

Final Environmental Report	Period Ending: 4 th February 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 stopped recording on the 31 st January due to internal power failure.
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

22/01/2009	3.100	29/01/2009	7.995
23/01/2009	8.775	30/01/2009	0.975
24/01/2009	6.825	31/01/2009	3.705
25/01/2009	7.215	01/02/2009	0.000
26/01/2009	2.145	02/02/2009	1.365
27/01/2009	0.975	03/02/2009	4.290
28/01/2009	0.195	04/02/2009	1.560
Total Rainfall 49.120mm			

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1.3 Summary

Environment	Comments
Surface Water	There was 1 no. reportable exceedance 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 42.12mm of rainfall during the reporting period, with a temperature range of -1.7°C to 12.1°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

Date and Time	27 th January 2009
Location	SP1
Nature of Incident	A value of 203µg/l was recorded for total aluminium at SP1 on the 27 th of January 2009. This value is in marginally exceedance of the site discharge limit for total aluminium of 200µg/l.
Actions Taken	<ul style="list-style-type: none"> On going surveillance and maintenance of site drainage outside the main footprint area. Close monitoring of total suspended solids will be carried out at SP1. Storage and pumping back to Axonic's of footprint waters. Using the northern settlement pond for increasing the water attenuating capacity thus improving water quality.
Category	Environmental Exceedance
Status	Closed

Surface Water Monitoring Record Sheet: Accredited Laboratory Results

	Date	Cond. μS/cm	Temp °C	Turbidity NTU	DO % Sat	pH pH units	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 ⁻¹	Aluminium (dissolved) μg l ⁻¹	Aluminium (total) μg l ⁻¹	Phosphate as PO ₄ -P mg l ⁻¹	TDS 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	27/01/2009	257		7		6.7	11	12		1.24	0.04	0.029	<0.017	43	203	0.04	132
SP3	27/01/2009	305		14		6.9	8	<10		1.81	0.04	0.047	<0.017	21	345	<0.03	158
SP1	04/02/2009	281		6		7.1	5	<10		0.87	0.13	<0.005	<0.017	43	199	<0.03	148
SP3	04/02/2009	318		7		6.6	3	<10		1.39	0.24	0.048	<0.017	<20	215	<0.03	169
Additional Monitoring																	
Axonics Monitoring																	
Pre Axonics	27/01/2009	306		3509		7.0	3048	<10		1.63	0.05	0.062	<0.017	20	109500	<0.03	159
Post Axonics	27/01/2009	325		4		6.4	4	<10		1.48	0.03	0.067	<0.017	<20	430	<0.03	170
Pre Axonics	04/02/2009	345		741		6.8	913	<10		1.51	0.15	0.011	0.020	20	23850	<0.03	181
Post Axonics	04/02/2009	327		2		6.3	4	<10		1.44	0.12	0.021	0.023	<20	369	<0.03	172
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 CaCO ₃	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	04/02/2009	13	9.3	307	5.8	161	20	14	62	<0.017	<0.44	1.941	6.0	<0.05	1	166	19	0.6	<1	<0.5	23920	5.0	1.854	<20	768
MP 2	04/02/2009	14	10.1	264	5.8	138	11	89	68	<0.017	<0.44	0.820	2.0	<0.05	5	1951	24	3.0	5	<0.5	20980	3.0	2.638	74	331
MP 3	04/02/2009	10	9.0	373	5.5	196	16	137	77	<0.017	<0.44	1.714	3.0	<0.05	1	1011	20	1.0	2	<0.5	15570	1.0	2.702	157	256
MP 4	04/02/2009	15	8.1	416	5.9	220	13	169	69	<0.017	<0.44	0.523	2.0	<0.05	4	1748	24	4.0	5	<0.5	59720	2.0	0.169	22	1628
MP 5	04/02/2009	18	8.4	237	5.6	124	10	316	66	<0.017	<0.44	0.356	1.0	<0.05	4	1783	35	4.0	4	<0.5	9691	3.0	1.697	173	191
MP 6	04/02/2009	9	8.7	432	6.2	227	14	23	101	<0.017	<0.44	1.651	10.0	<0.05	1	172	17	<0.5	<1	<0.5	46580	3.0	0.933	<20	1058
MP 7	04/02/2009	11	8.8	336	5.7	177	19	29	58	<0.017	<0.44	0.670	0.6	<0.05	1	266	19	1.0	<1	<0.5	41480	3.0	2.566	<20	558
MP 8	04/02/2009	15	8.6	187	5.3	101	<1	259	49	<0.017	<0.44	0.086	0.9	<0.05	3	1486	85	2.0	4	<0.5	3552	1.0	0.731	133	301
MP 10a	04/02/2009	18	8.9	338	5.6	176	1	24	122	<0.017	<0.44	<0.03	1.0	<0.05	5	404	29	1.0	3	<0.5	8829	3.0	0.453	<20	3133
MP 11	04/02/2009	20	8.5	187	5.3	100	2	5	30	<0.017	<0.44	<0.03	<0.5	<0.05	7	56	18	<0.5	1	<0.5	179	<0.5	<0.005	<20	914

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	
NDP = No Determination Possible							
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												
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	3.1	10.4	22/01/2009	08:00:00	14:00:00	2539533	9.7		51.1	76.3	35.9	
N1	1.6	6.9	23/01/2009	08:00:00	14:00:00	2539533	4.2	78.6	51.7	80.6	41.7	
N1	1.6	5.8	24/01/2009	08:00:00	14:00:00	2539533	3.9	181.7	53.6	79.7	39.4	
N1	3.8	8.6	25/01/2009	08:00:00	14:00:00	2539533	3.7	88.0	48.7	77.7	37.6	
N1	1.8	9.6	26/01/2009	08:00:00	14:00:00	2539533	4.0	88.7	50.3	86.7	38.7	
N1	3.4	9.8	27/01/2009	08:00:00	14:00:00	2539533	2.2	45.5	49.3	81.4	34.0	
N1	3.3	10.0	28/01/2009	08:00:00	14:00:00	2539533	4.7	150.5	52.1	76.5	34.2	
N1	6.4	10.5	29/01/2009	08:00:00	14:00:00	2539533	9.4	329.1	57.8	91.0	45.3	Values impacted by high wind speeds
N1	6.7	10.9	30/01/2009	08:00:00	14:00:00	2539533	5.4	213.2	50.8	73.7	36.0	Values impacted by high wind speeds
N1	4.4	8.2	31/01/2009	08:00:00	14:00:00	2539533	1.0	192.0	48.1	73.0	37.2	
N1	1.5	6.4	01/02/2009	08:00:00	14:00:00	2539533	2.3	276.9	48.8	74.8	34.5	
N1	-2.1	6.8	02/02/2009	08:00:00	14:00:00	2539533	1.8	240.8	52.0	83.8	32.9	
N1	0.4	4.5	03/02/2009	08:00:00	14:00:00	2539533	3.9	222.1	51.7	81.4	39.3	
N1	2.3	8.6	04/02/2009	08:00:00	14:00:00	2539533	3.3	210.9	50.6	74.7	36.6	
* Wind speeds in excess of 5 m/s negatively impact noise readings (as per EPA Guidance Note on Noise Measurement).												

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

Note: Site weather data not available from the 27/11/2008 to 01/12/2008. Belmullet data used where available.

