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Anvil Range Pit Lakes
2009 Evaluation of In-Situ Treatment

Report Prepared for

Yukon Government

On behalf of

Faro Mine Closure Planning Office

Report Prepared by

SRK Consulting
Engineers and Scientists

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SRK Project Number SRKNAC

SRK Consulting (Canada) Inc.
Suite 2200, 1066 West Hastings Street
Vancouver, B.C. V6E 3X2

Tel: 604.681.4196 Fax: 604.687.5532
E-mail: vancouver@srk.com Web site: www.srk.com

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Executive Summary

Investigations undertaken in 2004 concluded that biological treatment should be continued in the Grum Pit and tested in the Faro Pit . The 2005 investigations in the Grum Pit concluded that biological treatment should be continued there. However, the 2005 fertilization program in the Faro Pit interfered with the performance of the Faro Mill water treatment system, and biological treatment was discontinued. Since then water quality and physical limnological monitoring were continued in the Faro and Vangorda pits, whilst fertilization and water quality monitoring were continued for the Grum Pit lake. In addition, since 2006 the rate of fertilization of the Grum Pit lake was reduced to ensure that nutrient concentrations are essentially depleted at the end of the season. This report provides presents and discusses the results from the 2008 biological treatment program in the Grum Pit and the monitoring results from the Faro and Vangorda Pit lakes.

The monitoring results indicated that nutrient concentrations of phosphate species have essentially been depleted from the surface water in the Faro Pit. Mass balance calculations indicate that, whilst there is some annual variability, on average the annual zinc loading to the pit lake is about 48 tonnes per year, of which about 24 % (11.6 tonnes) is sourced from the Zone 2 Pit water transfer. The balance of the loading represents the combined loadings from the wall rocks and the waste rock seepage that enters the pit lake. Monitoring results for seepage from the wall rocks suggest that the majority of this loading is likely from the waste rock dumps.

The results indicate that the Grum Pit again responded well to fertilization and that good algal growth was again achieved in 2009. Surface water mass balance calculations for 2004 through 2009 suggest that zinc loadings to the Grum Pit are on the order of 3000 to 4000 kg per annum. The loading appears to be associated with predominantly with wall rock runoff, and to a lesser extent with solute release from wall rock as the water level rises. Net zinc removal has matched the zinc loading to the pit lake during the 2009 summer period. Contrary to previous years, the concentrations in the pit lake did not increase over the 2008/09 winter season indicating a net removal of zinc occurred that may be a result of sulphate reduction occurring under the ice. Due to the removals, the volume weighted zinc concentration has decreased from in excess of 10 mg/L in 2005 to about 4.8 mg/L.

The leach extraction tests were used to verify the potential annual zinc loadings to the pit lake and then used to estimate steady state concentrations in outflow from the pit lake when it spills naturally at an elevation of about 1230 m ASL. The results suggest that the steady state zinc concentration in the steady state outflow (without any treatment) could still remain at about 1 mg/L. This is primarily due to the sulphidic wall rock remaining above the lake level. By raising the lake elevation by about 20 m, the zinc concentrations could potentially be reduced to about 0.1 mg/L in the long term.

Monitoring in the Vangorda Pit indicated that while the pH increased marginal in the near surface layer water, the layer acidified rapidly as a result of the acidity loads form the wall rocks and a in-pit waste rock dumps.

It is recommended that monitoring of both the Faro and Vangorda Pit be continued in 2010. Mass balance calculations should be carried forward to verify the current estimates of metal loadings to each pit. Furthermore, based on the zinc removal rates observed for the Grum Pit and the level of control established in 2008, it is recommended that the fertilization program be continued in 2010.

* * *

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1 Introduction

In-situ treatment of the Grum Pit lake has been ongoing since 2004, with the annual fertilization and monitoring carried out by Laberge Environmental Services. The findings from the previous programs (2004 to 2008) are reported elsewhere (SRK 2005, SRK 2006, SRK 2007, SRK 2008 and SRK 2009). The results to date indicate that the Grum Pit water responds rapidly to fertilization with excellent phytoplankton growth occurring within two weeks of the first fertilization program of each summer season. Zinc removal by phytoplankton has been demonstrated to the extent that total zinc concentrations in the near surface water annually decreases to or below 0.3 mg/L. However, annual turnover has resulted in the mixing of the clean surface layer with water of higher concentrations at depth which, together with ongoing sources, have annually replenished the zinc concentrations in the surface layer. Nevertheless, monitoring to date indicates that the zinc concentrations in the lake are decreasing annually indicating that the net removal of zinc is exceeding the rate of loading to the pit lake.

During 2009 the Grum Pit lake fertilisation program was continued. In conjunction with the annual fertilisation program for the Grum Pit lake, the Faro Pit and Vangorda Pit lakes have been monitored to assess potential changes in water quality over time. Supplemental to the 2009 monitoring Grum Pit lake program, samples of pit wall talus were obtained during 2009 to assess the potential for solute release from accumulated broken rock on the pit walls and benches of the Grum Pit to the rising water level. A bathymetry of the Grum Pit lake was also undertaken by Laberge during September 2009. As discussed later in this report, the survey indicated that the actual volume of water contained in the pit lake is significantly lower than had been inferred from the capacity curve used for load and volume calculations. As result, all of the historical calculations have been re-run to accommodate this change and are presented herein.

This report summarises and presents the outcomes from the 2009 monitoring programs together with the updated performance estimates based on the revised Grum Pit lake volume.

2 Fertilization and Monitoring Program

2.1 Grum Pit

Laberge Environmental Services again completed the pit lake fertilization and monitoring programs commencing 16 June 2009, as summarised in Table 2.1. As in previous years, fertilization of the Grum Pit entailed distribution by boat of about 1.5 drums (320 L) of the fertilizer mix to the surface of the pit lake during each fertilization event. The fertilizer addition was repeated until 5 August 2009.

Samples from the water column were collected at six depths from surface (1, 3, 5, 15, 30 and 50m – note samples were collected at 40 m in previous years) on 14 July, 11 August and 8 September 2009. Water samples were submitted to Maxxam Analytics Inc. for detailed chemical analysis.

Concurrent with each water sampling event, CTD casts using a Seabird were made of the water column and in-situ measurements were completed at each water sample depth. Field parameters included measurement of pH, temperature, TDS conductivity and dissolved oxygen.

The fertilization and monitoring programs were consistent with those of 2006 to 2008.

2.2 Vangorda and Faro Pits

Whilst neither the Vangorda nor the Faro Pit lake was fertilized during the 2009 season, water samples were collected from six depths in Vangorda Pit (1, 3, 5, 15, 30 and 40m) and seven depths in Faro pit (1, 3, 5, 15, 30, 60 and 80m) and submitted for detailed analysis as per the schedule shown in Table 2.1. As with the Grum Pit lake monitoring program, CTD casts were made concurrently with the in-situ measurements conducted at each of the sample depths. Field parameters included measurement of pH, temperature, TDS conductivity and dissolved oxygen.

All water samples were submitted to Maxxam Analytics Inc. for analysis. Complete field parameter results are provided in Appendix A and analytical results for the water quality samples are provided in Appendix B.

Table 2.1 Summary of Fertilization and Monitoring Program for 2008

Date	Pit Lake	Fertilize	Field Parameters	Water Quality	Chlorophyll 'a'
30 Apr 09 (under ice)	Vangorda	-	X	-	-
	Faro	-	X	-	-
	Grum	-	X	-	-
16-18 Jun 09	Vangorda	-	X		-
	Faro	-	X	-	-
	Grum	X	X	-	X
16 Jun 09	Vangorda	-	-	-	-
	Faro	-	-	-	-
	Grum	X	-	-	-
24 Jun 09	Vangorda	-	-	-	-
	Faro	-	-	-	-
	Grum	X	-	-	-
1 Jul 09	Vangorda	-	-	-	-
	Faro	-	-	-	-
	Grum	X	-	-	-
8 Jul 09	Vangorda	-	-	-	-
	Faro	-	-	-	-
	Grum	X	-	-	-
14-16 Jul 09	Vangorda	-	X	X	-
	Faro	-	X	X	-
	Grum	X	X	X	X
22 Jul 09	Vangorda	-	-	-	-
	Faro	-	-	-	-
	Grum	X	-	-	-
29 Jul 09	Vangorda	-	-	-	-
	Faro	-	-	-	-
	Grum	X	-	-	-
5 Aug 09	Vangorda	-	-	-	-
	Faro	-	-	-	-
	Grum	X	-	-	-
11-13 Aug 09	Vangorda	[illegible]	X	X	-
	Faro	-	X	X	-
	Grum	-	X	X	X
8-10 Sep 09	Vangorda	-	X	X	-
	Faro	-	X	X	-
	Grum	-	X	X	X

3 Results and Discussion

3.1 Faro Pit

3.1.1 In Situ Monitoring

As in past years, the in-situ monitoring results (see Figure 3.1) confirmed the annual development of a thermocline in the Faro Pit at a depth of about 5 to 6 m below the water surface. The results further suggest that a partial mixing event had occurred at about mid June, with the temperatures for 17 June 2009 indicating a middle layer at about 7°C, whilst the surface water at about 11 °C. Thereafter a 'normal' temperature profile was observed, with a maximum recorded temperature of about 14.5 °C measured in August. (Note that this may not necessarily represent the maximum temperature reached during the season since monitoring was only on a monthly basis.)

The EC results indicated that a chemocline continues to exist at a depth of between 15 and 30 m below surface. It is important to note that since the samples are taken at a fixed depth from the surface of the pit lake, the change in the pit lake surface elevation could account for some of the changes observed due to the fluctuation in surface elevated caused by pumping, treating and discharging annually. The absolute elevations of the samples therefore fluctuate proportionally with the fluctuation in pit lake elevation, whereas the absolute elevation of the chemocline would remain constant over time. Nevertheless, the EC results indicate relatively fresh inflows occur during the early season as indicated by the lower EC values for June 2009 compared to those observed for April 2009 (note that ice melt would have contributed to this). Later in the season the upper layer salinity increases again as the EC values approaches those for April 2009.

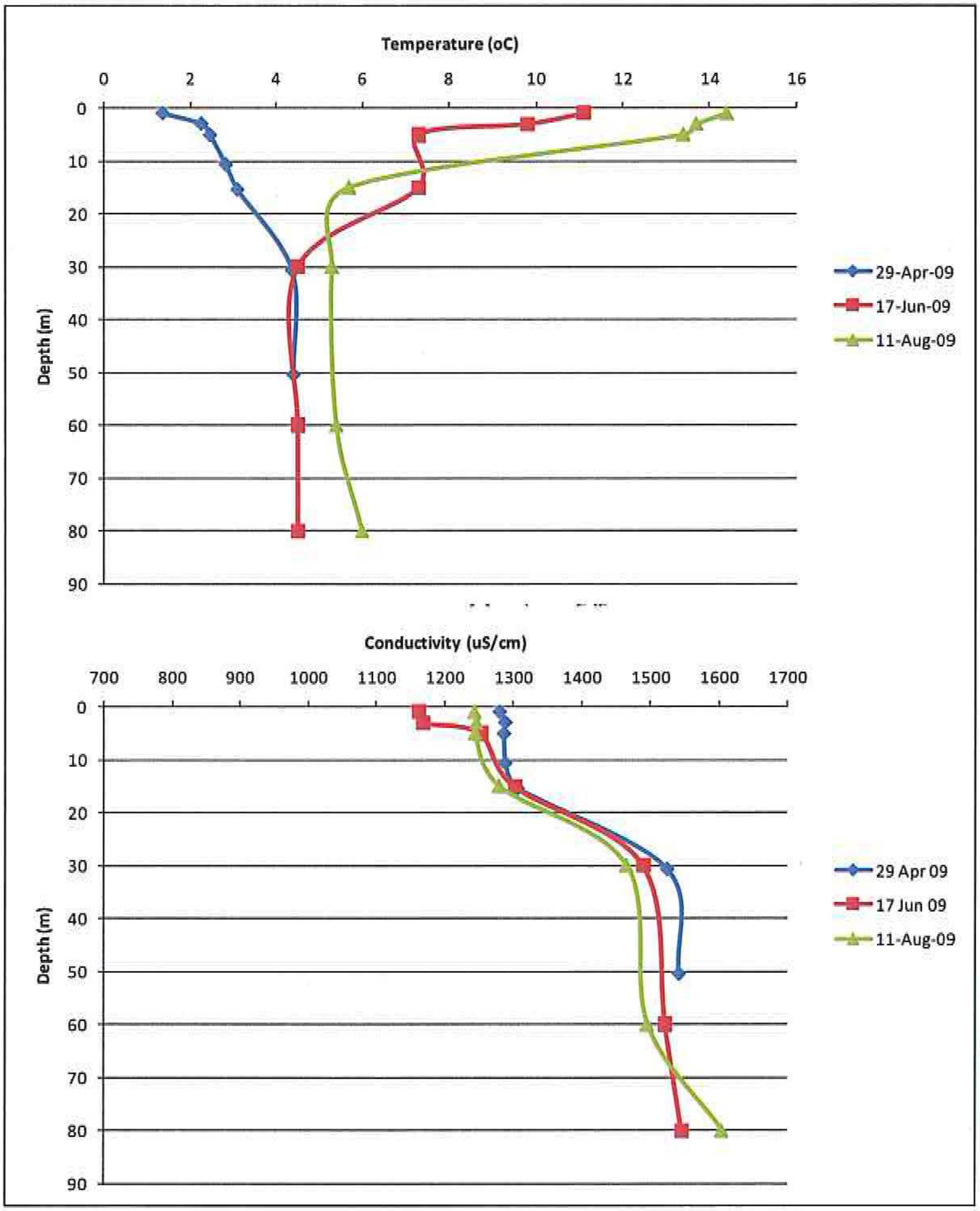


Figure 3.1 In-situ Parameters Measured in the Faro Pit

3.1.2 Nutrients

Analytical results for total phosphorus (P) concentrations for 2005 to 2009 at various depths in the Faro Pit lake are shown in Figure 3.2. Note that the August 9, 2006 result for a depth of 30 m and the June 12, 2007 result at a depth of 80 m appear to be anomalous.

The increase in the phosphorus concentration that occurred during 2005 was as a result of fertilization. In 2006, concentrations in general decreased in the near surface water (to a depth of about 15 m below surface) ranging from about 0.002 to 0.004 mg/L, and a further decrease was observed in 2007, with concentrations trending below the detection limit of 0.002 mg/L by the end of summer. The concentration at depth (30 m and below) appears to have decreased as well, and has an average concentration of slightly below 0.004 mg/L. The decreasing trend was observed to continue through 2008 with concentrations at all depths at or below about 0.002 mg/L. Whilst the results for 2009 appear to be of a similar spread and average concentration as for 2008, it should be noted that the detection limit for 2009 was variable, with the majority of the results reported as below the detection limit of 0.005 mg/L. The plot shows these results as at the detection limit, hence the similarity to the 2008 results.

Analytical results for ammonia (as N) are shown in Figure 3.3. Ammonia-N was present in the pit lake prior to the fertilization event undertaken in 2005. The results reported for April 2009 were all below a detection limit of 0.005 and are considered anomalous. The balance of the results for 2009 indicated a net decrease in the surface layer concentrations, whereas the concentrations at depth (30m and deeper) remained approximately the same as for 2008. Overall however concentrations are clearly decreasing within the pit lake.

Note that ammonia in waste rock seepage could be contributing to ammonia concentrations in the pit lake on an ongoing basis; based on the surface water concentrations the contribution however appears to be decreasing over time.

3.1.3 Algal Growth

Whilst the Faro Pit was fertilized three times in 2005, and a rapid increase in chlorophyll 'a' occurred during June and July of that year, the chlorophyll 'a' concentration has in subsequent years remained at or near the detection limit with no significant algal growth indicated during 2006 or 2007. During 2008, a single low value (0.005 ug/L) was recorded in early August for the sample taken at a depth of 1 m. No Chlorophyll measurements were completed for the Faro Pit lake water during 2009.

3.1.4 Zinc Concentrations

Total zinc concentrations at various monitoring depths over time are shown in Figure 3.4. The zinc concentrations confirm the presence of a chemocline in the Faro Pit at a depth between 15 and 30 m below surface, as discussed previously.

As noted in previous assessments, the monitoring results for 2005 suggested a net removal of zinc from the near surface water layers, as was evident in the 1, 3 and 5 m results for that year. The results for 2006 showed a net increase from 2005, with no decrease in the near surface zinc concentrations over the summer period, and the results for 2007 indicated zinc concentrations in the near surface water were similar to that observed in 2006. However, 2008 and again in 2009, zinc concentrations at all sampling depths down to 15 m showed a significant increase. These results suggest that the loading of zinc to the pit lake may be accelerating.

At depth, zinc concentrations appear to be marginally increasing over time with average zinc concentrations of 2.6 mg/L (2006), 2.7 mg/L (2007), 3.0 mg/L (2008) and 3.5 mg/L(2009), a for all samples in the 30 to 80 m depth range.

Iron concentrations also appear to be increasing at depth, as shown in Figure 3.5. This could suggest that iron precipitates (e.g. iron oxy-hydroxides) may be dissolving and that the increase in zinc is a result of desorption from these dissolving phases. Within the surface layer iron clearly remains at low concentrations. However it is possible that iron is entering the pit lake within acidic surface water runoff. Since the pit lake is slightly alkaline in pH, the iron forms iron oxy-hydroxides and the precipitates then settle over time from the surface layer, passing through the chemocline and accumulating at depth. Since the conditions at depth are reducing (as indicated by measured redox values of < -10 mV), the iron precipitates are slow reduced and dissolves within the deeper layer.

When the iron precipitates formed in the surface layer where zinc concentrations are elevated, zinc would have been sorped and transported to the bottom of the pit lake. Dissolution of the iron precipitates would result in the release of the sorped zinc and hence a concurrent increase in both iron and zinc concentrations occurs.

Overall these results indicate that the net zinc loading to the pit lake is increasing, in particular to the water layer above the chemocline. Some of the zinc is removed from the surface layer but is again released at depth.

An approximate water and load balance has been prepared to illustrate the distribution of loadings. The results are shown in Table 3.1. As shown, the average zinc concentration in the upper layer has increased over time. The load estimate accounts for the changes brought about by pumping and treating and the net loading from the Zone II pit (which is assumed to remain approximately constant, 100,000 m^3/year at 115 mg/L Zn, 3120 mg/L SO4). The results indicate that there are significant annual variations, which may be due to differences in annual rainfall (low rainfall resulting in lower loads and visa versa) and possible earthworks within and around the pit. During 2008 the Yukon experienced a very wet summer period and as shown the estimated loading to the pit lake was almost double the average loading. The average total zinc loading for the period 2005 to 2009 has been about 47 tonnes per year. About one quarter of the load is coming form the Zone II pit, and the remaining 75 % would be from the pit wall rocks and seepage from waste rock dumps within the pit lake catchment. Note that the negative change for 2006 was assumed to have been the result of fertilization.

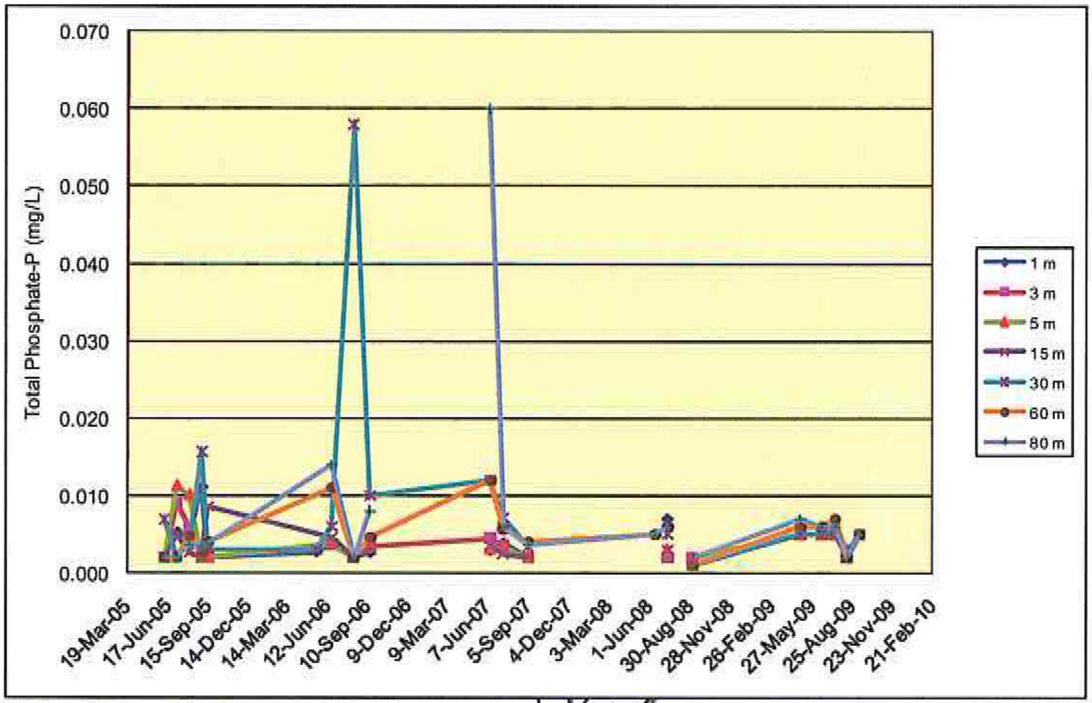


Figure 3.2 Total Phosphate-P Concentrations Measured in the Faro Pit

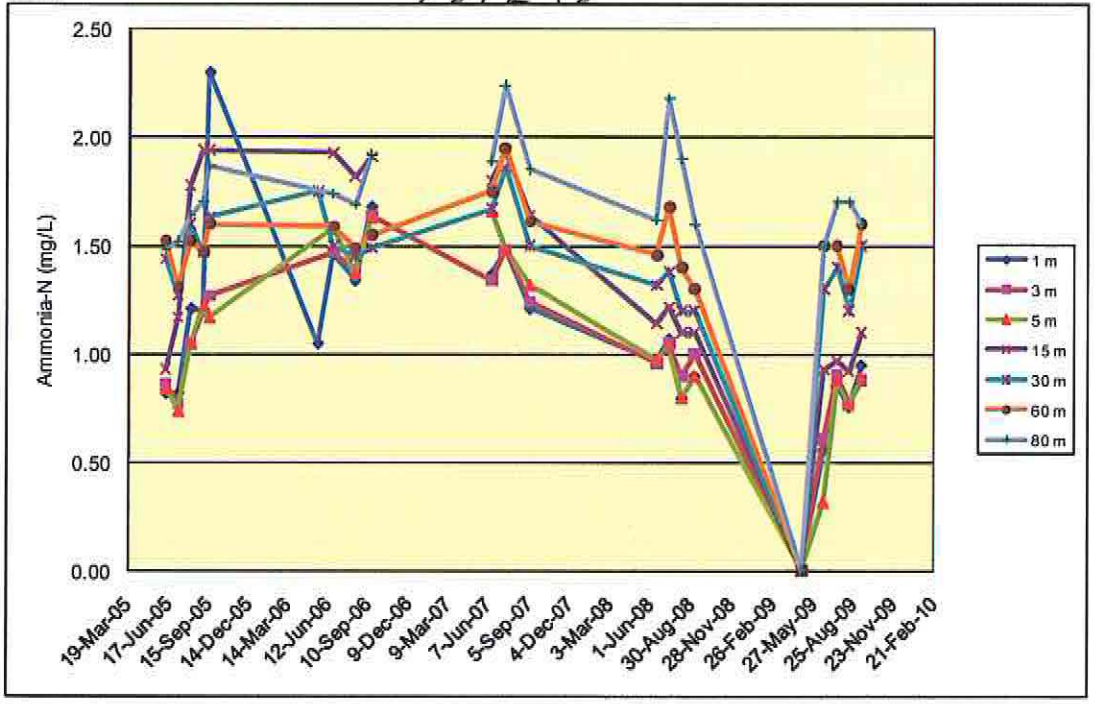


Figure 3.3 Ammonia-N Concentrations Measured in the Faro Pit

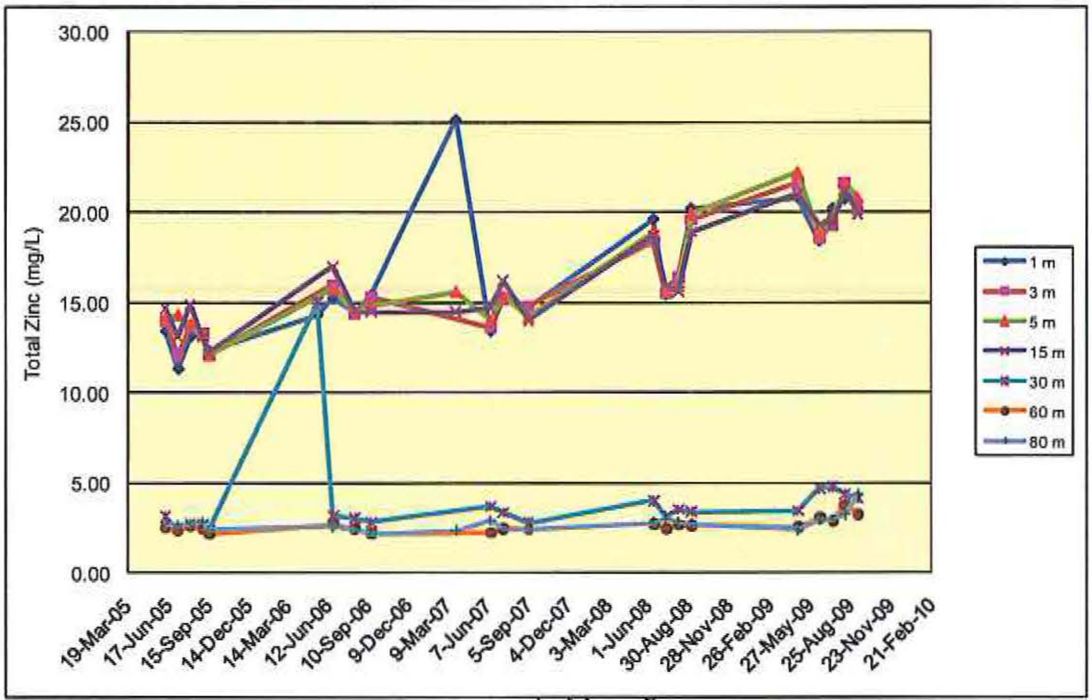


Figure 3.4 Total Zinc Concentrations Measured in the Faro Pit

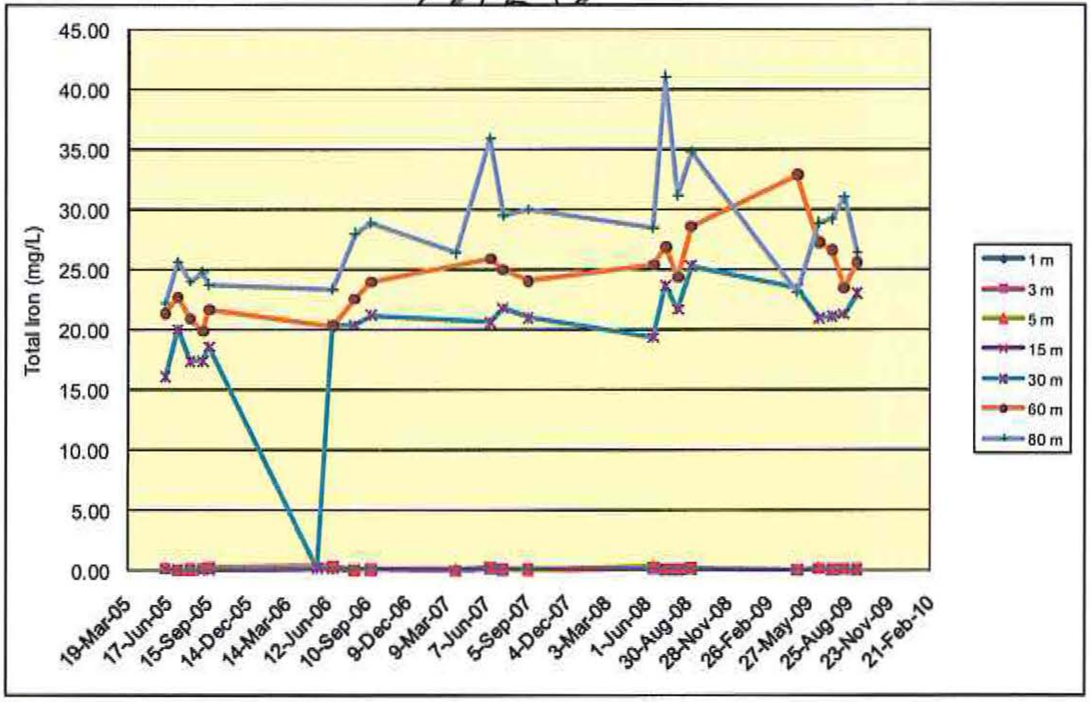


Figure 3.5 Total Iron Concentrations Measured in the Faro Pit .

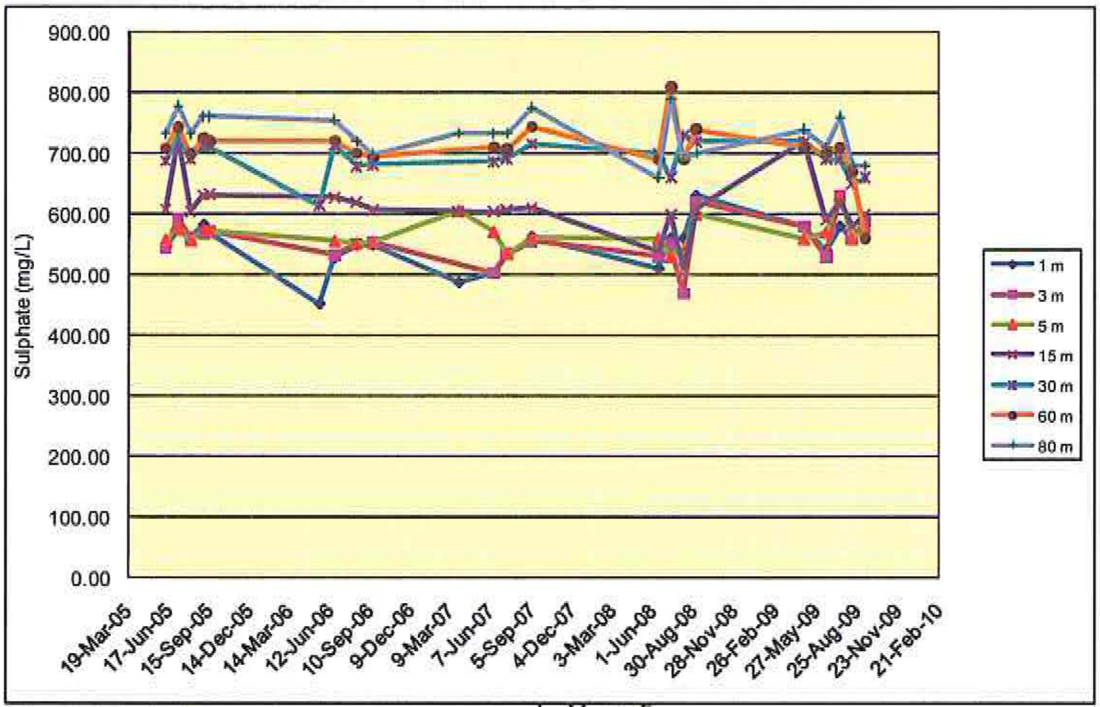


Figure 3.6 Sulphate Concentrations Measured in the Faro Pit .

Table 3.1 Estimated Net Loadings to the Faro Pit

Date	Elevation m	Total Volume (m3)	Change (m3)	Volume to 15 m (m3)	Zn (mg/L)	Change (tonnes/yr)	Pumped (tonnes/yr)	NET LOAD (tonnes/yr)	Load Z2 pit (tonnes/yr)	Other sources (tonnes/yr)
18-May-05	1176.5	5.12E+07	1.60E+06	1.12E+07	14.1					
19-Sep-05	1174.5	4.96E+07			12.1	-21.8	20.9	42.7	11.6	31.1
31-May-06	1176.1	5.08E+07	1.20E+06	1.12E+07	15.4					
8-Sep-06	1174.5	4.96E+07			15.0	32.4	18.2	50.6	11.6	39.0
22-May-07	1176.5	5.11E+07	1.40E+06	1.12E+07	13.9					
11-Sep-07	1174.6	4.97E+07			14.4	-6.4	19.8	13.4	11.6	1.8
10-Jun-08	1176.4	5.11E+07	1.50E+06	1.12E+07	18.9					
2-Sep-08	1174.5	4.96E+07			19.7	58.3	28.9	87.2	11.6	75.6
29-Apr-09	1176.4	5.11E+07	1.50E+06	1.12E+07	21.4					
9-Sep-09	1174.5	4.96E+07			20.4	7.8	31.3	39.1	11.6	27.5

Date	Elevation m	Total Volume (m3)	Change (m3)	Volume to 15 m (m3)	SO4 (mg/L)	Change (tonnes/yr)	Removed (pumped) (tonnes/yr)	NET LOAD (tonnes/yr)	Load Z2 pit (tonnes/yr)	Other sources (tonnes/yr)
18-May-05	1176.5	5.12E+07	1.60E+06	1.12E+07	564					
19-Sep-05	1174.5	4.96E+07			583	212	918	918	315	603
31-May-06	1176.1	5.08E+07	1.20E+06	1.12E+07	560					
8-Sep-06	1174.5	4.96E+07			566	-192	675	483	315	168
22-May-07	1176.5	5.11E+07	1.40E+06	1.12E+07	545					
11-Sep-07	1174.6	4.97E+07			572	73	782	855	315	540
10-Jun-08	1176.4	5.11E+07	1.50E+06	1.12E+07	535					
2-Sep-08	1174.5	4.96E+07			615	477	863	1339	315	1024
29-Apr-09	1176.4	5.11E+07	1.50E+06	1.12E+07	610					
9-Sep-09	1174.5	4.96E+07			588	-307	898	591	315	276

It is not possible to distinguish between loadings from the wall rocks and the waste rock seepage because the flows and concentrations from the Faro Valley dumps, for example, vary considerably over the season (e.g. 20 to 121 mg/L zinc, and flows ranging from 2 to >1000 L/min) and only spot measurements of flows and concentrations are available. Zinc concentrations in wall rock seeps have been noted to range from less than the detection limit to 875 mg/L; however, flows other than those associated with the Faro Valley Dumps are generally low. This suggests that the majority of the loading is likely associated with seepage from the waste rock dumps.

Similar calculations were completed for sulphate loadings and included in **Error! Reference source not found.**. These calculations indicate an annual average loading to the pit lake of about 840 tonnes of sulphate, comprising about 315 tonnes from the Zone 2 Pit and the balance originating from other sources (wall rocks and waste rock dumps within the catchment).

3.1.5 Summary

In summary, subsequent to fertilization in 2005, orthophosphate concentrations have remained below detection, and total phosphorus is being depleted from the surface layer to a depth of about 15 m. At depth, while there appeared to be a marginal increase in total phosphorus, a net decrease in the concentrations is occurring.

Whilst the chemocline continues to exist and is isolating the water at depth from the water near surface, there is a detectable increase in the zinc concentration at depth. This increase is occurring concurrently with an increase in iron concentration which suggests that the zinc increase is likely due to its desorption from dissolving iron precipitates transported by gravity from the surface layer of the pit lake.

Mass balance calculations indicate that while there is some annual variability in the total loadings, on average the annual zinc loading to the pit lake is about 47 tonnes per year, of which about 25 % (11.6 tonnes) is estimated to be sourced from the Zone 2 Pit water transfer. The balance of the loading represents the combined loadings from the wall rocks and the waste rock seepage that enters the pit lake. Monitoring results for seepage from the wall rocks suggest that the majority of this loading is likely present in seepage from the waste rock dumps.

3.2 Grum Pit

3.2.1 Pit Lake Bathymetry

A bathymetric survey of the Grum Pit lake was completed by Laberge during 2009 and is provided in Appendix C. The survey was used to calculate the approximate Grum Pit lake capacity curve below the water and the compared to the volume capacity curve that was used in the past for water balance calculations. The comparison of the capacity curves between the original and that based on the bathymetric results, as shown in Figure 3.7 indicate that the initial volume of the Grum Pit lake was vastly overestimated. The vertical line indicates the lake elevation as at the time of the bathymetric survey. Because of this large error, the capacity curve for the water and load balance calculations has been revised. This change is reflected in the following sections of the report pertaining to the Grumm Pit lake.

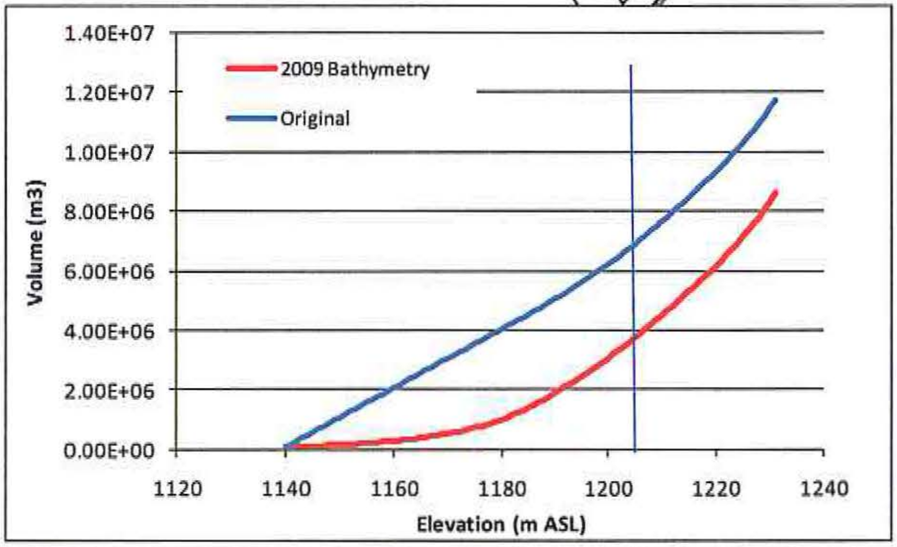


Figure 3.7 Comparison between Assumed and Actual Grum Pit Lake Capacity Curve

3.2.2 Water Level

The Grum Pit lake elevation over time is illustrated in Figure 3.8. As shown, the rate of rise increased significantly during 2008 due, in part, to the fact that this part of the Yukon experienced significantly more rain in 2008 than normal, i.e. about 2 times normal during the summer months. However, Laberge noted an increase in the rate and extent of till sloughing in some areas of the east pit wall during that time as well.

The effect of the would be expected to be twofold; first the till sloughing into the pit lake would cause an increase in the pit lake level and second, the shift of the wall could cause a 'narrowing' or decrease of the planar surface area of the pit at lake level (i.e. the lake would be narrower than if the wall had remained in place). As a result, the rate of rise from the same inflow would be higher. (The flipside of this is that at some future time it may be possible that the pit lake area becomes wider than it would otherwise have been and the rate of rise could decrease.)

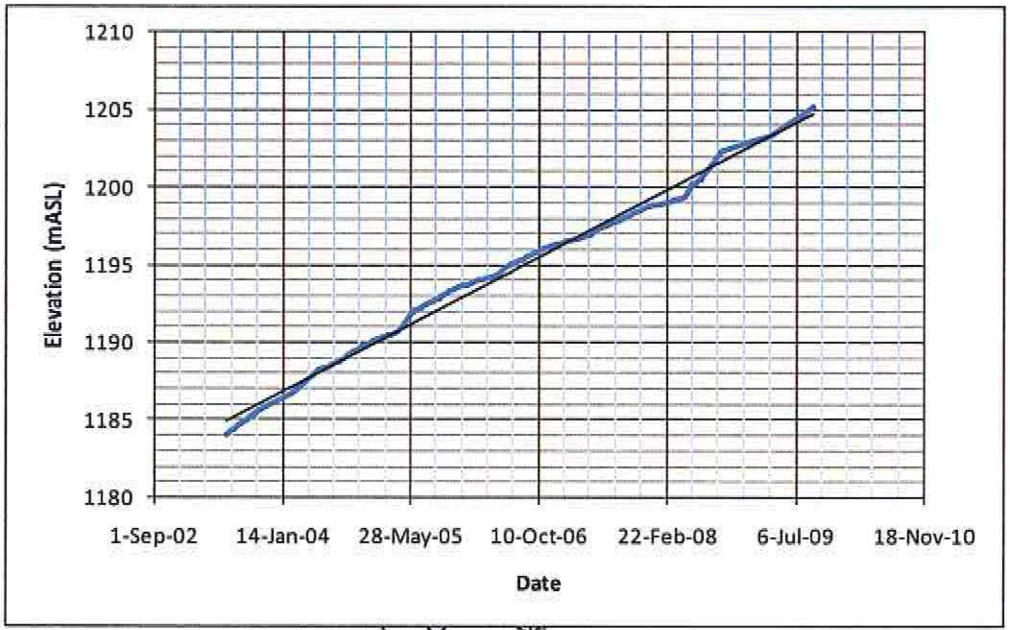


Figure 3.8 Grum Pit Lake Elevation over Time

The sloughing of the pit wall adds a complexity to the pit lake inventory calculations since the pit capacity above the water level is based on the topography of the pit before the sloughing had occurred. Although pit sloughing may have contributed to the difference between the original assumed capacity curve and that based on the bathymetric survey, the sloughing does not account for the entire volume change since the pit lake elevation increased only by about 4 m during 2008 which, at most, equates to about 500 000 m^3 (based on the updated capacity curve).

As shown, by September 2009 the lake elevation had risen to about 1205 m ASL.

3.2.3 In-situ Monitoring

The in-situ monitoring results, as shown in Figure 3.9 indicate that as in previous years a thermocline developed in the Grum Pit to a depth of about 5 m below the water surface. A maximum surface water temperature of about 14°C was recorded in August. The electrical conductivity (EC) profiles indicate a freshwater surface layer after ice-melt, which remained for most of the open water season. The results for June indicated a marginal increase in salinity at the surface. At depth however, the EC values were inconsistent, ranging from about 1050 uS/cm in April to 1200 uS/cm in August. This variation is likely due to instrument error as such large variations are not common or readily explainable and are inconsistent with results from previous years. Whilst showing similar trends the

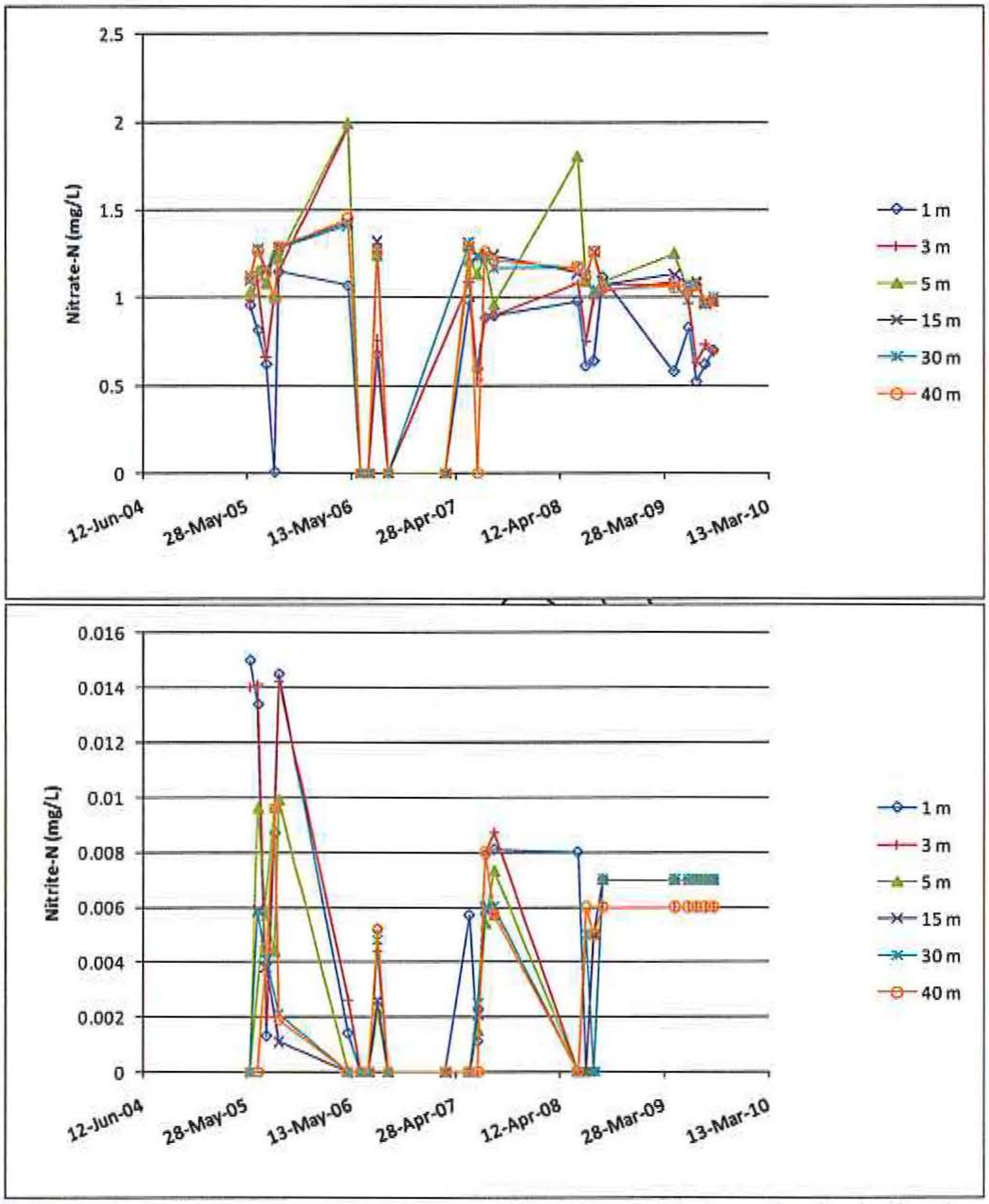


Figure 3.13 Nitrate-N and Nitrite-N Concentrations at Various Depths in the Grum Pit

3.2.5 Algal Growth

Based on visual observations made by field staff, rapid growth with high algal densities was again achieved in the Grum Pit. Whilst only limited chlorophyll 'a' analyses were completed for 2009, the results supported the visual observations. In general, based on the available results as shown in Figure 3.14, the chlorophyll 'a' concentrations were lower than recorded in 2005, but has been consistently peaking at about 10 ug/L since the fertilization program was curbed to limit the nutrient availability at the end of the season.

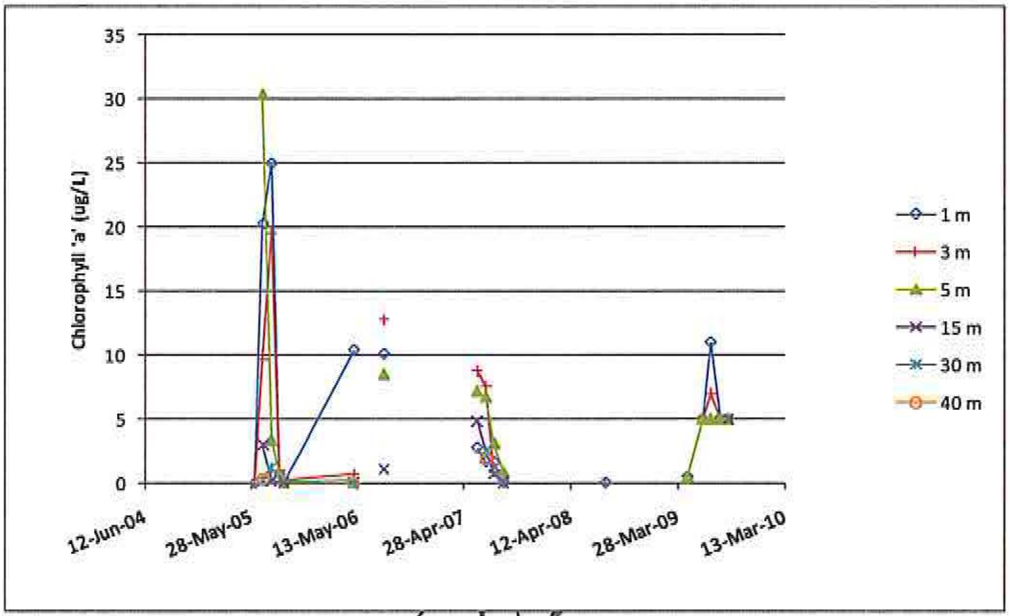


Figure 3.14 Chlorophyll 'a' Concentrations at Various Depths in the Grum Pit

3.2.6 Sulphate Concentrations and Loadings

The sulphate concentrations at various depths over time in the Grum Pit lake are shown in Figure 3.15. As shown, the sulphate concentrations remain approximately constant, slightly above about 400 mg/L. Since water is accumulating in the pit lake, and since the sulphate concentrations are remaining approximately constant at the end of each open water season, it is clear that there is an ongoing source of sulphate that is flowing into the pit lake (i.e. the sulphate concentration is not being diluted by fresh water inflows and direct precipitation even though the level of the lake is rising). Over the term of the monitoring period, were there no additional sources of sulphate, the sulphate concentration would have been lowered by more than 40 % (i.e. base don dilution the sulphate concentration would have decreased from about 425 to about 250 mg/L). The actual decrease in sulphate concentrations is about 10 %.

The total sulphate inventory in the water body over time is shown in Figure 3.16. If the end-of-season inventories are compared, it appears that there is net sulphate loading on the order of about 110 to 120 tonnes entering the pit lake each year.

3.2.8 Zinc Loadings

As discussed in a preceding section, the sulphate inventory in the pit lake has steadily increased over time indicating a net loading. Since zinc is an oxidation product similar to sulphate, it is reasonable to expect that there is a net loading of zinc to the pit lake as well. However, the total loading is difficult to determine because, concurrent with the loading, biological treatment has led to the removal of zinc. The assessment of zinc removal achieved by biological treatment is tentative at best since it relies on the net balance of zinc before an after each season. This is because the total loading cannot be determined within the available monitoring data. Nevertheless, in contrast to sulphate, the annual monitoring results have shown that the inventory of zinc has fluctuated within an approximately constant range since 2005, as shown in Figure 3.19.

Figure 3.19 Grum Pit Zinc Inventory

The results in the above figure further shows that up until 2008, each year the inventory increased over the winter months by about 4 to 5 tonnes of zinc. This trend did not occur during the 2008/09 winter period. The results further indicate that the inventory decreased substantially from the 2008 end-of-season to the 2009 end-of-season, suggesting that: i) winter removal occurred likely due to sulphate reduction (which is confirmed by the reduction in concentrations at depth) and, ii) the annual removal achieved in 2009 was approximately the same as the loading to the pit lake. Since the removal appears to have equalled the loading, the removal can be quantified only if the loading is known.

To provide a basis for estimating the annual loading to the pit lake, a series samples were obtained from the pit wall rocks. The sample locations were distributed around the different exposed lithological units as shown in Figure 3.20. The samples were subjected to leach extraction tests conducted at a solid:water ratio of 1:3 to estimate solute release rates. The results are summarized in Table 3.3. As shown, the results indicate very high concentrations of zinc may be released from the sulphide unit. The sulphide unit is also a source of copper, iron, lead and nickel. All of the units release sulphate to various degrees.

