

APPENDIX A DETAILS OF MONITORING BORES

Borehole	Easting	Northing	RL	Depth	Type	Function	Purpose	Project	Monitoring
RM01	318041	6404109	69.40		U	SP	P	UG	BC
RM02	317942	6404506	61.05		U	SP	P	UG	BC
RM03	317667	6404844	62.10		U	SP	P	UG	BC
RM04	317402	6405314	62.25		U	SP	P	UG	BC
RM05	317486	6406001	66.25		U	SP	P	UG	BC
RM06	317871	6405888	63.95		U	SP	P	UG	BC
RM07	318073	6405761	63.70		U	SP	P	UG	BC
RM08	318280	6406319	65.80		U	SP	P	UG	BC
RM09	318166	6406380	65.55		U	SP	P	UG	BC
RM10	317589	6405292	61.55		U	SP	P	UG	BC
RSGM1	317655	6406302	65.60		U	SP	P	UG	GW?
RA02			55.18		U	SP	P	UG	BC
PB1			61.10		U	SP	P	UG	BC
GM1			73.44		U	SP	P	UG	BC
GM3			64.31		U	SP	P	UG	GC
GM3A			64.28		U	SP	P	UG	GC
WML107B	318678.74	6403818.18	95.44	48.00	O	SP	E-P	UG	GW
WML108B	318447.11	6403979.48	81.38	30.00	O	SP	E-P	UG	GW
WML109B	318210.9	6404080.67	72.63	32.00	O	SP	E-P	UG	GW
WML110B	318006.89	6404246.88	63.74	24.00	O	SP	E-P	UG	GW
WML110C	318005.29	6404250.71	63.74	17.00		SP	E-P	UG	BC
WML111B	317774.59	6404362.64	58.33	50.00	O	SP	E-P	UG	GW
WML112B	317567.44	6404450	59.42	35.95	O	SP	E-P	UG	GW
WML112C	317563.66	6404450.29		12.00		SP		UG	BC
WML113B	317373.01	6404528.39	60.20	50.00	O	SP	E-P	UG	GW
WML113C	317376.76	6404526.02		11.50		SP		UG	BC
WML114B	318148.37	6405238.26	71.47	50.00	O	SP	E-P	UG	GW
WML115B	317880.69	6406703.5	66.35	40.00	O	SP	E-P	UG	GW
WML115C	317888.28	6406710.17	67.04	6.20				UG	
WML119	319255.3	6403930.06	61.45	35.00	O	SP-DL	E-P	UG	PG
WML120A	319291.96	6404579.64	60.35	9.00	O	P	E-P	UG	PG
WML120B	319293.64	6404587.51	60.12	20.00	O	SP-DL	E-P	UG	GC
WML129	319468.4	6403527.78	55.34	7.00	O		E	UG	GC
WML21	318245.036	6406339.99	65.03	117.00	O	SP	E-P	UG	GW
WML172	319997.441	6405774.9	65.77	14.00	O	SP	P	OC	GC
WML173	320003.939	6405766.58	64.71	14.00	O	SP	P	OC	GC
WML174	320077.96	6406491.23	111.33	14.00	O	SP	P	OC	GC
WML180	318272.207	6403565.1	59.01	12.00	O	SP	P	UG	HR
WML181	319214.999	6403958.33	64.30	32.00	O	SP-U	E-P	UG	PG
WML182	319155.393	6404133.96	71.80	44.00	O	SP-U	E-P	UG	PG
WML183	319188.193	6404325.16	76.72	46.00	O	SP-U	E-P	UG	PG
WML184	319179.254	6404530.36	103.36	72.60	O	SP-U	E-P	UG	PG
WML185	319200.029	6404642.74	105.41	72.00	O	SP-U	E-P	UG	PG
WML186	319218.222	6404743.89	99.90	80.00	O	SP-U	E-P	UG	PG
WML239	319345.00	6404044.82	58.82	7.50		SP	P	SEOC	GC
WML240	319499.88	6403999.67	57.83	8.10		SP	P	SEOC	GC
WML241	319475.01	6403221.79	59.65	7.00		SP	P	SEOC	GC
WML243	319643.28	6403226.08	60.39	dry		SP	P	SEOC	GC
WML246	319892.74	6404591.95	64.89			SP	P	SEOC	GC
WML247	319734.39	6404472.09	63.36			SP	P	SEOC	GC
WML249	319577.37	6404300.33	60.44	7.80		SP	P	SEOC	GC
WML250	319454.63	6404301.86	62.91	dry			E	SEOC	GC
WML252	319621.45	6403683.58	60.16	9.00		SP	P	SEOC	GC
WML253	319555.44	6403706.70	59.80	7.00		SP	P	SEOC	GC
WML256	319722.95	6402774.39	56.00	4.60		SP	P	SEOC	GC
WML294	320139.00	6403908.00	0.92			SP	P	SEOC	GC
WMLP243	319592	6403473				P		SEOC	GC
WMLP244	319662	6403472				P		SEOC	GC
WMLP245	319724	6403483				P		SEOC	GC
RA8	317887.20	6404192.73	63.98	15.00		P	P	UG	BCA
RA10	317639.69	6404334.80	60.16	13.00		P	P	UG	BCA
RA12	318038.94	6404446.63	62.92	13.00		P	P	UG	BCA
RA14	317643.41	6404697.90	60.81	11.00		P	P	UG	BCA
RA15	317420.50	6404747.73		10.50		P	P	UG	BCA
RA16	317940.43	6404743.49	70.91	6.00		P	P	UG	BCA
RA17	317695.46	6404876.24	63.06	10.50		P	P	UG	BCA
RA18	317821.70	6405434.37	63.16	8.50		P	P	UG	BCA
RA27	317952.07	6403738.01	59.79	15.50		P	P	UG	BCA
RA30	317810.61	6406500.88	67.03	9.00		P	P	UG	BCA
T1-A	318337.74	6406309.09	65.65	7.90		P	P	UG	BCA
T1-P	318356.92	6406303.94	65.33	12.60		P	P	UG	CMOB
T2-A	317583.32	6405217.43	61.85	8.90		P	P	UG	BCA
T2-P	317587.07	6405222.37	61.52	14.90		P	P	UG	CMOB
T3-A	317654.18	6404707.97	60.75	9.90		P	P	UG	BCA
T3-P	317650.09	6404701.41	59.81	30.50		P	P	UG	CMOB
T4-A	317685.78	6404323.08	59.46	10.00		P	P	UG	BCA
T4-P	317682.18	6404319.03	59.49	31.00		P	P	UG	CMOB
T5	317946.08	6406549.36	66.11	8.00		P	P	UG	BCA
T6	317975.09	6406675.44	66.88	7.00		P	P	UG	BCA
T7	317717.41	6406335.89	65.61	7.00		P	P	UG	BCA
T10	317683.55	6404449.90	59.61	10.00		P	P	UG	BCA
WMLP242	319455	6404320				TB		SEOC	GC
WMLP246	319647	6403249				TB		SEOC	GC
WMLP247	319635	6403699				TB		SEOC	GC

Borehole	Easting	Northing	RL	Depth	Type	Function	Purpose	Project	Monitoring
WML106	318860.91	6403493.11	83.07	88	O	VW	E-P	UG	GW
WML107A	318674.32	6403828.15	95.53	120.43	C	VW	E-P	UG	GW
WML108A	318446.52	6403974.74	81.62	80	O	VW	E-P	UG	GW
WML109A	318216.91	6404080.18	72.58	84	O	VW	E-P	UG	GW
WML110A	318005.25	6404243.73	63.71	110	O	VW	E-P	UG	GW
WML111A	317775.66	6404367.46	58.2	150	O	VW	E-P	UG	GW
WML112A	317563.72	6404450.5	59.44	285.52	C	VW	E-P	UG	GW
WML113A	317368.8	6404528.87	60.2	150	O	VW	E-P	UG	GW
WML114A	318151.57	6405239.44	71.53	150	O	VW	E-P	UG	GW
WML115A	317873.59	6406707.5	66.59	178.39	O	VW	E-P	UG	GW
WMLC144	319499.97	6404169.91	59.26	132	C	OH	E-P	SEOC	GC
WML189	318657.234	6404569.05	82.19	109.5					
WML191	318623.936	6404334.66	82.516	235					
WML213	317210.23	6404153.8							
WML245	320035.09	6404834.96	64.885	dry		VW	EP	SEOC	GC
ASHTONWEL	318305	6406089	62	30	U	WELL?			

APPENDIX B HYDRAULIC TESTING RESULTS

Bore	Aquifer Screened	Screened Interval (m bgl)	Test Date	Type of Test	Duration (min)	Pumping Rate (kL/day)	Transmissivity, T (m ² /day)	Hydraulic Conductivity, K (m/day)	Comments	
WML20	Pikes Gully	114-118	1/09/2006	CRT		6		0.04		
WML20	Pikes Gully	114-118	1/09/2006	Slug		-		0.015		
WML21	Pikes Gully	106-112	1/09/2006	CRT		7.5		0.02		
WML119	Pikes Gully	18-21	15/06/2006	CRT		8.3		0.1		
WML120B	Pikes Gully	12 - 15	15/06/2006	CRT		13.5		10	Weathered seam, close to outcrop	
WML120A	Alluvium	5.5-8.5	15/06/2006	CRT		7.7		5		
RA8	Colluvium	11.8 – 14.8	15/11/2007	CRT	8	-	-	-	Water level reached pump inlet in 2 min. Uninterpretable.	
			18/12/2007	Slug	36	-	-	0.035		
RA10	Alluvium	7.9 – 10.9	15/11/2007	CRT	10	12.7	5.4	2.5	Based on analysis of data from 1min onwards.	
			15/11/2007	Recovery	-	-	8	3.6		
			18/12/2007	Slug	46	-	-	1.5		
RA14	Alluvium	6.9 – 9.9	27/11/2007	CRT	10	14.6	11	7.1	Water level reached pump inlet in 2 min.	
			5/12/2007	Slug	47	-	-	0.0002	Note: Low b value (1.5m).	
			RA15	Alluvium	6.0 – 9.0	28/03/2008	Slug	41	-	-
RA16	Colluvium	2.5 – 5.5	8/11/2007	CRT	10	8.6	0.5	0.4	Water level reached pump inlet in 2 min.	
			19/12/2007	Slug	48	-	-	0.0006	Analysis undertaken but low confidence in data.	
			15/11/2007	CRT	-	-	-	-	Note: Low b value (1.25m).	
RA17	Colluvium	7.1 – 10.1	19/12/2007	Slug	31	-	-	0.0054	Insufficient water to test.	
			14/11/2007	CRT	-	-	-	-	Uninterpretable.	
RA18	Alluvium	5.3 – 8.3	19/12/2007	Slug	33	-	-	4.1		
RA27	Hunter River Alluvium	7.2 – 10.2	15/11/2007	CRT	10	14.4	61	50	Based on analysis of data from 0.5 mins onwards.	
									Note: low b value (1.2m).	
RA30	Alluvium	3.7 – 6.7	7/11/2007	CRT	10	13.5	0.3	0.27	Based on analysis of data from 1.6 mins onwards. Water level reached pump inlet in 2 min.	
			19/12/2007	Slug	35	-	-	1	Low confidence in data. Note: low b value (1.1m)	
			8/11/2007	CRT	-	-	-	-	Uninterpretable.	
T1-A	Alluvium	4.2 – 7.2	20/12/2007	Slug	32	-	-	6.1		
T1-P	Permian	9.0 – 12.0	8/11/2007	CRT	38	16	2.3	0.75	Test terminated prior to steady-state equilibrium conditions being reached.	
				Recovery	-	-	5.8	1.9		
T2-A	Alluvium	5.9 – 8.9	28/11/2007	CRT	40	12.7	-	-	Spurious data. Not valid for interpretation.	
T2-P	Permian	11.9 – 14.9	14/11/2007	CRT	60	16	9.9	3.3	Two barrier boundaries.	
T3-A	Alluvium	6.9 – 9.9	7/11/2007	CRT	4	-	-	-	Water level reached pump inlet in 1 min. Uninterpretable	
			19/12/2007	Slug	40	-	-	0.36		
T3-P	Permian	27.5 – 30.5	13/11/2007	CRT	5	-	-	-	Water level reached pump inlet in 3 min. Uninterpretable	
									0.11	Early time data
			5/12/2007	Slug	33	-	-	0.09	Late time data	

Bore	Aquifer Screened	Screened Interval (m bgl)	Test Date	Type of Test	Duration (min)	Pumping Rate (kL/day)	Transmissivity, T (m ² /day)	Hydraulic Conductivity, K (m/day)	Comments
T4-A	Alluvium	6.9 – 9.9	14/11/2007	CRT	12	-	-	-	Water level reached pump inlet in 4 min. Uninterpretable
								0.07	Early time data
T4-P	Permian	28.0 – 31.0	15/11/2007	CRT	10	12.5	0.2	0.05	Late time data
			7/11/2007	CRT	25	15.1	45	15	
T5	Alluvium	5.0 – 8.0	7/11/2007	Recovery	-	-	45	15	
			7/11/2007	CRT	-	-	-	-	Uninterpretable
T6	Alluvium	4.0 – 7.0	19/12/2007	Slug	32	-	-	0.24	
			7/11/2007	CRT	25	14.4	3	0.9	Dewatered bore once drawdown reached 1m
T7	Alluvium	3.9 – 6.9	20/12/2007	Slug	35	-	-	0.15	
T10	Alluvium	7.0 – 10.0	18/12/2007	Slug	31	-	-	6	
WML110B	Permian	18.0 – 24.0	4/07/2007	CRT	100	-	-	-	Water level reached pump inlet in 3 min. Uninterpretable
								0.05	Early time data
WML110C	Colluvium	11.0 – 14.0	4/07/2007	Slug	75	-	-	0.13	Late time data
							0.37	0.12	Early time data
WML111B	Permian	12.0 – 18.0	14/11/2007	CRT	20	11.7		0.15	Late time data
		16.0 – 19.0					-	0.011	Early time data
		22.0 – 25.0	5/12/2007	Slug	-	-	-	0.015	Late time data
WML112B	Permian		13/11/2007	CRT	100+	-	-	-	Uninterpretable.
WML112C	Alluvium	9.7 – 12.7	19/12/2007	Slug	46	-	-	0.0006	
				CRT	25	9.4	0.5	0.13	Water level reached pump inlet in 2 min. Analysis undertaken but more confidence in recovery data.
WML113B	Permian	15.0 – 18.0	13/11/2007	Recovery	-	-	0.66	0.22	
WML113C	Alluvium	8.5 – 11.5	5/12/2007	Slug	12	-	-	0.16	
		13.0 – 16.0							
WML114B	Permian	27.0 – 30.0	19/12/2007	Slug	32	-	-	0.035	
				CRT	60	6.7	9.3	3.1	
WML115B	Permian	9.6 – 12.6	28/02/2008	Recovery	100	-	2.5	0.83	
			7/11/2007	CRT	5	13.3	-	-	Water level reached pump inlet in 2 min.
							3.5	4.4	Low confidence in interpretation.
WML115C	Alluvium	3.2 – 6.2	7/11/2007	Recovery	5	13.3	3.9	4.9	
WML119*	PG seam	18-21	15/06/2006	CRT	120	8.3	0.3	0.1	Western side of creek
			23/06/2007	CRT	65	4.9	0.75	0.04	
			6/11/2007	CRT	65	10.8	0.4		
WML120A*	PG seam	Dec-15	15/06/2006	CRT	125	13.5	20	7	Western side of creek
			27/11/2007	CRT	35	13.9	50	7	
WML120B*	Alluvium	5.5-8.5	14/06/2006	CRT	12	7.7	17	5	Western side of creek
			20/12/2007	Slug	-	-	-	0.2	
WML129*	Alluvium	7-9.5	23/06/2007	CRT	1	6.5	2.3	0.7	Western side of creek
			19/12/2007	Slug	-	-	-	0.4	
WML145*^	Alluvium	11.8 – 14.8	20/12/2007	Slug	12	-	-	0.26	
			21/11/2008	Slug		-	-	0.3	
WML148*	Alluvium	7.9 – 10.9	20/12/2007	Slug	46	-	-	0.42	
WML155*^	Alluvium	6.9 – 9.9	20/12/2007	Slug	47	-	0.21	0.07	

Bore	Aquifer Screened	Screened Interval (m bgl)	Test Date	Type of Test	Duration (min)	Pumping Rate (kL/day)	Transmissivity, T (m ² /day)	Hydraulic Conductivity, K (m/day)	Comments
			21/11/2008	Slug		-	0.15	0.05	
WML157 [^]	Alluvium	6.0 – 9.0	20/03/2008	Slug	41	-	0.54	0.18	
			21/11/2008	Slug		-	0.3	0.1	
WML158 [*]	Alluvium	2.5 – 5.5	20/12/2007	Slug	48	-		0.7	
WML239 [^]	Alluvium	11.5-13.5	15/10/2008	Slug	6	-	0.77	0.2	Early time data
			15/10/2008	Slug	13	-	1.41	0.16	Late time data
WML240 [^]	Alluvium	8.0-11.1	15/10/2008	Slug	5	-	0.3	0.1	Early time data
			15/10/2008	Slug	11	-	0.3	0.1	Late time data
			6/11/2008	CRT	30		1.2	0.4	Late time data
WML241 [^]	Alluvium	11.5-14.5	14/10/2008	Slug	2		3.84	0.6	Early time data
			14/10/2008	Slug	17		0.58	0.09	Late time data
WML243 [^]	Alluvium	12-15	7/11/2008	CRT	20	14.2	-	-	Test duration too short and drawdown too small to be reliable
			14/10/2008	Slug	15	-	0.14	0.05	Early time data
			14/10/2008	Slug	25	-	0.49	0.17	Late time data
			5/02/2009	Slug	6	-	10.08	3.5	
WML248 [^]	Alluvium	6-Sep	6/11/2008	Slug	60	-	0.01	0.01	
WML249 [^]	Alluvium	Oct-13	21/11/2008	Slug	58	-	0.06	0.02	
WML250 [^]	Alluvium	8 – 11	16/10/2008	Slug	-	-			Recovery too rapid to analyse
			20/01/2008	CRT	35	19	20	6.67	Early time data
							115	38.33	Late time data
			27/01/2009	CRT	310	34	150	50	Early time data -based on 3m sat thickness
						240	80	Late time data - based on 3m sat thickness	
WML252 [^]	Alluvium	7.9-10.9	21/11/2008	Slug	15	-	2.5 - 6	1 - 2.4	
			30/01/2009	CRT	8	16.4	4.29	2.14	Test duration too short and drawdown too small to be reliable
WML253 [^]	Alluvium	9.5 - 12.5	21/11/2008	Slug	-	-	6.72	1.6	
			28/01/2009	CRT	260	36	22	5	Early time data
							66	15	Late time data
WML294 [^]	Alluvium	8-Nov	30/01/2009	Slug	66	-	0.08	0.03	
AP242 [^]	Alluvium	9.3 - 11.3	14/05/2009	CRT	240	147	448	180	
AP243 [^]	Alluvium	7.3-10.3	12/05/2009	CRT	40	12.96	13	6	early data
							1.6	0.75	late data
			22/05/2009	CRT	65	12.1	13	6	early data
							6	2.8	late data
AP 246 [^]	Alluvium	7.9-10.9	21/05/2009	CRT	400	116	60	28	early data
							29	13.8	late data
AP 247 [^]	Alluvium	8.0-11.0	22/05/2009	CRT	8	25.92	9.8	6	early data
							1	0.62	late data
AP244 [^]	Alluvium	5.8 – 7.8	29/05/2009	CRT	15	8.6	0.9	0.37	
WML256	Alluvium	4.55 -7.55	5/05/2009	Slug	-	-	0.1	0.036	slug out

APPENDIX C WATER QUALITY MONITORING RESULTS

Table B-1: Monitoring Bore Groundwater Samples - Laboratory Analysis Results
(page 1 of 8)

Bore / Well / Spring / Soak				RM10																										
Aquifer				Bowmans Creek Alluvium																										
Parameter	Units	LOR	ARZCC (2000) Guideline Value for Freshwater Ecosystem Protection	00-Jan-00	20-Jun-01	18-Jul-01	01-Sep-01	16-Oct-02	01-Nov-02	01-Dec-02	01-Jan-03	01-Feb-03	01-Mar-03	01-Apr-03	01-May-03	19-Jun-03	19-Jul-03	01-Aug-03	01-Nov-03	01-Feb-04	01-May-04	01-Aug-04	01-Nov-04	01-Feb-05	01-May-05	01-Aug-05	01-Nov-05	01-Feb-06	01-May-06	
pH Value (Lab)																														
pH Value (field)		0.01		7.42	7.57	7.59	7.13	7.04	7.1	7.21	7.56	7.19	8.12	7.62	8.15	7.16	7.31	7.02												
Conductivity (field)	µS/cm			1010	1160	1160	1050	1080	1070	1110	1100	1160	1150	1260	1210	1250	1260	1320	1340	1390	1450	1470	1490	1460	3700	1330	1570	1410	1460	
Lab Conductivity @ 25°C	µS/cm																													
Total Dissolved Solids (TDS)	mg/L	1		654																										
Suspended Solids (TSS)	mg/L	1																												
Total Hardness as CaCO3	mg/L	1																												
Calcium	mg/L	1		34	45	48	42	39	37	41	41	39	44	48	45	48	46	48												
Magnesium	mg/L	1		15	20	20	19	17	17	18	19	18	23	20	21	22	21	22												
Sodium	mg/L	1		177	171	190	147	140	188	169	151	148	140	150	137	256	178	185												
Potassium	mg/L	1		3	8	6	3	3	3	2	2	3	3	3	3	3	3	3												
Chloride	mg/L	1		141	189	227	160	173	187	173	179	176	194	191	237	208	234	259												
Hydroxide Alkalinity as CaCO3	mg/L	1																												
Carbonate as CaCO3	mg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1												
Bicarbonate as CaCO3	mg/L	1		217	242	238	224	214	216	202	204	200	179	192	187	424	198	185												
Sulphate	mg/L	1		66	104	88	72	74	73	77	73	80	78	82	85	87	84	87												
Silica				20.2	25.7	27.6	25.4	24.6	11.2	0.05	23.6	25.9	23.1	27.9	24.4	25.3	23.4	24.2												
Fluoride	mg/L	0.1																												
Aluminum	mg/L																													
Arsenic - Filtered	mg/L	0.001	0.013																											
Barium - Filtered	mg/L	0.001																												
Boron - Filtered	mg/L	0.05																												
Cadmium - Filtered	mg/L	0.00005	0.0002																											
Chromium - Filtered	mg/L	0.002	10																											
Copper - Filtered	mg/L	0.0005	0.0014																											
Iron - Filtered	mg/L	0.05																												
Lead - Filtered	mg/L	0.00005	0.0034																											
Manganese - Filtered	mg/L	0.001																												
Nickel - Filtered	mg/L	0.001	0.011																											
Selenium - Filtered	mg/L	0.01																												
Silver																														
Zinc - Filtered	mg/L	0.005	0.008																											
Mercury - Filtered	mg/L	0.0001	0.00006																											
Iron - Total	mg/L	0.05																												
Iron - Dissolved	mg/L	0.05																												
Ammonia as N	mg/L	0.01																												
Nitrate as N	mg/L	0.01	0.7	0.07	0.02	0.01	0.03	<0.01	0.04	0.05	0.04	0.25	0.01	0.06	0.04	0.06	0.04	0.04												
Nitrite as N	mg/L	0.01																												
Total Anions	meq/L	0.01																												
Total Cations	meq/L	0.01																												
Ionic Balance	%	1.00%																												
Oil and Grease	mg/L	5																												

Table B-1: Monitoring Bore Groundwater Samples - Laboratory Analysis Results
(page 2 of 8)

Bore / Well / Spring / Soak				PB1							PB2	GM1							GM2											
Aquifer				Bowmans Creek Alluvium							Bowman's Creek Alluvium	Upper Liddell Seam							Lower Barrett Seam											
Parameter	Units	LOR	ARZEDC (2000) Guideline Value for Freshwater Ecosystem Protection	25-Nov-00	27-Nov-00	01-Nov-04	01-Feb-05	08-Aug-05	01-Mar-06	28-Nov-00	01-Nov-03	01-Feb-04	01-May-04	01-Aug-04	01-Nov-04	01-Feb-05	01-May-05	01-Aug-05	01-Nov-05	01-Feb-06	01-May-06	01-Nov-03	01-Feb-04	01-May-04	01-Aug-04	01-Nov-04	01-Feb-05	01-May-05	01-Aug-05	
pH Value (Lab)																														
pH Value (field)		0.01			7.65	7.08	7.18	8.22	7.12	8.03																				
Conductivity (field)	µS/cm			1352	1020	1600	1560	1070	1540	1420	5240	5390	5520	5620	5780	5500	9370	5600	5230	4980	4920	8600	7520	6200	6010	4680	4060	1460		
Lab Conductivity @ 25°C	µS/cm																													
Total Dissolved Solids (TDS)	mg/L				614					852					3190	3220	5920	3180	3290	3450	3440									
Suspended Solids (TSS)	mg/L																													
Total Hardness as CaCO3	mg/L																													
Calcium	mg/L				614					852																				
Magnesium	mg/L				31					34																				
Sodium	mg/L				189					265																				
Potassium	mg/L				14					24																				
Chloride	mg/L				69					86																				
Hydroxide Alkalinity as CaCO3	mg/L																													
Carbonate as CaCO3	mg/L				<1					<1																				
Bicarbonate as CaCO3	mg/L									3																				
Sulphate	mg/L				219					207																				
Silica																														
Fluoride	mg/L	0.1			146					216																				
Aluminum	mg/L																													
Arsenic - Filtered	mg/L	0.001	0.013								17.5																			
Barium - Filtered	mg/L	0.001			20																									
Boron - Filtered	mg/L	0.05																												
Cadmium - Filtered	mg/L	0.00005	0.0002																											
Chromium - Filtered	mg/L	0.002	ID																											
Copper - Filtered	mg/L	0.0005	0.0014																											
Iron - Filtered	mg/L	0.05																												
Lead - Filtered	mg/L	0.00005	0.0034																											
Manganese - Filtered	mg/L	0.001																												
Nickel - Filtered	mg/L	0.001	0.011																											
Selenium - Filtered	mg/L	0.01																												
Silver																														
Zinc - Filtered	mg/L	0.005	0.008																											
Mercury - Filtered	mg/L	0.0001	0.00006																											
Iron - Total	mg/L	0.05																												
Iron - Dissolved	mg/L	0.05																												
Ammonia as N	mg/L	0.01																												
Nitrate as N	mg/L	0.01	0.7		<0.01					<0.01																				
Nitrite as N	mg/L	0.01																												
Total Anions	meq/L	0.01																												
Total Cations	meq/L	0.01																												
Ionic Balance	%	1.00%																												
Oil and Grease	mg/L	5																												

Table B-1: Monitoring Bore Groundwater Samples - Laboratory Analysis Results
(page 3 of 8)

Bore / Well / Spring / Soak			GM3A										OC1						OC2							
Aquifer			Upper Barrett Seam										Coal Measures						Coal Measures							
Parameter	Units	LOR	AWZELC (2000) Guideline Value for Freshwater Ecosystem Protection	01-Nov-03	01-Feb-04	01-May-04	01-Aug-04	01-Nov-04	01-Feb-05	01-Aug-05	01-Mar-06	01-Nov-03	01-Feb-04	01-May-04	01-Aug-04	01-Nov-04	01-Feb-05	01-Aug-05	01-Nov-03	01-Feb-04	01-May-04	01-Aug-04	01-Nov-04	01-Feb-05	01-May-05	
pH Value (Lab)																										
pH Value (field)		0.01						7.64	7.63	8.48	7.77						6.87	7.02	6.99					8.01	7.95	7.05
Conductivity (field)	µS/cm	0		8380	8620	8660		7540	6460	5720	6020	6250	6270	6330	6380	6490	5740	1260	6570	6580	6670	6570	6700	6080	1400	
Lab Conductivity @ 25°C	µS/cm	1																								
Total Dissolved Solids (TDS)	mg/L	1						4300	3670	3200	4160						3670	3400	688					3830	3660	772
Suspended Solids (TSS)	mg/L	1																								
Total Hardness as CaCO3	mg/L	1																								
Calcium	mg/L	1																								
Magnesium	mg/L	1																								
Sodium	mg/L	1																								
Potassium	mg/L	1																								
Chloride	mg/L	1																								
Hydroxide Alkalinity as CaCO3	mg/L	1																								
Carbonate as CaCO3	mg/L	1																								
Bicarbonate as CaCO3	mg/L	1																								
Sulphate	mg/L	1																								
Silica																										
Fluoride	mg/L	0.1																								
Aluminum	mg/L																									
Arsenic - Filtered	mg/L	0.001	0.013																							
Barium - Filtered	mg/L	0.001																								
Boron - Filtered	mg/L	0.05																								
Cadmium - Filtered	mg/L	0.00005	0.0002																							
Chromium - Filtered	mg/L	0.002	10																							
Copper - Filtered	mg/L	0.0005	0.0014																							
Iron - Filtered	mg/L	0.05																								
Lead - Filtered	mg/L	0.00005	0.0034																							
Manganese - Filtered	mg/L	0.001																								
Nickel - Filtered	mg/L	0.001	0.011																							
Selenium - Filtered	mg/L	0.01																								
Silver																										
Zinc - Filtered	mg/L	0.005	0.008																							
Mercury - Filtered	mg/L	0.0001	0.00006																							
Iron - Total	mg/L	0.05																								
Iron - Dissolved	mg/L	0.05																								
Ammonia as N	mg/L	0.01																								
Nitrate as N	mg/L	0.01	0.7																							
Nitrite as N	mg/L	0.01																								
Total Anions	meq/L	0.01																								
Total Cations	meq/L	0.01																								
Ionic Balance	%	1.00%																								
Oil and Grease	mg/L	5																								

Table B-1: Monitoring Bore Groundwater Samples - Laboratory Analysis Results
(page 4 of 8)

