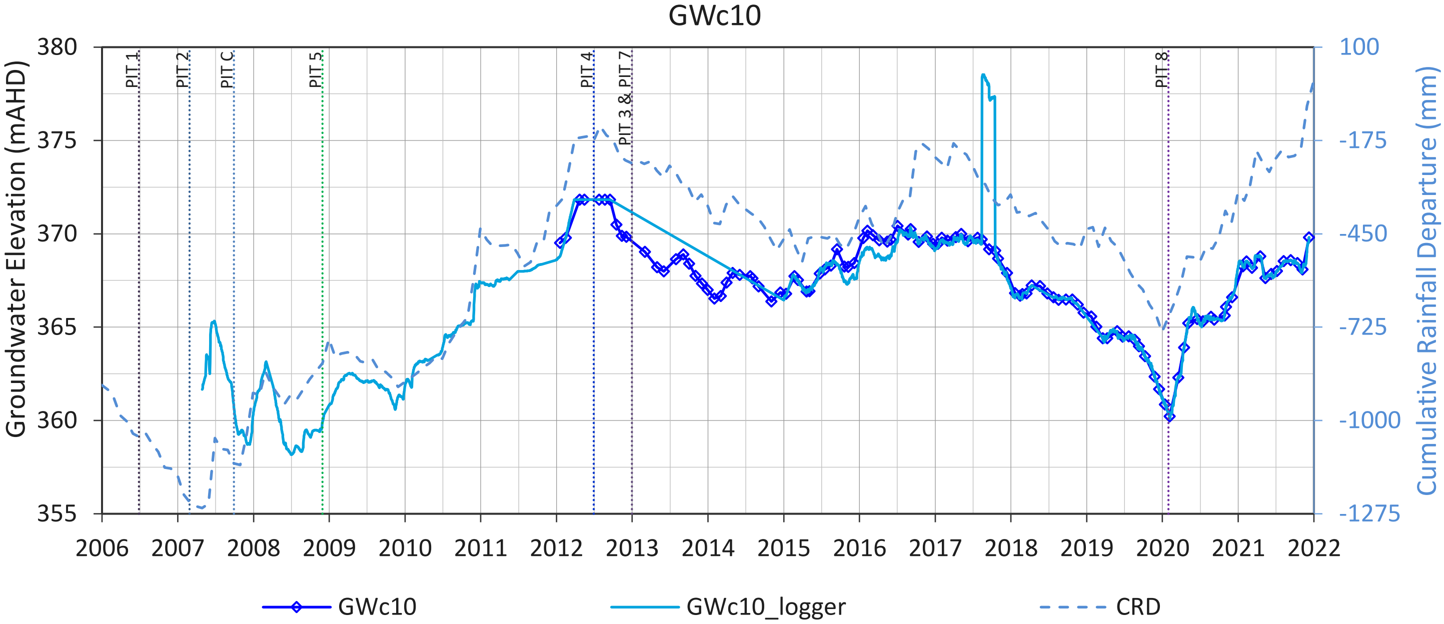

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
125
-50
-225
-400
-575
-750
-925
-1100
-1275
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
GWc5
Lower Trigger
Upper Trigger
CRD

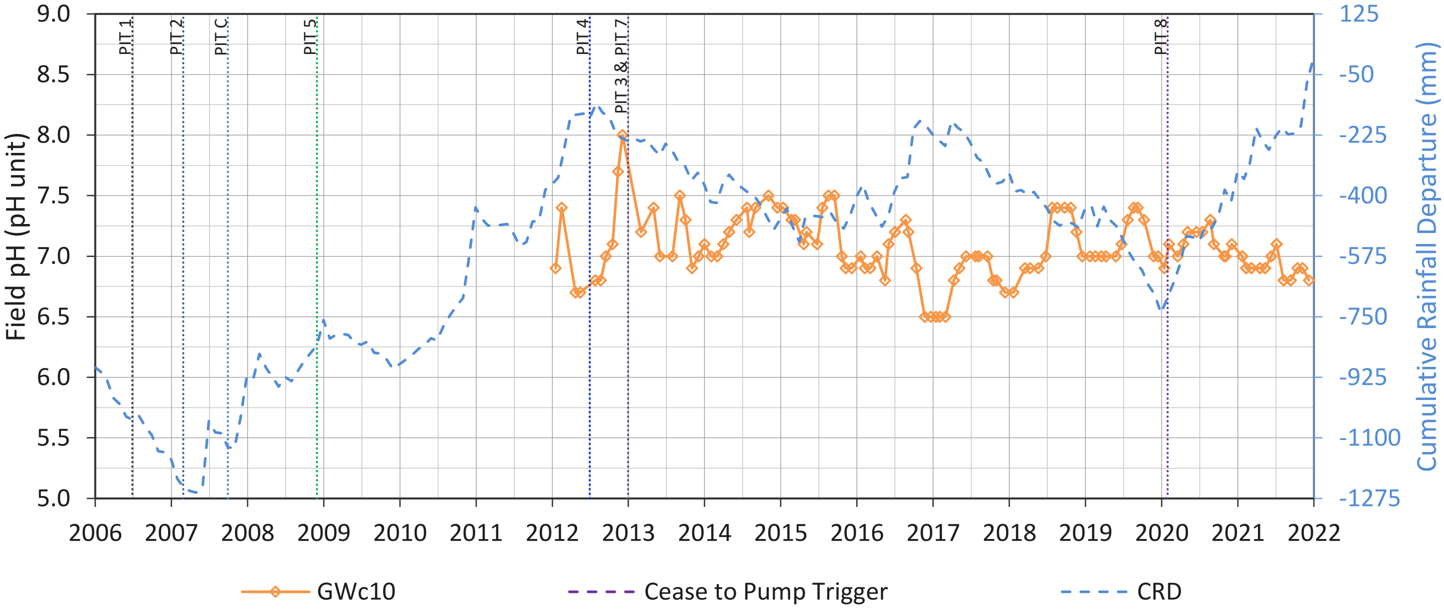

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
7000
6000
5000
4000
3000
2000
1000
0
125
-75
-275
-475
-675
-875
-1075
-1275
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
GWc5
Upper Trigger
CRD

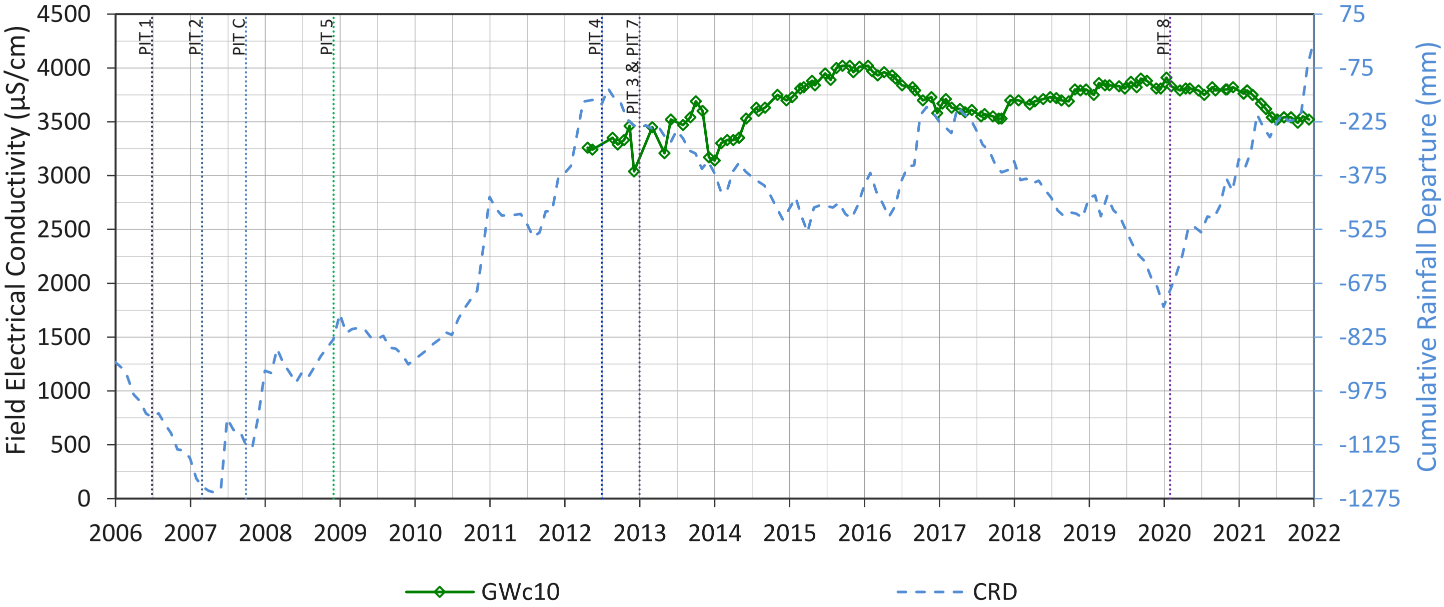

GWa10
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWa10
GWa10_logger
Lower Trigger
Base of Bore
CRD

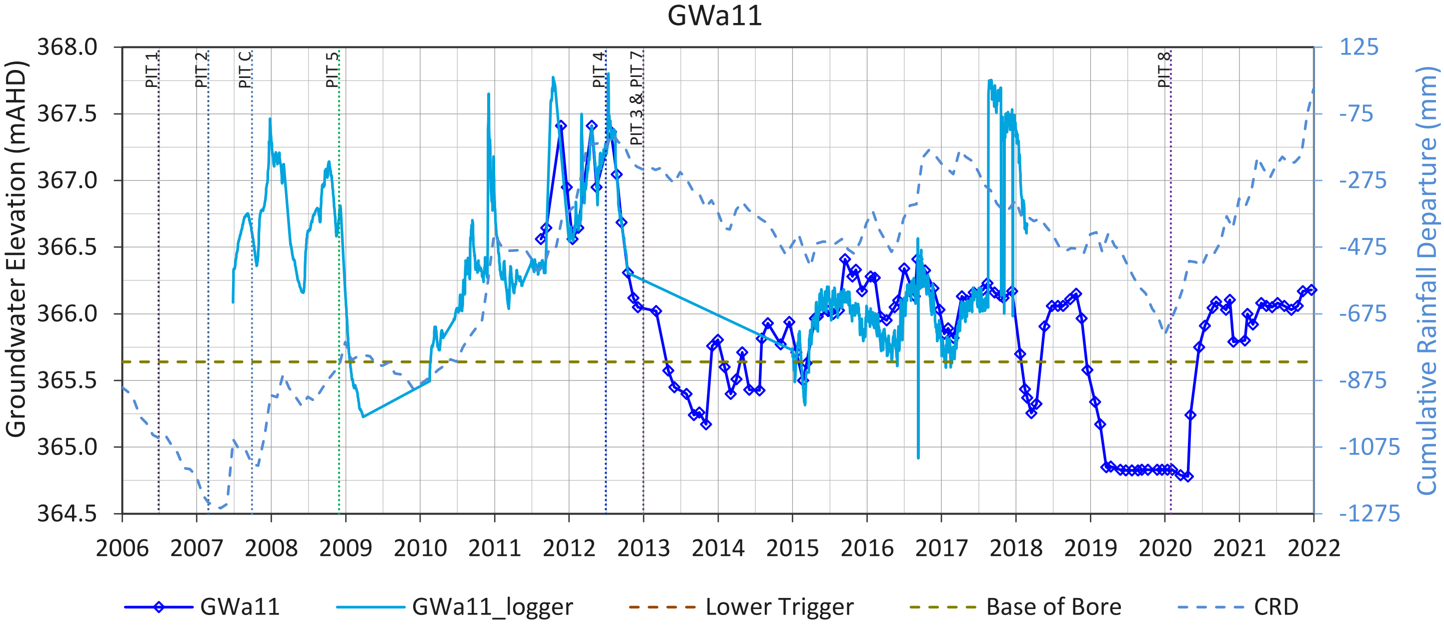

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWa10
CRD

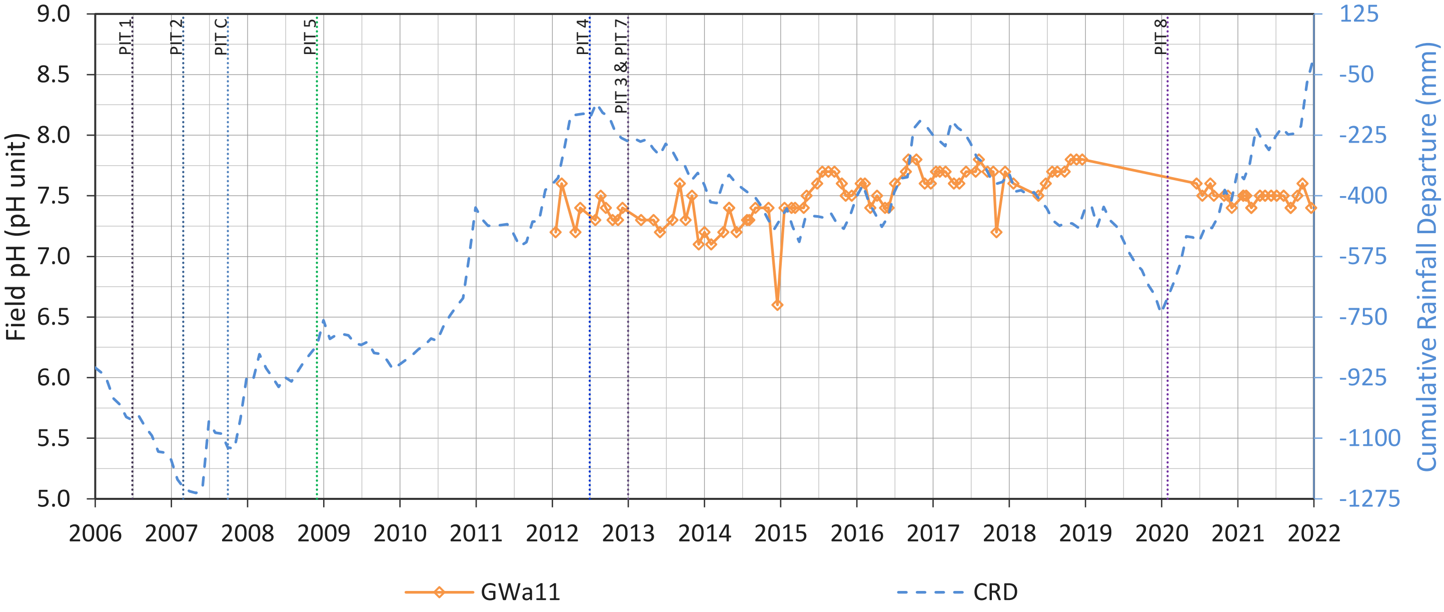

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWa10
CRD

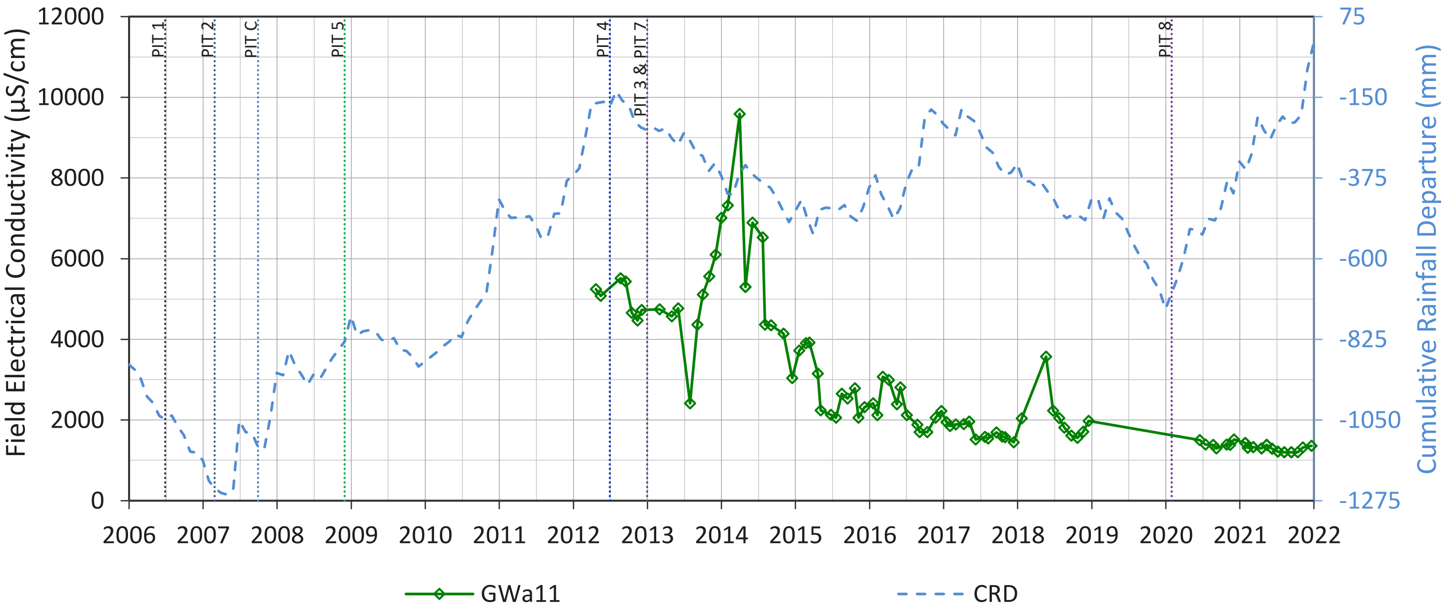

GWc10
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc10
GWc10_logger
CRD

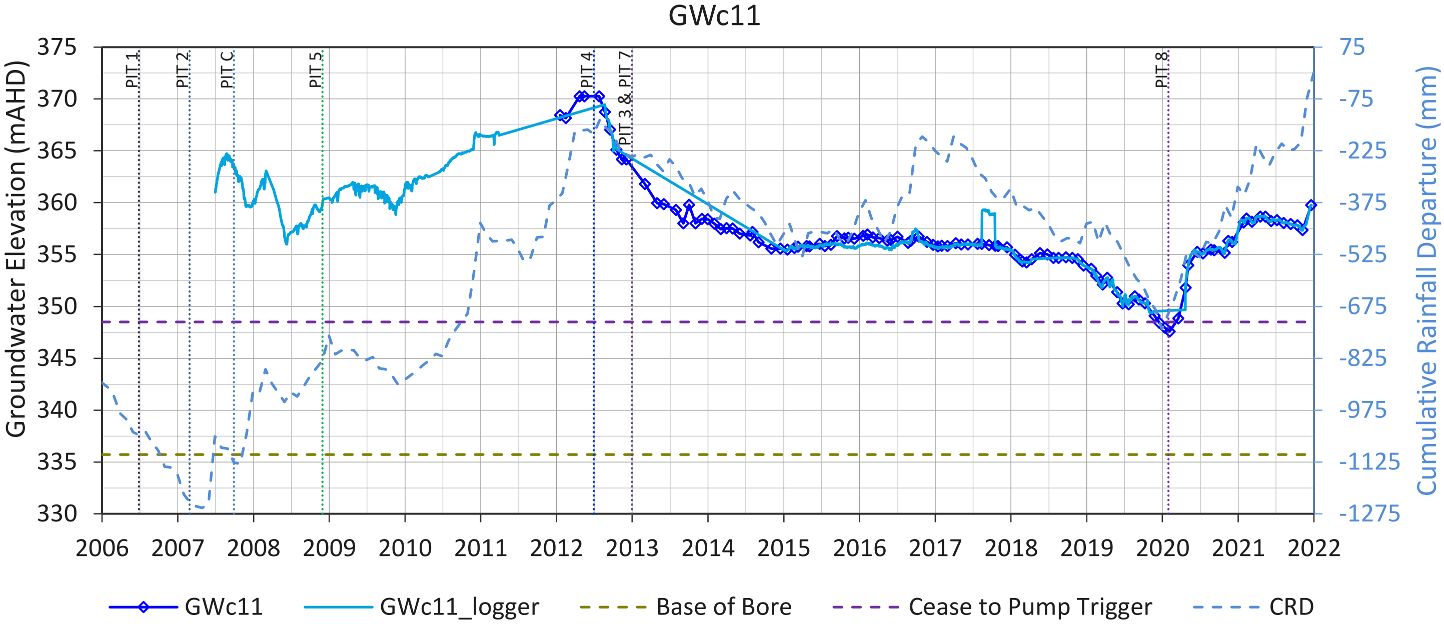

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc10
Cease to Pump Trigger
CRD

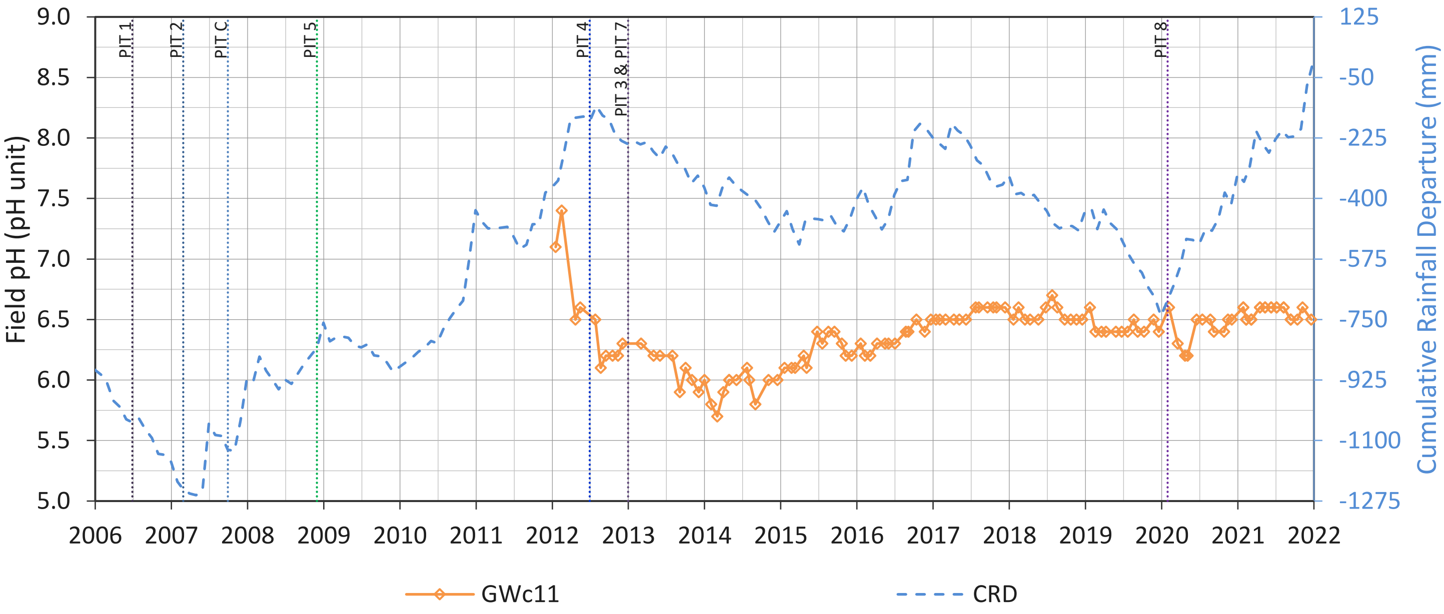

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc10
CRD

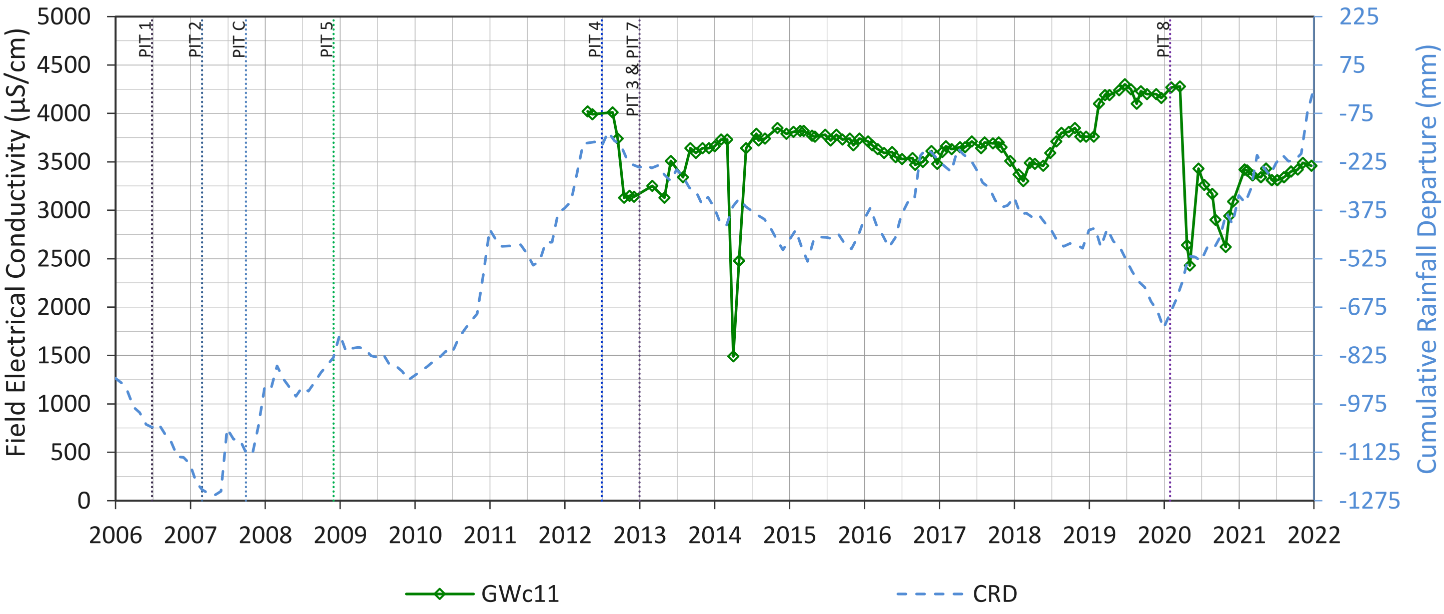

GWa11
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWa11
GWa11_logger
Lower Trigger
Base of Bore
CRD

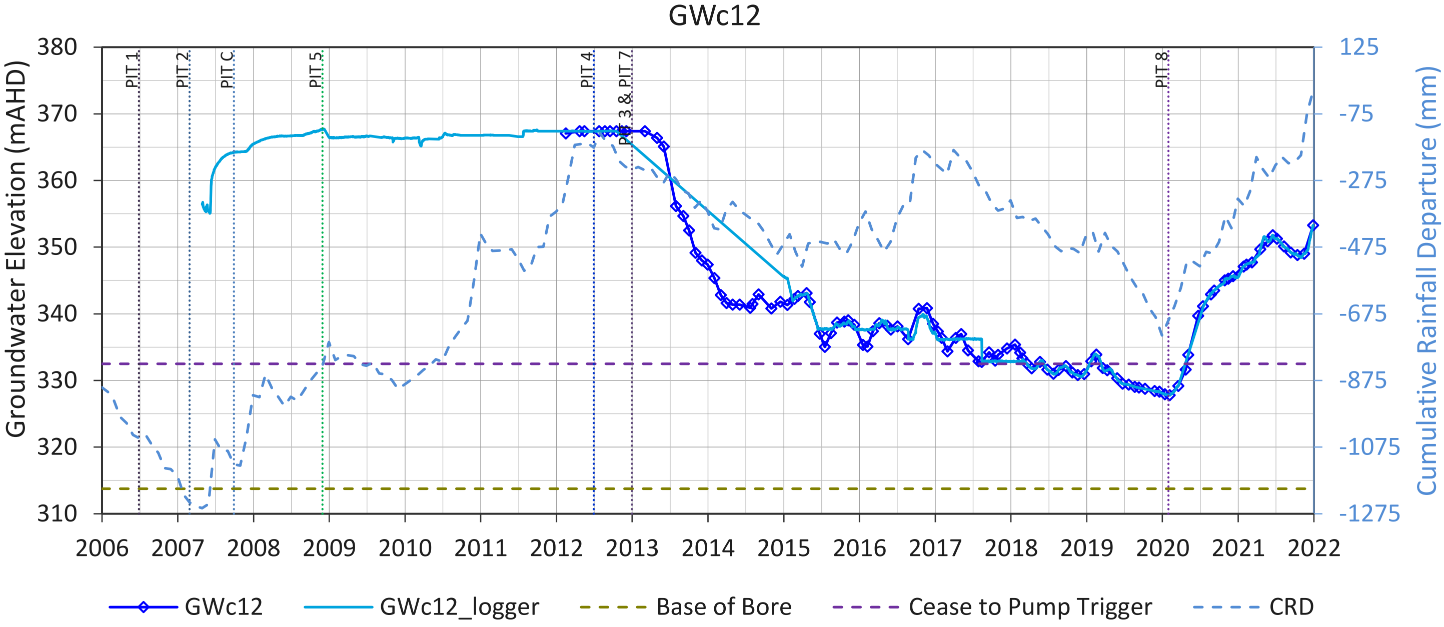

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWa11
CRD

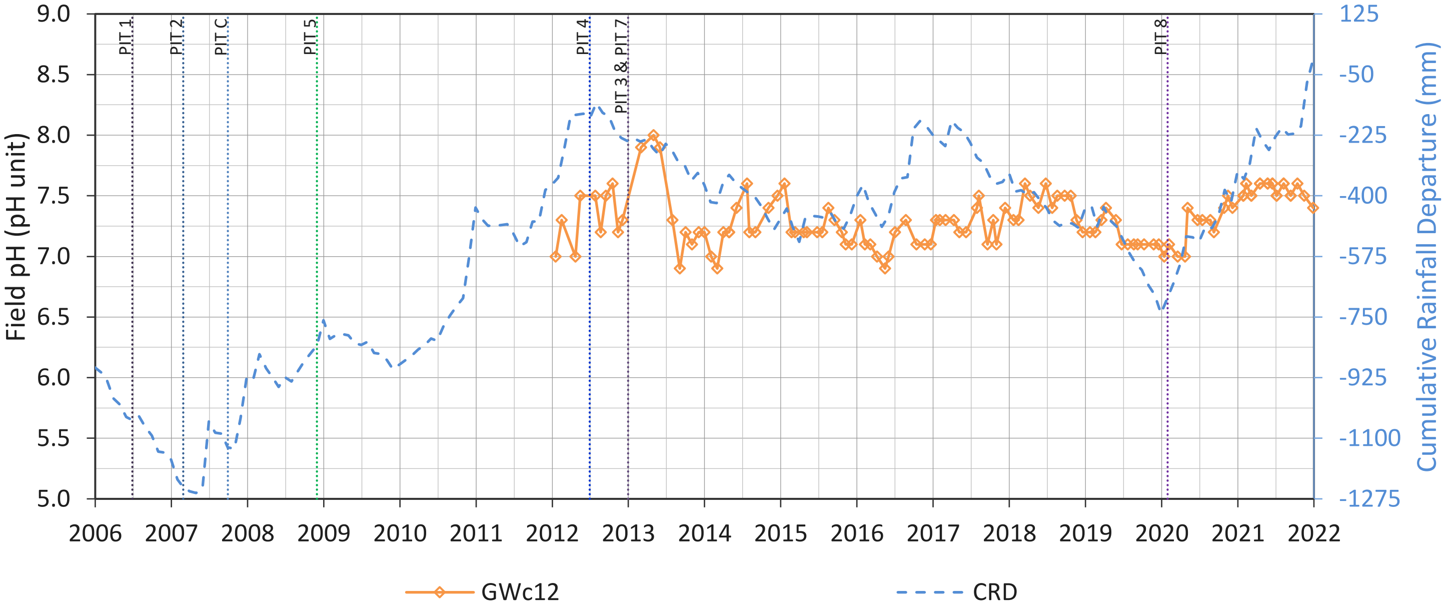

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWa11
CRD

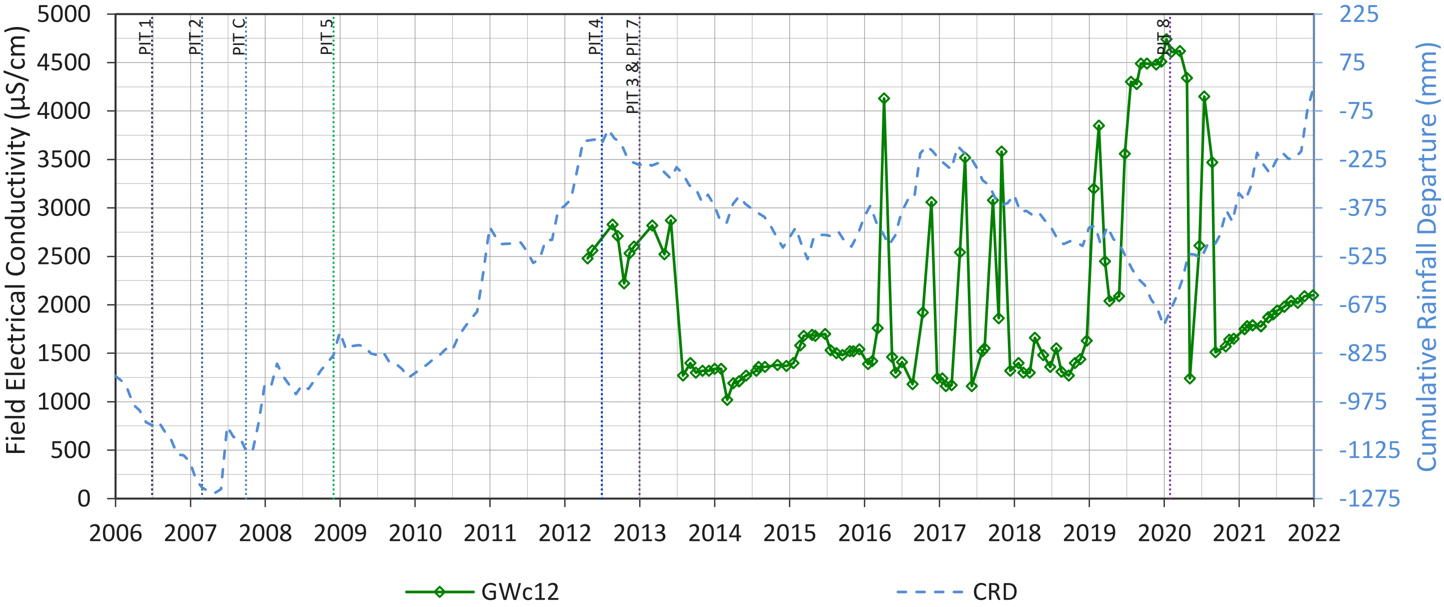

GWc11
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc11
GWc11_logger
Base of Bore
Cease to Pump Trigger
CRD

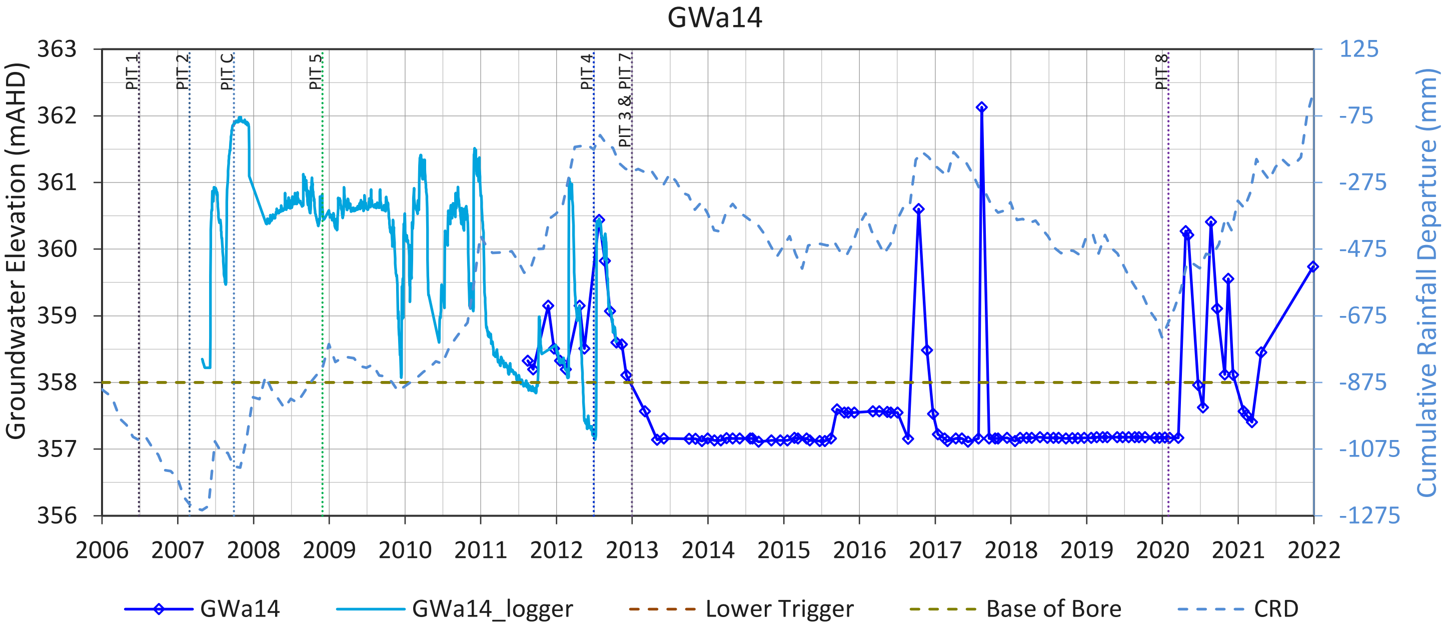

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc11
CRD

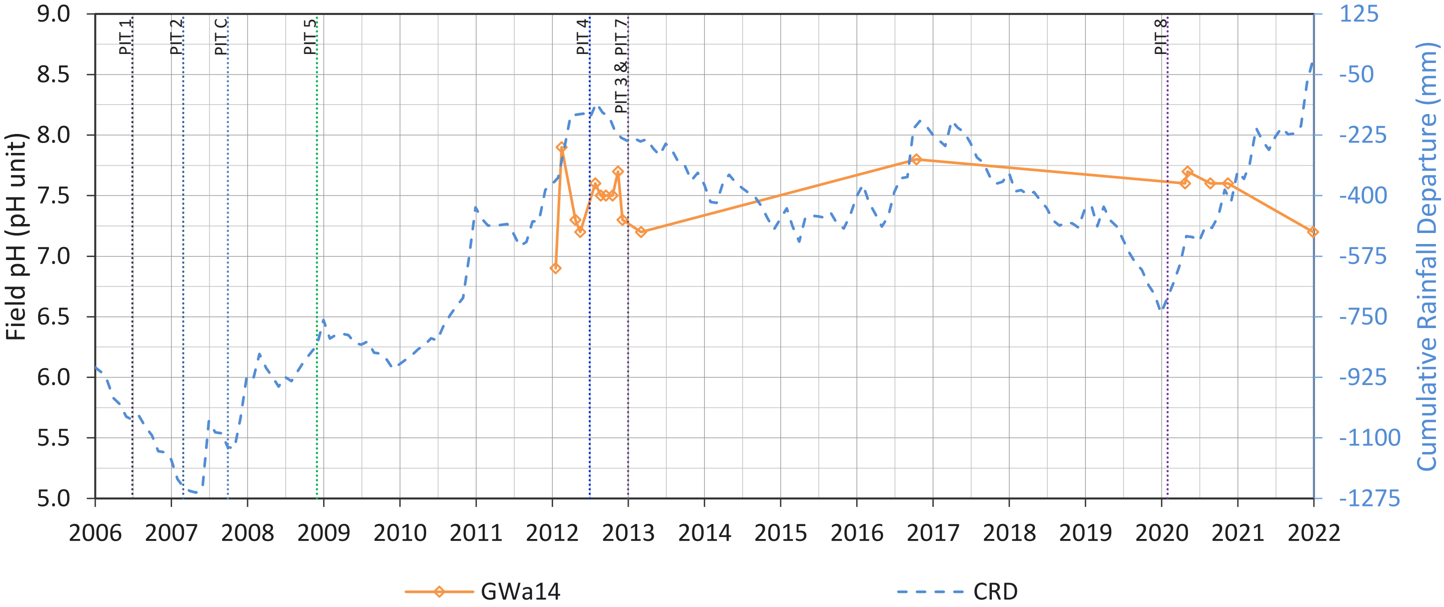

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc11
CRD

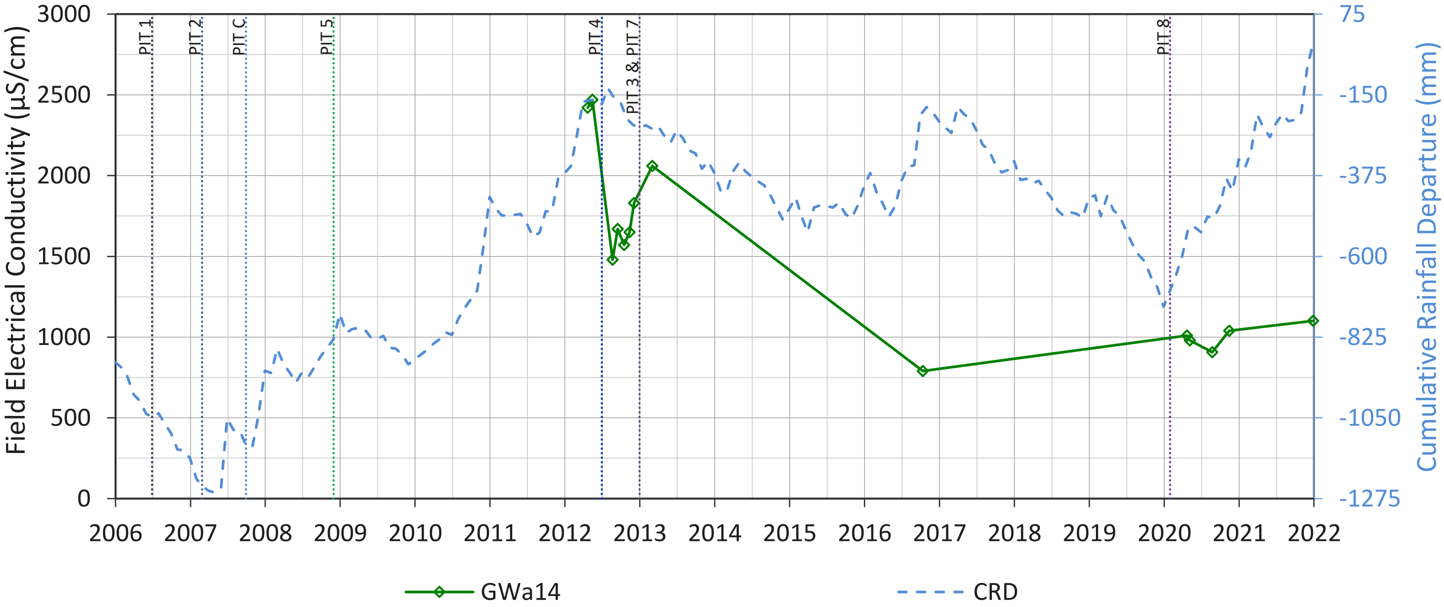

GWc12
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc12
GWc12_logger
Base of Bore
Cease to Pump Trigger
CRD

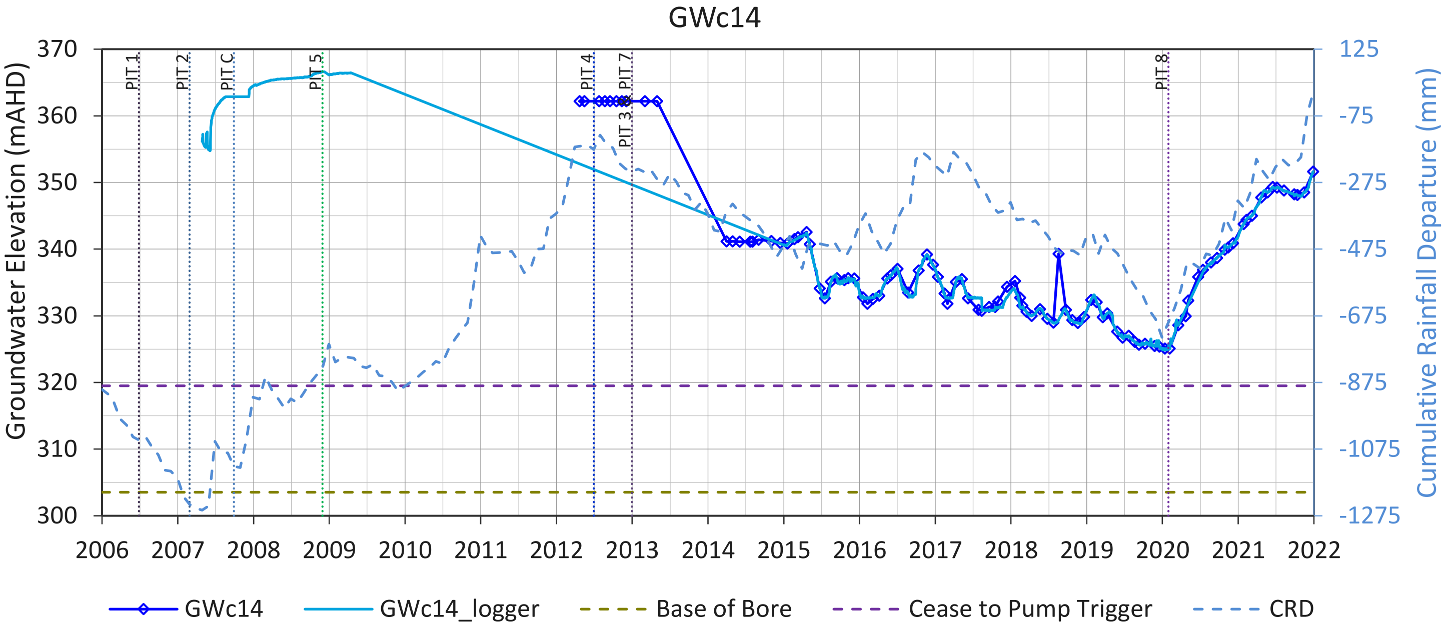

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc12
CRD

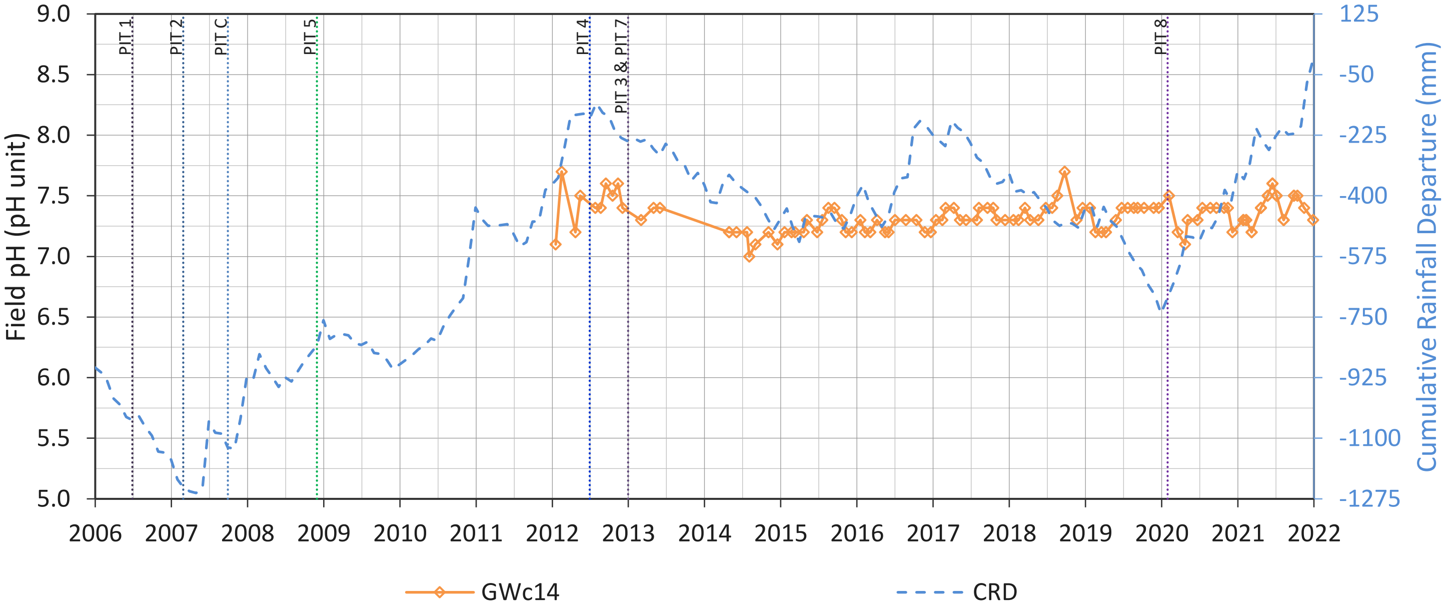

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc12
CRD

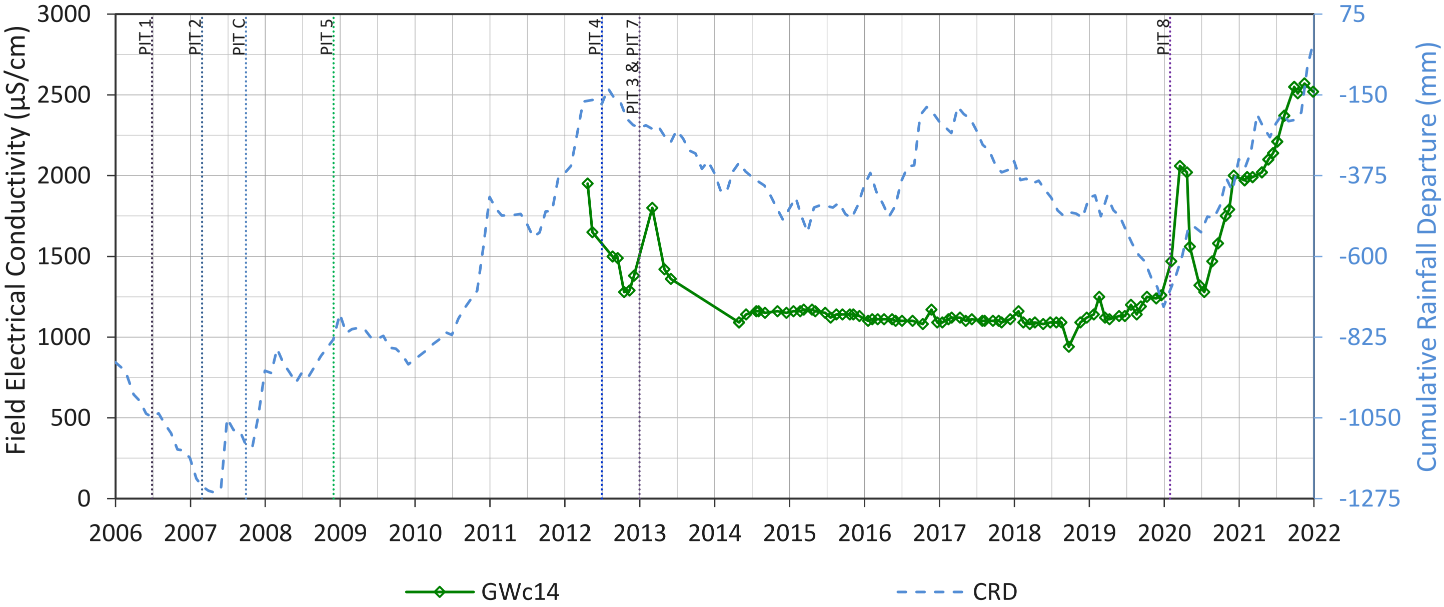

GWa14
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWa14
GWa14_logger
Lower Trigger
Base of Bore
CRD

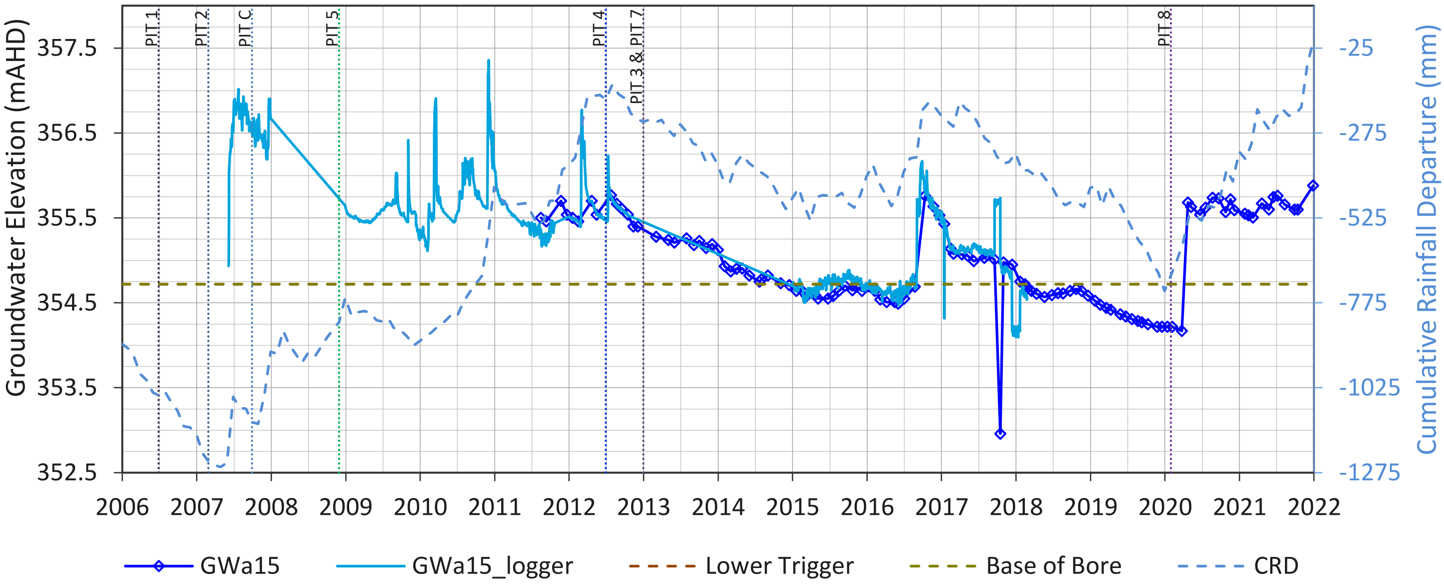

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWa14
CRD

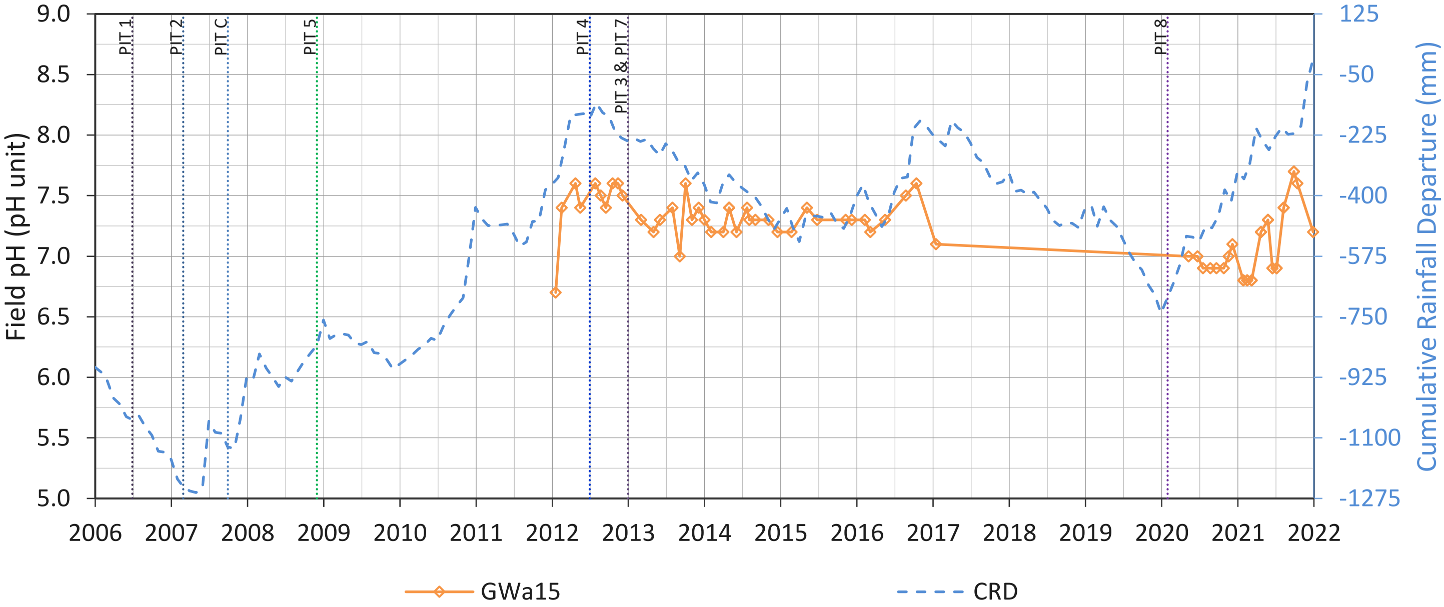

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWa14
CRD

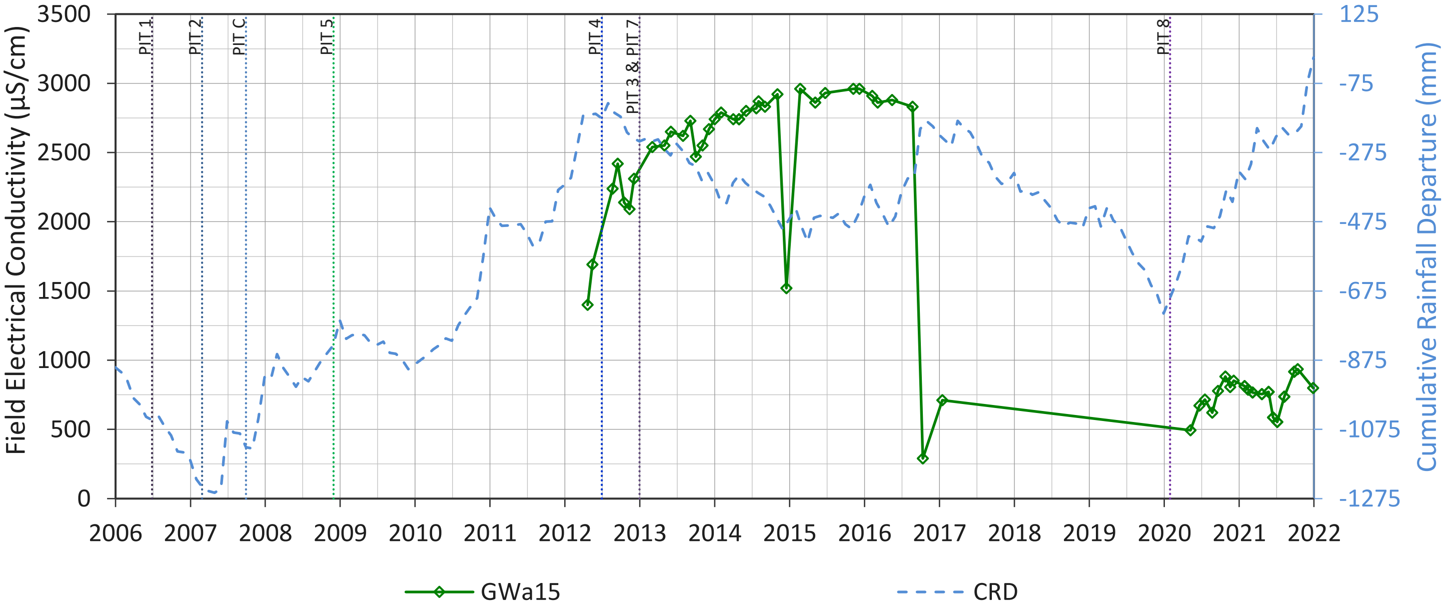

GWc14
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3
PIT 7
PIT 8
GWc14
GWc14_logger
Base of Bore
Cease to Pump Trigger
CRD

