

CORRIB GAS DEVELOPMENT

Report for PMC Meeting dated 16th September 2009.

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Project Manager for Mayo County Council.**

Water Quality – Carrowmore Lake

- Mayo County Council's Project Team has continued to monitor the surface waters in and around the Bellanaboy site. Summaries of the most recent verified results are attached, which are available on Mayo County Council Website www.mayococo.ie.
- The results show that in the last monitoring period the discharge of surface water from the Terminal Site has had no significant impact on the water quality of the Bellanaboy River and Carrowmore Lake.
- The results also show that the discharge of surface water from the Terminal Site has had no adverse impact on the quality of drinking water produced at the Erris Regional Water Supply Scheme at Barnatra.
- Biological water quality monitoring of the Bellanaboy River for 2009 was carried out in June in conjunction with the North Western Regional Fisheries Board. As in previous years the monitoring was carried out both upstream and downstream of the outfall from the terminal site using the SSRS (Small Stream Risk Score) scheme. The results of the 2009 biological monitoring are that both upstream and downstream locations scored well indicating a healthy aquatic environment as in previous years.

Environmental Issues at the Bellanaboy Site

- Construction work at the terminal site is ongoing and is now approximately 80% complete.
- Surface water runoff from the terminal footprint, the carrier drain road and other roads outside the terminal footprint, is treated by the axonics unit prior to discharge to the site drainage system.
- The axonics plant has been switched to mains power and a new clarifier has been installed.
- During the last two months the site experienced significant rainfall from time to time. One exceedance of the total aluminium parameter was recorded on 20th August when a value of 404 µg/l was measured exceeding the site discharge limit of 200 µg/l.

Total aluminium levels recorded upstream and downstream in the Bellanaboy river and at Carrowmore Lake on the same date indicate that the exceedance had negligible impact on water quality.

- Specific work activities outside normal hours are ongoing from time to time, subject to noise level restriction and the developer providing continuous noise monitoring which is submitted in a fortnightly report to Mayo County Council.

Community Fund

The following projects have been completed;

- **Bellanaboy Footpath along L1204** – Length 400m / Cost: €145,000.
- **Attawalla Village Footpath** – Length 150 m / Cost €60,000.
- **Upgrade Glencullen River** – Works carried out by North Western Regional Fisheries Board. Cost €120,000. Funding allocated €60,000.
- **Bangor Angling Scheme** – Provision of boat moorings. Cost €185,000.

TOTAL FUNDING ALLOCATED TO THE ABOVE SCHEMES WAS €450,000.

- **Bellanaboy Village Scheme** – The community have requested the provision of new footpaths and public lighting from the terminal gate to Bellanaboy bridge on the R314, a distance of 1.32km. The estimate to carry out these works is €400,000.

Transportation/Roads

- Deliveries of abnormal loads have been completed.
- R314 and L1202 (Glengad Road)– These works have been completed.
- Repairs to damaged sections of pavement are required on the R313 and L1204 which are the designated haul routes from Barrett's and Lennon's quarries. The works involved are:
 - 5.2 km of bitumen macadam overlay
 - 0.7 km of hot rolled asphalt in Bangor village
 - 10.9 km of surface dressing
 - 11.6 km of relining

The estimated cost of this work is €1.485 million. The work should be undertaken as soon as possible because it requires good weather and adequate road surface temperatures for a successful outcome.

CARROWMORE LAKE
Results from 19/05/2009 to 20/08/2009 (14 Samples taken)
Analysis by Bord na Mona Laboratory Newbridge, Co. Kildare

Parameter	Units	Average	Max	Min
Suspended Solids	mg/l	6	10	<5
Turbidity	N.T.U	4	7	2
pH	pH units	7.6	8.2	7
Conductivity	uS/cm	155	170	146
Phosphate	mg/l P	<0.01	<0.02	<0.01
Total Phosphorous	mg/l P	<0.05	<0.05	<0.05
Ammonia	mg/l NH ₃ -N	0.03	0.14	<0.02
Nitrate	mg/l NO ₃ -N	<0.2	<0.2	<0.2
Nitrite	mg/l NO ₂ -N	<0.02	<0.02	<0.02
Total Aluminium	ug/l Al	111	145	88

