

<b>Final Environmental Report</b>	Period Ending: 10 <sup>th</sup> December 2008
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 <sub>4</sub>	– The PO <sub>4</sub> analyser was operational during the reporting period. – The composite sampler was in place to cover any shortfalls in the PO <sub>4</sub> 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. – 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 majority of data used for this reporting period was taken from the on-site meteorological station. Data for the 27 <sup>th</sup> of November through to the 1 <sup>st</sup> of December was taken from Belmullet weather station. There was a technical fault with the on site station, which has since been rectified.
Weirs	– Weirs were operational during the reporting period.

### 1.2 Rainfall Data

27/11/08	9.200	04/12/08	7.605
28/11/08	2.900	05/12/08	6.240
29/11/08	6.400	06/12/08	0.195
30/11/08	4.900	07/12/08	4.290
01/12/08	4.300	08/12/08	7.215
02/12/08	1.560	09/12/08	4.290
03/12/08	15.795	10/12/08	3.705
Total Rainfall 78.595mm			

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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 monitoring in progress.
Weather	There was a total of 78.595mm of rainfall during the reporting period, with a temperature range of -2.3°C to 10.7°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

There was 1 no. reported exceedance during the reporting period.

<b>Date and Time</b>	4 <sup>th</sup> of December
<b>Location</b>	SP1
<b>Nature of Incident</b>	A value of 255µg/l was recorded for total aluminium at SP1 on the 4 <sup>th</sup> of December 2008. This value is in exceedance of the site discharge limit for total aluminium of 200µg/l. During the week previous there was a total of 45.055mm of rainfall. The level has dropped back to within the limit the following week; a value of 175µg/l was recorded.
<b>Actions Taken</b>	<ul style="list-style-type: none"> <li>On going surveillance and maintenance of site drainage outside the main footprint area.</li> <li>Close monitoring of Total Aluminium will be carried out at SP1.</li> <li>Storage and pumping back to Axonic's of footprint waters.</li> <li>Continued implementation of agreed surface water actions.</li> </ul>
<b>Category</b>	Environmental Exceedance
<b>Status</b>	Open



Groundwater Monitoring Record Sheet																									
Location	Date	DO	Temp	Cond.	pH	TDS	BOD	TSS	Total Hardness	Nitrite as NO <sub>2</sub>	Nitrate as NO <sub>3</sub>	Phosphate as PO <sub>4</sub>	Arsenic	Mercury	Lead	Aluminium (total)	Zinc	Chromium	Copper	Cadmium	Iron	Tin	Ammonia	Aluminium, dissolved	Manganese, total
		% Sat	°C	uS/cm		mg l <sup>-1</sup>	mg l <sup>-1</sup>	mg l <sup>-1</sup>	mg/l CaCO <sub>3</sub>	mg l <sup>-1</sup>	mg l <sup>-1</sup>	mg l <sup>-1</sup>	ug l <sup>-1</sup>	ug l <sup>-1</sup>	ug l <sup>-1</sup>	ug l <sup>-1</sup>	ug l <sup>-1</sup>	ug l <sup>-1</sup>	ug l <sup>-1</sup>	ug l <sup>-1</sup>	ug l <sup>-1</sup>	ug l <sup>-1</sup>	mg l <sup>-1</sup>		
MP 1	04/12/2008	23.5	9.7	342	5.9	153.0	23.0	<2	60.2	<0.017	<0.44	1.8	6.0	<0.05	<0.5	42.0	<5	<0.5	<1.0	<0.5	18890	<0.5	1.9	<20	790
MP 2	04/12/2008	16.2	9.8	248	5.9	115.0	9.0	93	62.0	<0.017	<0.44	0.3	1.0	<0.05	2.0	848.0	29.0	1.0	3.0	<0.5	3161	2.0	1.8	82.0	178
MP 3	04/12/2008	14.8	10.4	414	5.8	190.0	8.0	14	74.1	<0.017	<0.44	1.6	3.0	<0.05	0.5	600.0	24.0	1.0	<1.0	<0.5	9239	1.0	2.5	212.0	225
MP 4	04/12/2008	10.8	9.8	466	6.0	190.0	13.0	94	88.2	<0.017	<0.44	0.4	2.0	<0.05	1.0	521.0	10.0	2.0	3.0	<0.5	66690	<0.5	0.7	<20	1678
MP 5	04/12/2008	19.4	9.8	288	5.9	129.0	7.0	19	73.4	<0.017	<0.44	0.4	0.8	<0.05	0.9	671.0	25.0	2.0	1.0	<0.5	13090	2.0	1.9	202.0	295
MP 6	04/12/2008	23.0	9.7	476	6.1	194.0	6.0	39	101.9	<0.017	<0.44	1.1	9.0	<0.05	2.0	108.0	19.0	<0.5	1.0	<0.5	46410	1.0	1.7	<20	1386
MP 7	04/12/2008	12.6	10.2	379	5.8	193.0	22.0	7	57.5	<0.017	<0.44	0.6	<0.5	<0.05	0.7	64.0	8.0	1.0	<1.0	<0.5	36760	<0.5	2.6	<20	759
MP 8	04/12/2008	104.6	8.6	158	5.8	74.0	13.0	836	35.2	<0.017	<0.44	0.7	0.8	<0.05	3.0	1417.0	116.0	2.0	2.0	<0.5	2757	0.6	1.3	103.0	136
MP 10a	04/12/2008	17.3	9.8	373	5.7	166.0	1.0	20	104.2	<0.017	<0.44	<0.03	1.0	<0.05	8.0	413.0	37.0	1.0	3.0	<0.5	5098	2.0	0.6	<20	2813
MP 11	04/12/2008	12.3	10.5	209	5.7	100.0	5.0	<2	25.1	<0.017	<0.44	0.0	<0.5	<0.05	11.0	58.0	17.0	<0.5	1.0	<0.5	127	<0.5	0.0	<20	934

Graphs provided for MP1, MP2,MP4, MP6 and MP7: Temperature, Conductivity, and pH.

Graphs provided for MP1, MP2,MP4, MP6 and MP7: Temperature, Conductivity, and pH.

