

<b>Final Environmental Report</b>	<b>Period Ending: 7<sup>th</sup> January 2009</b>
Compiled By: Siobhán Quinn & Aoife Reynolds	
Approved By: Tony Doyle	

## 1 Monitoring Data

### 1.1 Monitoring Equipment

Axonics	<ul style="list-style-type: none"> <li>– Axonics plant operated as required during the reporting period.</li> </ul>
PO <sub>4</sub>	<ul style="list-style-type: none"> <li>– The PO<sub>4</sub> analyser was operational during the reporting period.</li> <li>– The composite sampler was in place to cover any shortfalls in the PO<sub>4</sub> analyser.</li> </ul>
TSS	<ul style="list-style-type: none"> <li>– The TSS analyser was operational during the reporting period.</li> <li>– The composite sampler was in place to cover any shortfalls in the TSS analyser.</li> </ul>
Aluminium	<ul style="list-style-type: none"> <li>– There were technical issues with the aluminium analyser during the reporting period, which has since been rectified.</li> <li>– The composite sampler was in place to cover any shortfalls in the aluminium analyser</li> </ul>
Composite	<ul style="list-style-type: none"> <li>– The composite sampler was operational during the reporting period.</li> <li>– Where there is loss of continuous monitoring data due to instrument faults or other issues composite sample data is provided on the graphs.</li> </ul>
Noise	<ul style="list-style-type: none"> <li>– There is a single noise monitoring location currently being used – N1.</li> <li>– The other location is visible from off-site and because of current protestor action it cannot be guaranteed that the equipment remains undisturbed.</li> <li>– Telemetry is currently being set up at the noise monitoring station.</li> </ul>
Vibration	<ul style="list-style-type: none"> <li>– There is a single vibration monitoring location currently being used – V1.</li> <li>– The other location is visible from off-site and because of current protestor action it cannot be guaranteed that the equipment remains undisturbed.</li> </ul>
Sondes	<ul style="list-style-type: none"> <li>– The results are displayed graphically. <ul style="list-style-type: none"> <li>○ Any unusual values are explained on the relevant graph.</li> </ul> </li> </ul>
Weather Station	<ul style="list-style-type: none"> <li>– The majority of data used for this reporting period was taken from the on-site meteorological station. Data for the 20th of December through to the 27th of December was taken from Belmullet weather station. There was a technical fault with the on site station, which has since been rectified.</li> </ul>
Weirs	<ul style="list-style-type: none"> <li>– Weirs were operational during the reporting period.</li> </ul>

### 1.2 Rainfall Data

18/12/2008	3.900	25/12/2008	0.000	01/01/2009	0.000
19/12/2008	6.630	26/12/2008	0.000	02/01/2009	0.000
20/12/2008	8.100	27/12/2008	0.000	03/01/2009	0.000
21/12/2008	1.200	28/12/2008	0.195	04/01/2009	0.195
22/12/2008	0.000	29/12/2008	0.000	05/01/2009	0.195
23/12/2008	0.100	30/12/2008	0.195	06/01/2009	0.000
24/12/2008	0.000	31/12/2008	0.000	07/01/2009	0.195
Total Rainfall 20.905 mm					

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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 20.905mm of rainfall during the reporting period, with a temperature range of -4.1°C to 12.1°C.
Noise	All noise levels were within the set limits.
Vibration	No vibration exceedances were recorded during the reporting period.

**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>	22 <sup>nd</sup> of December
<b>Location</b>	SP1
<b>Nature of Incident</b>	A value of 226µg/l was recorded for total aluminium at SP1 on the 22 <sup>nd</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, which contributes to this excessive values. The value the following week reduced to 110 µg/l.
<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



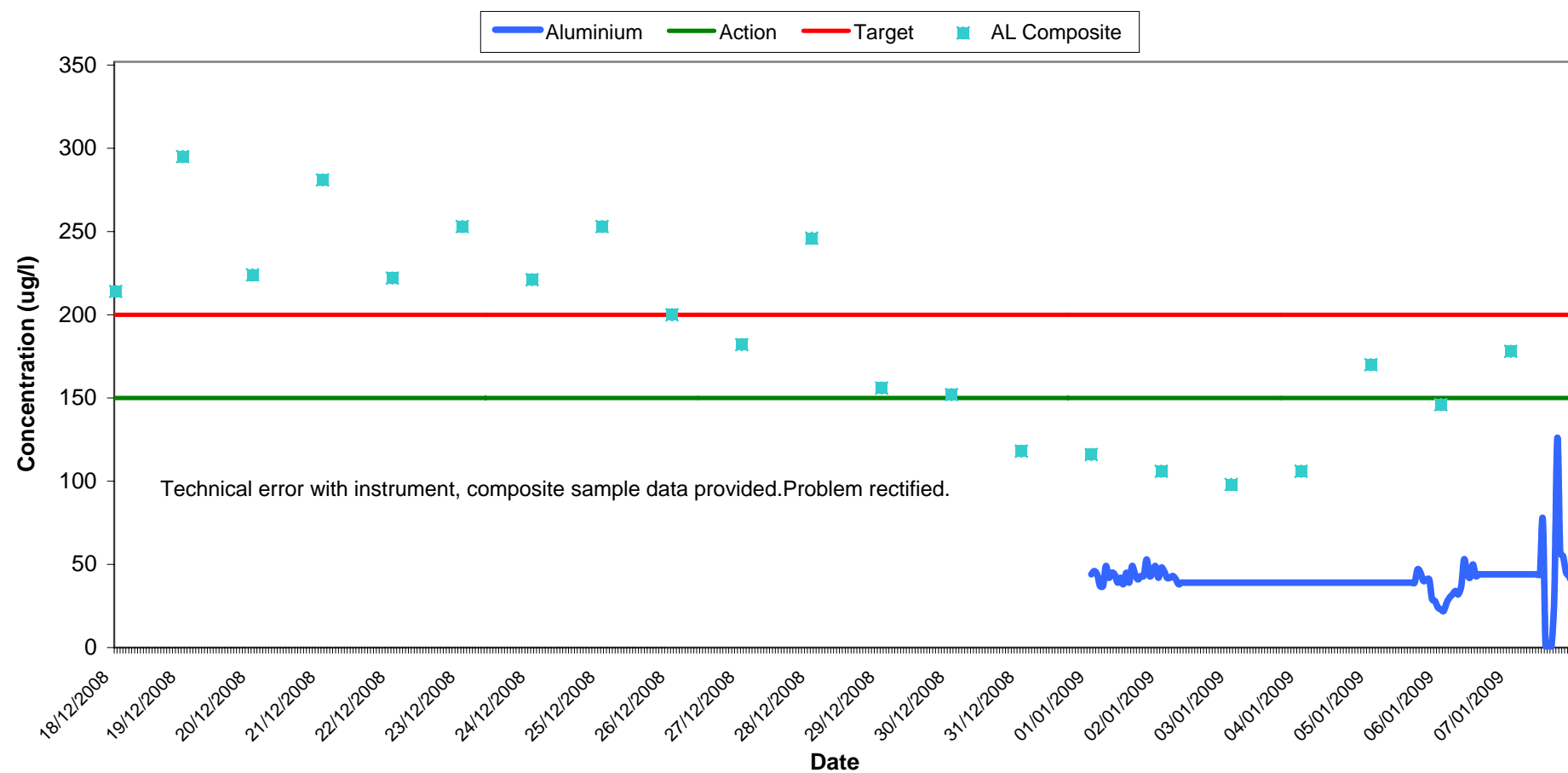
Groundwater Monitoring Record Sheet																									
Location	Date	DO	Temp	Cond.	pH	TDS	BOD	TSS	Total Hardness	Nitrite as NO <sub>2</sub>	Nitrate as NO <sub>3</sub>	Phosphate as PO <sub>4</sub>	Arsenic	Mercury	Lead	Aluminium (total)	Zinc	Chromium	Copper	Cadmium	Iron	Tin	Ammonia	Aluminium, dissolved	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	07/01/2008	19.8	12.0	303	5.8	159	18	13	71	<0.0017	<0.44	1.916	5	<0.05	<0.5	189	20	<0.5	<1	<0.5	23310	4.0	0.317	189	816
MP 2	07/01/2008	13.7	10.0	242	5.7	127	10	142	71	<0.0017	<0.44	0.589	<0.5	<0.05	<0.5	1247	23	<0.5	2	<0.5	7290	1.0	0.494	1247	246
MP 3	07/01/2008	31.6	10.6	339	5.7	176	9	82	73	<0.0017	<0.44	2.103	<0.5	<0.05	<0.5	582	19	<0.5	<1	<0.5	14570	1.0	0.385	582	322
MP 4	07/01/2008	11.4	10.1	414	6.0	217	14	501	81	<0.0017	<0.44	0.488	<0.5	<0.05	<0.5	1830	29	<0.5	6	<0.5	53600	1.0	0.139	1830	1723
MP 5	07/01/2008	14.1	10.1	241	5.6	126	10	19	72	<0.0017	<0.44	0.472	<0.5	<0.05	<0.5	443	12	<0.5	<1	<0.5	8075	0.9	0.310	443	240
MP 6	07/01/2008	16.7	10.0	434	6.2	227	7	6	103	<0.0017	<0.44	1.772	7	<0.05	<0.5	<20	20	<0.5	<1	<0.5	49820	15.0	0.284	<20	1370
MP 7	07/01/2008	13.1	10.2	337	5.7	176	11	18	62	<0.0017	<0.44	0.810	<0.5	<0.05	<0.5	156	6	<0.5	<1	<0.5	318	<0.5	0.406	<20	77
MP 8	07/01/2008	78.9	8.8	269	6.6	141	<1	241	103	<0.0017	<0.44	<0.03	<0.5	<0.05	<0.5	152	55	<0.5	<1	<0.5	7619	0.9	<0.005	46	272
MP 10a	07/01/2008	21.7	8.8	402	5.5	211	2	150	161	<0.0017	<0.44	0.133	<0.5	<0.05	<0.5	610	29	<0.5	7	<0.5	9954	2.0	0.078	<20	3328
MP 11	07/01/2008	21.2	10.2	194	5.2	103	<1	43	35	0.0240	<0.44	0.456	<0.5	<0.05	<0.5	196	34	<0.5	11	<0.5	1570	13.0	<.005	<20	1400