ERRIS REGIONAL WATERWORKS (Final Treated Water)
Results from 11/05/2009 to 08/09/2009 (100 Samples)
Analysis carried out at Erris Regional Waterworks

Parameter	Units	Average	Max	Min	Drinking Water Limits
Colour	mg/l	1	8	0	<10 Haz
Turbidity	N.T.U	0.13	0.59	0.05	<2.0 NTU
Ph	pH units	7.1	8.3	6.5	6.5 – 8.5
Free Chlo/Res	mg/l	0.73	1	0.44	>0.3
Total Chlo/Res	mg/l	0.87	1.25	0.54	>0.3
Flourine	ppm	0.67	0.91	0.56	0.6-0.8
Total Aluminium	ug/l	21	87	0	200

BELLANABOY RIVER
(Upstream and Downstream of discharge from Terminal site)
Results from 19/05/2009 to 20/08/2009(14 Samples taken)
Analysis by Bord na Mona Laboratory Newbridge, Co. Kildare

Parameter	Units	BEL 1 (upstream)			BEL 2 (downstream)		
		Average	Max	Min	Average	Max	Min
Temp.	°C	13.2	16.6	10	13.3	16.6	10
Dissolved Oxygen	% Sat.	90	96	85	91	103	85
Suspended Solids	mg/l	6	9	<5	5	9	<5
Turbidity	N.T.U	3	5	2	3	5	2
pH	pH units	7.1	7.5	6.4	7.3	7.9	6.5
Conductivity	uS/cm	188	279	117	203	336	124
Total Dissolved Solids	mg/l	141	191	96	146	182	104
Phosphate	mg/l P	0.015	0.03	<0.01	0.02	0.03	<0.01
Total Phosphorus	mg/l P	<0.05	<0.05	<0.05	0.05	0.06	<0.05
Ammonia	mg/l NH ₃ -N	0.05	0.27	<0.02	0.05	0.22	<0.02
Nitrate	mg/l NO ₃ -N	<0.2	<0.2	<0.2	0.2	0.24	<0.2
Nitrite	mg/l NO ₂ -N	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Total Aluminium	ug/l Al	70	134	26	66	123	18

SP1 (Discharge point from terminal site)
Results from 19/05/2009 to 20/08/2009 (14 Samples)
Analysis by Bord na Mona Laboratory Newbridge, Co. Kildare

Parameter	Units	SP 1		
		Average	Max	Min
Suspended Solids	mg/l	6	10	<5
Turbidity	N.T.U	4	12	2
pH	pH units	7.5	7.8	7.1
Conductivity	uS/cm	323	410	186
Total Dissolved Solids	mg/l	213	260	156
Phosphate	mg/l P	<0.01	<0.01	<0.01
Total Phosphorus	mg/l P	0.05	0.09	0.05
Ammonia	mg/l NH ₃ -N	0.022	0.04	<0.02
Nitrate	mg/l NO ₃ -N	0.2	0.21	<0.2
Nitrite	mg/l NO ₂ -N	<0.02	<0.02	<0.02
Total Aluminium	ug/l Al	68	404	11

Axonics Water Treatment Units (Post-treatment Results)
Results from 19/05/2009 to 20/08/2009 (10 samples)
Analysis by Bord na Mona Laboratory Newbridge, Co. Kildare

Parameter	Units	Post-Treatment (Samples)		
		Average	Max	Min
Suspended Solids	mg/l	6	19	<5
Turbidity	N.T.U	5	12	2
pH	pH units	6.9	7.3	6.5
Conductivity	uS/cm	355	419	260
Total Dissolved Solids	mg/l	232	280	178
Phosphate	mg/l P	<0.01	<0.01	<0.01
Total Phosphorus	mg/l P	<0.05	<0.05	<0.05
Ammonia	mg/l NH ₃ -N	0.178	0.42	<0.02
Nitrate	mg/l NO ₃ -N	0.21	0.3	<0.2
Nitrite	mg/l NO ₂ -N	<0.02	<0.02	<0.02
*Total Aluminium	ug/l Al	327	566	171

Srahmore Peat Repository
WL 0199-01

Environmental Management System Up-Date No. 40(16/09/09)

