

Final Environmental Report	Period Ending: 17 th December 2008
Compiled By: Siobhán Quinn & Aoife Reynolds	
Approved By: Tony Doyle	

1 Monitoring Data

1.1 Monitoring Equipment

Axonic's	– 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.
Aluminium	– Due to a technical error, no data available from the analyser for a period during the reporting period. The problem has since been rectified. – On site results and composites available.
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. – The other location is visible from off-site and because of current protestor action it cannot be guaranteed that the equipment remains undisturbed. – Telemetry is currently being set up at the noise monitoring station.
Vibration	– There is a single vibration monitoring location currently being used – V1. – The other location is visible from off-site and because of current protestor action it cannot be guaranteed that the equipment remains undisturbed.
Sondes	– The results are displayed graphically. ○ Any unusual values are explained on the relevant graph.
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

11/12/08	5.265	15/12/08	5.070
12/12/08	19.695	16/12/08	11.700
13/12/08	5.265	17/12/08	1.170
14/12/08	0.195		
Total Rainfall 48.360mm			

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1.3 Summary

Environment	Comments
Surface Water	There was one reportable exceedances during the reporting period (See Sec. 2 below)
Groundwater	The groundwater data (Sonde) is within anticipated ranges.
Dust	Dust monitoring in progress.
Weather	There was a total of 48.360mm of rainfall during the reporting period, with a temperature range of 0.5°C to 11.1°C.
Noise	All noise levels were within the set limits.
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	16 th of December
Location	SP1
Nature of Incident	A value of 219µg/l was recorded for total aluminium at SP1 on the 16 th of December 2008. This value is marginally in exceedance of the site discharge limit for total aluminium of 200µg/l. During the previous days (from the 12 th to the 16 th of December inclusive) there was a total of 41.9mm of rainfall.
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 Aluminium will be carried out at SP1. Storage and pumping back to Axonic's of footprint waters. Continued implementation of agreed surface water actions.
Category	Environmental Exceedance
Status	Open

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	16/12/2008	224		4.9		7.0	<2	13		<0.440	0.04	0.010	<0.017	68	219	0.04	108
SP3	16/12/2008	261		15.9		7.0	7	11		0.554	0.04	0.009	<0.017	52	377	0.04	123
Additional Monitoring																	
Axonics Monitoring																	
Pre Axonics	16/12/2008	290		328.0		7.0	304	35		1.347	0.12	<0.005	<0.017	<20	1255	0.11	135
Post Axonics	16/12/2008	296		2.5		6.4	<2	<10		1.012	0.02	0.020	0.019	<20	248	<0.03	139
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		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		
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 during the reportin 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	25/07/2008	25/08/2008	182830	29/08/2008	04/09/2008	86	
D2	25/07/2008	25/08/2008	182831	29/08/2008	04/09/2008	166	
D3	25/07/2008	25/08/2008	182833	29/08/2008	04/09/2008	41	
D4	25/07/2008	25/08/2008	182834	29/08/2008	04/09/2008	76	
D1	25/08/2008	25/09/2008	185830	26/09/2008	30/09/2008	135	
D2	25/08/2008	25/09/2008	185831	26/09/2008	30/09/2008	92	
D3	25/08/2008	25/09/2008	185832	26/09/2008	30/09/2008	102	
D4	25/08/2008	25/09/2008	185833	26/09/2008	30/09/2008	83	
D1	25/09/2008	24/10/2008	188708	24/10/2008	28/10/2008	233	
D2	25/09/2008	24/10/2008	188709	24/10/2008	28/10/2008	186	
D3	25/09/2008	24/10/2008	188710	24/10/2008	28/10/2008	155	
D4	25/09/2008	24/10/2008	188711	24/10/2008	28/10/2008	208	
D1	24/10/2008	21/11/2008	191474	21/11/2008	27/11/2008	174	
D2	24/10/2008	21/11/2008	191475	21/11/2008	27/11/2008	167	
D3	24/10/2008	21/11/2008	191476	21/11/2008	27/11/2008	171	
D4	24/10/2008	21/11/2008	191477	21/11/2008	27/11/2008	180	
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	
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

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	5.6	8.4	11/12/2008	08:00:00	14:00:00	2539533	2.8	136.5	48.1	82.8	36.3	
N1	4.8	10.8	12/12/2008	08:00:00	14:00:00	2539533	4.5	57.5	53.1	73.9	42.5	
N1	0.5	5.5	13/12/2008	08:00:00	14:00:00	2539533	1.9	120.2	46.9	73.5	39.6	
N1	0.5	7.9	14/12/2008	08:00:00	14:00:00	2539533	3.1	137.4	45.9	66.1	37.3	
N1	1.9	10.7	15/12/2008	08:00:00	14:00:00	2539533	5.2	22.9	52.0	70.8	38.8	Elevated wind speeds impacted noise values.
N1	4.4	11.1	16/12/2008	08:00:00	14:00:00	2539533	5.1	68.8	50.0	80.0	40.6	
N1	5.1	11.1	17/12/2008	08:00:00	14:00:00	2539533	5.5	54.8	52.9	75.9	41.4	

* 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	
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Date	SP1			SP3		
	Max (l/s)	Min (l/s)	Avg (l/s)	Max (l/s)	Min (l/s)	Avg (l/s)
11/12/2008	29.94	16.03	22.16	12.09	6.03	9.87
12/12/2008	217.89	22.34	64.35	67.42	12.09	24.87
13/12/2008	50.28	29.60	37.17	24.76	13.88	17.67
14/12/2008	29.26	14.87	21.41	16.08	5.80	12.32
15/12/2008	26.29	15.56	18.86	10.38	5.35	8.54
16/12/2008	73.04	15.56	38.41	18.72	4.48	11.90
17/12/2008	38.12	12.09	23.28	17.39	3.10	9.76

Note: Negative values indicate low flow conditions.

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	5.6	8.4	11/12/2008	22:00:00	10:00:00	2539533	2.8	136.5	47.5	74.5	37.6	
N1	4.8	10.8	12/12/2008	22:00:00	10:00:00	2539533	4.5	57.5	44.7	71.5	40.3	
N1	0.5	5.5	13/12/2008	22:00:00	10:00:00	2539533	1.9	120.2	44.6	65.6	39.6	
N1	0.5	7.9	14/12/2008	22:00:00	10:00:00	2539533	3.1	137.4	45.3	68.0	35.3	
N1	1.9	10.7	15/12/2008	22:00:00	10:00:00	2539533	5.2	22.9	45.3	60.6	41.3	Elevated wind speeds impacted noise values.
N1	4.4	11.1	16/12/2008	22:00:00	10:00:00	2539533	5.1	68.8	45.9	67.9	39.5	
N1	5.1	11.1	17/12/2008	22:00:00	10:00:00	2539533	5.5	54.8	53.6	75.9	39.9	