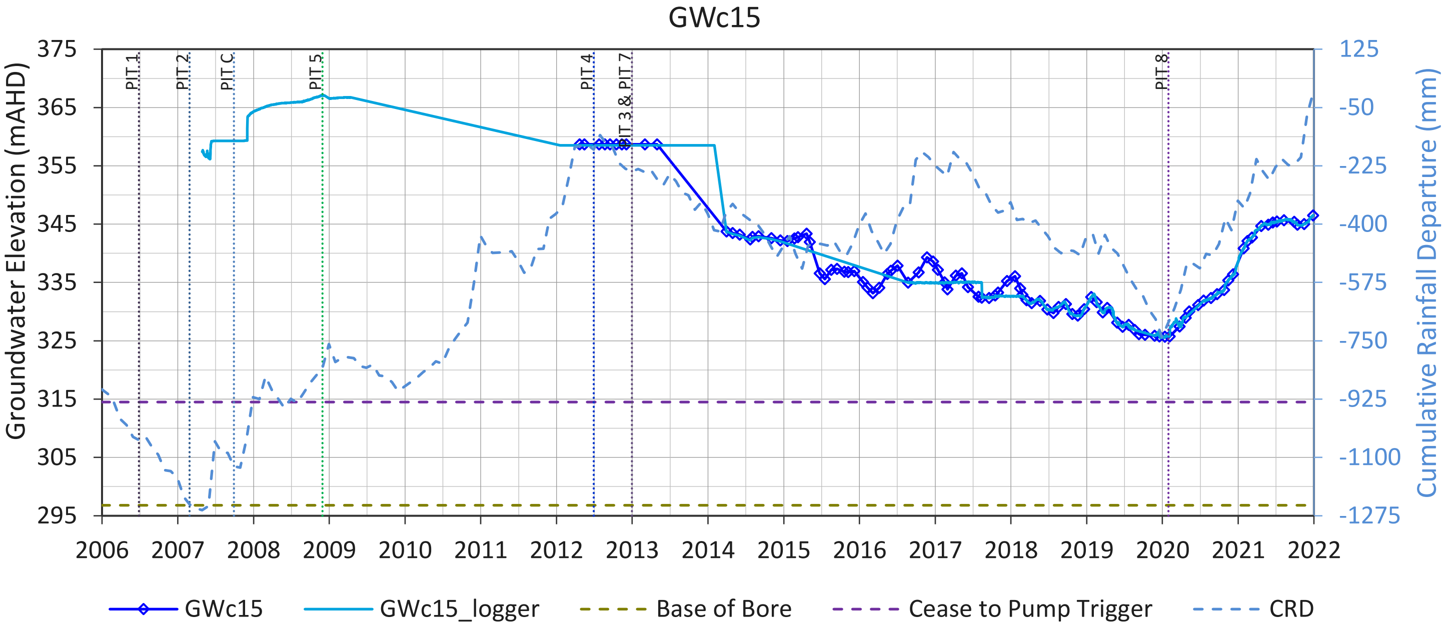

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc14
CRD

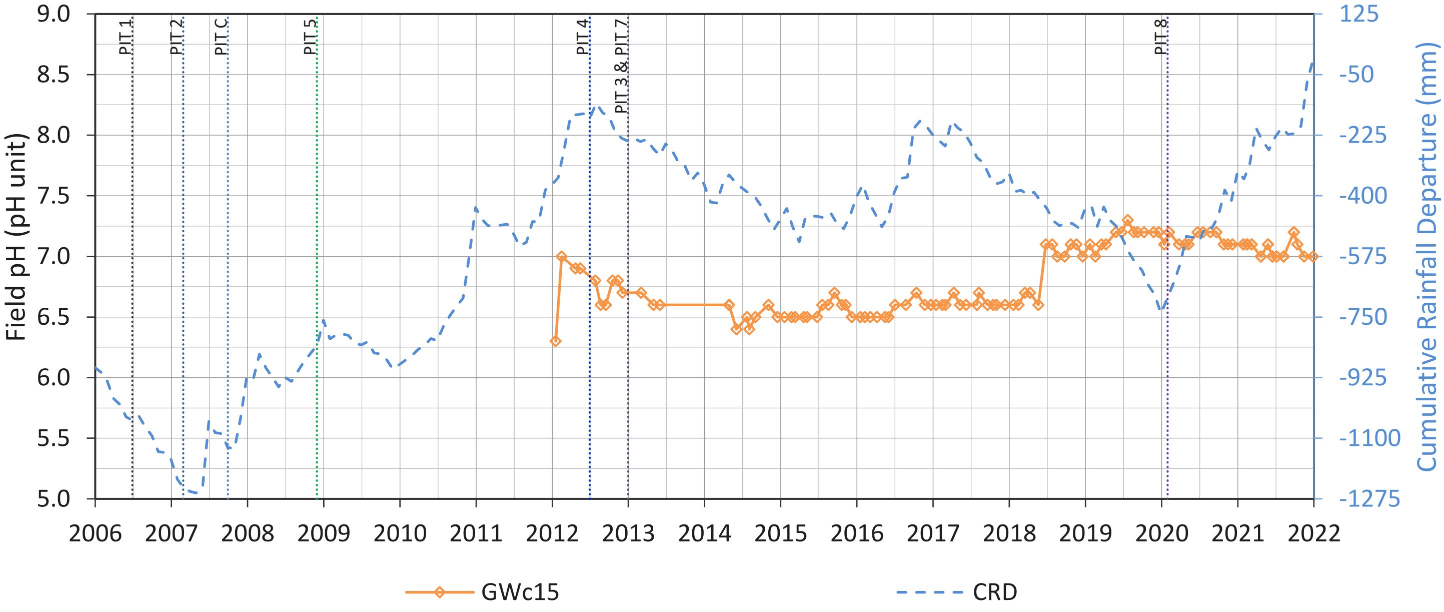

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc14
CRD

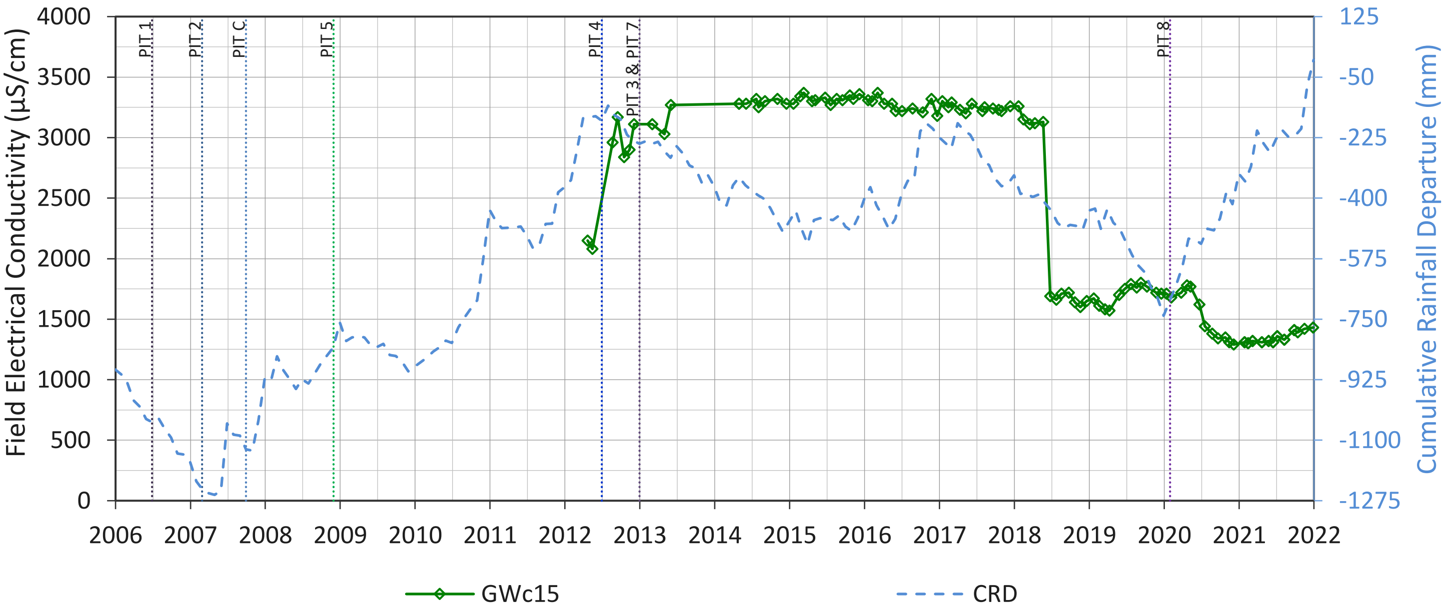

GWa15
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
357.5
356.5
355.5
354.5
353.5
352.5
-25
-275
-525
-775
-1025
-1275
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
GWa15
GWa15_logger
Lower Trigger
Base of Bore
CRD

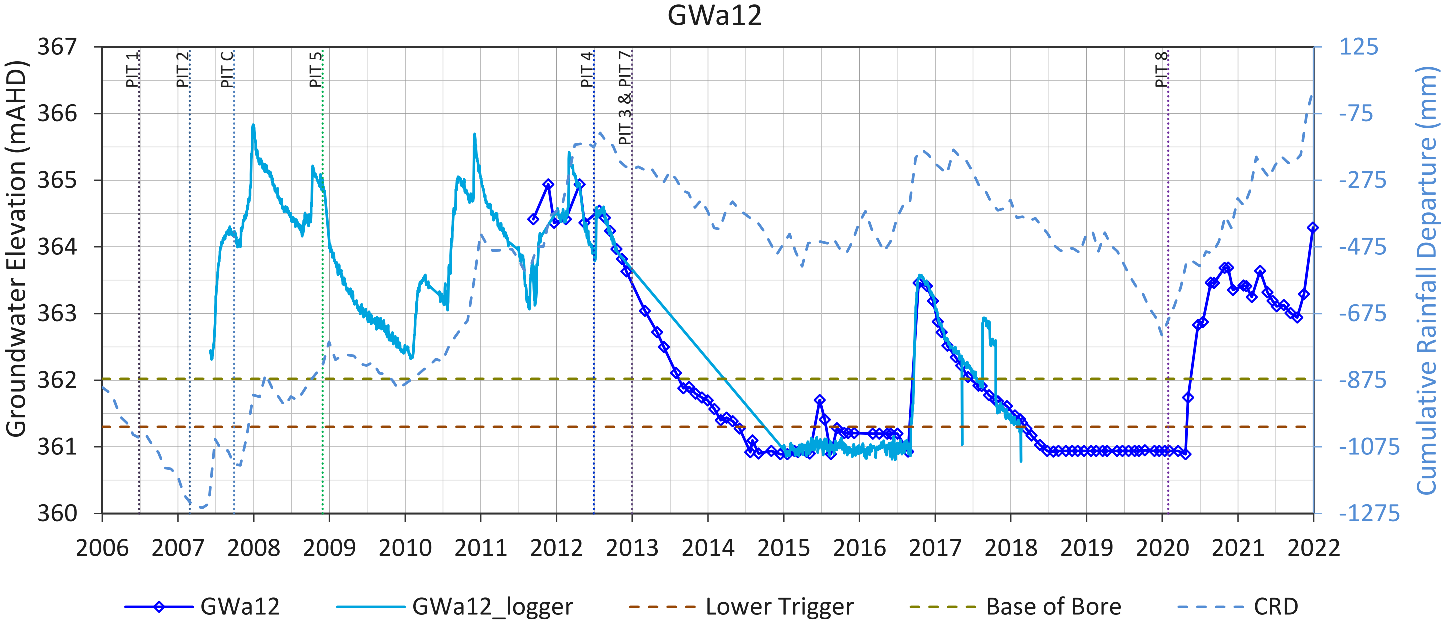

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
125
-50
-225
-400
-575
-750
-925
-1100
-1275
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
GWa15
CRD

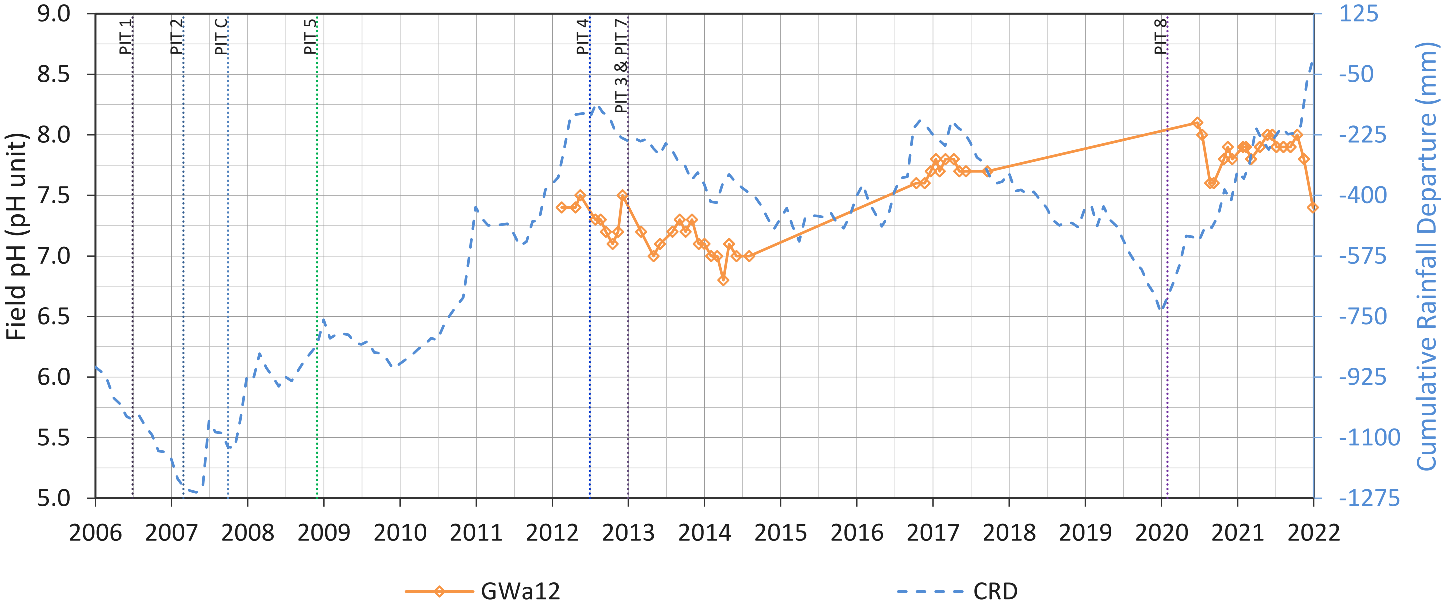

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
3500
3000
2500
2000
1500
1000
500
0
125
-75
-275
-475
-675
-875
-1075
-1275
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
GWa15
CRD

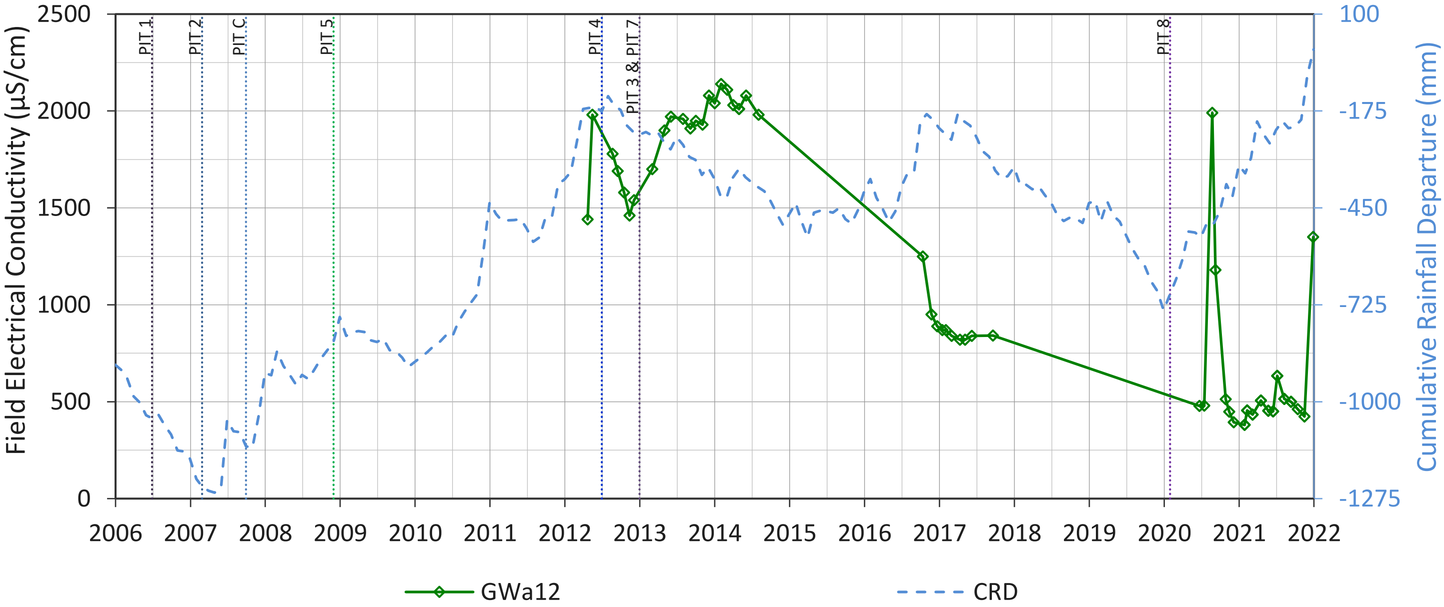

GWc15
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc15
GWc15_logger
Base of Bore
Cease to Pump Trigger
CRD

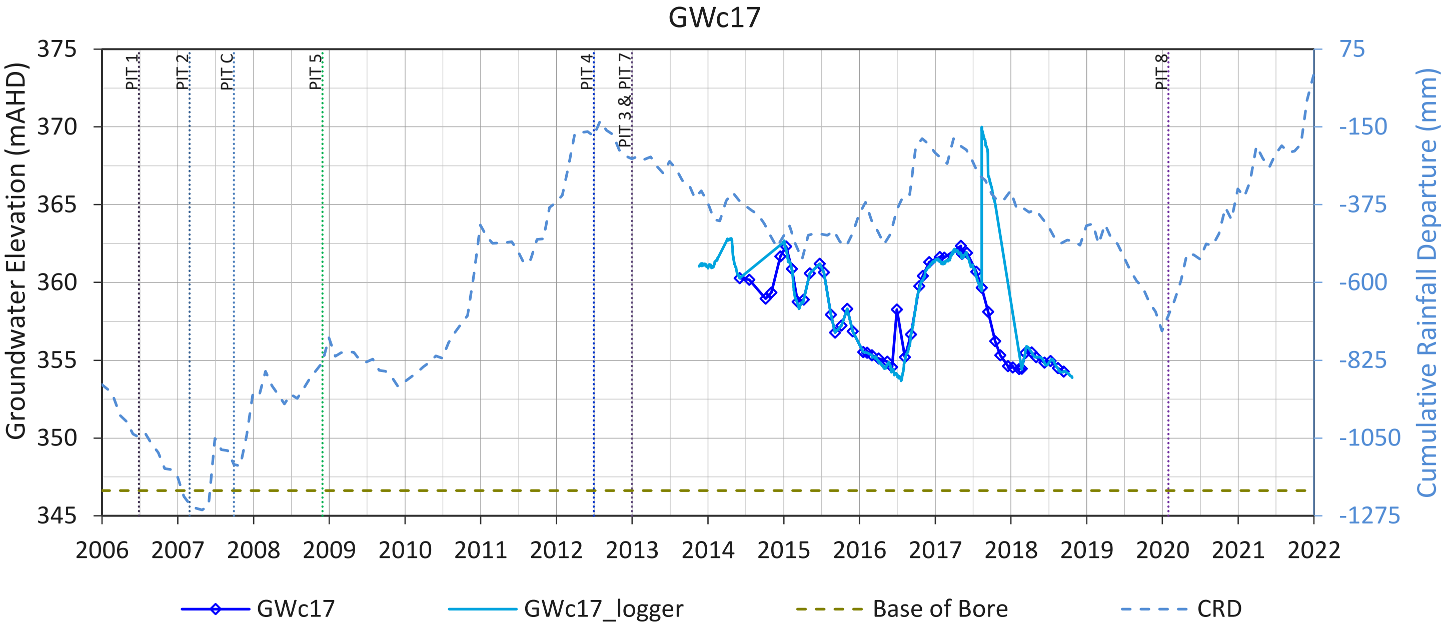

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc15
CRD

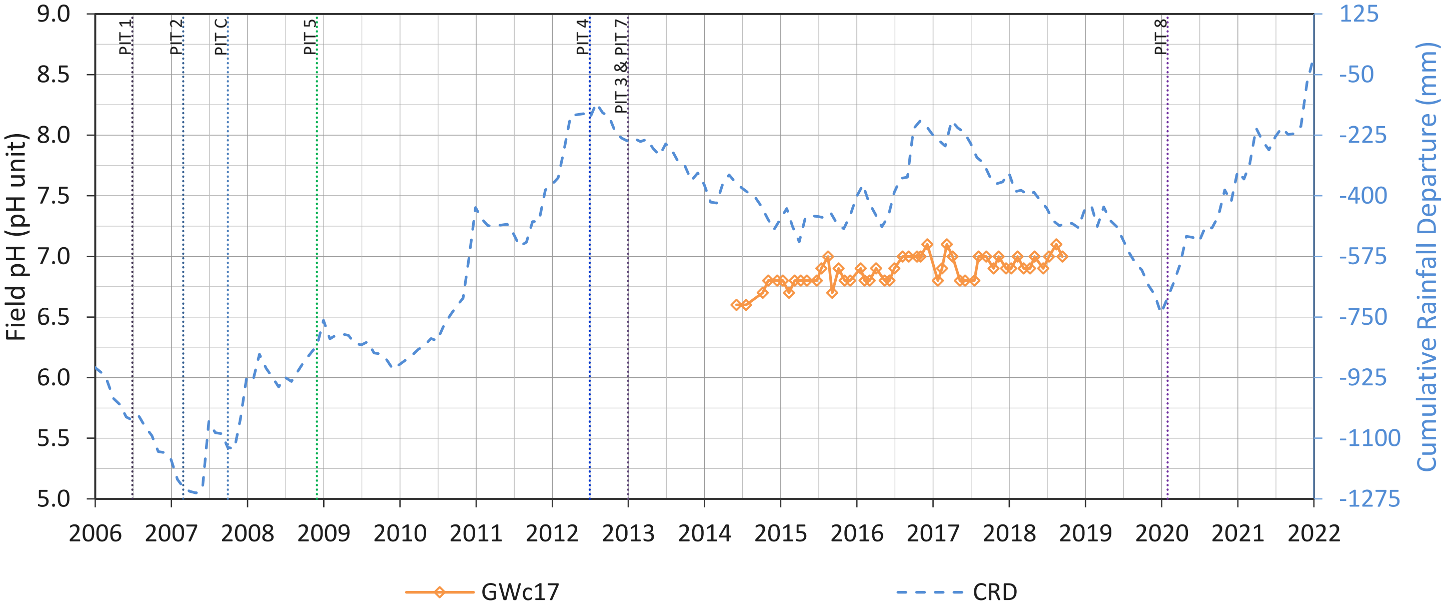

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc15
CRD

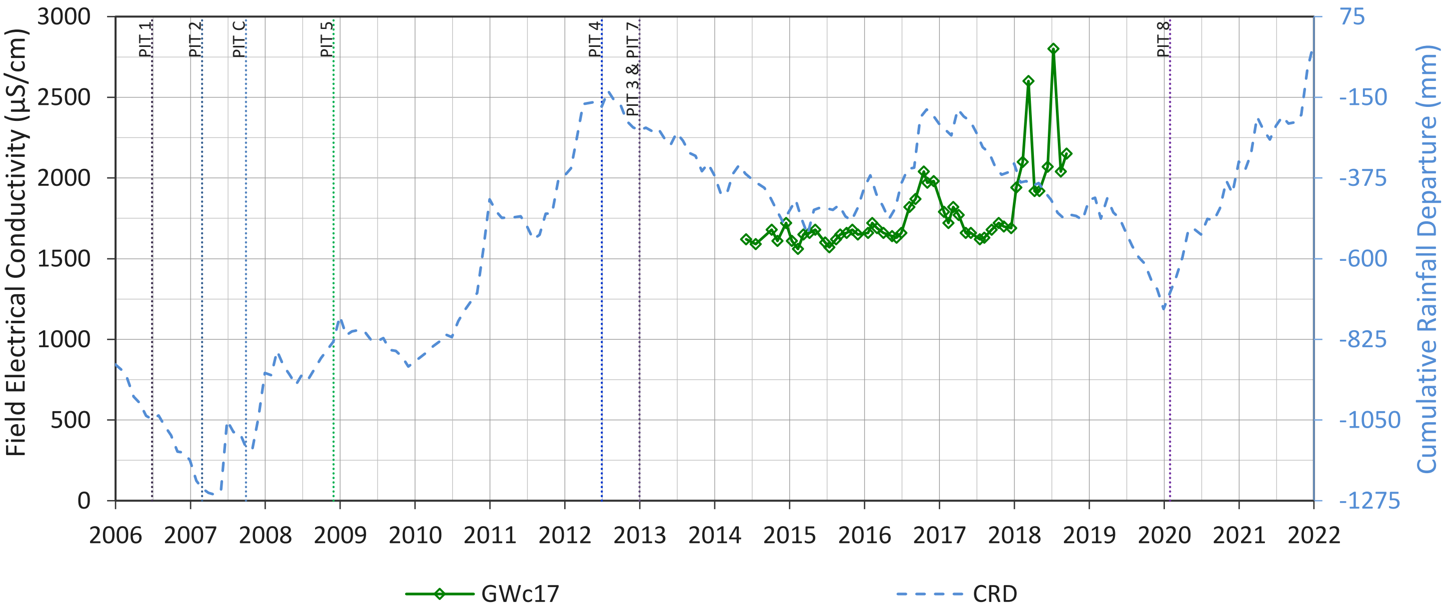

GWa12
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
367
366
365
364
363
362
361
360
125
-75
-275
-475
-675
-875
-1075
-1275
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
GWa12
GWa12_logger
Lower Trigger
Base of Bore
CRD

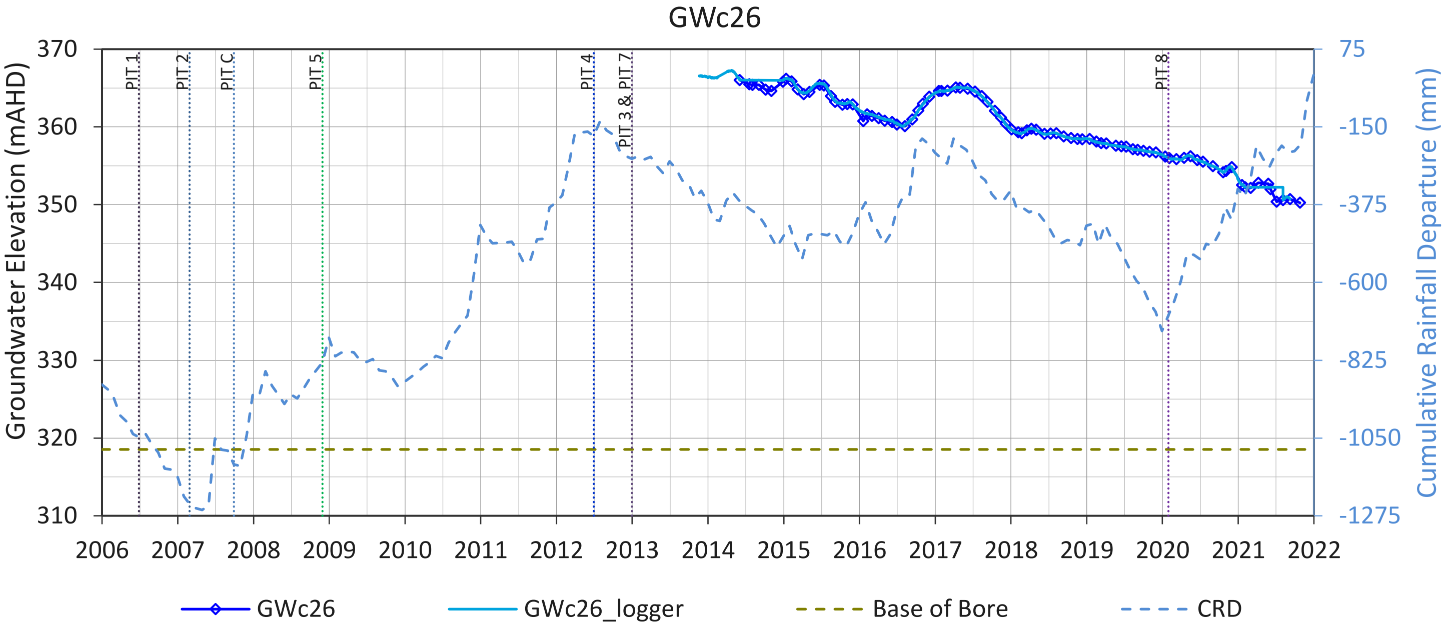

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
125
-50
-225
-400
-575
-750
-925
-1100
-1275
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
GWa12
CRD

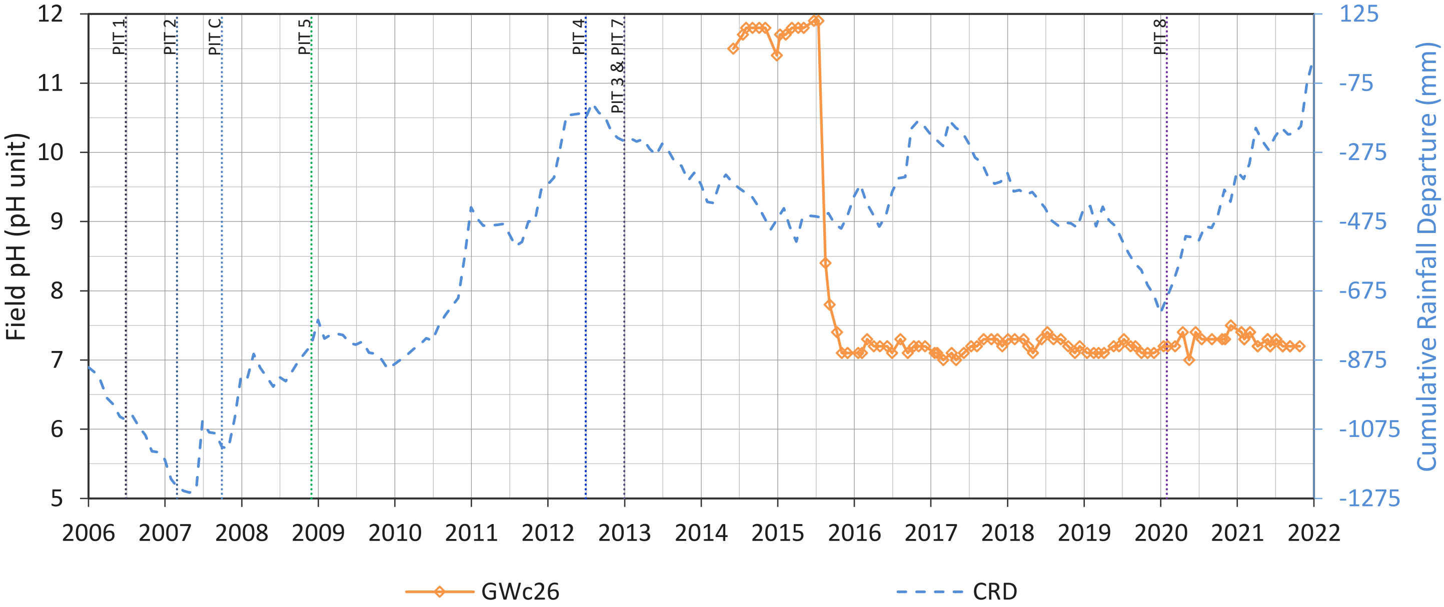

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
2500
2000
1500
1000
500
0
100
-175
-450
-725
-1000
-1275
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
GWa12
CRD

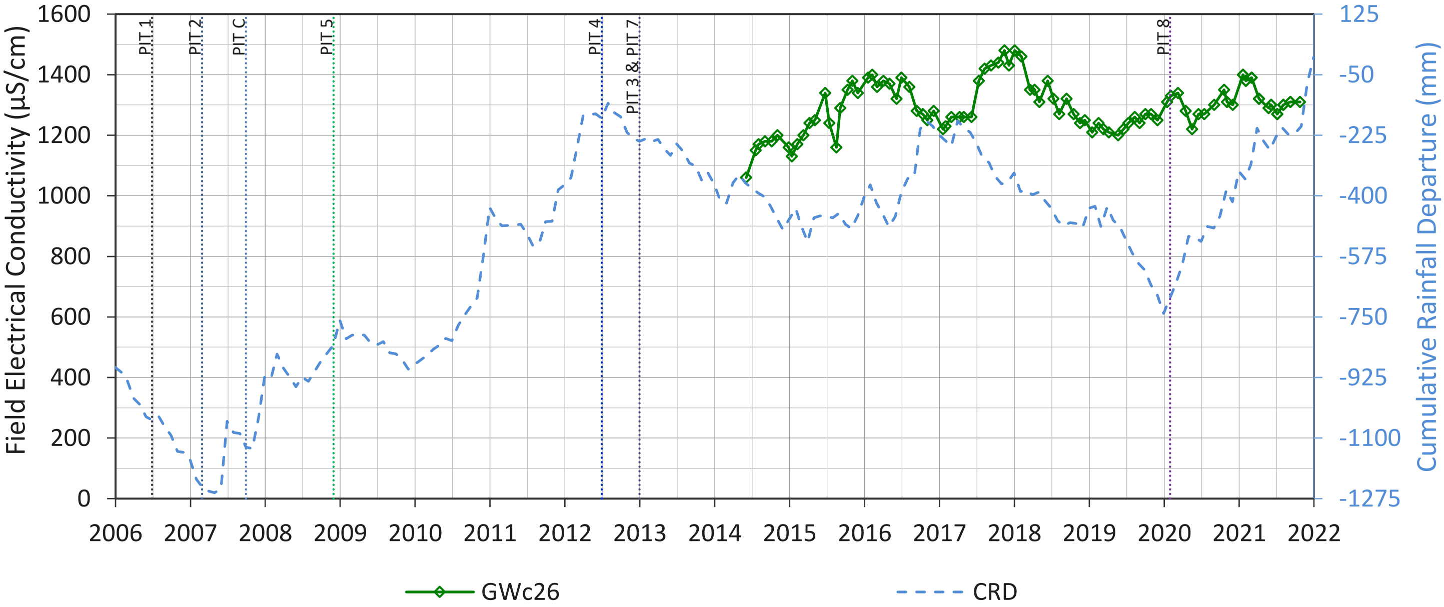

GWc17
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
375
370
365
360
355
350
345
75
-150
-375
-600
-825
-1050
-1275
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
GWc17
GWc17_logger
Base of Bore
CRD

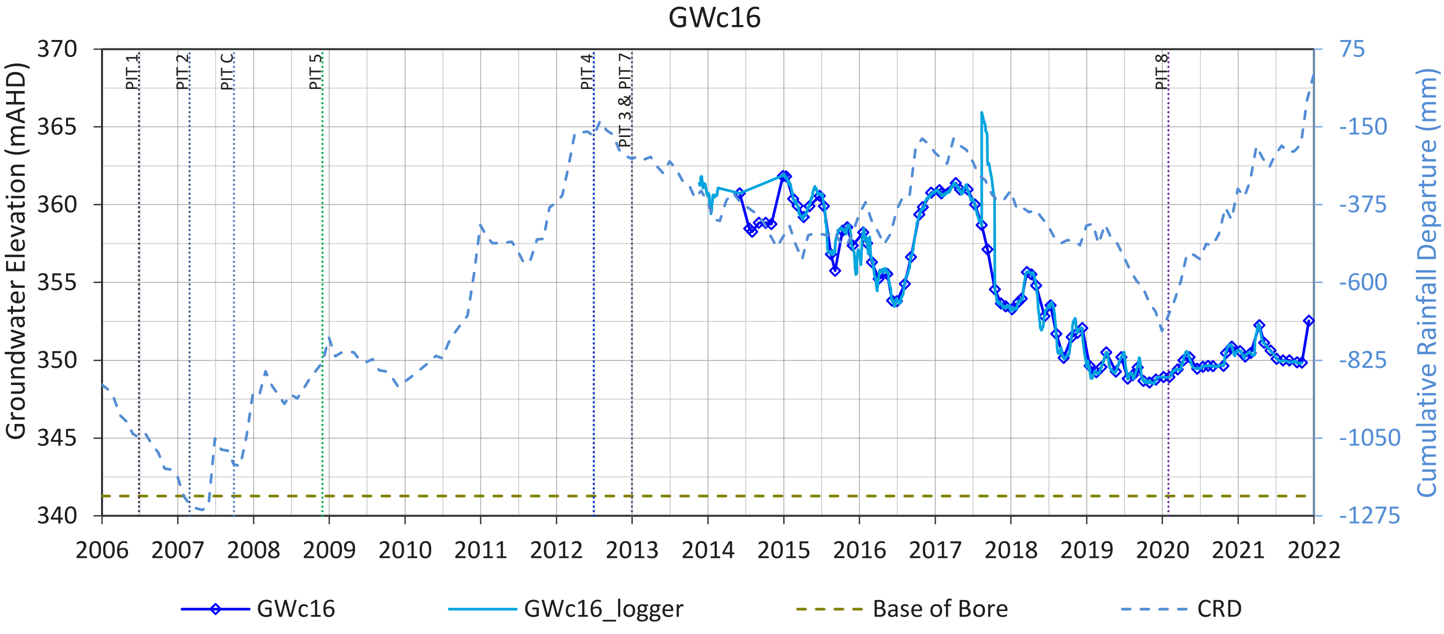

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
125
-50
-225
-400
-575
-750
-925
-1100
-1275
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
GWc17
CRD

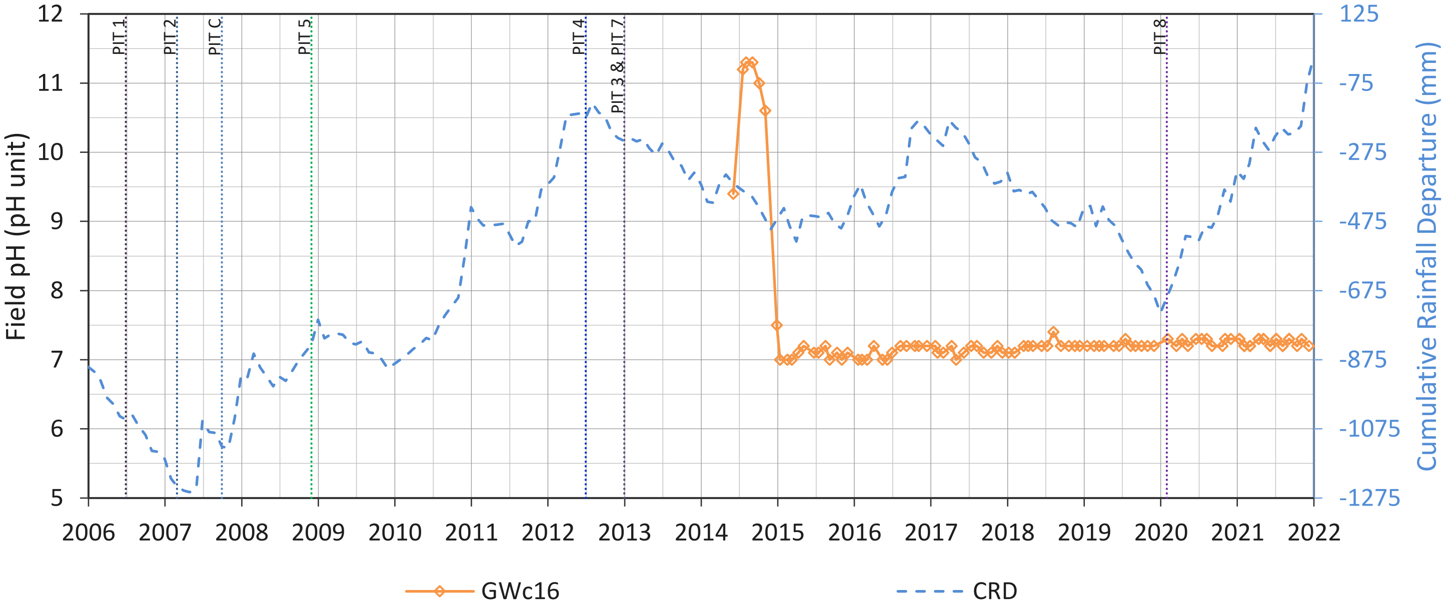

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
3000
2500
2000
1500
1000
500
0
75
-150
-375
-600
-825
-1050
-1275
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
GWc17
CRD

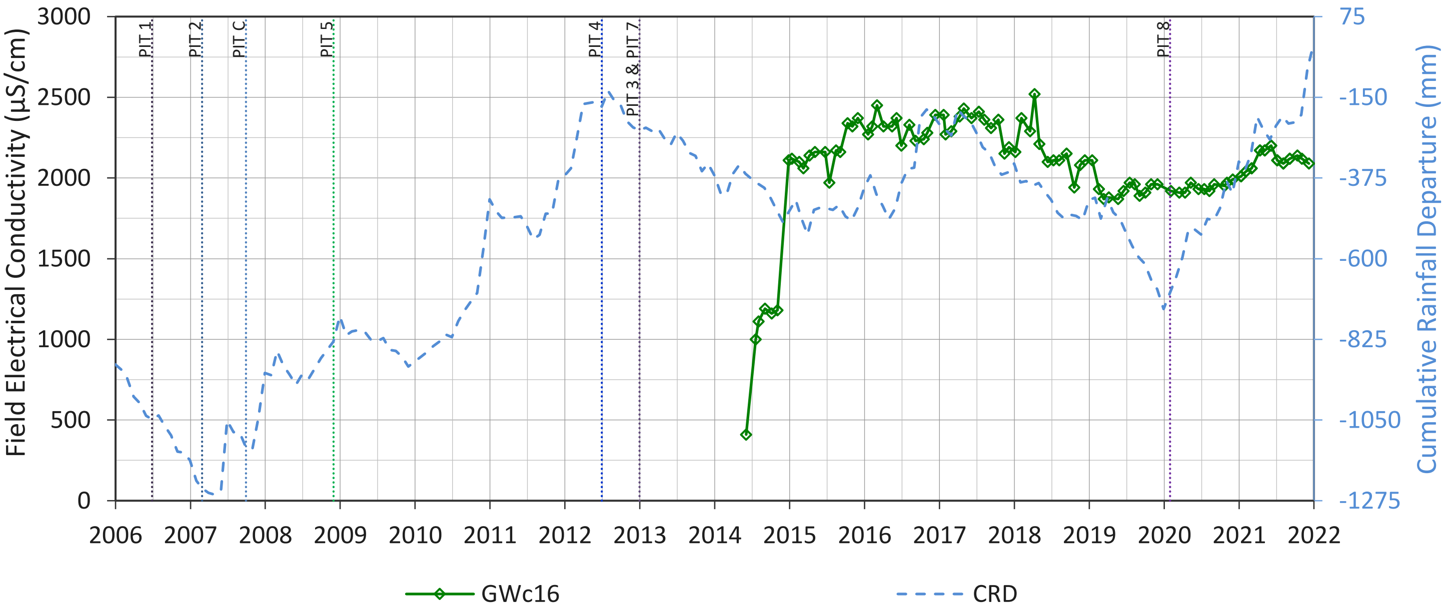

GWc26
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
370
360
350
340
330
320
310
75
-150
-375
-600
-825
-1050
-1275
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
GWc26
GWc26_logger
Base of Bore
CRD

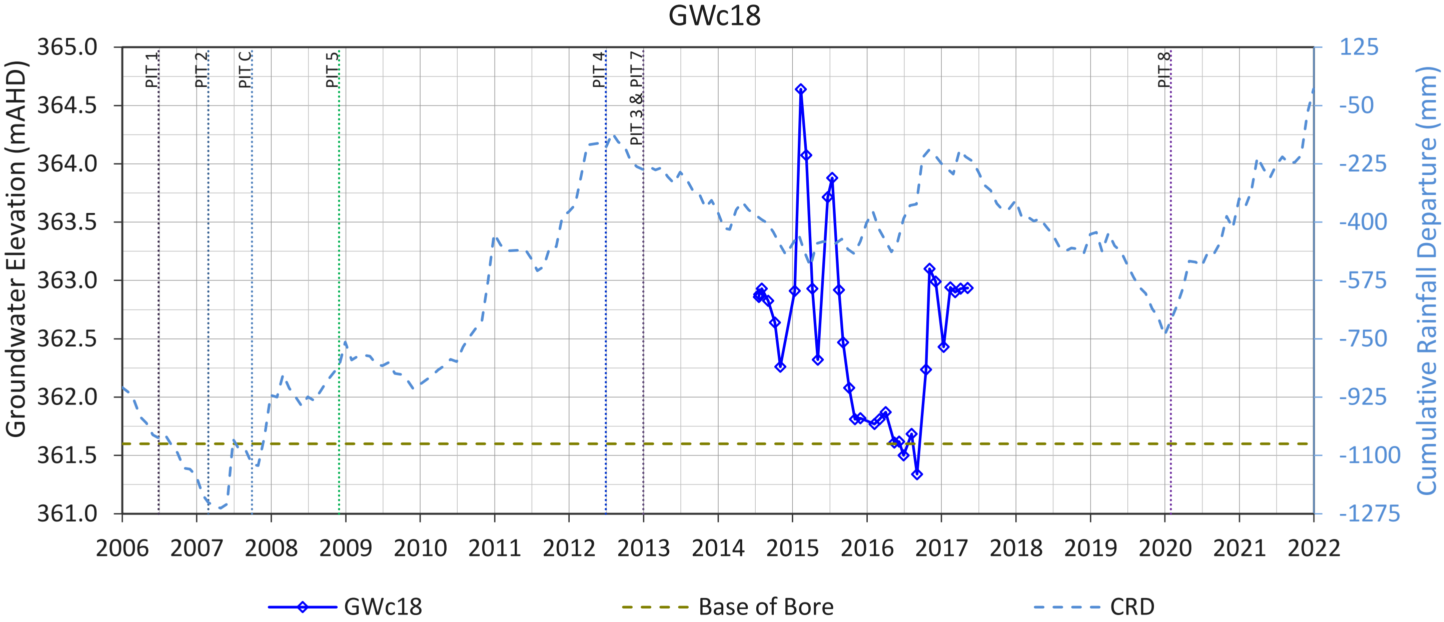

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
12
11
10
9
8
7
6
5
125
-75
-275
-475
-675
-875
-1075
-1275
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
GWc26
CRD

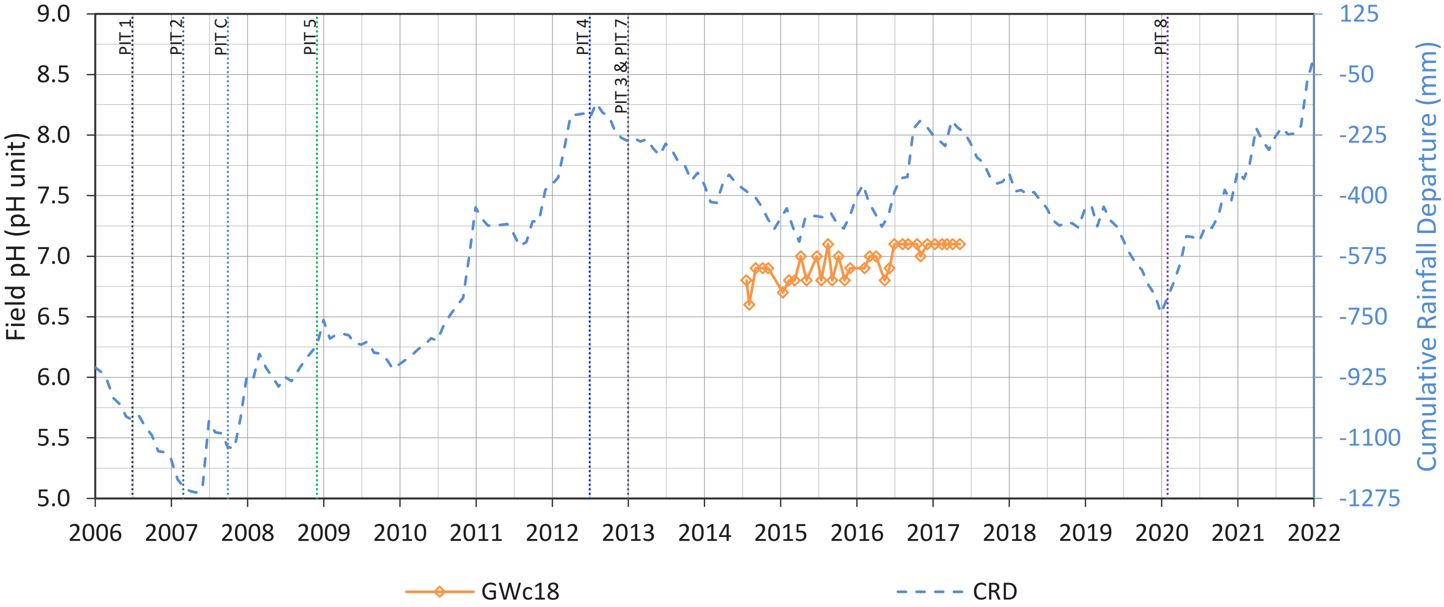

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
1600
1400
1200
1000
800
600
400
200
0
125
-50
-225
-400
-575
-750
-925
-1100
-1275
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
GWc26
CRD

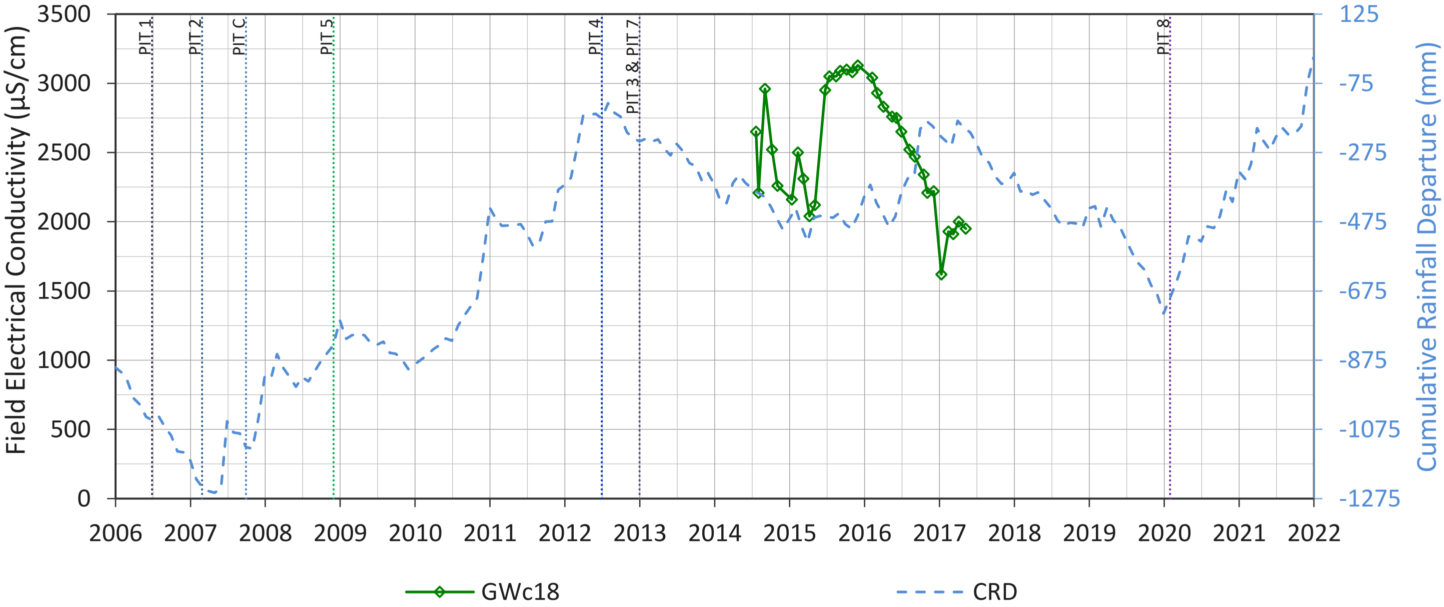

GWc16
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
370
365
360
355
350
345
340
75
-150
-375
-600
-825
-1050
-1275
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
GWc16
GWc16_logger
Base of Bore
CRD

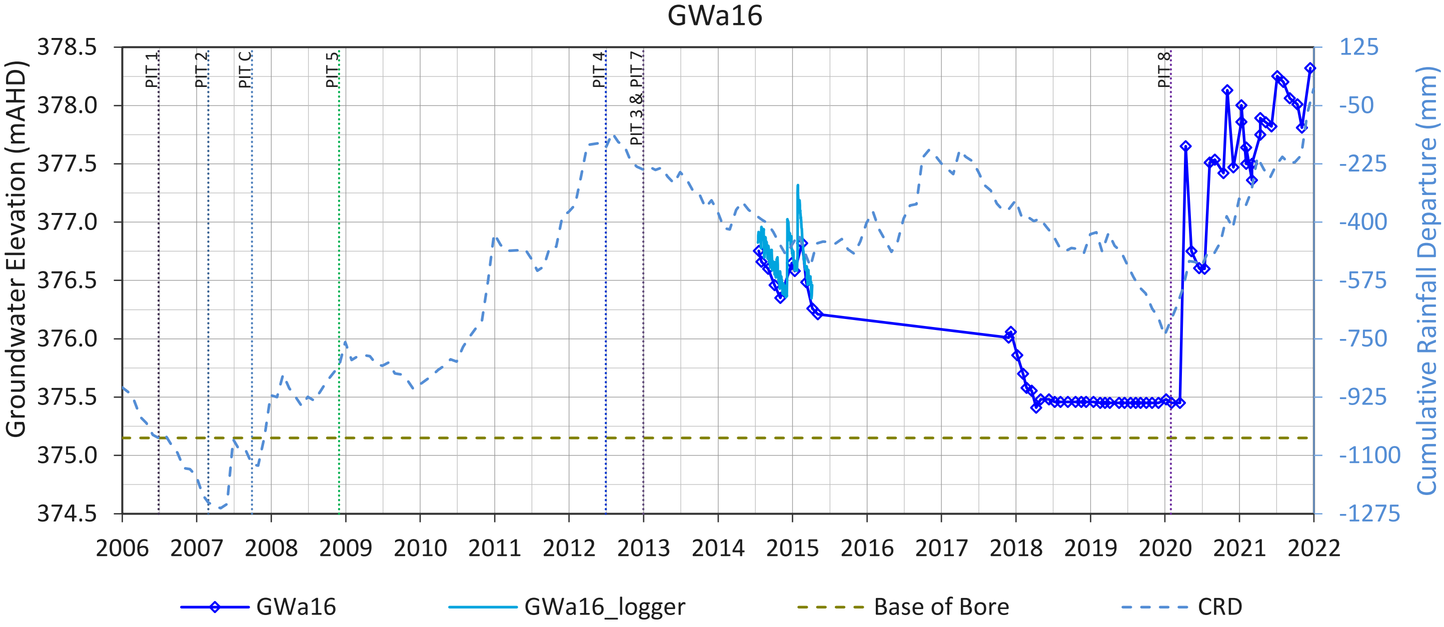

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
12
11
10
9
8
7
6
5
125
-75
-275
-475
-675
-875
-1075
-1275
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
GWc16
CRD

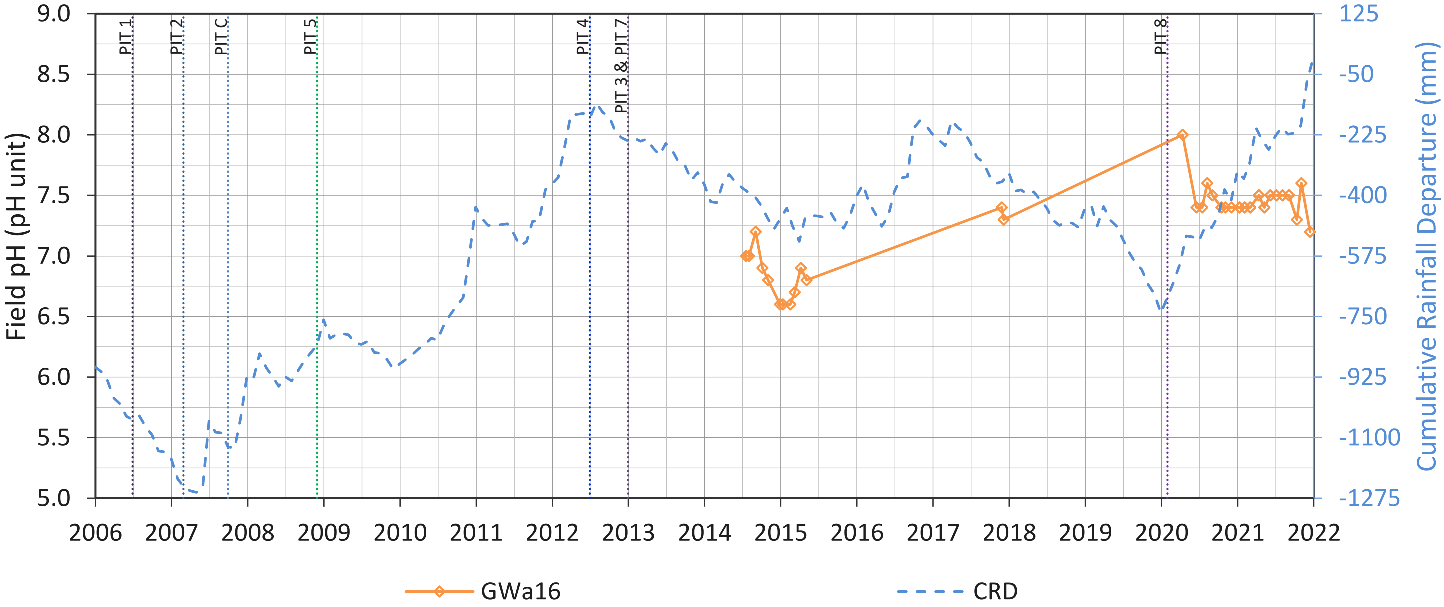

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
3000
2500
2000
1500
1000
500
0
75
-150
-375
-600
-825
-1050
-1275
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
GWc16
CRD

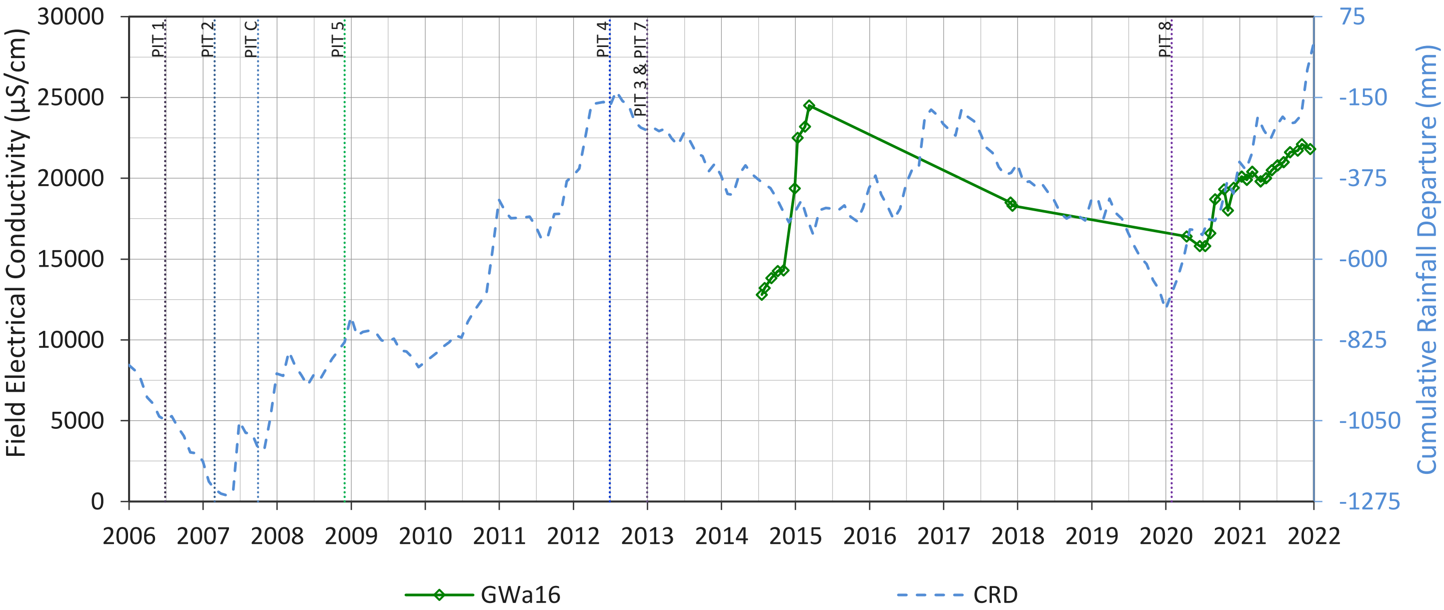

GWc18
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
365.0
364.5
364.0
363.5
363.0
362.5
362.0
361.5
361.0
125
-50
-225
-400
-575
-750
-925
-1100
-1275
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
GWc18
Base of Bore
CRD