Bore / Well / Spring / Soak			T1-A	T1-P	T2-A	T2-P	T3-A	T3-P	T4-A	T4-P	T5	T6	T7	T9	T10
Aquifer			Bowman s Ck Alluvium	Permian CM	Bowman s Ck Alluvium	Permian CM	Bowman s Ck Alluvium	Permian CM	Bowman s Ck Alluvium	Permian CM	Bowman s Ck Alluvium	Bowman s Ck Alluvium	Bowman s Ck Alluvium	Bowmans Ck Alluvium	Bowmans Ck Alluvium
Parameter	Units	LOR (2000 Guideline Value for Freshwater Ecosystem Protection)	06-Nov-07	06-Nov-07	14-Nov-07	14-Nov-07	13-Nov-07	13-Nov-07	14-Nov-07	15-Nov-07	07-Nov-07	07-Nov-07	07-Nov-07	13-Nov-07	13-Nov-07
pH Value (Lab)			7.26	7.24	7.12	6.76	6.76	11.80	6.99	8.01	6.88	6.99	6.96	7.36	6.88
pH Value (field)		0.01	7.82	7.12	7.11	6.77	6.97	11.97	7.14	7.69	7.04	6.96	7.09	7.7	7.04
Conductivity (field)	µS/cm		2230	9390	1597	1308	2110	1647	2270	1751	1420	1420	6410	2460	2160
Lab Conductivity @ 25°C	µS/cm		2040	9220	1680	1070	2150	2050	2270	2000	1330	1280	6420	2490	2050
Total Dissolved Solids (TDS)	mg/L		1390	5990	2580	854	3200	694	1490	1100	910	834	4180	3800	12400
Suspended Solids (TSS)	mg/L														
Total Hardness as CaCO3	mg/L														
Calcium	mg/L		68	117	78	75	62	4	80	37	66	57	150	59	82
Magnesium	mg/L		49	247	40	36	59	0	58	35	29	24	149	42	57
Sodium	mg/L		377	1690	242	74	354	211	383	378	202	193	1180	479	313
Potassium	mg/L		4	11	2	2	0	80	0	4	2	2	1	2	0
Chloride	mg/L		608	2650	393	237	669	200	694	367	293	288	2010	711	478
Hydroxide Alkalinity as CaCO3	mg/L		<1	<1	<1	<1	84	<1	<1	<1	<1	<1	<1	<1	<1
Carbonate as CaCO3	mg/L		<1	<1	<1	<1	128	<1	<1	<1	<1	<1	<1	<1	<1
Bicarbonate as CaCO3	mg/L		216	855	154	102	211	0	209	468	145	161	568	341	245
Sulphate	mg/L		176	495	141	56	92	33	189	10	158	122	416	126	183
Silica Fluoride	mg/L	0.1													
Aluminum	mg/L				<0.01	0.15	0.02	0.06	<0.01	0.01				<0.01	0.23
Arsenic - Filtered	mg/L	0.001	0.013	0.001	<0.001	<0.001	0.01	<0.001	<0.001	0.002	<0.001	0.002	0.005	0.004	0.004
Barium - Filtered	mg/L	0.001													
Boron - Filtered	mg/L	0.05	0.05	0.12	0.05	0.05	<0.05	<0.05	0.06	0.08	0.06	0.06	<0.05	0.07	0.08
Cadmium - Filtered	mg/L	0.00005	0.0002	0.0003	0.0001	0.0003	<0.0001	0.0004	<0.0001	0.0001	0.001	<0.0001	<0.0001	<0.0001	0.0003
Chromium - Filtered	mg/L	0.002	10	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper - Filtered	mg/L	0.0005	0.0014	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	0.002
Iron - Filtered	mg/L	0.05		<0.05	<0.05	0.06	5.08	13.3	<0.05	0.58	0.38	<0.05	<0.05	0.08	1.54
Lead - Filtered	mg/L	0.00005	0.0034	<0.001	<0.001	<0.001	<0.001	0.015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.004
Manganese - Filtered	mg/L	0.001		0.008	0.105	0.103	0.322	3.2	<0.001	0.788	0.015	0.04	0.024	1.87	0.554
Nickel - Filtered	mg/L	0.001	0.011	<0.001	<0.001	0.002	<0.001	<0.001	0.001	<0.001	0.001	<0.001	0.005	0.002	0.006
Selenium - Filtered	mg/L	0.01		<0.010	<0.010	<0.001	<0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Silver	mg/L				<0.01	<0.001	<0.001	<0.001	<0.001	<0.001				<0.001	<0.001
Zinc - Filtered	mg/L	0.005	0.008	<0.005	0.015	0.031	<0.005	0.01	0.008	<0.005	<0.005	<0.005	<0.005	0.006	0.06
Mercury - Filtered	mg/L	0.00001	0.00006	<0.0001	<0.0001	<0.0001	<0.0001	0.0004	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	0.0002
Iron - Total	mg/L	0.05													
Iron - Dissolved	mg/L	0.05													
Ammonia as N	mg/L	0.01													
Nitrate as N	mg/L	0.01	0.7												
Nitrite as N	mg/L	0.01													
Total Anions	meq/L	0.01	25.1	102	17.1	9.88	26	10.6	27.7	19.9	14.4	13.9	26.6	29.5	22.2
Total Cations	meq/L	0.01	23.9	99.9	17.8	9.96	28.3	11.4	25.4	21.3	14.5	13.3	21.1	27.3	22.4
Ionic Balance	%	1.00%	2.45%	1.12%	1.83%	0.41%	3.53%	3.79%	4.33%	3.22%	0.20%	2.16%	3.75%	3.90%	0.39%
Oil and Grease	mg/L	5													

Table B-1: Monitoring Bore Groundwater Samples - Laboratory Analysis Results
(page 5 of 8)

Bore / Well / Spring / Soak				RA8	RA10	RA14	RA16	RA17	RA18	RA27	RA30	WML20		WML21	
Aquifer				Bowman's Ck Alluvium	Bowman's Ck Alluvium	Bowman's Ck Alluvium	Bowman's Ck Alluvium	Bowman's Ck Alluvium	Bowman's Ck Alluvium	Bowman's Ck Alluvium	Bowman's Ck Alluvium	Pikes Gully Seam		Pikes Gully Seam	
Parameter	Units	LOR	ARZELCO (2000) Guideline Value for Freshwater Ecosystem Protection	27-Nov-07	15-Nov-07	13-Nov-07	08-Nov-07	14-Nov-07	14-Nov-07	15-Nov-07	07-Nov-07	01-Sep-06	23-Jun-07	01-Sep-06	23-Jun-07
pH Value (Lab)				7.24	7.38	7.06	6.79	7.13	7.06	7.05	6.66	8.21	8.09	8.19	7.96
pH Value (field)		0.01		7.35	7.39	7.08	7	7.38	7.31	6.94	6.63		8.05		8.03
Conductivity (field)	µS/cm	0		7310	1576	2080	13860	1364	2060	2540	1633		4940		7190
Lab Conductivity @ 25°C	µS/cm	1		8370	1780	2050	13400	1190	2100	2550	1560	6240	6030	8140	8530
Total Dissolved Solids (TDS)	mg/L	1		4680	1360	1370	9240	702	1310	2030	1140		3260		4640
Suspended Solids (TSS)	mg/L	1													
Total Hardness as CaCO3	mg/L	1													
Calcium	mg/L	1		102	68	68	20	47	78	132	68		6		10
Magnesium	mg/L	1		180	40	58	430	32	54	90	39		2		4
Sodium	mg/L	1		1460	266	329	2450	150	328	368	245		1340		1790
Potassium	mg/L	1		8	0	0	62	4	2	2	1		4		6
Chloride	mg/L	1		2540	373	632	4750	198	618	867	440		1300		2240
Hydroxide Alkalinity as CaCO3	mg/L	1		<1	<1	<1	<1	<1	<1	<1	<1		<1		<1
Carbonate as CaCO3	mg/L	1		<1	<1	<1	<1	<1	<1	<1	<1		<1		<1
Bicarbonate as CaCO3	mg/L	1		574	191	182	126	211	220	243	133		1050		882
Sulphate	mg/L	1		358	160	163	358	58	138	170	140		1		1
Silica															
Fluoride	mg/L	0.1													
Aluminum	mg/L			<0.01	<0.01	0.18		0.03	<0.01	0.02					
Arsenic - Filtered	mg/L	0.001	0.013	0.001	0.001	0.002	<0.001	0.005	<0.001	0.005	<0.001		<0.001		<0.001
Barium - Filtered	mg/L	0.001													
Boron - Filtered	mg/L	0.05		<0.05	0.06	<0.05	<0.05	0.05	<0.05	<0.05	<0.05		0.18		0.14
Cadmium - Filtered	mg/L	0.00005	0.0002	0.0004	<0.0001	<0.0001	0.0004	<0.0001	0.0008	0.0003	<0.0001		0.0001		<0.0001
Chromium - Filtered	mg/L	0.002	10	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.005		<0.005
Copper - Filtered	mg/L	0.0005	0.0014	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001		<0.001		<0.001
Iron - Filtered	mg/L	0.05	0.43	<0.05	0.17	<0.05	1.58	<0.05	<0.05	<0.05	<0.05		0.08		0.1
Lead - Filtered	mg/L	0.00005	0.0034	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001		<0.001
Manganese - Filtered	mg/L	0.001	0.04	0.182	0.044	0.146	1.4	0.03	2.88	0.794			0.038		0.006
Nickel - Filtered	mg/L	0.001	0.011	<0.001	0.002	<0.001	0.005	0.004	<0.001	0.013	0.001		<0.001		<0.001
Selenium - Filtered	mg/L	0.01		<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.010	<0.010		<0.01		<0.01
Silver	mg/L			<0.001	<0.001	<0.001		<0.001	<0.001	<0.001					
Zinc - Filtered	mg/L	0.005	0.008	<0.005	<0.005	0.01	0.034	0.015	0.011	0.01	0.005		<0.005		<0.005
Mercury - Filtered	mg/L	0.0001	0.00006	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		<0.0001		<0.0001
Iron - Total	mg/L	0.05													
Iron - Dissolved	mg/L	0.05													
Ammonia as N	mg/L	0.01													
Nitrate as N	mg/L	0.01	0.7												
Nitrite as N	mg/L	0.01													
Total Anions	meq/L	0.01		90.6	17.7	24.8	144	11	24.7	32.9	18		57.6		80.9
Total Cations	meq/L	0.01		83.6	18.3	22.5	145	11.6	22.7	30.1	17.3		58.8		78.9
Ionic Balance	%	1.00%		4.01%	1.68%	4.95%	0.26%	2.66%	4.29%	4.43%	1.95%		0.94%		1.30%
Oil and Grease	mg/L	5													

Table B-1: Monitoring Bore Groundwater Samples - Laboratory Analysis Results
(page 6 of 8)

Bore / Well / Spring / Soak			WML108 B	WML109 B	WML110B		WML110C	WML111 B	WML112B		WML112 C	WML113 B	WML113 C	WML114 B	WML115B		WML115 C
Parameter	Units	LOR	Permi CM	Permi CM	Permi CM		Bowman s Ck Alluvium	Permi CM	Permi CM		Bowman s Ck Alluvium	Permi CM	Bowman s Ck Alluvium		Permi CM		Bowman s Ck Alluvium
			04-Jul-07	04-Jul-07	04-Jul-07	18-Dec-07	04-Jul-07	14-Nov-07	04-Jul-07	13-Nov-07	13-Nov-07	13-Nov-07	13-Nov-07	20-Dec-07	07-Nov-07	28-Feb-08	07-Nov-07
pH Value (Lab)			6.65	6.90	7.33	7.04	7.13	7.28	7.88	8.66	8.26	7.36	7.06	7.06	7.78	7.57	7.28
pH Value (field)		0.01	6.35	6.74	7.41	7.4		7.48	8.33	8.89	8.61	7.72	7.13	7.34	10.04		7.39
Conductivity (field)	µS/cm		14440	11160	9120	9240		2640	1420	1903	1420	1100	1368	6410	3003		3860
Lab Conductivity @ 25°C	µS/cm		14700	11500	9260	9590	9340	2580	10300	1720	1360	875	1450	6730	3790	3970	4100
Total Dissolved Solids (TDS)	mg/L		10300	7380	5820	5590	5900	1660	548	980	720	490	1220	3580	2090	2300	2610
Suspended Solids (TSS)	mg/L																
Total Hardness as CaCO3	mg/L																
Calcium	mg/L		627	195	143	174	126	68	36	37	17	43	93	95	9	43	86
Magnesium	mg/L		604	330	253	298	250	61	8	13	22	26	37	166	7	34	47
Sodium	mg/L		1680	1700	1360	1490	1570	494	126	316	229	89	151	1220	735	775	783
Potassium	mg/L		32	16	11	14	13	6	26	21	6	2	2	8	7	4	1
Chloride	mg/L		4850	3190	2630	3060	2680	824	167	385	230	120	319	2060	1000	1150	1210
Hydroxide Alkalinity as CaCO3	mg/L		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbonate as CaCO3	mg/L		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bicarbonate as CaCO3	mg/L		492	762	640	545	763	318	83	92	264	213	107	646	285	378	237
Sulphate	mg/L		957	719	369	446	356	138	102	143	42	24	146	259	74	86	325
Silica Fluoride	mg/L	0.1															
Aluminum	mg/L							<0.01		0.13	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	0.002
Arsenic - Filtered	mg/L	0.001	0.013	<0.001	0.002	0.005	0.003	0.002	0.003	<0.001	0.002	<0.001	0.003	0.002	0.0004	<0.001	<0.001
Barium - Filtered	mg/L	0.001															
Boron - Filtered	mg/L	0.05	0.06	0.09	0.11	0.11	0.11	0.08	<0.05	<0.05	0.06	<0.05	0/06	0.12	0.07	0.13	<0.05
Cadmium - Filtered	mg/L	0.00005	0.0002	0.0003	0.0002	0.0004	0.0002	0.0001	0.0027	<0.0001	<0.0001	0.0002	0.0002	0.0002	<0.0001	<0.0001	<0.0001
Chromium - Filtered	mg/L	0.002	JD	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.005	<0.001	0.001	<0.001	<0.001	0.002	<0.001	<0.001
Copper - Filtered	mg/L	0.0005	0.0014	0.003	0.002	0.025	0.009	0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001
Iron - Filtered	mg/L	0.05	<0.05	1.72	3.26	2.56	2.34	0.58	0.09	<0.05	1.75	1.41	<0.05	0.99	<0.05	0.57	<0.05
Lead - Filtered	mg/L	0.00005	0.0034	<0.001	<0.001	0.016	0.014	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Manganese - Filtered	mg/L	0.001	1.98	1.9	2.12	2.12	0.364	0.054	0.041	0.004	0.063	0.406	0.015	0.194	0.003	0.144	0.004
Nickel - Filtered	mg/L	0.001	0.011	0.012	0.008	0.018	0.01	0.001	<0.001	0.004	0.001	<0.001	<0.001	<0.001	0.001	0.001	<0.001
Selenium - Filtered	mg/L	0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Silver	mg/L					<0.001		<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005
Zinc - Filtered	mg/L	0.005	0.008	0.058	0.026	0.109	0.047	0.008	0.008	0.016	<0.005	0.006	<0.005	<0.005	0.009	<0.005	<0.005
Mercury - Filtered	mg/L	0.00001	0.00006	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Iron - Total	mg/L	0.05															
Iron - Dissolved	mg/L	0.05															
Ammonia as N	mg/L	0.01															
Nitrate as N	mg/L	0.01	0.7														
Nitrite as N	mg/L	0.01															
Total Anions	meq/L	0.01	166	120	94.6	106	98.3	32.5	8.5	15.7		8.15	14.2	76.4	35.4	41.8	45.6
Total Cations	meq/L	0.01	155	112	87.5	98.4	95.5	30	8.59	17.2		8.19	14.3	72	33.2	38.8	42.3
Ionic Balance	%	1.00%	3.59%	3.77%	3.95%	3.94%	1.48%	3.96%	0.50%	4.58%		0.19%	0.45%	3.02%	3.26%	3.73%	3.80%
Oil and Grease	mg/L	5															

Table B-1: Monitoring Bore Groundwater Samples - Laboratory Analysis Results
(page 7 of 8)

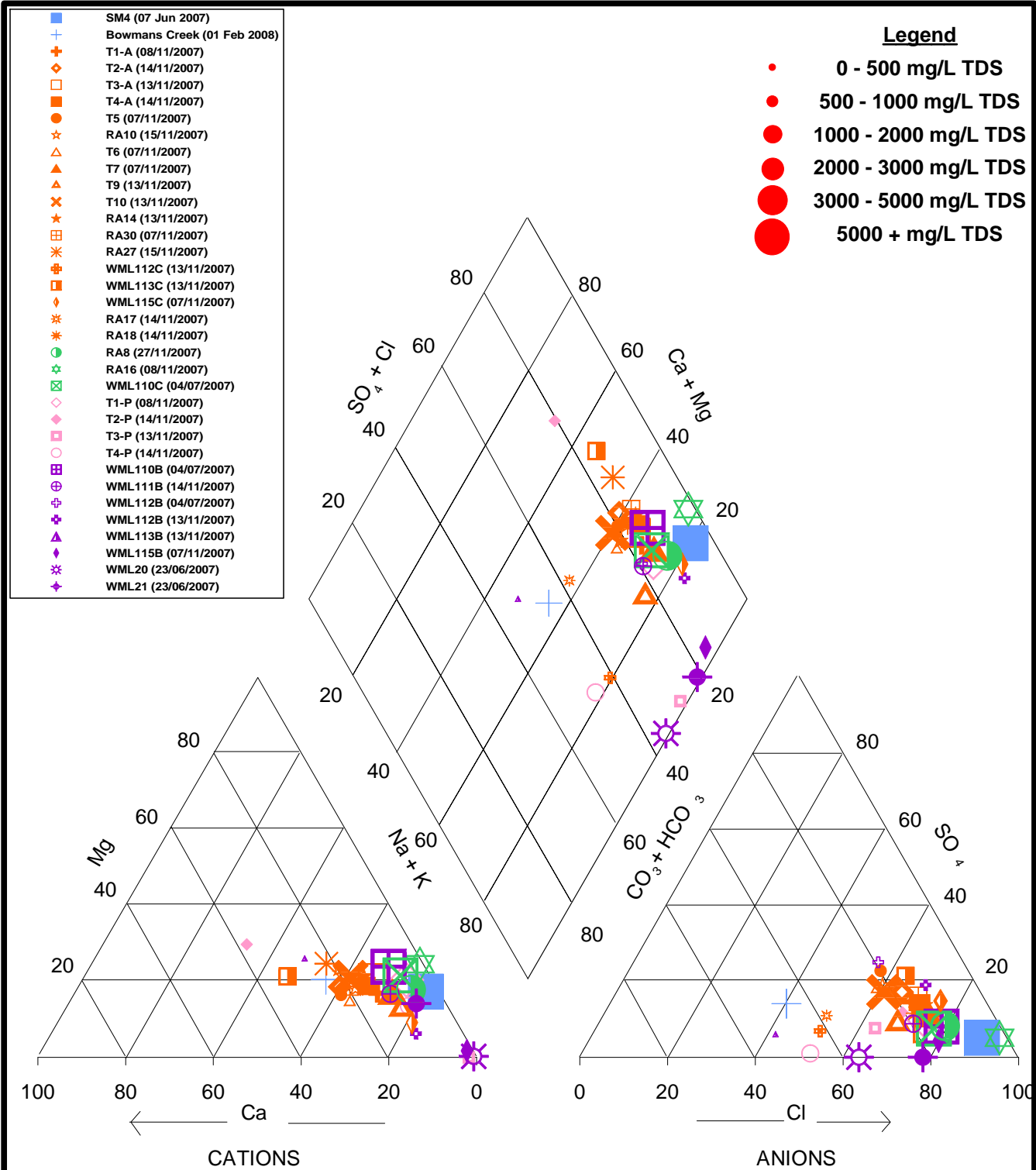
Bore / Well / Spring / Soak			WML119				WML120A				WML120B				WML129				
Aquifer			Pikes Gully Seam				Pikes Gully Seam				Glennies Creek Alluvium				Glennies Ck Alluvium				
Parameter	Units	LOR	RWZELC (2000) Guideline Value for Freshwater Ecosystem Protection	14-Jun-06	17-Jan-07	22-Jun-07	06-Nov-07	14-Jun-06	17-Jan-07	16-May-07	27-Nov-07	14-Jun-06	17-Jan-07	16-May-07	27-Nov-07	17-Jan-07	17-Jun-07	23-Jun-07	06-Nov-07
pH Value (Lab)				8.19	7.74	7.26	7.45	6.86	7.11	7.16	6.77	7.05	7.08	7.24	6.87	7.27	7.24	7.25	7.06
pH Value (field)		0.01				5.96	5.29				7.69				7.10			7.33	7.54
Conductivity (field)	µS/cm	0				1890	1855				828				1220			289	666
Lab Conductivity @ 25°C	µS/cm	1		6470	4940	3090	2320	6350	1470	742	757	1930	1260	1020	1240	571	522	396	577
Total Dissolved Solids (TDS)	mg/L	1		4910		1660	1530	5620		358	402	1480		552	746		280	192	550
Suspended Solids (TSS)	mg/L	1																	
Total Hardness as CaCO3	mg/L	1			332				343				258			108			
Calcium	mg/L	1		39	28	35	20	203	6.4	18	24	123	41	33	42	23	21	18	33
Magnesium	mg/L	1		122	64	58	32	354	44	20	21	83	38	25	31	12	11	9	18
Sodium	mg/L	1		1570	1090	539	532	1260	172	91	79	221	162	132	136	54	53	28	40
Potassium	mg/L	1		9	6	6	4	13	1	2	1	2	2	1	0	3	3	2	3
Chloride	mg/L	1		1830	1380	628	548	2300	289	119	127	610	213	166	247	45.2	44.9	43.6	90.1
Hydroxide Alkalinity as CaCO3	mg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbonate as CaCO3	mg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bicarbonate as CaCO3	mg/L	1		1080	824	626	602	936	203	134	126	137	232	178	140	148	161	78	108
Sulphate	mg/L	1		167	42	78	46	462	38	19	27	111	52	40	46	24	8	13	21
Silica																			
Fluoride	mg/L	0.1		0.8					0.3				0.5			0.2			
Aluminum	mg/L										<0.01				<0.01				
Arsenic - Filtered	mg/L	0.001	0.013			<0.001	0.002				0.002				<0.001			0.001	0.003
Barium - Filtered	mg/L	0.001																	
Boron - Filtered	mg/L	0.05				0.11	0.11				<0.05				<0.05			<0.05	<0.05
Cadmium - Filtered	mg/L	0.00005	0.0002			0.0001	<0.0001				0.0004				<0.0001			0.0002	<0.0001
Chromium - Filtered	mg/L	0.002	10			<0.005	<0.001				<0.005				<0.005			<0.005	<0.001
Copper - Filtered	mg/L	0.0005	0.0014			<0.01	0.001				<0.001				<0.001			0.006	<0.001
Iron - Filtered	mg/L	0.05				<0.05	0.08				0.47				<0.05			0.58	1.15
Lead - Filtered	mg/L	0.00005	0.0034			<0.001	<0.001				<0.001				<0.001			<0.001	<0.001
Manganese - Filtered	mg/L	0.001				0.062	0.05				0.041				0.004			0.413	1.26
Nickel - Filtered	mg/L	0.001	0.011			<0.001	<0.001				<0.001				<0.001			0.001	0.002
Selenium - Filtered	mg/L	0.01				<0.01	<0.01				<0.01				<0.01			<0.01	<0.01
Silver											<0.001				<0.001				
Zinc - Filtered	mg/L	0.005	0.008			0.007	0.005				0.006				<0.005			0.023	<0.005
Mercury - Filtered	mg/L	0.0001	0.00006			<0.0001	<0.0001				<0.0001				<0.0001				<0.0001
Iron - Total	mg/L	0.05																	
Iron - Dissolved	mg/L	0.05																	
Ammonia as N	mg/L	0.01																	
Nitrate as N	mg/L	0.01	0.7		<0.01				0.526				0.179			<0.01			
Nitrite as N	mg/L	0.01			0.034				<0.01				0.014			<0.01			
Total Anions	meq/L	0.01		76.5	56.1	31.9	28.4	93.3	13	6.42	6.65	22.2	11.7	9.08	10.7	4.72	4.65	3.05	5.14
Total Cations	meq/L	0.01		80.7	54.1	30.2	26.8	94.4	14.3	6.52	6.44	22.6	12.2	9.46	10.6	4.56	4.32	2.96	4.94
Tonic Balance	%	1.00%		2.65%	1.86%	2.79%	2.96%	0.57%	4.73%	0.69%	1.63%	0.88%	2.25%	2.04%	0.55%	1.72%	3.68%	1.40%	1.99%
Oil and Grease	mg/L	5																	

Table B-1: Monitoring Bore Groundwater Samples - Laboratory Analysis Results
(page 8 of 8)

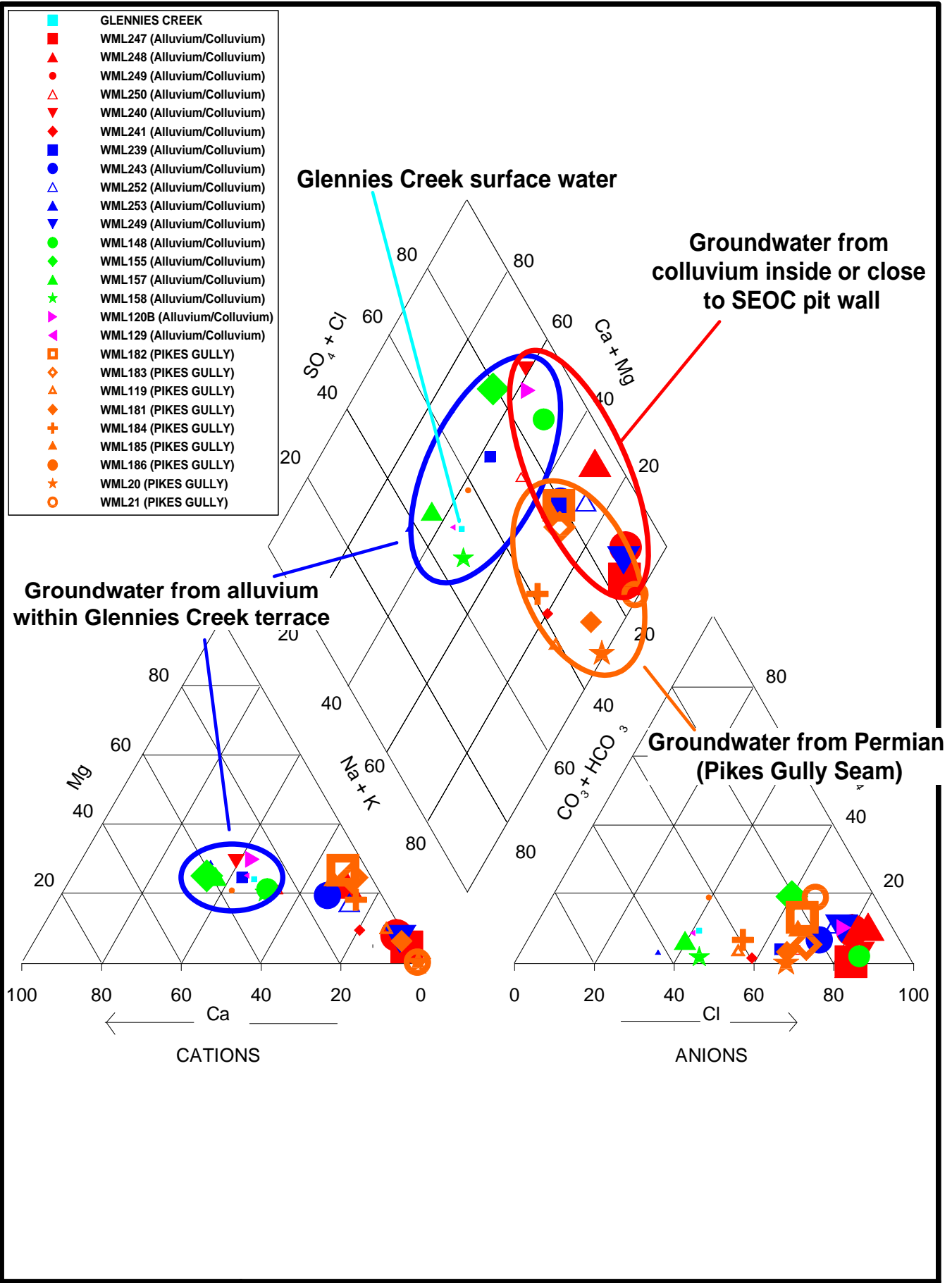
Bore / Well / Spring / Soak			WML148	WML155	WML157	WML158	WML181	WML182	WML183	WML184	WML185	WML186		
Aquifer			Glennies Ck Alluvium	Glennies Ck Alluvium	Glennies Ck Alluvium	Glennies Ck Alluvium	Pikes Gully Seam	Pikes Gully Seam	Pikes Gully Seam	Pikes Gully Seam	Pikes Gully Seam	Pikes Gully Seam		
Parameter	Units	LOR	ARZECC (2000) Guideline Value for Freshwater Ecosystem Protection	25-Nov-07	25-Nov-07	25-Nov-07	25-Nov-07	24-Jun-07	05-Nov-07	24-Jun-07	06-Nov-07	25-Nov-07	25-Nov-07	25-Nov-07
pH Value (Lab)			6.94	6.74	7.23	7.14	7.61	7.08	6.85	7.02	6.97	6.97	6.74	6.44
pH Value (field)		0.01	7.24	6.92	7.77	7.63	6.16	6.80	6.91	7.04	6.81	6.96	6.68	6.76
Conductivity (field)	µS/cm	0	2170	978	842	745	3570	3840	8820	8350	8140	3180	1852	463
Lab Conductivity @ 25°C	µS/cm	1	2610	915	803	705	4920	4220	8680	8570	8180	4560	4430	387
Total Dissolved Solids (TDS)	mg/L	1	2180	5600	2250	2300	2700	2280	5940	5310	5000	2960	2870	290
Suspended Solids (TSS)	mg/L	1												
Total Hardness as CaCO3	mg/L	1												
Calcium	mg/L	1	103	61	53	37	15	50	118	120	83	44	82	23
Magnesium	mg/L	1	54	23	22	16	38	96	321	347	263	70	120	8
Sodium	mg/L	1	363	65	59	75	1010	727	1500	1240	1400	532	622	29
Potassium	mg/L	1	0	1	0	0	6	7	14	14	13	5	5	2
Chloride	mg/L	1	696	165	114	91.3	1110	929	2270	2150	2290	602	944	40.8
Hydroxide Alkalinity as CaCO3	mg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbonate as CaCO3	mg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bicarbonate as CaCO3	mg/L	1	125	140	190	183	863	757	1040	916	1110	758	595	75
Sulphate	mg/L	1	91	20	10	5	76	102	629	637	244	104	183	27
Silica														
Fluoride	mg/L	0.1												
Aluminum	mg/L		<0.01	<0.01	<0.01	<0.01						<0.01	<0.01	0.04
Arsenic - Filtered	mg/L	0.001	0.013	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	0.002	0.001
Barium - Filtered	mg/L	0.001												
Boron - Filtered	mg/L	0.05	<0.05	<0.05	0.06	<0.05	0.13	0.1	0.16	0.13	0.16	0.1	0.07	<0.05
Cadmium - Filtered	mg/L	0.00005	0.0002	0.0005	0.0455	0.0002	0.0005	0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	0.0002
Chromium - Filtered	mg/L	0.002	ID	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005
Copper - Filtered	mg/L	0.0005	0.0014	0.002	<0.001	0.001	<0.001	0.002	<0.001	0.003	0.002	0.002	<0.001	<0.001
Iron - Filtered	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	0.49	0.42	0.08	0.94	3.96	0.8
Lead - Filtered	mg/L	0.00005	0.0034	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002
Manganese - Filtered	mg/L	0.001	0.001	0.008	<0.001	0.986	0.01	0.084	0.061	0.057	0.027	0.076	0.272	0.03
Nickel - Filtered	mg/L	0.001	0.011	0.001	0.001	<0.001	0.001	<0.001	<0.001	0.002	<0.001	<0.001	0.001	0.002
Selenium - Filtered	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	mg/L		<0.001	<0.001	<0.001	<0.001						<0.001	<0.001	<0.001
Zinc - Filtered	mg/L	0.005	0.008	0.013	0.006	0.009	<0.005	0.007	<0.005	<0.005	0.007	<0.005	0.006	<0.005
Mercury - Filtered	mg/L	0.0001	0.00006	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Iron - Total	mg/L	0.05												
Iron - Dissolved	mg/L	0.05												
Ammonia as N	mg/L	0.01												
Nitrate as N	mg/L	0.01	0.7											
Nitrite as N	mg/L	0.01												
Total Anions	meq/L	0.01	24	7.85	7.22	6.34	50	43.5	97.9	92.2	91.8	34.3	42.3	3.22
Total Cations	meq/L	0.01	25.3	7.8	6.99	6.44	48	42.2	98	88.7	87.2	31.2	41.1	3.14
Ionic Balance	%	1.00%	2.70%	0.33%	1.65%	0.83%	2.11%	1.57%	0.07%	1.95%	2.57%	4.72%	1.52%	1.20%
Oil and Grease	mg/L	5												

