

CORRIB GAS DEVELOPMENT

Report for PMC Meeting dated 5th December 2008.

**Prepared by Mr. Kieran Lynn, A/Senior Engineer,
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.

Environmental Issues at the Bellanaboy Site

- Construction work at the terminal site is ongoing.
- 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.
- During the last two months the site experienced significant rainfall which resulted in some exceedances in water quality parameters. As outlined above, these exceedances have had no significant impact on the water quality of the Bellanaboy River and Carrowmore Lake.
- Agreement has been reached regarding work outside normal hours, 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

- **Attavally** – (Budget €60,000). Project complete.
- **Bellanaboy Community Group Scheme** – (Budget €145,000)
Project complete.
- **The Glencullen River Scheme** – (Budget €100,000)
Project complete.
- **The Bangor Angling Scheme** – (Budget €185,000). Planning permission has been granted for a floating pontoon, access channel and 20 car parking spaces at Carrowmore Lake for 24 lake boats. It is intended to commence this project in January 2009.
- **Bellanaboy Village Scheme** – It is proposed to provide new footpaths and public lighting from Terminal gate to Bellanaboy Bridge on R314, length 1.32 Km. The estimate to carry out these works is €400,000, and this has been sent as an application for funding.

Transportation/Roads

- Deliveries of heavy/long loads are continuing.

CARROWMORE LAKE
Results from 2/10/2008 to 11/11/2008 (7 Samples)
Analysis by Bord na Mona Laboratory Newbridge, Co. Kildare

Parameter	Units	Average	Max	Min
Suspended Solids	mg/l	7	20	5
Turbidity	N.T.U	5	7	3
pH	pH units	7.5	7.8	7.1
Conductivity	uS/cm	142	191	121
Phosphate	mg/l P	<0.01	<0.01	<0.01
Total Phosphorous	mg/l P	0.06	0.12	<0.05
Ammonia	mg/l NH ₃ -N	0.15	0.89	<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	132	312	61

ERRIS REGIONAL WATERWORKS (Final Treated Water)
Results from 4/10/2008 to 3/12/2008 (61 Samples)
Analysis carried out at Erris Regional Waterworks

Parameter	Units	Average	Max	Min	Drinking Water Limits
Colour	mg/l	3	10	0	<10 Haz
Turbidity	N.T.U	0.21	0.58	0.03	<2.0 NTU
Ph	pH units	7.2	8.3	6.7	6.5 - 8.5
Free Chlo/Res	mg/l	0.81	1.10	0.41	>0.3
Total Chlo/Res	mg/l	0.96	1.27	0.51	>0.3
Flourine	ppm	0.77	0.96	0.64	0.6-0.8
Total Aluminium	ug/l	26	88	10	200

BELLANABOY RIVER
 (Upstream and Downstream of discharge from Terminal site)
 Results from 2/10/2008 to 11/11/2008 (7 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	8.7	12.1	6.8	8.8	12.1	7
Dissolved Oxygen	% Sat.	90	97	81	93	110	84
Suspended Solids	mg/l	5	5	5	5	6	5
Turbidity	N.T.U	2	5	2	3	5	2
pH	pH units	6.9	7.5	6.5	6.8	7.5	6
Conductivity Total	uS/cm	133	233	94	141	231	101
Dissolved Solids	mg/l	116	152	84	116	144	80
Phosphate Total	mg/l P	0.02	0.04	0.02	0.02	0.04	0.02
Phosphorus	mg/l P	<0.05	0.08	<0.05	0.06	0.16	<0.05
Ammonia	mg/l NH ₃ -N	0.03	0.05	0.02	0.02	0.06	0.02
Nitrate	mg/l NO ₃ -N	<0.2	<0.2	<0.2	<0.2	<0.2	<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	115	225	61	130	275	84

SP1 (Discharge point from terminal site)
 Results from to 2/10/2008 to 11/11/2008 (7 Samples)
 Analysis by Bord na Mona Laboratory Newbridge, Co. Kildare

