

Final Environmental Report	Period Ending: 01st April 2009
Compiled By: Siobhán Quinn & Aoife Reynolds	
Approved By: Tony Doyle	

1 Monitoring Data

1.1 Monitoring Equipment

Axonics	– Axonics plant operated as required during the reporting period.
PO ₄	– The PO ₄ analyser was operational during the reporting period. – The composite sampler was in place to cover any shortfalls in the PO ₄ analyser.
TSS	– The TSS analyser was operational during the reporting period. – The composite sampler was in place to cover any shortfalls in the TSS analyser.
Composite	– The composite sampler was operational during the reporting period. – Where there is loss of continuous monitoring data due to instrument faults or other issues composite sample data is provided on the graphs.
Noise	– There is a single noise monitoring location currently being used – N1.
Vibration	– There is a single vibration monitoring location currently being used – V1.
Sondes	– The results are displayed graphically. ○ Any unusual values are explained on the relevant graph. ○ MP6 sonde was returned from the manufacturer and reinstated on the 31/03/2009.
Weather Station	– The data used for this reporting period was taken from the on-site meteorological station.
Weirs	– Weirs were operational during the reporting period.

1.2 Rainfall Data

19/03/2009	0.200	26/03/2009	6.000
20/03/2009	0.000	27/03/2009	6.000
21/03/2009	0.400	28/03/2009	5.600
22/03/2009	0.000	29/03/2009	0.200
23/03/2009	0.800	30/03/2009	4.400
24/03/2009	2.800	31/03/2009	0.400
25/03/2009	0.200	01/04/2009	0.000
Total Rainfall 26.80mm			

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1.3 Summary

Environment	Comments
Surface Water	There were no exceedances during the reporting period.
Groundwater	The groundwater data (Sonde) is within anticipated ranges.
Dust	Dust results are all within limits.
Weather	There was a total of 26.80mm of rainfall during the reporting period, with a temperature range of 0.7°C to 16.2 °C.
Noise	All noise levels were within the set limits. Where values were affected by high wind speeds it is indicated on the table.
Vibration	No vibration exceedances were recorded during the reporting period, based on available results.

Note: All laboratory data generated on site should be considered indicative only.

2 Environmental Exceedances / Incidents / Complaints

No exceedances during the reporting period.

Surface Water Monitoring Record Sheet: Accredited Laboratory Results

	Date	Cond.	Temp	Turbidity	DO	pH	TSS	Ortho-phosphate as P	Nitrate as N	Nitrate as NO ₃	Total Phosphorus as P	Ammonia as NH ₃ -N	Nitrite as NO ₂	Aluminium (dissolved)	Aluminium (total)	Phosphate as PO ₄ -P	TDS
		µS/cm	°C	NTU	% Sat	pH units	mg l ⁻¹	µg l ⁻¹	mg l ⁻¹	mg l ⁻¹	mg l ⁻¹	mg l ⁻¹	mg l ⁻¹	µg l ⁻¹	µg l ⁻¹	mg l ⁻¹	mg l ⁻¹
Action Limits		400		150		<3.5 or >7.5	25	40	1.5	4.0		0.2	0.025	100	135		
Target Limits		500		200		<3 or >8	35	70	2.6	6.0		0.5	0.05	150	200		
SP1	19/03/2009	263		4		7.0	<2.0	<10		<0.44	0.03	<0.005	<0.017	56	186	<0.03	140
SP3	19/03/2009	294		8		7.1	3.0	42		<0.44	0.06	0.009	<0.017	29	210	0.13	157
SP1	26/03/2009	332		3		7.4	<2.0	<10		0.67	0.02	<0.005	0.023	29	91	<0.03	159
SP3	26/03/2009	357		12		7.1	10.0	<10		0.94	0.03	0.016	0.018	<20	204	<0.03	172
Additional Monitoring																	
Axonics Monitoring																	
Pre Axonics	19/03/2009	297		11		7.2	123.0	<10		0.49	0.05	0.055	<0.017	29	6398	<0.03	160
Post Axonics	19/03/2009	310		2		6.5	<2	<10		<0.44	0.05	0.058	0.017	<20	400	<0.03	167
Pre Axonics	26/03/2009	368		39		7.3	828.0	<10		1.49	0.08	0.007	0.028	59	5069	<0.03	175
Post Axonics	26/03/2009	379		2		6.4	4.0	<10		1.31	0.01	0.031	0.038	<20	209	<0.03	179
I.P.	= In Progress																
< LOD	= Below Limit of Detection																
> LOD	= Above Limit of Detection																
On site laboratory results included in Appendix 1																	
	Grey shaded areas denote parameters that cannot or were not analysed on-site or the lab.																

Groundwater Monitoring Record Sheet																									
Location	Date	DO	Temp	Cond.	pH	TDS	BOD	TSS	Total Hardness	Nitrite as NO ₂	Nitrate as NO ₃	Phosphate as PO ₄	Arsenic	Mercury	Lead	Aluminium (total)	Zinc	Chromium	Copper	Cadmium	Iron	Tin	Ammonia	Aluminium, dissolved	Manganese, total
		% Sat	°C	uS/cm	pH Units	mg l ⁻¹	mg l ⁻¹	mg l ⁻¹	mg/l CaCO3	mg l ⁻¹	mg l ⁻¹	mg l ⁻¹	ug l ⁻¹	ug l ⁻¹	ug l ⁻¹	ug l ⁻¹	ug l ⁻¹	ug l ⁻¹	ug l ⁻¹	ug l ⁻¹	ug l ⁻¹	ug l ⁻¹	mg l ⁻¹	ug l ⁻¹	ug l ⁻¹
MP 1																									
MP 2																									
MP 3																									
MP 4																									
MP 5																									
MP 6																									
MP 7																									
MP 8																									
MP 10a																									
MP 11																									
Graphs provided for MP1, MP2,MP4, MP6 and MP7: Temperature, Conductivity, and pH.																									
No Groundwater Monitoring Undertaken During The Reporting Period.																									

Determinant Results							
	Date Positioned	Date Removed	Ref. Number	Date Dispatched	Date Returned	Weight (mg/m ² /day)	Comments
Target (Consent) Limit: 350 mg m² d⁻¹ on as a 30 day average							
D1	21/11/2008	22/12/2008	194862	22/12/2008	05/01/2009	172	
D2	21/11/2008	22/12/2008	194863	22/12/2008	05/01/2009	37	
D3	21/11/2008	22/12/2008	194864	22/12/2008	05/01/2009	144	
D4	21/11/2008	22/12/2008	194865	22/12/2008	05/01/2009	39	
D1	22/12/2009	22/01/2009	197095	22/01/2009	28/01/2009	295	
D2	22/12/2009	22/01/2009	197096	22/01/2009	28/01/2009	324	
D3	22/12/2009	22/01/2009	197097	22/01/2009	28/01/2009	261	
D4	22/12/2009	22/01/2009	197098	22/01/2009	28/01/2009	324	
D1	22/01/2009	20/02/2009	199883	20/02/2009	23/02/2009	106	
D2	22/01/2009	20/02/2009	199884	20/02/2009	23/02/2009	117	
D3	22/01/2009	20/02/2009	199885	20/02/2009	23/02/2009	109	
D4	22/01/2009	20/02/2009	199886	20/02/2009	23/02/2009	110	
D1	20/02/2009	20/03/2009	207133	20/03/2009	25/03/2009	169	
D2	20/02/2009	20/03/2009	207134	20/03/2009	25/03/2009	162	
D3	20/02/2009	20/03/2009	207135	20/03/2009	25/03/2009	174	
D4	20/02/2009	20/03/2009	207136	20/03/2009	25/03/2009	183	
D1	20/03/2009	20/04/2009	210632	20/04/2009	29/04/2009	146	
D2	20/03/2009	20/04/2009	210633	20/04/2009	29/04/2009	101	
D3	20/03/2009	20/04/2009	210635	20/04/2009	29/04/2009	117	
D4	20/03/2009	20/04/2009	210636	20/04/2009	29/04/2009	115	
NDP = No Determination Possible							
Monitoring Points are numbered clockwise through the Cardinal Marks (N, E, S, W)							
Monitoring Results will be presented monthly							

Monitoring Points are numbered clockwise through the Cardinal Marks (N, E, S, W)
Monitoring Results will be presented monthly