Aquifer Screened	Piezometers	pH Range	Electrical Conductivity ($\mu\text{S}/\text{cm}$)	
			Mean	Range
Alluvium & Colluvium	WML120B	6.87-7.24	1360	1020-1930
	WML129	7.06-7.27	517	396-577
	WML148	6.94	2610	2610
	WML155	6.74	915	915
	WML157	7.23	803	803
	WML158	7.14	705	705
	WML239	7.01	1000	1000
	WML240	6.72	1660	1660
	WML241	7.34	829	829
	WML243	6.97	5570	5570
	WML247	7.92	14200	14200
	WML248	7.53	18400	18400
	WML249	8	15300	15300
	WML250	7.1	1200	1200
	WML252	6.73	4710	4710
	WML253	7.87	345	345
	AP242	7 – 7.13	1045	1045
	AP243	7	1938	1938
	AP244	7	600	600
	AP245	7.2	2500	2500
AP246	7.1	5250	5250	
AP247	7.38	6080	6080	
Pikes Gully Seam	WML20, WML21, WML119, WML120A, WML181-186	6.44-8.27	4380	387-8680
Upper Liddell Seam	GM1	6.81-8.38	5740	4920-9370
Lower Barrett Seam	GM2	6.76-7.18	5504	1460-8600

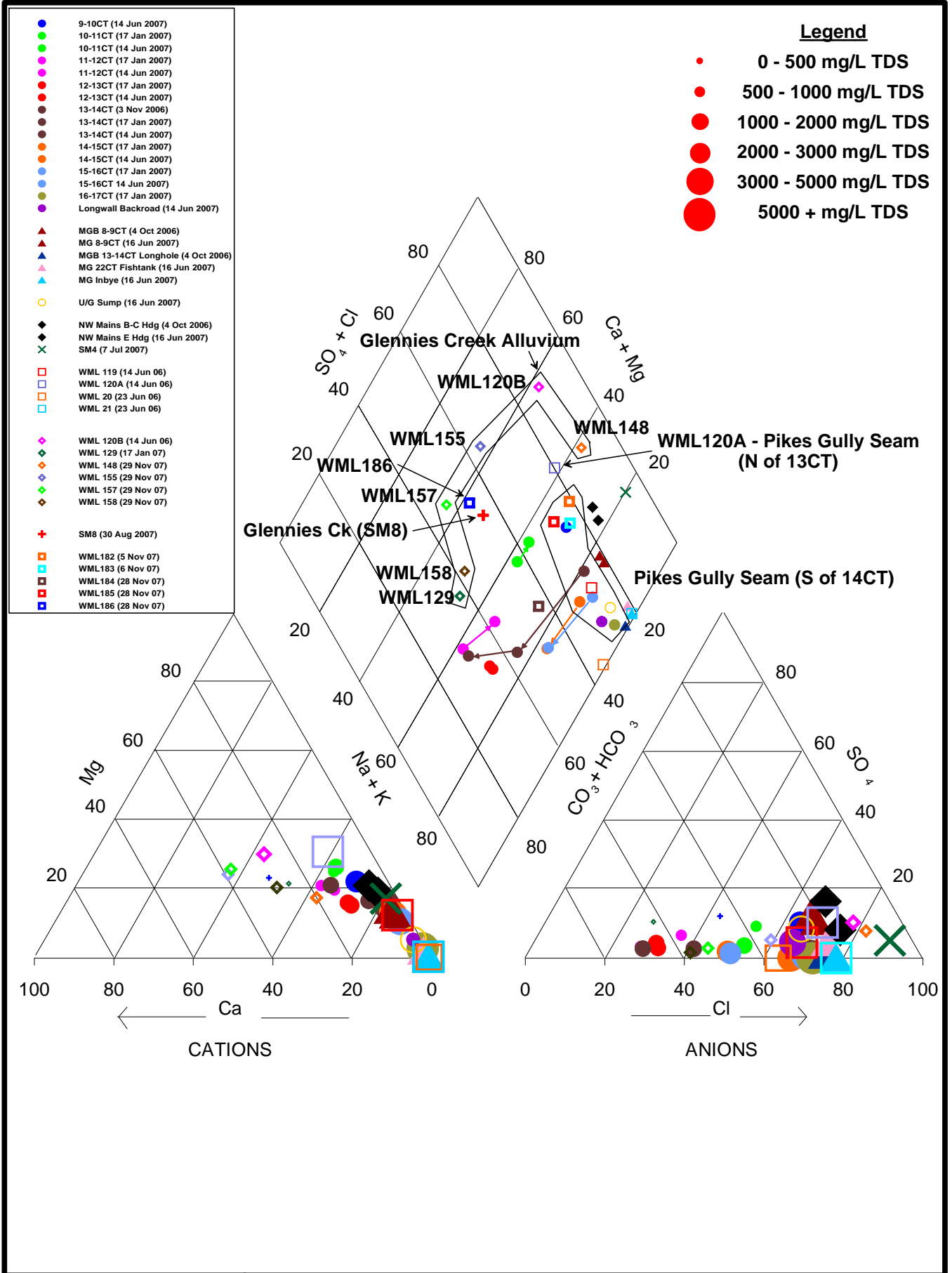
APPENDIX D PIPER DIAGRAMS



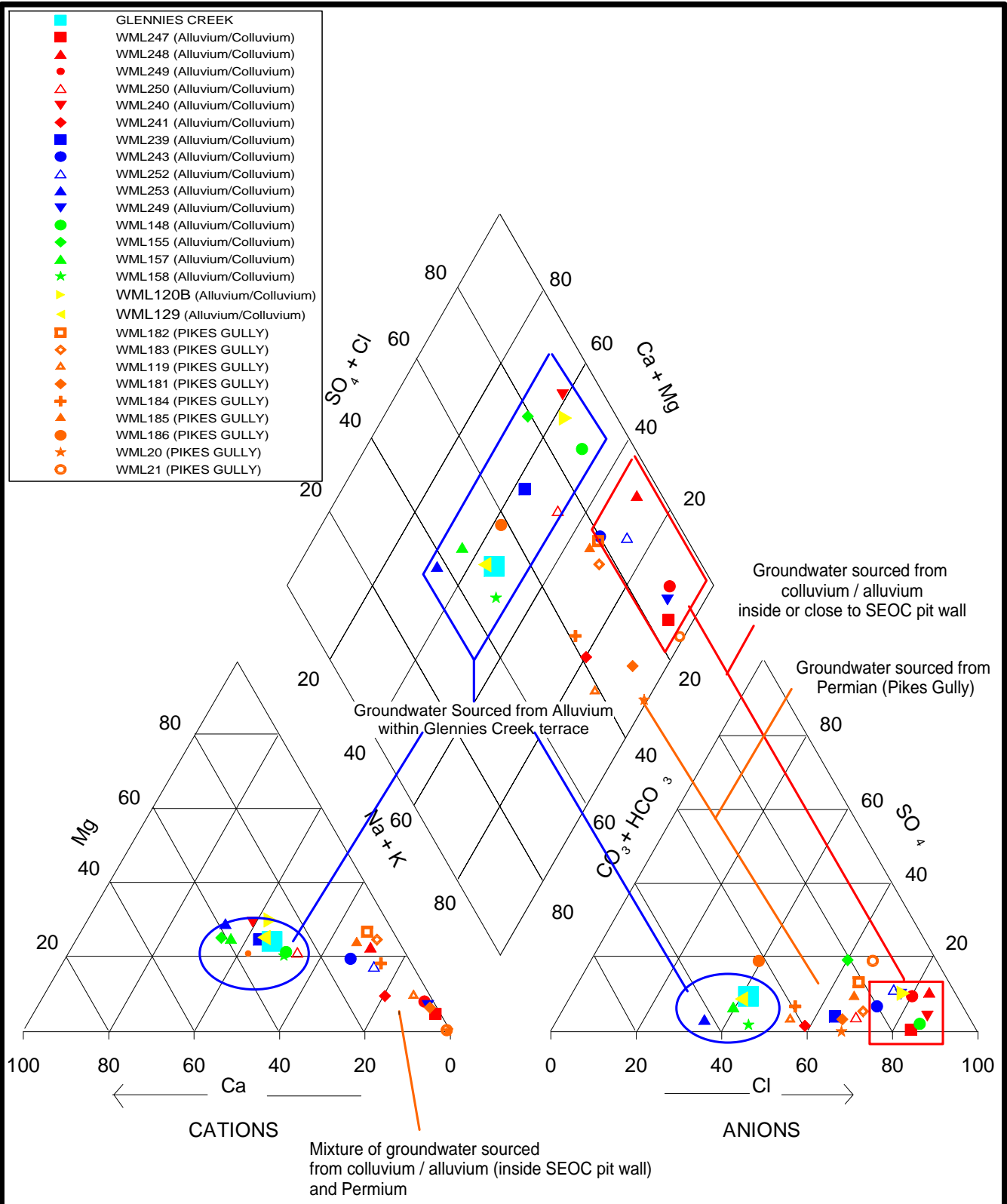
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	DRAWN PJD	DATE August 2008	TITLE	
	CHECKED		PIPER TRILINEAR DIAGRAM	
			BOWMANS CREEK BORES	
	SCALE As Shown	Dwg S03-301	A4	PROJECT No S03



	CLIENT Ashton Coal Operations Ltd		PROJECT ASHTON COAL PROJECT		
	DRAWN JV/SRD	DATE 30 March 2009	TITLE PIPER TRILINEAR DIAGRAM ASHTON BORES		
	CHECKED 	DATE 	PROJECT No S36		
	SCALE As Shown	S36-010a	A4	APPENDIX D2	



	CLIENT Ashton Coal Operations Ltd		PROJECT ASHTON PROJECT	
	DRAWN PJD	DATE December 2007	TITLE PIPER TRILINEAR DIAGRAM ASHTON UNDERGROUND LONGWALL 1 SEEPAGES	
	CHECKED	DATE		
	SCALE As Shown	Dwg 05-0166-141	A4	PROJECT No S55



	CLIENT Ashton Coal Operations Ltd		PROJECT ASHTON COAL PROJECT		
	DRAWN JV	DATE 24 March 2009	TITLE PIPER TRILINEAR DIAGRAM ASHTON ALLUVIAL BORES		
	CHECKED	DATE			
	SCALE As Shown	S36-010a	A4	PROJECT No S55	Appendix D 4

APPENDIX E MODEL CALIBRATION REPORT

Appendix E - Model Calibration

Calibration is a process by which the independent variables (parameters and boundary conditions) of a model are adjusted, within realistic limits, to produce the best match between simulated and measured data.

Calibration of the Ashton Model was undertaken in both steady state and transient modes. The key calibration results and statistics are presented in the following sections.

Final Calibrated Parameters:

The final calibrated parameters and head boundaries used within the steady state model are shown in Figures E1 to E1.

These include:

- ▼ Hydraulic conductivity for Layers 1 to 9 - Figures E1 to E9
- ▼ Recharge - Figure E10
- ▼ All GHB's in steady state model - Figure E11

Figure E1: Hydraulic conductivity for Layer 1 (m/d)

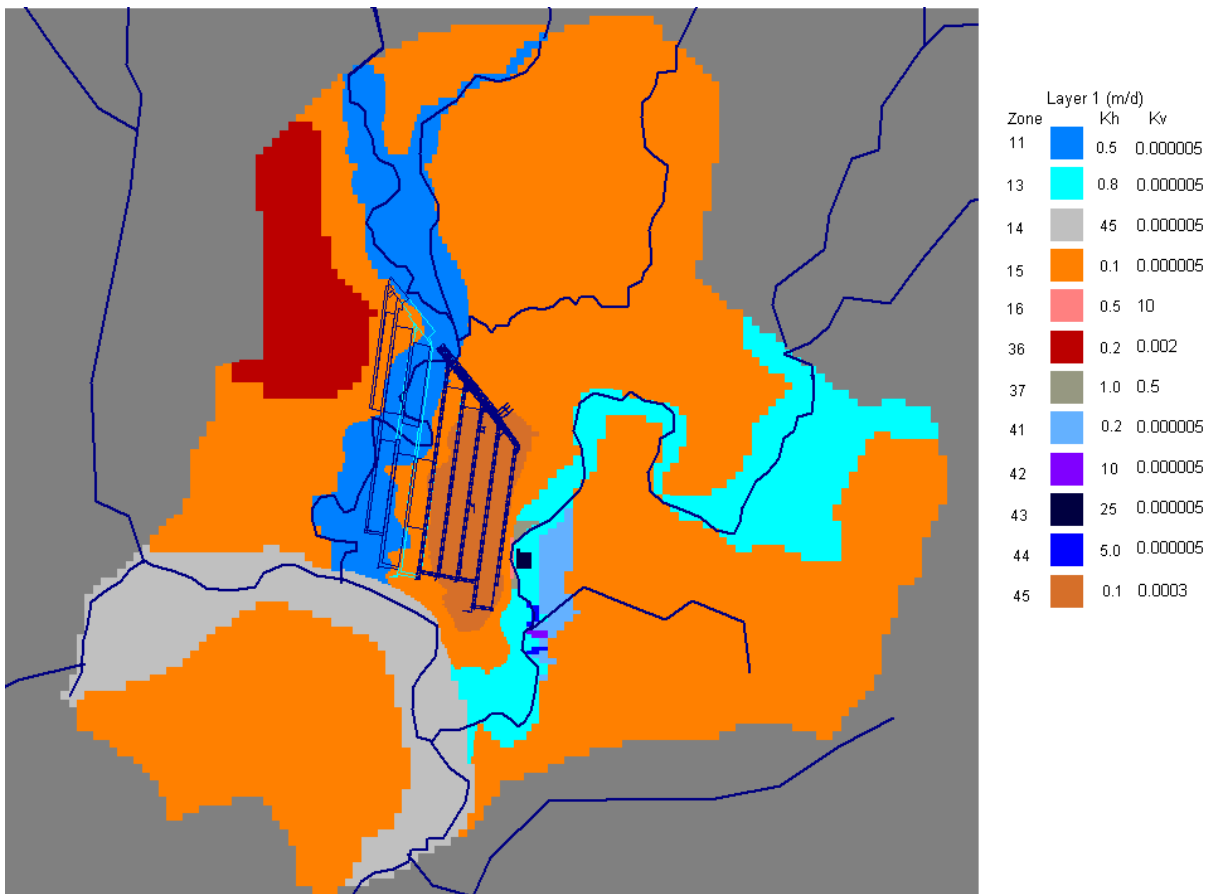


Figure E2: Hydraulic conductivity for Layer 2 (m/d)

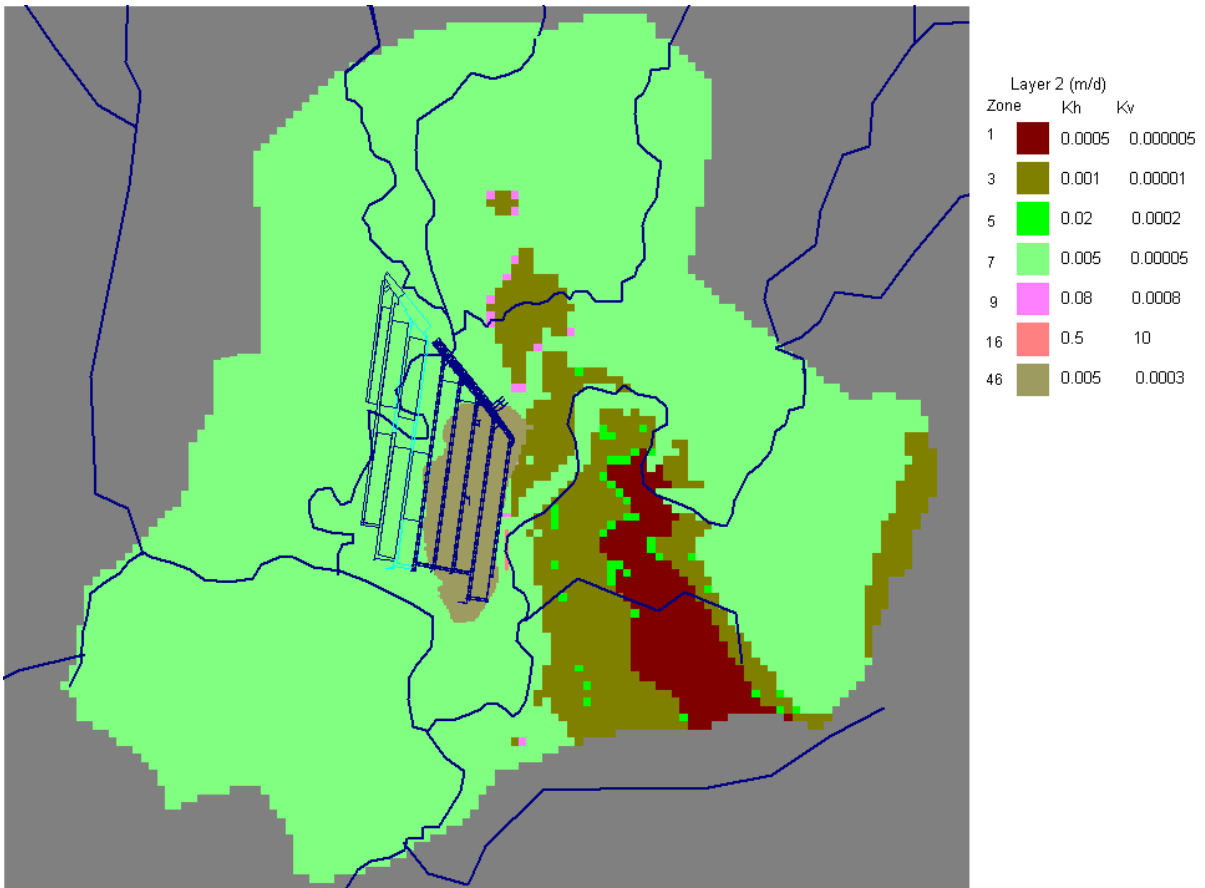


Figure E3: Hydraulic conductivity for Layer 3 (m/d)

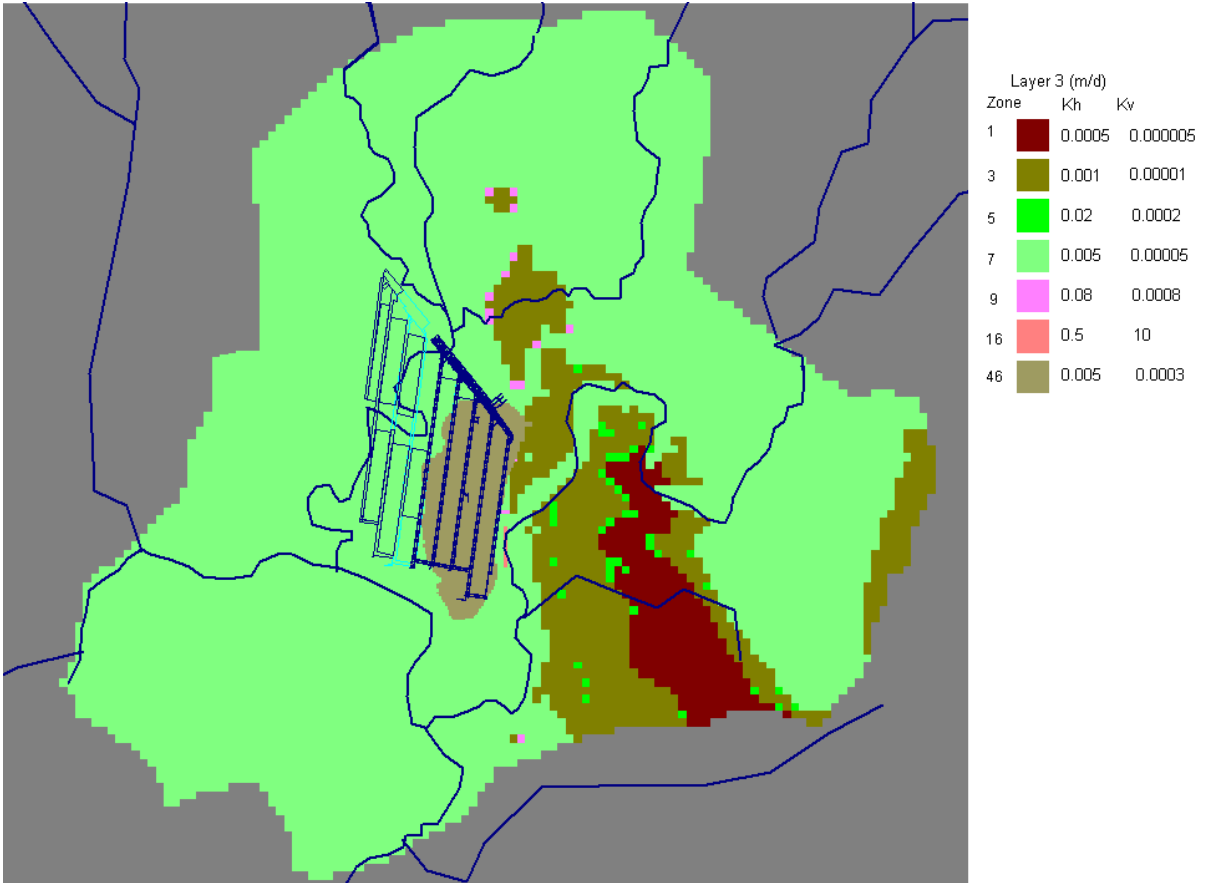


Figure E4 Hydraulic conductivity for Layer 4 (m/d)

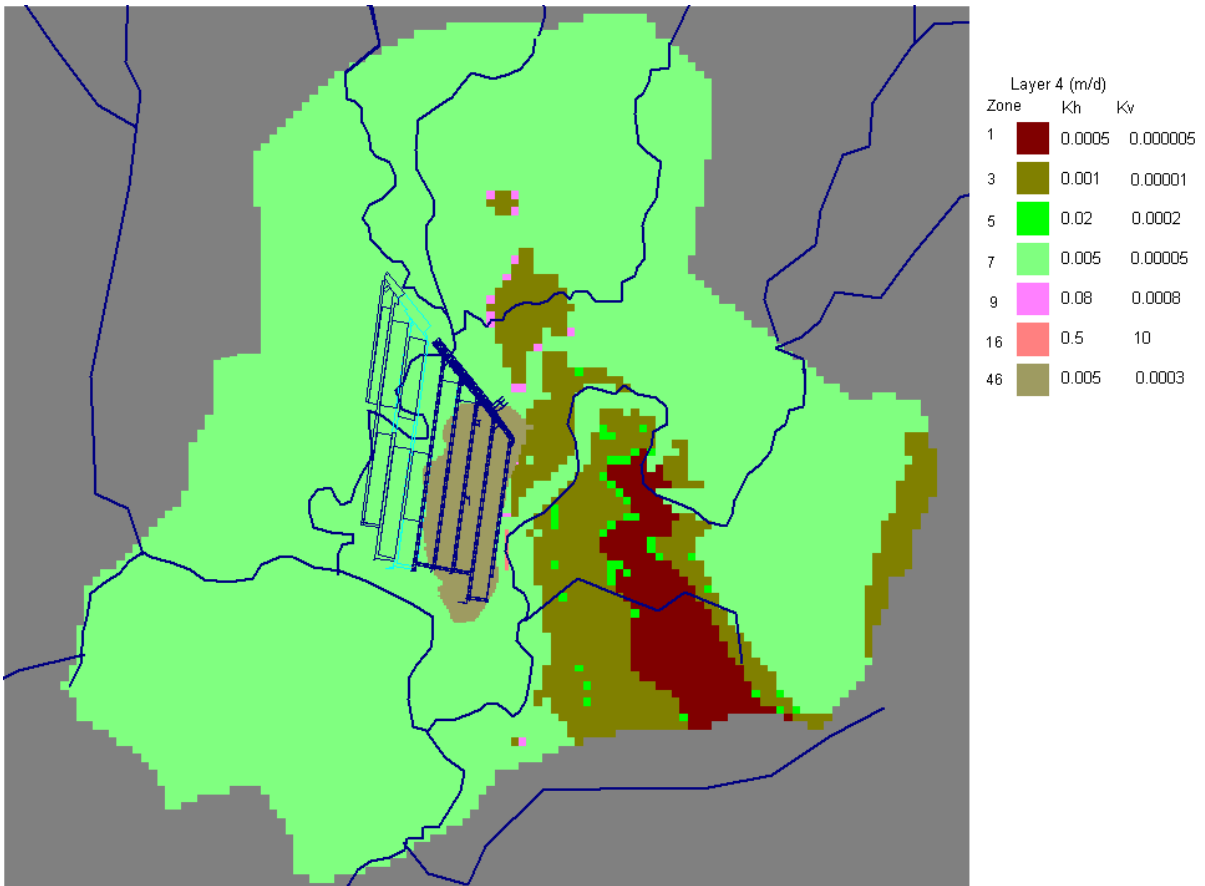


Figure E5 Hydraulic conductivity for Layer 5 (m/d)

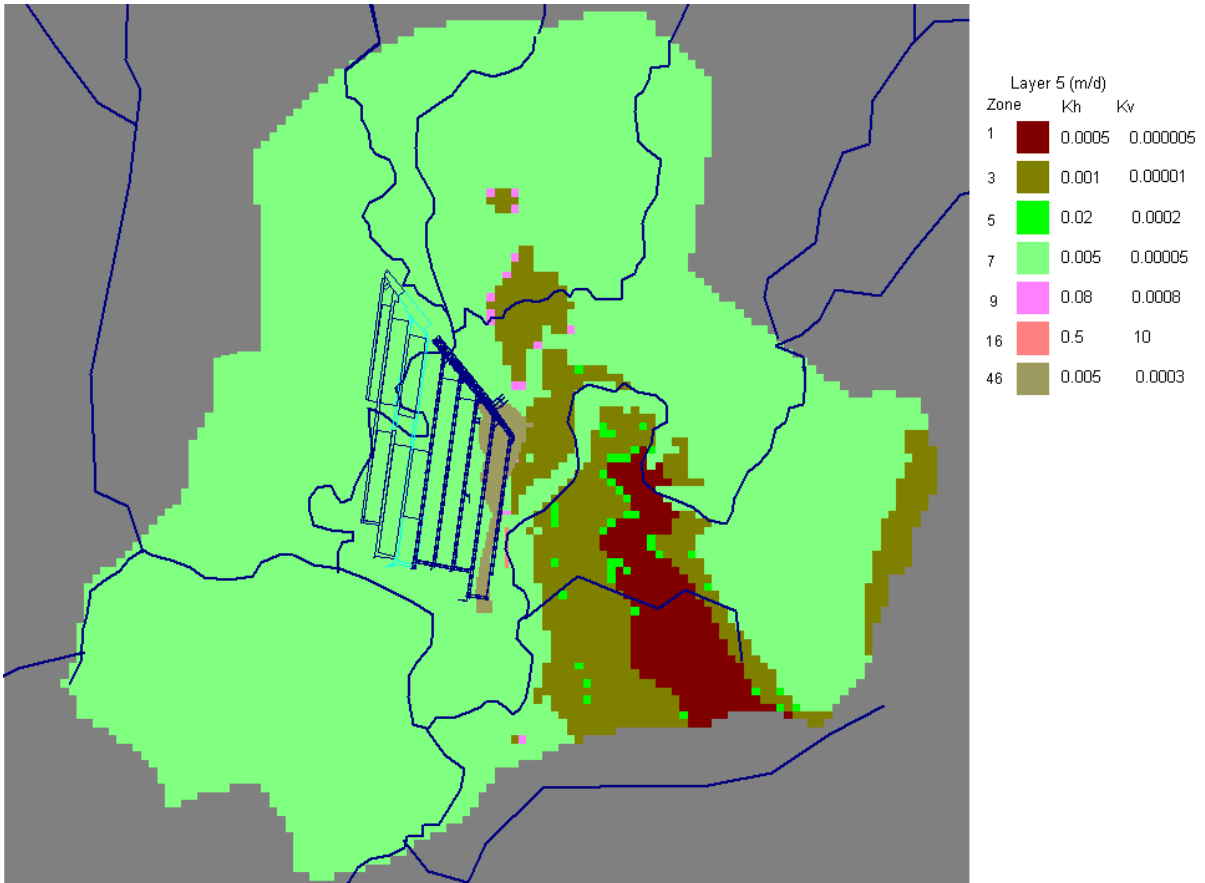


Figure E6 Hydraulic conductivity for Layer 6 (m/d)

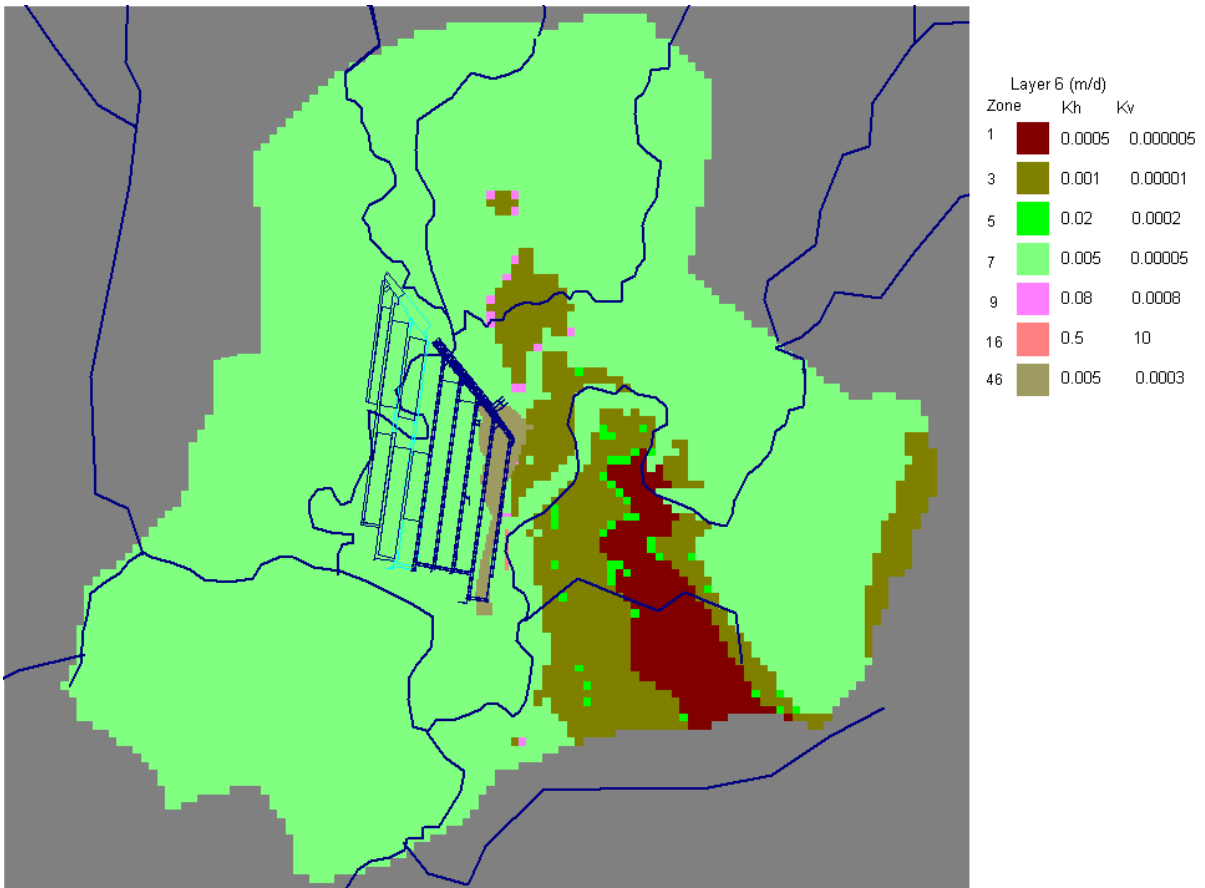


Figure E7 Hydraulic conductivity for Layer 7 (m/d)