Decommissioning and Rehabilitation

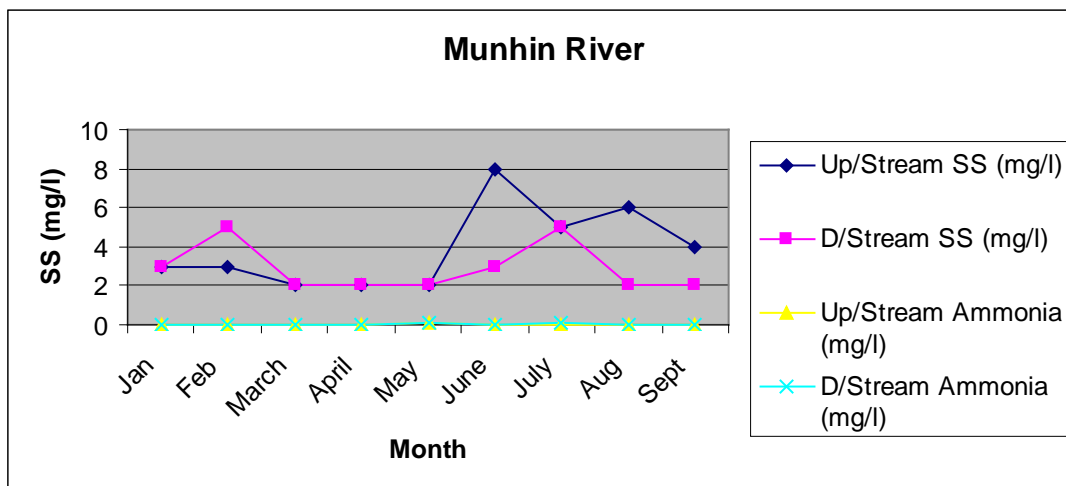
Environmental Monitoring:

- There were No non-compliances at the site since the last meeting.
- There was one complaint received at the site since the last meeting. This was in relation to the wording on the Waste Licence Application site Notice, which reads “Third Schedule, Class 4. ‘Surface impoundment, including placement of liquid or sludge discards into pits, ponds or lagoons’”.

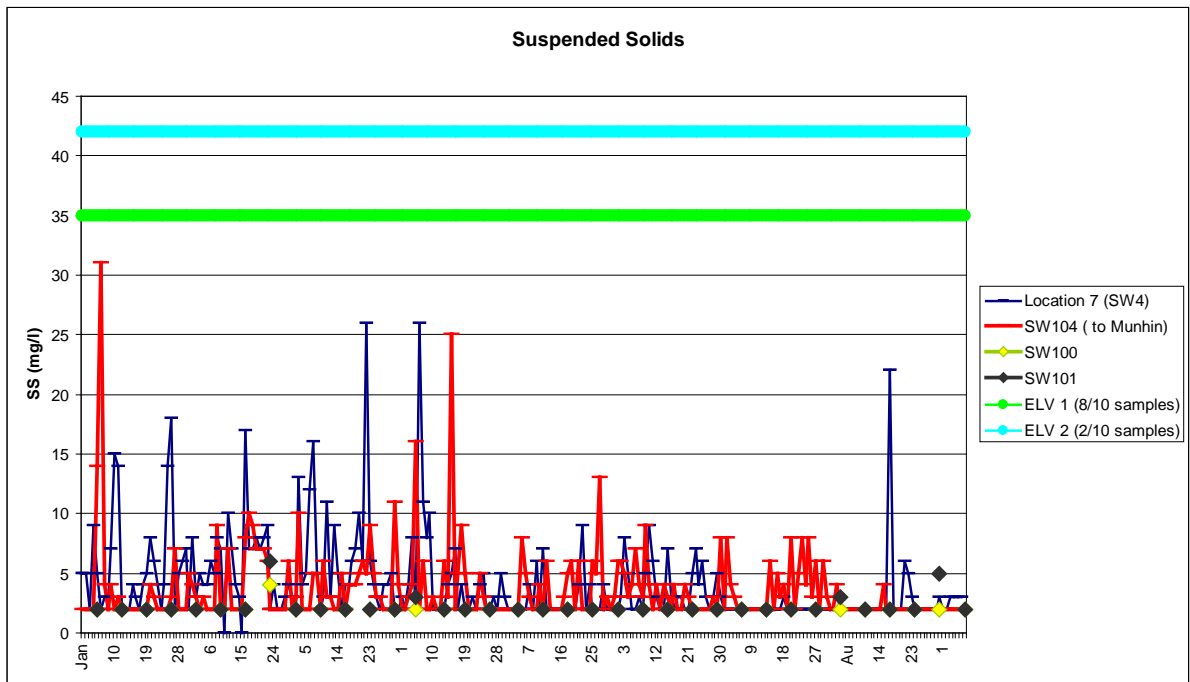
The concern was in relation to the word “sludge” which suggested that something other than peat would be deposited at the site. The Site Manager met the group concerned and clarified the situation.