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	3.1	10.4	22/01/2009	22:00:00	10:00:00	2539533	9.7		47.7	73.9	42.5	Values impacted by high wind speeds
N1	1.6	6.9	23/01/2009	22:00:00	10:00:00	2539533	4.2	78.6	46.1	76.1	40.3	
N1	1.6	5.8	24/01/2009	22:00:00	10:00:00	2539533	3.9	181.7	46.4	73.4	40.0	
N1	3.8	8.6	25/01/2009	22:00:00	10:00:00	2539533	3.7	88.0	49.2	73.1	41.6	
N1	1.8	9.6	26/01/2009	22:00:00	10:00:00	2539533	4.0	88.7	49.4	62.1	38.0	
N1	3.4	9.8	27/01/2009	22:00:00	10:00:00	2539533	2.2	45.5	44.4	80.6	34.7	
N1	3.3	10.0	28/01/2009	22:00:00	10:00:00	2539533	4.7	150.5	55.1	79.0	40.0	Values impacted by high wind speeds
N1	6.4	10.5	29/01/2009	22:00:00	10:00:00	2539533	9.4	329.1	49.8	72.1	38.5	Values impacted by high wind speeds
N1	6.7	10.9	30/01/2009	22:00:00	10:00:00	2539533	5.4	213.2	43.6	73.8	35.8	Values impacted by high wind speeds
N1	4.4	8.2	31/01/2009	22:00:00	10:00:00	2539533	1.0	192.0	44.0	69.2	37.1	
N1	1.5	6.4	01/02/2009	22:00:00	10:00:00	2539533	2.3	276.9	42.7	66.5	35.0	
N1	-2.1	6.8	02/02/2009	22:00:00	10:00:00	2539533	1.8	240.8	52.2	72.5	47.5	
N1	0.4	4.5	03/02/2009	22:00:00	10:00:00	2539533	3.9	222.1	48.9	73.5	39.0	
N1	2.3	8.6	04/02/2009	22:00:00	10:00:00	2539533	3.3	210.9	54.1	71.4	44.0	

* 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)
22/01/2009	206.72	3.90	54.63	102.60	15.76	36.62
23/01/2009	36.93	22.34	28.88	19.40	7.47	14.13
24/01/2009	32.06	22.63	26.42	15.76	5.57	11.05
25/01/2009	43.08	19.29	26.29	14.81	7.47	9.77
26/01/2009	43.08	19.29	25.63	15.44	9.55	11.59
27/01/2009	20.92	7.24	15.10	11.51	2.21	6.96
28/01/2009	13.76	8.32	11.78	8.49	2.73	6.08
29/01/2009	27.92	12.30	17.64	11.80	6.26	8.72
30/01/2009	20.64	13.98	16.26	9.83	5.80	8.11
31/01/2009	19.29	15.10	17.42	10.10	7.47	9.40
01/02/2009	17.74	8.64	12.84	9.28	2.21	6.14
02/02/2009	41.81	3.05	23.26	4.69	-0.13	2.77
03/02/2009	40.56	8.16	20.13	3.87	1.03	2.93
04/02/2009	10.19	4.32	8.48	4.91	2.73	3.58

Note: Negative values indicate low flow conditions.