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

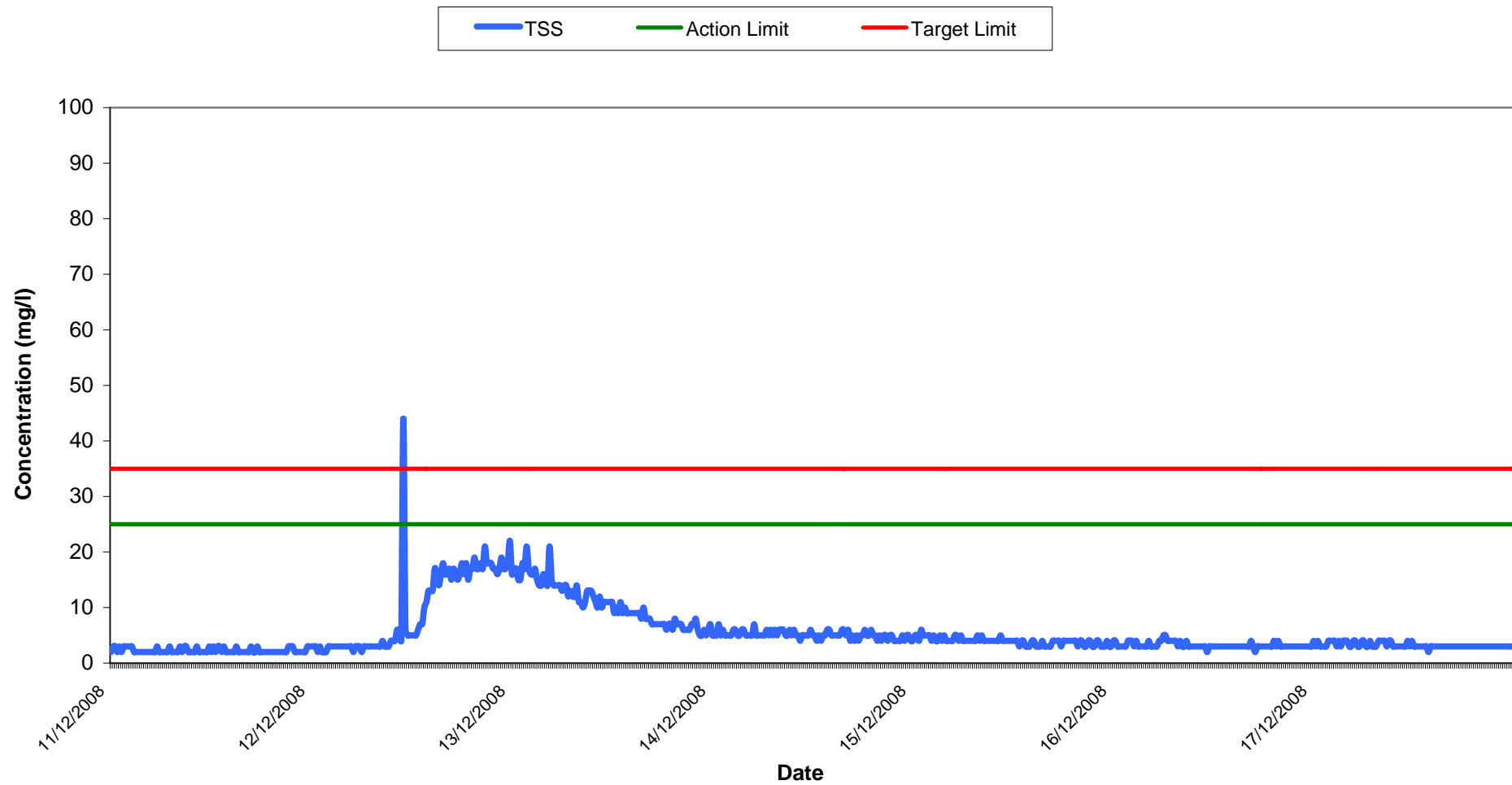
Vibration Monitoring Record Sheet

Determinant Results	
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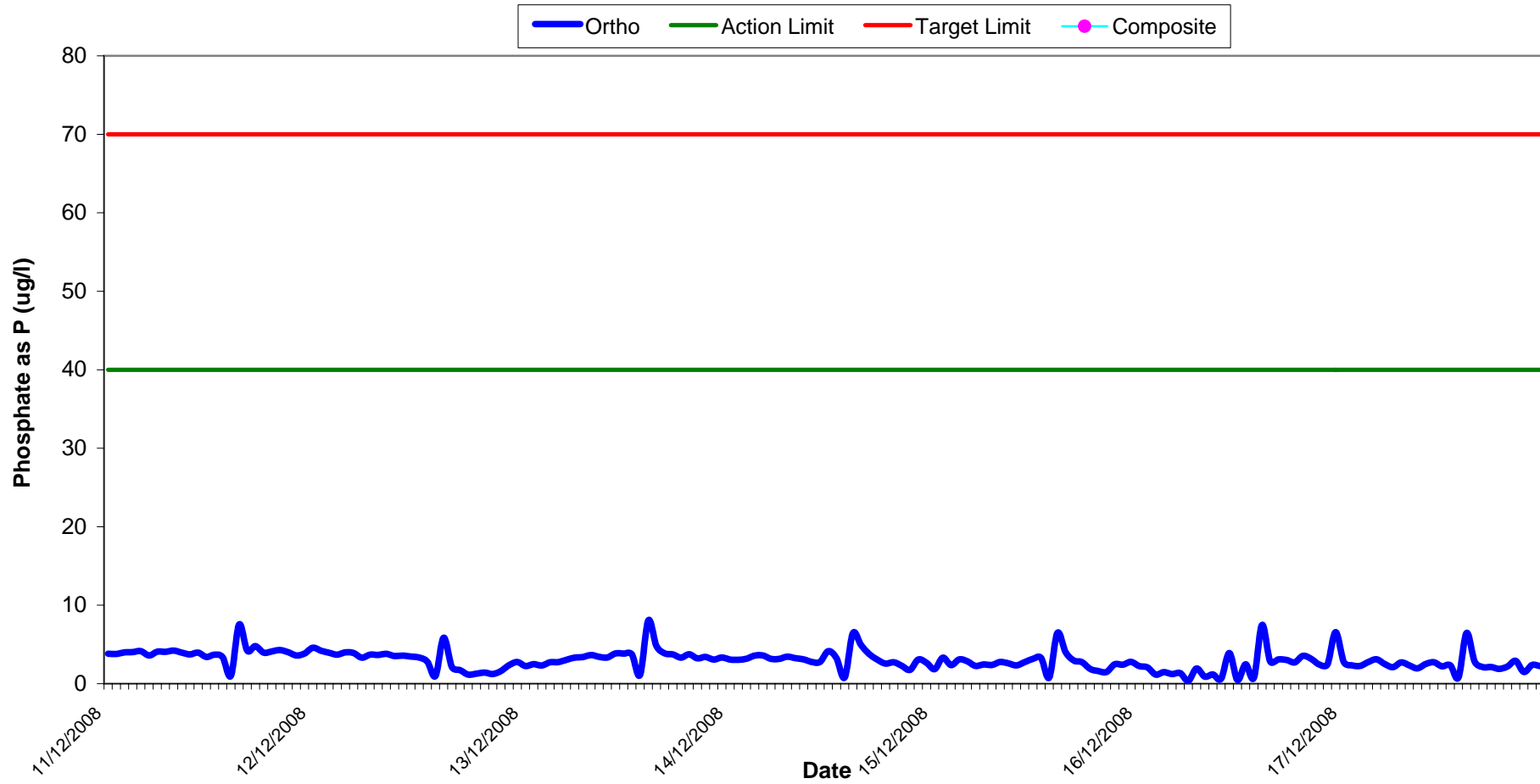
[illegible]

Vibration meter was located at V1 only.

