



## Eraring Power Station - EPA Licence 1429

Rocky Point Rd, Morriset NSW 2264

## Coal Unloader - EPA Licence 4297

Eraring Coal Delivery Facility, Construction Rd, Dora Creek NSW 2264

## Environmental Monitoring Data

May 2014



## Unit 1 Boiler Continuous Emission Monitoring Summary

*EPA Identification no. 11 - Air emissions monitoring, Boiler 1 stack discharge to air*

- Unit one out of service - 6th - 12th due to a tube leak.

	NOX			Particulates			SOX		
	ppm (7% O2)			mg/m3			ppm (7% O2)		
	Daily Ave	Max Hourly	Min Hourly	Daily Ave	Max Hourly	Min Hourly	Daily Ave	Max Hourly	Min Hourly
1 - May	176	191	159	18	22	16	223	248	207
2 - May	182	198	165	18	22	15	232	259	210
3 - May	199	219	157	19	24	14	225	269	193
4 - May	195	230	176	20	26	17	230	264	199
5 - May	176	192	156	20	29	11	209	234	191
6 - May	0	0	0	0	0	0	0	0	0
7 - May	0	0	0	0	0	0	0	0	0
8 - May	0	0	0	0	0	0	0	0	0
9 - May	0	0	0	0	0	0	0	0	0
10 - May	0	0	0	0	0	0	0	0	0
11 - May	0	0	0	0	0	0	0	0	0
12 - May	0	0	0	0	0	0	0	0	0
13 - May	183	248	154	16	25	10	197	217	177
14 - May	158	169	141	21	31	16	230	261	197
15 - May	169	194	147	22	32	17	219	237	206
16 - May	177	195	143	24	31	19	221	238	202
17 - May	185	223	163	17	32	7	210	227	183
18 - May	199	227	176	14	22	9	185	191	171
19 - May	230	258	188	12	19	8	182	188	174
20 - May	200	231	175	10	17	7	200	216	177
21 - May	180	210	156	10	12	7	224	239	197
22 - May	176	197	139	11	19	6	204	225	178
23 - May	212	242	176	11	18	7	231	292	201
24 - May	227	269	168	9	15	6	219	256	186
25 - May	241	272	200	10	13	6	194	228	170
26 - May	234	266	199	11	18	8	235	266	185
27 - May	207	231	177	9	15	6	229	245	203
28 - May	196	227	168	8	14	4	228	252	204
29 - May	216	245	181	13	18	9	257	294	221
30 - May	195	241	169	13	18	10	237	272	209
31 - May	193	205	160	11	18	6	193	221	173

## Unit 2 Boiler Continuous Emission Monitoring Summary

*EPA Identification no. 12 - Air emissions monitoring, Boiler 2 stack discharge to air*

- Unit one out of service - 24th - 30th due to a tube leak.

	NOX			Particulates			SOX		
	ppm (7% O <sub>2</sub> )			mg/m <sup>3</sup>			ppm (7% O <sub>2</sub> )		
	Daily Ave	Max Hourly	Min Hourly	Daily Ave	Max Hourly	Min Hourly	Daily Ave	Max Hourly	Min Hourly
1 - May	185	207	118	18	20	14	246	262	215
2 - May	170	203	142	18	20	15	257	284	219
3 - May	183	213	152	18	21	14	243	270	212
4 - May	187	222	156	18	21	15	224	275	189
5 - May	171	194	143	19	22	16	233	252	208
6 - May	155	168	132	21	24	18	246	274	223
7 - May	156	175	138	20	24	16	227	253	199
8 - May	146	161	131	21	23	18	235	253	204
9 - May	143	168	118	22	26	18	236	250	222
10 - May	150	183	126	20	25	16	244	267	198
11 - May	146	182	104	19	25	14	216	250	188
12 - May	164	180	144	21	24	18	226	278	176
13 - May	170	185	149	21	25	19	199	220	181
14 - May	149	163	135	21	25	19	220	245	199
15 - May	151	172	109	21	27	18	218	238	202
16 - May	157	170	145	21	26	17	229	243	211
17 - May	153	175	122	17	20	14	211	231	187
18 - May	217	254	180	11	15	8	182	194	154
19 - May	235	300	127	17	20	13	208	230	186
20 - May	209	287	194	17	21	13	227	258	189
21 - May	203	231	180	17	23	15	242	258	229
22 - May	168	194	131	17	20	14	210	252	166
23 - May	177	197	142	15	19	12	251	281	217
24 - May	0	0	0	0	0	0	0	0	0
25 - May	0	0	0	0	0	0	0	0	0
26 - May	0	0	0	0	0	0	0	0	0
27 - May	0	0	0	0	0	0	0	0	0
28 - May	0	0	0	0	0	0	0	0	0
29 - May	0	0	0	0	0	0	0	0	0
30 - May	0	0	0	0	0	0	0	0	0
31 - May	150	195	140	14	20	13	213	227	203