Day Time Noise Monitoring Record Sheet

Determinant Results	
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Location	Air Temp. (Min)	Air Temp. (Max)	Start Date	Time	Duration	Serial No.	Wind		Results dB			*Comments
							Speed (m/s)*	Direction (Degrees)	L _{Aeq}	L _{Amax}	L _{Amin}	
Action Limit									60			
Target Limit									65			
N1	0.7	16.2	19/03/2009	08:00:00	14:00:00	2539533	3.0	181.0	52.1	80.5	36.2	
N1	10.5	16.2	20/03/2009	08:00:00	14:00:00	2539533	4.5	172.4	51.5	79.5	41.1	
N1	9.0	11.4	21/03/2009	08:00:00	14:00:00	2539533	2.9	306.6	47.7	74.4	40.8	
N1	9.2	11.2	22/03/2009	08:00:00	14:00:00	2539533	3.6	267.5	48.6	81.6	41.2	
N1	8.4	9.8	23/03/2009	08:00:00	14:00:00	2539533	6.8	311.5	49.8	77.8	42.8	Values impacted by wind speed
N1	7.4	11.3	24/03/2009	08:00:00	14:00:00	2539533	5.0	254.1	51.8	74.8	42.9	Values impacted by wind speed
N1	8.3	10.0	25/03/2009	08:00:00	14:00:00	2539533	7.6	286.1	50.3	72.9	42.4	Values impacted by wind speed
N1	6.9	9.5	26/03/2009	08:00:00	14:00:00	2539533	8.5	294.4	52.9	79.6	44.7	Values impacted by wind speed
N1	5.3	8.5	27/03/2009	08:00:00	14:00:00	2539533	3.1	321.7	56.1	83.0	43.0	Values impacted by wind speed
N1	4.6	7.2	28/03/2009	08:00:00	14:00:00	2539533	5.0	251.3	48.9	78.0	42.2	Values impacted by wind speed
N1	6.8	10.8	29/03/2009	08:00:00	14:00:00	2539533	4.8	234.1	51.2	77.9	44.2	
N1	9.5	13.5	30/03/2009	08:00:00	14:00:00	2539533	3.1	232.8	51.5	78.6	38.7	
N1	10.0	13.8	31/03/2009	08:00:00	14:00:00	2539533	3.7	189.7	52.7	77.2	42.4	
N1	9.9	13.7	01/04/2009	08:00:00	14:00:00	2539533	3.4	183.7	53.5	76.9	42.7	

* Wind speeds in excess of 5 m/s negatively impact noise readings (as per EPA Guidance Note on Noise Measurement).

Night Time Noise Monitoring Record Sheet

Determinant Results

Determinant Results												
Location	Air Temp. (Min)	Air Temp. (Max)	Start Date	Time	Duration	Serial No.	Wind		Results dB			*Comments
							Speed (m/s)*	Direction (Degrees)	L _{Aeq}	L _{Amax}	L _{Amin}	
Action Limit									50			
Target Limit									55			
N1	0.7	16.2	19/03/2009	22:00:00	10:00:00	2539533	3.0	181.0	49.3	70.5	42.5	
N1	10.5	16.2	20/03/2009	22:00:00	10:00:00	2539533	4.5	172.4	57.8	102.6	45.0	Values impacted by high wind speeds
N1	9.0	11.4	21/03/2009	22:00:00	10:00:00	2539533	2.9	306.6	47.8	72.0	38.2	
N1	9.2	11.2	22/03/2009	22:00:00	10:00:00	2539533	3.6	267.5	49.4	81.1	40.0	
N1	8.4	9.8	23/03/2009	22:00:00	10:00:00	2539533	6.8	311.5	46.8	66.8	42.2	
N1	7.4	11.3	24/03/2009	22:00:00	10:00:00	2539533	5.0	254.1	51.2	75.0	45.6	Values impacted by high wind speeds
N1	8.3	10.0	25/03/2009	22:00:00	10:00:00	2539533	7.6	286.1	52.2	74.0	47.0	Values impacted by high wind speeds
N1	6.9	9.5	26/03/2009	22:00:00	10:00:00	2539533	8.5	294.4	50.7	77.7	45.6	Values impacted by high wind speeds
N1	5.3	8.5	27/03/2009	22:00:00	10:00:00	2539533	3.1	321.7	58.7	83.8	44.7	Values impacted by high wind & rain speeds
N1	4.6	7.2	28/03/2009	22:00:00	10:00:00	2539533	5.0	251.3	48.6	68.1	44.6	Values impacted by high wind speeds
N1	6.8	10.8	29/03/2009	22:00:00	10:00:00	2539533	4.8	234.1	49.4	68.5	46.5	Values impacted by high wind speeds
N1	9.5	13.5	30/03/2009	22:00:00	10:00:00	2539533	3.1	232.8	51.3	68.6	47.3	
N1	10.0	13.8	31/03/2009	22:00:00	10:00:00	2539533	3.7	189.7	51.8	71.9	48.5	
N1	9.9	13.7	01/04/2009	22:00:00	10:00:00	2539533	3.4	183.7	52.0	69.3	42.5	

* Wind speeds in excess of 5 m/s negatively impact noise readings (as per EPA Guidance Note on Noise Measurement).

Flow Weir Record Sheet**Determinant Results**

Date	SP1			SP3		
	Max (l/s)	Min (l/s)	Avg (l/s)	Max (l/s)	Min (l/s)	Avg (l/s)
19/03/2009	9.14	4.88	7.71	7.23	2.91	4.07
20/03/2009	8.64	3.23	7.09	5.35	2.38	3.65
21/03/2009	13.33	0.76	4.76	9.28	0.36	2.92
22/03/2009	25.97	4.43	10.57	2.91	-0.18	1.90
23/03/2009	20.64	0.00	11.20	4.07	0.56	2.87
24/03/2009	29.26	11.12	16.19	2.91	1.03	1.51
25/03/2009	21.48	-0.01	4.87	2.05	-0.53	1.09
26/03/2009	0.00	-0.01	-0.01	9.83	-0.38	2.54
27/03/2009	0.10	-0.04	-0.01	3.87	-0.48	1.05
28/03/2009	-0.01	-0.02	-0.02	3.87	1.74	3.14
29/03/2009	-0.01	-0.02	-0.02	4.07	0.90	2.15
30/03/2009	-0.02	-0.03	-0.02	2.05	-0.53	1.10
31/03/2009	-0.02	-0.02	-0.02	2.05	0.56	1.48
01/04/2009	-0.02	-0.03	-0.02	1.30	0.67	0.96

Note: Negative values indicate low flow conditions. Low values under investigation.