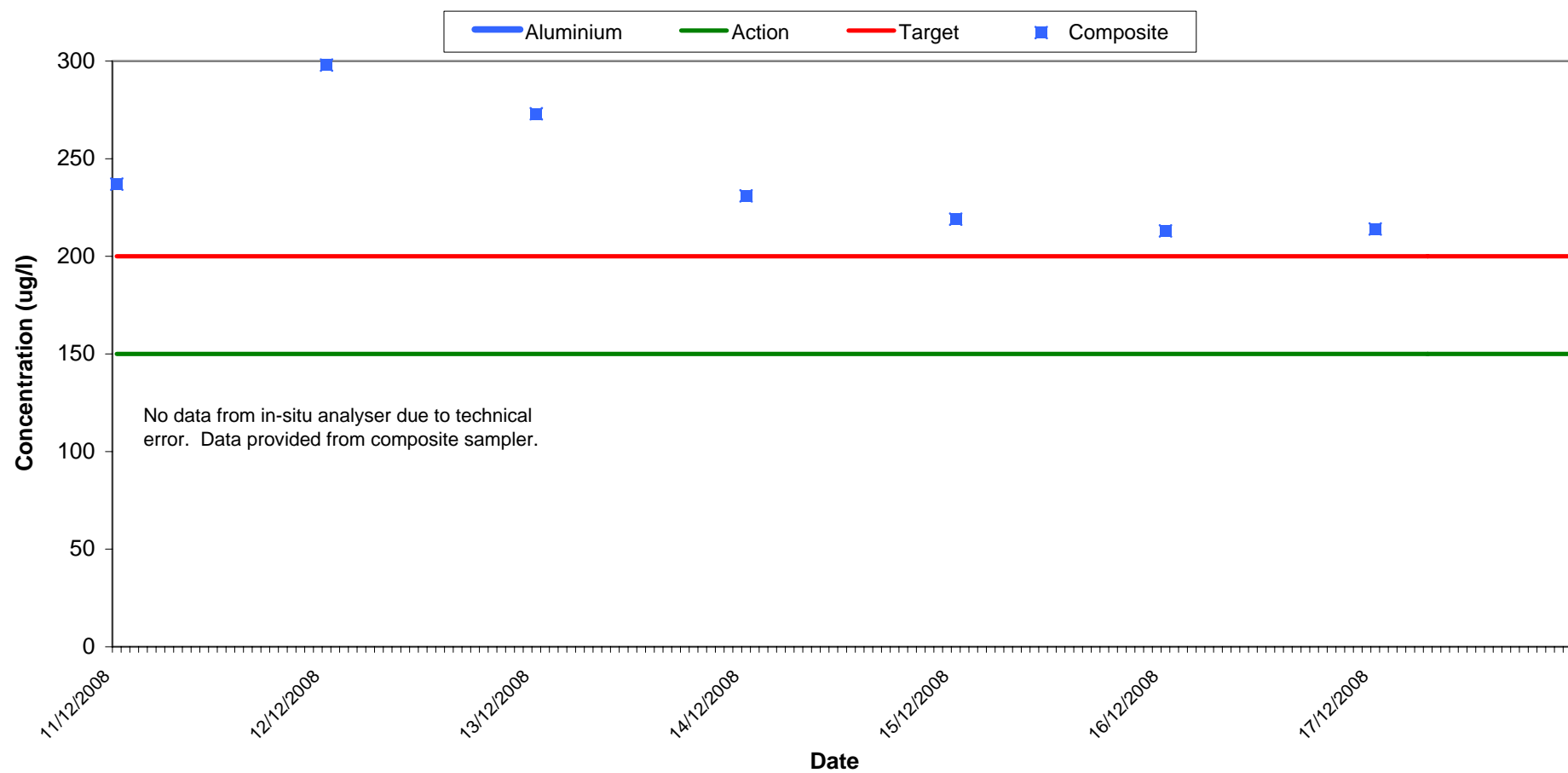
Total Suspended Solids Results at SP1 Wk 51