- There were No incidents recorded at the site since the last meeting.

Monitoring Results: Munhin River (2009)



Monitoring Results: SW4/104/100&101 (2009)



The average SS mg/l for SW4 for 2009 to date, was 4.1mg/l and 3.6mg/l at the discharge from the site to the Munhin at SW104

Srahmore Site Update:

Personnel:

Site Admin & Mgt.	1	Electricians	0		
		Site Supervisors	1		
		Excavator & Shovel	6		
				TOTAL EMPLOYED	9

Contractors

Security	0	Catering	0		
				TOTAL EMPLOYED	0

Off Site

Head Offices Staff	1			BnM (Support)	1
Environmental Officer	1				
				TOTAL EMPLOYED	3

OVERALL TOTAL EMPLOYED				12
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Srahmore Site Operations:

Environmental monitoring as per waste licence WL 0199-01.

Silt pond cleaning, drainage maintenance and site clearance.

Application for a review of the Waste Licence was submitted to the EPA on the 18 May 2009. The EPA visited the site on the 25 August.

As of the 16 September 2009, the Srahmore site is Compliant.

Bellanaboy Bridge Site

Report to the Project Monitoring Committee

16th September 2009

Works Undertaken

The following construction operations are ongoing:

- Operation of Axonics plant
- Environmental and geotechnical monitoring
- Civil's and foundations works
- Erection of structural steel
- Scaffolding erection
- Insulation on tanks, pipe racks, on sleeperways and below ground, including export pipeline.
- Building works.
- Electrical and Instrumentation works including cable rack installation and cable installation.
- Process equipment deliveries and installation.
- Tankage grit blasting and painting.
- Testing and cleaning of pipe work
- Testing of systems.

Outlook from September 2009 Onwards:

- Continuation of insulation works
- Continuation of environmental monitoring and Axonics operation.
- Continuation of civil's and foundation works.
- Continuation of structural steel erection.
- Continuation of electrical and instrumentation works
- Continuation of scaffolding erection
- Continuation of piping installation
- Continuation of building works
- Continue testing of pipe work.
- Continuation of tankage grit blasting and painting.
- Continued testing of systems.
- Continuation of landscaping works.

ENVIRONMENTAL REPORT

Dust - Dust deposition results of 177, 114, 167 and 167 mg/ m²/day were recorded at D1, D2, D3 and D4 respectively for June. All values were within the limit of 350 mg/ m² /day.

Dust deposition results of 103, 69, 121 and 47 mg/ m²/day were recorded at D1, D2, D3 and D4 respectively for July. All values were within the limit of 350 mg/ m² /day.

Dust deposition results of 54, 276, 110 and 106 mg/ m²/day were recorded at D1, D2, D3 and D4 respectively for August. All values were within the limit of 350 mg/ m² /day.

Noise – All construction related noise levels recorded were below the agreed noise limits and any unusual values were attributed to activities immediately adjacent to the monitoring location or elevated wind speeds.

Vibration Monitoring – All vibration monitoring results were within guidance values.

Traffic - There were approximately 157 traffic movements in June, 125 traffic movements in July and 126 traffic movements in August.

Fuel – Approximately 67.3 m³ of fuel was delivered to site in June, 104.3 m³ in July and 70.4 m³ in August.

Waste – From June to August the following waste quantities were removed from site: 15 skips of refuse (Canteen waste, etc.), 7 skips of cardboard/plastics, 5 skips of metal waste, 11 skips of timber and 5 skips of rubble. There were 20 chemical waste collections.

There were 6 hazardous waste collections for the removal of oily waste and chemical waste for the same period. The effluent holding tanks were emptied of approximately 2466 m³ of sewage during the same period.