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.

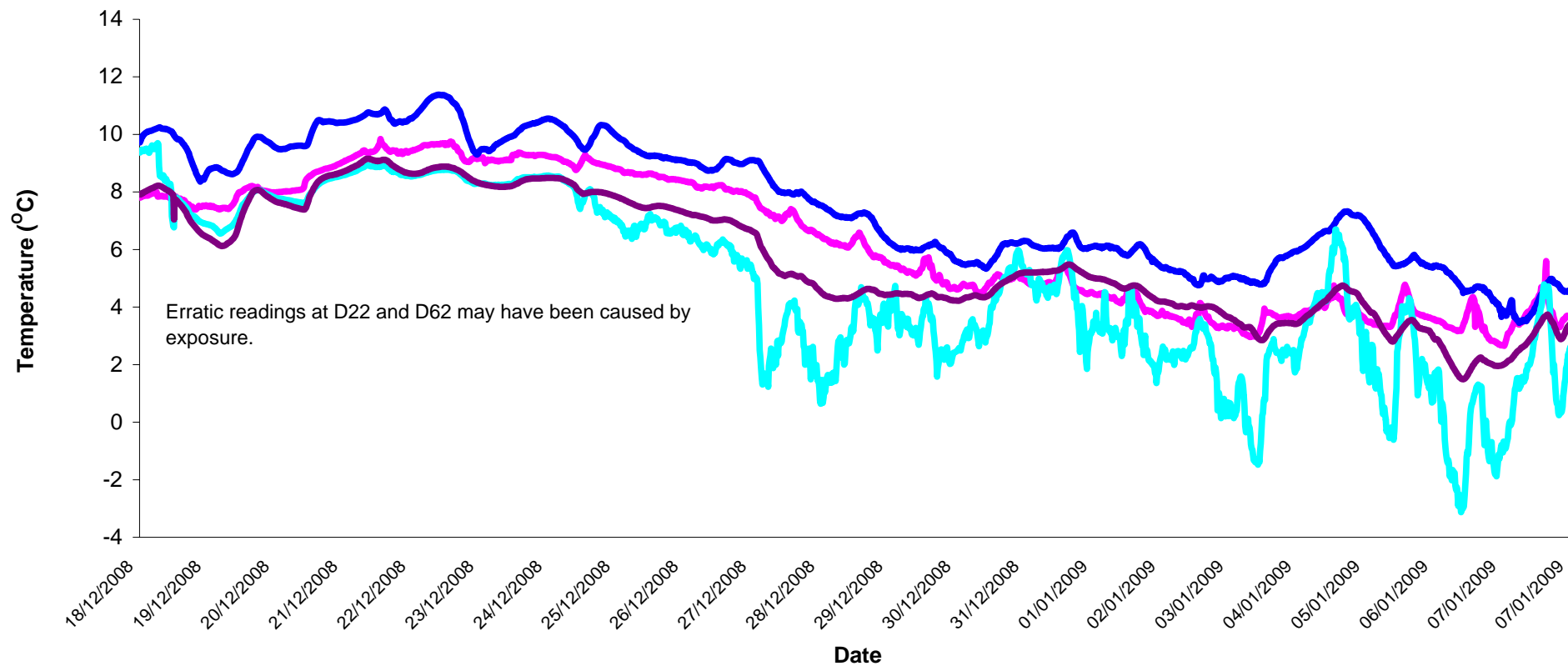
Determinant Results							
	Date Positioned	Date Removed	Ref. Number	Date Dispatched	Date Returned	Weight (mg/m <sup>2</sup> /day)	Comments
<b>Target (Consent) Limit: 350 mg m<sup>2</sup> d<sup>-1</sup> on as a 30 day average</b>							
D1	24/10/2008	21/11/2008	191474	21/11/2008	27/11/2008	174	
D2	24/10/2008	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	
D1	22/12/2008	22/01/2009	197095	22/12/2008	28/01/2009	295	
D2	22/12/2008	22/01/2009	197096	22/12/2008	28/01/2009	324	
D3	22/12/2008	22/01/2009	197097	22/12/2008	28/01/2009	261	
D4	22/12/2008	22/01/2009	197098	22/12/2008	28/01/2009	324	
NDP = No Determination Possible							
Monitoring Points are numbered clockwise through the Cardinal Marks (N, E, S, W)							
Monitoring Results will be presented monthly							