Parameter	Units	SP 1		
		Average	Max	Min
Suspended Solids	mg/l	5	7	5
Turbidity	N.T.U	8	14	4
pH	pH units	7.5	7.8	7.4
Conductivity	uS/cm	270	343	229
Total Dissolved Solids	mg/l	185	206	160
Phosphate	mg/l P	<0.01	<0.01	<0.01
Total Phosphorus	mg/l P	<0.05	0.1	<0.05
Ammonia	mg/l NH ₃ -N	<0.02	<0.02	<0.02
Nitrate	mg/l NO ₃ -N	<0.2	0.51	<0.2
Nitrite	mg/l NO ₂ -N	<0.02	<0.02	<0.02
Total Aluminium	ug/l Al	378	591	128

Axonics Water Treatment Units (Post-treatment Results)
 Results from to 2/10/2008 to 11/11/2008 (7 Samples)
 Analysis by Bord na Mona Laboratory Newbridge, Co. Kildare

Parameter	Units	Post-Treatment (7 Samples)		
		Average	Max	Min
Suspended Solids	mg/l	5	7	5
Turbidity	N.T.U	4	9	1
pH	pH units	6.9	7.3	6.7
Conductivity	uS/cm	354	375	316
Total Dissolved Solids	mg/l	210	220	186
Phosphate	mg/l P	<0.01	<0.01	<0.01
Total Phosphorus	mg/l P	<0.05	0.06	<0.05
Ammonia	mg/l NH ₃ -N	0.09	0.16	0.02
Nitrate	mg/l NO ₃ -N	0.28	0.33	<0.2
Nitrite	mg/l NO ₂ -N	<0.02	<0.02	<0.02
*Total Aluminium	ug/l Al	272	523	58

Bellanaboy Bridge Site

Report to the Project Monitoring Committee

10th December 2008

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
- Piping installation on pipe racks, on sleeperways and below ground.
- Building works.
- Electrical works including cable rack installation and cable installation.
- Process equipment deliveries and installation.
- Tankage grit blasting and painting.
- Testing of pipe work

Outlook from January 2009 Onwards:

- Continuation of environmental monitoring and Axonics operation.
- Continuation of civil and foundation works
- Continuation of structural steel erection.
- Continuation of electrical works
- Continuation of scaffolding erection
- Continuation of piping installation
- Continue building works
- Continued testing of pipe work.
- Continuation of installation of process equipment.
- Continuation of tankage grit blasting and painting.

ENVIRONMENTAL REPORT

Dust - Dust results of 233, 186, 155 and 208 mg/m²/day were recorded at D1, D2, D3 and D4 respectively for October.

Dust results of 174, 167, 171 and 180mg/ m²/day were recorded at D1, D2, D3 and D4 respectively for November. 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 409 construction HGV movements during October and 294 during November.

Fuel – Approximately 299.96m³ of fuel was delivered to site in October and November.

Waste – 10 skips of refuse (Canteen waste, etc.), 4 skips of cardboard/plastics, and 4 skip of metal waste were removed off site during October and November. The effluent holding tanks were emptied of approximately 1,627.2 m³ during October and November. There were 4 hazardous waste collections for the removal of oily waste and chemical waste for the same period.

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

pH (pH Units)

6.6 to 7.8

Suspended Solids (mg/l)

2 to 3

Orthophosphate (µg/l P)

10 to 48

Nitrate (mg/l NO₃)

0.017 to 0.036

Conductivity (µS/cm)

218 to 304

Turbidity (NTU)

3.6 to 12.0

Groundwater samples were taken and borehole monitoring equipment was downloaded for October and November. A summary of the main groundwater parameters measured (range of lowest to highest) follows:

pH (pH Units)

5.1 to 6.0

Conductivity (µS/cm)

163 to 478

Nitrate (mg/l NO₃)

<0.44

Total Dissolved Solids (mg/l)

75 to 215

Complaints – There were no construction activity related complaints logged with SEPIL during the months of October and November.

Incidents – There were no environmental incidents during the month of October and November.

Exceedances – There were four total aluminium exceedances during October and November. The exceedances were generally marginal and were short lived with values recovering to below the limit in a timely manner. Please see details below (exceedances are shaded in yellow):

Date	Total Aluminium (µg/l)
07/10/2008	362
16/10/2008	201
21/10/2008	150
28/10/2008	248
06/11/2008	67
11/11/2008	229
18/11/2008	184
27/11/2008	190

On investigation the exceedances were found to be attributed to heavy, persistent rainfall events.