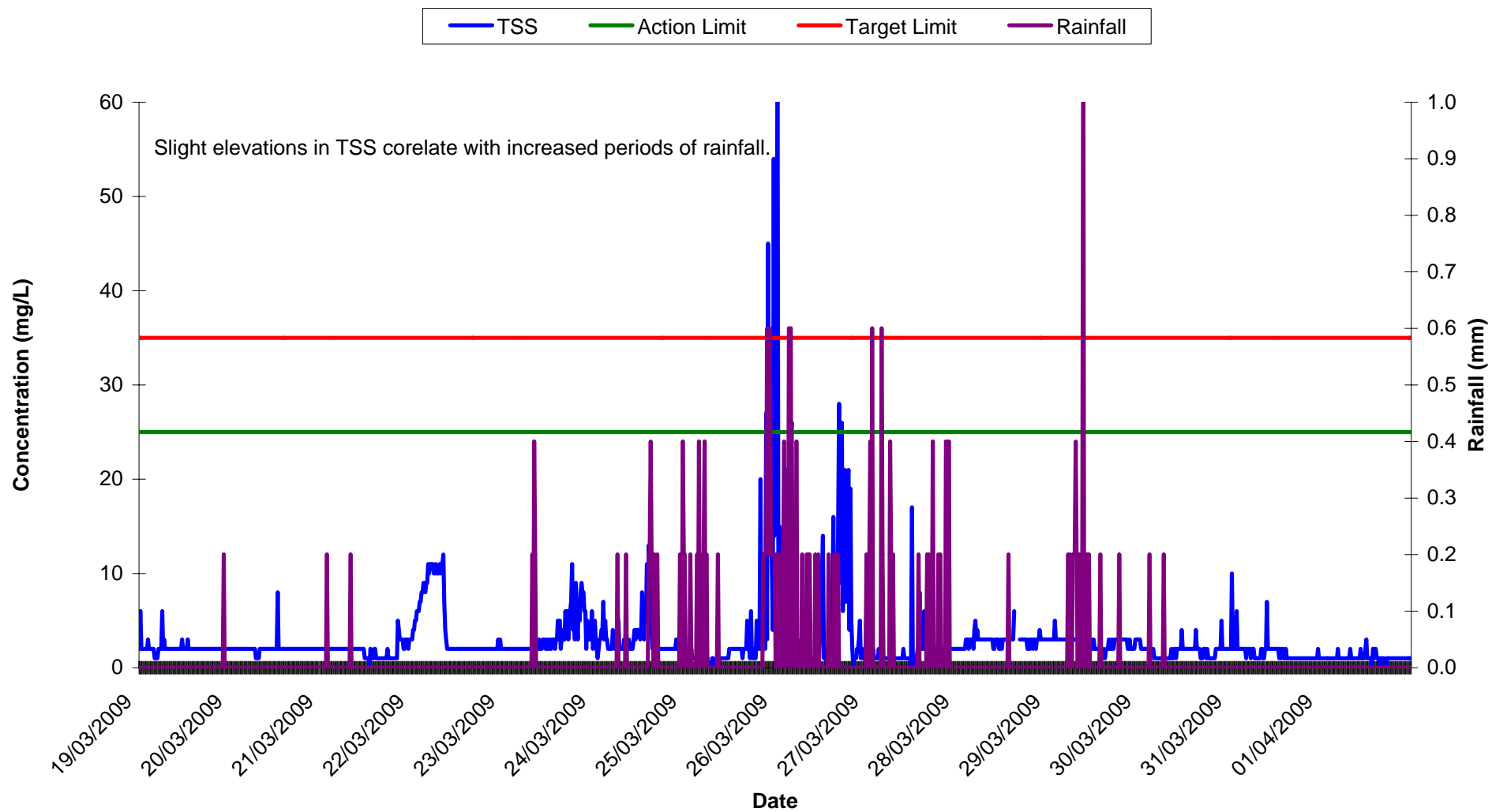
Vibration Monitoring Record Sheet

Determinant Results	
1	1
2	2
3	3
4	4
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12	12
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100	100

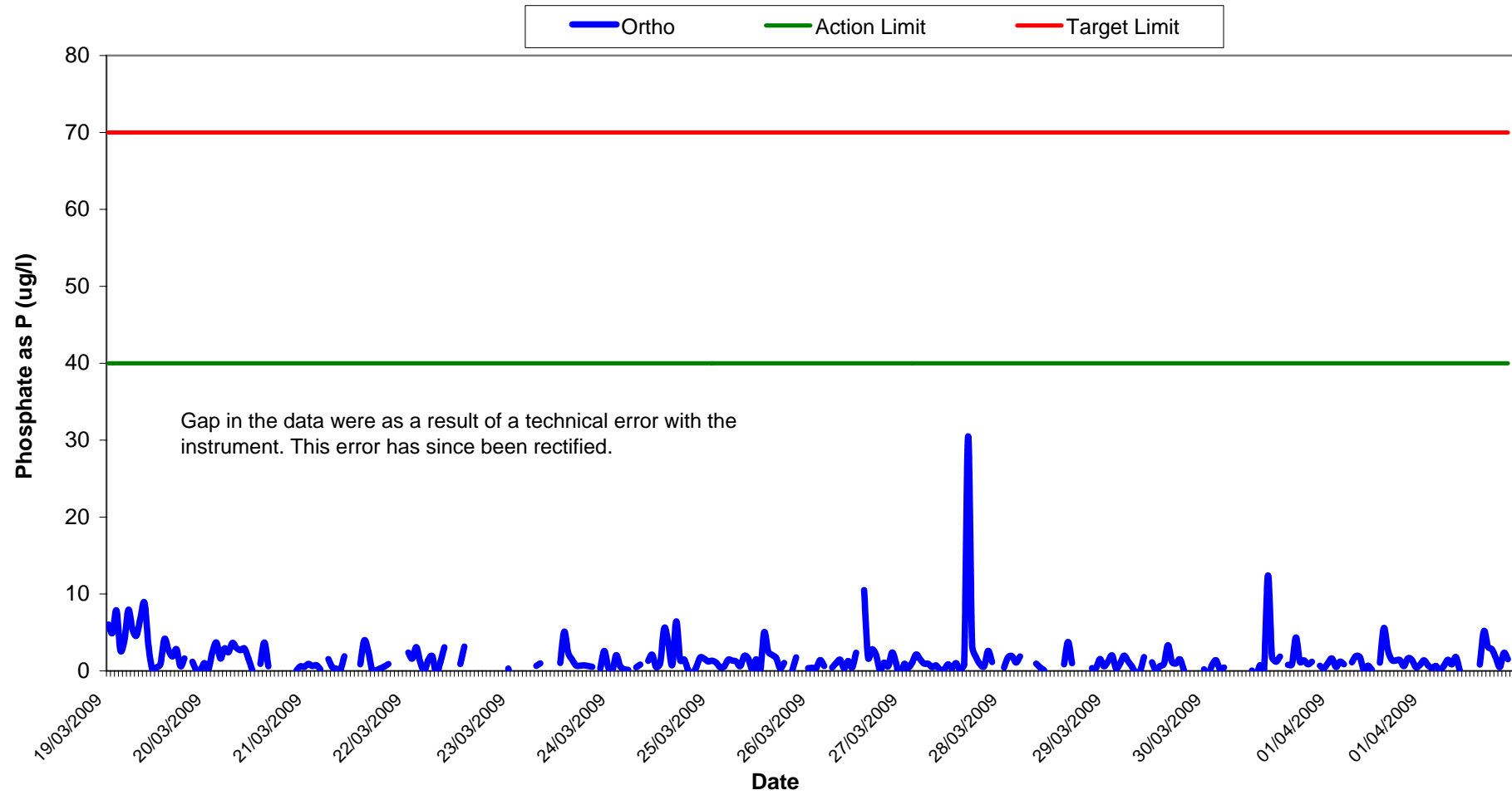
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Vibration meter located at V1.

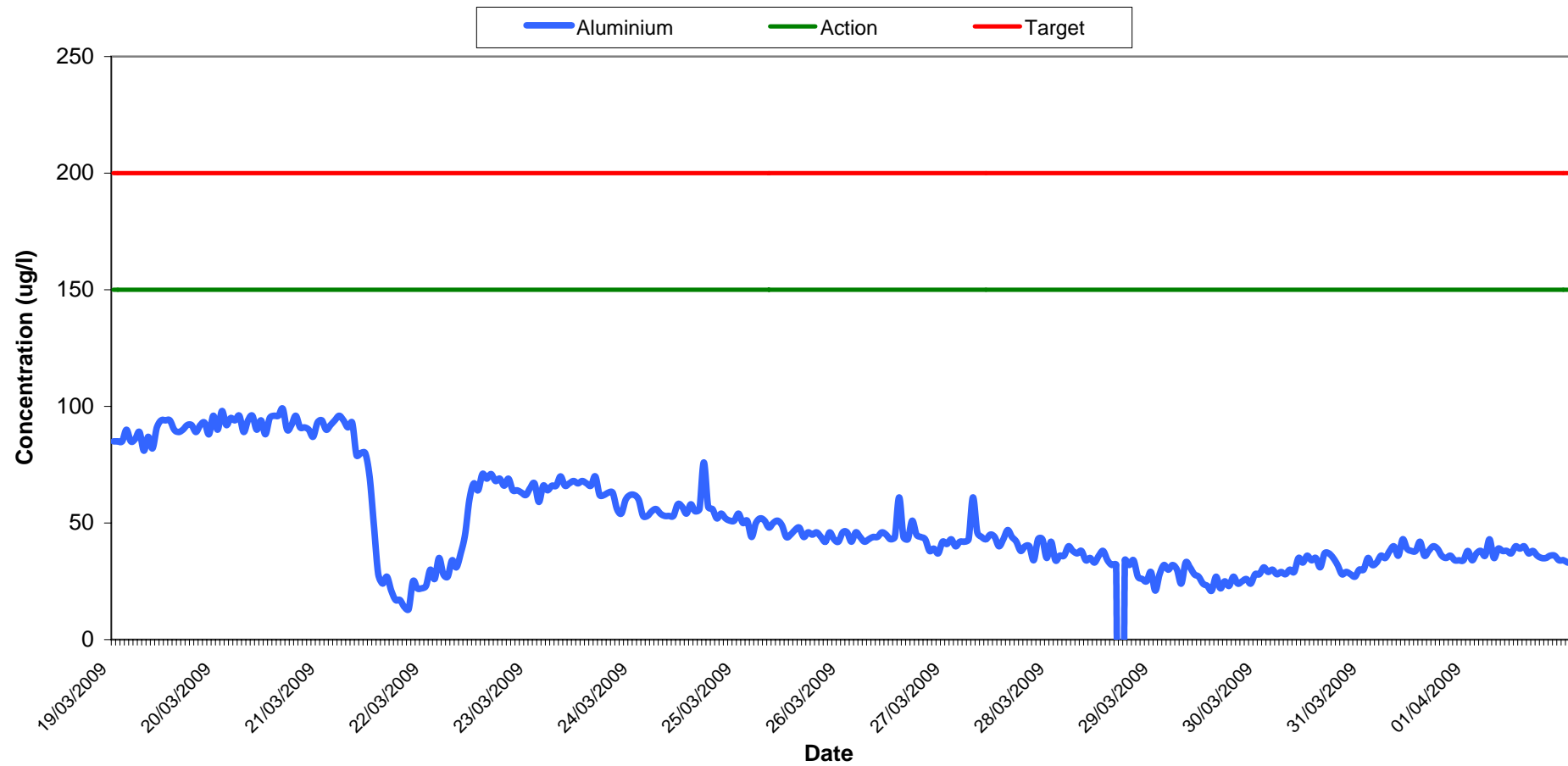
Total Suspended Solids at SP1 Week 12-13