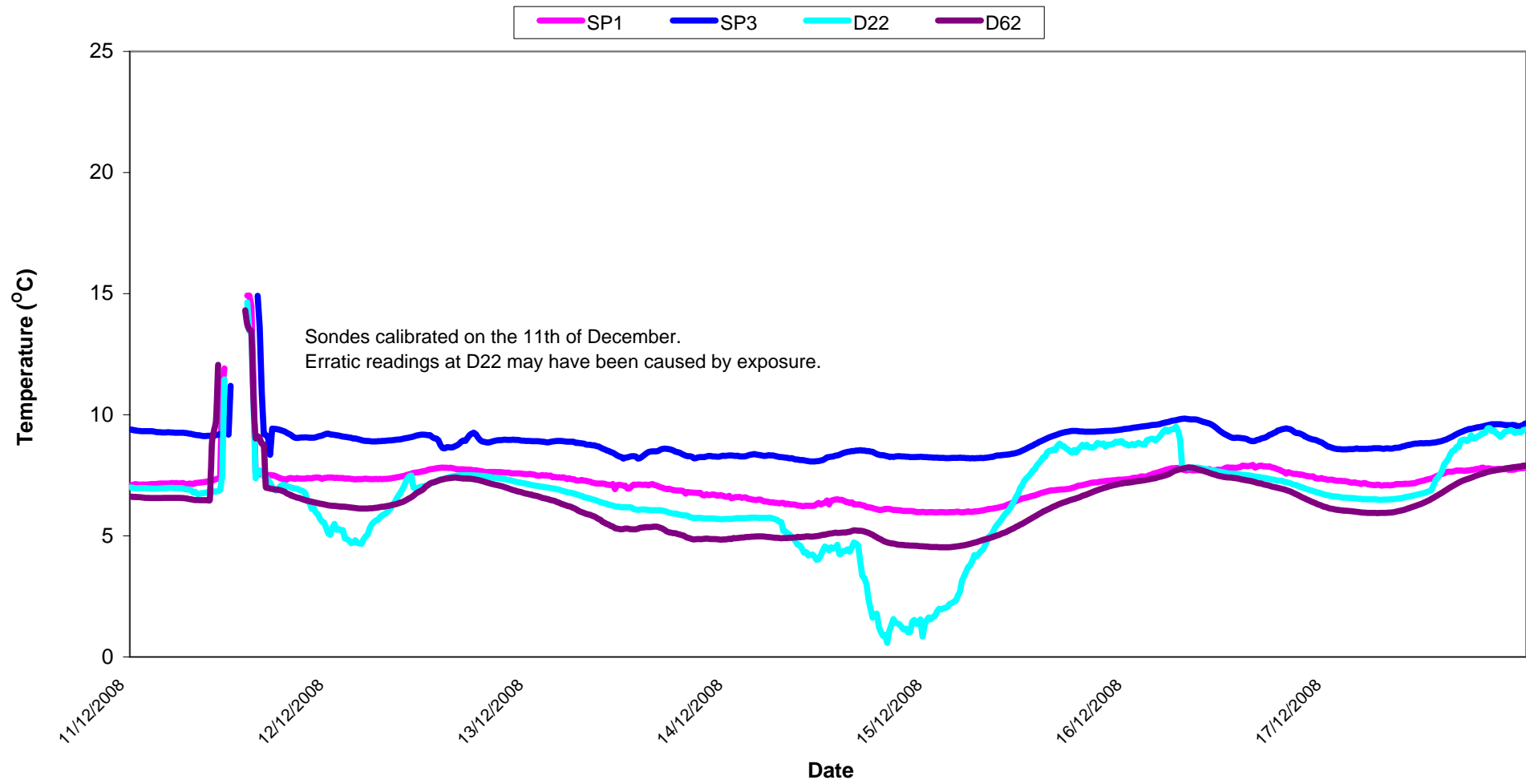
Orthophosphate Results at SP1 Wk 51



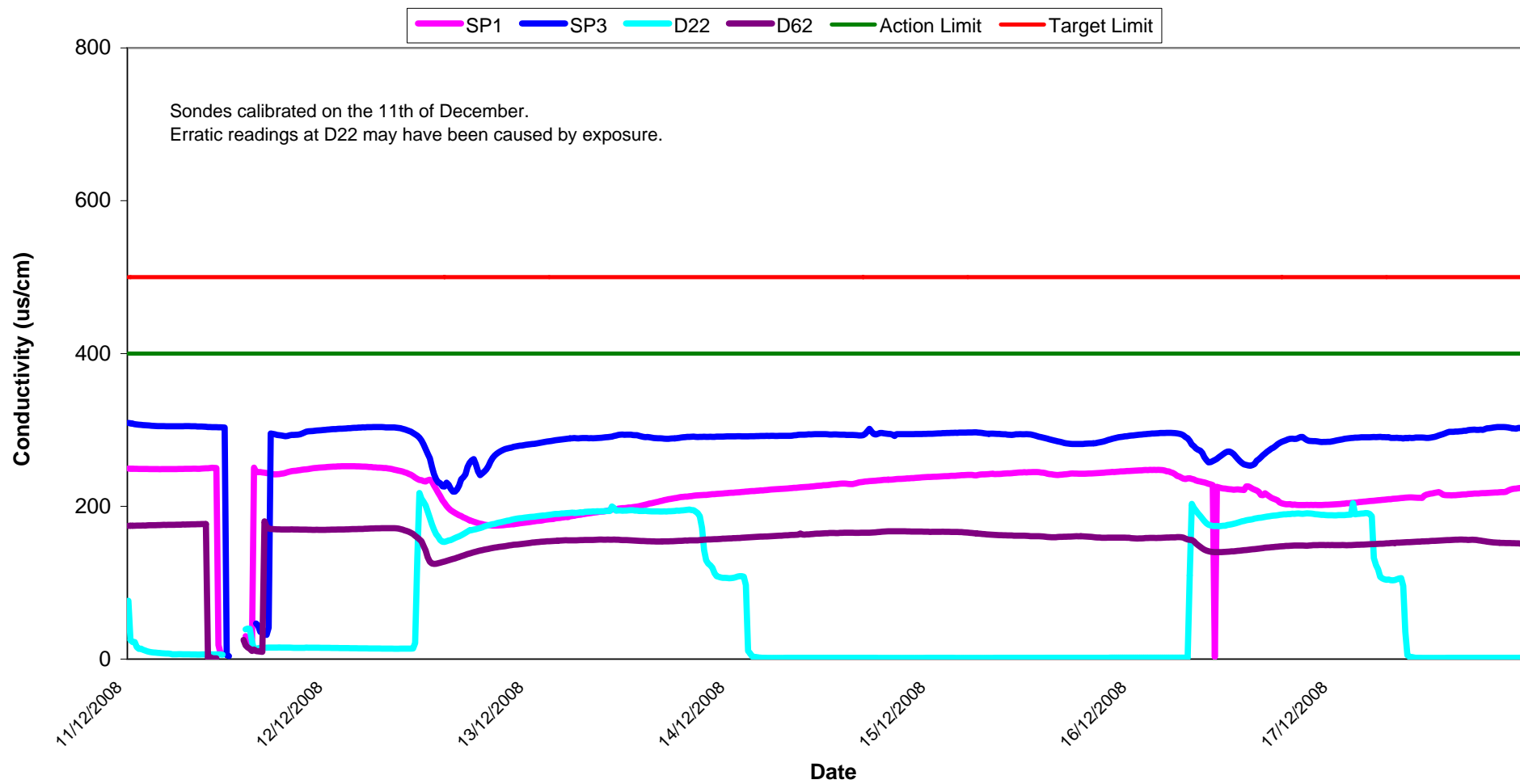
Aluminium Concentration at SP1 Wk 51



