



MACMAHON



Dredging and Dredge Spoil Placement Management Plan (DDSPMP)

Monthly Report #11 Revision 2

January 2014

Revision Date	Description	Originator	Reviewer	Approver
09 January 2014	Revision 0	J. Allaway.	B. McGuiness	B. Middleton
18 January 2014	Revision 1	J. Allaway	B. McGuiness	B. Middleton
12 May 2014	Revision 2	J. Allaway	B. Middleton	C. Pick

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1 ACRONYMS

CVA:	Conservation Volunteers Australia
DDSPMP:	Dredge and Dredge Spoil Placement Management Plan
DGT:	Diffusive Gradients in Thin-films
DLPE:	Department of Lands, Planning and Environment
DOI:	Department of Infrastructure
EAW:	East Arm Wharf
HSEQ:	Health Safety and Environment and Quality
LOR	Limit of Reporting
MSB:	Marine Supply Base
NRETAS:	Department of Natural Resources, Environment, the Arts and Sport (now Department of Lands, Planning and Environment)
NT EPA:	Northern Territory Environment Protection Authority
NTU:	Nephelometric Turbidity Unit
PASS:	Potential Acid Sulfate Soils
RL:	Reduced Level
SEWPaC:	Department of Sustainability, Environment, Water, Population and Communities
SSC:	Suspended Sediment Concentration
TAG:	Technical Advisory Group

2 SUMMARY

This document provides environmental monitoring data and assessment in accordance with the Darwin Marine Supply Base Project Construction Environmental Management Plan (C-NT-109-005) Revision 1 (CEMP) and the Dredge and Dredge Spoil Placement Management Plan (DDSPMP) Revision 5 dated 30 July 2013 which includes the Water Quality Management Plan required by the EPBC Act Approval conditions.

The objective of the CEMP and the DDSPMP is to limit the impacts of dredging and dredge spoil management on marine life and water quality as much as possible, including the impacts of noise, sediments and disturbance to habitats.

This monthly environmental monitoring report presents information relating to dredging, dredge spoil placement and treatment pond management activities, environmental management actions, environmental monitoring including an assessment of performance against trigger values, environmental incidents and corrective actions undertaken by the Builder. Activities which relate to the Northern Territory Government are not included within this report.

There was only a single day shift of dredging undertaken for the DMSB project on 23 January 2014 which brought dredging activities on the project to a closure.

Dredging only had a minimal short-term impact on the water level in Pond K, no discernible impact on levels in Pond E (North) and no impact on water levels in Ponds D or E (South).

Turbidity and pH results obtained from the dredge spoil treatment pond during the single day shift of dredging indicate that the levels were within the nominated range of pH 6.0 and pH 8.5 and were comparable to that found outside of the dredge footprint at the Background level monitoring location #12.

Turbidity and pH results obtained during periods of jet washing the face of the wharf piles and dredging works in the month of January 2014 from Monitoring Locations 5 – 7 (50m from perimeter of dredging footprint) & 12 (Background level monitoring location) indicate that the jet washing the face of the wharf piles and dredging operations did not adversely impact on the surrounding harbour area. Locations 8 – 10 (Seaward side of rail bund wall) were also monitored for pH although no tailwater transferred into Pond E (South) and through the permeable section of the rail bund wall during this month. Levels were found to be consistently within the trigger range of pH 6.0 and pH 8.5.

Water samples were not tested for dissolved metals because there was no flow of any tailwater into Pond E (South) following the single day of dredging and hence no possibility of any water tailwater entering the Harbour.

South Shell Island turbidity results received this month were within the nominated trigger levels set out in the DDSPMP.

The results of water quality monitoring from samples taken at nominated locations within the Treatment Ponds and Harbour show no trends or patterns to suggest that dredging had any discernible impact on water quality across all testing zones or the environment.

During the month, there was one exceedance event. The exceedance was in relation to a reduction in the total numbers of migratory shorebirds by 86.5% between weekly counts carried out on 06 and 17 January 2014. The event occurred during an extended period when no dredging was being undertaken.

No subsequent count was undertaken because the final dredging was completed for eight hours on 23 January 2014.

During this month, no dredging related environmental incidents occurred.

No marine fauna observations were reported during this month.

3 PROJECT OVERVIEW

The proposed Marine Supply Base (MSB) comprises 8.66 ha of land and 19.71 ha of water licence. Dredge material (685,000m³ including a 0.2m over dredge allowance) is to be placed into the existing East Arm Dredge Spoil Pond K with tailwater flowing through Ponds D & E.

The MSB will have a capacity to service over 1000 vessels per annum to support the existing and expanding offshore oil and gas industry into the future. Initially, one berth at the MSB will be used as a Rock Load-Out Facility to specifically service the rock armouring requirements of the INPEX Ichthys LNG project.

The Rock Load-Out facility is scheduled to operate up to 7.5 months.

Figure 1 shows the General arrangement of the proposed Darwin Marine Supply Base and dredging ponds.

Construction works commenced in April 2012, and the project is currently forecast for completion in May 2014

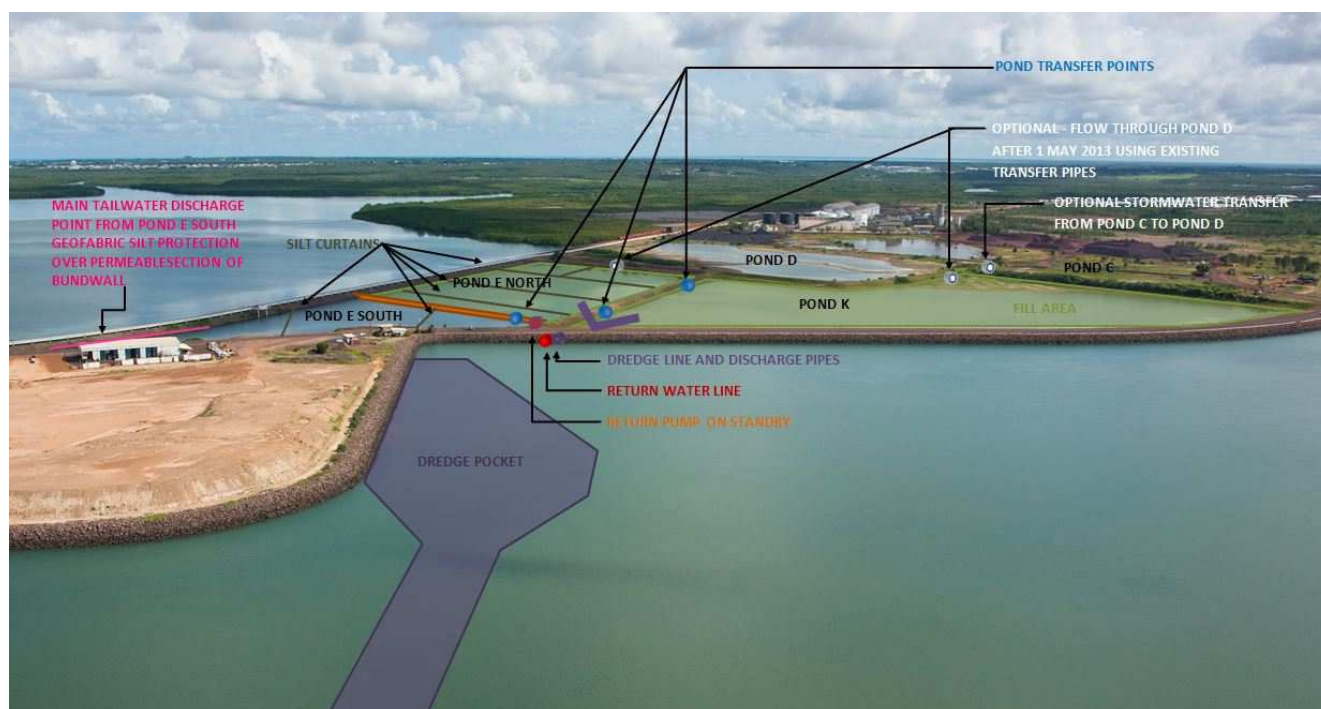


Figure 1 General arrangement of the proposed Darwin Marine Supply Base and dredging ponds

4 SITE ACTIVITIES

4.1 Dredging Operations

Dredge

For the month of January the CSD Eastern Aurora dredged for 8.00 hours, 4.00 hours of down time to carry out maintenance and cutter teeth changes and 684.00 hours of stand down for a combined total of 696 hours for the month. For the reporting period this represents an actual working time for the dredge of 1.1% with 66.1% availability since the recommencement of dredging on 1 May 2013. On Wednesday 29 January 2014 the dredging subcontractor was awarded Practical Completion by the Builder.

Work to remove the remaining material stuck to the face and between the piles began on 24 December using an excavator and jet blasting unit and progressed until 22 January 2014. On 23 January 2014 the CSD Eastern Aurora dredged for a single shift to sweep the floor and remove the material cleaned from the face of the piles which was deposited adjacent the wharf structure.

The hydrographic survey carried out on Friday 24 January 2014 confirmed a dredge volume for the month of 200m³ with a total dredged volume for the project to date of 655,219.5m³. The total dredged volume comprised 169,500m³ during Phase 1 dredging operations and 485,719.5m³ of material in Phase 2 dredging operations.

Since recommencement of Phase 2 dredging on 1 May 2013 a production rate of 2,978m³/day was achieved for the 163 operating days or 1,812m³/day per calendar day (268 days).

The hydro graphic survey carried out on Friday 24 January 2014 has been attached in **Section 10 Supporting Information**.

Pond Management

During the single day of dredging during the month the dredge spoil was discharged into Pond K using the northern discharge pipe, with the tailwater then flowing through the weir box between Pond K and E (North).

The material dredged was the remains of the pile cleaning and a final sweep of the floor and consisted of rock of various strengths but predominately small / medium size material which is producing what appears to be good reclamation material with a higher proportion of solids.

The silt curtains in Pond E (North) and Pond E (South) are still proving to be very effective in reducing the turbidity in the tail water as it passes through Pond E (North).

With the completion of the dredging works in late January 2014 the removal of dredge pipes and works to shape the stockpiled dredge spoil in Pond K will be carried out in February 2014.

Water Levels

The single shift of dredging on 23 January 2014 only had a minimal short-term impact on the water level in Pond K, no discernible impact on levels in Pond E (North) and no impact on water levels in Ponds D or E (South).

Following the completion of dredging on 21 December 2013 the ponds had returned to normal operating conditions. Only stormwater flows from of the adjacent DPC lands into and through the Ponds influenced the water levels in the ponds. There was a total of 849.5mm of rain recorded in January 2014 with a maximum rainfall of 149.5mm in a single storm event and the impacts of the stormwater can be observed in the water shown in Figure 2.

Water levels in Pond K remained constant at 5.00m AHD due to the lack of dredging and the pond is relatively self draining as the Pond K to E(North) weir box transfer remains open and allows any runoff occurring in Pond K to exit.

Pond E (North) water levels fluctuated between 1.0mAHD and 2.0mAHD depending on the inflow of stormwater from Ponds D & K.

Pond E (South) continued to be influenced by tidal movements, with heights varying between 0.0m AHD and 1.4m AHD.

Pond D remained blocked from the dredge tailwater discharge, the only contributing factor to change in water levels was stormwater runoff entering the pond from adjacent DPC lands and discharge into Pond E (North). The water level in Pond D varied between 4.50m AHD and 4.80m AHD as shown in **Table 1**.

Table 1 Recorded water height of Pond D.

Date	Pond Marker Reading (m)	Pond Water Height – RL (mAHD)
01 January 2013	-0.10	4.50
02 January 2014	-0.10	4.50
03 January 2014	-0.10	4.50
04 January 2014	-0.10	4.50
05 January 2014	-0.10	4.50
06 January 2014	-0.10	4.50
07 January 2013	-0.10	4.50
08 January 2013	-0.10	4.50
09 January 2013	-0.10	4.50
10 January 2013	-0.10	4.50
11 January 2013	-0.10	4.50
12 January 2013	0.00	4.60
13 January 2013	0.00	4.60
14 January 2014	0.10	4.70
15 January 2014	0.20	4.80
16 January 2013	0.20	4.80
17 January 2013	0.20	4.80
18 January 2013	0.20	4.80
19 January 2013	0.20	4.80
20 January 2013	0.20	4.80
21 January 2013	0.10	4.70
22 January 2013	0.10	4.70
23 January 2013	0.00	4.60
24 January 2013	0.00	4.60
25 January 2013	0.00	4.60
26 January 2013	0.00	4.60
27 January 2013	0.00	4.60
28 January 2013	0.00	4.60
29 January 2013	0.10	4.70
30 January 2013	0.10	4.70
31 January 2014	0.00	4.60

The pond water levels in Ponds D, K, E (North) & E (South) are shown on **Figure 2** against the dredging production time.

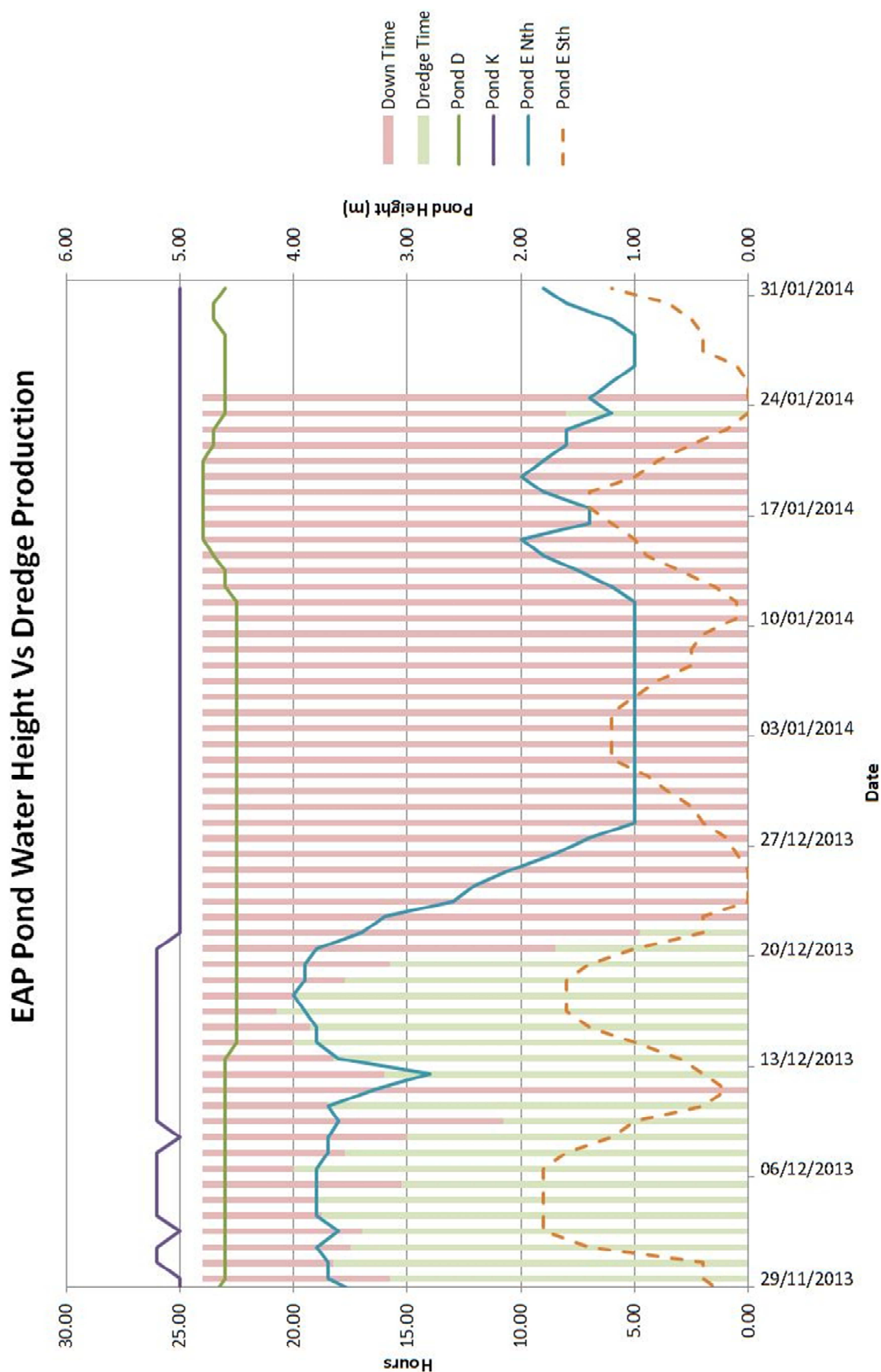


Figure 2 Pond Heights Vs. Dredging Production

Monitoring of Pond Bund Walls

Daily visual inspections for movement, cracking and water seepage were undertaken on the Rail Bund wall, Pond E internal bund wall and the Pond K/E bund wall with survey monitoring carried out every Wednesday.

Douglas Partners completed twenty four readings between 03 May 2013 and 30 August 2013. Douglas Partners have confirmed there have not been any readings of concern. The movements measured (2-4mm) are considered minimal and do not indicate the commencement of an embankment sliding or slip circle failure. Inclinator readings were suspended from 31 August 2013 when it became evident that Pond E (North) was never going to be filled above CD +4.0m due to operational performance of the dredge. The final report for Rail Bund monitoring was included in Weekly Report 28.

For the duration of Phase 2 dredging operations visual inspections were undertaken on the Pond D/E bund wall and Port Access Road with no deficiencies, movement or cracking identified.

4.2 Environmental Conditions

4.2.1 Weather Observations

Rainfall is recorded at the Marine Supply Base using the onsite rainfall gauge. Rainfall recorded during reporting period is presented in **Table 2**. 849.5mm of rainfall was recorded onsite during the month of January; this is greater than the January monthly average of 426.3mm by 423.2mm.

Table 2 Rainfall recorded onsite

Date	Rainfall (mm)	Date	Rainfall (mm)
01 January 2014	0	17 January 2014	15
02 January 2014	0	18 January 2014	149.5
03 January 2014	0	19 January 2014	40
04 January 2014	0	20 January 2014	17
05 January 2014	0	21 January 2014	1
06 January 2014	0	22 January 2014	5
07 January 2014	0	23 January 2014	15
08 January 2014	0	24 January 2014	58
09 January 2014	0	25 January 2014	11
10 January 2014	6.5	26 January 2014	0
11 January 2014	18.5	27 January 2014	15
12 January 2014	37	28 January 2014	137
13 January 2014	26	29 January 2014	28.5
14 January 2014	103	30 January 2014	28
15 January 2014	42.5	31 January 2014	57
16 January 2014	39	Total	849.5mm

DDSPMP Monthly Report #11

Darwin Marine Supply Base



Daily temperature recorded by the Bureau of Meteorology during this month ranged from 22.6°C to 36.1°C. Variable winds were recorded throughout this month with mostly west, north westerly winds and wind speed ranged from 30 – 87 km/h.

Weather observations for Darwin from the Bureau of Meteorology are presented in **Figure 3**.

Darwin, Northern Territory January 2014 Daily Weather Observations

Date	Day	Temps		Rain mm	Evap mm	Sun hours	Max wind gust			9 am					3 pm						
		Min °C	Max °C				Dir	Spd km/h	Time local	Temp °C	RH %	Cld g th	Dir	Spd km/h	MSLP hPa	Temp °C	RH %	Cld g th	Dir	Spd km/h	MSLP hPa
1	We	25.7	33.3	1.0	5.4	10.2	WNW	31	15:22	28.9	80	7	SSE	6	1009.2	32.8	61	6	WNW	22	1006.3
2	Th	26.7	33.7	0	7.6	12.1	WNW	30	14:01	30.4	74	2	WNW	13	1010.1	32.8	64	2	WNW	22	1006.9
3	Fr	26.9	34.1	0	6.4	12.2	NW	33	14:48	31.2	69	3	NW	19	1009.6	33.3	58	1	WNW	24	1006.9
4	Sa	27.0	33.4	0	7.8	9.3	W	37	10:22	30.1	73	7	WNW	22	1008.9	32.7	58	5	W	20	1005.7
5	Su	25.2	33.9	0	6.4	7.9	ENE	56	20:13	29.5	63	7	NE	9	1008.3	33.6	62	7	WNW	24	1005.8
6	Mo	24.9	36.0	5.8	8.0	11.4	ENE	52	22:12	28.3	67	4	SE	13	1008.3	34.2	50	5	SSW	17	1005.6
7	Tu	26.2	36.1	0	7.6	11.5	WNW	43	16:12	31.2	75	3	W	17	1007.6	34.2	64	1	WNW	31	1004.3
8	We	28.0	34.8	0	7.4	11.8	WNW	39	14:36	31.0	73	3	WSW	17	1006.4	33.6	65	5	WNW	31	1003.1
9	Th	28.6	34.8	0	7.8	10.5	WNW	41	16:07	30.9	76	6	W	15	1006.7	34.0	61	5	WNW	31	1003.9
10	Fr	22.9	32.8	24.0	12.0	3.3	SE	87	22:36	28.3	82	7	WNW	17	1008.1	32.0	65	7	W	17	1005.5
11	Sa	22.6	32.9	13.2	7.0	5.0	SE	48	23:23	27.2	84	7	WSW	13	1009.6	32.0	56	7	WNW	19	1005.3
12	Su	24.8	32.9	8.2	4.4	6.6	SE	52	19:32	27.6	77	7	SSE	19	1006.6	29.1	75	7	N	15	1002.5
13	Mo	23.8	29.2	15.8	4.4	0.0	SE	43	19:23	26.4	86	7	S	17	1003.0	28.4	80	8	SSW	15	999.1
14	Tu	24.4	28.0	31.2	1.0	0.0	WNW	72	23:43	24.8	96	7	S	20	998.8	25.3	96	7	WSW	28	996.0
15	We	24.6	30.6	62.4	3.0	1.1	NW	80	22:00	27.9	85	8	WNW	37	1000.2	30.1	71	7	NW	35	999.4
16	Th	24.0	30.6	42.0	3.8	0.8	N	72	04:01	25.8	89	8	WNW	44	1006.0	29.1	77	8	NNW	30	1003.0
17	Fr	23.6	31.2	15.4	5.2	1.5	NW	70	18:23	26.6	87	7	N	24	1005.4	28.7	81	8	NW	20	1002.5
18	Sa	24.1	30.1	44.2	1.6	0.2	WNW	56	07:33	25.5	94	8	NNW	28	1006.0	25.2	94	8	W	24	1004.0
19	Su	23.9	30.8	72.2	9.2	0.9	W	70	12:41	27.0	89	8	WNW	15	1005.6	27.2	77	8	W	30	1003.8
20	Mo	24.1	30.5	38.2	3.4	3.5	W	50	11:40	29.5	79	7	W	15	1006.2	29.3	80	8	W	19	1004.1
21	Tu	25.2	31.8	12.8	3.0	4.8	W	56	11:39	29.0	81	6	W	13	1006.5	28.1	67	7	WSW	30	1004.6
22	We	24.6	32.0	9.2	7.4	5.7	W	54	06:35	27.2	81	7	WSW	13	1007.0	31.9	58	7	WSW	19	1004.0
23	Th	24.0	30.7	14.0	6.0	4.0	N	37	00:01	25.1	91	8	SSW	7	1007.4	30.2	70	7	WNW	26	1004.0
24	Fr	25.0	30.0	1.2	5.8	0.6	WSW	39	11:59	28.0	86	7	WNW	9	1006.2	26.7	82	8	W	13	1004.6
25	Sa	23.5	31.6	34.0	2.0	8.8	WNW	37	15:34	29.2	76	7	WNW	15	1006.8	31.1	64	6	WNW	26	1004.7
26	Su	27.2	31.2	0	6.4	4.5	WNW	44	13:56	29.2	75	7	W	17	1007.6	28.7	76	7	W	24	1004.4
27	Mo	24.2	31.4	3.2	5.4	3.6	W	33	00:14	26.7	83	7	WSW	7	1005.7	30.3	67	7	WNW	22	1003.8
28	Tu	24.1	29.1	4.4	2.8	2.1	W	37	19:11	26.5	82	7	SW	11	1005.7	28.4	77	7	WNW	24	1002.9
29	We	23.8	28.5	81.4		0.1	WNW	59	04:58	24.9	96	7	SSW	11	1004.4	25.6	96	8	SW	15	1001.9
30	Th	24.1	28.4	42.0	4.2	0.0	WNW	63	18:05	25.7	91	7	WNW	28	1005.3	26.2	94	8	NW	31	1002.5
31	Fr	24.3	28.1	34.4	3.6	0.0	NW	80	18:58	25.4	93	8	WNW	13	1003.8	26.8	85	7	NW	31	1001.9
Statistics for January 2014																					
Mean		24.9	31.7		5.5	5.0				27.9	81	6		16	1006.4	30.1	71	6		23	1003.6
Lowest		22.6	28.0	0	1.0	0.0				24.8	63	2	SSE	6	998.8	25.2	50	1	W	13	996.0
Highest		28.6	36.1	81.4	12.0	12.2	SE	87		31.2	96	8	WNW	44	1010.1	34.2	96	8	NW	35	1006.9
Total				610.2	166.0	154.0															

IDCJDW8014.201401 Prepared at 13:10 UTC on Friday 21 February 2014

Figure 3 Recorded Weather Observations for Darwin (Commonwealth of Australia, BOM)

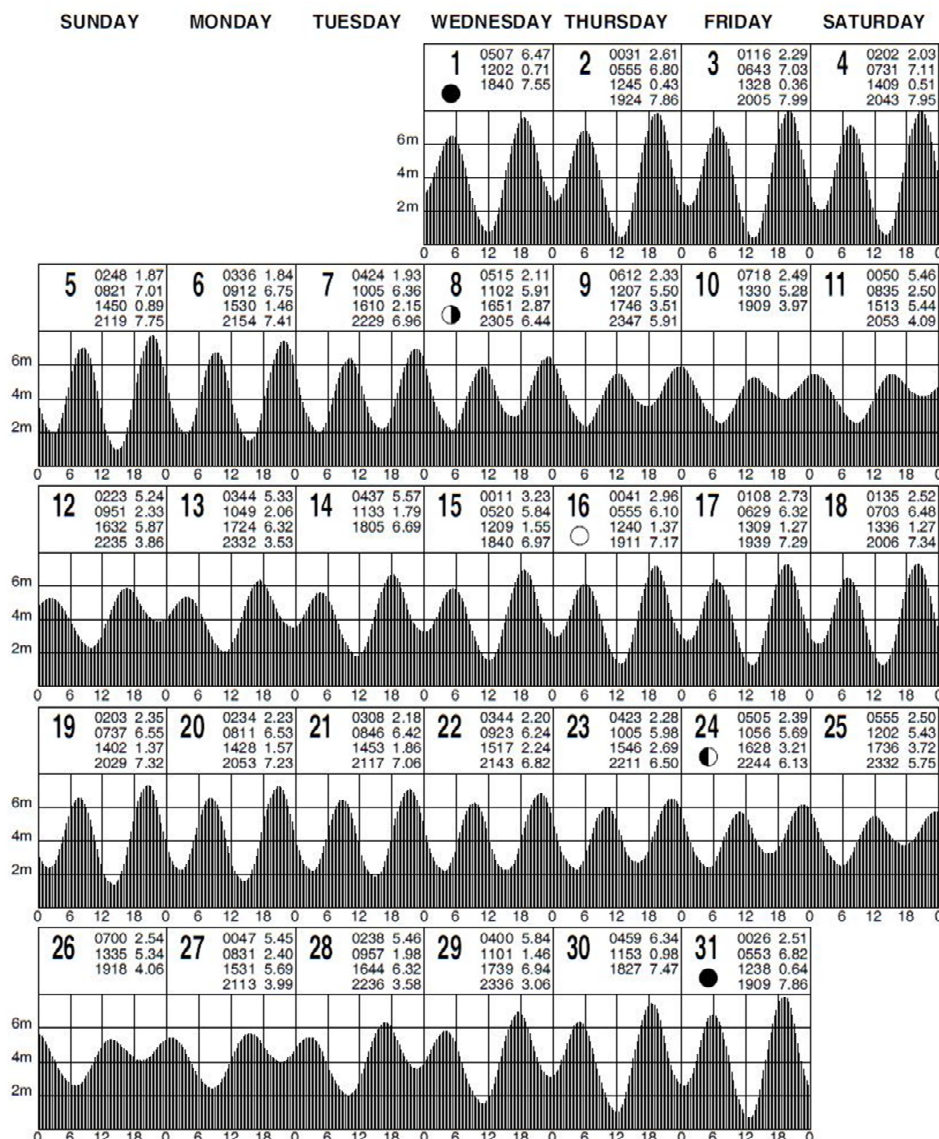
4.2.2 Tidal Information

There were two spring tide cycles during the month of January. The first cycle was between 01 and 07 January 2014 with the largest tidal movement for the month occurring on 03 January 2014, with a low tide of 0.36m and a high tide of 7.95m with a range of 7.59m. The second spring tide cycle occurred between 14 to 20 January 2014 with the largest tidal movement occurring on 18 January 2014 with a low tide of 1.27m and a high tide of 7.34m with a range of 6.07m. The tide heights predictions from the Bureau of Meteorology are presented in **Figure 4**.

TIDE PREDICTIONS FOR DARWIN

JANUARY – 2014

AUSTRALIAN CENTRAL STANDARD TIME



© Copyright: Commonwealth of Australia 2012, Bureau of Meteorology (ABN 92 637 533 532)

Disclaimer: These tide predictions are supplied in good faith and believed to be correct.

No warranty is given in respect to errors, omissions, or suitability for any purpose.

Figure 4 Tide Predictions for Darwin (Commonwealth of Australia, BOM)

5 ENVIRONMENTAL MONITORING

5.1 Water Quality

5.1.1 Water Quality Monitoring Locations and Frequency

There are thirteen water quality sampling locations, six within the treatment ponds where pH, turbidity, suspended solid concentrations and toxicants are monitored. Sampling recommenced at location 2 on Friday 12 July 2013 following the opening of the transfer point from Pond K into Pond D. Sampling recommenced at monitoring location 3 on Saturday 13 July 2013, when the transfer of water from Pond D to Pond E (North) began, however sampling ceased at locations 2 and 3 following the blocking of the Pond K to D transfer point on 05 September 2013.

A total of seven locations are monitored within the Harbour for pH, turbidity, suspended solid concentrations and one location (monitoring location 12) is monitored for toxicants as a quality assurance for the Pond system water samples. In addition to these there is a turbidity telemeter adjacent to South Shell Island. Monitoring locations are shown in (Figure 5).



Figure 5 Monitoring Points described in the DDSPMP.

The water quality parameters monitored during dredging is described in **Table 3** to meet the requirements of Table 7.1 in the DDSPMP.

Table 3 Water Quality Monitoring Parameters and Frequency

Monitoring Type	Parameters	Frequency
In-Situ	pH; Turbidity; Suspended Solids	Daily
Laboratory	Toxicants – Dissolved Metals	Daily for the first 14 days reduced to weekly if the TAG concurs that the observed trends indicate no likelihood of trigger exceedance over a 14 day period. If trends subsequently indicate a potential for trigger exceedance then revert to daily sampling until trend is reversed.
Visual	Plume	Daily (continuous)

5.1.2 Performance Criteria

Water quality monitoring criteria included in the DDSPMP have been based on the Australian and New Zealand Guidelines for Fresh and Marine Water (ANZECC Guidelines); NRETAS Water Quality Objectives for the Darwin and the Darwin Harbour Region Report Cards 2010 (NRETAS). The water quality monitoring criteria established for the project are described in **Table 4**.

Table 4 Water Quality Trigger Levels

Parameter	Unit	Trigger Level
pH	-	6.0 - 8.5
Turbidity	NTU	111 / 52
SSC	mg/L	100
Arsenic (AsIII)	µg/L	24.0
Arsenic (AsV)	µg/L	13.0
Cadmium	µg/L	5.5
Chromium (CrIII)	µg/L	27.4
Chromium (CrVI)	µg/L	4.4
Copper	µg/L	1.3
Lead	µg/L	4.4
Mercury	mg/L	0.4
Nickel	µg/L	70.0
Selenium	µg/L	5.0
Zinc	µg/L	15.0

5.1.3 Methodology

Water quality sampling is conducted in accordance with the Water Sampling Procedure Revision 02 to meet the requirements of Table 7.1 of the DDSPMP. Analysis results are assessed against trigger values to identify deviation or trends against the nominated criteria. Data has been graphed for all sites for each water quality parameter to provide a visual representation of water quality changes over time and is provided in **Section 10 Supporting Information**.

5.2 Water Quality Results and Assessment

Onsite testing of water quality samples for turbidity and pH is gained through a multi-parameter logger (TPS 90-FLT Field Lab Analyser), calibrated as per the manufacturer's recommendations.

Samples collected for suspended solids and dissolved metal concentrations are sent to an independent NATA accredited laboratory for analysis. Analysis results are typically received from the laboratory within seven working days.