Water Quality – All monitoring and sampling locations were accessible for download, recalibration and reinstallation during the months of June, July and August. A summary of the main surface water parameters measured for grab sampling from June to August (available range of lowest to highest) at SP1 is presented below:

pH (pH Units)

6.9 to 7.9

Suspended Solids (mg/l)

2 to 6

Orthophosphate (µg/l P)

10-53

Nitrite (mg/l NO₂)

0.017

Conductivity (µS/cm)

172 to 368

Turbidity (NTU)

1.6 to 10.0

Groundwater samples were taken and borehole monitoring equipment was downloaded for the months of June, July & August. A summary of the main groundwater parameters measured (range of lowest to highest) follows:

pH (pH Units)

5.5 to 6.3

Conductivity (µS/cm)

189 to 419

Nitrate (mg/l NO₃)

<0.17

Total Dissolved Solids (mg/l)

103 to 232

Complaints – There were no construction activity related complaints logged with SEPIL during the months of June, July or August.

Incidents – There were no environmental incidents during the months of June, July and August.

Exceedances – There was 1 exceedance at SP1 for total aluminium. The exceedance occurred on the 20th August as outlined below (limit is 200 ug/l):

Date	Total Al (µg/L)
14/07/2009	83
23/07/2009	65
30/07/2009	65
06/08/2009	45
11/08/2009	42
20/08/2009	292
25/08/2009	135
04/09/2009	121

The exceedance was attributed to heavy, persistent rainfall and was at odds with the trend throughout the period as all other values well within the limit.

Necessary Environmental Works

- Continue operation of on-site surface water treatment plant.
- Removal of all waste and effluent from site on an as needs basis.
- Inspect, repair (when required) and recalibrate all in situ monitoring equipment.
- Monitor/sample and download water (surface and ground) quality monitoring devices.

Environmental Improvements

- Further training undertaken with Emergency Spill Response Team. Exercises were undertaken to assess site procedures and identify areas of improvement.
- The Axonics plant underwent a major upgrade with a new mixing tank and clarifier installed.
- All site environmental monitoring locations were upgraded to provide improved access and working conditions.

Water Quality Monitoring Graphs

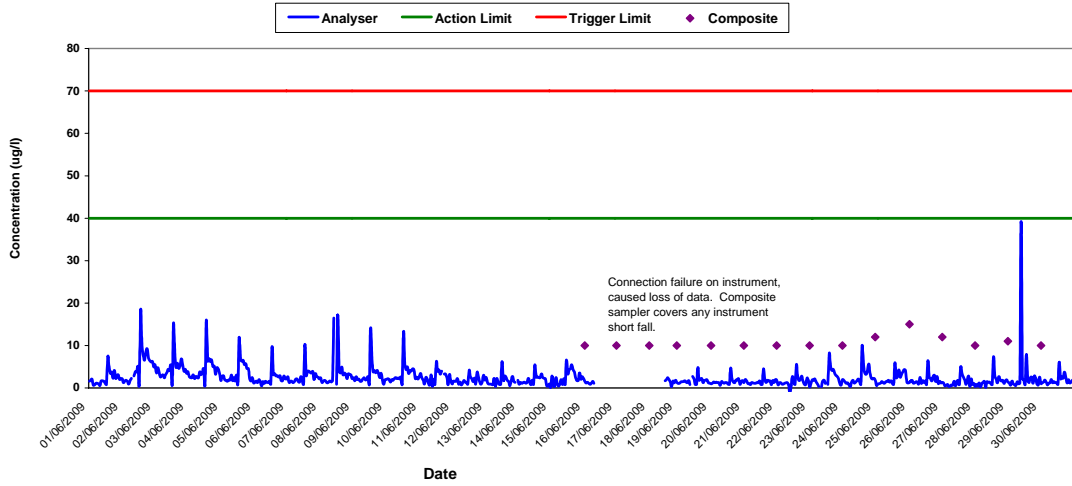
Graphs are attached for monthly continuous monitoring data at SP1 during June, July, and August for total suspended solids, turbidity, and orthophosphate. Please see commentary below for each graph.

Total Suspended Solids: Over the period of the three months, the short terms peaks correlate with periods of heavy rainfall.