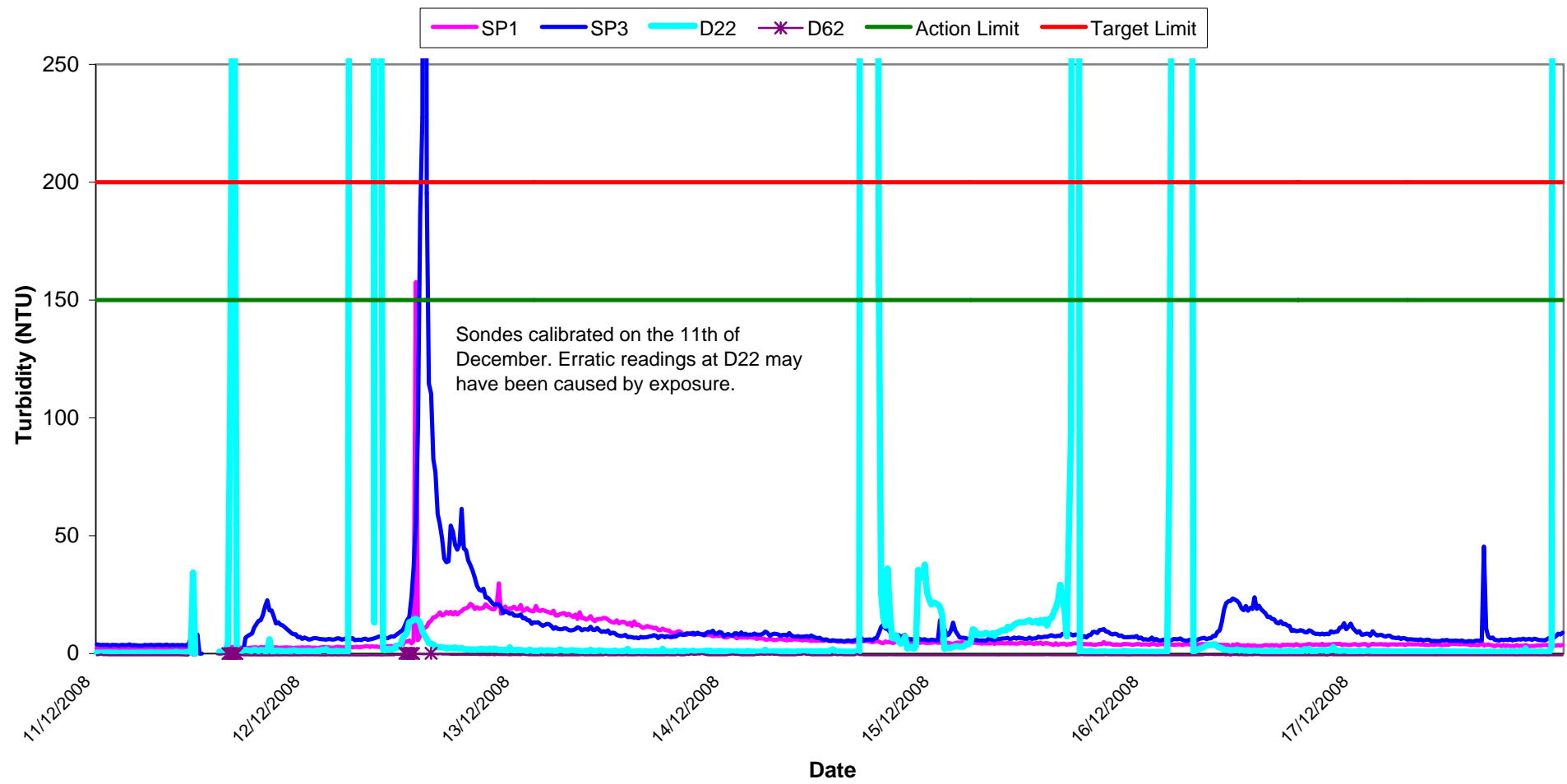
Temperature - Surface Waters Wk 51



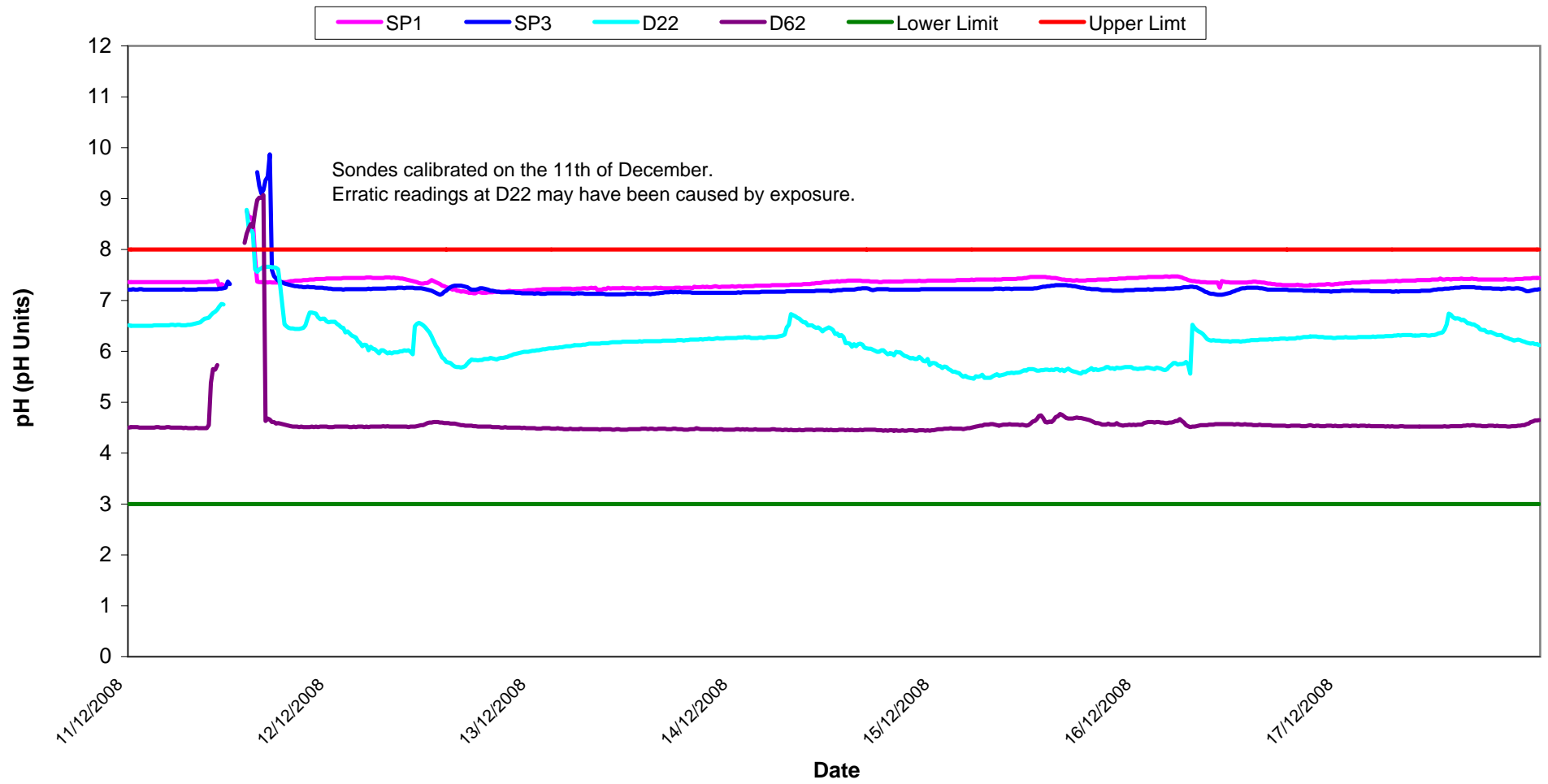
Conductivity - Surface Waters, Wk 51