Water quality data is presented in **Section 10 Supporting Information** to provide a visual representation of water quality changes over time. Discussion on data is provided in the following sections.

As per the requirements of Table 7-1 of the DDSPMP, a project specific relationship has been established since the commencement of dredging, with the Phase 1 of dredging correlation between turbidity and suspended solids being 100mg/L = 135NTU. Phase 2 dredging to date has established a correlation between turbidity and suspended solid concentration of 100mg/L = 140NTU.

In accordance with the DDSPMP the sampling frequency nominated in Table 7-1 of the DDSPMP and repeated in Table 3 above may be reduced to once daily for pH and turbidity and once weekly for dissolved metals within the treatment pond system if the TAG concur that results obtained over the first 14 days show no trend toward the exceedance of the parameters.

A Water Quality Monitoring Assessment Report was compiled for TAG to review the Phase 2 water quality trends and to highlight that there is no trend toward the exceedance of the parameters set out in the DDSPMP and on 12 June 2013 TAG endorsement was received to the reduce water quality monitoring frequency.

An amended DDSPMP dated 30 July 2013 was endorsed by TAG to remove the turbidity triggers for tailwater discharging from Pond K. The amended DDSPMP was approved by NT EPA and SEWPaC on 24 & 26 August 2013 respectively.

5.2.1 Turbidity and Suspended Sediments

Dredge Spoil Treatment Ponds Monitoring

Monitoring Location 1 – 20m from dredge spoil discharge point into Pond K:

Turbidity level recorded at monitoring location 1 on 23 January 2014 was 92.4NTU. No further discharge into Pond K occurred during the month of January 2014. In general, higher turbidity levels are expected at close proximity to the dredge spoil discharge point.

Monitoring Location 2 – Outlet from Pond K to D:

Turbidity levels at monitoring location 2 were not monitored over the course of this month, as tailwater transfer at this outlet was blocked on 05 September 2013 and remains blocked.

Monitoring Location 3 – Outlet from Pond D to E (North):

No turbidity levels were recorded at monitoring location 3 over the course of this month because the transfer pipes between Pond K to D outlet were blocked.

Monitoring Location 4 – Pond E (South) prior to discharge:

No tailwater transferred from Pond E (North) into Pond E (South) during the month of January 2014.

Monitoring Location 11 – Outlet from Pond K to E (North):

Turbidity level recorded at monitoring location 11 on 23 January 2014 was 114.7NTU. No further tailwater transfer into Pond E (North) from Pond K occurred during the month of January 2014. No turbidity triggers apply to this location.

Monitoring Location 13 – Outlet from Pond E (North) to E (South):

No tailwater transferred from Pond E North into Pond E South during the month of January 2014.

Conclusion:

Turbidity results were in line with the observations made during the most recent dredging in December 2013. Due to the low tailwater storage capacity of Pond K the turbidity levels were not dropping greatly before entering into Pond E (North). Although there was no tailwater transfer from Pond E (North to E (South) the silt curtains in Pond E (North) continued to assist with the improving the water quality as water flowed from the discharge point from Pond K towards the Pond E internal bind wall.

Harbour Monitoring

Samples for turbidity monitoring in the Harbour were undertaken twice daily during periods of jet washing the face of the wharf piles and dredging works in the month of January 2014.

Monitoring Location 5 – 50m from perimeter of dredging footprint (leeward side of tidal flow):

Turbidity levels measured at this location demonstrated an average NTU of 8.4 with no readings exceeding the trigger level of 53 NTU.

Monitoring Location 6 – 50m from perimeter of dredging footprint (leeward side of tidal flow):

Turbidity levels measured at this location demonstrated an average NTU of 8.0 with no readings exceeding the trigger level.

Monitoring Location 7 – 50m from perimeter of dredging footprint (leeward side of the tidal flow):

Turbidity levels measured at this location demonstrated an average NTU of 8.5 with no readings exceeding the trigger level.

Monitoring Location 8 – Seaward side of rail bund:

Turbidity levels measured at this location demonstrated an average NTU of 9.2 with no readings exceeding the trigger level.

Monitoring Location 9 – Seaward side of rail bund:

Turbidity levels measured at this location demonstrated an average NTU of 9.0 with no readings exceeding the trigger level.

Monitoring Location 10 – Seaward side of rail bund:

Turbidity levels measured at this location demonstrated an average NTU of 9.2 with no readings exceeding the trigger level.

Monitoring Location 12 – Old Man Rock (Background Level):

Turbidity levels measured at this location demonstrated an average NTU of 8.5 with no readings exceeding the trigger level.

South Shell Island

The Four Day Rolling Average NTU trigger levels for turbidity at the South Shell Island monitoring location during the Wet Season as detailed in Section 7.3 of Table 7-1 in the DDSPMP are:

Frequency: >23 NTU for >6 days of 7

Duration: >23 NTU over 7 consecutive days

Intensity: >35 NTU

Data from the South Shell Island logger is presented in the **Figure 6** showing that while there were some four day rolling average results above the frequency and duration trigger levels these were not sustained for long enough a period to be deemed an exceedance of the

nominated criteria. Figure 6 continues to show the turbidity levels at South Shell Island are directly influenced by the tidal cycle.

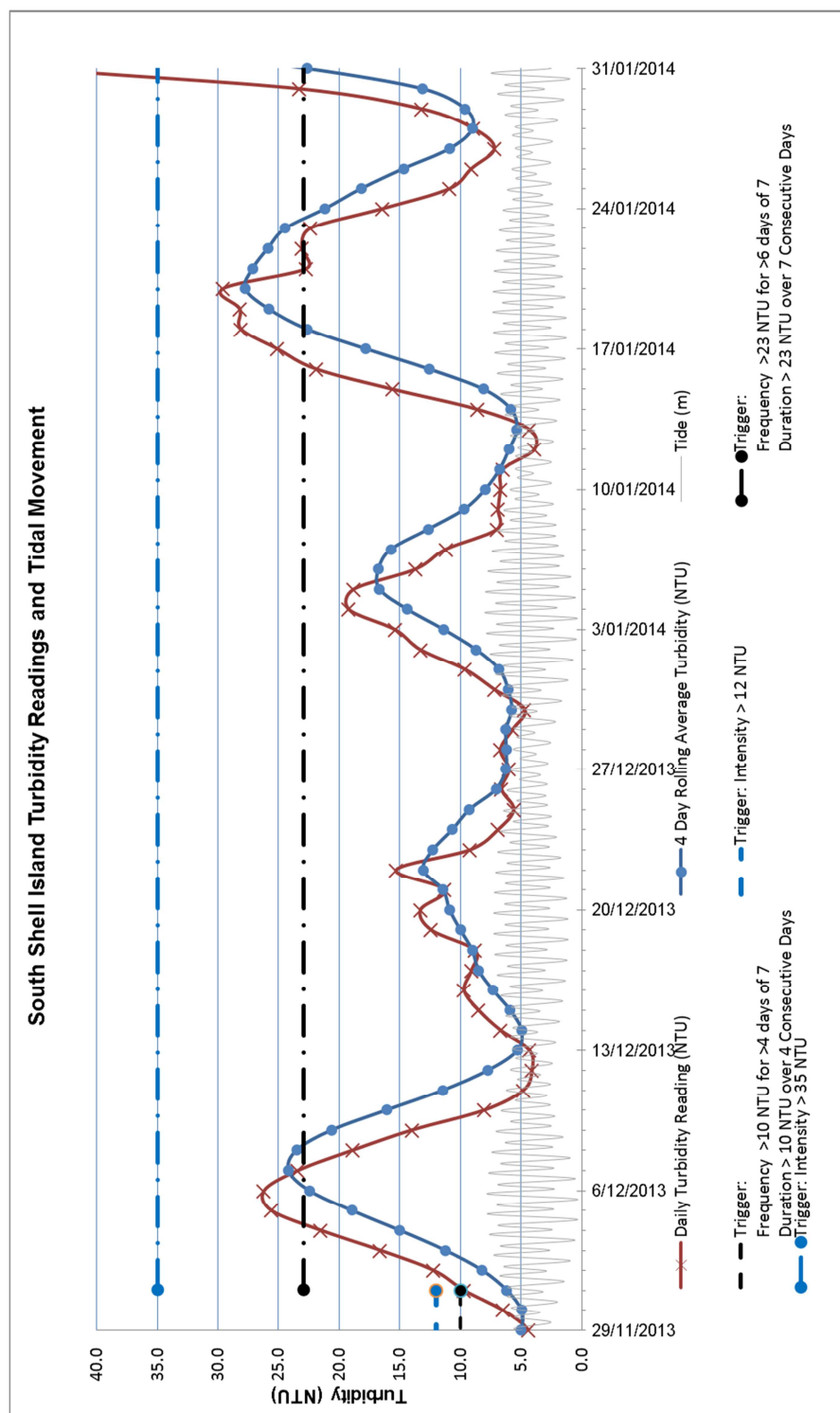


Figure 6 South Shell Island Turbidity.

Conclusion:

The turbidity results obtained from water samples taken in the Harbour and from the South Shell Island data logger for the month of January 2014 indicate the MSB jet washing the face of the wharf piles and dredging operations provided negligible influence on surrounding harbour areas.

5.2.2 pH

Dredge Spoil Treatment Ponds Monitoring

Monitoring Location 1:

pH level measured at monitoring location 1 on 23 January 2014 was 8.1, with no readings under or over trigger levels (pH <6 and >8.5) detected.

Monitoring Location 2:

No pH levels were measured at monitoring location 2 as no tailwater was transferred into Pond D from Pond K during this month.

Monitoring Location 3:

No pH levels were measured at monitoring location 3 as no tailwater was transferred into Pond D from Pond K during this month.

Monitoring Location 4:

pH levels measured at monitoring location 4 on 23 January 2014 was 8.0, with no readings under or over the trigger levels detected.

Monitoring Location 11:

pH level measured at monitoring location 11 on 23 January 2014 was 8.1. No daily readings were outside of the trigger levels.

Monitoring Location 13 – Outlet from Pond E (North) to E (South):

No pH levels were measured at monitoring location 13 as no tailwater was transferred into Pond E (South) from Pond E (North) during this month.

Harbour Monitoring

Samples for pH monitoring in the Harbour were undertaken twice daily during periods of jet washing the face of the wharf piles and dredging works in the month of January 2014.

Monitoring Location 5:

pH levels measured at monitoring location 5 during January 2014 averaged 8.1. No daily readings were outside of the trigger levels.

Monitoring Location 6:

pH levels measured at monitoring location 6 during January 2014 averaged 8.0. No daily readings were outside of the trigger levels.

Monitoring Location 7:

pH levels measured at monitoring location 7 during January 2014 averaged 8.1. No daily readings were outside of the trigger levels.

Monitoring Location 8:

pH levels measured at monitoring location 8 during January 2014 averaged 8.0. No daily readings were outside of the trigger levels.

Monitoring Location 9:

pH levels measured at monitoring location 9 during January 2014 averaged 8.0. No daily readings were outside of the trigger levels.

Monitoring Location 10:

pH levels measured at monitoring location during January 2014 averaged 8.0. No daily readings were outside of the trigger levels.

Monitoring Location 12:

pH levels measured at monitoring location 12 during January 2014 averaged 8.1. No daily readings were outside of the trigger levels.

Conclusion:

The pH results obtained from the ponds during of the single shift of dredging on 23 January 2014 indicate levels were within the nominated range of pH 6.0 and pH 8.5.

The pH range within the ponds was comparable to that found outside of the dredge footprint at the Background level monitoring location #12.

The pH results obtained during periods of jet washing the face of the wharf piles and dredging works in the month of January 2014 from Monitoring Locations 5 – 7 (50m from perimeter of dredging footprint) & 12 (Background level monitoring location) indicate that the jet washing the face of the wharf piles and dredging operations did not adversely impact the surrounding harbour area. Locations 8 – 10 (Seaward side of rail bund wall) were also monitored for pH although no tailwater transferred into Pond E (South) and through the permeable section of the rail bund wall during this month. Levels were found to be consistently within the trigger range of pH 6.0 and pH 8.5.

5.2.3 Dissolved Metal Analyses

Dredge Spoil Treatment Ponds Monitoring

Water samples were not taken during the month of January 2014 to test for dissolved metals as dredging was only performed for eight hours on 23 January 2014 with 200m³ of dredge spoil disposed into Pond K and no tailwater transfer to Pond E (South) with no possibility of any water tailwater entering the Harbour.

Arsenic (As):

No test results to report.

Cadmium (Cd):

No test results to report.

Chromium (Cr):

No test results to report.

Copper (Cu):

No test results to report.

Lead (Pb):

No test results to report.

Mercury (Hg):

No test results to report.

Nickel (Ni):

No test results to report.

Selenium (Se):

No test results to report.

Zinc (Zn):

No test results to report.

5.3 Plume monitoring

5.3.1 Plume around Dredge

Visual plume monitoring information is presented in **Section 10 Supporting Information**.

Observations and water quality sampling results concluded that the visual plume is not significantly impacting on the area extending beyond the 50 metre zone from the dredging footprint. *Harbour Sampling Data and Graphs*, **Section 10 Supporting Information** indicates that water was within the performance criteria.

5.4 Environmental Incidents

No dredge related environmental incidents were reported during this reporting period.

5.5 Significant Environmental Equipment Failures

During this month no significant environmental equipment failures were reported.

6 TRIGGER LEVEL EXCEEDANCES AND CORRECTIVE ACTIONS

6.1 Exceedance Reports within this reporting period

During this month, one exceedance event occurred.

Weekly shore bird counts were undertaken on 03, 06 and 17 January 2014. The counts carried out between 06 and 17 January 2014 concluded an exceedance of the nominated trigger level as a reduction in total shore bird numbers of greater than 50% from one week to the next. This exceedance is detailed in Exceedance Reports 36.

A summary of Exceedance Reports and Notifications are provided in **Table 6**.

6.2 Exceedance Reports

Exceedance notification and reports developed and provided to the TAG since the commencement of dredging on 03 October 2012 are provided in **Table 6**.

Table 5 Summary of Exceedance Notification and Reports

Report Number	Exceedance Type	Comments
Exceedance Report #1:	Turbidity Exceedance at South Shell Island Monitoring Station	20 October 2012; initial notification to TAG 24 October 2012; Revision 01 provided to TAG for review. 25 October 2012; Revision 01 reissued to TAG for review with supporting information. 28 November 2012, Revision 02 developed to include TAG comments and responses.
Exceedance Report #2:	Toxicant levels (Zinc and Copper) in Treatment Ponds	24 October 2012; initial notification to TAG 30 October 2012; Draft Issue Report provided to TAG for review. 31 October 2012; Revision B provided to TAG for review. 31 October 2012; Revision C provided to TAG for review. 28 November 2012, Revision 04 developed to include TAG comments and responses.
Exceedance Report #3	Toxicant levels (Copper) in Treatment Pond D Monitoring Location (3)	24 October 2012; initial notification to TAG. 06 November 2012; Draft Issue Report provided to TAG for review. 28 November 2012; Revision 02 developed no TAG comments received.
Exceedance Report #4	Toxicant levels (Copper) in Treatment Pond Monitoring Locations (3), (4) and (11).	12 November 2012; initial notification to TAG. 14 November 2012; Draft Issue Report provided to TAG for review. 15 November 2012; Initial review comments provided by TAG. 15 November 2012; Revision C provided to TAG for review. 25 November 2012; Review comments provided by TAG. 28 November 2012; Revision 02 developed to include TAG comments and responses.
Exceedance Report #5	Turbidity Exceedance at South Shell Island Monitoring Station	16 November 2012; Initial notification provided to TAG 20 November 2012; Revision 01 provided to TAG for review. 25 November 2012; Review comments provided by TAG 28 November 2012; Revision 02 developed to include TAG comments and responses.

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Report Number	Exceedance Type	Comments
Exceedance Report #6	Toxicant levels (Copper) in Treatment Pond K, Monitoring Location (11).	20 November 2012; Draft Issue Report provided to TAG for review. 22 November 2012; Revision 01 provided to TAG for review. 25 November 2012; Review comments provided by TAG 28 November 2012; Revision 02 developed to include TAG comments and responses
Exceedance Report #7	Toxicant levels (Copper) in Treatment Pond K, Monitoring Location (11).	24 November 2012, Initial notification provided to TAG. 28 November 2012; Revision 01 provided to TAG for review.
Exceedance Report #8	Turbidity Exceedance at South Shell Island Monitoring Station	19 December 2012, Revision 01 provided to TAG for review.
Exceedance Report #9	Turbidity Exceedance at South Shell Island Monitoring Station	10 January 2013, Revision 01 provided to TAG for review.
Exceedance Report #10	Turbidity Exceedance at South Shell Island Monitoring Station	15 January 2013, Initial notification provided to TAG. 18 January 2013, Revision 01 provided to TAG for review.
Exceedance Report #11	pH levels in Treatment Ponds K & D Monitoring locations 11 & 3	18 January 2013, Initial notification provided to TAG. 29 January 2013, Revision 01 provided to TAG for review.
Exceedance Report #12	Turbidity Exceedance at South Shell Island Monitoring Station	31 January 2013, Initial notification provided to TAG. 5 February 2013, Revision 01 provided to TAG for review.
Exceedance Report #13	Toxicant levels (Copper) in Treatment Pond K, Monitoring Location (11).	1 February 2013, Initial notification provided to TAG. 5 February 2013, Revision 01 provided to TAG for review.
Exceedance Report #14	pH levels in Treatment Ponds K & D Monitoring locations 11 & 3	2 February 2013, Initial notification provided to TAG. 8 February 2013, Revision 01 provided to TAG for review.
Exceedance Report #15	Turbidity Exceedance at South Shell Island Monitoring Station	13 February 2013, Initial notification provided to TAG. 18 February 2013, Revision 01 provided to TAG for review.
Exceedance Report #16	Migratory Shorebird Count (Pond D only)	28 May 2013, Initial notification provided to TAG. 31 May 2013, Revision 0 provided to TAG for review.
Exceedance Report #17	Toxicant levels (Zinc) in Treatment Pond K	21 June 2013, Initial notification provided to TAG. 25 June 2013, Revision 0 provided to TAG for review.
Exceedance Notification #18	Migratory Shorebird Count (Pond K only)	26 June 2013, Initial notification provided to TAG. 26 June 2013, Requested the Proponent seek advice from TAG on the necessity for exceedance attributability report to be carried out given the comment from the TAG on the previous exceedance reports that reductions in bird numbers are likely due to behaviour of the birds rather than dredging operations.
Exceedance Notification #19	Migratory Shorebird Count (Pond D only)	08 July 2013, Initial notification provided to TAG & SEWPAC. 08 July 2013, Requested the Proponent seek advice from TAG on the necessity for exceedance attributability report to be carried out given the comment from the TAG on the previous exceedance reports that reductions in bird numbers are likely due to behaviour of the birds

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Report Number	Exceedance Type	Comments
		rather than dredging operations. 08 July 2013, Advice received from Proponent that the TAG is likely to conclude the exceedance is as a result of migration & information in notification should be sufficient to allow TAG assessment of the exceedance. No report produced.
Exceedance Report #20	Turbidity Exceedance at the Pond K to E outlet, Monitoring location (11).	26 June 2013, Request made to the Proponent to change the application of turbidity trigger levels at the Pond K outlet 12 July 2013, Initial notification provided to TAG & SEWPaC. 19 July 2013, Exceedance Report Revision 0 provided to TAG for review
Exceedance Report#21	Migratory Shorebird Count (Pond D only)	18 July 2013, Initial notification provided to TAG & SEWPaC for 11 – 16 July 2013 exceedance. 07 August 2013, Initial notification provided to TAG & SEWPaC for 25 July– 01 August 2013 exceedance. 14 August 2013, Initial notification provided to TAG & SEWPaC for 08 – 12 August 2013 exceedance. 19 August 2013, Exceedance Report (21) Revision 0 provided to TAG for review covering three exceedances for the period 11 July 2013 to 12 August 2013 20 August 2013, Proponent advises of TAG's comments confirm that reduction in numbers is due to tidal movements
Exceedance Report #22	Turbidity Exceedance at the Pond K to E outlet, Monitoring location (11).	24 July 2013, Initial notification provided to TAG & SEWPaC. 31 July 2013, Exceedance Report Revision 0 provided to TAG for review
Exceedance Notification #23	Toxicant levels (Copper) in Treatment Pond K inlet, Monitoring Location (1).	06 August 2013, Initial notification provided to TAG & SEWPaC. 16 August 2013, Exceedance Report Revision 0 provided to TAG for review
Exceedance Notification #24	Migratory Shorebird Count (Pond D only)	This notification refers to the 25 July– 01 August 2013 exceedance discussed in Exceedance Report #21 No separate report produced for this exceedance.
Exceedance Report #25	Turbidity Exceedance at the Pond K to E outlet, Monitoring location (11).	12 August 2013, Initial notification provided to TAG & SEWPaC. 31 August 2013, Exceedance Report Revision 0 provided to TAG for review
Exceedance Report #26	Toxicant levels (Copper) in Treatment Pond E (North) outlet, Monitoring Location (13).	04 September 2013, Initial notification provided to TAG & SEWPaC. 10 September 2013, Exceedance Report (26) Revision 0 provided to TAG for review
Exceedance Report #27	Turbidity Exceedance at South Shell Island Monitoring Station	27 September 2013, Initial notification provided to TAG 28 September 2013, Initial notification provided to SEWPaC Since the turbidity exceedances at South Shell Island are directly correlated to the spring tides and not influenced by dredging it was suggested to the Proponent that an attributability investigation a report not be undertaken. 18 October 2013, Proponent advised of TAG's comments

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Report Number	Exceedance Type	Comments
		that there is no evidence to suggest the high turbidity readings recorded at South Shell Island in September 2013 were influenced by the dredging operations. Given these factors an exceedance report is not considered to be required. Nevertheless, on 22 October 2013, Exceedance Report (27) Revision 0 provided to TAG for review
Exceedance Report #28	Migratory Shorebird Count (Pond K only)	10 October 2013, Initial notification provided to TAG & SEWPaC for 02 – 08 October 2013 exceedance. 18 October 2013, Proponent advised of TAG's comments confirming that changes in migratory shorebird numbers are likely due to natural variation 21 October 2013, Initial notification provided to TAG & SEWPaC for 17 – 21 October 2013 exceedance. 08 November 2013, Exceedance Report (28) Revision 0 provided to TAG for review covering two exceedances for the period 02 to 21 October 2013
Exceedance Report #29	Turbidity Exceedance at South Shell Island Monitoring Station	08 November 2013, Initial notification provided to TAG & SEWPaC for the Four Day Rolling Average NTU trigger exceedance for Intensity of >12NTU 11 November 2013, a further notification was provided to TAG for the Four Day Rolling Average NTU trigger exceedance for Duration >10NTU over 4 consecutive days & Frequency >10NTU for >4 day of 7 18 November 2013, Exceedance Report (29) Revision 0 provided to TAG for review
Exceedance Report #30	Migratory Shorebird Count (Pond K & D)	11 November 2013, Initial notification provided to TAG & SEWPaC for the bird count on 07 November 2013. 19 November 2013, Exceedance Report (30) Revision 0 provided to TAG for review
Exceedance Report #31	Migratory Shorebird Count (Pond K & D)	19 November 2013, Initial notification provided to TAG & SEWPaC 23 November 2013, Exceedance Report (31) Revision 0 provided to TAG for review
Exceedance Report #32	Toxicant levels (Copper) in Treatment Pond K inlet, Monitoring Location (1) & Pond E (South) Monitoring Location (4).	21 November 2013, Initial notification provided to TAG & SEWPaC 28 November 2013, Exceedance Report (32) Revision 0 provided to TAG for review
Exceedance Report #33	Turbidity Exceedance at South Shell Island Monitoring Station	21 November 2013, Initial notification provided to TAG & SEWPaC for the Four Day Rolling Average NTU trigger exceedance for Intensity of >12NTU 25 November 2013, a further notification was provided to TAG for the Four Day Rolling Average NTU trigger exceedance for Duration >10NTU over 4 consecutive days & Frequency >10NTU for >4 day of 7 27 November 2013, Exceedance Report (33) Revision 0 provided to TAG for review
Exceedance Report #34	Toxicant levels (Copper) in Treatment Pond K inlet, Monitoring Location (11) & Pond E (South) Monitoring	30 November 2013, Initial notification provided to TAG & SEWPaC 05 December 2013, Exceedance Report (34) Revision 0 provided to TAG for review

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Report Number	Exceedance Type	Comments
	Location (4).	
Exceedance Report #35	Migratory Shorebird Count (Pond K only)	05 December 2013, Initial notification provided to TAG & SEWPaC 17 December 2013, Exceedance Report (35) Revision 0 provided to TAG for review
Exceedance Report #36	Migratory Shorebird Count (Pond K & D)	19 December 2013, Initial notification provided to TAG & SEWPaC for 14 – 17 December 2013 exceedance. 29 December 2013, Data received from bird count conducted on 27 December 2013. Exceedance occurred between counts 17 – 27 December 2013. No notification sent. 21 January 2014, Initial notification provided to TAG & SEWPaC for 06 – 17 January 2014 exceedance. 21 January 2014, Requested Proponent seek advice from TAG regarding bird behaviours and necessity of exceedance report based on no dredging operation since 20 December 2013 & comment from TAG on previous exceedance reports that reductions in bird numbers are likely to reflect drivers external to the site including migration rather than dredging operations. No advice received. 12 May 2104, Exceedance Report (36) Revision 1 to provided to TAG for review covering three exceedances for the period 14 December 2013 to 17 January 2014

7 MARINE FAUNA AND MIGRATORY BIRDS

7.1 Marine Fauna Monitoring

As per **Section 6.4** of the DDSPMP, the dredge operators have monitored for stranded, injured or dead large marine vertebrates on a daily basis and provided relevant information in contact with the Builder's Supervisors and HSE Advisors.

No vessel interactions / collisions with coastal dolphins, marine turtles, dugongs and other large marine fauna have been recorded within this reporting period.

No marine fauna observations were reported during the month of January 2014.

7.2 Migratory Bird Monitoring

As per **Section 6.6** of the DDSPMP, the total number of migratory shorebirds was assessed at treatment Ponds D and K on 03, 06 and 17 January 2014 by members of Conservation Volunteers Australia (CVA). This assessment includes counts for the 36 species as listed under the EPCB Act. **Table 8** provides counts of migratory shorebirds observed.

On 21 January 2014 an exceedance notification was provided to TAG for an exceedance of a reduction in the total numbers of migratory shorebirds of 86.5% that occurred between counts carried out on 06 and 17 January 2014. This is over the trigger of a fall greater than 50% from one week to the next.

A summary of the total number of migratory shorebirds observed during the January 2014 counts is shown in **Table 7**.

Table 6 Phase 2 January 2014 Shorebird Count

Count date	Week No. Phase 2 Dredging	Total shorebird counts(Pond D)	Total shorebird counts(Pond K)	Total shorebird counts (Pond D & K)
03 January 2014	36	120	68	188
06 January 2014	37	93	33	126
17 January 2014	38	17	0	17

Table 7 Migratory Bird Monitoring

MACMAHON CONTRACTORS Project: Darwin Marine Supply Base Title: Shore Bird Tracking										
Week	Jan-14	Jan-14	Jan-14	Jan-14	Jan-14	Jan-14	Jan-14	Jan-14	Jan-14	
Date	03/01/14	03/01/14	06/01/14	06/01/14	06/01/14	06/01/14	06/01/14	17/01/14	17/01/14	
Time of count	6:40	6:20	7:20	7:20	9:40	9:40	6:05	6:54	6:54	
Time of nearest high tide	6:52	6:52	9:12	9:12	9:12	9:12	6:29	6:29	6:29	
Height above sea level of nearest high tide (m)	7.03	7.03	6.75	6.75	6.75	6.75	6.32	6.32	6.32	
Location	Pond D	Pond K	Pond D	Pond D	Pond K	Pond K	Pond D	Pond K	Pond K	
Species	Count	Location	Count	Location	Count	Location	Count	Location	Count	
	Location	Count	Location	Count	Location	Count	Location	Count	Location	
Latham's snipe	0	Pond D	0	Pond K	0	Pond D	0	Pond K	0	
Pin-tailed snipe	0	Pond D	0	Pond K	0	Pond D	0	Pond K	0	
Swinhoe's snipe	0	Pond D	0	Pond K	0	Pond D	0	Pond K	0	
Black-tailed godwit	0	Pond D	0	Pond K	0	Pond D	0	Pond K	0	
Bar-tailed godwit	11	Pond D	0	Pond K	9	Pond D	0	Pond K	0	
Little curlew	0	Pond D	0	Pond K	0	Pond D	0	Pond K	0	
Whimbrel	1	Pond D	0	Pond K	0	Pond D	0	Pond K	0	
Eastern curlew	0	Pond D	0	Pond K	0	Pond D	0	Pond K	0	
Common redshank	0	Pond D	0	Pond K	0	Pond D	0	Pond K	0	
Marsh sandpiper	1	Pond D	0	Pond K	3	Pond D	0	Pond K	2	
Common greenshank	23	Pond D	0	Pond K	27	Pond D	0	Pond K	12	
Wood sandpiper	0	Pond D	0	Pond K	0	Pond D	0	Pond K	0	
Terek sandpiper	0	Pond D	0	Pond K	0	Pond D	0	Pond K	0	
Common sandpiper	0	Pond D	0	Pond K	0	Pond D	0	Pond K	1	
Grey-tailed tattler	0	Pond D	0	Pond K	0	Pond D	0	Pond K	0	
Wandering tattler	0	Pond D	0	Pond K	0	Pond D	0	Pond K	0	
Ruddy turnstone	0	Pond D	0	Pond K	0	Pond D	0	Pond K	0	
Asian dowitcher	0	Pond D	0	Pond K	0	Pond D	0	Pond K	0	
Great knot	22	Pond D	0	Pond K	3	Pond D	0	Pond K	0	
Red knot	0	Pond D	0	Pond K	0	Pond D	0	Pond K	0	
Sanderling	0	Pond D	0	Pond K	0	Pond D	0	Pond K	0	
Red-necked stint	30	Pond D	1	Pond K	22	Pond D	0	Pond K	2	
Long-toed stint	0	Pond D	0	Pond K	0	Pond D	0	Pond K	0	
Pectoral sandpiper	0	Pond D	0	Pond K	0	Pond D	0	Pond K	0	
Sharp-tailed sandpiper	12	Pond D	0	Pond K	19	Pond D	0	Pond K	0	
Curlew sandpiper	1	Pond D	0	Pond K	3	Pond D	0	Pond K	0	
Broad-billed sandpiper	0	Pond D	0	Pond K	0	Pond D	0	Pond K	0	
Ruff	0	Pond D	0	Pond K	0	Pond D	0	Pond K	0	
Red-necked phalarope	0	Pond D	0	Pond K	0	Pond D	0	Pond K	0	
Golden plover	14	Pond D	0	Pond K	0	Pond D	0	Pond K	0	
Grey plover	0	Pond D	0	Pond K	0	Pond D	0	Pond K	0	
Double-banded plover	0	Pond D	0	Pond K	0	Pond D	0	Pond K	0	
Lesser sand plover	3	Pond D	1	Pond K	6	Pond D	2	Pond K	0	
Greater sand plover	2	Pond D	66	Pond K	1	Pond D	31	Pond K	0	
Oriental plover	0	Pond D	0	Pond K	0	Pond D	0	Pond K	0	
Oriental pratincole	0	Pond D	0	Pond K	0	Pond D	0	Pond K	0	
Total	120	68	93	33	17	0	0	0	0	
Tide status	During Spring Tide Cycle		During Spring Tide Cycle		During Spring Tide Cycle		During Spring Tide Cycle		During Spring Tide Cycle	
Comments	CVA		CVA		CVA		CVA		CVA	

8 COMMUNICATIONS

8.1 Complaints Received and Responses

None identified within this reporting period.

8.2 Project Contacts

For any information or questions regarding this report contact the Darwin Marine Supply Base Project Manager (blair.middleton@territoriacivil.com.au) or Project Environmental Advisor (jessica.allaway@territoriacivil.com.au) write to PO Box 39648, Winnellie, 0821, NT.

9 REFERENCES

ANZECC. 1992. Australian water quality guidelines for fresh and marine waters. Australian and New Zealand Environment and Conservation Council, Canberra.

ANZECC. 1998. Interim ocean disposal guidelines. Australian and New Zealand Environment and Conservation Council, Canberra.