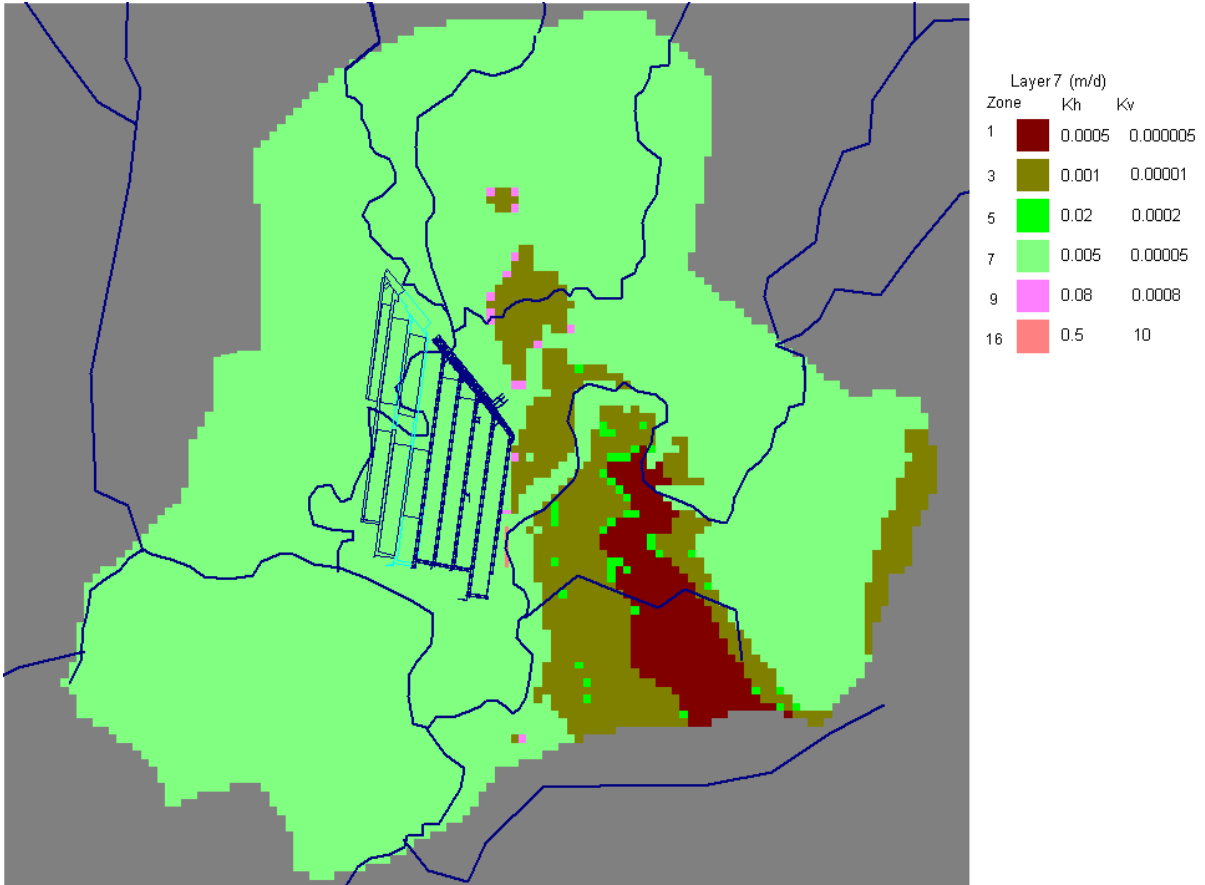


Figure E8 Hydraulic conductivity for Layer 8 (m/d)

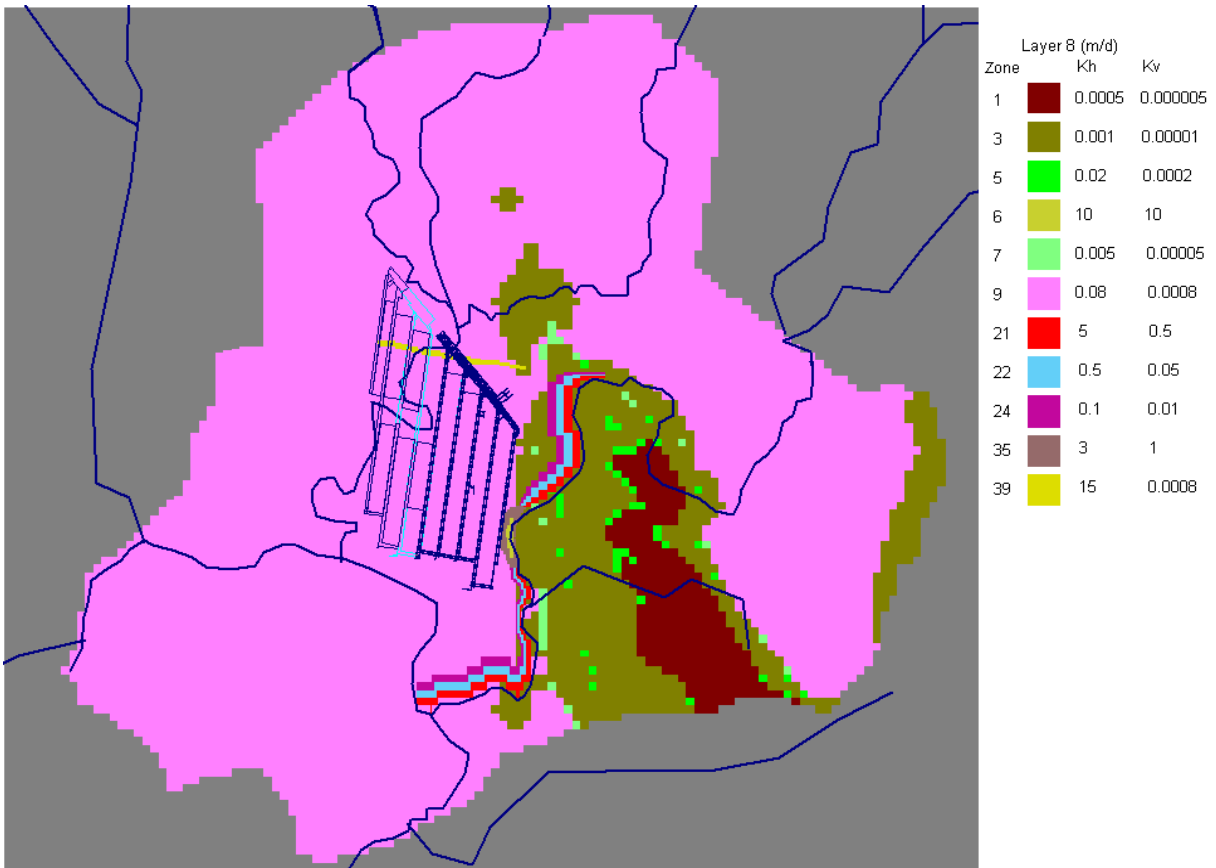


Figure E9 Hydraulic conductivity for Layer 9 (m/d)

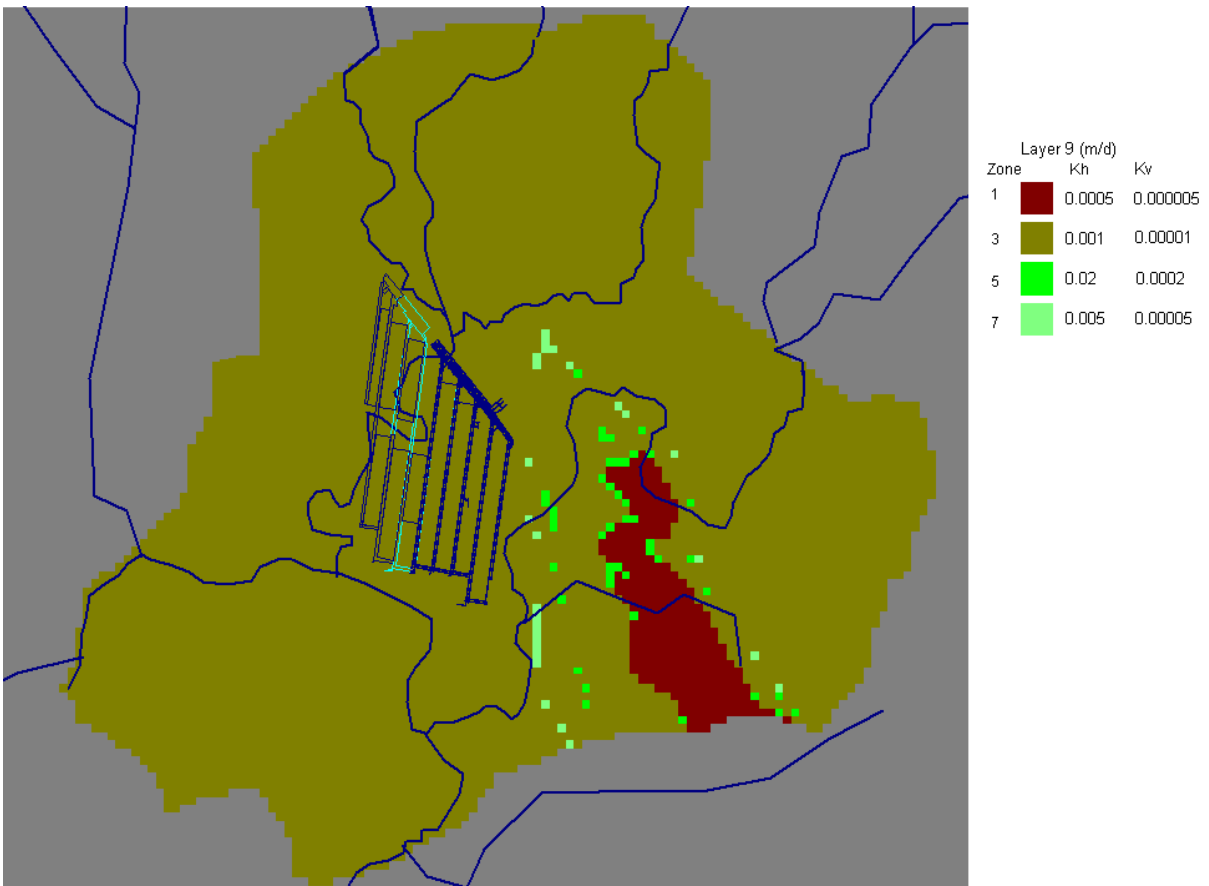


Figure E10 Calibrated recharge zone (applied to the highest active layer)

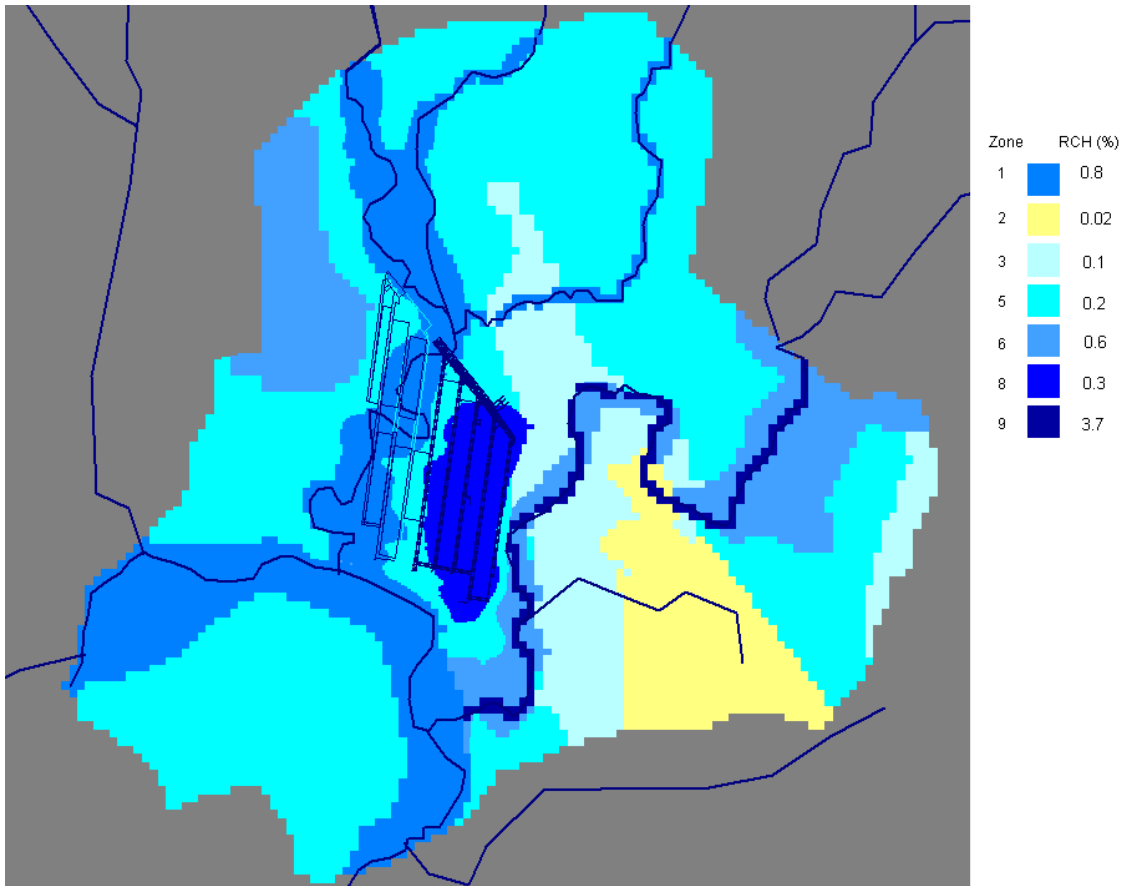
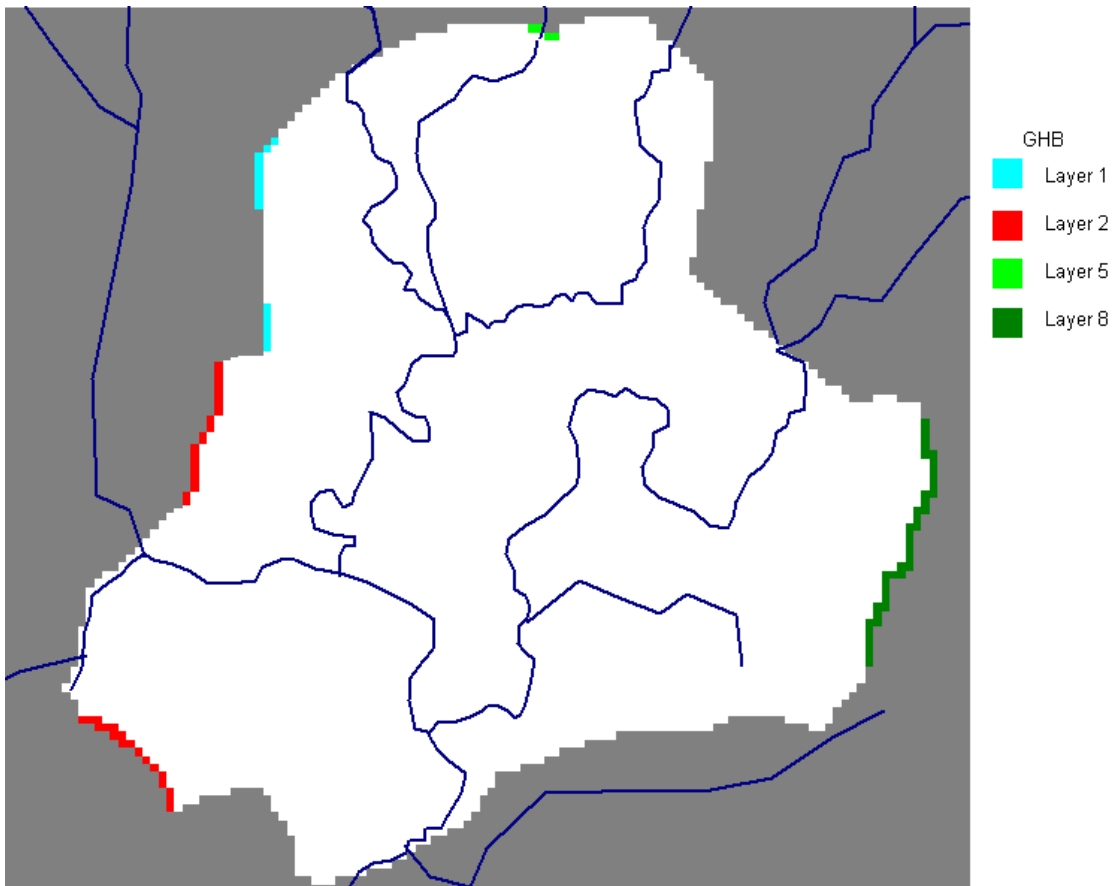


Figure E11 General Head Boundary (GHB) for all layers



Steady State Calibration

Steady state calibration was carried out entirely against pre-underground mining records of potentiometric head. Calibration was achieved through changes in recharge, hydraulic conductivity and modifications to boundary conditions.

There are 112 targets contained within the steady state calibration data set. Many of these (45) were in Layer 1 due to the intensive investigation programmes that have been carried out in the alluvium with 67 targets screened within the Permian model layers. Steady State Calibration against groundwater targets are shown in **Table E1**. The steady state calibration statistics are summarised in **Table E2**.

Table E1: Steady State Model Calibration Performance

Bore	Easting (MGA)	Northing (MGA)	Model Layer	Observed Head (mAHD)	Modelled Head (mAHD)	Head Difference (m)
AshtonWell	318305	6406087	1	58.1	59.445194	-1.34519
Oxbow	318330	6405744	1	56.72	58.624414	-1.90441
PB1	317556	6405223	1	55.88	54.965157	0.914843
PB2	318231	6406288	1	60.55	60.014098	0.535902
RA02	317712	6405233	1	55.38	55.282734	0.097266
RA8	317887.2	6404193	1	50.46	51.711411	-1.25141
RA10	317639.7	6404335	1	50.49	51.030326	-0.54033
RA14	317643.4	6404698	1	52.14	52.728184	-0.58818
RA15	317420.5	6404748	1	51.55	52.712291	-1.16229
RA17	317695.5	6404876	1	54.04	53.859372	0.180628
RA18	317821.7	6405434	1	56.84	56.44061	0.39939
RA27	317952.1	6403738	1	50.05	48.678717	1.371283
RA30	317810.6	6406501	1	61.17	59.866404	1.303596
RM03	317668	6404845	1	53.58	53.551623	0.028377
RM04	317403	6405316	1	55.73	54.882331	0.847669
RM06	317872	6405890	1	58.49	57.683276	0.806724
RM07	318092	6405763	1	58.48	57.81004	0.66996
RM09	318166	6406380	1	61	60.10397	0.89603
RM10	317590	6405294	1	55.89	55.201317	0.688683
T1-A	318337.7	6406309	1	61.13	60.308091	0.821909
T2-A	317583.3	6405217	1	55.83	55.013572	0.816428
T3-A	317654.2	6404708	1	51.69	52.783164	-1.09316
T4-A	317685.8	6404323	1	51.11	51.136226	-0.02623
T4-P	317682.2	6404319	1	51.68	51.10069	0.57931
T5	317946.1	6406549	1	61.71	60.057965	1.652035
T6	317975.1	6406675	1	62.07	60.514067	1.555933
T7	317717.4	6406336	1	61.21	59.35195	1.85805

Bore	Easting (MGA)	Northing (MGA)	Model Layer	Observed Head (mAHD)	Modelled Head (mAHD)	Head Difference (m)
T8	317707.8	6404630	1	51.51	52.530968	-1.02097
T10	317683.6	6404450	1	50.86	51.72585	-0.86585
WML112C	317563.7	6404450	1	51.75	51.338369	0.411631
WML113C	317376.8	6404526	1	51.08	51.039192	0.040808
WML115C	317888.3	6406710	1	61.82	60.643726	1.176274
WML120B	319293.6	6404588	1	52.42	54.294915	-1.87492
WML129	319468.4	6403528	1	50.99	50.188754	0.801246
WML145	319459.3	6404180	1	52.76	51.1443	1.6157
WML146	319420.7	6404178	1	54.36	51.139072	3.220928
WML154	319532.5	6404580	1	53.99	52.044595	1.945405
WML166	319469.9	6403825	1	54.01	50.61978	3.39022
WML175	317179	6404030	1	50.09	48.988226	1.101774
WML243	319643.3	6403226	1	51.345	50.011343	1.333657
WML247	319734.4	6404472	1	54.241	52.724056	1.516944
WML248	319706.1	6403936	1	52.152	51.786528	0.365472
WML249	319577.4	6404300	1	52.831	51.516971	1.314029
WML250	319454.6	6404302	1	52.804	51.213168	1.590832
WML252	319621.5	6403684	1	52.395	50.831412	1.563588
RM02	317943	6404508	2	51.32	53.323133	-2.00313
RM05	317487	6406003	2	53.63	54.967236	-1.33724
T1-P	318356.9	6406304	2	61.41	60.178877	1.231123
T2-P	317587.1	6405222	2	55.45	54.380737	1.069263
T3-P	317650.1	6404701	2	51.03	53.063974	-2.03397
T9	317764.5	6404530	2	51.59	52.788195	-1.1982
WML110A	318005.3	6404244	2	50.36	53.065058	-2.70506
WML110B	318006.9	6404247	2	51.31	53.087902	-1.7779
WML111B	317774.6	6404363	2	51.17	52.26805	-1.09805
WML112B	317567.4	6404450	2	50.49	52.024918	-1.53492
WML113-40m	317368.8	6404529	2	49.48	51.871768	-2.39177
WML113B	317373	6404528	2	50.48	51.878013	-1.39801
WML114B	318148.4	6405238	2	58.76	58.365691	0.394309
WML115B	317880.7	6406704	2	61.65	60.119769	1.530231
WML213-48m	317210.2	6404154	2	49.09	51.496397	-2.4064
WML109B	318210.9	6404081	3	57.23	55.704189	1.525811
WML110-38m	318005.3	6404244	3	52.08	53.337381	-1.25738

Bore	Easting (MGA)	Northing (MGA)	Model Layer	Observed Head (mAHD)	Modelled Head (mAHD)	Head Difference (m)
WML110-65m	318005.3	6404244	3	56.14	53.337381	2.802619
WML111A-24m	317775.7	6404367	3	49.88	52.660982	-2.78098
WML111A-54m	317775.7	6404367	3	53.87	52.660982	1.209018
WML112A-101m	317563.7	6404450	3	54.18	52.566584	1.613416
WML112A-43m	317563.7	6404450	3	55	52.566584	2.433416
WML112A-72m	317563.7	6404450	3	51.03	52.566584	-1.53658
WML113-65m	317368.8	6404529	3	49.93	52.458882	-2.52888
WML113-95m	317368.8	6404529	3	54.9	52.458882	2.441118
WML115A-40m	317873.6	6406708	3	59.57	59.729391	-0.15939
WML115A-72m	317873.6	6406708	3	58.91	59.729391	-0.81939
WML107A-38m	318674.3	6403828	4	56.08	57.661316	-1.58132
WML108A	318446.5	6403975	4	60.92	58.19989	2.72011
WML108A-53m	318446.5	6403975	4	59	58.19989	0.80011
WML110-90m	318005.3	6404244	4	57.6	54.261179	3.338821
WML113-124m	317368.8	6404529	4	57.76	52.999192	4.760808
WML114-63m	318151.6	6405239	4	60.11	57.922185	2.187815
WML109A-65m	318216.9	6404080	5	59.13	55.477293	3.652707
WML107A-69m	318674.3	6403828	6	52.92	55.667917	-2.74792
WML108A-80m	318446.5	6403975	6	57	55.587392	1.412608
WML109A-84.5m	318216.9	6404080	6	58.8	55.238946	3.561054
WML110-110m	318005.3	6404244	6	56.41	55.054081	1.355919
WML111A-118m	317775.7	6404367	6	58.68	54.666484	4.013516
WML114-88m	318151.6	6405239	6	60.82	57.961538	2.858462
WML115A-93m	317873.6	6406708	6	60.15	59.684203	0.465797
WML189-49m	318657.2	6404569	6	57.48	58.344279	-0.86428
WML191-52m	318623.9	6404335	6	56.8	57.327949	-0.52795
WML106-68m	318860.9	6403493	7	52	53.348396	-1.3484
WML114-108m	318151.6	6405239	7	60.77	57.759156	3.010844
WML115A-120m	317873.6	6406708	7	57.08	60.409137	-3.32914
WML213-185.5m	317210.2	6404154	7	52.3	53.348805	-1.04881
WML20	318361.8	6404331	8	58	55.483847	2.516153
WML21	318245	6406340	8	64.66	60.568748	4.091252
WML106-84m	318860.9	6403493	8	52	53.000469	-1.00047
WML115A-144m	317873.6	6406708	8	61	61.013124	-0.01312
WML119	319255.3	6403930	8	52	51.065866	0.934134

Bore	Easting (MGA)	Northing (MGA)	Model Layer	Observed Head (mAHD)	Modelled Head (mAHD)	Head Difference (m)
WML120A	319292	6404580	8	52.32	51.7709	0.5491
WML181	319214	6403957	8	48.692	51.059167	-2.36717
WML183	319188	6404325	8	50.202	51.212377	-1.01038
WML184	319179	6404530	8	51.896	51.617738	0.278262
WML185	319200	6404642	8	53	53.187331	-0.18733
WML191-100m	318623.9	6404335	9	55.89	55.346573	0.543427
WML189-101m	318657.2	6404569	10	54	56.221883	-2.22188
WML191-132m	318623.9	6404335	10	56.71	55.575527	1.134473
WML213-247m	317210.2	6404154	10	53.82	54.008013	-0.18801
WML191-155m	318623.9	6404335	12	56	56.00114	-0.00114
WML213-275m	317210.2	6404154	12	58.81	54.412526	4.397474
WML19a	319949.6	6406544	13	61.96	65.954352	-3.99435
WML144A-58m	319500	6404170	13	55	56.574021	-1.57402
WML191-200m	318623.9	6404335	14	55.59	56.473963	-0.88396
WML213-308.5m	317210.2	6404154	14	58	54.873027	3.126973

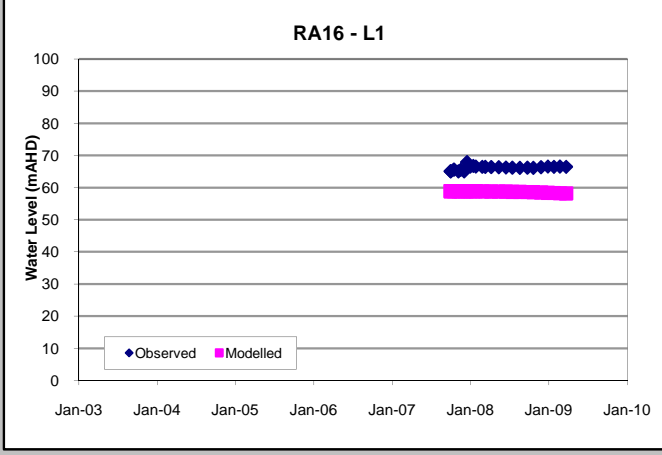
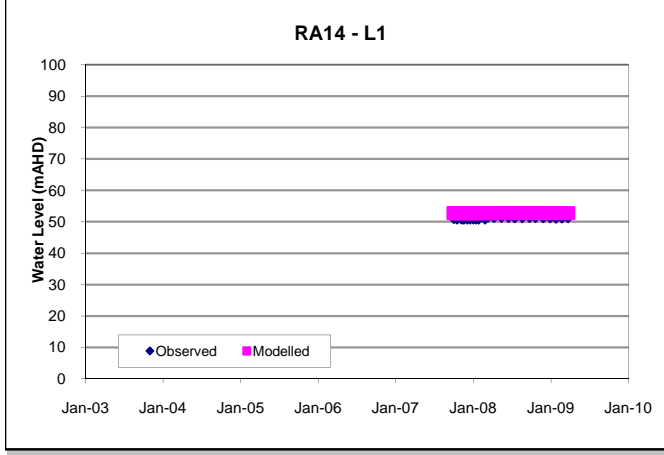
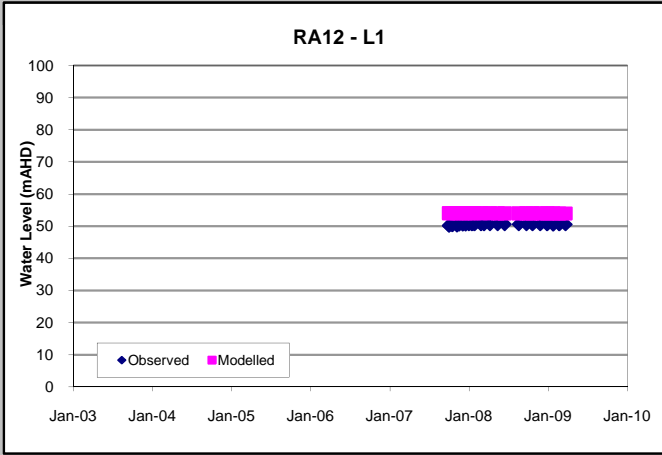
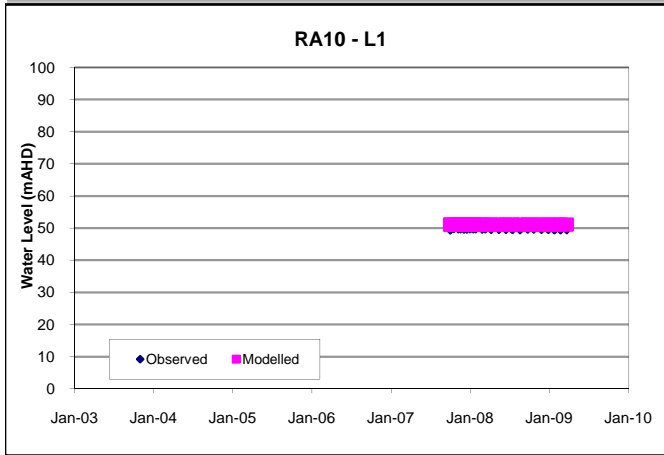
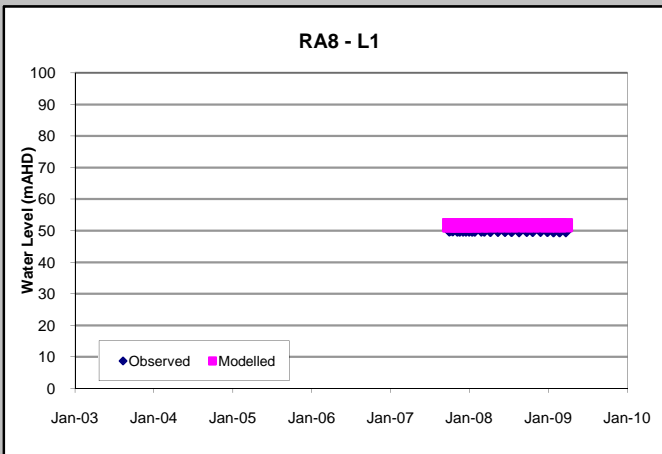
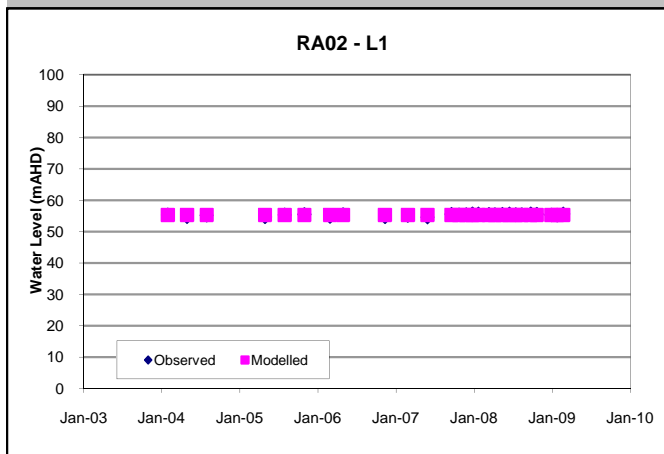
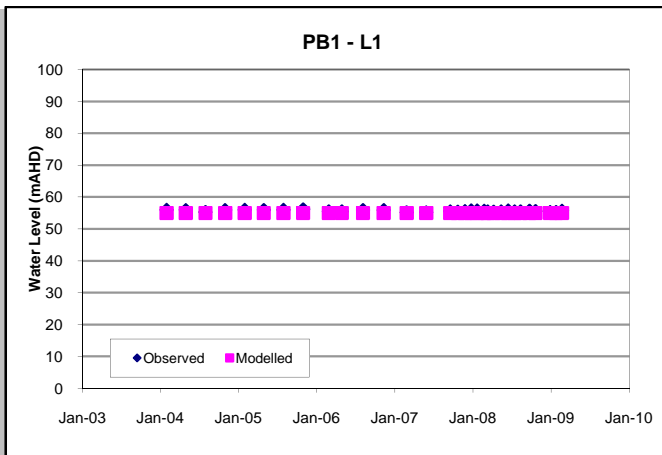
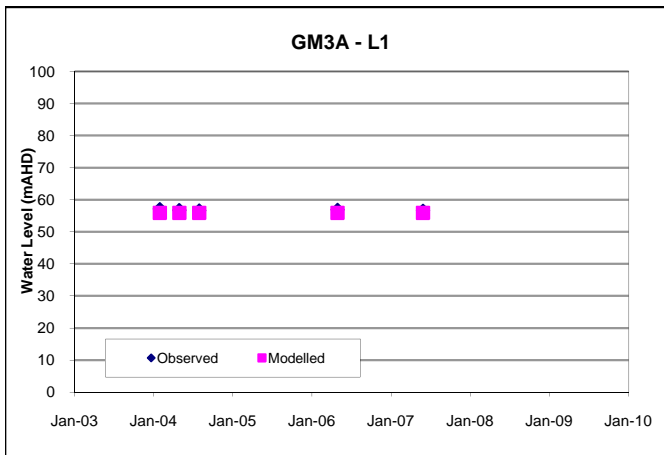
Table E2: Steady State Model Calibration Statistics