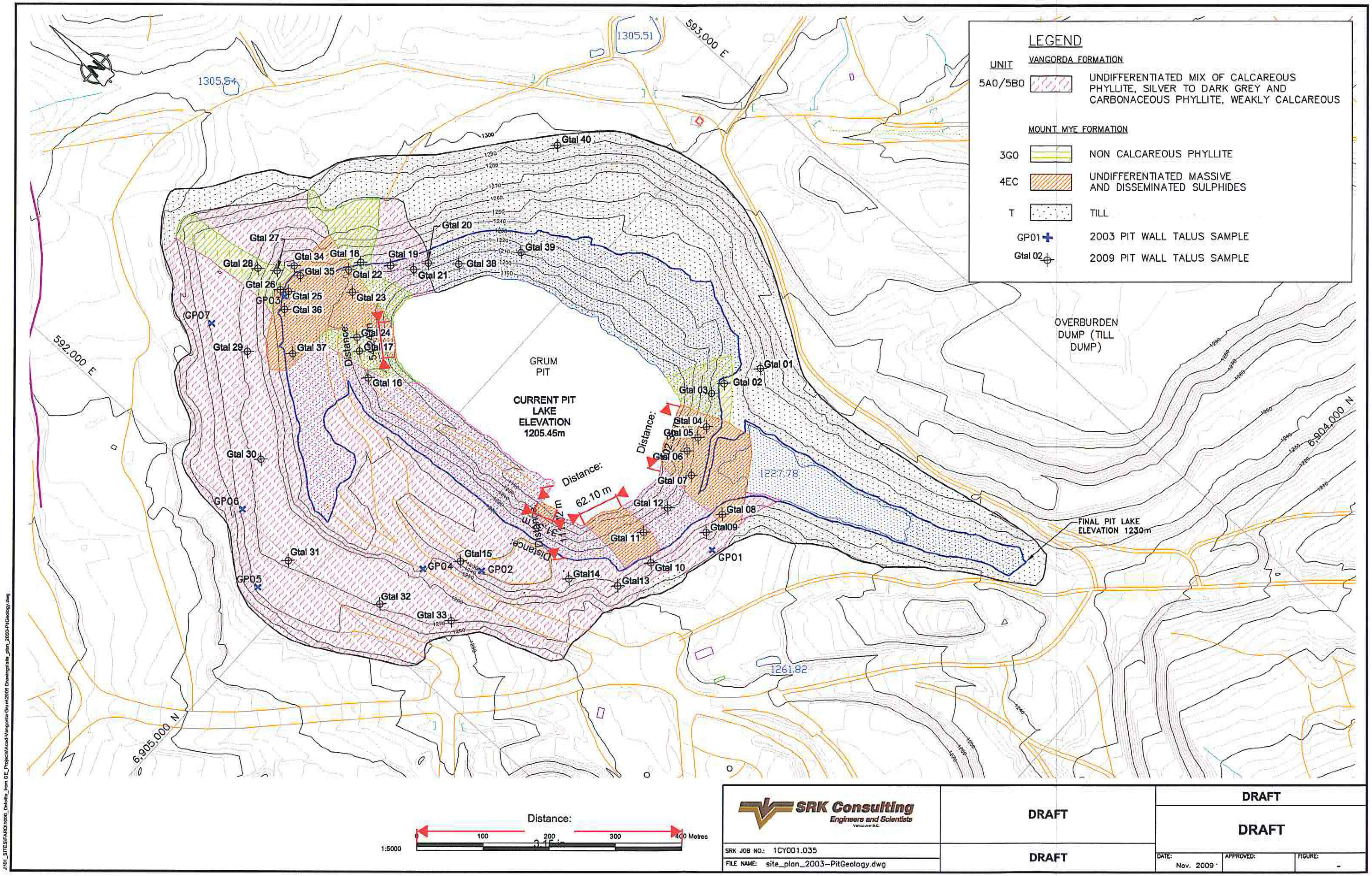
Table 3.3 Total and Dissolved Zinc Concentrations in Surface Layer (< 1 m depth)

Lithology		pH	Sulphate mg/L	Copper mg/L	Iron mg/L	Lead mg/L	Nickel mg/L	Zinc mg/L
3G0	Average	-	832	0.00074	0.0062	0.00016	0.0066	0.0070
Non Calcareous	Minimum	7.07	72	0.00005	0.001	0.000005	0.00002	0.0001
Phyllite	Maximum	7.89	1858	0.0013	0.014	0.00048	0.019	0.018
4EC	Average	-	1201	4.32	116	1.14	0.562	160
Sulphides (massive,	Minimum	2.52	266	0.00023	0.005	0.00225	0.00541	0.115
disseminated)	Maximum	8.1	2912	37.5	596	7.47	4.1	800
5A0/5B0	Average	-	238	0.00078	0.008	0.00064	0.0019	0.045
Mix of Calcareous and	Minimum	7.47	10	0.00025	0.002	0.000035	0.00038	0.0005
Carbonaceous Phyllite	Maximum	8.08	943	0.0026	0.057	0.0064	0.0094	0.61
Till	Average	-	184	0.0022	0.0535	0.00024	0.0012	0.0049
	Minimum	7.65	7	0.00053	0.005	0.00004	0.0007	0.0008
	Maximum	8.19	385	0.0051	0.185	0.00048	0.0018	0.010
Uncertain	Average	-	390	0.00086	0.06	0.030	0.040	6.63
	Minimum	7.08	2	0.0003	0.002	0.000018	0.00015	0.0005
	Maximum	8.06	1337	0.0022	0.153	0.115	0.127	25.3

Based on the average zinc concentration about 480 mg Zn may on average be released from the sulphide rich units. Assuming the talus depth on the benches of about 0.5 m and an equivalent depth of fracturing/oxidation on the sulphide wall rocks, every square meter of pit wall face may release about 0.43 kg of zinc (up to 2.2 kg at the maximum concentration) to the water column when inundated. The samples of uncertain classification (7.5 % of the samples) indicate that there may be other materials present that could release zinc; however the surface area they represent is unknown.

Based on an average annual water level rate of rise of about 3 m, and an estimated pit lake perimeter exposure length for the sulphide units (see Figure 3.20) of about 300 m, and assuming a vertical wall, about 9000 m^2 of rock was inundated during 2009. This equates to a potential net annual loading of about 388 kg, not including any loading associated with wall rock runoff. The balance of the wall rock inundated would contribute less than 5 kg of zinc. (This assumes that 7.5 % of the samples were of the 'uncertain' category with a higher soluble zinc content.)

The corresponding sulphate release from the sulphides would have been about 2.91 tonnes, with the remainder of the wall rock contributing about 1.99 tonnes. As noted before, the annual sulphate loading is in the order of 110 to 120 tonnes per year. The balance of the loading (110 -5 = 105 tonnes) is present in the pitwall runoff and any inflows to the lake.



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Assuming that the pit wall runoff contains sulphate concentrations similar to those obtained in the leach extraction tests, then the annual pit wall rock runoff together with the wall surface areas may be used to estimate the loadings that enter the lake by this mechanism. The estimated exposed surface areas above the water level for each lithology are summarised in Table 3.4. The table also shows the average concentration achieved in the leach extraction test and the calculated average concentration for the entire pit wall weighted according to the surface area. This would represent the average concentration of sulphate and zinc in the runoff from direct precipitation. Based on the total wall rock surface area and the annual rainfall, the estimated annual runoff (assuming 100 % runoff coefficient) is about 275 000 m^3.

Table 3.4 Summary of Wall Rock Exposure and Average Leach Extraction Concentrations

Unit	Description	Area (m2)	Distribution	SO4 (mg/L)	Zn (mg/L)
4EC	Sulphides	43455	7.5%	1201	160
3GO	Non calcareous Phyllite	29026	5.0%	832	0.007
5A0/5B0	Undifferentiated Phyllites	268956	46.3%	285*	1.51*
-	Till	239289	41.2%	184	0.0049
Total		580725	100.0%	-	-
Surface Area Weighted Average Concentration (mg/L)				339	12.7
Loading in Runoff (kg)				93 300	3485

Notes: * includes 'uncertain' samples

As shown in Table 3.4, the estimated sulphate loading from the wall rock is estimated to be about 93.3 tonnes. Together with the estimated loading from the inundation of the wall rock, the total loading is in the order of about 98 tonnes. Since there is likely to be some sulphate in the runoff that enters the open pit as natural runoff, the total estimate accounts for most of the estimated annual loading of between 110 and 120 tonnes (see Section 3.2.6) and is considered to be sufficiently accurate for the purposes of this assessment. The approach also appears to be reasonable for estimating wall rock loadings. As well, it is considered reasonable to use the same method for estimating the loading for zinc. Accordingly the estimated total zinc loading (inundation + runoff) is about 3.88 tonnes.

As shown in Figure 3.19, during the summer season the zinc inventory initially decreased and then increased slight to a level equivalent to the start of the season, i.e. showing no net change. In the context of the preceding load calculations, the treatment effectively removed about 3.88 tonnes of zinc from the water column. Similar or higher loadings would have existing for preceding years because the surface areas exposed would have been greater, as would the rise in the water elevation. Therefore, zinc removals on average would appear to have ranged from about 3.5 to 4 tonnes per year, which were offset by similar or slightly higher annual loadings. Furthermore, as noted previously, in contrast to other winter seasons, zinc was also removed from the water column during the 2008/09 winter season, with approximately 4 tonnes removed during this period, likely due to sulphate reduction occurring beneath the ice.

3.2.9 Estimated Post Spill Loadings and Concentrations

Water quality predictions previously completed for the Grum Pit lake were based on the estimated loadings presented in Table 3.5 (extracted from SRK, 2005). As discussed above, the actual zinc loadings from the wall rocks and releases from talus during inundation is about ten times higher than previously estimated (3000 to 4000 compared to 350 kg per annum). The sulphate loadings have also been underestimated (65 tonnes per annum compared to actual loadings of about 110 tonnes per annum – see Table 3.5).

Table 3.5 Initial Estimates of Net Loadings to the Grum Pit (SRK 2005)

Parameter	Estimated Annual Loading (kg/year)
Cl	83
SO_4	65 000
Ca	14 000
Mg	12 000
K	350
Na	420
Al	7
Cd	0.6
Co	3
Cu	0.5
Fe	180
Pb	2
Mn	45
Ni	16
Zn	350

As the pit lake elevation rises, more and more of the reactive sulphide wall rock will be inundated so that the loadings from this source will decrease over time. The estimated spill elevation at the time of spill (at lowest elevation in the slot cut, spill elevation of about 1230 mASL) is shown in Figure 3.20. At that elevation most of the sulphidic wall rock will be inundated. The surface areas for the remaining areas above the water level have been estimated and used to calculate the loadings from the pit wall rocks at that time. The water balance was used to then calculate the steady state concentrations in water flowing through the lake (i.e. for the discharge) without any treatment. The results are shown in Table 3.6. As the results in the table suggest, zinc concentrations in the outflow are projected to remain at about 1 mg/L, without any treatment. Note however that the calculations do not consider the potential reduction in oxidation rates as the sulphide content of the surface materials are depleted over time. A few other elements may also remain slightly elevated. These concentrations are generally caused by the exposed sulphidic wall rocks that continue to release metals at elevated concentrations.

Table 3.6 Summary of Estimated Concentrations at Spill Elevation 1230 m ASL

Unit	4EC	3G0	5A0/5B0	Till			
Description	Sulphides	Non calcareous Phyllite	Undifferentiated Phyllite	Till			
Area (m2)	7673	15701	209493	191835			
Distribution	2%	4%	49%	45%	Weighted Wall rock Runoff Concentrations	Annual Loading	Concentrations In Outflow
	Average Leach Extraction Concentrations						
Parameter	mg/L	mg/L	mg/L	mg/L	mg/L	t/year	mg/L
Sulphate	1202	832	285	185	277	42.280	118
Hardness CaCO3	634	808	313	222	296	45.238	127
Aluminium Al	9.46	0.005	0.014	0.077	0.212	0.032	0.091
Antimony Sb	0.008	0.0002	0.001	0.002	0.001	0.00018	0.000
Arsenic As	0.256	0.0002	0.001	0.002	0.006	0.001	0.002
Barium Ba	0.019	0.021	0.031	0.043	0.036	0.005	0.015
Beryllium Be	0.006	0.00001	0.00001	0.00001	0.00012	0.00002	0.00005
Bismuth Bi	<0.00005	0.00001	0.00001	0.00001	0.000005	0.0000008	0.000002
Boron B	<0.05	0.050	<0.05	<0.05	0.002	0.00028	0.0008
Cadmium Cd	0.224	0.0002	0.0030	0.00004	0.0056	0.0009	0.0024
Calcium Ca	175	181	67	59	70	10.665	30
Chromium Cr	0.062	0.00010	0.00018	0.00045	0.00141	0.00022	0.00060
Cobalt Co	0.218	0.0005	0.0025	0.0001	0.0053	0.0008	0.0023
Copper Cu	4.327	0.001	0.001	0.002	0.080	0.012	0.034
Iron Fe	116.654	0.006	0.017	0.054	2.140	0.327	0.917
Lead Pb	1.146	0.0002	0.0072	0.0002	0.0244	0.004	0.010
Lithium Li	0.020	0.010	0.009	0.007	0.008	0.0013	0.0035
Magnesium Mg	47.8	86.7	35.1	18.2	29.6	4.523	12.7
Manganese Mn	6.315	0.014	0.030	0.030	0.143	0.022	0.061
Mercury Hg	0.800	0.010	0.060	0.010	0.049	0.0075	0.021
Molybdenum Mo	0.009	0.002	0.007	0.007	0.007	0.0010	0.0029
Nickel Ni	0.563	0.007	0.011	0.001	0.016	0.0025	0.0070
Phosphorus P	0.549	0.002	0.002	0.018	0.019	0.0029	0.0082
Potassium K	1.19	2.55	2.49	3.22	2.80	0.428	1.20
Selenium Se	0.006	0.004	0.002	0.007	0.004	0.0007	0.0019
Silicon Si	2.189	0.197	0.450	1.110	0.770	0.118	0.330
Silver Ag	0.0004	0.00002	0.00002	0.00001	0.00002	0.000003	0.00001
Sodium Na	0.446	0.974	0.727	4.320	2.354	0.360	1.01
Strontium Sr	0.208	0.382	0.232	0.327	0.280	0.043	0.120
Sulphur (S)	406	274	96	78	100	15.277	43
Thallium Tl	0.024	0.001	0.0004	0.00004	0.0007	0.00010	0.0003
Tin Sn	0.001	0.00003	0.00005	0.00002	0.00005	0.000007	0.00002
Titanium Ti	0.220	0.001	0.001	0.004	0.006	0.0010	0.003
Uranium U	0.057	0.001	0.001	0.004	0.003	0.00053	0.001
Vanadium V	0.049	0.0002	0.0002	0.001	0.0015	0.00023	0.0006
Zinc Zn	160.5	0.007	0.045	0.005	2.924	0.447	1.252
Zirconium Zr	0.015	0.0001	0.0002	0.0004	0.0006	0.00008	0.0002

A reduction in the exposed sulphide wall rock can be achieved by increasing the spill elevation of the pit lake. For example, raising the lake elevation by 20 m by installing a dam in the slot cut would inundate essentially all of the sulphidic wall rocks. A revised water quality prediction was completed for a spill elevation of 1250 m ASL. The results are shown in Table 3.7. As shown the steady state zinc concentration in the outflow would decrease to about 0.1 mg/L without treatment.

Table 3.7 Summary of Estimated Concentrations at Spill Elevation 1250 m ASL

Unit	4EC	3G0	5A0/5B0	Till	Weighted Wall rock Runoff Concentrations	Annual Loading	Concentrations in Outflow
Description	Sulphides	Non calcareous Phyllite	Undifferentiated Phyllite	Till			
Area (m2)	603	12396	142000	149056			
Distribution	0.20%	4.1%	47%	49%			
	Average Leach Extraction Concentrations						
Parameter	mg/L	mg/L	mg/L	mg/L	mg/L	t/year	mg/L
Sulphate	1202	832	285	185	260	28.460	80
Hardness CaCO3	634	808	313	222	289	31.646	89
Aluminium Al	9.46	0.005	0.014	0.077	0.063	0.007	0.019
Antimony Sb	0.008	0.0002	0.001	0.002	0.001	0.00012	0.000
Arsenic As	0.256	0.0002	0.001	0.002	0.002	0.000	0.001
Barium Ba	0.019	0.021	0.031	0.043	0.037	0.004	0.011
Beryllium Be	0.006	0.00001	0.00001	0.00001	0.00002	0.00000	0.00001
Bismuth Bi	<0.00005	0.00001	0.00001	0.00001	0.000005	0.0000006	0.000002
Boron B	<0.05	0.050	<0.05	<0.05	0.002	0.00022	0.0006
Cadmium Cd	0.224	0.0002	0.0030	0.00004	0.0019	0.0002	0.0006
Calcium Ca	175	181	67	59	68	7.458	21
Chromium Cr	0.062	0.00010	0.00018	0.00045	0.00043	0.00005	0.00013
Cobalt Co	0.218	0.0005	0.0025	0.0001	0.0017	0.0002	0.0005
Copper Cu	4.327	0.001	0.001	0.002	0.010	0.001	0.003
Iron Fe	116.654	0.006	0.017	0.054	0.266	0.029	0.081
Lead Pb	1.146	0.0002	0.0072	0.0002	0.0058	0.001	0.002
Lithium Li	0.020	0.010	0.009	0.007	0.008	0.0009	0.0024
Magnesium Mg	47.8	86.7	35.1	18.2	28.9	3.166	8.9
Manganese Mn	6.315	0.014	0.030	0.030	0.042	0.005	0.013
Mercury Hg	0.800	0.010	0.060	0.010	0.035	0.0038	0.011
Molybdenum Mo	0.009	0.002	0.007	0.007	0.007	0.0007	0.0020
Nickel Ni	0.563	0.007	0.011	0.001	0.007	0.0008	0.0021
Phosphorus P	0.549	0.002	0.002	0.018	0.011	0.0012	0.0034
Potassium K	1.19	2.55	2.49	3.22	2.85	0.312	0.87
Selenium Se	0.006	0.004	0.002	0.007	0.005	0.0005	0.0014
Silicon Si	2.189	0.197	0.450	1.110	0.767	0.084	0.235
Silver Ag	0.0004	0.00002	0.00002	0.00001	0.00001	0.000001	0.00000
Sodium Na	0.446	0.974	0.727	4.320	2.498	0.273	0.77
Strontium Sr	0.208	0.382	0.222	0.327	0.284	0.031	0.087
Sulphur (S)	406	274	96	78	95	10.388	29
Thallium Tl	0.024	0.001	0.0004	0.00004	0.0003	0.00003	0.0001
Tin Sn	0.001	0.00003	0.00005	0.00002	0.00003	0.000004	0.00001
Titanium Ti	0.220	0.001	0.001	0.004	0.003	0.0003	0.001
Uranium U	0.057	0.001	0.001	0.004	0.003	0.00029	0.001
Vanadium V	0.049	0.0002	0.0002	0.001	0.0007	0.00008	0.0002
Zinc Zn	160.5	0.007	0.045	0.005	0.342	0.037	0.105
Zirconium Zr	0.015	0.0001	0.0002	0.0004	0.0003	0.00004	0.0001

3.2.10 Summary

The results indicate that the Grum Pit again responded well to fertilization and that good algal growth was again achieved in 2009. Consistent with previous years, elimination of late summer fertilization has again been shown to effectively control nutrient levels by the end of the season.

Surface water mass balance calculations for 2004 through 2009 suggest that zinc loadings to the Grum Pit are on the order of 3000 to 4000 kg per annum. The loading appears to be associated with predominantly with wall rock runoff, and to a lesser extent with solute release from wall rock as the water level rises. Net zinc removal has matched the zinc loading to the pit lake during the 2009 summer period. Contrary to previous years, the concentrations in the pit lake did not increase over the 2008/09 winter season. Rather, a net removal of zinc occurred. The mechanism appears to be a result of sulphate reduction, with concurrent metal precipitation as a sulphide mineral.

Due to the removals depth weighted zinc concentration has decreased from in excess of 10 mg/L in 2005 to about 4.8 mg/L.

Mass balance calculations further showed that the net loading of sulphate to the pit lake is about 110 to 120 tonnes per year.

The leach extraction tests indicate that most of the lithological units release sulphate whereas most of the zinc release is associated with the sulphidic wall rocks. A potential correlation was established between the sulphate loadings from the wall rocks and the leach extraction test results. This correlation was extended to verify the potential annual zinc loadings to the pit lake and then used to estimate steady state concentrations in outflow from the pit lake when it spills naturally at an elevation of about 1230 m ASL. The results suggest that the steady state zinc concentration in the steady state outflow (without any treatment) could still remain at about 1 mg/L. This is primarily due to the sulphidic wall rock remaining above the lake level. By raising the lake elevation by about 20 m, the zinc concentrations could potentially be reduced to about 0.1 mg/L in the long term.

3.3 Vangorda Pit

3.3.1 Concentrations

The pH trends over time are shown in Figure 3.21 for each of the monitoring depths. The results show that the surface water acidified in early 2006 but returned to circum neutral conditions by the end of that year. During 2007 surface water again acidified however the pH did not increase again to circum neutral conditions and remained acidic through to early 2008. During 2009, the first sampling event showed a slight increase in the pH in the surface water layer due to ice melt and spring freshet inflows. By the second monitoring event, the entire water column was at the same pH level.

The results for sulphate, zinc, cobalt and nickel concentrations indicated that complete mixing had occurred at the end of 2008, as shown in Figure 3.22 and Figure 3.23. As with the pH profiles, while there was a distinct difference between the surface and deeper water for the first sampling event, this distinction became less significant during the subsequent sampling events unlike the results for 2008. These results suggest that the loadings to the surface layer are sufficiently high to nullify the effects of dilution from the freshet flows.

Cadmium and copper concentrations as shown in Figure 3.24 appear to decrease slightly at depth and did not show significant increases even though the entire water column is acidic.

3.3.2 Estimated Loadings

As shown in Figure 3.25, conductivity measurements suggest that even though it acidified during this period, the water in the surface layer freshened rapidly in the spring of 2009, as in preceding years. Overall, however there is a net increase in the EC indicating a net accumulation of solutes in the pit lake. Since the water transfer rates for the pit lake were not available it was not possible to complete overall water and load balances for the Vangorda Pit for 2009. The estimated average annual loadings were determined to the end of the 2008 monitoring period, by obtaining the difference between the estimated inventories as at August 2005 and June 2008, and then normalising the net loading to the pit to an annual rate, are shown in the last column of Table 3.8.

The average annual loadings are well above previous estimates. For example the current estimate of the zinc loading is almost twice the estimate derived in 2007, the reason for this appears to be the acidification of the water column. Acidification negates the effects of solubility controls and would cause accumulated precipitates on the pit lake floor to dissolve. This is likely to greatly enhance dissolved and total metal concentrations. Consequently, solute loadings entering the pit lake with surface runoff are likely to be below the current estimates.

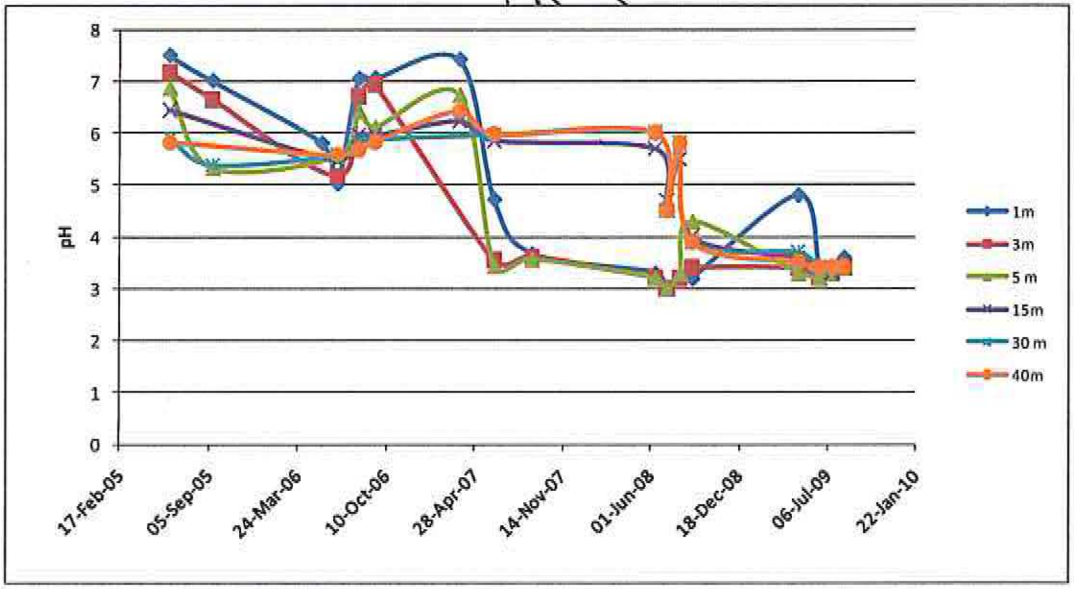


Figure 3.21 Vangorda Pit pH Trends

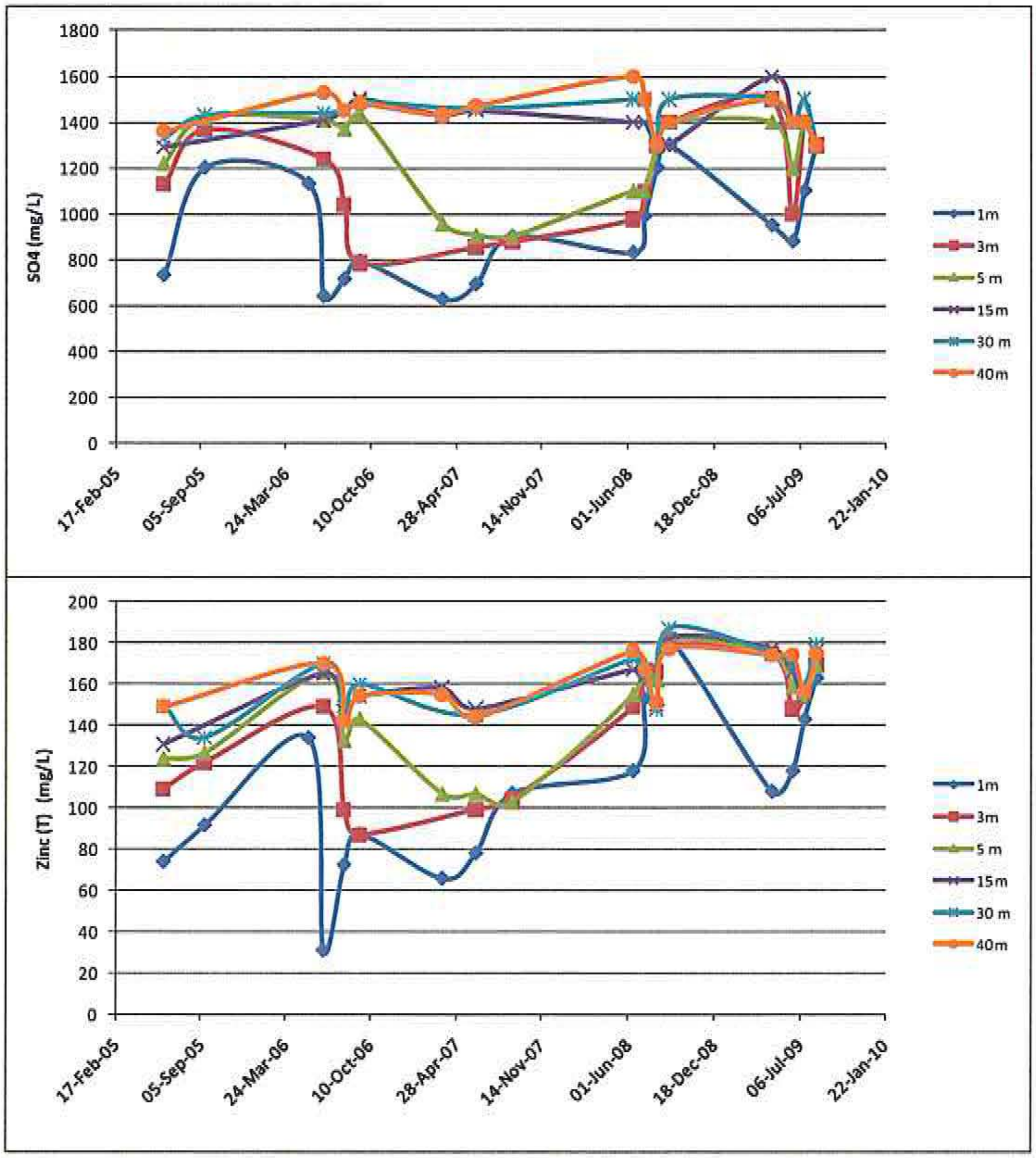


Figure 3.22 Vangorda Pit Lake Sulphate and Zinc Concentration Trends

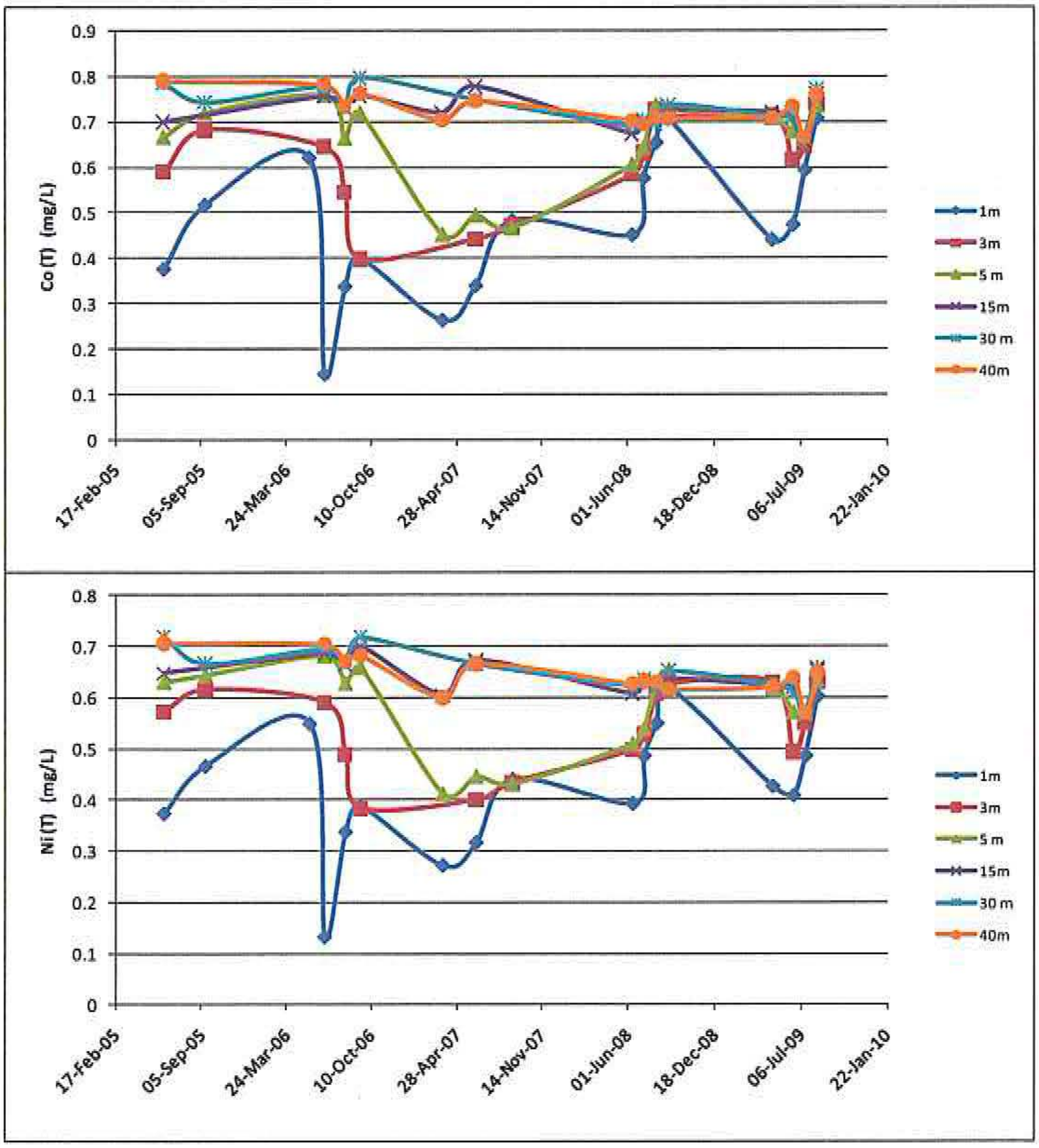


Figure 3.23 Vangorda Pit Lake Cobalt and Nickel Concentration Trends

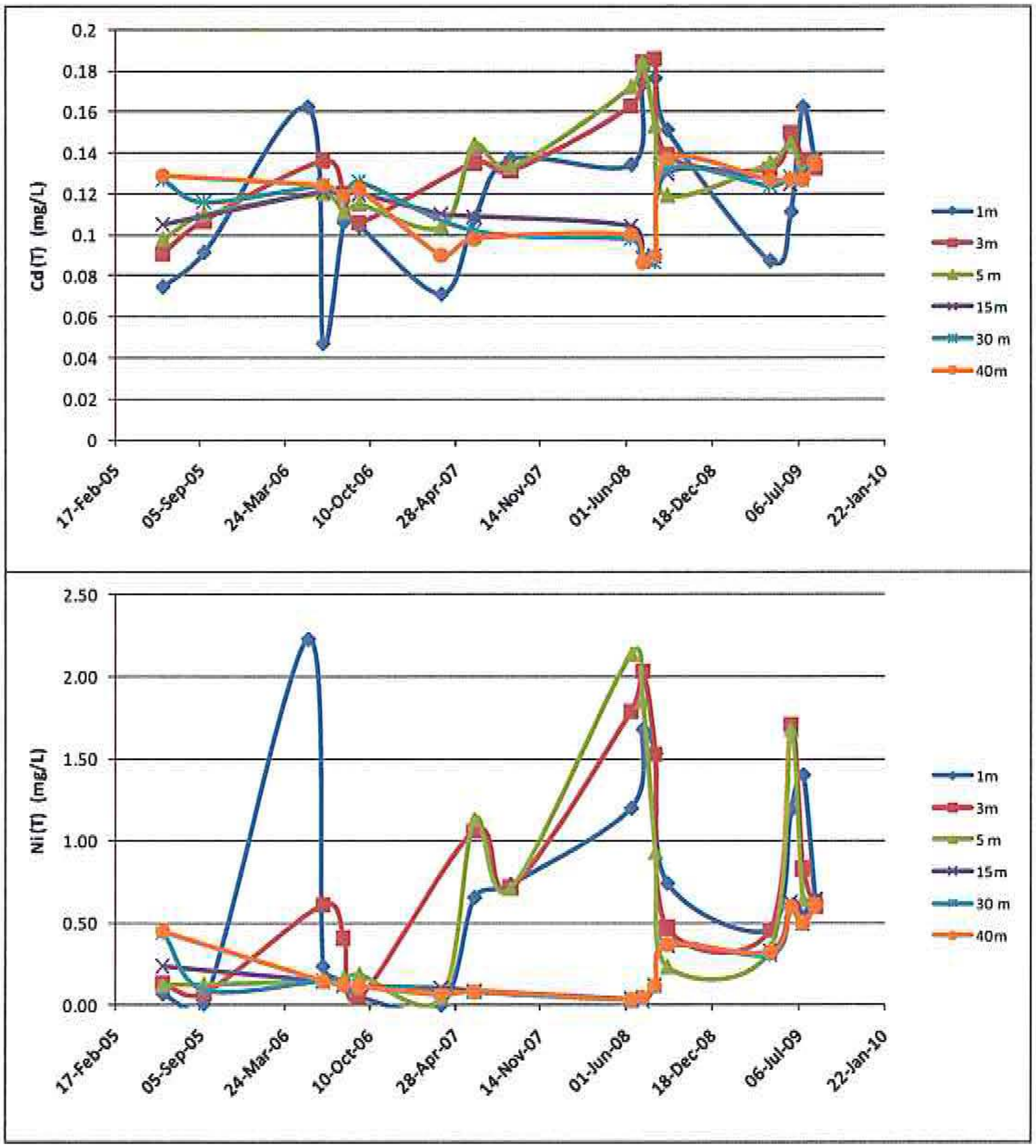


Figure 3.24 Vangorda Pit Lake Cadmium and Copper Concentration Trends

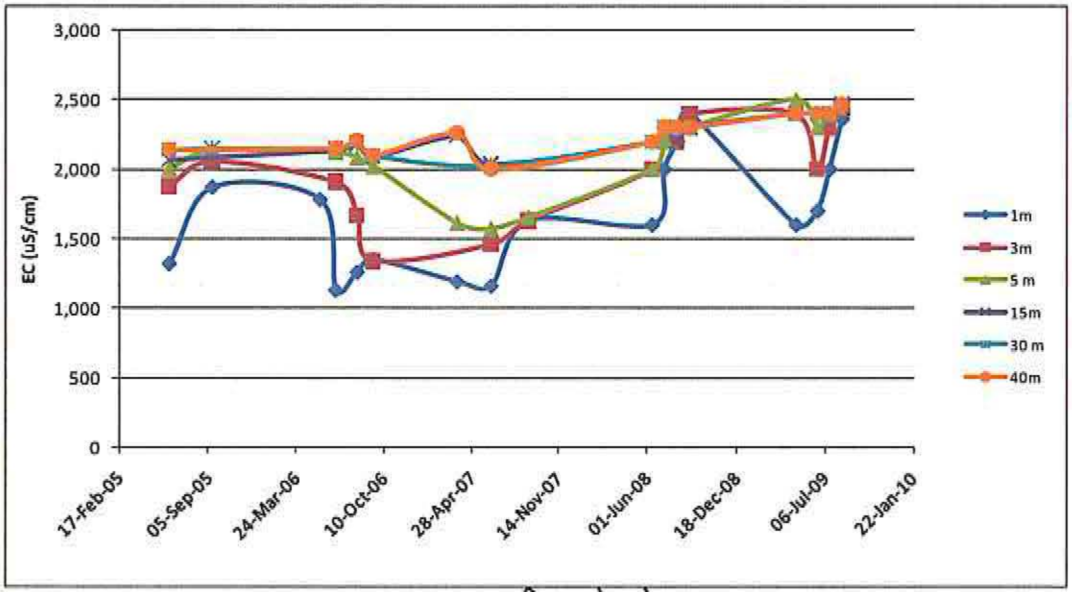


Figure 3.25 Electrical Conductivity Trends in the Vangorda Pit Lake

Table 3.8 Summary of Estimated Annual Loading to the Vangorda Pit Lake

Parameter	Inventory (tonnes)		Average Loading (tonne/year)
	Aug-05	Jun-08	
Volume (m^3)	725,816.93	1,787,986	386,147
Sulphate SO_4	980	2208	447
Cadmium	0.078	0.230	0.055
Cobalt	0.489	1.103	0.223
Copper	0.051	1.557	0.548
Iron	22	74	19
Manganese	29	73	16
Nickel	0.442	0.969	0.192
Zinc	88	279	70

4 Conclusions and Recommendations

4.1 Conclusions

The conclusions from the 2009 biological treatment program for Grum Pit lake, and the monitoring of the Faro and Vangorda Pit lakes can be summarised as follows.

4.1.1 Faro Pit

In summary, subsequent to fertilization in 2005, orthophosphate concentrations have remained below detection, and total phosphorus is being depleted from the surface layer to a depth of about 15 m. At depth, while there appeared to be a marginal increase in total phosphorus, a net decrease in the concentrations is occurring.

Whilst the chemocline continues to exist and is isolating the water at depth from the water near surface, there is a detectable increase in the zinc concentration at depth. This increase is occurring concurrently with an increase in iron concentration which suggests that the zinc increase is likely due to its desorption from dissolving iron precipitates transported by gravity from the surface layer of the pit lake.

Mass balance calculations indicate that while there is some annual variability in the total loadings, on average the annual zinc loading to the pit lake is about 47 tonnes per year, of which about 25 % (11.6 tonnes) is estimated to be sourced from the Zone 2 Pit water transfer. The balance of the loading represents the combined loadings from the wall rocks and the waste rock seepage that enters the pit lake. Monitoring results for seepage from the wall rocks suggest that the majority of this loading is likely present in seepage from the waste rock dumps.

4.1.2 Grum Pit

The results indicate that the Grum Pit again responded well to fertilization and that good algal growth was again achieved in 2009. Consistent with previous years, elimination of late summer fertilization has again been shown to effectively control nutrient levels by the end of the season. Near-shore sampling at shallow depths indicated that the biological removal of zinc occurs across the entire surface and is not limited to the central areas alone. The results further suggest that loadings from wall rocks and other inflows appear to be rapidly treated such that plumes do not appear to be formed within close proximity of the shores.

Surface water mass balance calculations for 2004 through 2009 suggest that zinc loadings to the Grum Pit are on the order of 3000 to 4000 kg per annum. The loading appears to be associated with predominantly with wall rock runoff, and to a lesser extent with solute release from wall rock as the water level rises. Net zinc removal has matched the zinc loading to the pit lake during the 2009 summer period. Contrary to previous years, the concentrations in the pit lake did not increase over the 2008/09 winter season. Rather, a net removal of zinc occurred. The mechanism appears to be a result of sulphate reduction, with concurrent metal precipitation as a sulphide mineral.

Due to the removals depth weighted zinc concentration has decreased from in excess of 10 mg/L in 2005 to about 4.8 mg/L.

Mass balance calculations further showed that the net loading of sulphate to the pit lake is about 110 to 120 tonnes per year.

The leach extraction tests indicate that most of the lithological units release sulphate whereas most of the zinc release is associated with the sulphidic wall rocks. A potential correlation was established between the sulphate loadings from the wall rocks and the leach extraction test results. This correlation was extended to verify the potential annual zinc loadings to the pit lake and then used to estimate steady state concentrations in outflow from the pit lake when it spills naturally at an elevation of about 1230 m ASL. The results suggest that the steady state zinc concentration in the steady state outflow (without any treatment) could still remain at about 1 mg/L. This is primarily due to the sulphidic wall rock remaining above the lake level. By raising the lake elevation by about 20 m, the zinc concentrations could potentially be reduced to about 0.1 mg/L in the long term.

4.1.3 Vangorda Pit

The monitoring results for 2009 indicated a slight increase in the pH of the surface water due to spring freshet inflows. However, acidity loadings nullified this increase and the pH of the surface again decreased to values equivalent to the deeper water. The results further indicated that the entire water column mixed at the end of 2008, unlike in previous years no clear chemocline developed that separated the surface water from the deeper water. Since no significant increase in zinc concentrations occurred for the water at depth it is concluded that all of the treatment sludges that were deposited in the pit have now dissolved and any further increases in solute concentrations would be a result of loadings associated with surface inflows from wall rocks and in-pit waste rock dumps.

4.2 Recommendations

4.2.1 Faro Pit

It is recommended that profiling of the pit lake continue to be undertaken at regular intervals during 2010 and mass balance calculations be completed to verify estimates of overall current loadings and support future water quality predictions. It is further recommended that improved monitoring of the flows from the Faro Valley dump be undertaken to enable a better estimation of the total loading from this source so that the pit lake loadings can further be broken down to distinguish between waste rock and wall rock loadings. Improved monitoring of the Faro Valley dump flows would require that a regular monitoring station be established to allow weekly or fortnightly monitoring of flow and water quality.

4.2.2 Grum Pit

Based on the observed performance of biological treatment in the Grum Pit, it is recommended that the fertilization program be continued in 2010. Fertilization should again be terminated by mid-August to prevent the build-up of residual nutrients in the water column.

The higher than predicted loadings to the pit lake are due to the inundation of talus on the benches as the water level rises and loadings associated with the surface runoff from the wall rocks. These loadings however are decreasing. The removal of zinc appears to further be facilitated by sulphate reduction under the ice. It is therefore recommended that an under-ice monitoring event be undertaken to determine if hydrogen sulphide is being generated.

4.2.3 Vangorda Pit

At this time, it is not foreseen that the Vangorda Pit will be utilized as an ancillary treatment system. Fertilization of this pit lake is therefore not recommended. However, it is recommended that the water column water quality profile be monitored to verify the load calculations. Monitoring should be undertaken on a monthly basis, commencing at open water conditions, and should be continued to September 20010. We further recommend that in future, should additional transfers occur, the volumes and quality of water transferred should be determined to enable evaluation of the impacts on the pit lake water quality by this operational strategy

5 References

SRK Consulting, 2004, *Anvil Range Pit Lakes, Assessment of Post Closure Conditions*. Prepared for Deloitte and Touche Inc., January 2004.

SRK Consulting, 2005, *Anvil Range Pit Lakes, Evaluation of In Situ Treatment*. Prepared for Deloitte and Touche Inc., January 2005.

SRK Consulting, 2006, *Anvil Range Pit Lakes, Evaluation of In Situ Treatment*. Prepared for Deloitte and Touche Inc., July 2006.

SRK Consulting, 2007, *Anvil Range Pit Lakes, Evaluation of In Situ Treatment*. Prepared for Deloitte and Touche Inc., July 2007.

Appendix A

In Situ Monitoring Results

Grum Pit Insitu Results

Date	time	Station	pH	Temp ^{0}C	Cond.*u* S/cm	D.O. mg/L	Secchi (m)	Comments
17-Jun-09	14:00	GL-1	6.91	11.0	1027	6.2	2.0	Grum Lake
17-Jun-09	14:15	GL-2	7.60	7.5	999	6.1	2.9	Former "Fish" limno corral, now control
17-Jun-09	14:25	GL-5	7.60	5.0	1054	5.6		
17-Jun-09	14:40	GL-15	7.65	4.5	1050	5.5		
17-Jun-09	14:50	GL-30	7.67	4.5	1054	5.5		
17-Jun-09	15:00	GL-50	7.68	4.2	1053	5.4		
11-Aug-09	18:40	GL-1	7.45	13.3	1000		0.9	Grum Lake
11-Aug-09	19:05	GL-3	7.94	13.5	1100		4.5	Former "Fish" limno corral, now control
11-Aug-09	19:18	GL-5	7.91	13.5	1200			Total depth: 62 m
11-Aug-09	19:34	GL-15	7.77	7.1	1200			Chlorophyll samples collected at 1m, 3m and 5m
11-Aug-09	19:45	GL-30	7.76	5.6	1200			
11-Aug-09	19:57	GL-50	7.79	5.0	1200			CTD cast ON 18:17, OFF 18:24
12-Aug-09	10:20	GLS-1	8.53	13.8	852	7.4		
12-Aug-09	10:35	GLS-2	6.81	13.8	860	10.4		Flow at GLS-2: 100 mL/sec
12-Aug-09	10:53	GLS-3	8.83	13.8	859	7.5		
12-Aug-09	11:20	GLS-4	8.86	13.9	859	7.0		
12-Aug-09	11:03	GLS-5	8.79	13.6	859	6.9		
12-Aug-09	11:13	GLS-6	8.86	13.6	857	7.3		
12-Aug-09	11:30	GLS-7	8.88	13.7	866	8.8		

Faro Pit Insitu Results

Date	time	Station	pH	Temp °C	Cond.*u* S/	D.O. mg/L	Secchi (m	comments
16-Jun-09	17:40:00	FL-1	7.32	11.1	1163	8.6	4.5	Total depth 85 m at sampling site
16-Jun-09	17:55:00	FL-3	7.38	9.8	1168	6.9		Chlorphyll a sampled at 1, 3 and 5 m
16-Jun-09	18:20:00	FL-5	7.39	7.3	1252	6.0		CTD cast ON: 17:20, OFF: 17:32
16-Jun-09	18:35:00	FL-15	7.30	7.3	1302	6.0		
16-Jun-09	18:50:00	FL-30	7.15	4.5	1490	1.6		
16-Jun-09	19:05:00	FL-60	6.97	4.5	1522	1.3		
16-Jun-09	19:20:00	FL-80	6.86	4.5	1546	0.7		
12-Aug-09	13:49	FL-1	6.87	14.4	1243	5.2	7.8	Total depth 84 m at sampling site
12-Aug-09	13:52	FL-3	7.13	13.7	1246	5.3		Chlorphyll a sampled at 1, 3 and 5 m
12-Aug-09	14:00	FL-5	7.32	13.4	1244	5.4		CTD cast ON: 13:22, OFF: 13:32
12-Aug-09	14:12	FL-15	7.39	5.7	1279	5.6		
12-Aug-09	14:22	FL-30	7.32	5.3	1465	1.2		
12-Aug-09	14:36	FL-60	7.04	5.4	1495	1.1		
12-Aug-09	14:51	FL-80	6.95	6.0	1604	1.0		

Vangorda Pit Insitu Results

Date	time	Station	pH	Temp °C	Cond.*u* S/	D.O. mg/L	Secchi (m	comment
18-Jun-09	10:00	VL-1	3.54	12.5	1675	4.7	1.5	CTD cast ON: 09:18, OFF: 09:24
18-Jun-09	10:15	VL-3	3.44	10.4	1951	2.6		
18-Jun-09	10:30	VL-5	3.61	5.0	2200	2.3		
18-Jun-09	10:45	VL-15	3.85	5.0	2300	2.3		
18-Jun-09	11:00	VL-30	3.99	4.0	2340	1.0		
18-Jun-09	11:15	VL-40	4.02	3.8	2330	0.9		
12-Aug-09	16:35	VL-1	3.78	12.3	2304	4.4	1.2	CTD cast ON: 16:20 , OFF: 16:26
12-Aug-09	16:41	VL-3	4.00	6.9	2297	1.1		
12-Aug-09	16:56	VL-5	3.99	5.9	2329	1.1		
12-Aug-09	17:05	VL-15	3.95	5.8	2393	1.1		
12-Aug-09	17:12	VL-30	4.00	6.1	2416	1.0		Chlorophyll samples at 1m and 3m
12-Aug-09	17:22	VL-40	3.99	5.7	2431	1.1		