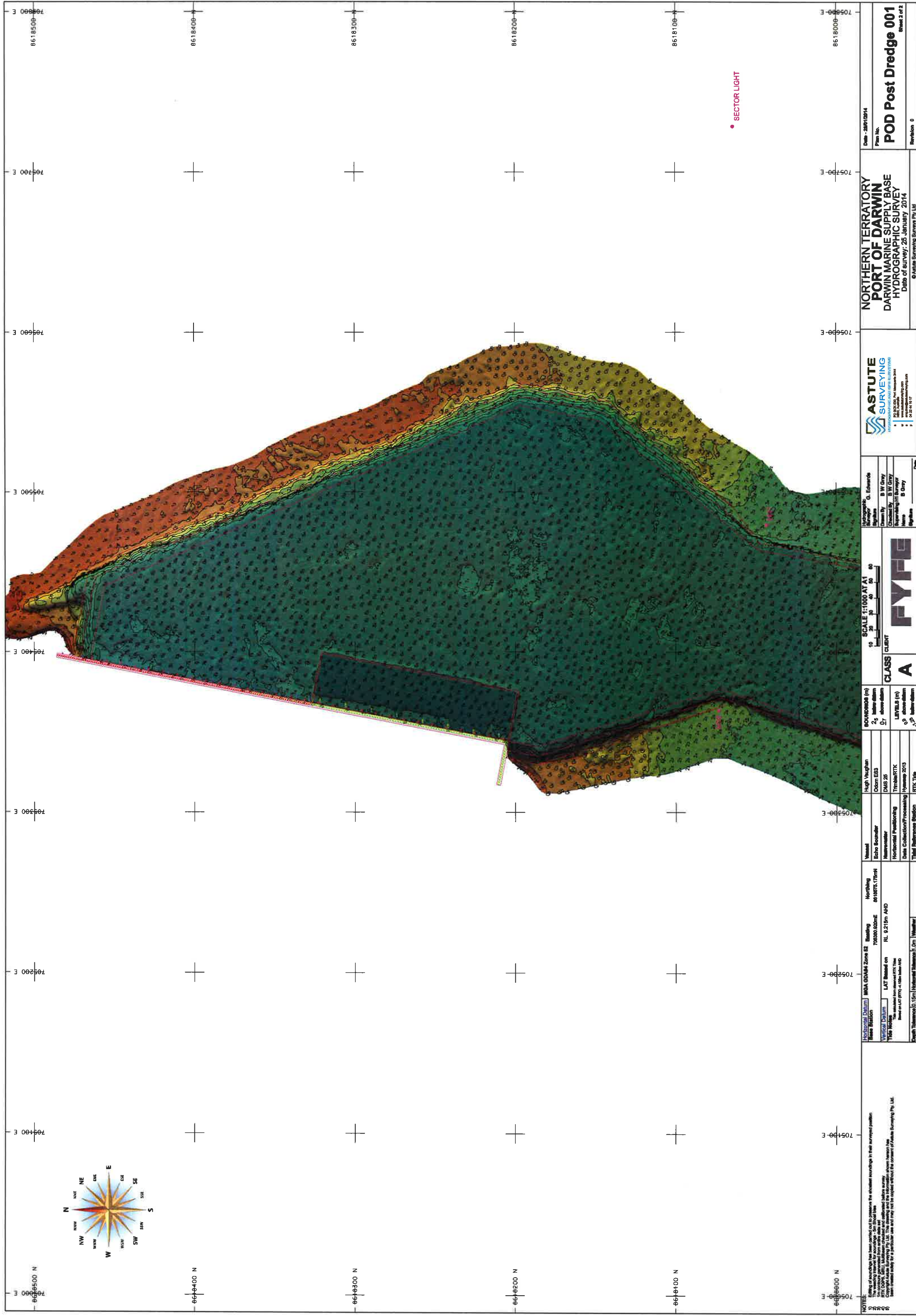
ANZECC/ARMCANZ. 2000. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australia and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand, Canberra,

(DDSPMP) Darwin Marine Supply Base Dredging and Dredge Spoil Placement Management Plan, 2 April 2013

Water Sampling Procedure Revision 02, 16 February 2013

10 SUPPORTING INFORMATION

Dredge Hydrographic Survey



NOTES:

- 1) Editing of soundbites has been carried out to preserve the clearest soundbites in their surveyed position.
- 2) The wedding interview for soundbites - see above table.
- 3) 1m counts generated from entire data set
- 4) RTK DGPS, Jentel, Multibeam checked and calibrated before survey
- 5) Copyright Akula Surveying Pty Ltd. The drawing and the information herein has been created solely for a particular use and may not be copied without the consent of Akula Surveying Pty Ltd.

Treatment Pond Sampling Data and Graphs

Units for Water Samples		pH		Turbidity		SSC	Arsenic (Total)	Arsenic (AsV)	Cadmium	Chromium (Total)	Chromium (CrVI)	Copper	Lead	Mercury	Nickel	Selenium	Zinc		
DOSPMP Guidelines		8.0	-	52	111	100	13.0	24.0	13.0	4.4	27.4	4.4	4.4	0.4	70.0	5.0	15.0		
Macmahon Reef Bund Outlet Baseline		8.5		4.0		40.0						Not Tested							
Macmahon Dredge Foot Print Baseline		8.4		6.0		17.0						Not Tested							
Macmahon Pond K Baseline		7.4		27.3		49.0		2.6	<0.2		2.8	2.0	9.0	<0.0001	1.7	<2.0	10.0		
Macmahon Pond D Baseline		8.7		11.5		25.0		3.7	<0.4		<1.0	2.5	<0.4	<0.1	<1.0	<4.0	<10.0		
Macmahon Pond E Baseline		8.0		4.6		22.5		2.3	<0.2		<0.5	1.0	<0.2	<0.1	<0.5	<2.0	<5.0		
Units for Sediment Samples				NTU		mg/L		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg		
URS Harbour Baseline																			
DP Pond K Baseline								35.3	<0.1	4.3	26.5	4.3	8.7	Not Tested	7.5	Not Tested	11.7		
DP Pond D Baseline								20.7	<1.0		43.7	26.7	16.7	<0.1	10.0	Not Tested	32.7		
DP Pond E Baseline																			
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Units for Water Samples		pH		Turbidity		SSC		Arsenic (Total)		Arsenic (AsV)		Cadmium		Chromium (Total)		Chromium (CrVI)		Copper		Lead		Mercury		Nickel		Selenium		Zinc	
DOSPMP Guidelines		8.0	-	8.5	111	/	52	13.0	24.0	13.0	5.5	4.4	27.4	4.4	27.4	4.4	1.3	70.0	0.4	4.4	0.4	<0.001	70.0	5.0	5.0	15.0	15.0		
Macmahon Rat Bund Outlet Baseline		8.5	-	8.5	40.0		4.0																						
Macmahon Dredge Foot Print Baseline		8.4	-	8.4	17.0		6.0				<0.2						2.0			9.0		<0.001				<2.0	10.0		
Macmahon Pond K Baseline		7.4	-	7.4	49.0		27.3			3.7	<0.4						2.5			0.4		<0.1				<4.0	<10.0		
Macmahon Pond D Baseline		8.7	-	8.7	22.5		11.5			2.3	<0.2						1.0			<0.2		<0.1				<0.5	<2.0		
Macmahon Pond E Baseline		8.0	-	8.0			4.6																						
Units for Sediment Samples							NTU																						
URS Harbour Baseline																													
DP Pond K Baseline																													
DP Pond D Baseline																													
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Notes:
Reading 1 = 7:00AM - 9:00AM
Reading 2 = 9:00AM - 11:00AM
Reading 3 = 11:00AM - 1:00PM
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Reading 5 = 3:00PM - 5:00PM

Units for Water Samples		pH		Turbidity NTU	SSC mg/L	Arsenic (Total) µg/L	Arsenic (AsIII) µg/L	Arsenic (AsV) µg/L	Cadmium µg/L	Chromium (Total) µg/L	Chromium (CrVI) µg/L	Copper µg/L	Lead µg/L	Mercury µg/L	Nickel µg/L	Selenium µg/L	Zinc µg/L
		6.0	8.5														
DSDRMP Guidelines		6.0	8.5	111	52	130	240	130	5.5	4.4	27.4	4.4	1.3	0.4	70.0	5.0	15.0
Macmahon Rail Bund Outlet Baseline																	
Macmahon Dredge Foot Print Baseline		8.5		4.0							Not Tested						
Macmahon Pond K Baseline		8.4		6.0			2.6		<0.2		2.8		2.0	9.0	1.7	<2.0	10.0
Macmahon Pond D Baseline		7.4		27.3	480		3.7	<1.0	<0.2		<1.0		2.5	0.4	<1.0	<10.0	<10.0
Macmahon Pond E Baseline		8.7		11.5	250		2.3		<0.2		<0.5		1.0	<0.1	<0.5	<2.0	<2.0
Macmahon Pond F Baseline		8.0		4.6	22.5												
Units for Sediment Samples					mg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
URS Harbour Baseline							35.3	<0.1	<0.1	28.5	26.5	4.3	26.7	8.7	Not Tested	11.7	32.7
DP Pond K Baseline							20.7		<1.0		43.7		26.7	16.7	10.0	Not Tested	32.7
DP Pond D Baseline															7.5	Not Tested	32.7
DP Pond E Baseline															10.0	Not Tested	32.7
Report Not provided to Date																	
Report Not provided to Date																	

Location 2 - K to D outlet	06-Nov-13	Wednesday	Blocked																									
	07-Nov-13	Thursday	Blocked																									
	08-Nov-13	Friday	Blocked																									
	09-Nov-13	Saturday	Blocked																									
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31-Jan-14	Friday	Blocked																										

Notes:
Reading 1 = 7:00AM - 9:00AM
Reading 2 = 9:00AM - 11:00AM
Reading 3 = 11:00AM - 1:00PM
Reading 4 = 1:00PM - 3:00PM
Reading 5 = 3:00PM - 5:00PM

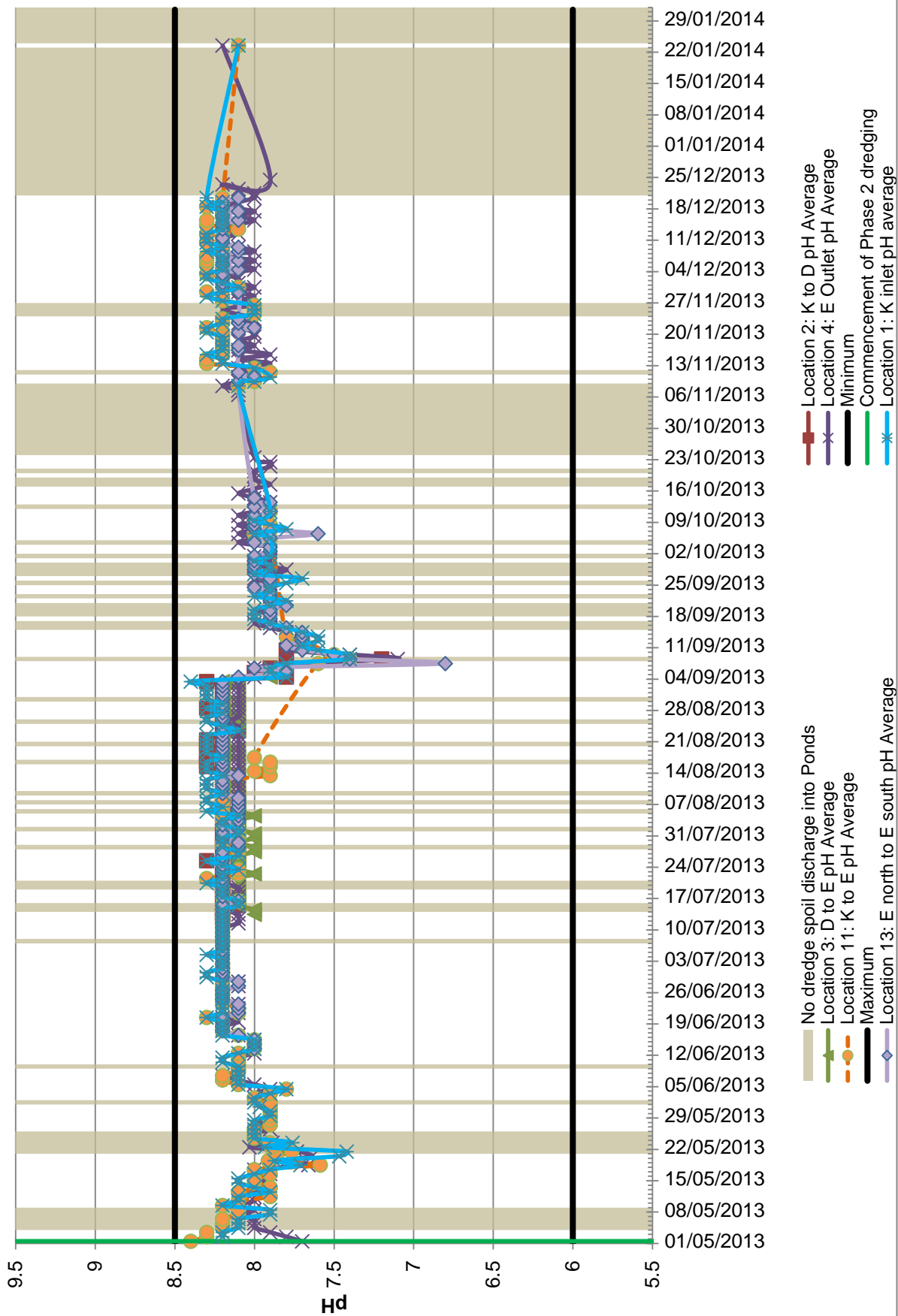
Units for Water Samples		pH		Turbidity		SSC		Arsenic (Total)		Arsenic (AsIII)		Arsenic (AsV)		Cadmium		Chromium (Total)		Chromium (Cr(VI))		Copper		Lead		Mercury		Nickel		Selenium		Zinc	
				NTU		mg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		mg/kg		µg/L		µg/L		µg/L	
DDBSRP Guidelines		6.0	8.5	11	52	100	13.0	24.0	13.0	4.4	27.4	4.4	1.3	2.8	5.5	27.4	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Macmahon Rail Bund Outlet Baseline		8.5		4.0		40.0																									
Macmahon Dredge Foot Pit#1 Baseline		8.4		6.0		17.0																									
Macmahon Pond K Baseline		7.4		27.3		49.0																									
Macmahon Pond D Baseline		8.7		22.5		25.0																									
Macmahon Pond E Baseline		8.0		4.6																											
Units for Sediment Samples		-		NTU		mg/L			mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg
URS Harbour Baseline																															
DP Pond K Baseline																															
DP Pond D Baseline																															
DP Pond E Baseline																															

Notes:

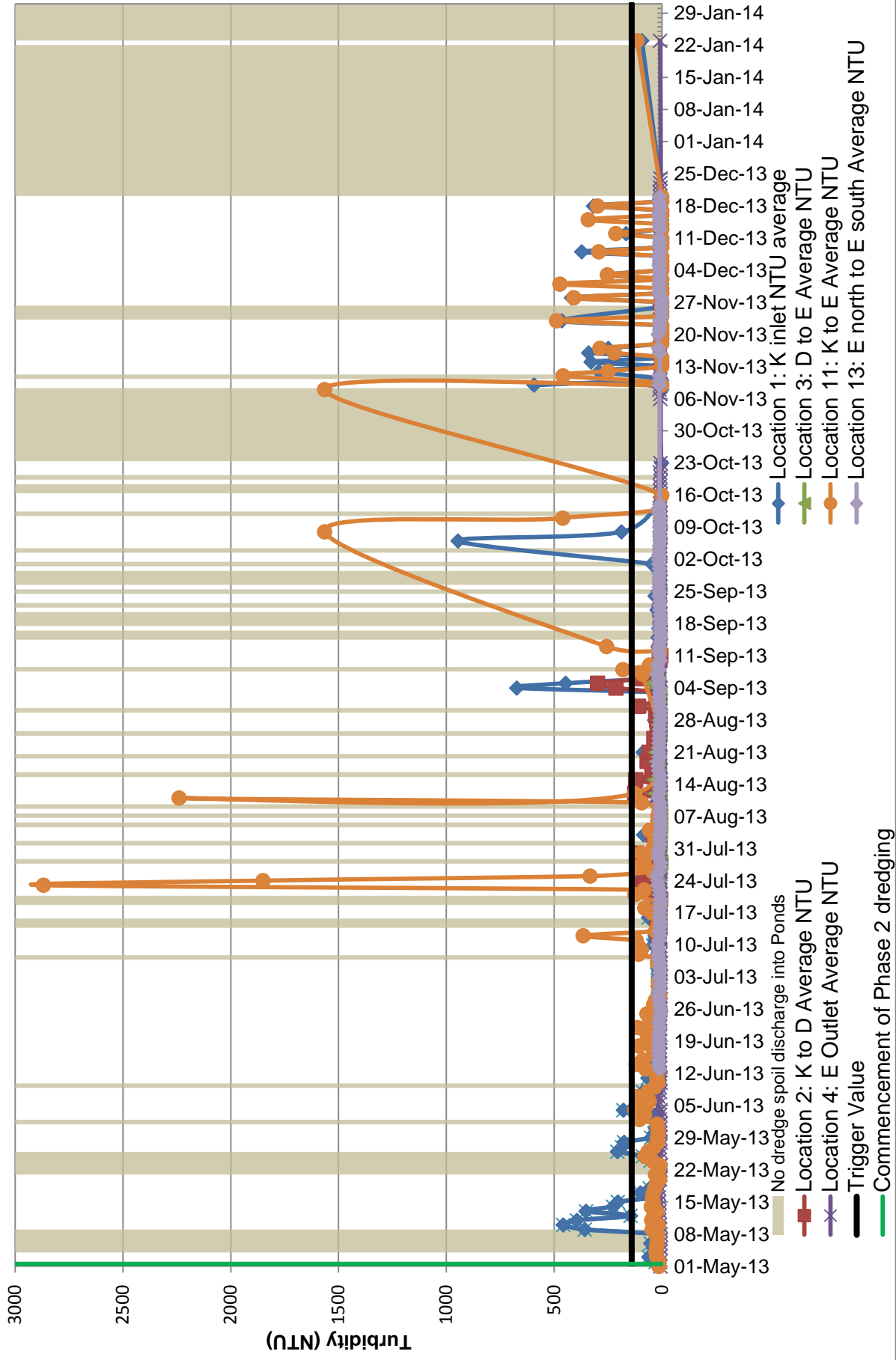
Reading 1 = 7:00AM - 9:00AM
Reading 2 = 9:00AM - 11:00AM
Reading 3 = 11:00AM - 1:00PM
Reading 4 = 1:00PM - 3:00PM
Reading 5 = 3:00PM - 5:00PM

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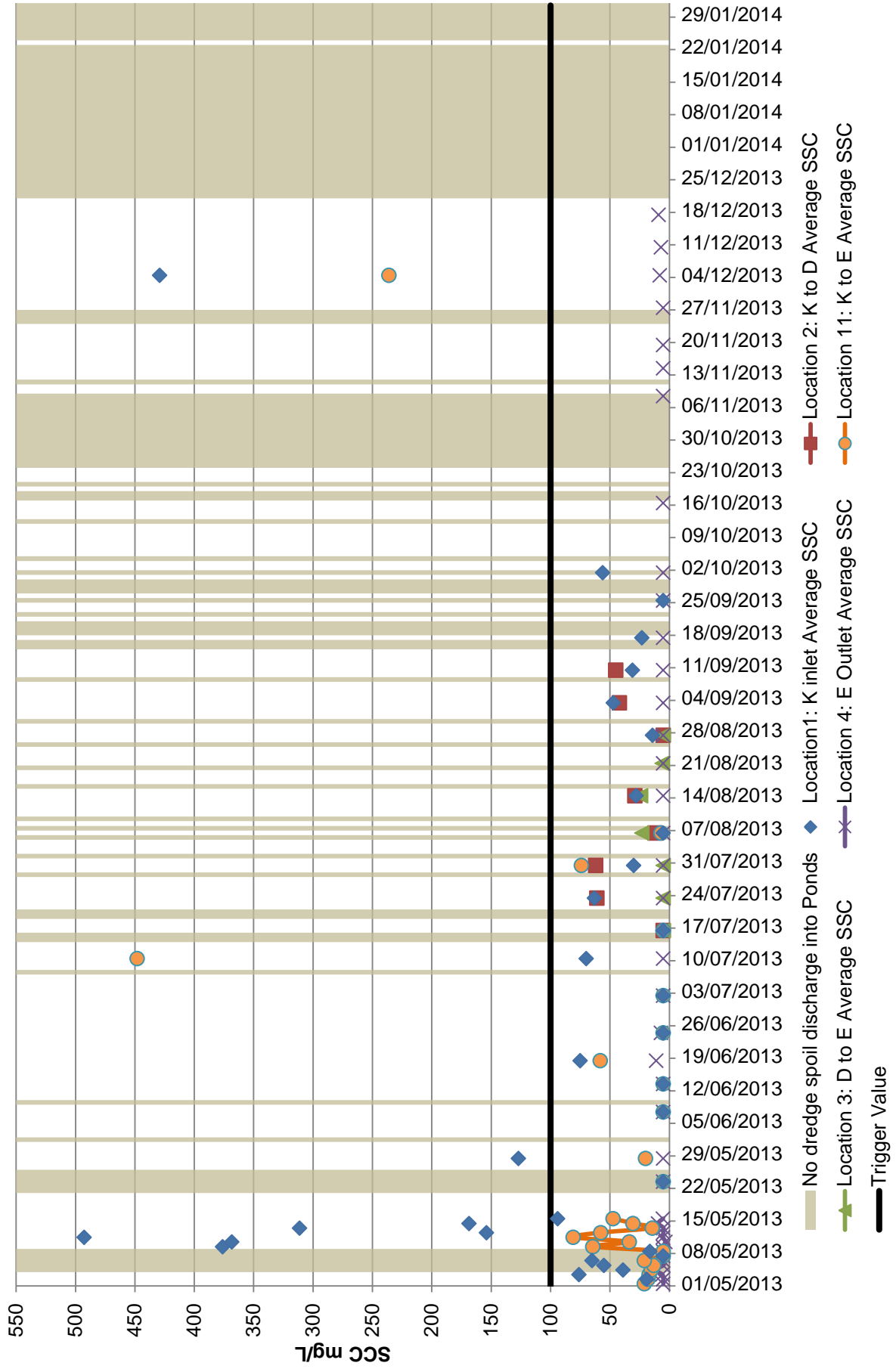
East Arm Dredge Ponds - Comparison of pH Average



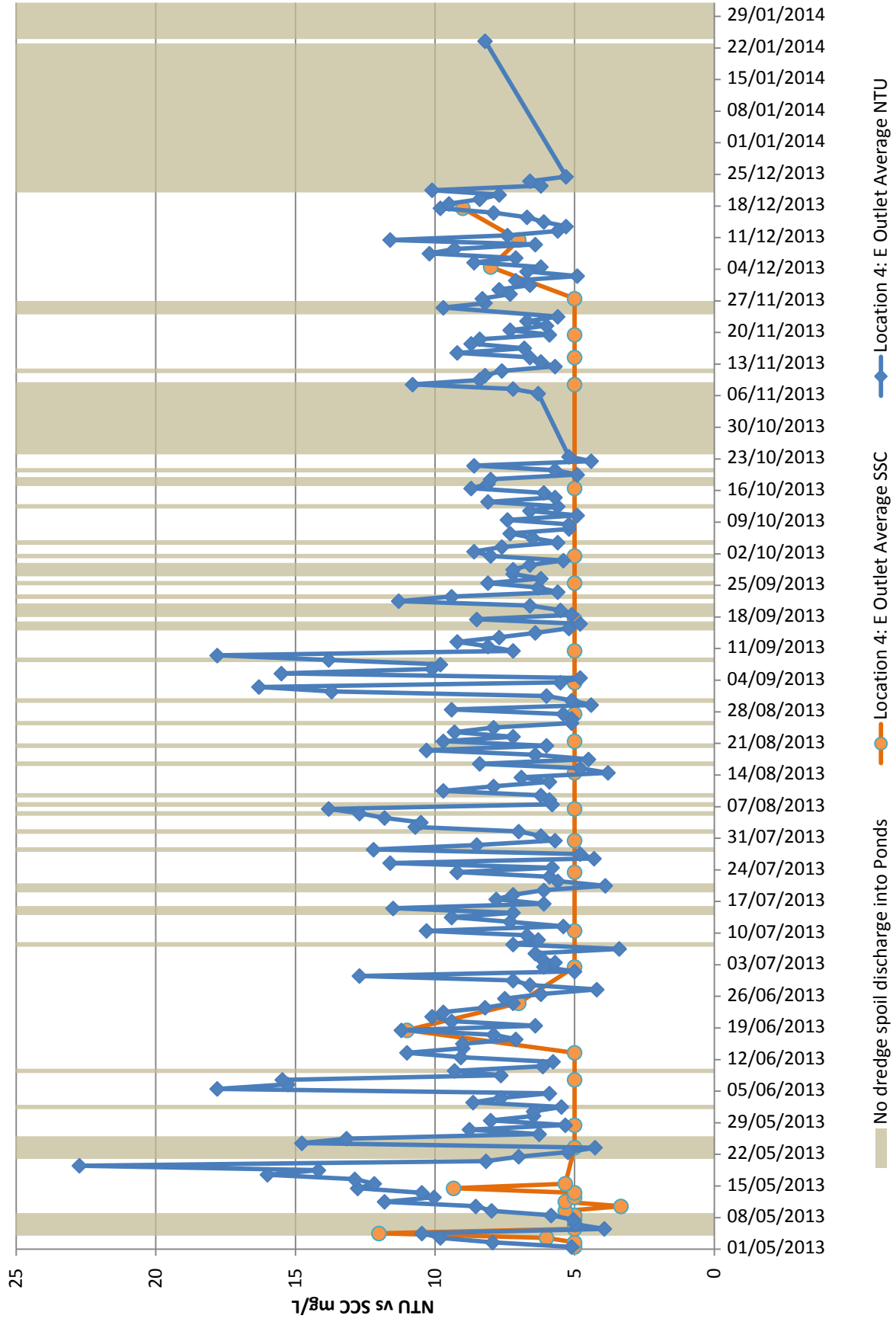
East Arm Dredge Ponds - Comparison of Average Turbidity



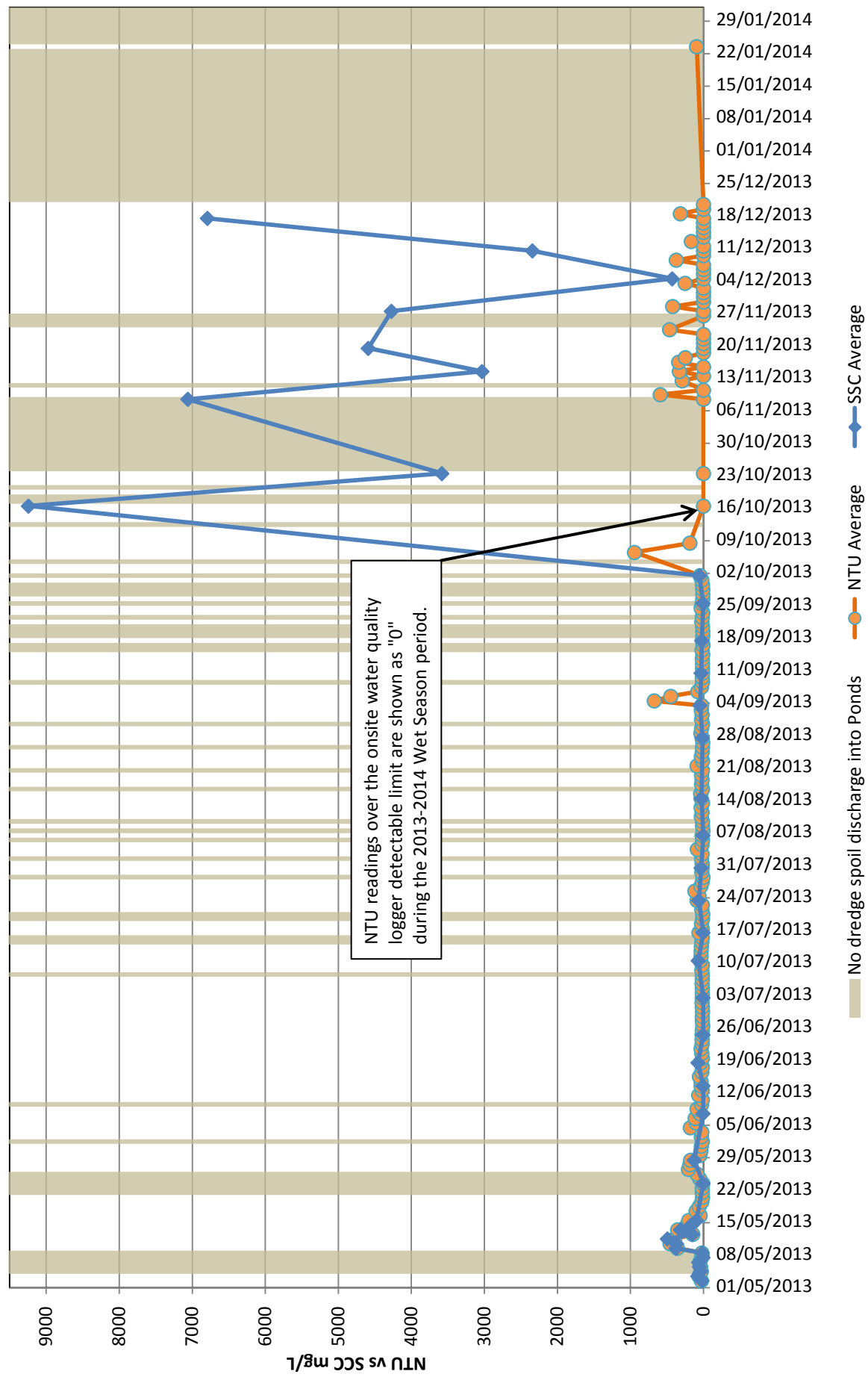
East Arm Dredge Ponds - Comparison of Average SSC



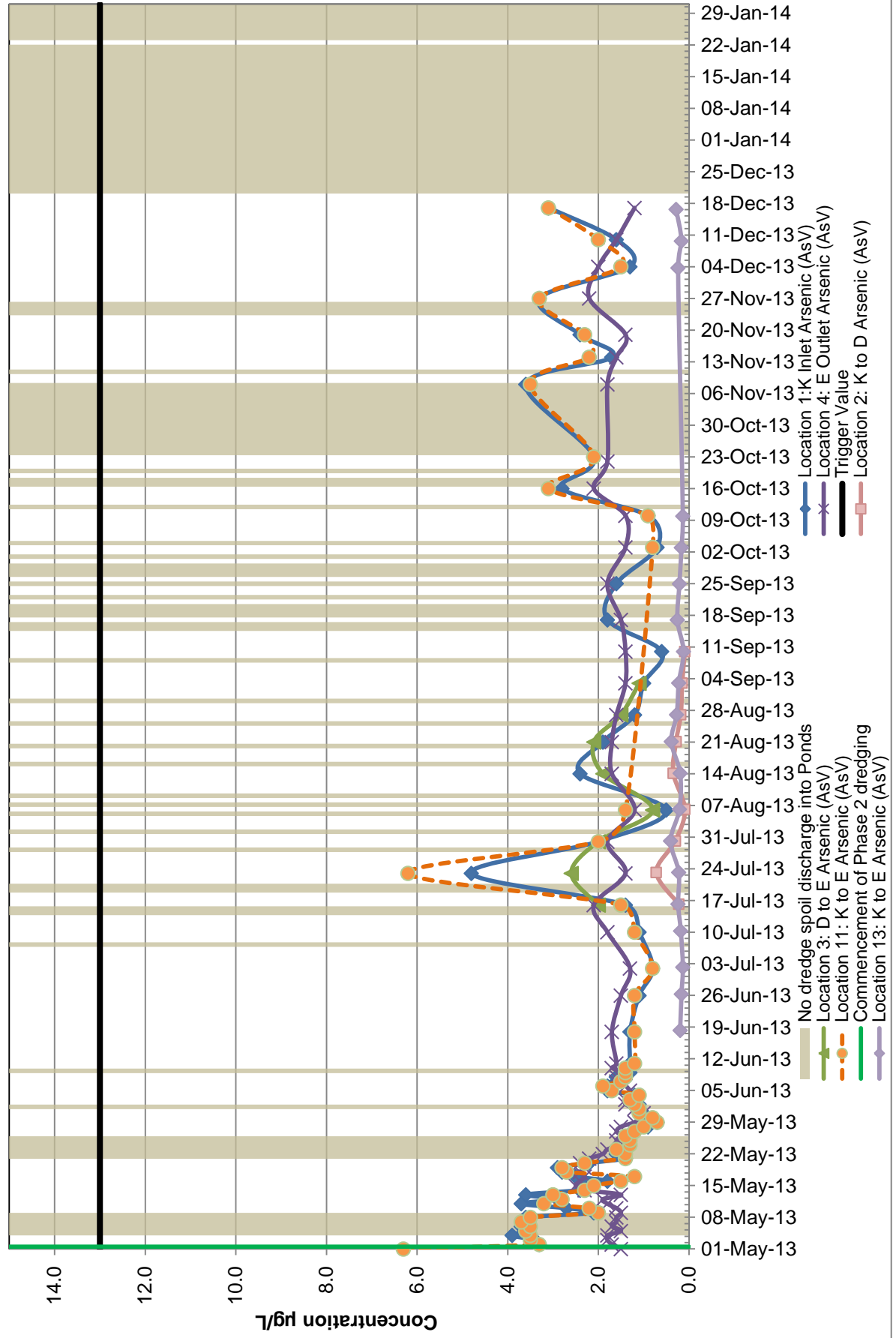
East Arm Dredge Ponds - Comparison of Average NTU and SCC E Outlet