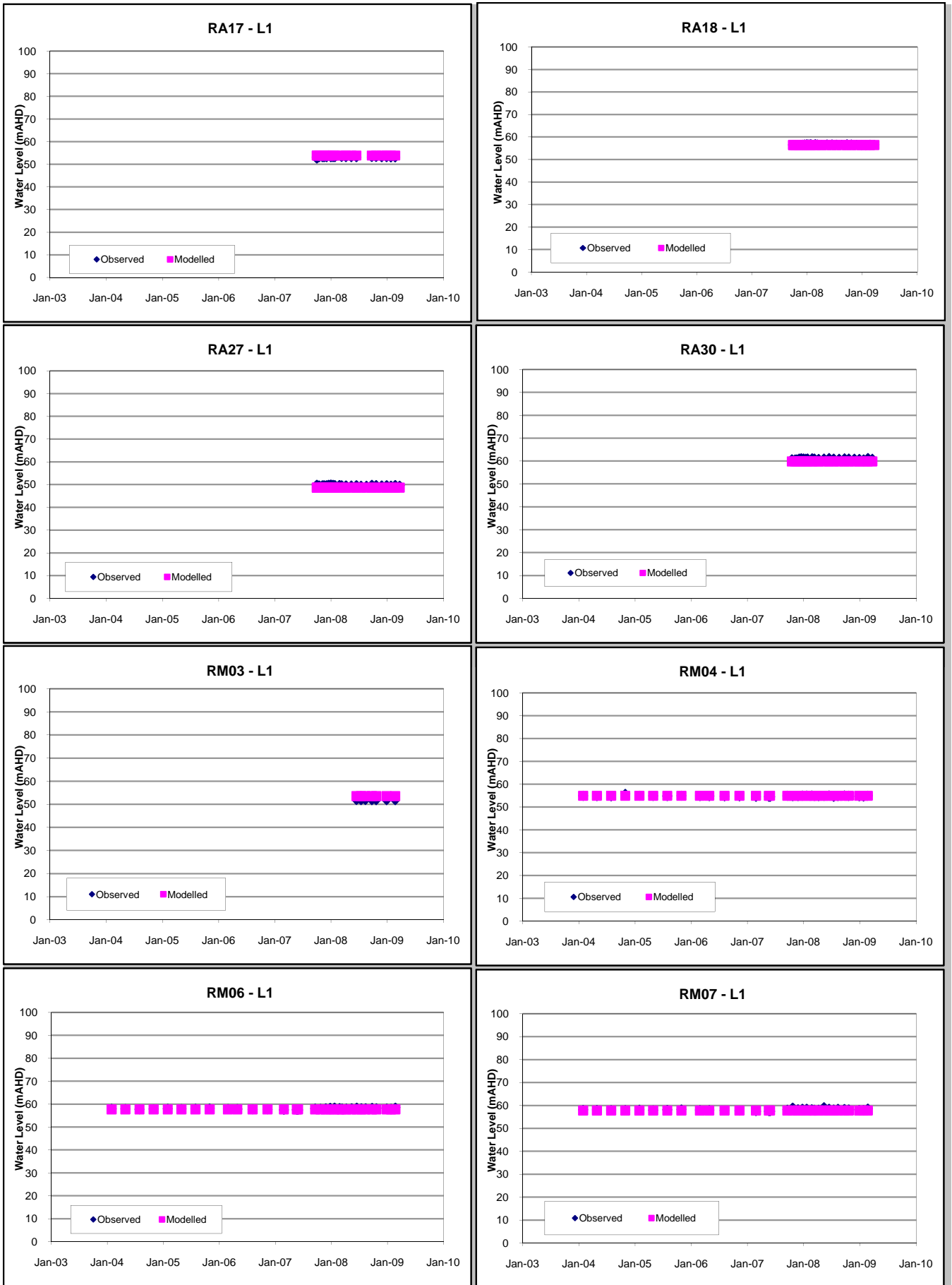
Calibration Parameters		Value	
Count	n	112	
Scaled Mean Sum of Residuals	SMSR	2.23	%
Root Mean Square	RMS	1.86	m
Scaled RMS	SRMD	11.65	%
Root Mean Fraction Square	RMPS	3.32	%
Scaled RMFS	SRMPS	11.47	%
Coefficient of Determination	CD	1.31	

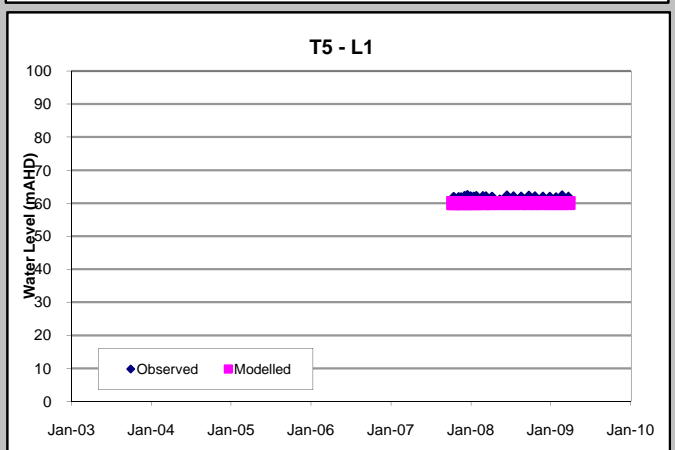
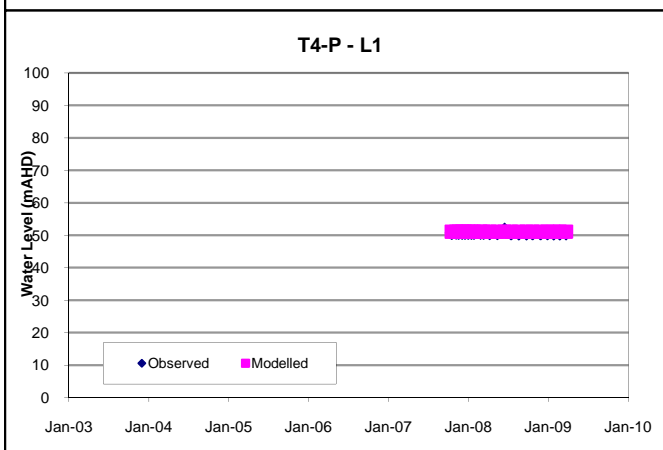
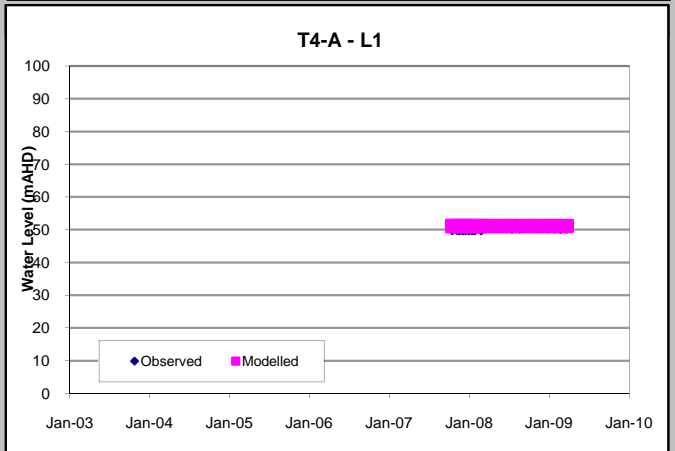
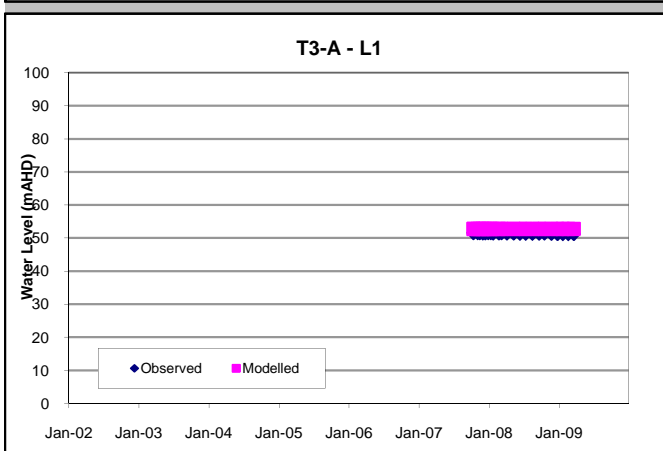
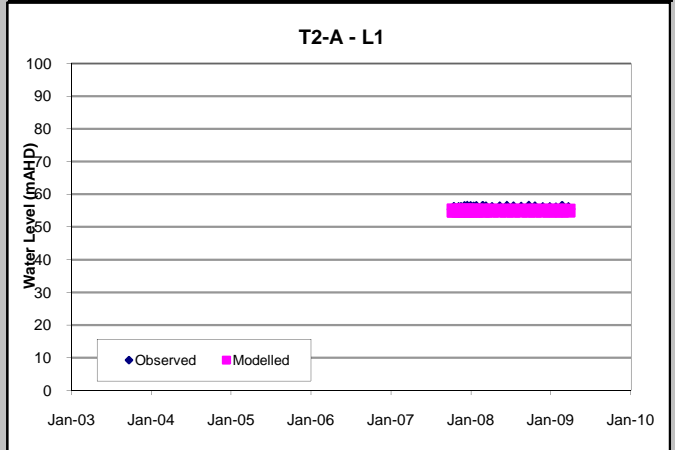
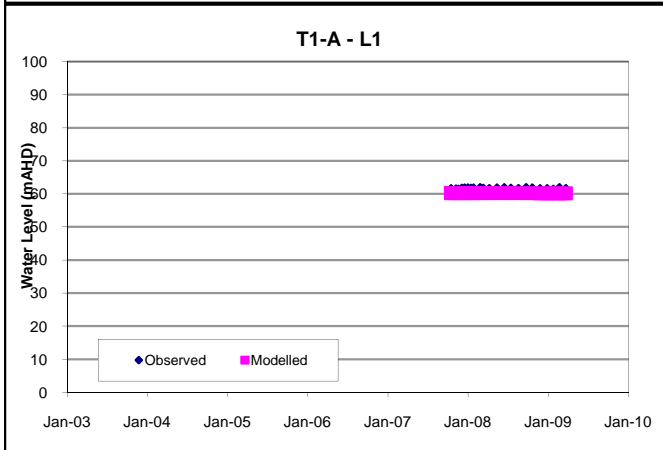
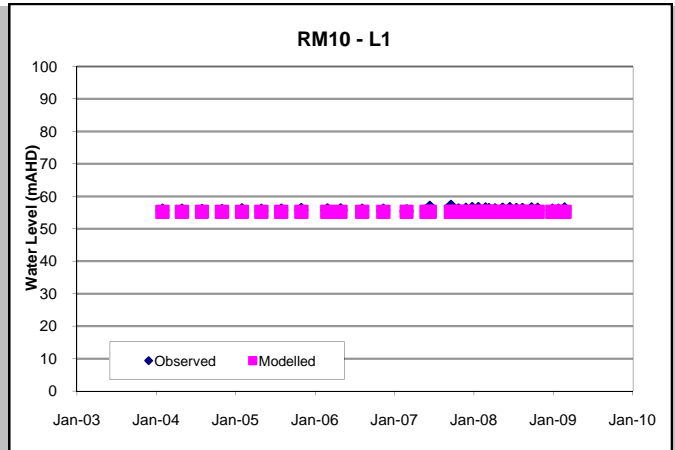
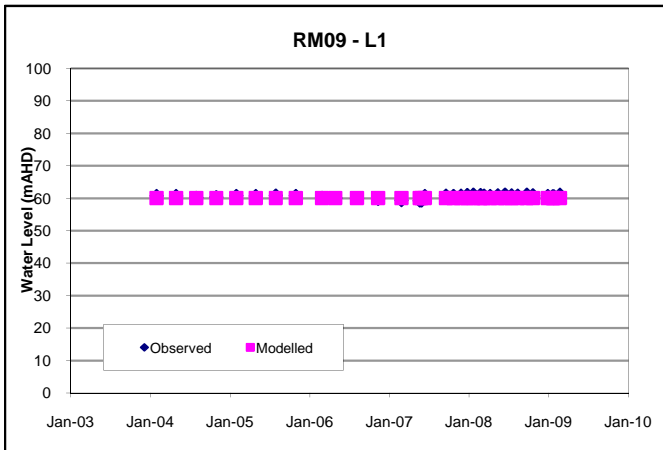
Transient calibration

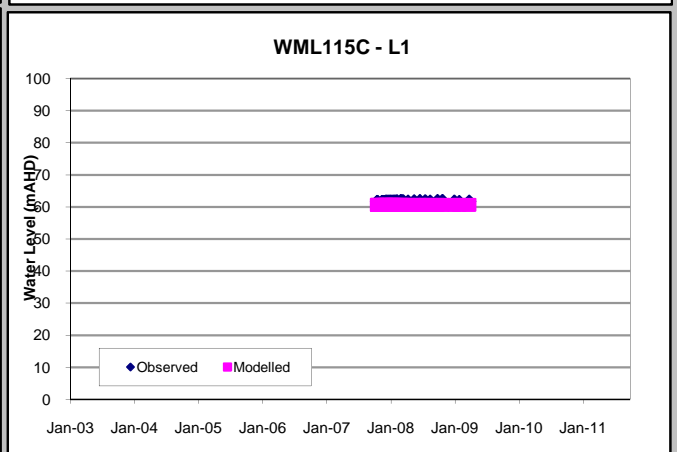
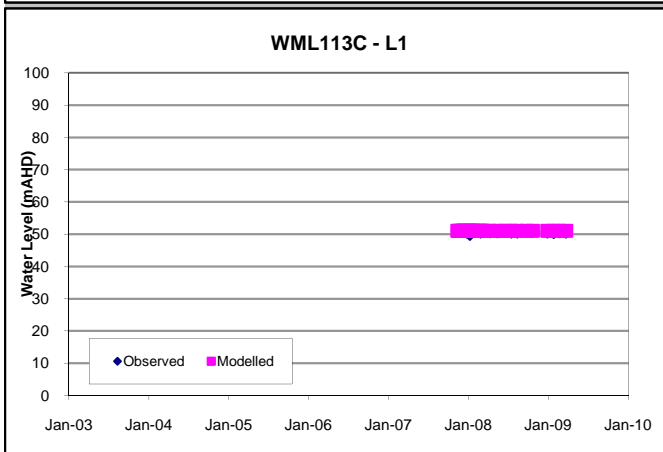
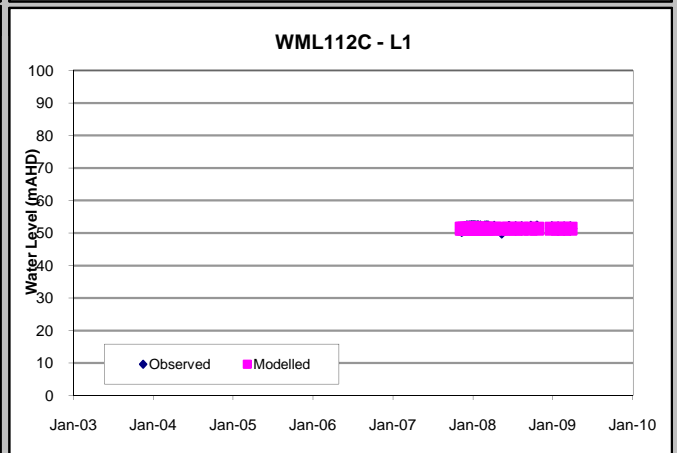
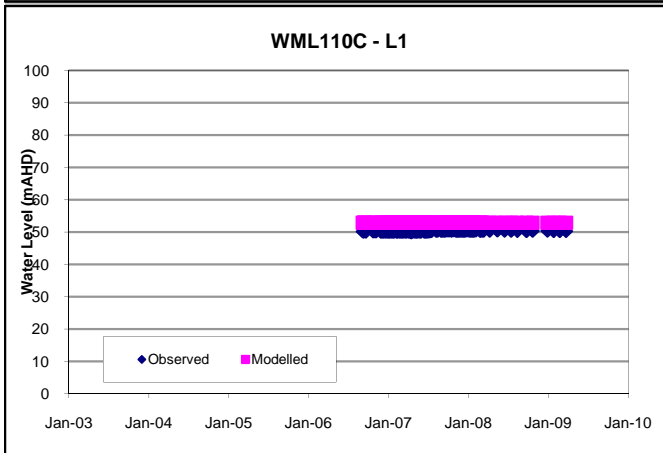
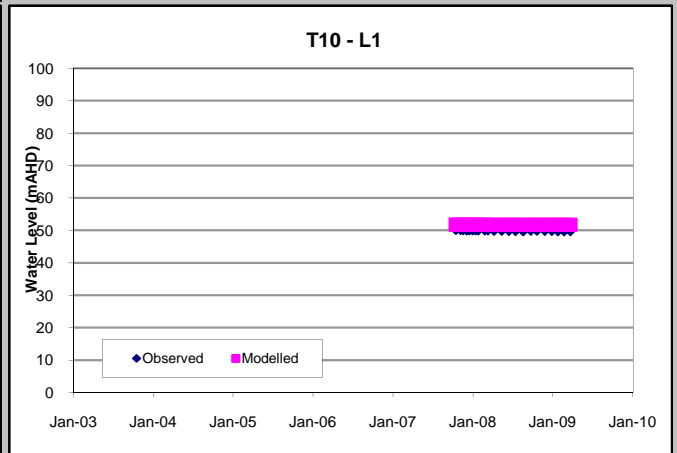
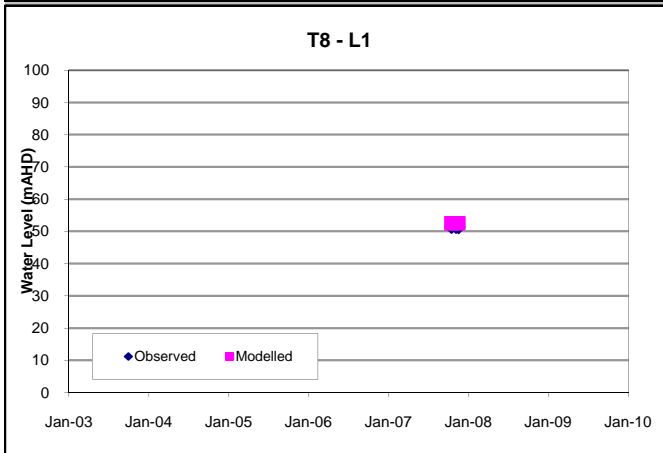
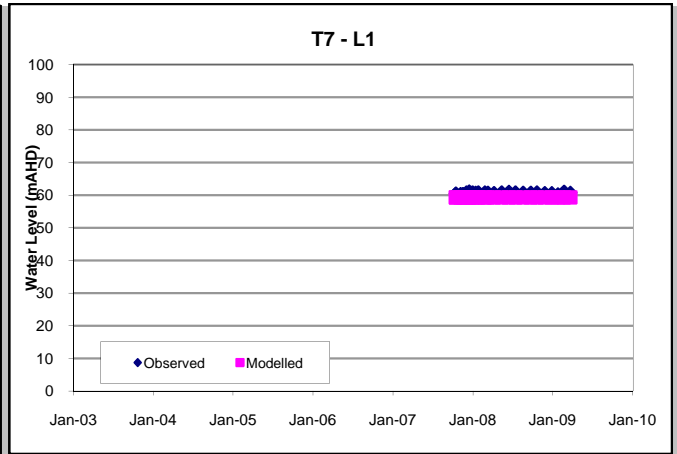
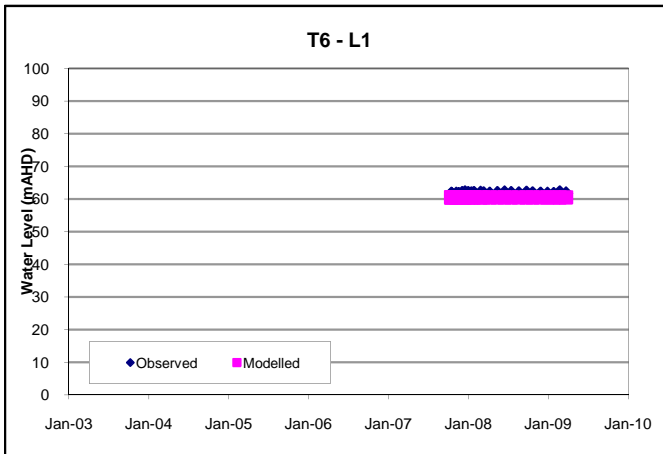
Transient calibration has focused on matching trends rather than focusing on matching absolute temporal water levels and therefore is qualitative rather than quantitative. Details of These factors are described in detail within the main body of the report.

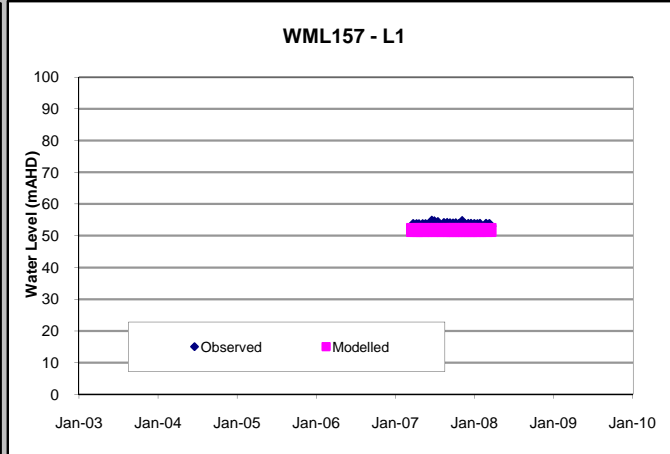
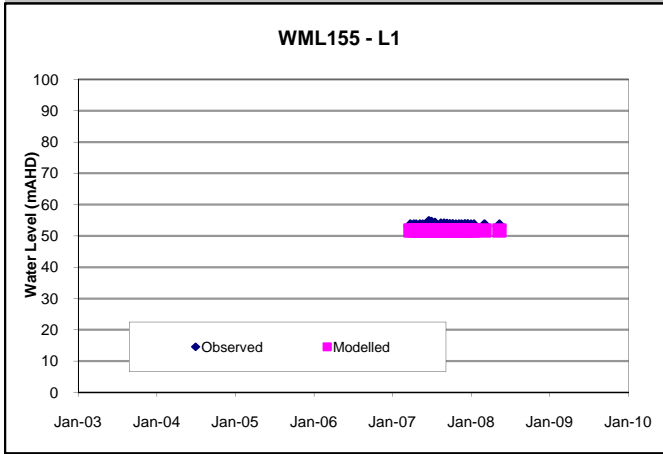
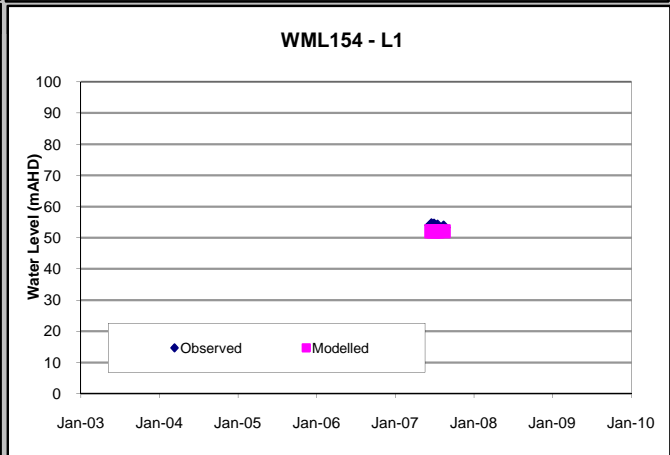
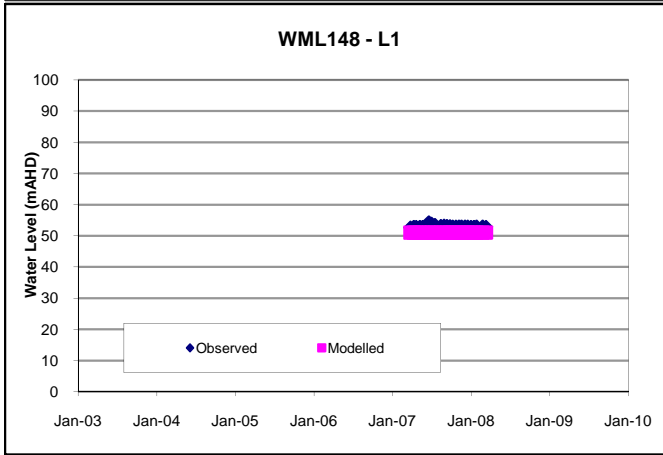
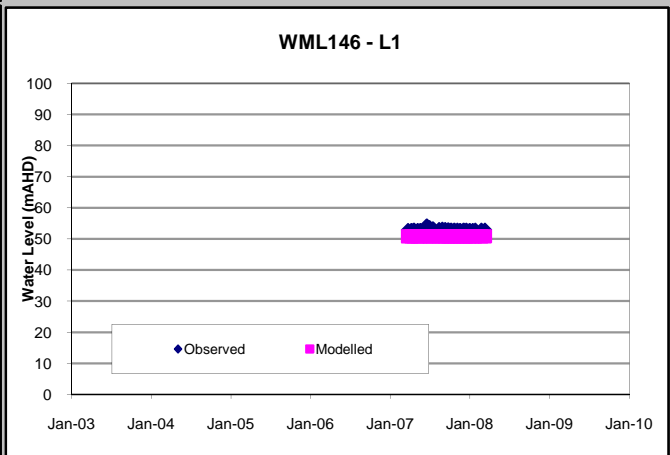
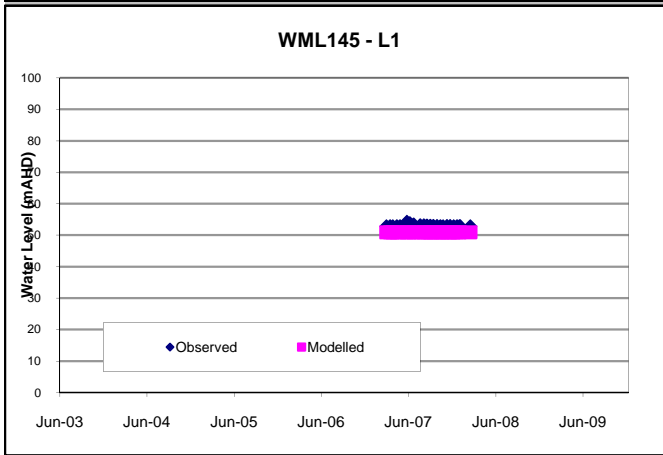
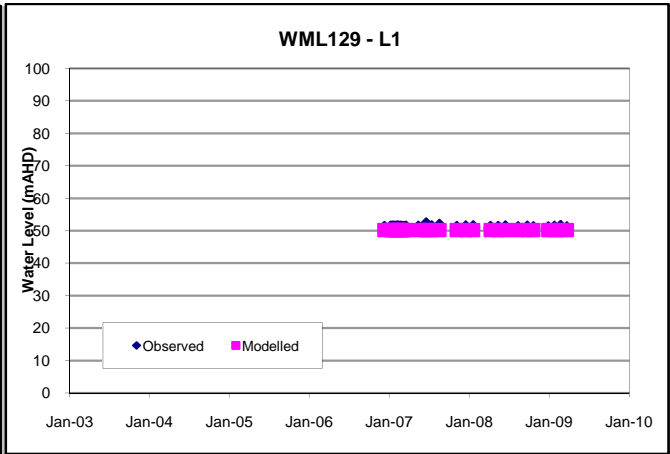
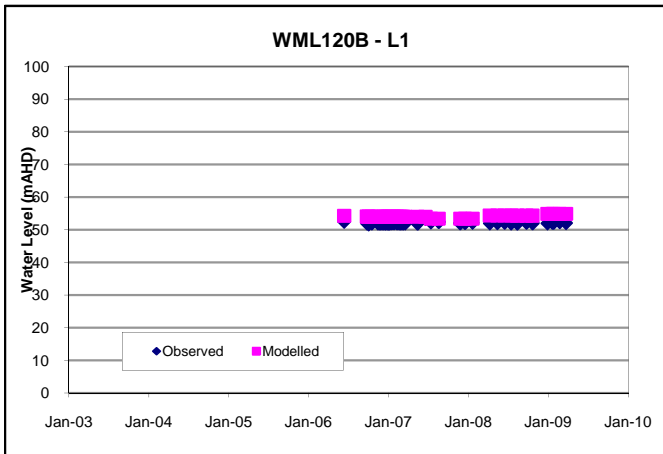
Transient calibration hydrographs were produced for around 150 piezometers, which measured groundwater levels in multiple seams from the alluvium right through to the Lower Barrett seam. The following hydrographs display levels or responses which illustrate the qualitative transient calibration performance of the model. The hydrographs are shown in Figures E12 to E36.