Appendix B

Pit lake Water Quality Monitoring Results

Grum Pit - 2005 -2008 Monitoring Results
RESULTS OF ANALYSIS

Depth (m)	m	1	3	5	10	15	30	40	0.1	1	3	5	10	15	30	40	0.1	1	3	5	10	15	30	40
Sample ID		GP-1 GRUM PIT @1m	GP-3 GRUM PIT @3m	GP-5 GRUM PIT @5m	GP-10 GRUM PIT @10m	GP-15 GRUM PIT @15m	GP-30 GRUM PIT @30m	GP-40 GRUM PIT @40m	GP-0.1 Grum Surface	GP-1 Grum Pit @ 1m	GP-3 Grum Pit @3m	GP-5 Grum Pit @5m	GP-10 Grum Pit @10m	GP-15 Grum Pit @15m	GP-30 Grum Pit @30m	GP-40 Grum Pit @40m	GP_0.1	GP_1	GP_3	GP_5	GP_10	GP_15	GP_30	GP_40
Date Sampled		09-Jun-05	09-Jun-05	09-Jun-05	09-Jun-05	09-Jun-05	09-Jun-05	09-Jun-05	06-Jul-05	06-Jul-05	06-Jul-05	06-Jul-05	06-Jul-05	06-Jul-05	06-Jul-05	06-Jul-05	03-Aug-05	03-Aug-05	03-Aug-05	03-Aug-05	03-Aug-05	03-Aug-05	03-Aug-05	03-Aug-05
Time Sampled		11:40	11:50	12:00	12:10	12:15	23:30	12:45	15:00	15:10	15:15	15:30	15:50	16:05	16:45	17:00	10:00	10:08	10:18	10:28	10:38	10:48	11:00	11:08
ALS Sample ID		8	9	10	11	12	13	14	9	10	11	12	13	14	15	16	9	10	11	12	13	14	15	16
Nature		Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Physical Tests																								
Hardness (as CaCO3)	mg/L																							
Conductivity (uS/cm)		1000	1030	1080	1070	1070	1070	1030	970	972	1010	1050	1060	1060	1060	1060	897	894	897	1040	1050	1050	1050	1060
ORP	mV																							
pH		8.07	8.07	7.99	7.99	8.00	8.11	8.01	8.40	8.64	8.32	7.82	7.66	7.66	7.68	7.68	8.72	8.80	8.80	7.97	7.93	7.95	7.98	7.50
Total Suspended Solids	mg/L	3.3	3.9	4.6	3.9	<3.0	11.3	<3.0	6.8	8.1	6.1	4.1	<3.0	<3.0	<3.0	<3.0	10.7	9.3	9.3	4.0	<3.0	<3.0	4.7	9.3
Dissolved Anions																								
Alkalinity-Total CaCO3	mg/L	157	164	187	172	179	176	172	152	152	169	174	173	171	167	183	113	108	117	171	174	173	176	178
Sulphate SO4	mg/L	408	421	435	437	433	440	436	430	416	415	459	457	453	453	448	407	405	401	436	439	432	433	433
Chloride (Cl)	mg/L																							
Fluoride (F)	mg/L																							
Bromide (Br)	mg/L																							
Nutrients																								
Ammonia Nitrogen N	mg/L	0.0067	0.0100	0.0053	0.0153	0.0200	0.0240	0.0180	0.0470	0.0413	0.0250	0.0170	0.0100	< 0.005	< 0.005	< 0.005	0.127	0.0993	0.0600	0.114	0.0407	0.0427	0.0453	0.0453
Nitrate Nitrogen N	mg/L	0.958	0.989	1.03	1.07	1.10	1.12	1.11	0.821	0.816	1.10	1.15	1.27	1.28	1.28	1.27	0.616	0.621	0.664	1.08	1.20	1.16	1.15	1.14
Nitrite Nitrogen N	mg/L	0.015	0.014	<0.010	<0.010	<0.010	<0.010	<0.010	0.0126	0.0134	0.0141	0.0096	0.0060	0.0059	0.0058	<0.0050	0.0014	0.0013	0.0020	0.0057	0.0041	0.0038	0.0041	0.0045
Nitrite/Nitrate Nitrogen N	mg/L																							
Dissolved ortho-Phosphate P	mg/L	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.0015	0.0012	0.001	0.001
Total Phosphate P	mg/L	0.0031	0.002	0.0029	0.0039	0.0021	0.0025	0.0031	0.0398	0.0371	0.0314	0.0182	0.0089	0.0054	0.0041	0.0046	0.0215	0.0216	0.0174	0.0070	0.0063	0.0047	0.0081	0.0179
Total Metals																								
Aluminum T-Al	mg/L	0.0331	0.0353	0.0340	0.0261	0.0216	0.0291	0.0217	0.0207	0.0264	0.0126	0.0187	0.0176	0.0096	0.0112	0.0112	0.0630	0.0551	0.0672	0.0363	0.0151	0.0139	0.0674	0.0961
Antimony T-Sb	mg/L	0.00602	0.00697	0.00772	0.00758	0.00751	0.00772	0.00786	0.00584	0.00582	0.00605	0.00740	0.00773	0.00754	0.00747	0.00760	0.00513	0.00514	0.00497	0.00747	0.00832	0.00835	0.00833	0.00845
Arsenic T-As	mg/L	0.00069	0.00073	0.00077	0.00106	0.00097	0.00145	0.00213	0.00044	0.00045	0.00048	0.00055	0.00093	0.00101	0.00198	0.00262	0.00069	0.00069	0.00067	0.00092	0.00155	0.00170	0.00222	0.00248
Barium T-Ba	mg/L	0.0410	0.0442	0.0460	0.0461	0.0458	0.0466	0.0474	0.0430	0.0429	0.0415	0.0457	0.0459	0.0447	0.0446	0.0448	0.0257	0.0254	0.0249	0.0462	0.0498	0.0494	0.0498	0.0511
Beryllium T-Be	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00050	<0.00050	<0.00050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Bismuth T-Bi	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00050	<0.00050	<0.00050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron T-B	mg/L	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.010	<0.010	<0.010	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium T-Cd	mg/L	0.00525	0.00585	0.00668	0.00673	0.00656	0.00678	0.00674	0.00280	0.00268	0.00466	0.00761	0.00711	0.00666	0.00676	0.00677	0.000562	0.000598	0.000713	0.00579	0.00781	0.00755	0.00746	0.00786
Calcium T-Ca	mg/L	114	122	127	126	125	123	119	111	113	118	117	122	127	131	117	97.1	95.5	96.5	121	128	127	128	130
Chromium T-Cr	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00050	<0.00050	<0.00050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt T-Co	mg/L	0.0206	0.0231	0.0251	0.0245	0.0240	0.0250	0.0256	0.0196	0.0193	0.0207	0.0255	0.0251	0.0240	0.0246	0.0244	0.0153	0.0153	0.0147	0.0242	0.0256	0.0258	0.0261	0.0262
Copper T-Cu	mg/L	0.00140	0.00173	0.00322	0.00350	0.00324	0.00328	0.00326	0.00069	0.00109	0.00086	0.00169	0.00250	0.00269	0.00257	0.00249	0.00096	0.00133	0.00091	0.00143	0.00188	0.00202	0.00198	0.00216
Iron T-Fe	mg/L	0.050	0.053	0.044	0.038	0.042	0.087	0.132	<0.040	0.036	0.047	0.050	<0.030	0.037	0.142	0.179	0.084	0.083	0.089	0.117	0.097	0.117	0.226	0.320
Lead T-Pb	mg/L	0.00128	0.00155	0.00157	0.00173	0.00119	0.00147	0.00135	0.00091	0.00092	0.00128	0.00144	0.00130	0.00131	0.00134	0.00146	0.000837	0.000964	0.000940	0.00168	0.00136	0.00149	0.00166	0.00204
Lithium T-Li	mg/L	0.022	0.025	0.025	0.024	0.025	0.025	0.025	0.023	0.022	0.023	0.026	0.025	0.026	0.025	0.026	0.0243	0.0239	0.0234	0.026	0.027	0.028	0.027	0.028
Magnesium T-Mg	mg/L	66.8	70.8	72.0	71.3	70.0	68.9	66.0	65.0	65.5	67.9	65.6	67.8	70.5	71.1	66.2	69.1	68.2	68.3	69.4	72.5	71.5	74.2	73.9
Manganese T-Mn	mg/L	0.387	0.438	0.500	0.489	0.487	0.505	0.528	0.296	0.289	0.342	0.503	0.493	0.477	0.488	0.492	0.218	0.222	0.223	0.484	0.531	0.530	0.546	0.556
Molybdenum T-Mo	mg/L	0.00312	0.00330	0.00345	0.00333	0.00345	0.00346	0.00369	0.00338	0.00327	0.00325	0.00386	0.00336	0.00326	0.00336	0.00324	0.00344	0.00339	0.00324	0.00358	0.00364	0.00361	0.00359	0.00374
Nickel T-Ni	mg/L	0.173	0.195	0.215	0.209	0.207	0.213	0.220	0.161	0.156	0.171	0.217	0.216	0.209	0.213	0.216	0.123	0.121	0.119	0.206	0.228	0.227	0.231	0.230
Phosphorus T-P	mg/L	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium T-K	mg/L	2.3	2.4	2.5	2.5	2.5	2.2	2.4	3.1	3.1	3.3	3.2	3.3	3.5	3.5	3.2	2.2	2.2	2.2	2.3	2.4	2.5	2.6	2.5
Selenium T-Se	mg/L	<0.0020	<0.0020	<0.0020	0.0020	<0.0020	0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0017	0.0019	0.0016	<0.0020	<0.0020	0.0021	<0.0020	0.0022
Silicon T-Si	mg/L	2.67	2.91	3.07	3.02	2.96	2.95	2.81	2.33	2.37	2.72	3.42	3.22	3.32	3.37	3.10	2.35	2.31	2.31	2.83	3.00	2.95	3.05	3.09
Silver T-Ag	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000010	<0.000010	<0.000010	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Sodium T-Na	mg/L	9.0	9.8	10.3	10.4	10.2	9.2	9.7	10.2	10.1	10.6	10.8	10.9	11.4	11.7	10.9	9.2	9.1	9.1	9.4	10.2	10.3	10.4	10.2
Strontium T-Sr	mg/L	0.691	0.750	0.780	0.772	0.775	0.784	0.814	0.658	0.648	0.633	0.719	0.715	0.707	0.714	0.721	0.582	0.587	0.567	0.739	0.792	0.796	0.810	0.821
Thallium T-Tl	mg/L	0.00093	0.00103	0.00094	0.00095	0.00094	0.00102	0.00100	0.00109	0.00107	0.00117	0.00105	0.00099	0.00098	0.00107	0.00115	0.00114	0.00114	0.00111	0.00116	0.00108	0.00109	0.00114	0.00114
Tin T-Sn	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Titanium T-Ti	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium T-U	mg/L	0.00423	0.00396	0.00517	0.0126	0.00862	0.00873	0.00922	0.00446	0.00442	0.00368	0.00248	0.0104	0.00923	0.00939	0.00944	0.00384	0.00383	0.00366	0.00512	0.00980	0.00989	0.00986	0.00991
Vanadium T-V	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	<0.0010	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Zinc T-Zn	mg/L	5.05	7.07	10.1	9.38	8.93	9.15	9.32	0.943	0.919	2.78	10.8	9.37	8.24	8.39	8.38	0.421	0.427	0.526	7.62	10.3	10.4	10.5	10.4
Dissolved Metals																								
Aluminum D-Al	mg/L								0.0054	<0.0020	<0.0020	0.0097	<0.0020	0.0030	<0.0020	<0.0020								
Antimony D-Sb	mg/L								0.00601	0.00583	0.00606	0.00756	0.00749	0.00738	0.00728	0.00729								
Arsenic D-As	mg/L								0.00037	0.00033	0.00034	0.00034	0.00073	0.00075	0.00061	0.00066								
Barium D-Ba	mg/L								0.0425	0.0414	0.0416	0.0442	0.0444	0.0439	0.0434	0.0430								
Beryllium D-Be	mg/L								<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010								
Bismuth D-Bi	mg/L								<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010								
Boron D-B	mg/L								<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020								
Cadmium D-Cd	mg/L								0.00152	0.00082	0.00353	0.00674	0.00689	0.00665	0.00669	0.00666								
Calcium D-Ca	mg/L								115	112	113	118	120	125	116	119								
Chromium D-Cr	mg/L								<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010								
Cobalt D-Co	mg/L								0.0188	0.0179	0.0210	0.0242	0.0240	0.0240	0.0240	0.0236								
Copper D-Cu	mg/L								0.00050	0.00025	0.00034	0.00658	0.00139	0.00213	0.00199	0.00181								
Iron D-Fe	mg/L								<0.030	<0.030	<0.030	0.063	<0.030	<0.030	<0.030	<0.030								
Lead D-Pb	mg/L								0.00043	0.00020	0.00047	0.00181	0.00063	0.00073	<0.00010	<0.00010								
Lithium D-Li	mg/L								0.022	0.021	0.024	0.025	0.025	0.025	0.025	0.025								
Magnesium D-Mg	mg/L								67.4	65.8	65.0	67.3	66.7	68.3	67.2	67.5								
Manganese D-Mn	mg/L								0.269	0.248	0.338	0.477	0.476	0.477	0.480	0.475								
Molybdenum D-Mo	mg/L								0.00337	0.00324	0.00340	0.00334	0.00321	0.00329	0.00330	0.00333								
Nickel D-Ni	mg/L								0.155	0.147	0.175	0.207	0.204	0.207	0.209	0.206								
Phosphorus D-P	mg/L								<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30								
Potassium D-K	mg/L								3.2	3.1	3.2	3.3	3.2	3.4	3.2	3.3								
Selenium D-Se	mg/L								<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020								
Silicon D-Si	mg/L								2.34	2.23	2.46	3.45	3.17	3.25	3.05	3.11								
Silver D-Ag	mg/L								<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020								
Sodium D-Na	mg/L								10.6	10.3	10.4	11.2	10.7	11.1	11.0	11.0								
Strontium D-Sr	mg/L								0.667	0.642	0.658	0.695	0.697	0.704	0.711	0.697								
Thallium D-Tl	mg/L								0.00110	0.00105	0.00116	0.00100	0.00094	0.00096	0.00105	0.00110								
Tin D-Sn	mg/L								<0.00020	<0.00020	<0.00020	0.00058	<0.00020	<0.00020	<0.00020	<0.00020								
Titanium D-Ti	mg/L								<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010								
Uranium D-U	mg/L								0.00445	0.00431	0.00380	0.00263	0.00999	0.00922	0.00923	0.00915								
Vanadium D-V	mg/L								<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020								
Zinc D-Zn	mg/L								0.431	0.144	1.90	10.7	8.98	8.19	8.19	8.06								
Organic Parameters																								
Chlorophyll a (a,b)	ug/L								24.1	20.3	9.65	30.3	3.34	2.99	0.196	0.333	13.5	25.0	19.5	3.35	1.25	0.220	1.18	

Grum Pit - 2005 -2008 Monitoring Results
RESULTS OF ANALYSIS

Depth (m)	1	3	4	5	7	10	20	40	0.1	1	3	5	10	15	30	40	1	3	5	15	30	40	1	3	5	15	30	40
Sample ID	GP_1	GP_3	GP_40	GP_5	GP_7	GP_10	GP_20	GP_40	GP-0.1	GP-1	GP-3	GP-5	GP-10	GP-15	GP-30	GP-40	GRUM 1m	GRUM 3m	GRUM 5m	GRUM 15m	GRUM 30m	GRUM 40m	GL-1 GRUM@1m	GL-3 GRUM@3m	GL-5 GRUM@5m	GL-15 GRUM@15m	GL-30 GRUM@30m	GL-40 GRUM@40m
Date Sampled	31-Aug-05	31-Aug-05	31-Aug-05	31-Aug-05	31-Aug-05	31-Aug-05	31-Aug-05	31-Aug-05	14-Sep-05	14-Sep-05	14-Sep-05	14-Sep-05	14-Sep-05	14-Sep-05	14-Sep-05	14-Sep-05	02-May-06	02-May-06	02-May-06	02-May-06	02-May-06	02-May-06	14-Jun-06	14-Jun-06	14-Jun-06	14-Jun-06	14-Jun-06	14-Jun-06
Time Sampled	10:30	10:40	12:10	10:55	11:15	11:30	11:45	12:10	11:45	12:07	12:14	12:20	12:27	12:31	12:45	13:15	11:15	11:25	11:40	11:50	12:00	12:15	12:00	12:15	12:30	12:45	13:10	13:30
ALS Sample ID	10	11	16	12	13	14	15	16	9	10	11	12	13	14	15	16	1	2	3	4	5	6	1	2	3	4	5	6
Nature	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Physical Tests																												
Hardness (as CaCO3)																												
Conductivity (uS/cm)	901	898	904	1040	1030	1040	1040	904	938	937	945	1060	1080	1070	1070	1070	765	994	1000	1040	1050	1050	783	1020	1020	1020	1020	1020
ORP																												
pH	8.51	8.55	8.48	7.82	7.83	7.34	7.60	8.48	7.93	7.97	8.07	7.79	7.61	7.66	7.68	7.72	7.90	7.77	7.81	7.65	7.65	7.70	7.98	7.90	7.90	7.88	7.89	7.88
Total Suspended Solids	6.4	5.7	5.7	<3.0	5.7	<3.0	6.4	5.7	3.8	3.8	<3.0	5.2	4.5	3.2	6.5	7.8	<3.0	<3.0	<3.0	<3.0	<3.0	4.4	3.7	3.0	<3.0	3.7	<3.0	3.7
Dissolved Anions																												
Alkalinity-Total CaCO3	120	118	120	185	178	176	180	120	128	123	127	173	171	209	182	193	191	167	167	172	187	172	117	174	160	181	161	172
Sulphate SO4	410	413	411	443	443	442	449	411	403	403	402	428	439	440	441	441	256	425	428	451	453	454	317	431	433	435	434	435
Chloride (Cl)																												
Fluoride (F)																												
Bromide (Br)																												
Nutrients																												
Ammonia Nitrogen N	0.463	0.427	0.497	0.0520	0.0473	0.0247	0.0347	0.497	0.530	0.657	0.647	0.204	0.0107	0.0067	0.0107	0.0107	0.032	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Nitrate Nitrogen N	0.005	1.01	0.998	1.25	1.27	1.29	1.26	0.998	1.16	1.15	1.15	1.22	1.33	1.29	1.28	1.29	1.070	1.970	1.99	1.43	1.41	1.45						
Nitrite Nitrogen N	0.0087	0.0096	0.0096	0.0044	0.0061	0.0104	0.0092	0.0096	0.0134	0.0145	0.0142	0.0099	0.0021	0.0011	0.0021	0.0019	0.0014	0.0026	<0.0010	<0.0010	<0.0010	<0.0010						
Nitrite/Nitrate Nitrogen N																							0.980	1.350	1.37	1.46	1.45	1.45
Dissolved ortho-Phosphate P	0.0237	0.0291	0.0253	0.001	0.0013	0.001	0.0033	0.0253	0.0297	0.0310	0.0294	0.0120	0.001	0.001	0.001	0.001	<0.0010	0.0026	0.0035	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Total Phosphate P	0.0316	0.0406	0.0435	0.0063	0.0071	0.0036	0.0078	0.0435	0.0436	0.0426	0.0406	0.0170	0.0042	0.0023	0.0049	0.0052	0.0094	0.0083	0.0095	0.0035	0.0040	0.0088	0.0042	0.0036	0.0052	0.0044	0.0035	0.0040
Total Metals																												
Aluminum T-Al	0.0397	0.0514	0.0283	0.0308	0.0280	0.0165	0.0757	0.0283	0.0476	0.0501	0.0487	0.0585	<0.0020	0.0711	0.137	0.156	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.0388	0.0388	0.0289	0.0719	0.0442	0.0482
Antimony T-Sb	0.00516	0.00509	0.00536	0.00653	0.00645	0.00659	0.00681	0.00536	0.00554	0.00553	0.00527	0.00651	0.00694	0.00697	0.00684	0.00704	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.00430	0.00609	0.00604	0.00644	0.00651	0.00651
Arsenic T-As	0.00090	0.00087	0.00093	0.00088	0.00086	0.00135	0.00160	0.00093	0.00103	0.00101	0.00095	0.00082	0.00041	0.00157	0.00188	0.00215	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.00060	0.00083	0.00085	0.00095	0.00104	0.00118
Barium T-Ba	0.0313	0.0304	0.0322	0.0429	0.0424	0.0426	0.0434	0.0322	0.0335	0.0338	0.0323	0.0422	0.0480	0.0431	0.0442	0.0458	0.0820	0.0500	0.0490	0.0450	0.0460	0.0450	0.0348	0.0453	0.0460	0.0492	0.0490	0.0500
Beryllium T-Be	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Bismuth T-Bi	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron T-B	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium T-Cd	0.00083	0.00077	0.00084	0.00331	0.00366	0.00624	0.00630	0.00084	0.00107	0.00116	0.00109	0.00312	0.00489	0.00618	0.00621	0.00640	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.00316	0.00439	0.00437	0.00458	0.00470	0.00470
Calcium T-Ca	99.3	100	102	133	139	137	127	102	106	102	98.1	128	131	129	125	120	096	113	111	117	119	115	93.4	122	126	127	126	127
Chromium T-Cr	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt T-Co	0.0137	0.0129	0.0142	0.0238	0.0232	0.0229	0.0237	0.0142	0.0140	0.0143	0.0137	0.0217	0.0150	0.0226	0.0229	0.0235	0.01200	0.01900	0.02200	<0.010	<0.010	<0.010	0.00547	0.00746	0.00744	0.00772	0.00757	0.00769
Copper T-Cu	0.00127	0.00116	0.00124	0.00102	0.00099	0.00129	0.00118	0.00124	0.00136	0.00144	0.00125	0.00110	<0.00060	0.00120	0.00123	0.00134	<0.010	<0.010	0.01200	<0.010	<0.010	<0.010	0.00161	0.00177	0.00149	0.00150	0.00143	0.00139
Iron T-Fe	0.076	0.081	0.068	0.106	0.099	0.115	0.213	0.068	0.104	0.094	0.093	0.132	<0.030	0.223	0.346	0.371	<0.030	0.045	0.058	0.05	0.091	0.2	0.061	0.063	0.055	0.105	0.082	0.105
Lead T-Pb	0.00159	0.00139	0.00156	0.00186	0.00159	0.00157	0.00138	0.00156	0.00180	0.00196	0.00181	0.00247	0.00025	0.00136	0.00157	0.00166	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.00239	0.00151	0.00099	0.00101	0.00084	0.00094
Lithium T-Li	0.023	0.022	0.025	0.025	0.024	0.026	0.026	0.025	0.022	0.023	0.022	0.024	0.024	0.024	0.023	0.024	0.017	0.021	0.024	0.024	0.022	0.025	0.018	0.025	0.026	0.024	0.024	0.026
Magnesium T-Mg	65.0	66.5	64.5	72.6	75.7	73.0	68.8	64.5	65.6	62.7	60.9	68.8	70.6	69.0	67.0	64.1	48.7	69.3	69.0	67.7	68.4	67.5	54.2	71.0	72.8	72.9	72.4	73.0
Manganese T-Mn	0.189	0.179	0.199	0.489	0.475	0.480	0.513	0.199	0.224	0.231	0.213	0.479	0.524	0.520	0.537	0.559	0.2400	0.3890	0.389	0.034	0.034	0.100	0.1120	0.157	0.156	0.161	0.163	0.167
Molybdenum T-Mo	0.00331	0.00323	0.00340	0.00305	0.00292	0.00295	0.00293	0.00340	0.00345	0.00350	0.00324	0.00327	0.00381	0.00308	0.00308	0.00314	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	0.00195	0.00281	0.00279	0.00299	0.00290	0.00298
Nickel T-Ni	0.112	0.106	0.117	0.208	0.202	0.202	0.206	0.117	0.115	0.117	0.110	0.184	0.108	0.196	0.195	0.203	0.095	0.170	0.169	0.212	0.207	0.202	0.132	0.193	0.193	0.193	0.194	0.192
Phosphorus T-P	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium T-K	2.2	2.3	2.3	2.7	2.8	2.9	2.6	2.3	2.4	2.2	2.2	2.6	2.6	2.5	2.4	2.3	2.6	3.1	3.0	3.0	3.2	3.0	2.1	2.8	2.8	2.9	2.8	2.9
Selenium T-Se	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon T-Si	2.46	2.54	2.44	3.34	3.45	3.29	3.11	2.44	2.56	2.47	2.36	3.10	3.06	3.09	3.09	2.98	4.34	3.24	3.16	2.97	3.00	3.02	2.43	3.12	3.20	3.26	3.18	3.23
Silver T-Ag	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000023	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Sodium T-Na	9.4	9.8	9.5	11.4	11.7	11.3	10.7	9.5	9.3	8.5	8.6	10.0	11.0	10.4	10.3	9.7	10.6	10.9	10.6	10.0	10.9	10.2	8.1	10.9	10.9	11.0	10.9	11.1
Strontium T-Sr	0.610	0.583	0.628	0.779	0.763	0.780	0.801	0.628	0.583	0.590	0.559	0.707	0.855	0.727	0.729	0.756	0.592	0.682	0.671	0.710	0.763	0.729	0.562	0.808	0.808	0.868	0.877	0.881
Thallium T-Tl	0.00119	0.00116	0.00122	0.00105	0.00104	0.00106	0.00110	0.00122	0.00121	0.00123	0.00116	0.00116	0.00110	0.00108	0.00111	0.00115	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.00073	0.00096	0.00092	0.00094	0.00094	0.00099
Tin T-Sn	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Titanium T-Ti	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium T-U	0.00386	0.00373	0.00390	0.00753	0.00788	0.00906	0.00898	0.00390	0.00408	0.00408	0.00385	0.00445	0.00377	0.00875	0.00882	0.00916							0.00659	0.00886	0.00880	0.0092	0.0092	0.0092
Vanadium T-V	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.030	<0.030	0.038	0.035	0.032	0.032	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Zinc T-Zn	0.996	0.976	1.08	10.2	9.82	9.96	10.0		1.50	1.52	1.42	6.39	1.56	8.47	8.50	8.85	3.170	5.73	5.79	9.60	9.56	9.06	5.580	8.28	08.4	8.26	8.42	8.41
Dissolved Metals																												
Aluminum D-Al	-	-	-	-	-	-	-	-	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.0058	0.0225	0.0028	0.0239	<0.0020	<0.0020
Antimony D-Sb									0.00513	0.00531	0.00537	0.00612	0.00665	0.00713	0.00699	0.00709	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.00422	0.00609	0.00619	0.00650	0.00633	0.00649
Arsenic D-As									0.00064	0.00069	0.00069	0.00042	0.00029	0.00047	0.00048	0.00050	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.00043	0.00073	0.00072	0.00076	0.00070	0.00075
Barium D-Ba									0.0321	0.0326	0.0328	0.0408	0.0463	0.0447	0.0434	0.0437	0.0770	0.0510	0.0480	0.0450	0.0430	0.0440	0.0339	0.0451	0.0463	0.0483	0.0474	0.0480
Beryllium D-Be									<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Bismuth D-Bi									<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron D-B									<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium D-Cd									0.00081	0.00075	0.00077	0.00261	0.00622	0.00651	0.00637	0.00639	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.00304	0.00442	0.00436	0.00455	0.00461	0.00459
Calcium D-Ca									100	96.5	96.8	124	133	128	123	114	97.5	110	110	116	121	115	91.5	123	123	125	124	129
Chromium D-Cr									<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt D-Co									0.0133	0.0137	0.0137	0.0214	0.0201	0.0238	0.0233	0.0236	0.01200	0.01800	0.01900	<0.010	<0.010	<0.010	0.00543	0.00754	0.00704	0.00740	0.00732	0.00747
Copper D-Cu									<0.0010	<0.0010	<0.0010	<0.0010	<0.00060	<0.0010	<0.0010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.00146	0.00149	0.00133	0.00137	0.00127	0.00125
Iron D-Fe									<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Lead D-Pb									0.00029	0.00032	0.00035	0.00053	<0.00010	<0.00010	<0.00010	0.00029	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.00142	0.00075	0.00046	0.00046	0.00022	0.00016
Lithium D-Li									0.021	0.021	0.021	0.023	0.023	0.023	0.022	0.023	0.017	0.024	0.022	0.023	0.021	0.021	0.018	0.026	0.024	0.025	0.024	0.024
Magnesium D-Mg									61.1	60.0	59.9	65.5	70.2	68.0	65.6	61.2	49.5	68.3	68.1	66.9	70.2	66.7	53.0	71.1	71.1	72.1	71.1	74.4
Manganese D-Mn									0.196	0.197	0.200	0.469	0.544	0.555	0.560	0.580	0.2520	0.3810	0.385	<0.0050	<0.0050	0.043	0.1030	0.154	0.148	0.159	0.156	0.159
Molybdenum D-Mo									0.00337	0.00350	0.00356	0.00325	0.00351	0.00333	0.00325	0.00328	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	0.00205	0.00284	0.00291	0.00302	0.00295	0.00305
Nickel D-Ni									0.111	0.115	0.116	0.187	0.157	0.214	0.209	0.213	0.107	0.162	0.167	0.206	0.218	0.202	0.134	0.193	0.184	0.192	0.187	0.188
Phosphorus D-P									<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium D-K									2.2	<2.0	2.1	2.5	2.6	2.5	2.4	2.2	2.6	3.0	3.0	3.1	3.1	3.1	2.1	2.8	2.8	2.8	2.8	2.9
Selenium D-Se									<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon D-Si									2.30	2.23	2.25	2.86	3.07	2.94	2.84	2.65	4.20	3.13	3.08	2.88	3.03	2.90	2.32	3.08	3.08	3.13	3.09	3.22
Silver D-Ag									<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Sodium D-Na									8.5	8.0	8.2	9.7	10.9	10.5	10.2	9.2	10.5	10.9	10.3	10.5	10.1	10.2	7.9	10.8	10.6	10.8	10.8	11.1
Strontium D-Sr									0.604	0.615	0.624	0.754	0.840	0.799	0.790	0.812	0.592	0.680	0.659	0.736	0.738	0.738	0.573	0.812	0.836	0.886	0.843	0.856
Thallium D-Tl									0.00113	0.00111	0.00117	0.00109	0.00105	0.00111	0.00112	0.00114	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.00073	0.00096	0.00093	0.00094	0.00095	0.00097
Tin D-Sn									<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Titanium D-Ti									<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium D-U									0.00395	0.00397	0.00392	0.00420	0.00144	0.00931	0.00916	0.00915							0.00652	0.00883	0.00890	0.0091	0.0089	0.0091
Vanadium D-V									<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.030	0.033	<0.030	0.037	0.034	<0.030	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Zinc D-Zn									1.18	1.19	1.24	6.44	2.07	9.28	9.17	9.29	3.420	5.61	5.74	9.36	9.77	9.02	5.5800	8.34	07.9	8.29	8.11	8.32
Organic Parameters																												
Chlorophyll a (a,b)	0.639	1.01		0.847	2.64	3.06	3.91		0.136	0.0006	0.240	0.152	0.0416	0.0335			10.4	00.7	0.24	0.04	0.024	<0.010	-	-	-	-	-	-

Grum Pit - 2005 -2008 Monitoring Results
RESULTS OF ANALYSIS

Depth (m)	1	3	5	15	30	40	1	3	5	15	30	40
Sample ID	GL_1 (Grum@ 1m)	GL_3 (Grum@ 3m)	GL_5 (Grum@ 5m)	GL_15 (Grum@ 15m)	GL_30 (Grum@ 30m)	GL_40 (Grum@ 40m)	GL_1 (GRUM@ 1m)	GL_3 (GRUM@ 3m)	GL_5 (GRUM@ 5m)	GL_15 (GRUM@ 15m)	GL_30 (GRUM@ 30m)	GL_40 (GRUM@ 40m)
Date Sampled	12-Jul-06	12-Jul-06	12-Jul-06	12-Jul-06	12-Jul-06	12-Jul-06	09-Aug-06	09-Aug-06	09-Aug-06	09-Aug-06	09-Aug-06	09-Aug-06
Time Sampled	13:15	13:45	14:00	14:30	14:45	15:10	10:00	10:20	10:40	10:55	11:10	11:30
ALS Sample ID	1	2	3	4	5	6	1	2	3	4	5	6
Nature	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Physical Tests												
Hardness (as CaCO3)												
Conductivity (uS/cm)	820	0920	1030	1030	1040	1030	892	938	1070	1060	1070	1070
ORP												
pH	8.00	8.06	7.91	7.90	7.91	7.89	7.91	8.05	7.51	7.54	7.61	7.66
Total Suspended Solids	6.4	8.4	3.8	<3.0	<3.0	3.8	3.7	6.3	<3.0	<3.0	<3.0	3.0
Dissolved Anions												
Alkalinity-Total CaCO3	107	151	176	169	176	179	128	140	176	171	174	175
Sulphate SO4	369	391	434	435	435	436	375	389	433	434	434	434
Chloride (Cl)												
Fluoride (F)												
Bromide (Br)												
Nutrients												
Ammonia Nitrogen N	0.56	0.337	0.089	0.02	0.0213	0.0193	0.0570	0.037	0.028	0.05	0.055	0.058
Nitrate Nitrogen N							0.68	0.76	1.24	1.32	1.28	1.26
Nitrite Nitrogen N							0.0052	0.0044	0.0022	0.0026	0.0048	0.0052
Nitrite/Nitrate Nitrogen N	0.179	0.86	1.33	1.44	1.44	1.43	0.681	0.767	1.24	1.32	1.28	1.26
Dissolved ortho-Phosphate P	0.0095	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0017	<0.0010	<0.0010	0.0013	0.0013	<0.0010
Total Phosphate P	0.0461	0.0252	0.0164	0.0034	0.0032	0.0033	0.0623	0.0490	0.0172	0.0076	0.0089	0.0080
Total Metals												
Aluminum T-Al	0.0426	0.0314	0.0179	0.0232	0.0214	0.0403	0.0052	0.0042	<0.0020	0.007	0.0182	0.0185
Antimony T-Sb	0.00439	0.00471	0.00605	0.00588	0.00599	0.00606	0.00521	0.00551	0.00683	0.00681	0.00655	0.00661
Arsenic T-As	0.00086	0.00059	0.00080	0.00107	0.00110	0.00163	0.00077	0.00069	0.00069	0.00099	0.00157	0.00137
Barium T-Ba	0.0277	0.0408	0.0497	0.0470	0.0472	0.0476	0.037	0.040	0.051	0.048	0.047	0.047
Beryllium T-Be	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Bismuth T-Bi	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron T-B	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium T-Cd	0.00090	0.00300	0.00494	0.00432	0.00448	0.00457	0.00055	0.00098	0.00224	0.00464	0.00436	0.00437
Calcium T-Ca	88.5	110	123	121	121	115	102.0	105	126	124	127	122
Chromium T-Cr	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt T-Co	0.00525	0.00647	0.00814	0.00771	0.00783	0.00823	0.006	0.006	0.009	0.00864	0.00857	0.00868
Copper T-Cu	0.00109	0.00086	0.00093	0.00102	0.00126	0.00118	0.00086	0.00065	0.001	0.00086	0.00098	0.00086
Iron T-Fe	0.063	0.048	0.047	0.071	0.065	0.128	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Lead T-Pb	0.00075	0.00089	0.00103	0.00114	0.00105	0.00109	0.00066	0.00061	0.00059	0.00042	0.00082	0.00056
Lithium T-Li	0.021	0.021	0.025	0.026	0.025	0.025	0.023	0.026	0.027	0.028	0.028	0.027
Magnesium T-Mg	61.9	67.0	72.5	71.1	70.9	67.2	65.2	65.3	72.5	72.1	73.6	70.8
Manganese T-Mn	0.088	0.125	0.181	0.170	0.173	0.186	0.069	0.095	0.199	0.1820	0.2240	0.2330
Molybdenum T-Mo	0.00256	0.00262	0.00286	0.00284	0.00285	0.00280	0.00307	0.00312	0.00301	0.0031	0.00299	0.0033
Nickel T-Ni	0.123	0.151	0.205	0.194	0.197	0.202	0.123	0.141	0.215	0.210	0.195	0.200
Phosphorus T-P	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium T-K	2.2	2.3	2.7	2.6	2.6	2.5	2.5	2.5	2.8	2.8	2.9	2.8
Selenium T-Se	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon T-Si	2.16	2.52	3.15	2.93	2.94	2.81	2.48	2.52	3.05	3.02	3.11	3.01
Silver T-Ag	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Sodium T-Na	8.8	09.3	10.5	10.0	09.8	09.5	09.7	10.0	10.9	11.2	11.2	10.9
Strontium T-Sr	0.590	0.749	0.882	0.847	0.858	0.870	0.659	0.700	0.850	0.917	0.872	0.872
Thallium T-Tl	0.00084	0.00095	0.00107	0.00099	0.00100	0.00105	0.00095	0.00102	0.00113	0.00109	0.0011	0.00111
Tin T-Sn	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Titanium T-Ti	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium T-U	0.00317	0.00271	0.00667	0.01050	0.01040	0.01070	0.00383	0.00354	0.00808	0.011	0.0106	0.0104
Vanadium T-V	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Zinc T-Zn	0.27	2.77	10.50	8.95	9.16	9.27	0.74	1.85	9.97	9.30	8.75	8.83
Dissolved Metals												
Aluminum D-Al	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0025	0.0024	<0.0020	<0.0020	<0.0020	<0.0020
Antimony D-Sb	0.00440	0.00449	0.00599	0.00581	0.00583	0.00584	0.00501	0.0052	0.00649	0.00637	0.00632	0.00648
Arsenic D-As	0.00054	0.00039	0.00059	0.00068	0.00073	0.00091	0.0007	0.00056	0.00051	0.00076	0.00072	0.00072
Barium D-Ba	0.0261	0.0376	0.0479	0.0452	0.0460	0.0453	0.036	0.038	0.048	0.045	0.045	0.043
Beryllium D-Be	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Bismuth D-Bi	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron D-B	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium D-Cd	0.00013	0.00158	0.00445	0.00426	0.00424	0.00428	0.00028	0.00067	0.00176	0.00433	0.00431	0.00421
Calcium D-Ca	88.6	104	121	122	122	116	97.0	101	119	121	119	116
Chromium D-Cr	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt D-Co	0.00471	0.00601	0.00805	0.00756	0.00776	0.00809	0.005	0.006	0.008	0.00809	0.00835	0.00843
Copper D-Cu	0.00031	0.00034	0.00068	0.00069	0.00074	0.00072	0.00079	0.00058	0.00052	0.00075	0.00075	0.00071
Iron D-Fe	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Lead D-Pb	<0.00010	0.00035	0.00034	0.00025	0.00028	<0.00010	0.00037	0.00036	0.00037	0.0002	0.00011	<0.00010
Lithium D-Li	0.020	0.020	0.024	0.024	0.024	0.024	0.023	0.024	0.027	0.026	0.027	0.027
Magnesium D-Mg	62.2	64.0	71.4	71.3	70.8	68.1	61.3	62.8	68.7	69.3	68.0	67.4
Manganese D-Mn	0.074	0.113	0.177	0.167	0.171	0.181	0.061	0.084	0.189	0.173	0.194	0.2260
Molybdenum D-Mo	0.00271	0.00260	0.00293	0.00274	0.00292	0.00284	0.00301	0.00293	0.00284	0.00299	0.00293	0.00333
Nickel D-Ni	0.111	0.139	0.201	0.192	0.197	0.196	0.116	0.131	0.203	0.197	0.193	0.196
Phosphorus D-P	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium D-K	2.2	2.2	2.6	2.7	2.7	2.5	2.3	2.5	2.6	2.7	2.6	2.7
Selenium D-Se	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon D-Si	2.09	2.28	3.07	2.91	2.90	2.79	2.24	2.36	3.07	3.01	2.95	2.92
Silver D-Ag	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Sodium D-Na	8.9	08.8	10.2	10.3	10.1	09.9	09.1	09.7	10.4	10.7	10.3	10.4
Strontium D-Sr	0.579	0.661	0.871	0.832	0.854	0.845	0.638	0.668	0.797	0.863	0.857	0.873
Thallium D-Tl	0.00081	0.00083	0.00103	0.00097	0.00100	0.00101	0.00095	0.001	0.00108	0.00102	0.00106	0.0011
Tin D-Sn	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Titanium D-Ti	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium D-U	0.00305	0.00273	0.00653	0.01010	0.01030	0.01010	0.00352	0.00353	0.00643	0.0104	0.0103	0.0102
Vanadium D-V	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Zinc D-Zn	0.06	1.75	10.30	8.87	9.17	8.96	0.34	1.08	9.41	8.60	8.50	8.56
Organic Parameters												
Chlorophyll a (a,b)	-	-	-	-	-	-	10.1	12.800	8.500	1.100	-	-

Depth (m)	0.1	1	3	5	15	30	40	1	5	15	40	1	3	5	15	30	40
Sample ID	GRUM_ SURFACE	GL_1 (GRUM @1m)	GL_3 (GRUM @3m)	GL_5 (GRUM @5m)	GL_15 (GRUM @15m)	GL_30 (GRUM @30m)	GL_40 (GRUM @40m)	GL-1 GRUM @1M	G-5 GRUM @5M	G-15 GRUM @15M	G-40 GRUM @40M	GPL-1M	GPL-3M	GPL-5M	GPL-15M	GPL-30M	GPL-40M
Date Sampled	15-Sep-06	15-Sep-06	15-Sep-06	15-Sep-06	15-Sep-06	15-Sep-06	15-Sep-06	26-Mar-07	26-Mar-07	26-Mar-07	26-Mar-07	12-Jun-07	12-Jun-07	12-Jun-07	12-Jun-07	12-Jun-07	12-Jun-07
Time Sampled	10:10	10:15	10:20	10:30	10:47	10:59	11:15	10:40	12:30	12:40	13:05	14:15	14:30	14:40	14:55	15:00	15:20
ALS Sample ID	13	1	2	3	4	5	6	L491616-1	L491616-2	L491616-3	L491616-4	L518525-7	L518525-8	L518525-9	L518525-10	L518525-11	L518525-12
Nature	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Physical Tests																	
Hardness (as CaCO3)												558	673	645	654	648	645
Conductivity (uS/cm)	914	912	913	924	1030	1040	1040	964	1020	1080	1100	839	976	978	981	993	993
ORP												50	70	80	90	90	90
pH	7.97	7.90	8.08	8.09	7.90	7.90	7.91	8.01	8.09	8.02	8.05	8.1	8.07	8.03	8	7.96	7.95
Total Suspended Solids	<3.0	4.8	4.6	5.2	<3.0	3.9	3.9	7.9	<3.0	<3.0	<3.0	8	5.3	6	4	4.7	5.3
Dissolved Anions																	
Alkalinity-Total CaCO3	144	146	145	146	174	174	171										
Sulphate SO4	377	384	384	386	430	431	431	367	408	438	444	356	421	422	423	424	423
Chloride (Cl)								<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Fluoride (F)																	
Bromide (Br)								<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Nutrients																	
Ammonia Nitrogen N	0.0713	0.0753	0.0700	0.0720	0.0780	0.0913	0.0893					0.035	0.043	<0.020	<0.020	<0.020	0.022
Nitrate Nitrogen N												0.987	1.09	1.21	1.29	1.31	1.28
Nitrite Nitrogen N												0.0057	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Nitrite/Nitrate Nitrogen N	0.783	0.824	0.823	0.849	1.30	1.24	1.24					0.993	1.09	1.21	1.29	1.31	1.28
Dissolved ortho-Phosphate P	<0.0010	<0.0010	<0.0010	<0.0010	0.0014	<0.0010	<0.0010					<0.0010	<0.0010	<0.0010	0.0011	<0.0010	<0.0010
Total Phosphate P	0.0125	2.13	0.0129	0.0137	0.0071	0.0045	0.0033					0.0058	0.0074	0.0076	0.0045	0.0121	0.0057
Total Metals																	
Aluminum T-Al	0.0771	0.0793	0.0766	0.0900	0.0227	0.0456	0.0444	<0.20	<0.20	<0.20	<0.20	0.0776	0.063	0.0503	0.0493	0.102	0.0929
Antimony T-Sb	0.00476	0.00489	0.00501	0.00506	0.00633	0.00609	0.00618	<0.20	<0.20	<0.20	<0.20	0.00415	0.00499	0.00506	0.00497	0.00505	0.00494
Arsenic T-As	0.00108	0.00109	0.00106	0.00110	0.00132	0.00178	0.00176	<0.20	<0.20	<0.20	<0.20	0.00076	0.00078	0.00076	0.00076	0.00081	0.00095
Barium T-Ba	0.0416	0.0424	0.0425	0.0435	0.0490	0.0479	0.0480	0.059	0.047	0.044	0.041	0.0406	0.0464	0.0471	0.0471	0.048	0.0484
Beryllium T-Be	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0050	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Bismuth T-Bi	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.20	<0.20	<0.20	<0.20	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron T-B	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.10	<0.10	<0.10	<0.10	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium T-Cd	0.00103	0.00098	0.00099	0.00102	0.00441	0.00417	0.00433	<0.010	<0.010	<0.010	<0.010	0.00251	0.00298	0.00292	0.00294	0.00293	0.00289
Calcium T-Ca	114	110	110	111	124	125	125	115	125	131	134	107	127	140	132	141	125
Chromium T-Cr	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt T-Co	0.00679	0.00663	0.00673	0.00692	0.00863	0.00912	0.00908	<0.010	<0.010	<0.010	<0.010	0.00413	0.00401	0.00391	0.00396	0.00404	0.00413
Copper T-Cu	0.00147	0.00198	0.00177	0.00185	0.00121	0.00115	0.00119	<0.010	<0.010	<0.010	<0.010	0.00198	0.00151	0.00101	0.00095	0.00108	0.00104
Iron T-Fe	0.161	0.148	0.143	0.145	0.080	0.176	0.156	0.19	0.07	0.051	0.128	0.137	0.112	0.099	0.088	0.128	0.159
Lead T-Pb	0.00239	0.00256	0.00239	0.00239	0.00115	0.00106	0.00104	<0.050	<0.050	<0.050	<0.050	0.00236	0.00179	0.00117	0.00097	0.00103	0.00119
Lithium T-Li	0.023	0.023	0.023	0.024	0.026	0.026	0.026	0.019	0.023	0.023	0.024	0.021	0.025	0.026	0.025	0.026	0.025
Magnesium T-Mg	69.1	67.2	67.1	68.2	72.5	72.6	72.3	61	69.6	70.5	73.2	61.4	72	79.1	75.9	80.1	71.1
Manganese T-Mn	0.122	0.120	0.117	0.127	0.212	0.256	0.254	0.152	0.149	0.0287	0.0457	0.0931	0.1	0.102	0.102	0.107	0.108
Molybdenum T-Mo	0.00276	0.00286	0.00280	0.00288	0.00285	0.00276	0.00290	<0.030	<0.030	<0.030	<0.030	0.00216	0.00256	0.0026	0.00254	0.00252	0.00254
Nickel T-Ni	0.146	0.146	0.144	0.151	0.209	0.202	0.205	0.133	0.159	0.192	0.195	0.152	0.176	0.176	0.178	0.177	0.178
Phosphorus T-P	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium T-K	3.3	3.2	3.2	3.3	3.5	3.5	3.4	3.1	3.4	3.5	3.5	2.3	2.9	3.1	2.9	3.1	2.7
Selenium T-Se	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.20	<0.20	<0.20	<0.20	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon T-Si	3.07	2.99	2.97	3.02	3.06	3.18	3.11	4.2	3.5	3.25	3.26	2.56	2.98	3.26	3.1	3.27	2.94
Silver T-Ag	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.010	<0.010	<0.010	<0.010	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Sodium T-Na	11.6	11.4	11.3	11.5	11.7	12.0	11.6	10.7	10.8	10.9	11	8	10.2	10.7	10.2	10.9	9.6
Strontium T-Sr	0.732	0.716	0.727	0.750	0.892	0.870	0.878	0.747	0.798	0.863	0.881	0.64	0.769	0.769	0.77	0.764	0.766
Thallium T-Tl	0.00103	0.00102	0.00103	0.00103	0.00110	0.00116	0.00117	<0.20	<0.20	<0.20	<0.20	0.00078	0.00091	0.00085	0.00084	0.00088	0.00087
Tin T-Sn	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.030	<0.030	<0.030	<0.030	0.00103	0.00024	0.00069	0.00058	0.00089	0.00089
Titanium T-Ti	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium T-U	0.00498	0.00489	0.00483	0.00527	0.0105	0.0104	0.0103					0.00834	0.0097	0.00981	0.00981	0.00976	0.00978
Vanadium T-V	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.030	<0.030	<0.030	<0.030	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Zinc T-Zn	4.19	4.07	4.09	4.55	9.55	9.24	9.42	4.97	5.94	9.14	9.41	6.1	7.39	7.28	7.36	7.48	7.45
Dissolved Metals																	
Aluminum D-Al	0.0200	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.20	<0.20	<0.20	<0.20	0.0034	<0.0030	0.0027	<0.0020	0.0139	0.0041
Antimony D-Sb	0.00490	0.00484	0.00480	0.00497	0.00614	0.00588	0.00606	<0.20	<0.20	<0.20	<0.20	0.00416	0.00513	0.00502	0.00516	0.00504	0.00501
Arsenic D-As	0.00097	0.00068	0.00065	0.00070	0.00081	0.00061	0.00065	<0.20	<0.20	<0.20	<0.20	0.0005	0.0006	0.00062	0.00063	0.00061	0.00069
Barium D-Ba	0.0460	0.0404	0.0401	0.0411	0.0476	0.0452	0.0472	0.061	0.046	0.043	0.04	0.0388	0.0457	0.0458	0.0464	0.047	0.0465
Beryllium D-Be	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0050	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Bismuth D-Bi	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.20	<0.20	<0.20	<0.20	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron D-B	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.10	<0.10	<0.10	<0.10	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium D-Cd	0.00091	0.00079	0.00084	0.00086	0.00411	0.00394	0.00399	<0.010	<0.010	<0.010	<0.010	0.00259	0.00293	0.00284	0.00294	0.00286	0.00289
Calcium D-Ca	110	109	107	109	120	124	122	110	125	128	135	115	139	133	135	134	133
Chromium D-Cr	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt D-Co	0.00645	0.00642	0.00636	0.00657	0.00837	0.00869	0.00893	<0.010	<0.010	<0.010	<0.010	0.004	0.00388	0.00391	0.00388	0.00399	0.00404
Copper D-Cu	0.00155	0.00143	0.00128	0.00138	0.00081	0.00075	0.00074	<0.010	<0.010	<0.010	<0.010	0.00125	0.00121	0.0008	0.00076	0.00079	0.00076
Iron D-Fe	0.121	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Lead D-Pb	0.00578	0.00095	0.00098	0.00097	0.00027	<0.00010	<0.00010	<0.050	<0.050	<0.050	<0.050	0.00093	0.00083	0.00049	0.00039	0.00036	0.00034
Lithium D-Li	0.023	0.022	0.022	0.023	0.025	0.023	0.025	0.019	0.021	0.024	0.024	0.021	0.026	0.025	0.025	0.025	0.026
Magnesium D-Mg	66.2	66.1	65.7	67.1	69.3	71.9	70.2	57.5	68.6	70.3	72.6	65.8	79.2	76.1	77	76	75.6
Manganese D-Mn	0.108	0.109	0.107	0.114	0.204	0.244	0.249	0.141	0.147	<0.0050	0.0184	0.088	0.0993	0.101	0.102	0.104	0.106
Molybdenum D-Mo	0.00278	0.00307	0.00284	0.00286	0.00299	0.00284	0.00297	<0.030	<0.030	<0.030	<0.030	0.00221	0.00271	0.00267	0.00278	0.00271	0.0026
Nickel D-Ni	0.140	0.141	0.140	0.144	0.201	0.196	0.197	0.122	0.156	0.189	0.196	0.15	0.18	0.175	0.18	0.177	0.176
Phosphorus D-P	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium D-K	3.2	3.1	3.2	3.2	3.4	3.5	3.4	2.9	3.3	3.4	3.6	2.5	3.1	2.9	3	2.9	2.9
Selenium D-Se	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.20	<0.20	<0.20	<0.20	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon D-Si	2.81	2.72	2.74	2.80	3.01	3.09	3.01	4.05	3.43	3.17	3.25	2.64	3.2	3.03	3.06	3.05	3.02
Silver D-Ag	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.010	<0.010	<0.010	<0.010	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Sodium D-Na	11.1	11.1	11.3	11.4	11.6	11.9	11.6	10.3	10.8	10.8	11	8.6	11	10.2	10.6	10.4	10.3
Strontium D-Sr	0.706	0.713	0.712	0.750	0.871	0.847	0.872	0.718	0.794	0.857	0.873	0.636	0.771	0.773	0.78	0.763	0.763
Thallium D-Tl	0.00101	0.00100	0.00100	0.00102	0.00107	0.00111	0.00116	<0.20	<0.20	<0.20	<0.20	0.00076	0.00092	0.00087	0.00086	0.00087	0.00085
Tin D-Sn	0.00264	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.030	<0.030	<0.030	<0.030	0.00037	0.00038	0.00045	0.00094	0.00093	0.00087
Titanium D-Ti	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium D-U	0.00478	0.00490	0.00484	0.00509	0.0102	0.0100	0.0103					0.0081	0.00984	0.00985	0.00982	0.00987	0.00967
Vanadium D-V	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.030	<0.030	<0.030	<0.030	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Zinc D-Zn	3.48	3.46	3.43	3.75	9.33	8.89	9.22	4.56	5.84	8.99	9.38	5.86	7.44	7.32	7.5	7.33	7.34
Organic Parameters																	
Chlorophyll a (a,b)	-	-	-	-	-	-	-					2.75	8.77	7.18	4.82	-	-