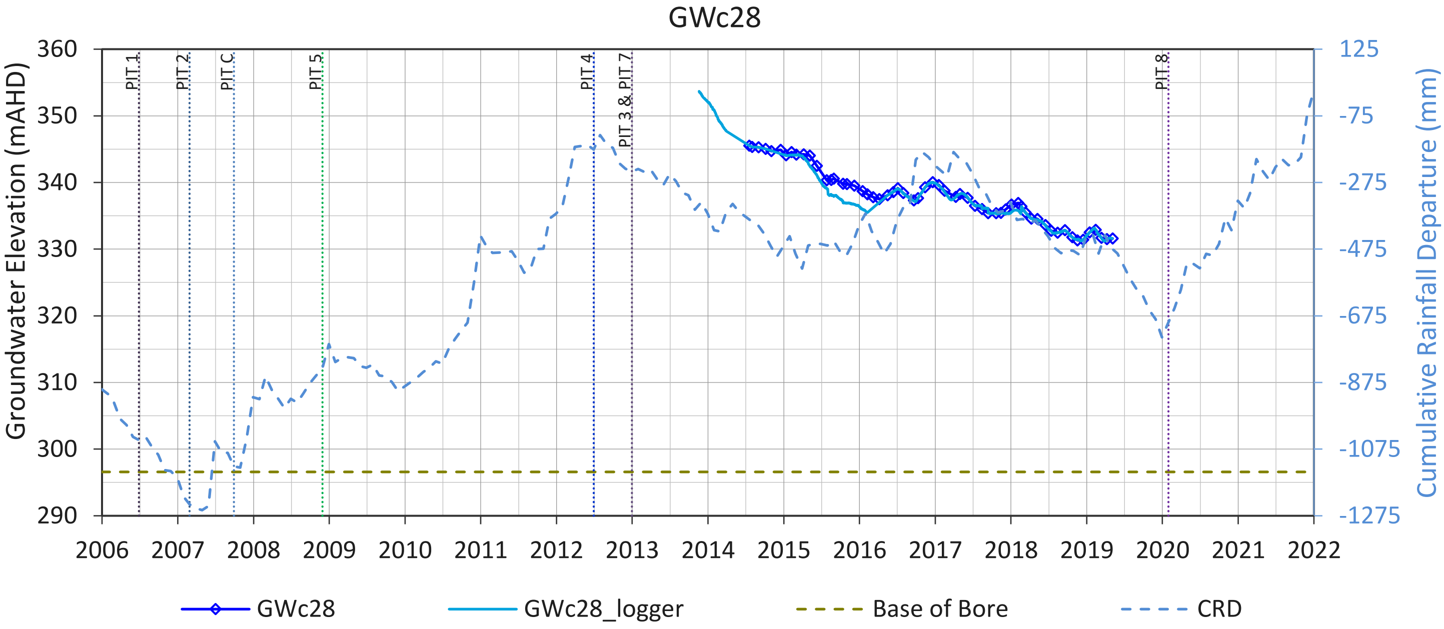

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
125
-50
-225
-400
-575
-750
-925
-1100
-1275
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
GWc18
CRD

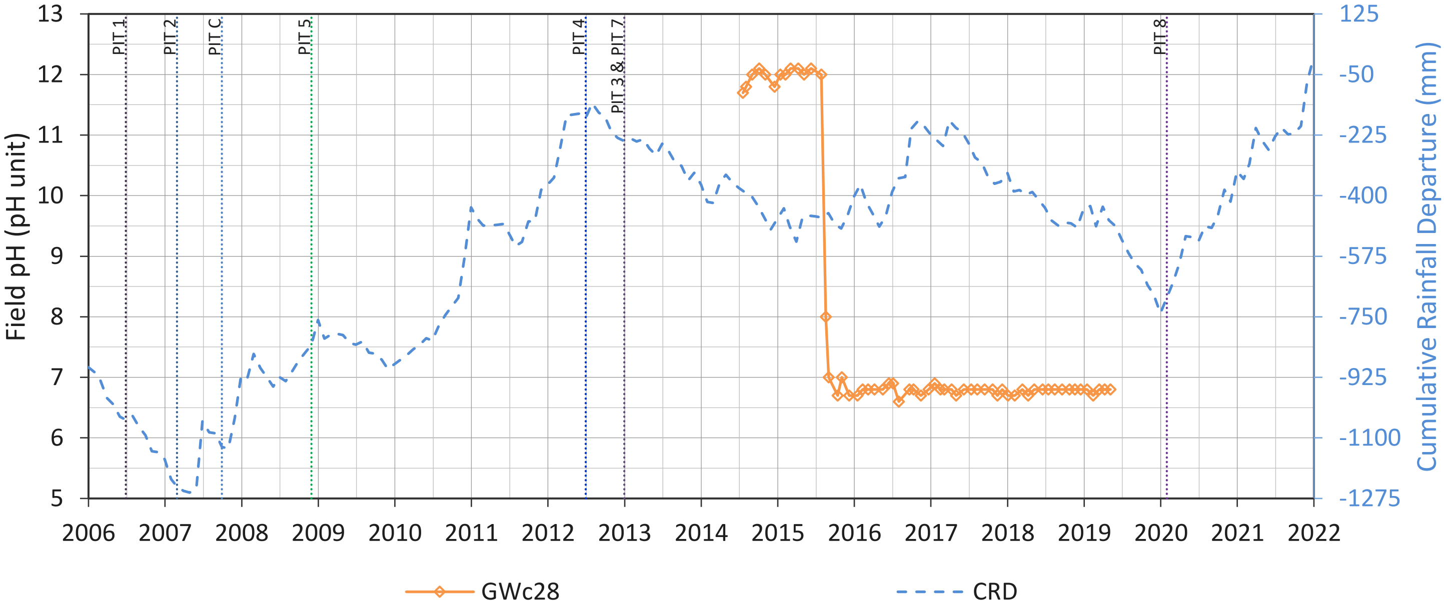

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
3500
3000
2500
2000
1500
1000
500
0
125
-75
-275
-475
-675
-875
-1075
-1275
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
GWc18
CRD

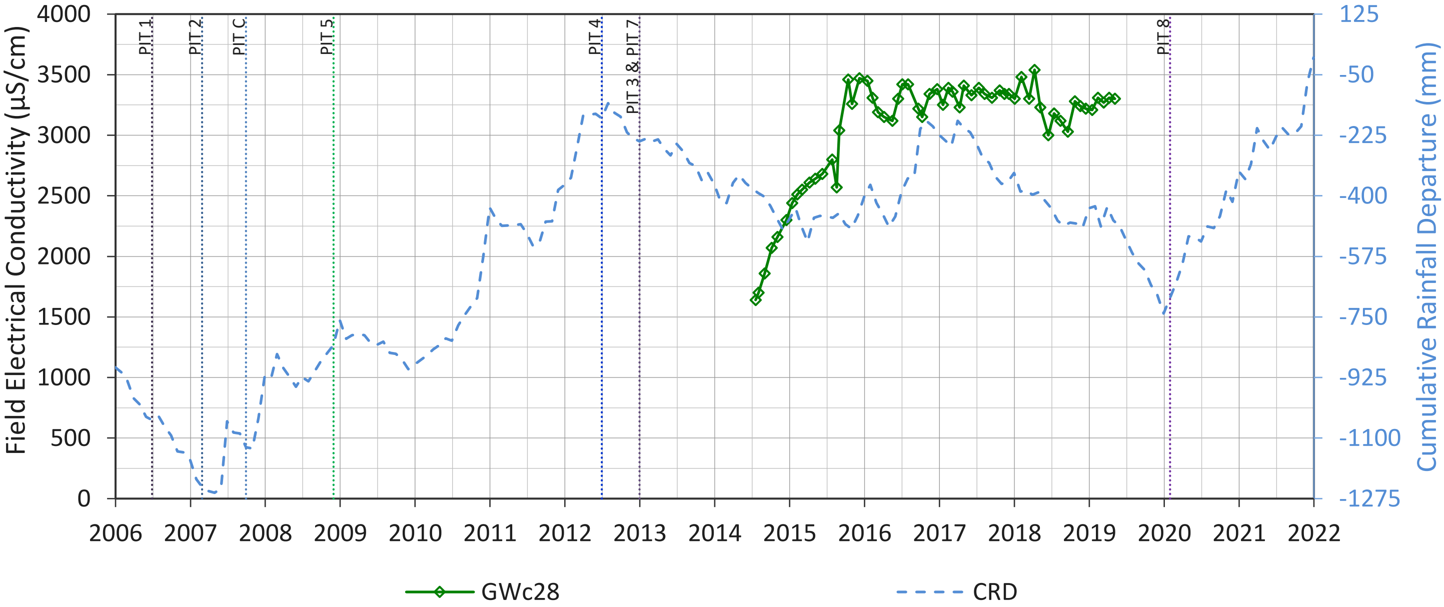

GWa16
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWa16
GWa16_logger
Base of Bore
CRD


Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWa16
CRD

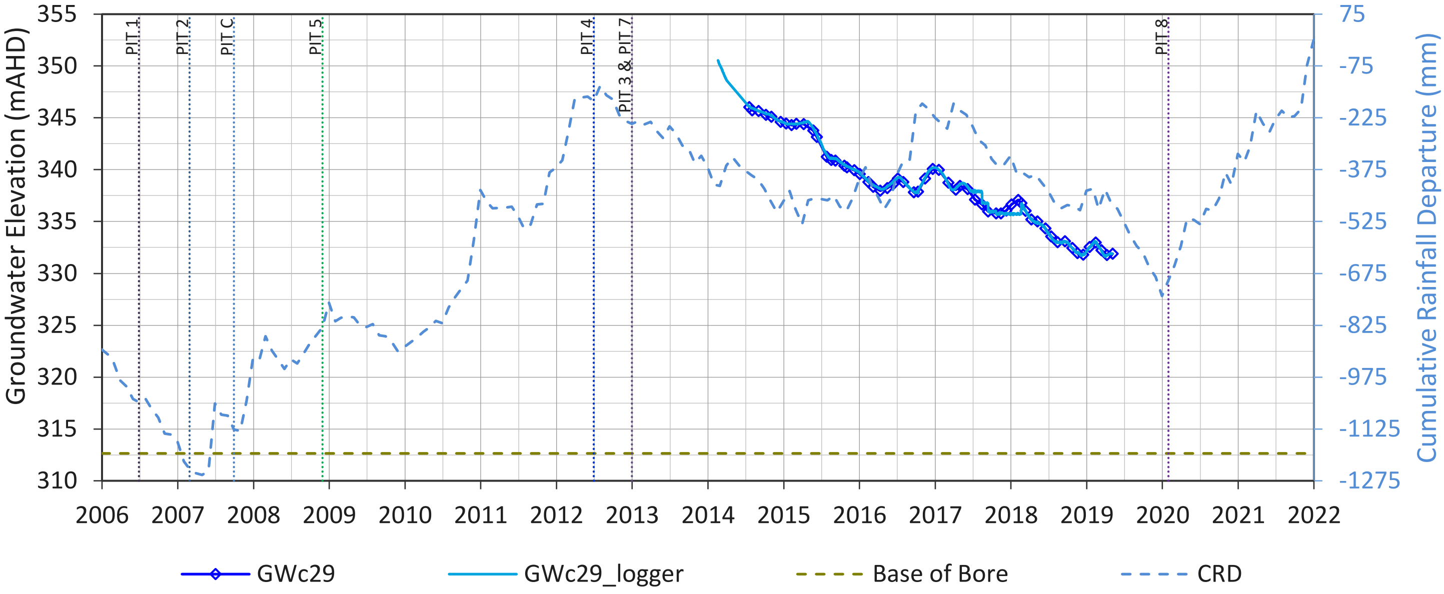

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWa16
CRD

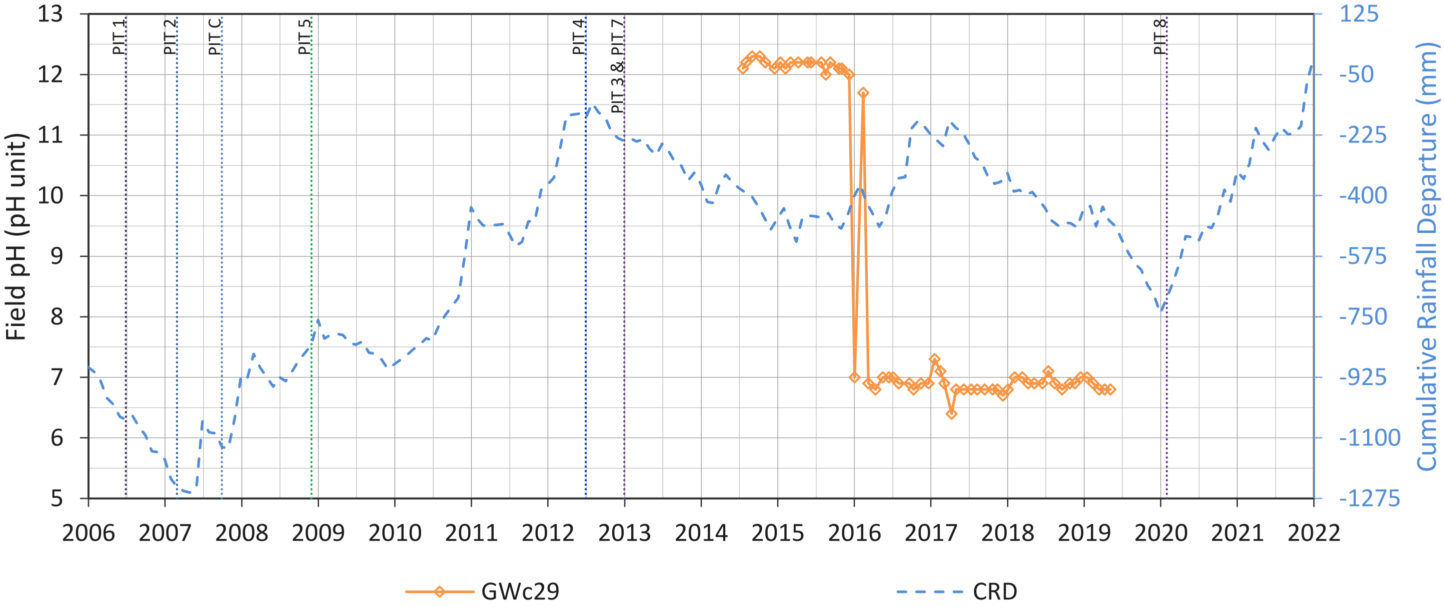

GWc28
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
360
350
340
330
320
310
300
290
125
-75
-275
-475
-675
-875
-1075
-1275
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
GWc28
GWc28_logger
Base of Bore
CRD

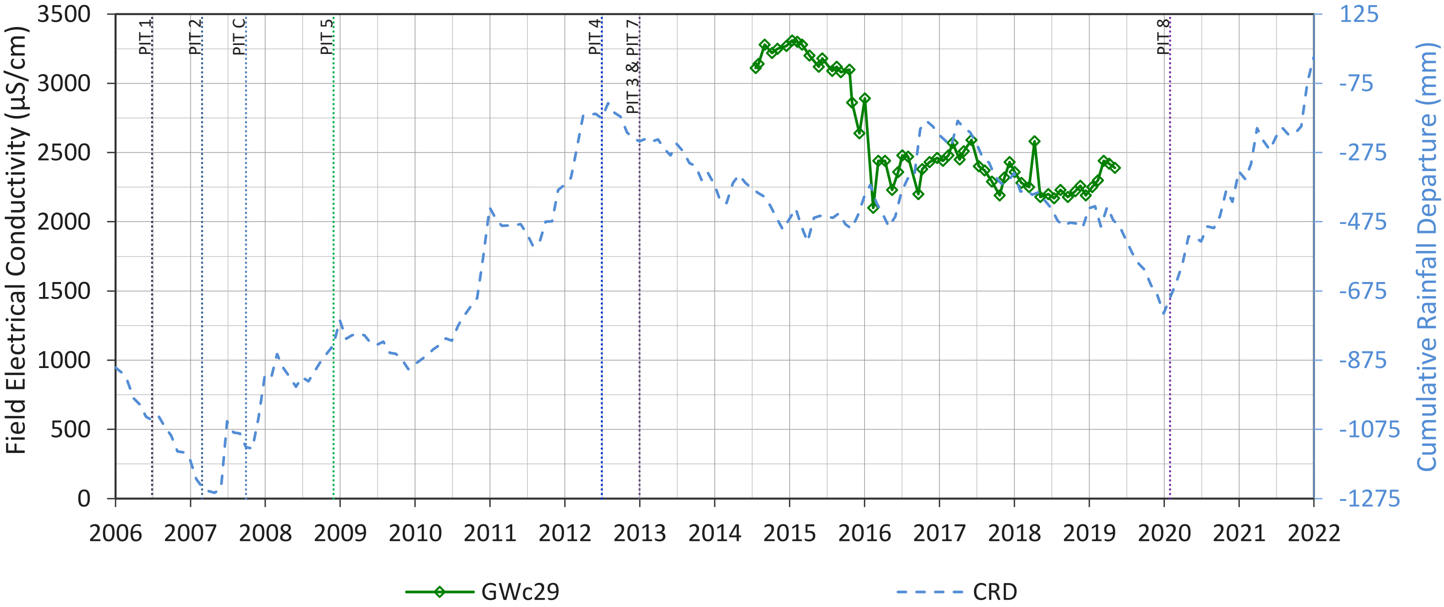

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
13
12
11
10
9
8
7
6
5
125
-50
-225
-400
-575
-750
-925
-1100
-1275
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
GWc28
CRD

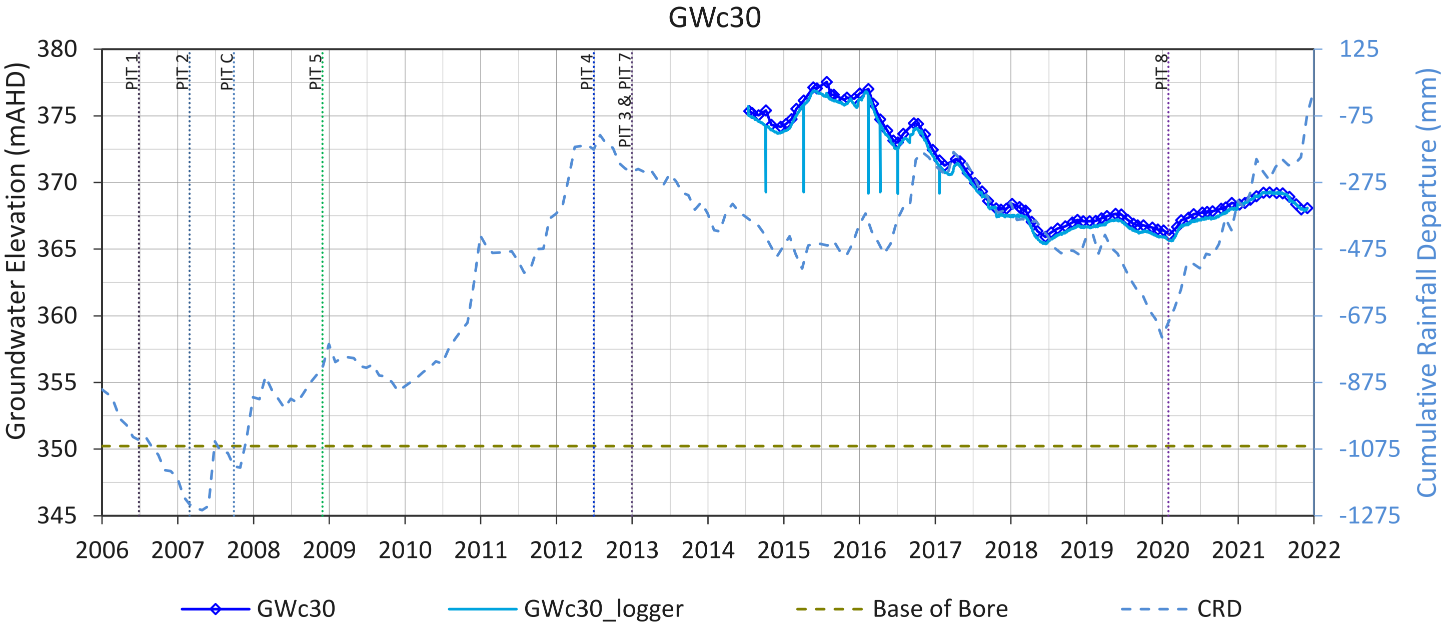

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
4000
3500
3000
2500
2000
1500
1000
500
0
125
-50
-225
-400
-575
-750
-925
-1100
-1275
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
GWc28
CRD

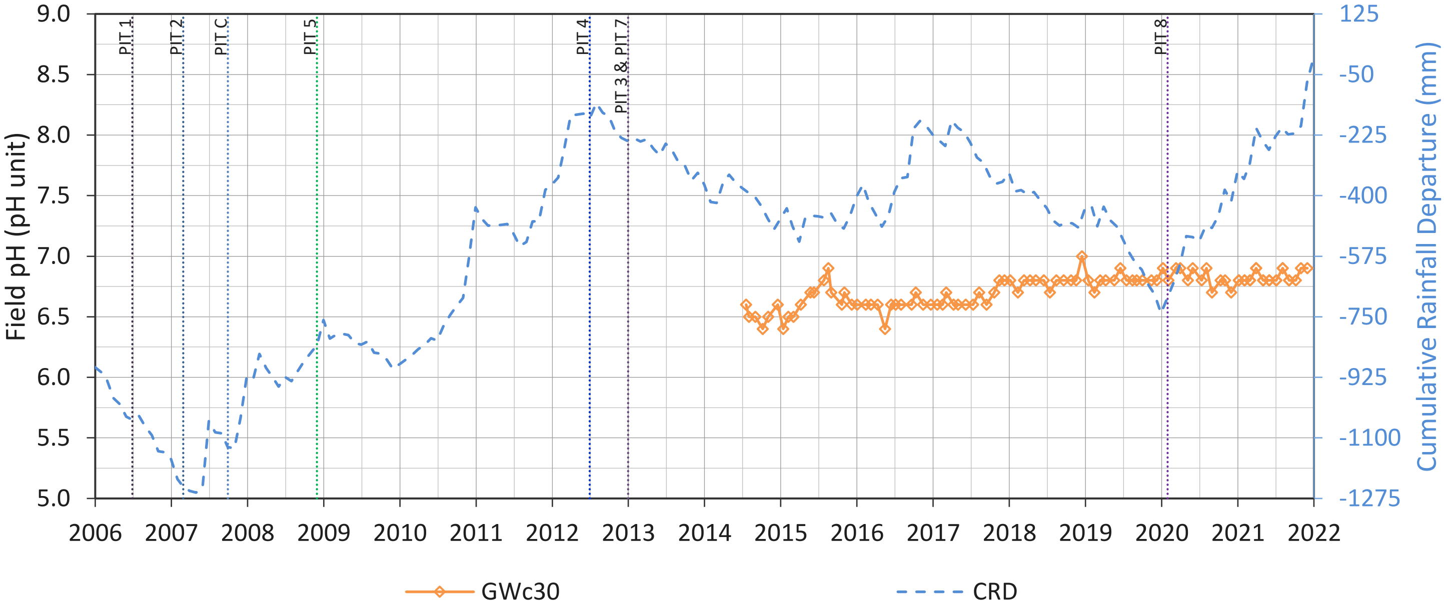
GWc29

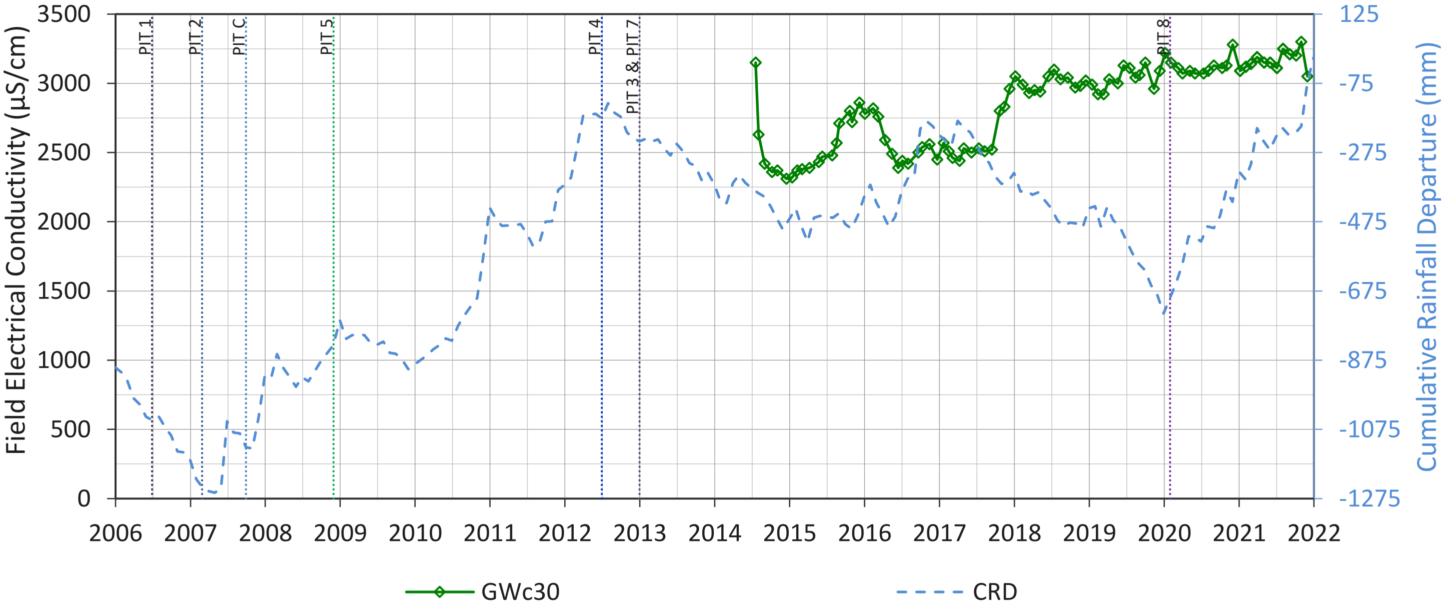

Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc29
GWc29_logger
Base of Bore
CRD

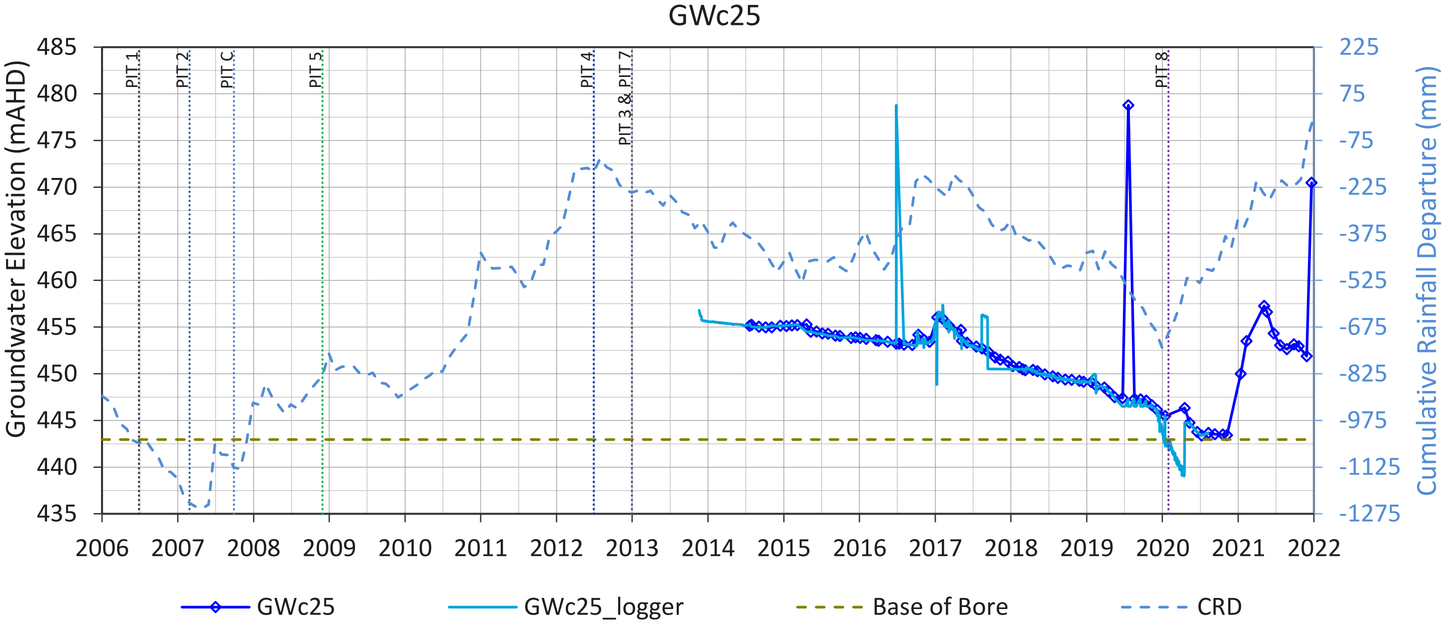

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc29
CRD

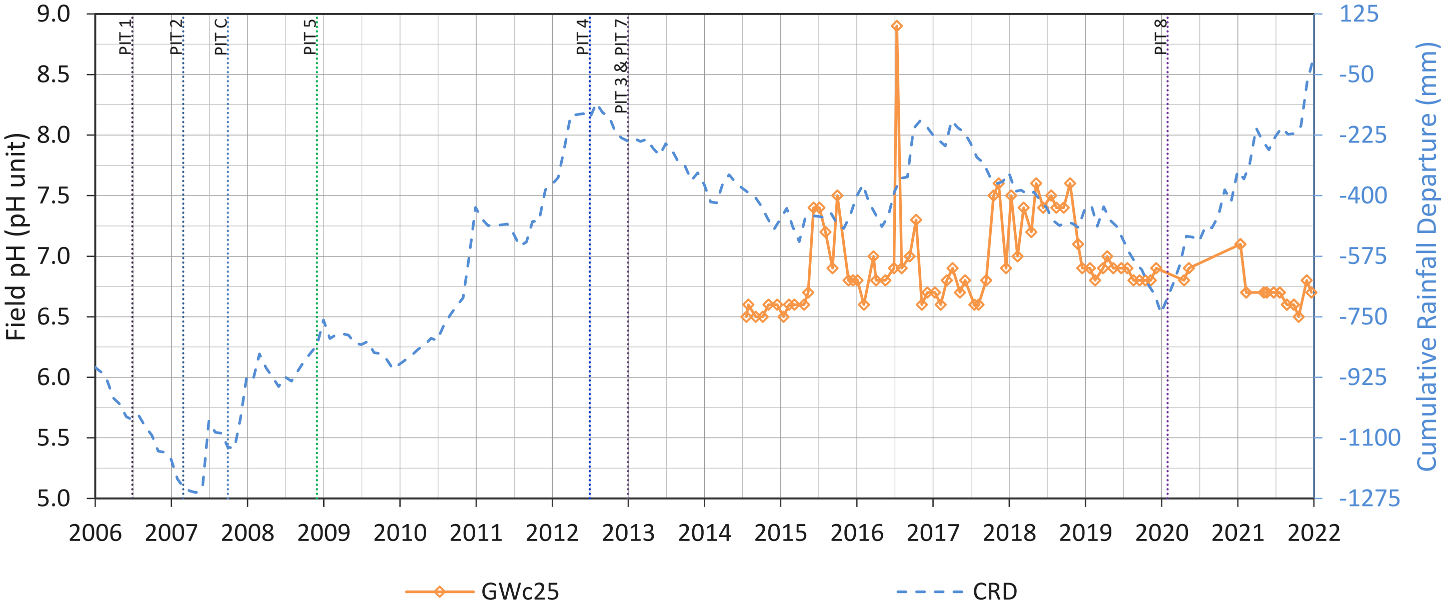

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc29
CRD

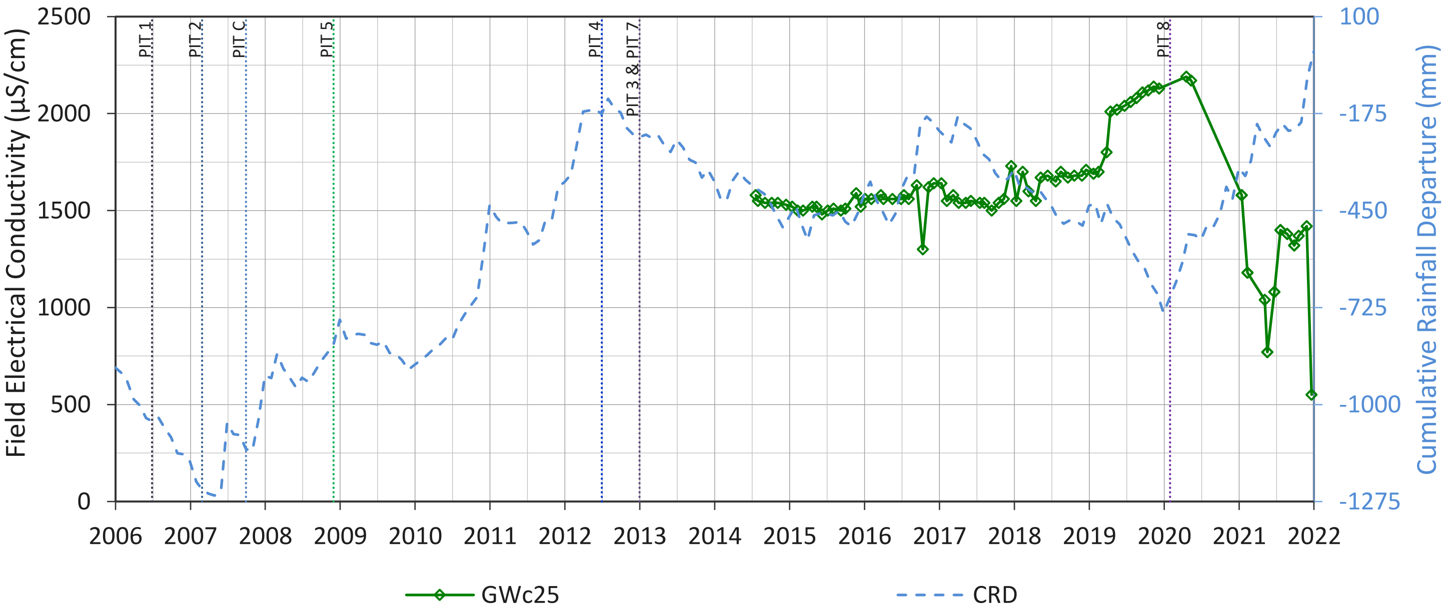

GWc30
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
380 375 370 365 360 355 350 345
125 -75 -275 -475 -675 -875 -1075 -1275
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc30
GWc30_logger
Base of Bore
CRD

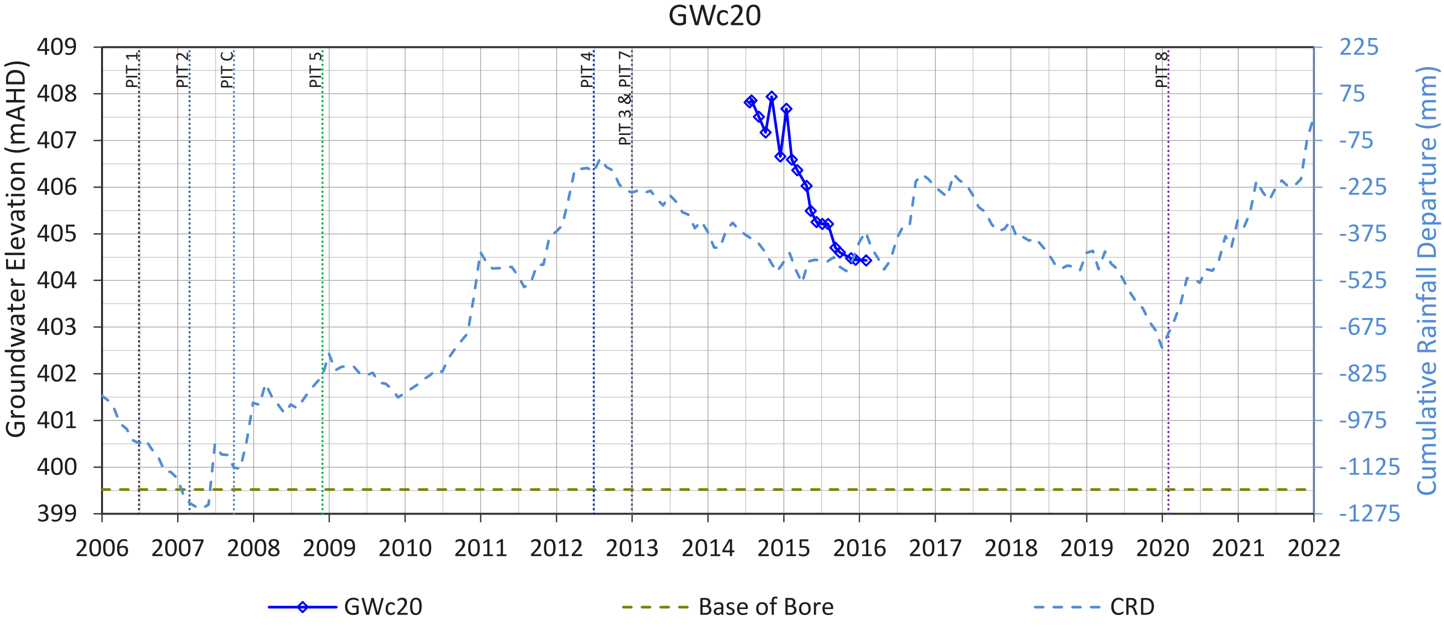

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0
125 -50 -225 -400 -575 -750 -925 -1100 -1275
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc30
CRD

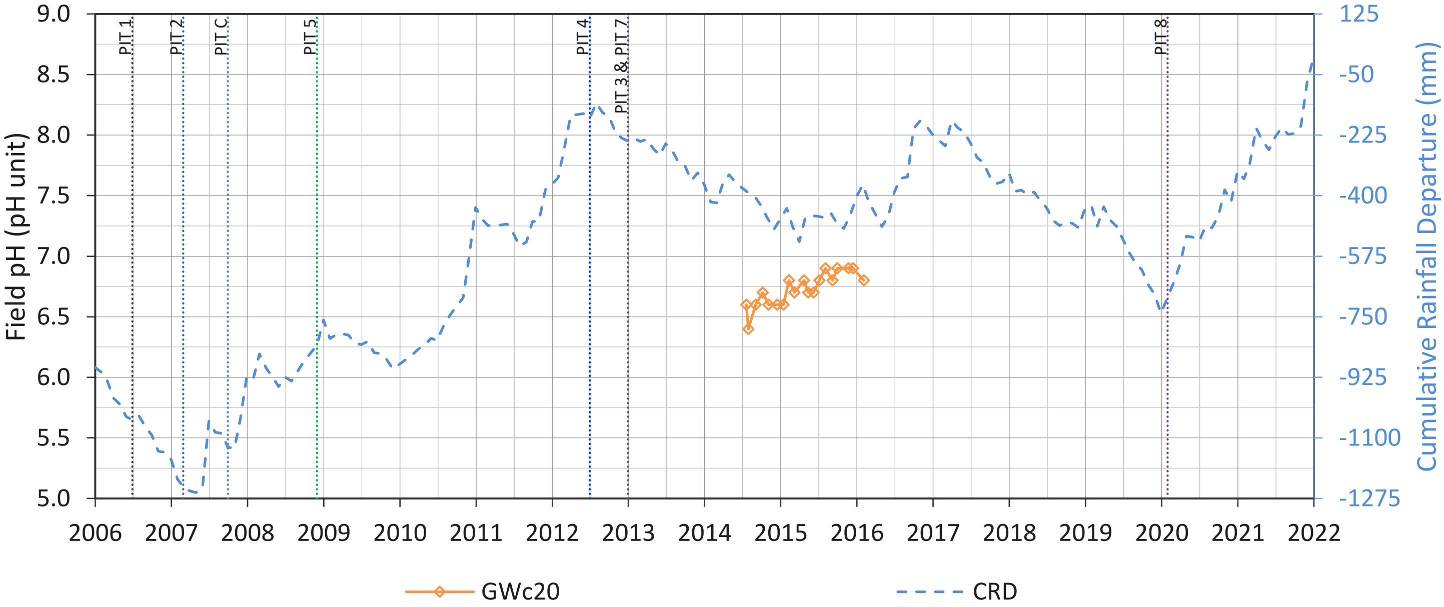

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
3500 3000 2500 2000 1500 1000 500 0
125 -75 -275 -475 -675 -875 -1075 -1275
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc30
CRD

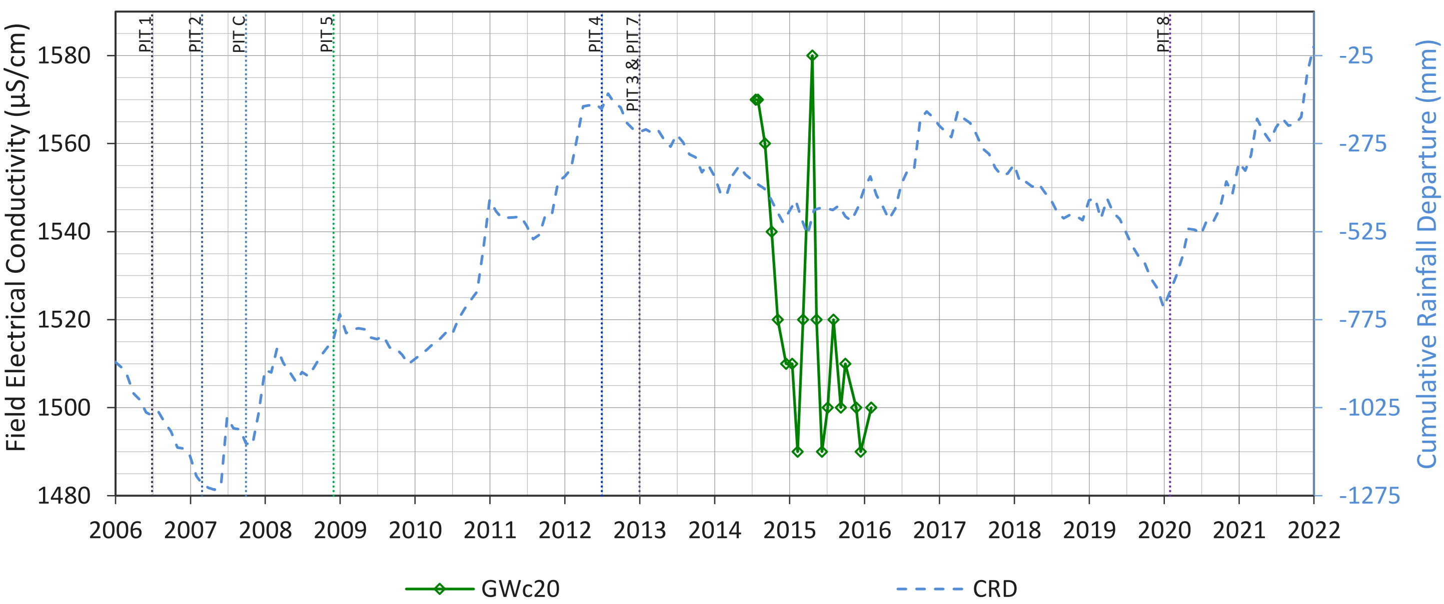

GWc25
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
485
480
475
470
465
460
455
450
445
440
435
225
75
-75
-225
-375
-525
-675
-825
-975
-1125
-1275
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
GWc25
GWc25_logger
Base of Bore
CRD

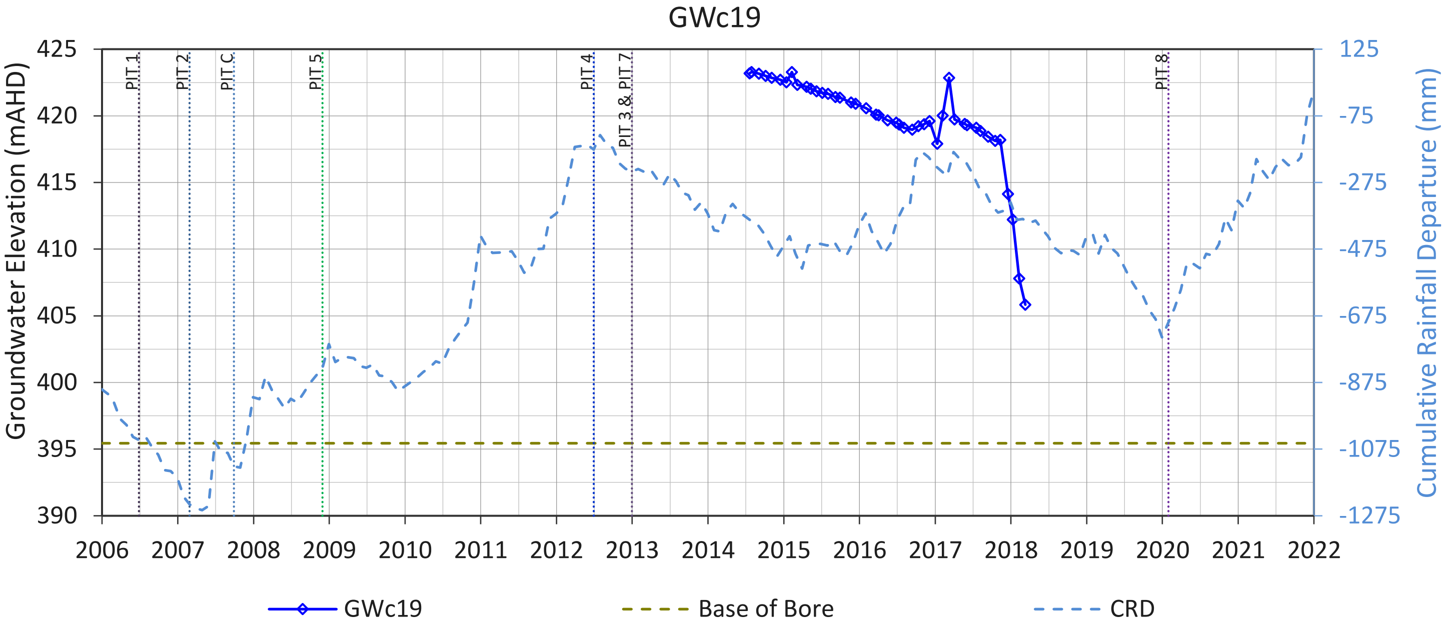

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
125
-50
-225
-400
-575
-750
-925
-1100
-1275
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
GWc25
CRD

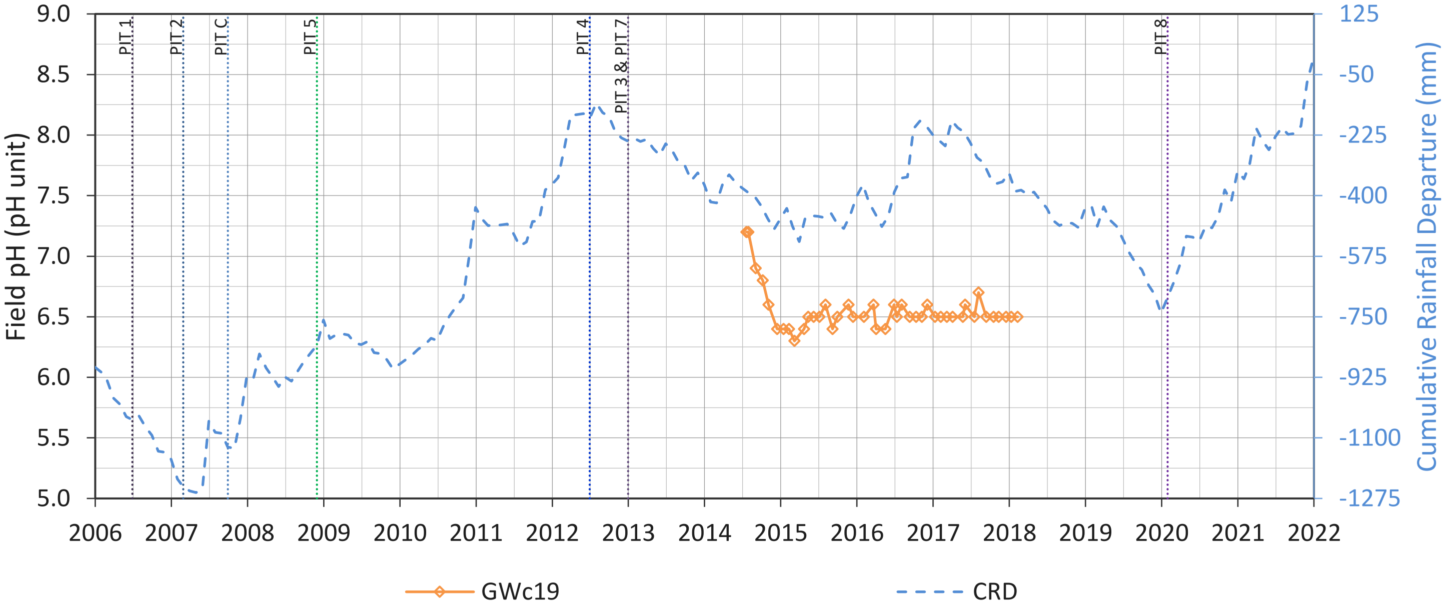

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
2500
2000
1500
1000
500
0
100
-175
-450
-725
-1000
-1275
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
GWc25
CRD

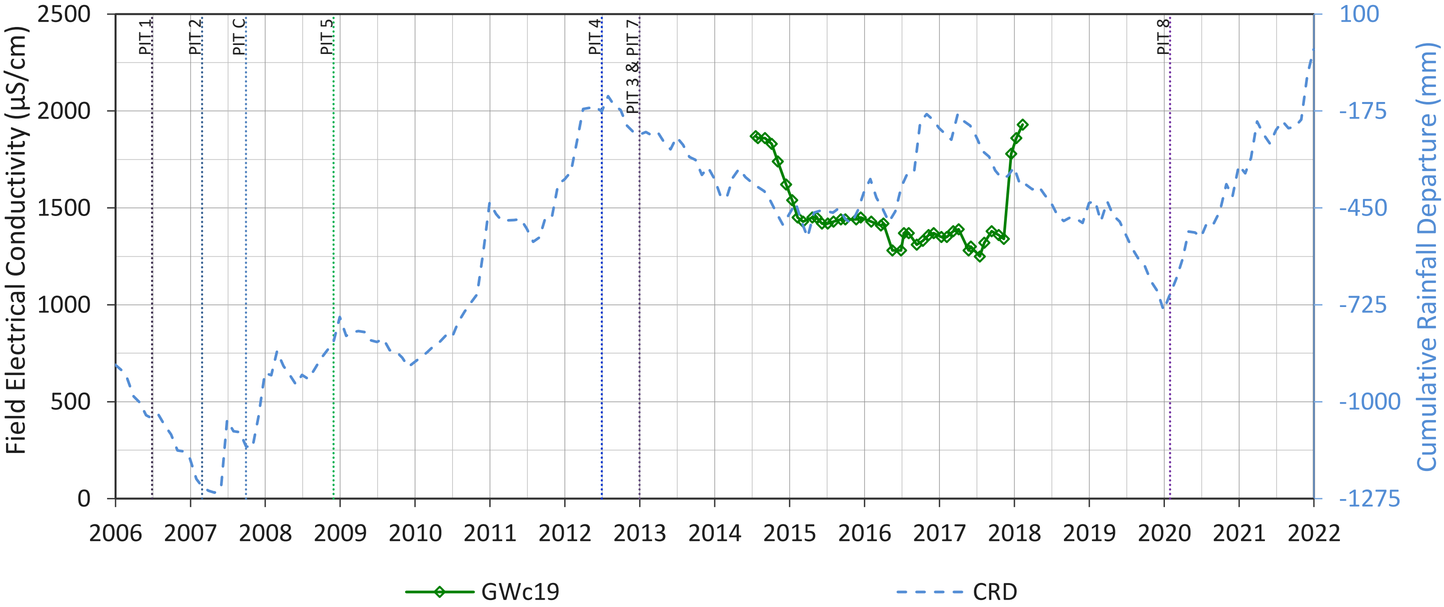

GWc20
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
409
408
407
406
405
404
403
402
401
400
399
225
75
-75
-225
-375
-525
-675
-825
-975
-1125
-1275
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
GWc20
Base of Bore
CRD

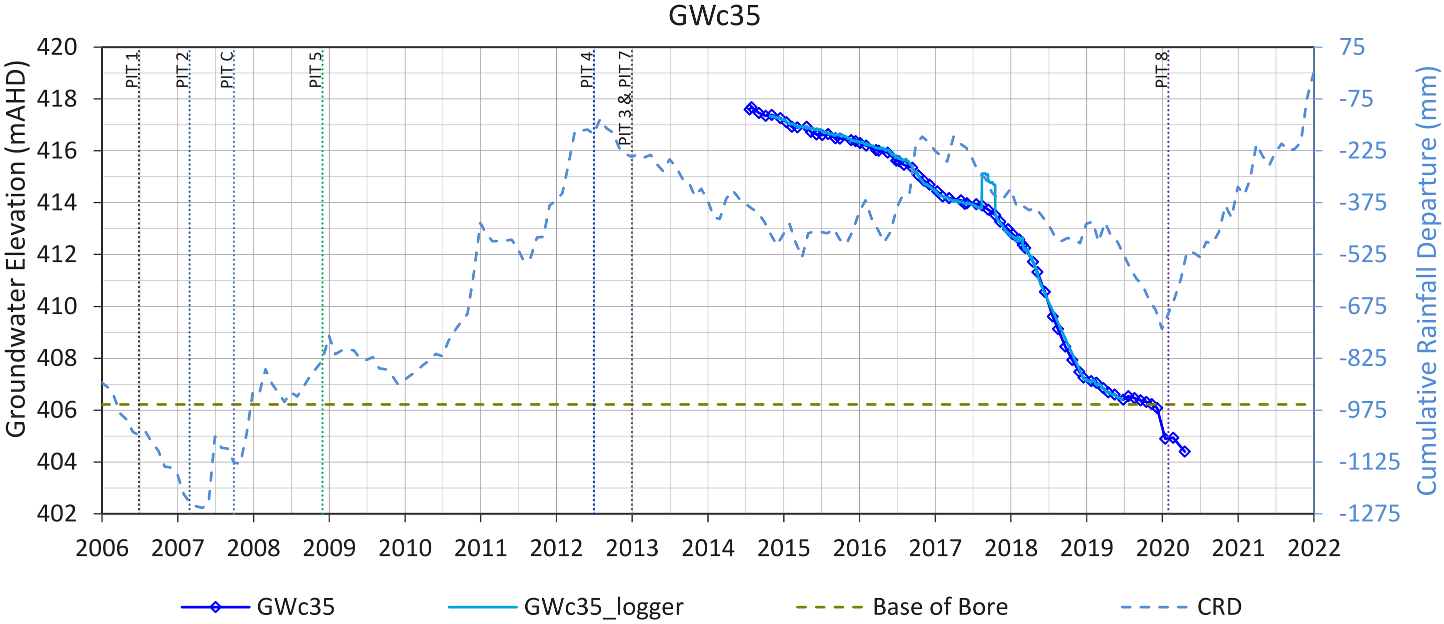

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
125
-50
-225
-400
-575
-750
-925
-1100
-1275
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
GWc20
CRD

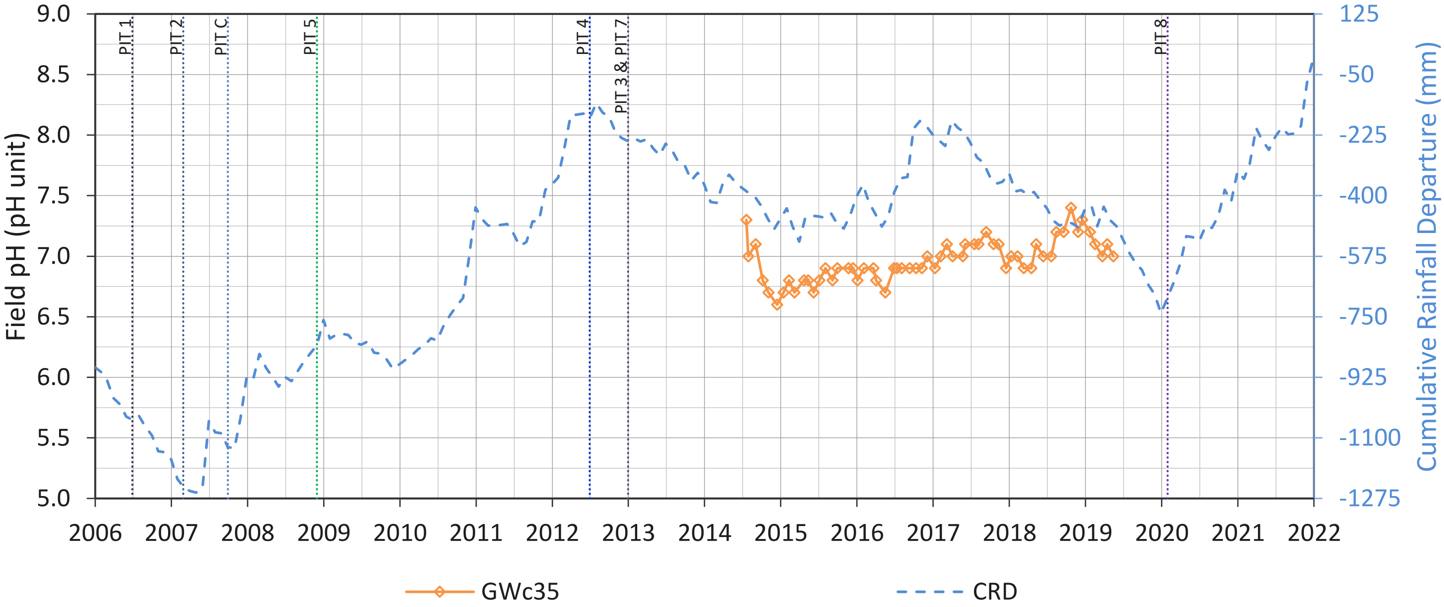

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
1580
1560
1540
1520
1500
1480
-25
-275
-525
-775
-1025
-1275
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
GWc20
CRD

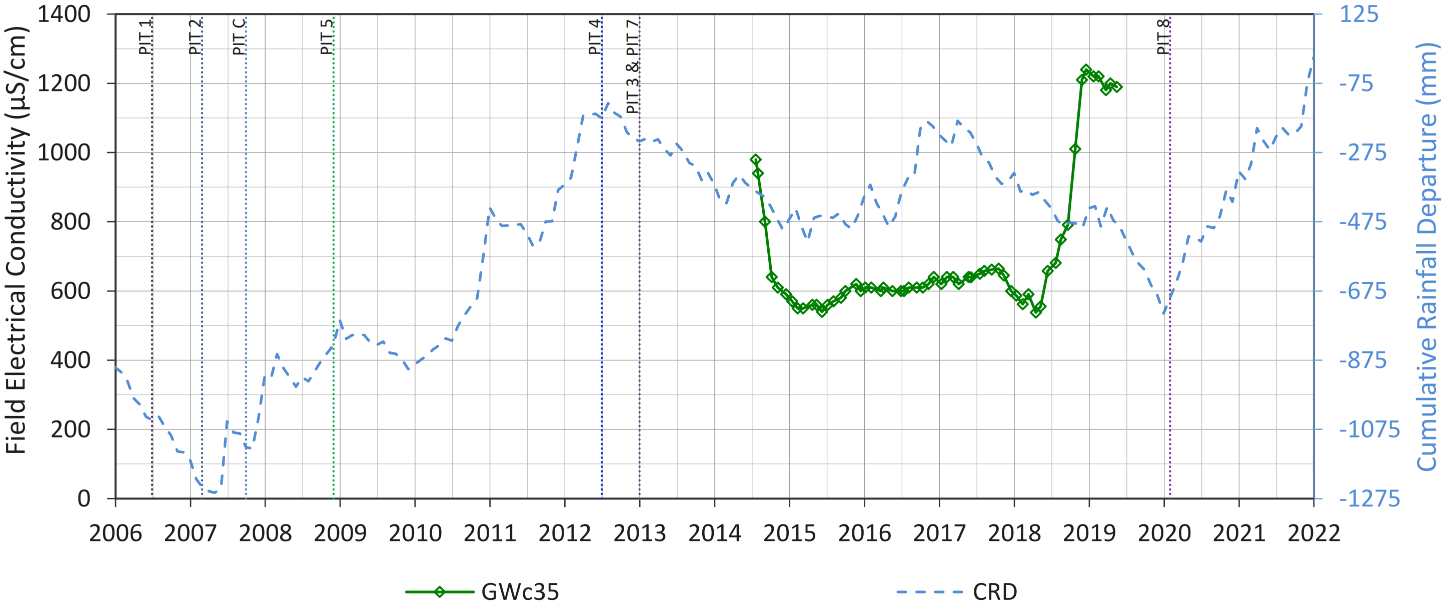

GWc19
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
425
420
415
410
405
400
395
390
125
-75
-275
-475
-675
-875
-1075
-1275
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc19
Base of Bore
CRD