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.

Water Quality Monitoring Graphs

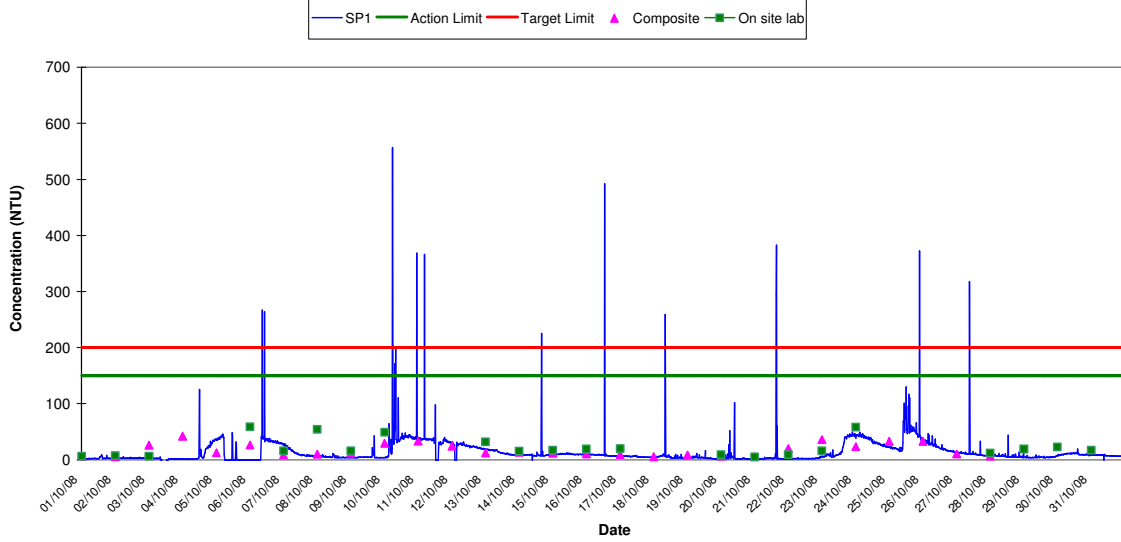
Graphs are attached for monthly continuous monitoring data at SP1 during October and November for total suspended solids, turbidity, and orthophosphate. Please see commentary below for each graph.

Total Suspended Solids: The graph shows a number of short term spikes during October and November. These were mainly attributed to rainfall events or material becoming temporarily lodged on the measurement probe. On the 22nd of November there were elevated TSS readings over an 18hr period. The TSS meter was inspected and it was observed that material had lodged in the probe. This was verified by the composite sample readings obtained during that period.

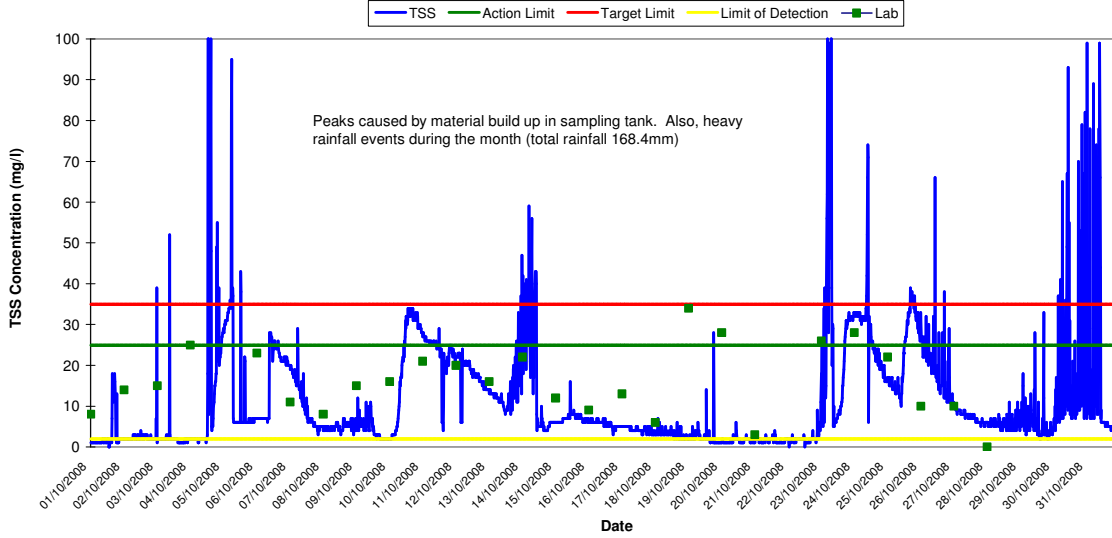
Turbidity: The graph showed a series of temporary short term spikes over the two months. On site testing shows negligible values on these days indicating that the spikes are due to fluctuations in flow rates and material lodging in the probe.