Determinant Results							
	Date Positioned	Date Removed	Ref. Number	Date Dispatched	Date Returned	Weight (mg/m <sup>2</sup> /day)	Comments
<b>Target (Consent) Limit: 350 mg m<sup>2</sup> d<sup>-1</sup> on as a 30 day average</b>							
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	05/07/2433	22/12/2008	05/01/2009	172	
D2	21/11/2008	22/12/2008	06/07/2433	22/12/2008	05/01/2009	37	
D3	21/11/2008	22/12/2008	07/07/2433	22/12/2008	05/01/2009	144	
D4	21/11/2008	22/12/2008	08/07/2433	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)
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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 <sub>Aeq</sub>	L <sub>Amax</sub>	L <sub>Amin</sub>	
Action Limit									60			
Target Limit									65			
N1			27/11/2008	08:00:00	14:00:00	2539533	8.2		52.3	82.0	38.8	Values impacted by elevated wind speeds.
N1			28/11/2008	08:00:00	14:00:00	2539533	2.9		52.3	72.5	44.8	
N1			01/12/2008	08:00:00	14:00:00	2539533	5.4		53.8	65.6	46.7	
N1	4.6	0.9	02/12/2008	08:00:00	14:00:00	2539533	2.8	109.4	67.1	94.5	44.6	Work in progress adjacent to the noise meter, not construction site related.
N1	3.7	-0.1	03/12/2008	08:00:00	14:00:00	2539533	3.1	67.8	64.6	92.2	43.4	
N1	5.9	4.0	04/12/2008	08:00:00	14:00:00	2539533	3.3	88.0	53.3	96.6	40.1	
N1	6.4	0.8	05/12/2008	08:00:00	14:00:00	2539533	4.6	152.1	49.0	75.4	41.6	
N1	6.2	3.7	08/12/2008	08:00:00	14:00:00	2539533	3.3	130.5	49.1	84.3	40.5	
N1	6.7	4.8	09/12/2008	08:00:00	14:00:00	2539533	4.7	148.9	48.5	76.3	40.7	
N1	7.0	5.9	10/12/2008	08:00:00	14:00:00	2539533	1.1	131.0	50.0	67.0	39.0	
* 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	
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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 <sub>Aeq</sub>	L <sub>Amax</sub>	L <sub>Amin</sub>	
<b>Action Limit</b>									<b>50</b>			
<b>Target Limit</b>									<b>55</b>			
N1			27/11/2008	22:00:00	10:00:00	2539533	8.2		51.2	86.1	44.5	Values impacted by elevated wind speeds.
N1			28/11/2008	22:00:00	10:00:00	2539533	2.9		51.2	70.5	44.8	
N1			01/12/2008	22:00:00	10:00:00	2539533	5.4		54.5	55.6	53.4	High wind speeds gave elevated results.
N1	4.6	0.9	02/12/2008	22:00:00	10:00:00	2539533	2.8	109.4	50.2	75.0	41.4	
N1	3.7	-0.1	03/12/2008	22:00:00	10:00:00	2539533	3.1	67.8	51.0	74.8	44.6	
N1	5.9	4.0	04/12/2008	22:00:00	10:00:00	2539533	3.3	88.0	52.5	71.8	44.4	
N1	6.4	0.8	05/12/2008	22:00:00	10:00:00	2539533	4.6	152.1	49.3	65.4	40.5	
N1	6.2	3.7	08/12/2008	22:00:00	10:00:00	2539533	3.3	130.5	49.0	77.4	39.2	
N1	6.7	4.8	09/12/2008	22:00:00	10:00:00	2539533	4.7	148.9	45.0	66.3	37.7	
N1	7.0	5.9	10/12/2008	22:00:00	10:00:00	2539533	1.1	131.0	47.5	66.6	35.4	

\* 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)
27/11/2008	53.15	7.85	24.80	15.44	2.91	7.10
28/11/2008	32.42	14.64	20.75	11.51	4.07	7.74
29/11/2008	29.60	15.10	20.60	15.13	5.57	9.76
30/11/2008	51.71	25.97	34.82	22.21	10.38	14.73
01/12/2008	53.64	25.03	35.45	20.79	6.74	11.08
02/12/2008	34.63	13.98	22.95	13.58	4.07	7.81
03/12/2008	137.27	5.73	28.31	38.41	-0.28	8.34
04/12/2008	110.62	29.26	48.02	30.93	6.50	17.80
05/12/2008	52.19	26.61	39.80	21.85	11.80	17.13
06/12/2008	26.29	14.64	18.86	11.80	6.98	9.23
07/12/2008	17.24	12.70	14.11	10.94	6.98	8.61
08/12/2008	50.28	19.29	30.82	16.73	11.80	13.48
09/12/2008	28.25	19.82	24.17	13.58	9.83	11.85
10/12/2008	24.11	12.09	19.08	12.38	2.38	8.40

**Note:** Negative values indicate low flow conditions.



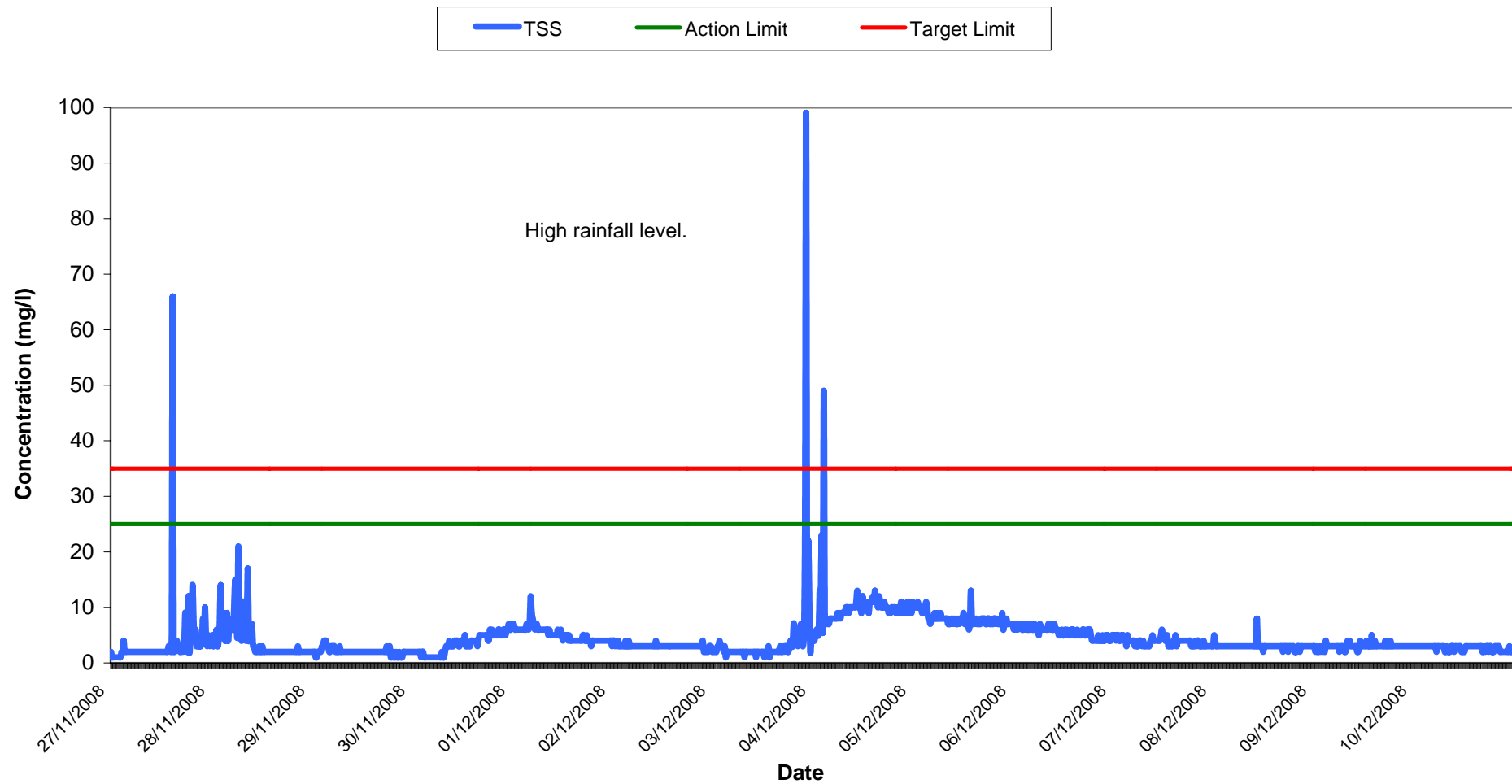
## Vibration Monitoring Record Sheet

Determinant Results	
1. <b>Demographics</b>	Age, Gender, Education, Income, Employment Status
2. <b>Attitudes</b>	Attitudes Toward Recycling, Environmental Awareness, Perceived Benefits
3. <b>Barriers</b>	Lack of Information, Lack of Time, Lack of Access, Cost
4. <b>Facilitators</b>	Community Programs, Government Incentives, Convenient Recycling Bins
5. <b>Behavioral Intent</b>	Willingness to Recycle, Frequency of Recycling, Recycling Volume