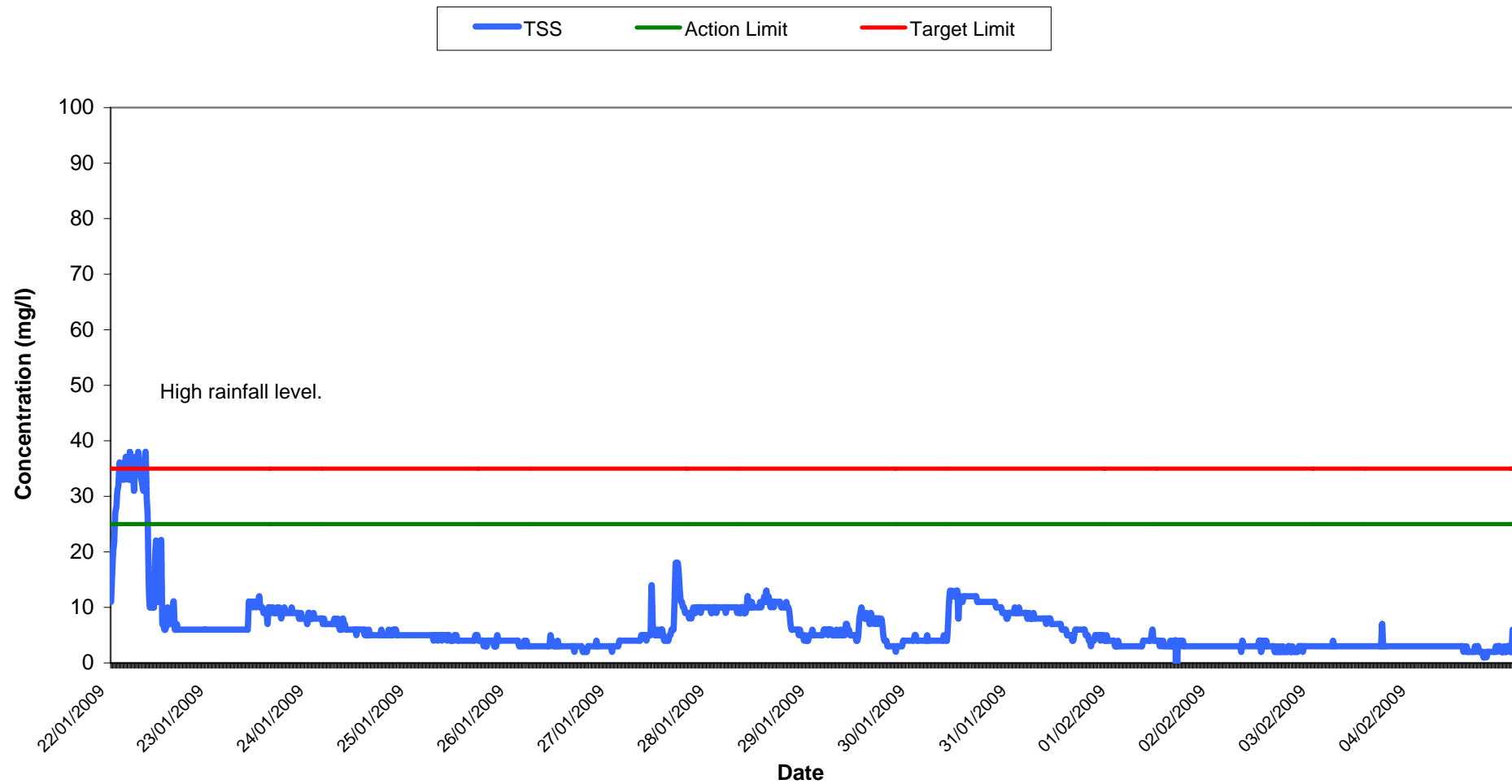
Vibration Monitoring Record Sheet

Determinant Results

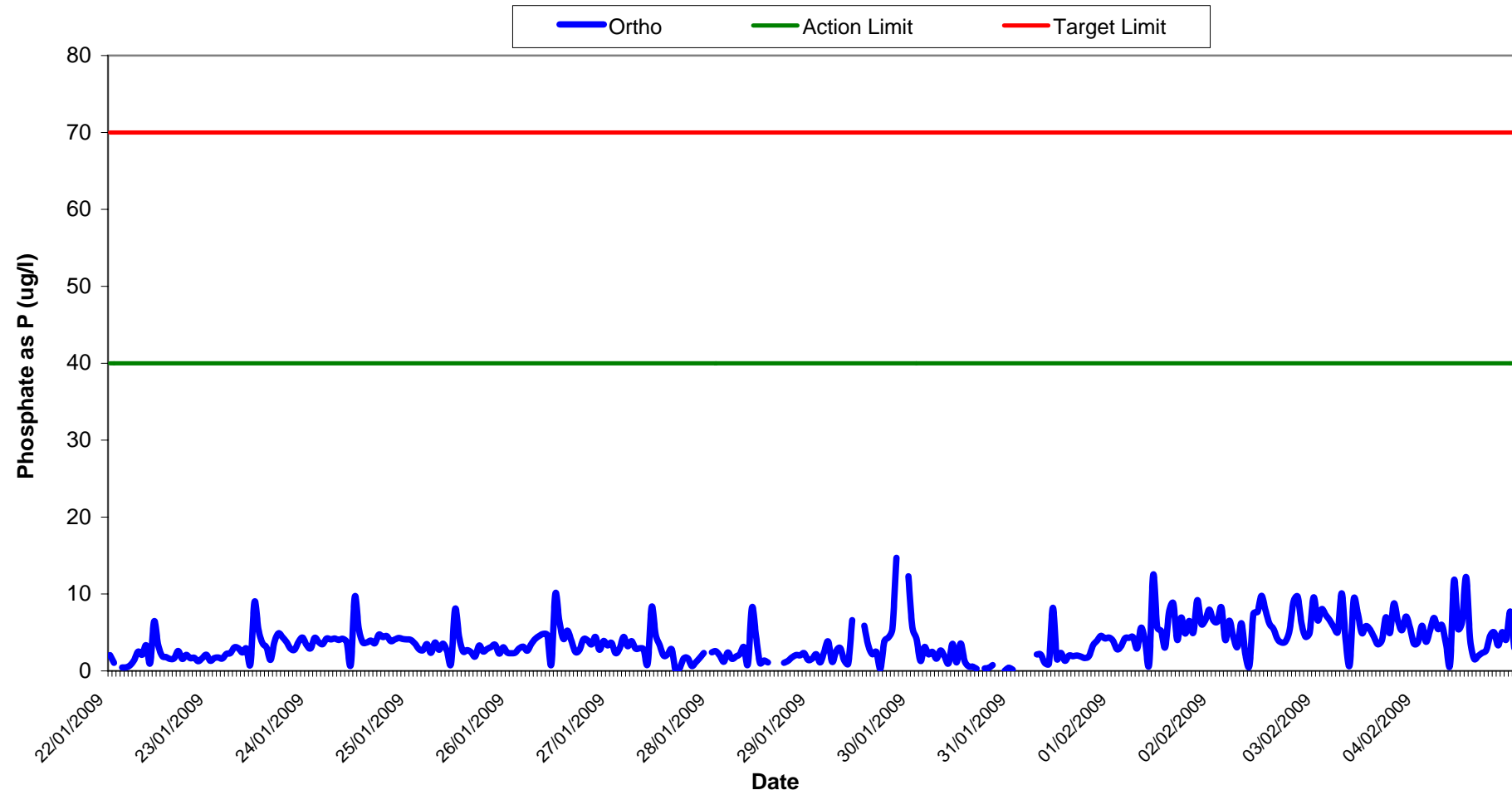
[illegible]

Vibration meter was located at V1 only.

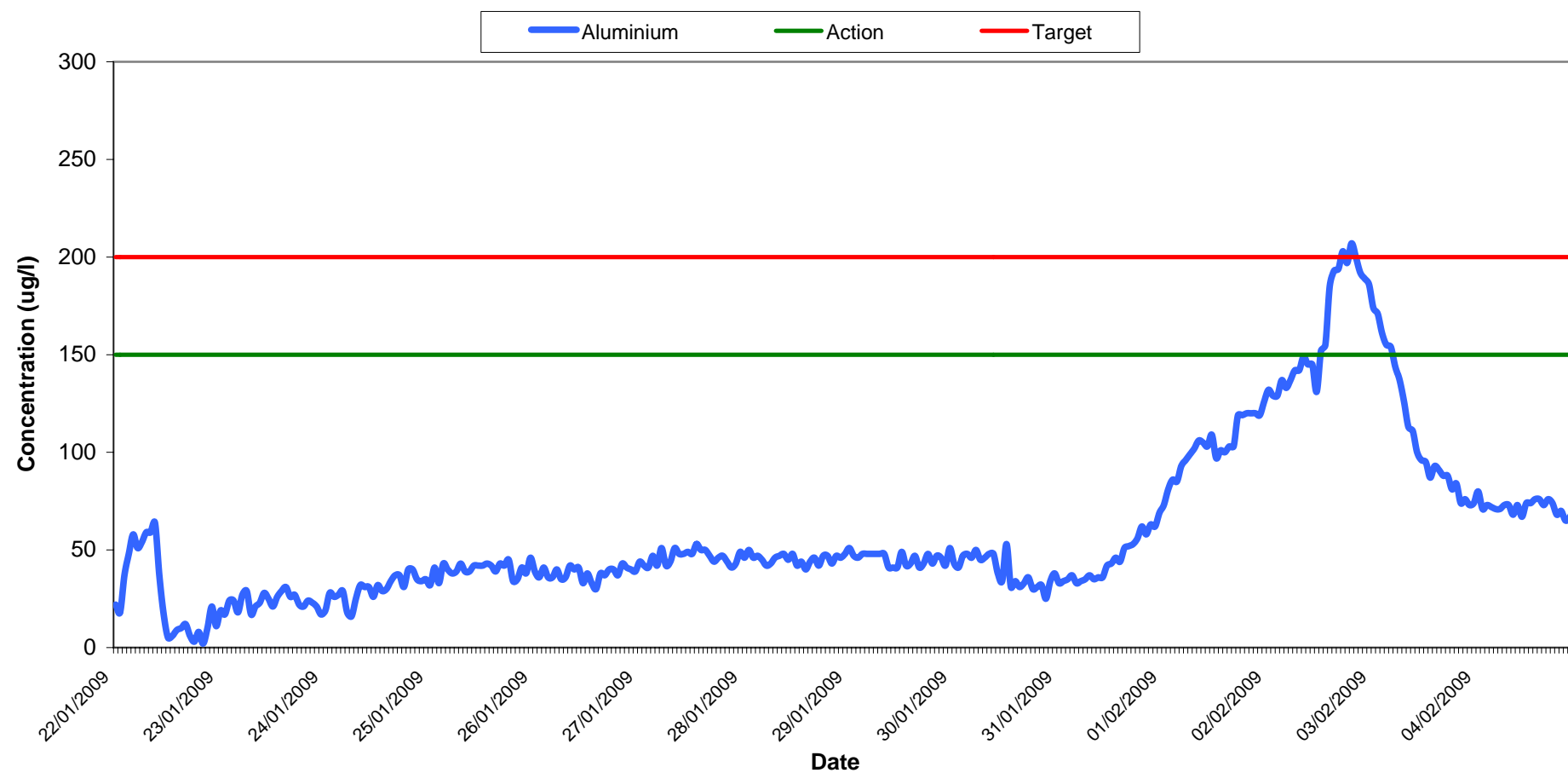
Total Suspended Solids Results at SP1 Wk 04-05