Turbidity - Surface Waters Wk 51

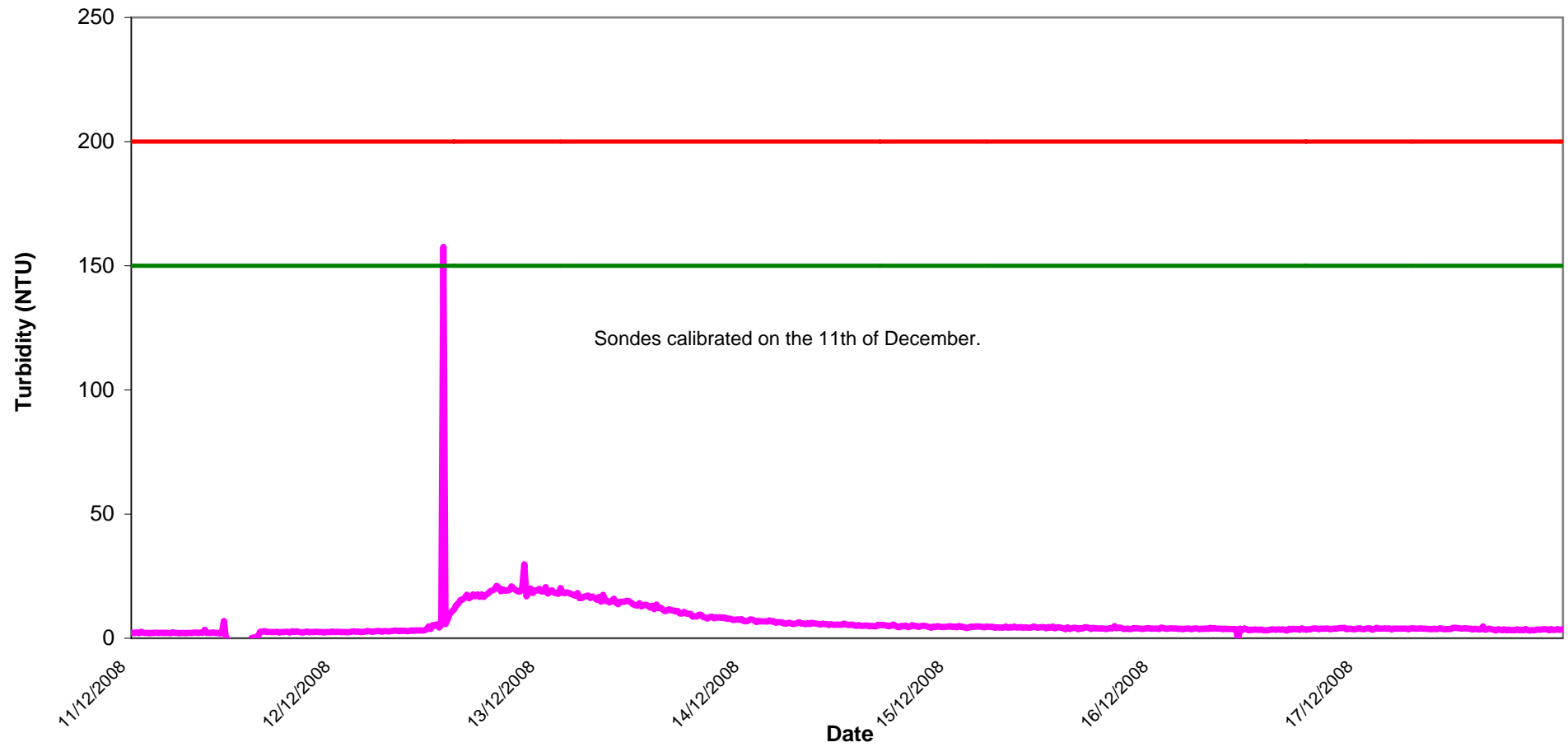


pH - Surface Waters Wk 51

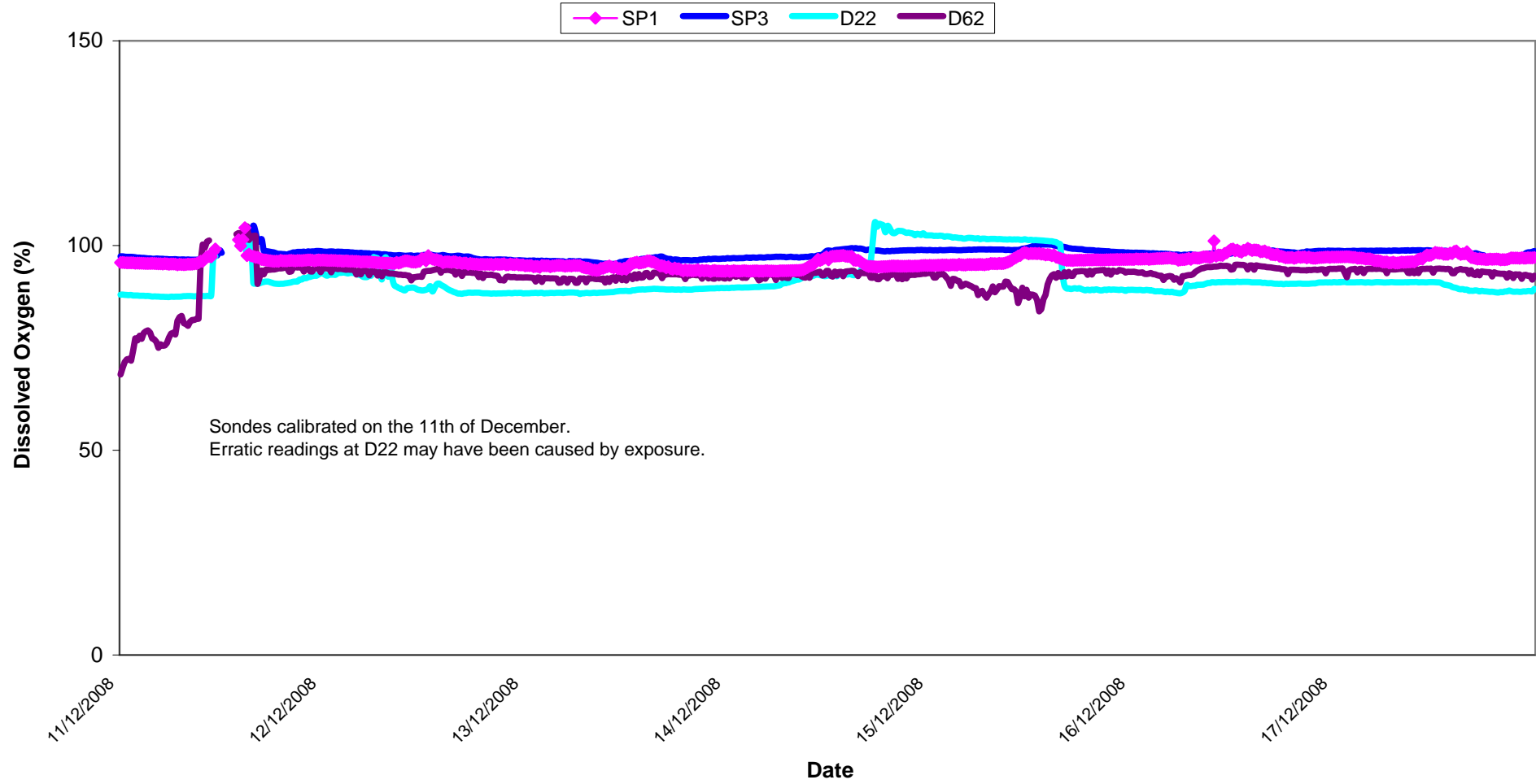


Turbidity - Surface Waters @ SP1, Wk 51