## Unit 3 Boiler Continuous Emission Monitoring Summary

*EPA Identification no. 13 - Air emissions monitoring, Boiler 3 stack discharge to air*

- Unit Nox and Sox out of service 8th - 10th due to pump failure.

Unit taken out of service 22nd - 31st due to ash build up.

	NOX			Particulates			SOX		
	ppm (7% O2)			mg/m3			ppm (7% O2)		
	Daily Ave	Max Hourly	Min Hourly	Daily Ave	Max Hourly	Min Hourly	Daily Ave	Max Hourly	Min Hourly
1 - May	199	213	176	12	17	9	239	256	182
2 - May	197	217	153	11	15	8	236	264	171
3 - May	214	238	182	11	14	10	231	253	193
4 - May	220	247	173	11	15	8	226	271	161
5 - May	226	241	192	12	17	10	219	244	175
6 - May	210	233	172	13	17	10	247	288	162
7 - May	211	234	181	12	15	10	225	264	193
8 - May	0	0	0	12	15	10	222	271	145
9 - May	0	0	0	11	14	10	0	0	0
10 - May	0	0	0	11	15	9	0	0	0
11 - May	218	233	198	10	14	8	159	188	137
12 - May	216	244	113	10	13	8	222	276	162
13 - May	202	227	176	10	13	9	201	220	166
14 - May	192	206	169	10	14	9	214	238	164
15 - May	197	212	150	12	17	9	209	223	180
16 - May	192	209	176	11	14	9	219	241	170
17 - May	196	214	169	11	15	8	206	223	165
18 - May	217	254	180	11	15	8	182	194	154
19 - May	236	263	183	10	14	7	175	189	150
20 - May	210	240	169	10	14	6	190	204	160
21 - May	166	203	143	9	14	7	193	211	141
22 - May	0	0	0	0	0	0	0	0	0
23 - May	0	0	0	0	0	0	0	0	0
24 - May	0	0	0	0	0	0	0	0	0
25 - May	0	0	0	0	0	0	0	0	0
26 - May	0	0	0	0	0	0	0	0	0
27 - May	0	0	0	0	0	0	0	0	0
28 - May	0	0	0	0	0	0	0	0	0
29 - May	0	0	0	0	0	0	0	0	0
30 - May	0	0	0	0	0	0	0	0	0
31 - May	0	0	0	0	0	0	0	0	0

## Unit 4 Boiler Continuous Emission Monitoring Summary

*EPA Identification no. 14 - Air emissions monitoring, Boiler 4 stack discharge to air*

- Unit 4 out of service for scheduled maintenance - 1st - 8th.

Unit 4 Nox and Sox out of service 9th - 11th due to power failure on instruments during return to service.