Orthophosphate Results at SP1
Wk 04-05



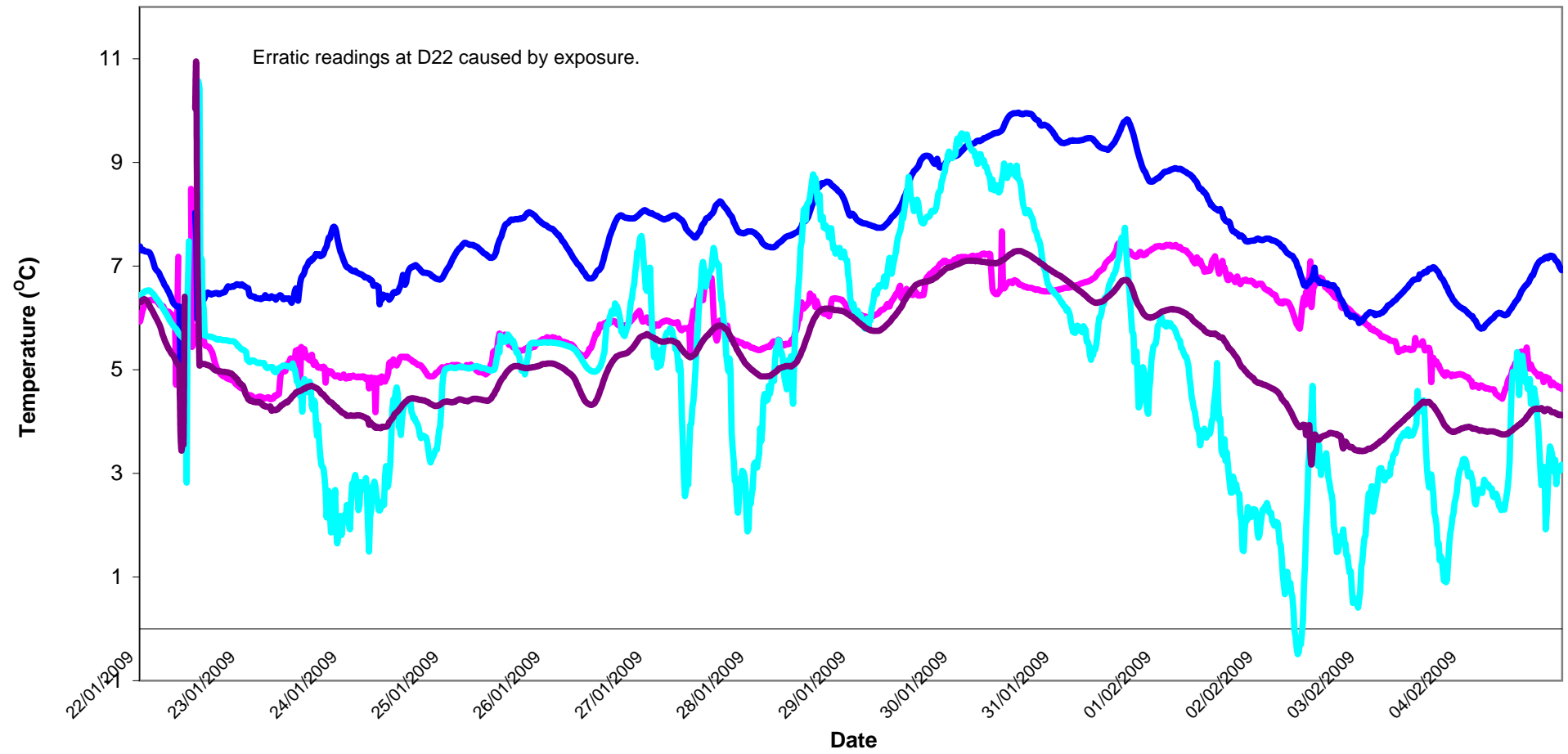
Aluminium Concentration at SP1 Wk 04-05



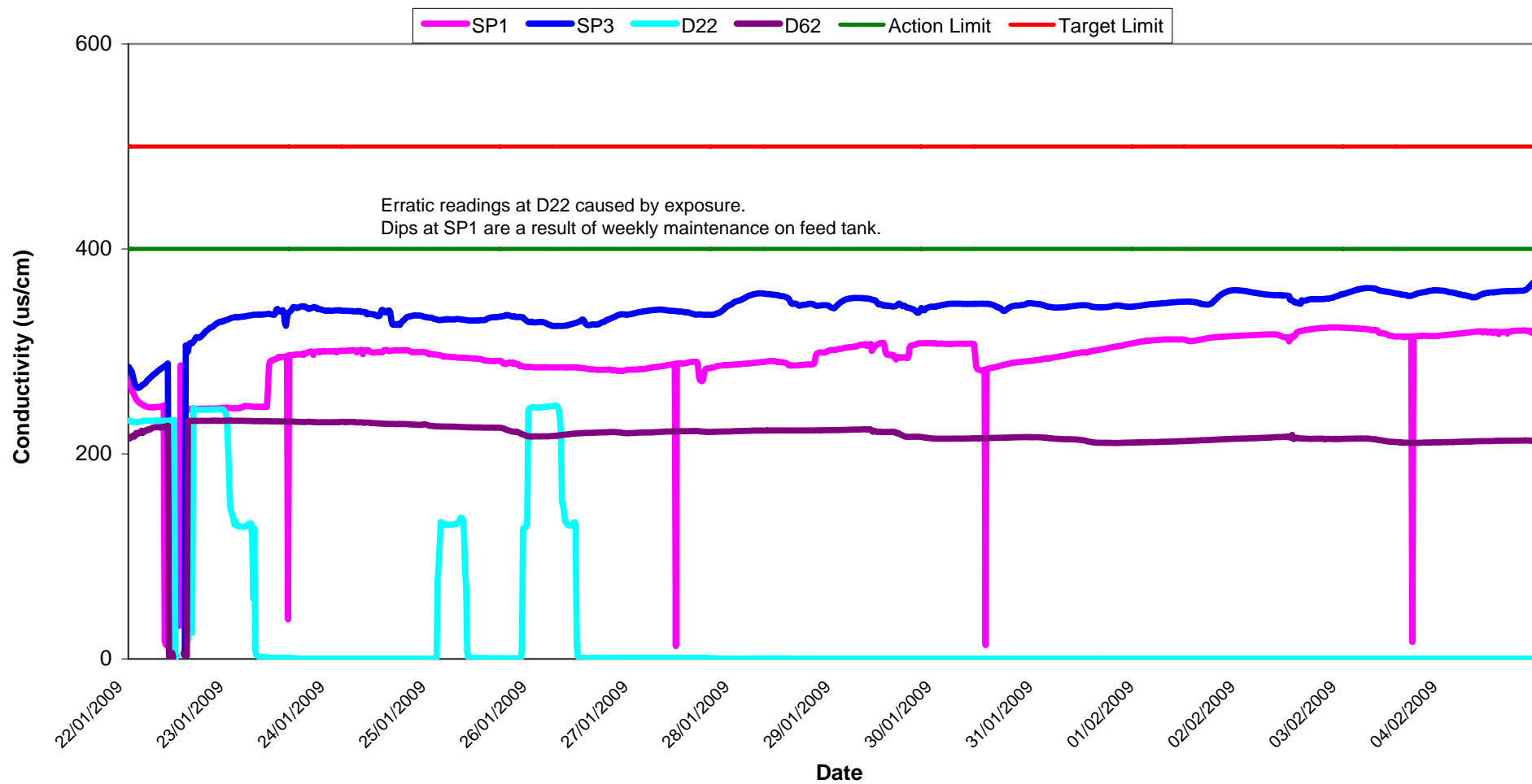