Orthophosphate Results at SP1 Wk 12-13

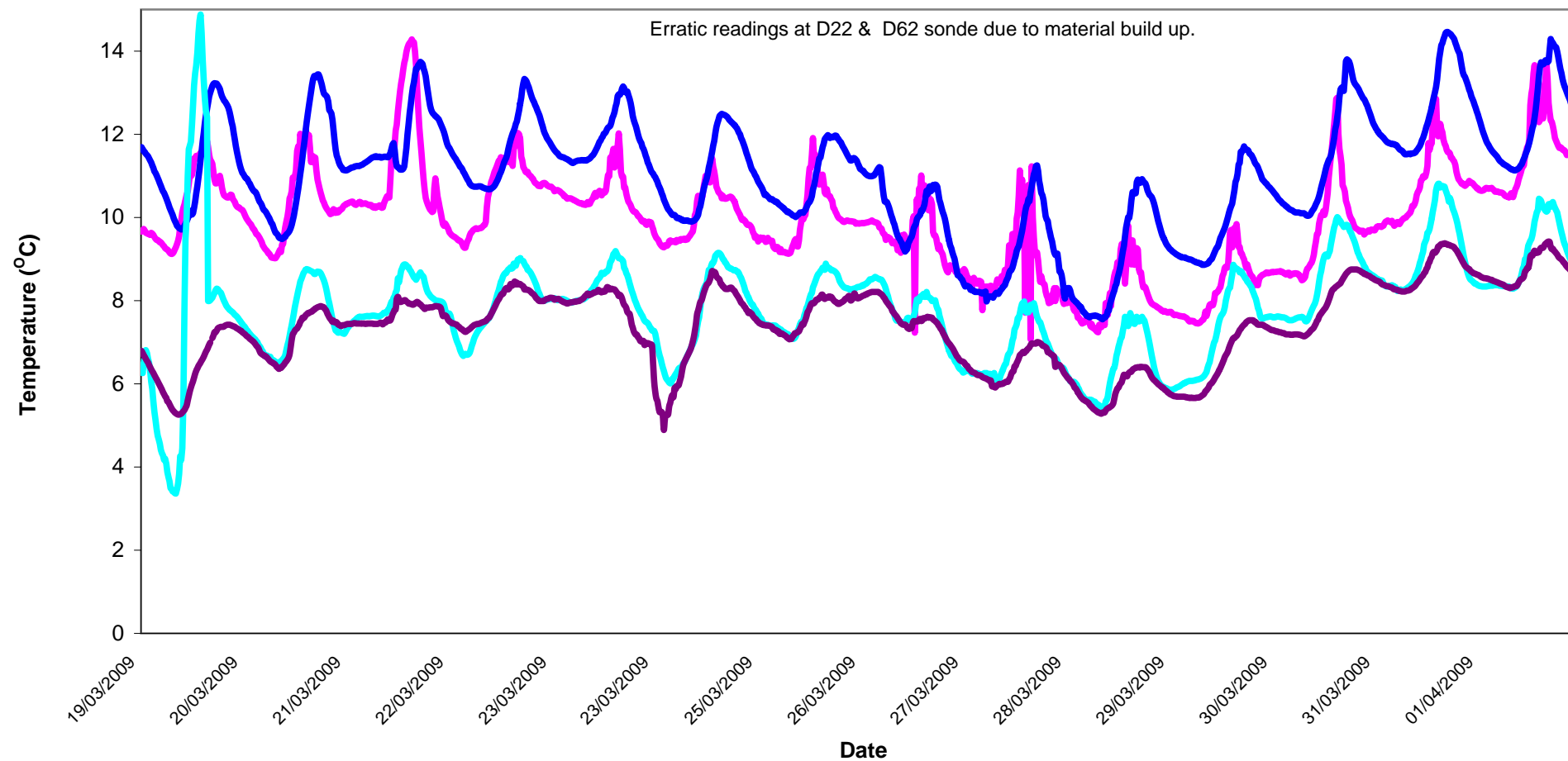


Aluminium Concentration at SP1 Wk 12-13

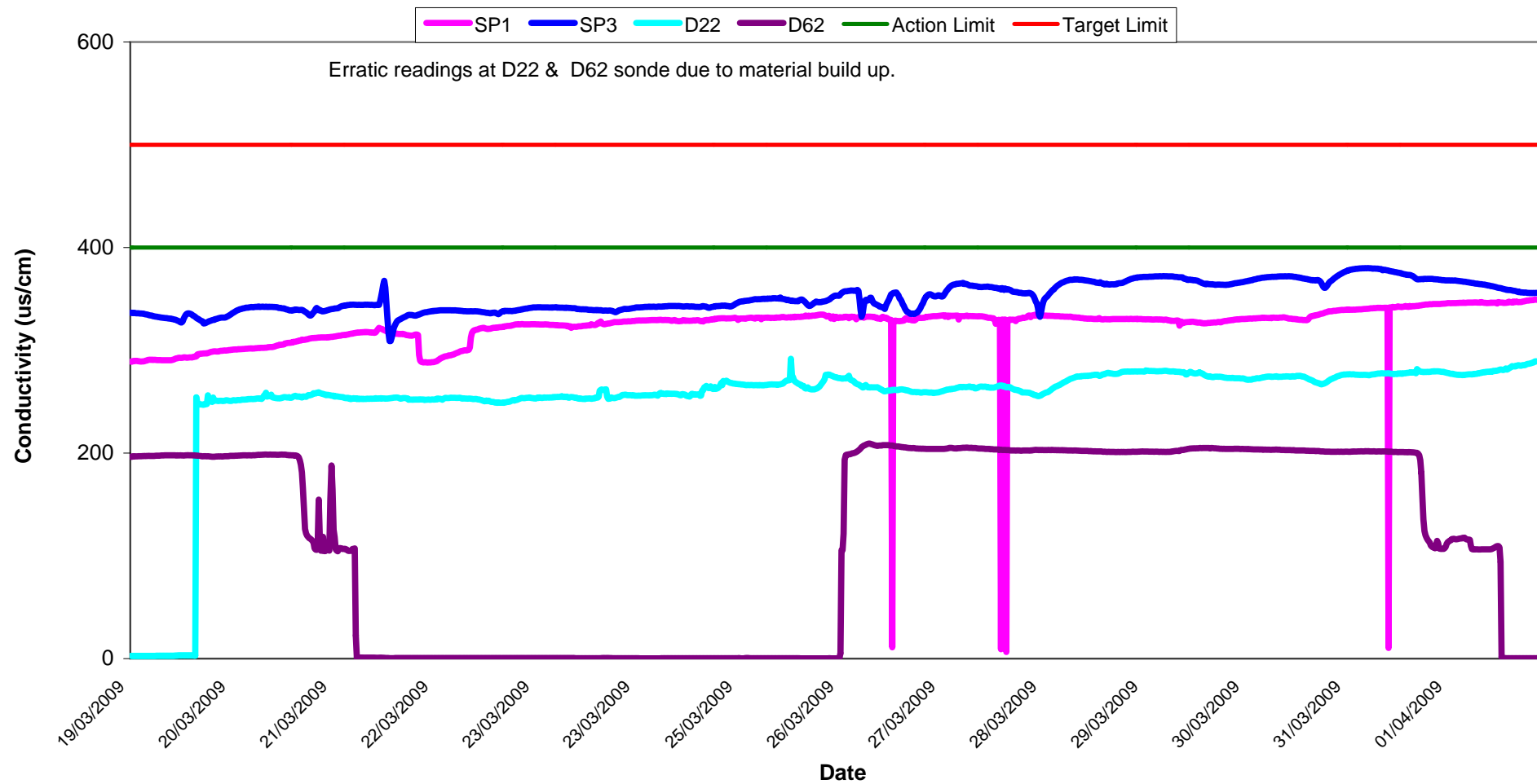