	NOX			Particulates			SOX		
	ppm (7% O2)			mg/m3			ppm (7% O2)		
	Daily Ave	Max Hourly	Min Hourly	Daily Ave	Max Hourly	Min Hourly	Daily Ave	Max Hourly	Min Hourly
1 - May	0	0	0	0	0	0	0	0	0
2 - May	0	0	0	0	0	0	0	0	0
3 - May	0	0	0	0	0	0	0	0	0
4 - May	0	0	0	0	0	0	0	0	0
5 - May	0	0	0	0	0	0	0	0	0
6 - May	0	0	0	0	0	0	0	0	0
7 - May	0	0	0	0	0	0	0	0	0
8 - May	0	0	0	0	0	0	0	0	0
9 - May	0	0	0	7	11	5	0	0	0
10 - May	0	0	0	10	13	7	0	0	0
11 - May	195	215	112	7	18	4	0	0	0
12 - May	189	212	172	8	9	6	226	260	190
13 - May	201	220	182	8	11	6	196	217	182
14 - May	198	217	181	7	14	5	219	257	189
15 - May	187	200	170	7	10	5	221	239	199
16 - May	183	204	161	7	10	5	220	236	202
17 - May	192	218	164	7	12	5	202	223	180
18 - May	204	227	161	7	10	5	181	194	172
19 - May	216	236	184	9	14	5	183	196	172
20 - May	206	223	161	10	14	6	182	192	165
21 - May	205	218	180	6	9	5	206	226	188
22 - May	202	224	164	7	10	5	207	240	187
23 - May	208	233	163	7	10	5	246	271	222
24 - May	215	249	156	6	9	5	216	263	178
25 - May	227	267	202	7	10	6	191	220	171
26 - May	229	254	200	7	10	5	226	290	177
27 - May	197	217	151	6	10	6	229	270	201
28 - May	185	200	145	6	9	5	232	257	205
29 - May	193	222	154	7	10	6	259	282	238
30 - May	208	239	176	7	10	6	234	266	206
31 - May	240	273	188	7	10	7	200	214	181

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## Unit 1 Boiler Emission Test Results

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*EPA Identification no. 11 - Air emissions monitoring, Boiler 1 stack discharge to air*

<u>Name</u>	<u>Reading</u>	<u>Units</u>	<u>Licence Limit</u>	<u>Date</u>
Cadmium	0.0012	mg/m3	0.20	23/02/2014
Carbon Dioxide (Wet)	10.2	%	-	23/02/2014
Carbon Monoxide	2.9	mg/m3	-	23/02/2014
Chlorine	0.020	mg/m3	300	23/02/2014
Copper	0.0013	mg/m3	-	23/02/2014
Dry Gas Density	0.93	kg/m3	-	23/02/2014
Fluoride As HF - Total	6.4	mg/m3	50	23/02/2014
Hazardous Substances (Metals) - Total	0.07	mg/m3	1.00	23/02/2014
Hydrogen Chloride	3.1	mg/m3	100.0	23/02/2014
Mercury	0.0011	mg/m3	0.200	23/02/2014
Moisture	7.1	%	-	23/02/2014
Particulates - Total	7.3	mg/m3	50	23/02/2014
Stack Gas Molecular Weight	29	kg/k-mole	-	23/02/2014
Temperature	109.0	degC	-	23/02/2014
Velocity	11.8	m/sec	-	23/02/2014
Volatile Organic Compounds (VOC) - Total	4.7	mg/m3	-	23/02/2014
Volumetric Flow Rate (Dry At STP)	283	m3/sec	-	23/02/2014



## Unit 2 Boiler Emission Test Results

*EPA Identification no. 12 - Air emissions monitoring, Boiler 2 stack discharge to air*

<u>Name</u>	<u>Reading</u>	<u>Units</u>	<u>Licence Limit</u>	<u>Date</u>
Cadmium	0.0011	mg/m3	0.20	06/05/2013
Carbon Dioxide (Wet)	10.4	%	-	06/05/2013
Carbon Monoxide	0.90	mg/m3	-	06/05/2013
Chlorine	0.28	mg/m3	300	06/05/2013
Copper	0.0011	mg/m3	-	06/05/2013
Dry Gas Density	0.93	kg/m3	-	06/05/2013
Fluoride As HF - Total	6.4	mg/m3	50	06/05/2013
Hazardous Substances (Metals) - Total	0.025	mg/m3	1.00	06/05/2013
Hydrogen Chloride	3.2	mg/m3	100.0	06/05/2013
Mercury	0.0022	mg/m3	0.200	06/05/2013
Moisture	7.5	%	-	06/05/2013
Particulates - Total	3.8	mg/m3	50	06/05/2013
Stack Gas Molecular Weight	29	kg/k-mole	-	06/05/2013
Temperature	108.0	degC	-	06/05/2013
Velocity	12.2	m/sec	-	06/05/2013
Volatile Organic Compounds (VOC) - Total	5.4	mg/m3	-	06/05/2013
Volumetric Flow Rate (Dry At STP)	293	m3/sec	-	06/05/2013