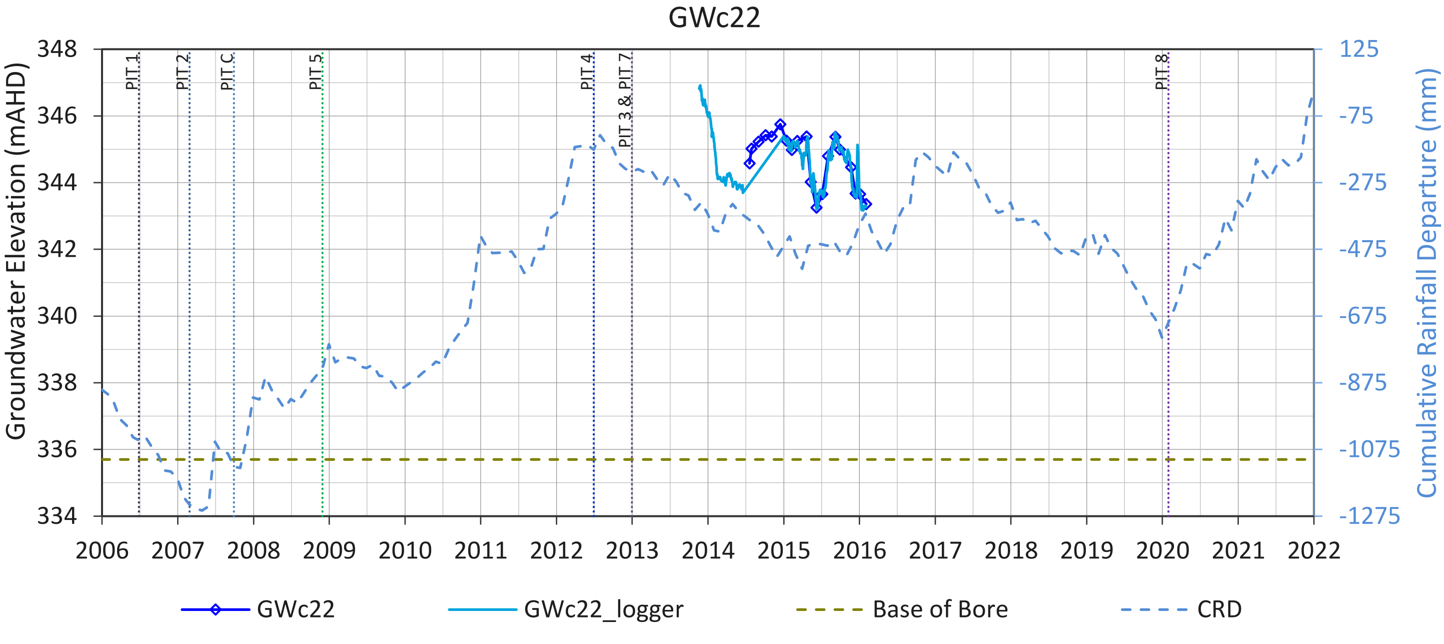

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
125
-50
-225
-400
-575
-750
-925
-1100
-1275
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc19
CRD

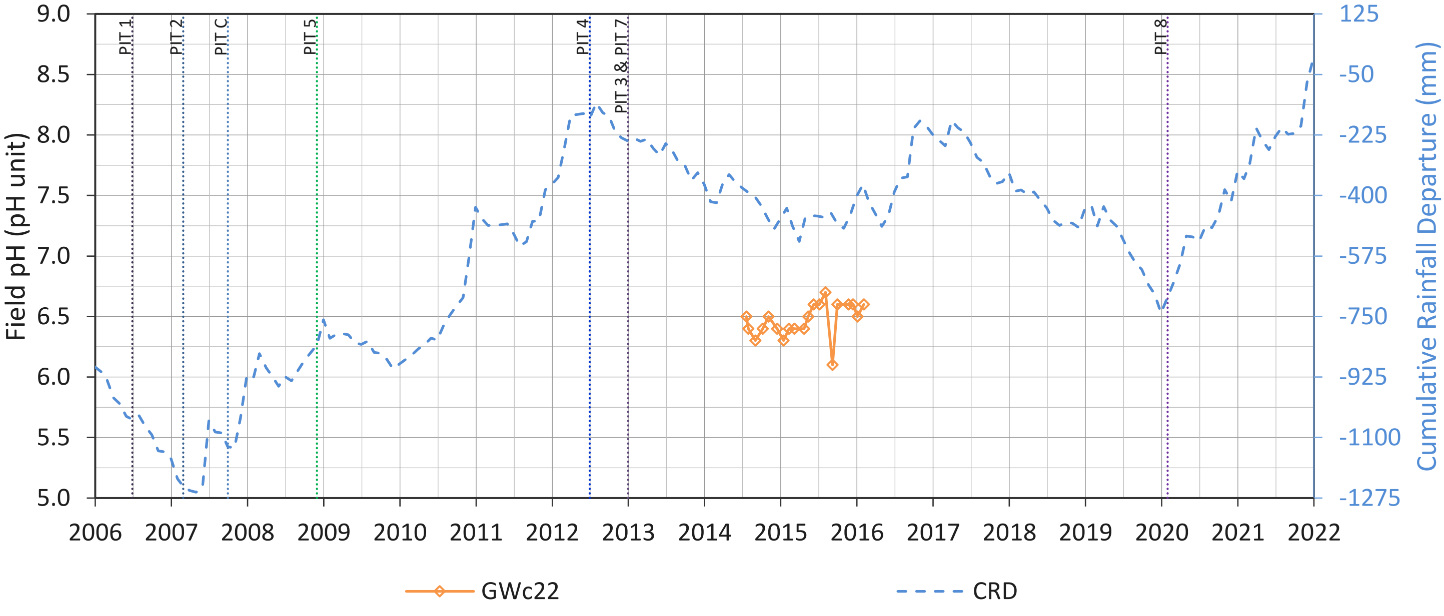

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
2500
2000
1500
1000
500
0
100
-175
-450
-725
-1000
-1275
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc19
CRD

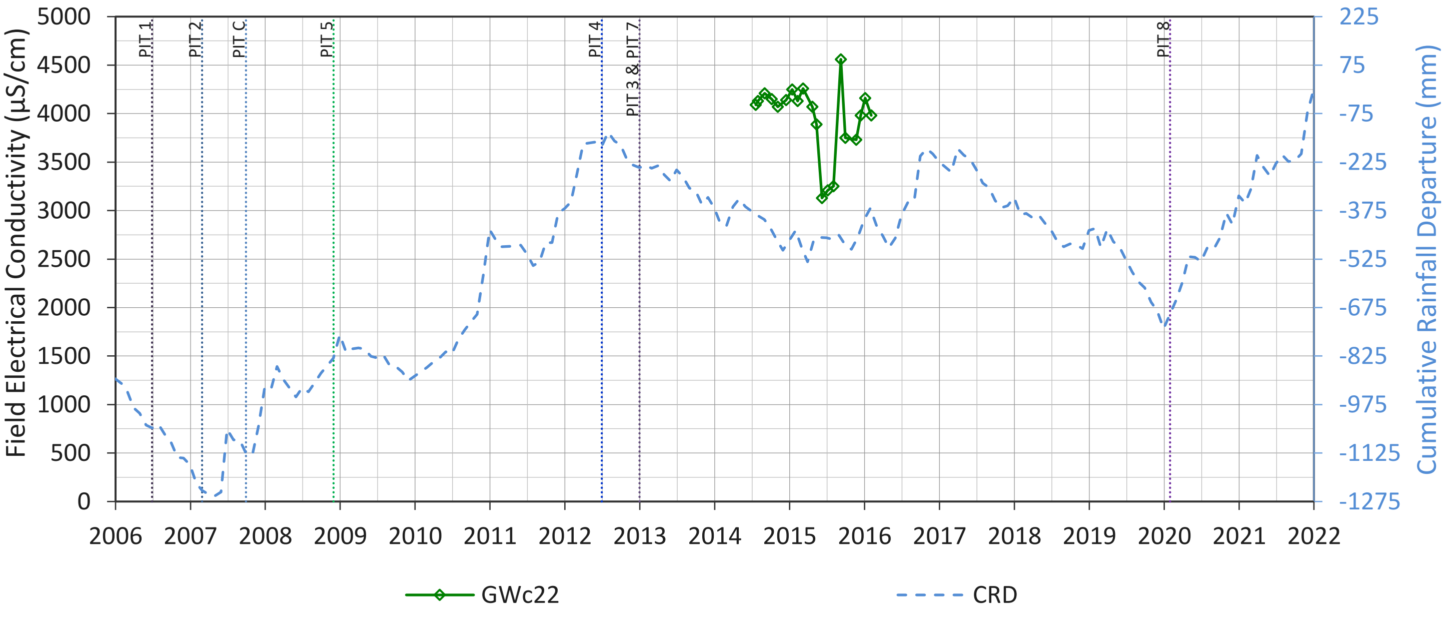

GWc35
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc35
GWc35_logger
Base of Bore
CRD

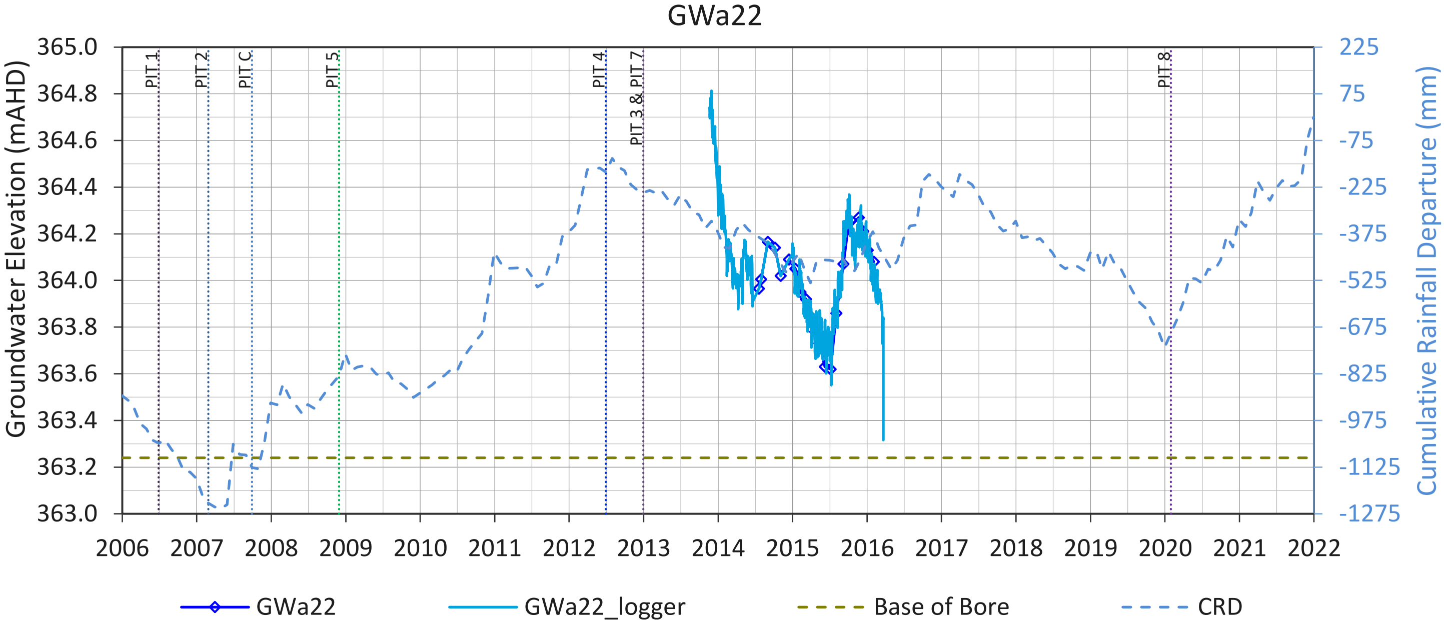

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc35
CRD

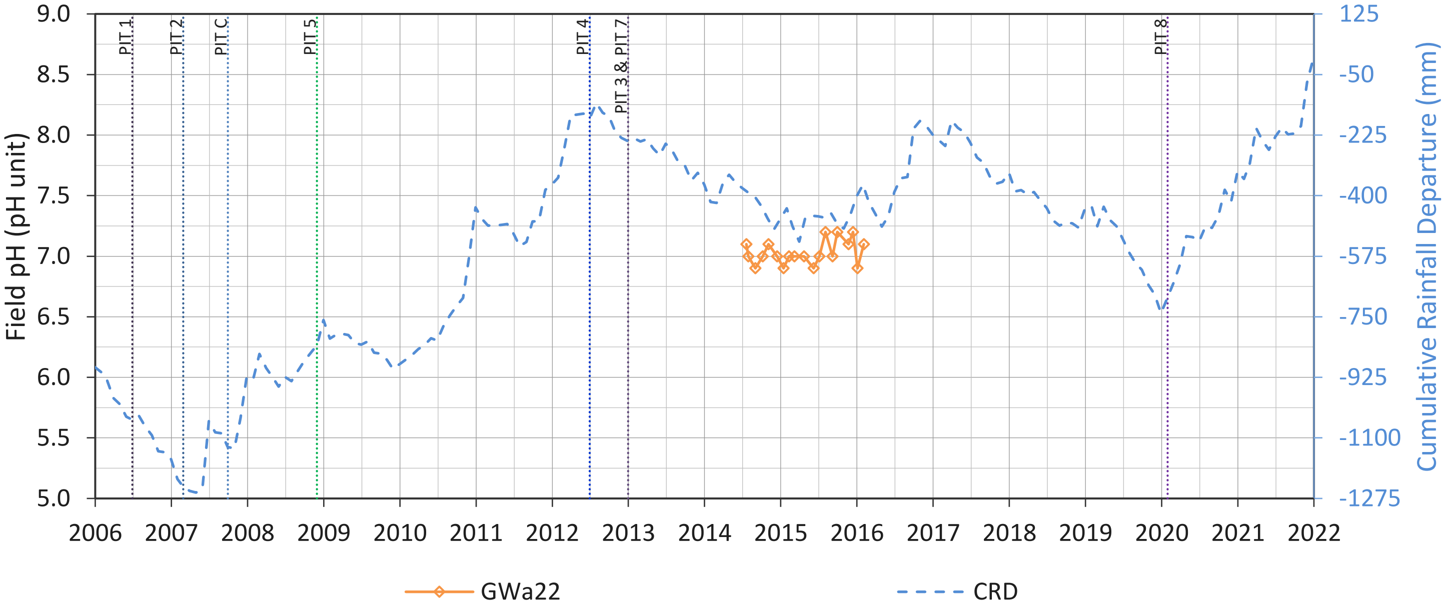

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc35
CRD

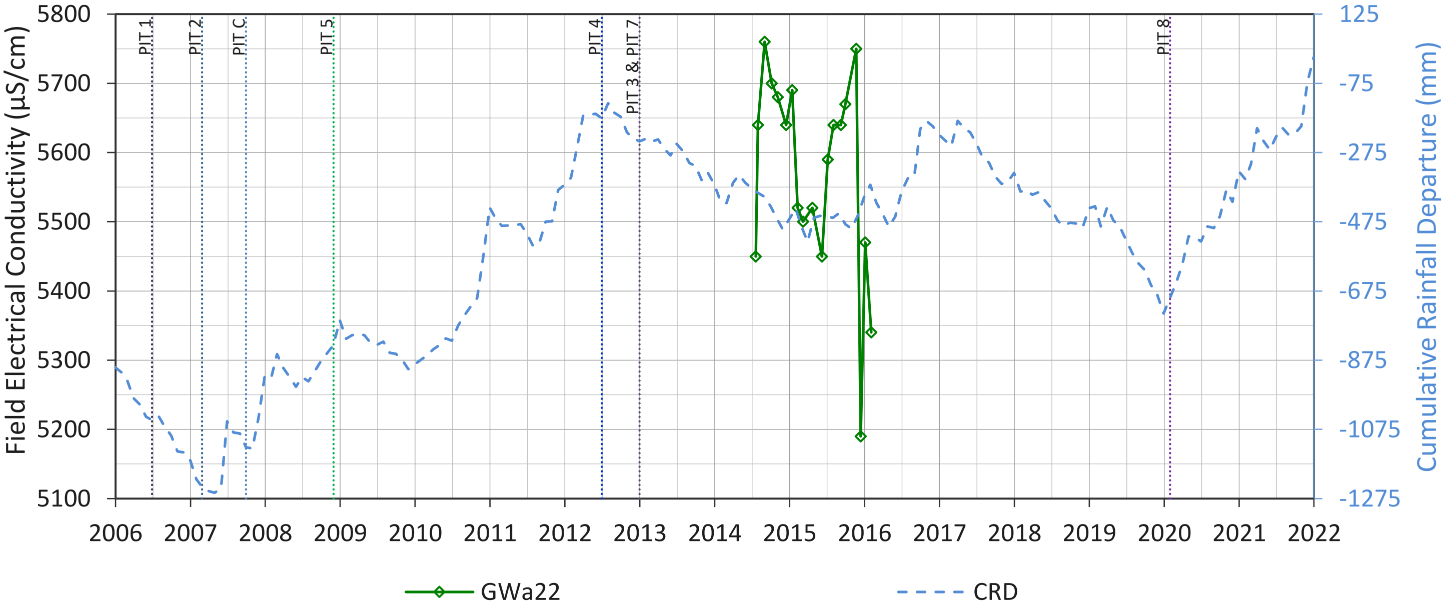

GWc22
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc22
GWc22_logger
Base of Bore
CRD

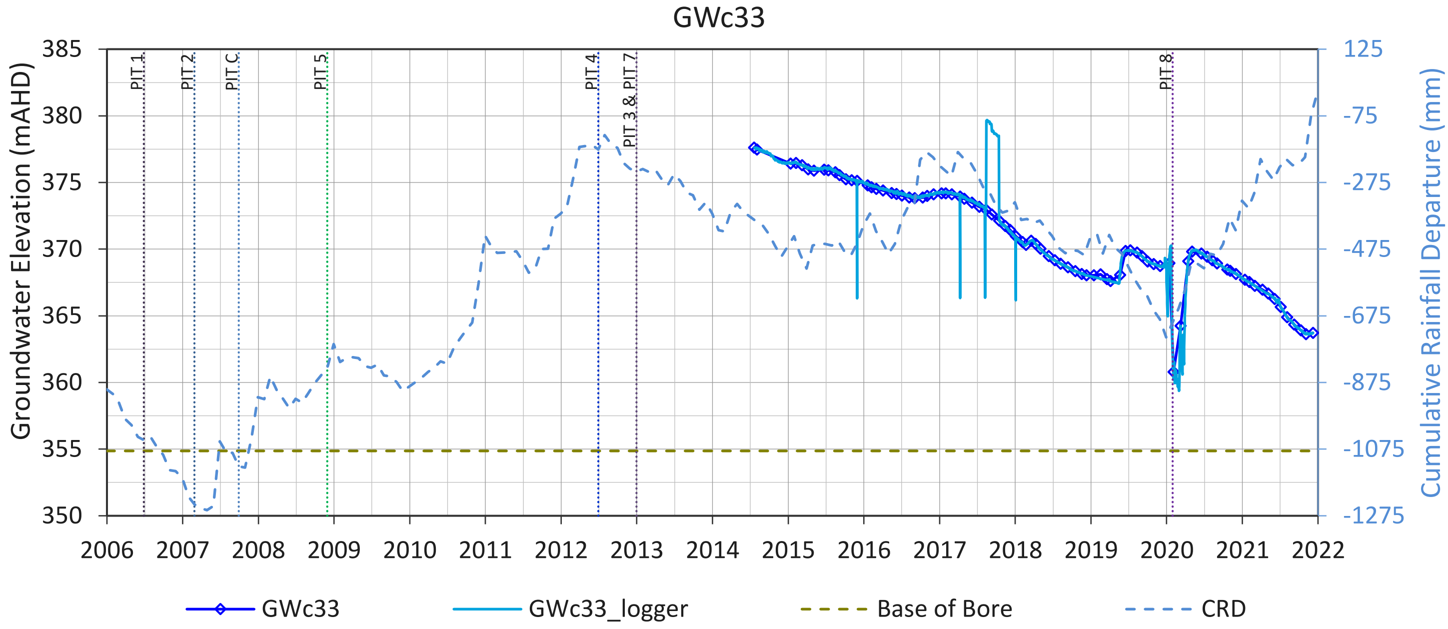

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc22
CRD

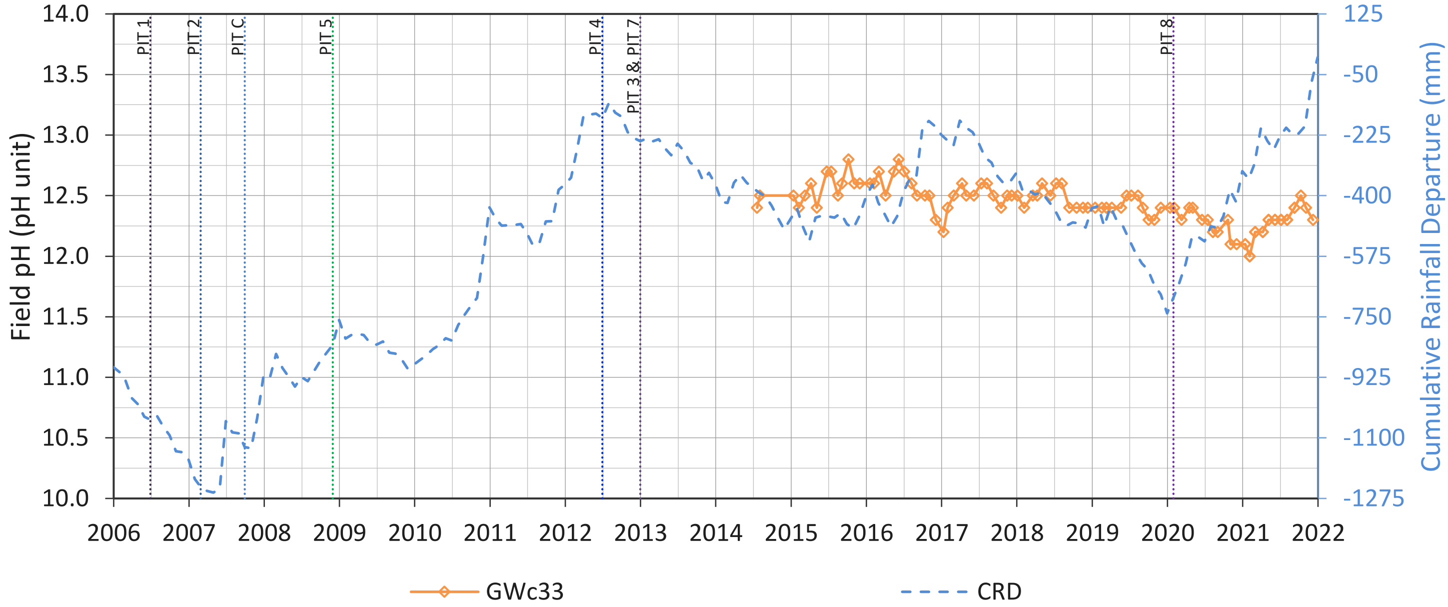

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc22
CRD

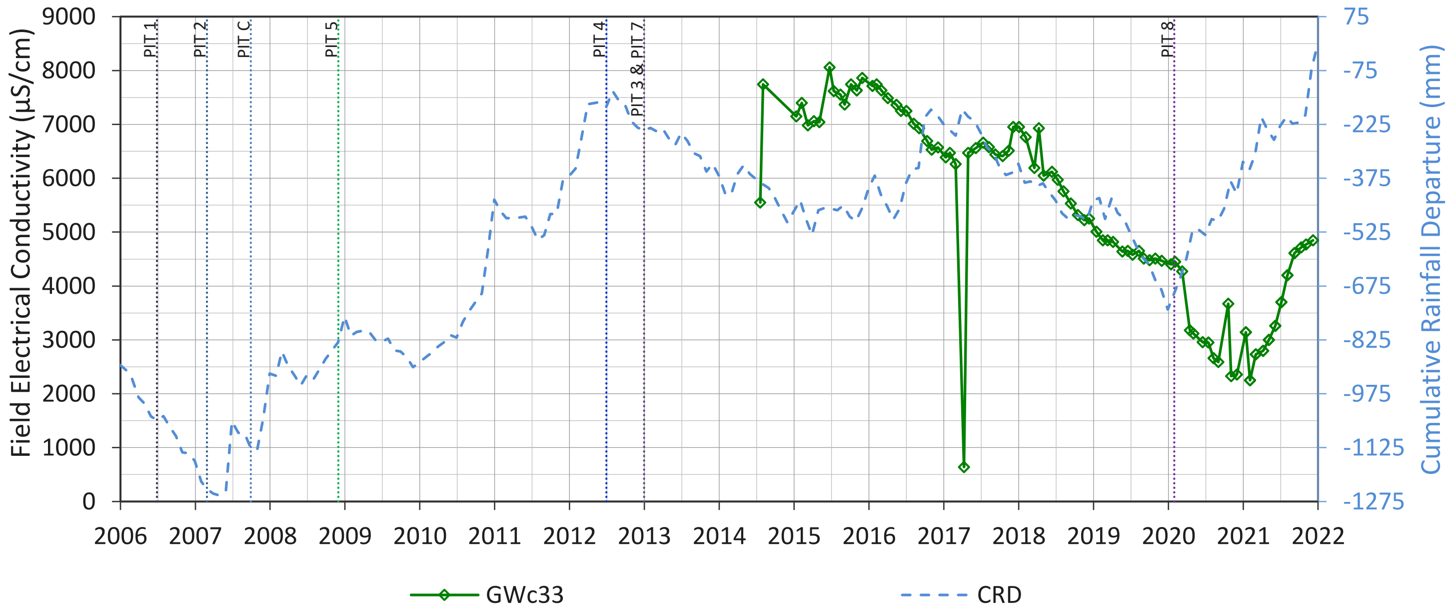

GWa22
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
365.0
364.8
364.6
364.4
364.2
364.0
363.8
363.6
363.4
363.2
363.0
225
75
-75
-225
-375
-525
-675
-825
-975
-1125
-1275
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
GWa22
GWa22_logger
Base of Bore
CRD


Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
125
-50
-225
-400
-575
-750
-925
-1100
-1275
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
GWa22
CRD

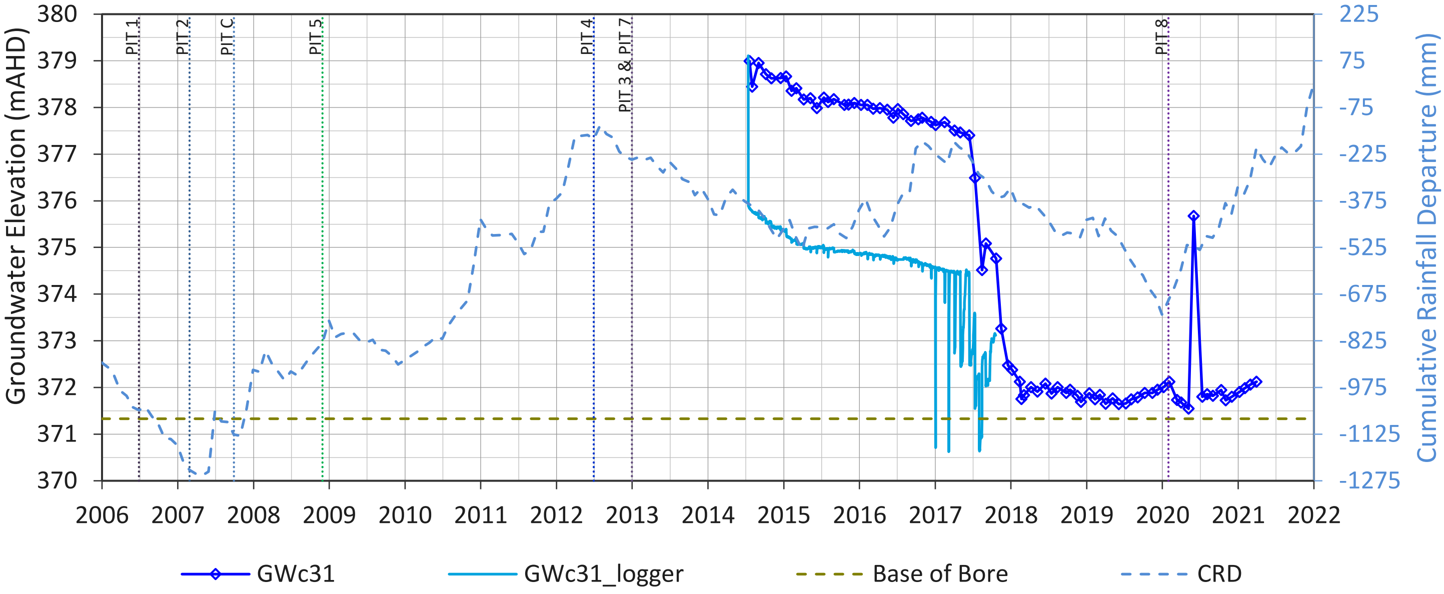

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
5800
5700
5600
5500
5400
5300
5200
5100
125
-75
-275
-475
-675
-875
-1075
-1275
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
GWa22
CRD

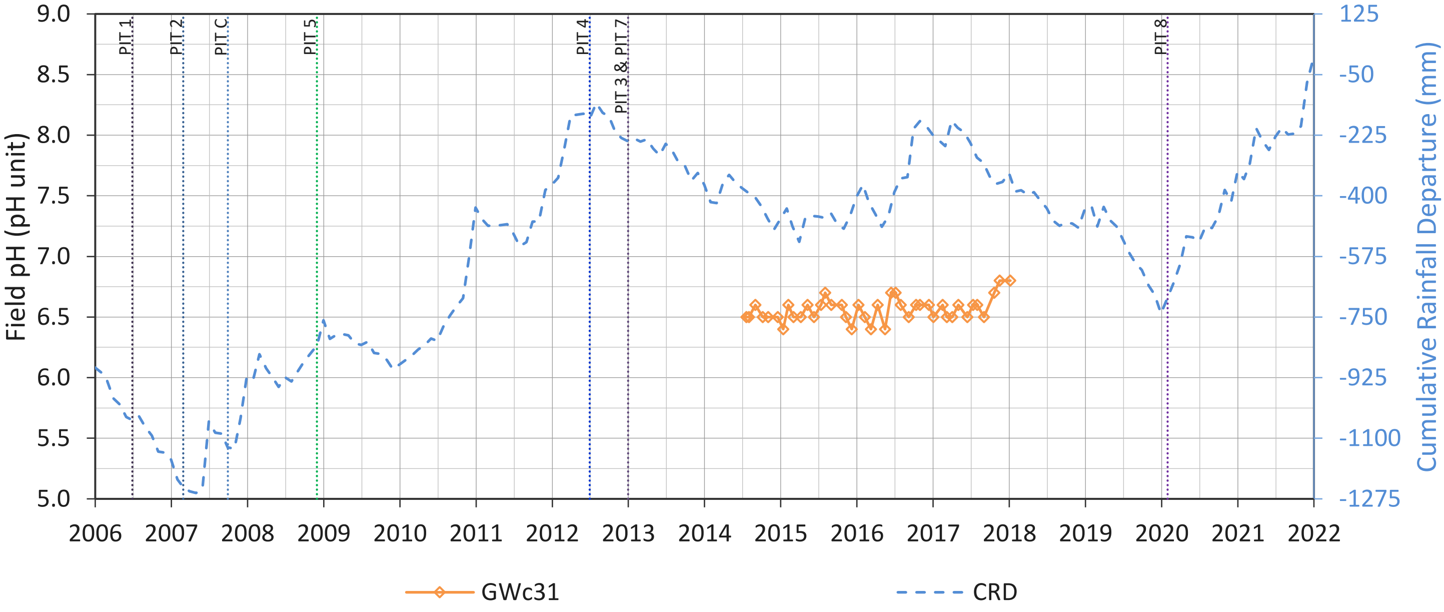

GWc33
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
385
380
375
370
365
360
355
350
125
-75
-275
-475
-675
-875
-1075
-1275
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
GWc33
GWc33_logger
Base of Bore
CRD

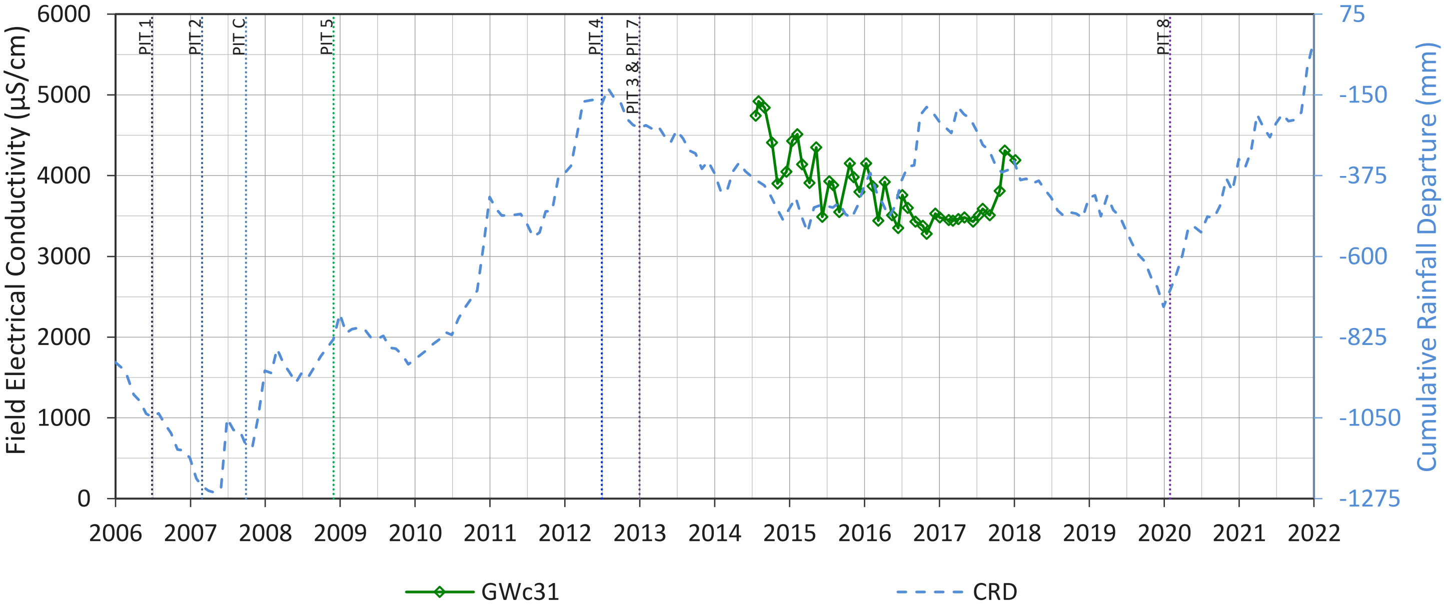

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
14.0
13.5
13.0
12.5
12.0
11.5
11.0
10.5
10.0
125
-50
-225
-400
-575
-750
-925
-1100
-1275
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
GWc33
CRD

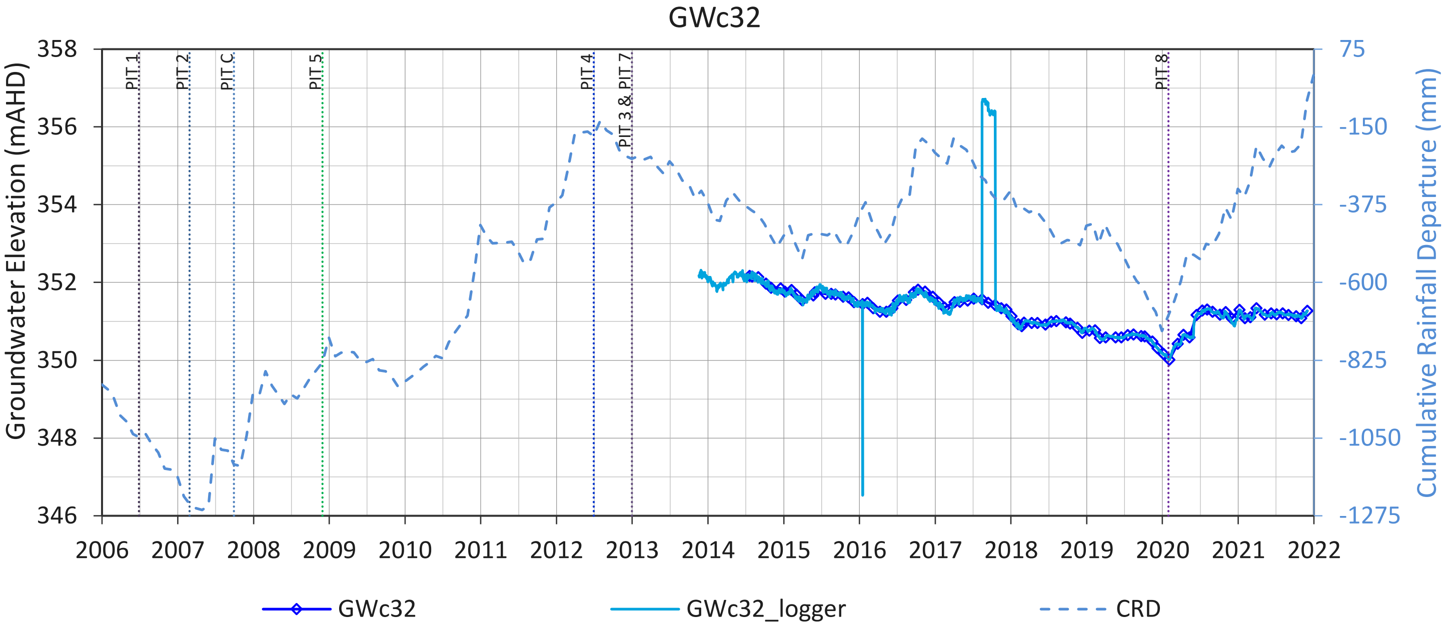

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
75
-75
-225
-375
-525
-675
-825
-975
-1125
-1275
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
GWc33
CRD

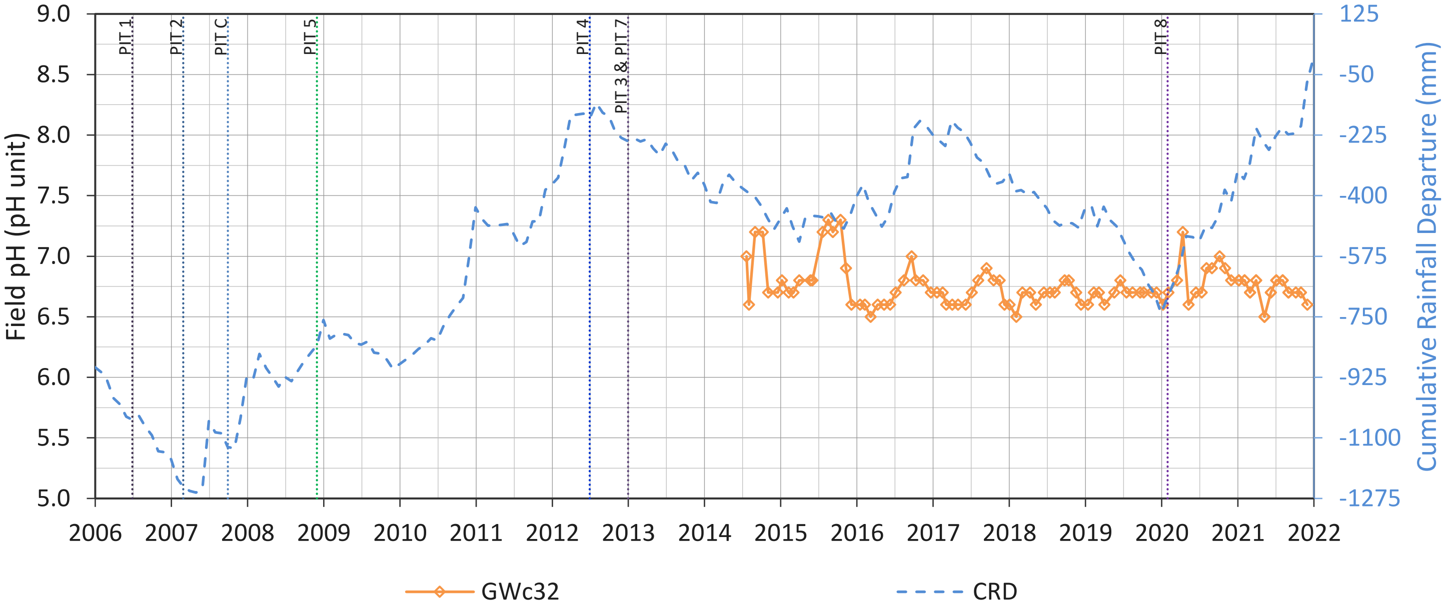
GWc31

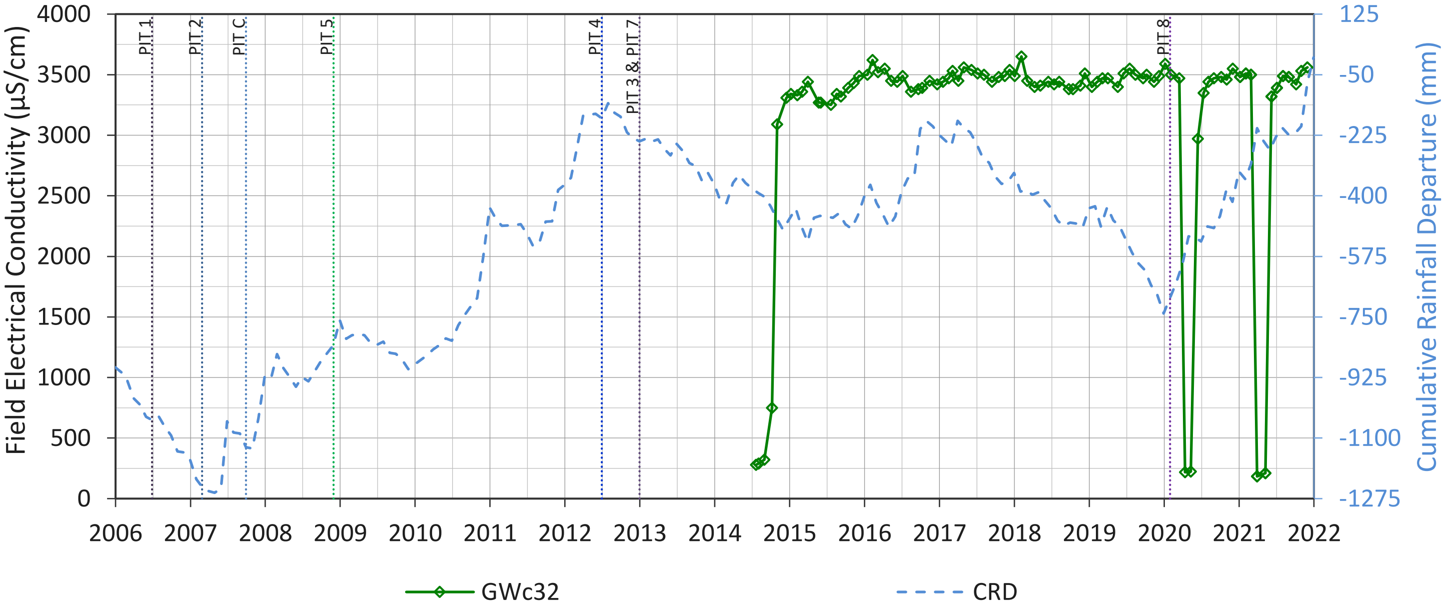

Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc31
GWc31_logger
Base of Bore
CRD

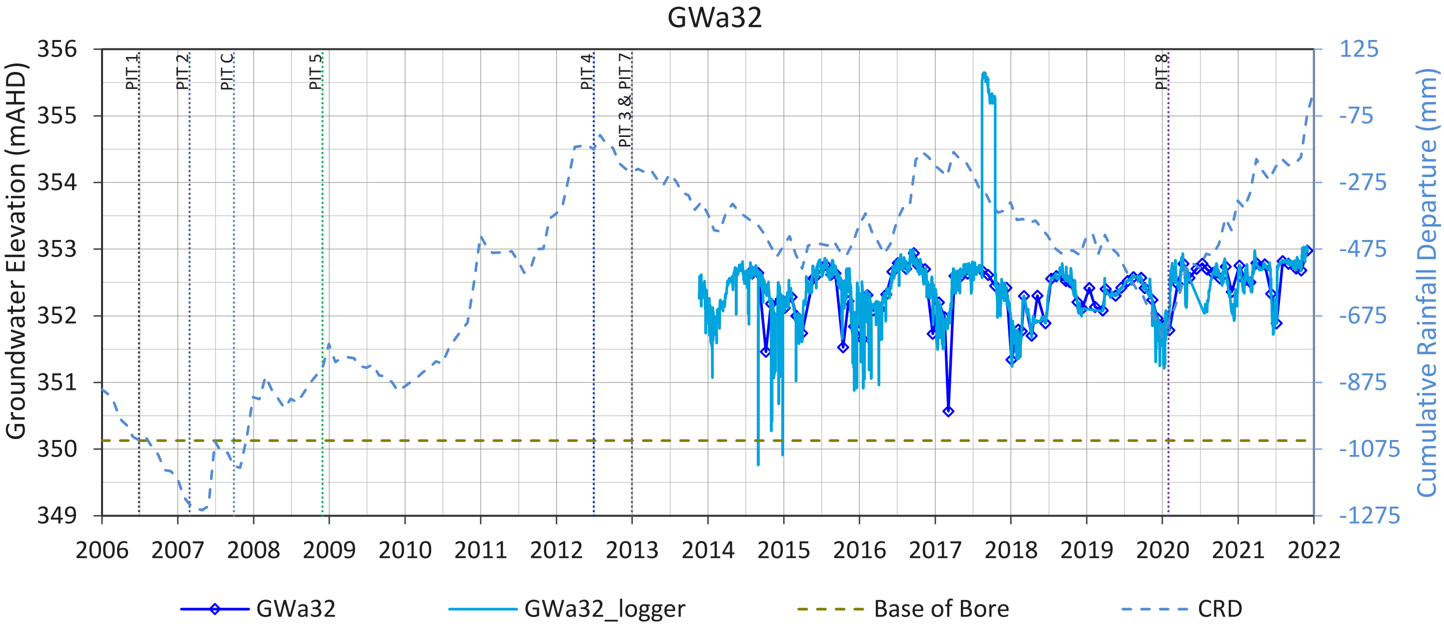

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc31
CRD

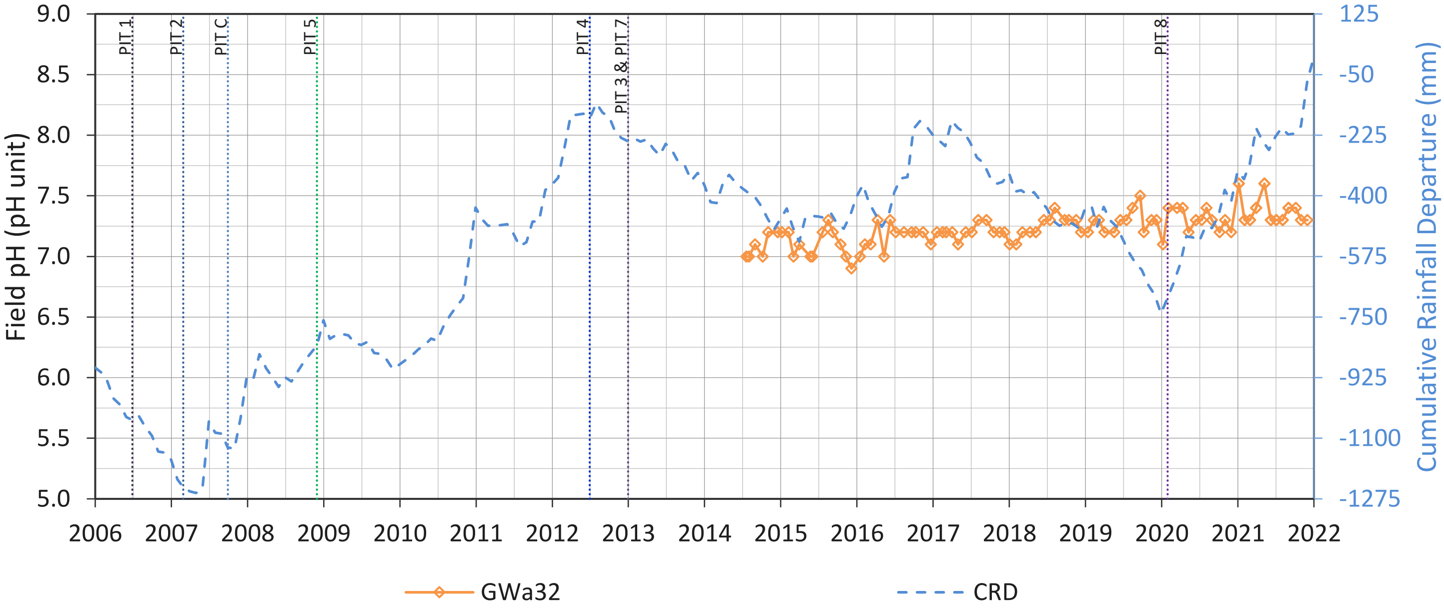

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc31
CRD

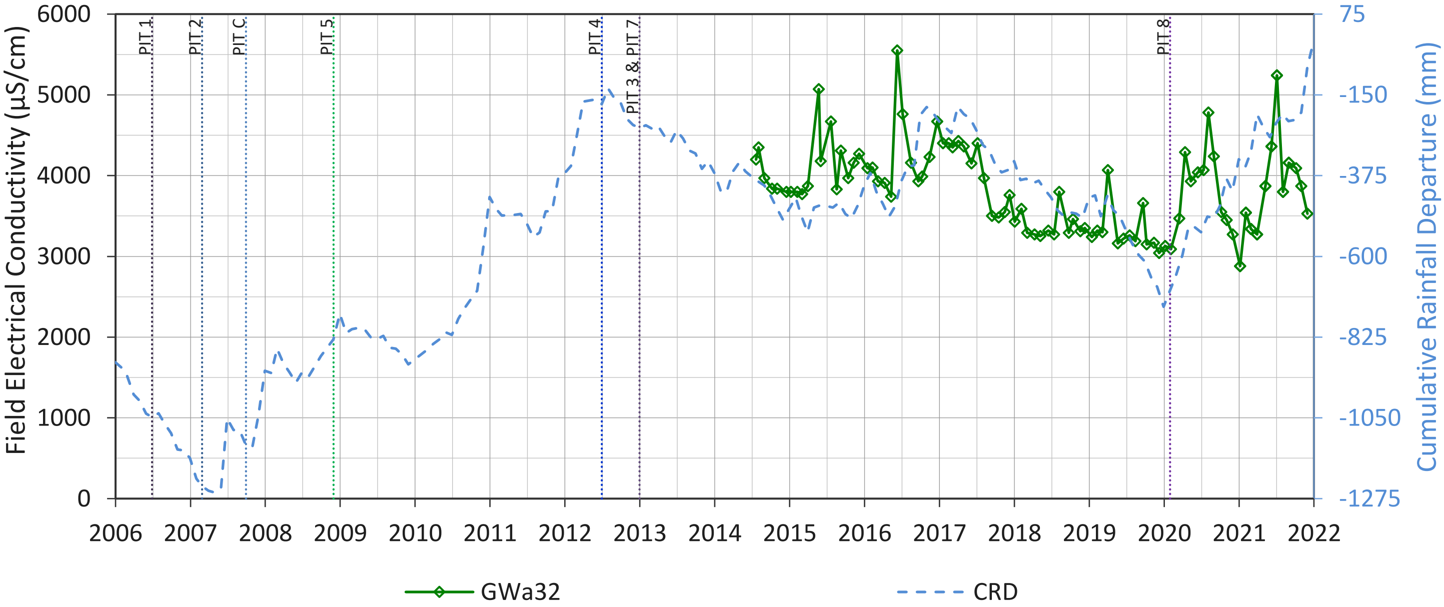

GWc32
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
358
356
354
352
350
348
346
75
-150
-375
-600
-825
-1050
-1275
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
GWc32
GWc32_logger
CRD

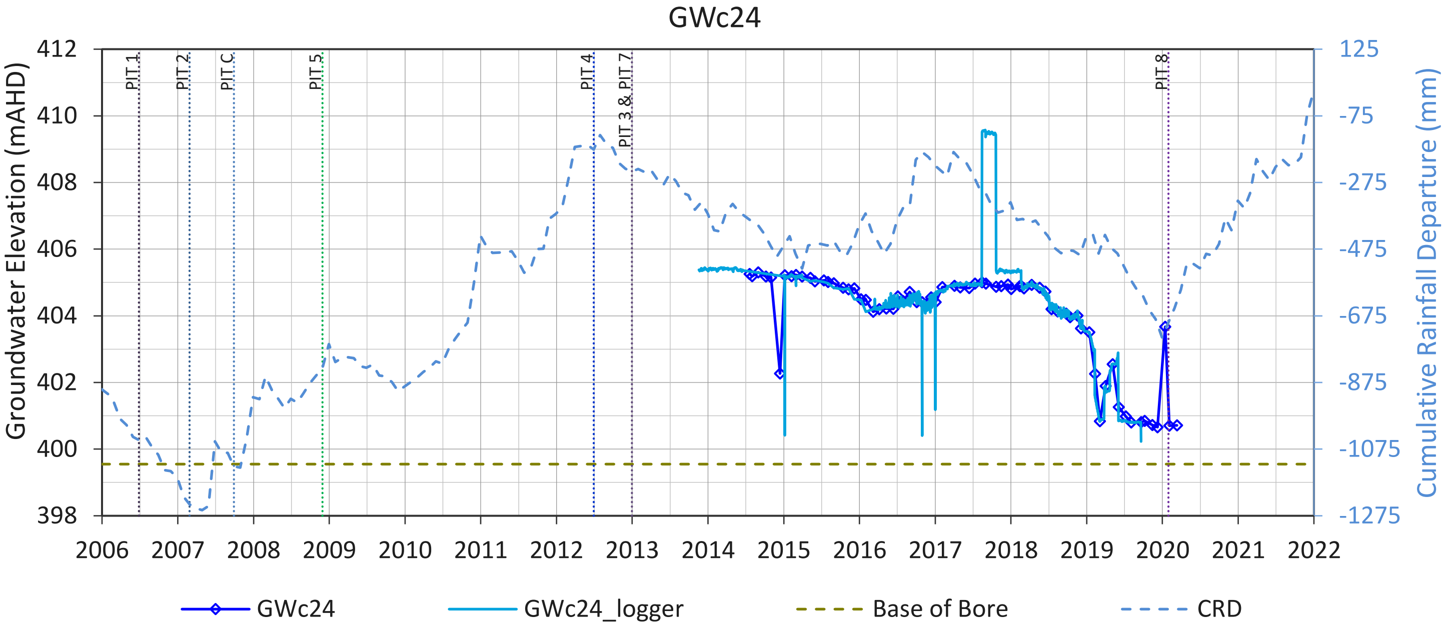

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
125
-50
-225
-400
-575
-750
-925
-1100
-1275
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
GWc32
CRD

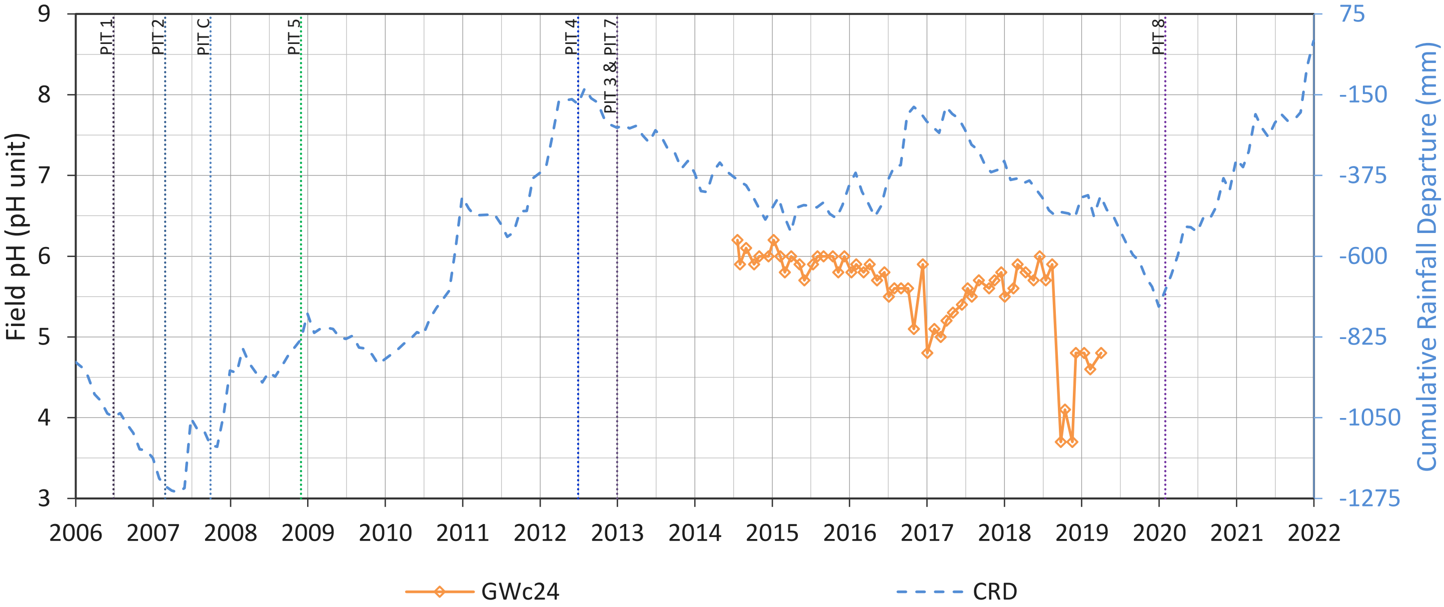

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
4000
3500
3000
2500
2000
1500
1000
500
0
125
-50
-225
-400
-575
-750
-925
-1100
-1275
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
GWc32
CRD

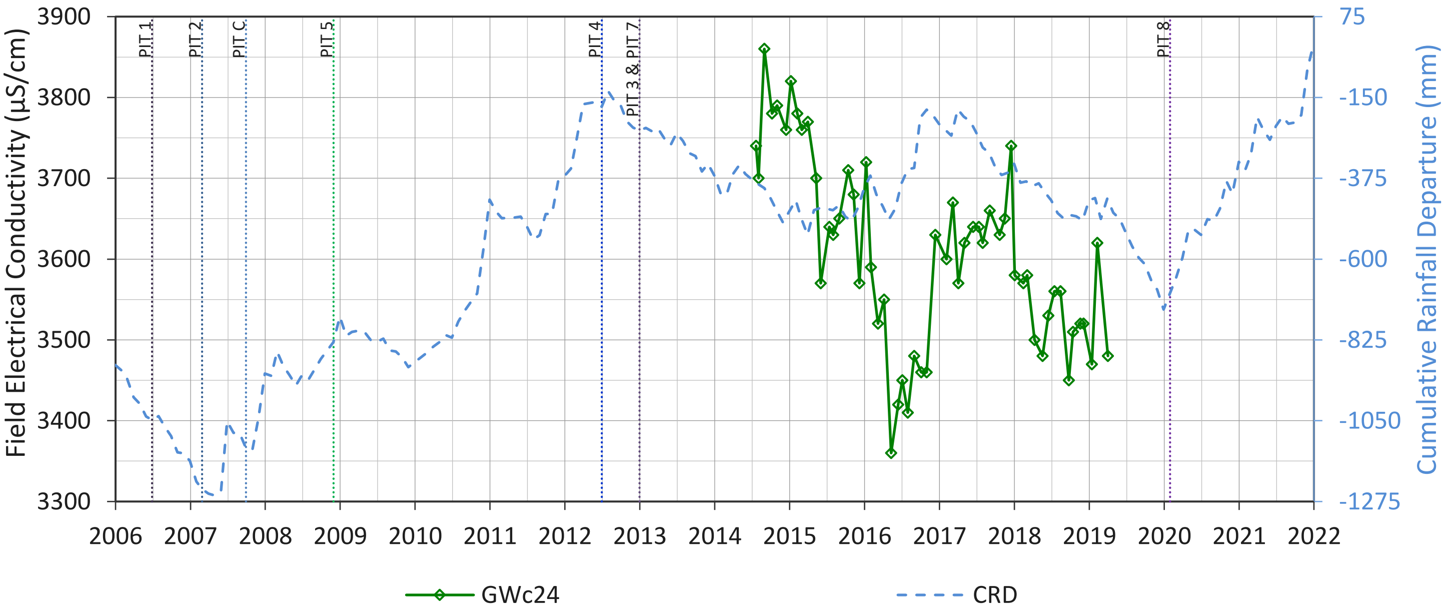

GWa32
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
356
355
354
353
352
351
350
349
125
-75
-275
-475
-675
-875
-1075
-1275
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
GWa32
GWa32_logger
Base of Bore
CRD