Temperature - Surface Waters Wk 12-13

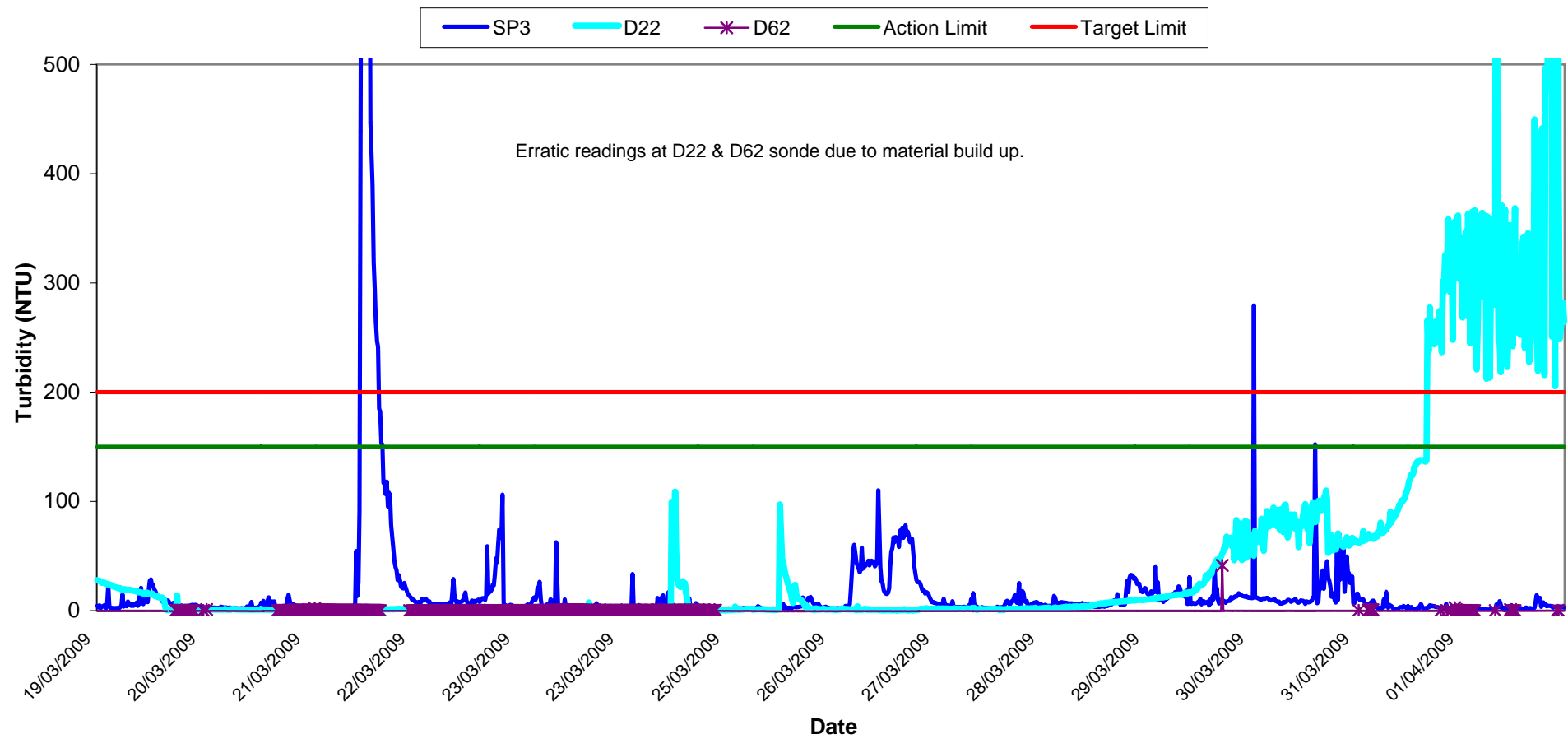
SP1 SP3 D22 D62



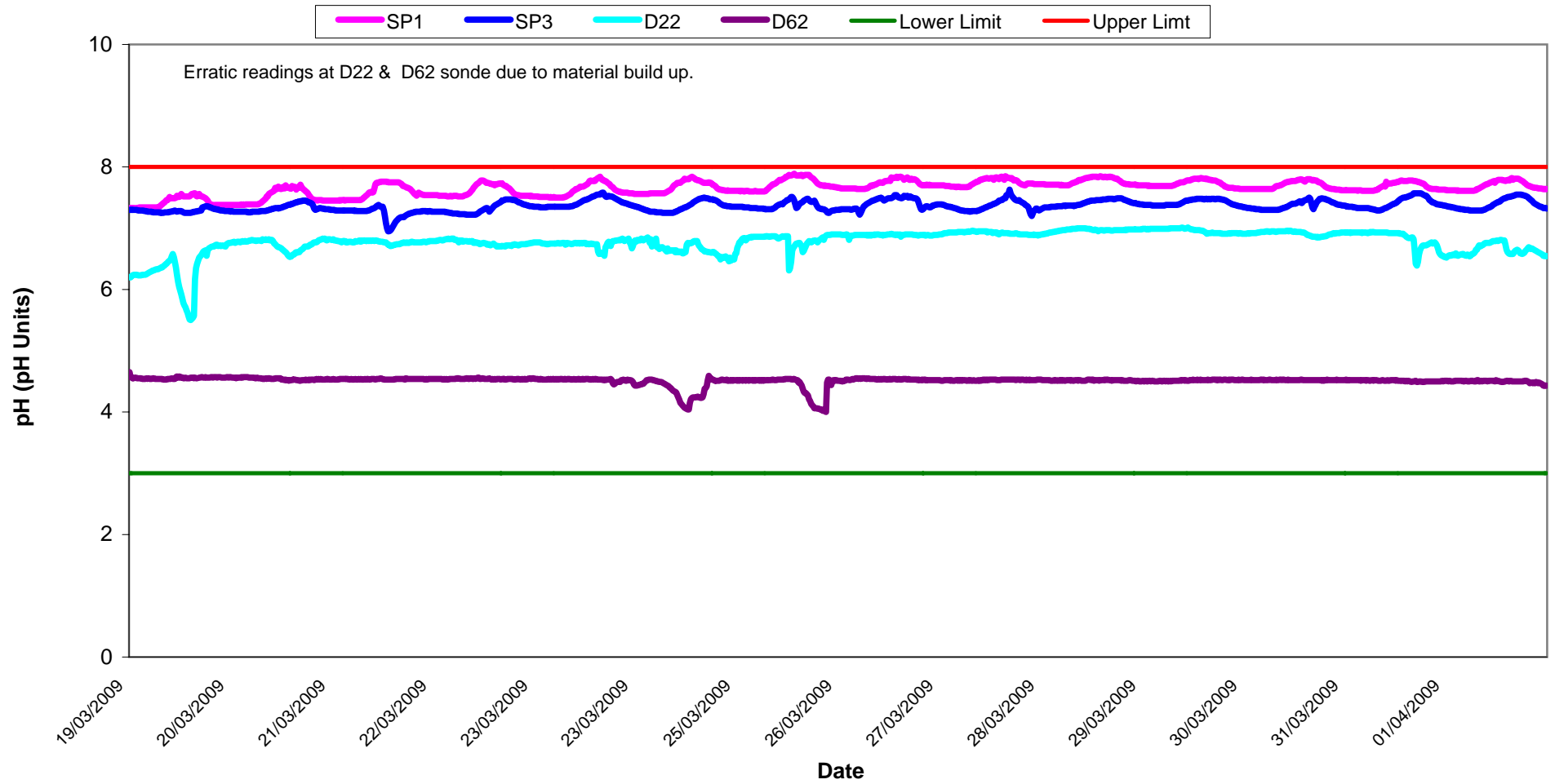
Conductivity - Surface Waters, Wk 12-13