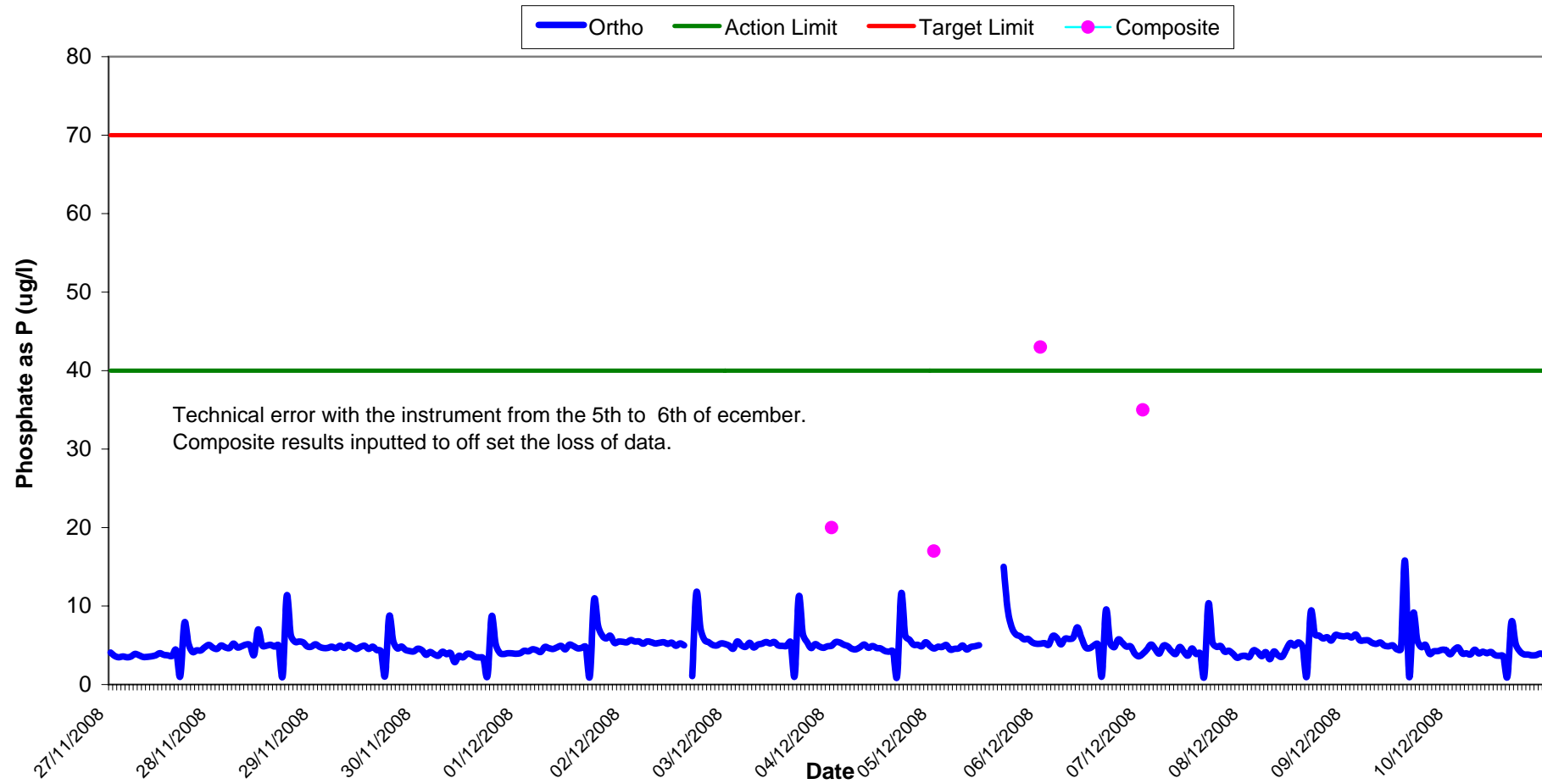
[illegible]

Vibration meter was located at V1 only.

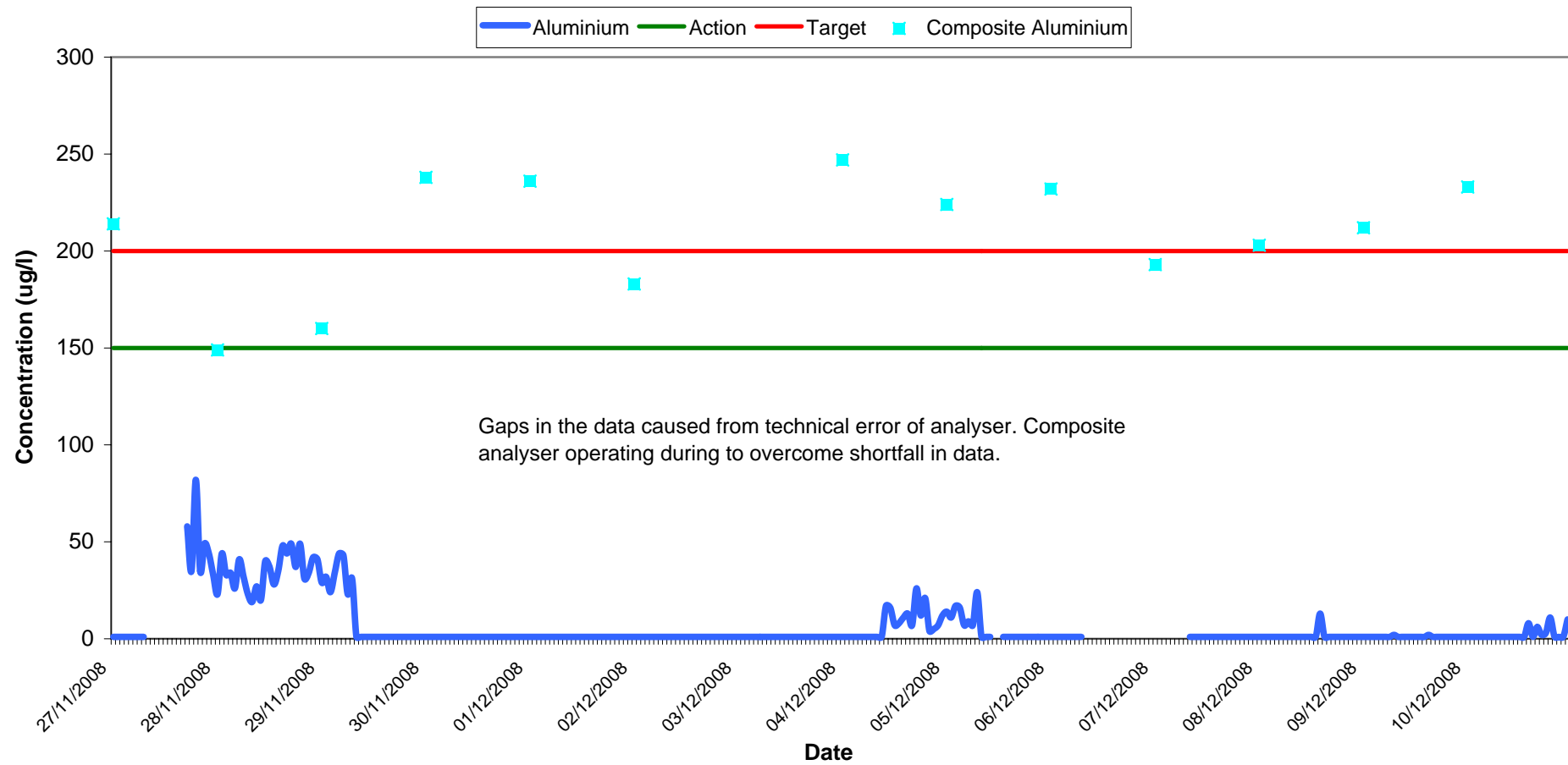
# Total Suspended Solids Results at SP1 Wk 49-50