Temperature - Surface Waters

Wk 04-05

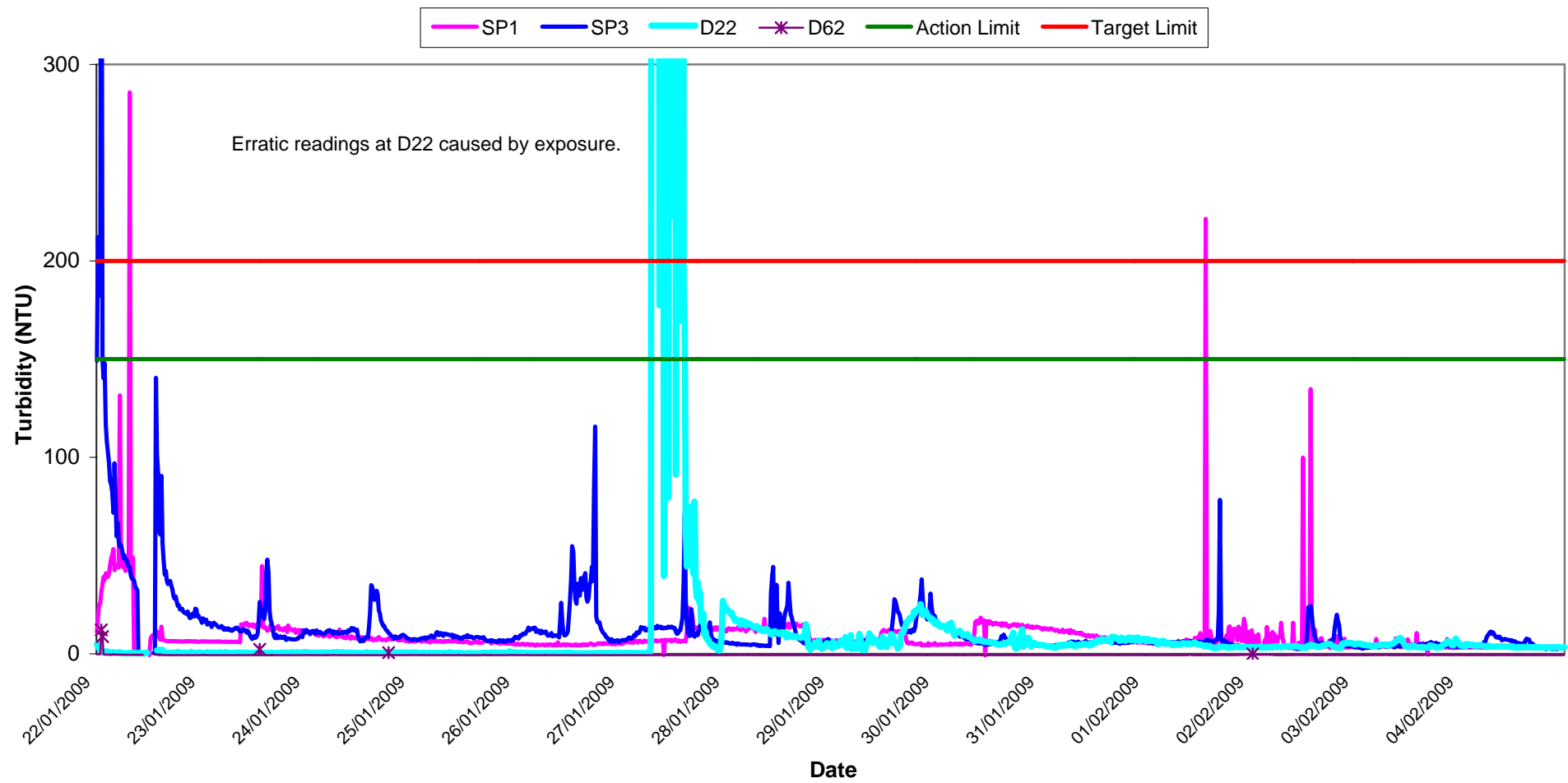
SP1 SP3 D22 D62



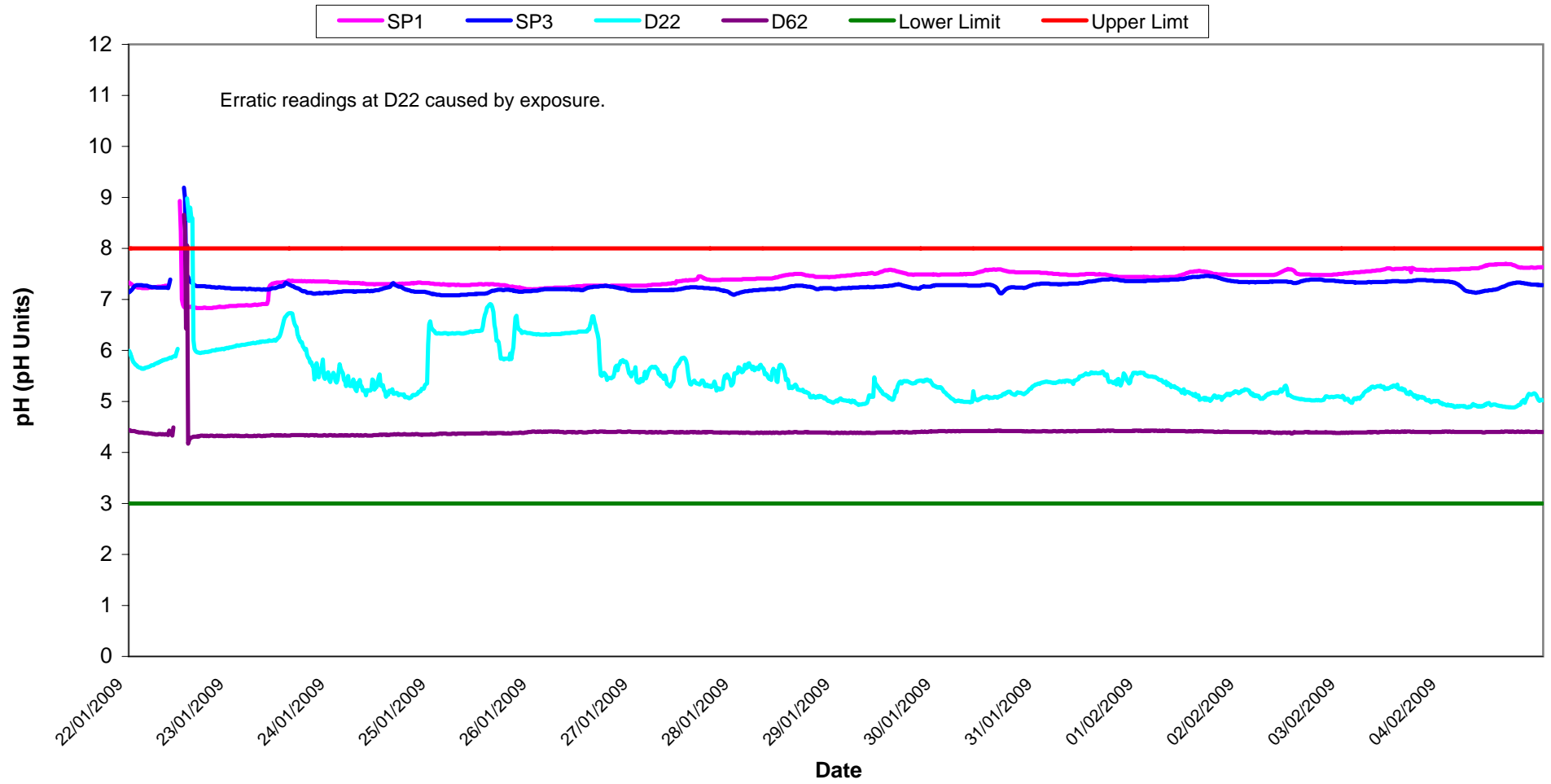
Conductivity - Surface Waters, Wk 04-05