Grum Pit - 2005 -2008 Monitoring Results
RESULTS OF ANALYSIS

Depth (m)	1	3	5	15	30	40	0.1	1	3	5	15	30	40	0.1	1	3	5	15	30	40	1	3	5	15	30	40
Sample ID	GPL-1M	GPL-3M	GPL-5M	GPL-15M	GPL-30M	GPL-40M	GL-0.1	GL-1	GL-3	GL-5	GL-15	GL-30	GL-40	GL-0.1 GRUMLAKE NEAR SURFACE	GL-1 GRUMLAKE@ 1M	GL-3 GRUMLAKE@ 3M	GL-5 GRUMLAKE@ 5M	GL-15 GRUMLAKE@ 15M	GL-30 GRUMLAKE@ 30M	GL-40 GRUMLAKE@ 40M	GL-1	GL-3	GL-5	GL-15	GL-30	GL-40
Date Sampled	11-Jul-07	11-Jul-07	11-Jul-07	11-Jul-07	11-Jul-07	11-Jul-07	07-Aug-07	07-Aug-07	07-Aug-07	07-Aug-07	07-Aug-07	07-Aug-07	07-Aug-07	05-Sep-07	05-Sep-07	05-Sep-07	05-Sep-07	05-Sep-07	05-Sep-07	05-Sep-07	11-Jun-08	11-Jun-08	11-Jun-08	11-Jun-08	11-Jun-08	11-Jun-08
Time Sampled	13:05	13:15	13:35	13:48	14:05	14:15	09:15	09:30	09:50	10:30	11:00	11:30	12:00	10:00	10:20	10:30	10:45	11:00	11:30	12:00	F112779	F112779	F112779	F112779	F112779	F112779
ALS Sample ID	L529776-14	L529776-15	L529776-16	L529776-17	L529776-18	L529776-19	L540525-1	L540525-2	L540525-3	L540525-4	L540525-5	L540525-6	L540525-7	L551912-11	L551912-12	L551912-13	L551912-14	L551912-15	L551912-16	L551912-17	K23501	K23502	K23503	K23504	K23505	K23506
Nature	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water						
Physical Tests																										
Hardness (as CaCO3)	543	577	596	606	592	581	553	572	558	648	610	619	605	556	565	563	586	612	615	612	523	579	604	603	598	598
Conductivity (uS/cm)	900	953	1020	1030	1030	1030	943	944	943	1070	1070	1070	1070	976	969	967	1000	1070	1070	1070						
ORP	20	40	80	80	80	80	200	200	190	200	200	190	190	50	60	60	70	80	90	90						
pH	8.87	8.64	7.85	7.84	7.83	7.76	8.57	8.57	8.59	7.98	7.99	7.98	8	8.37	8.39	8.4	8.26	8.02	8.07	8.01	8	7.9	7.9	7.8	7.8	7.7
Total Suspended Solids	<3.0	5.7	<3.0	3	4.3	5	6.2	6.2	5.5	6.2	<3.0	4.9	6.2	<3.0	<3.0	<3.0	<3.0	3.8	<3.0	3.8	ND	ND	ND	ND	ND	ND
Dissolved Anions																										
Alkalinity-Total CaCO3																					140	160	170	170	170	180
Sulphate SO4	385	398	419	424	424	424	441	387	384	436	424	464	467	390	388	387	395	424	408	428	360	410	430	410	420	430
Chloride (Cl)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.4	0.8	0.9	0.9	1	0.9
Fluoride (F)							0.341	0.335	0.33	0.371	0.364	0.363	0.365													
Bromide (Br)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050						
Nutrients																										
Ammonia Nitrogen N	0.126	0.057	0.028	0.027	0.039	0.035	0.197	0.12	0.134	0.033	0.069	0.073	0.079	0.06	0.047	0.04	0.031	0.059	0.072	0.072	ND	ND	ND	ND	ND	ND
Nitrate Nitrogen N	0.594	0.529	1.13	1.24	1.23	<0.0050	0.939	0.886	0.884	1.23	1.23	1.24	1.26	0.91	0.9	0.897	0.957	1.24	1.17	1.21	0.98	1.08	1.8	1.14	1.17	1.17
Nitrite Nitrogen N	0.0011	<0.0010	0.0015	0.0021	0.0025	<0.0010	0.0073	0.0079	0.0079	0.0054	0.0059	0.006	0.008	0.0087	0.0081	0.0087	0.0073	0.0057	0.006	0.0057	0.008	ND	ND	ND	ND	ND
Nitrite/Nitrate Nitrogen N	0.595	0.529	1.13	1.24	1.23	<0.0050															0.99	1.08	1.8	1.14	1.17	1.17
Dissolved ortho-Phosphate P	0.0025	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.007	0.0058	0.0041	<0.0010	0.0013	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	ND	ND	ND	ND	ND	ND
Total Phosphate P	0.029	0.0212	0.0156	0.0073	0.0082	0.0087	0.0331	0.0322	0.0298	0.016	0.0081	0.0094	0.0107	0.0121	0.0107	0.0105	0.0101	0.0059	0.0069	0.0068	0.007	0.006	0.005	0.005	0.007	0.007
Total Metals																										
Aluminum T-Al	0.0272	0.0354	0.0281	0.0429	0.0594	0.0814	0.0752	0.085	0.0974	0.0494	0.0521	0.0571	0.0497	0.0279	0.0183	0.0284	0.0282	0.0377	0.0681	0.0446	0.0612	0.067	0.0475	0.0397	0.0542	0.0679
Antimony T-Sb	0.00386	0.00416	0.00464	0.00484	0.00488	0.00481	0.00375	0.00392	0.00379	0.00482	0.00483	0.00467	0.00474	0.00413	0.00403	0.00426	0.0045	0.0049	0.00493	0.00483	0.00359	0.00406	0.00427	0.00423	0.00426	0.00422
Arsenic T-As	0.00048	0.00051	0.00076	0.0008	0.001	0.00106	0.001	0.00099	0.00096	0.00092	0.00092	0.00119	0.00129	0.00086	0.00081	0.00087	0.00085	0.00102	0.00156	0.00164	0.00068	0.00074	0.00067	0.0007	0.0008	0.00084
Barium T-Ba	0.0424	0.0455	0.0458	0.0465	0.0468	0.048	0.0372	0.0381	0.038	0.048	0.0466	0.0467	0.047	0.0417	0.0410	0.0427	0.0446	0.0469	0.0479	0.0478	0.0414	0.0456	0.0477	0.0477	0.0483	0.0487
Beryllium T-Be	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	ND	ND	ND	ND	ND	ND
Bismuth T-Bi	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	ND	ND	ND	ND	ND	ND
Boron T-B	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	ND	ND	ND	ND	ND	ND
Cadmium T-Cd	0.00127	0.00216	0.0027	0.00282	0.00277	0.00275	0.00078	0.00074	0.00075	0.0025	0.00257	0.00251	0.00243	0.00104	0.00101	0.00113	0.00142	0.00243	0.00255	0.00258	0.00193	0.00216	0.00225	0.00221	0.00227	0.00224
Calcium T-Ca	112	115	124	124	123	118	118	120	120	129	138	134	133	113	112	114	119	127	127	126	112	124	129	130	130	130
Chromium T-Cr	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	ND	ND	ND	ND	ND	ND
Cobalt T-Co	0.00378	0.00401	0.00417	0.00414	0.00435	0.00456	0.00364	0.00382	0.00364	0.00467	0.00443	0.00505	0.00501	0.00409	0.00416	0.00428	0.00455	0.00483	0.00551	0.00569	0.00311	0.00305	0.00285	0.00303	0.00317	0.00314
Copper T-Cu	0.00091	0.00067	0.00091	0.00079	0.00084	0.00092	0.00149	0.00187	0.00156	0.00086	0.00069	0.00077	0.00078	0.00135	0.00164	0.00142	0.00129	0.00068	0.00079	0.0008	0.0022	0.00201	0.0017	0.00166	0.00169	0.00162
Iron T-Fe	0.043	0.036	0.063	0.083	0.133	0.128	0.122	0.127	0.14	0.084	0.098	0.15	0.155	0.056	0.045	0.057	0.055	0.091	0.2	0.185	0.111	0.129	0.09	0.077	0.114	0.129
Lead T-Pb	0.001	0.00109	0.00108	0.00098	0.00137	0.00132	0.00152	0.00163	0.00148	0.00162	0.00109	0.00125	0.00126	0.00142	0.00145	0.00149	0.00155	0.00105	0.00122	0.00133	0.00203	0.00208	0.00118	0.00101	0.00156	0.00137
Lithium T-Li	0.022	0.023	0.023	0.025	0.025	0.025	0.022	0.022	0.022	0.025	0.025	0.025	0.025	0.023	0.023	0.024	0.024	0.024	0.025	0.026	0.0216	0.0245	0.0261	0.0261	0.0254	0.0261
Magnesium T-Mg	66.8	69.5	72	73.5	70.9	70.2	64.5	65.7	64.2	76.6	68.6	68.1	66.8	68.5	68.6	70.3	71.8	73.3	74.3	71.8	59.2	65.2	68.2	68	66.5	66.5
Manganese T-Mn	0.0619	0.0911	0.11	0.115	0.124	0.127	0.0547	0.0625	0.0564	0.135	0.129	0.154	0.155	0.0719	0.0694	0.0702	0.101	0.151	0.184	0.19	0.0646	0.0713	0.0714	0.0752	0.0791	0.0811
Molybdenum T-Mo	0.00242	0.00257	0.00261	0.00257	0.00257	0.00253	0.00238	0.00243	0.00246	0.00257	0.00254	0.00262	0.00255	0.00257	0.00268	0.00254	0.00261	0.00244	0.00257	0.00246	0.00212	0.00237	0.00247	0.00254	0.0025	0.00249
Nickel T-Ni	0.117	0.146	0.174	0.178	0.181	0.183	0.101	0.105	0.103	0.188	0.18	0.182	0.179	0.117	0.117	0.119	0.145	0.181	0.185	0.184	0.139	0.159	0.164	0.166	0.165	0.165
Phosphorus T-P	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	0	0	0	0	0	0
Potassium T-K	2.4	2.6	2.7	2.7	2.7	2.6	2.6	2.7	2.6	3.3	2.9	2.9	2.9	3	3	3.1	3.2	3.4	3.4	3.2	2.81	3.17	3.26	3.32	3.27	3.29
Selenium T-Se	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.00099	0.00114	0.00119	0.00117	0.00116	0.00111
Silicon T-Si	2.45	2.62	3.07	3.06	3.04	2.94	2.62	2.64	2.68	3.12	3.07	2.98	2.97	2.88	2.86	2.94	3.08	3.26	3.31	3.17	2.76	3.28	3.46	3.37	3.36	3.34
Silver T-Ag	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	0.000008	0.000008	0.000006	0.000005	0.000007	ND
Sodium T-Na	8.7	9.2	9.7	9.9	9.6	9.5	9.4	9.7	9.6	10.8	10.4	10.5	10.4	9.9	10	10.3	10.4	11	11.1	10.4	8.45	9.57	10.1	10.1	9.93	9.73
Strontium T-Sr	0.682	0.743	0.76	0.771	0.775	0.781	0.609	0.618	0.625	0.778	0.771	0.777	0.782	0.636	0.634	0.647	0.683	0.713	0.728	0.734	0.655	0.74	0.782	0.793	0.791	0.779
Thallium T-Tl	0.00081	0.00085	0.00088	0.00088	0.00088	0.00091	0.00086	0.00089	0.00087	0.00094	0.00092	0.00089	0.0009	0.00094	0.00094	0.00097	0.00095	0.00088	0.00094	0.00096	0.000731	0.000804	0.000804	0.000817	0.000827	0.000827
Tin T-Sn	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00003	0.00002	0.00001	0.00001	0.00002	ND
Titanium T-Ti	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.0033	0.0033	0.0023	0.0019	0.0025	0.003
Uranium T-U	0.00411	0.00302	0.00954	0.0106	0.0106	0.0107	0.00384	0.00392	0.00385	0.0105	0.0107	0.0107	0.0106	0.00423	0.00417	0.00425	0.00498	0.0104	0.0107	0.0107	0.00911	0.0102	0.0106	0.0106	0.0106	0.0106
Vanadium T-V	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	ND	ND	ND	ND	ND	ND
Zinc T-Zn	0.401	1.51	7.7	8.07	8.26	8.34	0.602	0.643	0.639	9.91	8.58	8.26	8.15	1.96	1.92	2	4.58	7.62	7.91	7.64	5.89	6.7	7.01	7.08	7.04	7.09
Dissolved Metals																										
Aluminum D-Al	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0046	0.0034	0.0039	0.0035	0.0033	0.0438	0.0038	0.0042	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0031	0.0012	0.0009	0.0007	0.0007	0.0109
Antimony D-Sb	0.00387	0.00418	0.00472	0.00478	0.00487	0.00484	0.00392	0.00393	0.00327	0.00477	0.00464	0.00474	0.00466	0.00399	0.00423	0.00418	0.00443	0.00476	0.00492	0.00492	0.00366	0.00418	0.00445	0.0044	0.00445	0.00432
Arsenic D-As	0.00039	0.00039	0.0006	0.00062	0.00063	0.00064	0.00061	0.00066	0.00053	0.00052	0.00058	0.00053	0.00057	0.00059	0.00061	0.00065	0.00059	0.00059	0.00049	0.00052	0.00042	0.00046	0.00045	0.00044	0.00046	0.00048
Barium D-Ba	0.0418	0.0451	0.0453	0.0455	0.0454	0.0462	0.0364	0.0364	0.0306	0.0467	0.0444	0.0473	0.0457	0.0404	0.0416	0.0418	0.0443	0.0459	0.0469	0.0468	0.0425	0.0474	0.051	0.0506	0.0507	0.0493
Beryllium D-Be	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	ND	ND	ND	ND	ND	ND
Bismuth D-Bi	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	ND	ND	ND	ND	ND	ND
Boron D-B	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	ND	ND	ND	ND	ND	ND
Cadmium D-Cd	0.00034	0.00152	0.0023	0.00275	0.00262	0.00278	0.00051	0.00054	0.00035	0.00236	0.00248	0.00245	0.00227	0.00097	0.00102	0.00108	0.00135	0.00248	0.00256	0.00247	0.00196	0.00216	0.00222	0.00228	0.00229	0.00227
Calcium D-Ca	110	115	122	124	121	118	117	121	118	131	134	136	132	111	113	112	118	125	126	126	98.2	111	115	114	115	112
Chromium D-Cr	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	ND	ND	ND	ND	ND	ND
Cobalt D-Co	0.00366	0.00398	0.00409	0.00413	0.00429	0.00435	0.0033	0.00346	0.0028	0.0045	0.00438	0.00505	0.00496	0.00397	0.00406	0.004	0.0044	0.00486	0.00557	0.00557	0.00292	0.00294	0.0027	0.00277	0.00291	0.00283
Copper D-Cu	0.00037	0.00026	0.00047	0.00047	0.00044	0.00047	0.00093	0.00115	0.00076	0.00046	0.00041	0.00039	0.0004	0.00104	0.00122	0.00104	0.00096	0.00038	0.0004	0.00043	0.00151	0.00151	0.00135	0.00133	0.00128	0.0012
Iron D-Fe	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	0.005	0.002	0.003	0.002	0.002	0.003
Lead D-Pb	0.00042	0.00034	0.00045	0.0003	0.00015	0.00015	0.00038	0.0004	0.00031	0.00049	0.00019	0.00012	<0.00010	0.00071	0.0007	0.00074	0.00072	0.00012	<0.00010	<0.00010	0.000971	0.00075	0.000549	0.000359	0.000381	0.000307
Lithium D-Li	0.021	0.024	0.024	0.025	0.024	0.025	0.022	0.022	0.019	0.025	0.024	0.025	0.025	0.022	0.022	0.023	0.024	0.025	0.026	0.025	0.0192	0.0218	0.0243	0.0233	0.0232	0.0227
Magnesium D-Mg	65.1	70.4	71	72	70.6	69.2	63.2	65.6	64	77.7	66.6	67.6	66.7	67.7	69	69	70.6	72.7	72.8	72.5	54.2	59.4	62.6	61.7	61.5	60.5
Manganese D-Mn	0.0526	0.0891	0.108	0.115	0.122	0.125	0.0355	0.0417	0.0296	0.128	0.127	0.163	0.155	0.0623	0.0629	0.0639	0.0932	0.15	0.181	0.188	0.0571	0.0642	0.0654	0.0686	0.0721	0.0722
Molybdenum D-Mo	0.00246	0.00267	0.00253	0.00257	0.00255	0.00257	0.00251	0.00268	0.00216	0.00261	0.00254	0.0026	0.00251	0.00261	0.00275	0.00258	0.00261	0.00244	0.00263	0.00263	0.00224	0.00248	0.00269	0.00267	0.0027	0.00256
Nickel D-Ni	0.114	0.146	0.174	0.18	0.178	0.182	0.0933	0.0952	0.0783	0.185	0.178	0.184	0.183	0.111	0.116	0.116	0.144	0.181	0.186	0.186	0.132	0.151	0.156	0.157	0.158	0.154
Phosphorus D-P	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	0	0	0	0	0	0
Potassium D-K	2.4	2.5	2.7	2.7	2.7	2.6	2.6	2.6	2.6	3.4	2.8	2.8	2.7	3	3.1	3	3.1	3.3	3.3	3.2	2.56	2.87	2.98	2.99	2.98	2.91
Selenium D-Se	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.00091	0.001	0.00111	0.00104	0.00103	0.00106
Silicon D-Si	2.36	2.63	2.96	2.99	2.91	2.88	2.47	2.55	2.49	3.11	2.91	2.97	2.88	2.81	2.83	2.82	2.99	3.13	3.14	3.14	2.44	2.81	2.83	2.81	2.73	2.9
Silver D-Ag	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	ND	ND	ND	ND	ND	ND
Sodium D-Na	8.6	9.3	9.7	9.9	9.6	9.3	9.3	9.5	9.6	11.1	10.2	10.4	10.3	10	10.2	10.1	10.3	10.7	10.7	10.7	8.08	9.17	11	9.59	9.76	9.62
Strontium D-Sr	0.677	0.748	0.756	0.775	0.761	0.776	0.621	0.626	0.524	0.774	0.755	0.783	0.78	0.625	0.644	0.641	0.686	0.713	0.739	0.738	0.652	0.738	0.776	0.755	0.767	0.745
Thallium D-Tl	0.00082	0.00083	0.00088	0.00088	0.00085	0.00089	0.00088	0.00088	0.00072	0.00091	0.00087	0.0009	0.00089	0.00092	0.00095	0.00091	0.00096	0.00087	0.00092	0.00095	0.000744	0.000822	0.000848	0.000834	0.000869	0.00084
Tin D-Sn	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00004	0.00002	0.00002	0.00002	0.00001	ND
Titanium D-Ti	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	ND	ND	ND	ND	ND	ND
Uranium D-U	0.00405	0.00286	0.00935	0.0107	0.0104	0.0105	0.00382	0.0038	0.00321	0.00856	0.0103	0.0109	0.0108	0.00415	0.00427	0.00422	0.0049	0.0103	0.0107	0.0108	0.0092	0.0104	0.0111	0.0109	0.0111	0.0107
Vanadium D-V	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	ND	ND	ND	ND	ND	ND
Zinc D-Zn	0.2	1.4	7.67	8.12	8.16	8.24	0.442	0.458	0.362	9.67	8.44	8.88	8.49	1.82	1.86	1.87	4.38	7.66	7.91	7.92	5.72	6.63	6.81	6.89	6.88	6.71
Organic Parameters																										
Chlorophyll a (a,b)	1.65	7.56	6.71	2.56	2.49	1.9	0.72	1.61	0.913	3.11	0.73	-	-	-	0.0416	0.028	0.831	0.0344	-	-						

Grum Pit - 2005 -2008 Monitoring Results
RESULTS OF ANALYSIS

Depth (m)	1	3	5	15	30	40	1	3	5	15	30	40	1	3	5	15	30	40	1	3	5	15	30	40
Sample ID	GL-1	GL-3	GL-5	GL-15	GL-30	GL-40	GL-1	GL-3	GL-5	GL-15	GL-30	GL-40	GL-1	GL-3	GL-5	GL-15	GL-30	GL-40	GL-1 GRUM PIT LAKE AT 1M	GL-3 GRUM PIT LAKE AT 3M	GL-5 GRUM PIT LAKE AT 5M	GL-15 GRUM PIT LAKE AT 15M	GL-30 GRUM PIT LAKE AT 30M	GL-40 GRUM PIT LAKE AT 40M
Date Sampled	08-Jul-08	08-Jul-08	08-Jul-08	08-Jul-08	08-Jul-08	08-Jul-08	05-Aug-08	05-Aug-08	05-Aug-08	05-Aug-08	05-Aug-08	05-Aug-08	03-Sep-08	03-Sep-08	03-Sep-08	03-Sep-08	03-Sep-08	03-Sep-08	29-Apr-09	29-Apr-09	29-Apr-09	29-Apr-09	29-Apr-09	29-Apr-09
Time Sampled													F112784	F112784	F112784	F112784	F112784	F112784						
ALS Sample ID	F113736	F113736	F113736	F113736	F113736	F113736	L05899	L05900	L05901	L05902	L05903	L05904	L47631	L47632	L47633	L47634	L47635	L47636	O65245	O65246	O65247	O65248	O65249	O65250
Nature																								
Physical Tests																								
Hardness (as CaCO3)	555	559	624	622	614	628	654	641	630	623	627	598	637	637	649	643	644	642	460	621	606	617	612	619
Conductivity (uS/cm)	990	980	1100	1100	1100	1100	1000	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	730	1100	1100	1100	1100	1100
ORP																								
pH	8.5	8.5	8	8.1	8.1	8.1	8.8	8	7.9	7.8	7.9	7.9	8	8	7.9	7.9	8	7.9	8.1	8	8	8.1	8.1	8.1
Total Suspended Solids	10	8	ND	ND	ND	4	150	4	2	2	2	12	2	2	3	3	8	23	1	<1	<1	5	43	68
Dissolved Anions																								
Alkalinity-Total CaCO3	150	150	170	170	170	170													180	170	170	170	170	170
Sulphate SO4	410	410	450	460	450	470	380	410	430	390	390	390	440	440	440	430	440	440	200	390	400	390	380	370
Chloride (Cl)	0.9	1	12	2.2	1.1	1.2	0.6	1	1.2	0.6	0.6	0.8	1.1	1	0.8	1.1	1	1.1						
Fluoride (F)	0.31	0.32	0.36	0.36	0.36	0.37																		
Bromide (Br)							0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.1	ND						
Nutrients													ND	ND	ND	0	0	0						
Ammonia Nitrogen N	0.019	0.015	0.006	0.02	0.01	0.007	ND	ND	ND	ND	ND	0.01	0.03	0.04	0.04	0.02	0.03	0.02	<0.005	<0.005	<0.005	<0.005	0.024	0.038
Nitrate Nitrogen N	0.61	0.75	1.09	1.12	1.12	1.11	0.64	0.99	1.03	1.26	1.04	1.26	1.12	1.04	1.09	1.07	1.07	1.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrite Nitrogen N	ND	ND	ND	ND	0.005	0.006	ND	0.005	0.005	0.005	ND	0.005	0.007	0.006	0.007	0.007	0.007	0.006	0.58	1.09	1.25	1.13	1.07	1.06
Nitrite/Nitrate Nitrogen N	0.61	0.75	1.09	1.12	1.12	1.11	0.64	1	1.04	1.27	1.04	1.27	1.13	1.05	1.1	1.08	1.08	1.05	0.58	1.09	1.25	1.13	1.07	1.06
Dissolved ortho-Phosphate P	0.007	0.008	0.004	0.005	0.005	0.005	ND	ND	ND	ND	0.001	0.002	ND	0.003	0.003	0.002	0.002	0.002	0.013	0.017	0.013	0.009	0.012	0.01
Total Phosphate P	0.015	0.012	ND	0.006	ND	0.006	0.018	0.007	ND	ND	ND	ND	ND	ND	ND	0.008	0.008	0.009	<0.005	<0.005	<0.005	<0.005	0.028	0.05
Total Metals																								
Aluminum T-Al	0.0535	0.0858	0.0431	0.046	0.0654	0.0928	0.0462	0.0423	0.0338	0.0455	0.0744	0.104	0.0506	0.0476	0.0456	0.0656	0.124	0.246	0.0019	0.0067	0.0077	0.0547	0.341	0.484
Antimony T-Sb	0.00342	0.0034	0.00441	0.00448	0.00442	0.00452	0.00372	0.00414	0.00428	0.00413	0.00412	0.0041	0.00383	0.00382	0.00382	0.00385	0.00399	0.00384	0.00153	0.00433	0.00448	0.00434	0.00424	0.00411
Arsenic T-As	0.00047	0.00051	0.00072	0.00086	0.00088	0.00098	0.00052	0.00086	0.00058	0.00058	0.00062	0.00062	0.00063	0.00062	0.00064	0.00061	0.00066	0.00081	0.00133	0.00071	0.00069	0.00079	0.00117	0.00139
Barium T-Ba	0.0436	0.0439	0.0478	0.0476	0.048	0.049	0.046	0.0556	0.0622	0.0607	0.0611	0.0636	0.0658	0.0654	0.0666	0.0715	0.0769	0.0779	0.0868	0.0632	0.0595	0.0579	0.0657	0.0694
Beryllium T-Be	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00001	ND	ND	ND	ND	ND	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00003	0.00005
Bismuth T-Bi	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.000007	ND	ND	ND	ND	0.000007	0.000012	<0.000005	0.000007	<0.000005	<0.000005	0.000013	0.000015
Boron T-B	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Cadmium T-Cd	0.00144	0.00166	0.00252	0.00235	0.00229	0.00239	0.00149	0.00223	0.002	0.00199	0.00199	0.00195	0.00185	0.00178	0.00183	0.00183	0.00184	0.00185	0.000557	0.00179	0.00188	0.00188	0.00188	0.00188
Calcium T-Ca	116	117	132	133	130	134	133	133	133	129	130	127	136	135	138	136	136	136	80.5	124	126	127	129	126
Chromium T-Cr	0.0002	0.0002	ND	0.0001	0.0002	0.0002	0.0002	0.0002	ND	ND	0.0004	0.0002	0.0001	ND	ND	0.0001	0.0003	0.0005	<0.0001	<0.0001	<0.0001	<0.0001	0.0005	0.0007
Cobalt T-Co	0.00394	0.00411	0.00376	0.00366	0.00376	0.00382	0.006	0.005	0.004	0.004	0.005	0.005	0.0054	0.0054	0.0055	0.0054	0.0056	0.0058	0.0022	0.0067	0.0071	0.0070	0.0076	0.0076
Copper T-Cu	0.00273	0.00158	0.00172	0.0016	0.00151	0.00154	0.004	0.003	0.001	0.001	0.001	0.001	0.0028	0.0024	0.0021	0.0012	0.0013	0.0020	0.0006	0.0009	0.0011	0.0009	0.0023	0.0031
Iron T-Fe	0.132	0.184	0.108	0.116	0.15	0.208	0.098	0.089	0.065	0.076	0.113	0.174	0.121	0.123	0.109	0.106	0.198	0.414	0.003	0.021	0.038	0.084	0.591	0.861
Lead T-Pb	0.00123	0.0014	0.00147	0.00163	0.00147	0.00161	0.00155	0.00229	0.00111	0.00087	0.00113	0.00141	0.0016	0.00154	0.00124	0.00098	0.00143	0.00213	0.00024	0.000437	0.000442	0.000869	0.00282	0.00418
Lithium T-Li	0.0238	0.0233	0.0266	0.0255	0.0262	0.027	0.0239	0.0254	0.0258	0.0251	0.0254	0.0263	0.0265	0.0261	0.0263	0.0253	0.0273	0.0277	0.0127	0.0247	0.0255	0.0256	0.0262	0.026
Magnesium T-Mg	64.5	64.9	71.2	70.7	70	71.6	78.3	74.9	72.5	73.1	73.6	67.9	72.5	72.9	74.2	73.5	73.9	73.3	34.7	72.9	74.2	74.8	75.9	74.1
Manganese T-Mn	0.0644	0.0701	0.0961	0.097	0.1	0.105	0.103	0.135	0.137	0.138	0.147	0.146	0.173	0.172	0.176	0.18	0.186	0.192	0.0987	0.255	0.27	0.275	0.293	0.289
Molybdenum T-Mo	0.00269	0.0025	0.00265	0.00261	0.00265	0.0026	0.00266	0.00261	0.00268	0.00259	0.00255	0.00255	0.00251	0.00245	0.00246	0.00246	0.00255	0.00235	0.002	0.00278	0.00289	0.00277	0.00257	0.00242
Nickel T-Ni	0.112	0.119	0.183	0.175	0.174	0.18	0.131	0.175	0.167	0.168	0.17	0.166	0.161	0.162	0.167	0.166	0.169	0.168	0.0441	0.148	0.15	0.149	0.152	0.149
Phosphorus T-P	0	0	0	0	0	0																		
Potassium T-K	2.97	2.96	3.35	3.33	3.29	3.37	3.25	3.21	3.22	3.16	3.17	3.09	3.36	3.3	3.35	3.3	3.37	3.35	2.21	3.31	3.33	3.36	3.43	3.39
Selenium T-Se	0.00125	0.00118	0.00134	0.00136	0.00137	0.00138	0.00115	0.00117	0.00122	0.00119	0.00116	0.00115	0.00134	0.00144	0.00132	0.00137	0.00136	0.00125	0.00453	0.0016	0.00152	0.00152	0.00154	0.00149
Silicon T-Si	2.88	2.78	3.48	3.09	3.2	3.24	2.95	3.67	3.86	3.46	3.38	3.7	3.43	3.54	3.26	3.29	3.27	3.14	5.37	3.18	2.97	3.02	3.29	3.43
Silver T-Ag	ND	ND	0.000006	0.000007	0.000008	0.000008	0.000007	0.000006	ND	ND	ND	0.000007	ND	ND	ND	ND	ND	ND	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Sodium T-Na	9.48	9.5	10.8	10.8	10.7	10.9	10.6	10.9	10.7	10.7	10.9	10.2	10.9	10.9	11.2	11	11.2	11.1	8.49	10.7	10.9	10.8	11	10.8
Strontium T-Sr	0.713	0.714	0.824	0.831	0.839	0.84	0.748	0.802	0.828	0.827	0.805	0.786	0.846	0.852	0.871	0.862	0.872	0.837	0.543	0.818	0.842	0.834	0.847	0.833
Thallium T-Tl	0.000727	0.000751	0.000864	0.00086	0.000861	0.000869	0.000686	0.000627	0.000552	0.000533	0.000529	0.00051	0.000476	0.000474	0.00045	0.000414	0.000439	0.000434	0.000132	0.000359	0.000382	0.000352	0.000353	0.000351
Tin T-Sn	0.00002	0.00001	ND	ND	ND	0.00001	0.00005	0.00003	0.00002	0.00001	0.00001	0.00001	0.00002	0.00002	ND	0.00003	0.00003	0.00002	0.00001	0.00007	<0.00001	<0.00001	<0.00001	0.00001
Titanium T-Ti	0.0028	0.0035	0.002	0.0018	0.0024	0.0039	0.0023	0.0021	0.0014	0.0022	0.0033	0.0046	0.0025	0.0021	0.0022	0.0028	0.0066	0.0129	<0.0005	<0.0005	<0.0005	0.0022	0.0168	0.0222
Uranium T-U	0.00499	0.0048	0.0112	0.0116	0.0117	0.0119	0.00864	0.0132	0.0118	0.0116	0.0116	0.0118	0.0103	0.0104	0.0105	0.0107	0.0111	0.0109	0.0104	0.0108	0.0111	0.0111	0.0112	0.0113
Vanadium T-V	0.0004	0.0004	0.0002	0.0003	0.0003	0.0003	0.0005	0.0003	0.0003	0.0003	0.0003	0.0005	0.0002	ND	0.0002	0.0003	0.0005	0.0008	<0.0002	<0.0002	<0.0002	<0.0002	0.0006	0.001
Zinc T-Zn	0.748	1.28	8.44	7.7	7.88	8.09	2.09	8.72	6.86	6.82	6.86	6.74	6.48	6.38	6.54	6.47	6.59	6.54	1.47	5.12	5.19	5.08	5.11	5.03
Dissolved Metals																								
Aluminum D-Al	0.004	0.0014	0.0012	0.0012	0.0013	0.0044	0.005	0.0025	0.0026	0.0041	0.0038	0.0033	0.0023	0.0014	0.0009	0.0025	0.0013	0.0019	0.0007	0.0006	0.0007	0.0008	0.0008	0.0014
Antimony D-Sb	0.00357	0.00356	0.00455	0.00449	0.00442	0.00446	0.00362	0.00409	0.00429	0.00409	0.00419	0.00419	0.0041	0.00411	0.00404	0.00428	0.00399	0.00413	0.00295	0.00448	0.00446	0.00446	0.00427	0.00434
Arsenic D-As	0.00036	0.00034	0.00053	0.00055	0.00052	0.00051	0.0003	0.00049	0.00045	0.00047	0.00047	0.00046	0.00043	0.00045	0.00048	0.00053	0.00053	0.00056	0.0008	0.00054	0.00054	0.00069	0.00066	0.00069
Barium D-Ba	0.0439	0.0434	0.0473	0.047	0.0463	0.0472	0.0459	0.0556	0.0641	0.0609	0.0625	0.0627	0.0688	0.0694	0.0687	0.0776	0.0732	0.0757	0.0709	0.0622	0.0576	0.0547	0.0549	0.0547
Beryllium D-Be	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Bismuth D-Bi	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	0.00001
Boron D-B	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Cadmium D-Cd	0.000844	0.00133	0.00241	0.00235	0.00231	0.00232	0.000817	0.00201	0.0019	0.00195	0.00192	0.0019	0.00178	0.00183	0.00187	0.00174	0.00176	0.00179	0.00123	0.00184	0.00186	0.00187	0.00178	0.00182
Calcium D-Ca	115	119	133	133	132	132	129	130	132	133	134	133	137	139	139	129	128	129	98.5	127	122	123	123	124
Chromium D-Cr	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt D-Co	0.00364	0.00403	0.00371	0.00363	0.0037	0.00379	0.00464	0.00428	0.00421	0.0043	0.00436	0.00434	0.00532	0.00546	0.00537	0.00515	0.00516	0.00521	0.00415	0.00658	0.00665	0.00678	0.00666	0.00681
Copper D-Cu	0.00083	0.00036	0.00114	0.00133	0.00133	0.00112	0.00161	0.00138	0.00057	0.0005	0.00061	0.00054	0.002	0.00175	0.00145	0.00075	0.00079	0.00074	0.00053	0.0008	0.00084	0.00066	0.00063	0.0007
Iron D-Fe	0.01	0.002	0.002	0.002	0.003	0.017	0.008	0.003	0.008	0.002	0.004	0.005	0.027	0.002	0.002	0.002	0.002	0.004	0.002	0.003	0.003	0.002	0.002	0.003
Lead D-Pb	0.00053	0.000337	0.000557	0.000538	0.000339	0.000615	0.000619	0.000609	0.000388	0.000374	0.000426	0.000371	0.000474	0.000386	0.000327	0.000313	0.000297	0.000259	0.000184	0.000262	0.000117	0.000305	0.00019	0.000219
Lithium D-Li	0.0226	0.0241	0.0267	0.0269	0.0272	0.0268	0.0234	0.0251	0.0262	0.0247	0.0252	0.0249	0.0248	0.0252	0.0247	0.0257	0.0244	0.0248	0.0188	0.0253	0.0251	0.0246	0.0238	0.0247
Magnesium D-Mg	62.3	64.9	70.5	70.6	69.8	70.1	72.1	70.7	71.6	72.4	72.7	72	72.3	72.9	73.1	67.9	67.8	68.5	52	74	73.1	75.1	73.9	75
Manganese D-Mn	0.0555	0.0661	0.0967	0.0967	0.102	0.104	0.0811	0.123	0.131	0.135	0.141	0.142	0.173	0.174	0.177	0.172	0.173	0.177	0.187	0.253	0.255	0.262	0.259	0.263
Molybdenum D-Mo	0.00249	0.00259	0.00277	0.0027	0.00267	0.00273	0.00273	0.00263	0.00277	0.0026	0.00267	0.00269	0.00275	0.00276	0.00266	0.00285	0.00272	0.00277	0.00241	0.00286	0.00283	0.0029	0.00294	0.00287
Nickel D-Ni	0.101	0.116	0.184	0.182	0.181	0.182	0.108	0.159	0.162	0.164	0.164	0.162	0.159	0.163	0.166	0.155	0.156	0.159	0.0911	0.146	0.143	0.144	0.141	0.144
Phosphorus D-P																								
Potassium D-K	3.05	3.01	3.37	3.37	3.31	3.33	3.45	3.18	3.26	3.27	3.3	3.28	3.37	3.38	3.43	3.19	3.2	3.24	2.58	3.24	3.13	3.2	3.19	3.23
Selenium D-Se	0.00117	0.00119	0.00134	0.00131	0.00137	0.00135	0.00132	0.00132	0.00136	0.00134	0.00136	0.0014	0.00154	0.00158	0.00164	0.0016	0.00158	0.00168	0.00247	0.00151	0.00152	0.00148	0.00146	0.00147
Silicon D-Si	2.63	3.05	3.7	3.61	3.62	3.56	2.18	2.85	2.76	2.66	2.67	2.69	3.49	3.44	3.41	3.29	3.27	3.28	3.7	3.12	2.99	2.92	2.92	2.94
Silver D-Ag	0.000005	ND	ND	ND	ND	ND	0.000016	ND	ND	ND	ND	ND	0.000005	ND	ND	ND	ND	ND	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Sodium D-Na	9.19	9.67	10.9	10.9	10.9	10.8	9.74	10.2	10.6	10.6	10.7	10.4	11	11.1	11.2	10.5	10.6	10.6	9.03	10.8	10.5	10.9	10.8	10.9
Strontium D-Sr	0.718	0.737	0.861	0.849	0.845	0.853	0.736	0.797	0.828	0.812	0.819	0.814	0.799	0.801	0.812	0.855	0.827	0.835	0.668	0.828	0.806	0.785	0.789	0.816
Thallium D-Tl	0.000724	0.000732	0.000857	0.000855	0.000855	0.000866	0.000639	0.000607	0.000553	0.00054	0.000544	0.000515	0.000447	0.000447	0.000425	0.000402	0.000393	0.000393	0.000236	0.00037	0.000375	0.000345	0.000312	0.00031
Tin D-Sn	0.00003	0.00001	ND	0.00002	ND	ND	0.00004	0.00002	ND	ND	ND	ND	0.00001	ND	ND	ND	ND	ND	<0.00001	<0.00001	<0.00001	<0.00001	0.00003	<0.00001
Titanium D-Ti	0.0006	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Uranium D-U	0.00509	0.00488	0.0115	0.0119	0.0119	0.0119	0.00878	0.0113	0.0118	0.0114	0.0117	0.0116	0.0114	0.0116	0.0113	0.0121	0.0117	0.0119	0.0128	0.0134	0.0135	0.0137	0.0133	0.0135
Vanadium D-V	ND	0.0002	ND	ND	ND	ND	0.0003	ND	ND	ND	ND	ND	0.0003	0.0003	0.0003	0.0004	0.0004	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	0.0003
Zinc D-Zn	0.237	0.891	8.52	8.01	8.03	7.97	0.257	7.6	6.58	6.67	6.62	6.59	6.36	6.51	6.67	6.16	6.2	6.27	3.31	5.24	5.11	5.08	4.97	5.02
Organic Parameters																								
Chlorophyll a (a,b)							0.014	0.017	ND	ND	0	0	0	0	0	0	0	0	<0.5	<0.5	<0.5	0	0	0

Grum Pit - 2005 -2008 Monitoring Results
RESULTS OF ANALYSIS

Depth (m)	1	3	5	15	30	50	1	3	5	15	30	50	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Sample ID	GL-1 GRUM PIT LAKE AT 1 M	GL-3 GRUM PIT LAKE AT 3 M	GL-5 GRUM PIT LAKE AT 5 M	GL-15 GRUM PIT LAKE AT 15 M	GL-30 GRUM PIT LAKE AT 30 M	GL-50 GRUM PIT LAKE AT 50 M	GL-1 GRUM PIT LAKE AT 1 M	GL-3 GRUM PIT LAKE AT 3 M	GL-5 GRUM PIT LAKE AT 5 M	GL-15 GRUM PIT LAKE AT 15 M	GL-30 GRUM PIT LAKE AT 30 M	GL-50 GRUM PIT LAKE AT 50 M	GLS-1 SURFACE OF GRUM PIT LAKE	GLS-2 SURFACE OF GRUM PIT LAKE	GLS-3 SURFACE OF GRUM PIT LAKE	GLS-4 SURFACE OF GRUM PIT LAKE	GLS-5 SURFACE OF GRUM PIT LAKE	GLS-6 SURFACE OF GRUM PIT LAKE	GL-7 GRUM PIT LAKE AT 1
Date Sampled	17-Jun-09	17-Jun-09	17-Jun-09	17-Jun-09	17-Jun-09	17-Jun-09	14-Jul-09	14-Jul-09	14-Jul-09	14-Jul-09	14-Jul-09	14-Jul-09	14-Jul-09	14-Jul-09	14-Jul-09	14-Jul-09	14-Jul-09	14-Jul-09	14-Jul-09
Time Sampled																			
ALS Sample ID	P41233	P41234	P41235	P41236	P41237	P41238	P86733	P86734	P86735	P86736	P86737	P86738	P86739	P86740	P86741	P86742	P86743	P86744	P86747
Nature																			
Physical Tests																			
Hardness (as CaCO3)	470	546	574	572	571	576	511	508	611	598	594	592	508	506	513	509	508	500	508
Conductivity (uS/cm)	900	1000	1100	1100	1100	1100	930	940	1100	1100	1100	1100	920	920	920	920	910	890	930
ORP																			
pH	8.1	8.1	8.1	8	8	8.1	8.5	8.5	8	8	8.1	8	8.7	8.7	8.9	8.9	8.9	8.8	8.8
Total Suspended Solids	4	3	2	2	4	16	4	5	<4	<4	<4	8	0	0	0	0	0	0	0
Dissolved Anions																			
Alkalinity-Total CaCO3	140	160	170	170	170	170	150	150	170	170	170	170	0	0	0	0	0	0	0
Sulphate SO4	320	370	390	390	400	390	300	350	400	420	440	430	360	300	300	360	280	350	360
Chloride (Cl)																			
Fluoride (F)																			
Bromide (Br)																			
Nutrients																			
Ammonia Nitrogen N	<0.01	<0.01	<0.01	0.01	0.01	<0.01	0.09	0.03	0.02	0.02	0.02	0.02							
Nitrate Nitrogen N	0.006	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005						
Nitrite Nitrogen N	0.83	0.97	1.03	1.07	1.06	1.07	0.52	0.63	1.07	1.09	1.08	1.07							
Nitrite/Nitrate Nitrogen N	0.84	0.97	1.03	1.07	1.06	1.07	0.52	0.63	1.07	1.09	1.08	1.07							
Dissolved ortho-Phosphate P	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005							
Total Phosphate P	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.006	0.006	<0.005	<0.005	<0.005							
Total Metals																			
Aluminum T-Al	0.0355	0.0338	0.0183	0.0265	0.0381	0.114	0.0013	0.0152	0.0101	0.0168	0.0251	0.0632	0.0182	0.0176	0.0459	0.117	0.0357	0.032	0.0846
Antimony T-Sb	0.00324	0.00381	0.00403	0.00407	0.00406	0.00403	0.00348	0.00324	0.00423	0.00425	0.00426	0.00453	0.00336	0.00338	0.00337	0.00347	0.00351	0.00356	0.00367
Arsenic T-As	0.00058	0.00067	0.00072	0.00072	0.00075	0.00086	0.00049	0.00053	0.00074	0.00089	0.0009	0.00092	0.00054	0.00067	0.0006	0.00057	0.00056	0.00051	0.00431
Barium T-Ba	0.0481	0.0554	0.0558	0.0569	0.0574	0.0576	0.0513	0.0506	0.0546	0.0546	0.0546	0.0549	0.051	0.0507	0.0521	0.0558	0.0523	0.0538	0.0521
Beryllium T-Be	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00001
Bismuth T-Bi	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	0.000006	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	0.000005	0.000006	<0.000005	<0.000005	0.000008	<0.000005	<0.000005	0.000005
Boron T-B	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Cadmium T-Cd	0.00146	0.00172	0.00169	0.00178	0.00172	0.00172	0.000147	0.00116	0.00189	0.00187	0.00186	0.00192	0.000774	0.000776	0.000787	0.000811	0.000808	0.000817	0.000849
Calcium T-Ca	98.6	115	118	117	117	116	109	106	121	122	120	119	104	106	106	106	101	103	105
Chromium T-Cr	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	0.0004
Cobalt T-Co	0.0052	0.0061	0.0064	0.0064	0.0063	0.0064	0.00531	0.00554	0.00705	0.00706	0.00674	0.00643	0.00525	0.00545	0.00549	0.00509	0.00485	0.0049	0.00629
Copper T-Cu	0.0012	0.0010	0.0009	0.0009	0.0009	0.0013	0.00049	0.00074	0.00073	0.00096	0.00087	0.00088	0.00102	0.00092	0.00083	0.00111	0.00069	0.00066	0.00203
Iron T-Fe	0.076	0.065	0.037	0.049	0.07	0.214	0.003	0.036	0.027	0.04	0.057	0.119	0.042	0.059	0.104	0.193	0.061	0.051	0.571
Lead T-Pb	0.00225	0.00133	0.000982	0.0015	0.0011	0.00222	0.00033	0.000781	0.000851	0.000776	0.000833	0.00134	0.000857	0.00141	0.00144	0.00156	0.000916	0.000847	0.0243
Lithium T-Li	0.0193	0.0223	0.0231	0.0233	0.0229	0.0233	0.0204	0.0204	0.0233	0.0237	0.0237	0.0245	0.0203	0.0201	0.0202	0.0209	0.0209	0.0218	0.0206
Magnesium T-Mg	52.4	60.9	64	62.7	62.9	62.1	58.5	56.9	64.7	66.4	64.1	61.9	56.6	56.9	57.1	55.9	53.9	55.2	57.2
Manganese T-Mn	0.19	0.23	0.238	0.237	0.239	0.241	0.164	0.176	0.263	0.265	0.26	0.254	0.158	0.163	0.165	0.162	0.15	0.153	0.171
Molybdenum T-Mo	0.00213	0.00251	0.00283	0.00277	0.00267	0.00257	0.00232	0.00238	0.00244	0.00262	0.00263	0.0025	0.00236	0.00225	0.00232	0.00234	0.00236	0.00242	0.00226
Nickel T-Ni	0.099	0.118	0.122	0.122	0.121	0.121	0.0883	0.102	0.136	0.136	0.131	0.121	0.0923	0.0937	0.094	0.0871	0.0829	0.0844	0.0942
Phosphorus T-P																			
Potassium T-K	2.35	2.75	2.76	2.79	2.78	2.74	2.61	2.51	2.85	2.93	2.86	2.82	2.53	2.56	2.55	2.59	2.4	2.48	2.55
Selenium T-Se	0.00111	0.00126	0.00137	0.00133	0.00132	0.00134	0.00123	0.00134	0.00135	0.00133	0.00134	0.00134	0.00131	0.00127	0.00132	0.00128	0.00135	0.00133	0.0013
Silicon T-Si	2.59	2.91	3	3	3.03	3.09	2.29	2.44	3.03	2.92	2.87	3.17	2.24	2.22	2.25	2.23	2.2	2.16	2.28
Silver T-Ag	0.000008	<0.000005	<0.000005	0.000007	<0.000005	0.000006	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Sodium T-Na	7.6	8.95	9.35	9.31	9.22	9.19	8.72	8.51	9.69	9.81	9.49	8.75	8.41	8.47	8.56	8.08	7.73	7.94	8.47
Strontium T-Sr	0.614	0.739	0.73	0.738	0.755	0.747	0.643	0.662	0.729	0.75	0.755	0.774	0.635	0.645	0.638	0.676	0.654	0.68	0.647
Thallium T-Tl	0.000249	0.000239	0.000211	0.000221	0.000224	0.000222	0.000348	0.000372	0.000235	0.000247	0.00027	0.000258	0.00038	0.000389	0.000352	0.000374	0.000357	0.000362	0.00041
Tin T-Sn	0.00002	0.00003	0.00001	0.00001	0.00001	0.00002	0.00004	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Titanium T-Ti	0.002	0.001	0.0006	0.0015	0.0015	0.0061	<0.0005	<0.0005	<0.0005	<0.0005	0.0008	0.0026	<0.0005	0.0005	0.0013	0.0054	0.0015	0.0008	0.0008
Uranium T-U	0.0102	0.0117	0.0122	0.0123	0.0123	0.0124	0.0113	0.0113	0.0131	0.0132	0.0134	0.0137	0.0107	0.0109	0.0113	0.0126	0.012	0.0125	0.0116
Vanadium T-V	0.0003	0.0003	0.0003	0.0003	0.0003	0.0005	0.0004	0.0004	0.0003	0.0002	0.0003	0.0003	0.0004	0.0005	0.0006	0.0007	0.0005	0.0005	0.0006
Zinc T-Zn	3.64	4.27	4.42	4.4	4.35	4.35	0.206	0.99	5.54	4.97	4.9	4.63	0.437	0.46	0.435	0.434	0.412	0.432	0.588
Dissolved Metals																			
Aluminum D-Al	0.0014	0.0013	0.0016	0.0016	0.0014	0.0021	0.0331	0.0019	0.0006	0.0015	0.0008	0.0011	0.0026	0.0032	0.004	0.0027	0.0025	0.0023	0.0028
Antimony D-Sb	0.00328	0.00379	0.00405	0.00404	0.00407	0.00403	0.00333	0.00351	0.00422	0.00415	0.00415	0.00428	0.00334	0.00336	0.00335	0.00337	0.00336	0.00333	0.00336
Arsenic D-As	0.00043	0.00057	0.00065	0.00063	0.00061	0.00066	0.00048	0.00043	0.00071	0.00075	0.0008	0.00086	0.00048	0.00047	0.00047	0.00045	0.00046	0.0005	0.00063
Barium D-Ba	0.0479	0.0549	0.0576	0.0571	0.0583	0.0579	0.0531	0.0529	0.0582	0.0571	0.0557	0.0566	0.0525	0.0532	0.0537	0.0531	0.0538	0.0549	0.0536
Beryllium D-Be	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Bismuth D-Bi	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	0.000007	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Boron D-B	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Cadmium D-Cd	0.00146	0.00163	0.00167	0.00169	0.0017	0.00178	0.000927	0.000614	0.00182	0.00186	0.00183	0.00191	0.000158	0.000136	0.000131	0.00014	0.000143	0.00013	0.000156
Calcium D-Ca	99.1	114	121	121	121	123	107	107	129	126	124	125	106	107	108	107	107	106	107
Chromium D-Cr	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt D-Co	0.00526	0.00616	0.00654	0.00663	0.00661	0.00669	0.00543	0.00555	0.00725	0.00722	0.00727	0.00732	0.00523	0.00508	0.00518	0.0051	0.00515	0.00499	0.00501
Copper D-Cu	0.00115	0.0009	0.00129	0.0007	0.00073	0.00073	0.00106	0.00028	0.00043	0.00068	0.00068	0.00059	0.00105	0.00035	0.00035	0.00028	0.00025	0.00029	0.00033
Iron D-Fe	0.003	0.004	0.009	0.004	0.006	0.005	0.042	0.003	0.002	0.002	0.002	0.002	0.003	0.005	0.011	0.003	0.002	0.004	0.003
Lead D-Pb	0.000816	0.000603	0.000574	0.000509	0.000454	0.0005	0.00104	0.000378	0.000506	0.000365	0.000329	0.000337	0.000321	0.000373	0.000329	0.000265	0.000271	0.000278	0.000889
Lithium D-Li	0.019	0.022	0.023	0.023	0.0233	0.0232	0.0204	0.0211	0.024	0.0235	0.0234	0.0243	0.0203	0.0203	0.0202	0.0205	0.0201	0.0197	0.0206
Magnesium D-Mg	54	63.2	66	65.5	65.1	65.5	59.2	58.7	70.2	69.2	68.8	68.2	58.8	58.2	59.3	58.8	58.7	57.4	58.3
Manganese D-Mn	0.182	0.224	0.244	0.246	0.245	0.25	0.176	0.174	0.274	0.27	0.272	0.274	0.153	0.154	0.155	0.154	0.153	0.15	0.15
Molybdenum D-Mo	0.00222	0.00256	0.00267	0.0027	0.00265	0.0027	0.00236	0.00254	0.0026	0.00272	0.0027	0.00264	0.00247	0.0025	0.0025	0.0025	0.00258	0.00251	0.00251
Nickel D-Ni	0.099	0.12	0.127	0.127	0.126	0.128	0.0952	0.0987	0.14	0.138	0.138	0.139	0.086	0.0854	0.0874	0.0864	0.087	0.0853	0.0832
Phosphorus D-P																			
Potassium D-K	2.39	2.74	2.93	2.89	2.93	2.96	2.67	2.63	3.15	3.07	3.04	3.07	2.67	2.6	2.64	2.61	2.59	2.59	2.69
Selenium D-Se	0.0011	0.00122	0.00126	0.00136	0.00131	0.00128	0.00135	0.00128	0.00134	0.00141	0.0014	0.00137	0.00129	0.00129	0.00136	0.0013	0.00135	0.00148	0.00132
Silicon D-Si	2.46	2.75	2.87	3.02	2.92	2.87	2.29	2.11	2.89	2.68	2.67	2.68	2.01	2.04	2.12	2.05	2.1	2.27	2.2
Silver D-Ag	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Sodium D-Na	7.95	9.23	9.81	9.57	9.61	9.78	8.71	8.8	10.2	10	9.98	10	8.76	8.61	8.78	8.7	8.66	8.62	8.52
Strontium D-Sr	0.625	0.73	0.775	0.78	0.774	0.776	0.67	0.671	0.771	0.783	0.77	0.788	0.671	0.668	0.666	0.654	0.665	0.66	0.662
Thallium D-Tl	0.000254	0.000238	0.000228	0.00023	0.000234	0.000229	0.000382	0.000382	0.000246	0.000263	0.000284	0.000273	0.000391	0.000403	0.000366	0.000362	0.000367	0.000356	0.000393
Tin D-Sn	0.00003	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00005	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Titanium D-Ti	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0013	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Uranium D-U	0.0102	0.012	0.0126	0.0126	0.0128	0.0127	0.0115	0.0117	0.0137	0.0139	0.0139	0.014	0.0116	0.0115	0.0118	0.0117	0.0119	0.0117	0.0115
Vanadium D-V	<0.0002	0.0002	0.0002	0.0003	0.0002	0.0002	0.0004	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	0.0004	0.0004	0.0003	0.0003	0.0004	0.0003
Zinc D-Zn	3.54	4.28	4.57	4.57	4.52	4.63	0.493	0.668	5.57	4.88	4.97	4.99	0.201	0.2	0.189	0.183	0.19	0.195	0.215
Organic Parameters																			
Chlorophyll a (a,b)	<5	<5	<5	0	0	0	11	7	<5										