Orthophosphate: The graphs shows a spike during the month of October and November which was, on investigation, found to be a false reading due to a technical error with the instrument. The instrument specialist later rectified the problem as shown in the graphs.

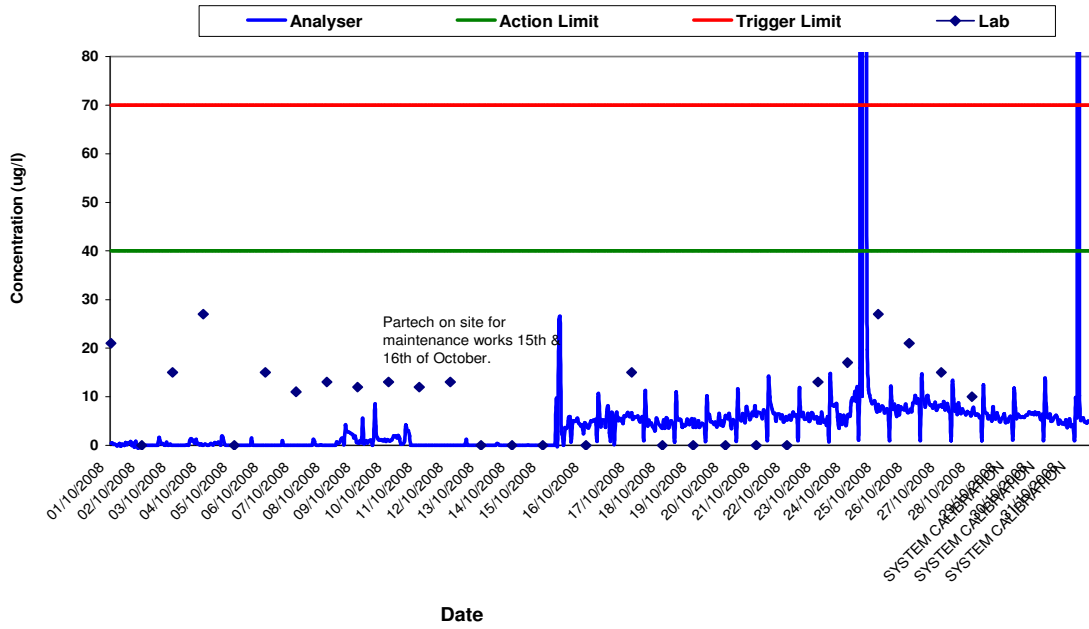
**Turbidity Results at SP1
October 2008**