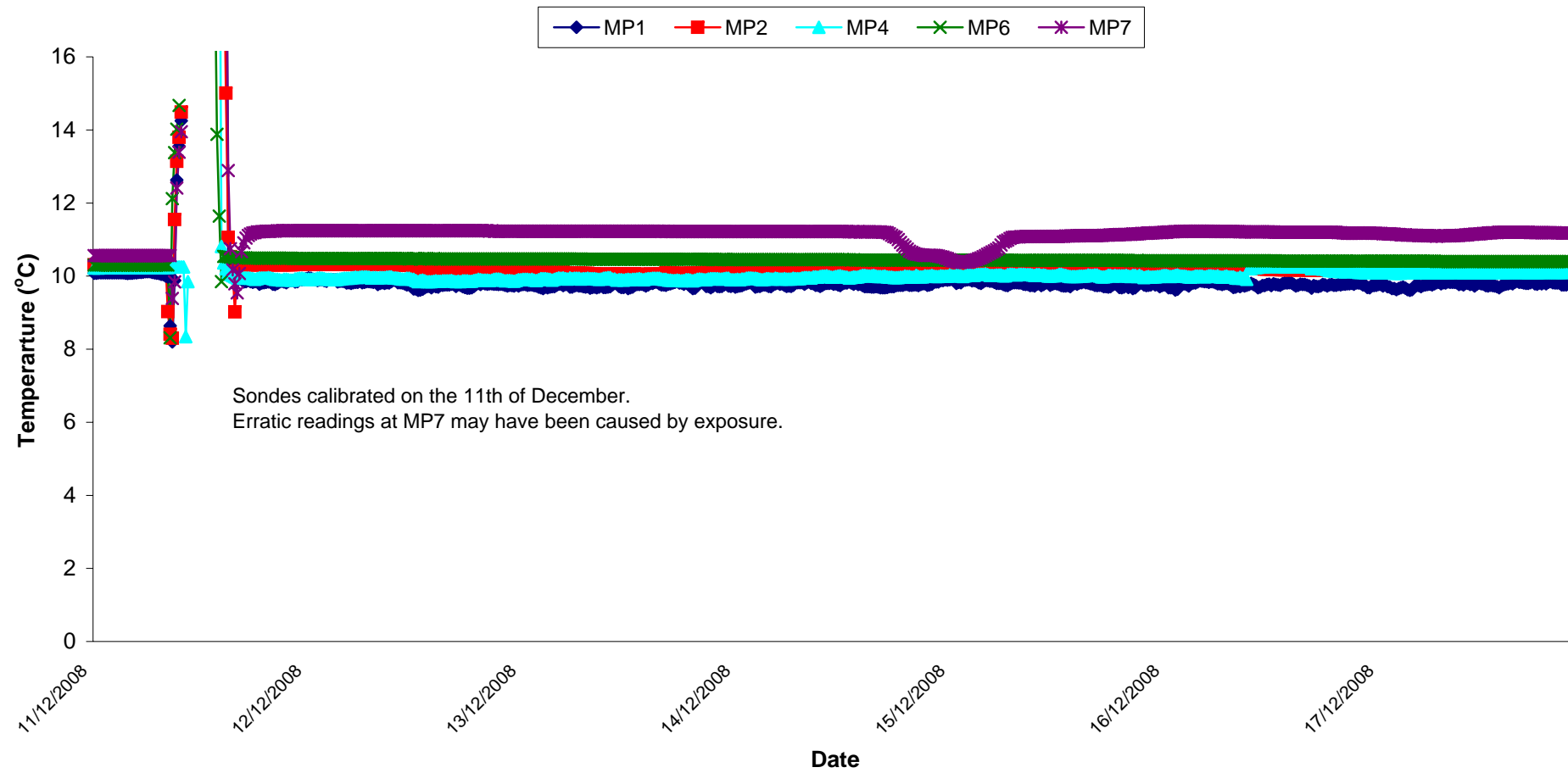
SP1 Action Limit Target Limit



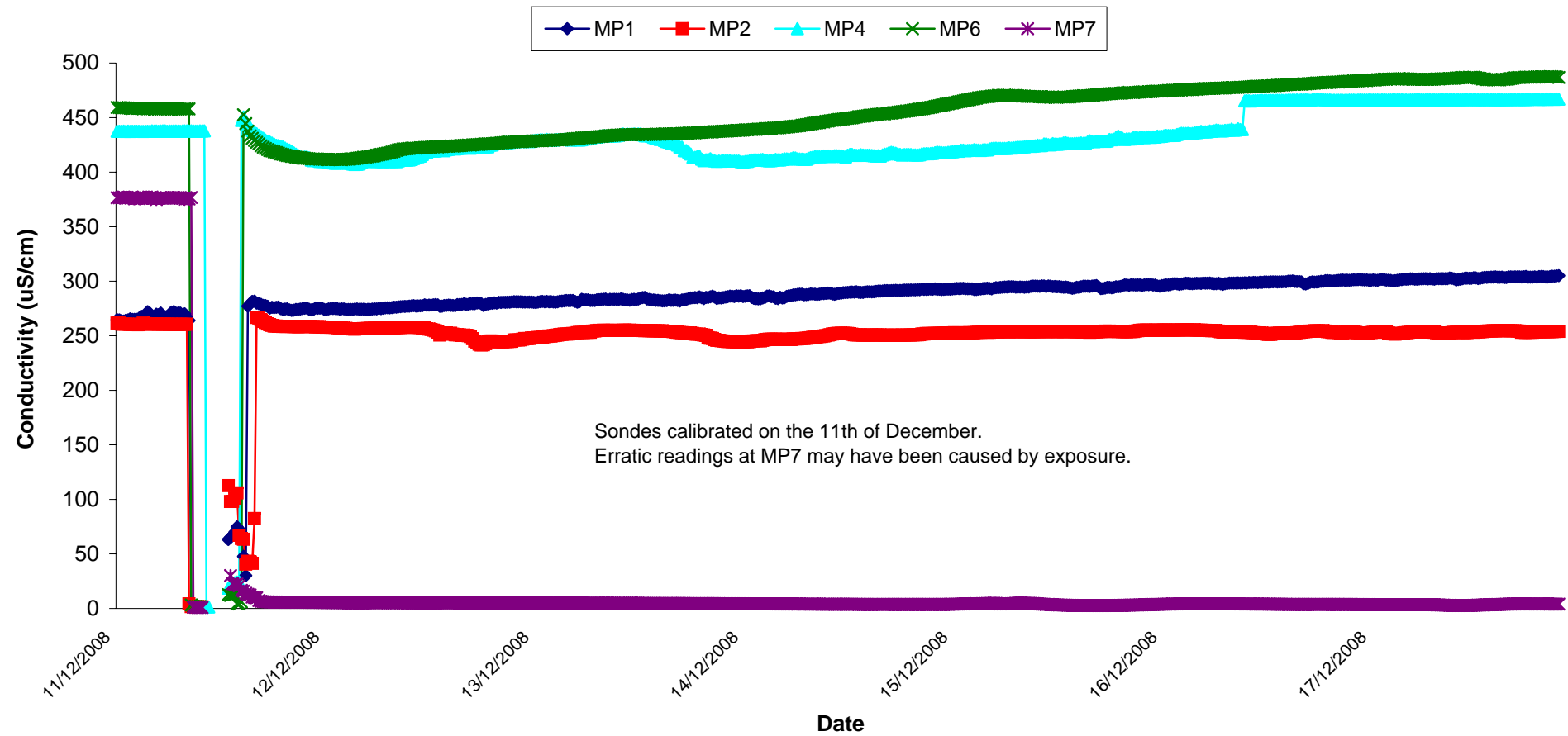
Dissolved Oxygen - Surface Waters, Wk 51