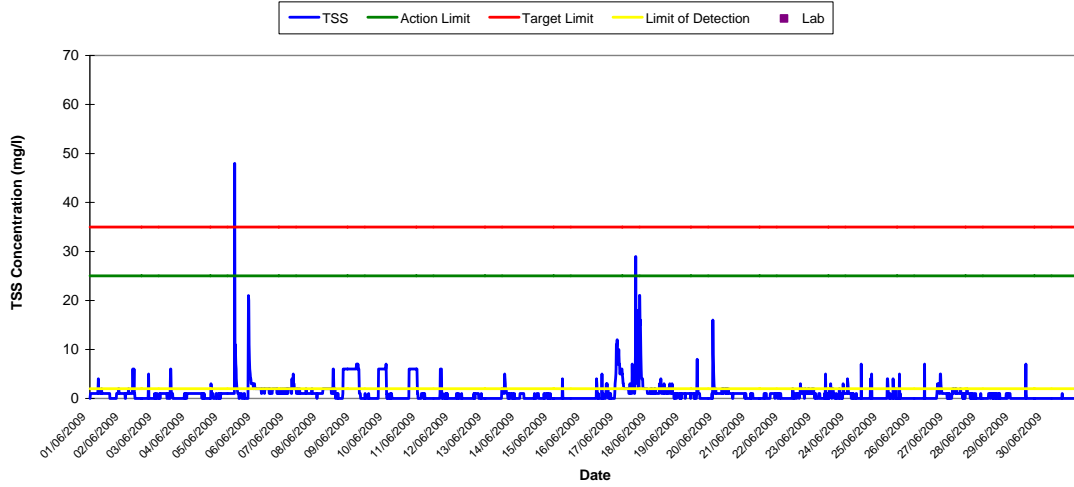
Turbidity: The graph showed a series of short term spikes over the two months however on site testing showed negligible values on these days indicating that the spikes were due to fluctuations in flow rates and material lodging in the probe. The on site testing data is therefore presented within the graphs.

Orthophosphate: The results yielded were all within the limits for discharge.