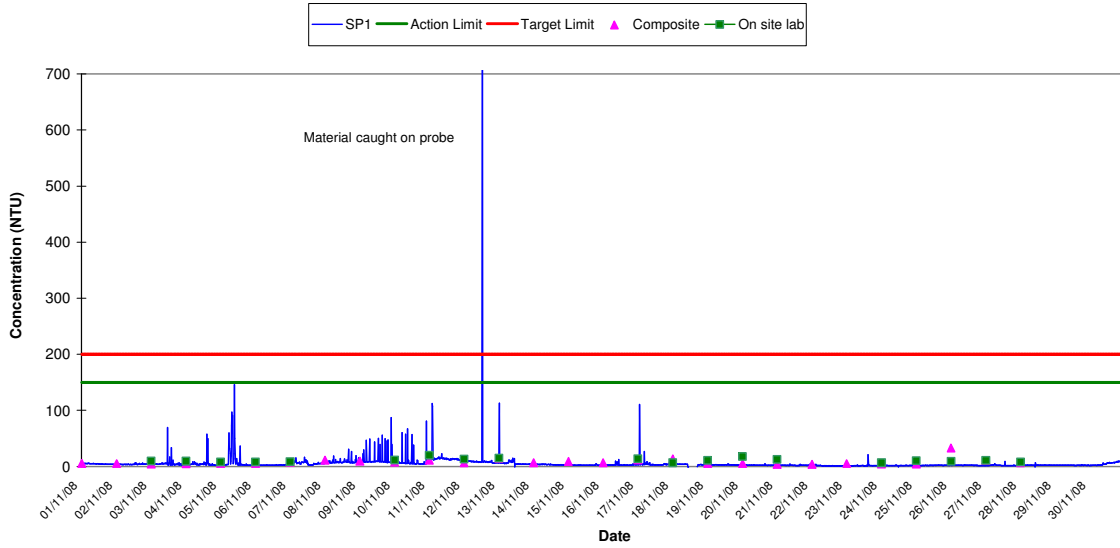
**Total Suspended Solids Results at SP1
October 2008**



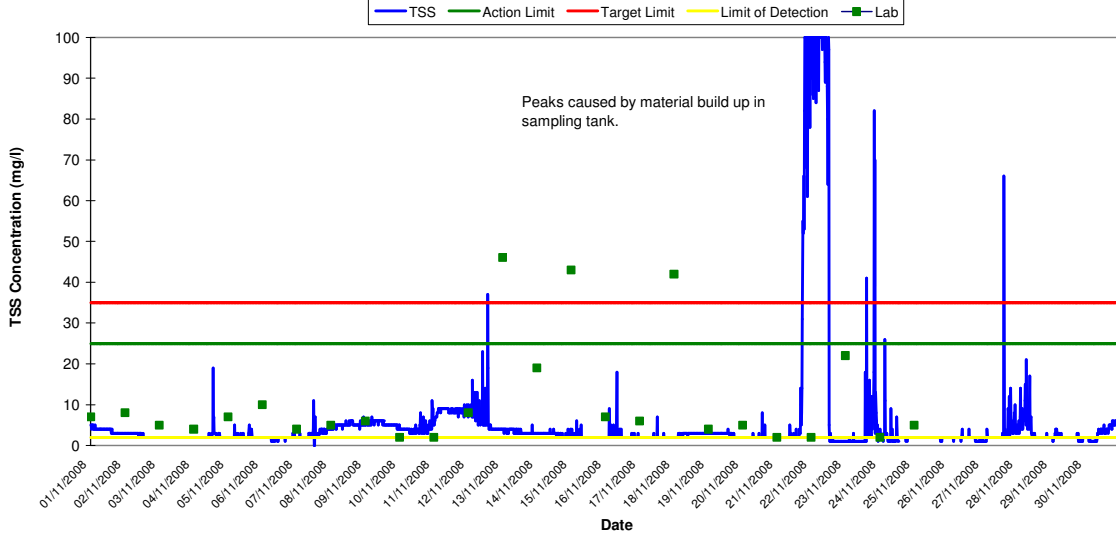
Orthophosphate Results at SP1 October 2008