# Aluminium Concentration at SP1 Wk 51-01

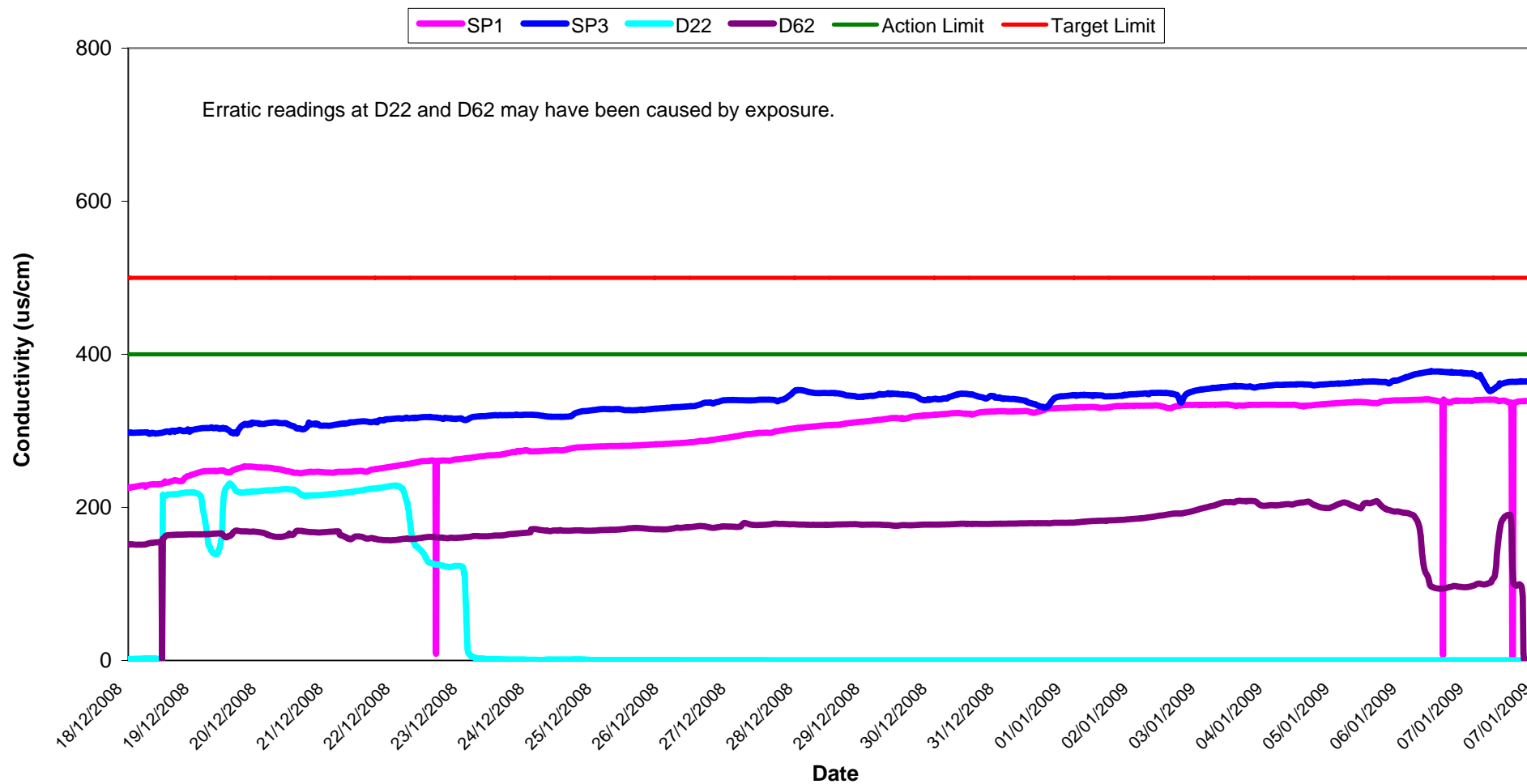


# Temperature - Surface Waters Wk 51-01

SP1 SP3 D22 D62

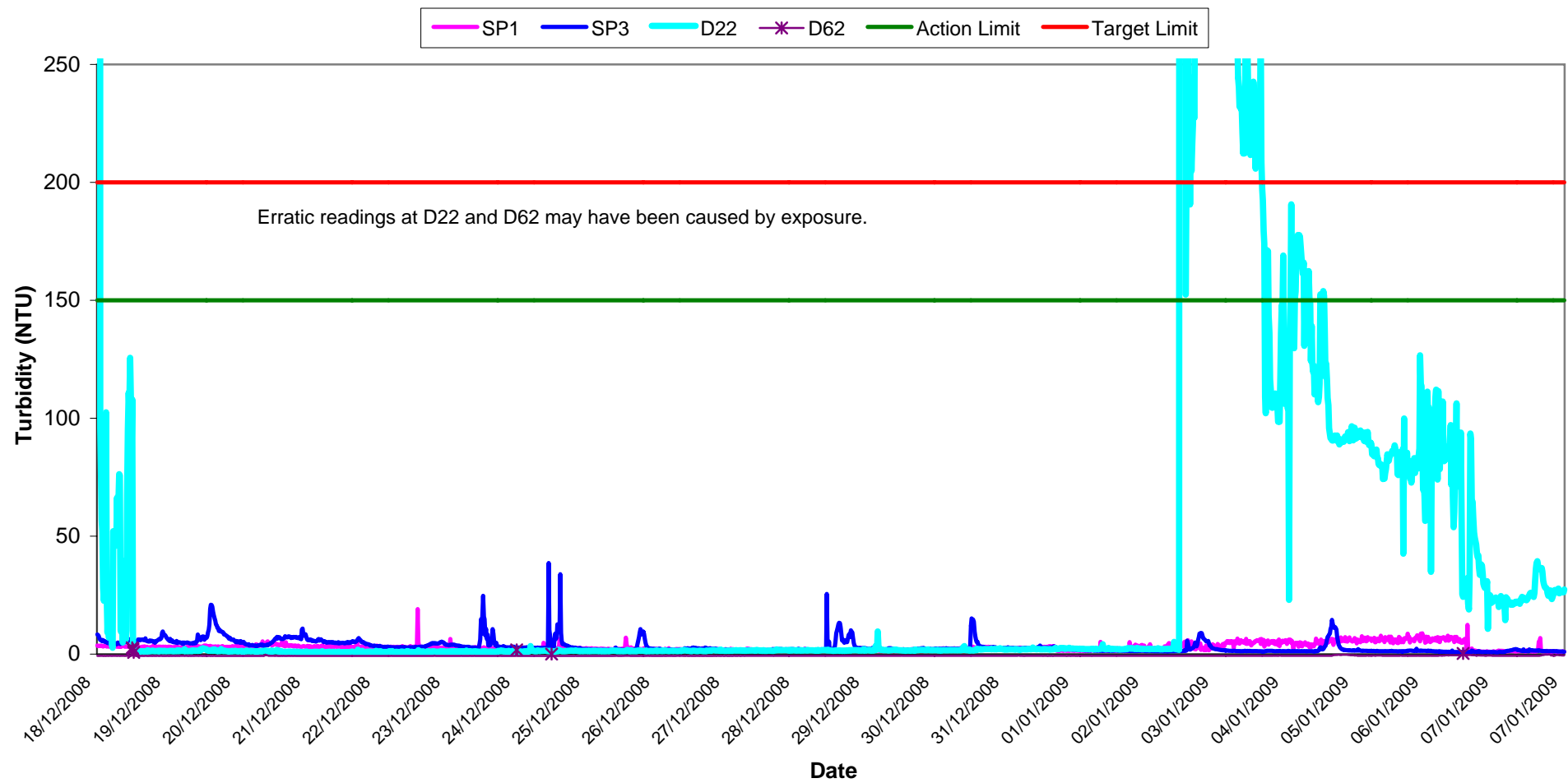