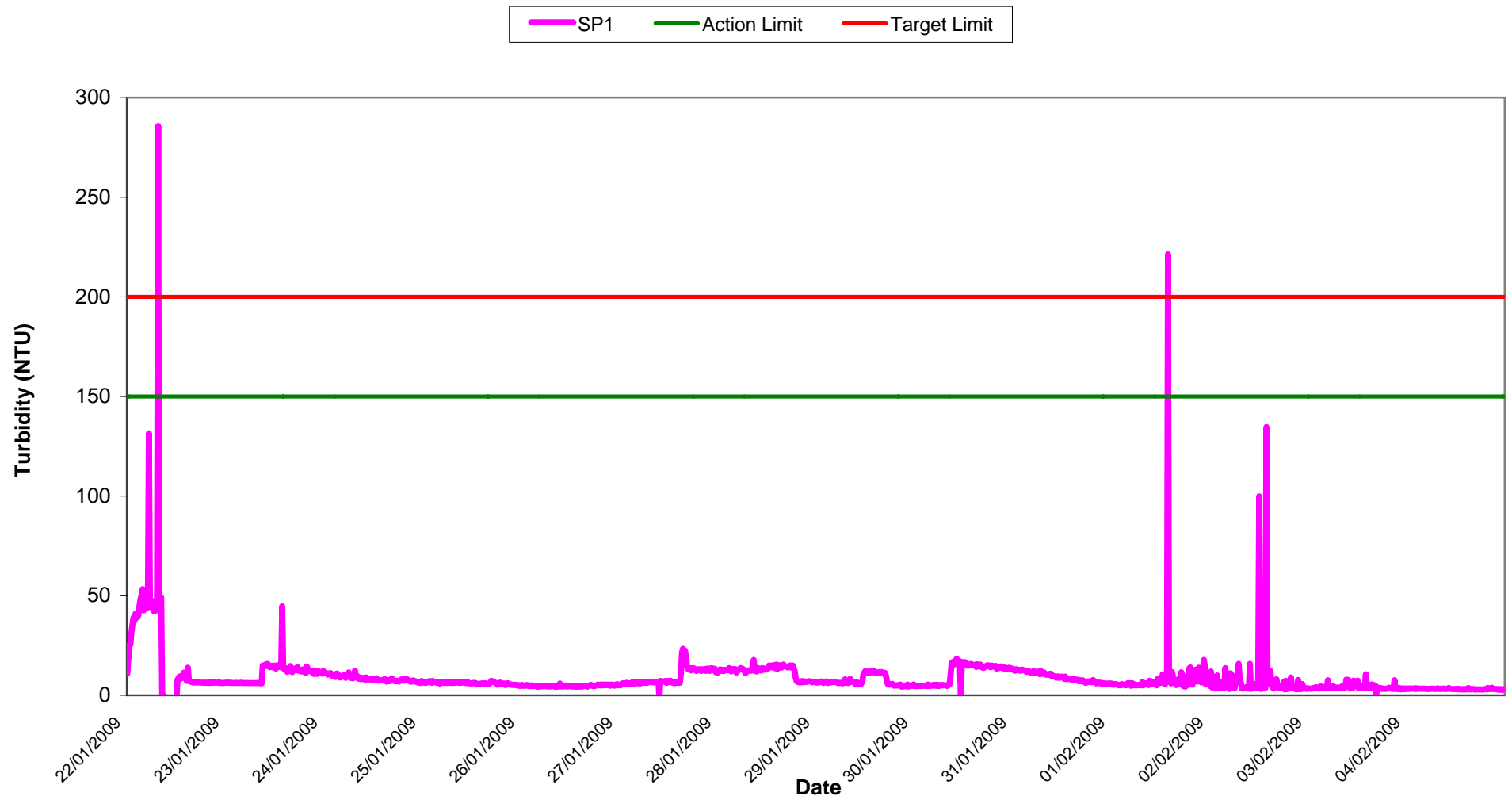
Turbidity - Surface Waters Wk 04-05



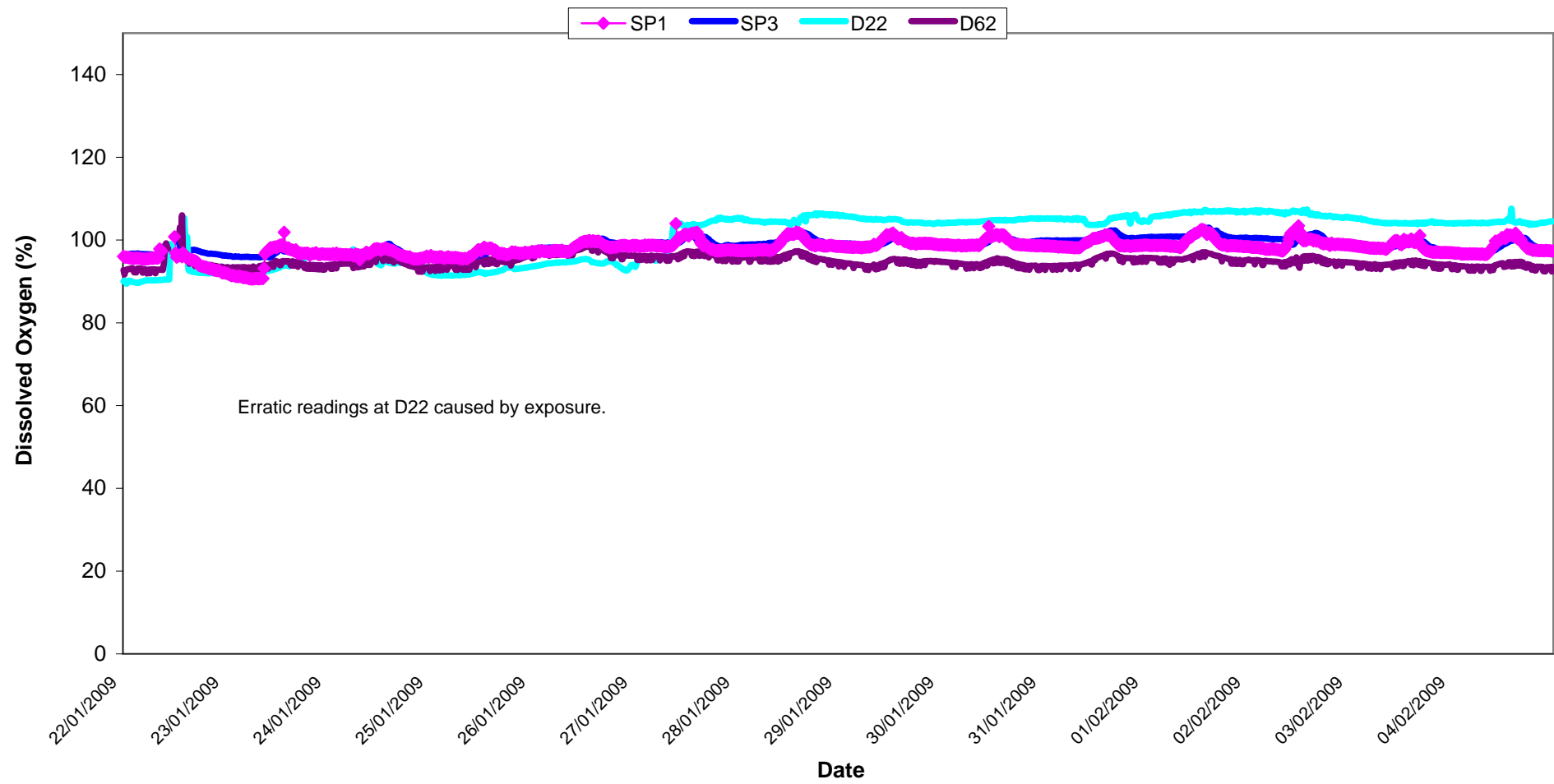
pH - Surface Waters Wk 04-05