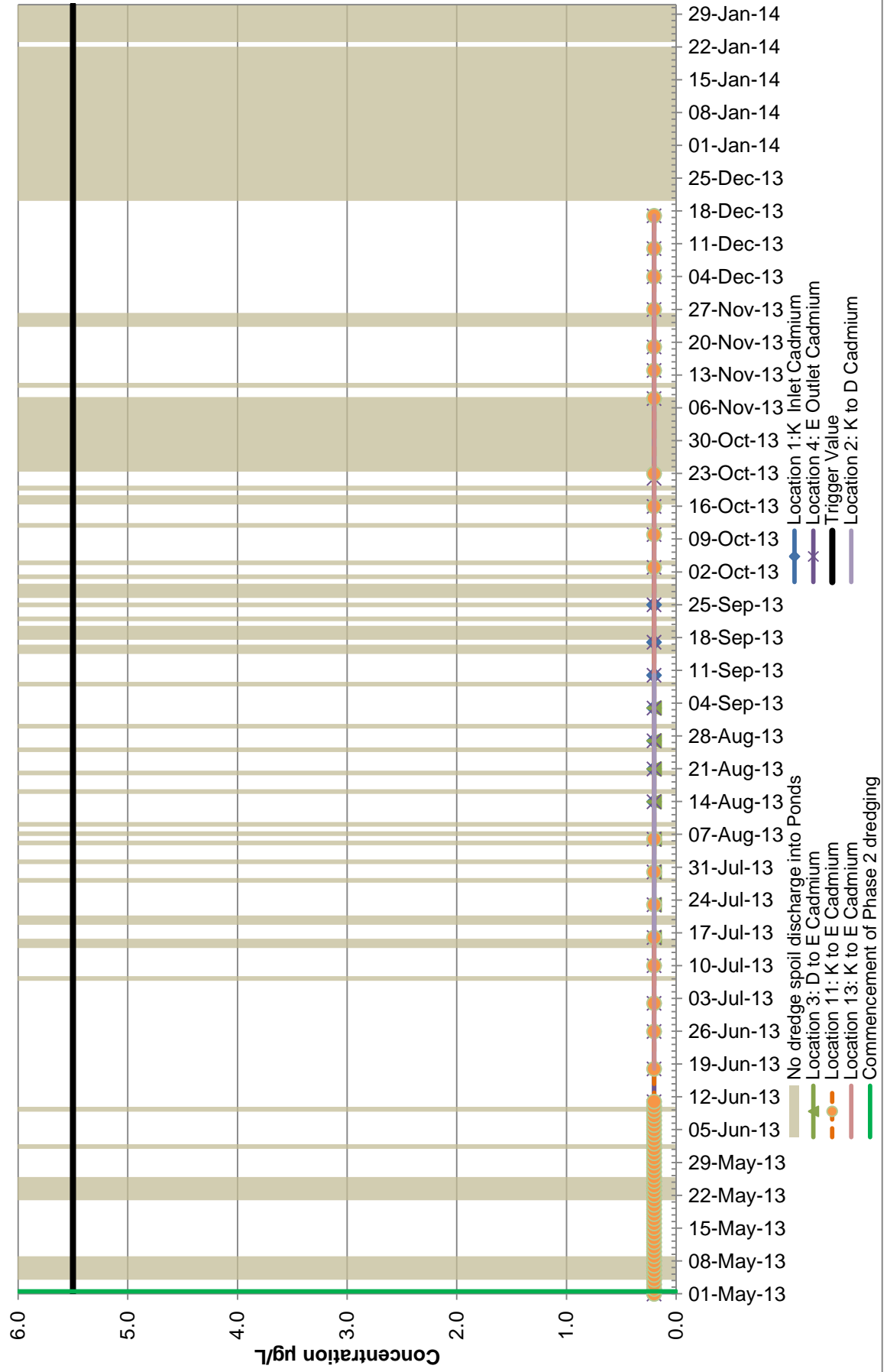
East Arm Dredge Ponds - Comparison of Average NTU and SSC at K Inlet



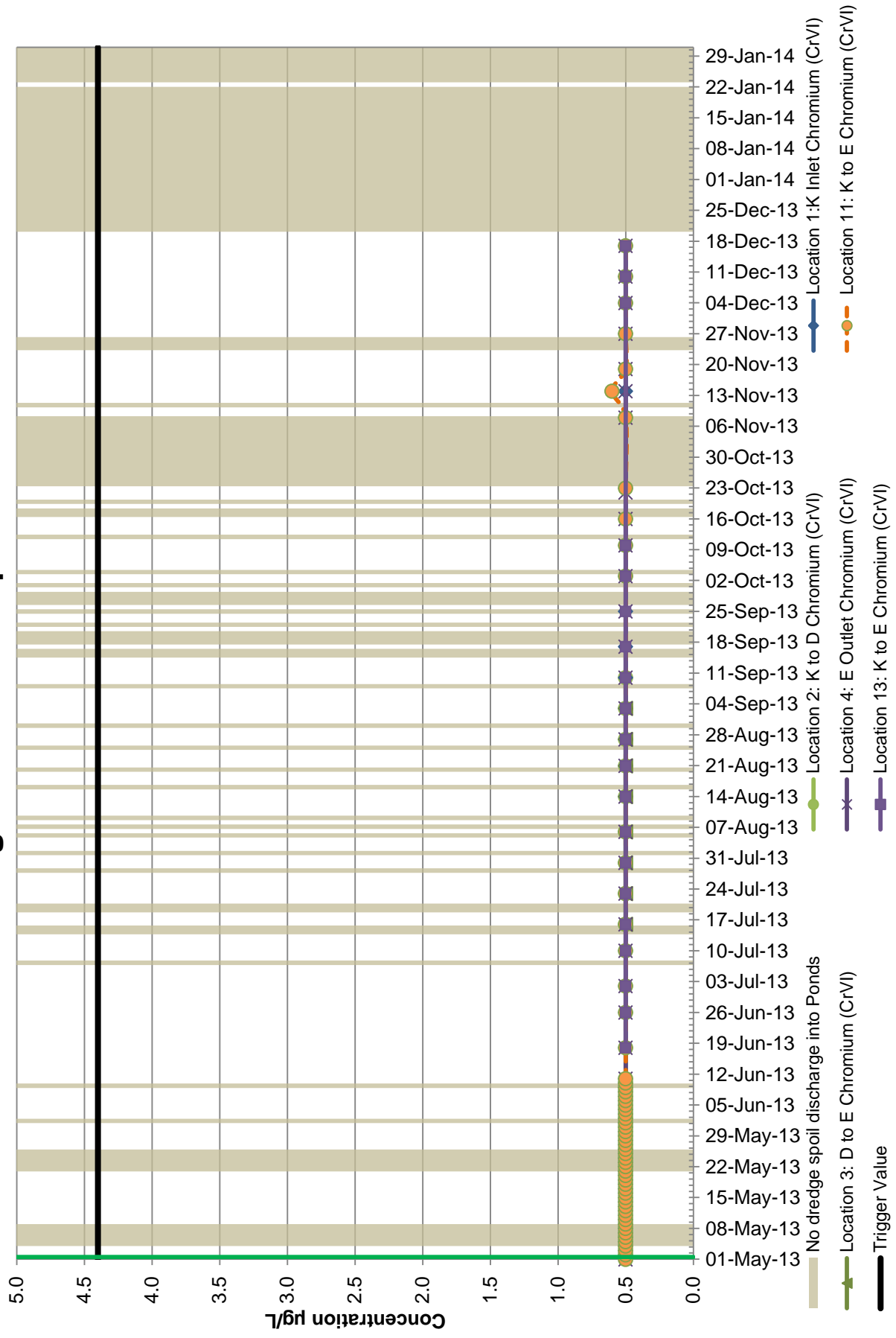
East Arm Dredge Ponds - Comparison of Arsenic



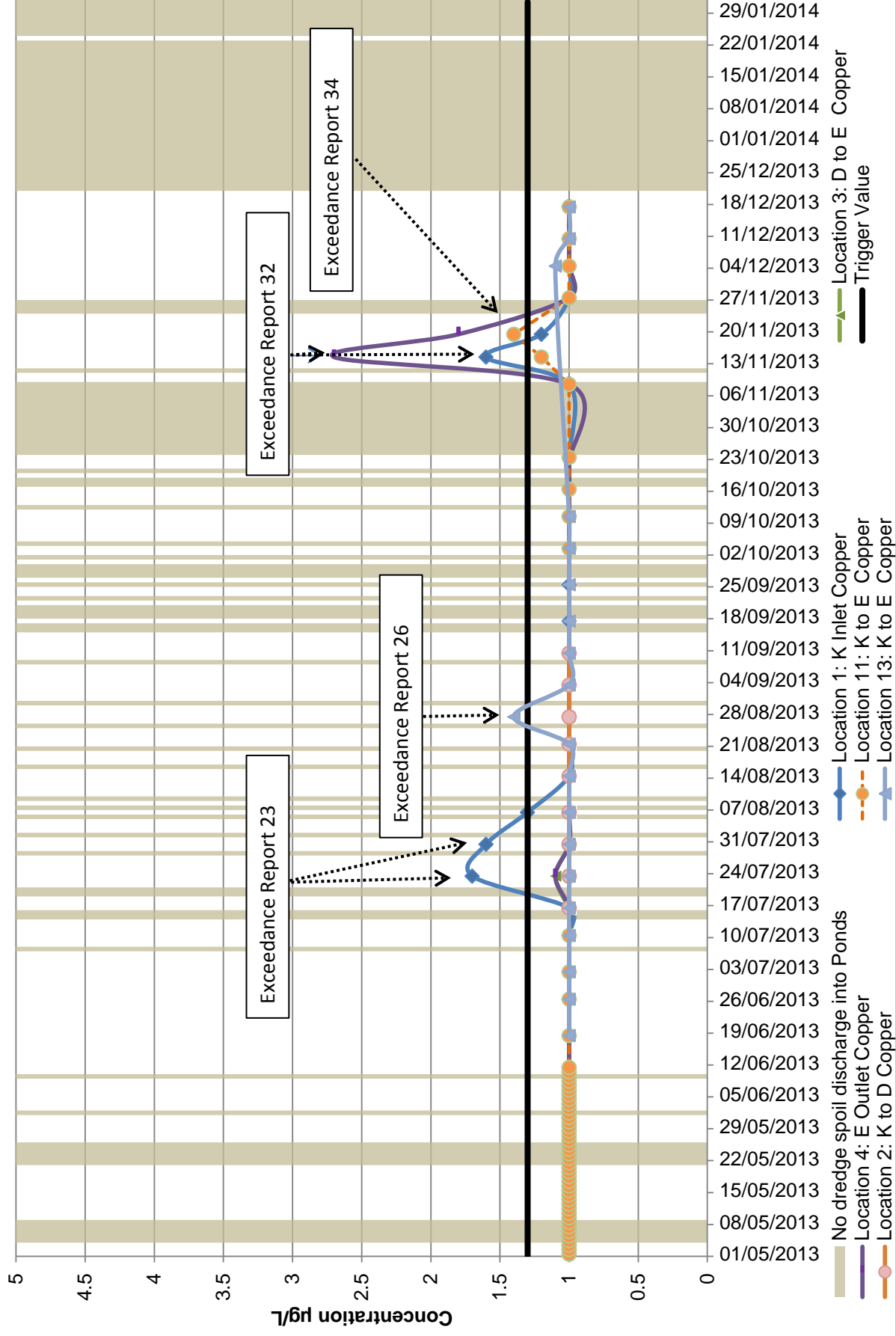
East Arm Dredge Ponds - Comparison of Cadmium



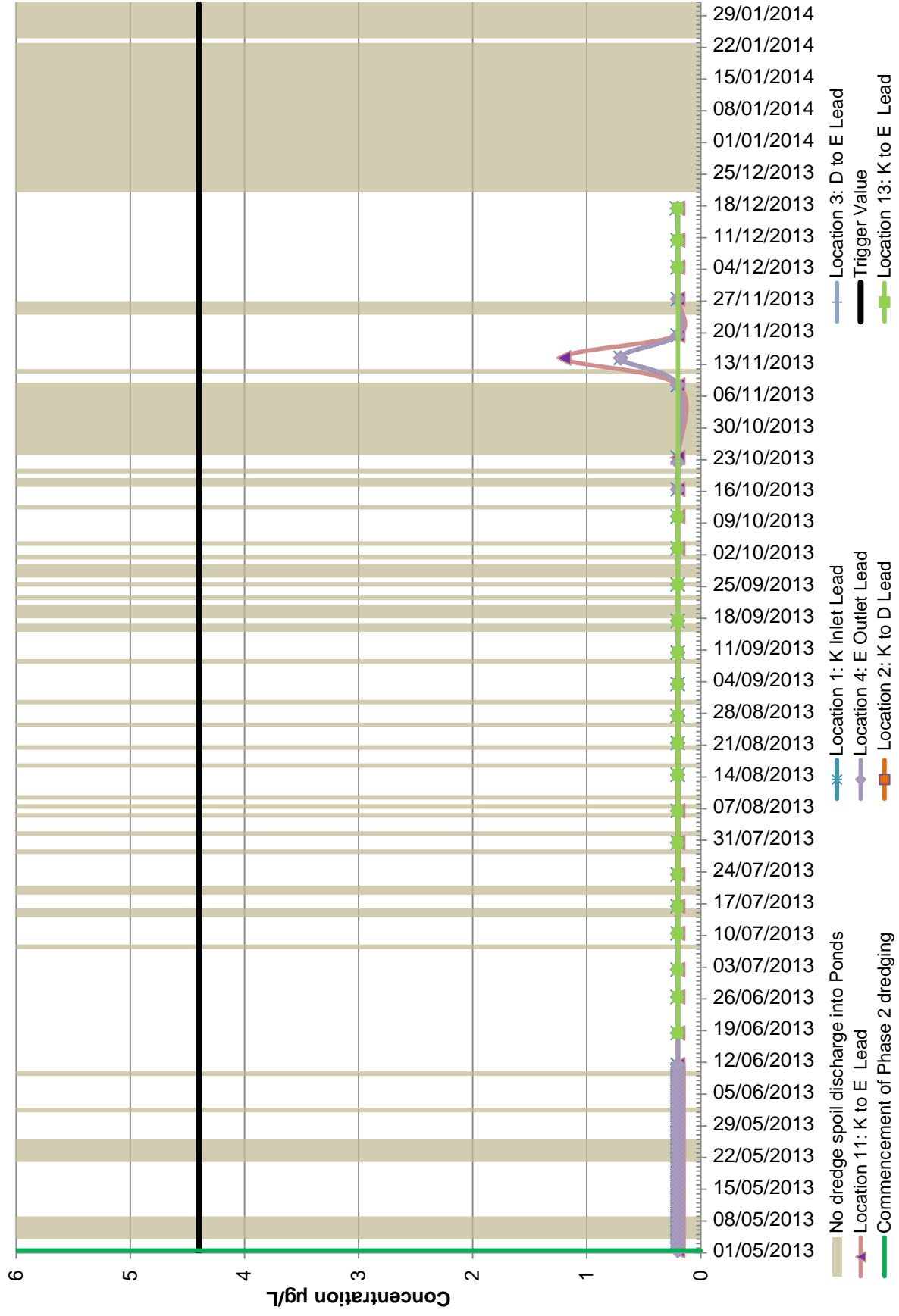
East Arm Dredge Ponds - Comparison of Chromium



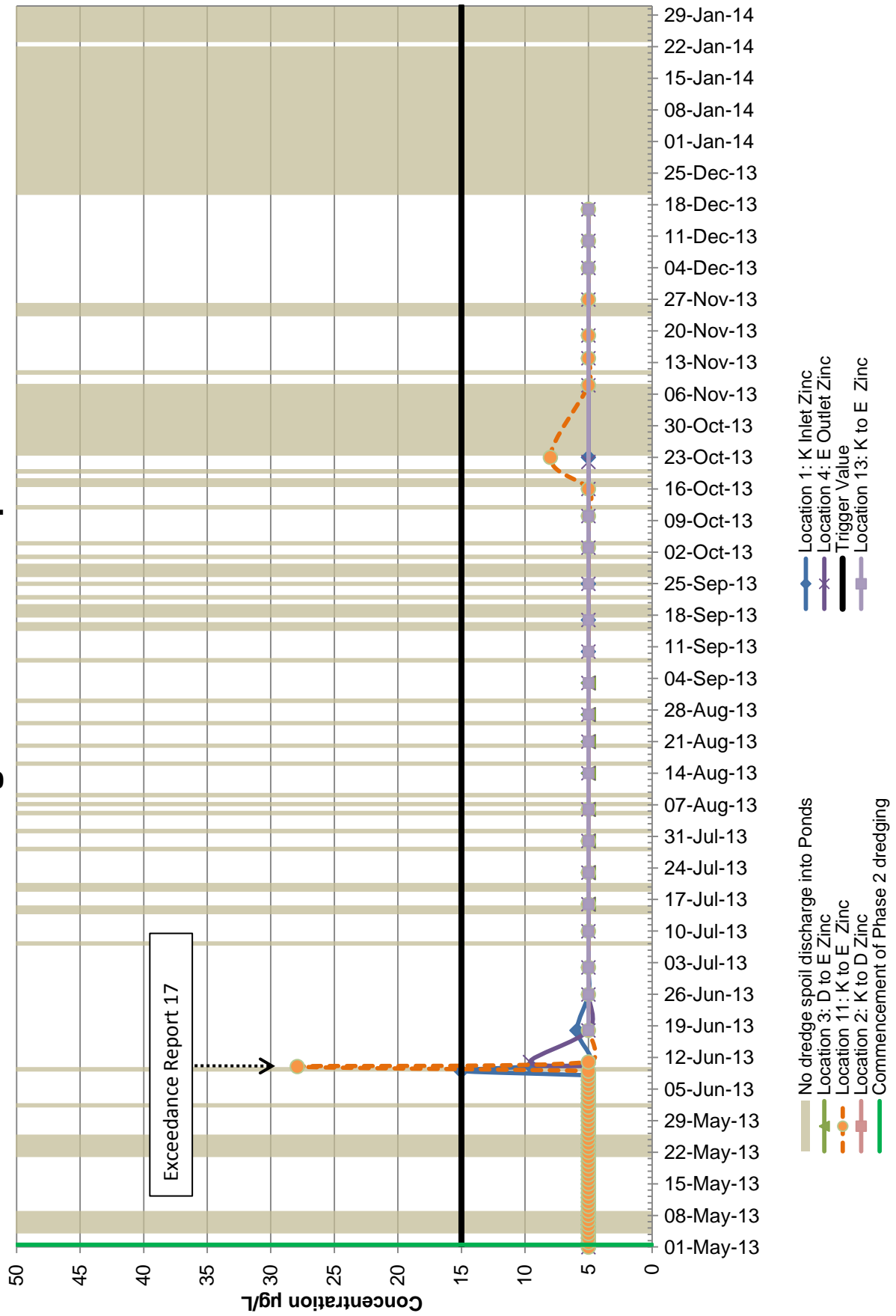
East Arm Dredge Ponds - Comparison of Copper



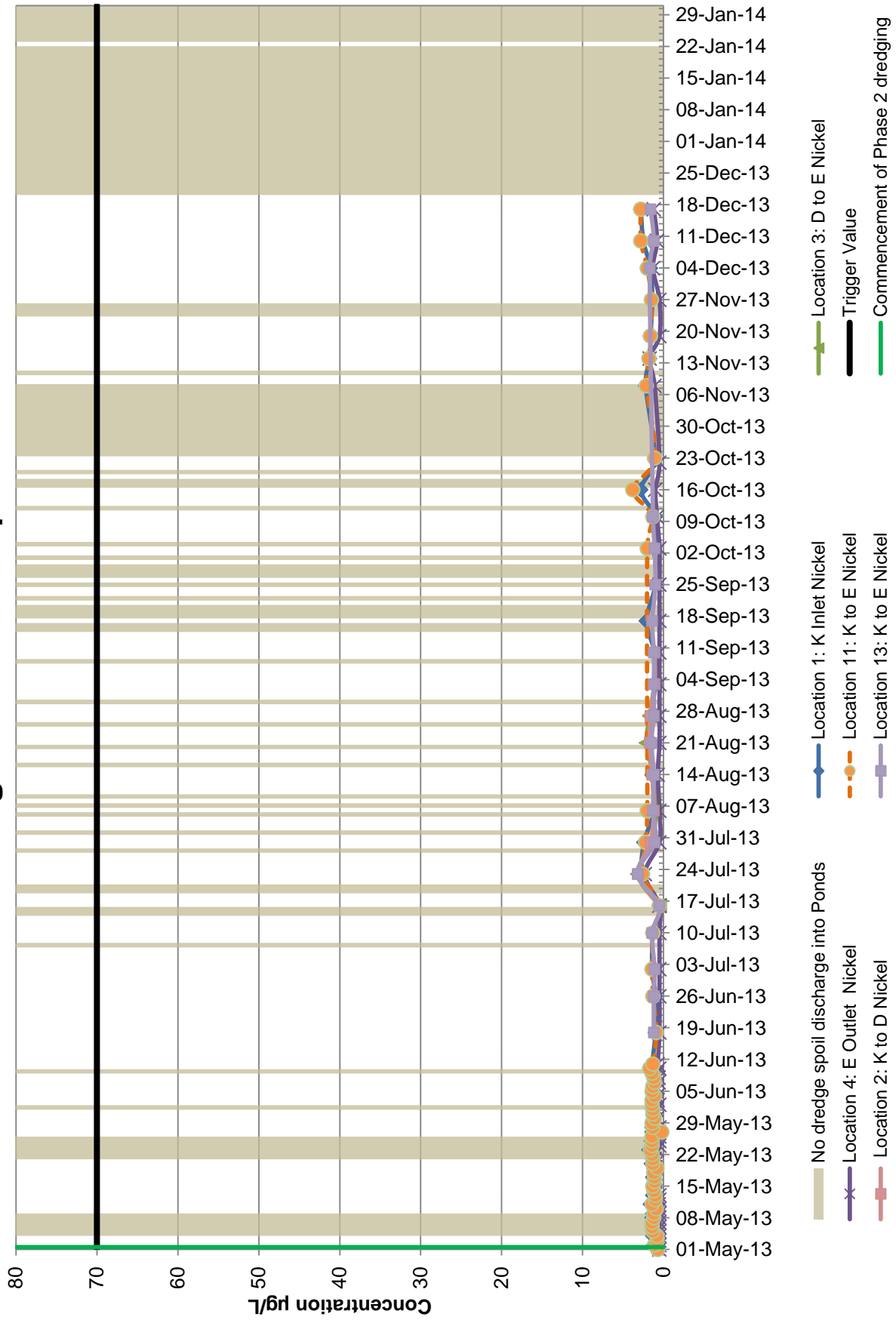
East Arm Dredge Ponds - Comparison of Lead



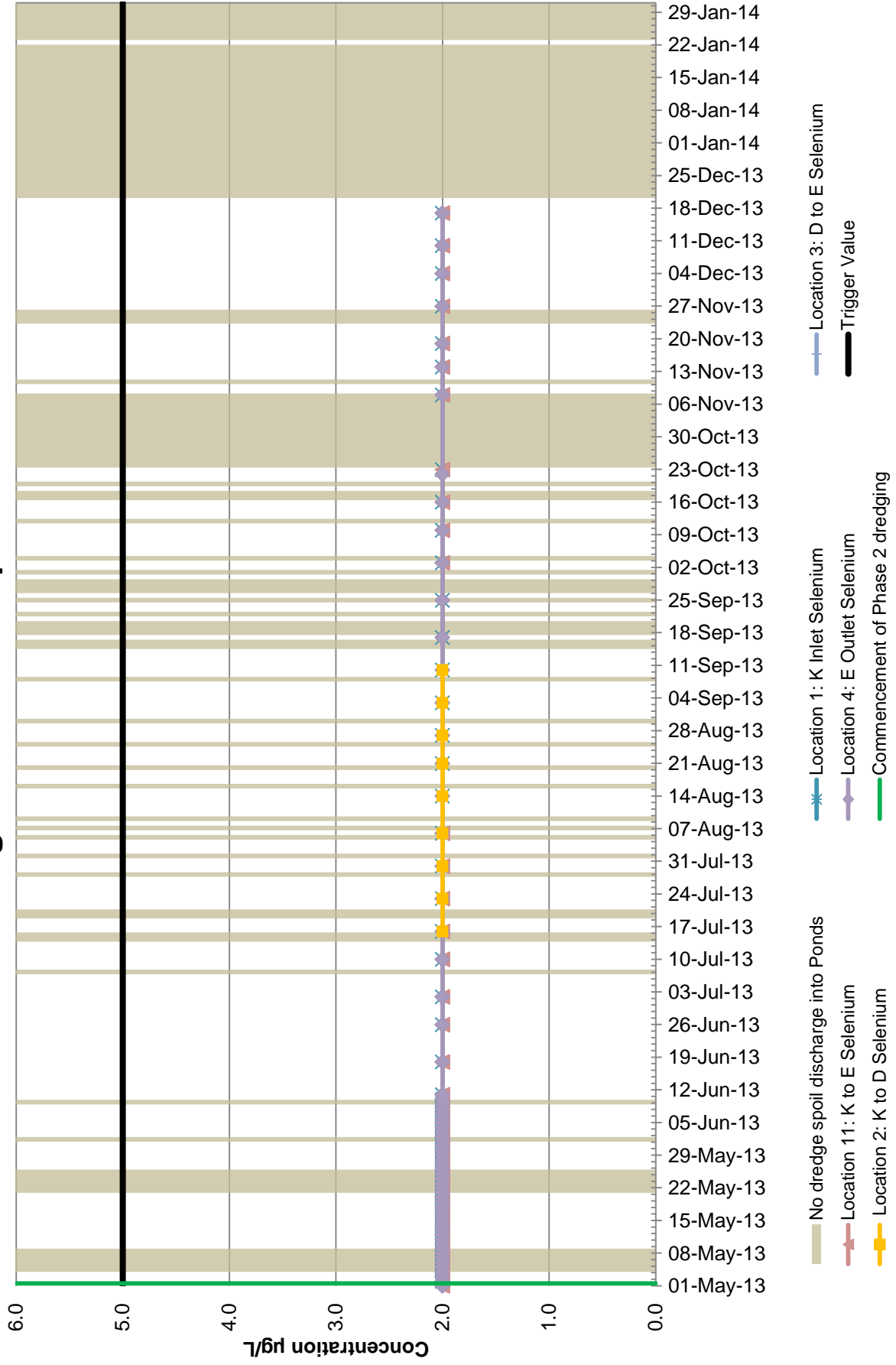
East Arm Dredge Ponds - Comparison of Zinc



East Arm Dredge Ponds - Comparison of Nickel



East Arm Dredge Ponds - Comparison of Selenium



Harbour Sampling Data and Graphs

MACMAHON CONTRACTORS

Project: Darwin Marine Supply Base

Title: DDSPMP Weekly Report

Location: Location 5 - 50m Edge of Dredge Footprint

Units for Water Samples			pH		Turbidity		SSC
			-		NTU		mg/L
DDSPMP Guidelines	6.0	-	8.5	111	/	52	100
Macmahon Rail Bund Outlet Baseline		8.5				4.0	40.0
Macmahon Dredge Foot Print Baseline		8.4				6.0	17.0
Macmahon Pond K Baseline		7.4				27.3	49.0
Macmahon Pond D Baseline		8.7				11.5	25.0
Macmahon Pond E Baseline		8.0				4.6	22.5
Units for Sediment Samples			-		NTU		mg/L
URS Harbour Baseline			Sediment Sammpled and Tested - Test Not Applicable				
DP Pond K Baseline			Sediment Sammpled and Tested - Test Not Applicable				
DP Pond D Baseline			Sediment Sammpled and Tested - Test Not Applicable				
DP Pond E Baseline			Sediment Sammpled and Tested - Test Not Applicable				

Notes:

Reading 1 = 7:00AM - 9:00AM

Reading 2 = 9:00AM - 11:00AM

Reading 3 = 11:00AM - 1:00PM

Reading 4 = 1:00PM - 3:00PM

Reading 5 = 3:00PM - 5:00PM

Location	Date	Day	Analysis Number	Observations	pH					Turbidity					SSC							
					1	2	3	4	5	pH Average	1	2	3	4	5	Average NTU	1	2	3	4	5	Average SSC
Location 5 - 50m from footprint	01-May-13	Wednesday	ES1310475			8	8			8		15.7	12.3		11.6	14			11	5		8
	02-May-13	Thursday	ES1310473				8			8			8.5		11.6	10			5		5	5
	03-May-13	Friday	ES1310382				8.1			8.1			10.8		13.3	12			8		17	12.5
	04-May-13	Saturday	ES1310472					8		8				12	9.9	11				19	20	19.5
	05-May-13	Sunday	ES1310470		8.1				8.1	8.1	5.5				5.7	6		5			7	6
	06-May-13	Monday	ES1310470		8.1				8.1	8.1	6.4				4.4	5						0
	07-May-13	Tuesday	ES1310609		8				8	8	12.4				11.7	12	8				13	11
	08-May-13	Wednesday	ES1310920						8.1	8.1		10.2			7.1	9		5				5
	09-May-13	Thursday	ES1310914		8.1	8.1				8.1	8.2	8.4				8			5			5
	10-May-13	Friday	ES1310917		8.1		8.1			8.1	17.8		16.2			17	10		7			8.5
	11-May-13	Saturday	ES1310925		8		8			8	13.8		15.4			15	8		8			8
	12-May-13	Sunday	ES1310928		8		8			8	9.9		12.9			11	6		8			7
	13-May-13	Monday	ES1311033		8	8	8			8		14.7	16.5			16		18	5			11.5
	14-May-13	Tuesday	ES1311137		8	8	8			8		16.4	14.8			16		5	5			5
	15-May-13	Wednesday	ES1311277		8	8		8		8		11.5		10.6		11		5				5
	16-May-13	Thursday						8		8		16.3		15.3		16						
	17-May-13	Friday					8	8		8			13.2	11.2		12						
	18-May-13	Saturday					7.81		7.75	7.8			7.4		6.4	7						
	19-May-13	Sunday					7.79		8.11	7.9			12.5		8.4	10						
	20-May-13	Monday						7.59	7.68	7.6				6	7.2	7						
	21-May-13	Tuesday			7.88					7.9	12.8			7.3		10						
	22-May-13	Wednesday			7.97					7.9					5.2	4						
	23-May-13	Thursday	ES1311863		8.01				7.82	7.9	2.4	4.8				6						
	24-May-13	Friday			8		8			8	12.1		16.2			14						
	25-May-13	Saturday			8		8			8	8.1		19.8			14						
	26-May-13	Sunday			8		8			8	11.1		13.8			12						
	27-May-13	Monday			8		8			8	12.8		13.2			13						
	28-May-13	Tuesday	ES1312420		7.9		7.9			7.9	15.4		6.3			11			5			5
	29-May-13	Wednesday				8		8		8		3.7		4.9		4						
	30-May-13	Thursday			8			8		8		11.2		7.7		9						
	31-May-13	Friday			7.9				7.9	7.9		8.8			6.9	8						
	01-Jun-13	Saturday			7.9				7.9	7.9		5.7			7.2	6						
	02-Jun-13	Sunday						8.1		8.1	15.7			13.4		15						
	03-Jun-13	Monday			8		8			8	14.6			15.5		15						
	04-Jun-13	Tuesday			8.1				8.1	8.1	14.1				14.3	14						
	05-Jun-13	Wednesday			8.2				8.2	8.2	11.9				10.1	11						
	06-Jun-13	Thursday			8.1	8.1				8.1	14.1					15						
	07-Jun-13	Friday	ES1313351					8.1	8.1	8.1					7.9	7				5		5
	08-Jun-13	Saturday						8.1	8.1	8.1					11.1	9						
	09-Jun-13	Sunday			8		8			8	8.7					10						
	10-Jun-13	Monday			8		8			8	12.3					13						
	11-Jun-13	Tuesday				8.1	8.1			8.1		8.8				9						
	12-Jun-13	Wednesday			8.1		8.1			8.1		7.7				10						
	13-Jun-13	Thursday	ES1313674			8.1	8.1			8.1		9				8		5				5
	14-Jun-13	Friday			8		8	8		8		5.7		8.9		7						
	15-Jun-13	Saturday						8		8			16.6		11.2	14						
	16-Jun-13	Sunday					8.1		8.1	8.1			10.2		13.6	12						
	17-Jun-13	Monday					8.2		8.2	8.2			6.2		7.4	7						