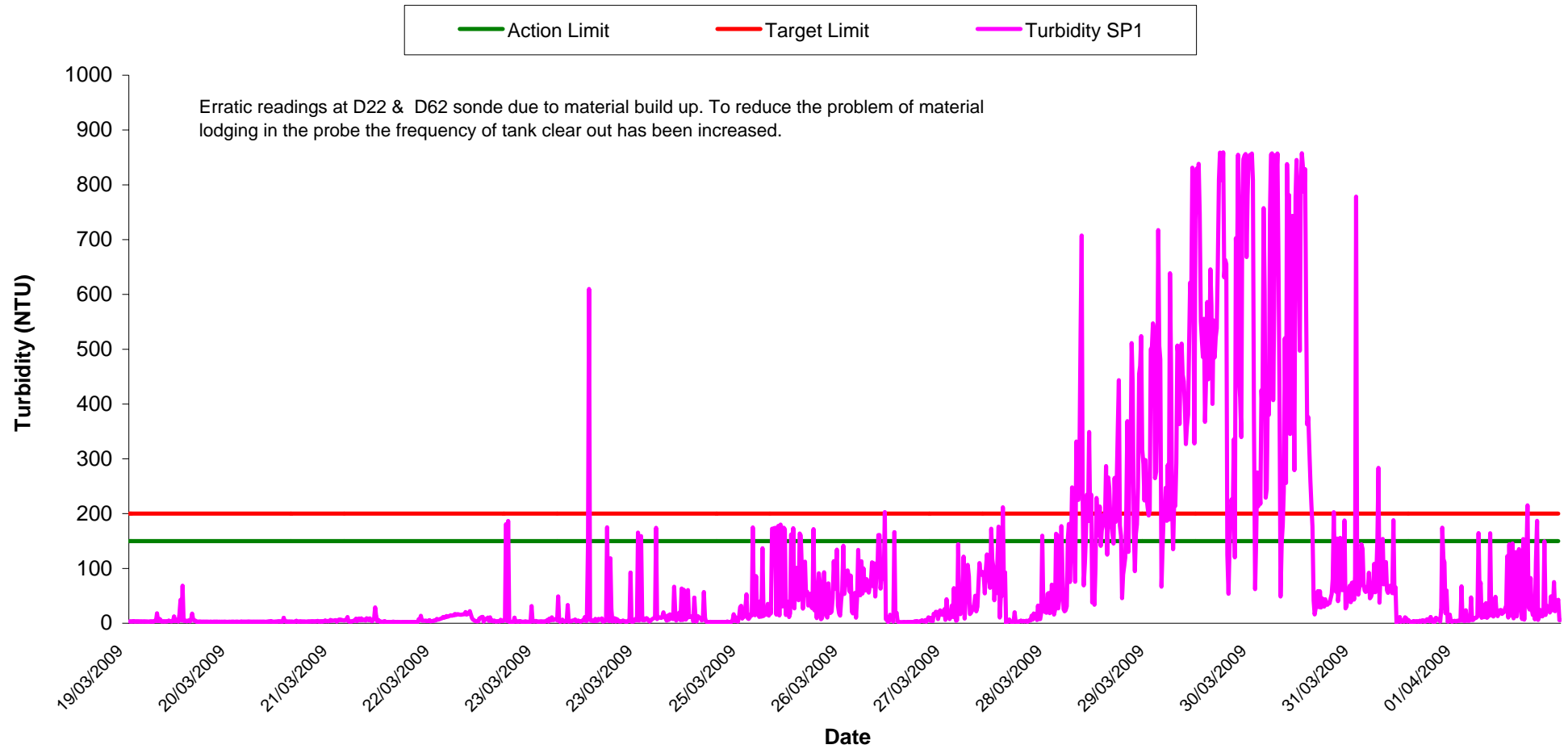
Turbidity - Surface Waters Wk 12-13



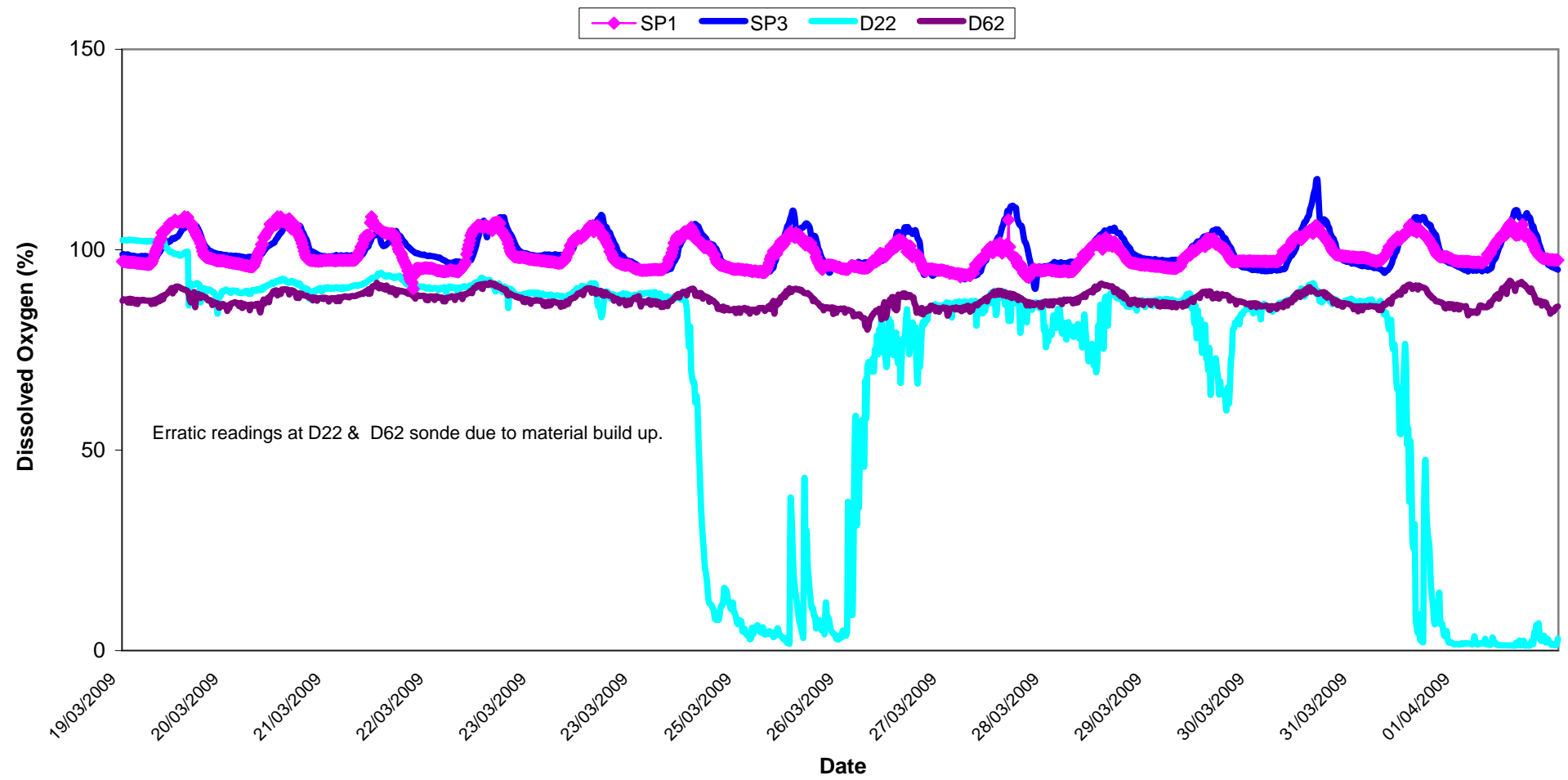
pH - Surface Waters Wk 12-13