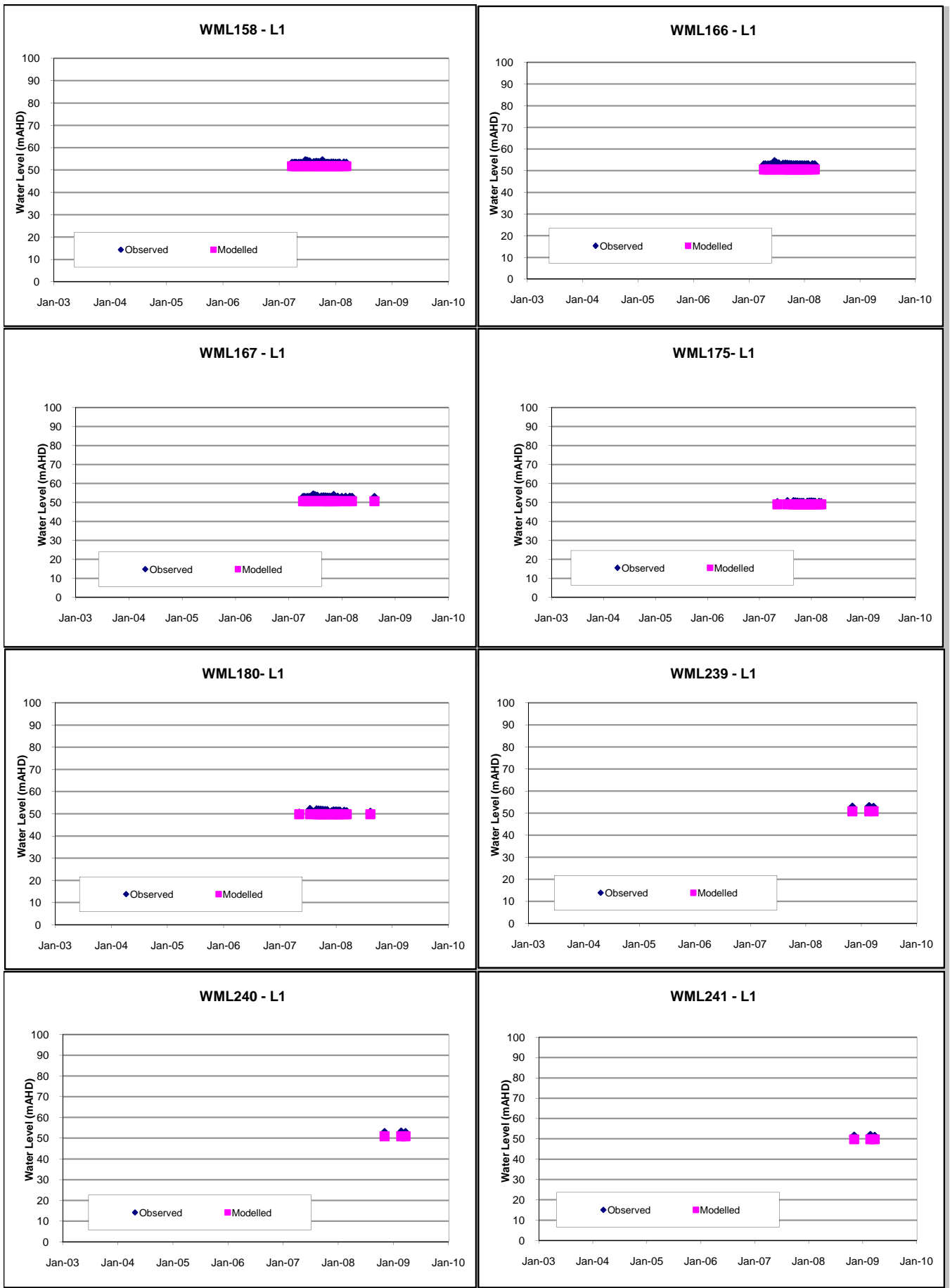


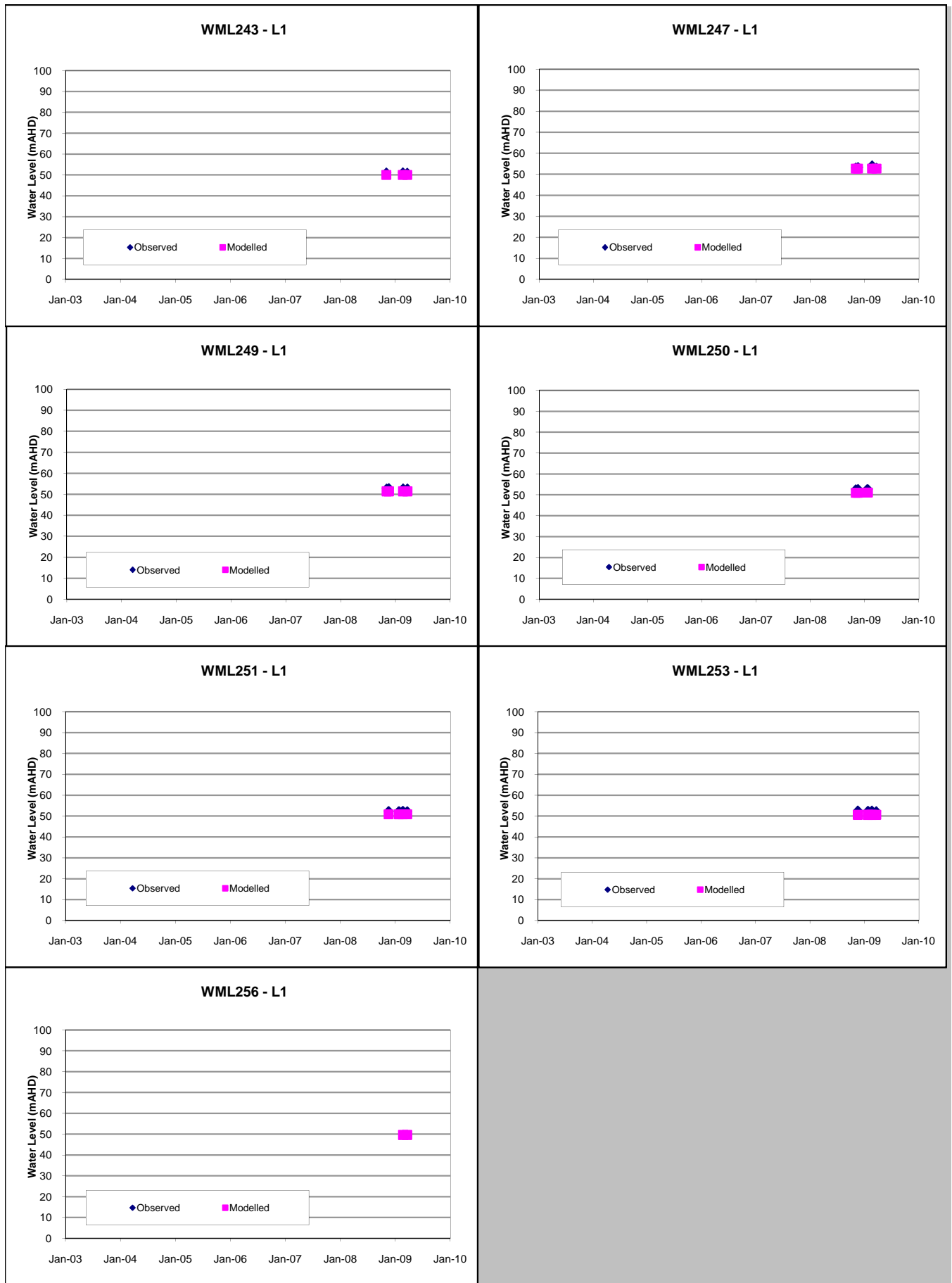


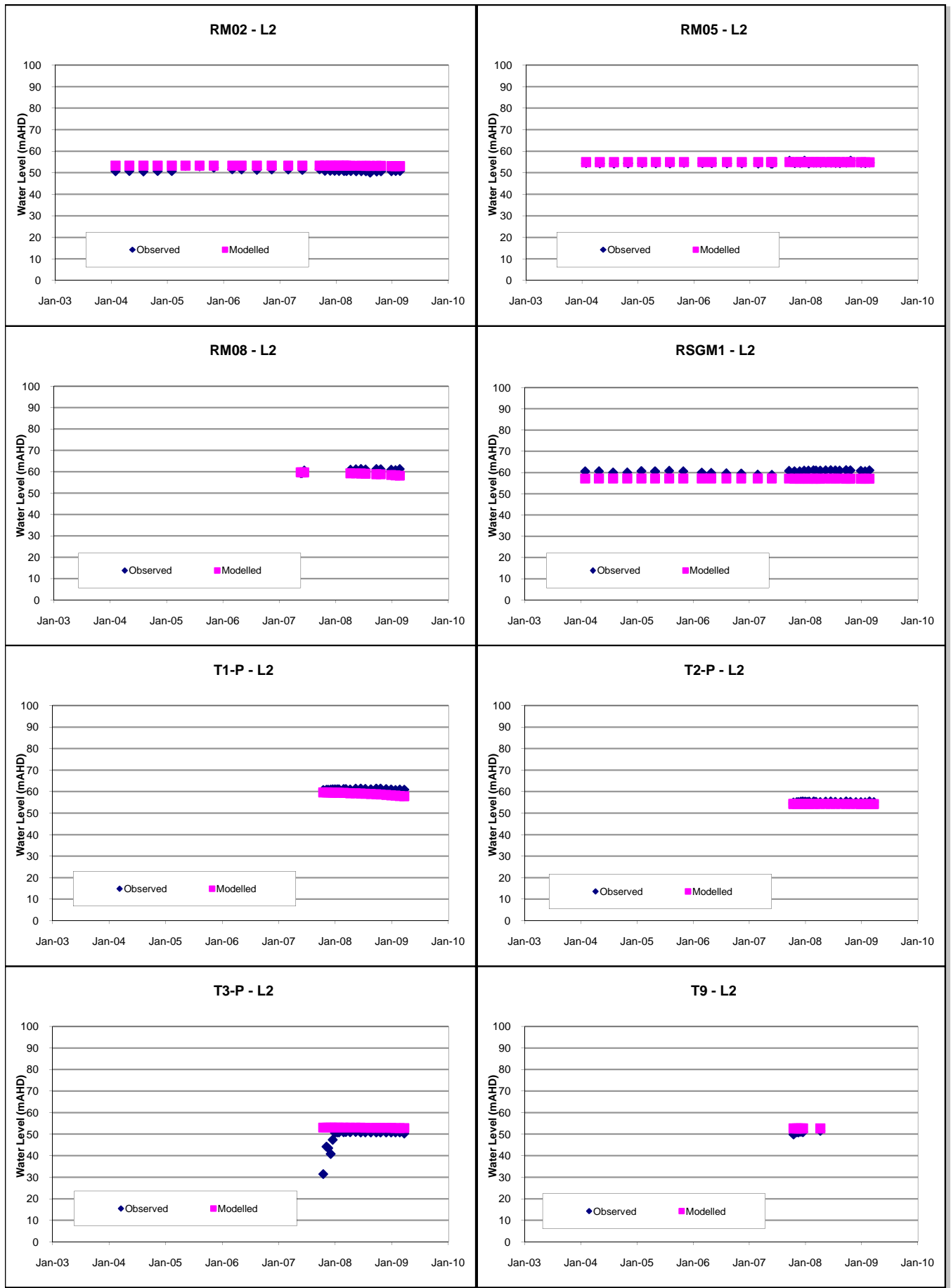


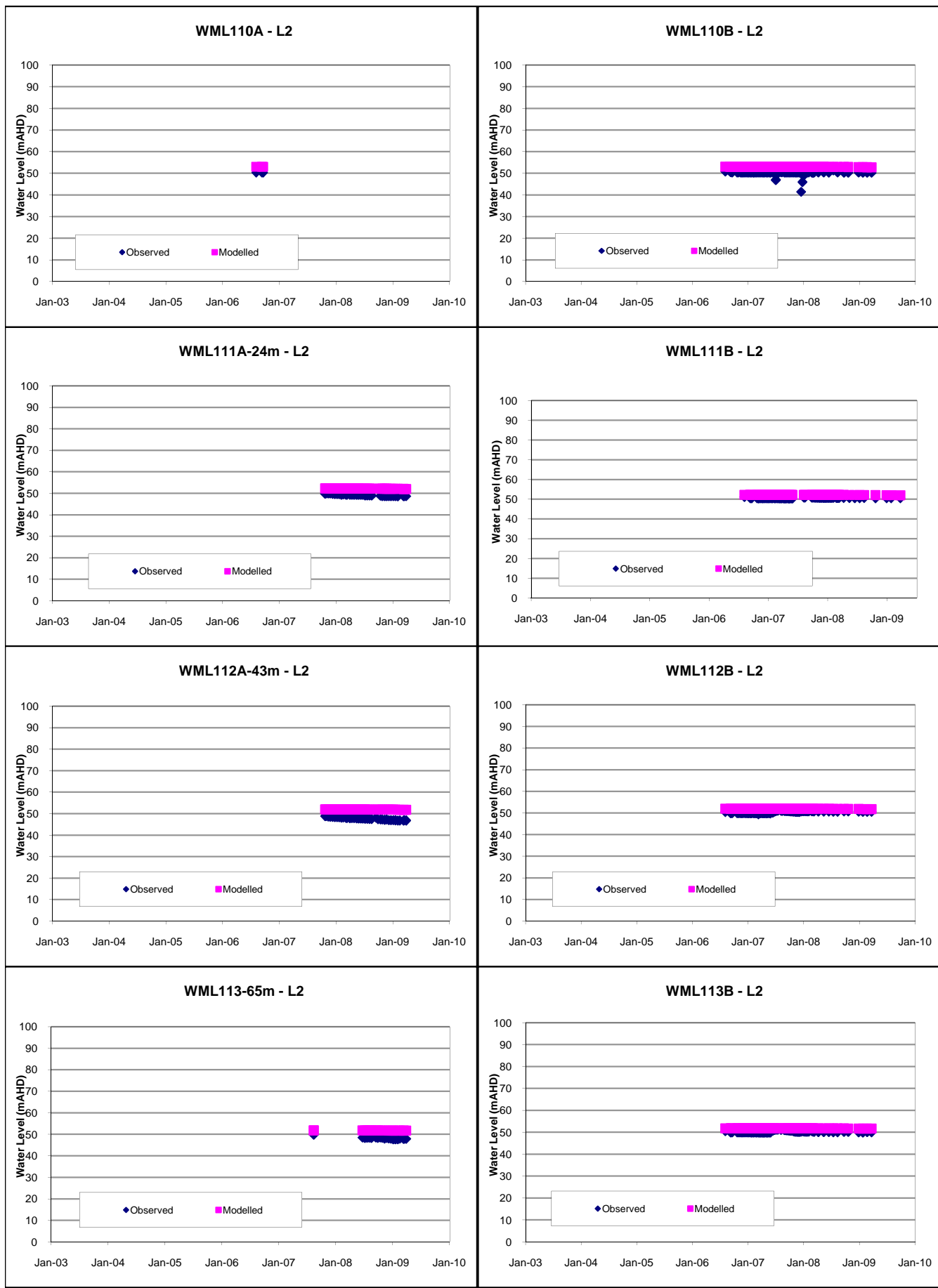


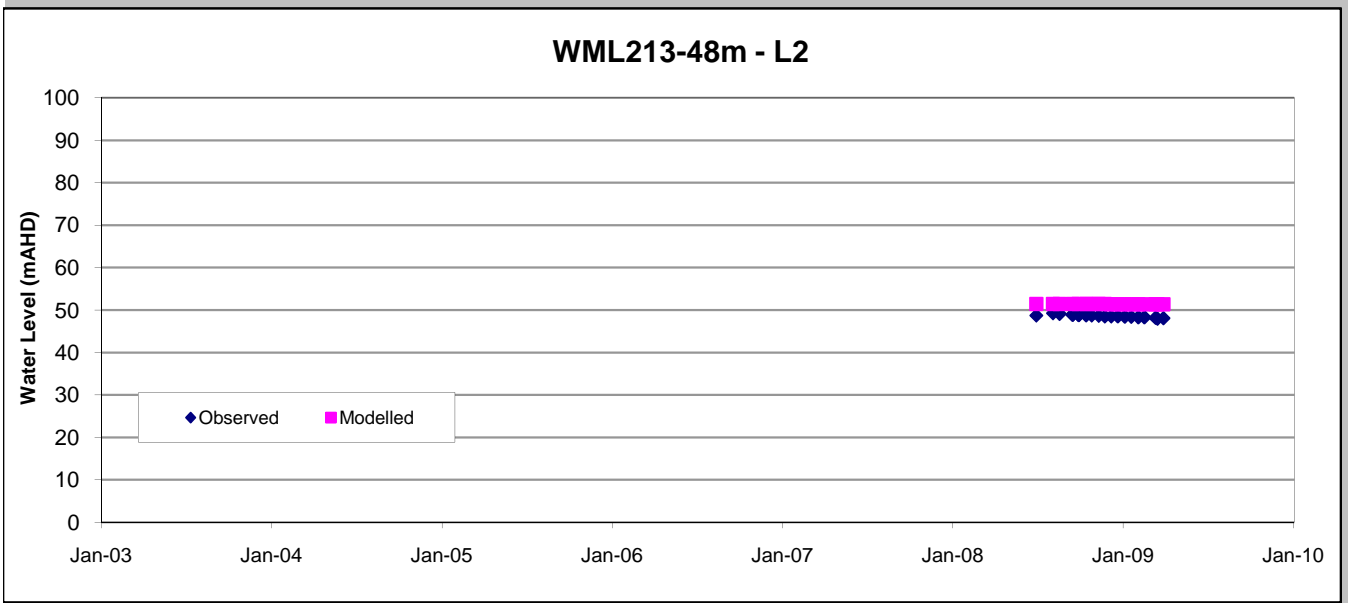
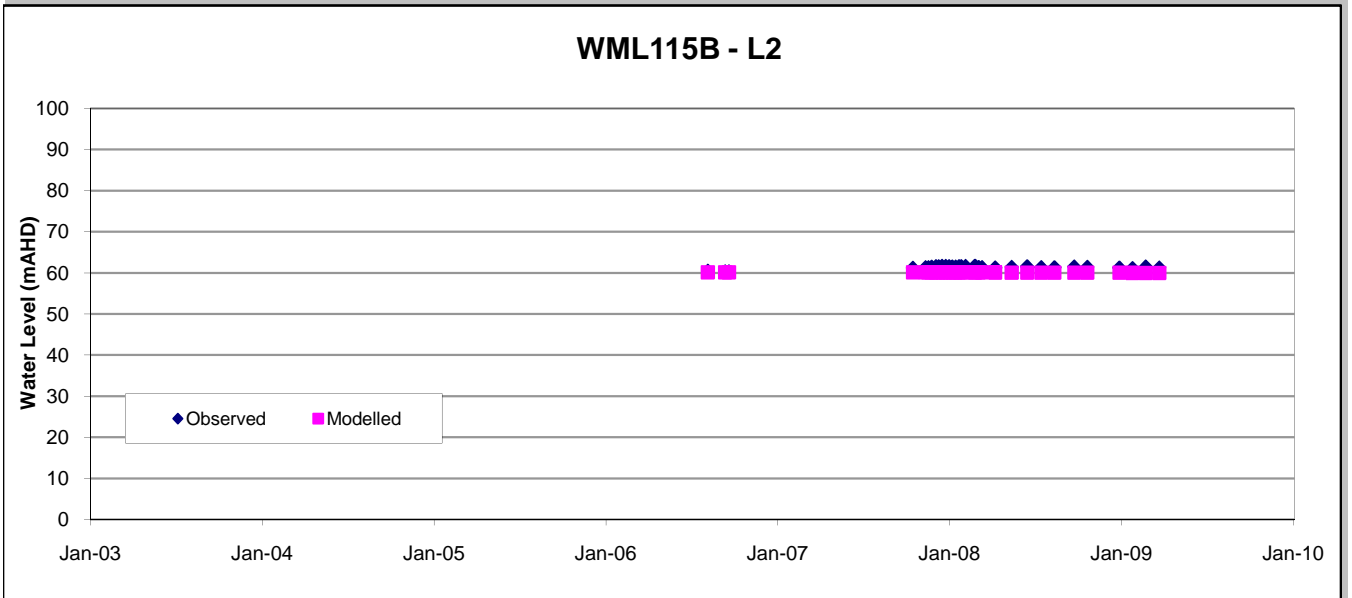
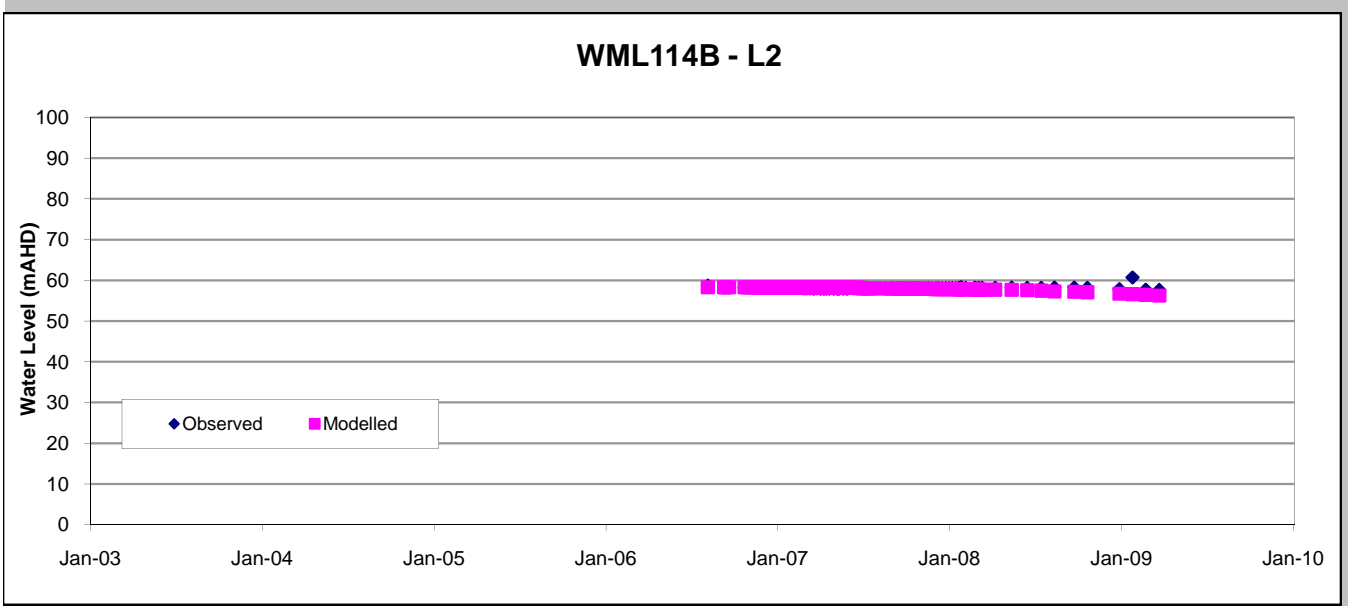