MACMAHON CONTRACTORS

Project: Darwin Marine Supply Base
Title: DDSPMP Weekly Report
Location: Location 5 - 50m Edge of Dredge Footprint

Units for Water Samples			pH		Turbidity		SSC
			-		NTU		mg/L
DDSPMP Guidelines	6.0	-	8.5	111	/	52	100
Macmahon Rail Bund Outlet Baseline			8.5			4.0	40.0
Macmahon Dredge Foot Print Baseline			8.4			6.0	17.0
Macmahon Pond K Baseline			7.4			27.3	49.0
Macmahon Pond D Baseline			8.7			11.5	25.0
Macmahon Pond E Baseline			8.0			4.6	22.5
Units for Sediment Samples			-			NTU	mg/L
URS Harbour Baseline				Sediment Sammpled and Tested - Test Not Applicable			
DP Pond K Baseline				Sediment Sammpled and Tested - Test Not Applicable			
DP Pond D Baseline				Sediment Sammpled and Tested - Test Not Applicable			
DP Pond E Baseline				Sediment Sammpled and Tested - Test Not Applicable			

Notes:
Reading 1 = 7:00AM - 9:00AM
Reading 2 = 9:00AM - 11:00AM
Reading 3 = 11:00AM - 1:00PM
Reading 4 = 1:00PM - 3:00PM
Reading 5 = 3:00PM - 5:00PM

Location 5 - 50m from footprint														
18-Jun-13	Tuesday													
19-Jun-13	Wednesday													6
20-Jun-13	Thursday	8.2	8.1	8.2	8.2	8.2	8.2	8.2	11	7.4	7	10	6	
21-Jun-13	Friday	8.2	8.2	8.2	8.2	8.2	8.2	8.2	14.9	5.6	14	7		
22-Jun-13	Saturday	8.3	8.3	8.3	8.3	8.3	8.3	6.8	5.6		7	7		
23-Jun-13	Sunday	8.2	8.1	8.2	8.2	8.2	8.2	5.8			6	6		
24-Jun-13	Monday	8.2	8.1	8.2	8.2	8.2	8.2	6.9			6	6		5
25-Jun-13	Tuesday	8.1		8.2	8.2	8.2	8.2				8	8		
26-Jun-13	Wednesday		8.2	8.2	8.2	8.2	8.2	9.1	8.6		10	10		
27-Jun-13	Thursday		8.2	8.2	8.2	8.2	8.2	5.5	10.4	7.6	7	7		
28-Jun-13	Friday		8.2	8.2	8.2	8.2	8.2	9.9		5.8	8	8		
29-Jun-13	Saturday		8.2	8.2	8.2	8.2	8.2	4.1	6.8		5	5		
30-Jun-13	Sunday		8.2	8.2	8.2	8.2	8.2		7.2	7.7	7	7		
01-Jul-13	Monday		8.1	8.1	8.1	8.1	8.1		4.4	4.7	5	5		
02-Jul-13	Tuesday		8.1	8.1	8.2	8.2	8.2	6		6.8	6	6		5
03-Jul-13	Wednesday	8.2	8.1	8.1	8.1	8.1	8.1	6.1		6.8	6	6		
04-Jul-13	Thursday	8.1	8.1	8.2	8.2	8.2	8.2	7.2		5.3	6	6		
05-Jul-13	Friday	8.2	8.2		8.2	8.2	8.2	7.7		8.2	8	8		
06-Jul-13	Saturday		8.1	8.1	8.1	8.1	8.1	4.2	6.8		6	6		
07-Jul-13	Sunday		8.1	8.1	8.1	8.1	8.1		8.9	9.2	9	9		
08-Jul-13	Monday	8.1	8.1	8.2	8.2	8.2	8.2	6.5	7.1		7	7		
09-Jul-13	Tuesday	8.1	8.1	8.1	8.1	8.1	8.1	5	5.2		5	5		
10-Jul-13	Wednesday	8.2	8.2	8.1	8.2	8.2	8.2	15.1	16.7		16	16		5
11-Jul-13	Thursday	8.2	8.2	8.1	8.2	8.2	8.2	6.3	5.9		6	6		
12-Jul-13	Friday		8.2	8.1	8.2	8.2	8.2	7.2	5.5		6	6		
13-Jul-13	Saturday		8.1	8.1	8.1	8.1	8.1	7.2	6.1		7	7		
14-Jul-13	Sunday		8.1	8.1	8.1	8.1	8.1	4.1		6.2	5	5		
15-Jul-13	Monday		8.1	8.1	8.1	8.1	8.1	3.3		5.2	4	4		
16-Jul-13	Tuesday		8.1	8.1	8.1	8.1	8.1		8.7	7.3	8	8		5
17-Jul-13	Wednesday		8.1	8.1	8.1	8.1	8.1		5	6.4	6	6		
18-Jul-13	Thursday		8.2	8.2	8.2	8.2	8.2		9.4	10	10	10		
19-Jul-13	Friday	8.1	8.1	8.1	8.1	8.1	8.1	6.6		3.7	5	5		
20-Jul-13	Saturday	8.1	8.1	8.1	8.1	8.1	8.1	3.1		5.3	4	4		
21-Jul-13	Sunday	8.1	8.1	8.1	8.1	8.1	8.1	4.2		6.3	5	5		
22-Jul-13	Monday		8.1	8.1	8.1	8.1	8.1	6.8		5.9	6	6		
23-Jul-13	Tuesday	8.2	8.2	8.1	8.2	8.2	8.2	5.5		6.7	6	6		5
24-Jul-13	Wednesday	8.2	8.2	8.1	8.2	8.2	8.2	7.8	9.3		9	9		
25-Jul-13	Thursday	8.1	8.1	8.1	8.1	8.1	8.1	8.8	10.2		10	10		
26-Jul-13	Friday	8.1	8.1	8.1	8.1	8.1	8.1	7.2	6.7		7	7		
27-Jul-13	Saturday		8.2	8.2	8.2	8.2	8.2	6.2		7.9	7	7		
28-Jul-13	Sunday	8.1	8.1	8.1	8.1	8.1	8.1	11.5		12	12	12		
29-Jul-13	Monday		8	8	8	8	8	6		6.8	6	6		
30-Jul-13	Tuesday			8.1	8.1	8.1	8.1	10.3			10	10		5
31-Jul-13	Wednesday		8.1	8.2	8.2	8.2	8.2		12.5	9.8	14	14		
01-Aug-13	Thursday			8.1	8.1	8.1	8.1	5.7	4.1	14.9	5	5		
02-Aug-13	Friday	8.1			8.2	8.2	8.2				13	13		
03-Aug-13	Saturday		8.1	8.1	8	8	8	7.8		6.2	7	7		
04-Aug-13	Sunday		8	8.1				5.2			6	6		
05-Aug-13	Monday		8.1	8.1				4.7			5	5		
06-Aug-13	Tuesday		8.1	8.1	8.1	8.1	8.1	7.1	8.4		8	8		5

MACMAHON CONTRACTORS
Project: Darwin Marine Supply Base
Title: DDSPMP Weekly Report
Location: Location 5 - 50m Edge of Dredge Footprint

Units for Water Samples			pH		Turbidity		SSC
			-		NTU		mg/L
DDSPMP Guidelines	6.0	-	8.5	111	/	52	100
Macmahon Rail Bund Outlet Baseline			8.5			4.0	40.0
Macmahon Dredge Foot Print Baseline			8.4			6.0	17.0
Macmahon Pond K Baseline			7.4			27.3	49.0
Macmahon Pond D Baseline			8.7			11.5	25.0
Macmahon Pond E Baseline			8.0			4.6	22.5
Units for Sediment Samples			-		NTU		mg/L
URS Harbour Baseline			Sediment Sammpled and Tested - Test Not Applicable				
DP Pond K Baseline			Sediment Sammpled and Tested - Test Not Applicable				
DP Pond D Baseline			Sediment Sammpled and Tested - Test Not Applicable				
DP Pond E Baseline			Sediment Sammpled and Tested - Test Not Applicable				

Notes:
Reading 1 = 7:00AM - 9:00AM
Reading 2 = 9:00AM - 11:00AM
Reading 3 = 11:00AM - 1:00PM
Reading 4 = 1:00PM - 3:00PM
Reading 5 = 3:00PM - 5:00PM

Location 5 - 50m from footprint														
07-Aug-13	Wednesday				8.1		8			8.1		3.8	4.9	4
08-Aug-13	Thursday				8.2		8.1			8.2		6.1	5.3	6
09-Aug-13	Friday						8.1			8.1		6.2	7.1	7
10-Aug-13	Saturday						8.1					5.3	4.4	5
11-Aug-13	Sunday							8.1		8.1		6.2	5.9	6
12-Aug-13	Monday						8			8.1		7.9	6.4	7
13-Aug-13	Tuesday						8			8.0		5.7	7.5	7
14-Aug-13	Wednesday							8.1		8.1		7.6	6.4	7
15-Aug-13	Thursday							8.1		8.1		4.6	5.4	5
16-Aug-13	Friday							8.1		8.1		5.2	3.9	5
17-Aug-13	Saturday				8.1			8.1		8.1		5.8	6.6	6
18-Aug-13	Sunday									8.2		8.2	9.3	9
19-Aug-13	Monday									8.2		7.7	7.3	8
20-Aug-13	Tuesday									8.2		6.8		7
21-Aug-13	Wednesday									8.1		7.7		7
22-Aug-13	Thursday						8			8.1		8.4	7.3	8
23-Aug-13	Friday									8.1		8.1	7.8	8
24-Aug-13	Saturday							8		8.1		5.6	7.1	6
25-Aug-13	Sunday							8.2		8.2		5.3	5.6	5
26-Aug-13	Monday									8.2		5.3	6.4	6
27-Aug-13	Tuesday							8.1		8.2		5.9	7.1	7
28-Aug-13	Wednesday							8.1		8.2		16.4	8.5	12
29-Aug-13	Thursday							8.1		8.2		10.3	8.7	10
30-Aug-13	Friday							8.1		8.1		5.5	6.1	6
31-Aug-13	Saturday									8.2		6.2	6.3	6
01-Sep-13	Sunday									8.2		6.1		7
02-Sep-13	Monday									8.2		4.1	5.4	5
03-Sep-13	Tuesday									8.2		7.9		7
04-Sep-13	Wednesday									8.1		12.5	10.2	11
05-Sep-13	Thursday									8.0		12.6		11
06-Sep-13	Friday							8		8.0		10.2		9
07-Sep-13	Saturday									7.3		17.6	13.4	16
08-Sep-13	Sunday									7.3		13.1	13.9	14
09-Sep-13	Monday									7.5		19.7	17	18
10-Sep-13	Tuesday									7.9		9.3	12.5	11
11-Sep-13	Wednesday									7.7		12.2	11.7	12
12-Sep-13	Thursday									7.7		12.1	13.6	13
13-Sep-13	Friday									7.9			12.5	11
14-Sep-13	Saturday									7.9		5.2		6
15-Sep-13	Sunday									7.9		5.6	5.6	6
16-Sep-13	Monday									7.9		9.8	10.2	5
17-Sep-13	Tuesday									7.9		6.4		10
18-Sep-13	Wednesday									7.9		5.9		6
19-Sep-13	Thursday									7.9		6.2		5
20-Sep-13	Friday									7.9			6.6	7
21-Sep-13	Saturday									7.9				8
22-Sep-13	Sunday									7.9		7.2		6
23-Sep-13	Monday									8.0		5.7	5.5	6
24-Sep-13	Tuesday									8.0		5.2	5.4	5

MACMAHON CONTRACTORS
Project: Darwin Marine Supply Base
Title: DDSPMP Weekly Report
Location: Location 6 - 50m Edge of Dredge Footprint

pH			Turbidity			SSC	
Units for Water Samples			NTU			mg/L	
DDSPMP Guidelines			/			100	
Macmahon Rail Bund Outlet Baseline			8.5			40.0	
Macmahon Dredge Foot Print Baseline			8.4			17.0	
Macmahon Pond K Baseline			7.4			49.0	
Macmahon Pond D Baseline			8.7			25.0	
Macmahon Pond E Baseline			8.0			22.5	
Units for Sediment Samples			NTU			mg/L	
URS Harbour Baseline			-				
DP Pond K Baseline			Sediment Sammpled and Tested - Test Not Applicable				
DP Pond D Baseline			Sediment Sammpled and Tested - Test Not Applicable				
DP Pond E Baseline			Sediment Sammpled and Tested - Test Not Applicable				

Notes:
Reading 1 = 7:00AM - 9:00AM
Reading 2 = 9:00AM - 11:00AM
Reading 3 = 11:00AM - 1:00PM
Reading 4 = 1:00PM - 3:00PM
Reading 5 = 3:00PM - 5:00PM

Location	Date	Day	Analysis Number	Observations	pH					Turbidity					SSC							
					-					NTU					mg/L							
					1	2	3	4	5	pH Average	1	2	3	4	5	Average NTU	1	2	3	4	5	Average SSC
Location 6 - 50m from footprint	01-May-13	Wednesday	ES1310475	ES1310475		8	8			8		12.3	11.2			12		16		10		13
	02-May-13	Thursday	ES1310473	ES1310473			8			8			10.8			9			5		5	
	03-May-13	Friday	ES1310382	ES1310382			8.1			8.1			16.1			13			5		5	
	04-May-13	Saturday	ES1310472	ES1310472				8						11.3		12				14	17	15.5
	05-May-13	Sunday	ES1310477	ES1310470	8.1				8.1	8.1	10.1					8	5				5	
	06-May-13	Monday	ES1310470	ES1310470	8.1				8.1	8.1	3.8					5	10				6	
	07-May-13	Tuesday	ES1310609	ES1310609	8				8	8	9.2					9	5				6	
	08-May-13	Wednesday	ES1310920	ES1310920		8.1				8.1		8.1				8		5		5		
	09-May-13	Thursday	ES1310914	ES1310914		8.1				8.1	8.8	9.2				9	10					8
	10-May-13	Friday	ES1310917	ES1310917			8.1			8.1	16.9		14.4			16	5		19			12
	11-May-13	Saturday	ES1310925	ES1310925	8					8	14.2		14.8			15	11		9			10
	12-May-13	Sunday	ES1310928	ES1310928			8			8	12.3		13.3			13	6					7.5
	13-May-13	Monday	ES1311033	ES1311033	8		8			8		12.4	12.6			13		59	5			32
	14-May-13	Tuesday	ES1311137	ES1311137		8	8			8		12.4	12.3			12		5				5
	15-May-13	Wednesday	ES1311277	ES1311277		8		8		8		10.7			12.6	6						
	16-May-13	Thursday						8		8		7.3			5.1	6						
	17-May-13	Friday						8		8					12.9	12						
	18-May-13	Saturday					7.96						11.4		3.6	6						
	19-May-13	Sunday				8.04		7.97					8.4			6						
	20-May-13	Monday							8.14	8			7.1			8		9				
	21-May-13	Tuesday							7.75	7.8					3.5	4		5				
	22-May-13	Wednesday							7.91	7.9	7				9.1	8						
	23-May-13	Thursday	ES1311863	ES1311863		8.01				7.8	5.6					5						
	24-May-13	Friday								8	7.1	7.7				7						
	25-May-13	Saturday								8	12.5		22.9			18						
	26-May-13	Sunday								8	21.6		30.5			26						
	27-May-13	Monday								8	12.9		12.2			13						
	28-May-13	Tuesday								8	11.2		10.6			11						
	29-May-13	Wednesday	ES1312420	ES1312420		7.9	7.9			7.9	10.7		3.9			7			5			5
	30-May-13	Thursday				8		8		8		4.8			5	5						
	31-May-13	Friday				8		8		8		10.8			8.9	10						
	01-Jun-13	Saturday				7.9			7.9	7.9		8.2				9						
	02-Jun-13	Sunday				7.9		8.1		7.9		7.9				8						
	03-Jun-13	Monday								8.1					10.2	12						
	04-Jun-13	Tuesday				8		8		8					10.9	10						
	05-Jun-13	Wednesday				8.1					10.7					11						
	06-Jun-13	Thursday				8.2				8.2	13.3					13						
	07-Jun-13	Friday	ES1313351	ES1313351		8.1	8.1			8.1	8.3	9.2				9						
	08-Jun-13	Saturday						8.1		8.1						6			5			5
	09-Jun-13	Sunday						8		8	6.2				5.4	7						
	10-Jun-13	Monday								8			7.4		4.5	7						
	11-Jun-13	Tuesday				8	8			8	11.1		9.8			10						
	12-Jun-13	Wednesday				8.1				8.1		5.9		8.2		7						
	13-Jun-13	Thursday	ES1313674	ES1313674		8.1	8.1			8.1		9.8	10.9			10						
	14-Jun-13	Friday				8.1	8.1			8.1		15.6	13.7			15	5					5
	15-Jun-13	Saturday				8	8	8		8		8.1	10	9		9						
	16-Jun-13	Sunday					8.1			8.1			8.7	10.9		9						
	17-Jun-13	Monday					8.1			8.1			6.9	14.9		11						

MACMAHON CONTRACTORS

Project: Darwin Marine Supply Base
Title: DDSPMP Weekly Report
Location: Location 6 - 50m Edge of Dredge Footprint

Units for Water Samples			pH		Turbidity		SSC
DDSPMP Guidelines			-		NTU		mg/L
Macmahon Rail Bund Outlet Baseline	6.0	-	8.5	111	/	52	100
Macmahon Dredge Foot Print Baseline			8.4			4.0	40.0
Macmahon Pond K Baseline			7.4			6.0	17.0
Macmahon Pond D Baseline			8.7			27.3	49.0
Macmahon Pond E Baseline			8.0			11.5	25.0
Units for Sediment Samples			-		NTU		mg/L
URS Harbour Baseline			Sediment Sammpled and Tested - Test Not Applicable				
DP Pond K Baseline			Sediment Sammpled and Tested - Test Not Applicable				
DP Pond D Baseline			Sediment Sammpled and Tested - Test Not Applicable				
DP Pond E Baseline			Sediment Sammpled and Tested - Test Not Applicable				

Notes:
Reading 1 = 7:00AM - 9:00AM
Reading 2 = 9:00AM - 11:00AM
Reading 3 = 11:00AM - 1:00PM
Reading 4 = 1:00PM - 3:00PM
Reading 5 = 3:00PM - 5:00PM

Location 6 - 50m from footprint														
18-Jun-13	Tuesday													
19-Jun-13	Wednesday	8.1	8.1	8.1	8.1	8.1	8.1	8.1	11.8	12.6	9.1	12	5	5
20-Jun-13	Thursday	8.2	8.2	8.1	8.2	8.15	6.9	12.7	12.6	8.1	8	8		
21-Jun-13	Friday	8.1	8.1					8.0	12.5	8.9	8.9	10		
22-Jun-13	Saturday	8.2	8.2			8.2	8.2	12.5	12.6		13	13		
23-Jun-13	Sunday	8.1	8.2			8.2	8.2	8.9	9.0		9	9		
24-Jun-13	Monday	8.1	8			8.1	8.1	7.1	7.3		7	7		
25-Jun-13	Tuesday	8.1	8.1	8.1	8.2	8.1	8.2	9.8	10.9		10	10		5
26-Jun-13	Wednesday	8.2	8.2	8.2	8.2	8.2	8.2	6.7	8.6	7.9	8	8		
27-Jun-13	Thursday		8.1	8.1	8.2	8.2	8.2	13.6	6.6	6.6	7	7		
28-Jun-13	Friday		8.2	8.2	8.2	8.2	8.2	6.6	7.6	6.5	10	10		
29-Jun-13	Saturday		8.2	8.2	8.2	8.2	8.2	6.6	6.8	7.4	7	7		
30-Jun-13	Sunday		8	8.1	8.1	8.1	8.1	5.4	5.8	5.4	7	7		
01-Jul-13	Monday	8.1	8.1	8.1	8.1	8.1	8.1	7.8	6.1	6.0	5	5		5
02-Jul-13	Tuesday	8.1	8.1	8.1	8.1	8.1	8.1	6.1	4.7	9.4	7	7		
03-Jul-13	Wednesday	8.1	8.1	8.1	8.1	8.1	8.1	6.9	15.5	13.3	8	8		
04-Jul-13	Thursday	8.1	8.1	8.1	8.1	8.1	8.1	6.9	5.2	6.7	14	14		
05-Jul-13	Friday	8.1	8.1	8.1	8.1	8.1	8.1	11.2	12.0	12.6	6	6		
06-Jul-13	Saturday	8.1	8.1	8.1	8.1	8.1	8.1	8.2	7.9	8.6	12	12		
07-Jul-13	Sunday	8.1	8.1	8.1	8.1	8.1	8.1	9.3	10.2	11.2	8	8		
08-Jul-13	Monday	8.1	8.1	8.1	8.1	8.1	8.1	7.7	16.4	12.8	10	10		
09-Jul-13	Tuesday	8.1	8.1	8.1	8.1	8.1	8.1	13.8	9.4	11.8	9	9		
10-Jul-13	Wednesday	8.1	8.1	8.1	8.1	8.1	8.1	13.8	8.7	11.8	11	11		
11-Jul-13	Thursday	8.1	8.1	8.1	8.1	8.1	8.1	13.8	8.7	11.8	9	9		
12-Jul-13	Friday	8.1	8.1	8.1	8.1	8.1	8.1	13.8	8.7	11.8	13	13		
13-Jul-13	Saturday	8.1	8.1	8.1	8.1	8.1	8.1	13.8	8.7	11.8	5	5		5
14-Jul-13	Sunday	8.1	8.1	8.1	8.1	8.1	8.1	13.8	8.7	11.8	13	13		
15-Jul-13	Monday	8.1	8.1	8.1	8.1	8.1	8.1	13.8	8.7	11.8	5	5		
16-Jul-13	Tuesday	8.1	8.1	8.1	8.1	8.1	8.1	13.8	8.7	11.8	5	5		
17-Jul-13	Wednesday	8.1	8.1	8.1	8.1	8.1	8.1	13.8	8.7	11.8	5	5		
18-Jul-13	Thursday	8.1	8.1	8.1	8.1	8.1	8.1	13.8	8.7	11.8	5	5		
19-Jul-13	Friday	8	8	8	8	8	8	8.7	11.1	11.1	10	10		
20-Jul-13	Saturday	8.1	8.1	8.1	8.1	8.1	8.1	5.4	5.6	5.6	6	6		
21-Jul-13	Sunday	8	8.2	8.2	8.2	8.1	8.1	4.2	6.3	6.3	5	5		
22-Jul-13	Monday	8.1	8.1	8.1	8.1	8.1	8.1	7.9	8.5	8.5	8	8		
23-Jul-13	Tuesday	8.1	8.2	8.2	8.2	8.1	8.1	10.2	9.8	9.8	10	10		5
24-Jul-13	Wednesday	8.2	8.2	8.2	8.2	8.2	8.2	18.1	21.8	21.8	20	20		
25-Jul-13	Thursday	8.2	8.2	8.2	8.2	8.2	8.2	9.4	7.5	7.5	8	8		
26-Jul-13	Friday	8.1	8.1	8.1	8.1	8.1	8.1	8.2	7.8	7.8	8	8		
27-Jul-13	Saturday	8.1	8.1	8.1	8.1	8.1	8.1	8.2	9.3	10.2	10	10		
28-Jul-13	Sunday	8.2	8.2	8.2	8.2	8.2	8.2	18.1	7.5	7.5	7	7		
29-Jul-13	Monday	8.1	8.1	8.1	8.1	8.1	8.1	8.2	11.1	13.5	12	12		
30-Jul-13	Tuesday	8.1	8.1	8.1	8.1	8.1	8.1	8.2	11.1	10.7	11	11		5
31-Jul-13	Wednesday	8.1	8.1	8.1	8.1	8.1	8.1	8.2	10.1	9.8	10	10		
01-Aug-13	Thursday	8.2	8.1	8.1	8.1	8.1	8.1	8.3	6	7.4	6	6		
02-Aug-13	Friday	8.2	8.1	8.1	8.1	8.1	8.1	8.3	8.4	7.4	8	8		
03-Aug-13	Saturday	8.1	8.1	8.1	8.1	8.1	8.1	7.3	6.4	7.0	8	8		
04-Aug-13	Sunday	8.1	8.2	8.2	8.2	8.2	8.2	6.1	5.9	6.4	7	7		
05-Aug-13	Monday	8.1	8.2	8.2	8.2	8.1	8.1	9.5	10.2	10.2	6	6		
06-Aug-13	Tuesday	8.1	8.1	8.1	8.1	8.1	8.1	5.1	4.8	4.8	10	10		5
07-Aug-13	Wednesday	8.1	8.1	8.1	8.1	8.1	8.1	5.1	4.8	4.8	5	5		

MACMAHON CONTRACTORS

Project: Darwin Marine Supply Base
Title: DDSPMP Weekly Report
Location: Location 6 - 50m Edge of Dredge Footprint

Units for Water Samples			pH		Turbidity		SSC
			-		NTU		mg/L
DDSPMP Guidelines	6.0	-	8.5	111	/ 52		100
Macmahon Rail Bund Outlet Baseline			8.5		4.0		40.0
Macmahon Dredge Foot Print Baseline			8.4		6.0		17.0
Macmahon Pond K Baseline			7.4		27.3		49.0
Macmahon Pond D Baseline			8.7		11.5		25.0
Macmahon Pond E Baseline			8.0		4.6		22.5
Units for Sediment Samples					NTU		mg/L
URS Harbour Baseline			Sediment Sammpled and Tested - Test Not Applicable				
DP Pond K Baseline			Sediment Sammpled and Tested - Test Not Applicable				
DP Pond D Baseline			Sediment Sammpled and Tested - Test Not Applicable				
DP Pond E Baseline			Sediment Sammpled and Tested - Test Not Applicable				

Notes:
Reading 1 = 7:00AM - 9:00AM
Reading 2 = 9:00AM - 11:00AM
Reading 3 = 11:00AM - 1:00PM
Reading 4 = 1:00PM - 3:00PM
Reading 5 = 3:00PM - 5:00PM

Location 6 - 50m from footprint														
08-Aug-13	Thursday				8.1	8.1	8.1	8.1	8.1	5.5	6.0	4.4		5
09-Aug-13	Friday				8.1	8.1					4.7	6.8		6
10-Aug-13	Saturday				8						7.7	9.3		7
11-Aug-13	Sunday					8.1		8.1			8.0	8.6		8
12-Aug-13	Monday					8.1		8.1			12.8	7.1		8
13-Aug-13	Tuesday					8.1		8.1			6.2	11.5		12
14-Aug-13	Wednesday					8.1		8.1			11.1	8.2		7
15-Aug-13	Thursday					8		8			5.9	13.6		12
16-Aug-13	Friday				8			8.1		6.5		5.0		5
17-Aug-13	Saturday				8.1			8.1		4.8		6		6
18-Aug-13	Sunday							8.1	8.1	4		5.7	6.5	6
19-Aug-13	Monday							8	8.0					5
20-Aug-13	Tuesday				8.2				8.2	5.2	6.3			6
21-Aug-13	Wednesday				8.1				8.1	12.5	9.5			11
22-Aug-13	Thursday				8				8.1	6.7		7.1		7
23-Aug-13	Friday				8				8.1	6.4	10.2	5.9		6
24-Aug-13	Saturday								8.1					9
25-Aug-13	Sunday								8.2		6.1	6		6
26-Aug-13	Monday								8.1		7.1			7
27-Aug-13	Tuesday								8.2			6.1		7
28-Aug-13	Wednesday								8.2		7.2	6.2		7
29-Aug-13	Thursday								8.2		12.7	10.9		12
30-Aug-13	Friday								8.1		8.6	5.9		7
31-Aug-13	Saturday				8.1				8.2		6.0	5.2		6
01-Sep-13	Sunday								8.1	7	6.4			7
02-Sep-13	Monday								8.2		6.4	6.9		7
03-Sep-13	Tuesday				8.1				8.2	6.2	6.2			6
04-Sep-13	Wednesday				8.1				8.1	10.8	8.7			10
05-Sep-13	Thursday				8				8.1	8.9		8.1		9
06-Sep-13	Friday								8	7.2	6.8	6.6		7
07-Sep-13	Saturday				7.3				7.2	17.3	15.3			16
08-Sep-13	Sunday				7.4				7.3	14.3	11.3			13
09-Sep-13	Monday										25.6	14.3	14.3	20
10-Sep-13	Tuesday										5.8	12.8		9
11-Sep-13	Wednesday										14.3	10.4		12
12-Sep-13	Thursday										13.1	12.8		13
13-Sep-13	Friday								7.8				9.2	9
14-Sep-13	Saturday				7.7				7.7	5.5	6.4	6.2		6
15-Sep-13	Sunday													7
16-Sep-13	Monday				7.9				7.9	6.2	6.3	7.2	5.3	6
17-Sep-13	Tuesday								8		7			7
18-Sep-13	Wednesday				7.9				7.9	6.2	7			7
19-Sep-13	Thursday				7.8				7.8	6.3	7			7
20-Sep-13	Friday				7.9				7.8	5.2				7
21-Sep-13	Saturday				7.9				7.9	8.4		5.9	7.8	7
22-Sep-13	Sunday				7.9				7.8	7.8	6	6.1		7
23-Sep-13	Monday											6.3		6
24-Sep-13	Tuesday										5.7	5.2		5
25-Sep-13	Wednesday				7.9				7.9		6.8			6
26-Sep-13	Thursday								7.9		8.4	5.4		8
27-Sep-13	Friday				7.9				8		8.9	11.3		10

MACMAHON CONTRACTORS
Project: Darwin Marine Supply Base
Title: DDSPMP Weekly Report
Location: Location 7 - 50m Edge of Dredge Footprint

Units for Water Samples			pH		Turbidity		SSC
			-		NTU		mg/L
DDSPMP Guidelines			6.0	8.5	111	52	100
Macmahon Rail Bund Outlet Baseline			8.5			4.0	40.0
Macmahon Dredge Foot Print Baseline			8.4			6.0	17.0
Macmahon Pond K Baseline				7.4		27.3	49.0
Macmahon Pond D Baseline				8.7		11.5	25.0
Macmahon Pond E Baseline				8.0		4.6	22.5
Units for Sediment Samples			-		NTU		mg/L
URS Harbour Baseline			Sediment Sammpled and Tested - Test Not Applicable				
DP Pond K Baseline			Sediment Sammpled and Tested - Test Not Applicable				
DP Pond D Baseline			Sediment Sammpled and Tested - Test Not Applicable				
DP Pond E Baseline			Sediment Sammpled and Tested - Test Not Applicable				

Notes:
Reading 1 = 7:00AM - 9:00AM
Reading 2 = 9:00AM - 11:00AM
Reading 3 = 11:00AM - 1:00PM
Reading 4 = 1:00PM - 3:00PM
Reading 5 = 3:00PM - 5:00PM