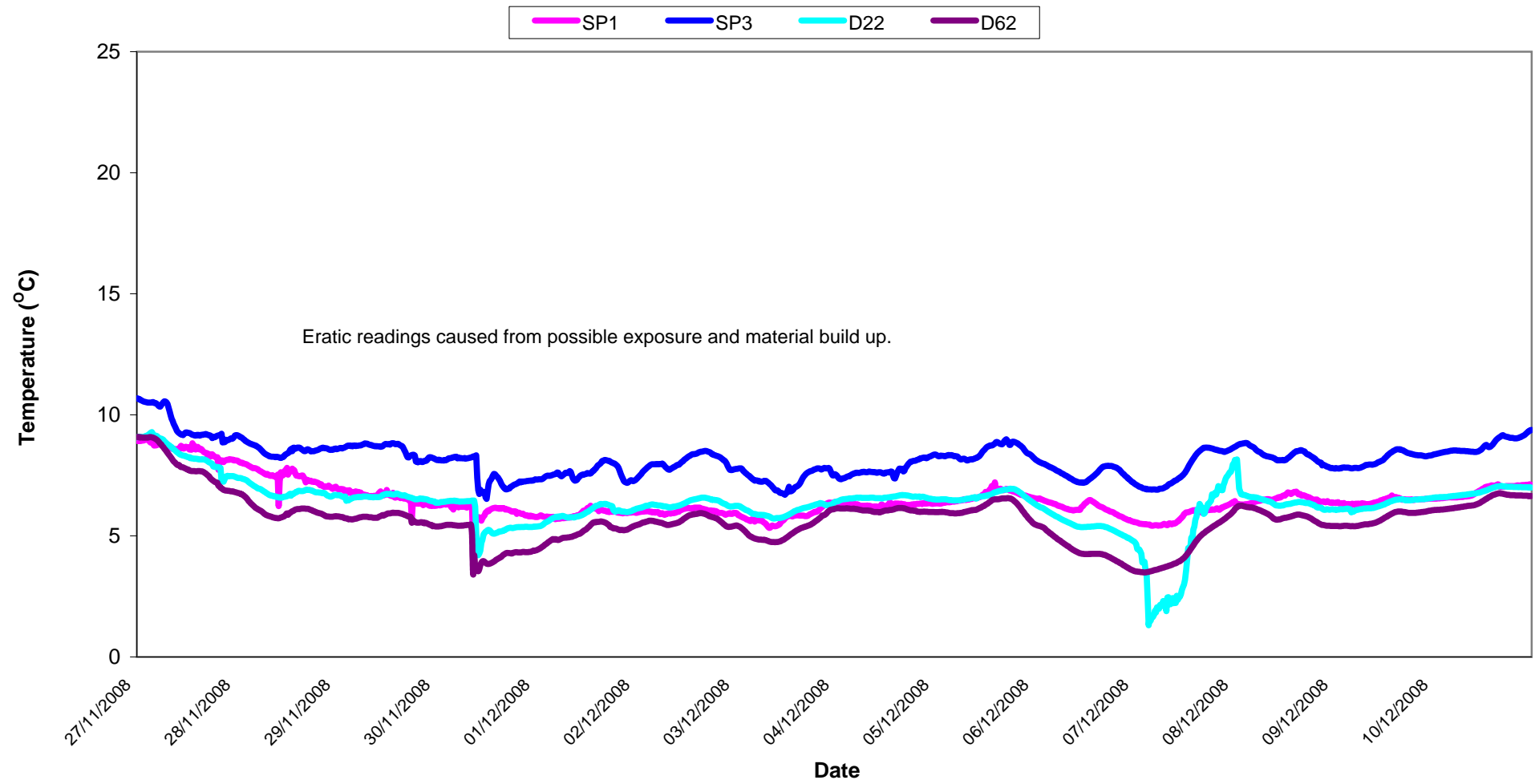
# Orthophosphate Results at SP1 Wk 49-50



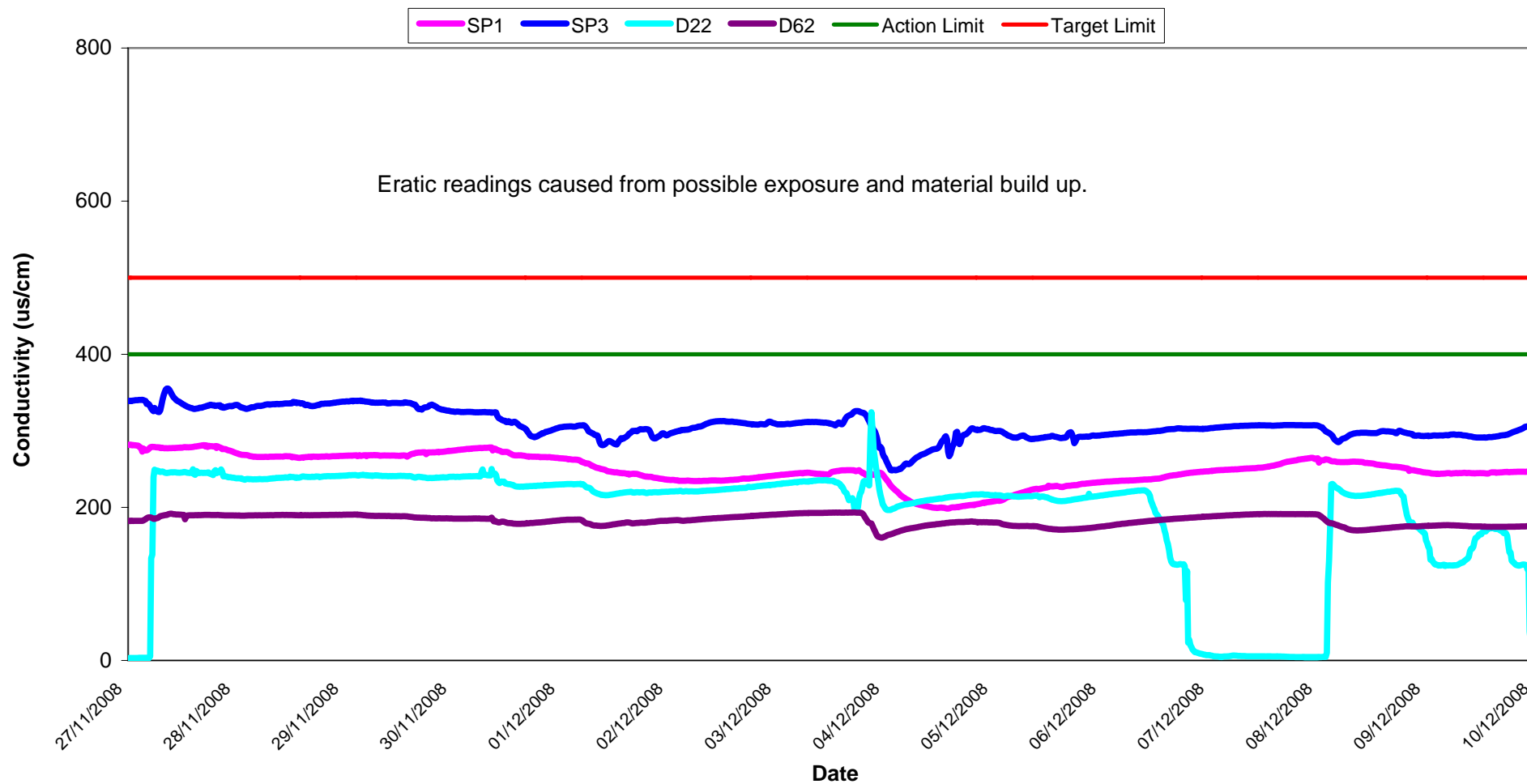
# Aluminium Concentration at SP1 Wk 49-50