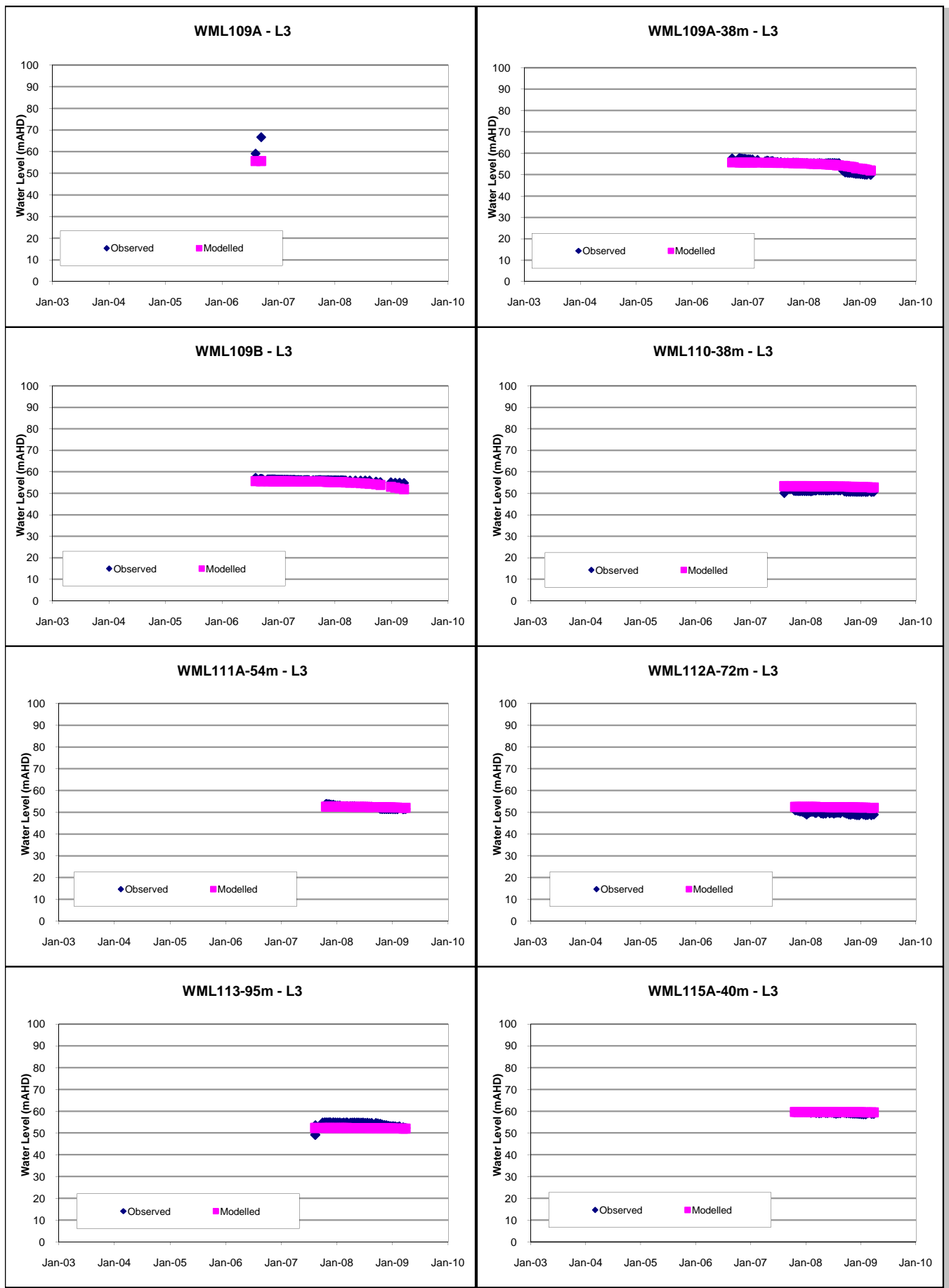




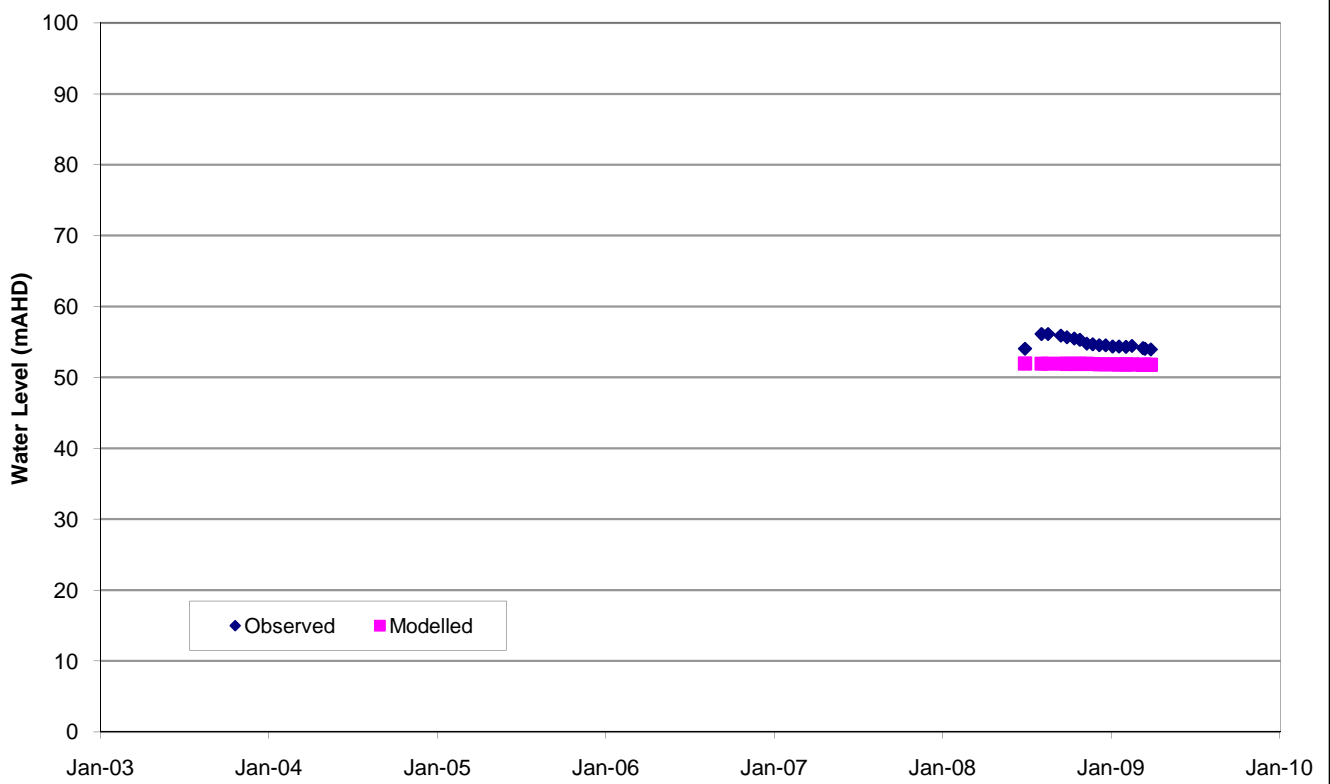


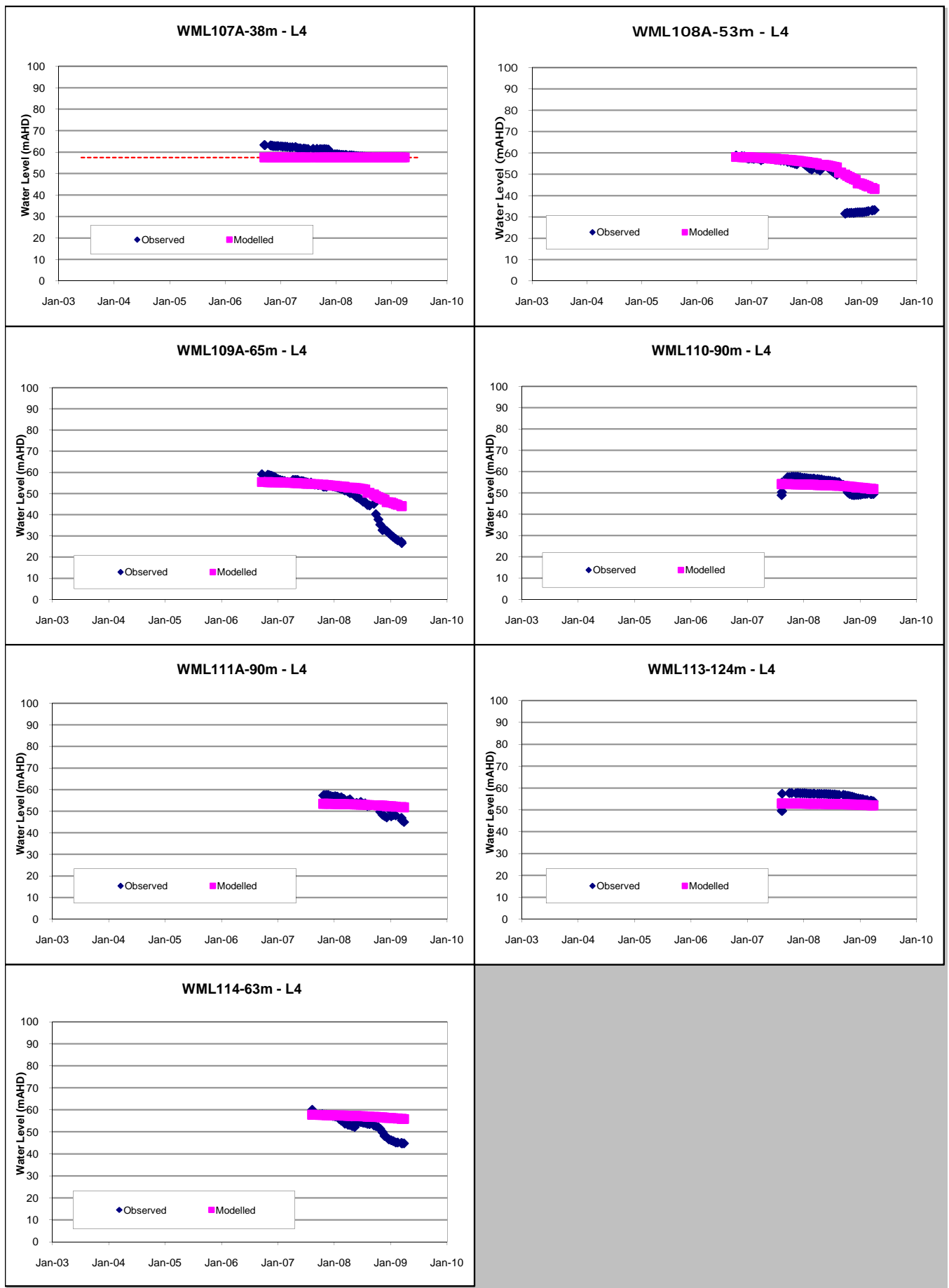




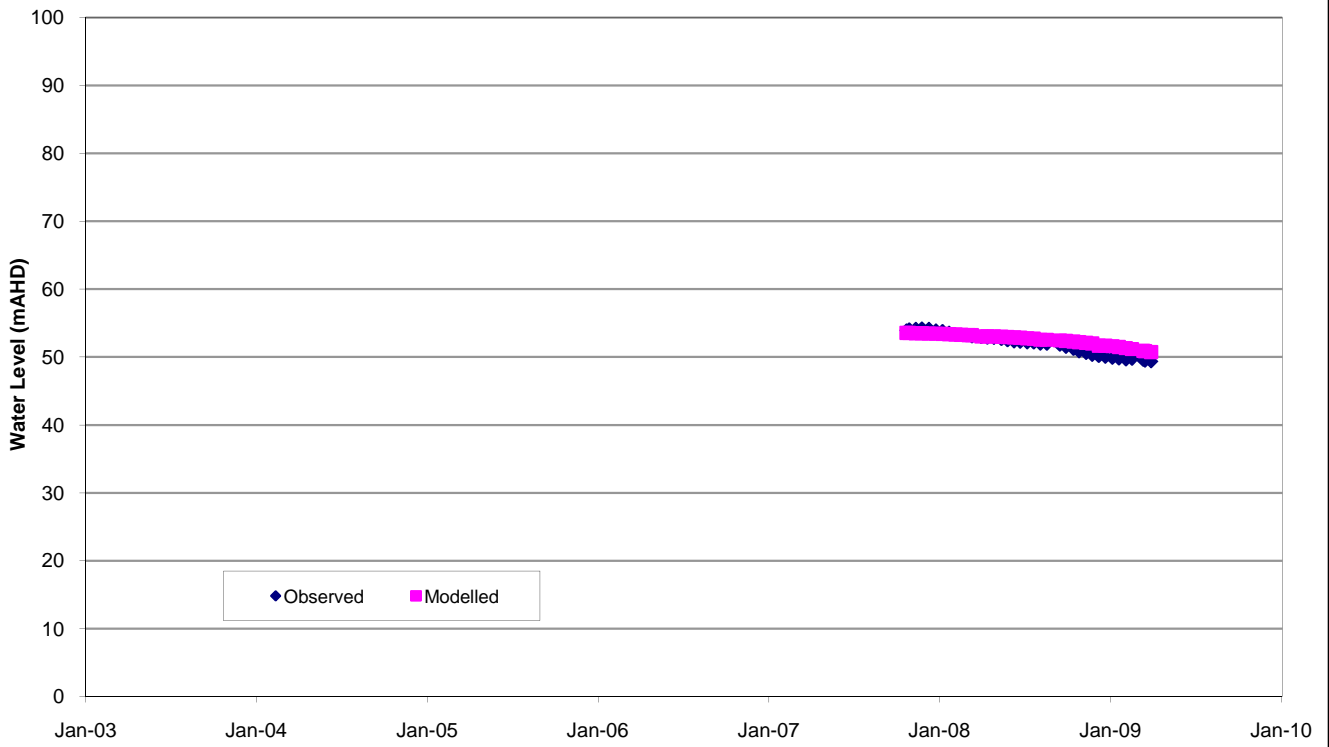


WML213-110.5m - L3

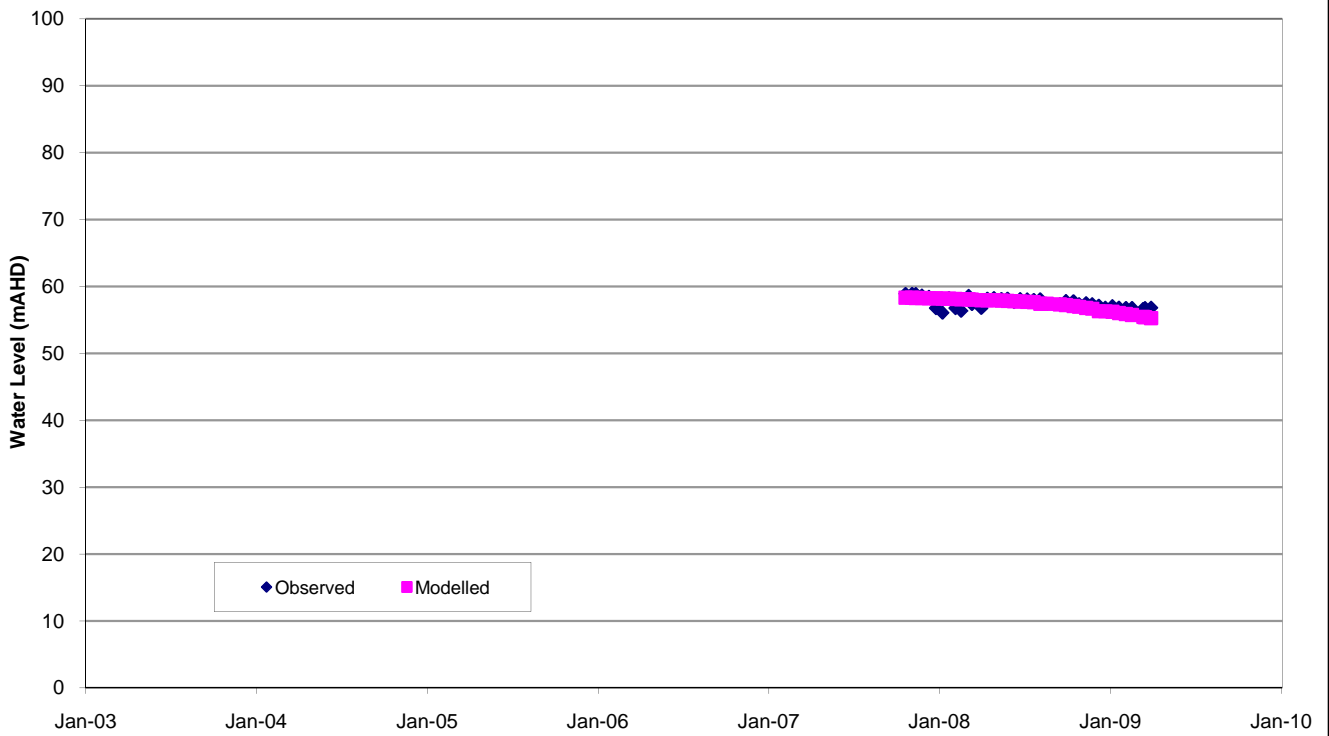


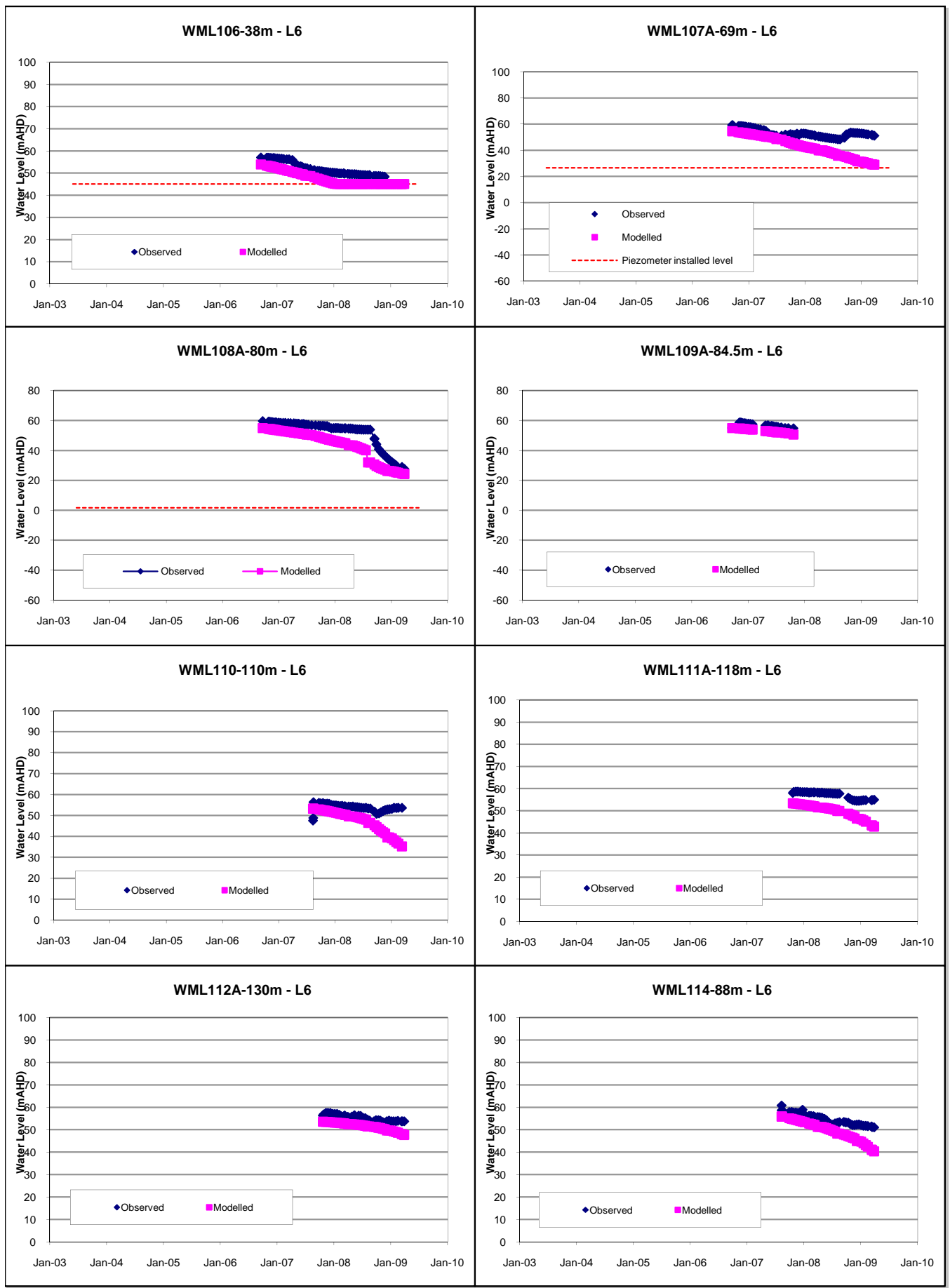


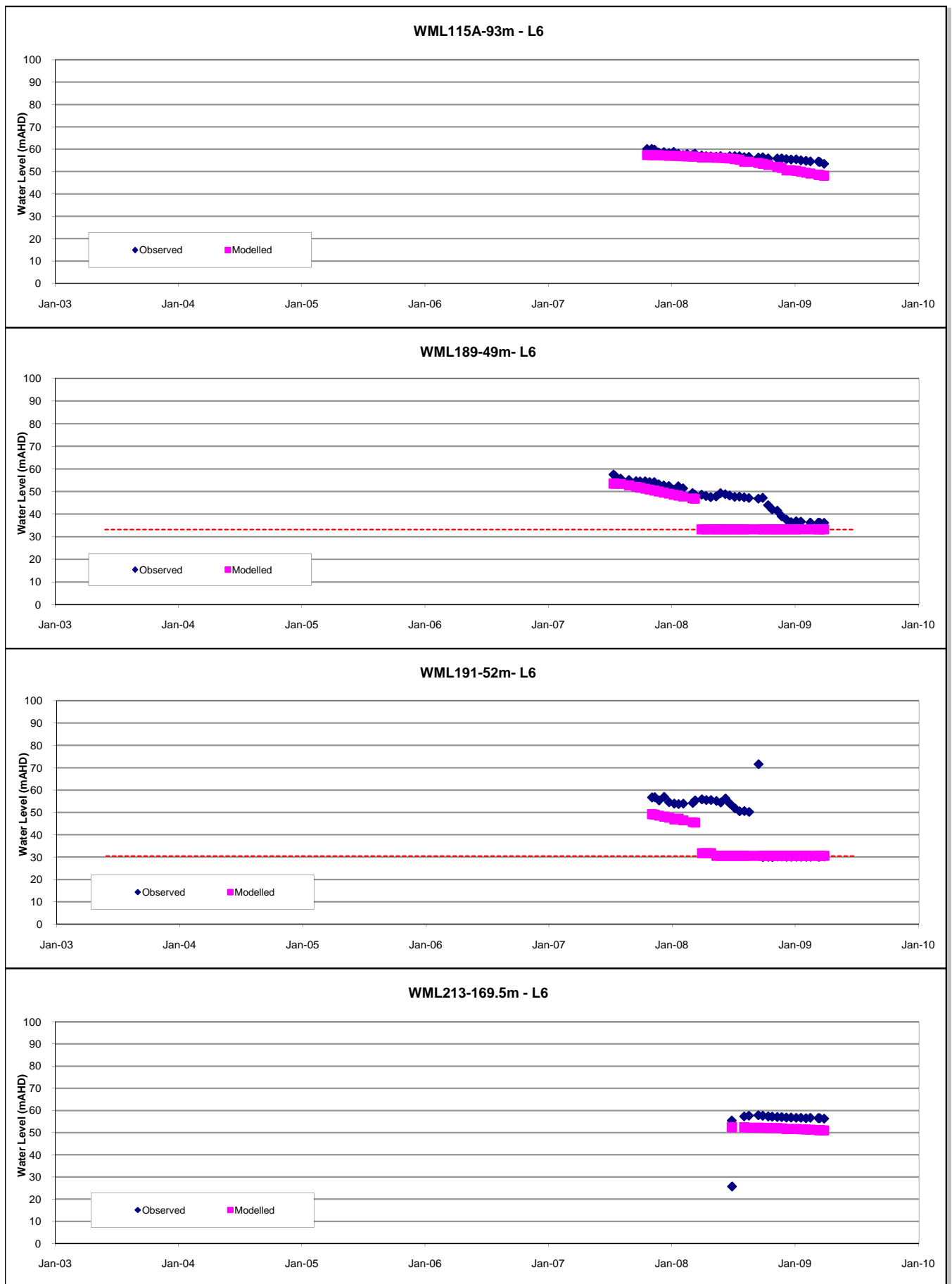
WML112A-101m - L5

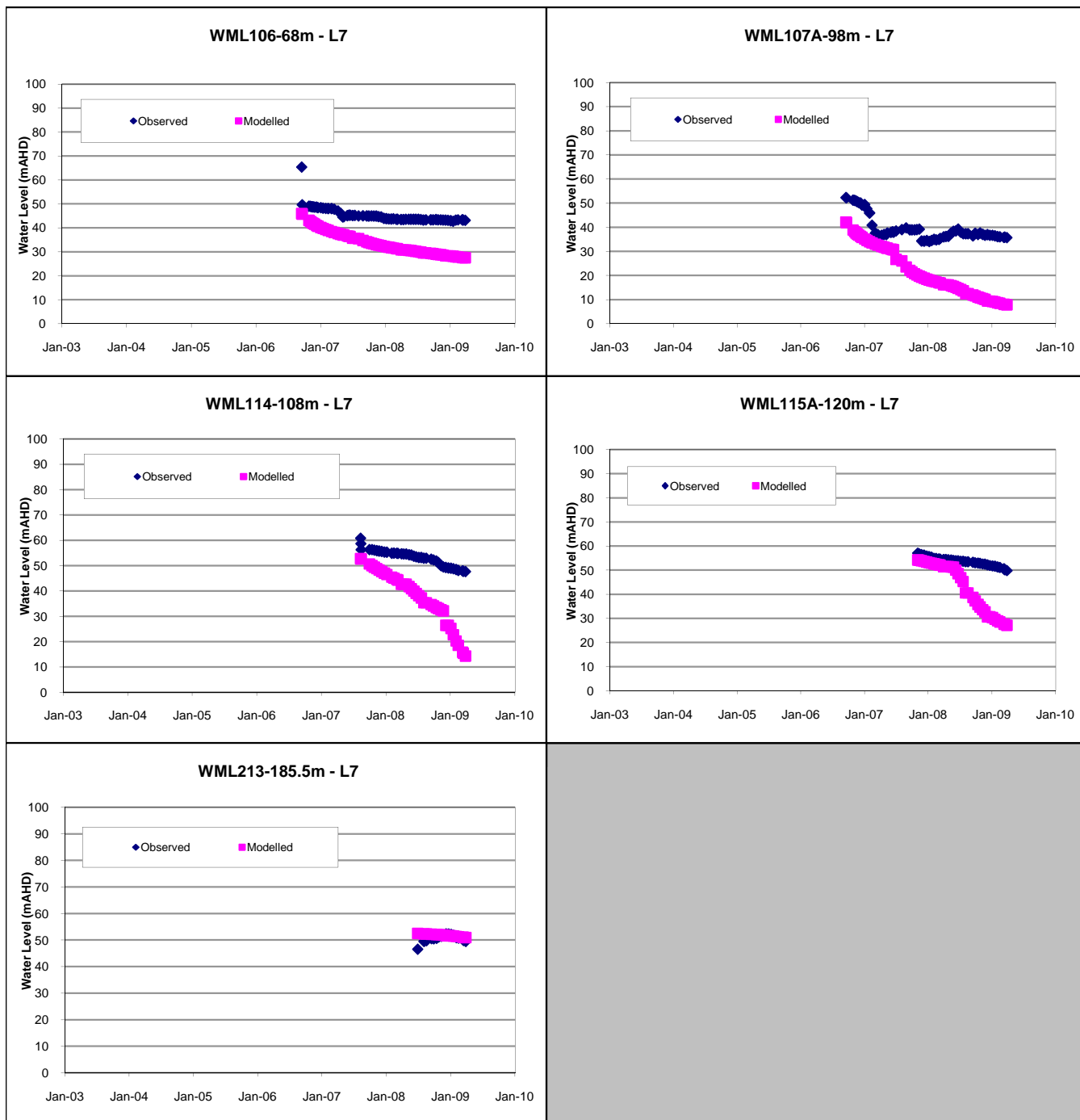


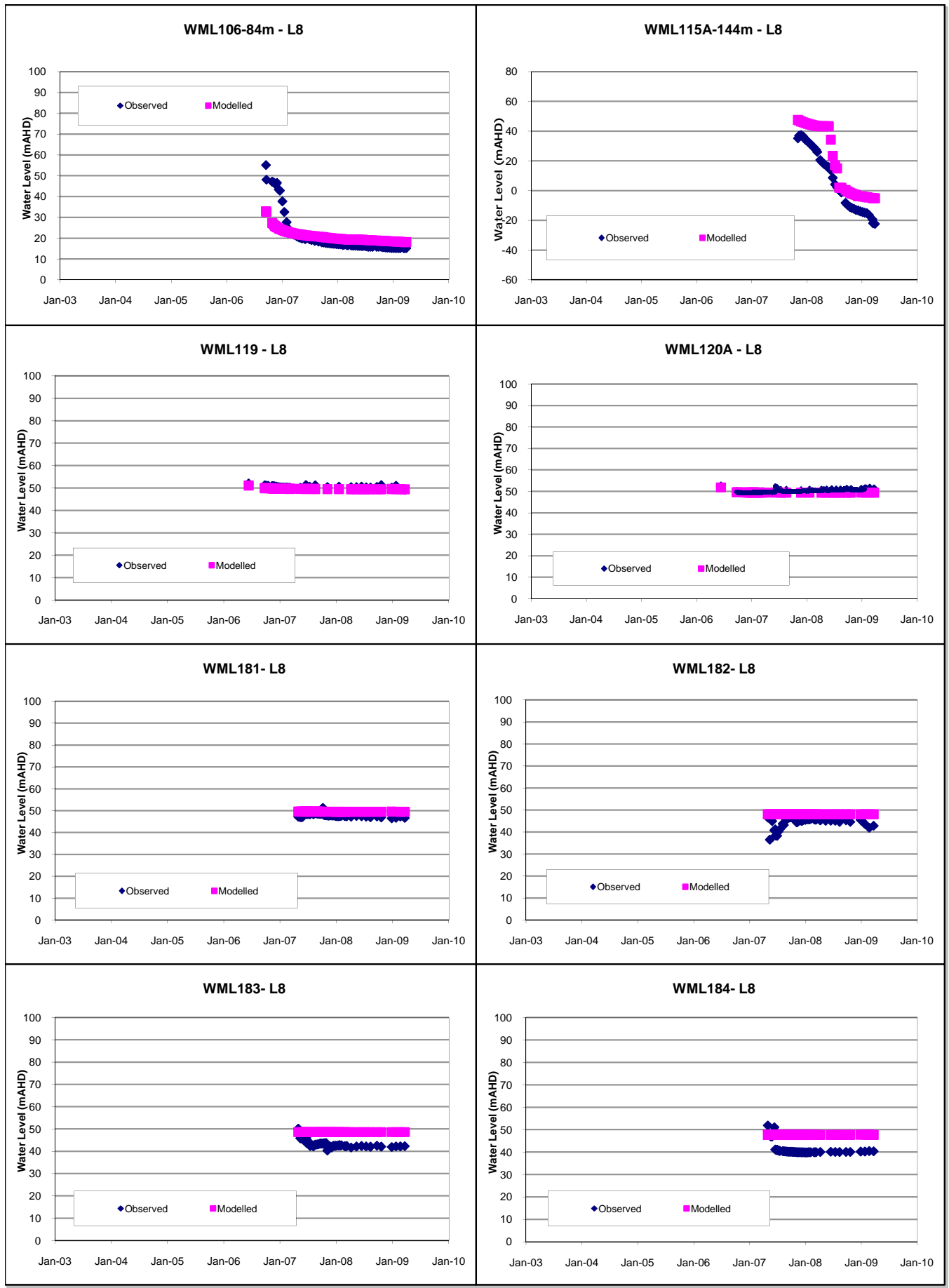
WML115A-72m - L5

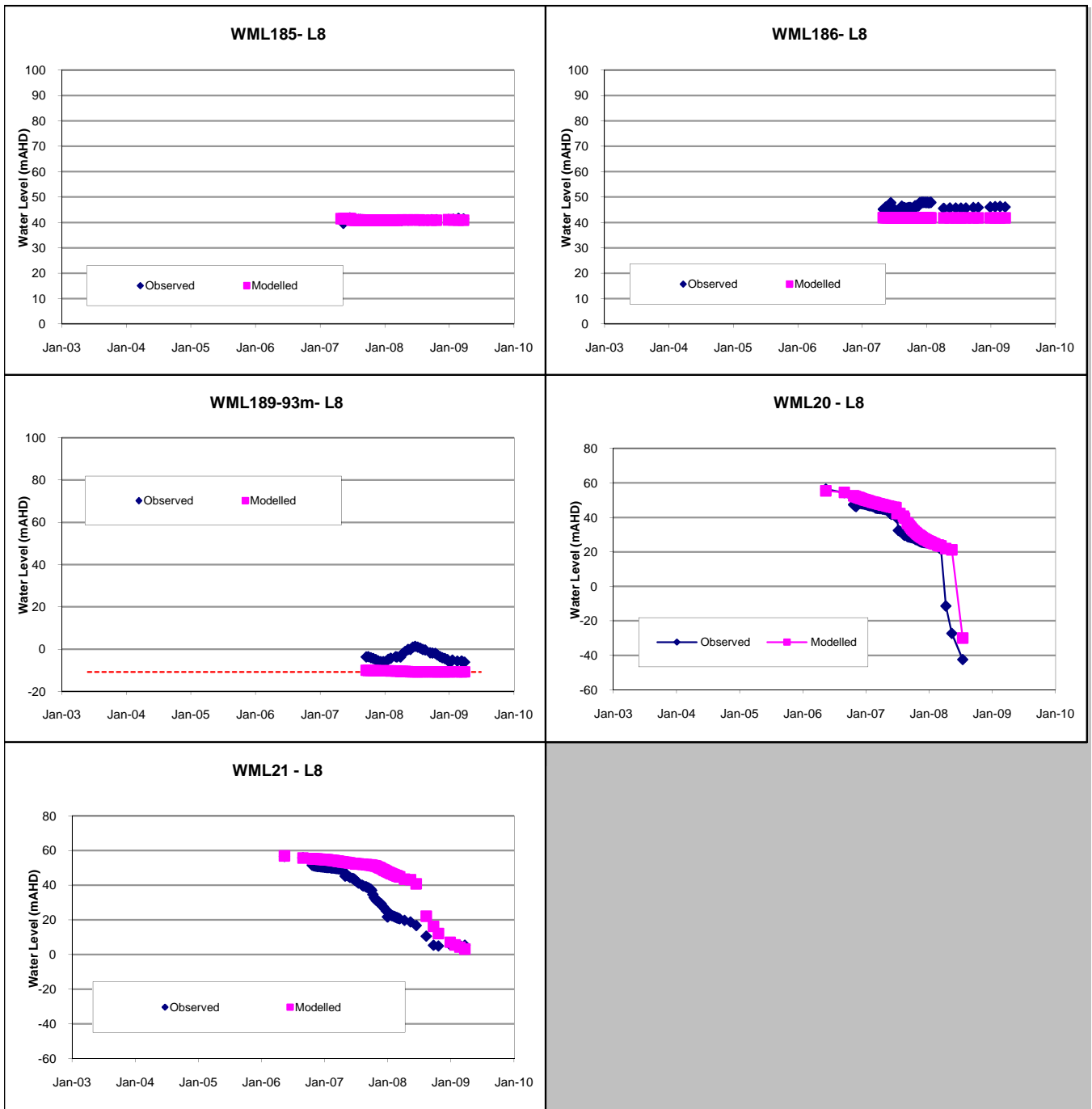


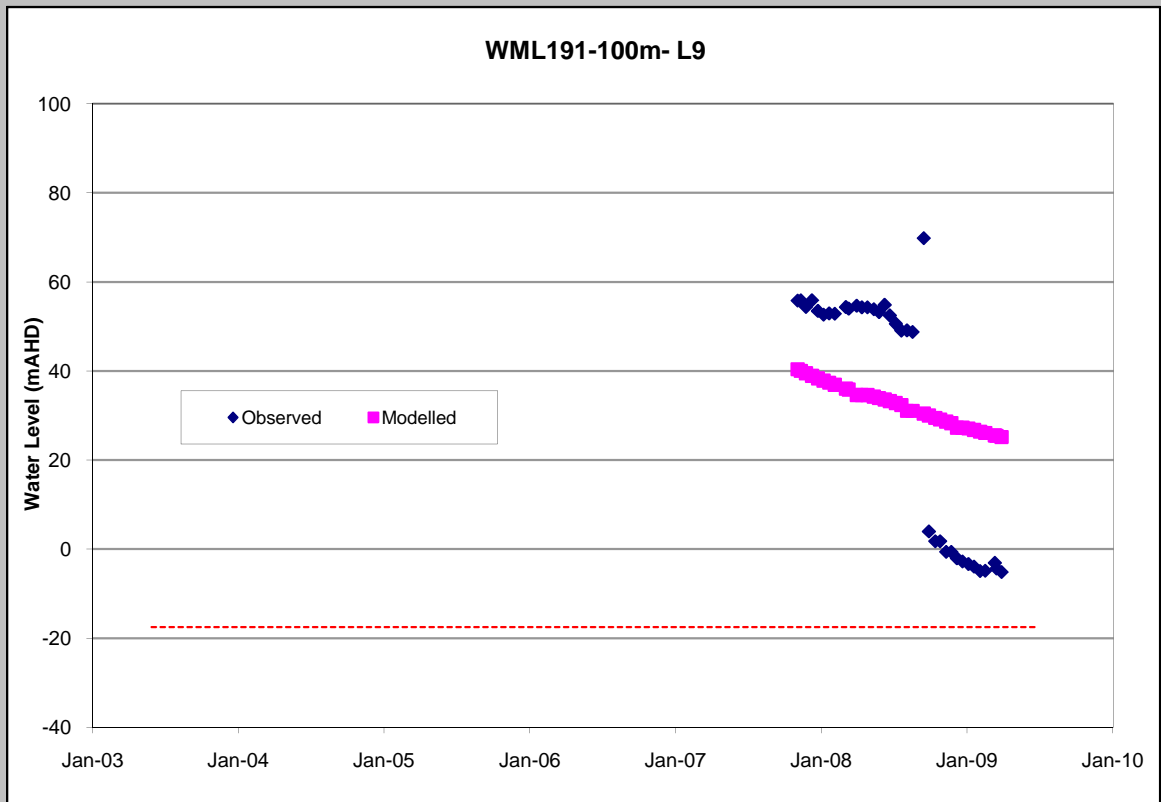


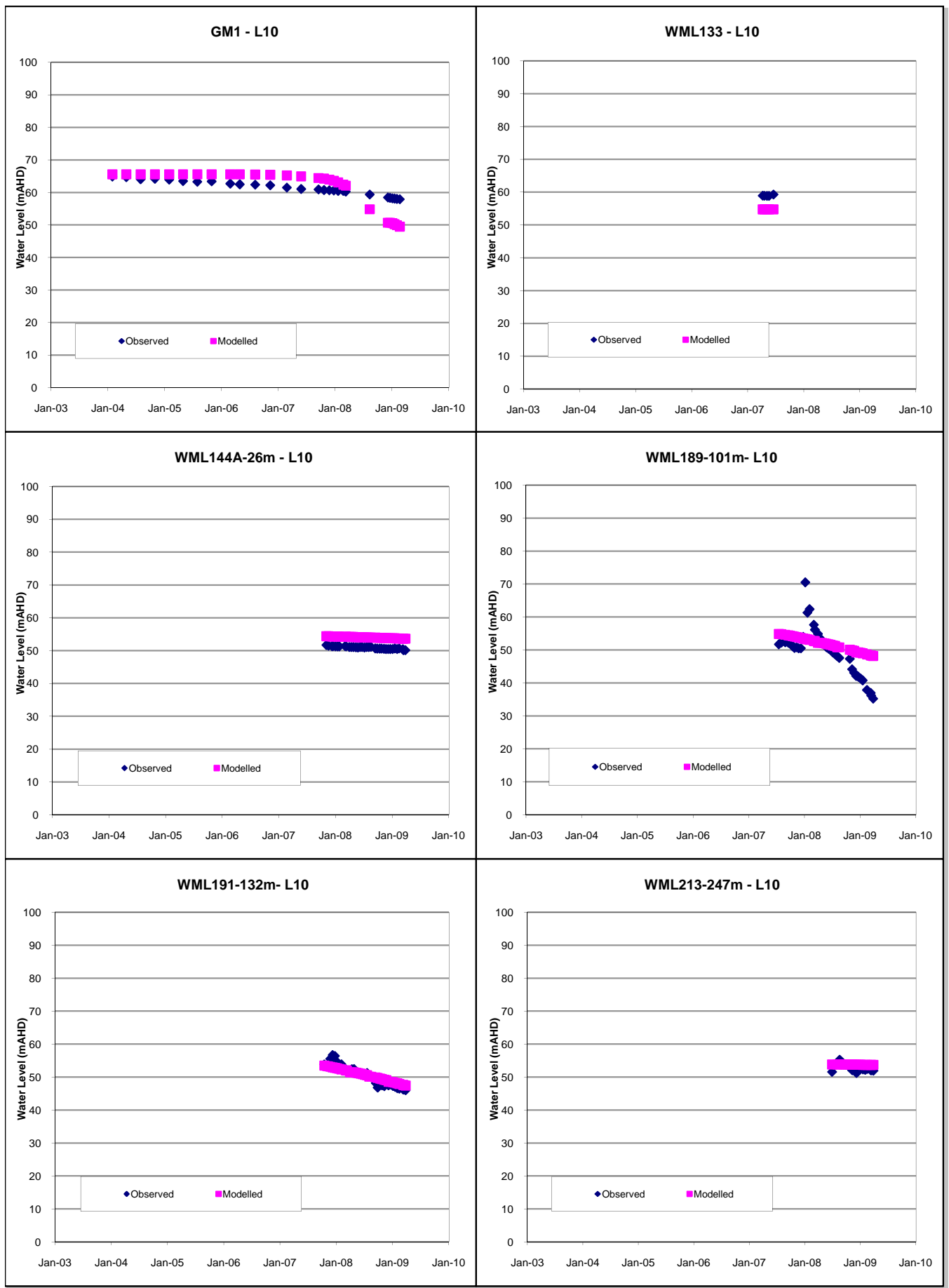