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## Unit 3 Boiler Emission Test Results

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*EPA Identification no. 13 - Air emissions monitoring, Boiler 3 stack discharge to air*

<u>Name</u>	<u>Reading</u>	<u>Units</u>	<u>Licence Limit</u>	<u>Date</u>
Cadmium	0.0011	mg/m3	0.20	05/08/2013
Carbon Dioxide (Wet)	10.3	%	-	05/08/2013
Carbon Monoxide	9.9	mg/m3	-	05/08/2013
Chlorine	0.30	mg/m3	200	05/08/2013
Copper	0.0011	mg/m3	-	05/08/2013
Dry Gas Density	0.94	kg/m3	-	05/08/2013
Fluoride As HF - Total	9.6	mg/m3	50	05/08/2013
Hazardous Substances (Metals) - Total	0.06	mg/m3	1.00	05/08/2013
Hydrogen Chloride	4.1	mg/m3	100.0	05/08/2013
Mercury	0.0007	mg/m3	0.200	05/08/2013
Moisture	6.7	%	-	05/08/2013
Particulates - Total	15.0	mg/m3	50	05/08/2013
Stack Gas Molecular Weight	29	kg/k-mole	-	05/08/2013
Temperature	103.0	degC	-	05/08/2013
Velocity	11.1	m/sec	-	05/08/2013
Volatile Organic Compounds (VOC) - Total	5.7	mg/m3	-	05/08/2013
Volumetric Flow Rate (Dry At STP)	270	m3/sec	-	05/08/2013



## Unit 4 Boiler Emission Test Results

*EPA Identification no. 14 - Air emissions monitoring, Boiler 4 stack discharge to air*

<u>Name</u>	<u>Reading</u>	<u>Units</u>	<u>Licence Limit</u>	<u>Date</u>
Cadmium	0.0010	mg/m3	0.20	13/10/2013
Carbon Dioxide (Wet)	9.4	%	-	13/10/2013
Carbon Monoxide	9.3	mg/m3	-	13/10/2013
Chlorine	0.040	mg/m3	200	13/10/2013
Copper	0.0010	mg/m3	-	13/10/2013
Dry Gas Density	0.94	kg/m3	-	13/10/2013
Fluoride As HF - Total	7.5	mg/m3	50	13/10/2013
Hazardous Substances (Metals) - Total	0.027	mg/m3	1.00	13/10/2013
Hydrogen Chloride	2.8	mg/m3	100.0	13/10/2013
Mercury	0.0022	mg/m3	0.200	13/10/2013
Moisture	6.5	%	-	13/10/2013
Particulates - Total	7.9	mg/m3	50	13/10/2013
Stack Gas Molecular Weight	29	kg/k-mole	-	13/10/2013
Temperature	104.0	degC	-	13/10/2013
Velocity	15.4	m/sec	-	13/10/2013
Volatile Organic Compounds (VOC) - Total	4.7	mg/m3	-	13/10/2013
Volumetric Flow Rate (Dry At STP)	375	m3/sec	-	13/10/2013

## Eraring Coal Unloader Dust Gauges

*EPA Identification no. 18 - Depositional dust monitoring within 1 km of the coal handling operations*

	Deposited Matter		
	g/m2/month		
	Ash	Combustible	Insolubles
<b>U1</b>	0.40	0.30	0.70
<b>U2</b>	0.20	0.20	0.40
<b>U3</b>	0.30	0.30	0.60
<b>U4</b>	3.30	1.80	5.10
<b>U5</b>	0.30	0.30	0.60
<b>U6</b>	1.30	0.80	2.10

## Eraring Due Diligence Dust Gauges

*EPA Identification no. 18 - Depositional dust monitoring within 1 km of the coal handling operations*