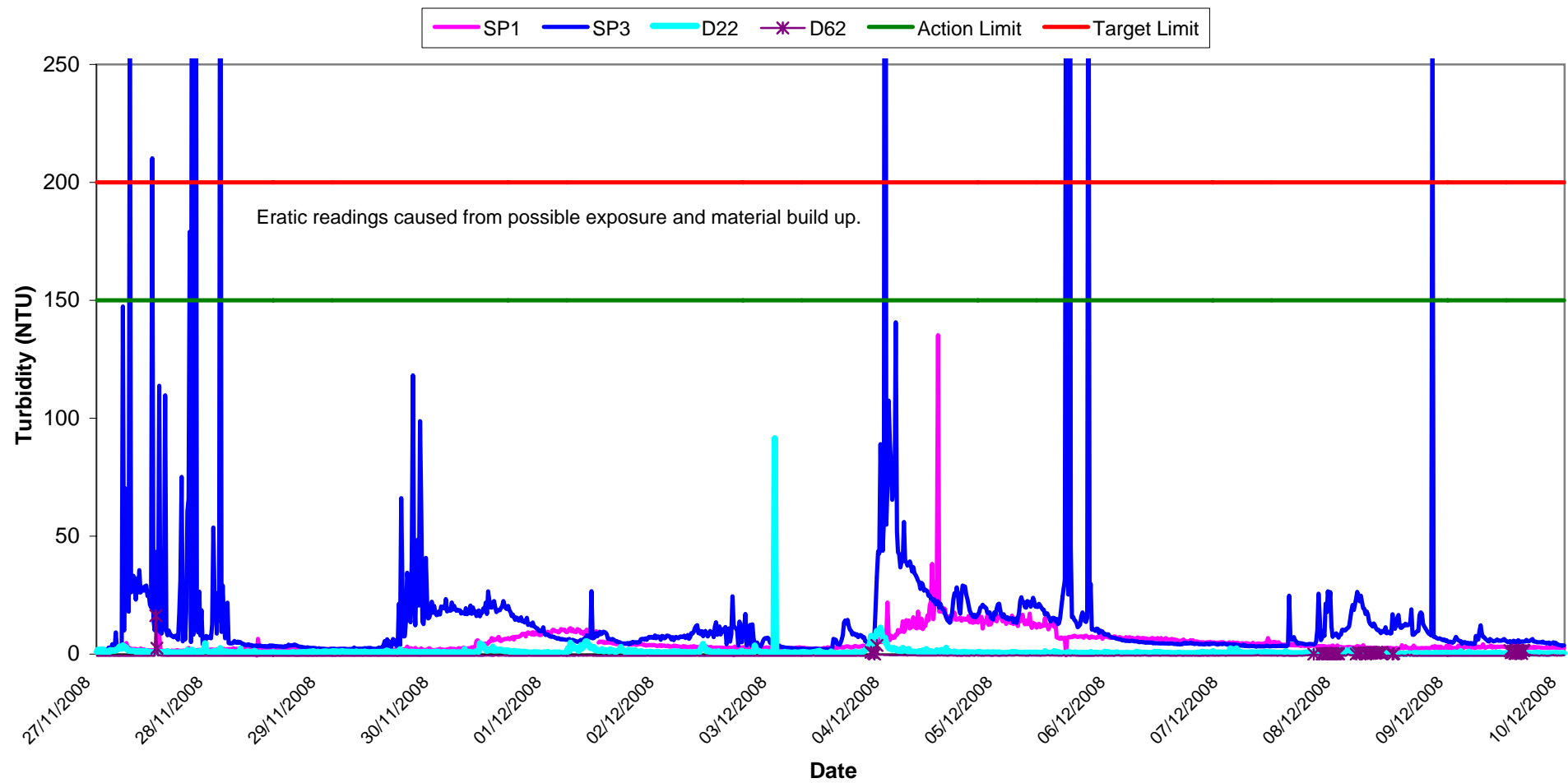
# Temperature - Surface Waters Wk 49-50



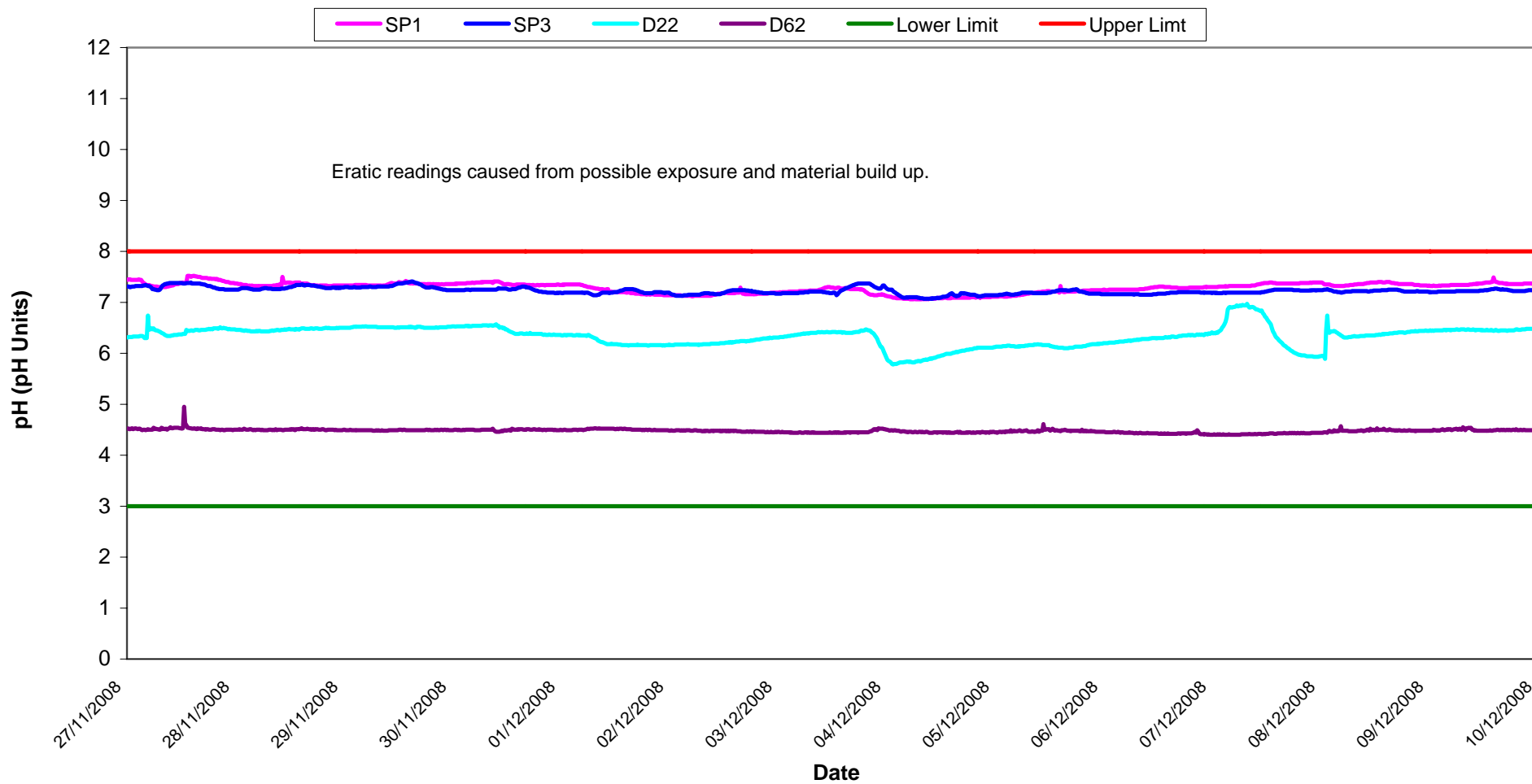
# Conductivity - Surface Waters, Wk 49-50