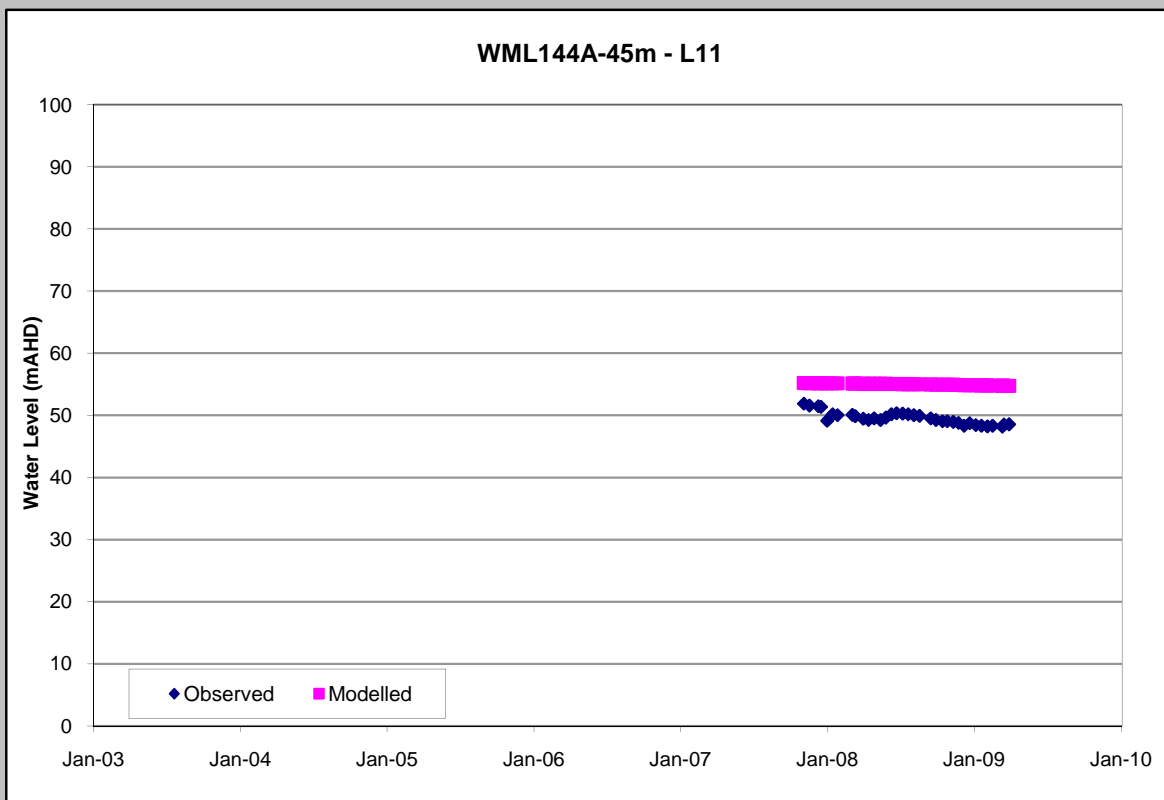
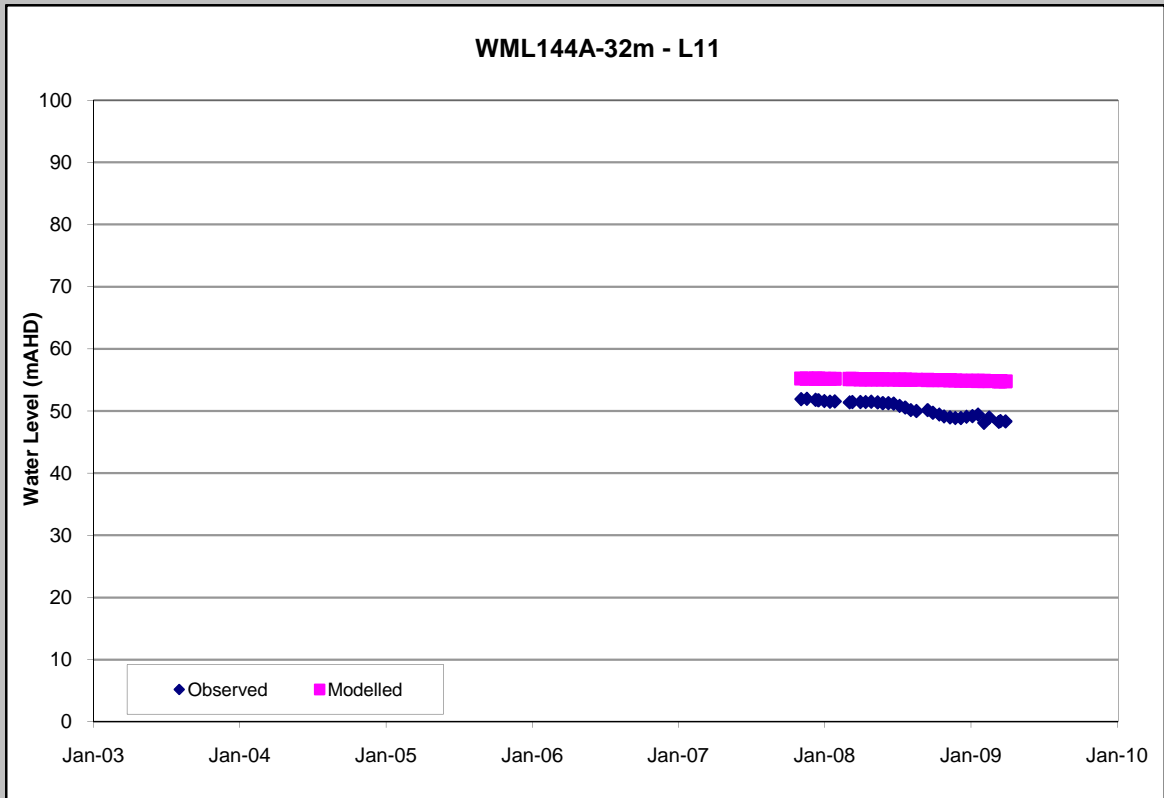


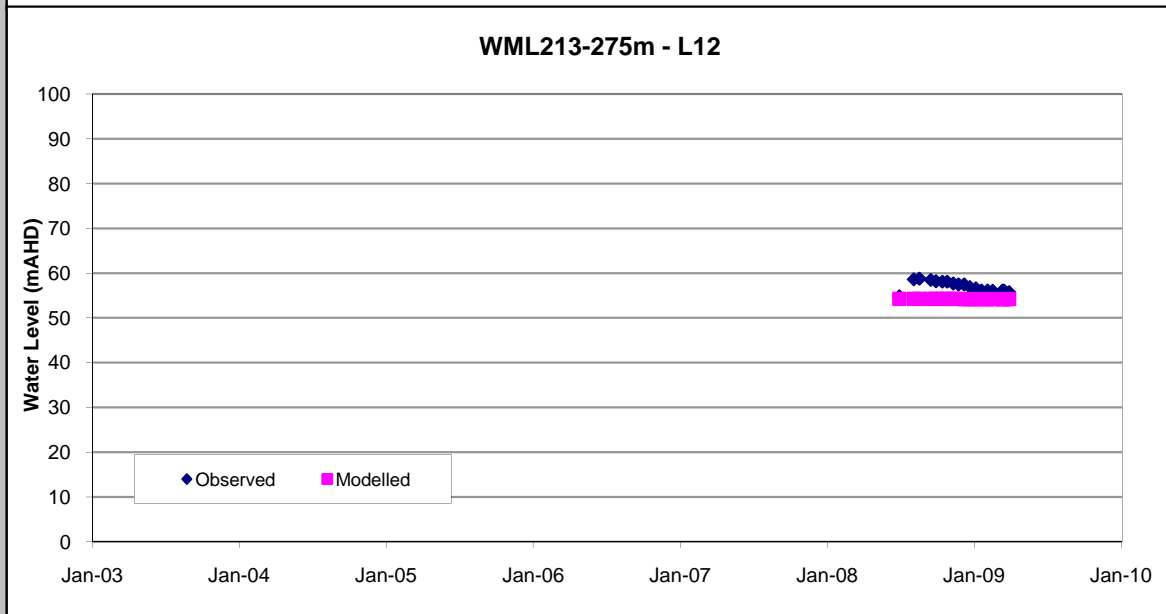
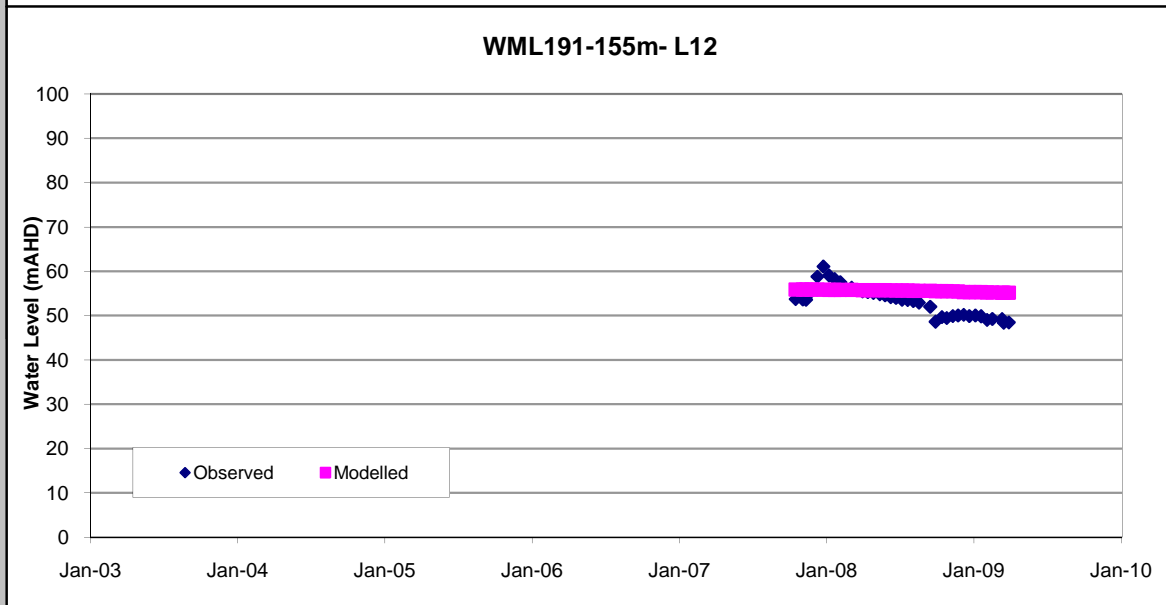
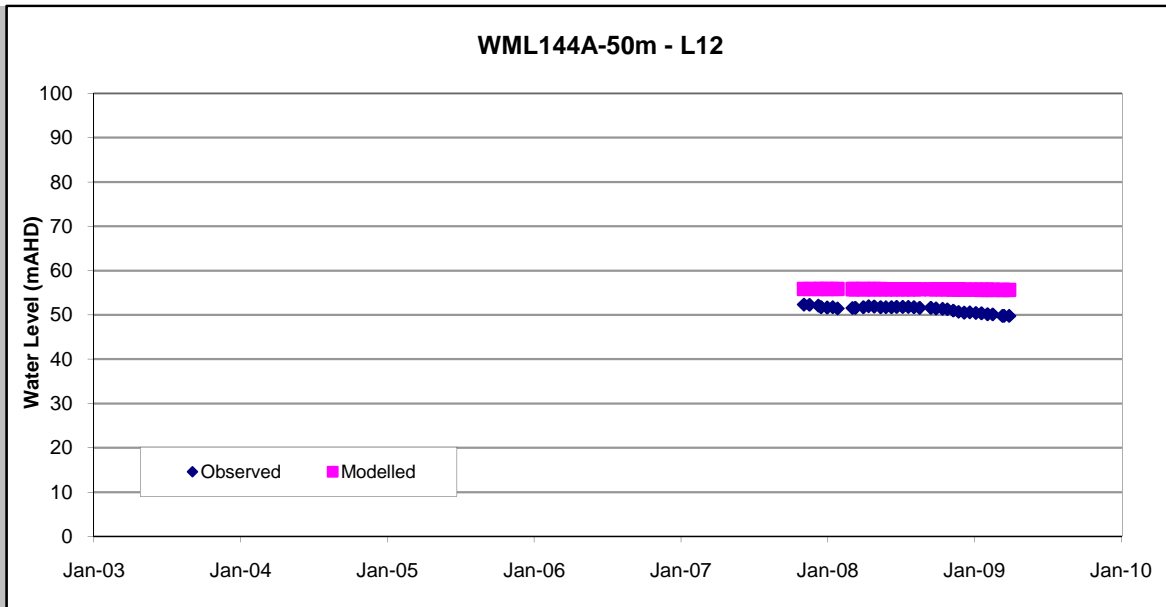


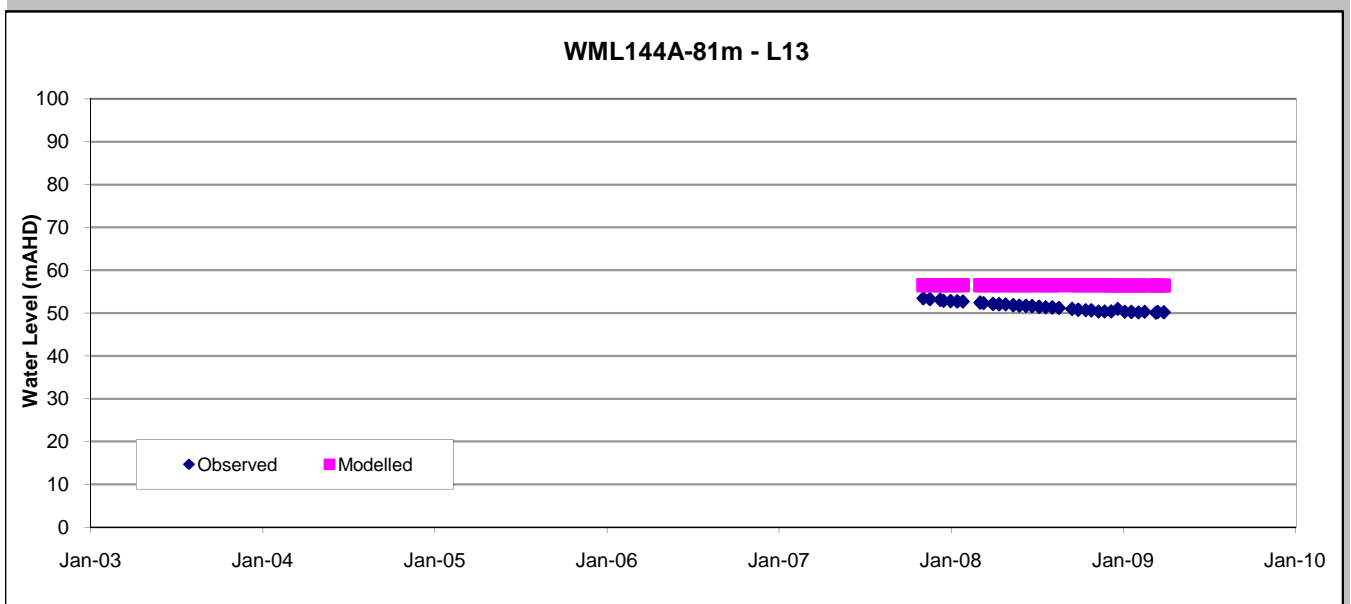
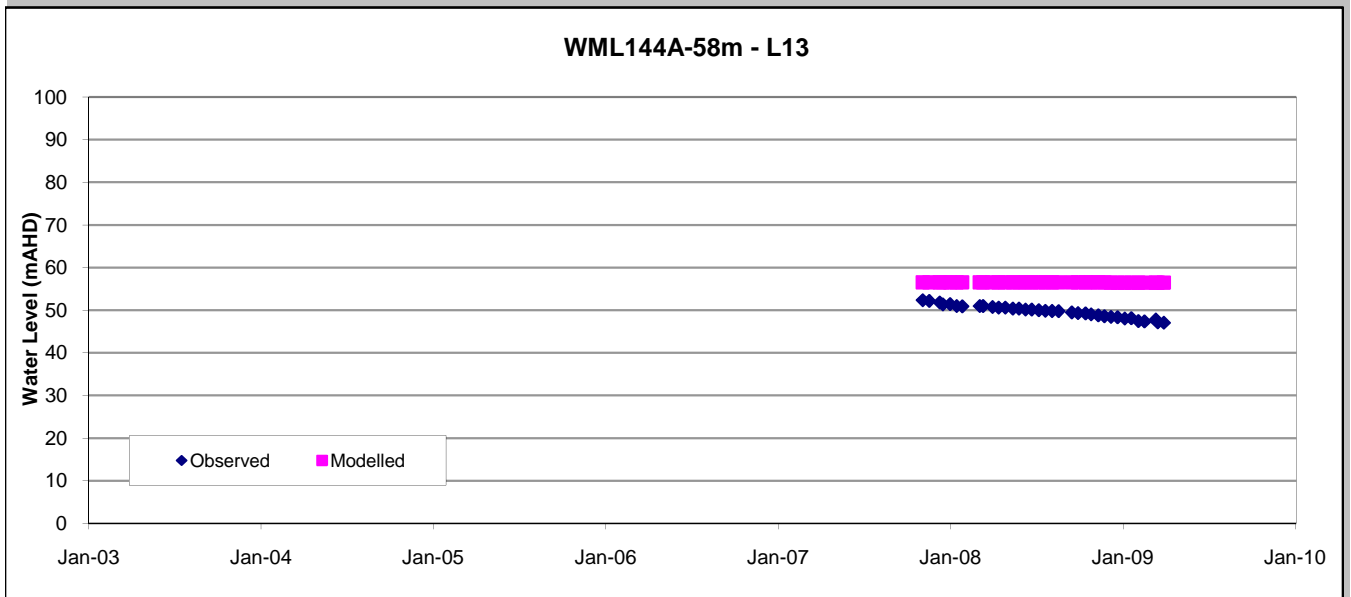
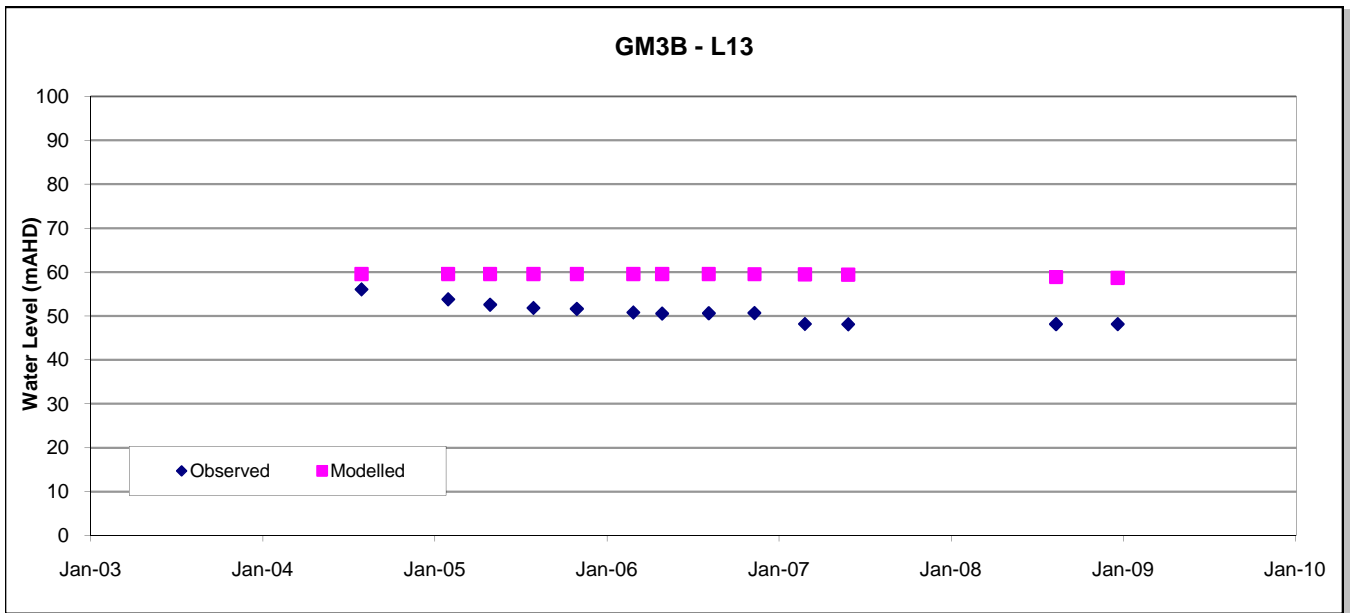


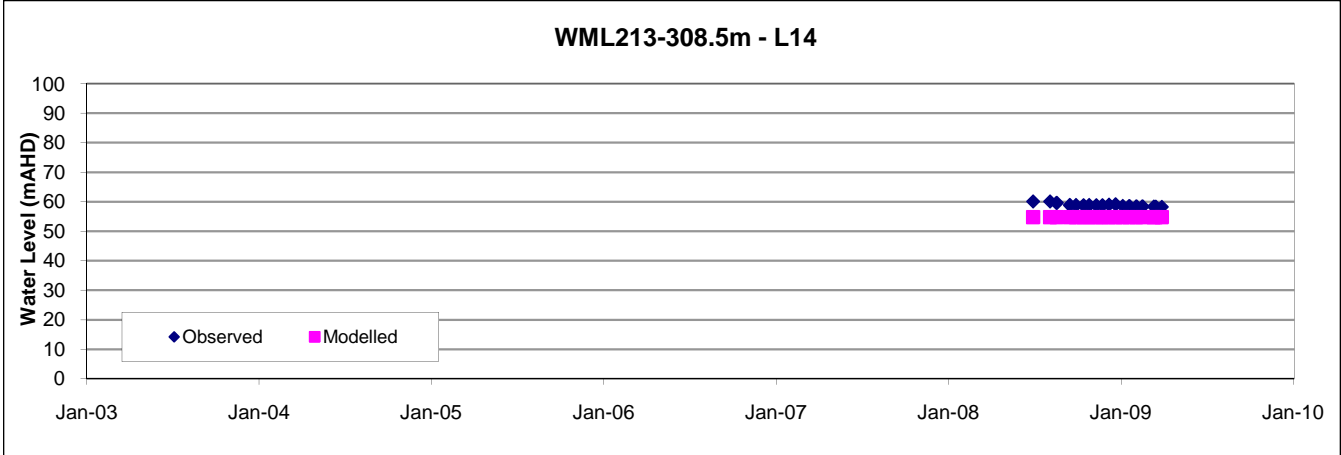
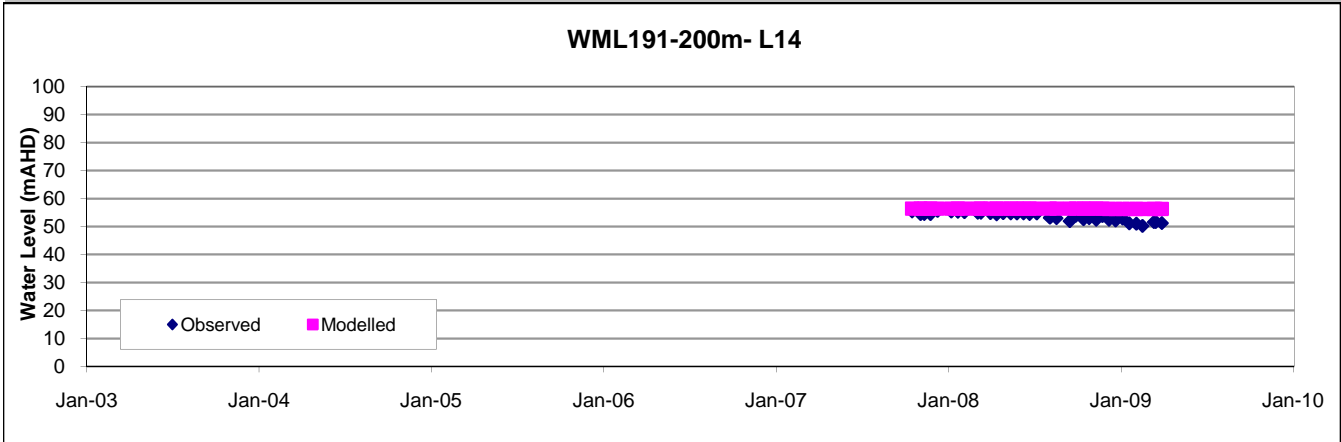
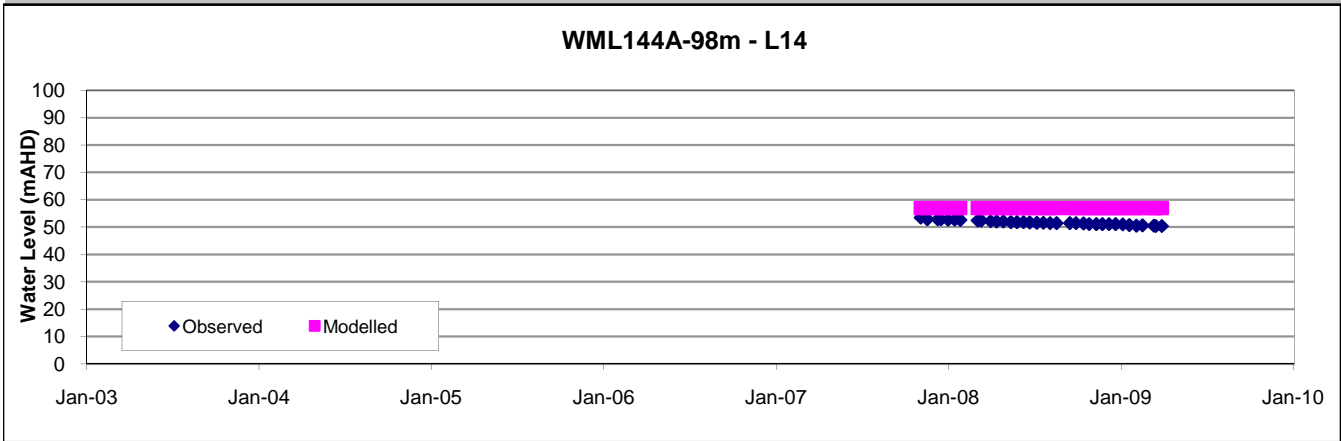
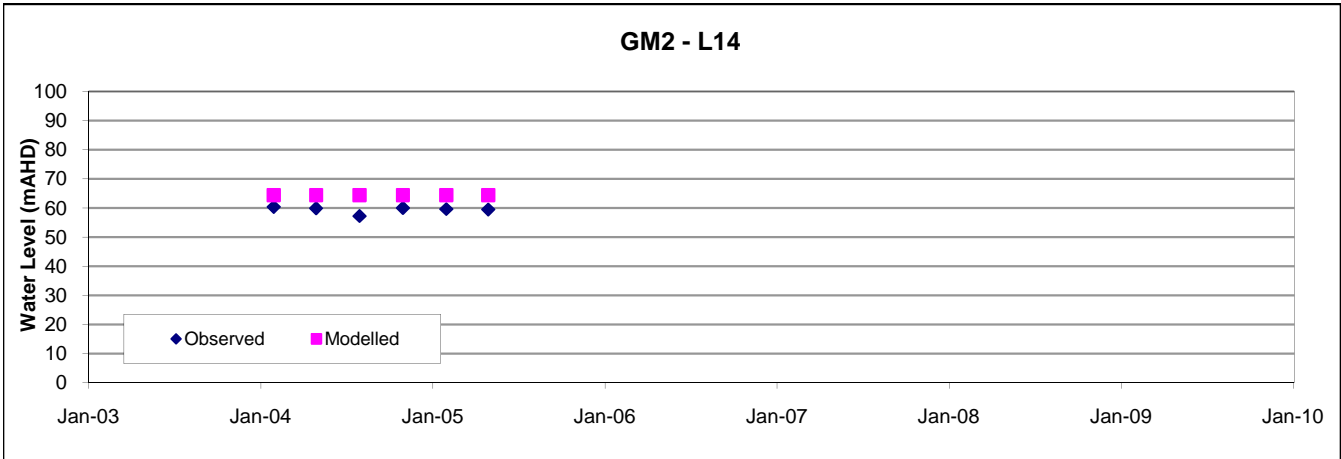














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