Location	Date	Day	Analysis Number	Observations	pH					Turbidity					SSC																
					-					NTU					mg/L																
					1	2	3	4	5	pH Average	1	2	3	4	5	Average NTU	1	2	3	4	5	Average SSC									
Location 7 - 50m from footprint	01-May-13	Wednesday	ES1310475				8	8	8		15.2	9.2			15.7	12				18			12					5		18	
	02-May-13	Thursday	ES1310473				8	8	8			9.1			11.2	12												5		5	
	03-May-13	Friday	ES1310382				8.1		8.1			9.4				10											8		8		
	04-May-13	Saturday	ES1310472					8	8					5.9	8.7	7				8							14		11		
	05-May-13	Sunday	ES1310470						8.1			9.3			9.7	10	5										5		5		
	06-May-13	Monday	ES1310470						8.1			9.7			9.6	10	5										5		5		
	07-May-13	Tuesday	ES1310609						8			9.5			9.8	10	10										10		10		
	08-May-13	Wednesday	ES1310920						8.1				8.2			8.9	9		5								5		5		
	09-May-13	Thursday	ES1310914						8.1			9.1	7.6				8										9		7		
	10-May-13	Friday	ES1310917				8.1			8.1		11.8				12	12										12		5	9	
	11-May-13	Saturday	ES1310925				8			8		12.2				13	13										5		5		
	12-May-13	Sunday	ES1310928				8			8		11.5				11	11										5		5		
	13-May-13	Monday	ES1311033				8			8			11.1	9.7			10		5								5		5		
	14-May-13	Tuesday	ES1311137				8			8			10.1	9.3			10		5								5		5		
	15-May-13	Wednesday	ES1311277				8			8			5.8			6												5		5	
	16-May-13	Thursday					8			8			6.4			7												5		5	
	17-May-13	Friday					8			8				9.3			9														
	18-May-13	Saturday					7.31			7.4				7.6			9														
	19-May-13	Sunday					8.08			8.1				6.9			6														
	20-May-13	Monday						7.86		7.8					5.4		6														
	21-May-13	Tuesday						7.99		8	11.8				6.5		9														
	22-May-13	Wednesday								7.9						6.1	7														
	23-May-13	Thursday	ES1311863			8.01				8	7.2	5.6					6														
	24-May-13	Friday					8			8				21.5			19														
	25-May-13	Saturday					8			8	16.3			24.7			21														
	26-May-13	Sunday					8			8	17.2			10.9			11														
	27-May-13	Monday					8			8	10.2			10.1			10														
	28-May-13	Tuesday	ES1312420				7.9			7.9	11.5			8.9			10														5
	29-May-13	Wednesday						8				9.2					8														
	30-May-13	Thursday					8			8		6.1			9.5		8														
	31-May-13	Friday							7.9	7.9		10.4					10														
	01-Jun-13	Saturday								7.9			8.1				8														
	02-Jun-13	Sunday						8.1			8.9						10														
	03-Jun-13	Monday								8	10.2				13.6		12														
	04-Jun-13	Tuesday								8.1		9.2			10.1		10														
	05-Jun-13	Wednesday								8.2		10.5			11.7		11														
	06-Jun-13	Thursday					8.1			8.1	1.4	10.4					6														
	07-Jun-13	Friday	ES1313351							8.1							8														5
	08-Jun-13	Saturday						8.1									10														
	09-Jun-13	Sunday							8		7.1			7			7														
	10-Jun-13	Monday							8			9.6		10.6			10														
	11-Jun-13	Tuesday							8				9	8.2			9														
	12-Jun-13	Wednesday							8.1					7.1			7														
	13-Jun-13	Thursday	ES1313674	ES1313674					8.1				11.2	10.5			11														5
	14-Jun-13	Friday											8.6		11.3		10														
	15-Jun-13	Saturday							8					8.8			8														
	16-Jun-13	Sunday							8.1					7.7			9														
	17-Jun-13	Monday							8					3.5			4														

MACMAHON CONTRACTORS

Project: Darwin Marine Supply Base
Title: DDSMP Weekly Report
Location: Location 7 - 50m Edge of Dredge Footprint

Units for Water Samples			pH		Turbidity		SSC
	DDSPMP Guidelines	6.0	-	8.5	111	/ 52	100
	Macmahon Rail Bund Outlet Baseline			8.5		4.0	40.0
	Macmahon Dredge Foot Print Baseline			8.4		6.0	17.0
	Macmahon Pond K Baseline			7.4		27.3	49.0
	Macmahon Pond D Baseline			8.7		11.5	25.0
	Macmahon Pond E Baseline			8.0		4.6	22.5
	Units for Sediment Samples			-		NTU	mg/L
	URS Harbour Baseline				Sediment Sammpled and Tested - Test Not Applicable		
	DP Pond K Baseline				Sediment Sammpled and Tested - Test Not Applicable		
	DP Pond D Baseline				Sediment Sammpled and Tested - Test Not Applicable		
	DP Pond E Baseline				Sediment Sammpled and Tested - Test Not Applicable		

Notes:
Reading 1 = 7:00AM - 9:00AM
Reading 2 = 9:00AM - 11:00AM
Reading 3 = 11:00AM - 1:00PM
Reading 4 = 1:00PM - 3:00PM
Reading 5 = 3:00PM - 5:00PM

Location 7 - 50m from footprint																			
18-Jun-13	Tuesday																		
19-Jun-13	Wednesday	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	13.7	5.1	12	6	6
20-Jun-13	Thursday	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	3.8	7.5	5		
21-Jun-13	Friday	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	7.5		7		
22-Jun-13	Saturday	8.3	8.2	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	7.5	9.7	9		
23-Jun-13	Sunday	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	7.4	7.7	8	5	
24-Jun-13	Monday	8.1	8.2	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	10.1	6.3	8		
25-Jun-13	Tuesday	8	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	6.6	6.7	6		
26-Jun-13	Wednesday	8.2	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	4.2	4.2	7		
27-Jun-13	Thursday		8.2	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	12.6	5.6	11		
28-Jun-13	Friday		8.2	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	3.9	4.1	4		
29-Jun-13	Saturday		8.2	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	5.6	4.7	6		
30-Jun-13	Sunday		8	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	3.7	5.3	5	5	
01-Jul-13	Monday														6.4	7.1	7		
02-Jul-13	Tuesday	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.2	6.6	7		
03-Jul-13	Wednesday	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	5.8	6.6	6		
04-Jul-13	Thursday	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	6.6	6.3	6		
05-Jul-13	Friday	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	6	6.6	6		
06-Jul-13	Saturday		8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.2	6.4	7		
07-Jul-13	Sunday		8	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	5.8	5.6	6		
08-Jul-13	Monday	8	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	7.6	6.6	7		
09-Jul-13	Tuesday	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	4.7	3.7	4		
10-Jul-13	Wednesday	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	5.9	7.7	7	8	
11-Jul-13	Thursday		8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	6	6.2	6		
12-Jul-13	Friday		8	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	6.6	6.3	6		
13-Jul-13	Saturday		8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	6	6	9		
14-Jul-13	Sunday		8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	7.5	6	6		
15-Jul-13	Monday		8	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	5.9	5.9	6		
16-Jul-13	Tuesday	ES1316303 & ES1316052			8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	7.2	10.3	6	5	
17-Jul-13	Wednesday		8	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	4.2	6.2	7		
18-Jul-13	Thursday		8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	4.5	7.4	4		
19-Jul-13	Friday		8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	5.8	4.5	5		
20-Jul-13	Saturday		8	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	4.3	5.8	5		
21-Jul-13	Sunday		8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	6.7	4.3	6		
22-Jul-13	Monday		8	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	7.7	6.7	9		
23-Jul-13	Tuesday	ES1316692			8.2	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1		5.1	5	6	
24-Jul-13	Wednesday		8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.9	7.7	9		
25-Jul-13	Thursday		8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	7.5	5.1	8		
26-Jul-13	Friday		8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	7.8	8.8	8		
27-Jul-13	Saturday		8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	14.2	13.6	14		
28-Jul-13	Sunday		8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	13.7	14.8	14		
29-Jul-13	Monday		8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	14.8	15.3	15		
30-Jul-13	Tuesday			8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	9.8	8.8	9	5	
31-Jul-13	Wednesday			8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.6	7.3	8		
01-Aug-13	Thursday			8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	4.9	7.5	5		
02-Aug-13	Friday			8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	4.2	5.8	9		
03-Aug-13	Saturday			8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	7.1	7	5		
04-Aug-13	Sunday			8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	7.4	7	7		
05-Aug-13	Monday			8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	6.2	6	6		
06-Aug-13	Tuesday			8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	6.1	5	5		
07-Aug-13	Wednesday			8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	4.6	5	5		

MACMAHON CONTRACTORS

Project: Darwin Marine Supply Base
Title: DDSPMP Weekly Report
Location: Location 7 - 50m Edge of Dredge Footprint

Units for Water Samples			pH		Turbidity		SSC
DDSPMP Guidelines	6.0	-	8.5	111	/	52	100
Macmahon Rail Bund Outlet Baseline			8.5			4.0	40.0
Macmahon Dredge Foot Print Baseline			8.4			6.0	17.0
Macmahon Pond K Baseline			7.4			27.3	49.0
Macmahon Pond D Baseline			8.7			11.5	25.0
Macmahon Pond E Baseline			8.0			4.6	22.5
Units for Sediment Samples			-			NTU	mg/L
URS Harbour Baseline				Sediment Sammpled and Tested - Test Not Applicable			
DP Pond K Baseline				Sediment Sammpled and Tested - Test Not Applicable			
DP Pond D Baseline				Sediment Sammpled and Tested - Test Not Applicable			
DP Pond E Baseline				Sediment Sammpled and Tested - Test Not Applicable			

Notes:
Reading 1 = 7:00AM - 9:00AM
Reading 2 = 9:00AM - 11:00AM
Reading 3 = 11:00AM - 1:00PM
Reading 4 = 1:00PM - 3:00PM
Reading 5 = 3:00PM - 5:00PM

Location 7 - 50m from footprint														
08-Aug-13	Thursday					8.2	8.1	8		8.1	8.1	4.6	6.4	6.2
09-Aug-13	Friday						8.1			8.1			5.8	5.7
10-Aug-13	Saturday						8.1						7.6	7.4
11-Aug-13	Sunday								8.1					
12-Aug-13	Monday						8.1			8.1			10.6	15.6
13-Aug-13	Tuesday						8.1			8.1			7.6	7.6
14-Aug-13	Wednesday						8			8.1			6.9	7.1
15-Aug-13	Thursday						8.1			8.1			11.7	7.6
16-Aug-13	Friday								8	8.1			6.1	4.2
17-Aug-13	Saturday					8.1				8.1		8.1		7.4
18-Aug-13	Sunday									8.1		10.6		
19-Aug-13	Monday									8.1		3.7		4.8
20-Aug-13	Tuesday									8.1		4.7	5.8	
21-Aug-13	Wednesday						8.1			8.1		7.9	9.4	
22-Aug-13	Thursday						8.1	8.1		8.1		7		7.2
23-Aug-13	Friday					8		8.1		8.1		7.7		6.2
24-Aug-13	Saturday									8.2			6.4	
25-Aug-13	Sunday							8.1		8.1			6.4	9.4
26-Aug-13	Monday						8.1			8.2			5	5.7
27-Aug-13	Tuesday						8.1			8.1			4.5	5.6
28-Aug-13	Wednesday						8.1			8.1			9.6	8.2
29-Aug-13	Thursday						8.1			8.1			6.9	5.4
30-Aug-13	Friday						8.2	8.1		8.2			5.7	
31-Aug-13	Saturday					8.2				8.2		6.4		7.3
01-Sep-13	Sunday						8.2			8.2		7.1	9.1	
02-Sep-13	Monday						8.2			8.2		8.1		7.3
03-Sep-13	Tuesday					8.2				8.2		7.2	6.6	
04-Sep-13	Wednesday					8				8.0		6.4	5.9	
05-Sep-13	Thursday					7.9		7.9		7.9		6.3		6.9
06-Sep-13	Friday					8		8		8.0		6.7		5.9
07-Sep-13	Saturday					7.5		7.5		7.5		12.6		17.8
08-Sep-13	Sunday					7.5		7.5		7.5		16		15.4
09-Sep-13	Monday									7.2			12.8	15.4
10-Sep-13	Tuesday						7.9			7.7			13.8	14.4
11-Sep-13	Wednesday					7.7				7.8			10.2	13.5
12-Sep-13	Thursday					7.7				7.7			11.9	11.2
13-Sep-13	Friday						7.8			7.7	7.7			7.9
14-Sep-13	Saturday					7.7		7.7		7.7		5.8		6.6
15-Sep-13	Sunday									7.9			5.4	4.1
16-Sep-13	Monday					8				8.0		5.8	4.1	
17-Sep-13	Tuesday						7.7			8.1			6.6	6.4
18-Sep-13	Wednesday					8				8.0		7.2		
19-Sep-13	Thursday					7.9				7.9		5.6	6.4	
20-Sep-13	Friday					7.8				7.8		6		5.7
21-Sep-13	Saturday					8		7.9		8.0		10.1		9.4
22-Sep-13	Sunday					7.8		7.9		7.9		10.9		11.6
23-Sep-13	Monday							7.9		7.9			9.6	9.5
24-Sep-13	Tuesday					7.8		7.8		7.8			10.2	12.6
25-Sep-13	Wednesday					7.9				7.9			8.3	11.1
26-Sep-13	Thursday					7.8		7.8		7.9			10.2	10
27-Sep-13	Friday					8				8.0			10.4	10.5

MACMAHON CONTRACTORS

Project: Darwin Marine Supply Base
Title: DDSPMP Weekly Report
Location: Location 7 - 50m Edge of Dredge Footprint

Units for Water Samples			pH		Turbidity			SSC	
DDSPMP Guidelines			-	-	NTU	NTU	mg/L	mg/L	mg/L
Macmahon Rail Bund Outlet Baseline	6.0	8.5	111	52	4.0	100	40.0	17.0	49.0
Macmahon Dredge Foot Print Baseline		8.5			6.0		25.0	22.5	
Macmahon Pond K Baseline		8.4			7.4				
Macmahon Pond D Baseline		7.4			27.3				
Macmahon Pond E Baseline		8.7			11.5				
Units for Sediment Samples		8.0			4.6				
URS Harbour Baseline		-			NTU				
DP Pond K Baseline	Sediment Sammpled and Tested - Test Not Applicable								
DP Pond D Baseline	Sediment Sammpled and Tested - Test Not Applicable								
DP Pond E Baseline	Sediment Sammpled and Tested - Test Not Applicable								

Notes:
Reading 1 = 7:00AM - 9:00AM
Reading 2 = 9:00AM - 11:00AM
Reading 3 = 11:00AM - 1:00PM
Reading 4 = 1:00PM - 3:00PM
Reading 5 = 3:00PM - 5:00PM

Location 7 - 50m from footprint									
18-Nov-13	Monday								
19-Nov-13	Tuesday	8	8.1	8.1	8.1	17.6	19.1	18	5
20-Nov-13	Wednesday	8.1	8.1	8.1	8.1	4.7	5.3	5	16
21-Nov-13	Thursday		8.2	8.1	8.1	17.2	15.6	13	13
22-Nov-13	Friday		8.2	8.1	8.1	14.5	12.1	13	13
23-Nov-13	Saturday		8.1	8.1	8.1	11.6	13.5	5	
24-Nov-13	Sunday		8.1	8.1	8.1	3.3	5.8	6	
25-Nov-13	Monday		8.1	8.1	8.1	7.6	7.4	8	
26-Nov-13	Tuesday		8	8	8	6.1	7	7	
27-Nov-13	Wednesday		8	8.1	8.1	5.3	5.4	5	5
28-Nov-13	Thursday	8			8.2	4.8		6	
29-Nov-13	Friday	8			8.1	13.2		13	
30-Nov-13	Saturday	8.2		8.1		7.2		6	
01-Dec-13	Sunday	8	8.1			4.6		5	
02-Dec-13	Monday	8	8			8.7		9	
03-Dec-13	Tuesday	8.1	8			11.7		11	
04-Dec-13	Wednesday	8	8	8.1		6.5	5.6	6	
05-Dec-13	Thursday	8.1	8	8		13.6	12.9	13	
06-Dec-13	Friday		8.2	8.2		22.4	20.7	22	
07-Dec-13	Saturday			8.1		18.9	16.6	18	
08-Dec-13	Sunday		8.2	8.2	8.1	17.4	16.7	17	
09-Dec-13	Monday		8.2	8.2	8.1			23	
10-Dec-13	Tuesday		8.2	8.2	8.1		17.5	9	9
11-Dec-13	Wednesday		8.2	8.2	8.2	7.7	5.8	7	
12-Dec-13	Thursday		8.2	8.1	8.2	4.9	5.3	5	
13-Dec-13	Friday	8.2		8.2			6.2	7	
14-Dec-13	Saturday	8.1	8.1			4.7		5	
15-Dec-13	Sunday	8.2	8.2	8.2		17.4		18	
16-Dec-13	Monday		8.1	8.1		5.5	3.8	5	
17-Dec-13	Tuesday	8.1	8.1			7.2	4.8	6	8
18-Dec-13	Wednesday	8.1	8.1	8.1		5.4	6.1	6	
19-Dec-13	Thursday	8.1	8.2	8.2		18.3	14.3	16	
20-Dec-13	Friday	8.2	8.2	8.2		17.5	17.6	18	
21-Dec-13	Saturday	8.2	8.1	8.2		15.2	16.8	16	
22-Dec-13	Sunday								
23-Dec-13	Monday								
24-Dec-13	Tuesday								
25-Dec-13	Wednesday								
26-Dec-13	Thursday								
27-Dec-13	Friday								
28-Dec-13	Saturday								
29-Dec-13	Sunday								
30-Dec-13	Monday								
31-Dec-13	Tuesday								
01-Jan-14	Wednesday								
02-Jan-14	Thursday	8.4	8.4	8.4	8.4	5.5	6.7	6.1	
03-Jan-14	Friday								
04-Jan-14	Saturday								
05-Jan-14	Sunday								
06-Jan-14	Monday	8.2	8.1	8.2	8.2	11.9	11.2	11.6	
07-Jan-14	Tuesday								

MACMAHON CONTRACTORS
Project: Darwin Marine Supply Base
Title: DDSPMP Weekly Report
Location: Location 8 - Rail Bund Outlet

Units for Water Samples			pH		Turbidity		SSC
			-		NTU		mg/L
DDSPMP Guidelines	6.0	8.5	111	/	52		100
Macmahon Rail Bund Outlet Baseline		8.5			4.0		40.0
Macmahon Dredge Foot Print Baseline		8.4			6.0		17.0
Macmahon Pond K Baseline		7.4			27.3		49.0
Macmahon Pond D Baseline		8.7			11.5		25.0
Macmahon Pond E Baseline		8.0			4.6		22.5
Units for Sediment Samples		-			NTU		mg/L
URS Harbour Baseline			Sediment Sammpled and Tested - Test Not Applicable				
DP Pond K Baseline			Sediment Sammpled and Tested - Test Not Applicable				
DP Pond D Baseline			Sediment Sammpled and Tested - Test Not Applicable				
DP Pond E Baseline			Sediment Sammpled and Tested - Test Not Applicable				

Notes:
Reading 1 = 7:00AM - 9:00AM
Reading 2 = 9:00AM - 11:00AM
Reading 3 = 11:00AM - 1:00PM
Reading 4 = 1:00PM - 3:00PM
Reading 5 = 3:00PM - 5:00PM

Location 8 - Rail bund outlet														
08-Aug-13	Thursday													
09-Aug-13	Friday	8	8.1	8.1	8.1	6.9	6.4	5.7						
10-Aug-13	Saturday		8	8.1	8.1		5.2	6.7						
11-Aug-13	Sunday		8.1	8.1	8.2		5.2	6.6						
12-Aug-13	Monday			8.1	8.1		6.6							
13-Aug-13	Tuesday			8	8.0		6.4							
14-Aug-13	Wednesday			8	8.1		5							
15-Aug-13	Thursday			8	8.1		5							
16-Aug-13	Friday			8.1	8.1		4.2							
17-Aug-13	Saturday	8.1		8.1	8.1	5.3								
18-Aug-13	Sunday	8		8.1	8.0	7.3								
19-Aug-13	Monday	8.1		8.1	8.1	4.5								
20-Aug-13	Tuesday	8		8.1	8.1	8.4	7.3							
21-Aug-13	Wednesday	8.1		8.1	8.1	7.3	7.4							
22-Aug-13	Thursday	8.1	8.1	8.1	8.1	6.9		8.4						
23-Aug-13	Friday	8.1	8.1	8.1	8.1	7.8		7.4						
24-Aug-13	Saturday			8.2	8.2		8.7							
25-Aug-13	Sunday		8.1	8.2	8.2		7.1							
26-Aug-13	Monday		8.1	8.1	8.1		7.1							
27-Aug-13	Tuesday		8.2	8.1	8.2		7.4							
28-Aug-13	Wednesday		8.1	8.1	8.1		8.1							
29-Aug-13	Thursday		8.1	8.1	8.1		7.7							
30-Aug-13	Friday		8.1	8.1	8.1		6.2							
31-Aug-13	Saturday	8.1		8.2	8.2	7.9								
01-Sep-13	Sunday	8.1		8.1	8.1	5.3	6.4							
02-Sep-13	Monday		8.1	8.1	8.1		7.2							
03-Sep-13	Tuesday	8.2		8.2	8.2	8.7	7.5							
04-Sep-13	Wednesday	8.1	8	8.1	8.1	3.9	3.5							
05-Sep-13	Thursday	8.1		8.1	8.1	10.2		9.8						
06-Sep-13	Friday	8.1	8.1	8.1	8.1	9.3		10.2						
07-Sep-13	Saturday	7.4	7.1	7.3	7.3	19.2		16.4						
08-Sep-13	Sunday	7.4	7.4	7.4	7.4	12.3		13.1						
09-Sep-13	Monday		7.4	7.4	7.4		19.4							
10-Sep-13	Tuesday		7.9	7.6	7.6		10.4							
11-Sep-13	Wednesday		7.7	7.7	7.7		13.2							
12-Sep-13	Thursday		7.7	7.7	7.7		10.1							
13-Sep-13	Friday		7.9	7.9	7.8									
14-Sep-13	Saturday	7.8	7.8	7.8	7.8	6.7		7.2						
15-Sep-13	Sunday			8.0	8.0		7.8							
16-Sep-13	Monday	7.9		7.9	7.9	6.5		6.6						
17-Sep-13	Tuesday		7.9	7.9	7.9		7.4							
18-Sep-13	Wednesday	7.7	7.7	7.7	7.7	8								
19-Sep-13	Thursday	7.6	8	8.0	8.0	7.2								
20-Sep-13	Friday	8		7.9	7.9	6.9								
21-Sep-13	Saturday	7.9	8	8.0	8.0	5.3		6						
22-Sep-13	Sunday	8	7.9	8.0	8.0	6.2		6.3						
23-Sep-13	Monday		7.8	7.8	7.8		6.2							
24-Sep-13	Tuesday		7.9	7.9	7.9		7.4							
25-Sep-13	Wednesday		7.8	7.8	7.8		16.3							
26-Sep-13	Thursday		7.9	7.8	7.9		11.8							
27-Sep-13	Friday		7.9	7.8	7.9		12.6							

MACMAHON CONTRACTORS

Project: Darwin Marine Supply Base

Title: DDSPMP Weekly Report

Location: Location 10 - Rail Bund Outlet

Units for Water Samples			pH		Turbidity		SSC	
DDSPMP Guidelines			6.0	-	8.5	111 / 52	100 mg/L	
Macmahon Rail Bund Outlet Baseline				8.5		4.0	40.0	
Macmahon Dredge Foot Print Baseline				8.4		6.0	17.0	
Macmahon Pond K Baseline				7.4		27.3	49.0	
Macmahon Pond D Baseline				8.7		11.5	25.0	
Macmahon Pond E Baseline				8.0		4.6	22.5	
Units for Sediment Samples				-		NTU	mg/L	
URS Harbour Baseline			Sediment Sammpled and Tested - Test Not Applicable					
DP Pond K Baseline			Sediment Sammpled and Tested - Test Not Applicable					
DP Pond D Baseline			Sediment Sammpled and Tested - Test Not Applicable					
DP Pond E Baseline			Sediment Sammpled and Tested - Test Not Applicable					

Notes:
Reading 1 = 7:00AM - 9:00AM
Reading 2 = 9:00AM - 11:00AM
Reading 3 = 11:00AM - 1:00PM
Reading 4 = 1:00PM - 3:00PM
Reading 5 = 3:00PM - 5:00PM

Location 10 - Rail bund wall														
18-Jun-13	Tuesday													
19-Jun-13	Wednesday	8.1	8.1	8.1	8.1	9.6	10.5	10.5	10.5	10	5	5	5	5
20-Jun-13	Thursday	8.1	8.2	8.1	8.1	7.7	6.8	6.8	7	9				
21-Jun-13	Friday	8.1	8.1	8.2	8.1	8.2	8.6	8.6	8	8				
22-Jun-13	Saturday	8.2	8.2	5.4	8.2	5.8			6	6				
23-Jun-13	Sunday	8.1	8.1	9.4	8.1	8.8			9	9				
24-Jun-13	Monday	8.1	8.1	7.7	8.1	8.1			8	8				
25-Jun-13	Tuesday	8.1	8.2	9.4	8.1	9.4			8	8				
26-Jun-13	Wednesday	8.2	8.1	6.9	8.2	6.9			8	8				
27-Jun-13	Thursday		8.1	5.4	8.1	5.8	5.8	5.8	6	6				
28-Jun-13	Friday		8.1	9.6	8.1	9.6	6.1	6.1	8	8				
29-Jun-13	Saturday		8.1	3.9	8.1	3.9	5.9	6.4	5	5				
30-Jun-13	Sunday		8.2	6.4	8.2	6.4	6.4	6.4	6	6				
01-Jul-13	Monday		8.1	5.6	8.1	5.6	5.8	5.8	6	6				
02-Jul-13	Tuesday	8.1	8.1	5.8	8.1	5.8			7	7				
03-Jul-13	Wednesday	8.1	8.1	6.6	8.1	6.6	5.6	5.6	6	6				
04-Jul-13	Thursday	8.1	8.1	4.1	8.1	4.1	6.2	6.2	4	4				
05-Jul-13	Friday	8.1	8.1	6.2	8.1	6.2	3.8	3.8	6	6				
06-Jul-13	Saturday		8.1	4.9	8.1	4.9	5.3	5.3	5	5				
07-Jul-13	Sunday		8.1	7.2	8.1	7.2	7.1	7.1	7	7				
08-Jul-13	Monday	8.1	8.2	5.9	8.2	5.9	6.9	6.9	6	6				
09-Jul-13	Tuesday	8.1	8.1	9.6	8.1	9.6	12.2	12.2	11	11				
10-Jul-13	Wednesday	8.1	8.1	7.6	8.1	7.6	8.2	8.2	8	8				
11-Jul-13	Thursday		8.1		8.1		10.2	10.2	10	10				
12-Jul-13	Friday		8.1		8.1		7.4	7.4	7	7				
13-Jul-13	Saturday		8.1		8.1		7.9	7.2	8	8				
14-Jul-13	Sunday		8.1		8.1		4.9	4.9	4	4				
15-Jul-13	Monday		8.2		8.2		8.7	8.7	9	9				
16-Jul-13	Tuesday		8.2	8.2	8.2		6.1	6.1	6	6				
17-Jul-13	Wednesday		8.1	8.1	8.1		7.1	7.1	7	7				
18-Jul-13	Thursday		8.1	8.1	8.1		5.8	5.8	6	6				
19-Jul-13	Friday	8.1	8.1	4.2	8.1	4.2			5	5				
20-Jul-13	Saturday	8.1	8.2	4.1	8.2	4.1	5.7	5.7	5	5				
21-Jul-13	Sunday	8.1	8.1	3.9	8.1	3.9			5	5				
22-Jul-13	Monday		8.1	9.7	8.1	9.7			9	9				
23-Jul-13	Tuesday	8.1	8.2	8.5	8.2	8.5	7.1	7.1	8	8				
24-Jul-13	Wednesday	8.2	8.1	14.3	8.2	14.3	11.6	11.6	13	13				
25-Jul-13	Thursday	8.1	8.1	6.9	8.1	6.9	9.1	9.1	8	8				
26-Jul-13	Friday	8.2	8.1	8.9	8.2	8.9	9.2	9.2	9	9				
27-Jul-13	Saturday		8.1		8.1		10.7	10.7	10	10				
28-Jul-13	Sunday		8.1		8.1		6.1	6.1	6	6				
29-Jul-13	Monday		8.1		8.2		10.9	10.9	12	12				
30-Jul-13	Tuesday		8.1		8.1		13.2	13.2	14	14				
31-Jul-13	Wednesday		8.1	8	8.1	8	9.4	9.4	11	11				
01-Aug-13	Thursday		8		8.1		3.5	3.5	4	4				
02-Aug-13	Friday	8.2	8.1	11.2	8.2	11.2			11	11				
03-Aug-13	Saturday		8.1		8.1		11.6	11.2	10	10				
04-Aug-13	Sunday	8.1	8.2	8.8	8.2	8.8			8	8				
05-Aug-13	Monday	8.2	8.1	7.4	8.2	7.4			8	8				
06-Aug-13	Tuesday	8.1	8.1	12.2	8.1	12.2	10.4	10.4	11	11				
07-Aug-13	Wednesday	8.1	8.1	6.2	8.1	6.2	6	6	6	6				

MACMAHON CONTRACTORS
Project: Darwin Marine Supply Base
Title: DDSPMP Weekly Report
Location: Location 10 - Rail Bund Outlet

Units for Water Samples			pH		Turbidity			SSC	
DDSPMP Guidelines			-	-	NTU	/	mg/L	mg/L	
Macmahon Rail Bund Outlet Baseline	6.0	8.5	8.5	111	52	4.0	100	40.0	
Macmahon Dredge Foot Print Baseline			8.4		6.0		17.0		
Macmahon Pond K Baseline			7.4		27.3		49.0		
Macmahon Pond D Baseline			8.7		11.5		25.0		
Macmahon Pond E Baseline			8.0		4.6		22.5		
Units for Sediment Samples			-	-	NTU		mg/L		
URS Harbour Baseline	Sediment Sammpled and Tested - Test Not Applicable								
DP Pond K Baseline	Sediment Sammpled and Tested - Test Not Applicable								
DP Pond D Baseline	Sediment Sammpled and Tested - Test Not Applicable								
DP Pond E Baseline	Sediment Sammpled and Tested - Test Not Applicable								

Notes:
Reading 1 = 7:00AM - 9:00AM
Reading 2 = 9:00AM - 11:00AM
Reading 3 = 11:00AM - 1:00PM
Reading 4 = 1:00PM - 3:00PM
Reading 5 = 3:00PM - 5:00PM

Location 10 - Rail bund wall									
08-Aug-13	Thursday								
09-Aug-13	Friday	8.2	8	8.1	8.2	6.9	6.1	6.2	7
10-Aug-13	Saturday	8.1	8.2		8.1	5.3	6.4	5.3	6
11-Aug-13	Sunday	8.1	8.1		8.2	6.9	6.4		7
12-Aug-13	Monday	8			8.2		7.3	7.7	8
13-Aug-13	Tuesday	8			8.1		9.6	9.9	10
14-Aug-13	Wednesday	8.1			8.1		8.7	9.7	9
15-Aug-13	Thursday	8.1			8.1		13.2	10.2	12
16-Aug-13	Friday	8.1			8.1		7.6	7	7
17-Aug-13	Saturday				8.1		6.6	6	6
18-Aug-13	Sunday	8.1			8.1			6.8	8
19-Aug-13	Monday	8.1			8.2			3.9	9
20-Aug-13	Tuesday	8.1			8.2		8	8.4	4
21-Aug-13	Wednesday	8.1			8.1		8.7		8
22-Aug-13	Thursday	8.1	8.1		8.1		8.6		8
23-Aug-13	Friday	8.1	8.1		8.1	8	7.6	8.7	8
24-Aug-13	Saturday				8.1		8.1	8.6	8
25-Aug-13	Sunday	8.1	8.2		8.2		6.2	5.9	6
26-Aug-13	Monday	8.1			8.1		6.6		6
27-Aug-13	Tuesday	8.2			8.2		6.7	6.3	8
28-Aug-13	Wednesday	8.1			8.2		8	8.8	8
29-Aug-13	Thursday	8.1			8.1		7.9	7.6	8
30-Aug-13	Friday	8.1	8.1		8.1		6.9	8.2	8
31-Aug-13	Saturday	8.2			8.2	8.6		6	6
01-Sep-13	Sunday	8.1			8.2	7	6.8	7.9	8
02-Sep-13	Monday	8.1			8.2		7.5	8.2	7
03-Sep-13	Tuesday	8.1			8.2	7.8	7.8		8
04-Sep-13	Wednesday	8.1			8.1	7	7.4		7
05-Sep-13	Thursday	8	8		8.0	11.6		12.6	12
06-Sep-13	Friday	8	8		8.0	12.8		11.8	12
07-Sep-13	Saturday	7.6	7.4		7.5	9.3		14.3	12
08-Sep-13	Sunday	7.5	7.5		7.5	18.4		17.3	18
09-Sep-13	Monday				7.6		13.6	18.5	16
10-Sep-13	Tuesday	8			7.8		7.6	12.4	10
11-Sep-13	Wednesday	7.8			7.8		10.5	9.2	10
12-Sep-13	Thursday	7.8			7.8		13.1	13.4	13
13-Sep-13	Friday		7.9		7.9			7.5	8
14-Sep-13	Saturday	7.9	7.8		7.9	5.2	6	6.1	6
15-Sep-13	Sunday				8.0				6
16-Sep-13	Monday	7.8		8	7.9	5.2	12.4	5.8	5
17-Sep-13	Tuesday			8	8.0		6.8	7.9	10
18-Sep-13	Wednesday	7.8			7.9	7			7
19-Sep-13	Thursday	7.8			7.8	6.1	6.7		6
20-Sep-13	Friday	7.9			7.9	6.6		6.8	7
21-Sep-13	Saturday	8	7.8		7.9	7.2		7.3	7
22-Sep-13	Sunday	7.9	7.8		7.9	7.6		6.9	7
23-Sep-13	Monday		7.7		7.9		6.6	6.4	7
24-Sep-13	Tuesday	7.7	7.7		7.7		5.8		6
25-Sep-13	Wednesday	7.8	7.8		7.9		9.2	10.4	10
26-Sep-13	Thursday	7.8	7.8		7.9		12.4	11.7	12
27-Sep-13	Friday	7.9	7.9		7.9		12.9	10.2	12