# Conductivity - Surface Waters, Wk 51-01

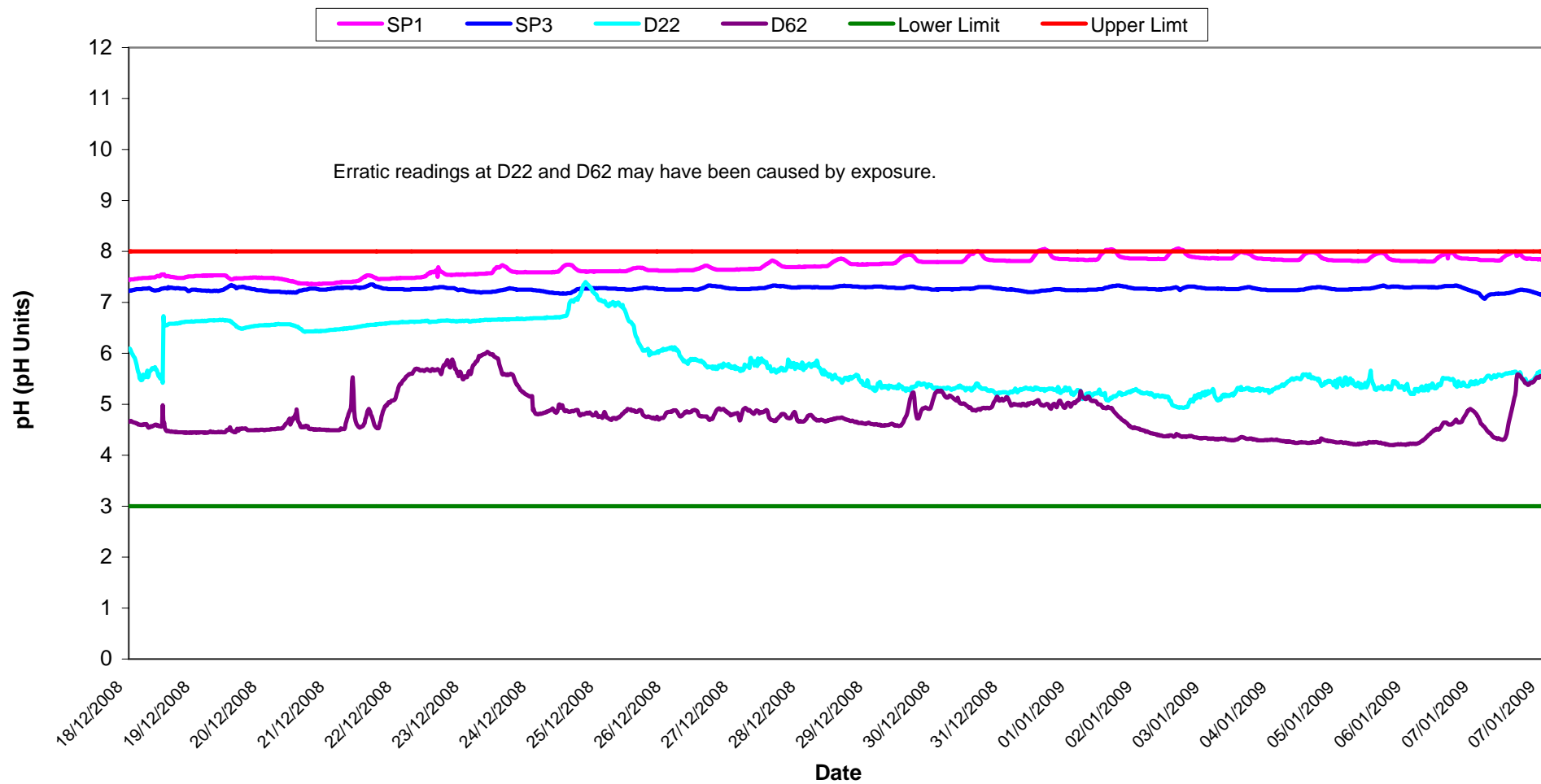




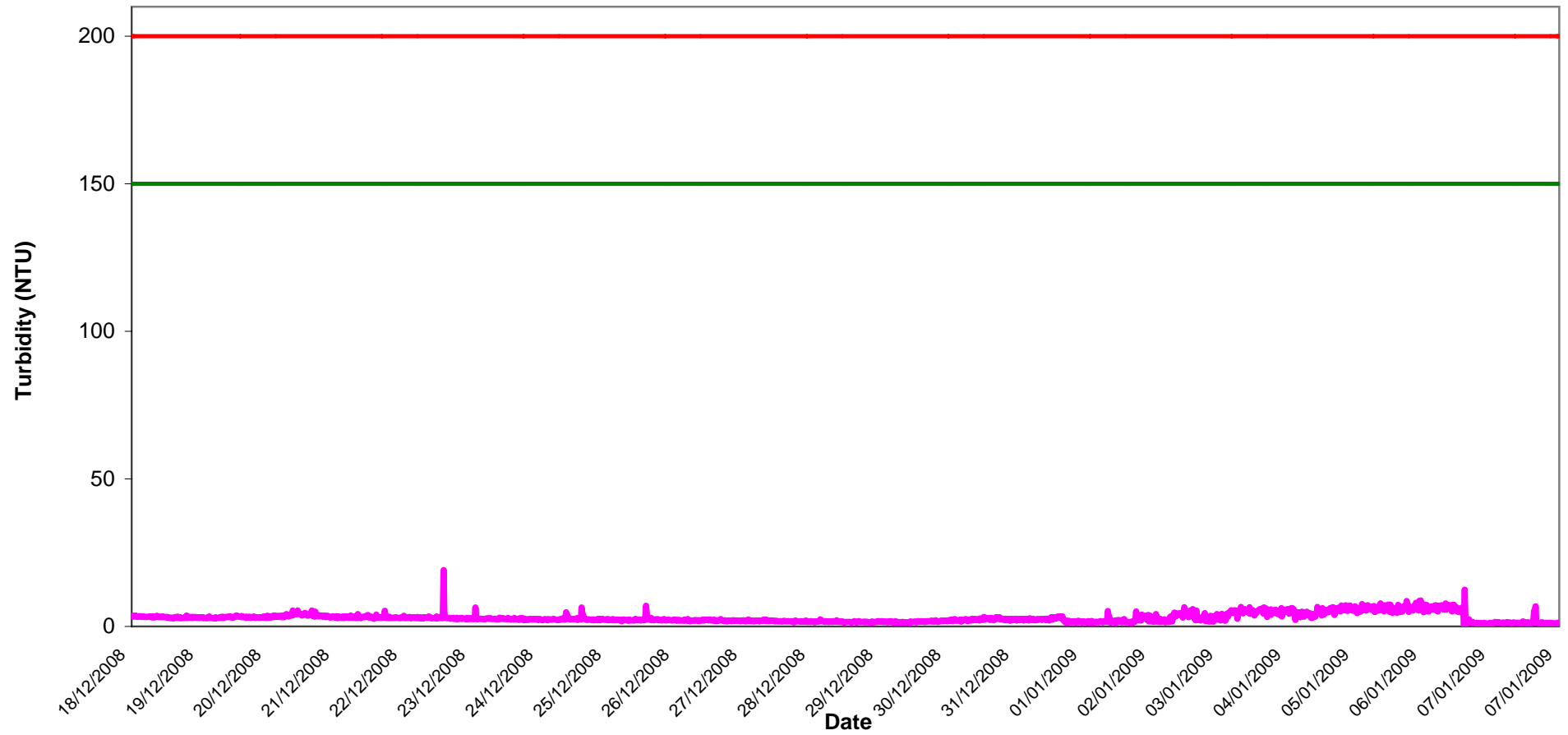
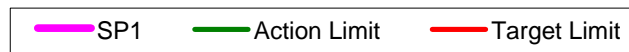
# Turbidity - Surface Waters Wk 51-01