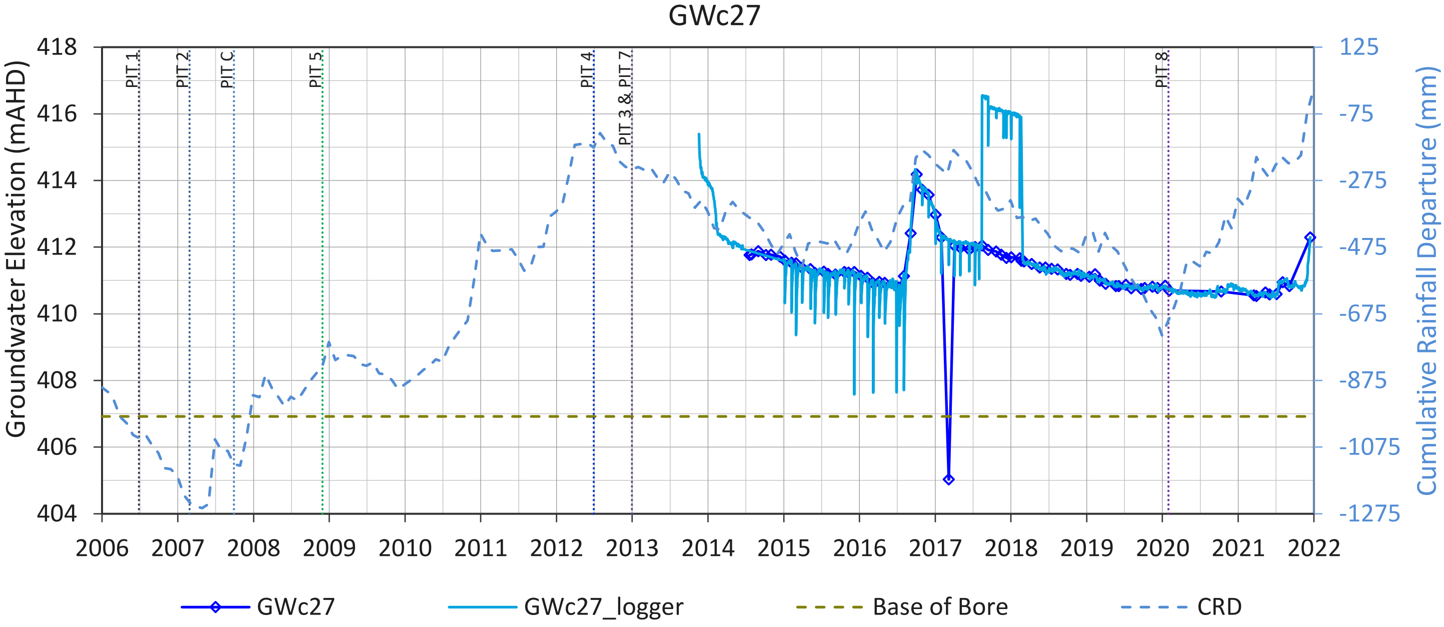

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
125
-50
-225
-400
-575
-750
-925
-1100
-1275
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
GWa32
CRD

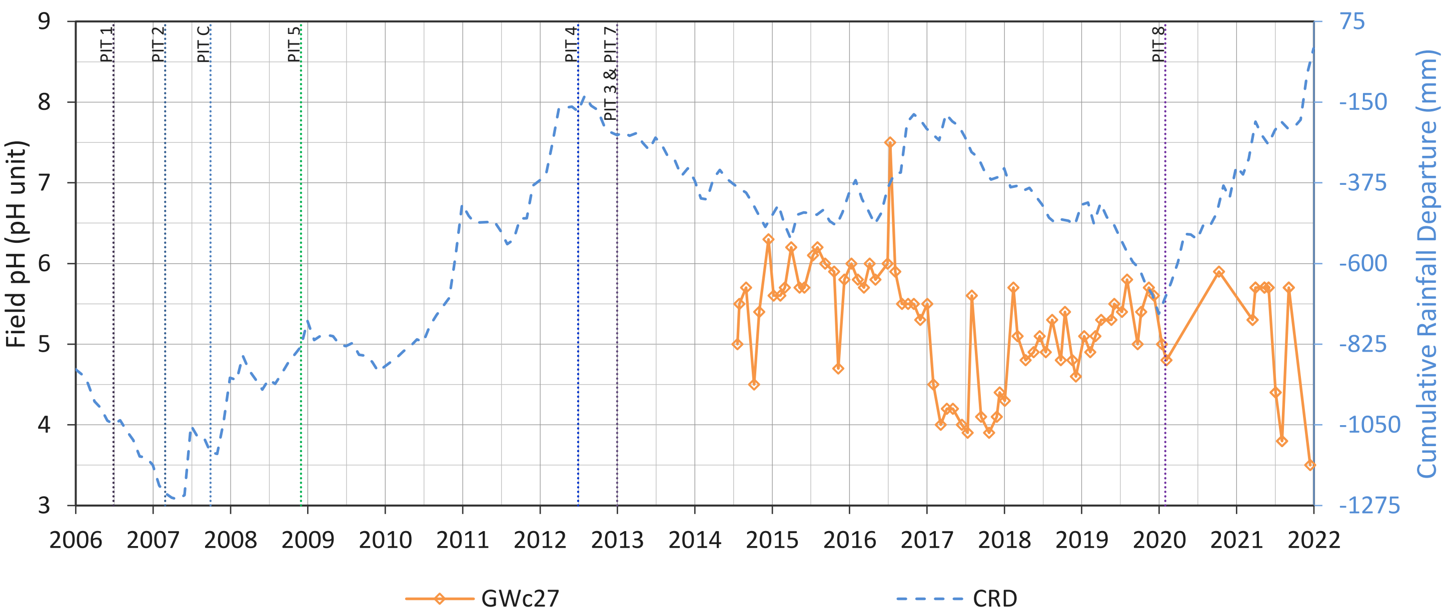

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
6000
5000
4000
3000
2000
1000
0
75
-150
-375
-600
-825
-1050
-1275
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
GWa32
CRD

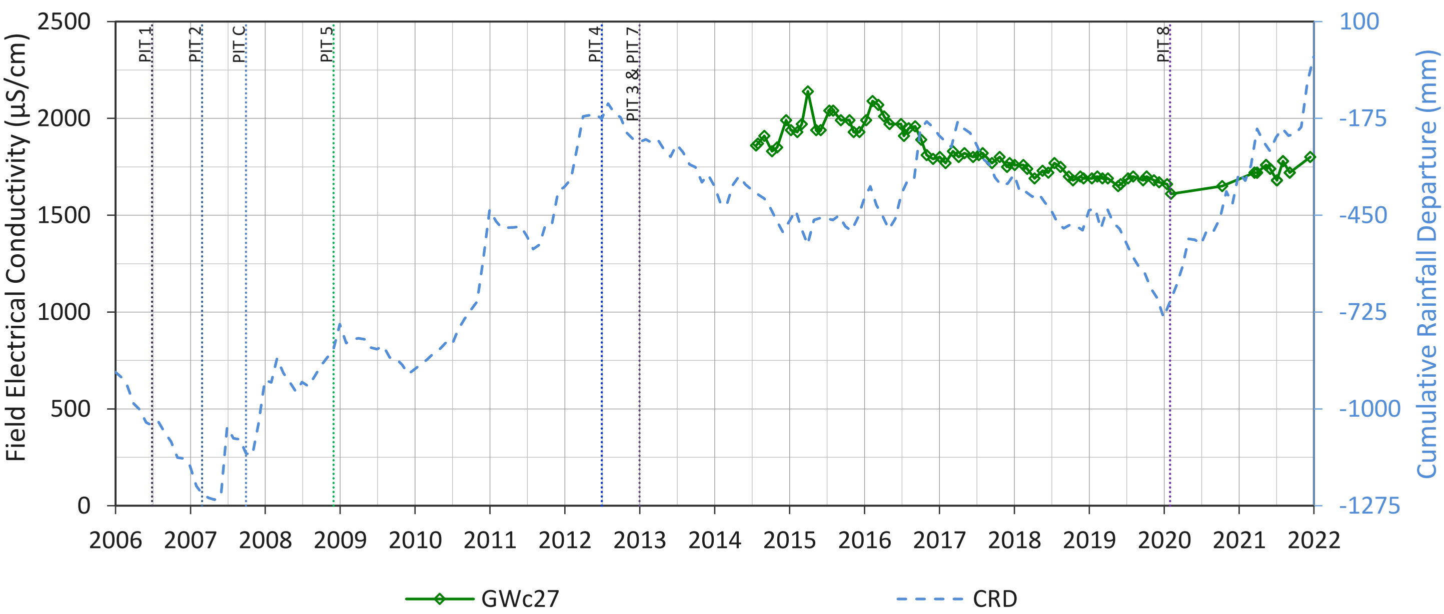

GWc24
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc24
GWc24_logger
Base of Bore
CRD

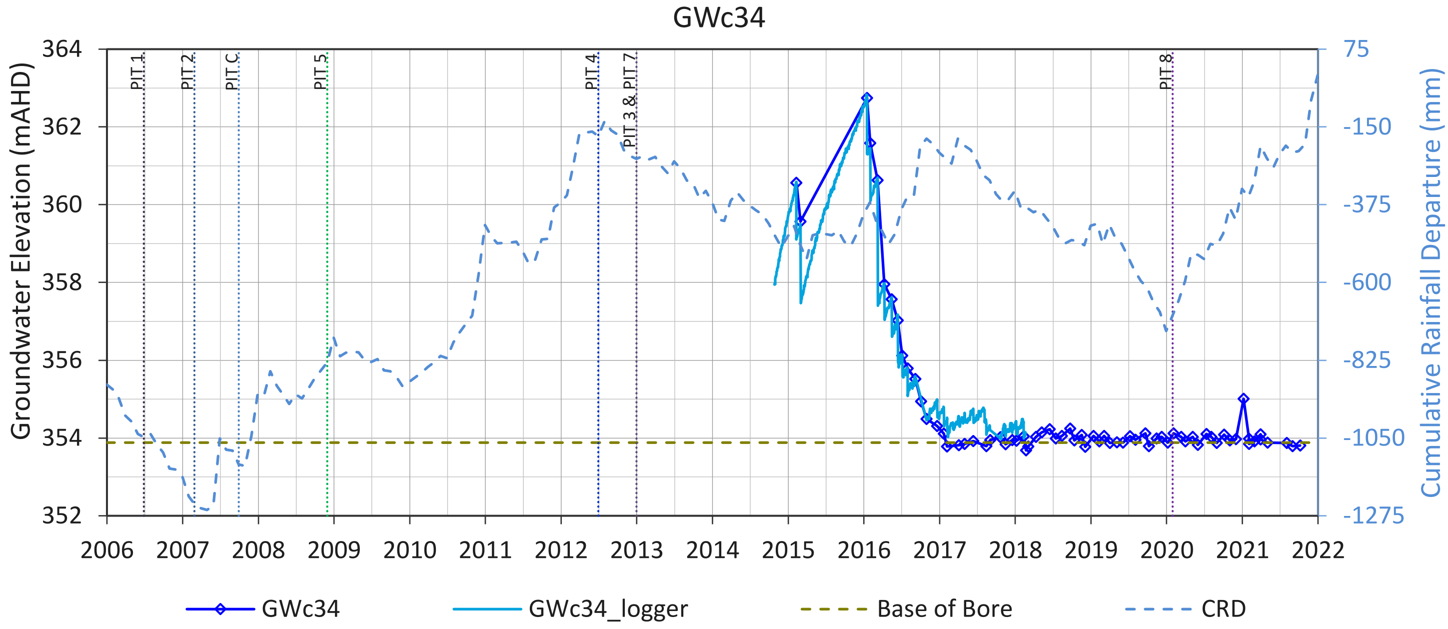

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc24
CRD

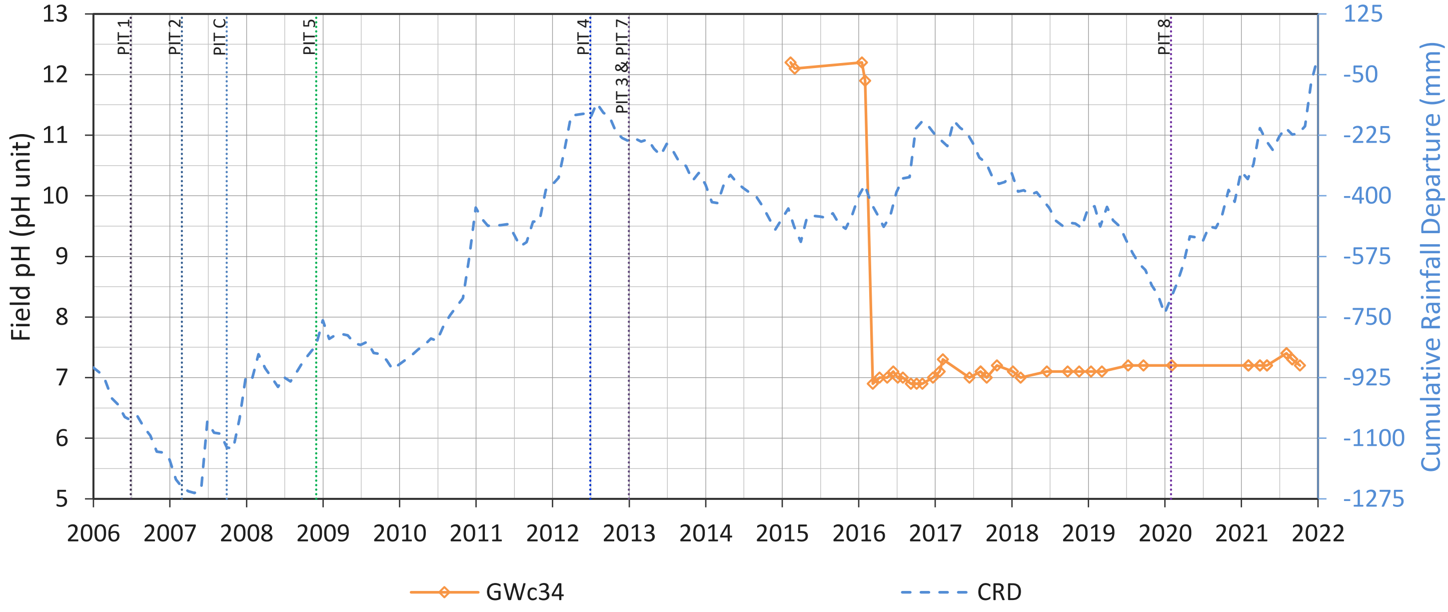

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc24
CRD

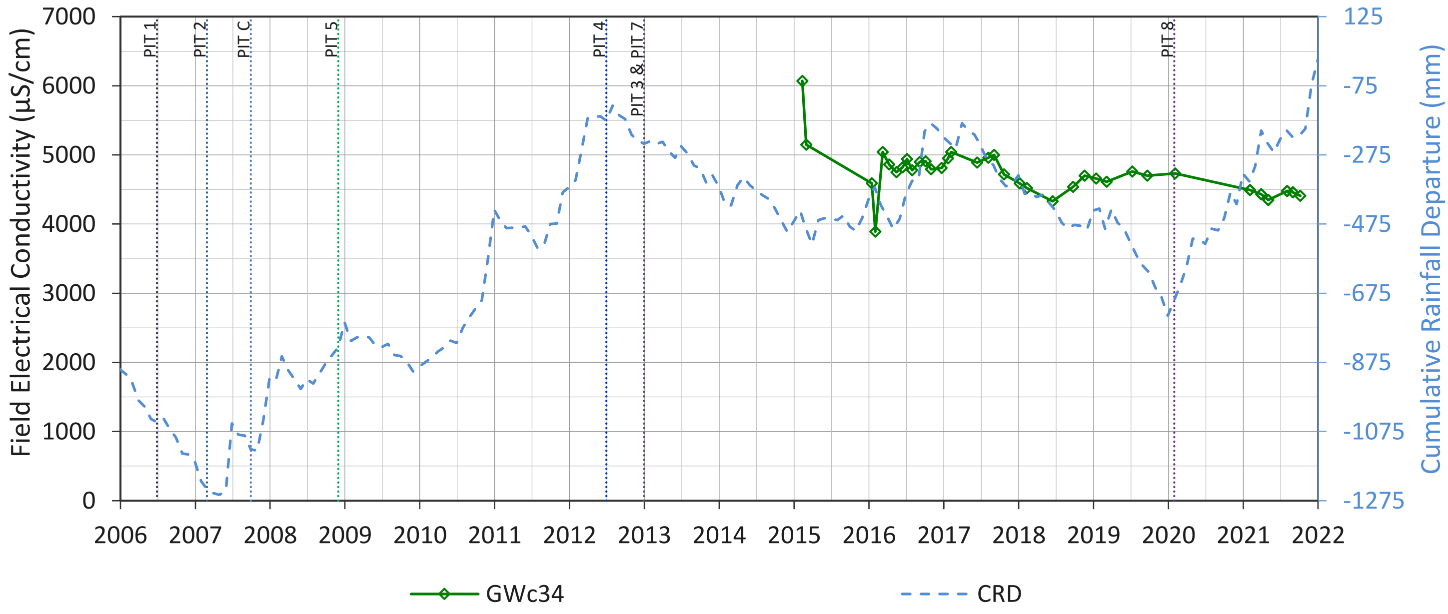

GWc27
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
418
416
414
412
410
408
406
404
125
-75
-275
-475
-675
-875
-1075
-1275
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
GWc27
GWc27_logger
Base of Bore
CRD

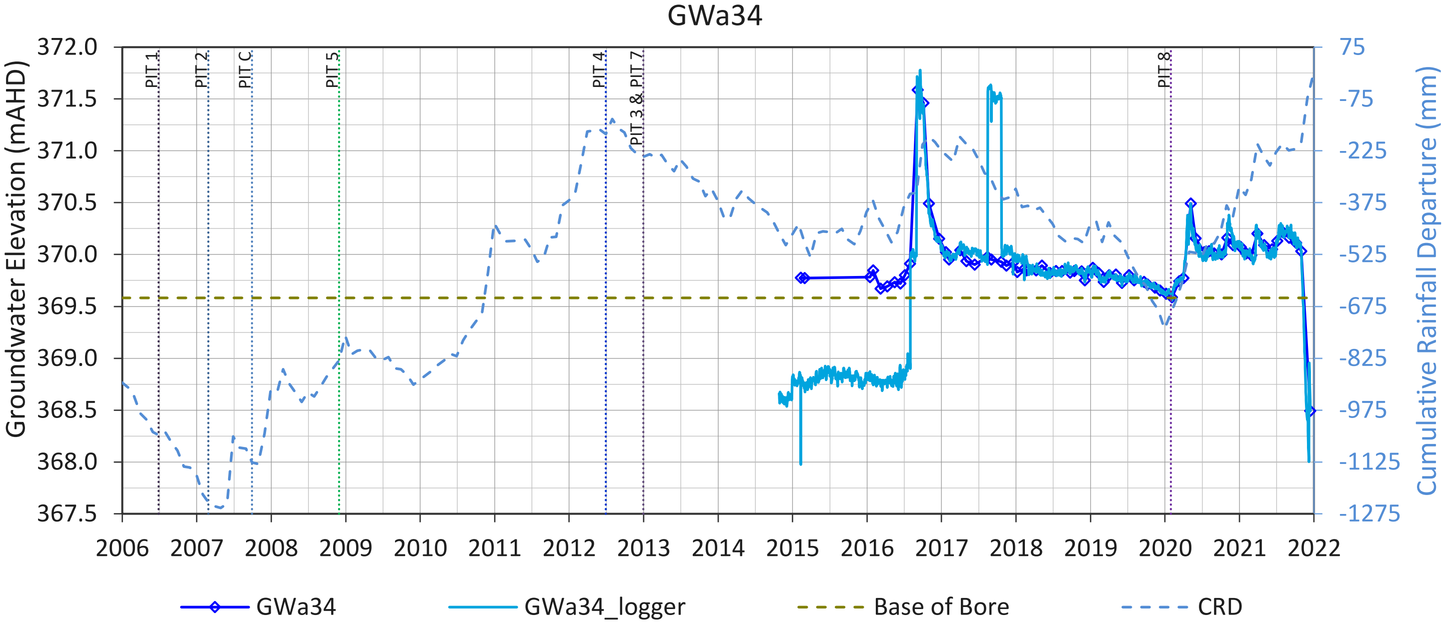

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
9
8
7
6
5
4
3
75
-150
-375
-600
-825
-1050
-1275
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
GWc27
CRD

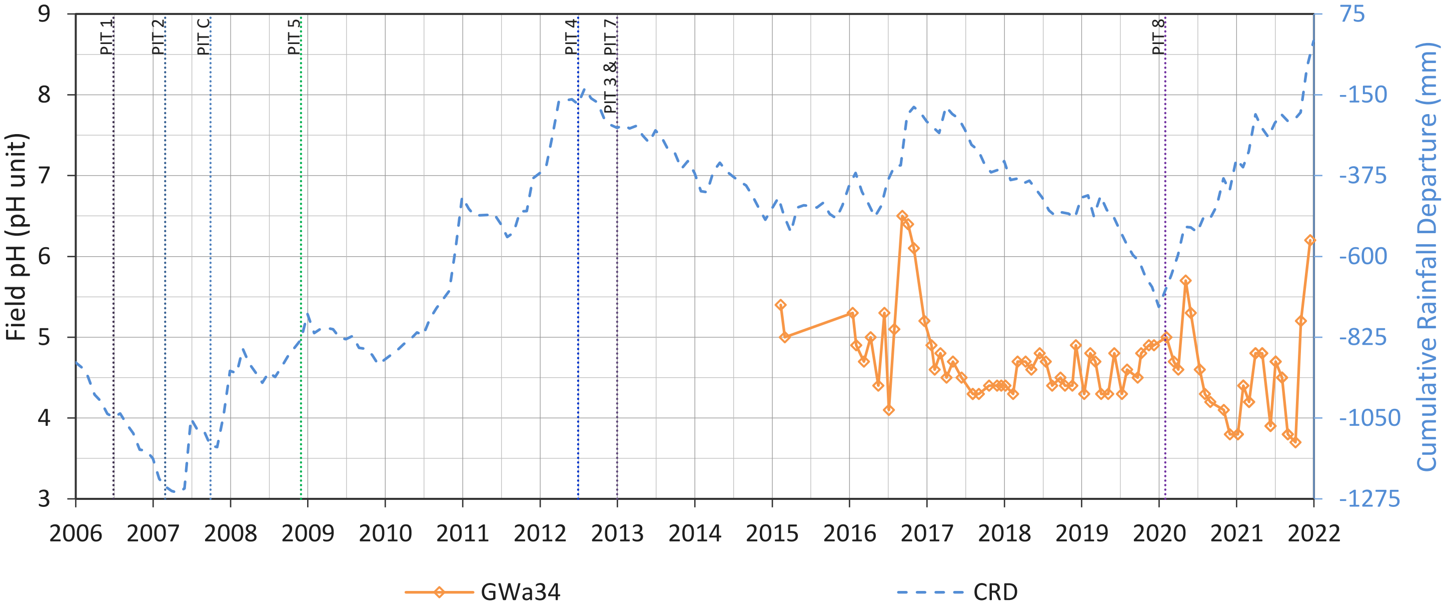

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
2500
2000
1500
1000
500
0
100
-175
-450
-725
-1000
-1275
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
GWc27
CRD

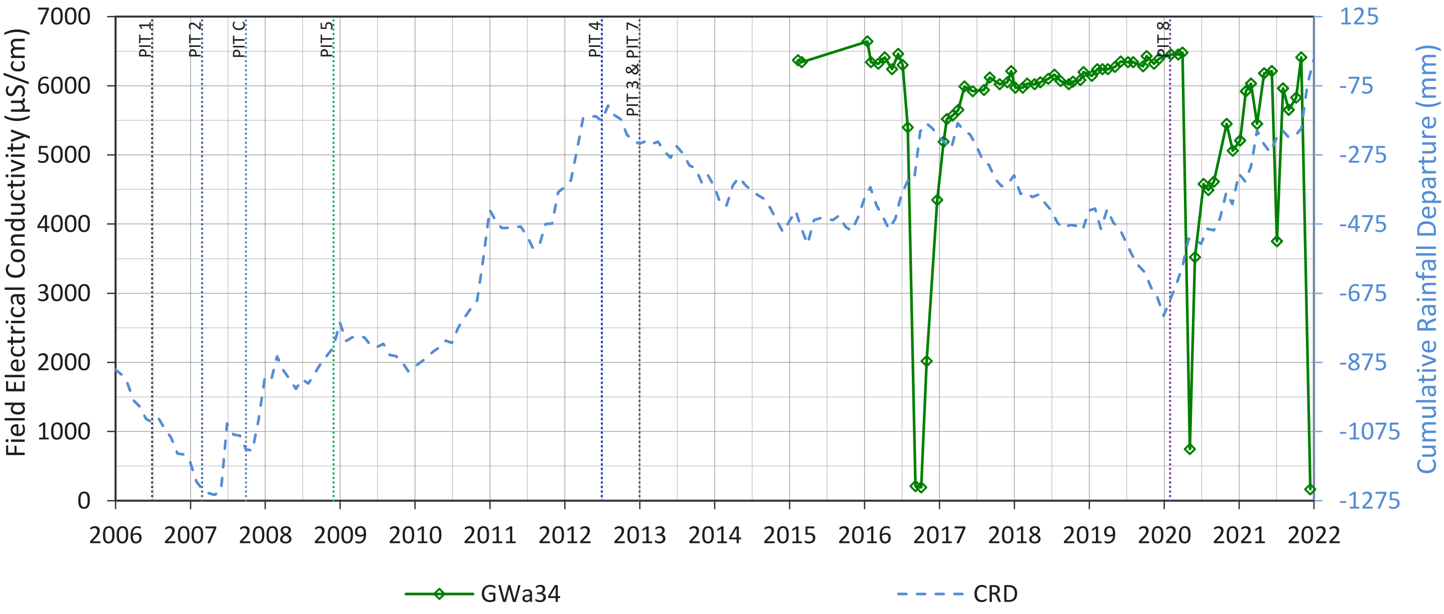

GWc34
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc34
GWc34_logger
Base of Bore
CRD

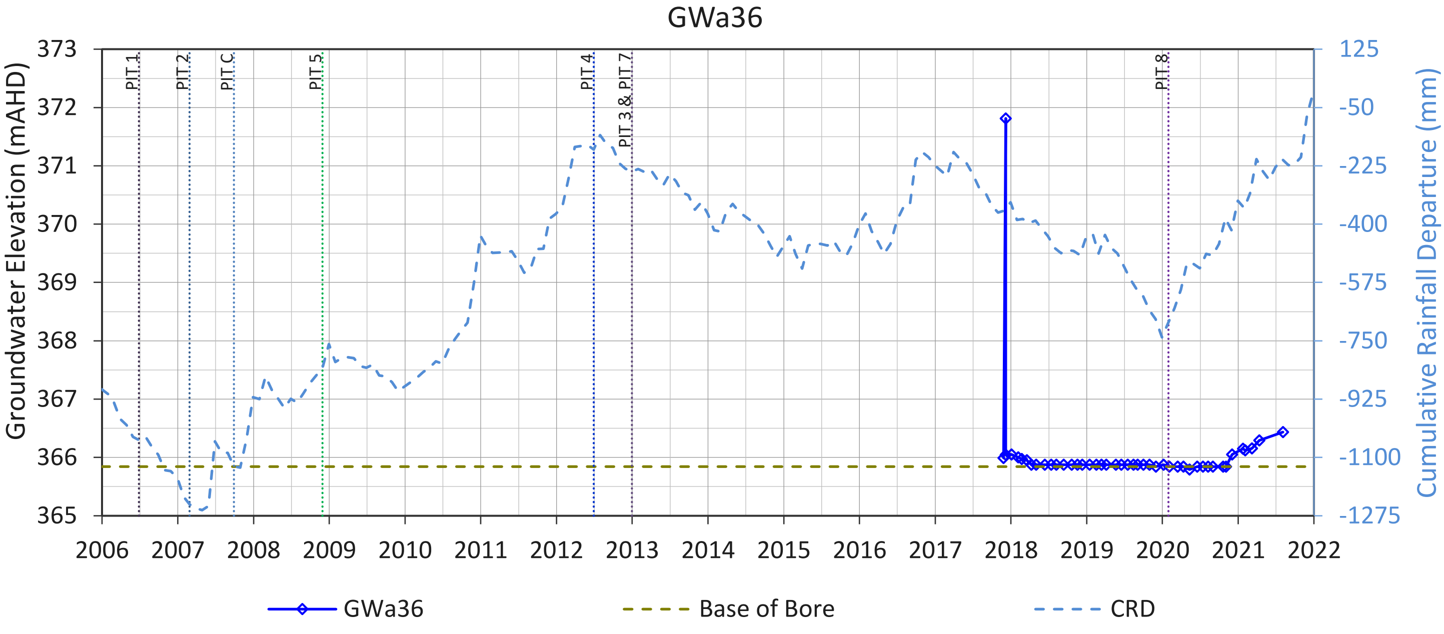

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc34
CRD


Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWc34
CRD

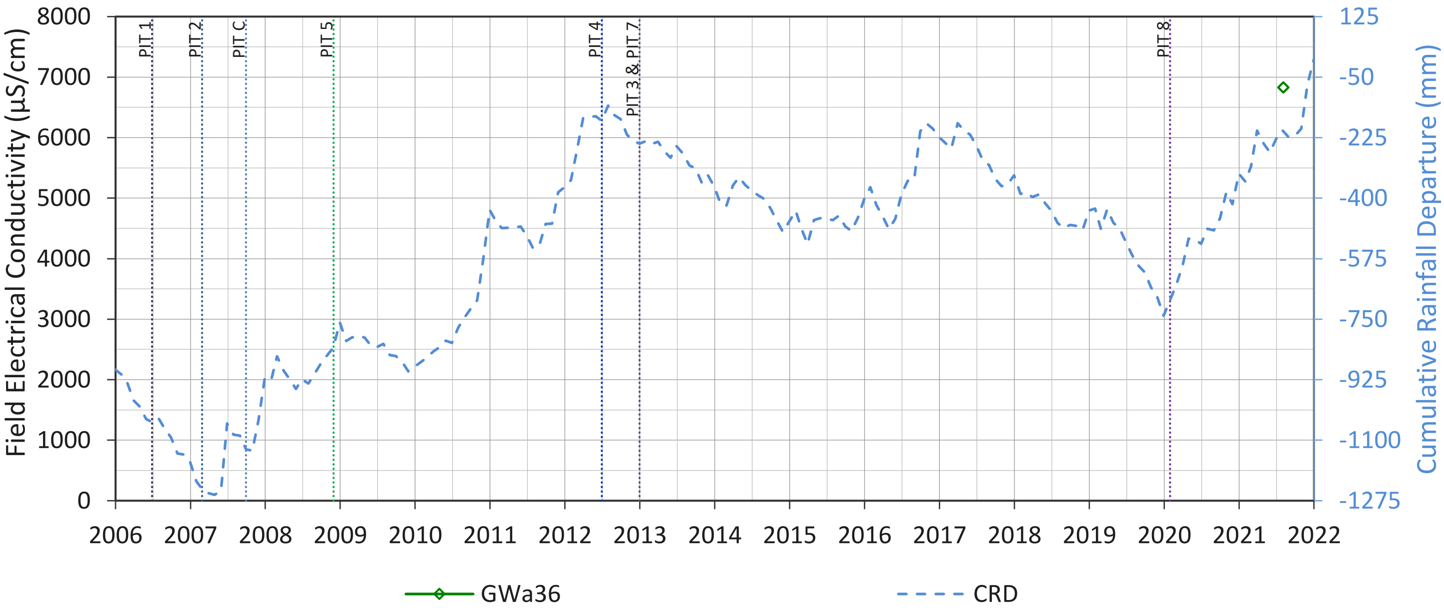

GWa34
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWa34
GWa34_logger
Base of Bore
CRD

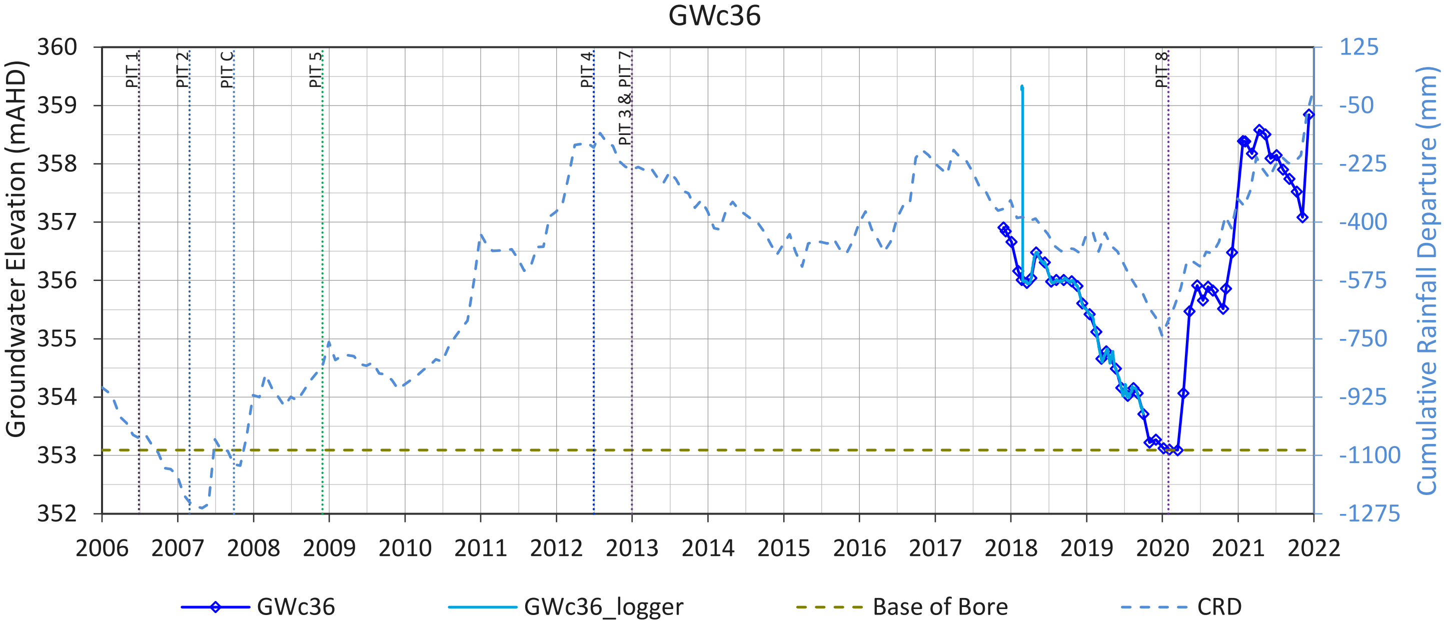

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWa34
CRD

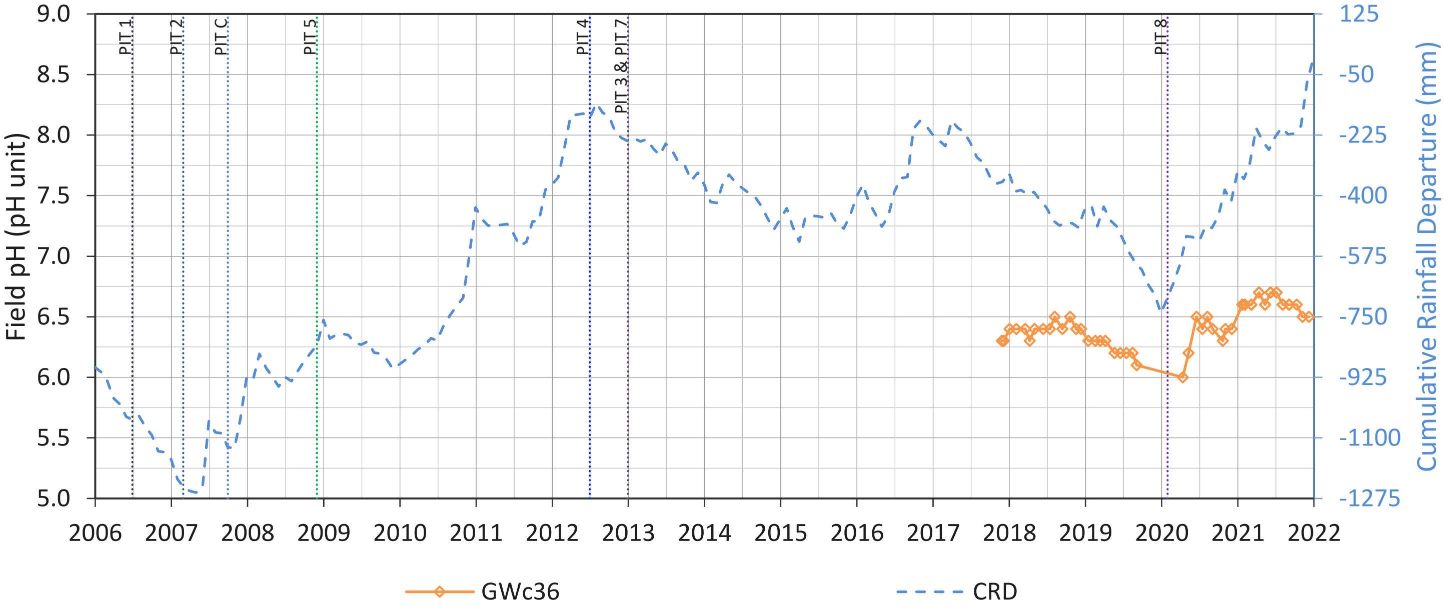

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWa34
CRD

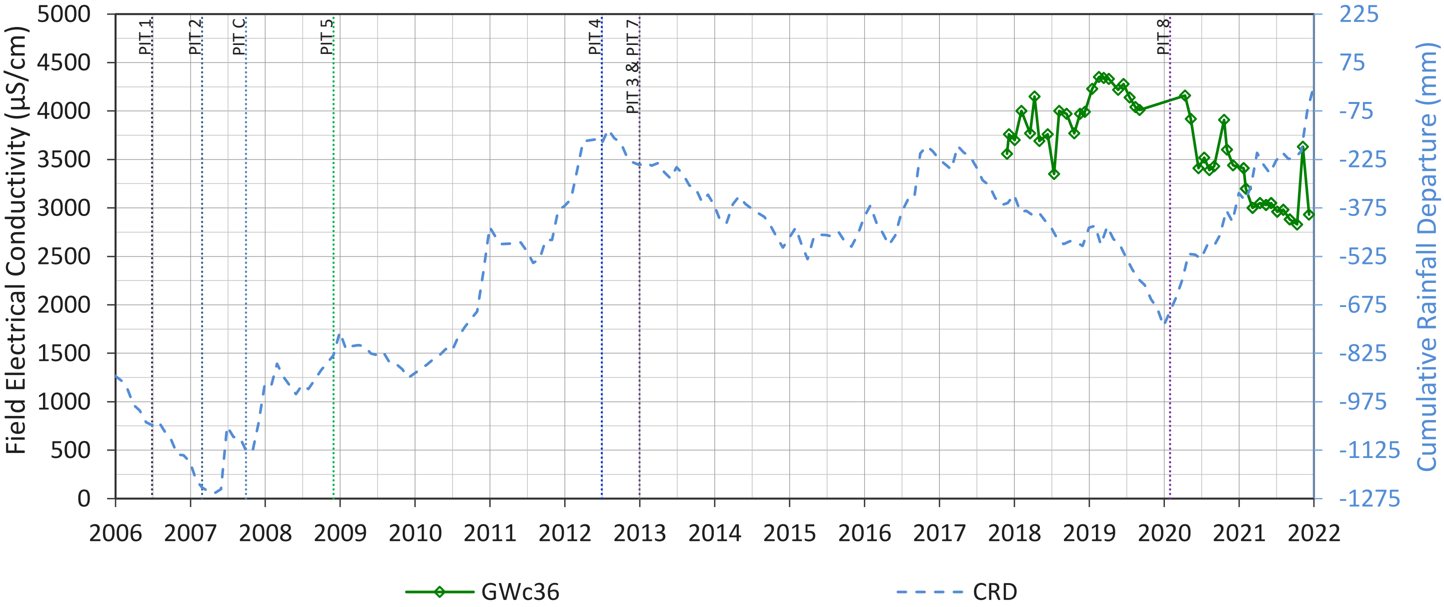

GWa36
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
373
372
371
370
369
368
367
366
365
125
-50
-225
-400
-575
-750
-925
-1100
-1275
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
GWa36
Base of Bore
CRD

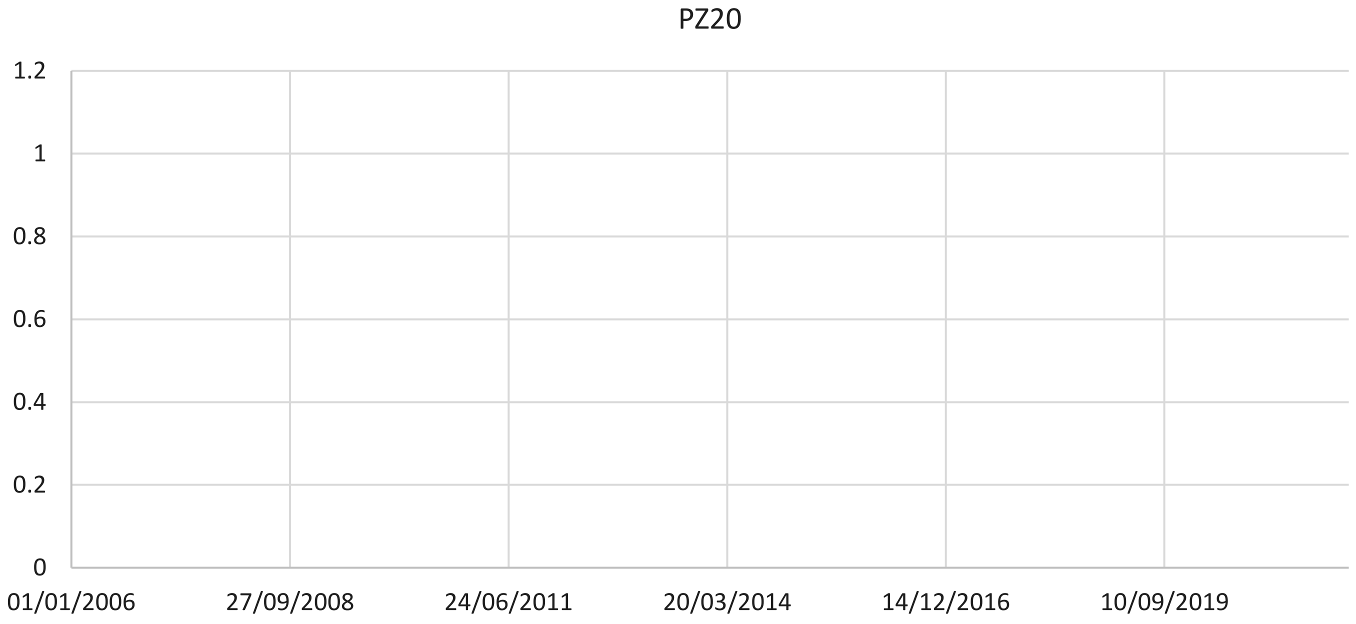

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
125
-50
-225
-400
-575
-750
-925
-1100
-1275
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
GWa36
CRD

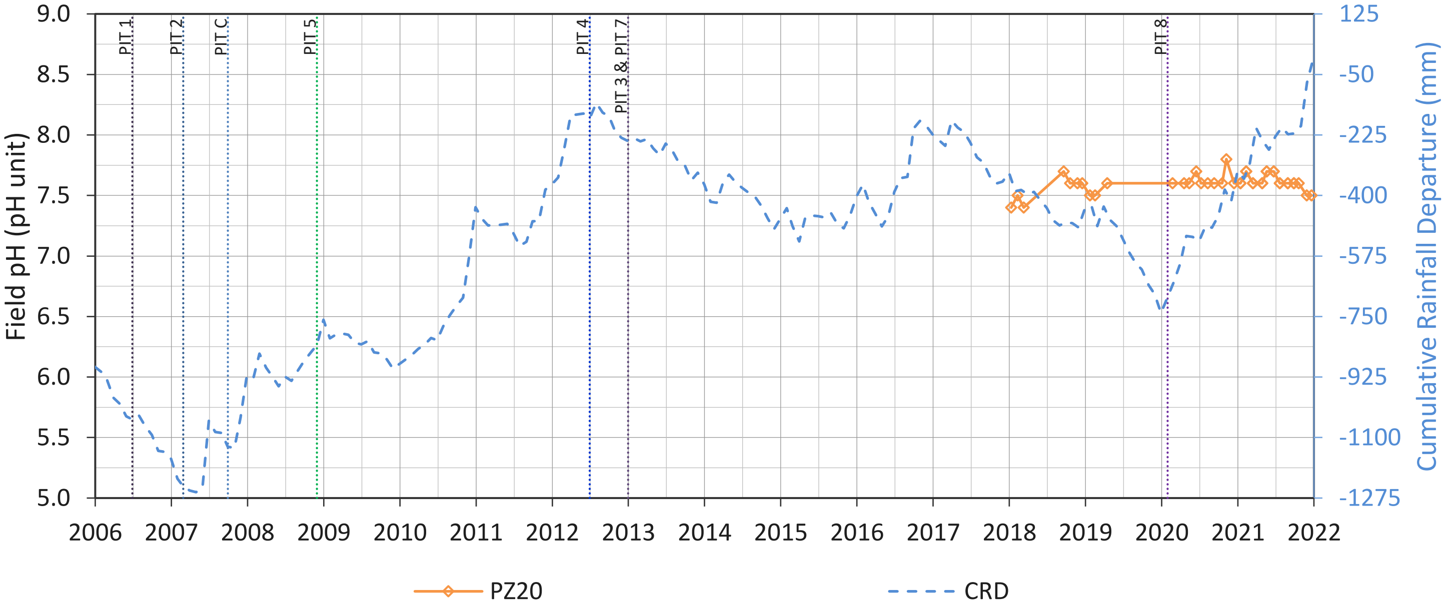

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
8000
7000
6000
5000
4000
3000
2000
1000
0
125
-50
-225
-400
-575
-750
-925
-1100
-1275
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
GWa36
CRD

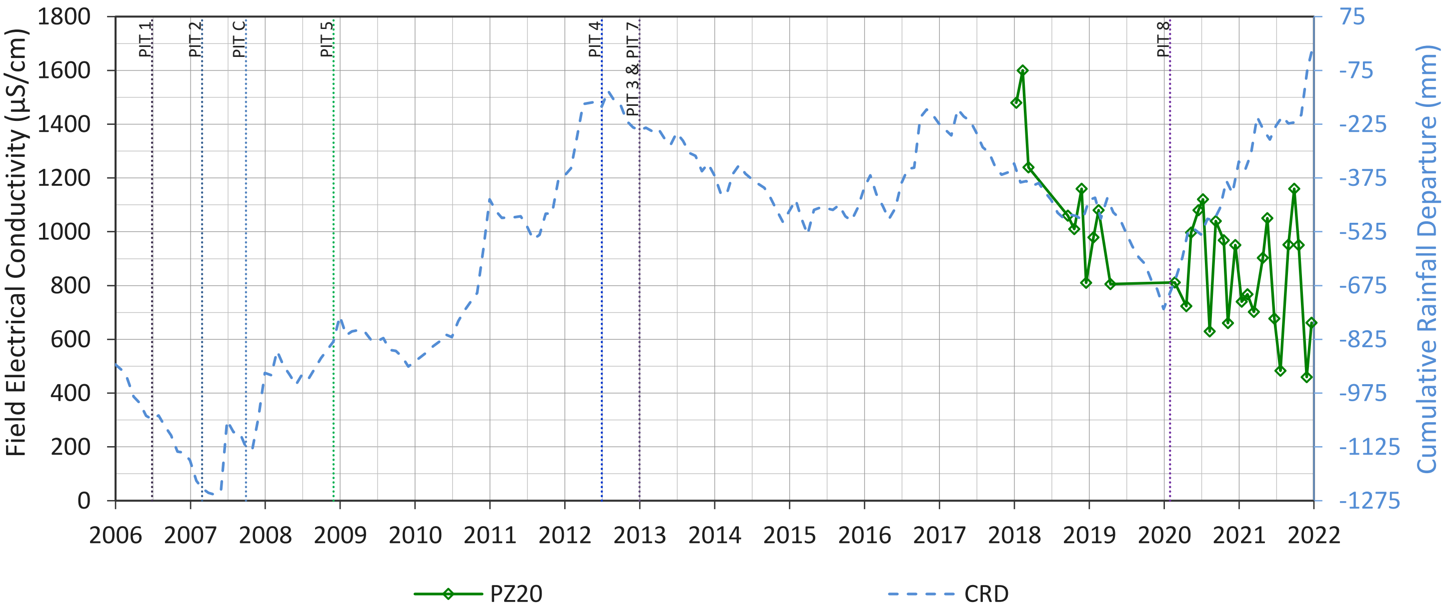

GWc36
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
360
359
358
357
356
355
354
353
352
125
-50
-225
-400
-575
-750
-925
-1100
-1275
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
GWc36
GWc36_logger
Base of Bore
CRD

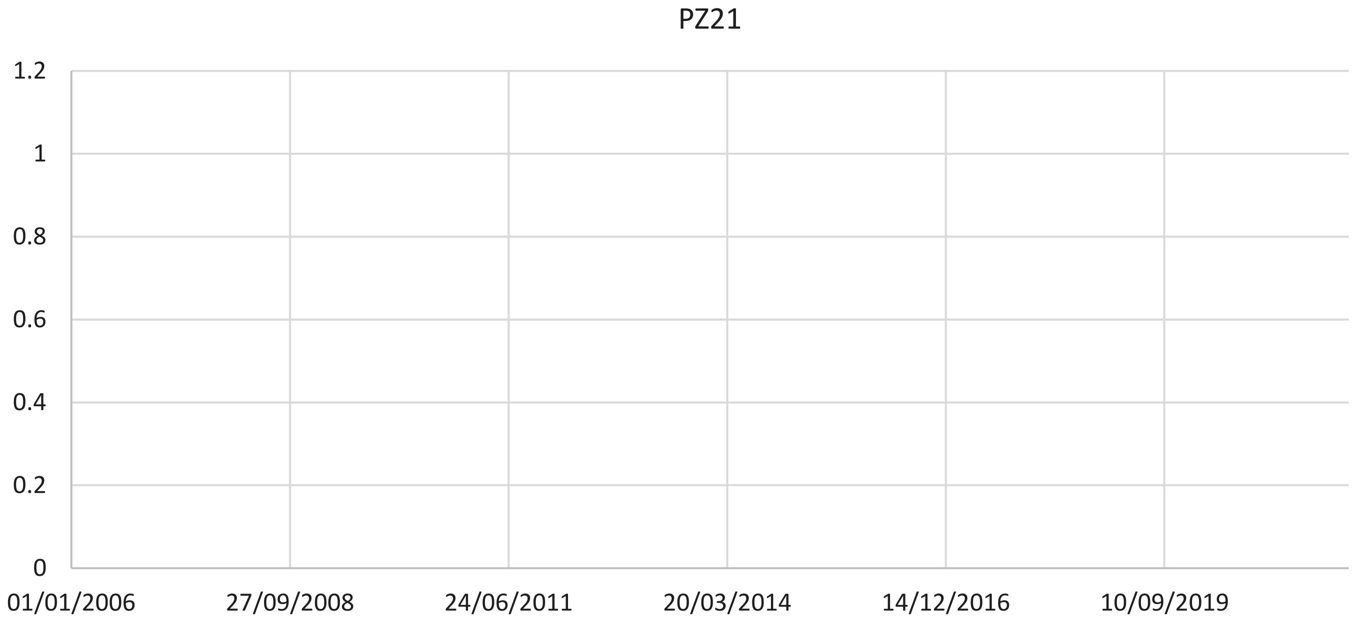

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
125
-50
-225
-400
-575
-750
-925
-1100
-1275
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
GWc36
CRD

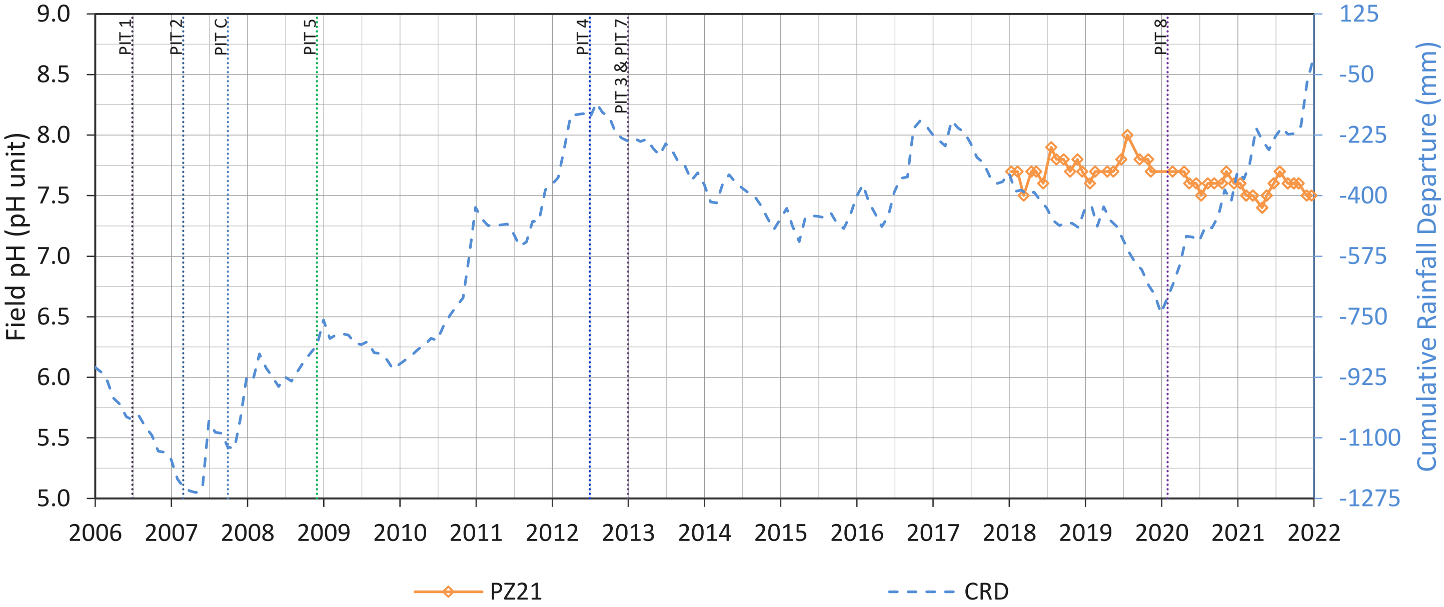

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
225
75
-75
-225
-375
-525
-675
-825
-975
-1125
-1275
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
GWc36
CRD