[illegible]

Notes:

Reading 1 = 7:00AM - 9:00AM
 Reading 2 = 9:00AM - 11:00AM
 Reading 3 = 11:00AM - 1:00PM
 Reading 4 = 1:00PM - 3:00PM
 Reading 5 = 3:00PM - 5:00PM

[illegible]

pH				Turbidity				SSC				Arsenic (Total) µg/L	Arsenic (AsII) µg/L	Arsenic (AsV) µg/L	Cadmium µg/L	Chromium (Total) µg/L	Chromium m (CrIII) µg/L	Chromium m (CrVI) µg/L	Copper µg/L	Lead µg/L	Mercury mg/L	Nickel µg/L	Selenium µg/L	Zinc µg/L
Units for Water Samples				NTU				mg/L				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L
DDSPMP Guidelines	6.0	-	8.5	111	/	52	4.0	100	5.5	4.4	27.4	4.4	1.3	0.4	0.4	2.0	2.8	2.0	2.0	9.0	<0.0001	1.7	<2.0	10.0
Macmahon Rail Burd Outlet Baseline			8.5				6.0	40.0								Not Tested	Not Tested	Not Tested	Not Tested					
Macmahon Dredge Foot Print Baseline			8.4					17.0						2.6	<0.2		2.8	2.0	2.0	9.0	<0.0001	1.7	<2.0	10.0
Macmahon Pond K Baseline			7.4				27.3	49.0						3.7	<0.4		<1.0	2.5	2.5	0.4	<0.1	<1.0	<4.0	<10.0
Macmahon Pond D Baseline			8.7				11.5	25.0						2.3	<0.2		<0.5	1.0	1.0	<0.2	<0.1	<0.5	<2.0	<5.0
Macmahon Pond E Baseline			8.0				4.6	22.5																
Units for Sediment Samples			-				NTU																	
URS Harbour Baseline																								
DP Pond K Baseline																								
DP Pond D Baseline																								
DP Pond E Baseline																								

Notes:
Reading 1 = 7:00AM - 9:00AM
Reading 2 = 9:00AM - 11:00AM
Reading 3 = 11:00AM - 1:00PM
Reading 4 = 1:00PM - 3:00PM
Reading 5 = 3:00PM - 5:00PM

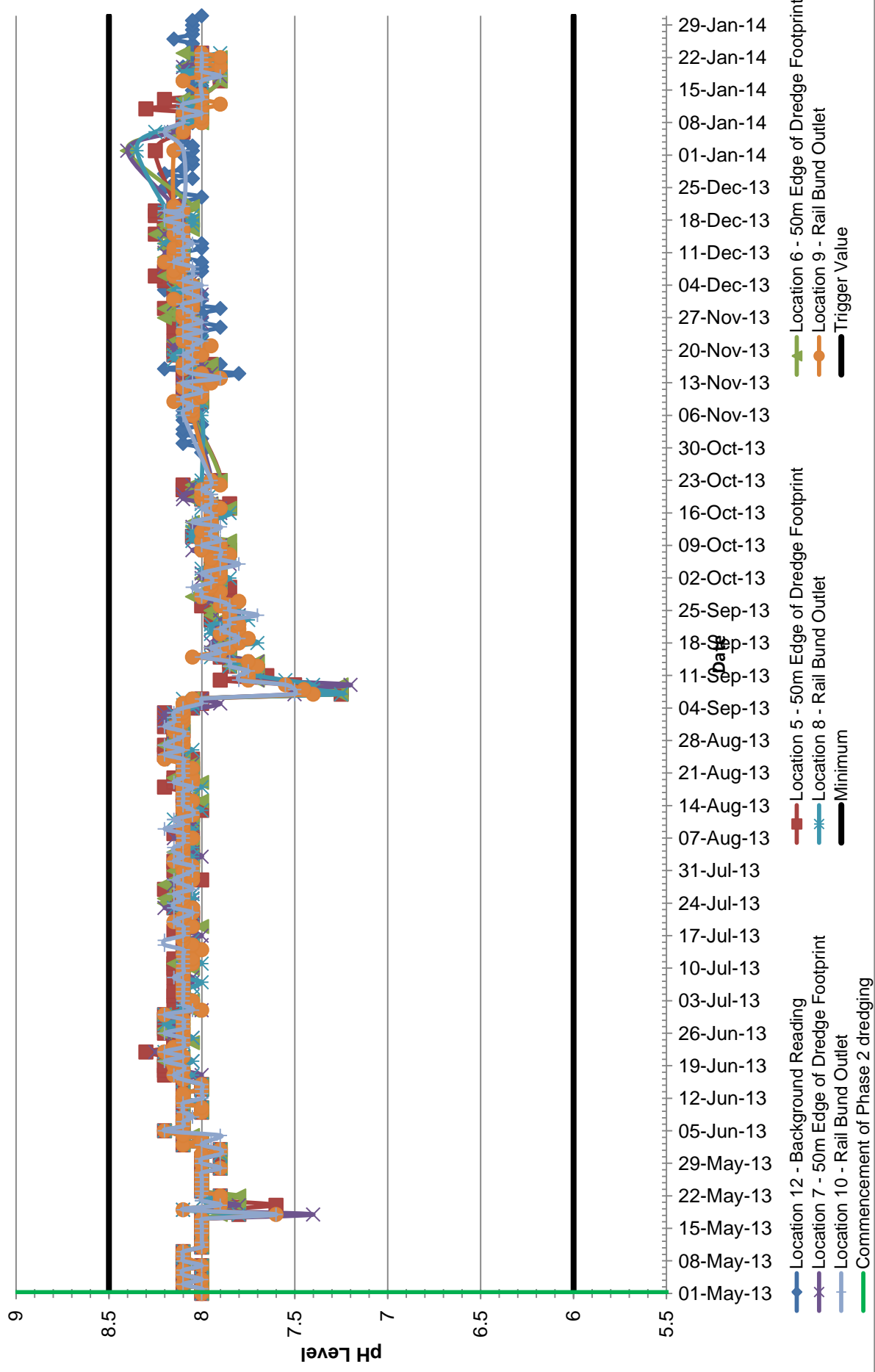
Location 12 - Old Man Rock	23-Jul-13 Tuesday	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1
	24-Jul-13 Wednesday	8.1	8	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1
	25-Jul-13 Thursday	8	8	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1
	26-Jul-13 Friday		8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1
	27-Jul-13 Saturday		8																					
	28-Jul-13 Sunday		8																					
	29-Jul-13 Monday		8.1																					
	30-Jul-13 Tuesday		8																					
	31-Jul-13 Wednesday																							
	01-Aug-13 Thursday	8.1	8.1	8.1	8.1	8.1	8.1	7.3						4										
	02-Aug-13 Friday																							
	03-Aug-13 Saturday		8					8																
	04-Aug-13 Sunday		8.1					8.1																
	05-Aug-13 Monday		8.1					8.1																
	06-Aug-13 Tuesday		8.1					8.1																
	07-Aug-13 Wednesday		8					8.1																
	08-Aug-13 Thursday	8	8.1					8.1																
	09-Aug-13 Friday		8					8																
	10-Aug-13 Saturday		8.1					8.1																
	11-Aug-13 Sunday		8					8																
	12-Aug-13 Monday		8.1					8.1																
	13-Aug-13 Tuesday		8.1					8.1																
	14-Aug-13 Wednesday		8					8																
	15-Aug-13 Thursday		8					8.1																
	16-Aug-13 Friday		8.1					8																
	17-Aug-13 Saturday	8						8																
	18-Aug-13 Sunday		8.1					8.1																
	19-Aug-13 Monday		8.1					8.1																
	20-Aug-13 Tuesday	8	8.1					8.1																
	21-Aug-13 Wednesday		8					8.1																
	22-Aug-13 Thursday	8.1	8.1					8.1																
	23-Aug-13 Friday		8.1					8																
	24-Aug-13 Saturday		8.1					8.1																
	25-Aug-13 Sunday		8.1					8.2																
	26-Aug-13 Monday		8					8																
	27-Aug-13 Tuesday		8.1					8.1																
	28-Aug-13 Wednesday		8.1					8.1																
	29-Aug-13 Thursday		8					8.2																
	30-Aug-13 Friday		8.1					8.1																
	31-Aug-13 Saturday	8.2						8.2																
	01-Sep-13 Sunday	8.1	8.1					8.1																
	02-Sep-13 Monday		8					8.2																
	03-Sep-13 Tuesday	8.2	8					8.1																
	04-Sep-13 Wednesday		8					8.1																
	05-Sep-13 Thursday	7.9						8																
	06-Sep-13 Friday	7.9	7.9					7.9																
	07-Sep-13 Saturday	7.3	7.5					7.5																
	08-Sep-13 Sunday	7.4						7.4																
	09-Sep-13 Monday		7.6					7.6																
	10-Sep-13 Tuesday	8	7.7					7.7																
	11-Sep-13 Wednesday	7.8	7.8					7.8																
	12-Sep-13 Thursday	7.7	7.7					7.7																
	13-Sep-13 Friday							7.8																
	14-Sep-13 Saturday	7.9						7.8																
	15-Sep-13 Sunday		8																					
	16-Sep-13 Monday	7.9	7.9					7.9																
	17-Sep-13 Tuesday		7.8					8																
	18-Sep-13 Wednesday	7.9						8																
	19-Sep-13 Thursday	7.9	8					7.9																
	20-Sep-13 Friday	7.9	7.9					7.9																
	21-Sep-13 Saturday	7.9						7.9																
	22-Sep-13 Sunday	7.9	7.9					8																
	23-Sep-13 Monday		8					8																
	24-Sep-13 Tuesday	7.9	7.9					7.9																
	25-Sep-13 Wednesday	8						8																
	26-Sep-13 Thursday	8	8					7.9																
	27-Sep-13 Friday	7.9	7.9					8																
	28-Sep-13 Saturday	7.9	8					8																
	29-Sep-13 Sunday	8	8					8																
	30-Sep-13 Monday	7.9	7.9					8																
	01-Oct-13 Tuesday	7.9	7.9					8																
	02-Oct-13 Wednesday	8	8					8																
	03-Oct-13 Thursday	8	8					7.9																
	04-Oct-13 Friday	8	8					8																
	05-Oct-13 Saturday	7.9	7.9					8																
06-Oct-13 Sunday	7.8	7.8					8																	
07-Oct-13 Monday	8	8					8																	
08-Oct-13 Tuesday																								
09-Oct-13 Wednesday																								
10-Oct-13 Thursday																								
11-Oct-13 Friday																								
12-Oct-13 Saturday																								
13-Oct-13 Sunday																								
14-Oct-13 Monday																								
15-Oct-13 Tuesday	8.1	8					8																	
16-Oct-13 Wednesday	8	8					8																	
17-Oct-13 Thursday		8.1					8.1																	
18-Oct-13 Friday		8					8																	

Units for Water Samples				pH		Turbidity		SSC		Arsenic (Total)	Arsenic (AsI)	Arsenic (AsV)	Cadmium	Chromium (Total)	Chromium m (CrIII)	Chromium m (CrVI)	Copper	Lead	Mercury	Nickel	Selenium	Zinc
DDSMPMP Guidelines				6.0	-	8.5	111	52	4.0	13.0	24.0	13.0	5.5	4.4	27.4	4.4	1.3	4.4	0.4	70.0	5.0	15.0
Macmahon Rail Buid Outlet Baseline				Not Tested																		
Macmahon Dredge Foot Print Baseline				Not Tested																		
Macmahon Pond K Baseline				Not Tested																		
Macmahon Pond D Baseline				Not Tested																		
Macmahon Pond E Baseline				Not Tested																		
Units for Sediment Samples				Not Tested																		
URS Harbour Baseline				Not Tested																		
DP Pond K Baseline				Not Tested																		
DP Pond D Baseline				Not Tested																		
DP Pond E Baseline				Not Tested																		

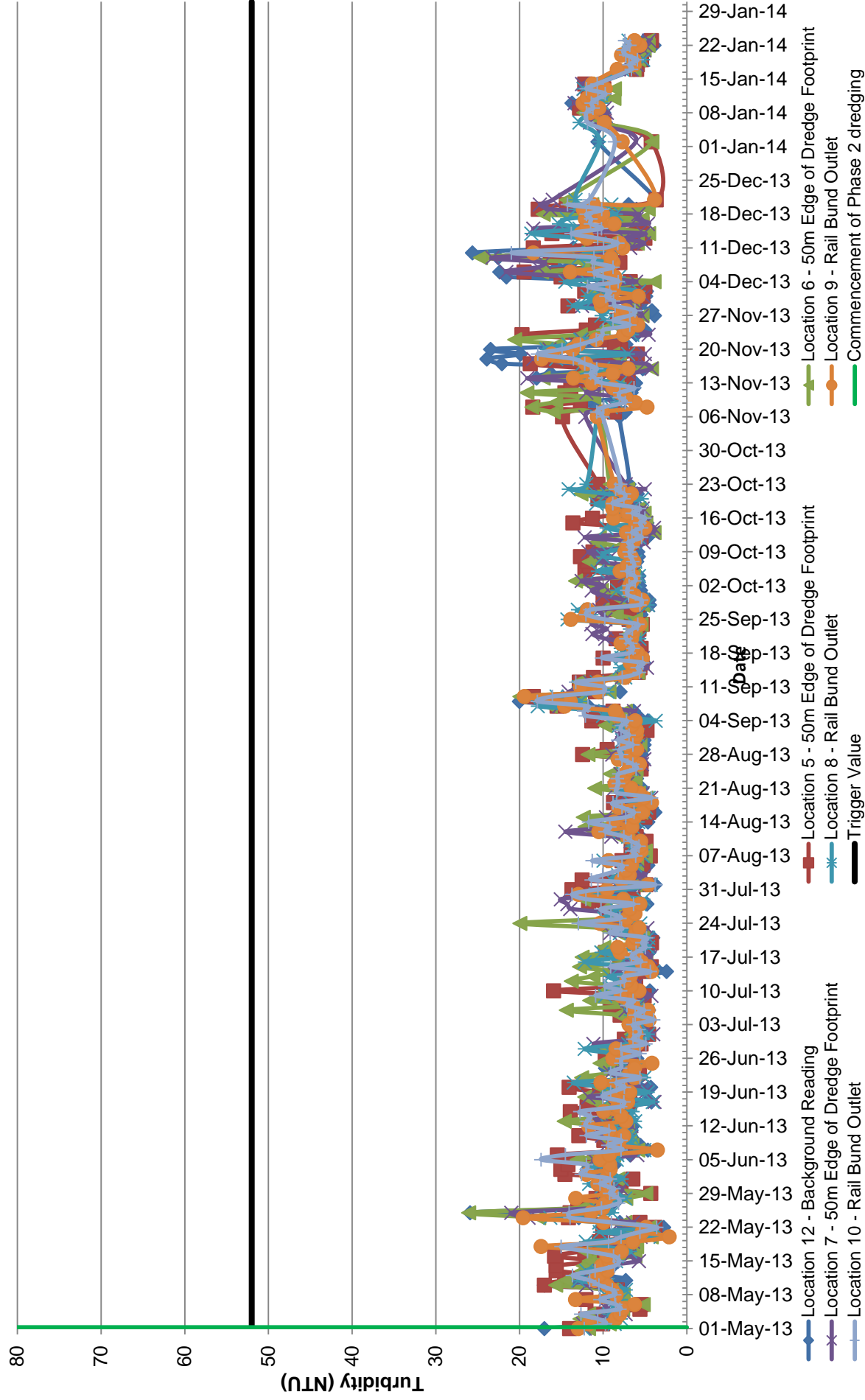
Notes:
Reading 1 = 7:00AM - 9:00AM
Reading 2 = 9:00AM - 11:00AM
Reading 3 = 11:00AM - 1:00PM
Reading 4 = 1:00PM - 3:00PM
Reading 5 = 3:00PM - 5:00PM

Location 12 - Old Man Rock																							
19-Oct-13	Saturday	8.1	8	8	8.1	6.4	5.9	6	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6
20-Oct-13	Sunday	8.1	8	8	8.1	6.5	6.6	6		6	6	6	6	6	6	6	6	6	6	6	6	6	6
21-Oct-13	Monday	8.1	8	8	8.1	5.2	6.6	6		6	6	6	6	6	6	6	6	6	6	6	6	6	6
22-Oct-13	Tuesday	8	8	8	8.0	8.6	8.7	8.7	5	7	9	9	9	9	9	9	9	9	9	9	9	9	9
23-Oct-13	Wednesday	8	8	8	8.0	7.2	6.6	6.6		7													
24-Oct-13	Thursday	No dredging																					
25-Oct-13	Friday	No dredging																					
26-Oct-13	Saturday	No dredging during sampling hours																					
27-Oct-13	Sunday	No dredging																					
28-Oct-13	Monday	No dredging																					
29-Oct-13	Tuesday	No dredging																					
30-Oct-13	Wednesday	No dredging																					
31-Oct-13	Thursday	No dredging																					
01-Nov-13	Friday	No dredging																					
02-Nov-13	Saturday	No dredging																					
03-Nov-13	Sunday	No dredging																					
04-Nov-13	Monday	No dredging																					
05-Nov-13	Tuesday	No dredging																					
06-Nov-13	Wednesday	8	8	8	8	8.1	8	8	8.1	8	8	8	8	8	8	8	8	8	8	8	8	8	
07-Nov-13	Thursday	8	8	8.1	8.1	6.8	7.9	11.9		7													
08-Nov-13	Friday	8.1	8.2	8	8.1	6.8	9.7	13.8		11													
09-Nov-13	Saturday	8.1	8	8	8.2	10.3	13.8			11													
10-Nov-13	Sunday	8.1	8.1	8.1	8.1	6.4	6.4			7													
11-Nov-13	Monday	8.1	8.1	8.1	8.1	6.6	6.4		6.9	7													
12-Nov-13	Tuesday	8.1	8.1	8.1	8.1	6.6	6		6	7													
13-Nov-13	Wednesday	8	8	8	8.0	5.9	5.9		6.3	6													
14-Nov-13	Thursday	8	8	8.1	8.1	21.2	14.7		14.7	18													
15-Nov-13	Friday	8	8	8.1	8.1	14.8	6.1		17.7	16													
16-Nov-13	Saturday	8	8.1	8.1	8.1	4.4	4.4		6.1	5													
17-Nov-13	Sunday	8	7.9	8.2	8.0	20.4	23.8			22													
18-Nov-13	Monday	8	8	8.1	8.1	26.5	21.3		21.3	24													
19-Nov-13	Tuesday	8.1	8.1	8	8.1	18.9	20.8		20.8	20													
20-Nov-13	Wednesday	8.1	8.1	8.1	8.1	18.9	24.1		24.1	23													
21-Nov-13	Thursday	8.1	8.1	8.1	8.0	7.7	7		6.8	7													
22-Nov-13	Friday	8	8	8	8.1	7	9.4		9.4	8													
23-Nov-13	Saturday	8.1	8.1	8	8.1	6.8	5.3		5.3	6													
24-Nov-13	Sunday	8.1	8.1	8.0	8.0	5.9	6.3		6.3	5													
25-Nov-13	Monday	8	8	8	8.1	6.3	6.5		6.5	6													
26-Nov-13	Tuesday	8	8	8	8.1	3.5	4.2		4.2	4													
27-Nov-13	Wednesday	8	8	8.1	8.1	3.2	5.1		5.1	4													
28-Nov-13	Thursday	8	8.1	8.1	8.1	6.1	5.3		5.3	6													
29-Nov-13	Friday	8	8	8.1	8.1	4.6	5.7		5.7	5													
30-Nov-13	Saturday	8	8	8	8.0	5.6	4.2		4.2	6													
01-Dec-13	Sunday	8.1	8	8	8.1	5.2	4.4		4.4	5													
02-Dec-13	Monday	8.1	8.1	8.1	8.1	6.6	6.5		6.5	5													
03-Dec-13	Tuesday	8.1	8.1	8.1	8.1	6.6	6.5		6.5	7													
04-Dec-13	Wednesday	8	8	8.1	8.1	7.4	6.6		6.6	7													
05-Dec-13	Thursday	8	8	8.1	8.1	22.7	20.4		20.4	22													
06-Dec-13	Friday	8.1	8.1	8.1	8.1	19.8	24.9		24.9	22													
07-Dec-13	Saturday	8.1	8.1	8	8.1	16.7	14.2		14.2	15													
08-Dec-13	Sunday	8	8	8.2	8.1	12.6	14.8		14.8	14													
09-Dec-13	Monday	8	8.1	8.2	8.2	8.1	24.7		24.7	23													
10-Dec-13	Tuesday	8.1	8.1	8.1	8.2	8.1	24		24	26													
11-Dec-13	Wednesday	8.1	8.1	8.1	8.1	14.8	12.3		12.3	14													
12-Dec-13	Thursday	8.1	8.1	8.1	8.1	6.2	6.4		6.4	6													
13-Dec-13	Friday	8.1	8.1	8.1	8.1	6.4	6.4		6.4	7													
14-Dec-13	Saturday	8.2	8.1	8	8.2	5.8	6.4		6.4	6													
15-Dec-13	Sunday	8.1	8.2	8.1	8.2	6.3	5.9		5.9	6													
16-Dec-13	Monday	8.1	8.1	8.1	8.1	6.4	6.4		6.4	6													
17-Dec-13	Tuesday	8.1	8.1	8.1	8.1	6.3	6.5		6.5	6													
18-Dec-13	Wednesday	8.1	8.1	8.1	8.1	6.8	7.7		7.7	7													
19-Dec-13	Thursday	8.1	8.1	8.2	8.2	5.4	6.6		6.6	6													
20-Dec-13	Friday	8.1	8.1	8.2	8.2	7.2	6.7		6.7	7													
21-Dec-13	Saturday	8.1	8.2	8.2	8.2	3.2	4.3		4.3	4													
22-Dec-13	Sunday	No dredging																					
23-Dec-13	Monday	No dredging																					
24-Dec-13	Tuesday	No dredging																					
25-Dec-13	Wednesday	Christmas Day																					
26-Dec-13	Thursday	Boxing Day																					
27-Dec-13	Friday	No dredging																					
28-Dec-13	Saturday	No dredging																					
29-Dec-13	Sunday	No dredging																					
30-Dec-13	Monday	No dredging																					
31-Dec-13	Tuesday	No dredging																					
01-Jan-14	Wednesday	No dredging																					
02-Jan-14	Thursday	8.1	8.1	8.1	8.1	10.7	10.4		10.4	10.6													
03-Jan-14	Friday	No dredging																					
04-Jan-14	Saturday	No dredging																					
05-Jan-14	Sunday	No dredging																					
06-Jan-14	Monday	8.2	8.2	8.2	8.2	9.3	10.1		10.1	9.7													
07-Jan-14	Tuesday	No dredging																					
08-Jan-14	Wednesday	8.1	8.1	8.1	8.1	9.6	10.2		10.2	9.9													
09-Jan-14	Thursday	8.1	8.1	8.1	8.1	11.1	11.6		11.6	11.4													
10-Jan-14	Friday	8.1	8.1	8.1	8.1	14.3	13.1		13.1	13.7													
11-Jan-14	Saturday	8	8	8	8.1	11.4	12.6		12.6	12.0													
12-Jan-14	Sunday	8	8	8	8.0	11.2	8.6		8.6	9.9													
13-Jan-14	Monday	8.1	8.1	8.1	8.1	9.2	10.1		10.1	10.5													
14-Jan-14	Tuesday	8	8	8	8.0	10.4	10.6		10.6														
15-Jan-14	Wednesday	Severe weather warning - dangerous conditions (no samples collected in the harbour)																					
16-Jan-14	Thursday	No dredging																					

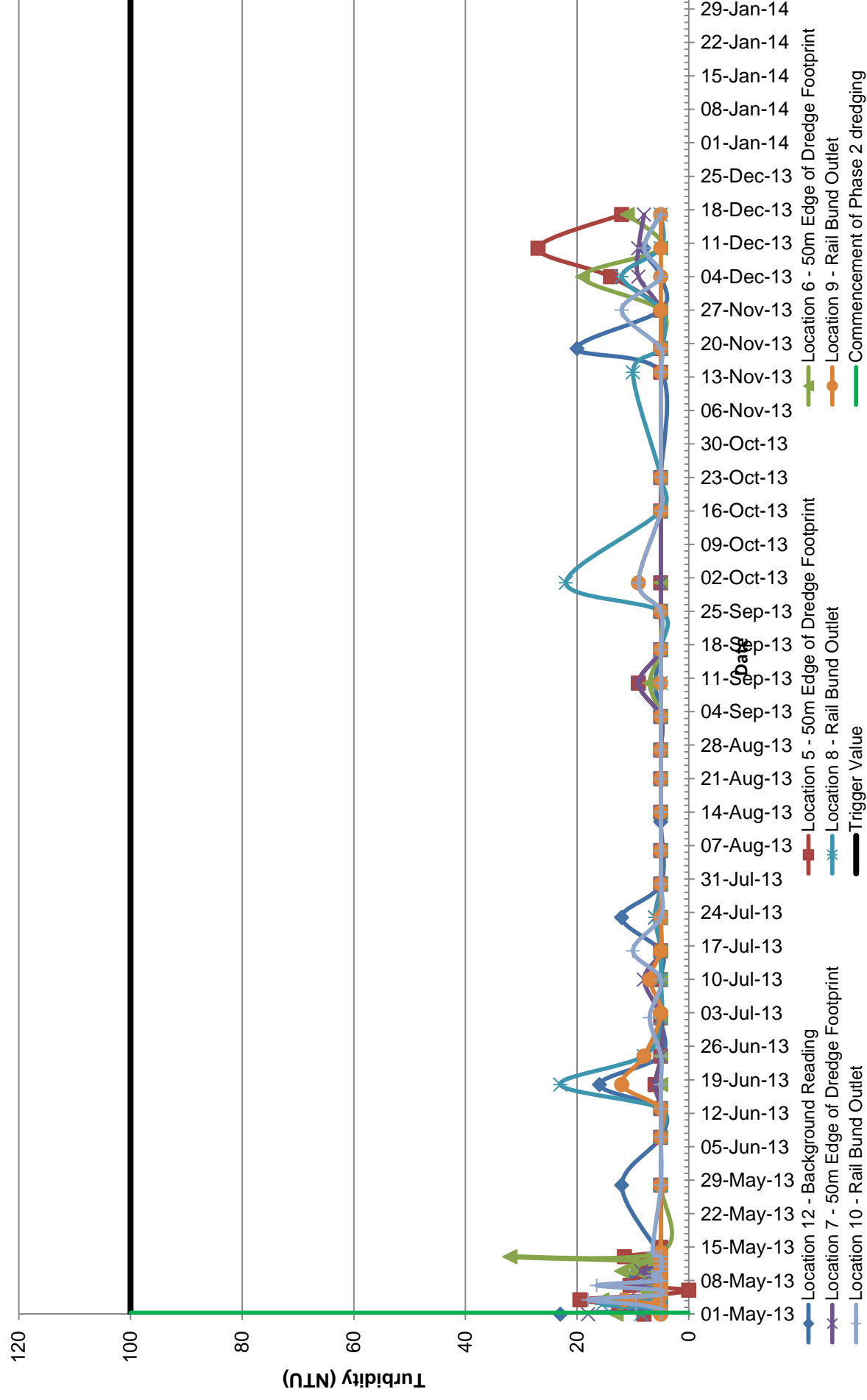
pH Monitoring from Harbour Locations



Turbidity (NTU) Monitoring from Harbour Locations



SSC monitoring from Harbour Locations



Plume Monitoring Information

DMSB: Visual Monitoring of Dredging

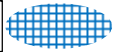
Date: 02 January 2014 at time of water sampling

Observations: Approximate size and location of plume/s from dredging operations denoted with hatched area

First observation



Second observation



DMSB: Visual Monitoring of Dredging

Date: 06 January 2014 at time of water sampling

Observations: Approximate size and location of plume/s from dredging operations denoted with hatched area

First observation



Second observation



DMSB: Visual Monitoring of Dredging

Date: 08 January 2014 at time of water sampling

Observations: Approximate size and location of plume/s from dredging operations denoted with hatched area

First observation



Second observation



DMSB: Visual Monitoring of Dredging

Date: 09 January 2014 at time of water sampling

Observations: Approximate size and location of plume/s from dredging operations denoted with hatched area

First observation



Second observation



DMSB: Visual Monitoring of Dredging

Date: 10 January 2014 at time of water sampling

Observations: Approximate size and location of plume/s from dredging operations denoted with hatched area

First observation



Second observation



DMSB: Visual Monitoring of Dredging

Date: 11 January 2014 at time of water sampling

Observations: Approximate size and location of plume/s from dredging operations denoted with hatched area

First observation



Second observation



DMSB: Visual Monitoring of Dredging

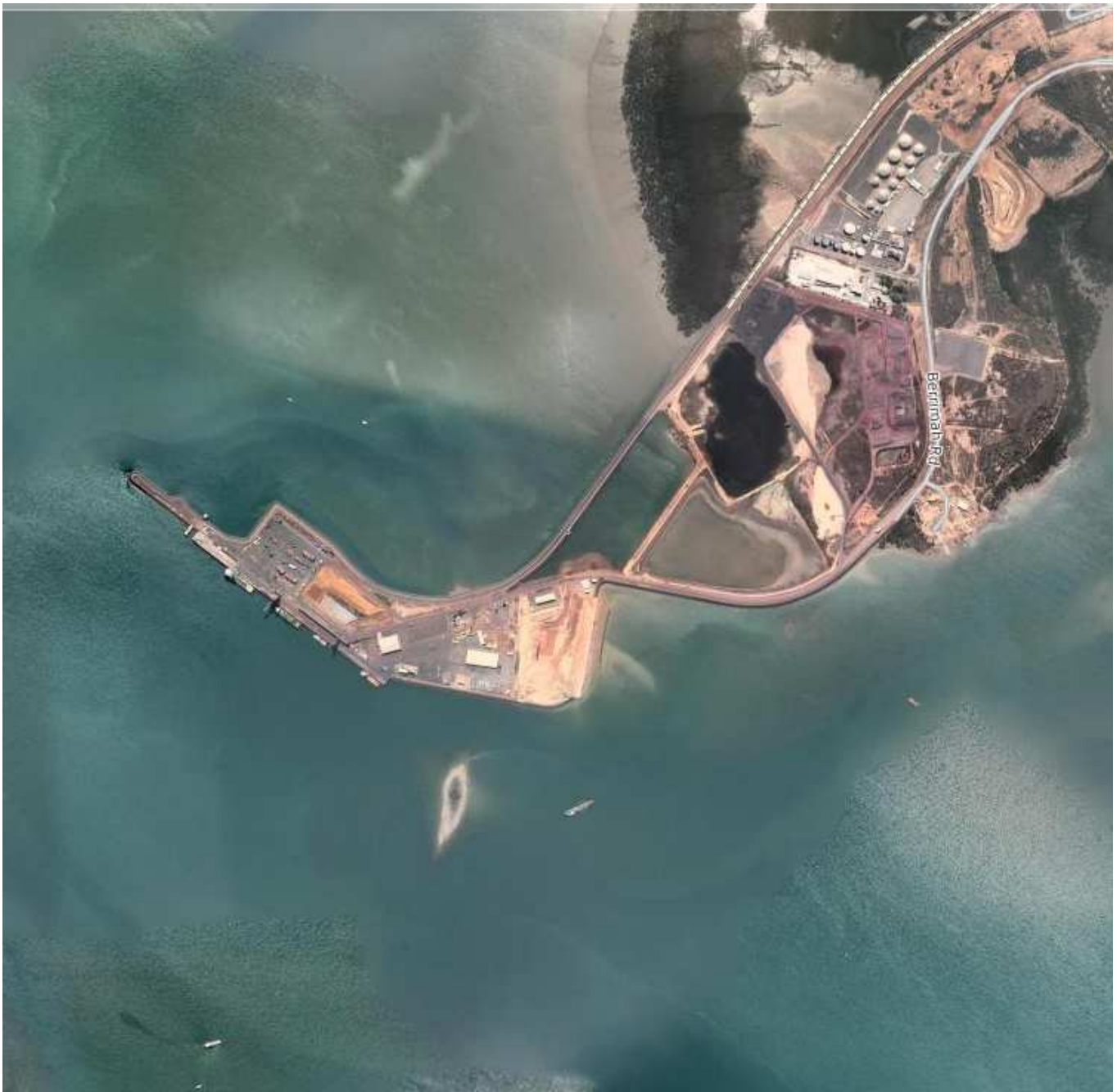
Date: 12 January 2014 at time of water sampling