	Deposited Matter		
	g/m2/month		
	Ash	Combustible	Insolubles
<b>E1</b>	0.30	0.20	0.50
<b>E2</b>	0.30	0.10	0.40
<b>E3</b>	0.60	0.40	1.00
<b>E4</b>	0.30	0.30	0.60
<b>E5</b>	0.10	0.20	0.30
<b>E6</b>	0.10	0.20	0.30

## Water Quality - Lake Monitoring LM10

*EPA Identification no. 4 - The waters of Lake Macquarie located midway between cooling water inlet and Hungary Point*

	Temp	pH	Salinity	Dissolved Oxygen		Secchi
	degC		ppt	%	mg/L	m
Depth/Air	22.00					
010cm	21.61	8.25	35.03	86.40	6.19	3.00
050cm	21.60	8.25	35.03	86.40	6.19	
100cm	21.54	8.26	35.04	86.50	6.20	
150cm	21.51	8.28	35.08	86.50	6.20	
200cm	21.54	8.26	35.16	84.00	6.02	
250cm	21.56	8.26	35.17	83.50	5.98	
300cm	21.50	8.26	35.15	84.10	6.03	
Bottom	21.50	8.26	35.15	85.10	6.10	

## Water Quality - Lake Monitoring LM12

*EPA Identification no. 6 - The waters of Lake Macquarie located at the Eraring/Vales Point mixing zone off Fishery Point*

	Temp	pH	Salinity	Dissolved Oxygen		Secchi
	degC		ppt	%	mg/L	m
Depth/Air	24.20					
010cm	21.82	8.34	34.03	104.80	7.53	3.50
050cm	21.82	8.34	34.03	104.50	7.50	
100cm	21.81	8.34	34.03	104.50	7.50	
150cm	21.81	8.33	34.03	104.60	7.51	
200cm	21.78	8.33	34.05	104.70	7.52	
250cm	21.70	8.32	34.12	104.20	7.49	
300cm	21.65	8.33	34.15	103.60	7.45	
350cm	21.53	8.33	34.27	102.70	7.40	
400cm	21.49	8.33	34.30	102.10	7.36	
450cm	21.47	8.33	34.33	102.60	7.40	
500cm	21.53	8.35	34.49	103.40	7.44	
550cm	21.57	8.33	34.84	101.80	7.28	
600cm	21.64	8.31	35.00	94.30	6.75	
650cm	21.66	8.27	35.22	89.80	6.42	
700cm	21.81	8.23	35.38	80.60	5.74	
750cm	21.81	8.23	35.38	73.40	5.23	
Bottom	21.81	8.23	35.38	73.40	5.23	

## Water Quality - Lake Monitoring LM4

*EPA Identification no. 7 - The northern waters of Lake Macquarie east off Lake Macquarie Yacht Club*

	Temp	pH	Salinity	Dissolved Oxygen		Secchi
	degC		ppt	%	mg/L	m
Depth/Air	20.10					
010cm	20.15	8.37	34.15	102.10	7.55	4.50
050cm	20.16	8.37	34.14	101.90	7.53	
100cm	20.16	8.37	34.16	102.00	7.54	
150cm	20.16	8.37	34.18	102.40	7.57	
200cm	20.16	8.37	34.19	102.00	7.54	
250cm	20.23	8.36	34.37	101.80	7.51	
300cm	20.28	8.36	34.41	101.10	7.45	
350cm	20.29	8.36	34.41	100.80	7.42	
400cm	20.53	8.35	34.66	100.00	7.32	
450cm	20.81	8.35	35.03	97.40	7.08	
500cm	20.92	8.34	35.04	96.10	6.97	
550cm	21.04	8.34	35.36	95.90	6.93	
600cm	21.20	8.34	35.62	94.90	6.82	
650cm	21.30	8.34	35.66	92.30	6.63	
700cm	21.31	8.34	35.68	91.00	6.53	
750cm	21.33	8.34	35.72	89.30	6.40	
800cm	21.39	8.34	35.81	88.30	6.32	
850cm	21.40	8.31	35.85	83.50	5.97	
900cm	21.41	8.30	35.90	82.50	5.90	
950cm	21.41	8.29	35.87	78.40	5.61	
Bottom	21.41	8.29	35.87	78.40	5.61	