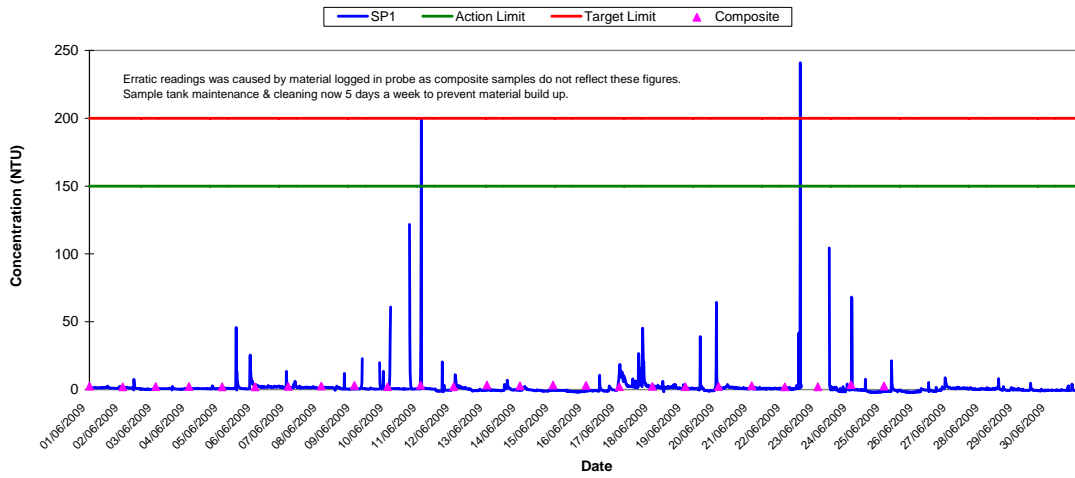
Orthophosphate Results at SP1 June 2009



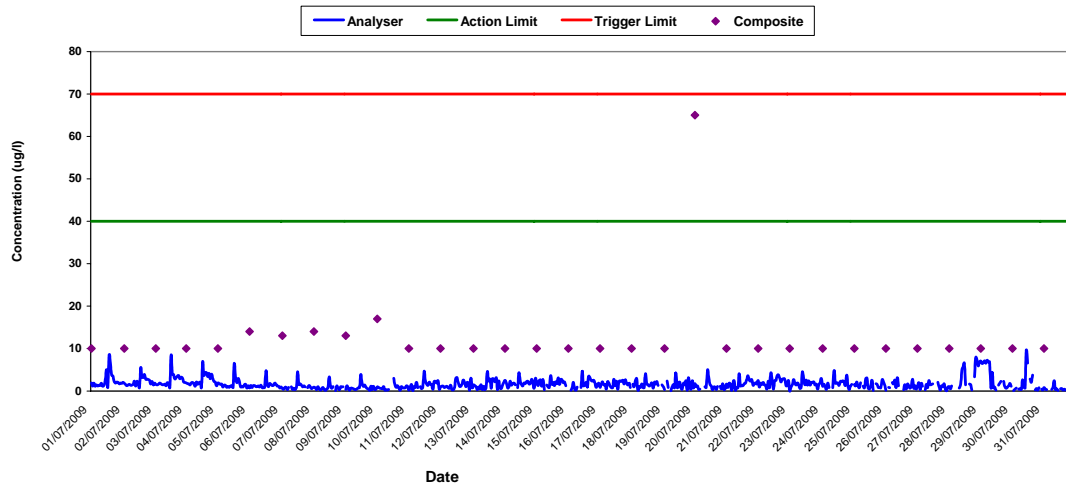
Total Suspended Solids Results at SP1 June 2009