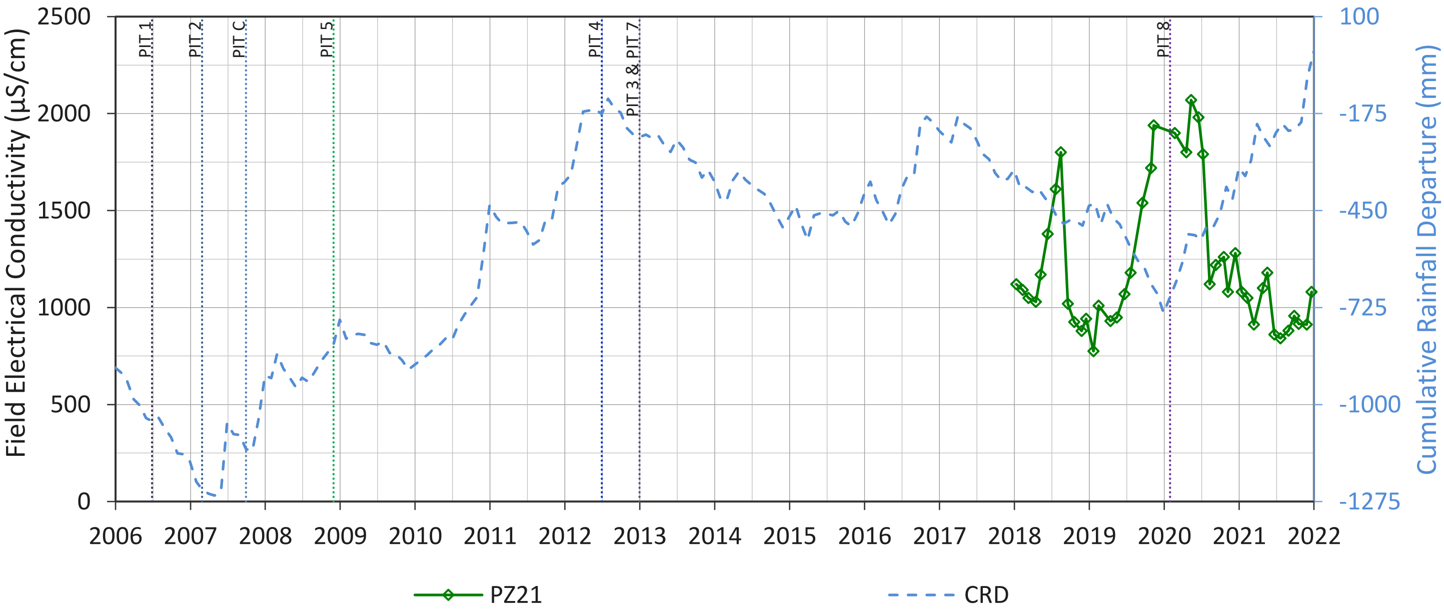

PZ20
1.2
1
0.8
0.6
0.4
0.2
0
01/01/2006
27/09/2008
24/06/2011
20/03/2014
14/12/2016
10/09/2019

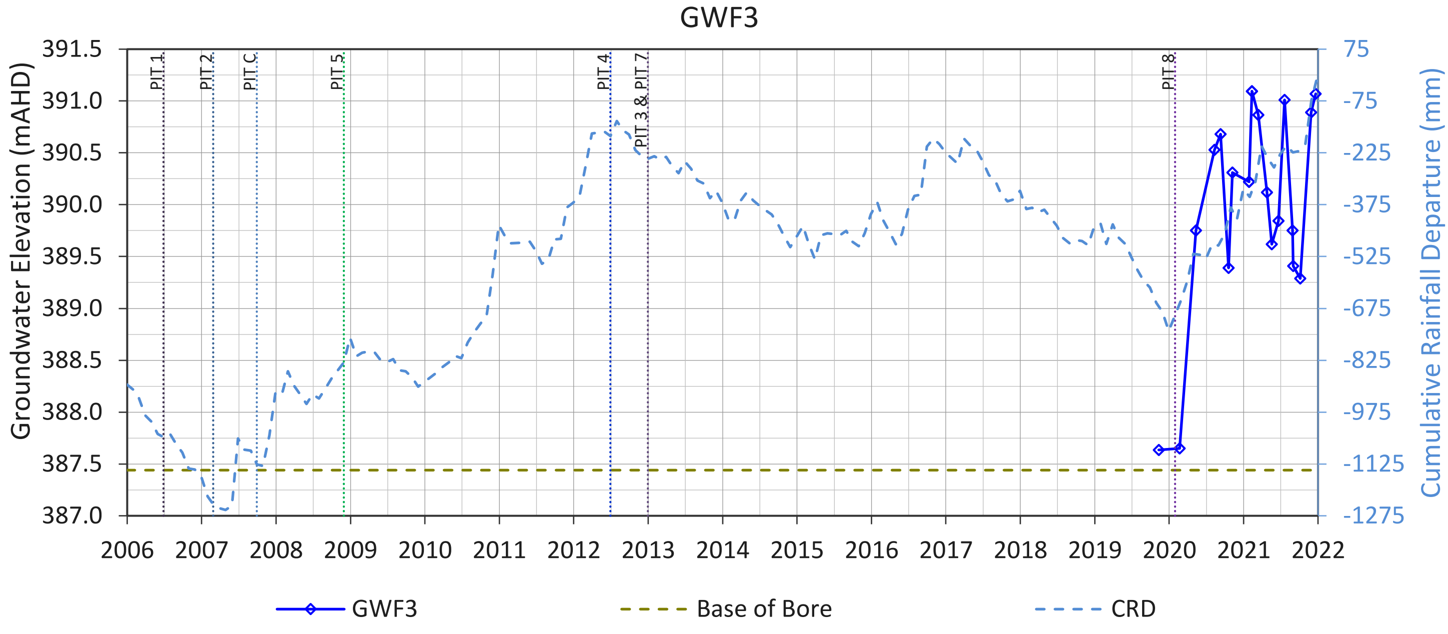

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
PZ20
CRD

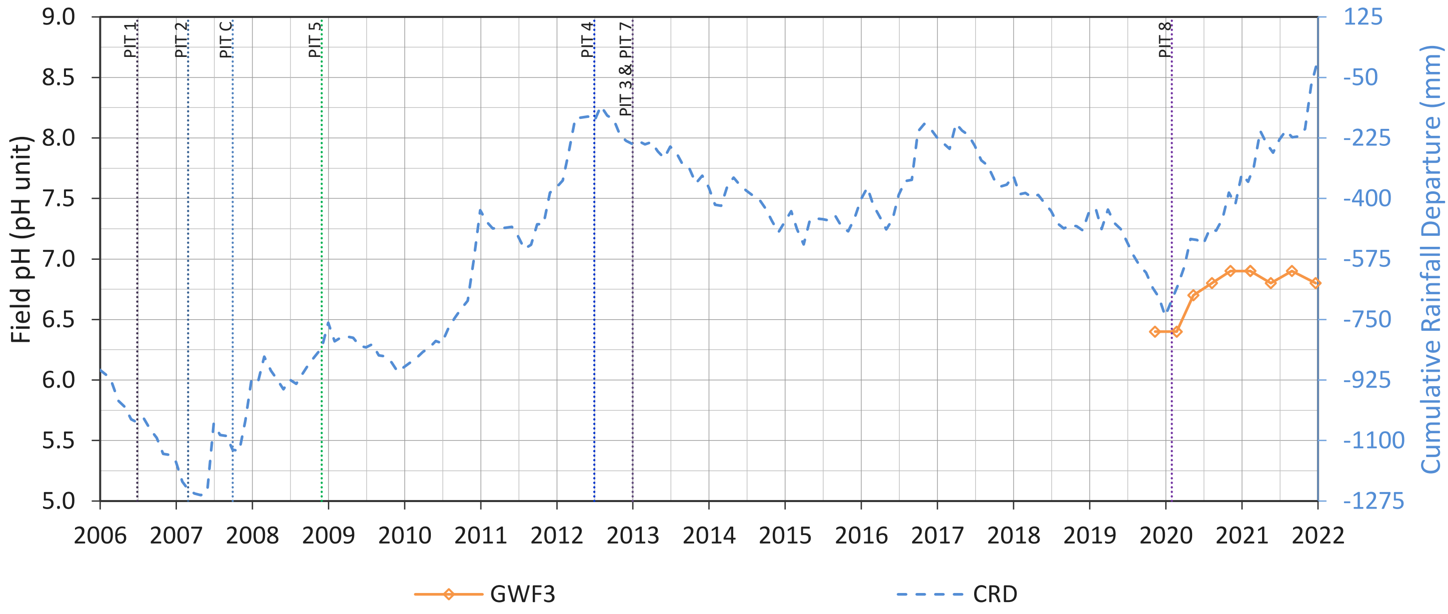

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
PZ20
CRD

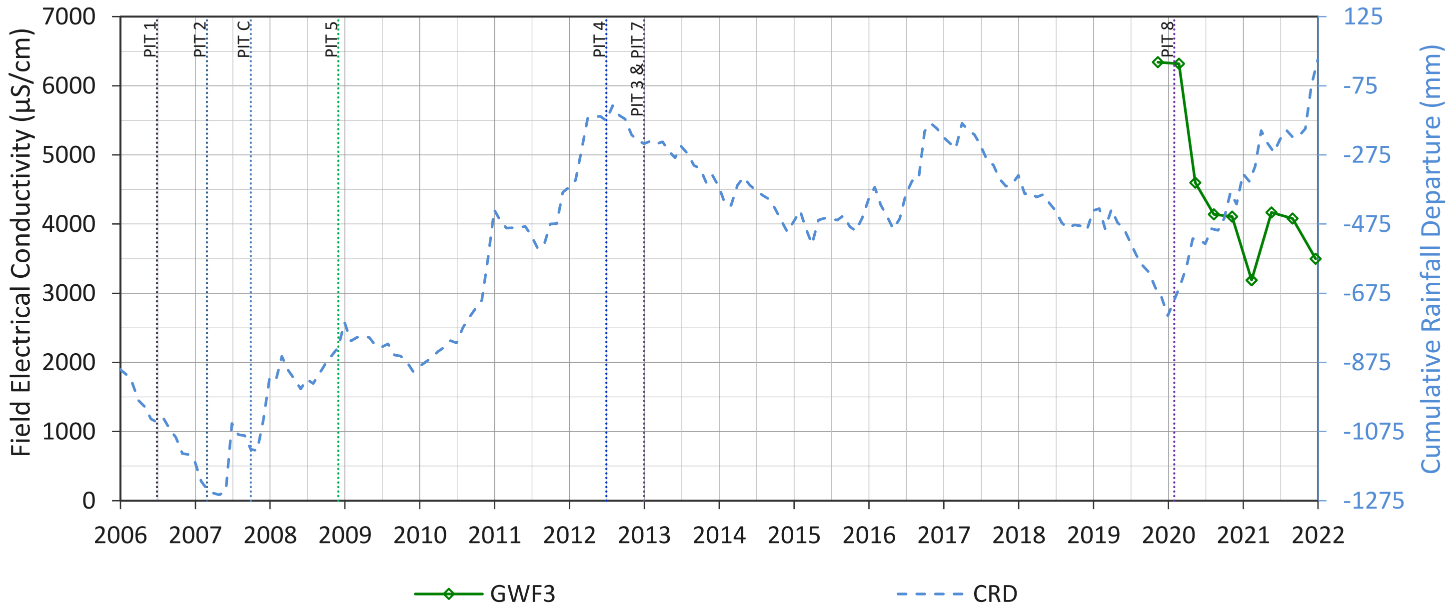

PZ21
1.2
1
0.8
0.6
0.4
0.2
0
01/01/2006
27/09/2008
24/06/2011
20/03/2014
14/12/2016
10/09/2019

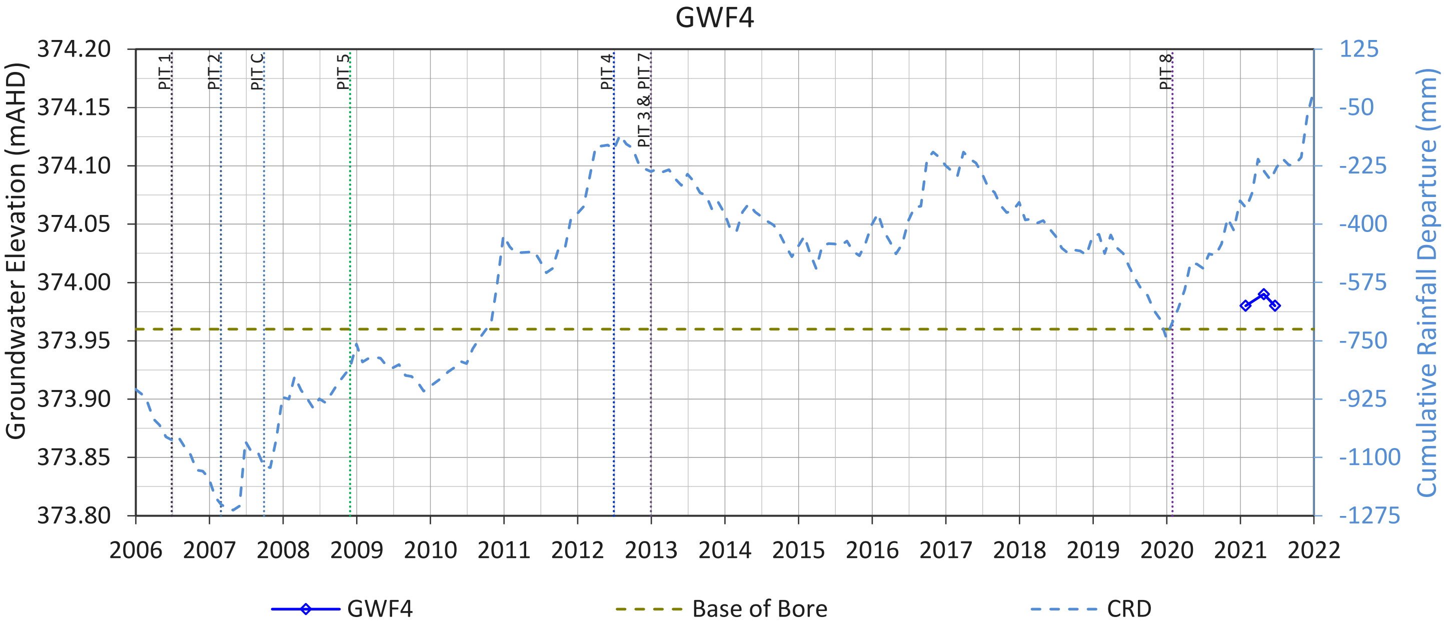

Field pH (pH unit)
Cumulative Rainfall Departure (mm)
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
125
-50
-225
-400
-575
-750
-925
-1100
-1275
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
PZ21
CRD

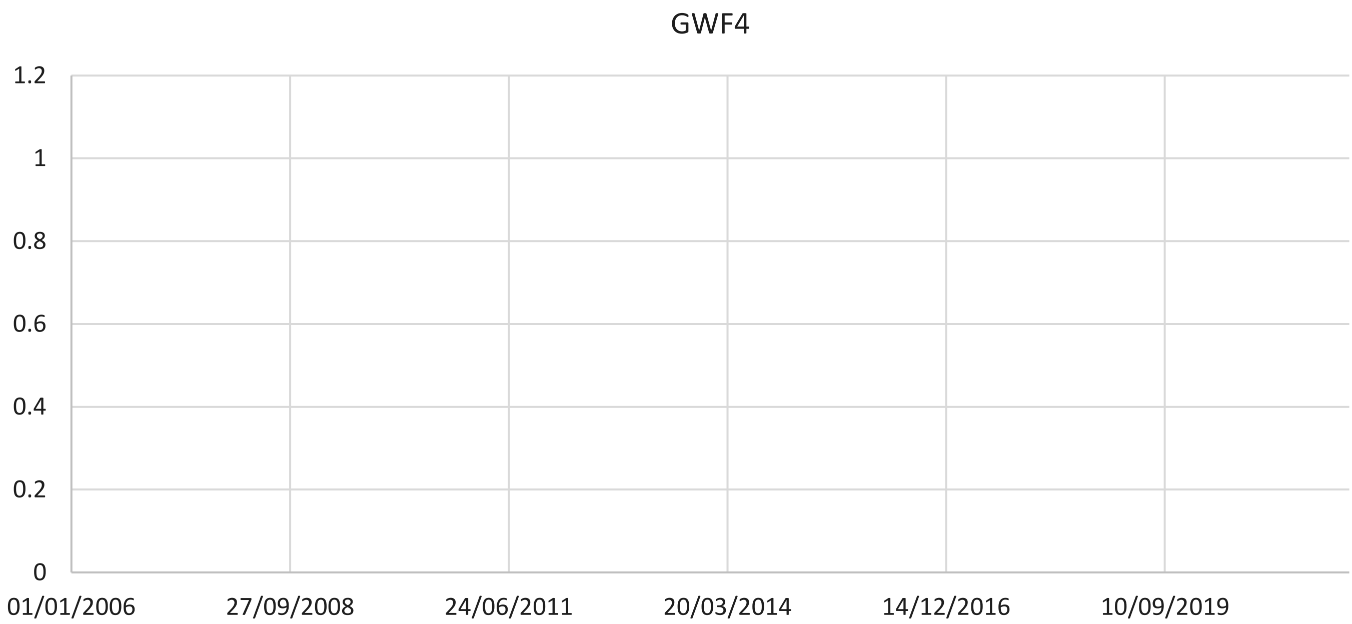

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
2500
2000
1500
1000
500
0
100
-175
-450
-725
-1000
-1275
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
PZ21
CRD

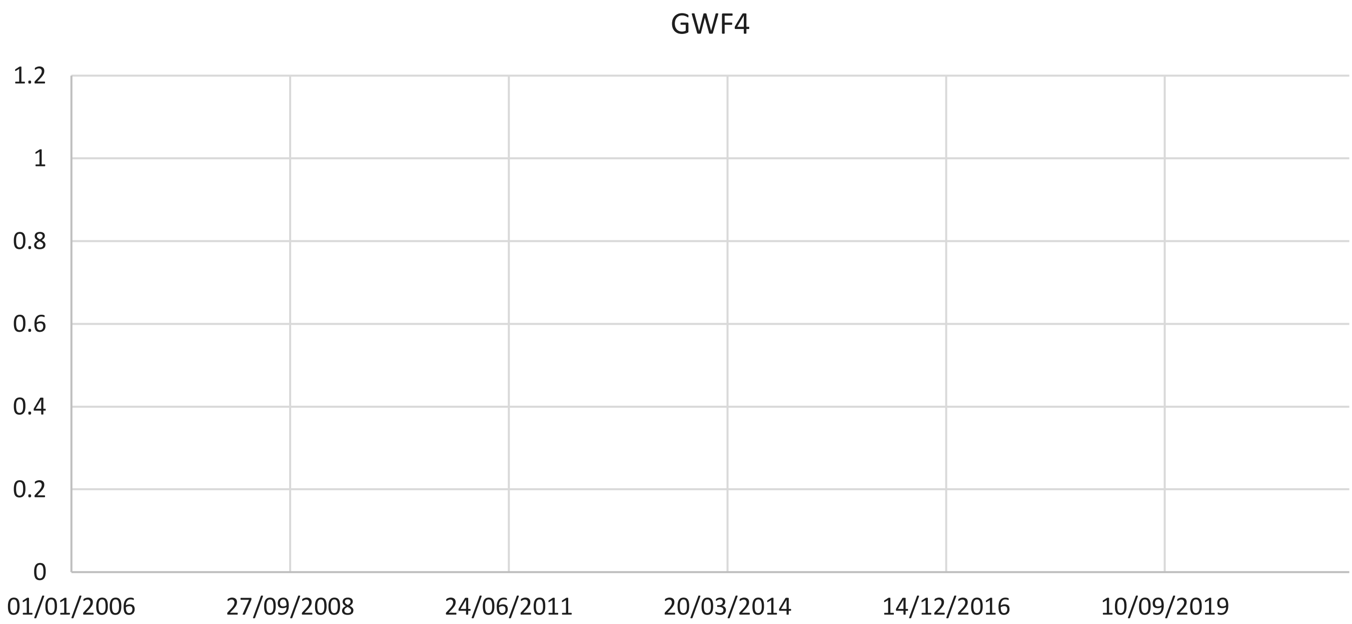

GWF3
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWF3
Base of Bore
CRD


Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWF3
CRD

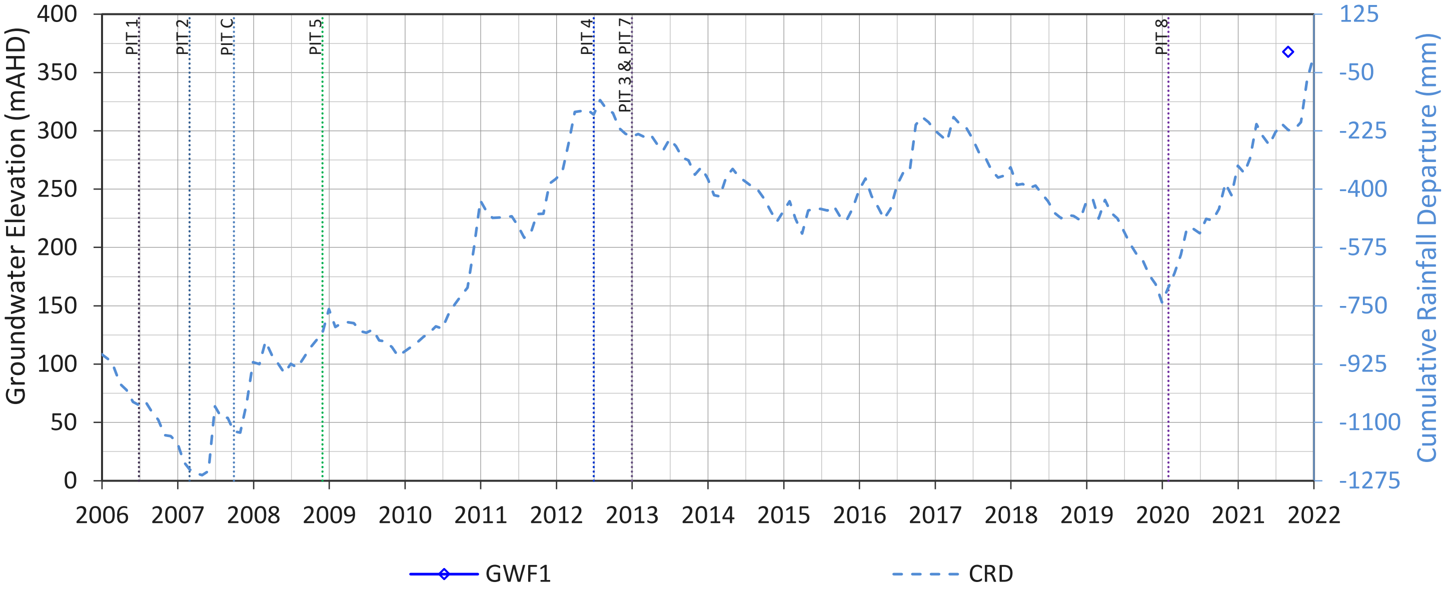

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWF3
CRD


GWF4
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
374.20
374.15
374.10
374.05
374.00
373.95
373.90
373.85
373.80
125
-50
-225
-400
-575
-750
-925
-1100
-1275
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
GWF4
Base of Bore
CRD

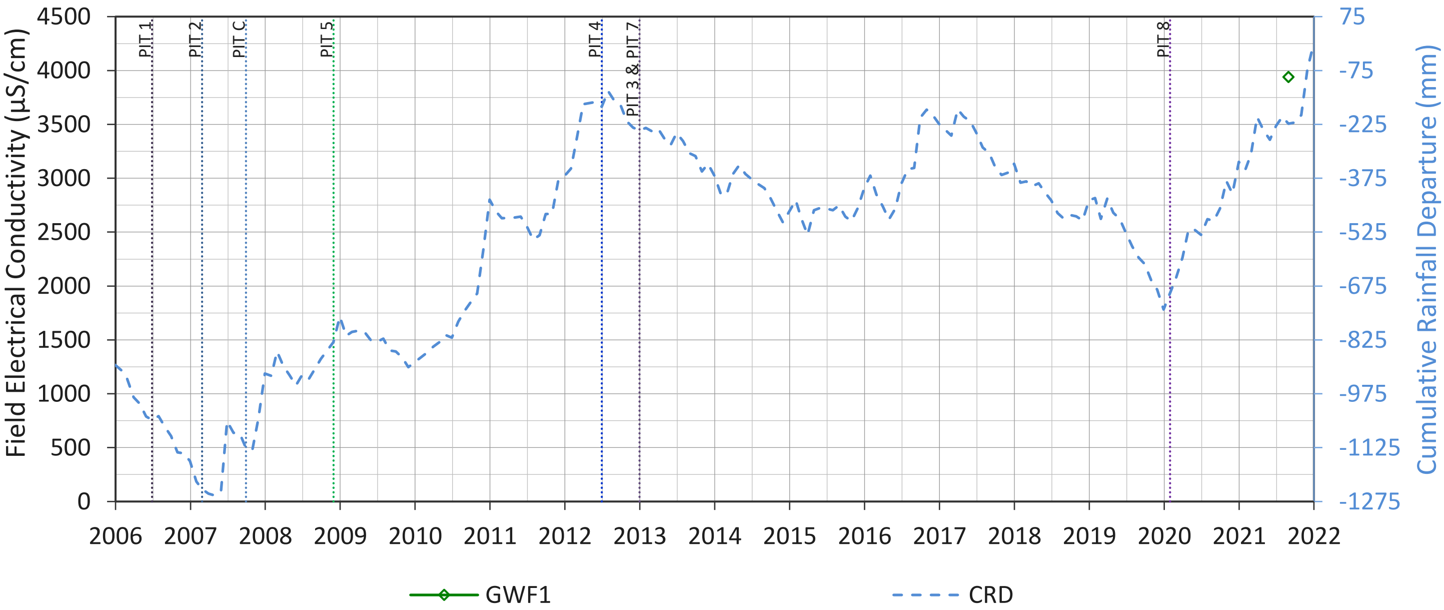

GWF4
1.2
1
0.8
0.6
0.4
0.2
0
01/01/2006
27/09/2008
24/06/2011
20/03/2014
14/12/2016
10/09/2019

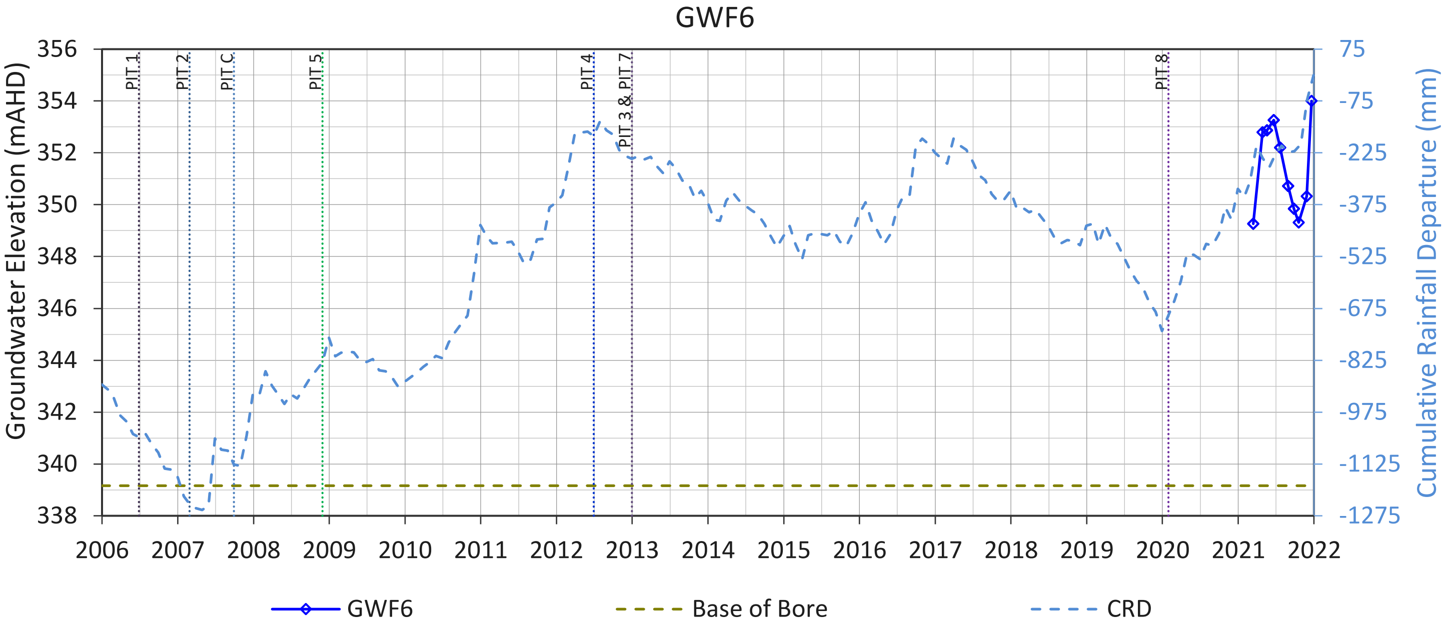

GWF4
1.2
1
0.8
0.6
0.4
0.2
0
01/01/2006
27/09/2008
24/06/2011
20/03/2014
14/12/2016
10/09/2019

GWF1

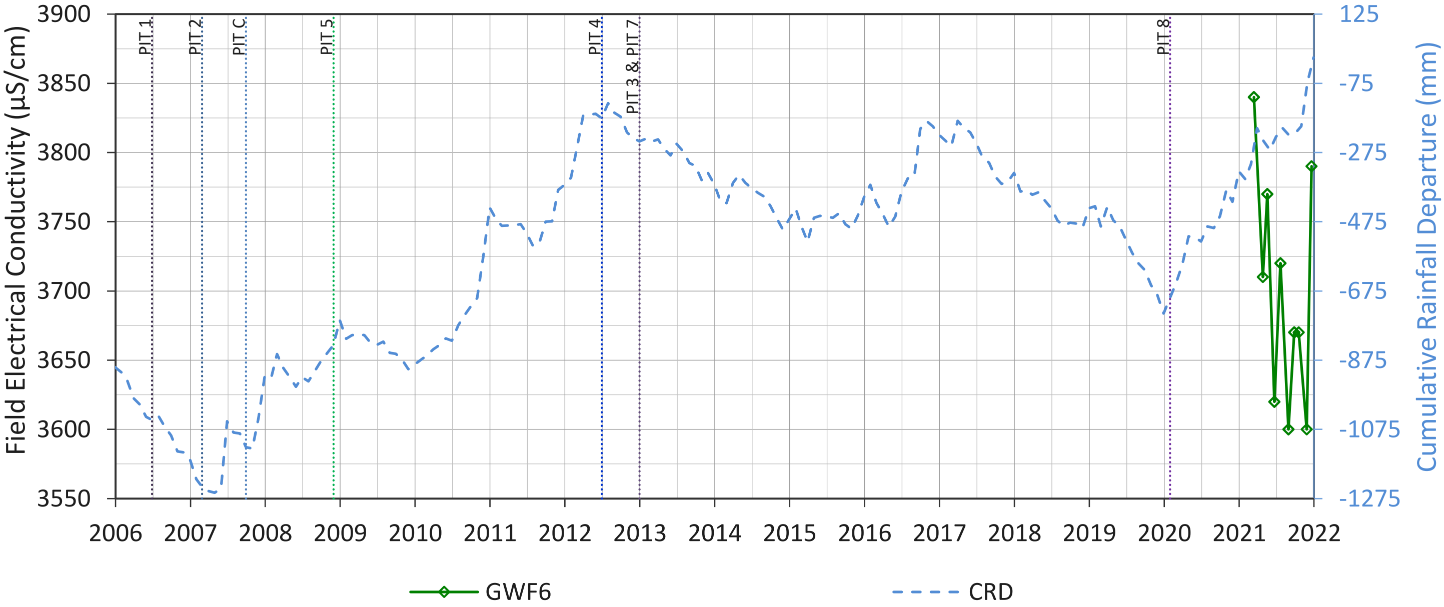

Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWF1
CRD


Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWF1
CRD


Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWF1
CRD

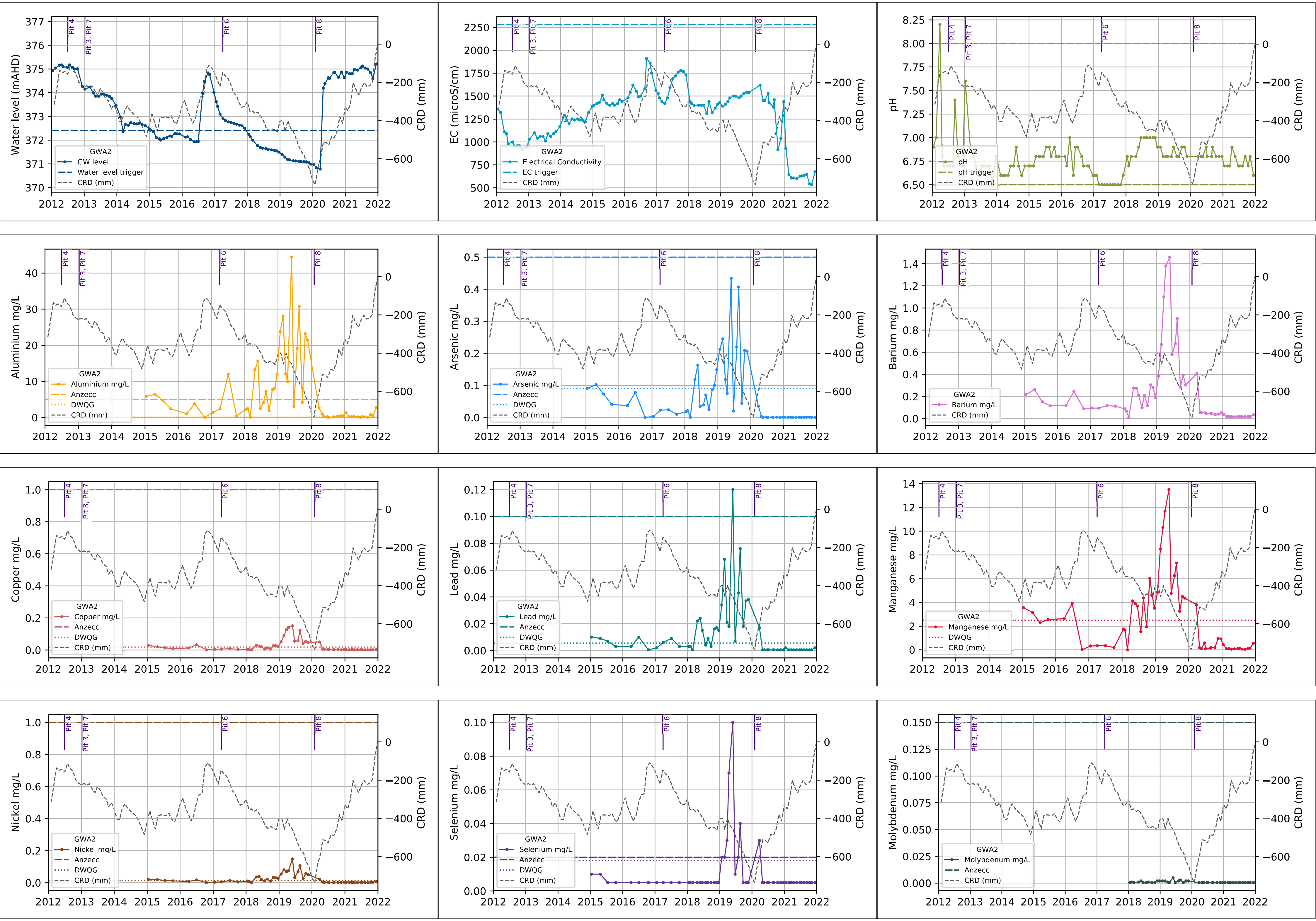

GWF6
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWF6
Base of Bore
CRD


Field pH (pH unit)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWF6
CRD

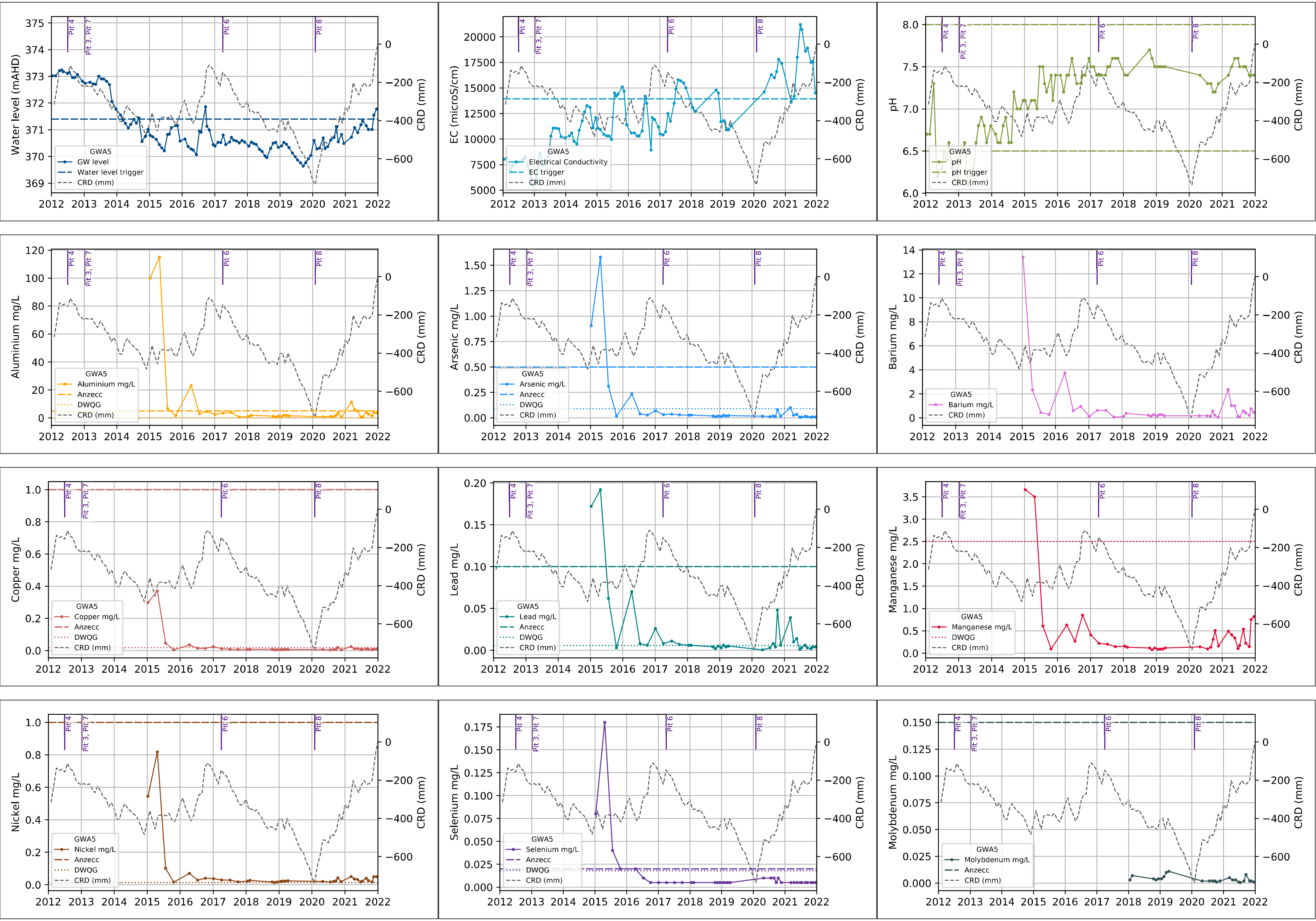

Field Electrical Conductivity (µS/cm)
Cumulative Rainfall Departure (mm)
PIT 1
PIT 2
PIT C
PIT 5
PIT 4
PIT 3 & PIT 7
PIT 8
GWF6
CRD

APPENDIX C

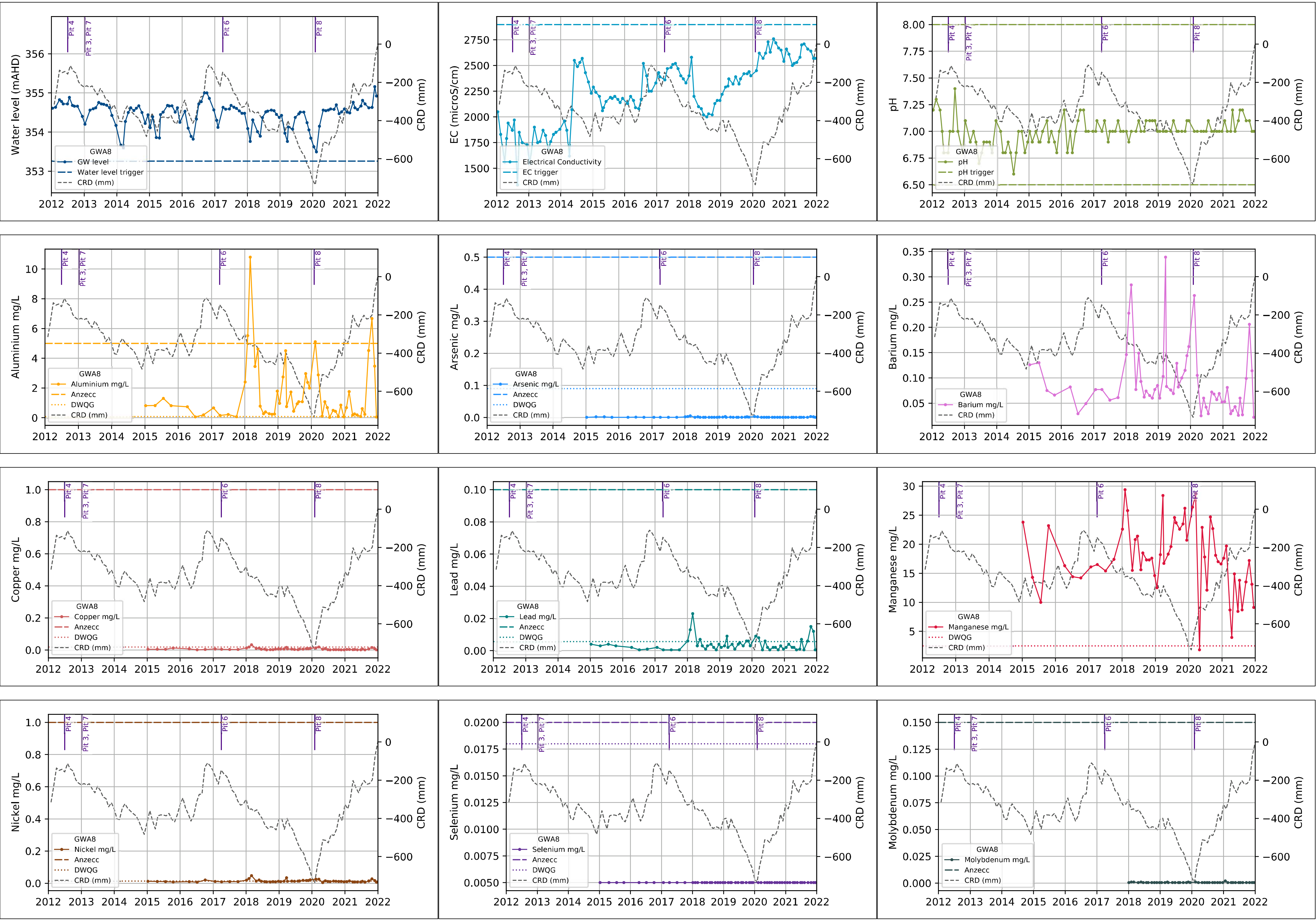
Metal Species Concentration Charts

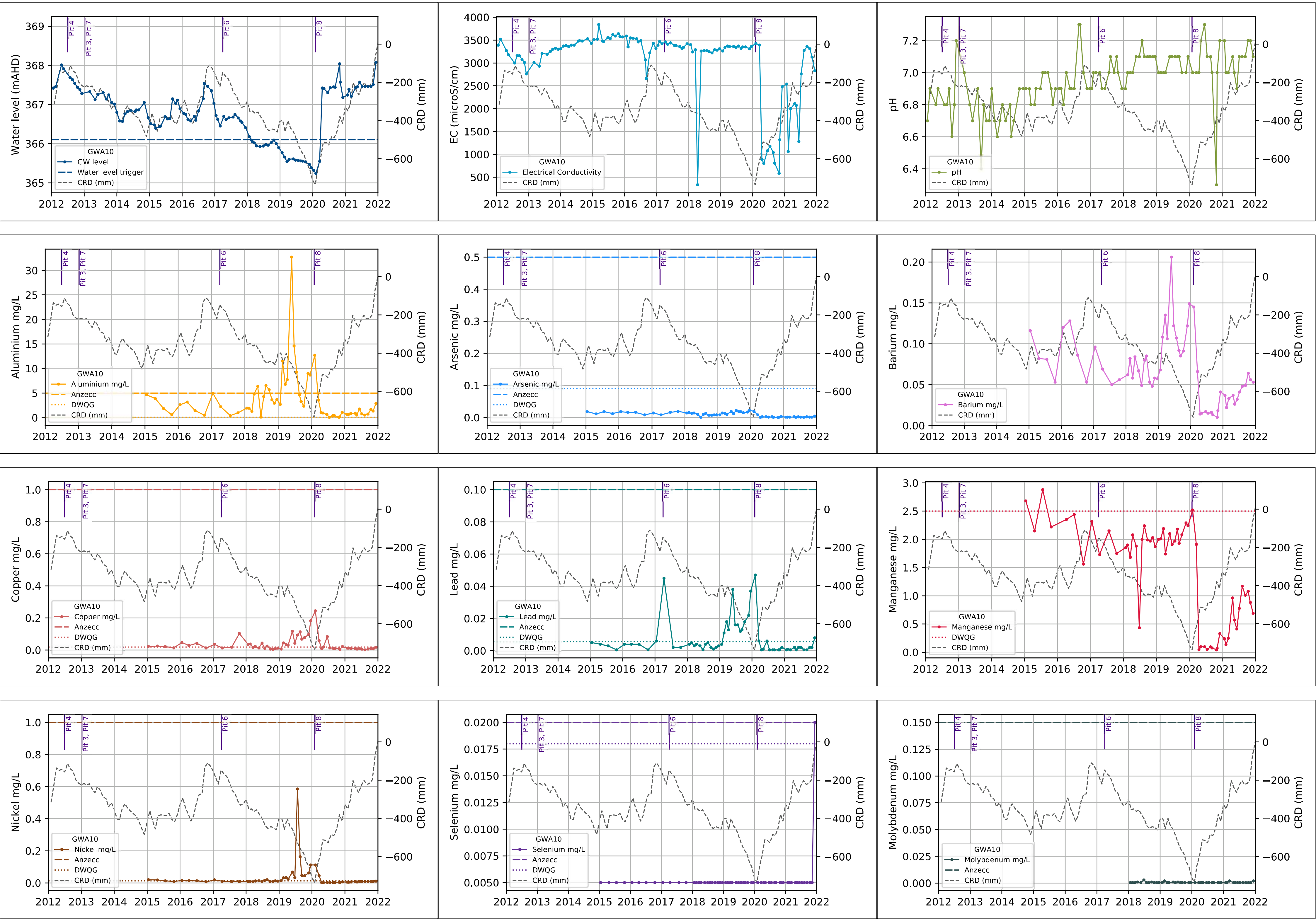


Water level (mAHD)
CRD (mm)
GWA2
GW level
Water level trigger
CRD (mm)
EC (microS/cm)
Electrical Conductivity
EC trigger
pH
pH trigger
Aluminium mg/L
Anzecc
DWQG
Arsenic mg/L
Barium mg/L
Copper mg/L
Lead mg/L
Manganese mg/L
Nickel mg/L
Selenium mg/L
Molybdenum mg/L
Pit 4
Pit 3, Pit 7
Pit 6
Pit 8
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022

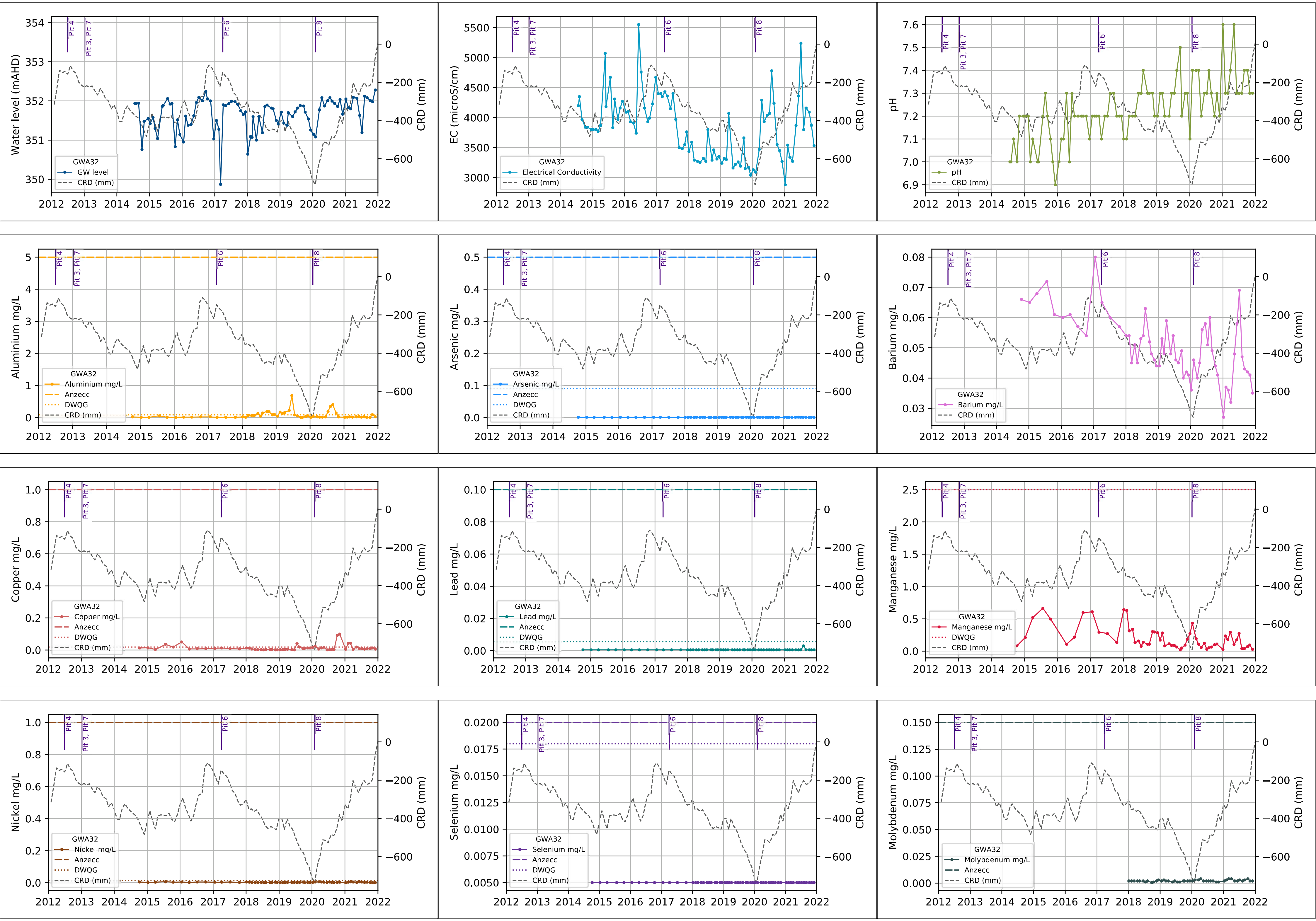


Water level (mAHD)
CRD (mm)
GWA5
GW level
Water level trigger
CRD (mm)
EC (microS/cm)
Electrical Conductivity
EC trigger
pH
pH trigger
Aluminium mg/L
Anzecc
DWQG
Arsenic mg/L
Barium mg/L
Copper mg/L
Lead mg/L
Manganese mg/L
Nickel mg/L
Selenium mg/L
Molybdenum mg/L
Pit 4
Pit 3, Pit 7
Pit 6
Pit 8
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022

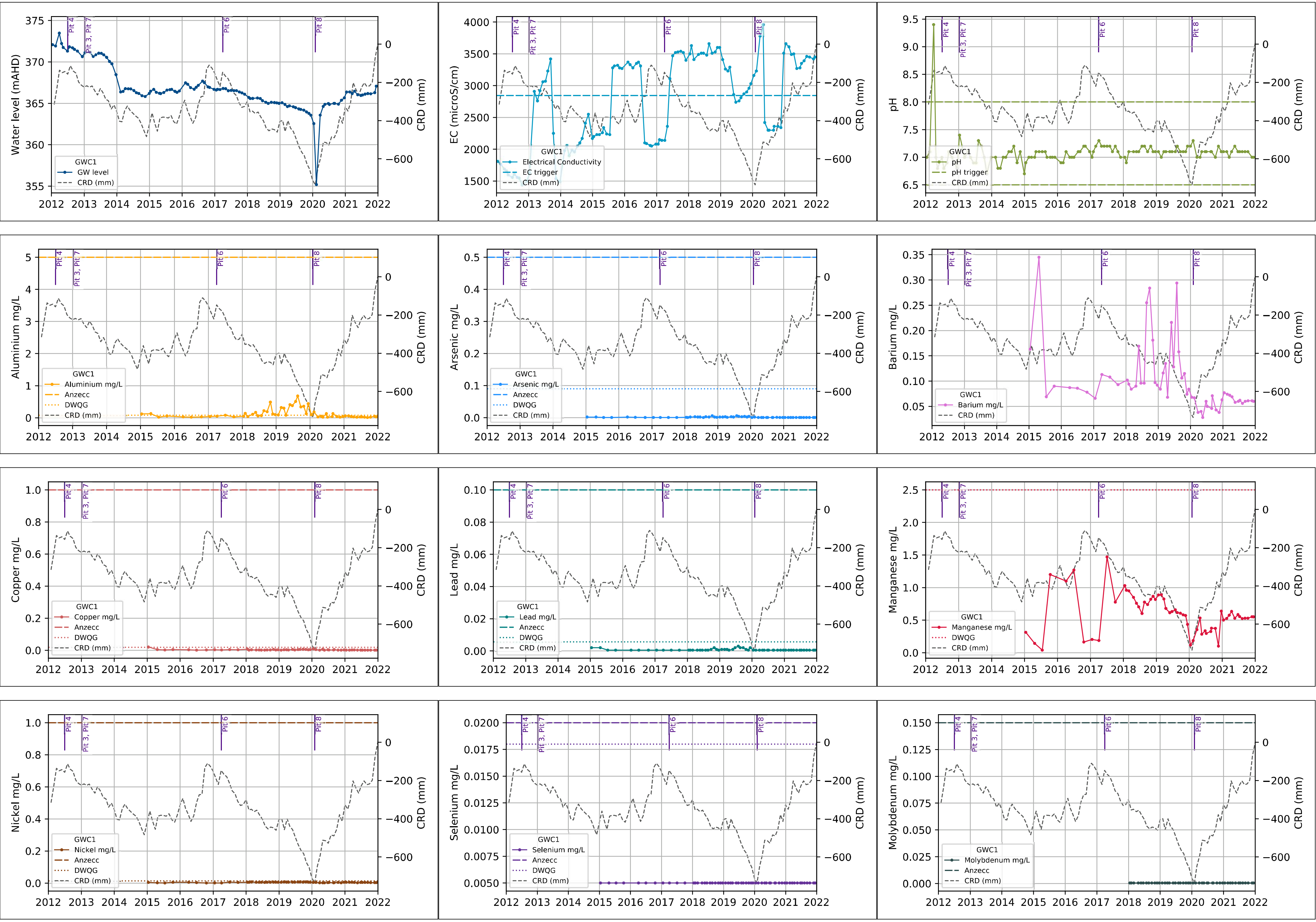

Water level (mAHD)
CRD (mm)
GWA8
GW level
Water level trigger
CRD (mm)
EC (microS/cm)
Electrical Conductivity
EC trigger
pH
pH trigger
Aluminium mg/L
Anzecc
DWQG
Arsenic mg/L
Barium mg/L
Copper mg/L
Lead mg/L
Manganese mg/L
Nickel mg/L
Selenium mg/L
Molybdenum mg/L
Pit 4
Pit 3, Pit 7
Pit 6
Pit 8
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022



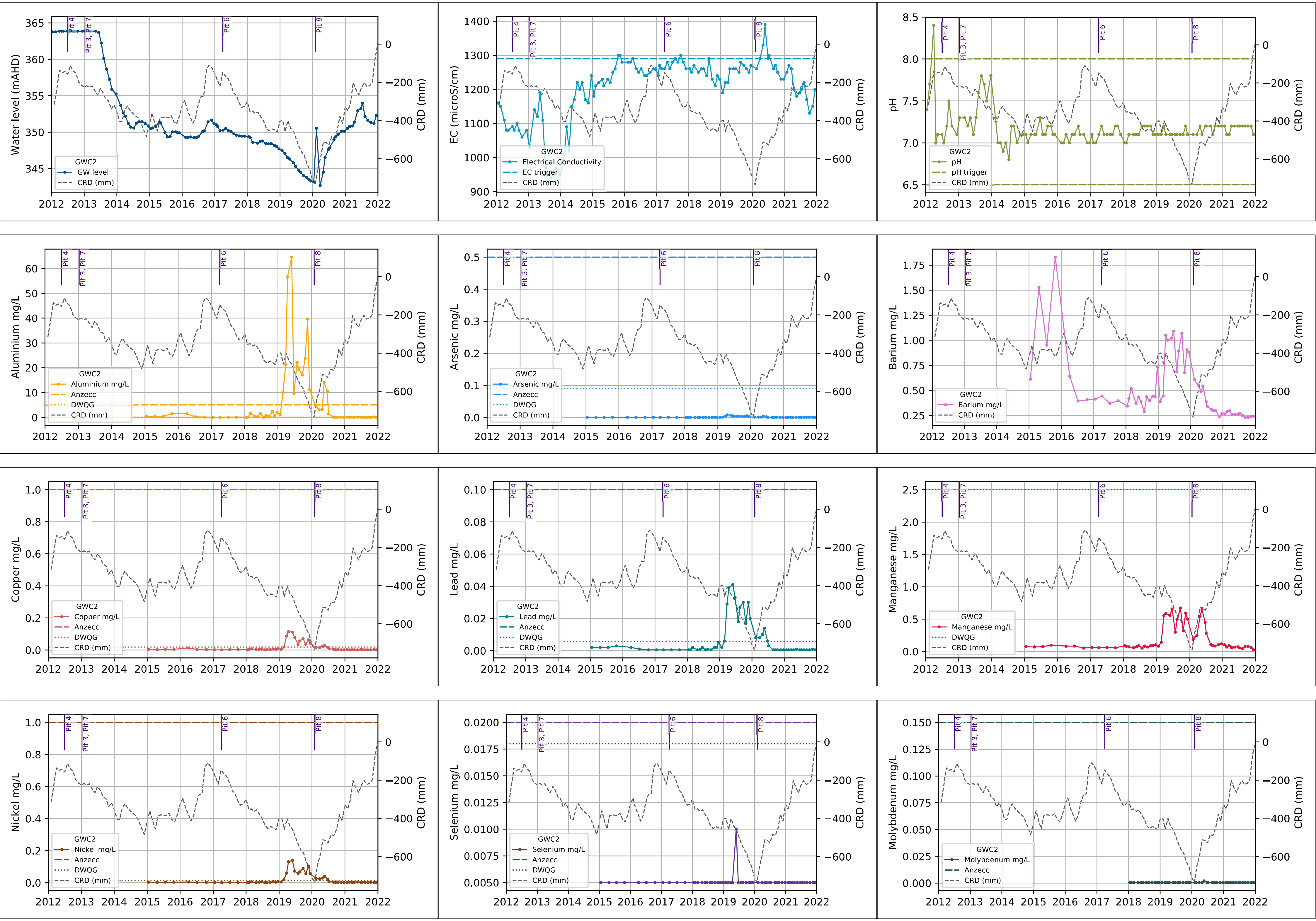
Water level (mAHD)
CRD (mm)
Pit 4
Pit 3, Pit 7
Pit 6
Pit 8
GWA10
GW level
Water level trigger
CRD (mm)
EC (microS/cm)
GWA10
Electrical Conductivity
CRD (mm)
pH
GWA10
pH
CRD (mm)
Aluminium mg/L
GWA10
Aluminium mg/L
Anzecc
DWQG
CRD (mm)
Arsenic mg/L
GWA10
Arsenic mg/L
Anzecc
DWQG
CRD (mm)
Barium mg/L
GWA10
Barium mg/L
CRD (mm)
Copper mg/L
GWA10
Copper mg/L
Anzecc
DWQG
CRD (mm)
Lead mg/L
GWA10
Lead mg/L
Anzecc
DWQG
CRD (mm)
Manganese mg/L
GWA10
Manganese mg/L
DWQG
CRD (mm)
Nickel mg/L
GWA10
Nickel mg/L
Anzecc
DWQG
CRD (mm)
Selenium mg/L
GWA10
Selenium mg/L
Anzecc
DWQG
CRD (mm)
Molybdenum mg/L
GWA10
Molybdenum mg/L
Anzecc
CRD (mm)
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022



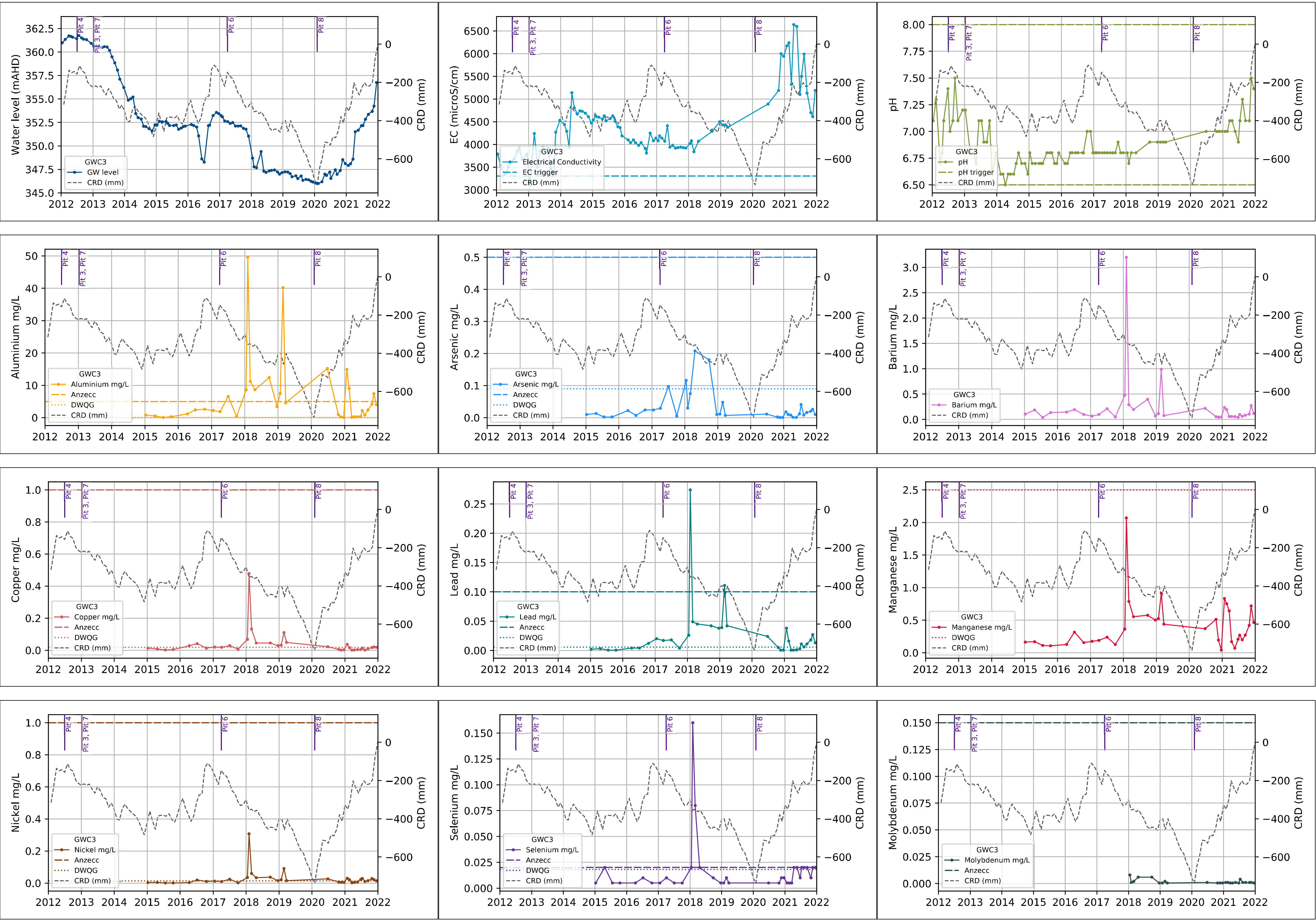
Water level (mAHD)
CRD (mm)
GWA32
GW level
CRD (mm)
Pit 4
Pit 3, Pit 7
Pit 6
Pit 8
EC (microS/cm)
Electrical Conductivity
pH
Aluminium mg/L
Aluminium mg/L
Anzecc
DWQG
Arsenic mg/L
Barium mg/L
Copper mg/L
Lead mg/L
Manganese mg/L
Nickel mg/L
Selenium mg/L
Molybdenum mg/L
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022