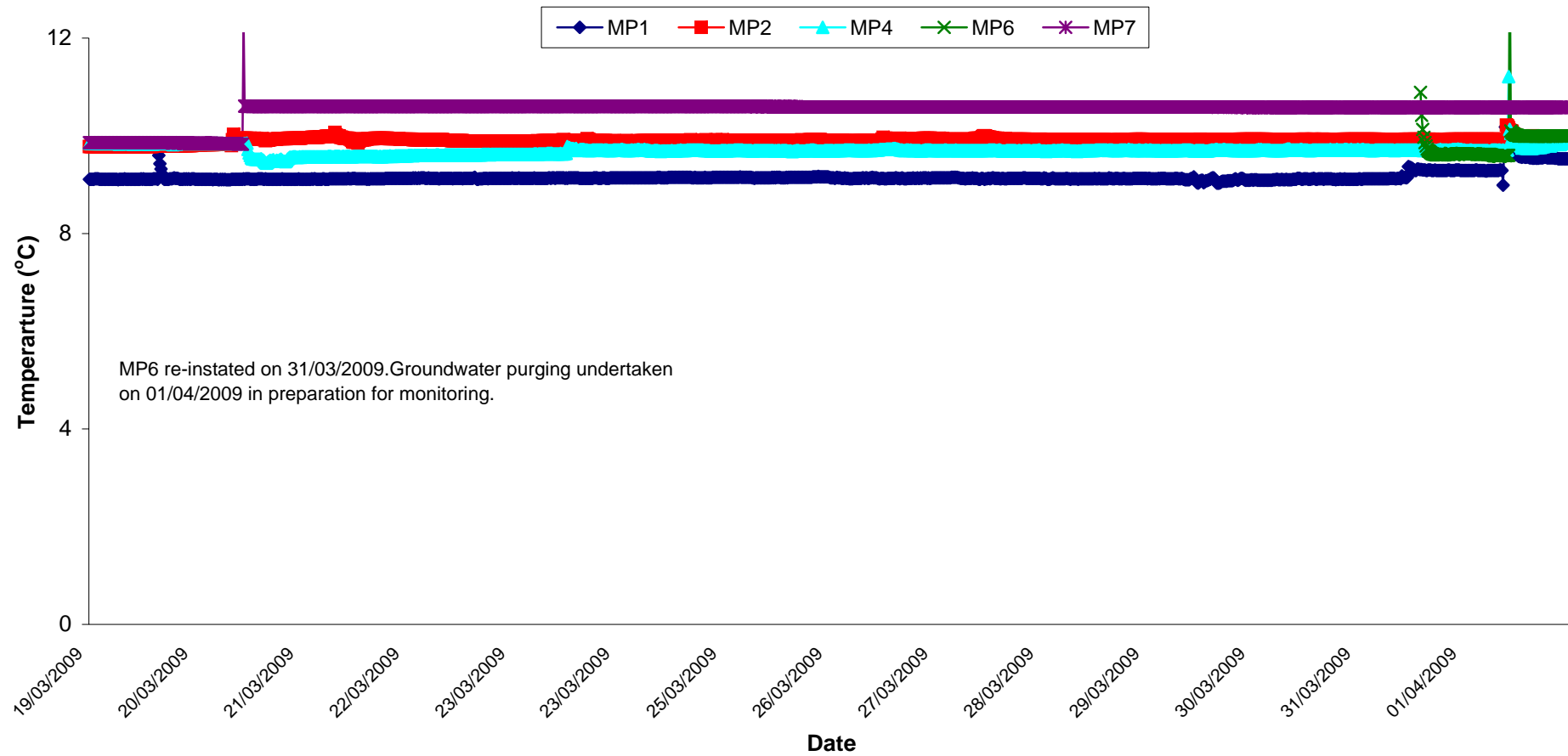
Turbidity - Surface Waters @ SP1, Wk 12-13



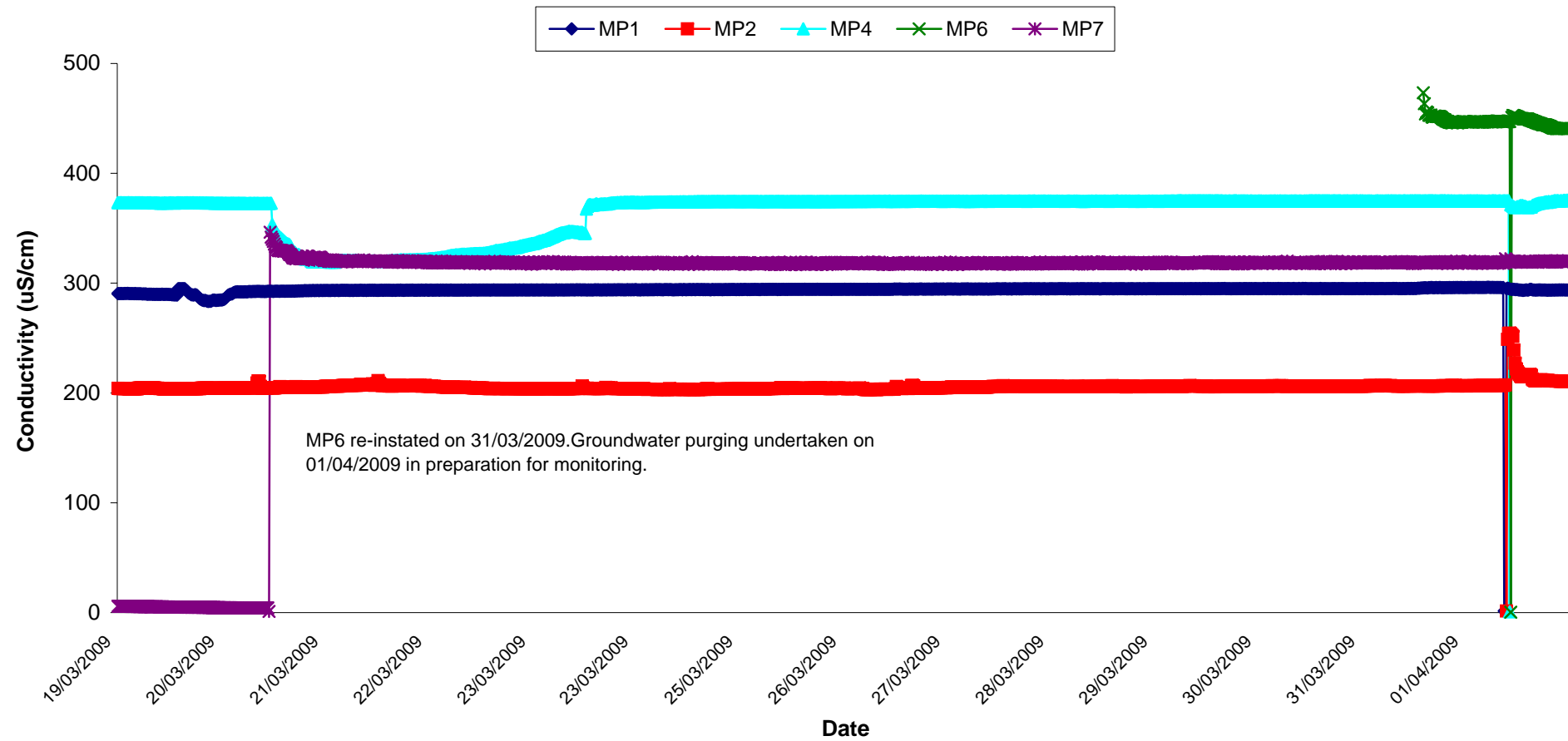
Dissolved Oxygen - Surface Waters, Wk 12-13