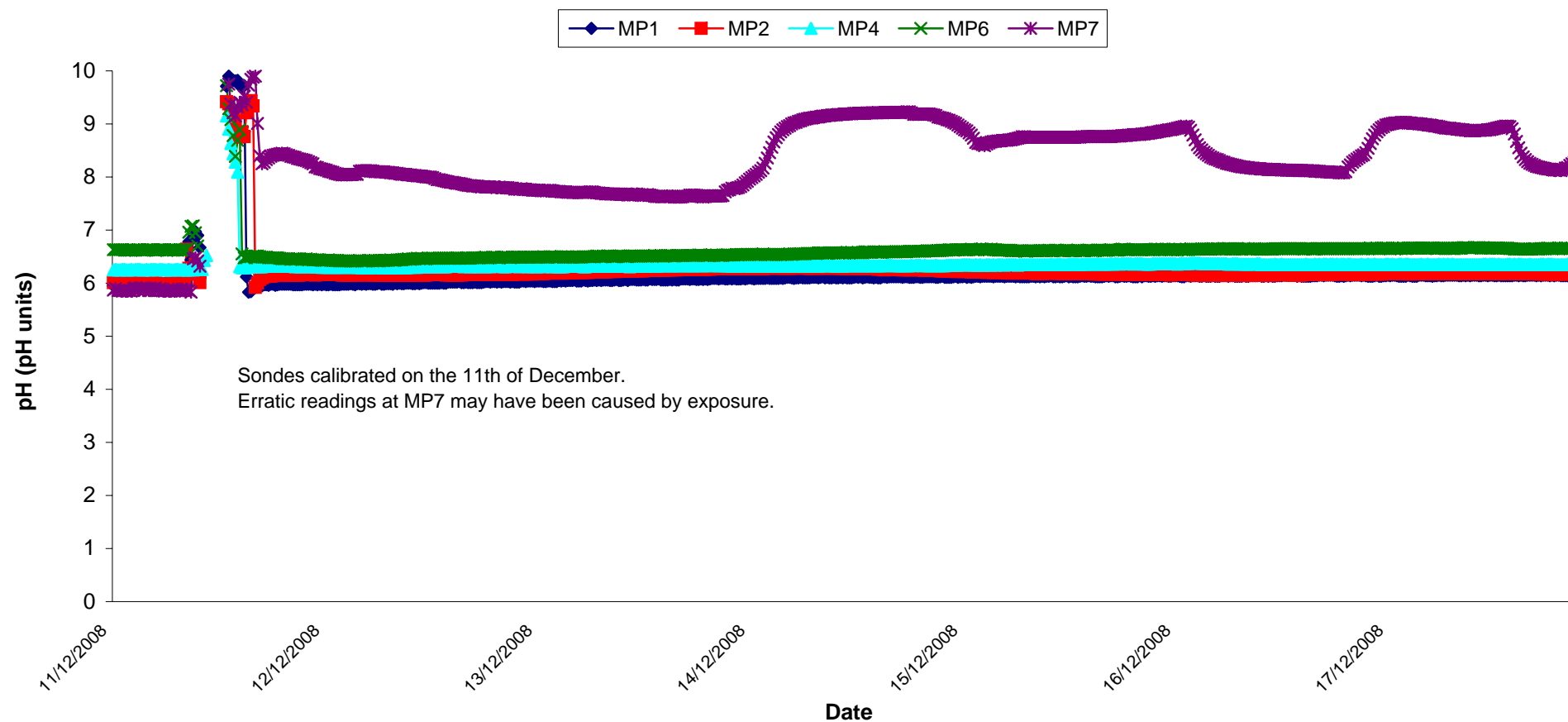
Temperature - Groundwaters Wk 51



Conductivity - Groundwaters Wk 51



pH - Groundwaters Wk 51



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	11/12/2008	254	8.4	10.6	93.3	6.9			0.1			0.04		56	169	0.05	164
SP1	12/12/2008	238	8.8	11.2	93.2	6.5			0.1			0.23		30	195	0.06	158
SP1	15/12/2008	251	7.3	12.6	92.8	6.5			0.3			<LOD		80	180	0.07	178
SP1	16/12/2008	199	8.4	7.4	90.5	6.5			0.4			<LOD		54	139	0.18	134
SP1	17/12/2008	199	8.0	9.6	89.0	6.1			<LOD			<LOD		61	134	0.06	134
SP3	11/12/2008	310	9.2	9.6	96.2	6.8			0.3			0.04		63		0.01	210
SP3	12/12/2008	279	9.4	22.6	96.6	6.4			0.1			0.30		43		0.08	189
SP3	15/12/2008	301	8.7	12.8	96.2	6.4			0.6			0.02		69		0.06	198
SP3	16/12/2008	202	9.8	22.6	91.0	6.5			0.3			>LOD		64		<LOD	140
SP3	17/12/2008	221	8.9	9.3	92.3	5.8			0.2			0.01		62		0.10	157
Additional Monitoring																	
D22	16/12/2008	188	8.2	2.5	87.2	5.8			<LOD			<LOD		29		0.01	112
D62	16/12/2008	163	7.5	1.1	85.1	5.2			0.1			<LOD		<LOD		0.05	93
Axonics Monitoring																	
Pre	11/12/2008	306		151.0		6.7			<LOD			0.07		181		0.03	206
Post	11/12/2008	320		7.6		6.7			0.2			0.01		<LOD	369	0.04	215
Pre	12/12/2008	301		126.0		6.5			<LOD			1.03		208		0.09	201
Post	12/12/2008	320		30.2		6.4			0.2			0.20		73	<LOD	0.02	214
Pre	15/12/2008	281		138.0		6.4			<LOD			0.10		97		0.10	192
Post	15/12/2008	299		13.0		6.6			0.4			0.01		55	372	0.04	200
Pre	16/12/2008	268		368.0		6.3			<LOD			2.51		576		0.01	158
Post	16/12/2008	233		5.2		6.0			0.5			0.02		20	189	<LOD	160
Pre	17/12/2008	220		88.9		6.4			<LOD			0.07		164		0.04	154
Post	17/12/2008	226		91.0		6.4			0.2			0.01		45	164	<LOD	161
Grey shaded areas denote parameters that cannot or were not analysed on-site.																	
= Indicative Only																	
< LOD = Below Limit of Detection																	
> LOD = Above Limit of Detection																	