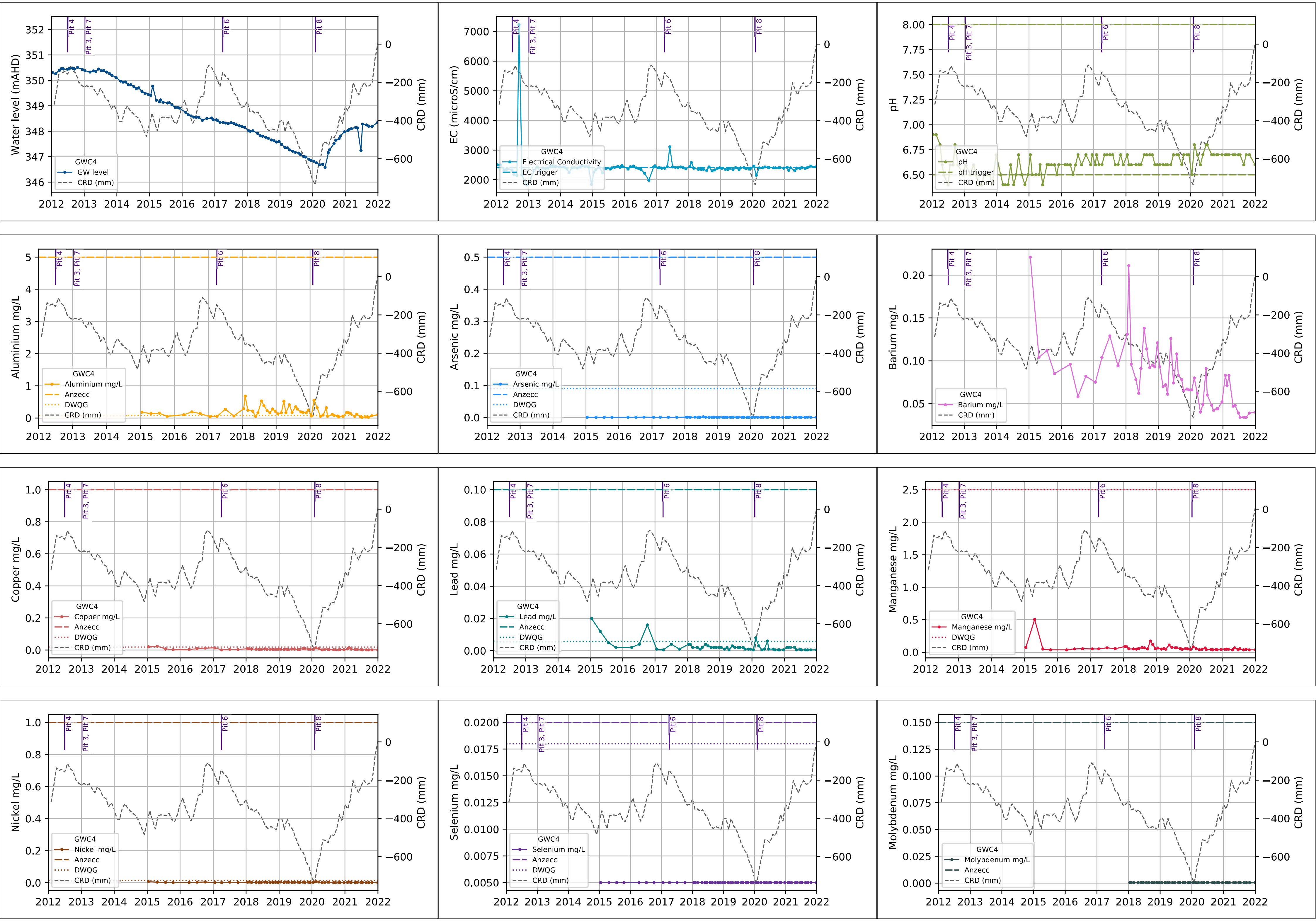
Water level (mAHD)
CRD (mm)
GWC1
GW level
CRD (mm)
EC (microS/cm)
Electrical Conductivity
EC trigger
pH
pH trigger
Aluminium mg/L
Anzecc
DWQG
Arsenic mg/L
Barium mg/L
Copper mg/L
Lead mg/L
Manganese mg/L
Nickel mg/L
Selenium mg/L
Molybdenum mg/L
Pit 4
Pit 3, Pit 7
Pit 6
Pit 8
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022



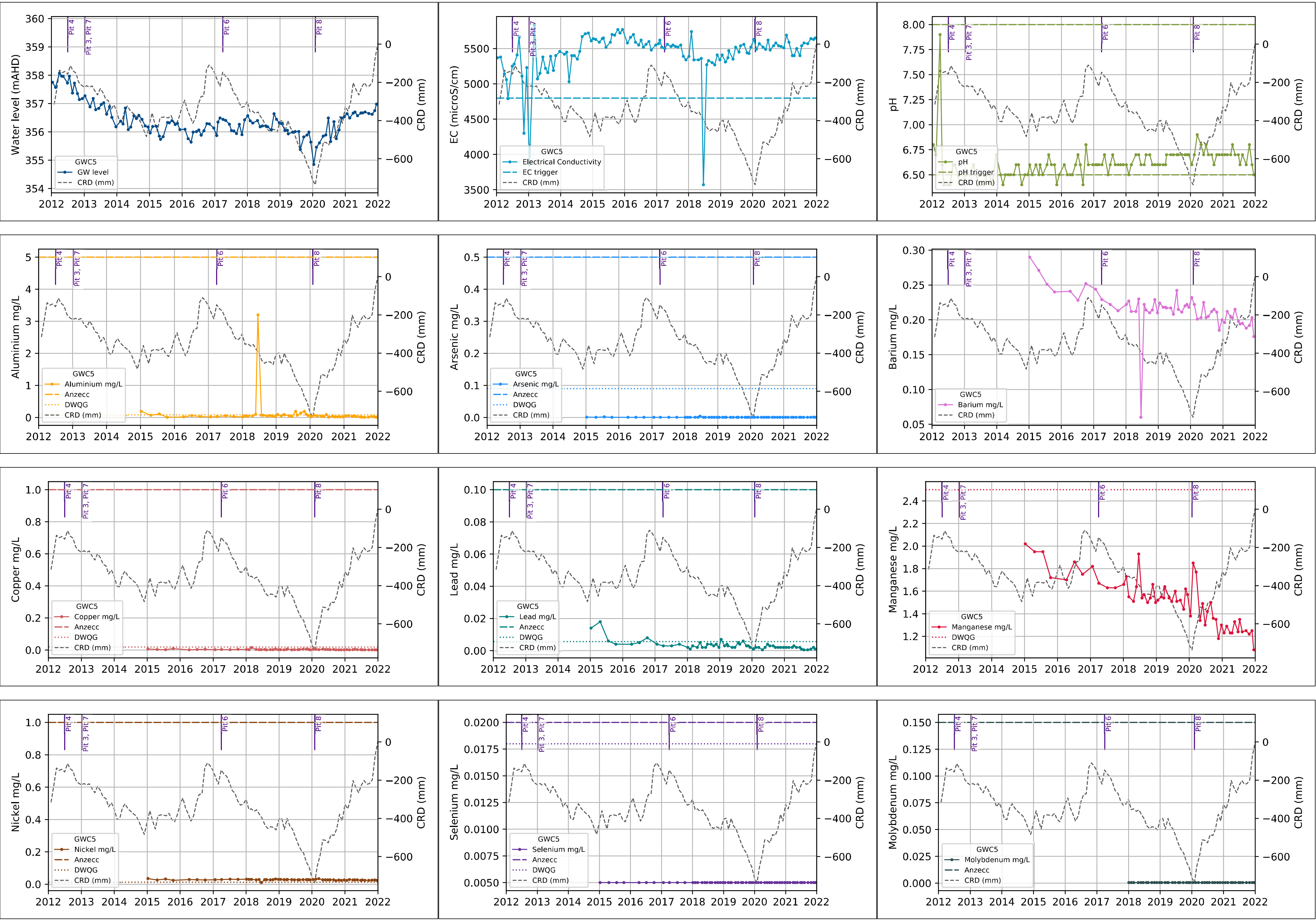
GWC2
GW level
CRD (mm)
Water level (mAHD)
Electrical Conductivity
EC trigger
EC (microS/cm)
pH
pH trigger
Aluminium mg/L
Arsenic mg/L
Barium mg/L
Copper mg/L
Lead mg/L
Manganese mg/L
Nickel mg/L
Selenium mg/L
Molybdenum mg/L
Anzecc
DWQG
Pit 4
Pit 3, Pit 7
Pit 6
Pit 8
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022



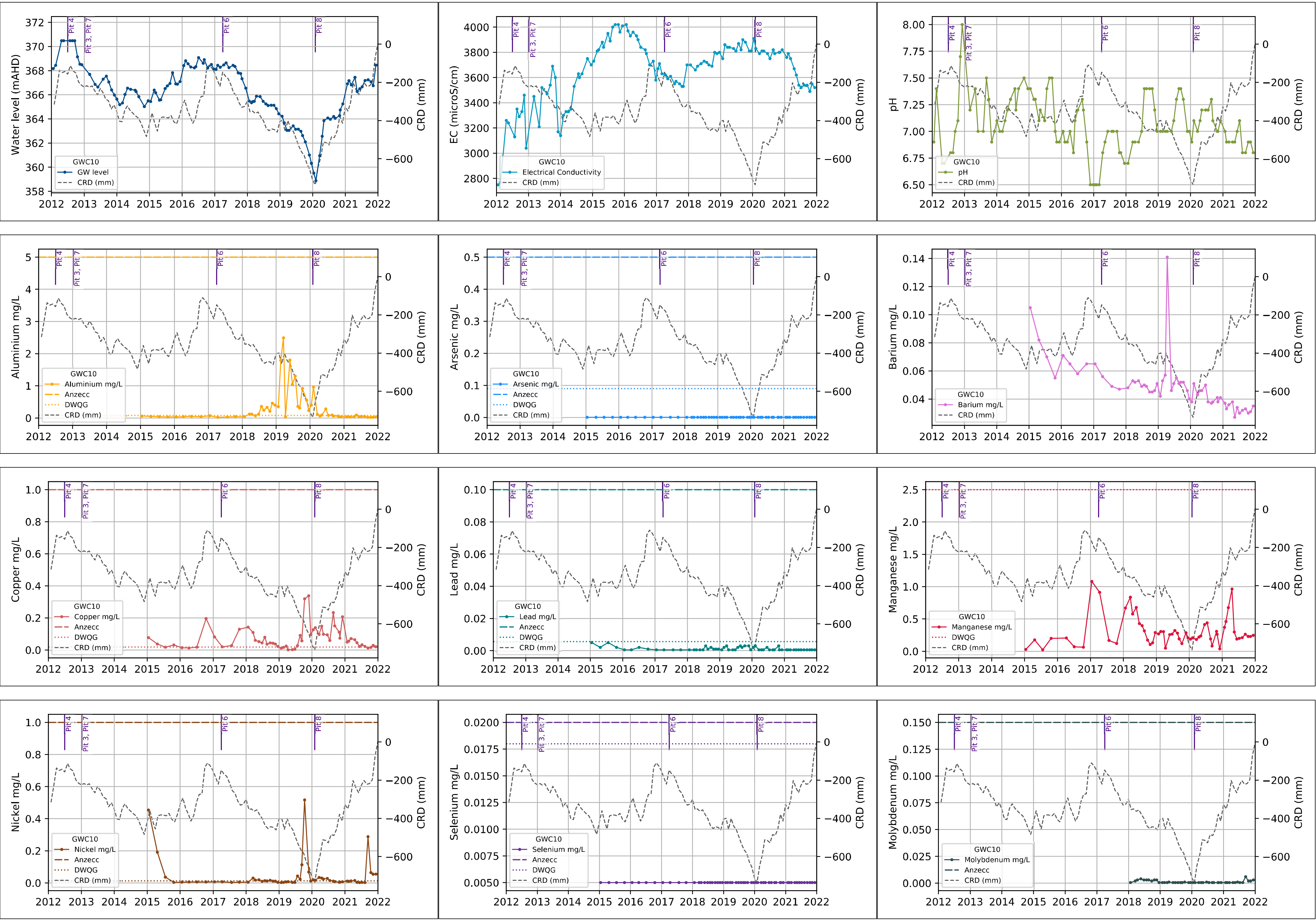
Water level (mAHD)
CRD (mm)
GWC3
GW level
CRD (mm)
EC (microS/cm)
Electrical Conductivity
EC trigger
pH
pH trigger
Aluminium mg/L
Anzecc
DWQG
Arsenic mg/L
Barium mg/L
Copper mg/L
Lead mg/L
Manganese mg/L
Nickel mg/L
Selenium mg/L
Molybdenum mg/L
Pit 4
Pit 3, Pit 7
Pit 6
Pit 8
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022

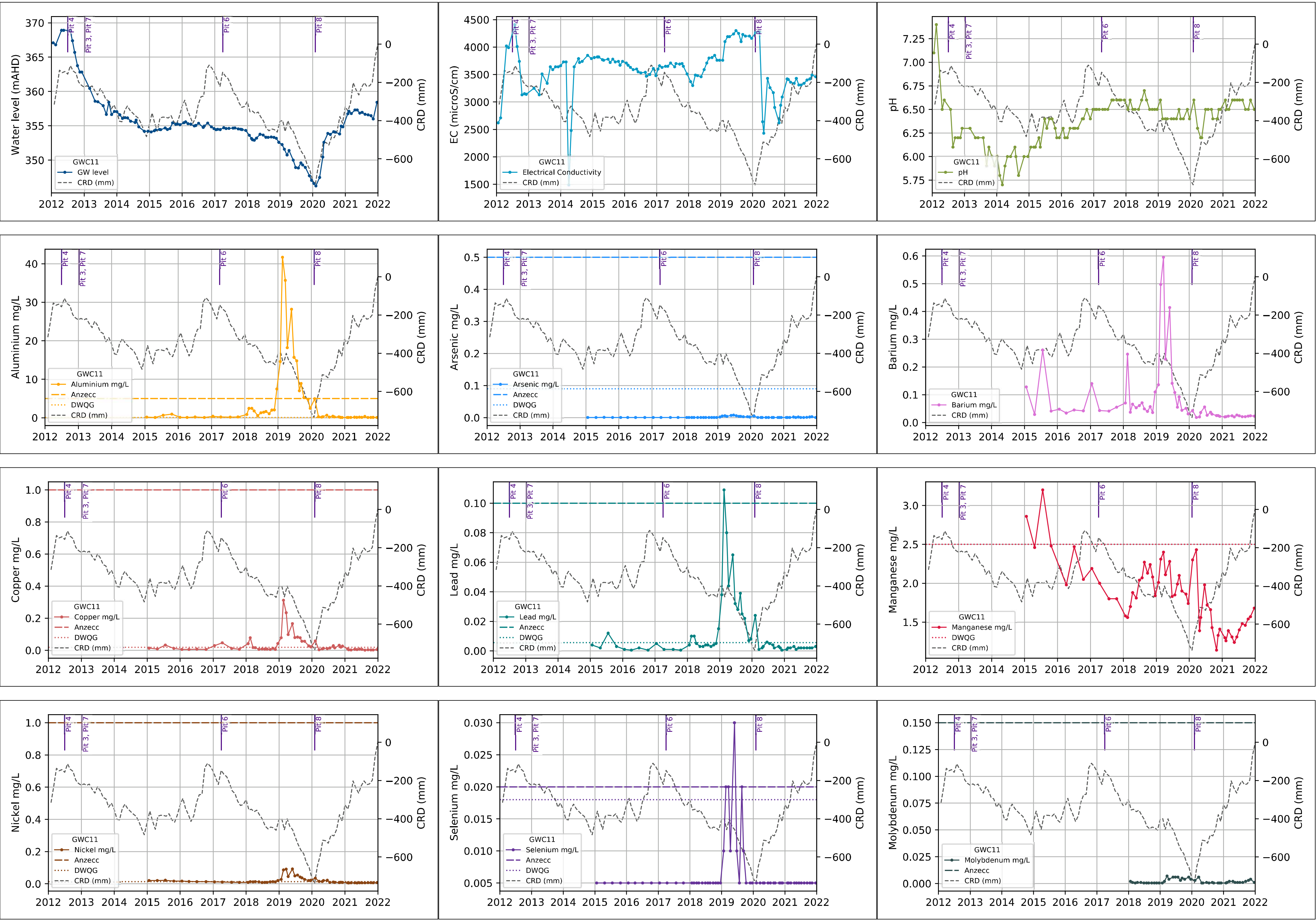


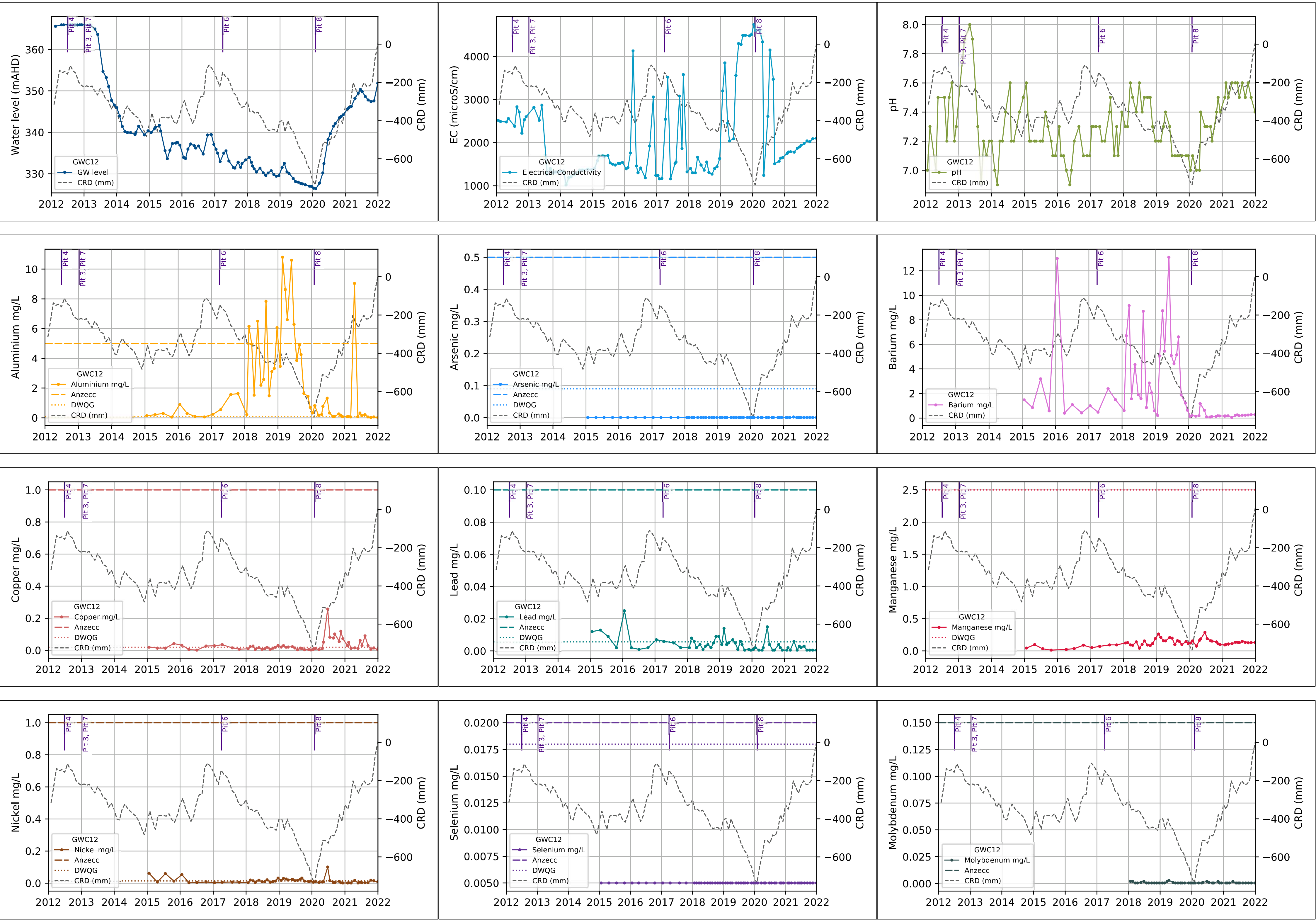
Water level (mAHD)
CRD (mm)
GWC4
GW level
CRD (mm)
EC (microS/cm)
Electrical Conductivity
EC trigger
pH
pH trigger
Aluminium mg/L
Aluminium mg/L
Anzecc
DWQG
Arsenic mg/L
Arsenic mg/L
Barium mg/L
Barium mg/L
Copper mg/L
Copper mg/L
Lead mg/L
Lead mg/L
Manganese mg/L
Manganese mg/L
Nickel mg/L
Nickel mg/L
Selenium mg/L
Selenium mg/L
Molybdenum mg/L
Molybdenum mg/L
Pit 4
Pit 3, Pit 7
Pit 6
Pit 8
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022



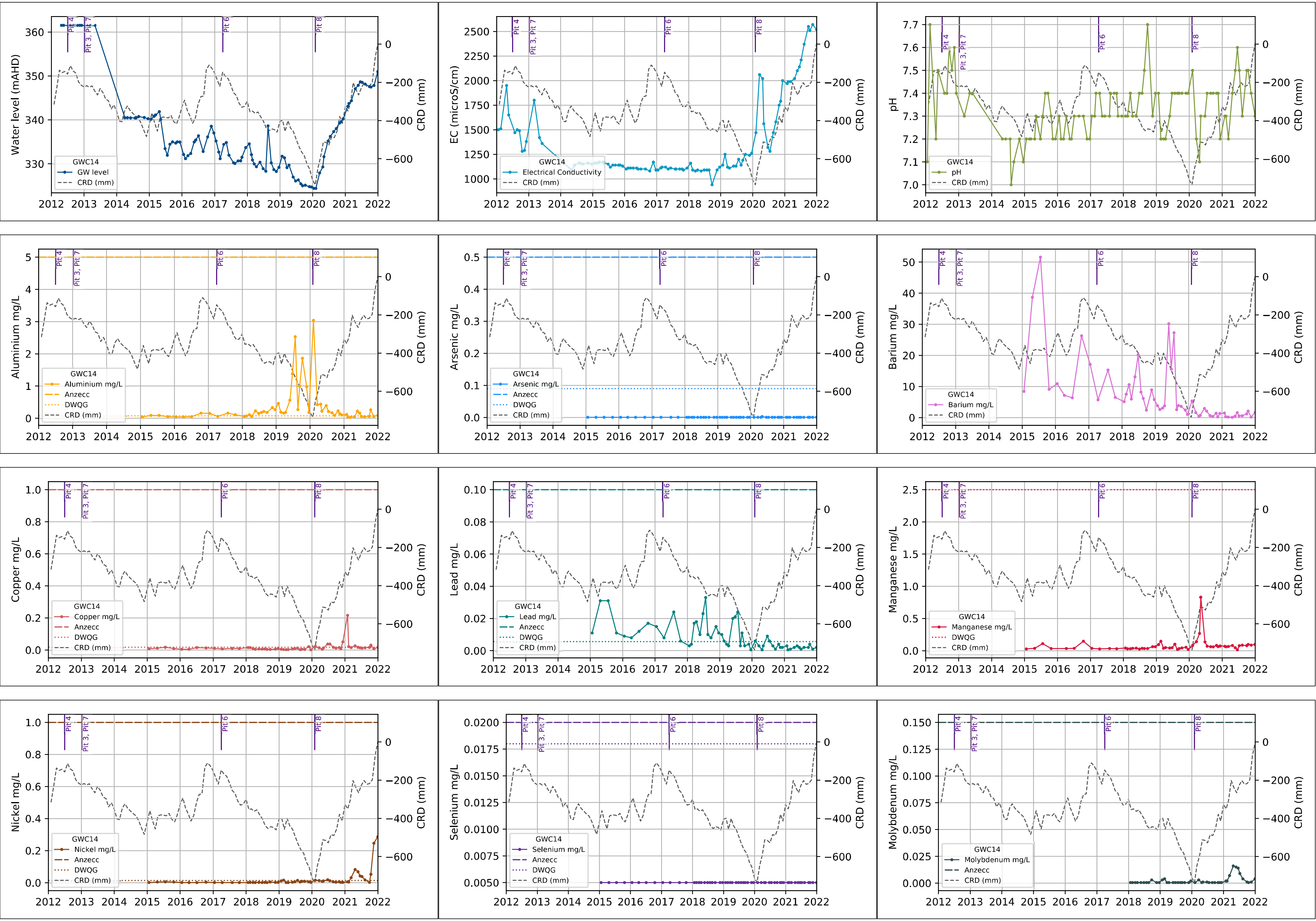
GWC5
GW level
CRD (mm)
Water level (mAHD)
Electrical Conductivity
EC trigger
EC (microS/cm)
pH
pH trigger
Aluminium mg/L
Anzecc
DWQG
Arsenic mg/L
Barium mg/L
Copper mg/L
Lead mg/L
Manganese mg/L
Nickel mg/L
Selenium mg/L
Molybdenum mg/L
Pit 4
Pit 3, Pit 7
Pit 6
Pit 8
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022

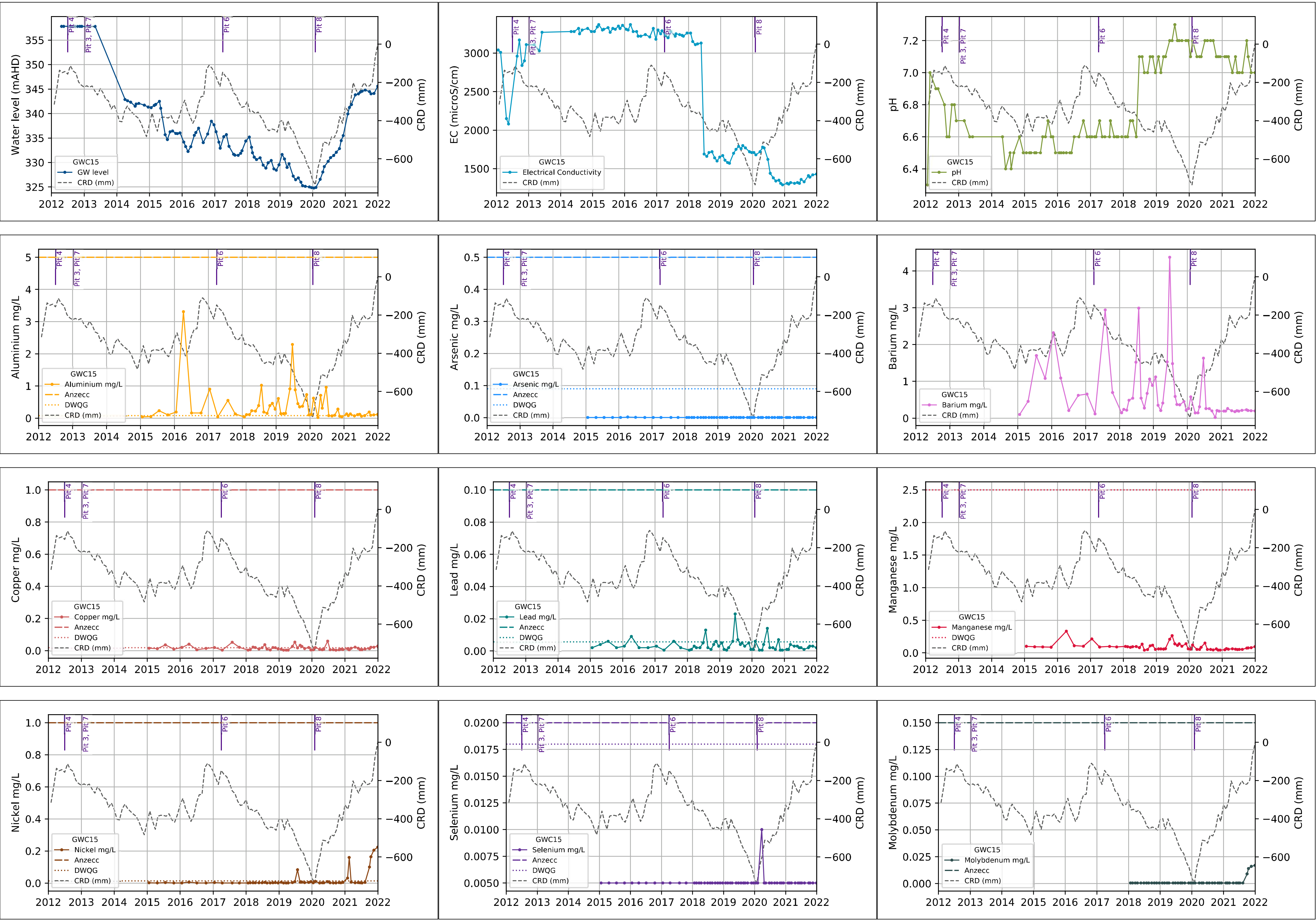

Water level (mAHD)
CRD (mm)
GWC10
GW level
CRD (mm)
EC (microS/cm)
Electrical Conductivity
pH
Aluminium mg/L
Anzecc
DWQG
Arsenic mg/L
Barium mg/L
Copper mg/L
Lead mg/L
Manganese mg/L
Nickel mg/L
Selenium mg/L
Molybdenum mg/L
Pit 4
Pit 3, Pit 7
Pit 6
Pit 8
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022


Water level (mAHD)
CRD (mm)
GWC11
GW level
CRD (mm)
EC (microS/cm)
Electrical Conductivity
pH
Aluminium mg/L
Aluminium mg/L
Anzecc
DWQG
Arsenic mg/L
Arsenic mg/L
Barium mg/L
Barium mg/L
Copper mg/L
Copper mg/L
Lead mg/L
Lead mg/L
Manganese mg/L
Manganese mg/L
Nickel mg/L
Nickel mg/L
Selenium mg/L
Selenium mg/L
Molybdenum mg/L
Molybdenum mg/L
Pit 4
Pit 3, Pit 7
Pit 6
Pit 8
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022

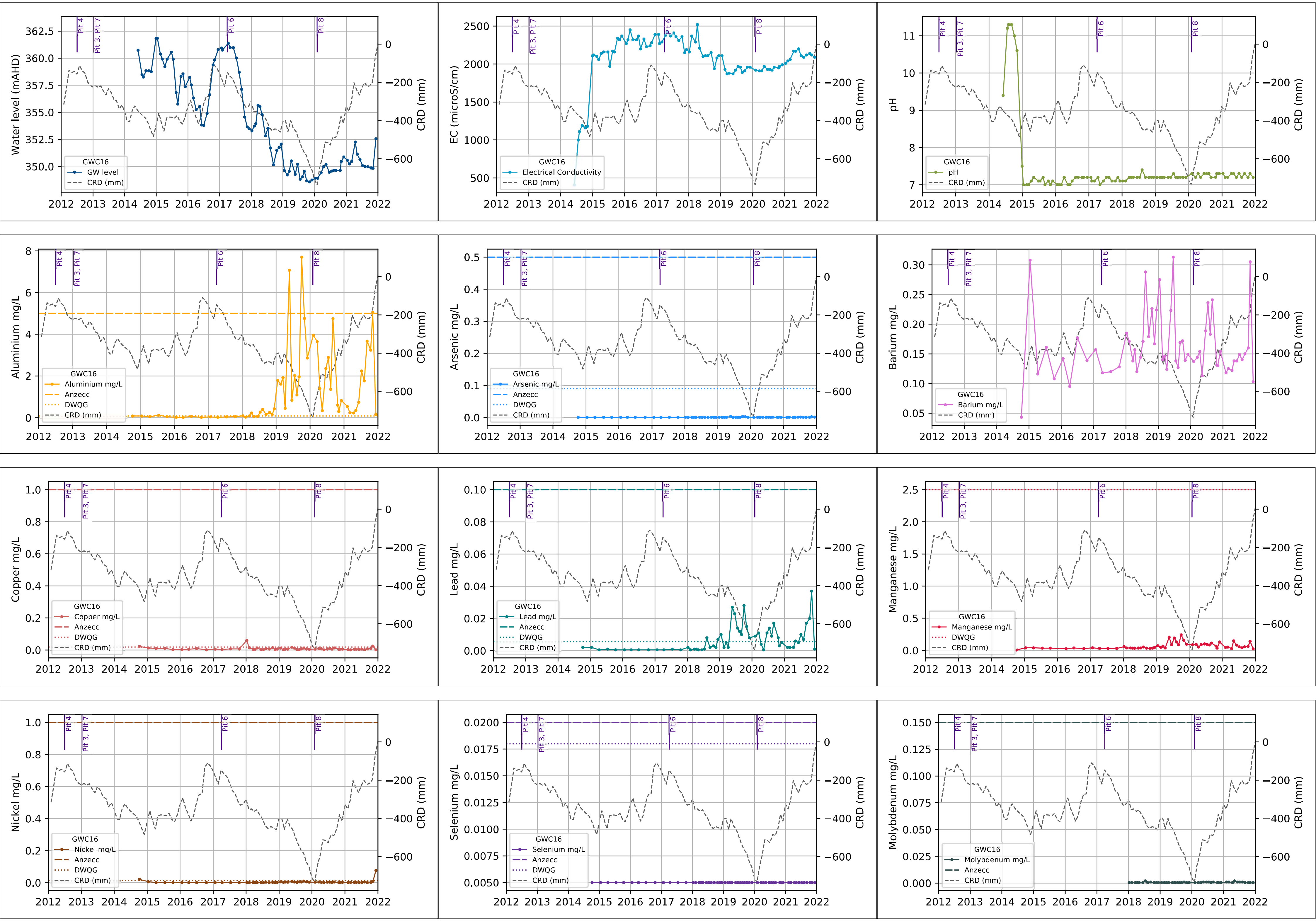


Water level (mAHD)
CRD (mm)
GWC12
GW level
CRD (mm)
EC (microS/cm)
Electrical Conductivity
pH
Aluminium mg/L
Anzecc
DWQG
Arsenic mg/L
Barium mg/L
Copper mg/L
Lead mg/L
Manganese mg/L
Nickel mg/L
Selenium mg/L
Molybdenum mg/L
Pit 4
Pit 3, Pit 7
Pit 6
Pit 8
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022

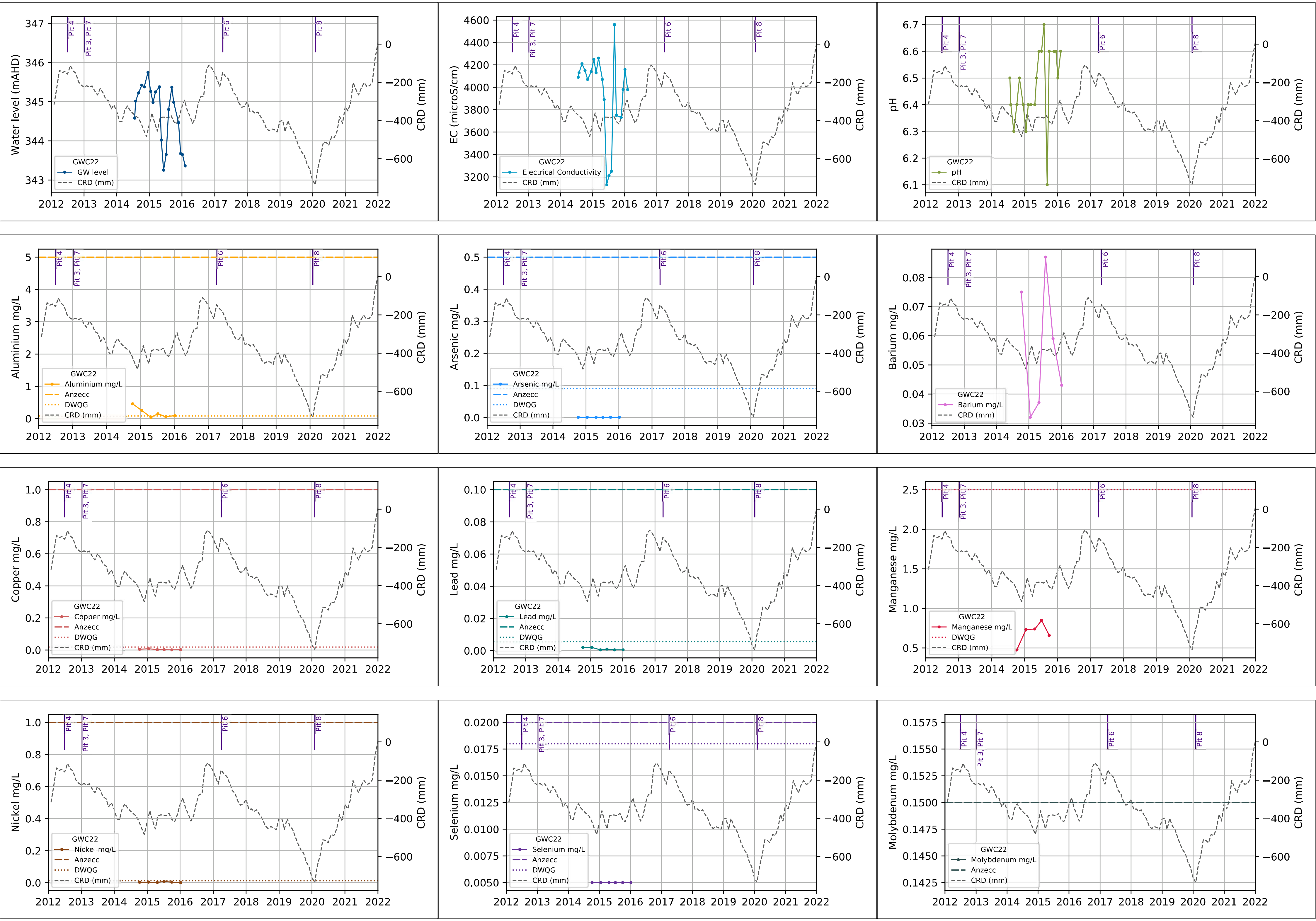

GWC14
GW level
CRD (mm)
Water level (mAHD)
Electrical Conductivity
EC (microS/cm)
pH
Aluminium mg/L
Anzecc
DWQG
Arsenic mg/L
Barium mg/L
Copper mg/L
Lead mg/L
Manganese mg/L
Nickel mg/L
Selenium mg/L
Molybdenum mg/L
Pit 4
Pit 3, Pit 7
Pit 6
Pit 8



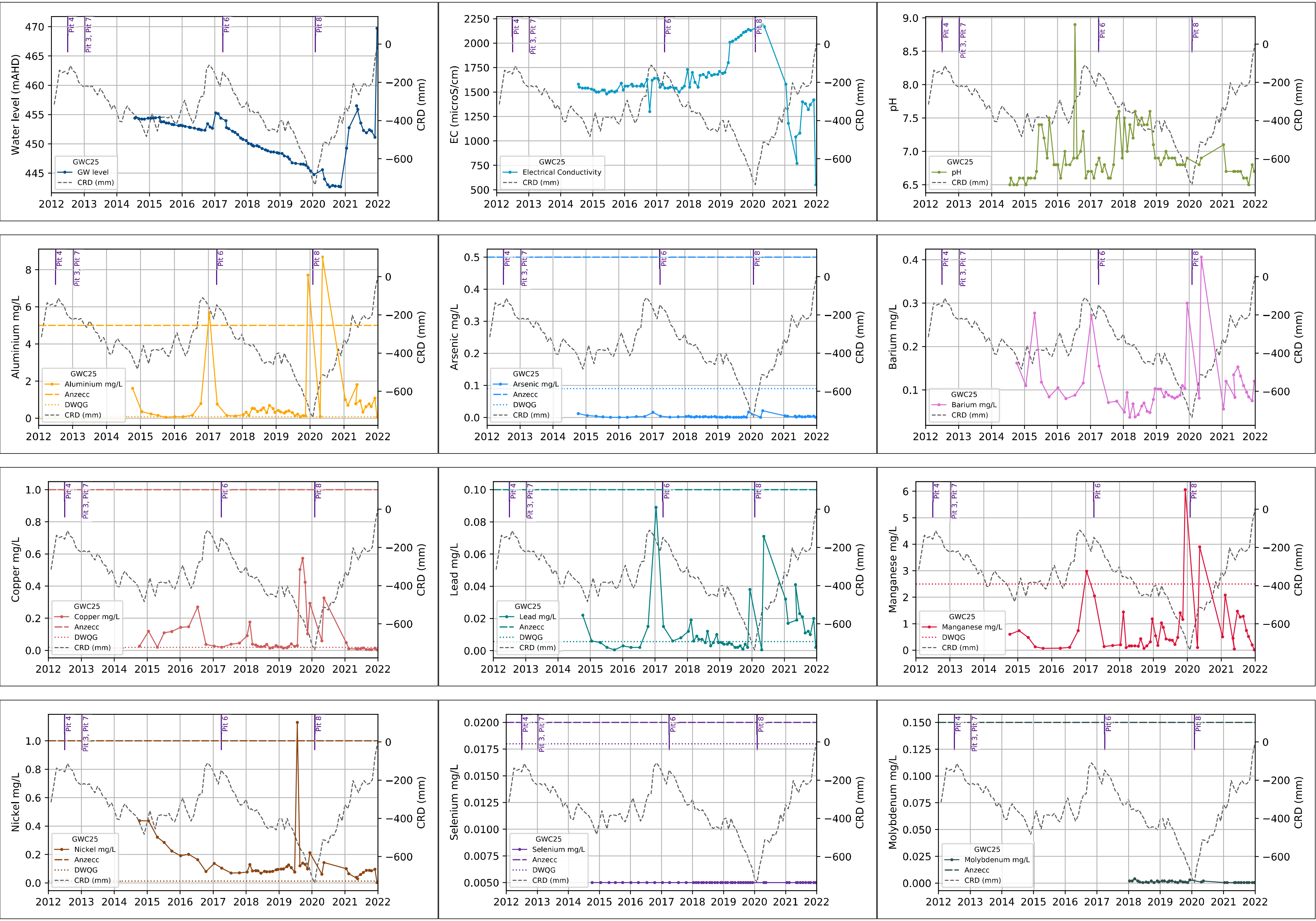
Water level (mAHD)
CRD (mm)
GWC15
GW level
CRD (mm)
EC (microS/cm)
Electrical Conductivity
pH
Aluminium mg/L
Aluminium mg/L
Anzecc
DWQG
Arsenic mg/L
Arsenic mg/L
Barium mg/L
Barium mg/L
Copper mg/L
Copper mg/L
Lead mg/L
Lead mg/L
Manganese mg/L
Manganese mg/L
Nickel mg/L
Nickel mg/L
Selenium mg/L
Selenium mg/L
Molybdenum mg/L
Molybdenum mg/L
Pit 4
Pit 3, Pit 7
Pit 6
Pit 8
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022



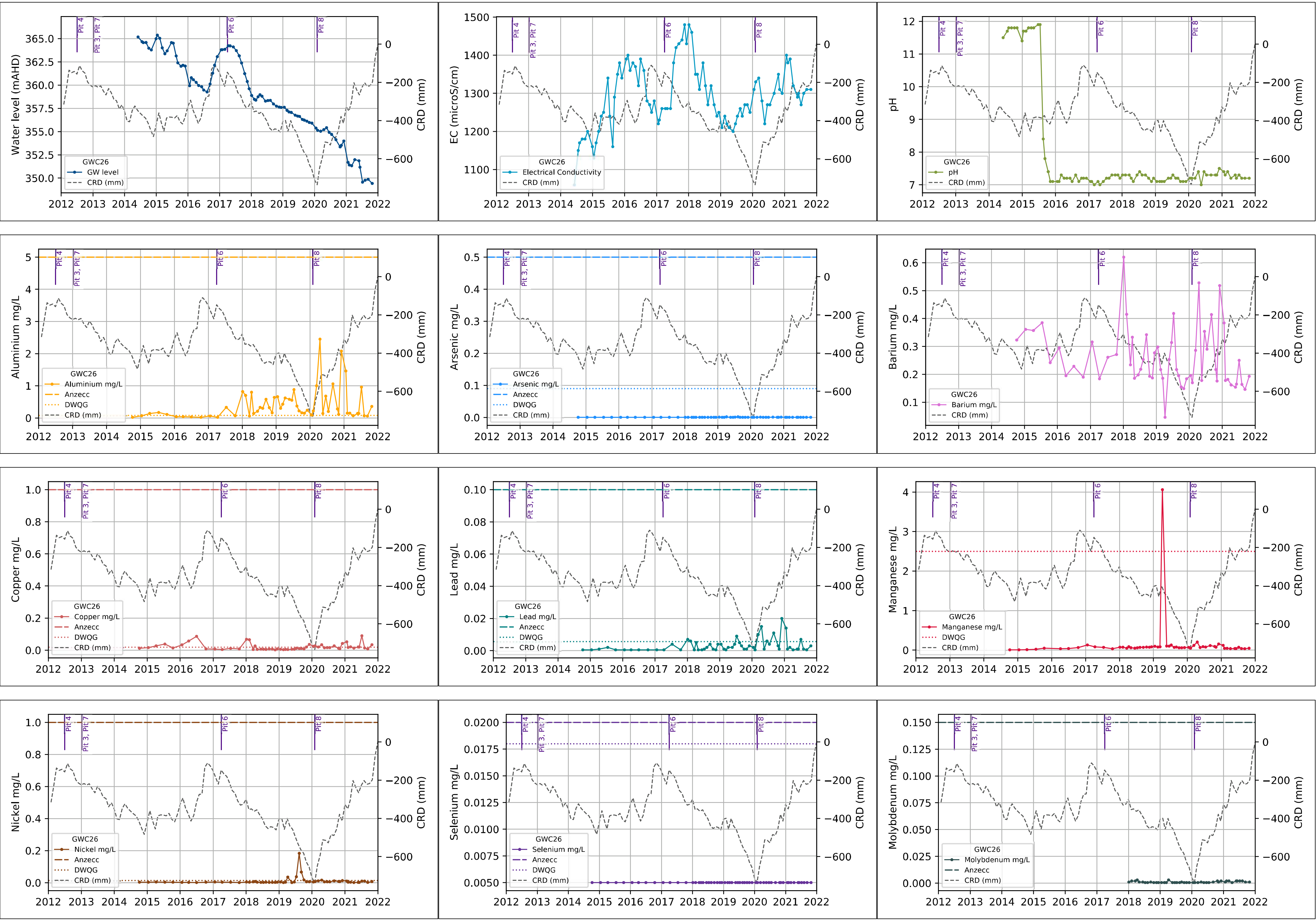
Water level (mAHD)
CRD (mm)
GWC16
GW level
CRD (mm)
EC (microS/cm)
Electrical Conductivity
pH
Aluminium mg/L
Aluminium mg/L
Anzecc
DWQG
Arsenic mg/L
Arsenic mg/L
Barium mg/L
Barium mg/L
Copper mg/L
Copper mg/L
Lead mg/L
Lead mg/L
Manganese mg/L
Manganese mg/L
Nickel mg/L
Nickel mg/L
Selenium mg/L
Selenium mg/L
Molybdenum mg/L
Molybdenum mg/L
Pit 4
Pit 3, Pit 7
Pit 6
Pit 8
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022



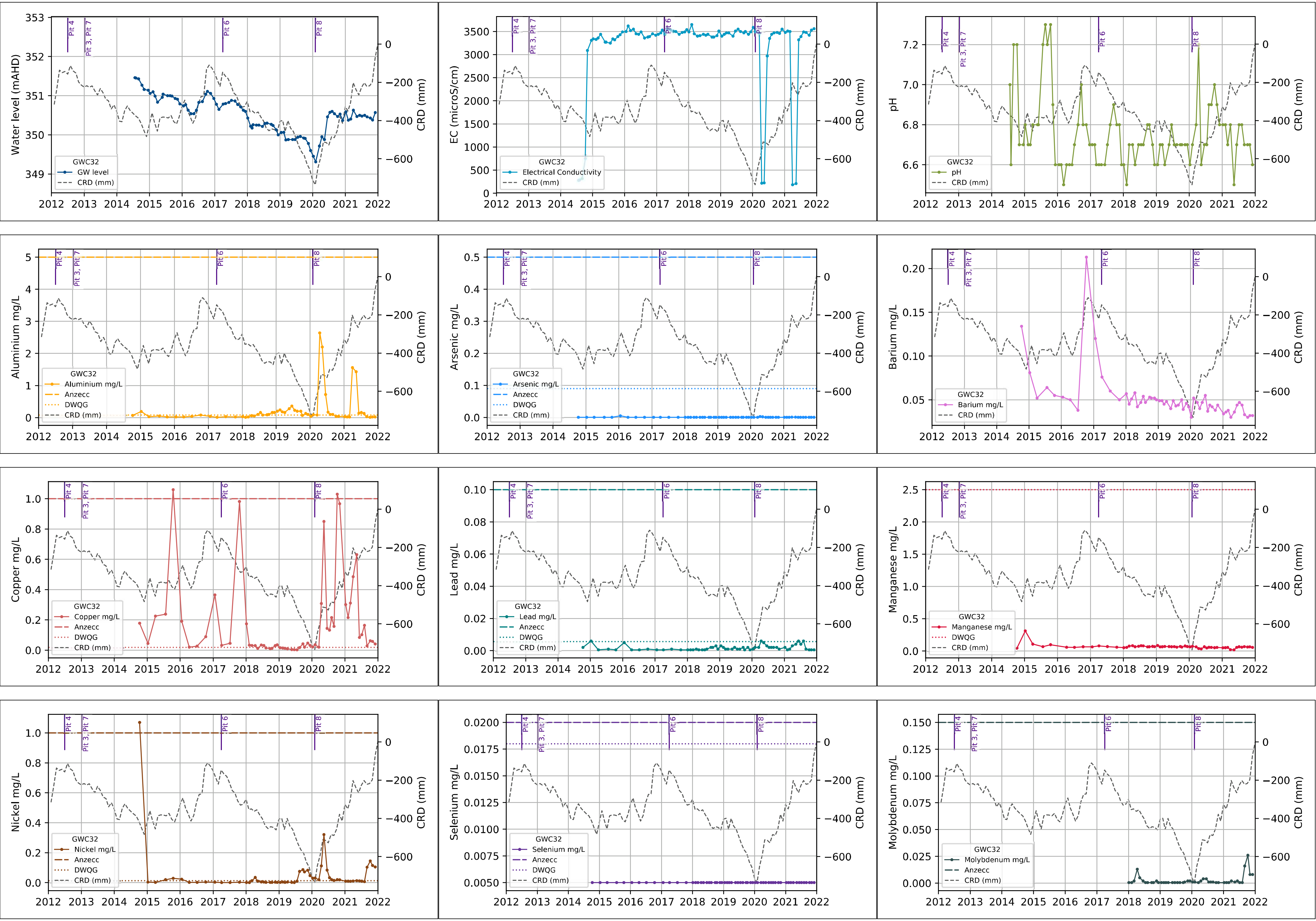
Water level (mAHD)
CRD (mm)
GWC22
GW level
CRD (mm)
EC (microS/cm)
Electrical Conductivity
pH
Aluminium mg/L
Aluminium mg/L
Anzecc
DWQG
Arsenic mg/L
Arsenic mg/L
Barium mg/L
Barium mg/L
Copper mg/L
Copper mg/L
Lead mg/L
Lead mg/L
Manganese mg/L
Manganese mg/L
Nickel mg/L
Nickel mg/L
Selenium mg/L
Selenium mg/L
Molybdenum mg/L
Molybdenum mg/L
Pit 4
Pit 3, Pit 7
Pit 6
Pit 8
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022



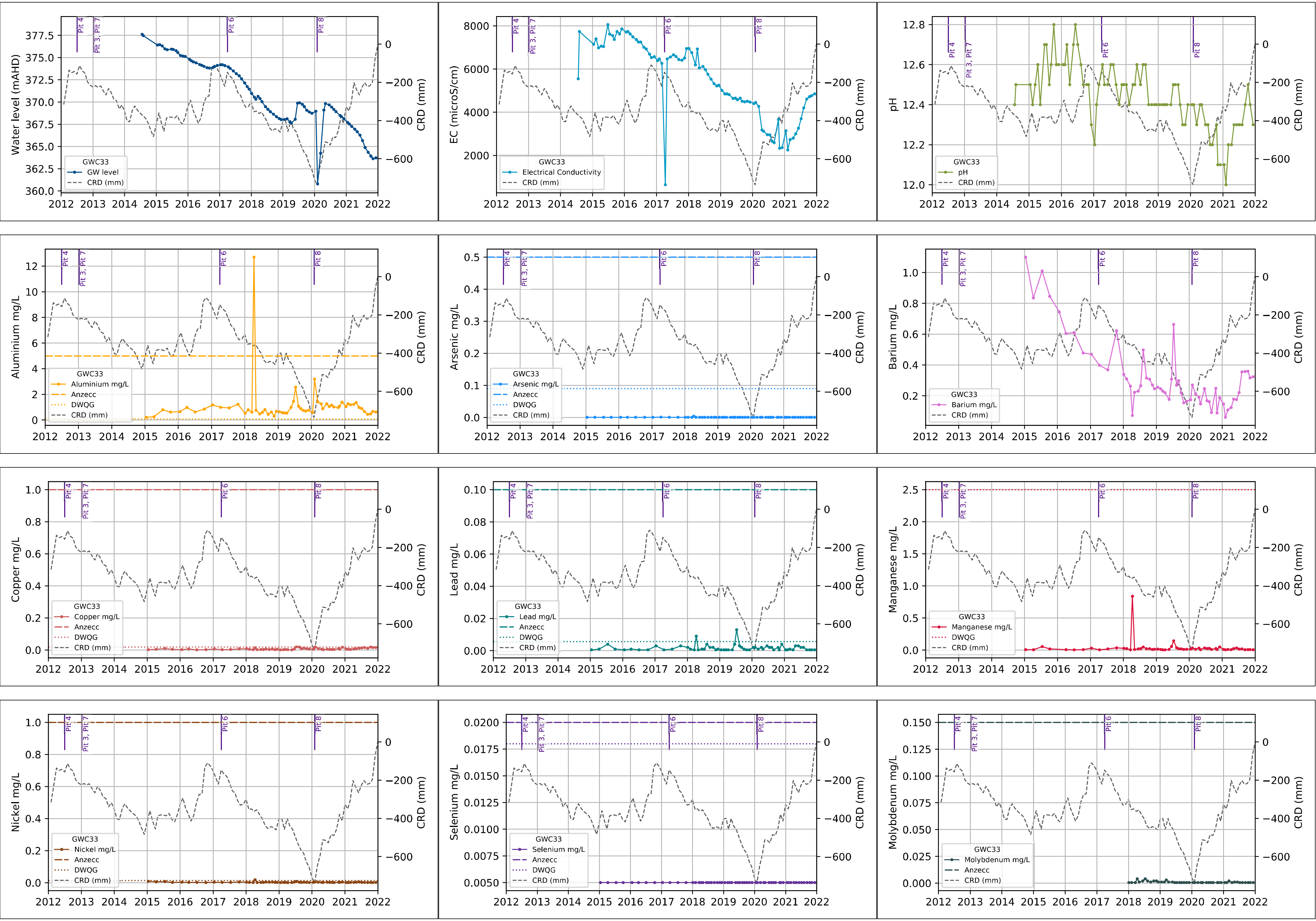
Water level (mAHD)
CRD (mm)
GWC25
GW level
CRD (mm)
EC (microS/cm)
Electrical Conductivity
pH
Aluminium mg/L
Anzecc
DWQG
Arsenic mg/L
Barium mg/L
Copper mg/L
Lead mg/L
Manganese mg/L
Nickel mg/L
Selenium mg/L
Molybdenum mg/L
Pit 4
Pit 3, Pit 7
Pit 6
Pit 8
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022



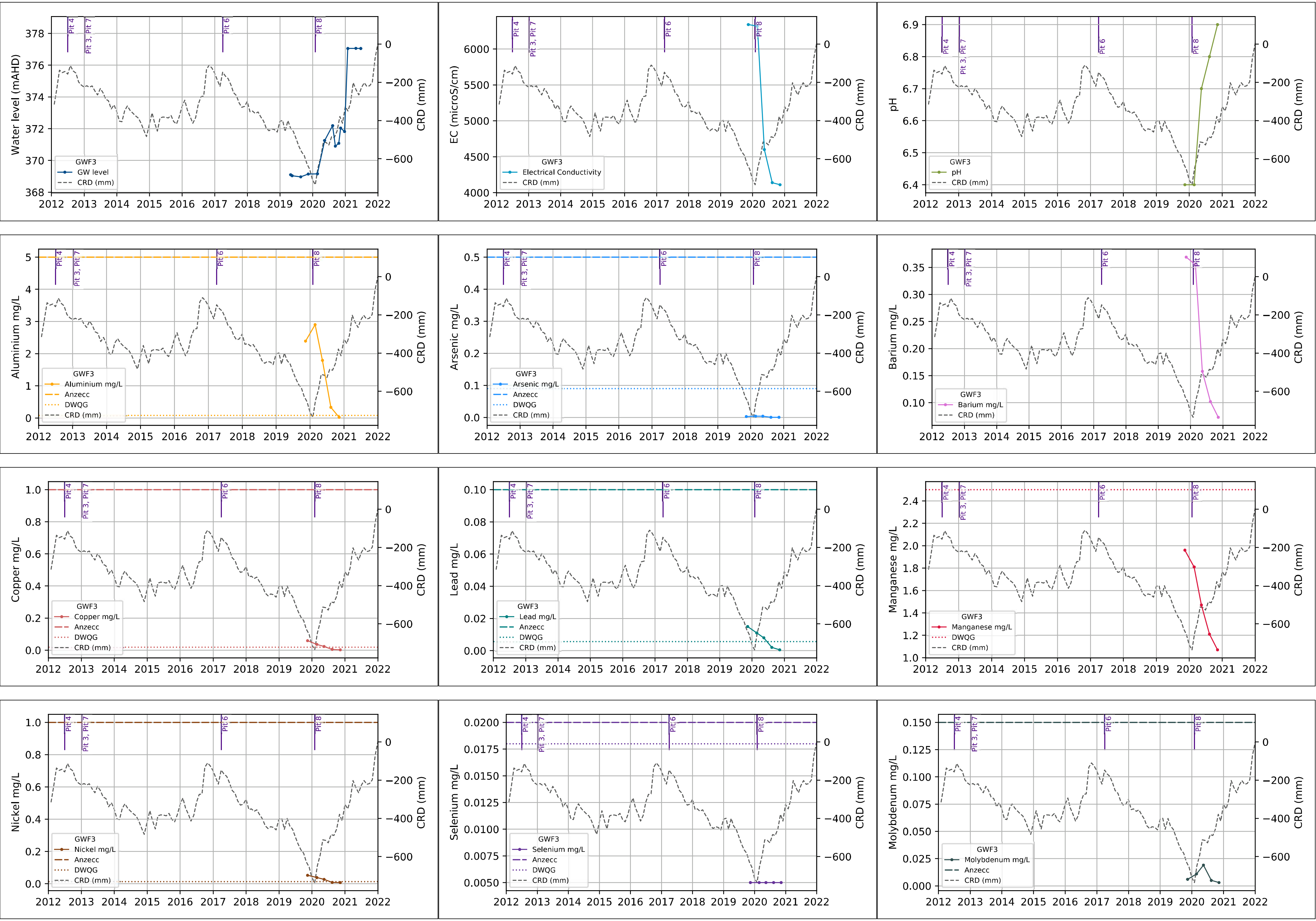
Water level (mAHD)
CRD (mm)
GWC26
GW level
CRD (mm)
EC (microS/cm)
Electrical Conductivity
pH
Aluminium mg/L
Anzecc
DWQG
Arsenic mg/L
Barium mg/L
Copper mg/L
Lead mg/L
Manganese mg/L
Nickel mg/L
Selenium mg/L
Molybdenum mg/L
Pit 4
Pit 3, Pit 7
Pit 6
Pit 8