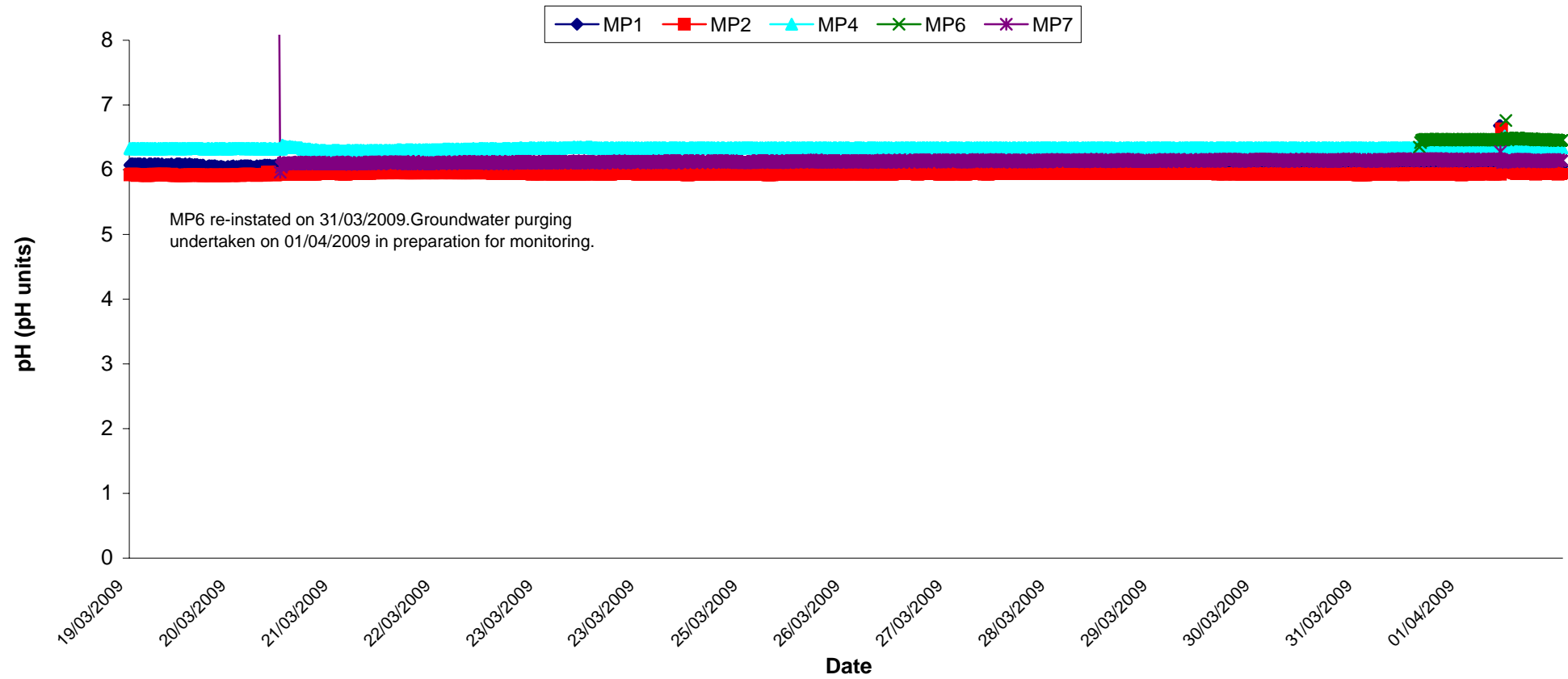
Temperature - Groundwaters Wk 12-13



Conductivity - Groundwaters Wk 12-13



pH - Groundwaters Wk 12-13



Appendix 1

Appendix 1: Surface Water Monitoring Record Sheet- Onsite Monitoring

	Date	Cond. µS/cm	Temp °C	Turbidity NTU	DO % Sat	pH	TSS mg l ⁻¹	Ortho-phosphate as P µg l ⁻¹	Nitrate as N mg l ⁻¹	Nitrate as NO ₃ mg l ⁻¹	Total Phosphorus as P mg l ⁻¹	Ammonia as NH ₃ -N mg l ⁻¹	Nitrite as NO ₂ mg/l	Aluminium (dissolved) ug/l	Aluminium (total) ug/l	Phosphate as PO ₄ mg/l	Total dissolved solids mg/l
Settlement Pond Monitoring																	
SP1	19/03/2009	304	11.3	9.5	97.3	7.7			<LOD			0.23		64	185	0.05	214
SP1	20/03/2009	323	9.8	6.9	95.2	7.2			0.1			0.22		49	164	0.06	230
SP1	23/03/2009	348	10.6	6.0	92.5	7.2			0.1			0.04		34	121	0.06	249
SP1	24/03/2009	347	11.7	8.8	95.9	6.5			<LOD			0.24		29	93	0.02	253
SP1	25/03/2009	354	10.3	5.6	93.4	6.0			0.3			0.23		26	127	0.03	240
SP1	26/03/2009	327	10.5	8.8	95.8	6.7			0.5			0.00		<LOD	120	0.08	228
SP1	27/03/2009	349	9.7	7.4	95.3	7.1			0.2			0.12		20	93	0.05	232
SP1	30/03/2009	355	12.7	7.5	99.8	6.7			0.3			0.30		20	106	0.07	238
SP1	31/03/2009	348	13.1	7.3	99.8	7.5			0.1			0.20		<LOD	83	0.04	240
SP1	01/04/2009	345	11.5	4.5	93.7	6.9			0.1			0.05		<LOD	75	0.07	242
SP3	19/03/2009	339	9.5	14.7	86.1	7.5			0.4			>LOD		27		<LOD	244
SP3	20/03/2009	366	10.9	5.8	94.1	6.9			0.3			>LOD		30		0.02	255
SP3	23/03/2009	364	11.6	5.2	93.8	7.1			0.7			0.36		25		0.04	257
SP3	24/03/2009	366	10.9	6.2	96.3	6.5			0.4			0.09		<LOD		0.03	260
SP3	25/03/2009	269	10.5	5.2	94.4	6.1			0.2			0.01		20		0.03	244
SP3	26/03/2009	360	9.5	23.9	99.4	6.7			0.1			0.87		<LOD		0.57	244
SP3	27/03/2009	371	9.3	8.9	96.1	7.1			0.7			0.93		<LOD		<LOD	249
SP3	30/03/2009	374	13.1	6.6	101.3	6.7			0.4			0.40		<LOD		0.07	253
SP3	31/03/2009	382	14.5	12.2	102.6	7.2			0.2			0.02		29		0.07	259
SP3	01/04/2009	371	12.6	4.2	93.5	6.9			0.4			0.67		23		0.04	247
Additional Monitoring																	
D22	19/03/2009	260	10.0	6.0	86.7	6.6			<LOD			<LOD		<LOD		0.07	190
D62	19/03/2009	213	8.8	4.6	87.4	5.5			0.1			0.09		<LOD		0.03	121
D22	25/03/2009	299	7.9	5.9	86.6	6.3			<LOD			1.010		23		0.08	202
D62	25/03/2009	206	7.8	2.8	83.9	5.6			0.4			1.36		31		0.08	122
Axonics Monitoring																	
Pre	19/03/2009	357		251.0		7.3			<LOD			0.06		413		<LOD	256
Post	19/03/2009	368		4.7		6.5			0.4			0.10		24	389	<LOD	263
Pre	20/03/2009	356		391.0		7.0			<LOD			0.99		>LOD		0.01	248
Post	20/03/2009	373		6.9		6.6			0.4			0.18		<LOD	350	<LOD	261
Pre	23/03/2009	352		628.0		7.5			<LOD			1.00		>LOD		0.03	249
Post	23/03/2009	380		5.4		6.6			0.3			0.03		<LOD	446	<LOD	266
Pre	24/03/2009	391		822.0		6.4			<LOD			0.37		>LOD		0.04	273
Post	24/03/2009	395		5.9		6.4			0.7			0.02		<LOD	226	0.02	277
Pre	25/03/2009	359		478.0		6.5			<LOD			0.29		584		0.04	240
Post	25/03/2009	372		6.8		6.2			0.4			<LOD		53	470	<LOD	248
Pre	26/03/2009	379		>LOD		6.5			<LOD			>LOD		>LOD		0.02	255
Post	26/03/2009	385		6.8		6.5			0.3			0.08		<LOD	187	0.01	255
Pre	27/03/2009	371		>1000		7.1			<LOD			0.82		>LOD		0.02	246
Post	27/03/2009	389		9.9		6.8			0.3			0.05		<LOD	389	0.04	254
Pre	30/03/2009	397		155.0		6.7			<LOD			<LOD		>LOD		0.05	264
Post	30/03/2009	400		3.9		6.3			0.2			0.20		<LOD	309	0.02	263
Pre	31/03/2009	374		153.0		7.0			<LOD			0.19		443		0.07	251
Post	31/03/2009	390		3.7		6.8			0.3			0.01		22	272	0.01	260
Pre	01/04/2009	361		151.0		6.6			<LOD			0.26		486		0.03	233
Post	01/04/2009	377		2.9		6.5			0.5			0.02		<LOD	361	<LOD	249
Grey shaded areas denote parameters that cannot or were not analysed on-site.																	
= Indicative Only																	
= Below Limit of Detection																	
= Above Limit of Detection																	