Grum Pit - 2005 -2008 Monitoring Results
RESULTS OF ANALYSIS

Depth (m)	1	3	5	15	30	50	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Sample ID	GL-1 GRUM PIT LAKE AT 1M	GL-3 GRUM PIT LAKE AT 3M	GL-5 GRUM PIT LAKE AT 5M	GL-15 GRUM PIT LAKE AT 15M	GL-30 GRUM PIT LAKE AT 30M	GL-50 GRUM PIT LAKE AT 50M	GLS-1 SURFACE OF FRUM PIT LAKE	GLS-2 SURFACE OF GRUM PIT LAKE	GLS-3 SURFACE OF GRUM PIT LAKE	GLS-4 SURFACE OF GRUM PIT LAKE	GLS-5 SURFACE OF GRUM PIT LAKE	GLS-6 SURFACE OF GRUM PIT LAKE	GL-7 SURFACE OF GRUM PIT LAKE
Date Sampled	11-Aug-09	11-Aug-09	11-Aug-09	11-Aug-09	11-Aug-09	11-Aug-09	11-Aug-09	11-Aug-09	11-Aug-09	11-Aug-09	11-Aug-09	11-Aug-09	11-Aug-09
Time Sampled													
ALS Sample ID	Q27087	Q27088	Q27089	Q27090	Q27091	Q27092	Q27093	Q27094	Q27095	Q27096	Q27097	Q27098	Q27100
Nature													
Physical Tests													
Hardness (as CaCO3)	477	534	615	605	616	604	470	478	478	480	475	474	469
Conductivity (uS/cm)	889	981	1080	1080	1070	1080	884	893	892	887	890	886	886
ORP													
pH	8.1	8.1	8.2	8	8.2	8.1	8.1	8.2	8.2	8.4	8.3	8.3	8.3
Total Suspended Solids	5	4	<4	<4	4	7	0	0	0	0	0	0	0
Dissolved Anions													
Alkalinity-Total CaCO3	110	140	170	170	170	170	0	0	0	0	0	0	0
Sulphate SO4	300	320	350	350	400	400	330	300	310	310	310	360	300
Chloride (Cl)													
Fluoride (F)													
Bromide (Br)													
Nutrients													
Ammonia Nitrogen N	0.16	0.17	0.11	0.06	0.06	0.05							
Nitrate Nitrogen N	0.005	<0.005	<0.005	<0.005	<0.005	<0.005							
Nitrite Nitrogen N	0.62	0.73	0.97	0.97	0.96	0.97							
Nitrite/Nitrate Nitrogen N	0.63	0.73	0.97	0.97	0.96	0.97							
Dissolved ortho-Phosphate P	0.005	<0.005	<0.005	<0.005	<0.005	0.006							
Total Phosphate P	0.034	0.019	0.007	0.01	0.008	0.021							
Total Metals													
Aluminum T-Al	0.0209	0.0165	0.017	0.0165	0.0453	0.0661	0.0251	0.0202	0.0253	0.0419	0.0264	0.0204	0.0358
Antimony T-Sb	0.0034	0.00374	0.00433	0.00431	0.00437	0.00444	0.00351	0.00351	0.00351	0.00351	0.00351	0.00351	0.00334
Arsenic T-As	0.00079	0.00089	0.00095	0.00096	0.0011	0.00119	0.00091	0.00097	0.00094	0.00093	0.00084	0.00089	0.00091
Barium T-Ba	0.0358	0.0488	0.0562	0.0572	0.0582	0.054	0.0338	0.0338	0.0342	0.035	0.0344	0.0344	0.0371
Beryllium T-Be	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Bismuth T-Bi	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Boron T-B	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Cadmium T-Cd	0.0003	0.00114	0.00186	0.00184	0.00185	0.00174	0.000441	0.000282	0.000338	0.000283	0.000294	0.000274	0.000268
Calcium T-Ca	96.8	117	132	133	129	125	88.1	87.1	87.7	88	88.8	88.5	97.5
Chromium T-Cr	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt T-Co	0.00451	0.00605	0.00715	0.00725	0.00731	0.00738	0.00472	0.00475	0.00489	0.0047	0.00471	0.00471	0.0048
Copper T-Cu	0.00092	0.00088	0.0007	0.00067	0.00084	0.00092	0.00105	0.0008	0.00105	0.00091	0.00072	0.00071	0.00076
Iron T-Fe	0.054	0.055	0.048	0.051	0.109	0.159	0.08	0.072	0.071	0.094	0.065	0.055	0.081
Lead T-Pb	0.000831	0.000845	0.000931	0.000906	0.00153	0.00168	0.00187	0.000833	0.000954	0.000946	0.000754	0.000693	0.00148
Lithium T-Li	0.0207	0.0228	0.0243	0.0245	0.0241	0.024	0.0206	0.0204	0.0213	0.0208	0.0208	0.0207	0.0204
Magnesium T-Mg	59.4	64.6	68	68.5	67.8	67.6	58.8	58	57.6	57.3	57.8	57.6	61.6
Manganese T-Mn	0.121	0.21	0.28	0.281	0.283	0.286	0.112	0.129	0.133	0.123	0.125	0.123	0.122
Molybdenum T-Mo	0.00253	0.00261	0.0027	0.00274	0.00275	0.00269	0.00264	0.0026	0.00261	0.00258	0.00264	0.00252	0.00268
Nickel T-Ni	0.0765	0.109	0.134	0.136	0.134	0.138	0.0793	0.0806	0.0817	0.0785	0.0813	0.0802	0.0804
Phosphorus T-P													
Potassium T-K	2.75	2.94	3.11	3.11	3.1	3.03	2.56	2.52	2.56	2.56	2.56	2.6	2.91
Selenium T-Se	0.00145	0.00134	0.0013	0.00135	0.00136	0.0014	0.00148	0.00146	0.00149	0.00146	0.00146	0.00146	0.00143
Silicon T-Si	2.75	2.95	3.15	3.24	3.23	3.51	2.72	2.65	2.73	2.72	2.69	2.72	2.45
Silver T-Ag	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Sodium T-Na	8.56	9.18	9.59	9.59	9.51	10.6	9.36	9.34	9.33	9.24	9.33	9.29	9.25
Strontium T-Sr	0.554	0.692	0.805	0.819	0.806	0.745	0.523	0.525	0.528	0.529	0.531	0.527	0.537
Thallium T-Tl	0.000488	0.000535	0.000298	0.0003	0.000313	0.000297	0.000482	0.000501	0.000547	0.000511	0.000505	0.000511	0.000515
Tin T-Sn	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Titanium T-Ti	0.0007	0.0007	0.001	0.0006	0.002	0.0026	0.0009	<0.0005	0.0006	0.0014	0.0006	0.0007	0.0015
Uranium T-U	0.00876	0.0106	0.0139	0.014	0.0141	0.0134	0.00865	0.00828	0.00808	0.00875	0.00812	0.00804	0.009
Vanadium T-V	0.0005	0.0002	<0.0002	<0.0002	<0.0002	0.0003	0.0009	0.0007	0.0007	0.0008	0.0007	0.0007	0.0007
Zinc T-Zn	0.267	2.55	5.09	5.1	5.01	5.14	0.277	0.294	0.329	0.286	0.291	0.281	0.275
Dissolved Metals													
Aluminum D-Al	0.0126	0.0019	0.0017	0.0105	0.0006	0.0005	0.0033	0.003	0.0036	0.0033	0.0074	0.0026	0.0036
Antimony D-Sb	0.00348	0.00372	0.00431	0.00433	0.00433	0.00433	0.00337	0.00339	0.00344	0.0034	0.00342	0.00339	0.00355
Arsenic D-As	0.00072	0.00069	0.00085	0.00081	0.00091	0.00097	0.0007	0.00073	0.00074	0.00075	0.00071	0.00072	0.00078
Barium D-Ba	0.0352	0.0463	0.056	0.0567	0.0551	0.0554	0.035	0.0354	0.0353	0.0355	0.0358	0.0352	0.0353
Beryllium D-Be	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Bismuth D-Bi	<0.000005	<0.000005	<0.000005	0.000017	<0.000005	<0.000005	0.000006	<0.000005	<0.000005	0.000006	0.000011	0.000007	<0.000005
Boron D-B	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Cadmium D-Cd	0.000123	0.000826	0.00167	0.00165	0.00175	0.00164	0.000113	0.000096	0.00013	0.000103	0.000124	0.000096	0.000104
Calcium D-Ca	91.6	108	130	128	129	128	90.9	92.3	92	93.2	92.5	92.1	91.3
Chromium D-Cr	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt D-Co	0.00422	0.00589	0.00738	0.00732	0.00758	0.00739	0.00433	0.0045	0.00445	0.0044	0.00443	0.00442	0.00445
Copper D-Cu	0.00063	0.00041	0.0005	0.00043	0.00047	0.00044	0.00058	0.00055	0.00059	0.00058	0.00062	0.00062	0.00051
Iron D-Fe	0.013	0.006	0.007	0.004	0.005	0.007	0.005	0.008	0.015	0.01	0.017	0.006	0.006
Lead D-Pb	0.000272	0.000186	0.000374	0.000323	0.000358	0.000351	0.000114	0.000145	0.000226	0.000153	0.00037	0.000101	0.00035
Lithium D-Li	0.0212	0.0229	0.0255	0.0245	0.024	0.0248	0.021	0.0211	0.0213	0.0212	0.021	0.0212	0.0203
Magnesium D-Mg	60.4	64.2	70.7	69.4	71.4	69.3	59	60.1	60.2	60.1	59.2	59.3	58.5
Manganese D-Mn	0.0809	0.177	0.278	0.274	0.285	0.281	0.0783	0.0824	0.0828	0.0826	0.0836	0.0802	0.0789
Molybdenum D-Mo	0.00263	0.00267	0.00283	0.00274	0.00276	0.00283	0.00268	0.00268	0.00268	0.00268	0.0026	0.00267	0.0027
Nickel D-Ni	0.0734	0.104	0.141	0.14	0.142	0.139	0.074	0.076	0.0754	0.075	0.0751	0.0745	0.074
Phosphorus D-P													
Potassium D-K	2.66	2.83	3.1	3.07	3.12	3.07	2.63	2.66	2.67	2.69	2.69	2.68	2.73
Selenium D-Se	0.00139	0.00132	0.0013	0.00127	0.0013	0.0013	0.00136	0.00138	0.00141	0.00138	0.00138	0.00142	0.00146
Silicon D-Si	2.43	2.66	2.99	2.91	2.91	2.93	2.34	2.39	2.42	2.4	2.38	2.39	2.61
Silver D-Ag	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Sodium D-Na	8.99	9.37	10.2	10.1	10.3	9.99	8.79	8.93	8.93	8.91	8.77	8.79	8.67
Strontium D-Sr	0.536	0.656	0.774	0.783	0.777	0.775	0.541	0.539	0.538	0.534	0.536	0.537	0.535
Thallium D-Tl	0.000498	0.000537	0.000306	0.000301	0.000312	0.000311	0.000503	0.000527	0.000542	0.000518	0.000523	0.000505	0.000509
Tin D-Sn	0.00002	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Titanium D-Ti	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Uranium D-U	0.00878	0.0102	0.0139	0.0137	0.0138	0.0137	0.00889	0.00898	0.00895	0.00911	0.00886	0.00899	0.009
Vanadium D-V	0.0008	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	0.0006	0.0006	0.0006	0.0007	0.0007	0.0006	0.0006
Zinc D-Zn	0.19	2.11	5.23	5.16	5.22	5.11	0.179	0.184	0.214	0.19	0.196	0.179	0.171
Organic Parameters													
Chlorophyll a (a,b)	<5	<5	<5										

Depth (m)	1	3	5	15	30	50	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Sample ID	GL-1 GRUM PIT LAKE AT 1M	GL-3 GRUM PIT LAKE AT 3M	GL-5 GRUM PIT LAKE AT 5M	GL-15 GRUM PIT LAKE AT 15M	GL-30 GRUM PIT LAKE AT 30M	GL-50 GRUM PIT LAKE AT 50M	GLS-1 SURFACE OF GRUM PIT LAKE	GLS-2 SURFACE OF GRUM PIT LAKE	GLS-3 SURFACE OF GRUM PIT LAKE	GLS-4 SURFACE OF GRUM PIT LAKE	GLS-5 SURFACE OF GRUM PIT LAKE	GLS-6 SURFACE OF GRUM PIT LAKE	GL-7 SURFACE OF GRUM PIT LAKE
Date Sampled	08-Sep-09	08-Sep-09	08-Sep-09	08-Sep-09	08-Sep-09	08-Sep-09	08-Sep-09	08-Sep-09	08-Sep-09	08-Sep-09	08-Sep-09	08-Sep-09	08-Sep-09
Time Sampled													
ALS Sample ID	Q70790	Q70791	Q70792	Q70793	Q70794	Q70795	Q70796	Q70797	Q70798	Q70799	Q70800	Q70801	Q70803
Nature													
Physical Tests													
Hardness (as CaCO3)	510	500	617	613	615	609	505	516	515	505	504	483	506
Conductivity (uS/cm)	906	906	1070	1080	1080	1080	898	905	907	897	904	858	909
ORP													
pH	8	8.1	7.9	7.9	7.9	7.9	8.1	8.2	8.2	8.3	8.3	8.2	8.3
Total Suspended Solids	<4	<4	5	<4	5	7	0	0	0	0	0	0	0
Dissolved Anions													
Alkalinity-Total CaCO3	120	130	180	180	180	180	0	0	0	0	0	0	0
Sulphate SO4	340	320	380	380 -	420	390	320	290	330	310	310	290	340
Chloride (Cl)													
Fluoride (F)													
Bromide (Br)													
Nutrients													
Ammonia Nitrogen N	0.1	0.08	0.02	0.06	0.07	0.07							
Nitrate Nitrogen N	0.006	0.007	<0.005	<0.005	<0.005	<0.005							
Nitrite Nitrogen N	0.7	0.69	0.98	0.98	1	0.98							
Nitrite/Nitrate Nitrogen N	0.7	0.69	0.98	0.98	1	0.98							
Dissolved ortho-Phosphate P	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005							
Total Phosphate P	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005							
Total Metals													
Aluminum T-Al	0.0313	0.0365	0.0324	0.0289	0.0479	0.0634	0.0168	0.0189	0.032	0.0454	0.0365	0.0212	0.0258
Antimony T-Sb	0.00353	0.00349	0.00421	0.00433	0.00422	0.00419	0.00328	0.00334	0.00337	0.00328	0.00342	0.00313	0.00338
Arsenic T-As	0.00098	0.00099	0.00102	0.00111	0.0013	0.00145	0.00097	0.00092	0.00118	0.00105	0.00097	0.00103	0.00165
Barium T-Ba	0.0444	0.0449	0.0574	0.0566	0.0558	0.0582	0.0413	0.0425	0.0436	0.0476	0.0443	0.0445	0.0426
Beryllium T-Be	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Bismuth T-Bi	0.000007	0.000011	0.000006	0.000017	0.000005	0.000009	<0.000005	<0.000005	<0.000005	0.000009	0.000006	<0.000005	0.000006
Boron T-B	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Cadmium T-Cd	0.000504	0.000498	0.00167	0.0018	0.00176	0.00177	0.000483	0.000457	0.000459	0.00049	0.000473	0.00042	0.000502
Calcium T-Ca	96.7	95.8	126	126	125	127	89.7	88.3	87.2	90.7	91.6	89.6	91.6
Chromium T-Cr	0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt T-Co	0.00491	0.00468	0.00709	0.00727	0.0073	0.00736	0.00454	0.00426	0.00429	0.00447	0.00447	0.00416	0.00449
Copper T-Cu	0.00186	0.00129	0.00074	0.00094	0.00089	0.00095	0.00102	0.00106	0.00129	0.00133	0.00119	0.00106	0.00142
Iron T-Fe	0.092	0.093	0.081	0.091	0.121	0.162	0.062	0.066	0.1	0.112	0.078	0.069	0.127
Lead T-Pb	0.0015	0.00157	0.0012	0.00105	0.00153	0.00155	0.00114	0.00119	0.00279	0.00264	0.00127	0.00122	0.01
Lithium T-Li	0.0205	0.0206	0.0235	0.0239	0.0238	0.0239	0.0195	0.02	0.0196	0.02	0.0197	0.0186	0.02
Magnesium T-Mg	58.1	57.3	65.2	65.5	64.7	64.6	52.9	51.9	51.3	52.4	53.5	51.3	53.4
Manganese T-Mn	0.128	0.116	0.274	0.283	0.285	0.291	0.106	0.106	0.107	0.11	0.109	0.103	0.107
Molybdenum T-Mo	0.00261	0.00254	0.00274	0.00279	0.00267	0.00268	0.00248	0.00249	0.0025	0.00259	0.00257	0.00245	0.00252
Nickel T-Ni	0.0764	0.0755	0.134	0.134	0.133	0.132	0.071	0.0697	0.0656	0.067	0.07	0.066	0.0718
Phosphorus T-P													
Potassium T-K	2.74	2.7	3.1	3.11	3.04	3.16	2.46	2.43	2.38	2.52	2.55	2.46	2.55
Selenium T-Se	0.00142	0.0014	0.0013	0.00136	0.00135	0.00136	0.00149	0.00147	0.00157	0.00148	0.00156	0.00181	0.00164
Silicon T-Si	2.82	2.75	3.22	3.36	3.28	3.52	2.85	2.78	2.89	3.07	2.95	3.33	3.14
Silver T-Ag	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Sodium T-Na	8.8	8.68	9.72	9.54	9.5	9.55	7.98	7.85	7.81	8.13	8.13	7.94	8.11
Strontium T-Sr	0.577	0.58	0.762	0.764	0.763	0.773	0.525	0.544	0.532	0.551	0.549	0.529	0.547
Thallium T-Tl	0.000572	0.00058	0.000338	0.000338	0.000349	0.000354	0.000515	0.000526	0.000515	0.000533	0.000547	0.000493	0.000547
Tin T-Sn	0.00002	0.00002	<0.00001	0.00002	<0.00001	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Titanium T-Ti	0.0019	0.0016	0.0012	0.0009	0.0028	0.003	<0.0005	<0.0005	0.0013	0.002	0.002	0.0009	<0.0005
Uranium T-U	0.00949	0.00951	0.0132	0.0132	0.0132	0.0132	0.00895	0.00908	0.00946	0.00944	0.00944	0.00902	0.00925
Vanadium T-V	0.0004	0.0004	0.0002	<0.0002	<0.0002	0.0002	0.0003	0.0003	0.0004	0.0005	0.0004	0.0005	0.0004
Zinc T-Zn	1.04	1.02	5.05	5.11	5.08	5.11	1.01	0.966	0.889	0.892	0.947	0.891	0.969
Dissolved Metals													
Aluminum D-Al	0.0013	0.001	0.0055	0.001	0.0006	0.0048	0.001	0.003	0.0023	0.0027	0.002	0.0022	0.0032
Antimony D-Sb	0.00338	0.00337	0.00421	0.00424	0.00427	0.00425	0.0034	0.00335	0.00336	0.00335	0.00337	0.00308	0.0034
Arsenic D-As	0.00085	0.00084	0.00095	0.00091	0.00105	0.00111	0.00083	0.00078	0.0009	0.00086	0.0008	0.00089	0.00084
Barium D-Ba	0.0428	0.0422	0.0558	0.0553	0.0544	0.0556	0.0439	0.0429	0.0442	0.0459	0.044	0.047	0.0439
Beryllium D-Be	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Bismuth D-Bi	0.000008	<0.000005	0.000026	<0.000005	<0.000005	0.00001	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	0.000006
Boron D-B	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Cadmium D-Cd	0.000489	0.000437	0.00168	0.00179	0.00179	0.00179	0.00047	0.000478	0.000463	0.000441	0.000442	0.000399	0.000453
Calcium D-Ca	101	99.3	131	130	132	131	103	105	105	104	103	99	103
Chromium D-Cr	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt D-Co	0.00507	0.00476	0.00736	0.00744	0.00743	0.00722	0.00484	0.00529	0.00484	0.00471	0.00461	0.00413	0.00467
Copper D-Cu	0.00112	0.00105	0.00076	0.00057	0.00054	0.00067	0.00095	0.00104	0.00096	0.00097	0.00096	0.0009	0.00129
Iron D-Fe	0.014	0.013	0.014	0.006	0.006	0.023	0.008	0.026	0.009	0.007	0.007	0.006	0.01
Lead D-Pb	0.000498	0.000513	0.000875	0.000237	0.00035	0.000649	0.000437	0.00008	0.000507	0.000405	0.0004	0.000393	0.000843
Lithium D-Li	0.0202	0.0197	0.0232	0.0228	0.023	0.0228	0.02	0.0198	0.0197	0.0201	0.0199	0.0187	0.02
Magnesium D-Mg	62.7	61.3	70.3	69.9	69.3	68.3	60.2	61.6	61.3	59.9	60.2	57.2	60.5
Manganese D-Mn	0.128	0.115	0.284	0.291	0.3	0.299	0.117	0.134	0.122	0.118	0.115	0.104	0.115
Molybdenum D-Mo	0.00257	0.00259	0.00274	0.00279	0.00273	0.00281	0.00259	0.0026	0.00264	0.00263	0.00261	0.00245	0.00265
Nickel D-Ni	0.0778	0.0756	0.136	0.136	0.135	0.133	0.075	0.0753	0.075	0.0725	0.0719	0.0653	0.0728
Phosphorus D-P													
Potassium D-K	2.79	2.75	3.18	3.17	3.16	3.17	2.79	2.84	2.86	2.8	2.82	2.68	2.83
Selenium D-Se	0.00141	0.00136	0.00128	0.00124	0.00133	0.00122	0.00138	0.00136	0.00131	0.00139	0.00128	0.00146	0.00137
Silicon D-Si	2.85	2.84	3.45	3.27	3.7	3.39	2.95	2.97	2.94	3.13	2.89	3.05	3.09
Silver D-Ag	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Sodium D-Na	9.1	8.76	9.76	9.59	9.51	9.39	8.53	8.63	8.73	8.53	8.47	8.2	8.48
Strontium D-Sr	0.59	0.594	0.787	0.803	0.787	0.785	0.604	0.597	0.604	0.602	0.599	0.574	0.596
Thallium D-Tl	0.000584	0.000583	0.000358	0.000347	0.00037	0.000371	0.000603	0.000605	0.000611	0.000592	0.000596	0.000547	0.000593
Tin D-Sn	0.00002	<0.00001	0.00003	<0.00001	<0.00001	0.00003	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Titanium D-Ti	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0005	<0.0005	<0.0005
Uranium D-U	0.0099	0.01	0.0138	0.014	0.014	0.0141	0.0102	0.01	0.0104	0.0103	0.0101	0.01	0.0101
Vanadium D-V	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	0.0003	0.0003	<0.0002	0.0003
Zinc D-Zn	1.03	0.985	5.02	5.17	5.09	5.02	1.06	1.02	1.06	0.98	0.975	0.873	0.976
Organic Parameters													
Chlorophyll a (a,b)	<5	<5	<5	<5									

Faro Pit - 2005 to 2009 Monitoring Results
RESULTS OF ANALYSIS

Depth (m)		1	3	5	15	30	60	80	0.1	1	3	5	15	30	60	80			3	5	15	30	60	80
Sample ID		FP-1 FARO PIT @1m	FP-3 FARO PIT @3m	FP-5 FARO PIT @5m	FP-15 FARO PIT @15m	FP-30 FARO PIT @30m	FP-60 FARO PIT @60m	FP-80 FARO PIT @80m	FP-0.1m Faro Pit Surface	FP-1 Faro Pit @1m	FP-3 Faro Pit @3m	FP-5 Faro Pit @5m	FP-15 Faro Pit @15m	FP-30 Faro Pit @30m	FP-60 Faro Pit @60m	FP-80 Faro Pit @80m	FP_0.1	FP_1	FP_3	FP_5	FP_15	FP_30	FP_60	FP_80
Date Sampled		8-Jun-05	8-Jun-05	8-Jun-05	8-Jun-05	8-Jun-05	8-Jun-05	8-Jun-05	6-Jul-05	6-Jul-05	6-Jul-05	6-Jul-05	6-Jul-05	6-Jul-05	6-Jul-05	6-Jul-05	3-Aug-05	3-Aug-05	3-Aug-05	3-Aug-05	3-Aug-05	3-Aug-05	3-Aug-05	3-Aug-05
Time Sampled		14:45	15:00	15:08	15:15	15:20	15:30	15:45	10:20	10:30	10:45	11:00	11:20	11:30	11:50	12:15	14:35	14:47	14:55	15:00	15:17	15:23	15:32	15:44
ALS Sample ID		1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
Nature		Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Physical Tests																								
Hardness (as CaCO3)	mg/L																							
Conductivity (uS/cm)		1160	1160	1170	1260	1410	1430	1480	1160	1160	1160	1170	1250	1400	1420	1470	1140	1140	1140	1140	1230	1370	1390	1440
ORP	mV																							
pH		7.60	7.73	7.80	7.42	7.34	7.32	7.29	7.16	7.24	7.33	6.81	6.94	6.94	6.88	6.84	7.45	7.69	7.78	7.81	7.66	7.41	7.24	7.25
Total Suspended Solids	mg/L	<3.0	<3.0	<3.0	<3.0	36.6	44.6	49.3	<3.0	<3.0	<3.0	4.8	<3.0	27.5	30.8	32.1	<3.0	<3.0	<3.0	<3.0	<3.0	36.7	32.0	36.7
Dissolved Anions																								
Alkalinity-Total CaCO3	mg/L	103	101	106	110	101	105	73.0	97.2	96.1	101	101	105	97.6	97.4	108	101	95.2	97.5	56.8	104	110	107	112
Sulphate SO4	mg/L	546	544	558	608	688	708	733	583	575	592	575	725	735	743	778	558	562	561	557	605	691	699	733
Chloride (Cl)	mg/L																							
Fluoride (F)	mg/L																							
Bromide (Br)	mg/L																							
Nutrients																								
Ammonia Nitrogen N	mg/L	0.820	0.860	0.840	0.930	1.44	1.52	1.48	0.800	0.820	0.770	0.740	1.17	1.27	1.31	1.52	1.17	1.21	1.05	1.05	1.78	1.80	1.52	1.64
Nitrate Nitrogen N	mg/L	0.257	0.193	0.200	0.192	<0.050	<0.050	<0.050	0.420	0.379	0.362	0.315	0.201	5.66	<0.025	<0.025	0.334	0.351	0.348	0.341	0.181	<0.0050	0.0066	<0.0050
Nitrite Nitrogen N	mg/L	0.014	<0.010	0.014	0.015	<0.010	<0.010	0.011	0.0086	0.0090	0.0078	0.0095	0.0087	0.137	0.0158	0.0088	0.0061	0.0062	0.0063	0.0063	0.0060	0.0016	0.0024	0.0022
Nitrite/Nitrate Nitrogen N	mg/L																							
Dissolved ortho-Phosphate P	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0019	0.0044	<0.0010	<0.0010	<0.0010	<0.0010
Total Phosphate P	mg/L	0.002	0.002	0.002	0.002	0.0069	0.002	0.002	0.0052	0.0052	0.0090	0.0113	0.0050	0.002	0.002	0.002	0.0025	0.0046	0.0060	0.0101	0.0027	0.0037	0.0048	0.0037
																							1.00E+09	
Total Metals																							500000	
Aluminum T-Al	mg/L	0.0262	0.0324	0.0353	0.0200	0.0192	0.0114	0.0129	<0.0050	<0.0050	<0.0050	0.0070	0.0117	0.0108	0.0085	0.0080	0.0119	0.0137	0.0140	0.0140	0.0147	0.0108	2000.0000	0.5556
Antimony T-Sb	mg/L	0.00156	0.00165	0.00164	0.00167	<0.00020	<0.00020	<0.00020	0.00141	0.00136	0.00135	0.00140	0.00150	<0.00020	<0.00020	<0.00020	0.00138	0.00140	0.00140	0.00142	0.00142	<0.00020	<0.00020	<0.00020
Arsenic T-As	mg/L	0.00024	0.00023	0.00022	0.00024	0.00091	0.00217	0.00172	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00106	0.00181	0.00126	<0.00020	<0.00020	<0.00020	0.00020	0.00022	0.00102	0.00168	0.00110
Barium T-Ba	mg/L	0.0165	0.0168	0.0167	0.0168	0.0155	0.0167	0.0164	0.0175	0.0169	0.0169	0.0169	0.0169	0.0165	0.0155	0.0164	0.0161	0.0163	0.0164	0.0164	0.0161	0.0158	0.0159	0.0160
Beryllium T-Be	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Bismuth T-Bi	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron T-B	mg/L	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.050	<0.050	<0.050	<0.050	<0.050	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium T-Cd	mg/L	0.0139	0.0144	0.0144	0.0150	0.00048	0.00013	0.00015	0.00511	0.00522	0.00626	0.0122	0.0165	0.00077	0.00035	0.00022	0.00302	0.00315	0.00315	0.00313	0.00968	0.00110	0.00051	0.00035
Calcium T-Ca	mg/L	147	135	135	138	185	202	193	137	139	139	136	158	189	201	202	138	135	137	135	146	175	191	199
Chromium T-Cr	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt T-Co	mg/L	0.0442	0.0460	0.0466	0.0474	0.0335	0.0326	0.0309	0.0475	0.0467	0.0463	0.0467	0.0475	0.0309	0.0301	0.0316	0.0433	0.0453	0.0461	0.0472	0.0494	0.0319	0.0324	0.0317
Copper T-Cu	mg/L	0.0172	0.0183	0.0184	0.0168	0.00728	<0.0016	<0.0014	0.00384	0.00392	0.00416	0.00704	0.00974	0.00462	0.00166	0.00118	0.00423	0.00445	0.00472	0.00463	0.00527	0.00243	0.00093	0.00060
Iron T-Fe	mg/L	0.154	0.167	0.185	0.136	16.1	21.4	22.2	<0.030	<0.030	<0.030	0.032	0.081	20.0	22.7	25.6	0.062	0.063	0.064	0.063	0.058	17.4	20.9	24.0
Lead T-Pb	mg/L	0.00219	0.00260	0.00251	0.00140	0.00132	0.00094	0.00122	0.00094	0.00108	0.00088	0.00141	0.00129	0.00058	0.00064	0.00088	0.00184	0.00282	0.00224	0.00252	0.00191	0.00114	0.00144	0.00135
Lithium T-Li	mg/L	0.050	0.051	0.051	0.054	0.063	0.066	0.065	0.048	0.050	0.050	0.049	0.054	0.059	0.059	0.066	0.049	0.052	0.052	0.054	0.058	0.063	0.066	0.068
Magnesium T-Mg	mg/L	64.3	59.4	58.8	58.6	65.3	72.1	69.0	61.2	61.3	61.7	60.3	66.7	66.3	69.8	68.8	63.0	62.5	62.8	61.6	62.9	63.1	69.2	71.7
Manganese T-Mn	mg/L	2.38	2.47	2.48	2.76	3.42	3.54	3.65	2.43	2.37	2.34	2.40	2.60	3.17	3.17	3.60	2.36	2.49	2.56	2.60	2.99	3.49	3.59	3.80
Molybdenum T-Mo	mg/L	0.00257	0.00258	0.00262	0.00280	0.00384	0.00333	0.00284	0.00273	0.00260	0.00235	0.00267	0.00260	0.00347	0.00291	0.00272	0.00236	0.00247	0.00249	0.00259	0.00270	0.00348	0.00304	0.00266
Nickel T-Ni	mg/L	0.0989	0.103	0.106	0.106	0.0717	0.0681	0.0719	0.109	0.105	0.105	0.107	0.105	0.0657	0.0648	0.0736	0.0959	0.0997	0.103	0.104	0.107	0.0651	0.0667	0.0715
Phosphorus T-P	mg/L	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium T-K	mg/L	7.5	6.9	6.9	7.1	12.0	13.6	12.3	9.0	9.2	8.9	8.7	10.8	15.1	15.7	15.4	6.9	6.8	6.9	6.7	7.8	13.4	13.0	12.7
Selenium T-Se	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon T-Si	mg/L	3.03	2.78	2.77	2.63	2.50	2.80	2.70	3.04	3.11	3.11	3.30	3.19	2.79	2.95	3.03	2.94	2.90	2.93	2.87	2.72	2.39	2.67	2.79
Silver T-Ag	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Sodium T-Na	mg/L	21.3	19.6	19.5	19.7	31.3	35.4	32.0	21.0	21.3	21.0	20.3	24.6	33.3	33.4	33.5	19.6	19.4	19.8	18.9	21.5	33.5	32.6	32.1
Strontium T-Sr	mg/L	0.470	0.486	0.491	0.510	0.535	0.561	0.609	0.488	0.470	0.463	0.473	0.470	0.485	0.490	0.585	0.480	0.504	0.514	0.521	0.539	0.525	0.566	0.617
Thallium T-Tl	mg/L	0.00064	0.00065	0.00067	0.00069	0.00024	0.00024	0.00024	0.00070	0.00069	0.00066	0.00066	0.00066	0.00025	0.00024	0.00026	0.00067	0.00069	0.00070	0.00070	0.00073	0.00025	0.00026	0.00026
Tin T-Sn	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Titanium T-Ti	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium T-U	mg/L	0.00275	0.00288	0.00293	0.00291	0.00282	0.00369	0.00464	0.00292	0.00288	0.00282	0.00270	0.00285	0.00322	0.00359	0.00484	0.00224	0.00234	0.00237	0.00239	0.00307	0.00330	0.00379	0.00472
Vanadium T-V	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Zinc T-Zn	mg/L	13.4	14.0	14.1	14.7	3.12	2.48	2.73	11.6	11.3	12.1	14.3	13.1	2.41	2.36	2.66	12.5	13.1	13.6	13.8	14.9	2.68	2.58	2.76
Dissolved Metals																								
Aluminum D-Al	mg/L								<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020								
Antimony D-Sb	mg/L								0.00142	0.00143	0.00137	0.00146	0.00150	<0.00020	<0.00020	<0.00020								
Arsenic D-As	mg/L								<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00089	0.00140	0.00059								
Barium D-Ba	mg/L								0.0170	0.0170	0.0164	0.0164	0.0165	0.0159	0.0154	0.0156								
Beryllium D-Be	mg/L								<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0010	<0.0010	<0.0010								
Bismuth D-Bi	mg/L								<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0010	<0.0010	<0.0010								
Boron D-B	mg/L								<0.050	<0.050	<0.050	<0.050	<0.050	<0.020	<0.020	<0.020								
Cadmium D-Cd	mg/L								0.00094	0.00090	0.00075	0.00116	0.00146	<0.00010	<0.00010	<0.00010								
Calcium D-Ca	mg/L								139	139	140	143	153	191	192	192								
Chromium D-Cr	mg/L								<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0010	<0.0010	<0.0010								
Cobalt D-Co	mg/L								0.0470	0.0469	0.0450	0.0447	0.0466	0.0308	0.0304	0.0306								
Copper D-Cu	mg/L								0.00187	0.00202	0.00171	0.00115	0.00161	0.00042	0.00035	0.00037								
Iron D-Fe	mg/L								<0.030	<0.030	<0.030	<0.030	<0.030	19.7	20.8	23.3								
Lead D-Pb	mg/L								0.00040	0.00045	0.00033	0.00050	<0.00025	<0.00010	<0.00010	<0.00010								
Lithium D-Li	mg/L								0.050	0.050	0.047	0.047	0.053	0.056	0.058	0.064								
Magnesium D-Mg	mg/L								62.3	61.3	62.0	63.1	64.6	67.0	64.6	64.9								
Manganese D-Mn	mg/L								2.38	2.39	2.29	2.30	2.60	3.13	3.15	3.51								
Molybdenum D-Mo	mg/L								0.00250	0.00253	0.00243	0.00246	0.00265	0.00329	0.00294	0.00257								
Nickel D-Ni	mg/L								0.107	0.108	0.104	0.103	0.106	0.0656	0.0649	0.0705								
Phosphorus D-P	mg/L								<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30								
Potassium D-K	mg/L								9.0	9.0	8.9	9.4	10.9	15.6	14.9	14.8								
Selenium D-Se	mg/L								<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020								
Silicon D-Si	mg/L								2.97	2.97	3.03	3.50	3.20	2.84	2.81	2.87								
Silver D-Ag	mg/L								<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000020	<0.000020	<0.000020								
Sodium D-Na	mg/L								21.1	21.1	20.9	21.7	24.8	34.2	31.7	32.7								
Strontium D-Sr	mg/L								0.477	0.480	0.450	0.455	0.468	0.477	0.499	0.565								
Thallium D-Tl	mg/L								0.00070	0.00068	0.00067	0.00066	0.00069	0.00024	0.00023	0.00024								
Tin D-Sn	mg/L								<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00020	<0.00020	<0.00020								
Titanium D-Ti	mg/L								<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010								
Uranium D-U	mg/L								0.00289	0.00294	0.00265	0.00256	0.00282	0.00301	0.00345	0.00459								
Vanadium D-V	mg/L								<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020								
Zinc D-Zn	mg/L								11.2	11.2	11.1	13.4	12.3	2.36	2.35	2.52								

Faro Pit - 2005 to 2009 Monitoring Re
RESULTS OF ANALYSIS

Depth (m)	0.05	0.1	1	3	5	15	30	60	80	0.1	1	3	5	15	30	60	80	1	10	30	1	3	5	15	30	60	80
Sample ID	FP_ SURFACE	FP_ SURFACE	FP_1	FP_3	FP_5	FP_15	FP_30	FP_60	FP_80	FP-0.1	FP-1	FP-3	FP-5	FP-15	FP-30	FP-60	FP-80	FARO PIT 1m	FARO PIT 10m	FARO PIT 30m	FP 1m Faro Pit @ 1m	FP 3m Faro Pit @ 3m	FP 5m Faro Pit @ 5m	FP 15m Faro Pit @ 15m	FP 30m Faro Pit @ 30m	FP 60m Faro Pit @ 60m	FP 80m Faro Pit @ 80m
Date Sampled	31-Aug-05	31-Aug-05	31-Aug-05	31-Aug-05	31-Aug-05	31-Aug-05	31-Aug-05	31-Aug-05	31-Aug-05	14-Sep-05	14-Sep-05	14-Sep-05	14-Sep-05	14-Sep-05	14-Sep-05	14-Sep-05	14-Sep-05	17-May-06	17-May-06	17-May-06	21-Jun-06	21-Jun-06	21-Jun-06	21-Jun-06	21-Jun-06	21-Jun-06	21-Jun-06
Time Sampled	10:15	15:15	16:00	16:15	16:22	16:35	16:49	17:15	17:45	19:00	19:07	19:12	19:16	19:25	19:40	18:55	20:15	10:00	10:30	11:00	16:00	16:15	16:20	16:35	16:45	17:00	17:20
ALS Sample ID	9	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	01	02	03	07	08	09	10	11	12	13
Nature	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Physical Tests																											
Hardness (as CaCO3)																											
Conductivity (uS/cm)	0899	1140	1140	1140	1140	1230	1360	1380	1440	1180	1180	1180	1190	1250	1390	1410	1460	0956	1250	1250	1090	1100	1140	1280	1410	1430	1490
ORP																											
pH	8.41	7.27	7.46	7.57	7.69	7.51	7.34	7.16	7.02	6.69	6.86	7.03	7.12	7.20	7.32	7.22	7.14	7.16	7.45	7.53	6.96	7.20	7.33	7.39	7.35	7.25	7.15
Total Suspended Solids	7.1	<3.0	<3.0	<3.0	3.3	<3.0	60.0	30.6	37.6	<3.0	<3.0	<3.0	<3.0	<3.0	31.2	34.5	39.8	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	28	33.3	40
Dissolved Anions																											
Alkalinity-Total CaCO3	124	102	101.0	100	102	110	104	107	118	90.0	93.4	96.7	107	97.7	83.4	90.0	93.2	84.3	105	111	097	98.0	097	104	102.0	107.0	116.0
Sulphate SO4	412	569	582	567	573	631	712	724	761	569	570	572	572	632	711	720	761	452	614	614	528	533	556	628	714	721	755
Chloride (Cl)																											
Fluoride (F)																											
Bromide (Br)																											
Nutrients																											
Ammonia Nitrogen N	0.45	1.07	1.20	1.19	1.22	1.94	1.47	1.47	1.700	1.33	2.30	1.27	1.17	1.94	1.63	1.60	1.87	1.05	1.66	1.75	1.46	1.47	1.58	1.93	1.50	1.59	1.74
Nitrate Nitrogen N	1.010	0.356	0.410	0.365	0.371	0.197	<0.025	<0.025	<0.025	0.344	0.351	0.346	0.349	0.199	<0.025	<0.025	<0.025	0.271	0.314	0.317	0.329	0.328	0.334	0.314	<0.0050	<0.0050	<0.0050
Nitrite Nitrogen N	0.0098	0.0308	0.0255	0.0159	0.0091	0.0167	0.0067	0.0060	0.0082	0.0052	0.0052	0.0051	0.0054	0.0093	0.0075	0.0056	0.0051										
Nitrite/Nitrate Nitrogen N																											
Dissolved ortho-Phosphate P	0.0363	<0.0010	0.0072	<0.0010	<0.0010	<0.0010	0.0016	0.0017	0.0017	<0.0010	<0.0010	<0.0010	<0.0010	0.0085	0.0026	0.0029	0.0027	<0.0010	<0.0010	<0.0010	<0.0010	0.0012	<0.0010	<0.0010	0.0013	0.0011	<0.010
Total Phosphate P	0.0540	0.0025	0.0112	0.0021	0.002	0.0020	0.0157	0.0026	0.0034	0.002	0.002	0.002	0.002	0.0086	0.0031	0.0040	0.0038	0.0027	0.0026	0.003	0.0039	0.004	0.0039	0.0046	<0.0060	0.0110	0.0140
Total Metals																											
Aluminum T-Al	0.0700	0.0109	0.0155	0.0118	0.0107	0.0069	0.0088	0.0096	0.0205	0.0179	0.0143	0.0105	0.0100	0.0068	0.0079	0.0092	0.0138	0.0529	0.0325	0.0646	0.0188	0.0211	0.0232	0.0280	0.0187	0.0123	0.0120
Antimony T-Sb	0.00520	0.00126	0.00135	0.00138	0.00132	0.00112	<0.00020	<0.00020	<0.00020	0.00133	0.00147	0.00145	0.00142	0.00134	<0.00020	<0.00020	<0.00020	0.00066	0.00130	0.00128	0.00096	0.00098	0.00105	0.00124	<0.00020	<0.00020	<0.00020
Arsenic T-As	0.00087	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00092	0.00162	0.00136	0.00023	0.00025	0.00021	0.00021	<0.00020	0.00128	0.00163	0.00154	<0.00020	0.00025	0.00024	<0.00020	<0.00020	<0.00020	0.00022	0.00104	0.00157	0.00139
Barium T-Ba	0.0317	0.0153	0.0159	0.0155	0.0156	0.0145	0.0155	0.0150	0.0166	0.0160	0.0173	0.0165	0.0162	0.0167	0.0156	0.0155	0.0182	0.0169	0.0167	0.0162	0.0170	0.0178	0.0175	0.0184	0.0170	0.0163	0.0160
Beryllium T-Be	<0.0010	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Bismuth T-Bi	<0.0010	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron T-B	<0.020	<0.050	<0.050	<0.050	<0.050	<0.050	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium T-Cd	0.00077	0.00313	0.00324	0.00323	0.00328	0.00408	0.00087	0.00029	0.00016	0.00346	0.00351	0.00340	0.00345	0.00284	0.00073	0.00024	0.00022	0.00798	0.00215	0.00259	0.00525	0.00546	0.00471	0.00371	0.00019	<0.00010	<0.00010
Calcium T-Ca	098	144	142	143	135	146	173	180	202.0	153	152	147	154	164	188	203	205	103	156	155	113	145	121	148	205	175	179
Chromium T-Cr	<0.0010	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt T-Co	0.0136	0.0426	0.0420	0.0435	0.0431	0.0429	0.0302	0.0290	0.0322	0.0429	0.0449	0.0446	0.0445	0.0454	0.0307	0.0301	0.0307	0.0336	0.0472	0.0459	0.0424	0.0450	0.0451	0.0501	0.0348	0.0345	0.0319
Copper T-Cu	0.00140	0.00423	0.00464	0.00442	0.00433	0.00132	<0.0020	<0.0010	<0.0010	0.00493	0.00537	0.00499	0.00478	<0.0020	<0.0018	<0.0012	<0.0012	0.0284	0.00720	0.01290	0.01340	0.01440	0.01410	0.00709	<0.0010	<0.0010	<0.00020
Iron T-Fe	0.124	0.162	0.183	0.160	0.148	00.0	17.4	19.9	24.800	0.224	0.243	0.216	0.230	0.072	18.6	21.7	23.8	0.346	0.172	0.201	0.164	00.4	00.3	00.2	20.400	20.300	23.400
Lead T-Pb	0.00168	0.00264	0.00373	0.00278	0.00265	0.00105	0.00074	0.00067	0.00284	0.00261	0.00403	0.00283	0.00286	0.00115	0.00067	0.00072	0.00289	0.00302	0.00133	0.00185	0.00188	0.00192	0.00174	0.00134	0.00069	0.00065	0.00093
Lithium T-Li	0.023	0.049	0.049	0.047	0.050	0.054	0.063	0.064	0.072	0.047	0.050	0.049	0.047	0.053	0.059	0.060	0.065	0.036	0.057	0.052	0.045	0.050	0.050	0.058	0.067	0.070	0.073
Magnesium T-Mg	64.4	66.0	64.2	63.0	59.6	60.0	60.7	62.1	70.1	67.6	67.4	65.4	68.0	67.2	65.5	68.9	68.1	48.7	68.6	68.1	58.2	66.5	56.1	66.2	72.6	62.7	63.8
Manganese T-Mn	0.19	2.22	2.19	2.25	2.24	2.50	3.18	3.17	3.720	2.36	2.49	2.49	2.46	2.84	3.36	3.45	3.77	1.80	2.80	2.65	2.58	2.78	2.77	3.32	4.13	4.34	4.42
Molybdenum T-Mo	0.00332	0.00217	0.00219	0.00223	0.00212	0.00214	0.00317	0.00269	0.00264	0.00234	0.00244	0.00238	0.00235	0.00251	0.00337	0.00286	0.00267	0.00136	0.00245	0.00211	0.00170	0.00182	0.00183	0.00226	0.00332	0.00299	0.00272
Nickel T-Ni	0.1120	0.0941	0.0955	0.0963	0.0969	0.0945	0.0630	0.0617	0.074	0.0952	0.0994	0.0991	0.0980	0.0994	0.0630	0.0624	0.0705	0.079	0.111	0.107	0.096	0.1020	0.1060	0.1120	0.0728	0.072	0.074
Phosphorus T-P	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.60	<0.30	<0.30	<0.60	<0.30	<0.30
Potassium T-K	2.2	7.7	7.4	7.3	7.0	08.2	12.0	12.5	13.2	7.7	7.6	7.4	7.8	9.1	12.3	13.4	13.0	5.6	9.3	9.4	5.3	06.7	06.6	08.4	12.6	11.8	12.0
Selenium T-Se	<0.0020	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon T-Si	2.48	3.22	3.15	3.16	2.95	2.74	2.47	2.55	2.91	3.27	3.28	3.18	3.32	3.00	2.60	2.77	2.81	3.35	3.43	3.40	2.70	3.11	2.82	3.14	2.65	2.52	2.62
Silver T-Ag	<0.000020	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	0.000035	0.000057	<0.000020
Sodium T-Na	09.6	21.9	21.4	20.8	19.9	22.3	30.4	31.2	33.8	21.3	20.9	20.4	21.3	24.1	29.8	32.0	31.1	13.7	22.9	23.1	17.7	20.6	19.3	23.7	35.7	30.4	30.8
Strontium T-Sr	0.607	0.478	0.475	0.483	0.485	0.483	0.522	0.541	0.661	0.470	0.492	0.487	0.487	0.496	0.503	0.525	0.604	0.385	0.589	0.529	0.503	0.543	0.541	0.631	0.638	0.671	0.745
Thallium T-Tl	0.00119	0.00063	0.00062	0.00062	0.00062	0.00058	0.00022	0.00022	0.00023	0.00066	0.00067	0.00066	0.00067	0.00064	0.00023	0.00023	0.00021	0.00042	0.00065	0.00060	0.00054	0.00058	0.00057	0.00066	0.00025	0.00022	<0.00020
Tin T-Sn	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Titanium T-Ti	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.010	<0.010	<0.020	<0.010	<0.010
Uranium T-U	0.00402	0.00195	0.00193	0.00192	0.00196	0.00240	0.00319	0.00374	0.00515	0.00200	0.00211	0.00209	0.00202	0.00256	0.00329	0.00369	0.00504	0.00151	0.00245	0.00244	0.00205	0.00221	0.00221	0.00250	0.00349	0.00409	0.00556
Vanadium T-V	<0.0020	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Zinc T-Zn	01.0	13.2	13.2	13.3	13.2	13.10	2.69	2.43	2.84	11.8	12.3	12.1	12.1	12.2	2.37	2.15	2.40	14.3	16.6	15.2	15.2	16.00	15.70	17.00	03.2	02.7	02.6
Dissolved Metals																											
Aluminum D-Al										<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0065	0.0089	0.0124	<0.0020	0.0034	0.0042	0.0084	0.0088	0.0043	0.0042
Antimony D-Sb										0.00140	0.00139	0.00139	0.00136	0.00138	<0.00020	<0.00020	<0.00020	0.00064	0.00125	0.00120	0.00094	0.00096	0.00099	0.00118	<0.00020	<0.00020	<0.00020
Arsenic D-As										<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00095	0.00062	0.00043
Barium D-Ba										0.0159	0.0160	0.0161	0.0161	0.0158	0.0149	0.0145	0.0137	0.0164	0.0167	0.0160	0.0168	0.0170	0.0173	0.0175	0.0169	0.0155	0.0152
Beryllium D-Be										<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Bismuth D-Bi										<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron D-B										<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium D-Cd										0.00337	0.00348	0.00353	0.00361	<0.00010	<0.00010	<0.00010	<0.00010	0.00771	0.00204	0.00258	0.00528	0.00535	0.00479	0.00357	<0.00010	<0.00010	<0.00010
Calcium D-Ca										151	148	149	147	161	194	192	209	104	155	156	114	137	125	145	203	165	169
Chromium D-Cr										<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt D-Co										0.0438	0.0445	0.0441	0.0443	0.0451	0.0312	0.0305	0.0306	0.0339	0.0477	0.0457	0.0434	0.0440	0.0470	0.0481	0.0358	0.0323	0.0328
Copper D-Cu										0.00289	0.00300	0.00295	0.00295	<0.00060	<0.00040	<0.00040	<0.00060	0.0198	0.00199	0.00425	0.00954	0.00899	0.00907	0.00217	<0.0050	<0.0050	<0.00020
Iron D-Fe										<0.030	<0.030	<0.030	<0.030	<0.030	1.70	1.71	1.96	<0.030	<0.030	<0.030	<0.030	<0.060	<0.030	<0.030	20.1	18.8	22.2
Lead D-Pb										0.00014	0.00024	0.00016	0.00016	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00014	0.00021	0.00022	0.00011	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Lithium D-Li										0.047	0.046	0.047	0.047	0.051	0.058	0.059	0.064	0.037	0.057	0.051	0.048	0.048	0.051	0.057	0.069	0.065	0.072
Magnesium D-Mg										66.7	65.1	65.7	64.3	64.7	67.1	65.3	69.2	49.1	68.2	68.4	59.8	63.3	57.6	64.8	71.8	59.1	60.2
Manganese D-Mn										2.45	2.49	2.50	2.48	2.90	3.54	3.59	3.83	1.80	2.83	2.66	2.67	2.69	2.88	3.17	4.24	4.07	4.50
Molybdenum D-Mo										0.00231	0.00230	0.00242	0.00237	0.00243	0.00017	<0.00010	<0.00010	0.00131	0.00247	0.00219	0.00169	0.00169	0.00183	0.00213	0.00340	0.00283	0.00278
Nickel D-Ni										0.101	0.101	0.102	0.103	0.103	0.0675	0.0658	0.0731	0.079	0.113	0.105	0.098	0.0992	0.1090	0.1090	0.0744	0.0679	0.075
Phosphorus D-P										<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.60	<0.30	<0.30	<0.60	<0.30	<0.30
Potassium D-K										7.6	7.4	7.5	7.3	8.9	12.7	12.4	12.9	5.6	9.4	9.3	5.9	06.4	06.5	07.8	12.4	11.4	11.4
Selenium D-Se										<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon D-Si										3.23	3.13	3.17	3.09	2.88	2.32	2.28	2.46	3.30	3.35	3.38	2.69	2.94	2.87	3.03	2.62	2.35	2.46
Silver D-Ag										<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	0.000061	0.000057	0.000045
Sodium D-Na										20.8	20.2	20.5	20.2	23.4	31.3	30.2	30.6	14.0	22.8	22.8	18.1	19.4	18.9	21.8	35.1	29.0	29.9
Strontium D-Sr										0.493	0.506	0.513	0.508	0.519	0.544	0.568	0.650	0.390	0.595	0.530	0.515	0.523	0.557	0.602	0.653	0.649	0.762
Thallium D-Tl										0.00064	0.00063	0.00062	0.00061	0.00060	0.00021	<0.00020	<0.00020	0.00041	0.00063	0.00061	0.00056	0.00054	0.00059	0.00066	0.00023	0.00021	<0.00020
Tin D-Sn										<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Titanium D-Ti										<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.010	<0.010	<0.020	<0.010	<0.010
Uranium D-U										0.00187	0.00188	0.00192	0.00193	0.00239	0.00114	0.00122	0.00157	0.00139	0.00243	0.00236	0.00207	0.00212	0.00228	0.00236	0.00352	0.00395	0.00563
Vanadium D-V										<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Zinc D-Zn										12.1	12.4	12.6	12.5	12.4	2.00	1.84	2.04	14.4	16.8	15.2	15.3	15.40	16.00	16.50	03.2	02.5	02.6