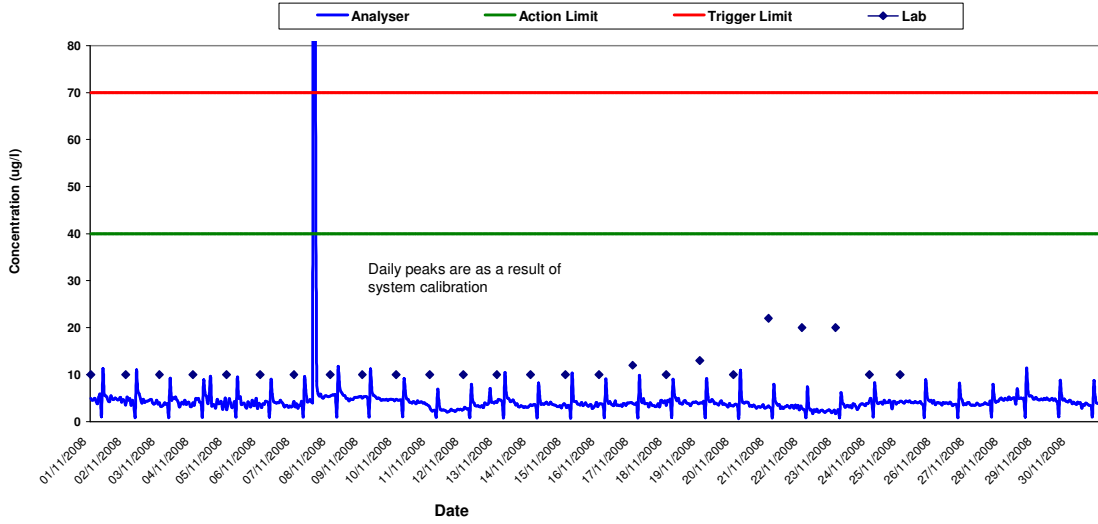
Turbidity Results at SP1 November 2008



**Total Suspended Solids Results at SP1
November 2008**



**Orthophosphate Results at SP1
November 2008**



Srahmore Peat Repository
WL 0199-01

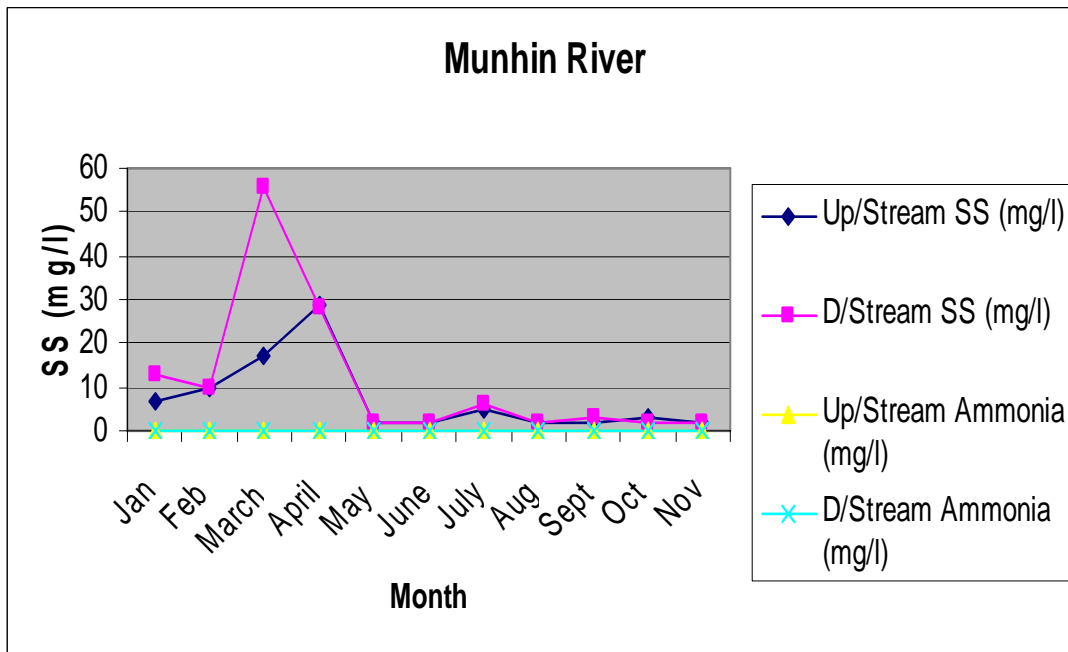
Environmental Management System Up-Date No. 36(08/12/08)