Water level (mAHD)
CRD (mm)
GWC32
GW level
CRD (mm)
EC (microS/cm)
Electrical Conductivity
pH
Aluminium mg/L
Anzecc
DWQG
Arsenic mg/L
Barium mg/L
Copper mg/L
Lead mg/L
Manganese mg/L
Nickel mg/L
Selenium mg/L
Molybdenum mg/L
Pit 4
Pit 3, Pit 7
Pit 6
Pit 8
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022



Water level (mAHD)
CRD (mm)
GWC33
GW level
CRD (mm)
EC (microS/cm)
Electrical Conductivity
pH
Aluminium mg/L
Aluminium mg/L
Anzecc
DWQG
Arsenic mg/L
Arsenic mg/L
Barium mg/L
Barium mg/L
Copper mg/L
Copper mg/L
Lead mg/L
Lead mg/L
Manganese mg/L
Manganese mg/L
Nickel mg/L
Nickel mg/L
Selenium mg/L
Selenium mg/L
Molybdenum mg/L
Molybdenum mg/L
Pit 4
Pit 3, Pit 7
Pit 6
Pit 8
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022



Water level (mAHD)
CRD (mm)
Pit 4
Pit 3, Pit 7
Pit 6
Pit 8
GWF3
GW level
CRD (mm)
EC (microS/cm)
CRD (mm)
GWF3
Electrical Conductivity
CRD (mm)
pH
CRD (mm)
GWF3
pH
CRD (mm)
Aluminium mg/L
CRD (mm)
GWF3
Aluminium mg/L
Anzecc
DWQG
CRD (mm)
Arsenic mg/L
CRD (mm)
GWF3
Arsenic mg/L
Anzecc
DWQG
CRD (mm)
Barium mg/L
CRD (mm)
GWF3
Barium mg/L
CRD (mm)
Copper mg/L
CRD (mm)
GWF3
Copper mg/L
Anzecc
DWQG
CRD (mm)
Lead mg/L
CRD (mm)
GWF3
Lead mg/L
Anzecc
DWQG
CRD (mm)
Manganese mg/L
CRD (mm)
GWF3
Manganese mg/L
DWQG
CRD (mm)
Nickel mg/L
CRD (mm)
GWF3
Nickel mg/L
Anzecc
DWQG
CRD (mm)
Selenium mg/L
CRD (mm)
GWF3
Selenium mg/L
Anzecc
DWQG
CRD (mm)
Molybdenum mg/L
CRD (mm)
GWF3
Molybdenum mg/L
Anzecc
CRD (mm)

APPENDIX D

Modelled vs Observed Hydrographs

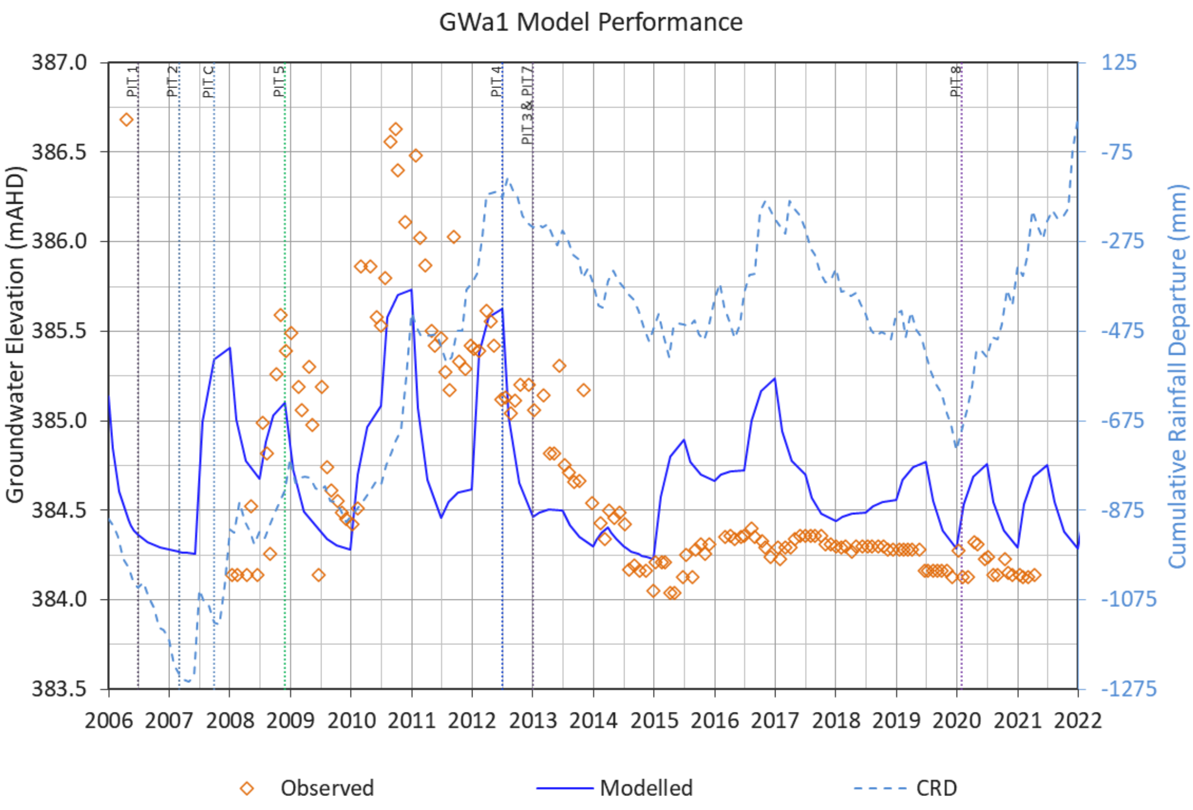


Figure 33 GWa1 Calibration Hydrographs

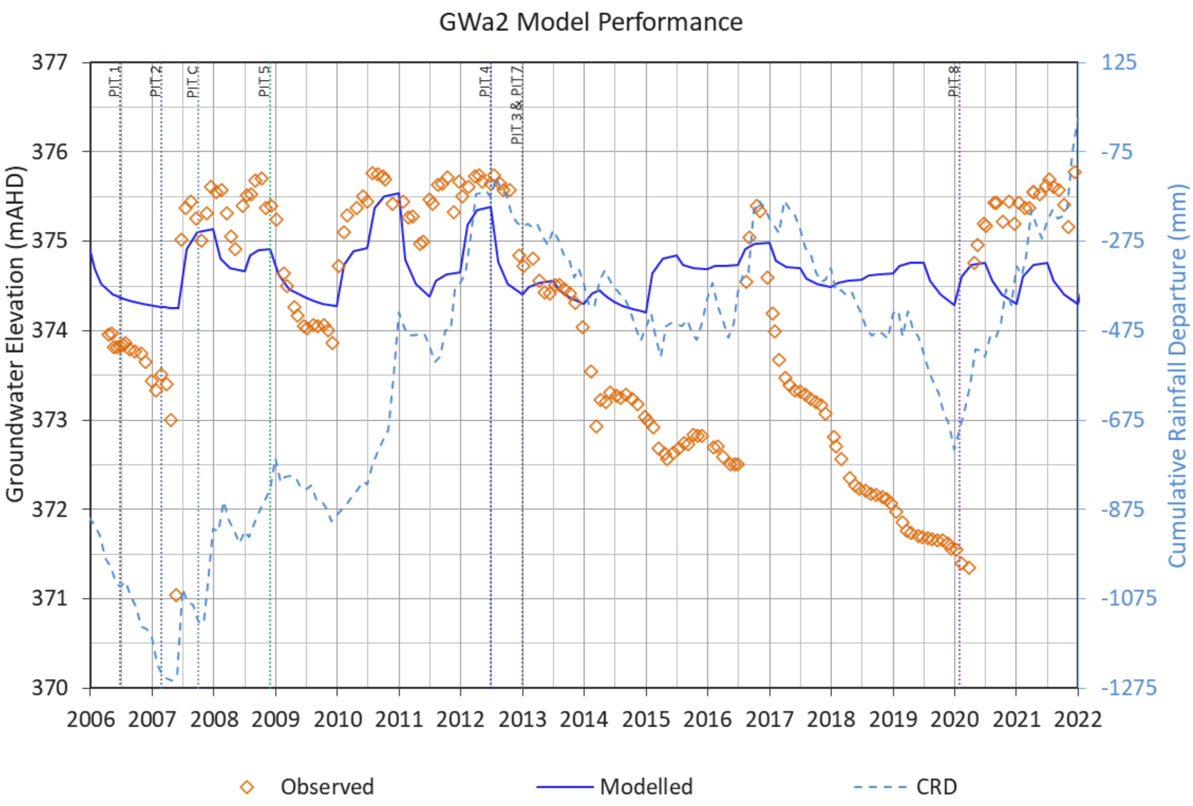


Figure 34 GWa2 Calibration Hydrographs

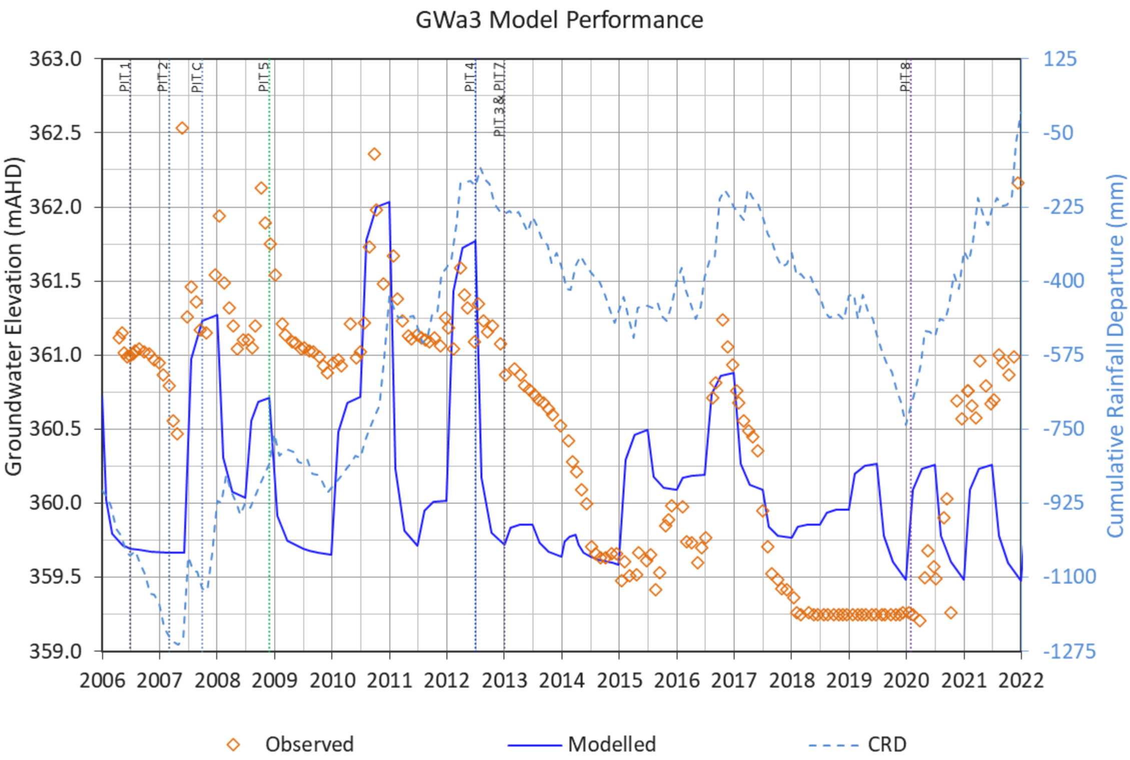


Figure 35 GWa3 Calibration Hydrographs

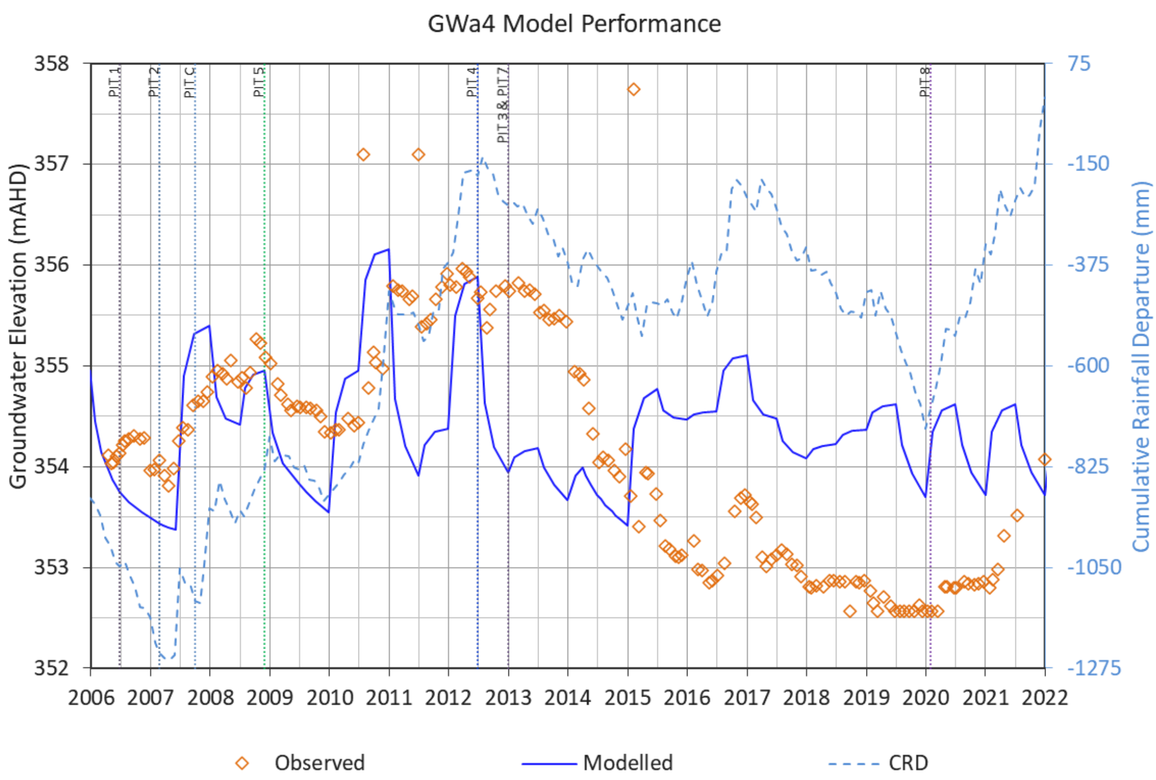


Figure 36 GWa4 Calibration Hydrographs

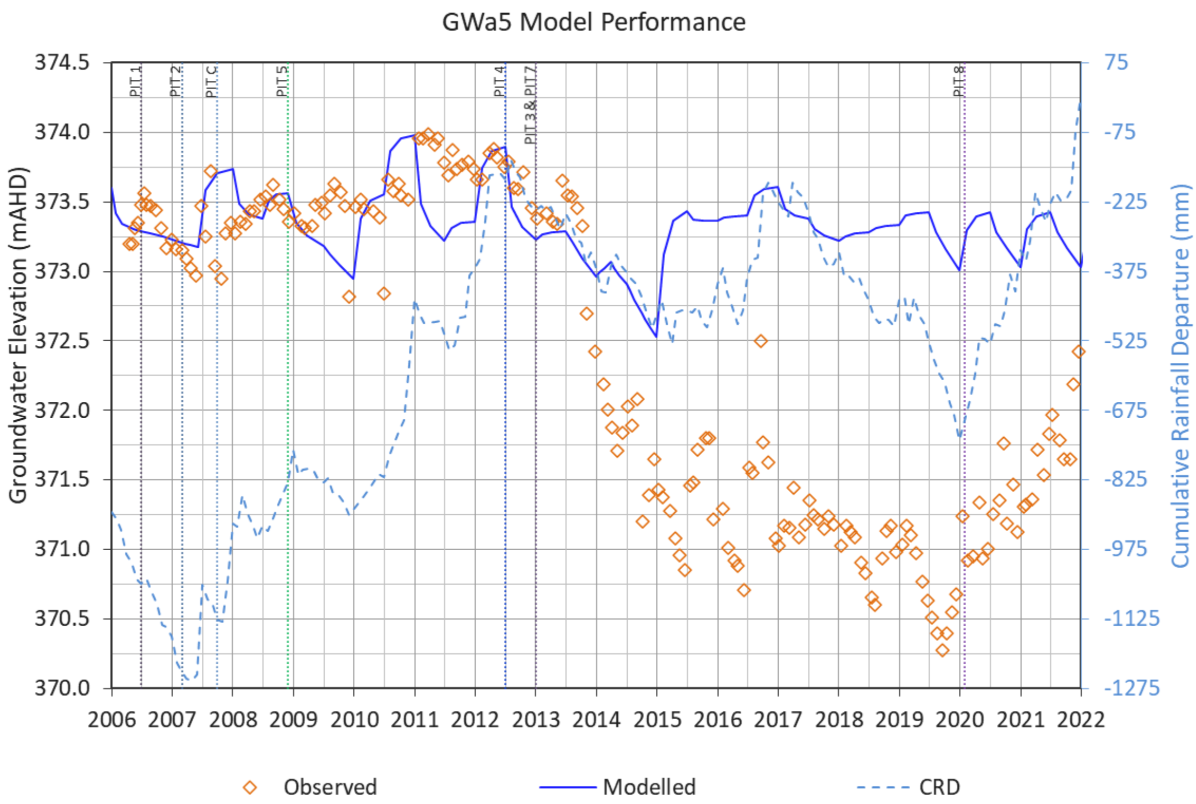


Figure 37 GWa5 Calibration Hydrographs

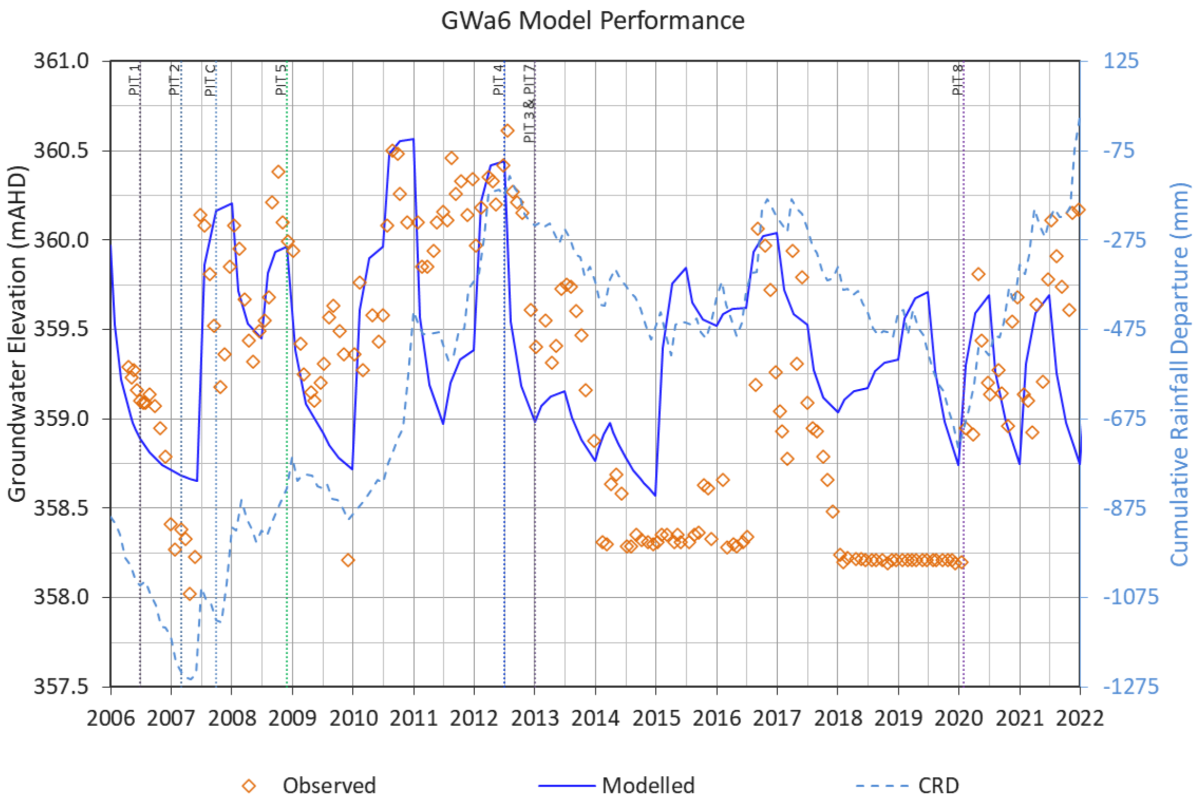


Figure 38 GWa6 Calibration Hydrographs

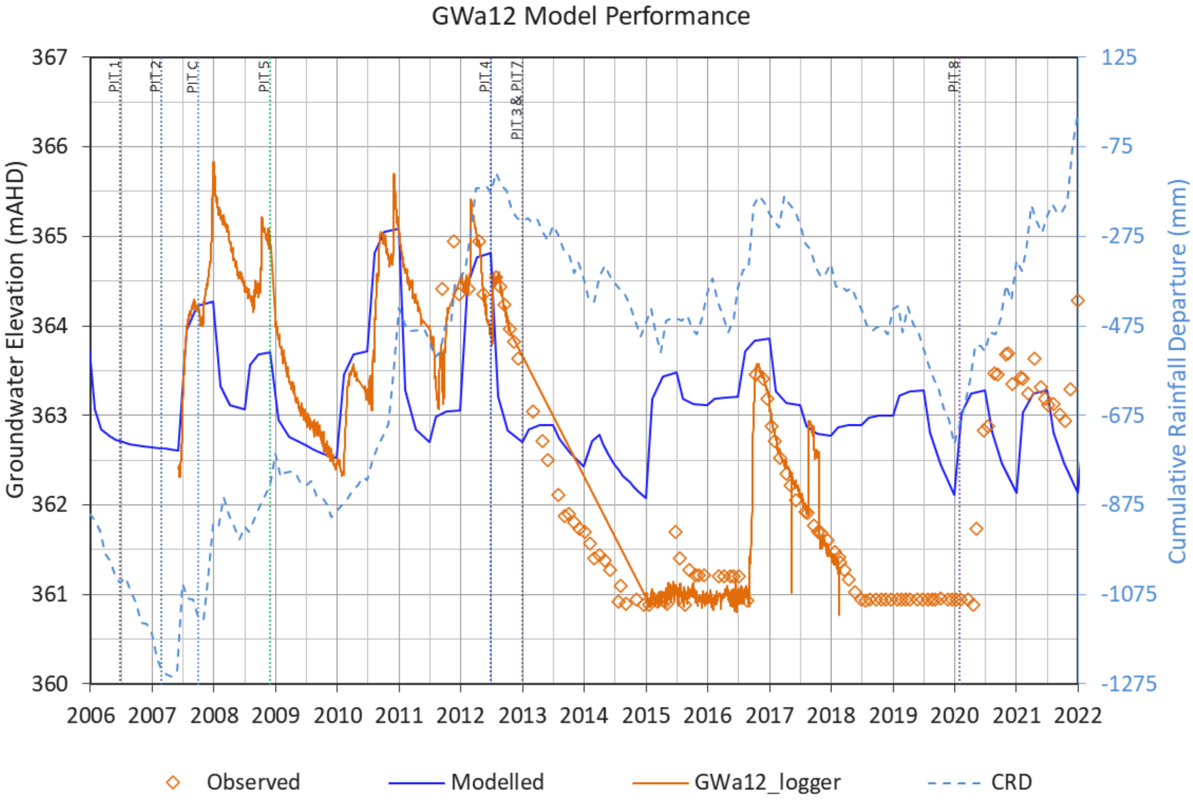


Figure 39 GWa12 Calibration Hydrographs

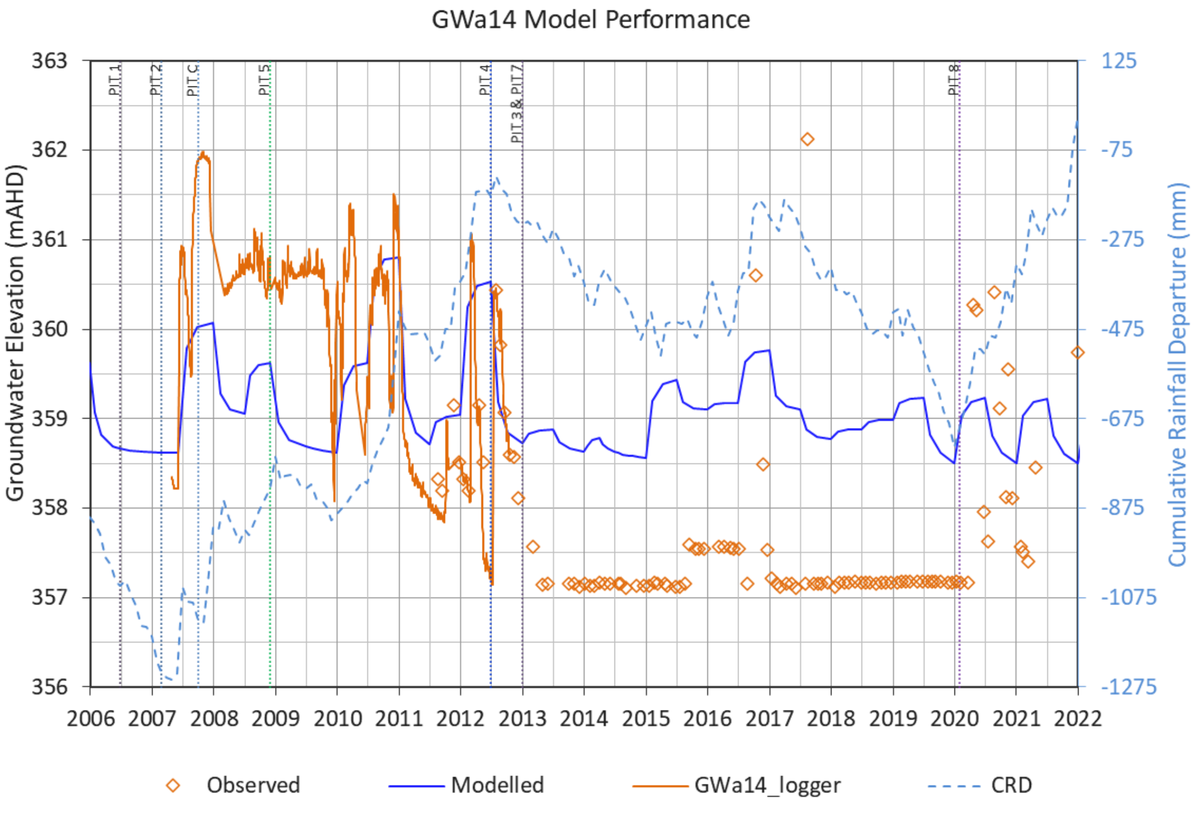


Figure 40 GWa14 Calibration Hydrographs

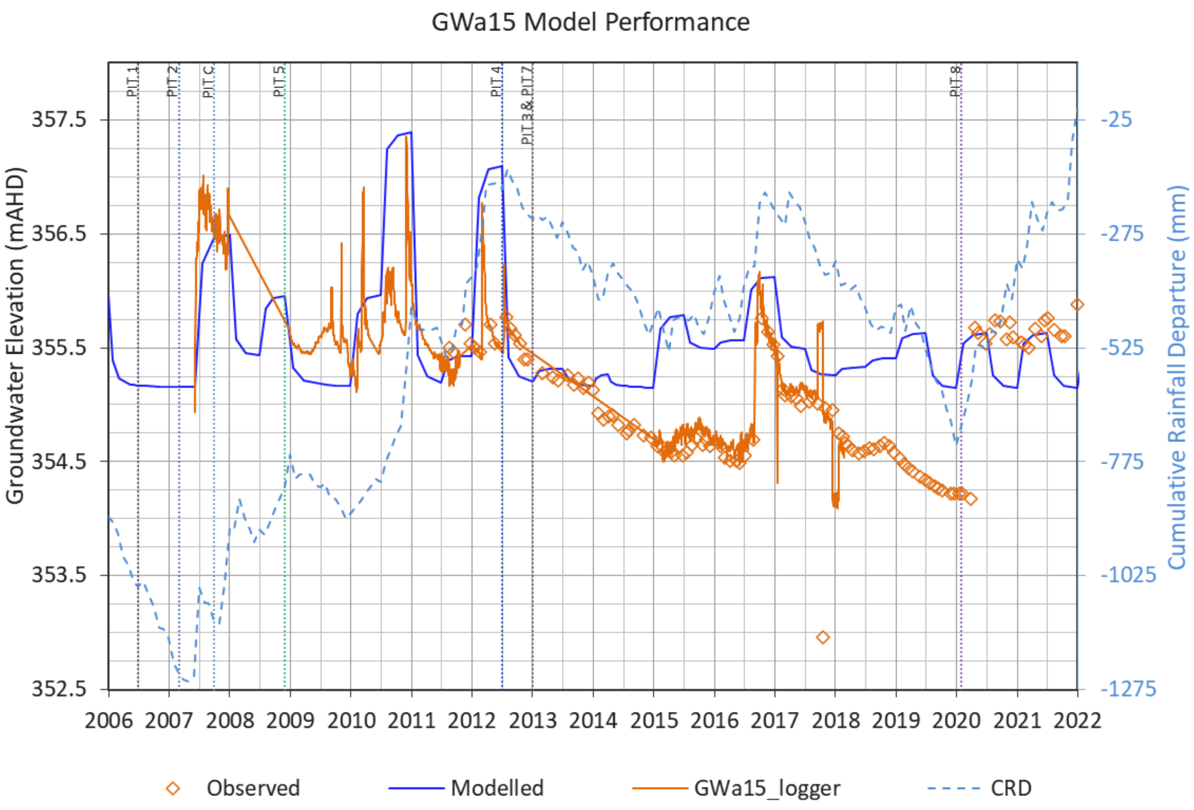


Figure 41 GWa15 Calibration Hydrographs

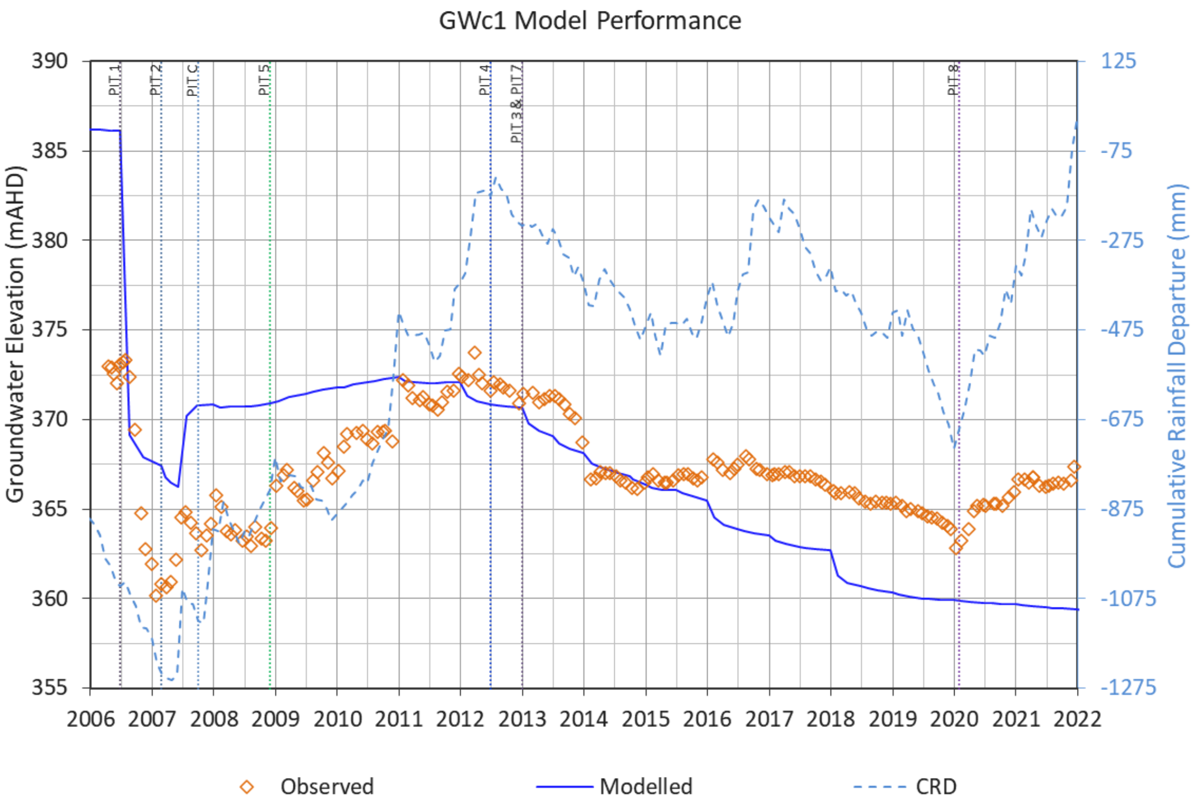


Figure 42 GWc1 Calibration Hydrographs

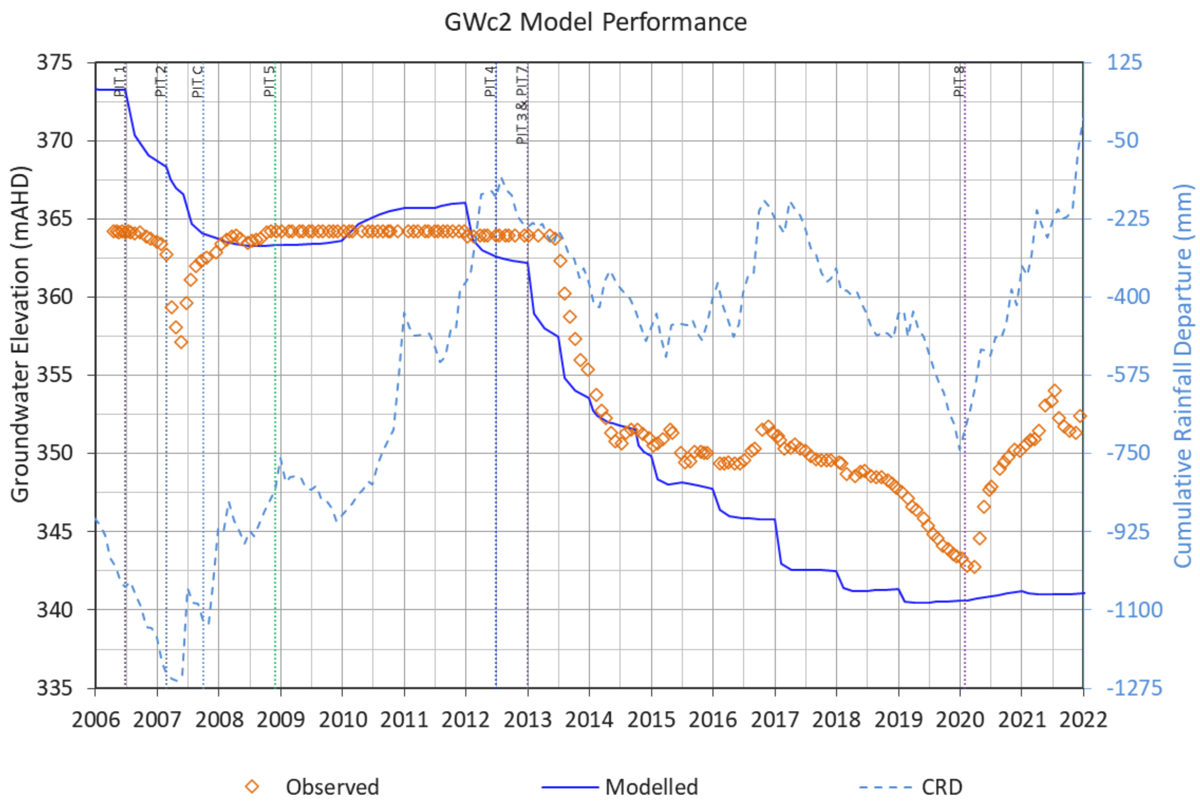


Figure 43 GWc2 Calibration Hydrographs

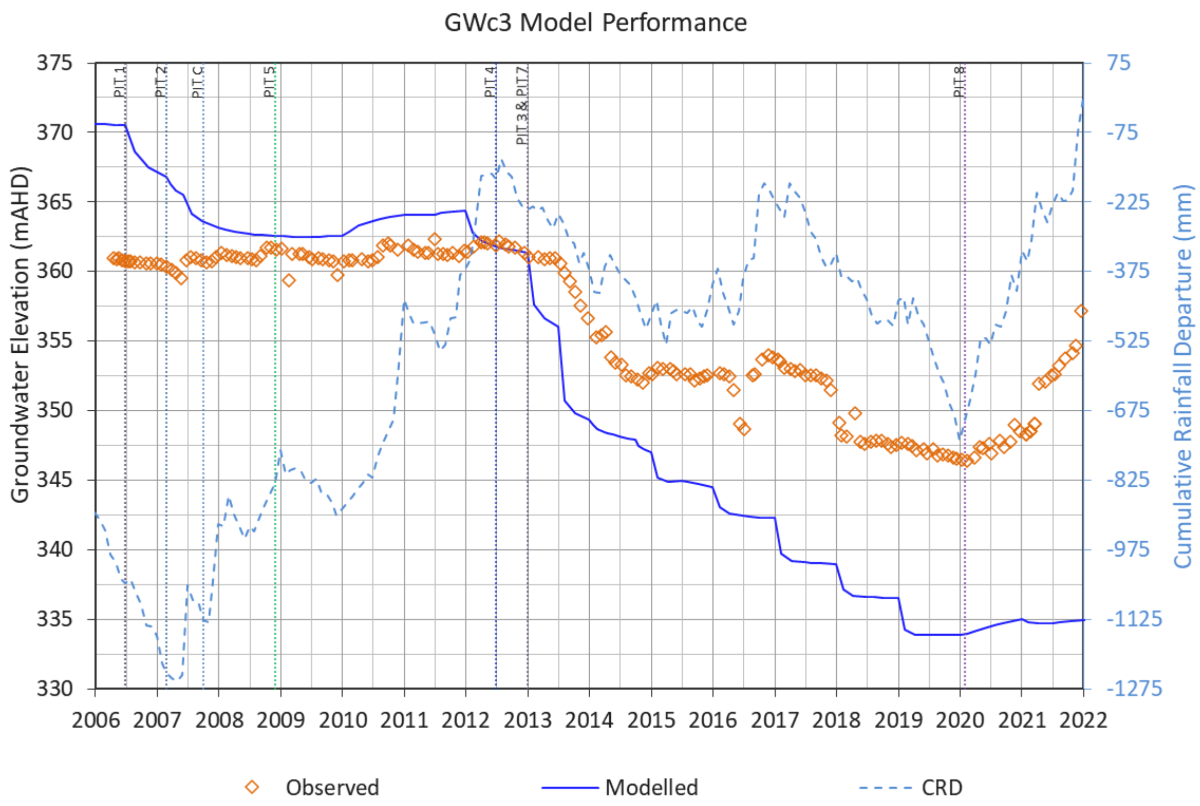


Figure 44 GWc3 Calibration Hydrographs

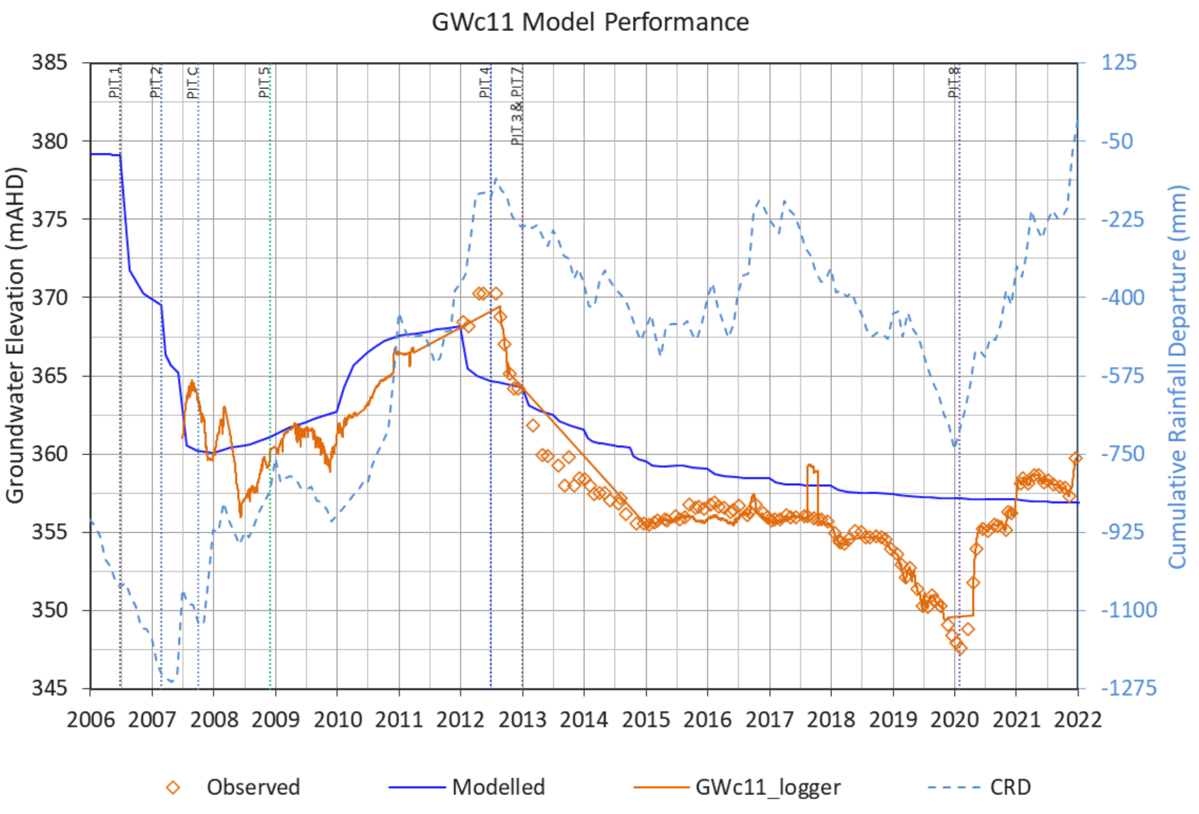


Figure 45 GWc11 Calibration Hydrographs

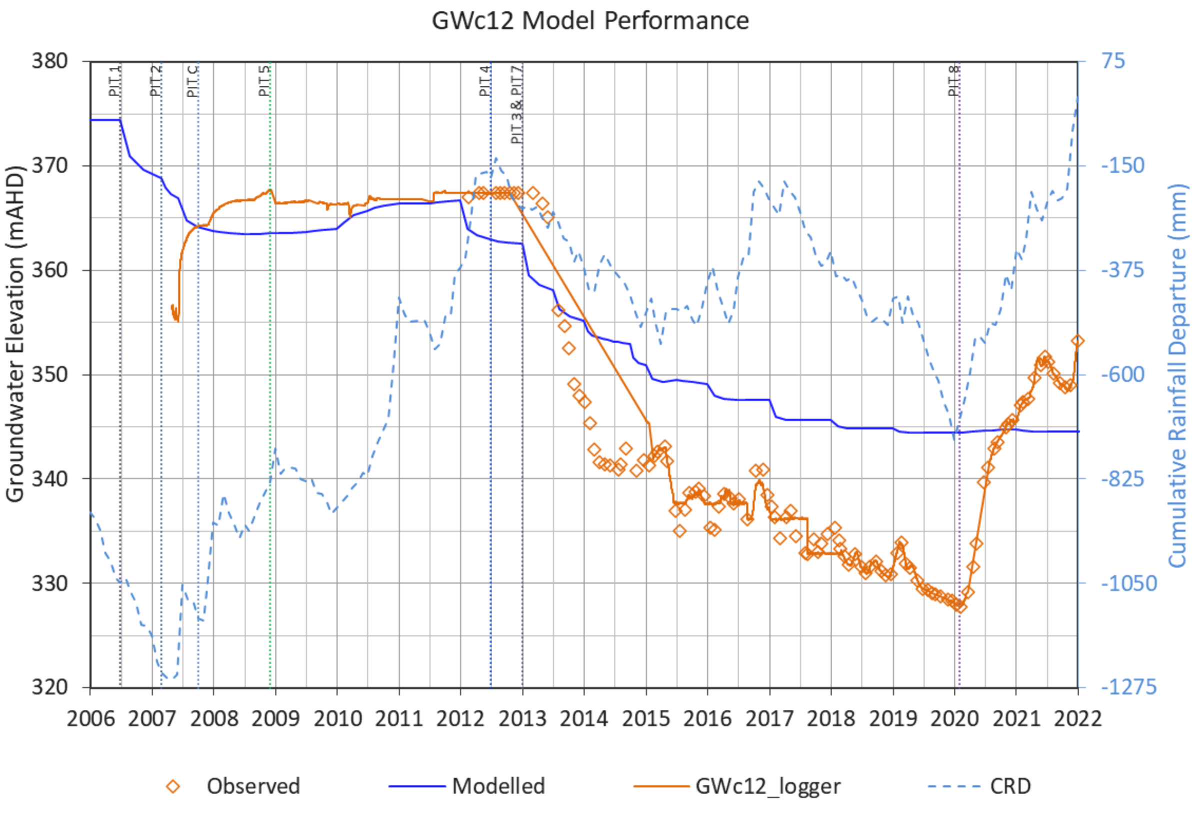


Figure 46 GWc12 Calibration Hydrographs

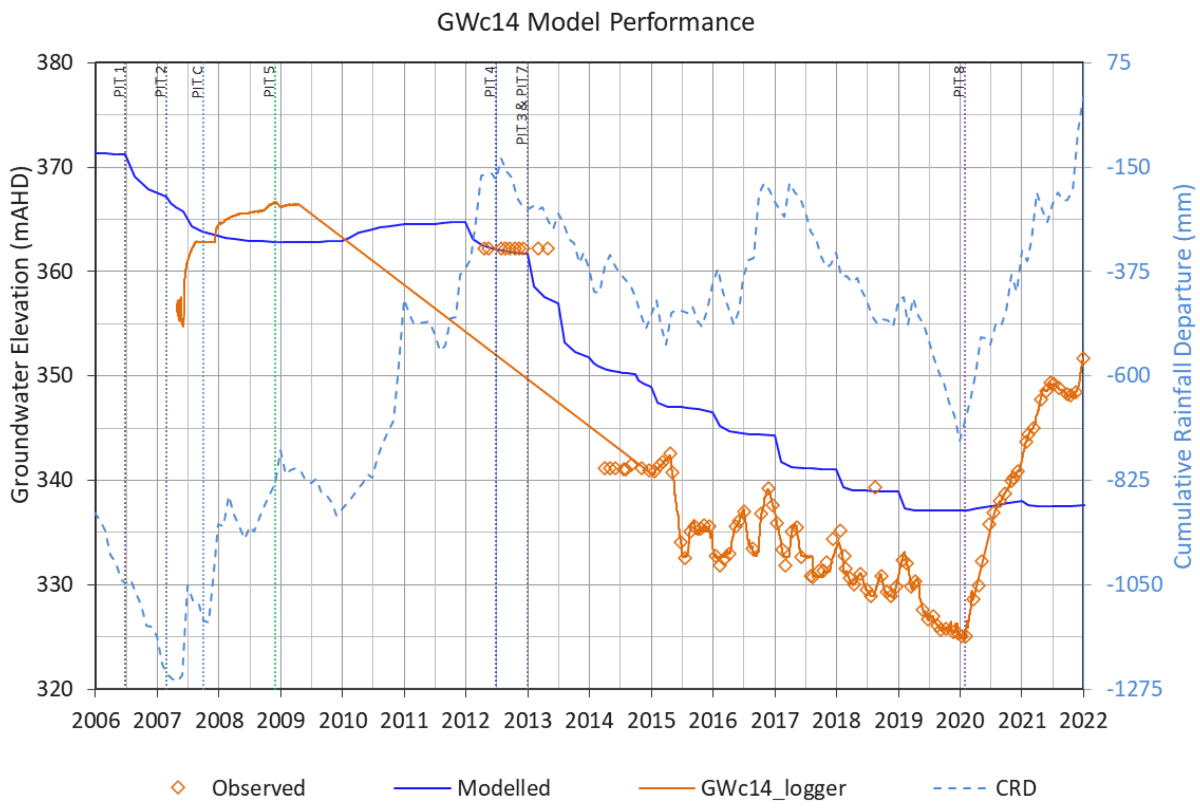


Figure 47 GWc14 Calibration Hydrographs

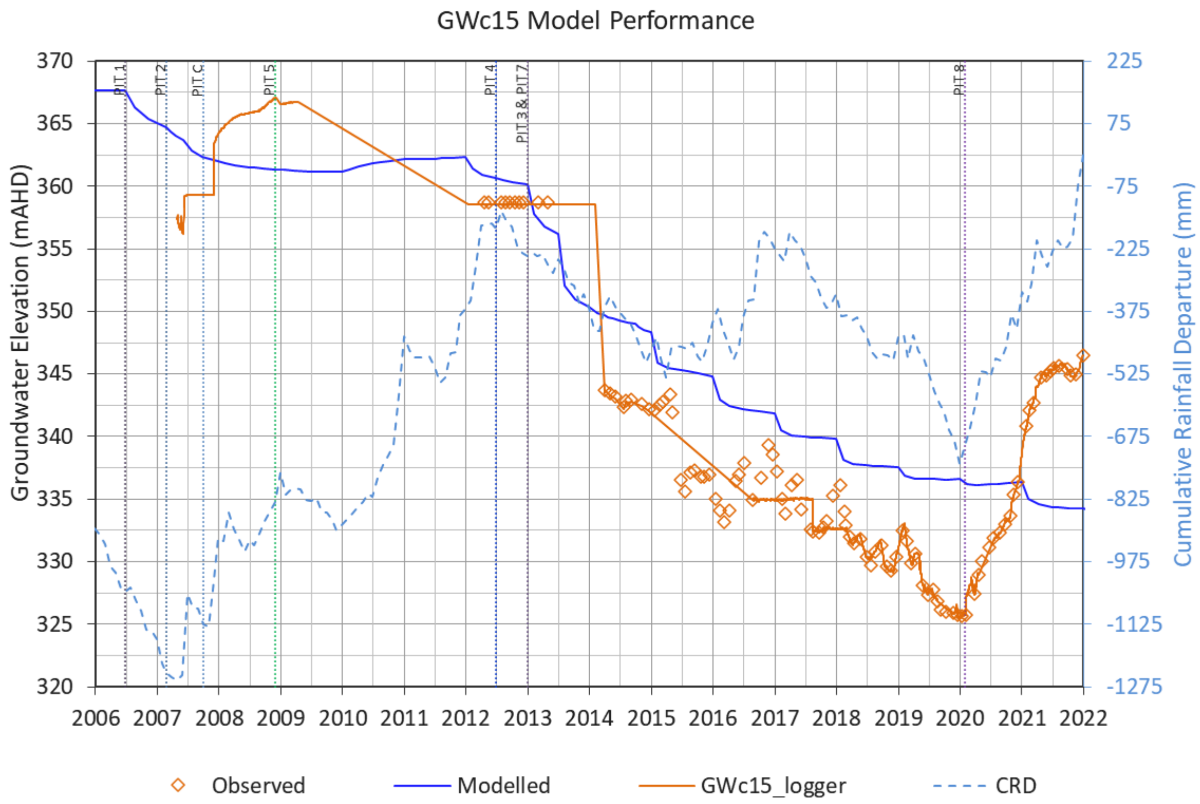


Figure 48 GWc15 Calibration Hydrographs

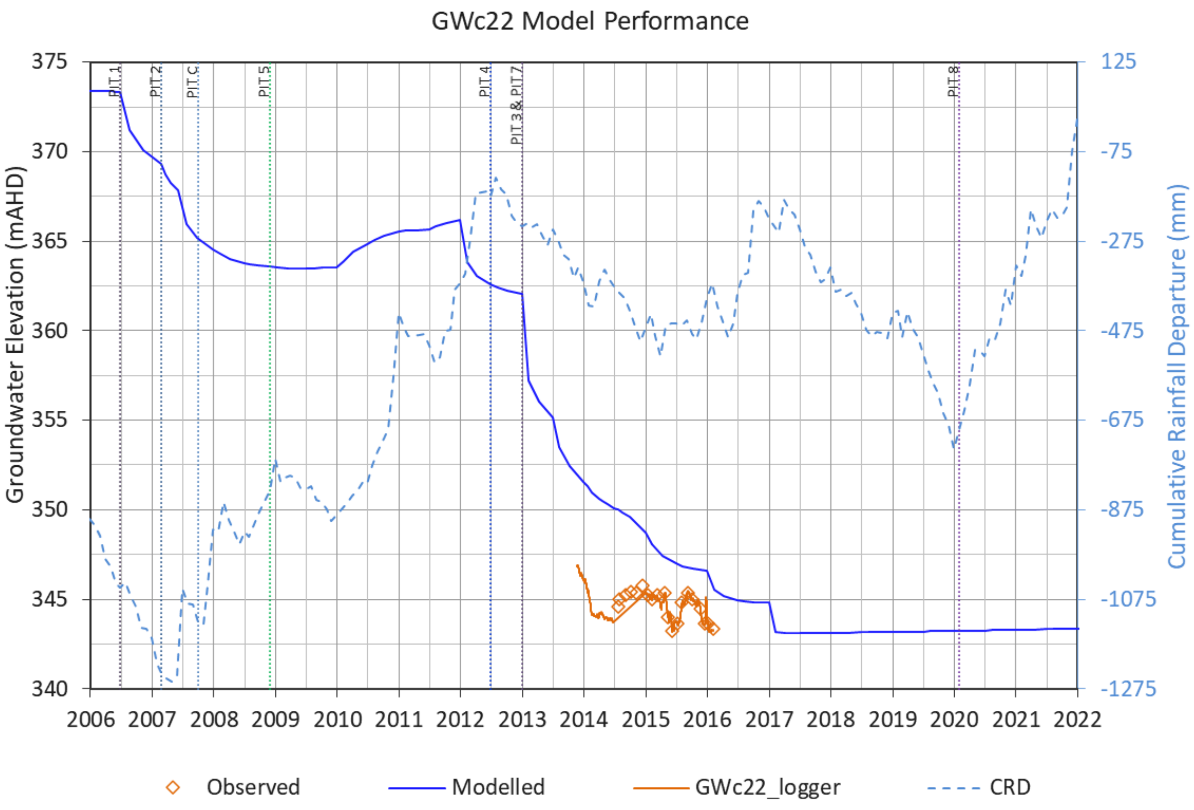


Figure 49 GWc22 Calibration Hydrographs

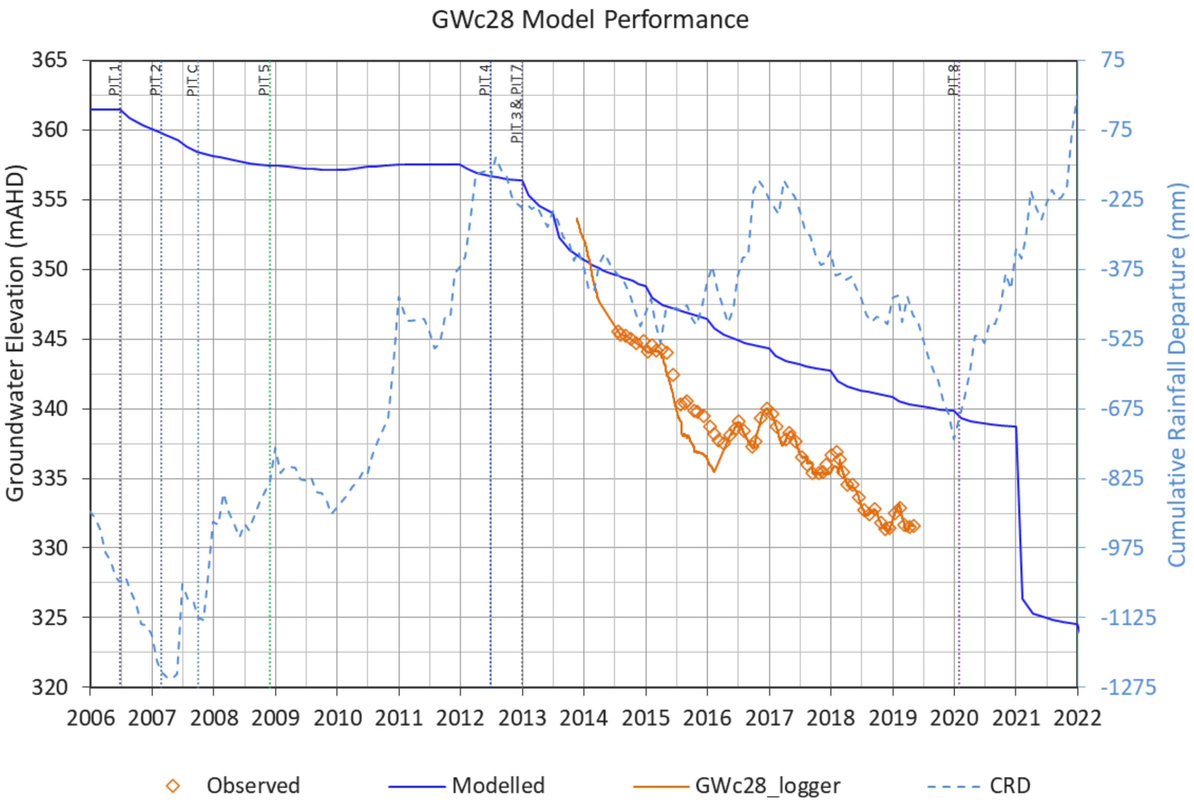


Figure 50 GWc28 Calibration Hydrographs

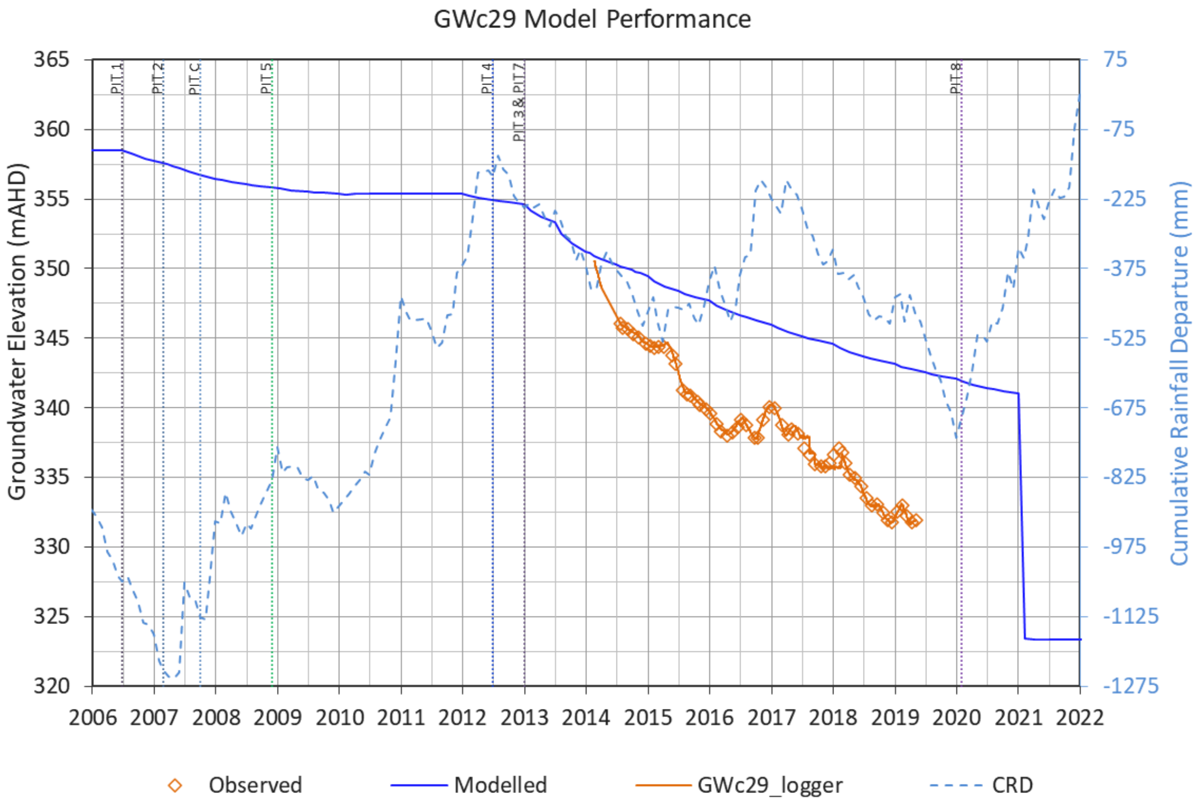


Figure 51 GWc29 Calibration Hydrographs

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