Faro Pit - 2005 to 2009 Monitoring Re
RESULTS OF ANALYSIS

Depth (m)	1	3	5	15	30	60	80	1	3	5	15	30	60	80	1	5	15	80	1	3	5	15	30	60	80
Sample ID	FP_1 Faro Pit @1m	FP_3 Faro Pit @3m	FP_5 Faro Pit @5m	FP_15 Faro Pit @15m	FP_30 Faro Pit @30m	FP_60 Faro Pit @60m	FP_80 Faro Pit @80m	FP_1 (Faro @1m)	FP_3 (Faro @3m)	FP_5 (Faro @5m)	FP_15 (Faro @15m)	FP_30 (Faro @30m)	FP_60 (Faro @60m)	FP_80 (Faro @80m)	F1 FARO @1M	F-5 FARO @5M	F-15 FARO @15M	F-80 FARO @80M	FPL-1M	FPL-3M	FPL-5M	PFL-15M	FPL-30M	FPL-60M	FPL-80M
Date Sampled	9-Aug-06	9-Aug-06	9-Aug-06	9-Aug-06	9-Aug-06	9-Aug-06	9-Aug-06	15-Sep-06	15-Sep-06	15-Sep-06	15-Sep-06	15-Sep-06	15-Sep-06	15-Sep-06	26-Mar-07	26-Mar-07	26-Mar-07	26-Mar-07	12-Jun-07	12-Jun-07	12-Jun-07	12-Jun-07	12-Jun-07	12-Jun-07	12-Jun-07
Time Sampled	17:00	17:20	17:35	17:45	18:00	18:15	18:30	17:35	17:45	18:00	18:15	18:32	18:50	19:05	15:20	15:48	15:59	16:45	17:45	18:05	18:15	18:30	18:40	18:55	19:20
ALS Sample ID	13	14	15	16	17	18	19	14	15	16	17	18	19	20	L491616-5	L491616-6	L491616-7	L491616-8	L518525-14	L518525-15	L518525-16	L518525-17	L518525-18	L518525-19	L518525-20
Nature	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Physical Tests																									
Hardness (as CaCO3)																			568	574	656	726	829	812	862
Conductivity (uS/cm)	1160	1150	1150	1280	1400	1420	1490	1140	1150	1150	1250	1360	1380	1440	1010	1270	1270	1490	1000	1000	1130	1180	1310	1320	1340
ORP																			120	120	120	130	130	-10	-30
pH	6.84	7.26	7.37	7.37	7.50	7.48	7.43	7.78	7.80	7.82	7.68	7.34	7.25	7.17	7.73	7.90	7.90	7.85	7.85	7.85	7.79	7.75	7.17	7.11	7.15
Total Suspended Solids	<3.0	<3.0	<3.0	<3.0	25.7	25	31	<3.0	<3.0	<3.0	<3.0	31.2	32.6	36.6	<3.0	<3.0	<3.0	47.2	<3.0	<3.0	<3.0	<3.0	30	30.7	135
Dissolved Anions																									
Alkalinity-Total CaCO3	075	102	103	111	96.6	110	140	101	96.9	103	105	106	108	118											
Sulphate SO4	549	552	552	619	679	700	720	549	553	554	607	682	695	699	487	606	605	734	502	503	571	604	687	710	733
Chloride (Cl)															0.52	1.19	1.21	1.44	0.95	0.9	1.03	1.11	1.28	1.29	1.31
Fluoride (F)																									
Bromide (Br)															<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Nutrients																									
Ammonia Nitrogen N	1.34	1.39	1.37	1.82	1.45	1.49	1.69	1.68	1.64	1.63	1.91	1.49	1.55	1.92					1.37	1.34	1.66	1.80	1.67	1.75	1.89
Nitrate Nitrogen N	0.335	0.338	0.34	0.22	<0.0050	<0.0050	<0.0050	0.330	0.328	0.328	0.211	<0.0050	<0.0050	<0.0050					0.327	0.331	0.377	0.421	<0.0050	<0.0050	<0.0050
Nitrite Nitrogen N	0.003	0.0037	0.0038	0.0038	<0.0010	<0.0010	<0.0010												0.0022	0.003	0.003	0.0029	<0.0010	<0.0010	<0.0010
Nitrite/Nitrate Nitrogen N	0.338	0.342	0.344	0.223	<0.0050	<0.0050	<0.0050												0	0	0	0.424	<0.0050	<0.0050	<0.0050
Dissolved ortho-Phosphate P	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010					<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Total Phosphate P	<0.0020	<0.0020	<0.0020	<0.0020	0.0580	<0.0020	<0.0020	0.0026	0.0034	0.0033	0.0031	0.0100	0.0046	0.0081					0.0029	0.0045	0.0031	0.0036	0.0120	0.0120	0.0600
Total Metals																									
Aluminum T-Al	0.0092	0.0044	0.0049	0.0138	0.0186	0.0126	0.0105	0.0048	0.0049	0.0045	0.0062	0.0080	0.0095	0.0175	<0.20	<0.20	<0.20	<0.20	0.0318	0.0347	0.0306	0.0282	0.0166	0.0097	0.8590
Antimony T-Sb	0.00110	0.00101	0.00104	0.00112	<0.00020	<0.00020	<0.00020	0.00102	0.00103	0.00101	0.00099	<0.00020	<0.00020	<0.00020	<0.20	<0.20	<0.20	<0.20	0.00068	0.00066	0.00086	0.00082	<0.00050	<0.00050	0.00233
Arsenic T-As	0.00023	<0.00020	<0.00020	<0.00020	0.00087	0.00123	0.00098	<0.00020	<0.00020	<0.00020	<0.00020	0.00086	0.00124	0.00126	<0.20	<0.20	<0.20	<0.20	<0.00050	<0.00050	<0.00050	<0.00050	0.00062	0.00179	0.0545
Barium T-Ba	0.0174	0.0168	0.0171	0.0174	0.0166	0.0157	0.0158	0.0178	0.0178	0.0175	0.0177	0.0162	0.0160	0.0157	0.0140	0.0170	0.0170	0.0240	0.0171	0.0167	0.0175	0.0171	0.0160	0.0151	0.5410
Beryllium T-Be	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0050	<0.0050	<0.0050	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025
Bismuth T-Bi	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.20	<0.20	<0.20	<0.20	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025
Boron T-B	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.10	<0.10	<0.10	<0.10	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Cadmium T-Cd	0.00556	0.00539	0.00529	0.00308	0.00014	<0.00010	<0.00010	0.00515	0.00508	0.00480	0.00336	<0.00010	<0.00010	<0.00010	0.02800	<0.010	<0.010	<0.010	0.00784	0.00829	0.00656	0.00664	0.00086	<0.00025	0.00098
Calcium T-Ca	135	137	137	149	192	191	207	146	144	144	161	193	196	207	112	163	160	206	134	131	152	169	209	219	226
Chromium T-Cr	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025
Cobalt T-Co	0.0439	0.0440	0.0445	0.0473	0.0351	0.0332	0.0320	0.0459	0.0461	0.0446	0.0478	0.0338	0.0334	0.0320	0.0330	0.0460	0.0460	0.0310	0.0417	0.0422	0.0460	0.0478	0.0378	0.0344	0.0358
Copper T-Cu	0.01230	0.00611	0.00612	0.00377	0.0012	0.00081	0.0007	0.00573	0.00594	0.00566	0.00248	0.00118	0.00098	0.00091	0.04000	<0.010	<0.010	<0.010	0.0189	0.01950	0.01330	0.01040	0.00232	0.00069	0.03320
Iron T-Fe	0.044	00.0	00.0	00.1	20.400	22.600	28.000	0.104	0.098	0.100	0.167	21.2	24.0	28.9	0.043	0.033	<0.030	26.400	0.2	0.2	0.3	0.231	20.600	25.900	35.900
Lead T-Pb	0.00099	0.00074	0.00087	0.00078	0.00062	0.00063	0.00072	0.00098	0.00099	0.00098	0.00089	0.00063	0.00060	0.00065	<0.050	<0.050	<0.050	<0.050	0.00223	0.00190	0.00191	0.00112	0.00069	0.00084	0.27200
Lithium T-Li	0.054	0.055	0.056	0.065	0.073	0.074	0.079	0.055	0.055	0.053	0.059	0.066	0.067	0.075	0.038	0.056	0.059	0.067	0.050	0.048	0.056	0.062	0.074	0.074	0.080
Magnesium T-Mg	62.8	63.8	64.1	64.8	68.6	67.5	72.7	67.4	66.6	66.3	69.7	68.2	68.3	71.4	60.0	69.6	69.1	68.1	62.4	60.1	68.5	75.3	74.0	75.1	77.2
Manganese T-Mn	2.37	2.58	2.60	3.19	4.06	4.05	4.27	2.64	2.65	2.52	3.07	3.74	3.86	4.12	1.74	2.74	2.81	3.88	2.13	2.14	2.40	2.56	3.67	3.75	3.89
Molybdenum T-Mo	0.00168	0.00171	0.00186	0.00214	0.00334	0.00290	0.00271	0.00179	0.00186	0.00184	0.00193	0.00309	0.00274	0.00260	<0.030	<0.030	<0.030	<0.030	0.00132	0.00132	0.00152	0.00160	0.00305	0.00250	0.00264
Nickel T-Ni	0.109	0.1080	0.1100	0.1090	0.0735	0.069	0.073	0.113	0.115	0.111	0.109	0.0721	0.0709	0.0768	0.111	0.111	0.109	0.067	0.0980	0.0989	0.1090	0.115	0.078	0.070	0.076
Phosphorus T-P	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium T-K	7.2	07.3	07.2	09.0	13.5	13.1	13.6	9.3	9.2	9.1	11.1	15.3	15.4	15.3	4.6	10.3	10.3	14.8	6.8	6.7	8.0	9.2	13.9	14.5	15.5
Selenium T-Se	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.20	<0.20	<0.20	<0.20	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Silicon T-Si	3.08	3.12	3.14	2.84	2.65	2.62	2.92	3.40	3.36	3.31	3.17	2.79	2.85	3.08	6.96	3.63	3.51	2.96	3.03	2.94	3.15	3.32	2.74	2.82	4.21
Silver T-Ag	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.010	<0.010	<0.010	<0.010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.000449
Sodium T-Na	20.0	20.2	20.1	24.3	34.5	33.9	35.6	22.4	22.1	21.9	26.2	34.3	34.2	34.5	10.7	22.0	22.4	31.2	17.0	16.8	20.1	22.9	31.9	32.6	34.5
Strontium T-Sr	0.501	0.575	0.577	0.632	0.673	0.684	0.759	0.570	0.593	0.565	0.601	0.613	0.659	0.743	0.397	0.611	0.616	0.679	0.462	0.459	0.529	0.567	0.597	0.629	0.656
Thallium T-Tl	0.00059	0.00057	0.00058	0.00059	0.00023	0.00022	<0.00020	0.00063	0.00059	0.00060	0.00058	0.00022	0.00022	0.00020	<0.20	<0.20	<0.20	<0.20	<0.00050	<0.00050	0.00054	0.00057	<0.00050	<0.00050	<0.00050
Tin T-Sn	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.030	<0.030	<0.030	<0.030	0.00076	0.00215	0.00296	0.00248	0.00284	0.00091	0.00406
Titanium T-Ti	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.033
Uranium T-U	0.00236	0.00230	0.00235	0.00228	0.00354	0.00399	0.00535	0.00244	0.00250	0.00245	0.00221	0.00342	0.00407	0.00559					0.00201	0.00199	0.00239	0.00239	0.00325	0.00430	0.00579
Vanadium T-V	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.030	<0.030	<0.030	<0.030	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Zinc T-Zn	14.5	14.40	14.50	14.50	03.0	02.4	02.4	15.4	15.3	14.8	14.5	2.80	2.17	2.16	25.1	15.6	14.5	2.3	13.40	13.60	14.00	14.7	3.7	2.2	2.9
Dissolved Metals																									
Aluminum D-Al	0.0024	0.0061	0.0022	0.0060	0.0063	0.0053	0.0038	<0.0020	<0.0020	<0.0020	0.0062	0.0030	0.0042	0.0033	<0.20	<0.20	<0.20	<0.20	0.0079	0.0081	0.0541	0.0052	0.0073	0.0056	0.0184
Antimony D-Sb	0.00107	0.00102	0.00102	0.00105	<0.00020	<0.00020	<0.00020	0.00098	0.00094	0.00101	0.00097	<0.00020	<0.00020	<0.00020	<0.20	<0.20	<0.20	<0.20	0.00063	0.00064	0.00083	0.00081	<0.00050	<0.00050	<0.00050
Arsenic D-As	0.0002	<0.00020	<0.00020	<0.00020	0.00075	0.00085	0.00062	<0.00020	<0.00020	<0.00020	<0.00020	0.00075	0.00104	0.00100	<0.20	<0.20	<0.20	<0.20	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00162	0.00169
Barium D-Ba	0.0169	0.0166	0.0168	0.0164	0.0157	0.0155	0.0149	0.0172	0.0171	0.0173	0.0170	0.0162	0.0151	0.0152	0.0130	0.0160	0.0160	0.0130	0.0157	0.0165	0.0172	0.0171	0.0154	0.0149	0.0142
Beryllium D-Be	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0050	<0.0050	<0.0050	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025
Bismuth D-Bi	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.20	<0.20	<0.20	<0.20	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025
Boron D-B	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.10	<0.10	<0.10	<0.10	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Cadmium D-Cd	0.00548	0.00531	0.00536	0.00295	<0.00010	<0.00010	<0.00010	0.00498	0.00478	0.00487	0.00327	<0.00010	<0.00010	<0.00010	0.02700	<0.010	<0.010	<0.010	0.0077	0.00784	0.00673	0.00655	0.00088	<0.00025	<0.00025
Calcium D-Ca	137	132	136	151	192	190	208	144	142	144	159	189	192	204	112	159	152	203	129	131	150	168	210	207	221
Chromium D-Cr	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025
Cobalt D-Co	0.0434	0.0431	0.0453	0.0449	0.0337	0.0330	0.0311	0.0451	0.0437	0.0441	0.0461	0.0346	0.0317	0.0317	0.0340	0.0450	0.0440	0.0310	0.0404	0.0425	0.0461	0.0479	0.0361	0.0341	0.0316
Copper D-Cu	0.01140	0.00525	0.0054	0.00105	0.0006	0.00057	0.00052	0.00472	0.00443	0.00444	0.00088	0.00105	0.00088	0.00080	0.03800	<0.010	<0.010	<0.010	0.0126	0.0128	0.00892	0.00761	<0.00050	<0.00050	<0.00050
Iron D-Fe	<0.030	<0.030	<0.030	<0.030	20.3	22.6	27.9	<0.030	<0.030	<0.030	0.066	20.6	23.0	28.4	<0.030	<0.030	<0.030	25.9	<0.030	<0.030	<0.030	<0.030	20.5	24.4	28.1
Lead D-Pb	0.00026	0.0003	0.00032	0.00012	<0.00010	<0.00010	0.00012	0.00017	0.00023	0.00014	<0.00010	0.00013	0.00010	<0.00010	<0.050	<0.050	<0.050	<0.050	<0.00025	<0.00025	<0.00025	<0.00025	0.00213	<0.00025	0.00103
Lithium D-Li	0.053	0.055	0.055	0.061	0.069	0.074	0.077	0.055	0.052	0.052	0.057	0.066	0.067	0.073	0.038	0.055	0.053	0.070	0.046	0.048	0.056	0.058	0.066	0.073	0.075
Magnesium D-Mg	63.3	61.6	63.0	65.7	68.4	67.2	72.3	66.2	65.7	66.6	69.3	66.7	66.6	70.2	59.7	67.3	65.0	67.6	59.7	60.1	68.1	74.7	74.1	71.4	75.2
Manganese D-Mn	2.33	2.55	2.63	3.03	3.91	4.05	4.19	2.59	2.52	2.52	2.92	3.79	3.70	4.02	1.73	2.70	2.66	3.92	2.06	2.17	2.45	2.61	3.51	3.71	3.74
Molybdenum D-Mo	0.00165	0.00176	0.00183	0.00198	0.00332	0.00288	0.00252	0.00185	0.00182	0.00178	0.00194	0.00316	0.00267	0.00251	<0.030	<0.030	<0.030	<0.030	0.00119	0.00129	0.00156	0.00164	0.00274	0.00256	0.00231
Nickel D-Ni	0.107	0.1090	0.1100	0.1020	0.0709	0.068	0.072	0.111	0.109	0.110	0.105	0.0730	0.0681	0.0746	0.110	0.107	0.104	0.067	0.0952	0.0996	0.1090	0.115	0.073	0.069	0.069
Phosphorus D-P	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium D-K	7.4	07.2	07.2	09.1	13.3	13.3	13.7	9.0	9.1	9.0	11.2	14.9	14.7	15.1	4.6	10.1	9.7	15.0	6.6	6.7	7.9	9.1	13.8	14.1	14.7
Selenium D-Se	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.20	<0.20	<0.20	<0.20	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Silicon D-Si	3.12	3.01	3.06	2.88	2.64	2.60	2.89	3.31	3.31	3.30	3.16	2.71	2.72	3.00	6.89	3.57	3.31	2.95	2.90	2.91	3.12	3.30	2.73	2.68	2.87
Silver D-Ag	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.010	<0.010	<0.010	<0.010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Sodium D-Na	20.3	19.9	20.1	24.3	34.5	34.5	35.5	21.9	22.0	22.0	26.1	33.3	32.7	34.3	10.6	21.7	21.2	31.5	16.5	16.9	19.9	22.7	31.5	32.4	33.2
Strontium D-Sr	0.495	0.567	0.582	0.598	0.637	0.678	0.740	0.570	0.560	0.567	0.581	0.633	0.632	0.717	0.396	0.598	0.578	0.689	0.450	0.479	0.534	0.577	0.574	0.624	0.650
Thallium D-Tl	0.00059	0.00057	0.00058	0.00056	0.00022	0.00021	<0.00020	0.00059	0.00057	0.00059	0.00057	0.00023	0.00021	<0.00020	<0.20	<0.20	<0.20	<0.20	<0.00050	<0.00050	0.00052	0.00054	<0.00050	<0.00050	<0.00050
Tin D-Sn	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.030	<0.030	<0.030	<0.030	0.0018	0.00248	0.00124	0.00266	0.00235	0.00084	0.00197
Titanium D-Ti	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium D-U	0.00233	0.00226	0.00232	0.00213	0.00328	0.00388	0.00524	0.00240	0.00238	0.00237	0.00209	0.00348	0.00393	0.00545					0.00188	0.00198	0.00232	0.00242	0.00308	0.00409	0.00513
Vanadium D-V	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.030	<0.030	<0.030	<0.030	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Zinc D-Zn	14.3	14.10	14.50	13.60	02.9	02.4	02.3	15.0	14.6	14.4	13.8	2.79	2.07	2.08	24.7	15.2	14.6	2.4	12.80	13.50	14.10	14.7	3.5	2.2	2.2

Faro Pit - 2005 to 2009 Monitoring Re
RESULTS OF ANALYSIS

Depth (m)	1	3	5	15	30	60	80	1	3	5	15	30	60	80
Sample ID	FPL-1M	FPL-3M	FPL-5M	FPL-15M	FPL-30M	FPL-60M	FPL-80M	FP-1 FARO PIT@1M	FP-3 FARO PIT@3M	FP-5 FARO PIT@5M	FP-15 FARO PIT@15M	FP-30 FARO PIT30M	FP-60 FARO PIT@60M	FP-80 FARO PIT @80M
Date Sampled	11-Jul-07	11-Jul-07	11-Jul-07	11-Jul-07	11-Jul-07	11-Jul-07	11-Jul-07	5-Sep-07	5-Sep-07	5-Sep-07	5-Sep-07	5-Sep-07	5-Sep-07	5-Sep-07
Time Sampled	10:33	10:27	10:22	10:15	10:07	09:55	10:55	17:35	17:45	18:10	18:25	18:40	18:50	19:00
ALS Sample ID	L529776-7	L529776-8	L529776-9	L529776-10	L529776-11	L529776-12	L529776-13	L551912-5	L551912-6	L551912-7	L551912-8	L551912-9	L551912-10	L551912-21
Nature	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Physical Tests														
Hardness (as CaCO3)	651	617	613	715	788	766	820	634	634	640	707	765	795	846
Conductivity (uS/cm)	1100	1100	1100	1230	1370	1380	1430	1180	1180	1180	1290	1430	1460	1530
ORP	60	70	80	100	-20	-30	-20	110	110	110	130	-10	-10	10
pH	7.70	7.80	7.84	7.62	7.06	7.02	6.94	7.91	7.94	7.96	7.79	7.46	7.44	7.37
Total Suspended Solids	<3.0	<3.0	<3.0	<3.0	29	29	37	<3.0	<3.0	<3.0	<3.0	24.4	27.8	23.8
Dissolved Anions														
Alkalinity-Total CaCO3														
Sulphate SO4	533	535	535	608	692	707	734	562	556	561	610	716	744	776
Chloride (Cl)	0.93	0.93	0.92	1.06	1.22	1.24	1.27	1.06	1.05	1.06	1.16	<10	<5.0	<5.0
Fluoride (F)														
Bromide (Br)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<1.0	<0.50	<0.50
Nutrients														
Ammonia Nitrogen N	1.48	1.48	1.48	1.93	1.86	1.95	2.24	1.21	1.24	1.32	1.64	1.5	1.61	1.85
Nitrate Nitrogen N	0.381	0.371	0.388	0.405	<0.0050	<0.0050	<0.0050	0.433	0.43	0.435	0	<0.10	<0.050	<0.050
Nitrite Nitrogen N	0.0067	0.0045	0.0051	0.0058	0.0012	<0.0010	<0.0010	0.0061	0.0076	0.0074	0	<0.020	0	0
Nitrite/Nitrate Nitrogen N	0.388	0.375	0.393	0.41	<0.0050	<0.0050	<0.0050							
Dissolved ortho-Phosphate P	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Total Phosphate P	0.0038	0.0035	0.0032	0.0025	0.0071	0.0057	0.0058	0.002	0.002	0.002	0	0.0034	0.0040	0.0036
Total Metals														
Aluminum T-Al	0.0128	0.0119	0.0134	0.0158	0.0130	0.0116	0.0126	0.0203	<0.0050	<0.0050	0.0088	0.0064	0.0066	0.0364
Antimony T-Sb	0.00065	0.00061	0.00064	0.00086	<0.00020	<0.00020	<0.00020	0.00072	0.00069	0.00075	0.00076	<0.00020	<0.00050	<0.00050
Arsenic T-As	<0.00050	<0.00050	<0.00050	<0.00050	0.00061	0.00126	0.00103	<0.00050	<0.00050	<0.00050	<0.00050	0.00068	0.00093	0.00117
Barium T-Ba	0.0166	0.0164	0.0167	0.0172	0.0149	0.0141	0.0140	0.0179	0.0180	0.017	0.017	0.015	0.015	0.015
Beryllium T-Be	<0.0025	<0.0025	<0.0025	<0.0025	<0.0010	<0.0010	<0.0010	<0.0025	<0.0025	<0.0025	<0.0025	<0.0010	<0.0025	<0.0025
Bismuth T-Bi	<0.0025	<0.0025	<0.0025	<0.0025	<0.0010	<0.0010	<0.0010	<0.0025	<0.0025	<0.0025	<0.0025	<0.0010	<0.0025	<0.0025
Boron T-B	<0.050	<0.050	<0.050	<0.050	<0.020	<0.020	<0.020	<0.050	<0.050	<0.050	<0.050	<0.020	<0.050	<0.050
Cadmium T-Cd	0.00808	0.00774	0.00807	0.00634	0.00027	<0.00010	<0.00010	0.00820	0.00808	0.00801	0.006	0.00015	<0.00025	<0.00025
Calcium T-Ca	145	140	143	166	204	206	208	140	142	138	156	189	197	211
Chromium T-Cr	<0.0025	<0.0025	<0.0025	<0.0025	<0.0010	<0.0010	<0.0010	<0.0025	<0.0025	<0.0025	<0.0025	<0.0010	<0.0025	<0.0025
Cobalt T-Co	0.0434	0.0429	0.0437	0.0470	0.0333	0.0311	0.0292	0.0456	0.0449	0.0446	0.049	0.034	0.034	0.030
Copper T-Cu	0.00873	0.00855	0.00895	0.0093	0.0020	<0.00080	<0.00060	0.00679	0.00657	0.0064	0.007	<0.0010	0.00065	0.00059
Iron T-Fe	0.1	0.1	0.1	0.146	21.800	25.000	29.500	0.1	0.1	0.1	0.160	21.000	24.1	30.0
Lead T-Pb	0.00102	0.00096	0.00094	0.00111	0.00083	0.00093	0.00102	0.00094	0.00097	0.001	0.00068	0.00051	0.00071	0.00119
Lithium T-Li	0.052	0.050	0.051	0.062	0.067	0.068	0.071	0.055	0.054	0.056	0.061	0.068	0.071	0.074
Magnesium T-Mg	70.2	66.0	68.6	74.8	75.2	73.0	74.8	67.3	69.0	66.3	71.4	68.5	70.5	73.7
Manganese T-Mn	2.20	2.18	2.22	2.59	3.38	3.39	3.59	2.25	2.23	2.20	2.61	3.37	3.48	3.49
Molybdenum T-Mo	0.00125	0.00119	0.00129	0.00154	0.00277	0.00244	0.00224	0.00134	0.00150	0.00129	0.00139	0.00273	0.00242	0.00188
Nickel T-Ni	0.1080	0.1050	0.1080	0.1170	0.0703	0.064	0.067	0.1150	0.1140	0.1140	0.118	0.071	0.070	0.073
Phosphorus T-P	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium T-K	7.7	7.2	7.3	9.0	13.9	14.2	13.7	8.6	8.9	8.3	10.3	14.4	15.0	14.7
Selenium T-Se	<0.0050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	<0.0050
Silicon T-Si	3.32	3.21	3.26	3.37	2.80	2.81	2.92	3.44	3.56	3.38	3.26	2.75	2.85	3.12
Silver T-Ag	<0.000050	<0.000050	<0.000050	<0.000050	<0.000020	<0.000020	<0.000020	<0.000050	<0.000050	<0.000050	<0.000050	<0.000020	<0.000050	<0.000050
Sodium T-Na	19.1	17.9	18.2	21.8	32.3	32.7	32.0	19.2	20.0	18.9	22.9	29.9	30.8	30.5
Strontium T-Sr	0.503	0.503	0.510	0.585	0.576	0.585	0.663	0.522	0.522	0.506	0.562	0.555	0.591	0.640
Thallium T-Tl	0.00054	0.00052	0.00053	0.00059	0.00022	0.00021	<0.00020	0.00058	0.00057	0.00056	0.00054	0.00021	<0.00050	<0.00050
Tin T-Sn	<0.00050	<0.00050	<0.00050	<0.00050	<0.00020	<0.00020	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00020	<0.00050	<0.00050
Titanium T-Ti	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium T-U	0.00204	0.00200	0.00201	0.00262	0.00330	0.00392	0.00540	0.00200	0.00199	0.00199	0.00225	0.00359	0.00427	0.00575
Vanadium T-V	<0.0050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	<0.0050
Zinc T-Zn	15.30	15.20	15.30	16.2	3.4	2.5	2.4	14.70	14.80	14.20	14.0	2.8	2.4	2.43
Dissolved Metals														
Aluminum D-Al	<0.0050	<0.0050	<0.0050	<0.0050	0.0041	0.0039	0.0021	<0.0050	<0.0050	<0.0050	<0.0050	0.0021	<0.0050	0.0099
Antimony D-Sb	0.0006	0.0006	0.00066	0.00082	<0.00020	<0.00020	<0.00020	0.00065	0.00066	0.00072	0.00072	<0.00020	<0.00050	<0.00050
Arsenic D-As	<0.00050	<0.00050	<0.00050	<0.00050	0.0005	0.0008	0.00021	<0.00050	<0.00050	<0.00050	<0.00050	0.00069	0.00081	0.00092
Barium D-Ba	0.0163	0.0165	0.0167	0.0168	0.0147	0.0138	0.0135	0.0174	0.0173	0.0173	0.017	0.015	0.014	0.014
Beryllium D-Be	<0.0025	<0.0025	<0.0025	<0.0025	<0.0010	<0.0010	<0.0010	<0.0025	<0.0025	<0.0025	<0.0025	<0.0010	<0.0025	<0.0025
Bismuth D-Bi	<0.0025	<0.0025	<0.0025	<0.0025	<0.0010	<0.0010	<0.0010	<0.0025	<0.0025	<0.0025	<0.0025	<0.0010	<0.0025	<0.0025
Boron D-B	<0.050	<0.050	<0.050	<0.050	<0.020	<0.020	<0.020	<0.050	<0.050	<0.050	<0.050	<0.020	<0.050	<0.050
Cadmium D-Cd	0.00803	0.00781	0.00811	0.00617	0.00017	<0.00010	<0.00010	0.00826	0.00805	0.00802	0.006	<0.00010	<0.00025	<0.00025
Calcium D-Ca	146	138	138	163	199	193	205	142	142	144	162	191	201	215
Chromium D-Cr	<0.0025	<0.0025	<0.0025	<0.0025	<0.0010	<0.0010	<0.0010	<0.0025	<0.0025	<0.0025	<0.0025	<0.0010	<0.0025	<0.0025
Cobalt D-Co	0.0426	0.0432	0.0438	0.0467	0.0333	0.0312	0.0289	0.0450	0.0449	0.0451	0.049	0.034	0.034	0.031
Copper D-Cu	0.00644	0.00621	0.0064	0.0066	<0.00040	<0.00040	<0.00040	0.00544	0.00555	0.00536	0.003	<0.00020	<0.00050	<0.00050
Iron D-Fe	<0.030	<0.030	<0.030	<0.030	20.7	23.8	29.1	<0.030	<0.030	<0.030	<0.030	21.1	24.4	30.5
Lead D-Pb	<0.00025	<0.00025	<0.00025	<0.00025	<0.00010	0.00015	<0.00010	0.00025	<0.00025	<0.00025	<0.00025	<0.00010	<0.00025	<0.00025
Lithium D-Li	0.050	0.052	0.053	0.061	0.066	0.067	0.071	0.055	0.054	0.056	0.063	0.067	0.071	0.075
Magnesium D-Mg	69.8	66.0	65.0	74.8	70.8	68.8	74.7	68.2	68.0	68.3	73.4	69.8	71.2	75.3
Manganese D-Mn	2.20	2.22	2.24	2.60	3.39	3.39	3.60	2.21	2.21	2.24	2.68	3.32	3.44	3.58
Molybdenum D-Mo	0.00127	0.00123	0.00125	0.00162	0.00266	0.00248	0.00226	0.00144	0.00134	0.00129	0.00146	0.00271	0.00236	0.00197
Nickel D-Ni	0.1050	0.1060	0.1070	0.1160	0.0703	0.064	0.068	0.1130	0.1120	0.1140	0.121	0.070	0.069	0.076
Phosphorus D-P	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium D-K	7.4	7.2	7.1	8.8	13.1	13.0	13.7	8.6	8.7	8.6	10.6	14.8	15.2	15.4
Selenium D-Se	<0.0050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	<0.0050
Silicon D-Si	3.30	3.14	3.10	3.31	2.70	2.64	2.87	3.48	3.52	3.50	3.36	2.80	2.89	3.26
Silver D-Ag	<0.000050	<0.000050	<0.000050	<0.000050	<0.000020	<0.000020	<0.000020	<0.000050	<0.000050	<0.000050	<0.000050	<0.000020	<0.000050	<0.000050
Sodium D-Na	18.8	17.7	17.5	21.4	30.6	30.4	32.0	19.4	19.9	19.2	23.4	30.4	31.4	32.8
Strontium D-Sr	0.502	0.507	0.511	0.572	0.576	0.592	0.665	0.517	0.509	0.514	0.570	0.551	0.580	0.656
Thallium D-Tl	<0.00050	0.00053	0.00052	0.00059	0.00022	<0.00020	<0.00020	0.00056	0.00054	0.00054	0.00056	0.00023	<0.00050	<0.00050
Tin D-Sn	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00020	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00020	<0.00050	<0.00050
Titanium D-Ti	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium D-U	0.00192	0.00197	0.00201	0.00249	0.00317	0.00389	0.00539	0.00195	0.00198	0.00199	0.00227	0.00348	0.00408	0.00592
Vanadium D-V	<0.0050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	<0.0050
Zinc D-Zn	15.20	15.30	15.20	15.9	3.3	2.2	2.2	14.60	14.40	14.50	14.5	2.8	2.4	2.51

Depth (m)	1	3	5	15	30	60	80	1	3	5	15	30	60	80
Sample ID	K23513	K23515	K23516	K23517	K23518	K23519	K23520	F-1	F-3	F-5	F-15	F-30	F-60	F-80
Date Sampled	11/6/08	11/6/08	11/6/08	11/6/08	11/6/08	11/6/08	11/6/08	9/07/08	9/07/08	9/07/08	9/07/08	9/07/08	9/07/08	9/07/08
Time Sampled	F112778	F112778	F112778	F112778	F112778	F112778	F112778							
ALS Sample ID	F-1	F-3	F-5	F-15	F-30	F-60	F-80	F113737	F113737	F113737	F113737	F113737	F113737	F113737
Nature	Water	Water	Water	Water	Water	Water	Water							
Physical Tests														
Hardness (as CaCO3)	633	594	619	649	697	716	713	614	638	641	712	787	830	909
Conductivity (uS/cm)								1200	1200	1200	1300	1500	1500	1600
ORP														
pH	7.60	7.60	7.60	7.50	7.10	7.10	7.00	7.60	7.70	7.70	7.70	7.80	7.70	7.60
Total Suspended Solids	ND	ND	ND	ND	27	33	31	ND	ND	ND	ND	19	23	60
Dissolved Anions														
Alkalinity-Total CaCO3	80	79	88	91	90	92	97	84	87	84	95	97	100	110
Sulphate SO4	510	530	560	540	700	690	660	560	550	530	600	660	810	790
Chloride (Cl)	1.3	1.4	1.4	1.8	7.2	7.5	7.1	1.8	1.7	1.6	2.2	8	7.9	7.1
Fluoride (F)														
Bromide (Br)								0.45	0.46	0.46	0.49	0.56	0.59	0.74
Nutrients														
Ammonia Nitrogen N	0.97	0.96	0.98	1.14	1.32	1.46	1.62	1.07	1.05	1.03	1.22	1.38	1.68	2.18
Nitrate Nitrogen N	0.51	10.1	0.69	0.43	0.02	0.17	0.12	0.45	0.45	0.44	0.47	ND	ND	ND
Nitrite Nitrogen N	ND	ND	ND	0.005	ND	ND	ND	0.005	0.005	0.005	0.005	ND	ND	ND
Nitrite/Nitrate Nitrogen N	0.51	10.1	0.69	0.44	0.02	0.17	0.12	0.46	0.45	0.45	0.47	ND	ND	ND
Dissolved ortho-Phosphate P	ND	ND	ND	ND	ND	ND	ND	0.007	0.002	0.003	0.003	0.005	0.006	0.006
Total Phosphate P	ND	ND	ND	ND	ND	0.005	0.005	0.019	ND	ND	ND	0.005	0.006	0.018
Total Metals														
Aluminum T-Al	0.04	0.038	0.036	0.025	0.025	0.014	0.017	0.0215	0.0207	0.0191	0.0156	0.0211	0.0195	0.197
Antimony T-Sb	0.0006	0.0006	0.0007	0.0007	ND	ND	ND	0.00053	0.00059	0.00053	0.00057	0.00005	0.00007	0.00011
Arsenic T-As	0.0002	0.0002	0.0002	0.0003	0.0005	0.0014	0.0015	0.00018	0.0002	0.00017	0.00019	0.00059	0.00125	0.00337
Barium T-Ba	0.0188	0.0174	0.0179	0.019	0.016	0.0158	0.0155	0.017	0.0169	0.0166	0.0171	0.0152	0.0144	0.0293
Beryllium T-Be	0.0001	0.0001	0.0001	0.00007	0.00008	0.00008	0.00008	0.00006	0.00006	0.00006	0.00006	0.00007	0.00007	0.00014
Bismuth T-Bi	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.000021
Boron T-B	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium T-Cd	0.0128	0.0123	0.0115	0.0108	0.00039	0.00008	0.00009	0.0109	0.0114	0.0113	0.00948	0.000194	0.00009	0.000381
Calcium T-Ca	143	134	141	149	179	186	186	140	146	146	167	207	219	242
Chromium T-Cr	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0005
Cobalt T-Co	0.0472	0.0443	0.046	0.0445	0.0332	0.0317	0.0284	0.0472	0.0482	0.0493	0.0503	0.036	0.0357	0.0321
Copper T-Cu	0.0213	0.0203	0.0181	0.0144	0.0034	0.0004	0.0006	0.00927	0.00984	0.0102	0.0135	0.00313	0.00085	0.00571
Iron T-Fe	0.214	0.209	0.35	0.205	19.4	25.4	28.5	0.101	0.088	0.084	0.099	23.7	26.9	41.1
Lead T-Pb	0.002	0.00204	0.00179	0.00175	0.00085	0.00134	0.00243	0.002	0.00241	0.0018	0.000902	0.000636	0.00113	0.0203
Lithium T-Li	0.059	0.056	0.062	0.065	0.073	0.079	0.082	0.0554	0.0539	0.0537	0.0578	0.0671	0.0699	0.0787
Magnesium T-Mg	67.2	63.1	65.1	67	61	61.2	60.3	64.1	66.4	67	71.8	65.6	68.8	74.3
Manganese T-Mn	2.5	2.32	2.43	2.61	3.64	3.71	3.72	2.48	2.53	2.51	2.86	3.9	3.96	4.33
Molybdenum T-Mo	0.0011	0.0011	0.0012	0.0011	0.0024	0.0024	0.0022	0.00114	0.00111	0.0011	0.00121	0.00278	0.0025	0.00213
Nickel T-Ni	0.114	0.107	0.116	0.11	0.0726	0.0665	0.0677	0.115	0.117	0.12	0.121	0.0737	0.0733	0.0842
Phosphorus T-P	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Potassium T-K	8	7.41	7.87	8.94	12.7	13.2	12.7	7.85	8.49	8.44	10.2	14.9	15.4	15.8
Selenium T-Se	0.0006	0.0004	0.0004	0.0004	0.0003	0.0003	0.0002	0.00013	0.00013	0.00014	0.00013	0.00017	0.00009	ND
Silicon T-Si	3.43	3.41	3.57	3.47	2.84	2.96	3.12	3.39	3.88	3.88	3.82	3.36	3.5	4.29
Silver T-Ag	ND	ND	ND	ND	ND	ND	ND	0.000011	0.000014	0.000013	0.00001	0.000006	0.000009	0.000017
Sodium T-Na	18.1	17	17.9	19.5	26.1	26.7	25.4	18.2	19.2	19.3	23.1	31.4	32.5	33.6
Strontium T-Sr	0.584	0.538	0.581	0.599	0.616	0.634	0.708	0.587	0.609	0.6	0.631	0.638	0.669	0.816
Thallium T-Tl	0.00054	0.0005	0.00054	0.00054	0.00021	0.00021	0.0002	0.000508	0.000512	0.000502	0.000524	0.000221	0.000204	0.000267
Tin T-Sn	ND	ND	ND	ND	ND	ND	ND	0.00014	0.00027	0.00009	0.00006	0.00002	0.00004	0.0001
Titanium T-Ti	0.004	0.003	0.003	0.003	0.005	0.008	0.004	ND	ND	ND	ND	0.0008	0.0007	0.0076
Uranium T-U	0.00211	0.002	0.00229	0.00212	0.00343	0.00431	0.00605	0.00202	0.00199	0.00196	0.00216	0.00367	0.00426	0.0076
Vanadium T-V	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0004
Zinc T-Zn	19.6	18.4	18.9	18.7	4.01	2.73	2.77	15.4	15.5	15.7	15.9	3.13	2.45	2.97
Dissolved Metals	F-1	F-3	F-5	F-15	F-30	F-60	F-80							
Aluminum D-Al	0.003	0.004	0.006	0.007	0.002	0.006	0.002	0.0017	0.0015	0.0021	0.0057	0.0093	0.0085	0.0102
Antimony D-Sb	0.0005	0.0005	0.0006	0.0006	ND	ND	ND	0.00053	0.00054	0.00058	0.00058	0.00008	0.00008	0.00009
Arsenic D-As	0.0002	0.0001	0.0002	0.0002	0.0003	0.0007	0.0006	0.00016	0.00013	0.00014	0.00015	0.00053	0.0007	0.00102
Barium D-Ba	0.0167	0.0172	0.017	0.0173	0.0163	0.0173	0.0142	0.0163	0.0164	0.0162	0.0167	0.015	0.014	0.0131
Beryllium D-Be	ND	0.00007	ND	ND	0.00006	0.00006	0.00006	0.00005	0.00004	0.00004	0.00006	0.00006	0.00007	0.00009
Bismuth D-Bi	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Boron D-B	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium D-Cd	0.0105	0.0104	0.00984	0.00946	0.00032	0.00006	0.00005	0.0109	0.011	0.011	0.00897	0.000168	0.000046	0.000057
Calcium D-Ca	115	115	124	137	184	194	195	144	145	143	158	205	205	224
Chromium D-Cr	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cobalt D-Co	0.0397	0.0397	0.0417	0.0412	0.0342	0.0326	0.0289	0.0463	0.0469	0.0471	0.0467	0.0365	0.0337	0.0302
Copper D-Cu	0.0117	0.0113	0.0096	0.0107	ND	ND	ND	0.0063	0.0064	0.00655	0.0108	0.00024	0.00007	0.00011
Iron D-Fe	ND	0.017	ND	0.013	18.6	23.1	26.8	0.007	0.003	0.003	0.005	25.1	26.7	40.2
Lead D-Pb	0.00013	0.0003	0.00013	0.00012	0.00039	0.00103	0.00014	0.000487	0.000578	0.000484	0.000226	0.000145	0.000068	0.00029
Lithium D-Li	0.047	0.048	0.051	0.054	0.066	0.069	0.071	0.0533	0.0519	0.052	0.0584	0.0666	0.0688	0.0769
Magnesium D-Mg	53.4	53.8	58	60.9	62.6	63.6	63.9	65.6	65.8	65.2	68.6	67.9	66.2	71.4
Manganese D-Mn	1.97	1.97	2.11	2.35	3.55	3.63	3.63	2.5	2.5	2.46	2.75	4.01	3.91	4.18
Molybdenum D-Mo	0.0009	0.0009	0.001	0.001	0.0021	0.0022	0.0018	0.00108	0.00107	0.00108	0.00121	0.00272	0.00244	0.00199
Nickel D-Ni	0.0959	0.0966	0.106	0.102	0.075	0.0688	0.0687	0.112	0.114	0.114	0.112	0.0745	0.0694	0.0794
Phosphorus D-P	0	0	0	0	0	0	0							
Potassium D-K	6.7	6.71	7.33	8.43	13.7	14.2	13.8	8.12	8.08	8	9.48	14.9	14.5	15.1
Selenium D-Se	ND	ND	0.0002	0.0003	0.0004	0.0003	0.0003	0.00012	0.00013	0.00012	0.00012	0.00024	0.00014	0.00009
Silicon D-Si	2.84	2.96	3.02	3.08	2.7	2.81	2.93	3.83	3.91	3.9	3.94	3.56	3.35	3.86
Silver D-Ag	ND	ND	ND	0.00006	ND	ND	ND	ND	0.000007	0.000008	0.000006	0.000007	0.000008	0.000011
Sodium D-Na	15.9	16.8	17.2	19.5	29.8	29.8	29.4	18.9	19	18.9	21.7	32	31.2	32.2
Strontium D-Sr	0.483	0.487	0.529	0.546	0.629	0.653	0.715	0.565	0.566	0.565	0.602	0.62	0.627	0.743
Thallium D-Tl	0.0005	0.00048	0.0005	0.00053	0.00023	0.00022	0.0002	0.000497	0.000503	0.000494	0.000515	0.00021	0.000201	0.000227
Tin D-Sn	ND	ND	ND	ND	ND	ND	ND	ND	0.00001	0.00002	ND	ND	ND	0.00001
Titanium D-Ti	ND	ND	ND	0.003	ND	0.003	ND	ND	ND	ND	ND	ND	ND	0.0005
Uranium D-U	0.00187	0.00186	0.0021	0.002	0.00323	0.00406	0.00552	0.00187	0.00183	0.0018	0.00207	0.00355	0.0042	0.00705
Vanadium D-V	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc D-Zn	15.2	15.2	15.7	16	3.7	2.52	2.52	15.3	15.3	15.4	15.2	3.2	2.36	2.72