# pH - Surface Waters Wk 51-01

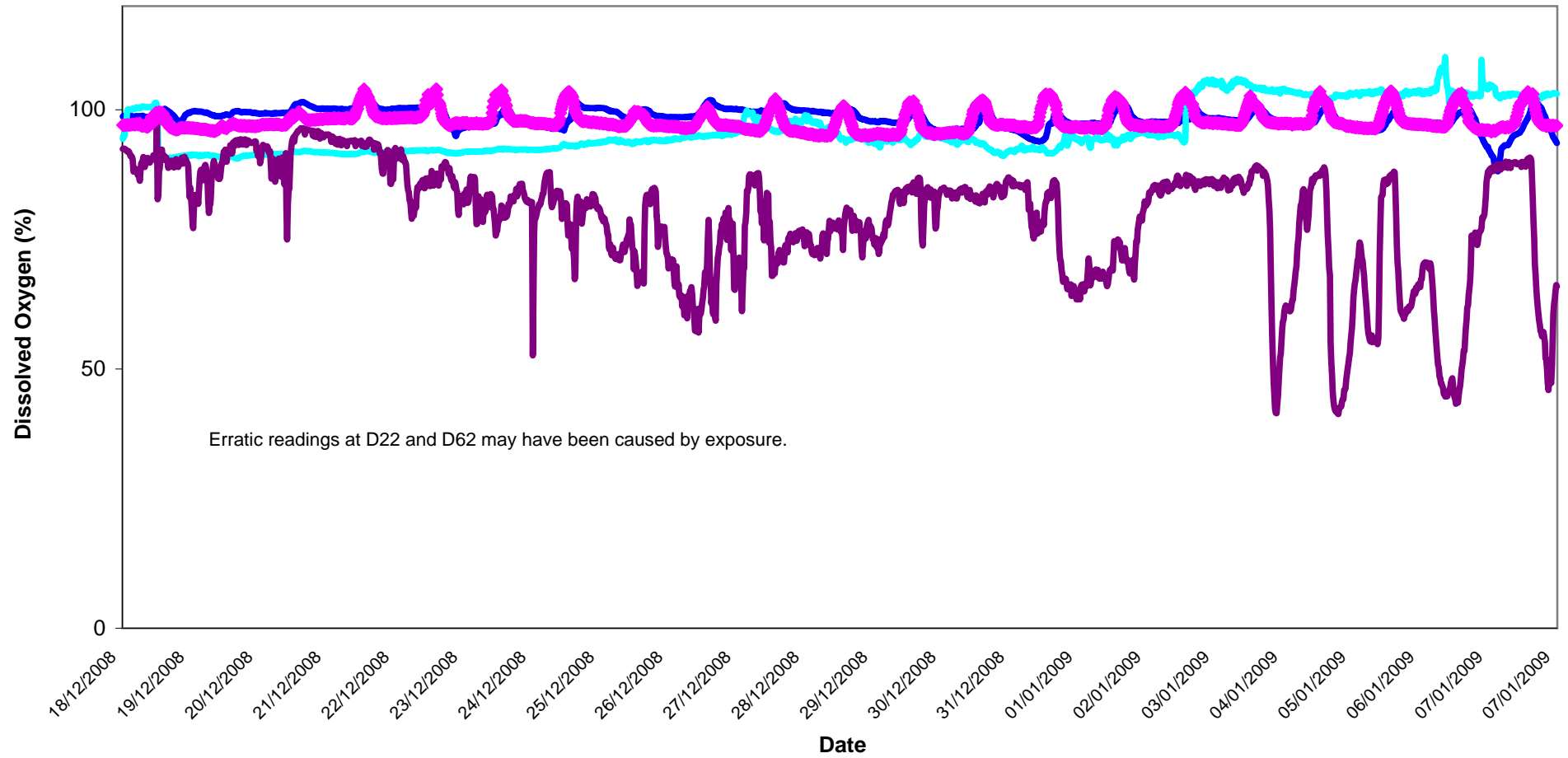


**Turbidity - Surface Waters @ SP1,  
Wk 51-01**

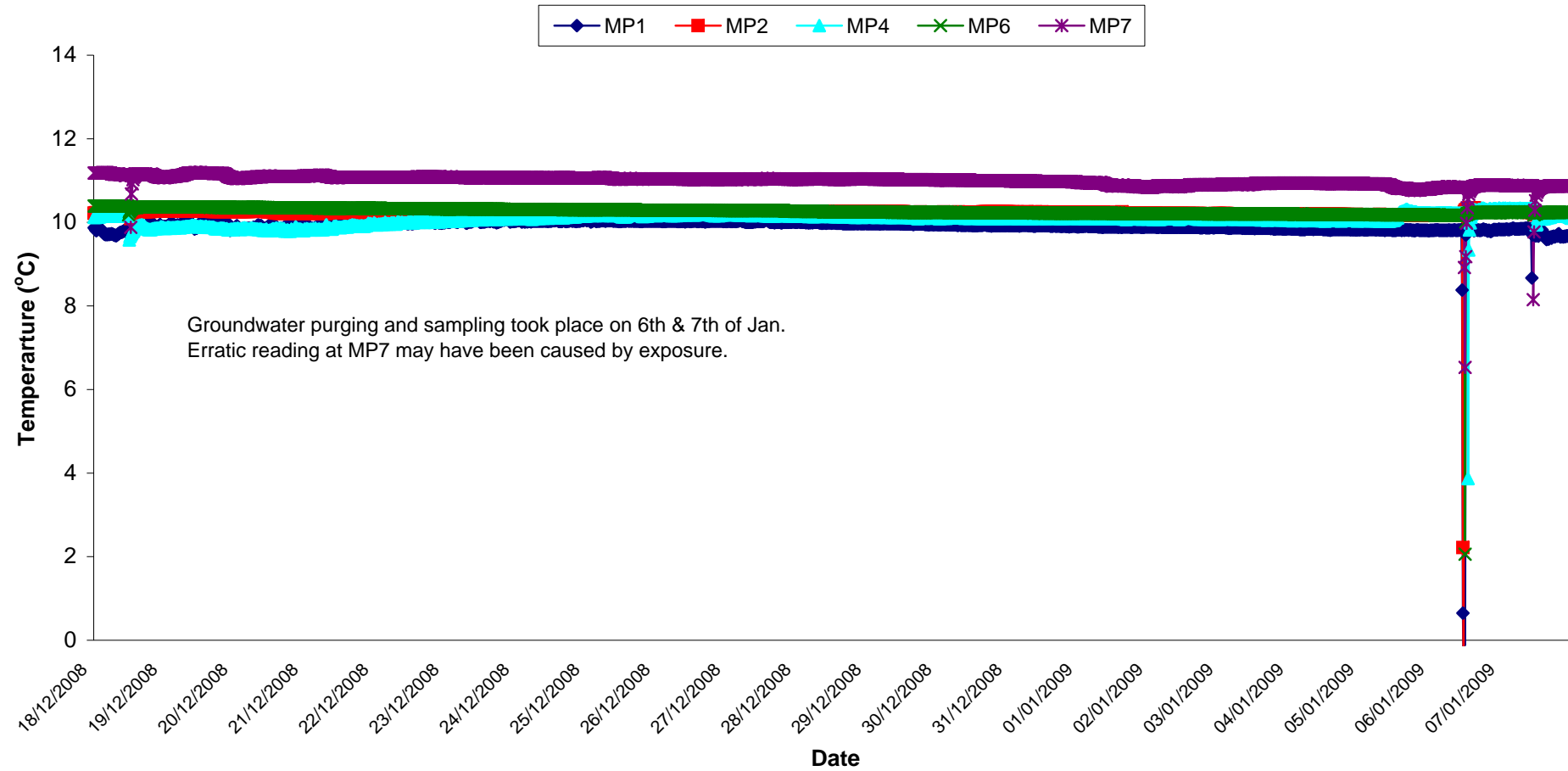


# Dissolved Oxygen - Surface Waters, Wk 51-01

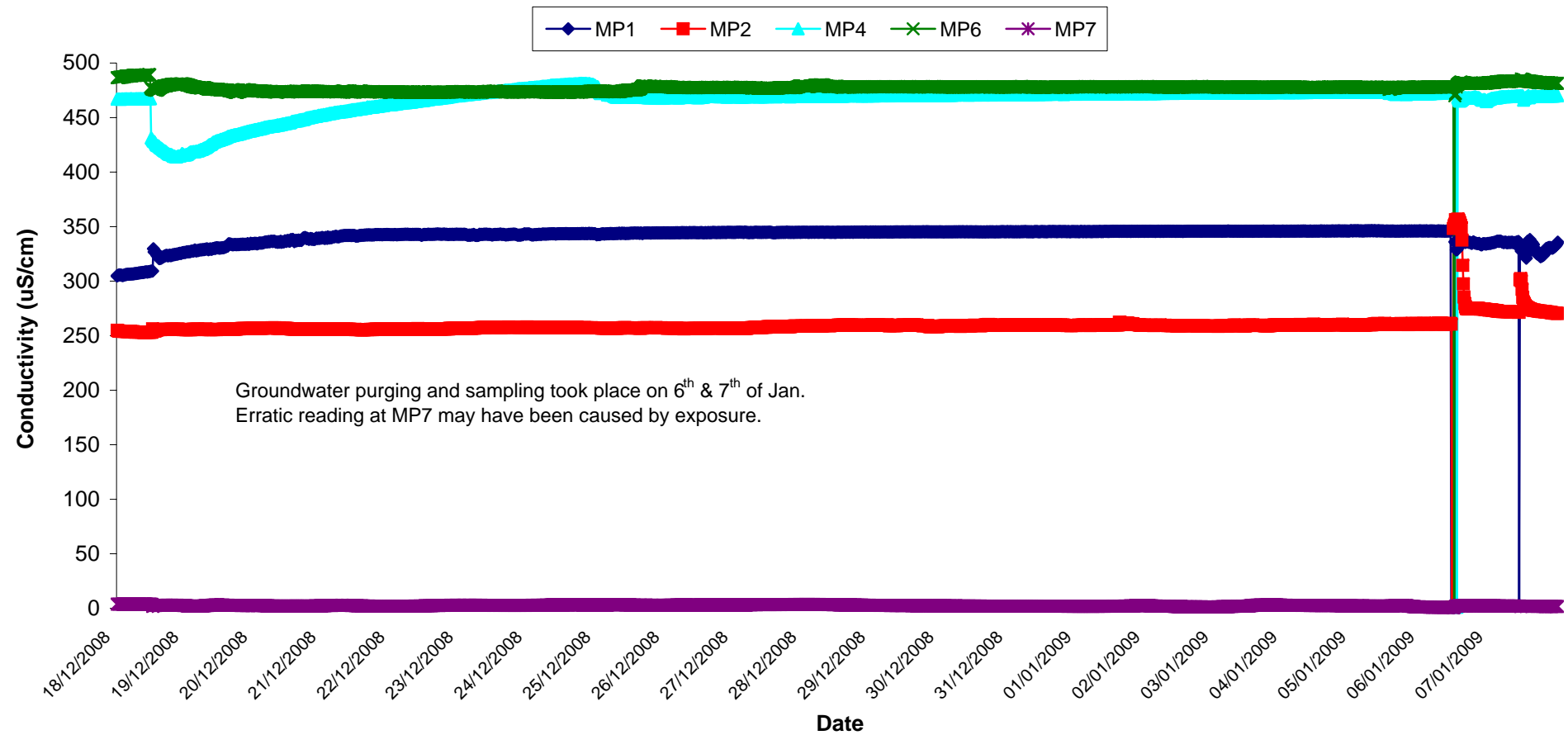
SP1 SP3 D22 D62



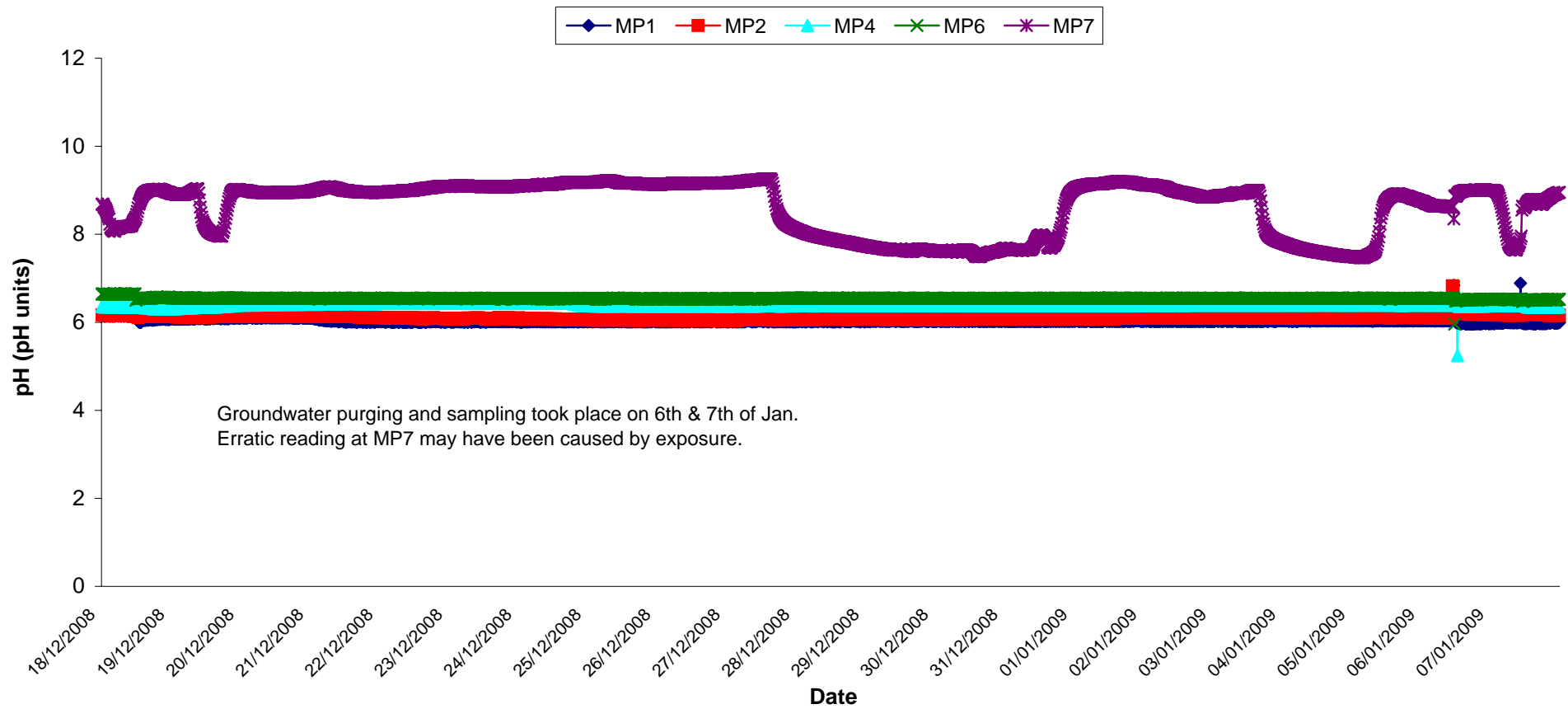
# Temperature - Groundwaters Wk 51-01



# Conductivity - Groundwaters Wk 51-01



# pH - Groundwaters Wk 51-01



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	5.1	11.8	18/12/2008	08:00:00	14:00:00	2539533	5.9	71.9	50.2	82.2	38.7	Values impacted by high wind speed
N1	3.6	12.1	19/12/2008	08:00:00	14:00:00	2539533	6.1	65.9	47.0	75.0	36.5	Values impacted by high wind speed
N1	7.0	11.5	20/12/2008	08:00:00	14:00:00	2539533	7.9		52.2	79.2	38.7	Values impacted by high wind speed
N1	9.6	11.7	21/12/2008	08:00:00	14:00:00	2539533	9.8		40.5	56.8	35.1	Values impacted by high wind speed
N1	9.0	11.0	22/12/2008	08:00:00	14:00:00	2539533	8.5		51.1	73.5	34.2	Values impacted by high wind speed
N1	8.9	10.4	23/12/2008	08:00:00	14:00:00	2539533	7.8		49.8	73.4	30.0	Values impacted by high wind speed
N1	-2.4	5.8	05/01/2009	08:00:00	14:00:00	2539533	2.0	201.8	48.5	74.3	30.0	
N1	-4.1	3.8	06/01/2009	08:00:00	14:00:00	2539533	1.6	44.5	46.7	72.7	30.0	
N1	-0.5	6.7	07/01/2009	08:00:00	14:00:00	2539533	2.3	108.6	59.9	100.2	30.0	
* 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 24/12/2008 to 04/01/2009. 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 <sub>Aeq</sub>	L <sub>Amax</sub>	L <sub>Amin</sub>	
Action Limit									50			
Target Limit									55			
N1	5.1	11.8	18/12/2008	22:00:00	10:00:00	2539533	5.9	71.9	47.0	75.0	36.5	Values impacted by high wind speed