Observations: Approximate size and location of plume/s from dredging operations denoted with hatched area

First observation



Second observation



DMSB: Visual Monitoring of Dredging

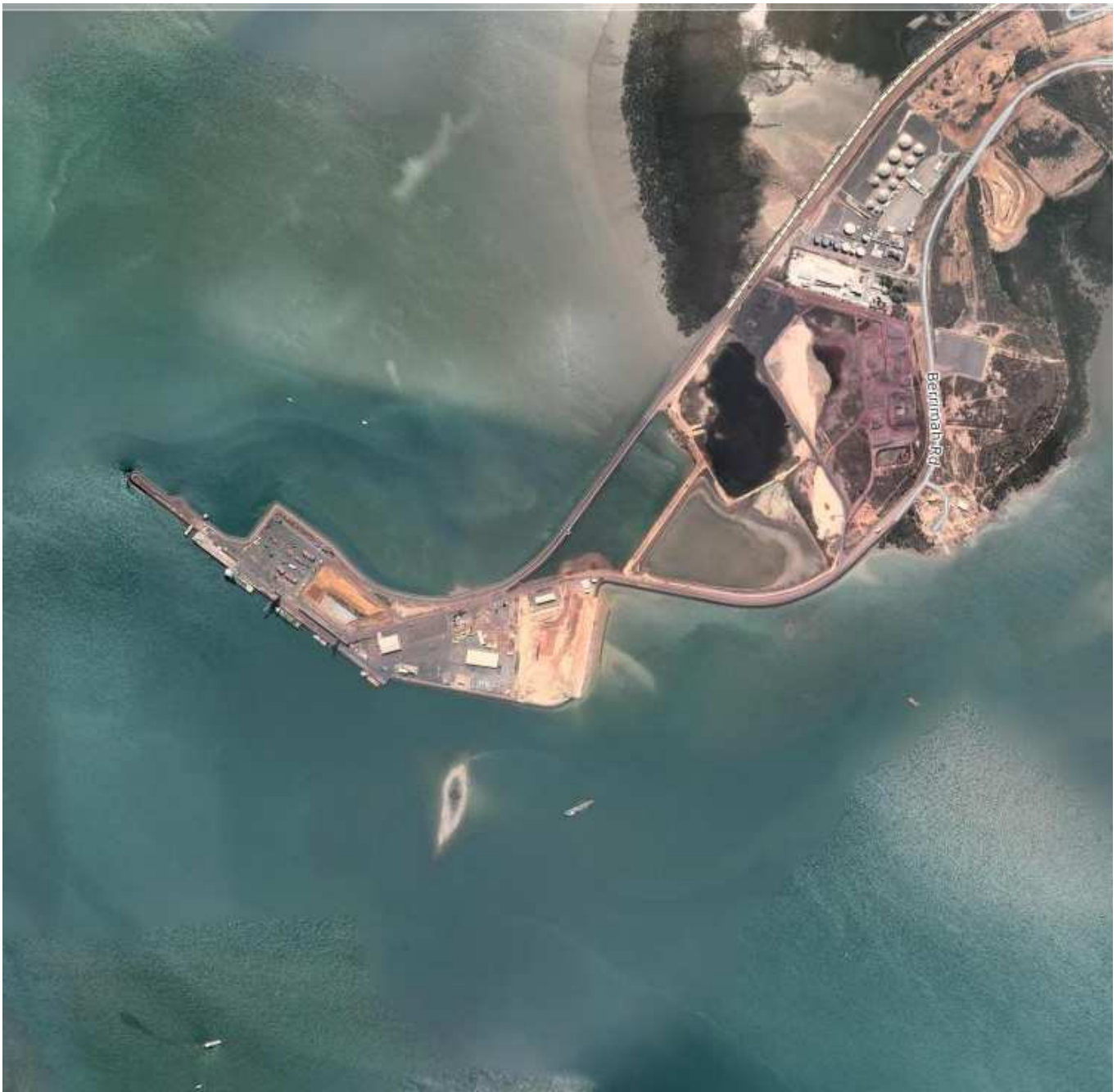
Date: 13 January 2014 at time of water sampling

Observations: Approximate size and location of plume/s from dredging operations denoted with hatched area

First observation



Second observation



DMSB: Visual Monitoring of Dredging

Date: 14 January 2014 at time of water sampling

Observations: Approximate size and location of plume/s from dredging operations denoted with hatched area

First observation



Second observation



DMSB: Visual Monitoring of Dredging

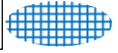
Date: 15 January 2014 at time of water sampling

Observations: Approximate size and location of plume/s from dredging operations denoted with hatched area

First observation



Second observation



DMSB: Visual Monitoring of Dredging

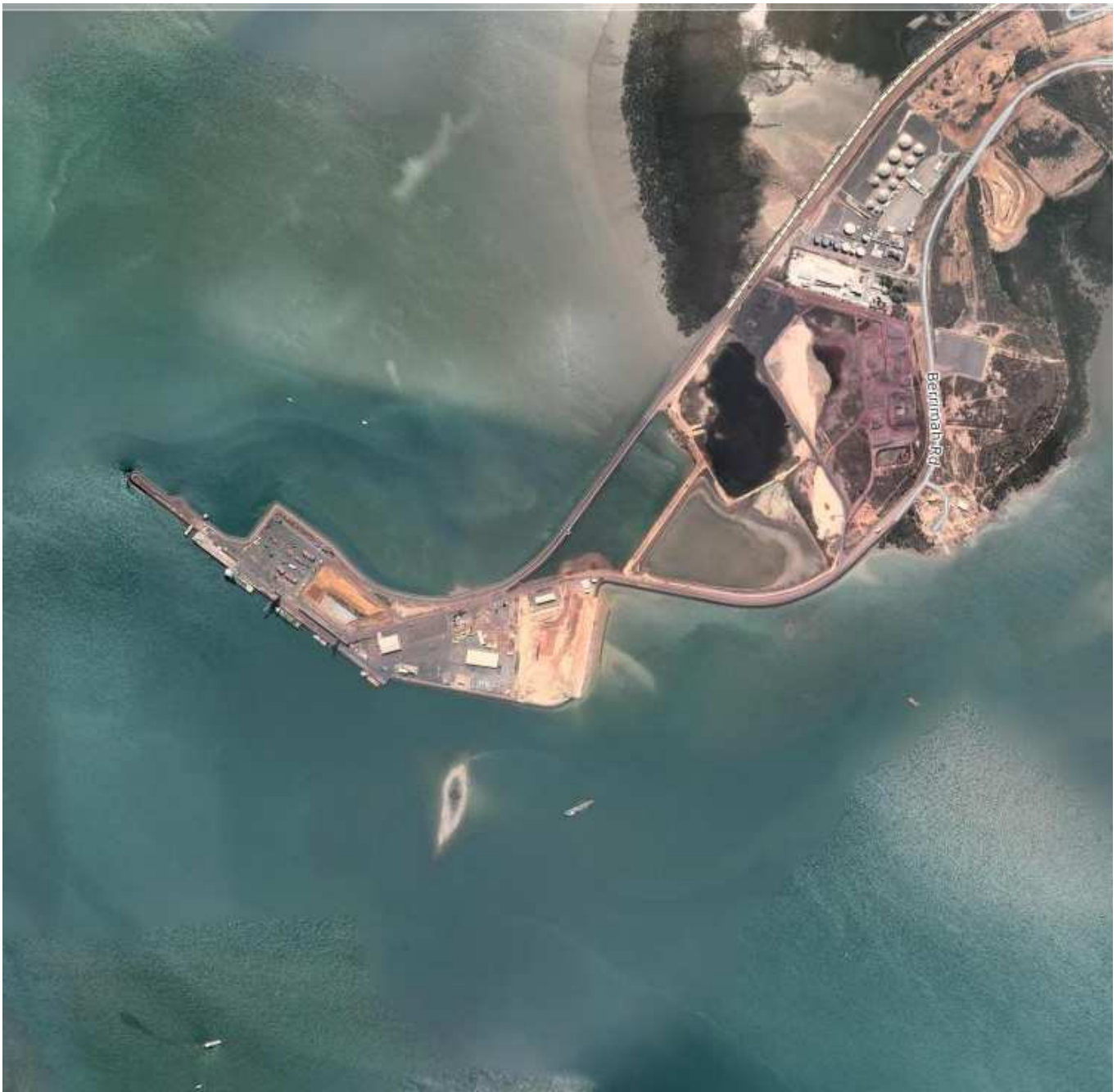
Date: 16 January 2014 at time of water sampling

Observations: Approximate size and location of plume/s from dredging operations denoted with hatched area

First observation



Second observation



DMSB: Visual Monitoring of Dredging

Date: 17 January 2014 at time of water sampling

Observations: Approximate size and location of plume/s from dredging operations denoted with hatched area

First observation



Second observation



DMSB: Visual Monitoring of Dredging

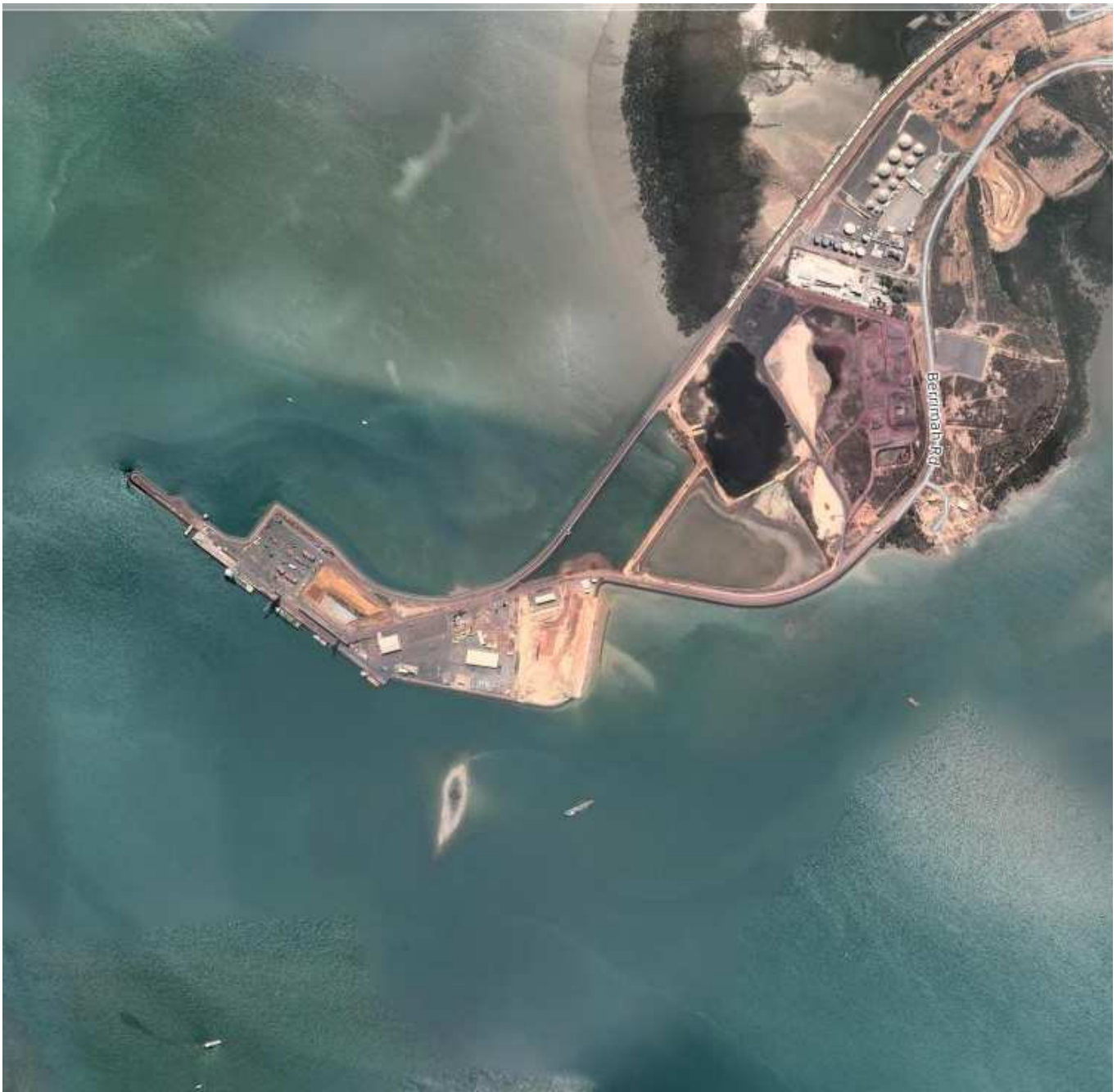
Date: 18 January 2014 at time of water sampling

Observations: Approximate size and location of plume/s from dredging operations denoted with hatched area

First observation



Second observation



DMSB: Visual Monitoring of Dredging

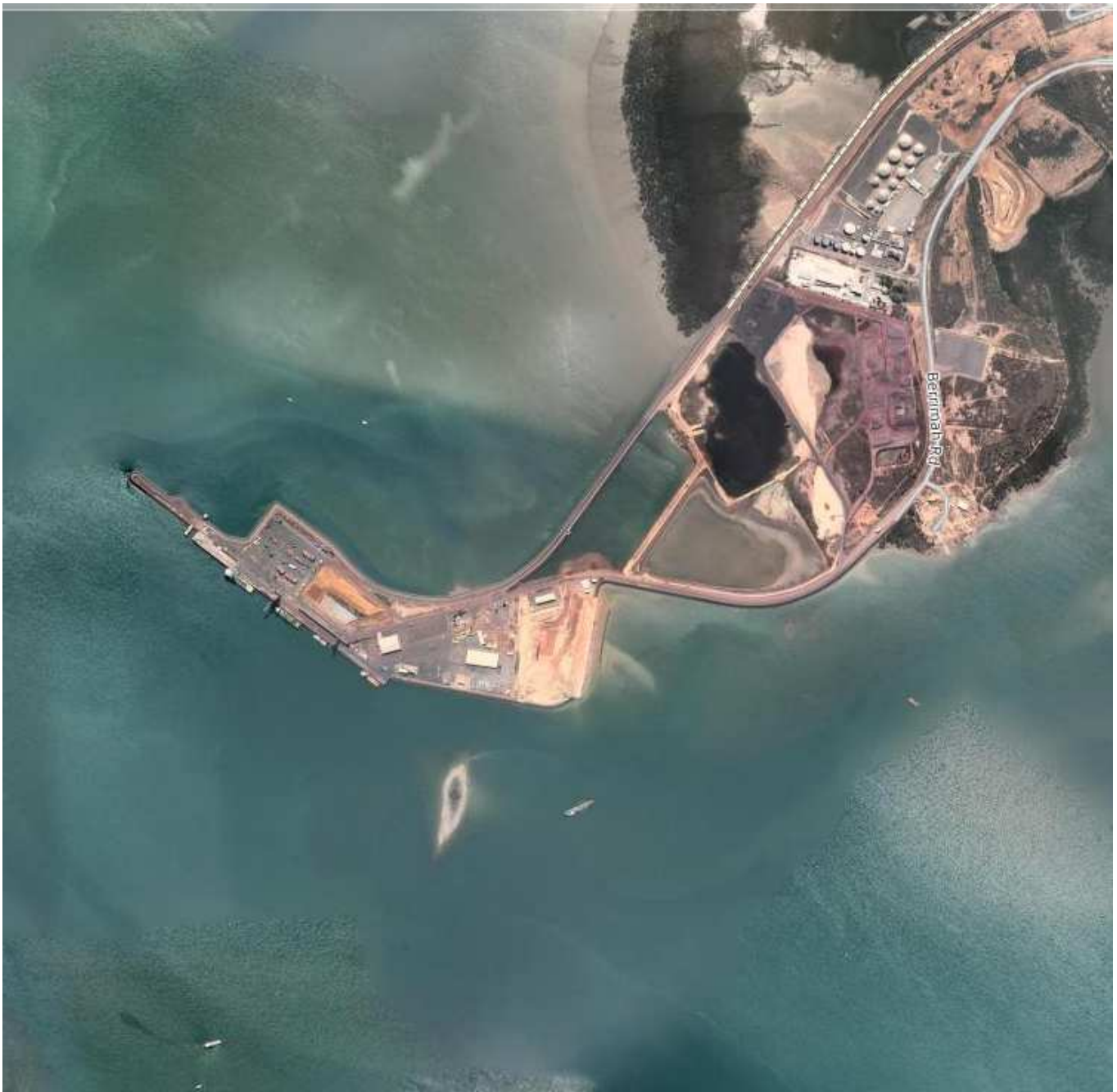
Date: 19 January 2014 at time of water sampling

Observations: Approximate size and location of plume/s from dredging operations denoted with hatched area

First observation



Second observation



DMSB: Visual Monitoring of Dredging

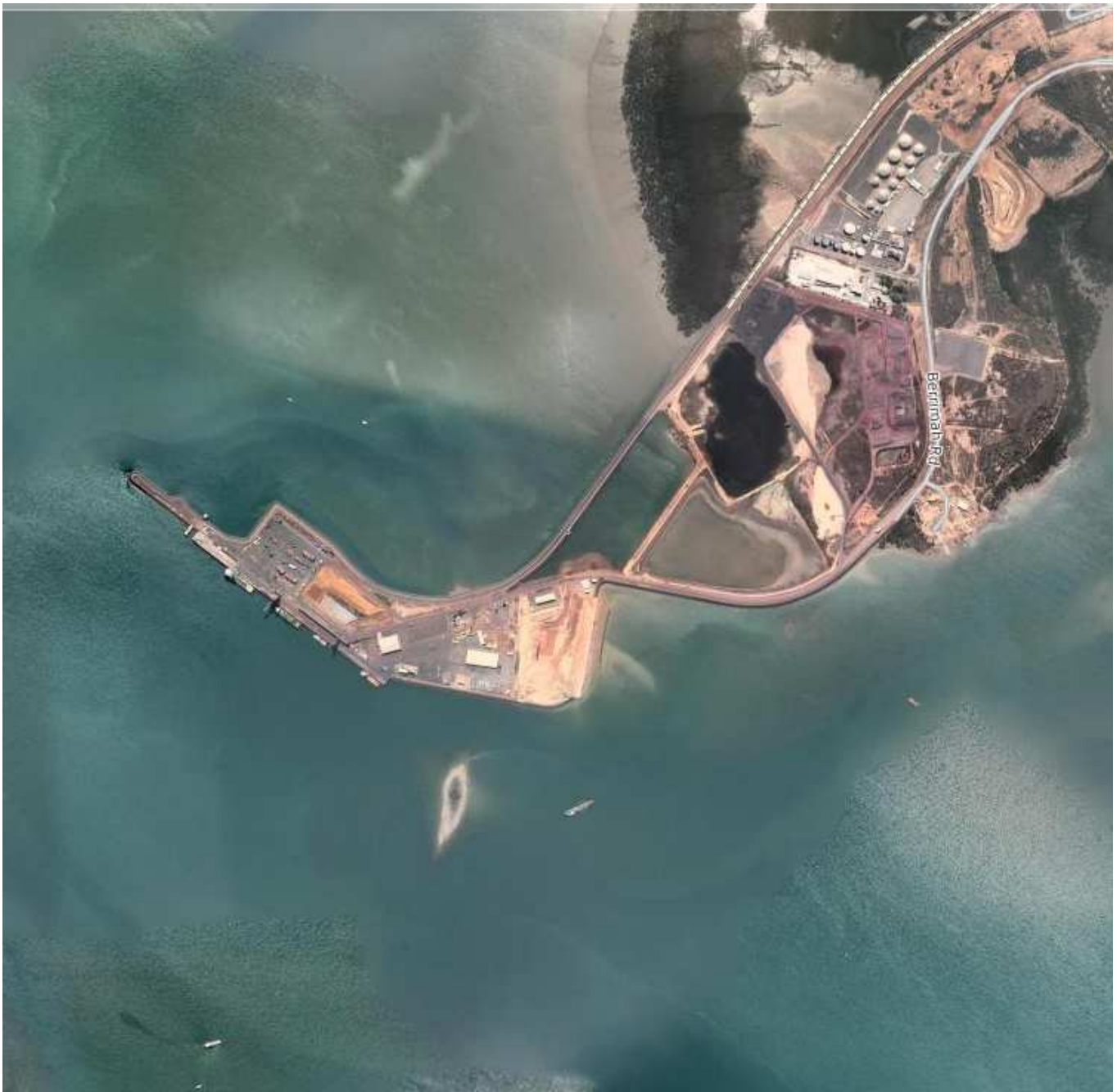
Date: 20 January 2014 at time of water sampling

Observations: Approximate size and location of plume/s from dredging operations denoted with hatched area

First observation



Second observation



DMSB: Visual Monitoring of Dredging

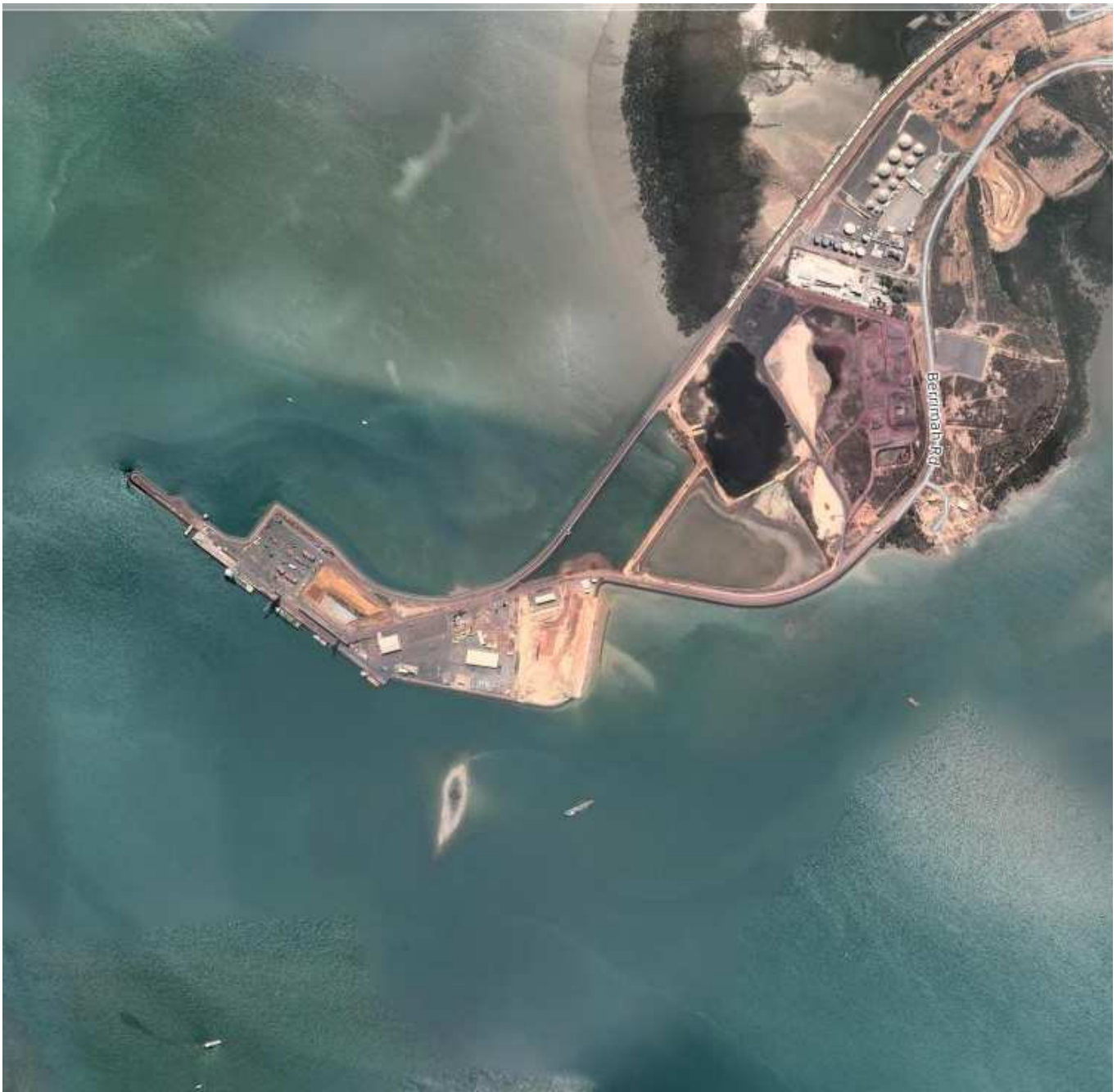
Date: 21 January 2014 at time of water sampling

Observations: Approximate size and location of plume/s from dredging operations denoted with hatched area

First observation



Second observation



DMSB: Visual Monitoring of Dredging

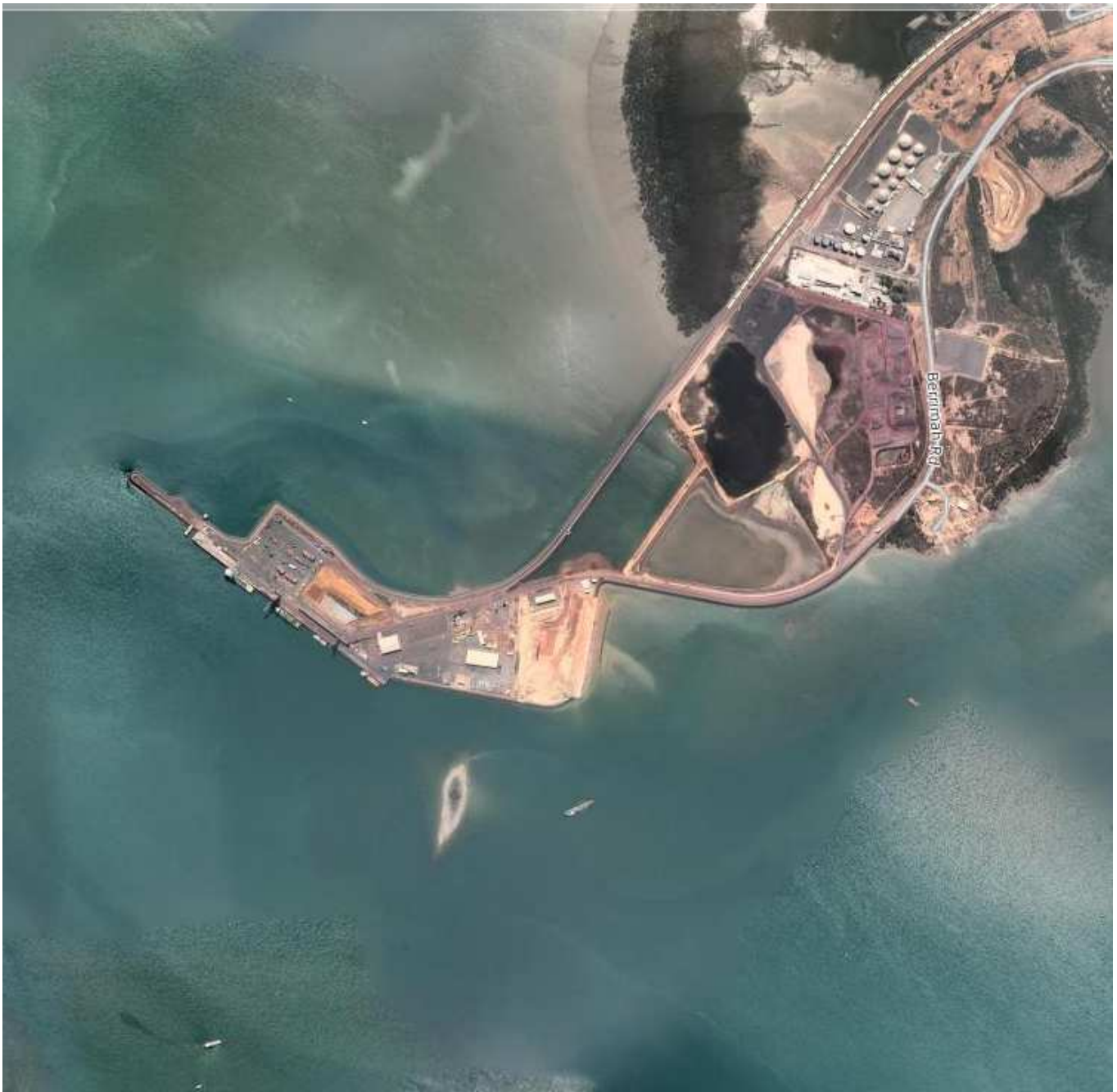
Date: 22 January 2014 at time of water sampling

Observations: Approximate size and location of plume/s from dredging operations denoted with hatched area

First observation



Second observation



DMSB: Visual Monitoring of Dredging

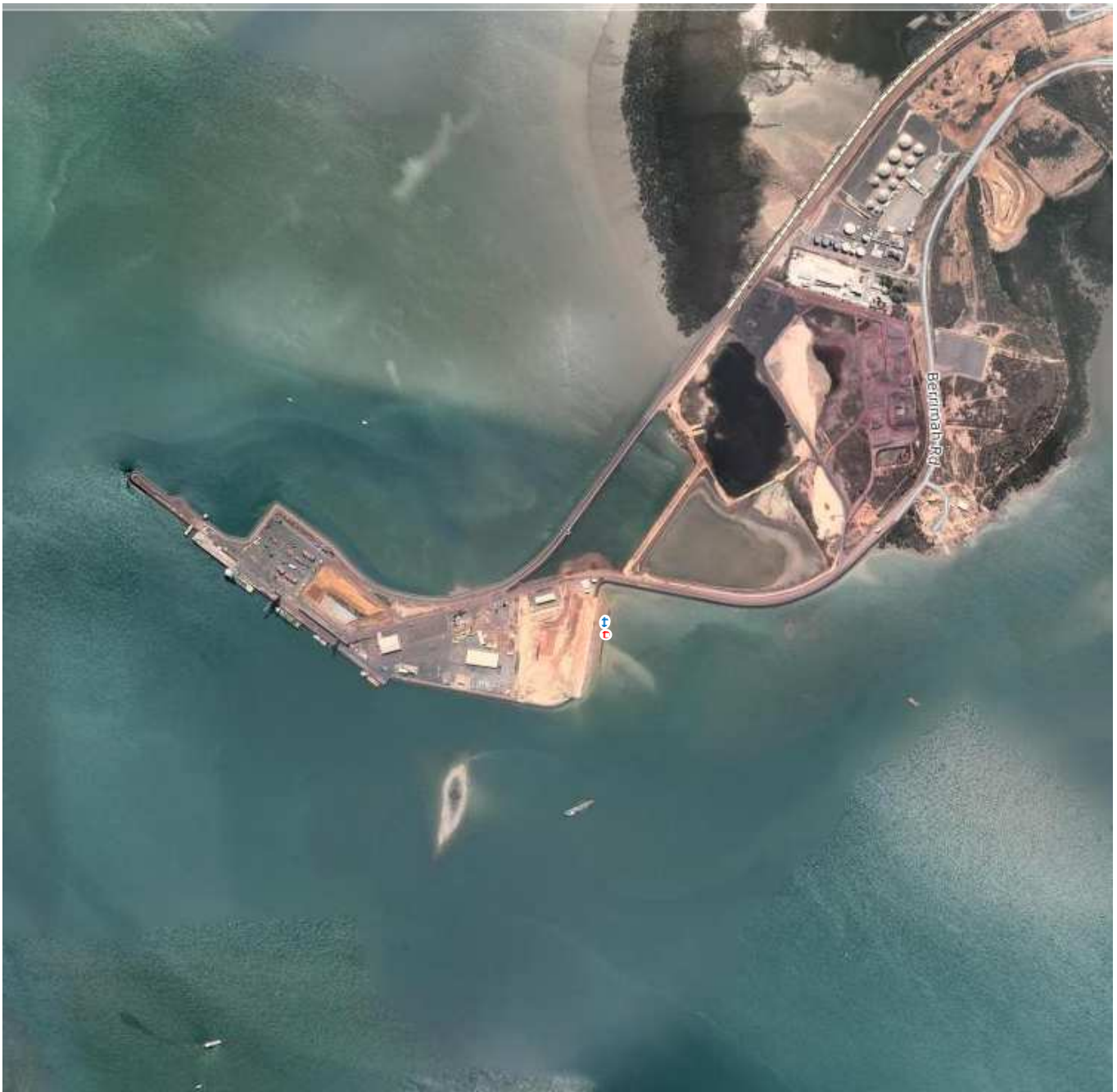
Date: 23 January 2014 at time of water sampling

Observations: Approximate size and location of plume/s from dredging operations denoted with hatched area

First observation



Second observation



Marine Fauna Observation Register