Decommissioning and Rehabilitation

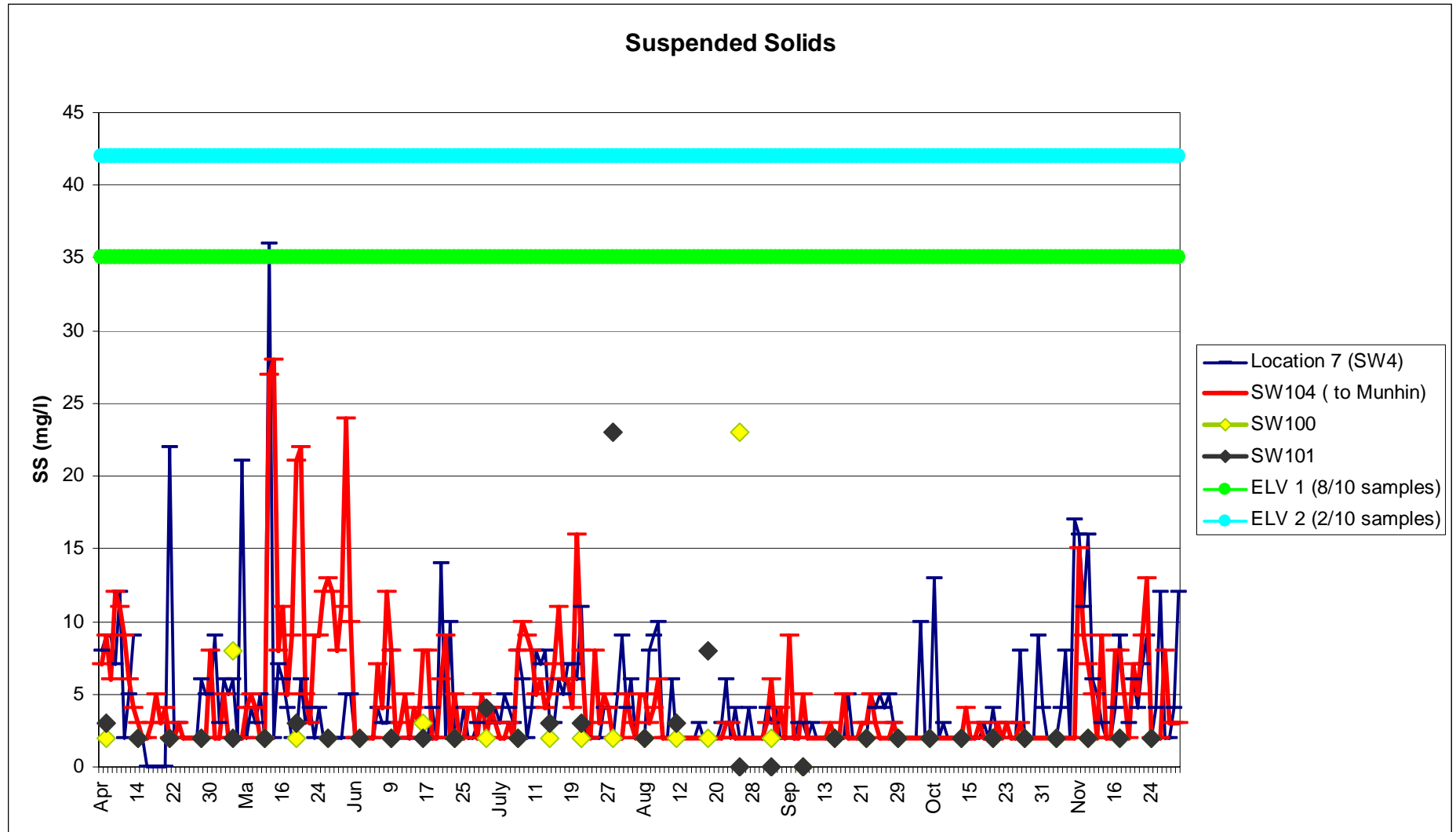
Environmental Monitoring:

- There were No non-compliances at the site since the last meeting
- There were No complaints received at the site since the last meeting.
- There were No incidents recorded at the site since the last meeting.

Results: Munhin River (2008)



Results: SW4/104/100&101 (2008)



The average SS mg/l for SW4 for 2008 to-date has been 6.16 mg/l and 4.88 mg/l at the discharge from the site to the Munhin at SW104.

Srahmore Site Update:

Personnel:

On Site

		Tractor & General Oper.	1	Environmental	0
BnM (Engineering)	0	Fitters	0	Archaeological	0
Site Admin & Mgt.	1	Electricians	0		
		Site Supervisors	0		
		Excavator & Shovel	0		
TOTAL EMPLOYED					2

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					5
-------------------------------	--	--	--	--	----------

On-going work:

Environmental monitoring as per waste licence WL 0199-01

As of the 30th of November, the Srahmore site is Compliant.