# Turbidity - Surface Waters Wk 49-50



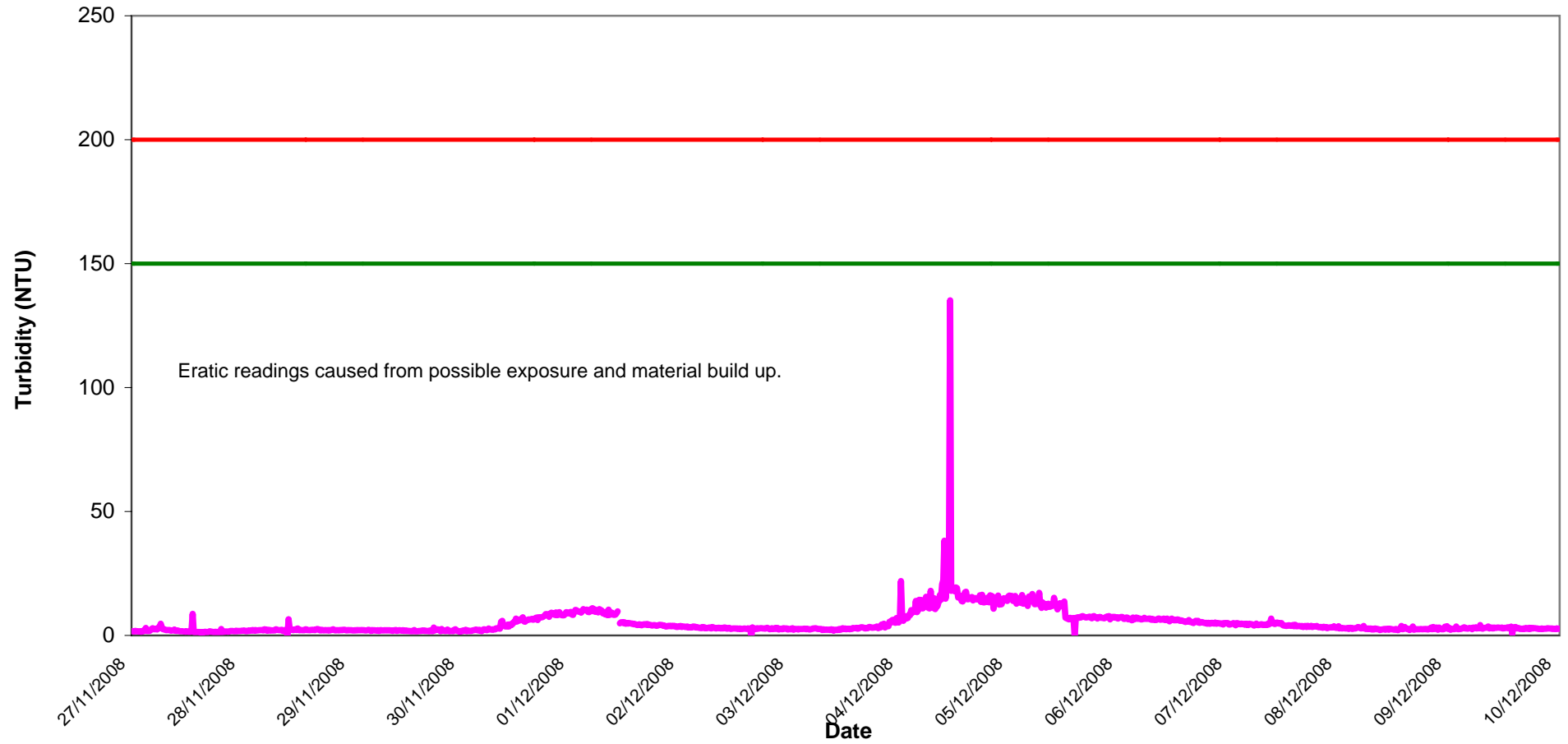
# pH - Surface Waters Wk 49-50



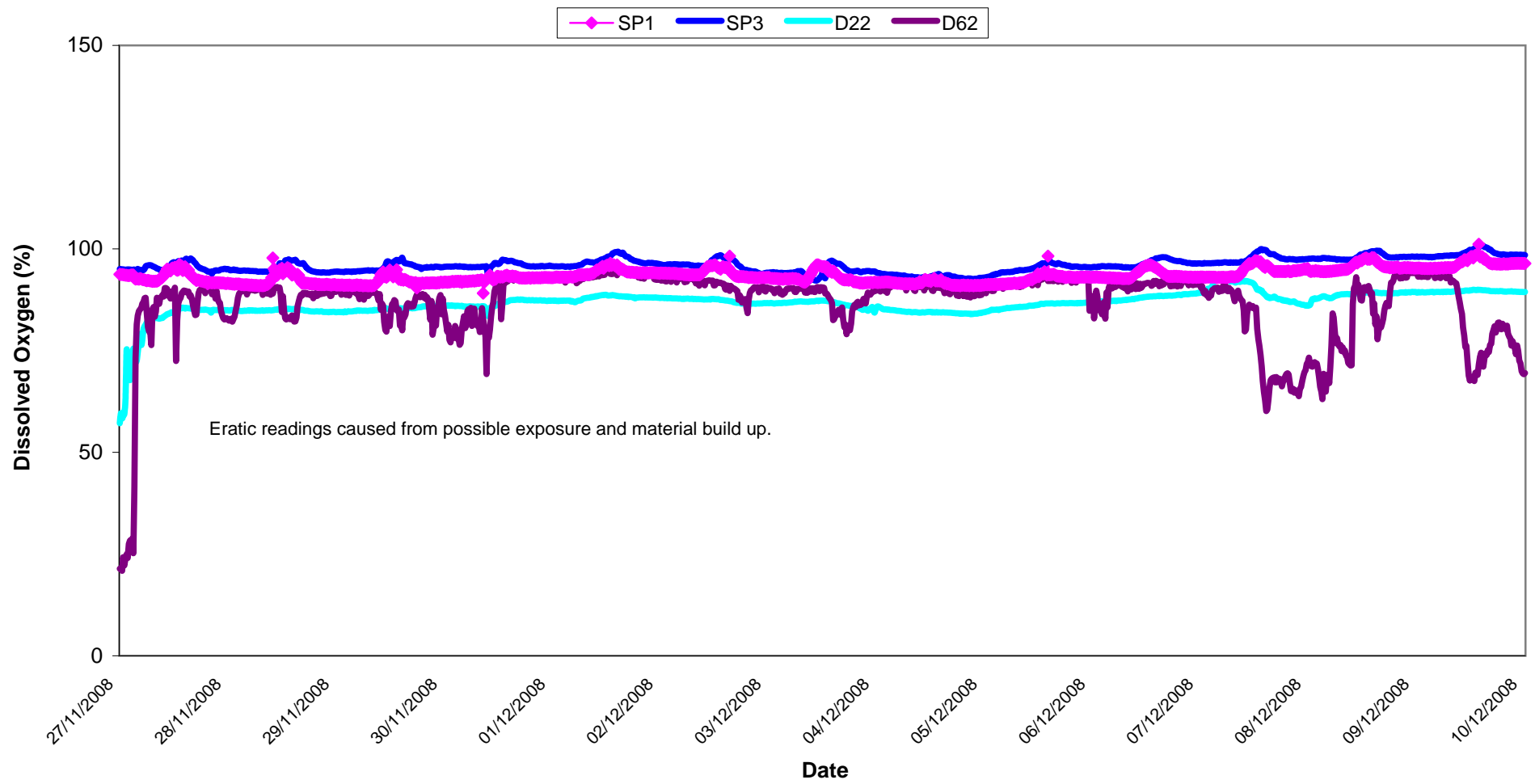


# Turbidity - Surface Waters @ SP1, Wk 49-50

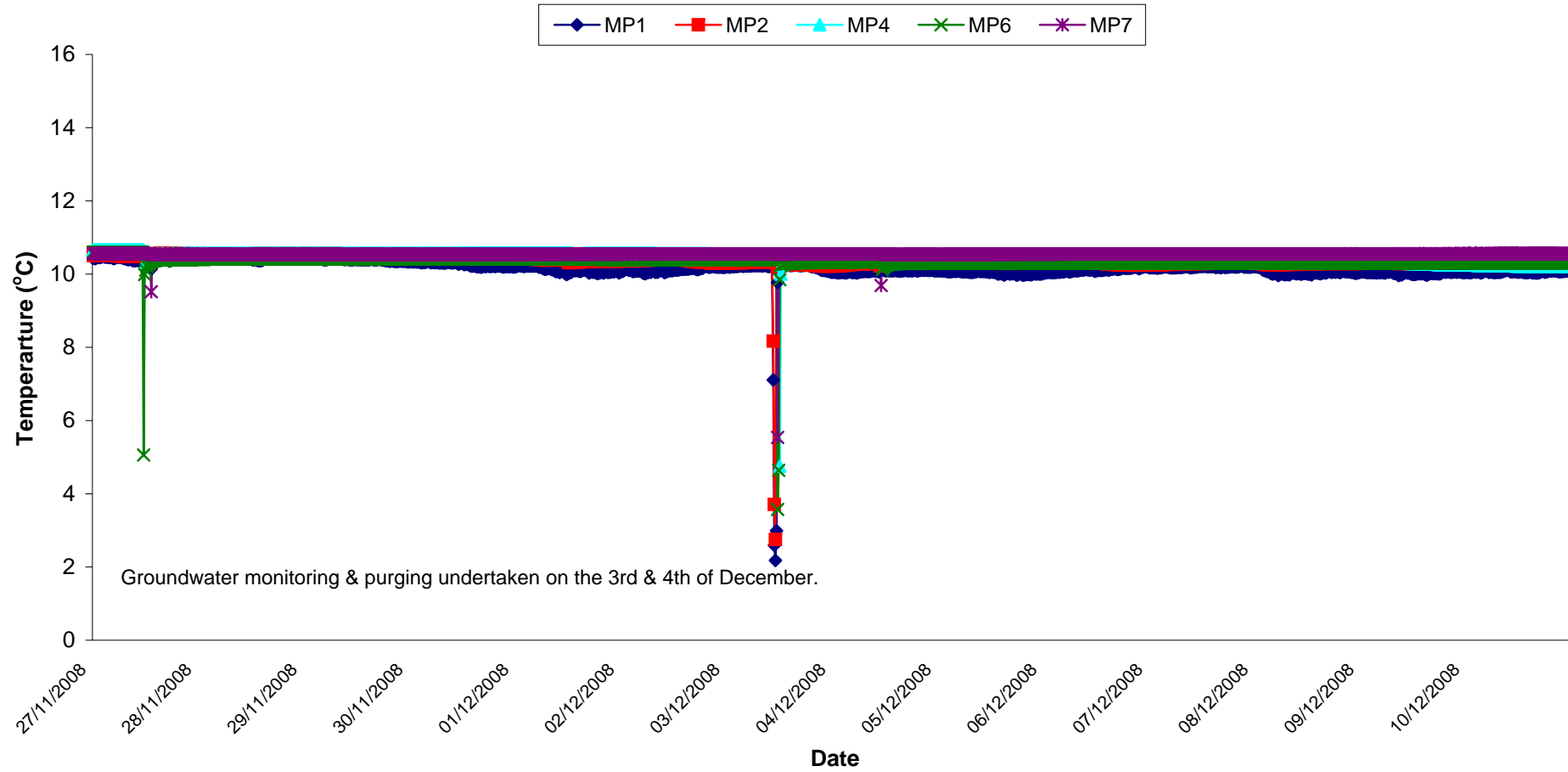
SP1    Action Limit    Target Limit



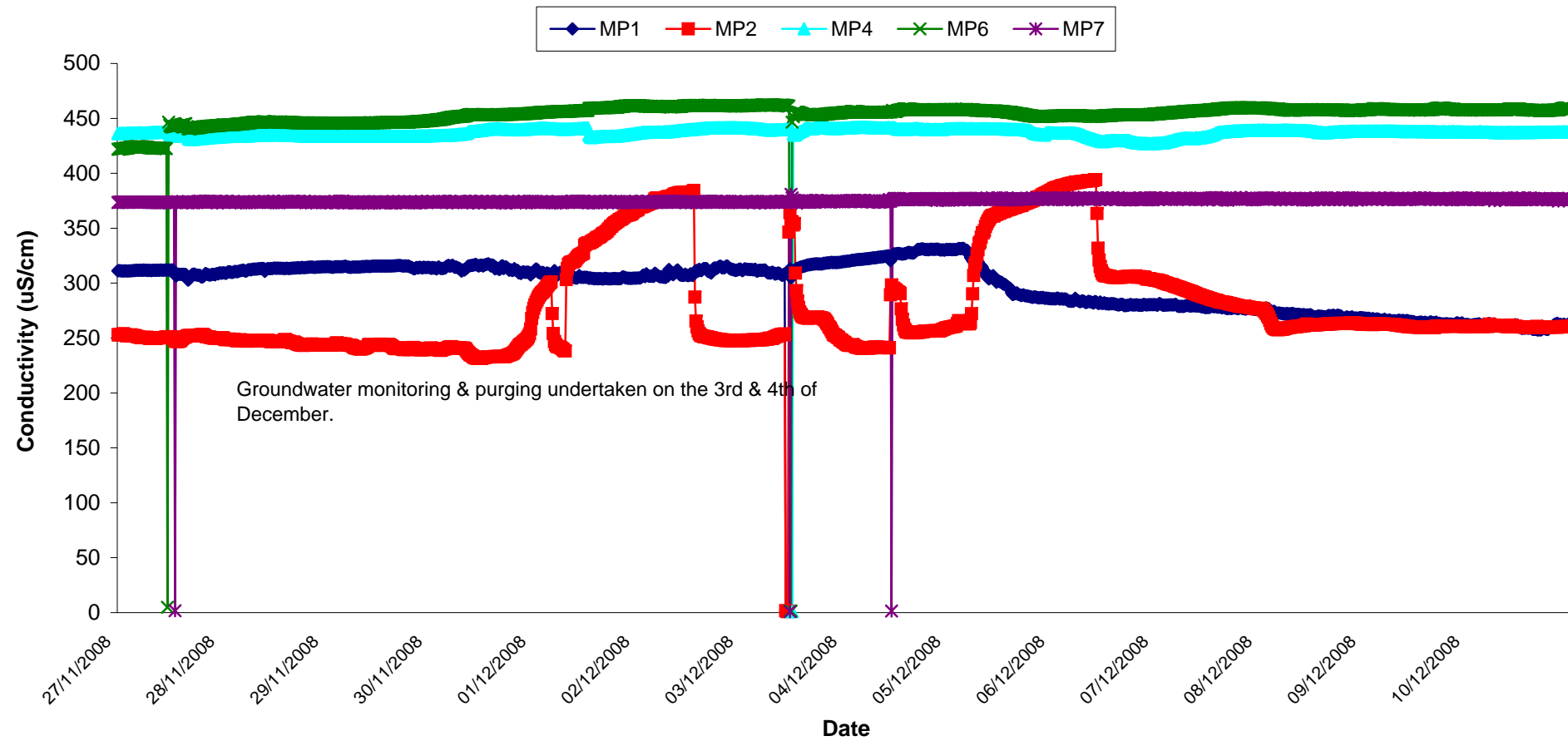
# Dissolved Oxygen - Surface Waters, Wk 49-50