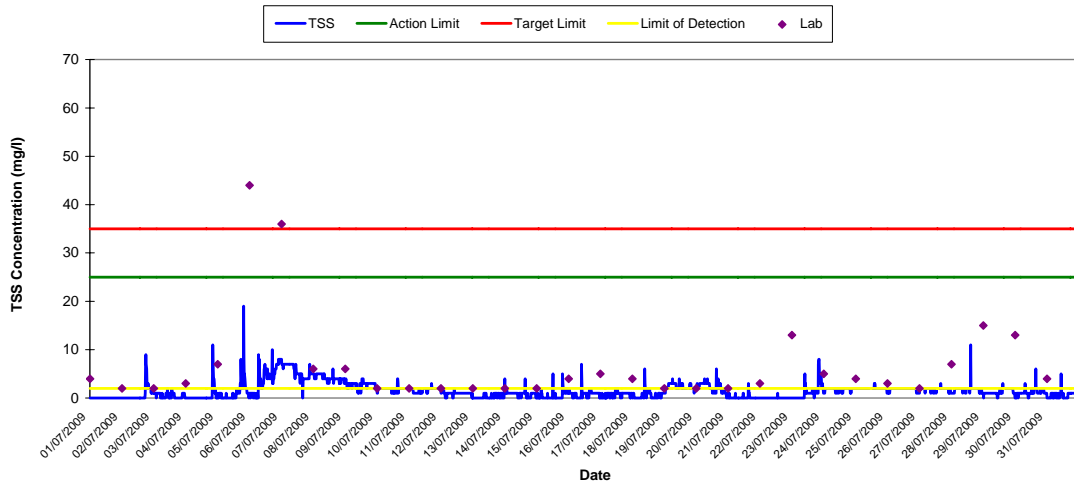
Turbidity Results at SP1 June 2009



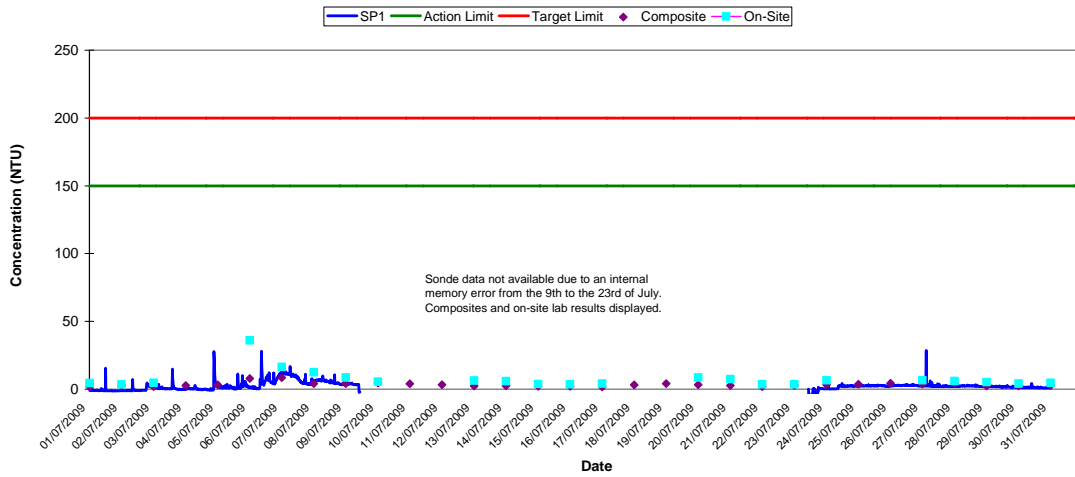
Orthophosphate Results at SP1 July 2009



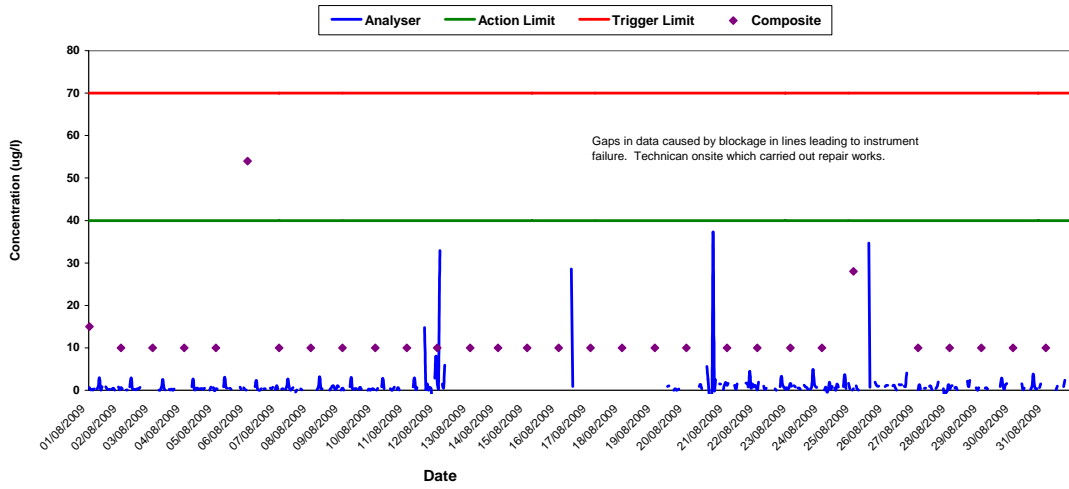
**Total Suspended Solids Results at SP1
July 2009**



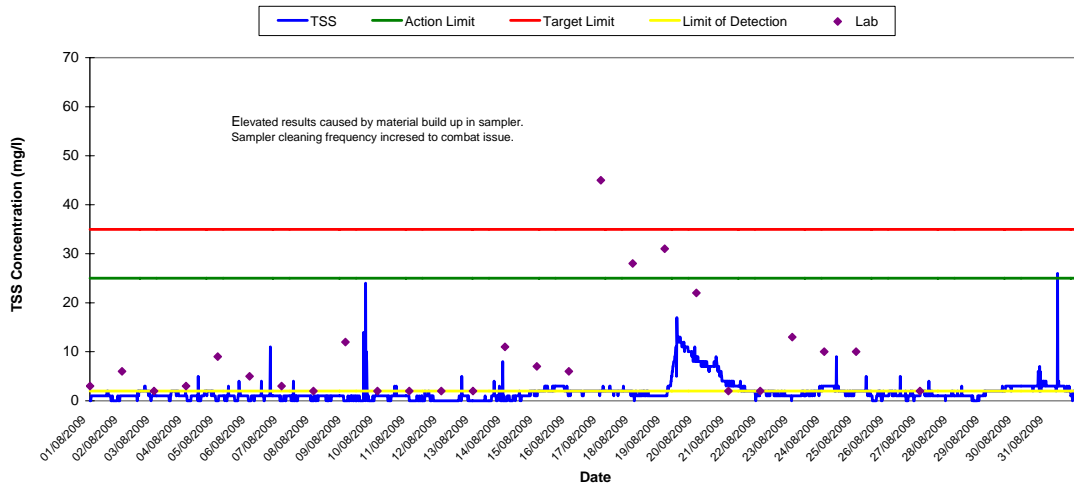
**Turbidity Results at SP1
July 2009**



Orthophosphate Results at SP1 August 2009



Total Suspended Solids Results at SP1 August 2009



Turbidity Results at SP1
August 2009