N1	3.6	12.1	19/12/2008	22:00:00	10:00:00	2539533	6.1	65.9	42.0	69.0	36.7	Values impacted by high wind speed
N1	7.0	11.5	20/12/2008	22:00:00	10:00:00	2539533	7.9		44.5	69.8	30.0	Values impacted by high wind speed
N1	9.6	11.7	21/12/2008	22:00:00	10:00:00	2539533	9.8		55.9	78.5	45.8	Values impacted by high wind speeds
N1	9.0	11.0	22/12/2008	22:00:00	10:00:00	2539533	8.5		44.3	68.9	34.2	Values impacted by high wind speed
N1	-2.4	5.8	05/01/2009	22:00:00	10:00:00	2539533	2.0	201.8	40.6	65.4	30.0	
N1	-4.1	3.8	06/01/2009	22:00:00	10:00:00	2539533	1.6	44.5	50.3	61.9	32.6	
N1	-0.5	6.7	07/01/2009	22:00:00	10:00:00	2539533	2.3	108.6	50.1	64.6	34.8	

\* 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)
18/12/2008	21.20	12.50	18.70	12.98	4.07	10.85
19/12/2008	42.23	13.98	23.93	19.06	5.57	11.55
20/12/2008	45.71	18.25	28.55	18.39	8.49	12.73
21/12/2008	24.72	11.70	17.70	12.98	3.67	9.29
22/12/2008	13.33	4.65	9.35	6.98	0.07	3.82
23/12/2008	6.12	5.11	5.57	1.30	0.56	0.99
24/12/2008	8.00	4.43	6.17	4.27	0.56	2.37
25/12/2008	8.00	4.99	6.03	4.07	1.44	2.00
26/12/2008	6.99	7.54	4.88	4.27	1.03	2.54
27/12/2008	7.54	4.32	6.99	4.27	1.03	3.71
28/12/2008	7.54	4.32	6.12	4.27	1.30	2.74
29/12/2008	4.65	2.47	3.59	1.58	-0.08	0.68
30/12/2008	3.23	2.39	2.90	0.28	-0.08	0.14
31/12/2008	3.90	1.71	2.55	0.90	-0.43	0.12
01/01/2009	4.21	3.80	3.89	1.03	0.90	0.99
02/01/2009	4.10	1.41	3.50	1.30	-0.38	0.82
03/01/2009	4.21	3.23	3.86	1.30	0.20	0.92
04/01/2009	3.80	3.60	3.65	0.67	0.46	0.56
05/01/2009	3.80	2.10	3.40	0.78	-0.28	0.44
06/01/2009	3.90	0.59	2.63	0.90	-0.73	0.15
07/01/2009	2.39	0.84	1.45	-0.08	-0.83	-0.49