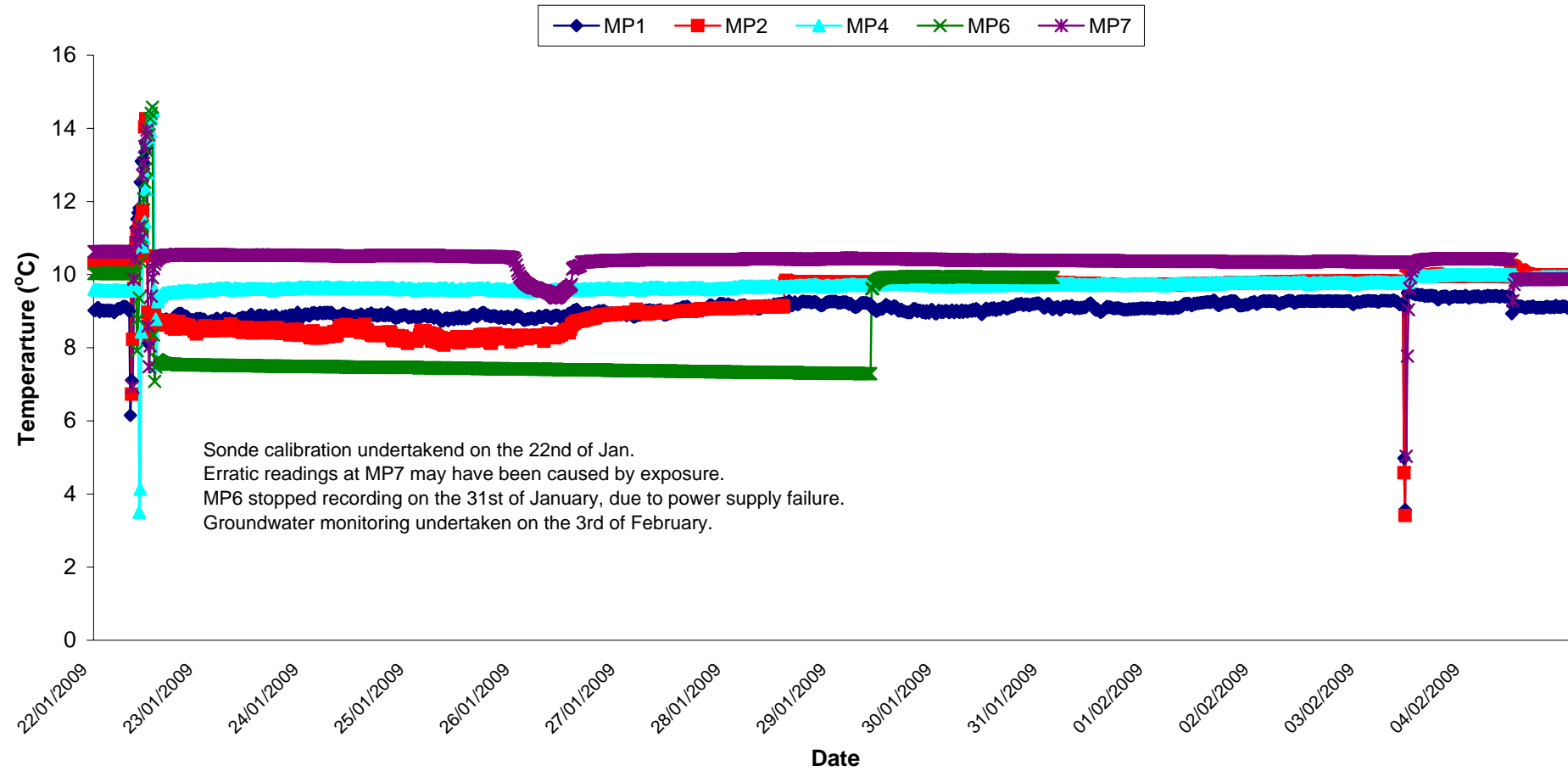
**Turbidity - Surface Waters @ SP1,
Wk 04-05**



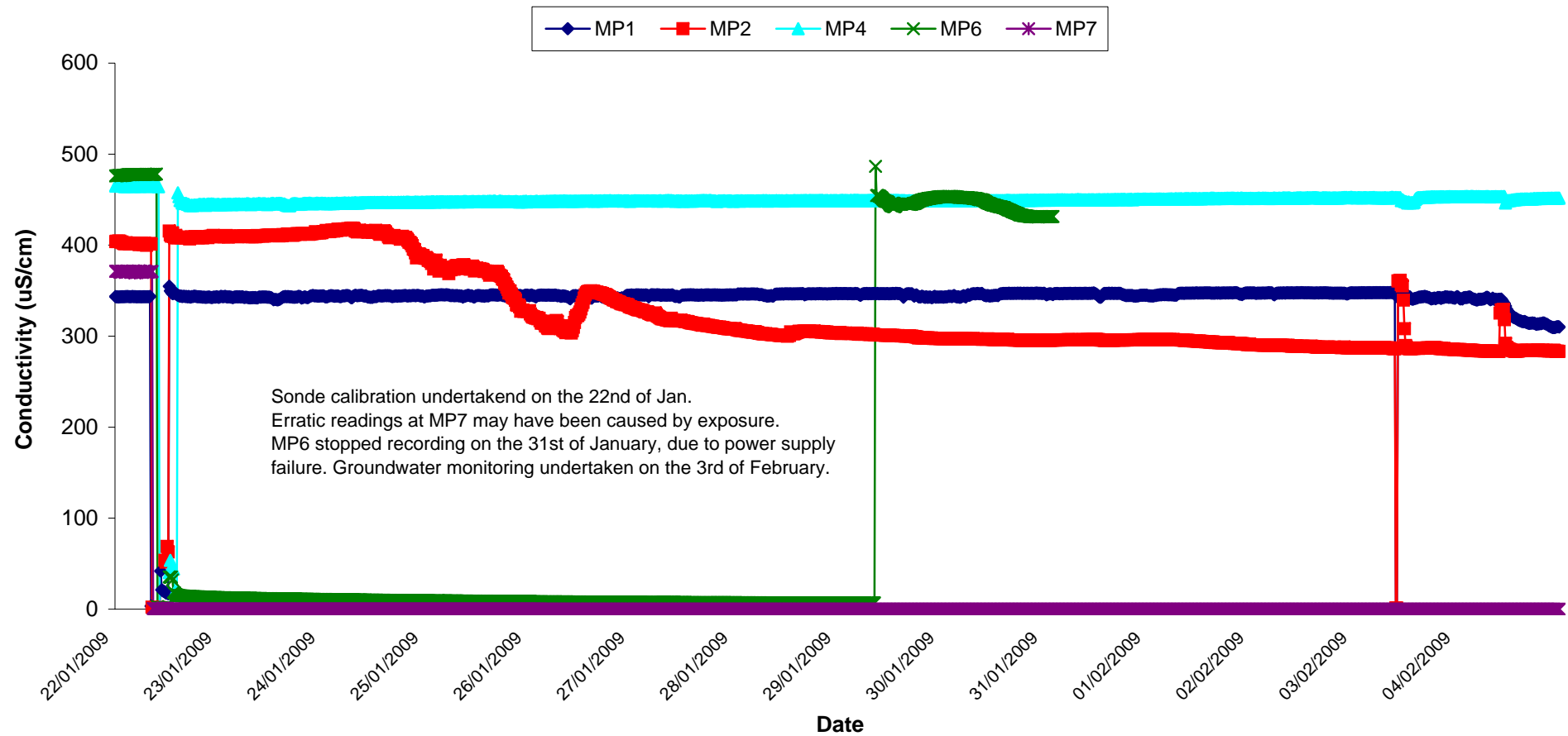
Dissolved Oxygen - Surface Waters, Wk 04-05