Faro Pit - 2005 to 2009 Monitoring Re
RESULTS OF ANALYSIS

Depth (m)	1	3	5	15	30	60	80	1	3	5	15	30	60	80	1	3	5	15	30	60	80	1	3	5	15	30	60	80
Sample ID	FL-1	FL-3	FL-5	FL-15	FL-30	FL-60	FL-80	FL-1	FL-3	FL-5	FL-15	FL-30	FL-60	FL-80	FL-1 FARO PIT LAKE AT 1M	FL-3 FARO PIT LAKE AT 3M	FL-5 FARO PIT LAKE AT 5M	FL-15 FARO PIT LAKE AT 15M	FL-30 FARO PIT LAKE AT 30M	FL-60 FARO PIT LAKE AT 60M	FL-80 FARO PIT LAKE AT 80M	FL-1 FARO PIT LAKE AT 1 M	FL-3 FARO PIT LAKE AT 3 M	FL-5 FARO PIT LAKE AT 5 M	FL-15 FARO PIT LAKE AT 15 M	FL-30 FARO PIT LAKE AT 30 M	FL-60 FARO PIT LAKE AT 60 M	FL-80 FARO PIT LAKE AT 80 M
Date Sampled	6/08/2008	6/08/2008	6/08/2008	6/08/2008	6/08/2008	6/08/2008	6/08/2008	3/09/08	3/09/08	3/09/08	3/09/08	3/09/08	3/09/08	3/09/08	29/04/09	29/04/09	29/04/09	29/04/09	29/04/09	29/04/09	29/04/09	16/06/09	16/06/09	16/06/09	16/06/09	16/06/09	16/06/09	16/06/09
Time Sampled																												
ALS Sample ID	L05915	L05916	L05917	L05918	L05919	L05920	L05921	L47684	L47685	L47686	L47687	L47688	L47689	L47690	O65312	O65313	O65314	O65315	O65316	O65317	O65318	P41243	P41244	P41245	P41246	P41247	P41248	P41249
Nature																												
Physical Tests																												
Hardness (as CaCO3)	624	631	611	660	780	795	809	630	623	628	672	814	844	868	693	709	715	687	763	795	826	601	600	643	678	761	781	797
Conductivity (uS/cm)	1200	1200	1200	1300	1500	1500	1600	1200	1200	1200	1300	1500	1500	1500	1300	1300	1300	1300	1500	1500	1600	1200	1200	1300	1300	1500	1500	1500
ORP																												
pH	7.70	7.80	7.80	7.60	7.10	7.00	7.00	7.60	7.70	7.70	7.60	7.10	7.00	7.00	7.70	7.80	7.80	7.70	7.30	7.30	7.30	7.70	7.70	7.60	7.60	7.30	7.20	7.20
Total Suspended Solids	1	1	ND	ND	14	16	16	ND	ND	1	ND	22	29	30	<1	<1	<1	<1	22	20	22	1	<1	<1	1	18	24	22
Dissolved Anions																												
Alkalinity-Total CaCO3															95	91	90	90	100	100	110	76	77	86	89	95	100	99
Sulphate SO4	560	470	540	510	730	690	690	630	620	600	610	720	740	700	580	580	560	720	720	710	740	540	530	570	590	690	700	710
Chloride (Cl)	1.4	1.5	1.5	2	7.3	7.4	7	1.4	1.4	1.4	2	7.3	7	6.6														
Fluoride (F)																												
Bromide (Br)	0.4	0.3	0.3	0.4	1.2	1.2	1.1	0.3	0.3	0.2	0.4	1.1	1.1	0.8														
Nutrients																												
Ammonia Nitrogen N	0.8	0.9	0.8	1.1	1.2	1.4	1.9	0.9	1	0.9	1.1	1.2	1.3	1.6	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.56	0.61	0.32	0.93	1.3	1.5	1.5
Nitrate Nitrogen N	0.49	0.46	0.47	0.44	ND	ND	ND	0.48	0.48	0.49	0.45	ND	ND	ND	0.48	0.45	0.45	0.48	<0.02	0.1	<0.02	0.42	0.41	0.45	0.45	<0.02	<0.02	<0.02
Nitrite Nitrogen N	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (1)	ND	0.48	0.45	0.45	0.48	<0.02	0.1	<0.02	0.42	0.41	0.45	0.45	<0.02	<0.02	<0.02
Nitrite/Nitrate Nitrogen N	0.49	0.46	0.47	0.44	ND	ND	ND	0.48	0.48	0.49	0.45	ND	ND	ND	0.48	0.45	0.46	0.49	<0.02	0.11	<0.02	0.42	0.42	0.45	0.46	<0.02	<0.02	<0.02
Dissolved ortho-Phosphate P	ND	ND	ND	ND	ND	ND	ND	0.002	0.002	0.002	0.001	0.001	0.001	0.002	0.9	1.11	1.1	1.07	1.06	1.56	1.76	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Phosphate P	ND	ND	ND	ND	ND	0.006	0.006	ND	ND	ND	ND	ND	0.009	0.009	<0.005	<0.005	<0.005	<0.005	0.005	0.006	0.007	<0.005	<0.005	<0.005	<0.005	<0.005	0.006	0.006
Total Metals																												
Aluminum T-Al	0.0217	0.023	0.0232	0.0148	0.0173	0.0191	0.0178	0.024	0.029	0.026	0.014	0.0171	0.0195	0.016	0.013	0.018	0.018	0.02	0.0159	0.0164	0.0132	0.027	0.037	0.035	0.023	0.025	0.0201	0.0177
Antimony T-Sb	0.00053	0.00054	0.00048	0.00055	0.00007	0.00008	0.00007	0.0004	0.0004	0.0004	0.0005	0.00005	0.00006	0.00005	0.0005	0.0006	0.0006	0.0005	0.00004	0.00004	0.00005	0.0004	0.0003	0.0004	0.0004	<0.0001	0.00005	0.00006
Arsenic T-As	0.00021	0.00021	0.00016	0.00019	0.00046	0.00075	0.00071	0.0002	0.0002	0.0002	0.0003	0.00043	0.00081	0.00078	0.0005	0.0005	0.0006	0.0006	0.00044	0.00151	0.0012	0.0001	0.0001	0.0002	0.0002	0.0003	0.00078	0.00097
Barium T-Ba	0.018	0.0184	0.0172	0.0164	0.0153	0.0145	0.0141	0.0162	0.0153	0.0155	0.0157	0.0134	0.0148	0.0134	0.0181	0.0189	0.0194	0.0183	0.0147	0.0133	0.014	0.017	0.0168	0.0173	0.0174	0.0145	0.0141	0.014
Beryllium T-Be	0.00006	0.00007	0.00006	0.00008	0.00008	0.00008	0.00009	ND	0.00006	ND	0.00008	0.00007	0.00007	0.00008	0.00012	0.00008	0.00009	0.00011	0.00007	0.00007	0.00007	0.00006	0.00009	0.00007	<0.00005	0.00005	0.00009	0.00008
Bismuth T-Bi	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.00003	<0.00003	<0.00003	<0.00003	<0.000005	<0.000005	<0.000005	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.000005	<0.000005
Boron T-B	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.3	<0.3	<0.3	<0.3	<0.05	<0.05	<0.05	<0.3	<0.3	<0.3	<0.3	<0.3	<0.05	<0.05
Cadmium T-Cd	0.0128	0.0128	0.0124	0.00951	0.000221	0.000126	0.000149	0.0143	0.0144	0.0144	0.0111	0.000209	0.000084	0.00008	0.0186	0.0165	0.0167	0.0156	0.000281	0.000067	0.000076	0.016	0.0165	0.0164	0.0156	0.00085	0.000119	0.000135
Calcium T-Ca	142	143	138	153	202	208	210	138	137	138	152	213	221	228	0.138	0.151	0.157	0.15	0.192	0.213	0.194	0.125	0.125	0.133	0.144	0.182	0.209	0.215
Chromium T-Cr	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0002	ND	<0.0005	<0.0005	<0.0005	<0.0005	<0.0001	<0.0001	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0001	<0.0001
Cobalt T-Co	0.0489	0.0492	0.0482	0.0475	0.0377	0.0359	0.0328	0.0508	0.0492	0.0491	0.0479	0.0369	0.0367	0.0345	0.0448	0.0511	0.0527	0.0489	0.0379	0.0337	0.0359	0.0463	0.046	0.0472	0.0505	0.0343	0.0343	0.0342
Copper T-Cu	0.00884	0.00871	0.00857	0.0133	0.00338	0.0012	0.00084	0.0098	0.0099	0.0101	0.0123	0.00293	0.00094	0.00083	0.0221	0.0147	0.0152	0.0132	0.00156	0.00044	0.00054	0.0206	0.0221	0.0206	0.0168	0.0044	0.00097	0.00103
Iron T-Fe	0.12	0.119	0.114	0.086	21.7	24.4	31.2	0.163	0.172	0.175	0.118	25.3	28.6	34.8	0.009	0.019	0.028	0.05	23.5	32.9	23.1	0.137	0.149	0.205	0.146	21	27.3	28.9
Lead T-Pb	0.00241	0.0023	0.0017	0.00109	0.000855	0.00143	0.00144	0.00134	0.0013	0.00153	0.00092	0.000874	0.00216	0.00143	0.00051	0.00043	0.00057	0.00044	0.000293	0.000756	0.000482	0.00247	0.00194	0.0029	0.00102	0.00066	0.00101	0.00124
Lithium T-Li	0.0563	0.0558	0.056	0.058	0.0705	0.0745	0.0782	0.056	0.055	0.055	0.06	0.0694	0.0744	0.0777	0.059	0.064	0.065	0.063	0.069	0.0755	0.071	0.052	0.051	0.056	0.057	0.069	0.0734	0.0758
Magnesium T-Mg	65.7	66.6	64.7	67.5	67	66.9	69	69.4	68.4	68.8	70.9	68.4	71.1	72.4	0.0705	0.0756	0.078	0.075	0.0689	0.0741	0.0696	0.0622	0.0618	0.0652	0.0701	0.0634	0.0672	0.0697
Manganese T-Mn	2.41	2.43	2.35	2.61	3.8	3.83	3.89	2.52	2.54	2.53	2.76	3.96	4.06	4.18	2.38	2.72	2.78	2.67	3.7	3.93	3.66	2.35	2.37	2.5	2.7	3.47	3.75	3.83
Molybdenum T-Mo	0.0011	0.00106	0.00107	0.00115	0.00268	0.00247	0.00221	0.001	0.0009	0.0009	0.001	0.00236	0.00227	0.00212	0.0016	0.0013	0.0013	0.0013	0.0024	0.00217	0.00241	0.001	0.0009	0.0009	0.0008	0.0022	0.00217	0.00199
Nickel T-Ni	0.118	0.118	0.116	0.117	0.0786	0.0741	0.0775	0.123	0.119	0.12	0.119	0.0764	0.0762	0.0791	0.117	0.126	0.129	0.123	0.078	0.0776	0.0721	0.107	0.108	0.113	0.118	0.0725	0.0705	0.0728
Phosphorus T-P																												
Potassium T-K	7.66	7.81	7.66	9.09	14.3	14.5	14.1	7.66	7.64	7.7	9.1	15.5	15.7	15.7	0.00787	0.00899	0.00927	0.00884	0.0143	0.0151	0.0144	0.00642	0.00655	0.00696	0.00771	0.0124	0.0148	0.015
Selenium T-Se	0.00011	0.00011	0.00012	0.00011	0.00018	0.00008	0.00008	ND	ND	ND	ND	0.00021	0.00013	0.00014	0.0002	<0.0002	<0.0002	<0.0002	0.00035	0.00017	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.00017	0.00016
Silicon T-Si	4.06	3.83	3.79	3.64	2.87	2.79	3.85	3.19	3.27	3.42	3.32	3.11	2.8	3.01	4.49	3.92	3.93	3.73	2.83	2.97	2.31	3.89	3.46	3.57	3.62	2.92	3.25	3.23
Silver T-Ag	0.000015	0.000017	0.000015	0.000007	0.000011	0.000012	0.00001	ND	ND	ND	ND	0.000012	0.000009	ND	<0.00003	<0.00003	<0.00003	<0.00003	<0.000005	<0.000005	<0.000005	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	0.000005	0.000008
Sodium T-Na	18	18.1	17.8	20.8	30.9	30.7	31	19.1	18.7	18.7	21.5	. 31.9	33.4	33.8	0.563	0.61	0.628	0.612	0.677	0.778	0.677	0.55	0.544	0.573	0.595	0.614	0.662	0.68
Strontium T-Sr	0.582	0.588	0.578	0.568	0.6	0.626	0.712	0.598	0.583	0.571	0.614	0.654	0.668	0.747	0.563	0.61	0.628	0.612	0.677	0.778	0.677	0.55	0.544	0.573	0.595	0.614	0.662	0.68
Thallium T-Tl	0.000539	0.00054	0.000518	0.000513	0.00022	0.000212	0.000187	0.00055	0.00053	0.00053	0.00054	0.000212	0.000213	0.000203	0.00047	0.00054	0.00058	0.00054	0.000202	0.000204	0.000191	0.00045	0.00046	0.00047	0.00046	0.00021	0.000208	0.000204
Tin T-Sn	0.00006	0.00004	0.00001	ND	ND	0.00002	0.00002	ND	ND	ND	ND	ND	ND	ND	<0.00005	<0.00005	<0.00005	<0.00005	0.00001	<0.00001	<0.00001	<0.00005	0.00013	<0.00005	<0.00005	<0.00005	<0.00001	<0.00001
Titanium T-Ti	ND	ND	ND	ND	ND	ND	ND	ND	0.004	0.003	ND	0.0007	0.0006	ND	<0.003	<0.003	<0.003	<0.003	<0.0005	<0.0005	<0.0005	<0.003	<0.003	<0.003	<0.003	<0.003	<0.0005	<0.0005
Uranium T-U	0.00137	0.00141	0.00134	0.00198	0.00366	0.00444	0.00642	0.0009	0.00088	0.00087	0.00138	0.00306	0.00408	0.00518	0.00154	0.00165	0.00159	0.00156	0.00273	0.00499	0.0037	0.00141	0.00134	0.00146	0.00143	0.00293	0.00425	0.0047
Vanadium T-V	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.001	0.001	0.001	0.001	<0.0002	<0.0002	<0.0002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002
Zinc T-Zn	16.3	16.4	15.9	15.6	3.53	2.65	2.82	20.2	19.6	19.9	18.9	3.38	2.64	2.7	20.8	21.6	22.2	21	3.43	2.53	2.37	18.4	18.6	18.8	19.3	4.68	3.02	2.93
Dissolved Metals																												
Aluminum D-Al	0.0014	0.0062	0.0052	0.005	0.0084	0.0089	0.0074	0.005	0.003	0.004	0.004	0.0061	0.0077	0.0078	0.011	0.009	0.008	0.007	0.0119	0.0087	0.0081	0.007	0.005	0.013	0.008	0.009	0.0085	0.0084
Antimony D-Sb	0.00048	0.0005	0.00047	0.00054	0.00005	0.00005	0.00005	0.0005	0.0005	0.0005	0.0006	0.00005	0.00005	0.00005	0.0005	0.0006	0.0006	0.0006	0.00005	0.00004	0.00005	0.0003	0.0004	0.0006	0.0005	<0.0001	0.00007	0.00005
Arsenic D-As	0.00014	0.00014	0.00015	0.00017	0.00037	0.00038	0.00032	0.0002	0.0002	0.0002	0.0002	0.00038	0.0004	0.00046	0.0007	0.0006	0.0008	0.0005	0.00043	0.00087	0.00131	0.0001	0.0002	0.0002	0.0002	0.0002	0.00033	0.00046
Barium D-Ba	0.0174	0.0176	0.0174	0.0168	0.0153	0.0145	0.0134	0.0171	0.0168	0.0171	0.0171	0.0152	0.0136	0.0136	0.0195	0.0187	0.0185	0.0177	0.0145	0.0135	0.0126	0.0164	0.0169	0.0182	0.0178	0.0145	0.0141	0.0138
Beryllium D-Be	0.00004	0.00005	0.00004	0.00007	0.00007	0.00006	0.00007	ND	ND	ND	0.00008	0.00006	0.00006	0.00007	0.00014	0.00008	0.00009	0.00008	0.00007	0.00007	0.00007	0.00008	0.00008	0.0001	0.00009	0.00009	0.00008	0.00008
Bismuth D-Bi	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.00003	<0.00003	<0.00003	<0.00003	<0.000005	<0.000005	<0.000005	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.000005	<0.000005
Boron D-B	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.3	<0.3	<0.3	<0.3	<0.05	<0.05	<0.05	<0.3	<0.3	<0.3	<0.3	<0.3	<0.05	<0.05
Cadmium D-Cd	0.0129	0.0128	0.0128	0.00989	0.000071	0.000021	0.000029	0.0148	0.0148	0.0156	0.0111	0.000084	0.00003	0.000041	0.0197	0.016	0.0158	0.0155	0.000156	0.000042	0.000063	0.0176	0.0158	0.0158	0.0155	0.00083	0.000073	0.000047
Calcium D-Ca	144	146	147	166	199	207	227	132	130	137	149	200	205	214	150	154	156	149	190	200	209	131	132	141	151	197	203	208
Chromium D-Cr	ND	0.0002	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.0005	<0.0005	<0.0005	<0.0005	<0.0001	<0.0001	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0001	<0.0001
Cobalt D-Co	0.0468	0.0471	0.0474	0.0476	0.0348	0.0337	0.0315	0.0477	0.0467	0.0494	0.0464	0.0369	0.0358	0.0337	0.0483	0.0523	0.0531	0.0502	0.0376	0.036	0.0327	0.0496	0.0498	0.0523	0.0551	0.0378	0.0357	0.0344
Copper D-Cu	0.00523	0.00528	0.00538	0.0114	0.00026	0.00016	0.00019	0.0057	0.0055	0.0059	0.0099	0.0001	0.00011	ND	0.0257	0.0133	0.0137	0.0121	0.00019	<0.00005	0.00006	0.0136	0.0166	0.0177	0.0163	0.0004	0.00021	0.00014
Iron D-Fe	0.007	0.006	0.009	0.004	23.4	26.8	34.1	0.014	0.014	0.01	0.012	23.6	28.2	32.5	0.009	0.007	0.006	<0.005	23.6	28.1	33400	0.007	0.015	0.025	0.006	22.1	27	28.8
Lead D-Pb	0.000357	0.000356	0.000513	0.000195	0.000069	0.00008	0.000126	0.00014	0.00019	0.00015	0.00016	0.000082	0.000165	0.000142	0.00036	0.00024	0.0002	0.00012	0.000073	0.00004	0.000056	0.00047	0.00029	0.00141	0.00029	0.00009	0.00066	0.000074
Lithium D-Li	0.0552	0.0555	0.0551	0.0583	0.0702	0.0734	0.0748	0.058	0.058	0.058	0.061	0.0698	0.0718	0.0751	0.062	0.064	0.064	0.062	0.0695	0.072	0.0757	0.05	0.054	0.058	0.061	0.07	0.0742	0.0742
Magnesium D-Mg	64.5	65.1	66.2	69.8	64.2	65.1	69.8	67.3	67.4	70.9	71.9	70.1	71.2	73.3	77.3	78.9	79.3	76.3	69.8	71.8	74.2	66.2	65.7	70.7	73.3	65.7	66.4	67.7
Manganese D-Mn	2.4	2.42	2.4	2.7	3.67	3.75	3.98	2.53	2.5	2.6	2.76	3.93	3.98	4.08	2.47	2.76	2.77	2.67	3.66	3.72	3.82	2.68	2.54	2.74	2.89	3.62	3.67	3.8
Molybdenum D-Mo	0.00103	0.00111	0.00104	0.00114	0.00262	0.0024	0.00205	0.001	0.001	0.001	0.0011	0.00269	0.00244	0.00233	0.0009	0.001	0.0011	0.001	0.00247	0.00241	0.00219	0.0007	0.0007	0.0007	0.0008	0.0021	0.00221	0.00212
Nickel D-Ni	0.111	0.112	0.113	0.116	0.0728	0.0693	0.0745	0.117	0.115	0.121	0.118	0.0786	0.0755	0.0786	0.126	0.128	0.129	0.126	0.0782	0.0725	0.075	0.116	0.121	0.13	0.134	0.0804	0.074	0.0742
Phosphorus D-P																												
Potassium D-K	8.07	8.06	8.1	9.83	14	14.6	15.2	7.35	7.28	7.59	8.85	14.6	14.8	14.8	8.43	9.28	9.33	8.96	13.7	14.2	14.4	7.31	7.26	8.03	8.59	14.1	14.5	14.7
Selenium D-Se	0.00009	0.00009	0.00008	0.00008	0.00021	0.00014	0.0001	ND	ND	ND	ND	0.00025	0.00018	0.00016	0.0003	0.0002	0.0002	0.0002	0.00032	0.00023	0.00017	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	0.00015	0.00012
Silicon D-Si	3.23	3.1	3.07	3	2.41	2.4	2.77	4	3.98	4.06	3.89	3.19	3.01	3.12	4.93	3.98	3.97	3.87	2.74	2.8	2950	3.89	3.54	3.73	3.74	3.09	3.08	3.1
Silver D-Ag	0.000012	0.000014	0.000014	0.000008	0.000009	0.000012	0.000012	ND	ND	ND	ND	0.000005	0.000006	0.000008	<0.00003	<0.00003	<0.00003	<0.00003	<0.000005	<0.000005	<0.000005	0.00006	0.00012	0.00007	0.00007	<0.00003	0.000012	0.000009
Sodium D-Na	17.6	17.9	18	21.2	29.1	29.5	30.9	18.3	18	19.1	21.9	33.3	34	34.9	19.1	21.4	21.6	20.6	31.9	33	33.6	17.8	17.3	19.2	20.5	29.5	31.1	31.6
Strontium D-Sr	0.58	0.59	0.573	0.576	0.615	0.633	0.698	0.567	0.569	0.568	0.57	0.646	0.66	0.713	0.6	0.627	0.622	0.601	0.673	0.69	0.783	0.544	0.537	0.58	0.596	0.639	0.651	0.666
Thallium D-Tl	0.000535	0.000542	0.000532	0.000508	0.000218	0.000205	0.000184	0.00051	0.00052	0.00052	0.00052	0.000207	0.000197	0.000194	0.0005	0.00056	0.00057	0.00052	0.000201	0.000201	0.000197	0.00047	0.00046	0.00048	0.00048	0.00022	0.000205	0.000194
Tin D-Sn	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00001	ND	0.00007	0.00011	0.00008	<0.00005	0.07	<0.00001	<0.00001	0.00011	<0.00005	<0.00005	<0.00005	<0.00005	<0.00001	<0.00001
Titanium D-Ti	ND	ND	ND	ND	ND	ND	ND	0.004	ND	ND	ND	0.0007	0.0007	0.0006	<0.003	<0.003	<0.003	<0.003	<0.0005	<0.0005	<0.0005	<0.003	<0.003	<0.003	<0.003	<0.003	<0.0005	<0.0005
Uranium D-U	0.0012	0.00123	0.00119	0.00178	0.00344	0.00417	0.00563	0.00091	0.00091	0.0009	0.00149	0.0035	0.00432	0.00564	0.00147	0.00154	0.00152	0.0014	0.00289	0.00454	6.19	0.00127	0.00126	0.00139	0.00138	0.00294	0.00399	0.00447
Vanadium D-V	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.002	0.002	0.002	0.001	<0.0002	<0.0002	<0.0002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002
Zinc D-Zn	15.5	15.7	15.8	15.9	3.3	2.4	2.61	19.7	19.4	20.3	19.2	3.45	2.6	2.64	22.5	21.5	21.8	21	3.55	2.5	2.61	19.7	19.5	20.3	20.3	4.39	2.88	2.6

Faro Pit - 2005 to 2009 Monitoring Re
RESULTS OF ANALYSIS

Depth (m)	1	3	5	15	30	60	80
Sample ID	FL-1 FARO PIT LAKE AT 1 M	FL-3 FARO PIT LAKE AT 3 M	FL-5 FARO PIT LAKE AT 5 M	FL-15 FARO PIT LAKE AT 15 M	FL-30 FARO PIT LAKE AT 30 M	FL-60 FARO PIT LAKE AT 60 M	FL-80 FARO PIT LAKE AT 80 M
Date Sampled	16/07/09	16/07/09	16/07/09	16/07/09	16/07/09	16/07/09	16/07/09
Time Sampled							
ALS Sample ID	P86769	P86770	P86771	P86772	P86773	P86774	P86775
Nature							
Physical Tests							
Hardness (as CaCO3)	660	649	656	681	746	743	784
Conductivity (uS/cm)	1200	1200	1200	1300	1500	1500	1600
ORP							
pH	7.10	7.30	7.30	7.30	7.30	7.10	7.40
Total Suspended Solids	<4	<4	<4	<4	21	30	30
Dissolved Anions							
Alkalinity-Total CaCO3	77	83	81	87	94	95	98
Sulphate SO4	580	630	630	620	690	710	760
Chloride (Cl)							
Fluoride (F)							
Bromide (Br)							
Nutrients							
Ammonia Nitrogen N	0.85	0.9	0.88	0.97	1.4	1.5	1.7
Nitrate Nitrogen N	0.47	0.48	0.48	0.48	<0.02	<0.02	<0.02
Nitrite Nitrogen N	0.47	0.48	0.48	0.48	<0.02	<0.02	<0.02
Nitrite/Nitrate Nitrogen N	0.48	0.48	0.48	0.48	<0.02	<0.02	<0.02
Dissolved ortho-Phosphate P	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Phosphate P	<0.005	<0.005	<0.005	<0.005	0.006	0.007	0.006
Total Metals							
Aluminum T-Al	0.016	0.013	0.012	0.014	0.0172	0.0193	0.0171
Antimony T-Sb	0.0004	0.0004	0.0004	0.0005	0.00007	0.00005	0.00006
Arsenic T-As	0.0002	0.0002	0.0001	0.0002	0.00031	0.00064	0.00095
Barium T-Ba	0.0174	0.0168	0.0164	0.0166	0.0151	0.0134	0.0133
Beryllium T-Be	0.00007	0.00007	0.00008	0.00008	0.00011	0.00008	0.00008
Bismuth T-Bi	<0.00003	<0.00003	<0.00003	<0.00003	<0.000005	<0.000005	<0.000005
Boron T-B	<0.3	<0.3	<0.3	<0.3	<0.05	<0.05	<0.05
Cadmium T-Cd	0.0183	0.017	0.0177	0.0163	0.000714	0.00016	0.000105
Calcium T-Ca	0.141	0.132	0.134	0.141	0.188	0.184	0.207
Chromium T-Cr	<0.0005	<0.0005	<0.0005	<0.0005	<0.0001	<0.0001	<0.0001
Cobalt T-Co	0.0513	0.0479	0.0496	0.05	0.0388	0.0336	0.0305
Copper T-Cu	0.0104	0.0096	0.0098	0.0156	0.00365	0.00121	0.00071
Iron T-Fe	0.099	0.088	0.076	0.055	21.1	26.6	29.2
Lead T-Pb	0.00218	0.00174	0.00136	0.0006	0.000583	0.000918	0.00123
Lithium T-Li	0.057	0.058	0.057	0.06	0.0706	0.0731	0.0785
Magnesium T-Mg	0.0685	0.0656	0.0663	0.0676	0.0671	0.0624	0.0652
Manganese T-Mn	2.75	2.57	2.62	2.71	3.55	3.37	3.61
Molybdenum T-Mo	0.0007	0.0007	0.0007	0.0007	0.00205	0.00213	0.00196
Nickel T-Ni	0.125	0.117	0.12	0.118	0.0842	0.0694	0.0708
Phosphorus T-P							
Potassium T-K	0.00721	0.00679	0.00675	0.00757	0.0128	0.0126	0.0136
Selenium T-Se	<0.0002	<0.0002	<0.0002	<0.0002	0.00022	0.00014	0.0001
Silicon T-Si	3.68	3.92	3.65	3.51	2.47	2.49	2.61
Silver T-Ag	<0.00003	<0.00003	<0.00003	<0.00003	<0.000005	<0.000005	<0.000005
Sodium T-Na	0.599	0.59	0.588	0.59	0.634	0.646	0.742
Strontium T-Sr	0.599	0.59	0.588	0.59	0.634	0.646	0.742
Thallium T-Tl	0.00049	0.00049	0.00047	0.00049	0.000211	0.000199	0.000213
Tin T-Sn	<0.00005	<0.00005	<0.00005	<0.00005	<0.00001	<0.00001	<0.00001
Titanium T-Ti	<0.003	<0.003	<0.003	<0.003	<0.0005	<0.0005	<0.0005
Uranium T-U	0.00142	0.00146	0.00143	0.00149	0.00301	0.00409	0.00615
Vanadium T-V	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
Zinc T-Zn	20.2	19.3	19.7	19.4	4.75	2.9	2.88
Dissolved Metals							
Aluminum D-Al	0.0023	0.0016	0.0015	0.0085	0.006	0.0099	0.0096
Antimony D-Sb	0.00037	0.00037	0.00037	0.00038	0.00006	0.00004	0.00004
Arsenic D-As	0.00017	0.00015	0.00014	0.00016	0.00026	0.0004	0.00072
Barium D-Ba	0.0172	0.0174	0.0175	0.0168	0.0146	0.0136	0.0128
Beryllium D-Be	0.00006	0.00006	0.00006	0.00008	0.00009	0.00008	0.00009
Bismuth D-Bi	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	0.000007	<0.000005
Boron D-B	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Cadmium D-Cd	0.0168	0.0168	0.0167	0.0158	0.00054	0.000054	0.000038
Calcium D-Ca	145	143	145	153	191	191	204
Chromium D-Cr	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt D-Co	0.0542	0.054	0.0547	0.0557	0.0382	0.0352	0.0319
Copper D-Cu	0.00846	0.00833	0.00845	0.0159	0.00015	0.00006	0.00005
Iron D-Fe	0.009	0.005	0.007	0.004	22.3	26	31.8
Lead D-Pb	0.000476	0.000398	0.000372	0.000133	0.000023	0.000072	0.000069
Lithium D-Li	0.0563	0.0553	0.0561	0.06	0.0703	0.0719	0.0769
Magnesium D-Mg	72.2	70.9	71.6	72.8	65.1	64.8	66.9
Manganese D-Mn	2.75	2.71	2.73	2.81	3.66	3.61	3.7
Molybdenum D-Mo	0.00073	0.00071	0.00073	0.00079	0.002	0.0021	0.00195
Nickel D-Ni	0.132	0.131	0.132	0.131	0.0834	0.0724	0.0755
Phosphorus D-P							
Potassium D-K	7.62	7.41	7.47	8.38	13.4	13.7	13.9
Selenium D-Se	0.00013	0.00013	0.00012	0.00013	0.00029	0.0002	0.00015
Silicon D-Si	3.36	3.2	3.18	3.19	2.95	2.7	2.81
Silver D-Ag	0.000013	0.000011	0.000011	0.000014	<0.000005	<0.000005	0.000005
Sodium D-Na	18.2	17.9	18.2	19.7	28.6	29.1	29.9
Strontium D-Sr	0.608	0.609	0.607	0.625	0.643	0.652	0.738
Thallium D-Tl	0.000499	0.000511	0.000499	0.000498	0.000212	0.000206	0.000199
Tin D-Sn	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Titanium D-Ti	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Uranium D-U	0.00135	0.00138	0.00136	0.00146	0.00291	0.00408	0.00581
Vanadium D-V	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Zinc D-Zn	18.3	18	18.2	18.3	4.68	3.01	2.91

Depth (m)	1	3	5	15	30	60	80
Sample ID	FL-1 FARO PIT LAKE AT 1M	FL-3 FARO PIT LAKE AT 3M	FL-5 FARO PIT LAKE AT 5M	FL-15 FARO PIT LAKE AT 15M	FL-30 FARO PIT LAKE AT 30M	FL-60 FARO PIT LAKE AT 60M	FL-80 FARO PIT LAKE AT 80M
Date Sampled	12/08/09	12/08/09	12/08/09	12/08/09	12/08/09	12/08/09	12/08/09
Time Sampled							
ALS Sample ID	Q27103	Q27104	Q27105	Q27106	Q27107	Q27108	Q27109
Nature							
Physical Tests							
Hardness (as CaCO3)	614	625	600	672	746	723	780
Conductivity (uS/cm)	1280	1280	1270	1320	1470	1480	1550
ORP							
pH	7.40	7.60	7.70	7.60	7.80	7.60	7.80
Total Suspended Solids	<4	<4	<4	<4	27	27	30
Dissolved Anions							
Alkalinity-Total CaCO3	73	76	78	87	90	84	100
Sulphate SO4	560	560	560	580	650	670	680
Chloride (Cl)							
Fluoride (F)							
Bromide (Br)							
Nutrients							
Ammonia Nitrogen N	0.76	0.78	0.77	0.92	1.2	1.3	1.7
Nitrate Nitrogen N	0.45	0.45	0.45	0.43	0.19	0.16	0.17
Nitrite Nitrogen N	0.45	0.45	0.45	0.43	0.19	0.16	0.17
Nitrite/Nitrate Nitrogen N	0.46	0.46	0.46	0.44	0.2	0.16	0.18
Dissolved ortho-Phosphate P	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Phosphate P	0.003	0.002	0.002	0.002	0.003	0.002	0.002
Total Metals							
Aluminum T-Al	0.009	0.019	0.008	0.01	0.0109	0.0168	0.0197
Antimony T-Sb	0.0004	0.0004	0.0004	0.0004	0.00006	0.00005	0.00005
Arsenic T-As	<0.0001	0.0002	<0.0001	0.0001	0.00029	0.0007	0.00131
Barium T-Ba	0.0214	0.018	0.0169	0.0174	0.0141	0.0132	0.0132
Beryllium T-Be	0.00007	0.00008	0.00006	0.00009	0.00008	0.00007	0.00007
Bismuth T-Bi	<0.00003	<0.00003	<0.00003	<0.00003	<0.000005	<0.000005	<0.000005
Boron T-B	<0.3	<0.3	<0.3	<0.3	<0.05	<0.05	<0.05
Cadmium T-Cd	0.0176	0.0178	0.0175	0.016	0.000575	0.000171	0.000109
Calcium T-Ca	0.142	0.146	0.147	0.156	0.193	0.2	0.229
Chromium T-Cr	<0.0005	<0.0005	<0.0005	<0.0005	<0.0001	<0.0001	<0.0001
Cobalt T-Co	0.0502	0.0526	0.052	0.0535	0.0378	0.0378	0.0332
Copper T-Cu	0.0097	0.0097	0.0099	0.0154	0.00222	0.00135	0.00066
Iron T-Fe	0.112	0.15	0.117	0.058	21.3	23.5	31
Lead T-Pb	0.00218	0.00557	0.00136	0.00093	0.000669	0.0012	0.00228
Lithium T-Li	0.056	0.057	0.055	0.059	0.065	0.067	0.073
Magnesium T-Mg	0.0694	0.0728	0.0732	0.0738	0.0667	0.0681	0.0738
Manganese T-Mn	2.74	2.83	2.85	2.95	3.6	3.72	4.08
Molybdenum T-Mo	0.0007	0.0007	0.0007	0.0007	0.00215	0.00228	0.00199
Nickel T-Ni	0.128	0.131	0.13	0.133	0.0796	0.0768	0.0788
Phosphorus T-P							
Potassium T-K	0.00754	0.00777	0.0079	0.00862	0.0139	0.0143	0.0154
Selenium T-Se	<0.0002	<0.0002	<0.0002	<0.0002	0.00025	0.00016	0.00015
Silicon T-Si	3.56	3.47	3.49	3.65	2.46	2.4	2.74
Silver T-Ag	<0.00003	<0.00003	<0.00003	<0.00003	0.000006	0.000006	0.000006
Sodium T-Na	0.569	0.579	0.562	0.587	0.606	0.617	0.722
Strontium T-Sr	0.569	0.579	0.562	0.587	0.606	0.617	0.722
Thallium T-Tl	0.0005	0.00051	0.00049	0.00048	0.000198	0.000213	0.000209
Tin T-Sn	<0.00005	<0.00005	<0.00005	<0.00005	<0.00001	<0.00001	0.00001
Titanium T-Ti	<0.003	<0.003	<0.003	<0.003	<0.0005	<0.0005	<0.0005
Uranium T-U	0.00114	0.00114	0.00114	0.00145	0.00306	0.00362	0.0058
Vanadium T-V	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
Zinc T-Zn	20.7	21.6	21.6	21.2	4.34	3.74	3.23
Dissolved Metals							
Aluminum D-Al	0.003	0.009	<0.001	0.004	0.0034	0.0081	0.0172
Antimony D-Sb	0.0004	0.0004	0.0004	0.0004	0.00006	0.00005	0.00006
Arsenic D-As	0.0001	0.0003	0.0002	<0.0001	0.00028	0.00058	0.00107
Barium D-Ba	0.0161	0.0172	0.0159	0.0167	0.0142	0.0127	0.0125
Beryllium D-Be	0.00006	0.00006	0.00006	0.00007	0.00008	0.00007	0.00007
Bismuth D-Bi	<0.00003	<0.00003	<0.00003	<0.00003	<0.000005	<0.000005	<0.000005
Boron D-B	<0.3	<0.3	<0.3	<0.3	<0.05	<0.05	<0.05
Cadmium D-Cd	0.017	0.0179	0.0174	0.0161	0.000411	0.000045	0.000082
Calcium D-Ca	135	137	131	150	191	185	204
Chromium D-Cr	<0.0005	<0.0005	<0.0005	<0.0005	<0.0001	<0.0001	<0.0001
Cobalt D-Co	0.0514	0.0518	0.0505	0.0527	0.0389	0.0373	0.0319
Copper D-Cu	0.0075	0.0076	0.0071	0.0144	0.00014	0.00008	0.00019
Iron D-Fe	0.017	0.073	0.007	0.006	22.8	24.4	31.7
Lead D-Pb	0.00142	9.34	0.00025	0.00028	0.000086	0.000082	2.97
Lithium D-Li	0.056	0.056	0.055	0.058	0.0672	0.0664	0.073
Magnesium D-Mg	67.2	68.6	66.4	72.5	65.5	63.1	65.6
Manganese D-Mn	2.74	2.75	2.65	2.87	3.72	3.59	3.81
Molybdenum D-Mo	0.0007	0.0007	0.0007	0.0008	0.00217	0.00223	0.00201
Nickel D-Ni	0.13	0.131	0.126	0.13	0.0821	0.0757	0.0752
Phosphorus D-P							
Potassium D-K	7.35	7.45	7.21	8.45	13.7	13.4	13.9
Selenium D-Se	0.0002	<0.0002	<0.0002	<0.0002	0.00027	0.23	0.00016
Silicon D-Si	3.72	3.71	3.59	3.32	2.67	2.62	3
Silver D-Ag	<0.00003	<0.00003	<0.00003	<0.00003	<0.000005	<0.000005	0.000007
Sodium D-Na	16.9	17.3	16.7	19.7	29.2	28.4	29.7
Strontium D-Sr	0.558	0.563	0.554	0.574	0.627	0.615	0.701
Thallium D-Tl	0.00047	0.00049	0.0005	0.00047	0.000201	0.000205	0.000196
Tin D-Sn	<0.00005	<0.00005	<0.00005	<0.00005	<0.00001	<0.00001	<0.00001
Titanium D-Ti	<0.003	<0.003	<0.003	<0.003	<0.0005	<0.0005	<0.0005
Uranium D-U	0.00104	0.00109	0.00105	0.00135	0.003	0.00358	0.00567
Vanadium D-V	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
Zinc D-Zn	20.7	21.1	20.3	20.5	4.34	3.59	3.06

Depth (m)	1	3	5	15	30	60	80
Sample ID	FL-1 FARO PIT LAKE AT 1M	FL-3 FARO PIT LAKE AT 3M	FL-5 FARO PIT LAKE AT 5M	FL-15 FARO PIT LAKE AT 15M	FL-30 FARO PIT LAKE AT 30M	FL-60 FARO PIT LAKE AT 60M	FL-80 FARO PIT LAKE AT 80M
Date Sampled	9/09/09	9/09/09	9/09/09	9/09/09	9/09/09	9/09/09	9/09/2009
Time Sampled							
ALS Sample ID	Q70731	Q70732	Q70733	Q70734	Q70735	Q70736	Q70737
Nature							
Physical Tests							
Hardness (as CaCO3)	644	652	653	668	755	769	784
Conductivity (uS/cm)	1290	1280	1280	1310	1470	1490	1520
ORP							
pH	7.60	7.60	7.70	7.30	7.00	7.00	7.00
Total Suspended Solids	<4	<4	<4	<4	28	31	32
Dissolved Anions							
Alkalinity-Total CaCO3	83	84	86	87	100	110	110
Sulphate SO4	580	590	580	600	660	560	680
Chloride (Cl)							
Fluoride (F)							
Bromide (Br)							
Nutrients							
Ammonia Nitrogen N	0.95	0.88	0.89	1.1	1.5	1.6	1.6
Nitrate Nitrogen N	0.48	0.47	0.47	0.45	<0.02	<0.02	0.04
Nitrite Nitrogen N	0.48	0.47	0.47	0.45	<0.02	<0.02	0.04
Nitrite/Nitrate Nitrogen N	0.48	0.48	0.48	0.45	<0.02	<0.02	0.04
Dissolved ortho-Phosphate P	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Phosphate P	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Metals							
Aluminum T-Al	0.009	0.027	0.009	0.008	0.0166	0.0126	0.0091
Antimony T-Sb	0.0005	0.0005	0.0005	0.0006	0.00009	0.00008	0.0001
Arsenic T-As	0.0001	0.0002	0.0002	0.0002	0.00032	0.00059	0.00059
Barium T-Ba	0.0168	0.0164	0.0161	0.0172	0.0139	0.0133	0.0143
Beryllium T-Be	0.00008	0.00011	0.00006	0.00012	0.00012	0.00009	0.0001
Bismuth T-Bi	<0.00003	<0.00003	<0.00003	<0.00003	<0.000005	<0.000005	0.000013
Boron T-B	<0.3	<0.3	<0.3	<0.3	<0.05	<0.05	<0.05
Cadmium T-Cd	0.0173	0.017	0.0177	0.0158	0.00038	0.000396	0.00157
Calcium T-Ca	0.143	0.139	0.141	0.148	0.188	0.194	0.196
Chromium T-Cr	<0.0005	<0.0005	<0.0005	<0.0005	<0.0001	<0.0001	<0.0001
Cobalt T-Co	0.0518	0.0504	0.0524	0.0521	0.0358	0.0342	0.0347
Copper T-Cu	0.0074	0.0075	0.0077	0.0149	0.00224	0.00094	0.00161
Iron T-Fe	0.082	0.083	0.079	0.067	23	25.6	26.4
Lead T-Pb	0.00111	0.00096	0.00109	0.00077	0.000877	0.00145	0.00125
Lithium T-Li	0.058	0.056	0.056	0.06	0.0719	0.0725	0.0743
Magnesium T-Mg	0.0708	0.0694	0.0708	0.0704	0.061	0.0615	0.0635
Manganese T-Mn	2.81	2.74	2.82	2.85	3.53	3.55	3.6
Molybdenum T-Mo	0.0008	0.0007	0.0006	0.0008	0.00213	0.00207	0.00176
Nickel T-Ni	0.133	0.13	0.134	0.129	0.0754	0.0714	0.0781
Phosphorus T-P							
Potassium T-K	0.00756	0.00746	0.00748	0.00841	0.0135	0.0139	0.0135
Selenium T-Se	<0.0002	<0.0002	<0.0002	<0.0002	0.00022	0.00016	0.00015
Silicon T-Si	3.94	3.91	3.95	3.93	3.02	3.05	3.34
Silver T-Ag	0.00003	<0.00003	<0.00003	<0.00003	<0.000005	<0.000005	0.000006
Sodium T-Na	0.597	0.587	0.583	0.612	0.624	0.636	0.669
Strontium T-Sr	0.597	0.587	0.583	0.612	0.624	0.636	0.669
Thallium T-Tl	0.00052	0.00051	0.0005	0.00049	0.000201	0.000205	0.000225
Tin T-Sn	<0.00005	<0.00005	<0.00005	<0.00005	<0.00001	<0.00001	0.00001
Titanium T-Ti	0.004	0.005	<0.003	<0.003	<0.0005	<0.0005	<0.0005
Uranium T-U	0.00113	0.001	0.00094	0.00132	0.00317	0.0039	0.00432
Vanadium T-V	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
Zinc T-Zn	20.6	20.1	20.8	19.9	4.11	3.23	4.35
Dissolved Metals							
Aluminum D-Al	0.003	0.002	0.015	0.003	0.0028	0.0344	0.008
Antimony D-Sb	0.0004	0.0003	0.0004	0.0004	0.00005	0.00005	0.00008
Arsenic D-As	0.0002	0.0002	0.0002	0.0002	0.00025	0.00021	0.00021
Barium D-Ba	0.0167	0.0164	0.0162	0.0163	0.014	0.0133	0.0144
Beryllium D-Be	0.00005	<0.00005	<0.00005	0.00008	0.00008	0.00007	0.00008
Bismuth D-Bi	<0.00003	<0.00003	<0.00003	<0.00003	0.000009	<0.000005	<0.000005
Boron D-B	<0.3	<0.3	<0.3	<0.3	<0.05	<0.05	<0.05
Cadmium D-Cd	0.0173	0.0174	0.0175	0.0156	0.000291	0.000322	0.00147
Calcium D-Ca	140	140	141	149	192	198	202
Chromium D-Cr	<0.0005	<0.0005	<0.0005	<0.0005	<0.0001	<0.0001	<0.0001
Cobalt D-Co	0.0524	0.0531	0.0528	0.053	0.0377	0.0358	0.0357
Copper D-Cu	0.0059	0.0064	0.0062	0.0143	0.00017	0.00017	0.00055
Iron D-Fe	0.019	0.011	0.013	0.008	24	26.4	26.3
Lead D-Pb	0.00017	0.00017	0.00022	0.00013	0.000078	0.000058	0.00015
Lithium D-Li	0.056	0.056	0.056	0.058	0.0693	0.071	0.0732
Magnesium D-Mg	71.7	73.3	73.3	72.2	67.1	66.8	68.1
Manganese D-Mn	2.75	2.76	2.81	2.84	3.66	3.66	3.72
Molybdenum D-Mo	0.0007	0.0007	0.0006	0.0008	0.00209	0.00199	0.00174
Nickel D-Ni	0.136	0.137	0.137	0.132	0.0798	0.075	0.0807
Phosphorus D-P							
Potassium D-K	7.21	7.29	7.28	8.13	13.4	13.4	13.3
Selenium D-Se	<0.0002	<0.0002	<0.0002	<0.0002	0.00019	0.00013	0.00012
Silicon D-Si	3.78	3.78	3.9	3.72	3.07	3.06	3.19
Silver D-Ag	0.00018	0.00007	0.00004	<0.00003	0.000008	0.000008	0.000009
Sodium D-Na	17.7	17.9	18	19.6	29.6	29.6	29.2
Strontium D-Sr	0.605	0.607	0.608	0.609	0.641	0.663	0.696
Thallium D-Tl	0.00053	0.0005	0.0005	0.00049	0.000203	0.000207	0.000232
Tin D-Sn	<0.00005	<0.00005	<0.00005	<0.00005	<0.00001	<0.00001	<0.00001
Titanium D-Ti	<0.003	<0.003	<0.003	<0.003	0.0008	<0.0005	<0.0005
Uranium D-U	0.00096	0.00092	0.00096	0.00125	0.00317	0.00398	0.0044
Vanadium D-V	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
Zinc D-Zn	20.1	20.5	20.5	19.8	4.18	3.29	4.32

Vangorda Pit - 2005 to 2008 Monitoring Results
RESULTS OF ANALYSIS

Depth (m)		1	3	5	15	30	40	0.1	1	3	5	10	20	30
Sample ID		VP-1 VGDA PIT @1m	VP-3 VGDA PIT @3m	VP-5 VGDA PIT @5m	VP-15 VGDA PIT @15m	VP-30 VGDA PIT @30m	VP-40 VGDA PIT @40m	VP-0.1	VP-1	VP-3	VP-5	VP-10	VP-20	VP-30
Date Sampled		9-Jun-05	9-Jun-05	9-Jun-05	9-Jun-05	9-Jun-05	9-Jun-05	14-Sep-05	14-Sep-05	14-Sep-05	14-Sep-05	14-Sep-05	14-Sep-05	14-Sep-05
Time Sampled		17:00	17:10	17:15	17:20	17:30	17:40	15:20	15:30	15:38	15:42	15:46	15:50	16:00
ALS Sample ID		15	16	17	18	19	20	17	18	19	20	21	22	23
Nature		Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Physical Tests														
Hardness (as CaCO3)	mg/L													
Conductivity (uS/cm)		1320	1880	2000	2070	2140	2140	1880	1870	2060	2130	2150	2150	2150
ORP	mV													
pH		7.49	7.17	6.86	6.44	5.90	5.82	7.05	7.00	6.65	5.32	5.36	5.37	5.38
Total Suspended Solids	mg/L	4.6	22.9	41.9	56.9	61.9	66.9	10.5	10.5	38.5	47.2	45.2	43.2	45.8
Dissolved Anions														
Alkalinity-Total CaCO3	mg/L	24.8	42.0	18.0	13.2	10.4	10.7	12.8	12.8	9.0	8.1	8.2	7.2	7.8
Sulphate SO4	mg/L	732	1130	1220	1290	1330	1360	1190	1200	1370	1420	1420	1420	1430
Chloride (Cl)	mg/L													
Fluoride (F)	mg/L													
Bromide (Br)	mg/L													
Nutrients														
Ammonia Nitrogen N	mg/L	0.180	0.420	0.470	0.500	0.590	0.550	0.490	0.460	0.590	0.640	0.620	0.630	0.590
Nitrate Nitrogen N	mg/L	0.184	0.055	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Nitrite Nitrogen N	mg/L	<0.010	<0.010	<0.010	0.015	<0.010	<0.010	<0.010	0.013	<0.010	0.016	0.019	0.010	0.011
Nitrite/Nitrate Nitrogen N	mg/L													
Dissolved ortho-Phosphate P	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010
Total Phosphate P	mg/L	0.0038	<0.0060	<0.030	<0.030	<0.030	<0.030	<0.0020	0.0029	0.0020	0.0024	0.0027	0.0032	0.0022
Total Metals														
Aluminum T-Al	mg/L	0.036	0.068	0.056	0.077	0.214	0.271	0.023	0.030	0.027	<0.050	<0.050	<0.050	<0.050
Antimony T-Sb	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.0050
Arsenic T-As	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.0050
Barium T-Ba	mg/L	0.0510	0.0347	0.0278	0.0254	0.0284	0.0310	0.0193	0.0208	0.0165	0.0137	0.0153	0.0164	0.0148
Beryllium T-Be	mg/L	<0.010	<0.010	<0.010	<0.010	<0.025	<0.025	<0.010	<0.010	<0.010	<0.025	<0.025	<0.025	<0.025
Bismuth T-Bi	mg/L	<0.010	<0.010	<0.010	<0.010	<0.025	<0.025	<0.010	<0.010	<0.010	<0.025	<0.025	<0.025	<0.025
Boron T-B	mg/L	<0.20	<0.20	<0.20	<0.20	<0.50	<0.50	<0.20	<0.20	<0.20	<0.50	<0.50	<0.50	<0.50
Cadmium T-Cd	mg/L	0.0746	0.0909	0.0979	0.105	0.127	0.129	0.0854	0.0914	0.107	0.110	0.114	0.124	0.116
Calcium T-Ca	mg/L	156	237	252	240	250	248	240	245	255	255	271	280	281
Chromium T-Cr	mg/L	<0.010	<0.010	<0.010	<0.010	<0.025	<0.025	<0.010	<0.010	<0.010	<0.025	<0.025	<0.025	<0.025
Cobalt T-Co	mg/L	0.376	0.590	0.666	0.699	0.784	0.789	0.491	0.517	0.683	0.719	0.761	0.801	0.742
Copper T-Cu	mg/L	0.0692	0.132	0.120	0.237	0.439	0.445	0.0063	0.0073	0.0745	0.124	0.0903	0.0992	0.0899
Iron T-Fe	mg/L	0.428	4.81	18.4	24.0	37.7	46.8	3.37	3.52	31.8	40.7	49.4	45.3	40.3
Lead T-Pb	mg/L	0.0115	0.0107	0.0052	0.0045	0.0421	0.0432	0.0096	0.0114	0.0100	0.0056	0.0180	0.0208	0.0223
Lithium T-Li	mg/L	<0.10	<0.10	<0.10	<0.10	<0.25	<0.25	<0.10	<0.10	<0.10	<0.25	<0.25	<0.25	<0.25
Magnesium T-Mg	mg/L	66.7	93.2	99.9	97.8	106	101	86.9	89.7	104	104	109	113	110
Manganese T-Mn	mg/L	23.0	33.0	37.1	39.5	43.8	43.9	31.3	32.8	40.8	41.3	44.6	47.0	43.4
Molybdenum T-Mo	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0025	<0.0025	<0.0010	<0.0010	<0.0010	<0.0025	<0.0025	<0.0025	<0.0025
Nickel T-Ni	mg/L	0.373	0.572	0.630	0.648	0.719	0.706	0.443	0.466	0.616	0.644	0.691	0.733	0.666
Phosphorus T-P	mg/L	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium T-K	mg/L	<2.0	2.5	3.0	2.7	2.8	3.5	2.7	2.6	2.9	3.1	3.6	3.3	3.0
Selenium T-Se	mg/L	<0.020	<0.020	<0.020	<0.020	<0.050	<0.050	<0.020	<0.020	<0.020	<0.050	<0.050	<0.050	<0.050
Silicon T-Si	mg/L	2.46	2.99	3.18	3.06	3.32	3.31	2.38	2.45	3.28	3.35	3.53	3.62	3.45
Silver T-Ag	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00050	<0.00050	<0.00020	<0.00020	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050
Sodium T-Na	mg/L	3.0	4.6	5.3	4.7	4.8	5.9	5.4	5.4	5.4	5.3	6.7	5.8	5.0
Strontium T-Sr	mg/L	0.803	1.14	1.21	1.23	1.36	1.34	1.17	1.25	1.18	1.23	1.31	1.38	1.28
Thallium T-Tl	mg/L	<0.0020	0.0020	0.0022	0.0023	<0.0050	<0.0050	0.0022	0.0023	0.0023	<0.0050	<0.0050	<0.0050	<0.0050
Tin T-Sn	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.0050
Titanium T-Ti	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium T-U	mg/L	0.00059	0.00043	0.00034	0.00036	0.00060	0.00074	0.00023	0.00034	0.00027	<0.00050	<0.00050	<0.00050	<0.00050
Vanadium T-V	mg/L	<0.020	<0.020	<0.020	<0.020	<0.050	<0.050	<0.020	<0.020	<0.020	<0.050	<0.050	<0.050	<0.050
Zinc T-Zn	mg/L	74.0	109	124	131	149	149	87.8	91.7	122	127	137	145	134
Dissolved Metals														
Aluminum D-Al	mg/L							<0.020	<0.020	<0.020	<0.050	<0.050	<0.050	<0.050
Antimony D-Sb	mg/L							<0.0020	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.0050
Arsenic D-As	mg/L							<0.0020	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.0050
Barium D-Ba	mg/L							0.0152	0.0146	0.0145	0.0125	0.0116	0.0114	0.0112
Beryllium D-Be	mg/L							<0.010	<0.010	<0.010	<0.025	<0.025	<0.025	<0.025
Bismuth D-Bi	mg/L							<0.010	<0.010	<0.010	<0.025	<0.025	<0.025	<0.025
Boron D-B	mg/L							<0.20	<0.20	<0.20	<0.50	<0.50	<0.50	<0.50
Cadmium D-Cd	mg/L							0.0935	0.0899	0.115	0.120	0.116	0.117	0.111
Calcium D-Ca	mg/L							251	238	270	260	279	293	272
Chromium D-Cr	mg/L							<0.010	<0.010	<0.010	<0.025	<0.025	<0.025	<0.025
Cobalt D-Co	mg/L							0.502	0.494	0.698	0.735	0.748	0.727	0.722
Copper D-Cu	mg/L							0.0074	0.0071	0.0642	0.109	0.0717	0.0765	0.0747
Iron D-Fe	mg/L							0.437	0.396	16.3	18.8	20.7	22.2	19.6
Lead D-Pb	mg/L							<0.0010	<0.0010	<0.0010	<0.0025	<0.0025	<0.0025	<0.0025
Lithium D-Li	mg/L							<0.10	<0.10	<0.10	<0.25	<0.25	<0.25	<0.25
Magnesium D-Mg	mg/L							92.9	85.1	108	105	113	117	107
Manganese D-Mn	mg/L							32.8	32.5	42.8	44.1	44.2	43.5	42.8
Molybdenum D-Mo	mg/L							<0.0010	<0.0010	<0.0010	<0.0025	<0.0025	<0.0025	<0.0025
Nickel D-Ni	mg/L							0.469	0.461	0.646	0.686	0.682	0.670	0.659
Phosphorus D-P	mg/L							<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium D-K	mg/L							2.8	2.5	3.2	3.0	3.3	3.5	3.1
Selenium D-Se	mg/L							<0.020	<0.020	<0.020	<0.050	<0.050	<0.050	<0.050
Silicon D-Si	mg/L							2.45	2.24	3.26	3.22	3.43	3.63	3.24
Silver D-Ag	mg/L							<0.00020	<0.00020	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050
Sodium D-Na	mg/L							5.7	5.2	5.9	5.3	6.0	6.1	5.2
Strontium D-Sr	mg/L							1.29	1.27	1.32	1.33	1.33	1.30	1.30
Thallium D-Tl	mg/L							0.0021	0.0022	0.0023	<0.0050	<0.0050	<0.0050	<0.0050
Tin D-Sn	mg/L							<0.0020	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.0050
Titanium D-Ti	mg/L							<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium D-U	mg/L							<0.00020	<0.00020	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050
Vanadium D-V	mg/L							<0.020	<0.020	<0.020	<0.050	<0.050	<0.050	<0.050
Zinc D-Zn	mg/L							94.0	92.5	133	139	138	136	134