## Water Quality - Lake Monitoring LM7

*EPA Identification no. 5 - The waters of Lake Macquarie located off old Wangi power station inlet point in Myuna Bay*

	Temp	pH	Salinity	Dissolved Oxygen		Secchi
	degC		ppt	%	mg/L	m
Depth/Air	25.90					
010cm	25.60	8.28	34.59	116.90	7.83	3.00
050cm	25.57	8.27	34.58	117.40	7.87	
100cm	24.98	8.29	34.55	118.40	8.02	
150cm	24.89	8.29	34.48	118.30	8.03	
200cm	24.60	8.30	32.86	119.10	8.20	
250cm	21.11	8.34	33.91	106.80	7.77	
300cm	20.58	8.35	34.07	103.30	7.58	
350cm	20.57	8.35	34.07	100.80	7.40	
400cm	20.64	8.35	34.31	100.20	7.34	
450cm	20.89	8.34	34.30	99.60	7.26	
500cm	22.07	8.24	35.39	83.80	5.94	
550cm	22.16	8.20	35.51	70.00	4.95	
Bottom	22.16	8.16	35.47	64.20	4.54	

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## Eraring Ash Dam Effluent Quality Monitoring

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*EPA Identification no. 10 - Discharge point below siphon pond weir at Ash Dam*

<u>Name</u>	<u>Reading</u>	<u>Units</u>	<u>Licence Limit</u>	<u>Date</u>
Cadmium	0.07	ug/L	-	02/05/2014
Copper	1.9	ug/L	-	02/05/2014
Iron	2.0	ug/L	-	02/05/2014
Lead	0.10	ug/L	-	02/05/2014
Manganese	24.2	ug/L	-	02/05/2014
Nitrite and Nitrate as N	289	ug/L	-	02/05/2014
Phosphorus Reactive as P - Total	284	ug/L	-	02/05/2014
Phosphorus as P - Total	445	ug/L	-	02/05/2014
Selenium	12.4	ug/L	-	02/05/2014
Suspended Solids (SS)	5.0	mg/L	-	02/05/2014
Zinc	4.0	ug/L	-	02/05/2014
pH	9.2	-	-	02/05/2014

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## Eraring Cooling Water Inlet Canal

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*EPA Identification no. 8 - Inlet canal of the cooling water intake from Lake Macquarie*

<u>Name</u>	<u>Reading</u>	<u>Units</u>	<u>Licence Limit</u>	<u>Date</u>
Copper	1.40	ug/L	-	02/05/2014
Iron	5.0	ug/L	-	02/05/2014
Selenium	1.00	ug/L	-	02/05/2014
Temperature - Average	19.3	deg C	-	May 2014
Temperature - Minimum	17.7	deg C	-	May 2014
Temperature - Maximum	21.7	deg C	-	May 2014

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## Eraring Cooling Water Outlet Canal

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*EPA Identification no. 1 - Cooling water outlet canal to Myuna Bay*

<u>Name</u>	<u>Reading</u>	<u>Units</u>	<u>Licence Limit</u>	<u>Date</u>
Copper	1.50	ug/L	5	02/05/2014
Iron	34.0	ug/L	300	02/05/2014
Selenium	1.00	ug/L	2	02/05/2014
Temperature - Average	27.1	deg C	35	May 2014
Temperature - Minimum	21.3	deg C	35	May 2014
Temperature - Maximum	31.8	deg C	35	May 2014
Maximum Daily Discharge from Ash Dam	17.6	ML	150000	May 2014
Monthly Discharge from Ash Dam	453	ML	-	May 2014

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## Emergency Discharge - Toe Drain Pond

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*EPA Identification no. 17 - Emergency discharge to toe drain collection pond*

<u>Name</u>	<u>Reading</u>	<u>Units</u>	<u>Licence Limit</u>	<u>Date</u>
Nitrite and Nitrate as N	24.0	ug/L	-	02/05/2014
Phosphorus as P - Total	62	ug/L	-	02/05/2014
pH	7.1	-	-	02/05/2014