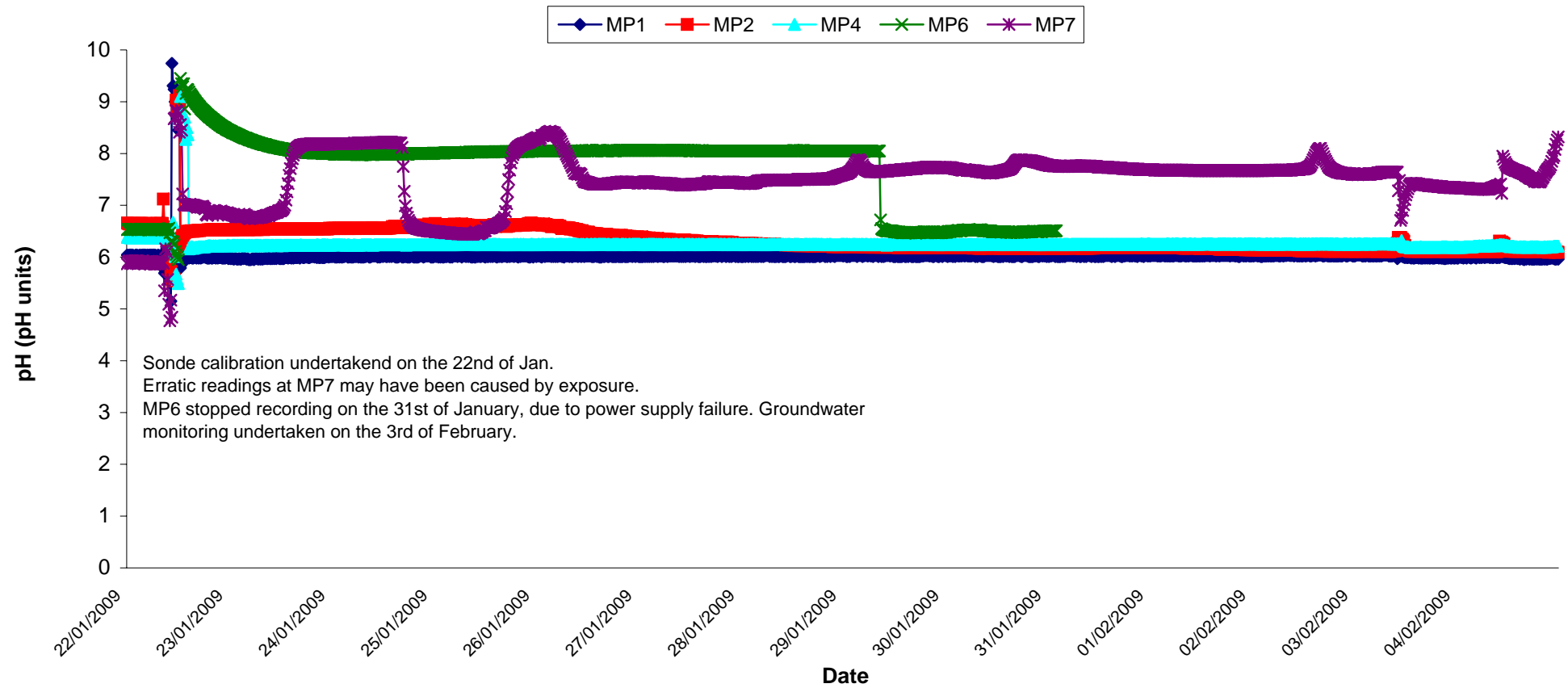
Temperature - Groundwaters Wk 04-05



Conductivity - Groundwaters Wk 04-05



pH - Groundwaters Wk 04-05



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	22/01/2009	253	6.1	18.3	94.0	7.5			0.3			0.09		<LOD	104	0.02	171
SP1	23/01/2009	284	5.1	25.2	95.9	7.1			<LOD			<LOD		23	161	0.07	190
SP1	26/01/2009	285	6.0	13.0	94.7	7.1			0.1			0.05		30	138	<LOD	194
SP1	27/01/2009	263	7.3	16.8	93.5	6.8			0.3			0.17		46	163	0.06	196
SP1	28/01/2009	281	6.6	25.0	91.3	7.1			<LOD			0.04		37	175	<LOD	195
SP1	29/01/2009	284	7.5	14.2	92.3	7.7			0.1			0.12		40	149	0.07	188
SP1	30/01/2009	283	8.5	18.1	92.3	6.7			0.7			0.21		33	213	0.02	197
SP1	02/02/2009	301	6.8	11.3	91.7	7.2			0.2			0.48		66	233	0.03	203
SP1	03/02/2009	303	6.3	15.1	90.8	7.5			<LOD			<LOD		28	205	<LOD	203
SP1	04/02/2009	305	5.6	12.8	89.2	7.5			0.2			0.01		32	216	<LOD	209
SP3	22/01/2009	314	7.0	46.3	98.2	7.5			0.8			0.39		32		0.05	210
SP3	23/01/2009	340	6.3	18.1	97.4	7.0			0.6			0.85		<LOD		0.05	225
SP3	26/01/2009	335	7.7	27.0	96.4	7.1			0.4			0.16		40		0.02	221
SP3	27/01/2009	330	7.9	19.6	96.6	6.9			0.9			0.24		27		0.06	224
SP3	28/01/2009	341	7.8	53.0	95.2	7.5			<LOD			0.21		48		0.02	233
SP3	29/01/2009	329	7.4	10.6	94.5	7.5			0.4			0.18		38		0.06	221
SP3	30/01/2009	332	10.2	9.4	95.6	6.8			0.3			0.17		65		0.03	224
SP3	02/02/2009	339	6.9	8.0	94.3	7.3			0.2			0.05		61		0.08	226
SP3	03/02/2009	344	6.9	9.6	92.0	7.2			<LOD			0.08		25		0.02	238
SP3	04/02/2009	343	6.7	13.2	91.4	7.3			0.1			0.09		<LOD		<LOD	238
Additional Monitoring																	
D22	22/01/2009	248	5.8	4.8	91.9	6.6			1.1			0.46		34		0.08	168
D62	22/01/2009	234	5.3	4.3	93.9	5.5			0.9			0.18		23		0.04	159
D22	30/01/2009	249	8.1	5.0	89.7	6.7			0.2			0.36		29		0.07	169
D62	30/01/2009	208	8.6	3.6	88.8	5.0			0.1			>LOD		16		0.01	135
Axonics Monitoring																	
Pre	22/01/2009	347		>LOD		7.3			<LOD			>LOD		>LOD		0.10	235
Post	23/01/2009	362		13.9		6.7			0.9			0.08		<LOD	433	0.05	243
Pre	23/01/2009	336		213.0		7.0			<LOD			0.19		505		<LOD	222
Post	23/01/2009	352		3.2		6.7			1.2			0.05		<LOD	302	<LOD	234
Pre	26/01/2009	343		36.4		7.0			<LOD			0.29		191		0.03	227
Post	26/01/2009	359		6.3		6.7			0.1			0.44		<LOD	672	0.03	236
Pre	27/01/2009	381		>LOD		6.8			<LOD			>LOD		>LOD		<LOD	256
Post	27/01/2009	358		9.1		6.4			2.5			0.35		<LOD	349	0.04	242
Pre	28/01/2009	330		115.0		7.0			<LOD			0.11		303		0.05	223
Post	28/01/2009	346		9.6		6.8			0.1			0.09		33	748	0.02	233
Pre	29/01/2009	330		542.0		7.4			<LOD			0.05		492		0.06	222
Post	29/01/2009	347		3.5		7.3			<LOD			0.02		<LOD	324	<LOD	235
Pre	30/01/2009	323		146.0		6.9			<LOD			0.11		410		0.03	216
Post	30/01/2009	343		8.3		6.7			0.8			0.12		45	771	0.03	231
Pre	02/02/2009	333		>LOD		7.2			<LOD			>LOD		>LOD		0.15	223
Post	02/02/2009	345		11.1		6.8			0.5			0.16		36	609	0.05	233
Pre	03/02/2009	337		>LOD		6.9			<LOD			0.56		>LOD		0.24	233
Post	03/02/2009	355		11.2		6.2			0.2			0.03		<LOD	257	0.06	245
Pre	04/02/2009	371		>LOD		7.2			<LOD			2.41		>LOD		0.28	256
Post	04/02/2009	358		10.4		6.7			0.2			0.02		<LOD	386	0.05	245
Grey shaded areas denote parameters that cannot or were not analysed on-site.																	
= Indicative Only																	
= Below Limit of Detection																	
= Above Limit of Detection																	