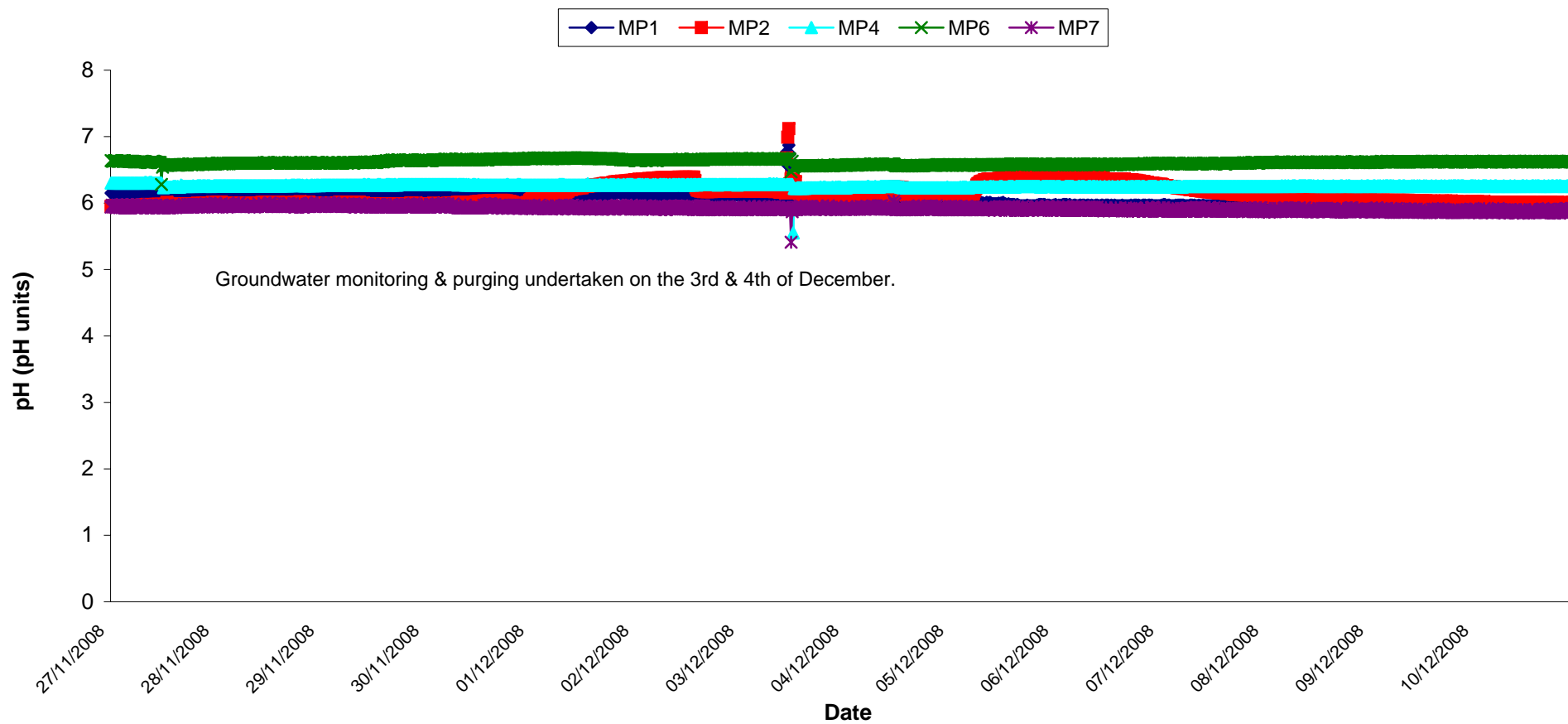
# Temperature - Groundwaters Wk 49-50



# Conductivity - Groundwaters Wk 49-50



# pH - Groundwaters Wk 49-50



# **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 <sup>-1</sup>	Ortho-phosphate as P µg l <sup>-1</sup>	Nitrate as N mg l <sup>-1</sup>	Nitrate as NO <sub>3</sub> mg l <sup>-1</sup>	Total Phosphorus as P mg l <sup>-1</sup>	Ammonia as NH <sub>3</sub> -N mg l <sup>-1</sup>	Nitrite as NO <sub>2</sub> mg/l	Aluminium (dissolved) ug/l	Aluminium (total) ug/l	Phosphate as PO <sub>4</sub> mg/l	Total dissolved solids mg/l
Settlement Pond Monitoring																	
SP1	27/11/2008	293	8.5	10.5	93.6	6.6			0.5			0.08		<LOD	145	<LOD	195
SP1	28/11/2008	266	8.5	7.7	92.1	6.9			0.1			0.10		25	140	<LOD	183
SP1	01/12/2008	265	7.4	12.3	89.4	6.7			<LOD			0.01		29	199	0.05	177
SP1	02/12/2008	219	7.4	7.1	91.8	7.7			0.3			0.43		39	241	0.02	140
SP1	03/12/2008	231	5.9	8.7	96.0	7.3			0.1			<LOD		<LOD	90	0.05	164
SP1	04/12/2008	214	6.5	6.8	93.9	6.8			<LOD			0.34		28	204	0.02	135
SP1	05/12/2008	199	9.2	14.6	96.2	6.4			<LOD			0.07		28	168	<LOD	139
SP1	08/12/2008	245	6.5	10.4	96.0	6.4			0.1			0.02		24	129	0.06	175
SP1	09/12/2008	321	8.2	10.8	92.8	7.0			<LOD			<LOD		39	179	0.06	171
SP1	10/12/2008	245	8.0	10.2	93.5	6.8			0.1			0.31		58	159	0.09	149
SP3	27/11/2008	339	9.2	19.6	94.7	6.6			0.2			0.03		31		<LOD	225
SP3	28/11/2008	349	8.5	8.0	95.9	6.7			0.1			0.10		29		0.01	227
SP3	01/12/2008	295	8.0	17.2	93.3	6.6			<LOD			0.27		26		<LOD	195
SP3	02/12/2008	301	8.6	7.6	95.0	7.8			<LOD			0.51		26		<LOD	202
SP3	03/12/2008	292	4.6	13.6	90.3	6.8			0.4			<LOD		54		0.06	201
SP3	04/12/2008	265	7.6	6.3	92.9	6.3			0.1			0.39		48		0.01	190
SP3	05/12/2008	263	8.1	29.4	92.1	6.2			<LOD			0.12		35		0.06	195
SP3	08/12/2008	278	8.1	12.0	95.7	6.3			0.1			0.28		47		0.05	205
SP3	09/12/2008	304	8.7	11.4	97.3	6.9			0.3			0.07		53		0.08	201
SP3	10/12/2008	300	8.9	9.0	94.5	6.9			0.2			0.15		<LOD		0.03	203
Additional Monitoring																	
D22	04/12/2008	201	6.8	6.3	87.0	6.3			<LOD			0.82		32		0.57	139
D62	04/12/2008	204	6.3	4.7	91.5	4.7			<LOD			0.86		24		0.04	116
Axonics Monitoring																	
Pre	27/11/2008	344		>LOD		6.4			<LOD			1.63		>LOD		0.08	226
Post	27/11/2008	355		4.2		6.3			0.5			0.25		<LOD	197	<LOD	234
Pre	28/11/2008	345		325.0		7.1			<LOD			0.38		>LOD		0.05	226
Post	28/11/2008	369		7.6		6.7			0.4			0.07		<LOD	360	0.02	241
Pre	01/12/2008	330		108.0		6.7			<LOD			0.08		404		0.01	215
Post	01/12/2008	345		8.7		6.6			0.4			0.02		26	355	0.04	227
Pre	02/12/2008	323		62.5		6.9			<LOD			0.81		133		0.04	210
Post	02/12/2008	331		4.4		6.4			0.3			0.50		<LOD	386	0.03	217
Pre	03/12/2008	310		158.0		6.5			<LOD			0.14		231		0.04	223
Post	03/12/2008	308		8.7		6.3			0.3			0.06		36	307	0.01	224
Pre	04/12/2008	288		6.7		6.7			<LOD			0.81		99		<LOD	208
Post	04/12/2008	300		6.2		6.2			0.2			0.58		12	274	<LOD	217
Pre	05/12/2008	274		228.0		6.0			<LOD			<LOD		410		0.04	200
Post	05/12/2008	302		11.2		6.0			<LOD			0.09		16	>LOD	0.01	218
Pre	08/12/2008	276		59.4		6.6			<LOD			0.83		345		0.09	203
Post	08/12/2008	289		10.7		6.7			0.3			0.03		31	>LOD	0.01	208
Pre	09/12/2008	300		73.9		6.8			<LOD			0.09		255		0.03	201
Post	09/12/2008	310		7.6		6.5			0.1			0.03		31	>LOD	0.05	210
Pre	10/12/2008	314		279.0		6.9			<LOD			0.54		>LOD		0.01	210
Post	10/12/2008	320		9.9		6.5			<LOD			0.13		33	>LOD	0.03	215
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																	