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

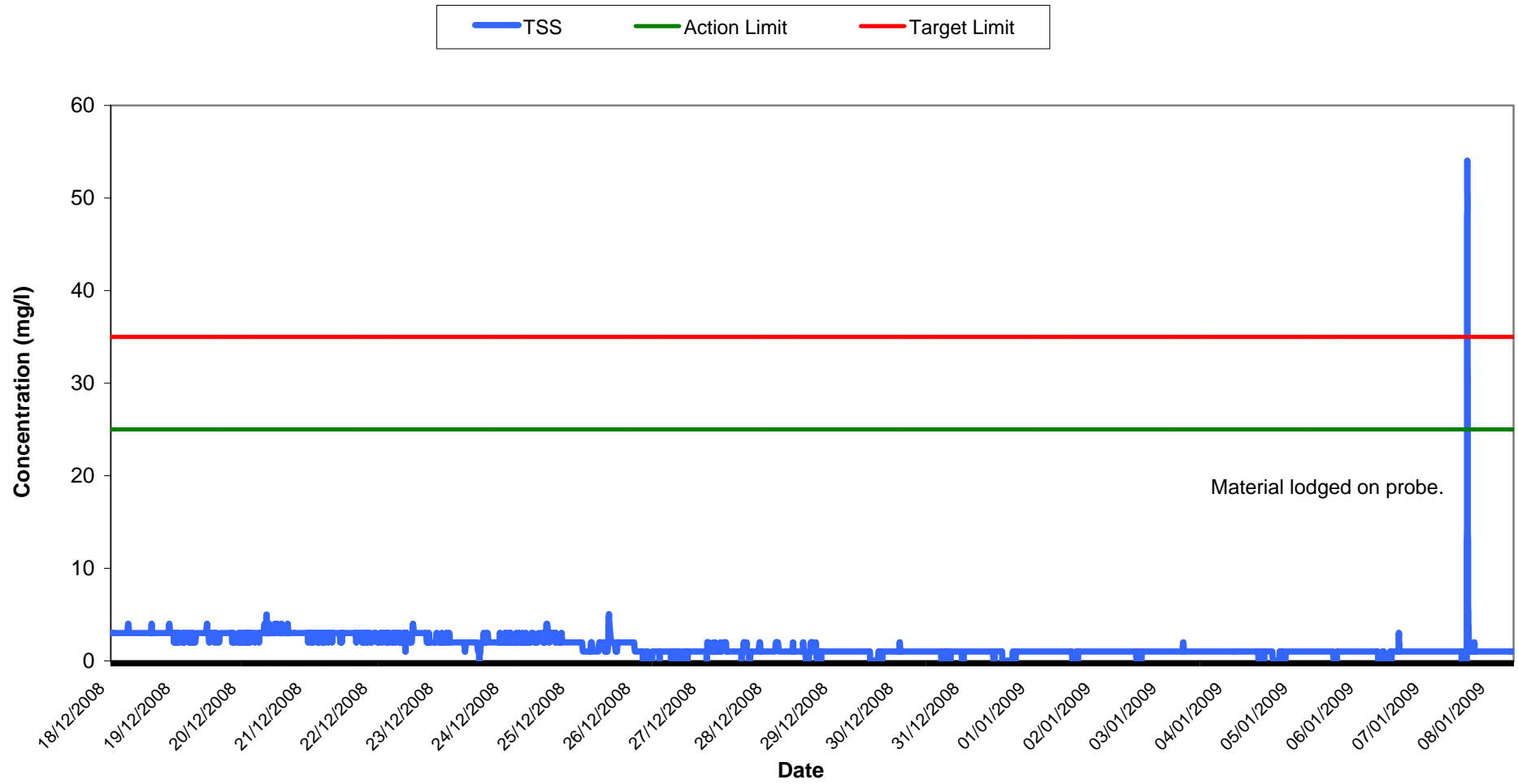
## Vibration Monitoring Record Sheet

### Determinant Results

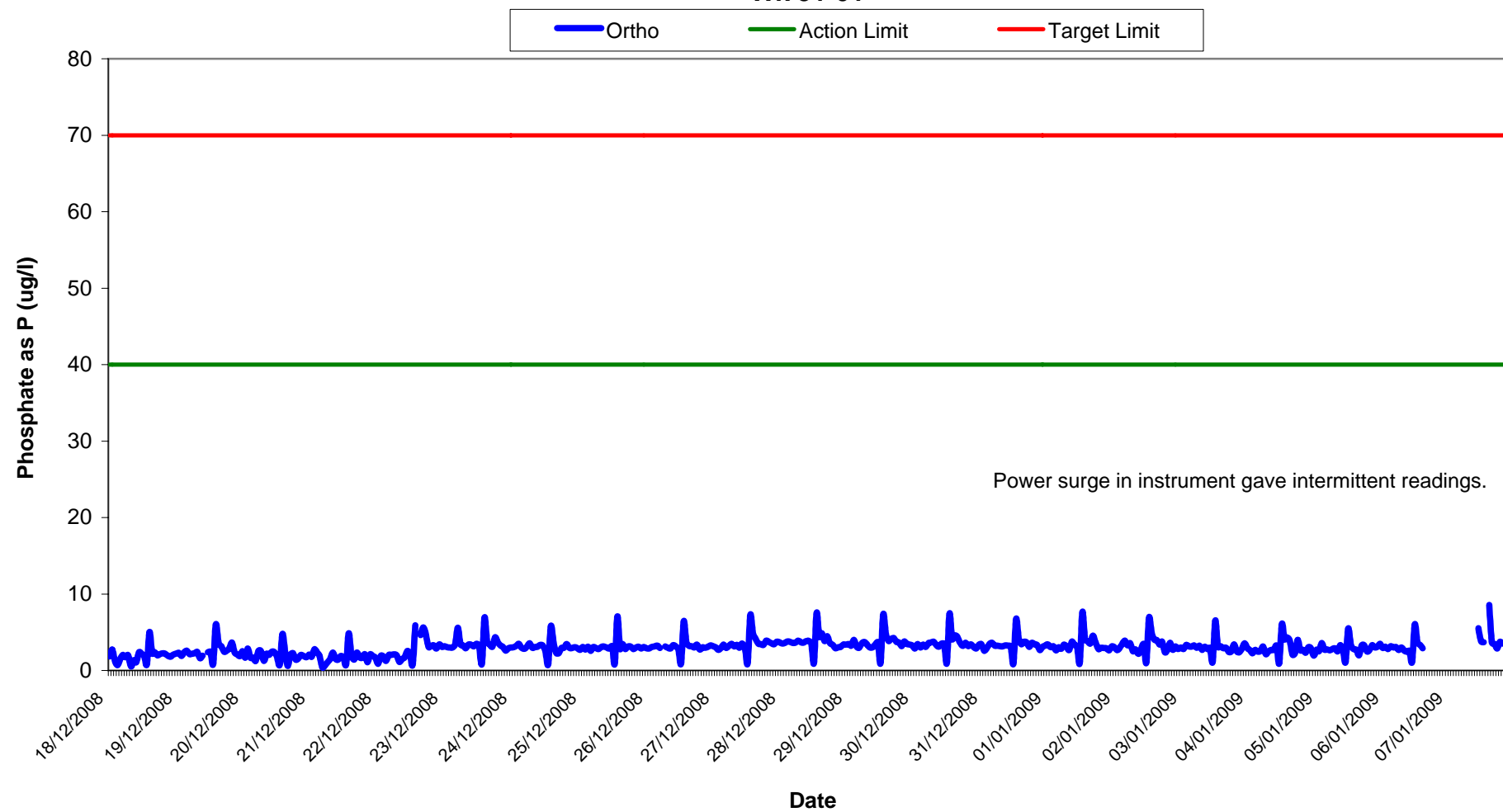
[illegible]

Vibration meter was located at V1 only.

# Total Suspended Solids Results at SP1 Wk 51-01



# Orthophosphate Results at SP1 Wk 51-01



# **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	18/12/2008	199	8.3	10.1	92.4	7.5			0.3			<LOD		38	194	0.08	127
SP1	19/12/2008	250	8.2	4.9	97.2	7.2	2	<0.01		<0.44	0.04	0.02	0.03	67	217	<0.03	121
SP1	22/12/2008	254	9.7	7.6	100.1	7.4			<LOD			0.12		53	217	0.07	182
SP1	23/12/2008	261	9.3	7.4	102.7	7.7			<LOD			0.06		60		0.19	185
SP1	26/12/2008	262	10.5	5.1	89.9	7.2			<LOD			0.10		42	199	0.03	185
SP1	28/12/2008	310	6.4	4.8	90.8	7.1			<LOD			0.21		33	110	0.01	207
SP1	31/12/2008	343	6.6	6.4	86.9	7.2			0.3			0.11		23	118	0.18	214
SP1	02/01/2009	244	6.0	4.7	90.5	7.2			<LOD			0.09		17	116	0.20	184
SP1	05/01/2009	369	5.3	7.6	89.0	6.9			0.2			0.12		<LOD	137	0.74	227
SP1	06/01/2009	365	4.6	9.6	95.6	7.0			0.1			0.06		<LOD	90	0.01	223
SP1	07/01/2009	353	5.7	6.9	93.1	7.1			0.4					<LOD	116	0.19	221
SP3	18/12/2008	236	9.8	10.8	93.6	7.1			0.3					62		0.04	164
SP3	19/12/2008	313	9.6	6.4	99.7	7.2	4	<0.01		0.62	0.03	0.05	0.049	38	275	<0.03	146
SP3	22/12/2008	315	10.8	6.3	101.5	7.7			0.4			0.59		27		0.01	217
SP3	23/12/2008	323	10.0	6.4	99.5	7.8			0.2			0.09		13		0.07	222
SP3	05/01/2009	394	5.7	6.4	90.7	6.8			0.5			1.80		23		0.01	249
SP3	06/01/2009	405	6.0	3.8	93.3	6.9			<LOD			0.12		<LOD		0.01	254
SP3	07/01/2009	390	4.9	10.2	92.8	6.9			0.7					<LOD		0.06	245
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	18/12/2008	229		105.0		6.9			<LOD			0.32		199		0.05	160
Post	18/12/2008	237		10.2		6.7			0.3			0.29		45	508	0.03	163
Pre	19/12/2008	302		37.2		7.2	36	<0.01		<0.44	0.11	0.02	0.023	79	1589	<0.03	142
Post	19/12/2008	328		5.1		6.5	5	<0.01		1.01	0.04	0.07	0.022	<20	642	<0.03	150
Pre	22/12/2008	312		41.2		7.8			<LOD			0.62		243		<LOD	212
Post	22/12/2008	165		8.3		6.5			0.5			1.07		26	910	<LOD	96
Pre	23/12/2008	322		37.1		7.7			<LOD			0.12		253		0.01	219
Post	23/12/2008	351		4.1		7.0			0.3			0.07		<LOD		<LOD	236
Post	26/12/2008	313		2.4		6.1			0.2			0.24		37	>LOD	0.07	210
Post	28/12/2008	374		6.7		6.2			0.2			0.11		<LOD	224	0.01	253
Post	31/12/2008	362		4.7		6.5			0.1			0.05		25	316	0.07	246
Post	02/01/2009	341		3.0		6.8			<LOD			0.02		9	486	0.05	244
Pre	05/01/2009	400		11.5		6.8			<LOD			1.10		187		<LOD	252
Post	05/01/2009	415		1.9		6.7			0.6			0.02		<LOD	332	0.05	261
Pre	06/01/2009	422		>LOD		6.8			6.1			0.88		>LOD		0.10	269
Post	06/01/2009	423		2.8		6.3			0.5			0.03		<LOD	290	0.10	266
Pre	07/01/2009	410		>LOD		6.9			<LOD					>LOD		0.71	256
Post	07/01/2009	440		4.5		6.5			0.2					<LOD	151	<LOD	274
	Grey shaded areas denote parameters that cannot or were not analysed on-site.																
	= Indicative Only																
	Laboratory analysis																
< LOD	= Below Limit of Detection																
> LOD	= Above Limit of Detection																