Depth (m)		1	7	1	3	5	15	30	40	1	3	5	15	30	40
Sample ID		VANGORDA PIT 1m	VANGORDA PIT 7m	VP 1m Vangorda Pit@ 1m	VP 3m Vangorda @ 3m	VP 5m Vangorda @ 5m	VP 15m Vangorda @ 15m	VP 30m Vangorda @ 30m	VP 40m Vangorda @ 40m	VP_1 Vangorda @1m	VP_3 Vangorda @3m	VP_5 Vangorda @5m	VP_15M Vangorda @15m	VP_30M Vangorda @30m	VP_40 Vangorda @40m
Date Sampled		17-May-06	17-May-06	21-Jun-06	21-Jun-06	21-Jun-06	21-Jun-06	21-Jun-06	21-Jun-06	9-Aug-06	9-Aug-06	9-Aug-06	9-Aug-06	9-Aug-06	9-Aug-06
Time Sampled		13:30	14:20	11:50	12:10	12:20	12:35	12:45	13:00	14:05	14:20	14:35	14:45	14:55	15:10
ALS Sample ID		4	5	1	02	03	04	5	6	7	8	9	10	11	12
Nature		Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Physical Tests															
Hardness (as CaCO3)	mg/L														
Conductivity (uS/cm)		1780	2110	1130	1910	2120	2140	2150	2150	1260	1670	2080	2180	2190	2210
ORP	mV														
pH		5.80	5.89	5.02	5.17	5.55	5.48	5.57	5.57	7.04	6.70	6.40	5.96	5.81	5.67
Total Suspended Solids	mg/L	17.3	32.0	04.7	14.7	30.7	35.3	37.3	34.0	<3.0	10.3	22.3	33.7	32.3	33.7
Dissolved Anions															
Alkalinity-Total CaCO3	mg/L	04.0	<2.0	24.8	30.4	47.4	47.6	37.0	33.0	16.8	11.1	12.7	12.6	11.5	13.1
Sulphate SO4	mg/L	1130	1390	0641	1240	1410	1410	1440	1530	0715	1040	1370	1450	1450	1450
Chloride (Cl)	mg/L														
Fluoride (F)	mg/L														
Bromide (Br)	mg/L														
Nutrients															
Ammonia Nitrogen N	mg/L	0.360	0.580	0.167	0.407	0.560	0.551	0.532	0.531	0.174	0.271	0.505	0.502	0.522	0.519
Nitrate Nitrogen N	mg/L									0.049	0.032	<0.12	<0.12	<0.12	<0.12
Nitrite Nitrogen N	mg/L									0.002	0.002	<0.025	<0.025	<0.025	<0.025
Nitrite/Nitrate Nitrogen N	mg/L	0.0600	<0.025	0.0714	0.038	<0.025	<0.025	<0.025	<0.025	0.0514	0.0337	<0.12	<0.12	<0.12	<0.12
Dissolved ortho-Phosphate P	mg/L	<0.0010	<0.0010	0.0026	0.0013	0.0011	0.0012	0.0014	0.0015	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Total Phosphate P	mg/L	0.0094	0.011	0.0051	0.0049	0.0084	0.0088	0.0138	0.0069	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Total Metals															
Aluminum T-Al	mg/L	1.970	0.127	0.161	0.503	0.162	0.133	<0.40	0.148	0.053	0.176	0.171	0.164	0.17	0.176
Antimony T-Sb	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0010	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Arsenic T-As	mg/L	0.0297	0.0022	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0010	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Barium T-Ba	mg/L	0.0385	0.0259	0.0118	0.0272	0.0273	0.0262	0.0257	0.0252	0.0249	0.0259	0.0226	0.0218	0.0208	0.0213
Beryllium T-Be	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0050	<0.010	<0.010	<0.010	<0.010	<0.010
Bismuth T-Bi	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0050	<0.010	<0.010	<0.010	<0.010	<0.010
Boron T-B	mg/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.10	<0.20	<0.20	<0.20	<0.20	<0.20
Cadmium T-Cd	mg/L	0.162	0.120	0.047	0.136	0.120	0.121	0.1240	0.124	0.106	0.120	0.111	0.120	0.119	0.119
Calcium T-Ca	mg/L	202	269	121	209	231	263	246	299	137	174	245	249	253	247
Chromium T-Cr	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0050	<0.010	<0.010	<0.010	<0.010	<0.010
Cobalt T-Co	mg/L	0.621	0.797	0.144	0.645	0.758	0.755	0.777	0.781	0.337	0.544	0.664	0.731	0.733	0.733
Copper T-Cu	mg/L	2.230	0.091	0.235	0.612	0.143	0.146	0.146	0.144	0.149	0.408	0.159	0.123	0.12	0.1220
Iron T-Fe	mg/L	30.500	34.50	06.8	23.4	28.5	35.0	34.20	38.2	00.6	10.0	29.9	41.0	45.3	42.0
Lead T-Pb	mg/L	0.0975	0.0123	0.0204	0.0455	0.0155	0.0178	0.0270	0.0281	0.0117	0.0371	0.0210	0.0373	0.0410	0.0438
Lithium T-Li	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.050	<0.10	<0.10	<0.10	<0.10	<0.10
Magnesium T-Mg	mg/L	86.2	110.0	048	087	098	111	104.0	121.0	58.9	077	103	105	108.0	106
Manganese T-Mn	mg/L	34.8	47.8	07.9	43.2	51.4	49.7	52.30	52.2	22.6	31.3	44.0	47.1	48.1	47.9
Molybdenum T-Mo	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.00264	<0.0010	0.0029	0.0023	0.0017	0.0021
Nickel T-Ni	mg/L	0.549	0.725	0.131	0.590	0.681	0.685	0.696	0.704	0.337	0.488	0.628	0.664	0.672	0.671
Phosphorus T-P	mg/L	<0.60	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.60	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium T-K	mg/L	<4.0	3.5	<2.0	2.3	2.7	3.0	2.8	<4.0	<2.0	2.2	3.0	2.9	3.1	2.9
Selenium T-Se	mg/L	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.010	<0.020	<0.020	<0.020	<0.020	<0.020
Silicon T-Si	mg/L	3.38	3.61	2.43	3.11	3.14	3.56	3.38	3.59	2.74	2.90	3.38	3.34	3.40	3.30
Silver T-Ag	mg/L	<0.00020	<0.00020	<0.00020	0.00098	0.00092	0.00049	0.00084	0.00080	<0.00010	0.00066	<0.00020	<0.00020	<0.00020	<0.00020
Sodium T-Na	mg/L	6.5	6.1	2.7	4.5	4.9	5.3	5.2	6.0	3.3	4.0	5.4	5.2	5.7	5.2
Strontium T-Sr	mg/L	1.320	1.48	0.31	1.33	1.53	1.46	1.510	1.52	0.88	1.06	1.40	1.45	1.45	1.44
Thallium T-Tl	mg/L	0.0022	0.0023	<0.0020	0.0026	0.0024	0.0023	0.0023	0.0024	0.0029	0.0026	0.0023	0.0023	0.0023	0.0023
Tin T-Sn	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0010	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Titanium T-Ti	mg/L	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium T-U	mg/L	0.00430	0.00054	0.00051	0.00170	0.00044	0.00056	0.00058	0.00060	0.00041	0.00168	0.00056	0.00054	0.00050	0.00053
Vanadium T-V	mg/L	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.010	<0.020	<0.020	<0.020	<0.020	<0.020
Zinc T-Zn	mg/L	134.0	162.0	031	149	166	165	170.0	170	072	099	133	147	149	142
Dissolved Metals															
Aluminum D-Al	mg/L	0.899	0.060	0.110	0.455	0.117	0.112	0.116	0.114	<0.010	0.105	0.095	0.100	0.099	0.096
Antimony D-Sb	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0010	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Arsenic D-As	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0010	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Barium D-Ba	mg/L	0.0375	0.0245	0.0112	0.0260	0.0258	0.0252	0.0247	0.0242	0.0225	0.0246	0.0224	0.0208	0.0206	0.0199
Beryllium D-Be	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0050	<0.010	<0.010	<0.010	<0.010	<0.010
Bismuth D-Bi	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0050	<0.010	<0.010	<0.010	<0.010	<0.010
Boron D-B	mg/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.10	<0.20	<0.20	<0.20	<0.20	<0.20
Cadmium D-Cd	mg/L	0.156	0.116	0.046	0.131	0.116	0.122	0.1240	0.123	0.106	0.119	0.109	0.117	0.116	0.113
Calcium D-Ca	mg/L	211	270	121	213	235	258	249	259	136	170	242	251	251	247
Chromium D-Cr	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0050	<0.010	<0.010	<0.010	<0.010	<0.010
Cobalt D-Co	mg/L	0.647	0.785	0.141	0.615	0.733	0.760	0.772	0.767	0.344	0.523	0.670	0.726	0.724	0.707
Copper D-Cu	mg/L	1.370	0.081	0.221	0.609	0.136	0.145	0.140	0.138	0.107	0.372	0.153	0.120	0.12	0.1120
Iron D-Fe	mg/L	23.8	31.10	05.7	22.9	27.0	34.4	32.00	32.6	<0.030	07.6	28.6	42.2	42.5	41.4
Lead D-Pb	mg/L	0.03410	<0.0010	0.0125	0.0326	0.0049	0.0092	0.0159	0.0173	0.0009	0.0130	0.0135	0.0312	0.0361	0.0356
Lithium D-Li	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.050	<0.10	<0.10	<0.10	<0.10	<0.10
Magnesium D-Mg	mg/L	87.9	109.0	49.1	089	098	108	103.0	104.0	58.7	076	099	107	108.0	103
Manganese D-Mn	mg/L	36.8	47.0	07.6	40.7	49.4	51.7	51.40	51.1	23.0	30.6	43.8	47.3	47.7	46.0
Molybdenum D-Mo	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.00206	<0.0010	0.0027	0.0022	0.0018	0.0014
Nickel D-Ni	mg/L	0.587	0.729	0.128	0.556	0.655	0.699	0.685	0.684	0.355	0.478	0.623	0.663	0.663	0.650
Phosphorus D-P	mg/L	<0.60	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.60	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium D-K	mg/L	<4.0	3.5	<2.0	2.4	2.5	2.9	2.9	<4.0	<2.0	2.1	2.8	3.1	3	2.9
Selenium D-Se	mg/L	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.010	<0.020	<0.020	<0.020	<0.020	<0.020
Silicon D-Si	mg/L	3.23	3.56	2.42	3.19	3.08	3.45	3.27	3.06	2.67	2.83	3.21	3.37	3.37	3.20
Silver D-Ag	mg/L	<0.00020	<0.00020	<0.00020	0.00057	0.00118	0.00063	0.00098	0.00100	<0.00010	0.00066	<0.00020	<0.00020	<0.00020	<0.00020
Sodium D-Na	mg/L	5.4	6.1	2.7	4.7	4.6	5.3	5.3	5.0	3.2	4.0	5.2	5.5	5.3	5.0
Strontium D-Sr	mg/L	1.390	1.45	0.30	1.26	1.47	1.49	1.470	1.47	0.89	1.03	1.42	1.42	1.43	1.39
Thallium D-Tl	mg/L	0.0023	0.0024	<0.0020	0.0024	0.0023	0.0023	0.0024	0.0023	0.0028	0.0026	0.0022	0.0022	0.0023	0.0021
Tin D-Sn	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0010	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Titanium D-Ti	mg/L	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium D-U	mg/L	0.00253	0.00036	0.00042	0.00164	0.00040	0.00046	0.00052	0.00054	0.00016	0.00121	0.00050	0.00050	0.00048	0.00051
Vanadium D-V	mg/L	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.010	<0.020	<0.020	<0.020	<0.020	<0.020
Zinc D-Zn	mg/L	138.0	161.0	030	140	161	168	167.0	167	073	095	134	148	139	136

Vangorda Pit - 2005 to 2008 Monitoring R
RESULTS OF ANALYSIS

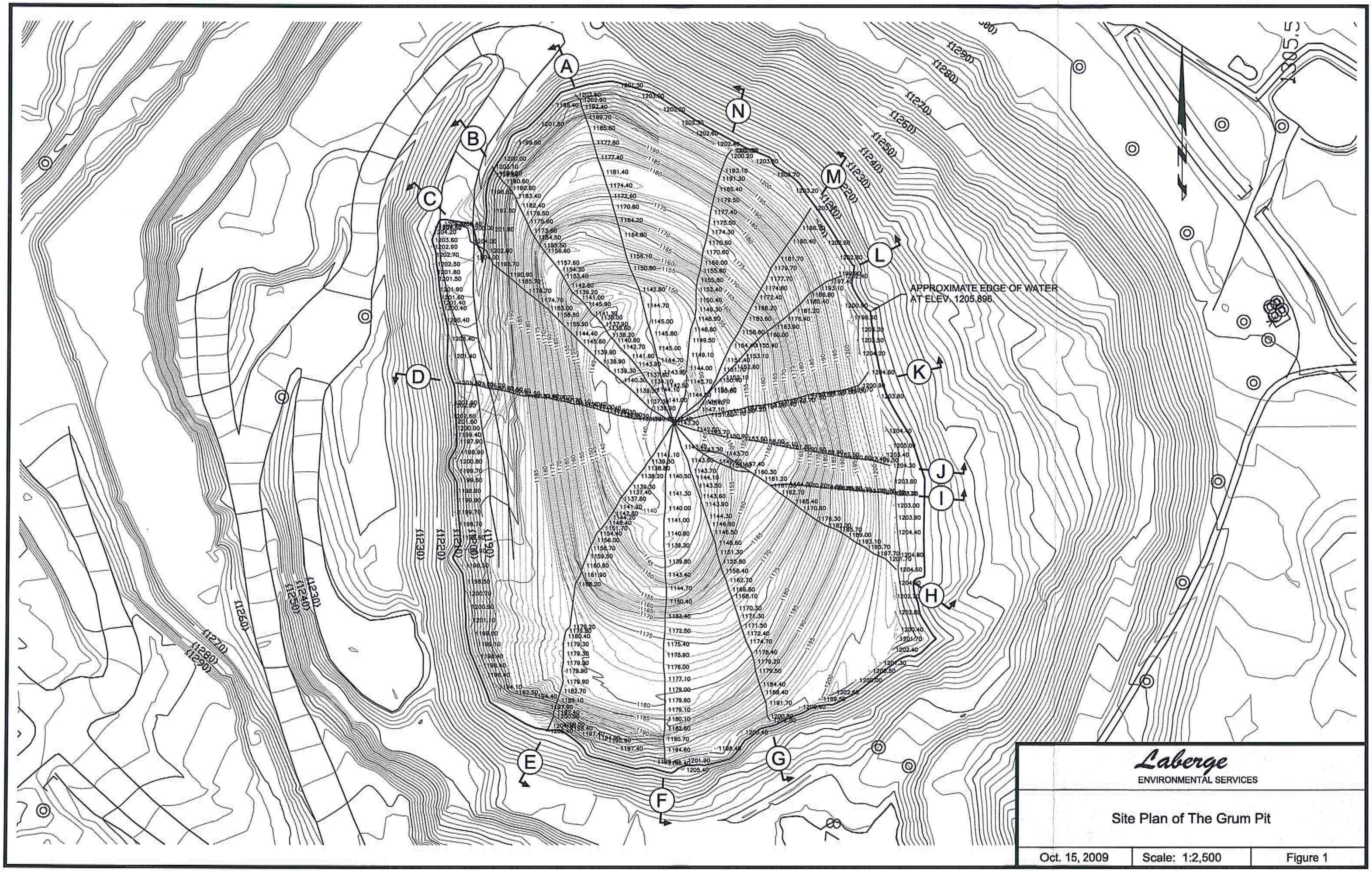
Depth (m)	1	3	5	15	30	40	1	5	15	40	1	3	5	15	30	40	1	3	5	1	3	5	15	30	40
Sample ID	VP_1 (vngrda @1m)	VP_3 (vngrda @3m)	VP_5 (vngrda @5m)	VP_15 (vngrda @15m)	VP_30 (vngrda @30m)	VP_40 (vngrda @40m)	V-1 VANGORDA @1M	V-5 VANGORDA @5M	V-15 VANGORDA @15M	V-40 VANGORDA @40M	VPL-1M	VPL-3M	VPL-5M	VPL-15M	VPL-30M	VPL-40M	VP-1 VANGORDA PIT LAKE @1M	VP-3 VANGORDA PIT LAKE @3M	VP-5 VANGORDA PIT LAKE @5M	K23507	K23508	K23509	K23510	K23511	K23512
Date Sampled	15-Sep-06	15-Sep-06	15-Sep-06	15-Sep-06	15-Sep-06	15-Sep-06	26-Mar-07	26-Mar-07	26-Mar-07	26-Mar-07	12-Jun-07	12-Jun-07	12-Jun-07	12-Jun-07	12-Jun-07	12-Jun-07	5-Sep-07	5-Sep-07	5-Sep-07	11/6/08	11/6/08	11/6/08	11/6/08	11/6/08	11/6/08
Time Sampled	14:15	14:20	14:26	14:36	14:50	15:15	10:00	10:12	10:25	10:40	10:55	11:05	11:20	11:35	11:45	12:00	13:00	13:15	13:25						
ALS Sample ID	7	8	9	10	11	12	L491616-9	L491616-10	L491616-11	L491616-12	L518525-1	L518525-2	L518525-3	L518525-4	L518525-5	L518525-6	L551912-18	L551912-19	L551912-20	F112779	F112779	F112779	F112779	F112779	F112779
Nature	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water						
Physical Tests																									
Hardness (as CaCO3)											588	697	720	1200	1190	1200	719	706	709	650	813	811	1170	1210	1230
Conductivity (uS/cm)	1350	1340	2020	2090	2100	2100	1190	1610	2240	2260	1160	1460	1570	2040	2030	2000	1630	1630	1650	1600	2000	2000	2200	2200	2200
ORP											260	480	540	180	170	160	430	430	420						
pH	7.05	6.92	6.11	5.94	5.88	5.83	7.41	6.73	6.23	6.43	4.72	3.55	3.44	5.85	5.96	5.97	3.67	3.63	3.57	3.3	3.2	3.2	5.7	6	6
Total Suspended Solids	5.2	4.6	33.9	36.6	39.9	39.9	<3.0	<3.0	39.9	58.5	<3.0	6.7	6.0	34.0	44.7	43.3	3.1	3.1	3.8	12	6	ND	26	31	34
Dissolved Anions																									
Alkalinity-Total CaCO3	13.6	13.7	14.1	13.1	14.5	13.7														ND	ND	ND	1.1	3.9	2.9
Sulphate SO4	794	785	1430	1500	1490	1480	627	959	1430	1430	693	856	907	1450	1460	1470	900	881	902	830	980	1100	1400	1500	1600
Chloride (Cl)							<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<10	<10	<10	<0.50	<0.50	<0.50	0.9	ND	ND	ND	ND	0.6
Fluoride (F)																									
Bromide (Br)							<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<1.0	<1.0	<1.0	<0.050	<0.050	<0.050						
Nutrients																									
Ammonia Nitrogen N	0.189	0.189	0.603	0.604	0.594	0.567					0.164	0.161	0.164	0.582	0.606	0.608	0.127	0.131	0.124	0.114	0.16	0.171	0.42 (1)	0.41 (1)	0.45 (1)
Nitrate Nitrogen N											-	-	-	-	-	-	-	-	-	1.19	0.16	0.08	ND	ND	ND
Nitrite Nitrogen N											-	-	-	-	-	-	-	-	-	ND	0.008	ND	0.007	0.009	0.009
Nitrite/Nitrate Nitrogen N	0.0489	0.0466	<0.0050	<0.0050	<0.0050	<0.0050					-	-	-	-	-	-				1.19	0.17	0.08	ND	ND	0.03
Dissolved ortho-Phosphate P	<0.0010	0.0029	<0.0010	0.0032	<0.0010	<0.0010					-	-	-	-	-	-	-	-	-	0.001	0.002	0.002	ND	ND	0.003
Total Phosphate P	<0.0020	<0.0020	0.0369	0.0047	0.0151	2.13					-	-	-	-	-	-	-	-	-	ND	0.005	0.007	ND	ND	ND
Total Metals																									
Aluminum T-Al	0.070	0.049	0.131	0.189	0.130	0.133	<0.20	<0.20	<0.20	<0.20	1.01	1.65	1.880	0.617	0.056	0.062	1.51	1.44	1.46	2.37	3.12	3.51	0.081	0.014	0.014
Antimony T-Sb	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.0050	<0.20	<0.20	<0.20	<0.20	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	ND	ND	ND	ND	0.0004	ND
Arsenic T-As	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.0050	<0.20	<0.20	<0.20	<0.20	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0026	0.0054	0.0061	0.0008	0.0009	0.0012
Barium T-Ba	0.0230	0.0225	0.0243	0.0225	0.0222	0.0223	0.0280	0.0170	0.0160	0.0130	0.0243	0.0232	0.0229	0.0181	0.0153	0.015	0.022	0.022	0.021	0.0347	0.0328	0.031	0.0156	0.0142	0.0147
Beryllium T-Be	<0.010	<0.010	<0.025	<0.025	<0.025	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.0005	0.0007	0.0007	ND	ND	ND
Bismuth T-Bi	<0.010	<0.010	<0.025	<0.025	<0.025	<0.025	<0.20	<0.20	<0.20	<0.20	<0.010	<0.010	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	ND	ND	ND	ND	ND	ND
Boron T-B	<0.20	<0.20	<0.50	<0.50	<0.50	<0.50	<0.10	<0.10	<0.10	<0.10	<0.20	<0.20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	ND	ND	ND	ND	ND	ND
Cadmium T-Cd	0.104	0.106	0.115	0.120	0.126	0.122	0.071	0.104	0.110	0.090	0.108	0.135	0.144	0.109	0.1020	0.098	0.137	0.131	0.133	0.134	0.163	0.172	0.104	0.0978	0.1
Calcium T-Ca	155	154	267	269	269	263	140	178	271	291	135	158	166	279	286	292	153	156	157	142	180	179	281	290	296
Chromium T-Cr	<0.010	<0.010	<0.025	<0.025	<0.025	<0.025	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	ND	ND	ND	ND	ND	ND
Cobalt T-Co	0.398	0.398	0.718	0.757	0.796	0.762	0.263	0.452	0.719	0.703	0.339	0.442	0.494	0.777	0.748	0.745	0.483	0.469	0.466	0.451	0.583	0.605	0.673	0.69	0.701
Copper T-Cu	0.0494	0.0498	0.183	0.117	0.116	0.111	<0.010	0.041	0.106	0.059	0.66	1.06	1.1300	0.0900	0.0777	0.0792	0.735	0.712	0.707	1.2	1.79	2.14	0.038	0.03	0.028
Iron T-Fe	1.31	1.28	31.2	41.8	42.5	41.9	0.1	13.0	48.8	50.80	8.66	7.3	10.3	47.9	51.0	51.600	15.9	16.0	16.2	21.5	31.8	36.5	47.4	55.3	55.7
Lead T-Pb	0.0074	0.0077	0.0077	0.0208	0.0285	0.0294	<0.050	<0.050	<0.050	<0.050	0.089	0.125	0.151	<0.0025	0.0042	0.0054	0.278	0.269	0.269	0.316	0.337	0.338	0.0074	0.0059	0.0082
Lithium T-Li	<0.10	<0.10	<0.25	<0.25	<0.25	<0.25	0.025	0.032	0.047	0.049	<0.10	<0.10	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.032	0.041	0.04	0.054	0.057	0.06
Magnesium T-Mg	74.7	73.8	110	113	114	110	55.8	78.9	111.0	115.0	61.2	74.9	80	120	121	124.0	77.7	78	79	71.7	88.5	88.4	114	118	120
Manganese T-Mn	26.2	26.7	43.4	46.2	48.0	45.8	18.2	30.8	46.4	46.9	20.1	26.2	28.6	45.3	45.2	45.3	28.2	27.0	27.2	28.4	35.9	37.2	45.7	48.1	48.3
Molybdenum T-Mo	<0.0010	<0.0010	<0.0025	<0.0025	<0.0025	<0.0025	<0.030	<0.030	<0.030	<0.030	<0.0010	<0.0010	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	ND	ND	ND	ND	ND	ND
Nickel T-Ni	0.386	0.383	0.658	0.698	0.718	0.682	0.271	0.412	0.604	0.600	0.316	0.399	0.446	0.672	0.666	0.666	0.440	0.433	0.431	0.392	0.497	0.509	0.607	0.622	0.626
Phosphorus T-P	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	0	0	0	0	0	0
Potassium T-K	2.4	2.5	3.9	4.0	3.9	3.8	2.2	2.5	3.7	3.9	<2.0	<2.0	<2.0	3.4	3.3	3.5	2.2	2.2	2.2	1.9	2.4	2.3	3.3	3.4	3.4
Selenium T-Se	<0.020	<0.020	<0.050	<0.050	<0.050	<0.050	<0.20	<0.20	<0.20	<0.20	<0.020	<0.020	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	ND	ND	ND	0.0015	0.0017	0.0022
Silicon T-Si	2.90	2.87	3.50	3.61	3.58	3.50	4.12	3.12	3.63	3.78	2.76	3.13	3.19	3.58	3.57	3.66	3.69	3.71	3.77	3.82	4.52	4.46	3.57	3.78	3.85
Silver T-Ag	<0.00020	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.010	<0.020	<0.020	<0.020	<0.00020	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	ND	ND	ND	ND	ND	ND
Sodium T-Na	4.4	4.4	6.8	6.8	6.7	6.4	4.2	4.5	5.8	6.0	2.9	3.4	3.5	5.5	5.5	5.6	3.8	3.8	3.8	2.9	3.8	3.7	5.3	5.5	5.5
Strontium T-Sr	0.879	0.877	1.40	1.37	1.42	1.38	0.884	0.998	1.330	1.410	0.704	0.780	0.86	1.36	1.37	1.370	0.837	0.81	0.81	0.668	0.89	0.882	1.37	1.43	1.46
Thallium T-Tl	0.0028	0.0027	<0.0050	<0.0050	<0.0050	<0.0050	<0.20	<0.50	<0.50	<0.50	<0.0020	0.0023	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.00121	0.00165	0.00172	0.00226	0.00224	0.00233
Tin T-Sn	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.0050	<0.030	<0.030	<0.030	<0.030	0.0093	0.0050	0.0222	0.0269	0.0254	0.0278	<0.0050	<0.0050	<0.0050	ND	ND	ND	ND	ND	ND
Titanium T-Ti	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.021	0.018	0.022	ND	0.013	0.016
Uranium T-U	<0.00020	0.00020	0.00081	<0.00050	0.00050	0.00050					0.00250	0.00337	0.00359	<0.00050	<0.00050	<0.00050	0.00357	0.00346	0.00345	0.00572	0.00669	0.00715	0.00009	ND	ND
Vanadium T-V	<0.020	<0.020	<0.050	<0.050	<0.050	<0.050	<0.030	<0.030	<0.030	<0.030	<0.020	<0.020	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	ND	ND	ND	ND	ND	ND
Zinc T-Zn	87.3	87.0	143	154	160	154	66	107	158	155.0	78.1	99	107	148	145	144.0	107	104	103	118	149	155	167	172	176
Dissolved Metals																				V-1	V-3	V-5	V-15	V-30	V-40
Aluminum D-Al	<0.020	0.020	0.112	0.107	0.129	0.058	<0.20	<0.20	<0.20	<0.20	0.80	1.64	1.690	0.054	0.105	0.06	1.49	1.57	1.41	2.52	2.95	3.34	162 (1)	ND	ND
Antimony D-Sb	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.0050	<0.20	<0.20	<0.20	<0.20	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	ND	ND	ND	ND	ND	ND
Arsenic D-As	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.0050	<0.20	<0.20	<0.20	<0.20	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0019	0.0039	0.0047	0.0005	0.0007	0.0007
Barium D-Ba	0.0226	0.0213	0.0237	0.0226	0.0215	0.0219	0.0280	0.0170	0.0170	0.0130	0.0219	0.0231	0.0213	0.0172	0.0146	0.015	0.023	0.021	0.021	0.0323	0.0306	0.0308	0.0145	0.0126	0.0126
Beryllium D-Be	<0.010	<0.010	<0.025	<0.025	<0.025	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.0004	0.0006	0.0007	ND	ND	ND
Bismuth D-Bi	<0.010	<0.010	<0.025	<0.025	<0.025	<0.025	<0.20	<0.20	<0.20	<0.20	<0.010	<0.010	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	ND	ND	ND	ND	ND	ND
Boron D-B	<0.20	<0.20	<0.50	<0.50	<0.50	<0.50	<0.10	<0.10	<0.10	<0.10	<0.20	<0.20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	ND	ND	ND	ND	ND	ND
Cadmium D-Cd	0.104	0.104	0.114	0.121	0.116	0.116	0.073	0.110	0.120	0.096	0.100	0.135	0.134	0.110	0.103	0.101	0.138	0.132	0.127	0.14	0.156	0.171	0.0945	0.0876	0.0895
Calcium D-Ca	151	151	260	268	263	271	137	183	285	290	135	157	161	280	282	281	157	155	156	146	163	167	258	271	279
Chromium D-Cr	<0.010	<0.010	<0.025	<0.025	<0.025	<0.025	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	ND	ND	ND	ND	ND	ND
Cobalt D-Co	0.389	0.387	0.746	0.773	0.752	0.756	0.259	0.457	0.742	0.685	0.321	0.441	0.458	0.746	0.759	0.741	0.480	0.466	0.453	0.47	0.546	0.578	0.637	0.663	0.671
Copper D-Cu	0.0296	0.0292	0.184	0.114	0.110	0.109	<0.010	0.045	0.112	0.053	0.63	1.08	1.0500	0.0871	0.0783	0.0763	0.736	0.707	0.702	1.28	1.68	2.05	101 (1)	0.027	0.025
Iron D-Fe	0.309	0.165	29.9	40.4	40.9	42.6	<0.030	13.5	49.6	49.40	8.45	6.54	8.9	46.7	50.0	50.4	15.6	15.3	15.5	21.7	27.7	33.2	41.8	50.2	50.4
Lead D-Pb	<0.0010	<0.0010	<0.0025	0.0074	0.0129	0.0140	<0.050	<0.050	<0.050	<0.050	0.083	0.126	0.14	<0.0025	0.0028	0.0034	0.277	0.268	0.263	0.325	0.335	0.351	10.6 (1)	0.0029	0.003
Lithium D-Li	<0.10	<0.10	<0.25	<0.25	<0.25	<0.25	0.025	0.036	0.054	0.049	<0.10	<0.10	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.032	0.035	0.039	0.051	0.052	0.051
Magnesium D-Mg	72.8	72.8	108	114	111	115	57.1	82.8	119.0	117.0	60.9	73.9	77	121	119	120.0	79.6	78	77	69.9	77.6	80.6	106	110	113
Manganese D-Mn	26.3	26.0	44.7	46.4	46.0	45.5	18.4	31.3	48.5	46.5	19.2	26.7	26.7	43.8	45.8	45.4	28.1	26.8	26.3	29.9	33.8	35.2	41.8	45.2	46.2
Molybdenum D-Mo	<0.0010	<0.0010	<0.0025	<0.0025	<0.0025	<0.0025	<0.030	<0.030	<0.030	<0.030	<0.0010	<0.0010	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	ND	ND	ND	ND	ND	ND
Nickel D-Ni	0.372	0.379	0.682	0.710	0.682	0.690	0.276	0.429	0.646	0.611	0.303	0.401	0.411	0.652	0.662	0.657	0.443	0.429	0.422	0.405	0.463	0.484	0.57	0.596	0.612
Phosphorus D-P	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	0	0	0	0	0	0
Potassium D-K	2.4	2.4	3.8	3.9	3.8	4.0	2.3	2.7	4.1	3.9	<2.0	<2.0	<2.0	3.3	3.3	3.3	2.3	2.1	2.1	1.9	2.6	2.1	3.6	3.7	3.8
Selenium D-Se	<0.020	<0.020	<0.050	<0.050	<0.050	<0.050	<0.20	<0.20	<0.20	<0.20	<0.020	<0.020	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.0011	0.001	0.001	0.0009	0.0011	0.0008
Silicon D-Si	2.79	2.79	3.43	3.50	3.46	3.59	4.31	3.43	4.10	3.96	2.73	3.06	3.11	3.57	3.50	3.52	3.75	3.69	3.69	3.45	3.78	3.82	3.25	3.39	3.43
Silver D-Ag	<0.00020	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.020	<0.020	<0.020	<0.020	<0.00020	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	ND	ND	ND	ND	ND	ND
Sodium D-Na	4.3	4.3	6.8	6.7	6.4	6.8	4.2	4.6	6.1	5.9	2.9	3.4	3.5	5.5	5.5	5.5	4.0	3.7	3.6	3.2	3.6	5.0 (1)	5.5	5.4	5.5
Strontium D-Sr	0.868	0.856	1.42	1.39	1.35	1.36	0.870	1.020	1.380	1.360	0.685	0.797	0.81	1.36	1.37	1.350	0.84	0.80	0.79	0.669	0.87	0.860	1.34	1.36	1.36
Thallium D-Tl	0.0026	0.0027	<0.0050	<0.0050	<0.0050	<0.0050	<0.40	<0.40	<0.40	<0.40	<0.0020	0.0021	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.00133	0.00147	0.00154	0.00221	0.00228	0.00221
Tin D-Sn	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.0050	<0.030	<0.030	<0.030	<0.030	0.0045	0.0081	0.0212	0.0225	0.0270	0.0271	<0.0050	<0.0050	<0.0050	ND	ND	ND	ND	ND	ND
Titanium D-Ti	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.011	ND	ND	ND	0.01	0.014
Uranium D-U	<0.00020	<0.00020	0.00066	0.00050	<0.00050	<0.00050					0.00224	0.00359	0.0032	<0.00050	<0.00050	<0.00050	0.00341	0.00355	0.0032	0.00582	0.00639	0.00718	0.27 (1)	0.00005	0.00005
Vanadium D-V	<0.020	<0.020	<0.050	<0.050	<0.050	<0.050	<0.030	<0.030	<0.030	<0.030	<0.020	<0.020	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	ND	ND	ND	ND	ND	ND
Zinc D-Zn	85.7	85.0	149	156	154	153	66	111	166	153.0	73.9	100.0	100	143	147	143.0	107	103	101	126	142	150	146	154	157

Vangorda Pit - 2005 to 2008 Monitoring R
RESULTS OF ANALYSIS

Depth (m)	1	3	5	15	30	40	1	3	5	15	30	40	1	3	5	15	30	40	1	3	5	15	30	40	1	3	5	15	30	40
Sample ID	K64669	K64670	K64671	K64672	K64673	K64674	VL-1	VL-3	VL-5	VL-15	VL-30	VL-40	VL-1	VL-3	VL-5	VL-15	VL-30	VL-40	VL-1 VANGORDA PIT LAKE AT 1M	VL-3 VANGORDA PIT LAKE AT 3M	VL-5 VANGORDA PIT LAKE AT 5M	VL-15 VANGORDA PIT LAKE AT 15M	VL-30 VANGORDA PIT LAKE AT 30M	VL-40 VANGORDA PIT LAKE AT 40M	VL-1 VANGORDA PIT LAKE AT 1 M	VL-3 VANGORDA PIT LAKE AT 3 M	VL-5 VANGORDA PIT LAKE AT 5 M	VL-15 VANGORDA PIT LAKE AT 15 M	VL-30 VANGORDA PIT LAKE AT 30 M	VL-40 VANGORDA PIT LAKE AT 40 M
Date Sampled	8/07/08	8/07/08	8/07/08	8/07/08	8/07/08	8/07/08	6/08/2008	6/08/2008	6/08/2008	6/08/2008	6/08/2008	6/08/2008	3/09/08	3/09/08	3/09/08	3/09/08	3/09/08	3/09/08	30/04/09	30/04/09	30/04/09	30/04/09	30/04/09	30/04/09	18/06/09	18/06/09	18/06/09	18/06/09	18/06/09	18/06/09
Time Sampled																														
ALS Sample ID	F113736	F113736	F113736	F113736	F113736	F113736	L05907	L05908	L05909	L05910	L05911	L05914	F112783	F112783	F112783	F112783	F112783	F112783	O65374	O65375	O65376	O65377	O65378	O65379	P41283	P41284	P41285	P41286	P41287	P41288
Nature																														
Physical Tests																														
Hardness (as CaCO3)	726	788	818	1190	1180	1180	812	911	1010	1150	1140	1150	1080	1120	1200	1170	1190	1130	749	1020	1050	1080	1090	1060	701	769	972	1130	1150	1190
Conductivity (uS/cm)	2000	2200	2200	2300	2300	2300	2200	2200	2300	2200	2300	2300	2400	2400	2300	2300	2300	2300	1600	2400	2500	2400	2400	2400	1700	2000	2300	2400	2400	2400
ORP																														
pH	3	3	3	4.7	4.5	4.5	3.2	3.2	3.3	5.5	5.8	5.8	3.2	3.4	4.3	4	3.9	3.9	4.8	3.4 (1)	3.3 (1)	3.6 (1)	3.7 (1)	3.5 (1)	3.4	3.2	3.2	3.4	3.4	3.4
Total Suspended Solids	8	8	6	32	36	33	10	9	7	28	30	31	22	29	13	8	10	12	10	18	22	31	23	64	5	12	9	6	9	9
Dissolved Anions																														
Alkalinity-Total CaCO3	ND	ND	ND	10	6.7	7.8	0	0	0	0	0	0	0	0	0	0	0	0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sulphate SO4	990	1100	1100	1400	1500	1500	1200	1300	1300	1300	1300	1300	1300	1400	1400	1300	1500	1400	950	1500	1400	1600	1500	1500	880	1000	1200	1400	1400	1400
Chloride (Cl)	0.6	ND	0.5	0.7	0.6	1.3	ND	ND	0.6	0.7	0.6	0.6	0.6	ND	1.6	1.5	0.5	ND												
Fluoride (F)																														
Bromide (Br)	0.31	0.29	0.29	0.11	0.11	0.12	ND	ND	ND	ND	ND	ND	ND	ND (1)	ND	ND	ND	ND												
Nutrients																														
Ammonia Nitrogen N	0.181	0.19	0.229	0.58	0.57	0.57	0.1	0.21	0.2	0.48	0.47	0.48	0.3	0.39	0.42	0.45	0.42	0.44	<0.005	<0.005	<0.005	0.018	<0.005	0.04	0.17	0.17	0.27	0.37	0.33	0.3
Nitrate Nitrogen N	0.1	0.07	0.07	ND	ND	ND	0.06	0.05	0.04	ND	ND	ND	0.04	ND	ND	ND	ND	ND	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	0.07	0.03	0.03	0.03	<0.02	<0.02
Nitrite Nitrogen N	0.009	0.01	0.008	ND	ND	0.005	0.005	0.006	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	0.07	0.03	0.03	0.03	<0.02	<0.02
Nitrite/Nitrate Nitrogen N	0.11	0.08	0.08	ND	ND	ND	0.07	0.06	0.04	ND	ND	ND	0.04	ND	ND	ND	ND	ND	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	0.07	0.05	0.04	0.03	<0.02	<0.02
Dissolved ortho-Phosphate P	0.011	0.011	0.016	0.01	0.009	0.006	0.004	0.003	0.004	0.002	ND	0.002	0.003	0.003	0.003	0.004	0.004	0.004	0.224	0.412	0.402	0.477	0.491	0.468	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Phosphate P	0.023	0.02	0.023	0.015	0.019	0.007	0.005	0.007	ND	ND	ND	ND	0.006	0.005	ND	ND	ND	ND	0.007	0.009	0.008	0.019	0.009	0.043	0.007	0.006	0.007	<0.005	<0.005	<0.005
Total Metals																														
Aluminum T-Al	3.13	3.43	3.23	0.018	0.039	0.022	3.35	3.15	1.85	0.057	0.08	0.071	1.78	1.05	0.278	0.822	0.679	0.682	1.39	1.38	1.04	0.954	0.862	1.03	1.87	2.61	2.3	1.25	1.16	1.18
Antimony T-Sb	0.00028	0.00014	0.00018	ND	0.0002	ND	0.0003	0.0002	0.0001	0.0001	0.0001	ND	ND	ND	ND	ND	ND	ND	0.0006	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
Arsenic T-As	0.00312	0.00477	0.00455	0.0008	0.0011	0.0009	0.0039	0.0036	0.0026	0.0008	0.0011	0.001	0.0045	0.0036	0.0017	0.002	0.0026	0.0028	0.0141	0.0187	0.0106	0.0092	0.006	0.0101	0.0021	0.0045	0.0033	0.002	0.0023	0.0026
Barium T-Ba	0.0297	0.0314	0.0292	0.0139	0.0137	0.0134	0.0282	0.0263	0.0209	0.0172	0.0169	0.0164	0.0203	0.0188	0.0187	0.0177	0.0193	0.0181	0.0301	0.0179	0.0176	0.0185	0.0179	0.0201	0.0328	0.0338	0.0303	0.0265	0.0232	0.0236
Beryllium T-Be	0.00057	0.00064	0.00054	ND	ND	ND	0.0006	0.0006	0.00033	ND	0.00005	0.00006	0.0003	ND	ND	ND	ND	ND	0.0003	0.0002	0.0003	0.0002	0.0002	0.0003	0.0005	0.0006	0.0005	0.0004	0.0004	0.0004
Bismuth T-Bi	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Boron T-B	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cadmium T-Cd	0.173	0.184	0.184	0.0885	0.0895	0.0868	0.176	0.186	0.153	0.0897	0.0865	0.0892	0.151	0.139	0.119	0.13	0.132	0.137	0.0872	0.132	0.135	0.127	0.124	0.127	0.111	0.15	0.145	0.125	0.128	0.127
Calcium T-Ca	158	173	180	286	282	283	181	203	234	276	273	276	243	255	280	272	274	259	0.183	0.243	0.239	0.252	0.251	0.249	0.151	0.172	0.223	0.253	0.256	0.267
Chromium T-Cr	0.0016	0.0021	0.0016	ND	ND	ND	0.0018	0.0015	0.0008	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cobalt T-Co	0.576	0.631	0.643	0.699	0.703	0.694	0.654	0.727	0.735	0.704	0.696	0.708	0.706	0.712	0.728	0.725	0.737	0.708	0.44	0.714	0.708	0.719	0.713	0.708	0.473	0.617	0.678	0.707	0.707	0.732
Copper T-Cu	1.68	2.03	1.85	0.0269	0.0516	0.0448	1.53	1.53	0.927	0.124	0.114	0.115	0.74	0.471	0.229	0.362	0.376	0.365	0.462	0.457	0.334	0.325	0.302	0.317	1.19	1.71	1.68	0.628	0.576	0.595
Iron T-Fe	35.6	43.1	45.1	54.9	58.9	56.3	36.8	50.7	50.4	49.7	51.7	52	36.1	40.1	48	42.8	51.7	48.4	15.7	46.9	49.6	52.1	49.4	50.8	16.7	39.2	43.2	43.4	46.4	48.1
Lead T-Pb	0.404	0.363	0.358	0.0031	0.00726	0.00747	0.397	0.361	0.208	0.00322	0.00966	0.00971	0.186	0.0974	0.0102	0.0445	0.0567	0.058	0.0593	0.136	0.139	0.168	0.177	0.193	0.287	0.317	0.252	0.231	0.252	0.262
Lithium T-Li	0.041	0.0438	0.0428	0.055	0.055	0.056	0.044	0.049	0.049	0.052	0.052	0.052	0.049	0.05	0.053	0.05	0.052	0.052	0.038	0.049	0.05	0.051	0.051	0.05	0.03	0.035	0.044	0.051	0.051	0.049
Magnesium T-Mg	80.6	86.2	89.6	115	115	114	87.7	98	104	111	111	113	115	117	122	121	123	118	0.0804	0.111	0.109	0.115	0.114	0.112	0.0736	0.0873	0.103	0.113	0.115	0.119
Manganese T-Mn	34.7	38.2	39.1	46.8	47.3	46.6	38.3	43.3	44.5	45.2	45.2	45.5	46.6	47.6	49.2	49.2	50.2	48.3	26.8	44.4	44.8	45.6	46	45.4	29.6	37.3	41.7	44.7	45.9	46.8
Molybdenum T-Mo	0.00031	0.00012	0.00011	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel T-Ni	0.486	0.528	0.539	0.635	0.636	0.631	0.55	0.606	0.63	0.629	0.618	0.629	0.619	0.627	0.653	0.637	0.652	0.616	0.426	0.629	0.616	0.623	0.624	0.62	0.408	0.493	0.571	0.618	0.61	0.639
Phosphorus T-P	0	0	0	0	0																									
Potassium T-K	2.09	2.25	2.35	3.47	3.42	3.41	2.35	2.58	2.93	3.37	3.31	3.31	3	3.1	3.5	3.3	3.4	3.2	0.0025	0.0029	0.0028	0.003	0.0029	0.0029	0.0021	0.0022	0.0027	0.003	0.0028	0.003
Selenium T-Se	0.00035	0.00045	0.00041	ND	ND	ND	0.0003	0.0003	0.0002	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008
Silicon T-Si	3.77	3.6	3.46	2.98	3.17	2.97	4.68	4.34	4.27	3.64	3.61	3.65	3.31	3.09	3.43	3.12	3.71	3.39	3.34	4.22	4.36	4.45	4.13	4.43	3.74	4.1	4.52	4.48	4.61	4.49
Silver T-Ag	0.000147	0.00009	0.000101	0.00009	0.00008	0.00008	0.00011	0.00012	0.00011	0.00011	0.00009	0.00009	ND	ND	ND	ND	ND	ND	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0001
Sodium T-Na	3.56	3.77	3.85	5.68	5.67	5.58	3.95	4.3	4.98	5.59	5.5	5.53	4.7	4.9	5.3	5.1	5.2	4.9	0.969	1.16	1.16	1.2	1.2	1.17	0.649	0.722	0.977	1.15	1.13	1.17
Strontium T-Sr	0.771	0.846	0.868	1.28	1.33	1.34	0.883	0.995	1.11	1.26	1.3	1.29	1.21	1.25	1.38	1.28	1.32	1.3	0.969	1.16	1.16	1.2	1.2	1.17	0.649	0.722	0.977	1.15	1.13	1.17
Thallium T-Tl	0.00144	0.00178	0.0019	0.00227	0.00225	0.00227	0.00171	0.00214	0.00216	0.00219	0.0021	0.00216	0.00214	0.00219	0.00219	0.00215	0.00227	0.00217	0.00147	0.00197	0.0021	0.00202	0.00212	0.00199	0.00132	0.00151	0.00179	0.00193	0.002	0.00203
Tin T-Sn	0.00038	0.00008	0.00012	ND	ND	ND	0.00027	0.00005	0.00006	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Titanium T-Ti	0.0058	0.0034	0.0041	ND	0.011	ND	0.003	0.004	ND	0.003	ND	ND	ND	ND	ND	ND	ND	0.013	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.012	<0.01	<0.01	<0.01	<0.01	<0.01
Uranium T-U	0.00709	0.00712	0.00675	0.0001	0.00021	0.00015	0.00732	0.00682	0.00382	0.00024	0.0003	0.0003	0.00334	0.00208	0.00068	0.00131	0.00142	0.00146	0.00324	0.00318	0.00263	0.00233	0.00204	0.00224	0.00475	0.00592	0.00515	0.00338	0.00305	0.00305
Vanadium T-V	0.0005	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
Zinc T-Zn	153	167	170	164	166	167	150	166	162	150	148	151	182	179	182	182	187	177	108	175	175	177	175	174	118	148	159	166	170	174
Dissolved Metals																														
Aluminum D-Al	3.01	3.36	3.03	54 (1)	0.02	0.013	3.27	2.87	1.7	0.051	0.062	0.065	1.64	0.973	0.275	0.621	0.68	0.675	1.13	1.35	0.957	0.86	0.757	0.81	1.93	2.6	2.31	1.26	1.17	1.17
Antimony D-Sb	0.0008	0.0005	0.0006	1.1 (1)	0.0004	0.0002	0.0001	ND	ND	ND	ND	0.0001	ND	ND	ND	ND	ND	ND	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	0.0007	<0.0004	<0.0004	<0.0004	<0.0004
Arsenic D-As	0.002	0.0038	0.0038	0.0005	0.0009	0.0008	0.003	0.0031	0.0021	0.0006	0.0007	0.0008	0.003	0.0026	0.0008	0.0009	0.001	0.0011	0.002	0.0076	0.0064	0.004	0.003	0.0033	0.0012	0.0027	0.0028	0.0019	0.0024	0.0025
Barium D-Ba	0.0276	0.0277	0.0276	0.0142	0.0138	0.0128	0.0277	0.0242	0.0194	0.0175	0.0175	0.0181	0.0208	0.0196	0.0202	0.0201	0.0202	0.0197	0.0291	0.0182	0.0178	0.0197	0.017	0.0178	0.0319	0.0318	0.0315	0.0272	0.0249	0.0249
Beryllium D-Be	0.00055	0.00061	0.0006	ND	ND	ND	0.00059	0.00053	0.00028	ND	ND	ND	0.0003	0.0002	ND	ND	ND	ND	0.0003	0.0003	0.0002	0.0002	<0.0002	<0.0002	0.0004	0.0005	0.0005	0.0004	0.0003	0.0003
Bismuth D-Bi	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Boron D-B	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cadmium D-Cd	0.169	0.181	0.178	0.0894	0.0879	0.0852	0.184	0.19	0.154	0.09	0.09	0.091	0.157	0.139	0.116	0.128	0.134	0.13	0.0892	0.138	0.137	0.135	0.128	0.13	0.113	0.15	0.141	0.126	0.126	0.126
Calcium D-Ca	154	170	172	272	274	270	191	214	241	282	287	287	241	250	260	256	264	257	175	234	240	246	250	243	153	164	221	260	266	277
Chromium D-Cr	0.0017	0.0017	0.001	ND	ND	ND	0.0015	0.0016	0.0006	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cobalt D-Co	0.572	0.627	0.598	0.656	0.668	0.658	0.656	0.722	0.715	0.685	0.691	0.699	0.683	0.693	0.707	0.71	0.729	0.702	0.416	0.691	0.709	0.708	0.71	0.698	0.495	0.608	0.674	0.725	0.74	0.756
Copper D-Cu	1.63	1.97	1.71	45.6 (1)	0.0427	0.041	1.54	1.53	0.914	0.12	0.11	0.111	0.71	0.452	0.227	0.367	0.382	0.375	0.413	0.445	0.334	0.326	0.301	0.31	1.23	1.69	1.7	0.654	0.605	0.614
Iron D-Fe	31.9	38.9	39.3	49.6	53.4	55.2	31.8	49.5	46.1	49.7	53	52.5	33.8	39.7	44.5	44.1	45.1	45.6	11.8	44.6	46.5	47	47.6	47	16.2	37.5	40	44.2	47.8	48.9
Lead D-Pb	0.387	0.349	0.336	4.45 (1)	0.00409	0.00452	0.399	0.334	0.197	0.0013	0.00714	0.00839	0.173	0.0888	0.0077	0.0424	0.0542	0.0541	0.0414	0.141	0.141	0.168	0.177	0.182	0.288	0.312	0.256	0.234	0.26	0.262
Lithium D-Li	0.039	0.042	0.04	0.051	0.051	0.049	0.046	0.047	0.045	0.053	0.054	0.056	0.048	0.049	0.052	0.054	0.055	0.053	0.037	0.051	0.05	0.053	0.052	0.052	0.032	0.038	0.047	0.052	0.053	0.053
Magnesium D-Mg	76.1	82.4	86	109	112	111	90.4	99.5	103	111	113	113	111	112	120	119	122	119	76.2	107	109	112	113	111	77.7	87.1	102	116	118	121
Manganese D-Mn	34.4	37.5	37.1	44	45.2	44.7	39.7	44	44.3	45.3	46.6	46.2	46.6	47.1	47.9	48.2	49.6	47.9	25.4	43.6	45	45.8	46.6	45.3	31.6	37.1	42.1	46.2	47.3	48.6
Molybdenum D-Mo	0.0004	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel D-Ni	0.482	0.521	0.504	0.595	0.607	0.596	0.546	0.597	0.609	0.61	0.618	0.618	0.597	0.613	0.65	0.64	0.653	0.634	0.407	0.612	0.617	0.62	0.624	0.619	0.421	0.49	0.58	0.643	0.639	0.661
Phosphorus D-P																														
Potassium D-K	2.13	2.2	2.2	3.3	3.35	3.29	2.49	2.75	3.08	3.48	3.52	3.51	2.8	3	3.2	3.1	3.2	3.1	2.5	2.9	3	3.1	3.1	3	2.3	2.3	2.7	3.1	3.1	3
Selenium D-Se	0.0003	0.0003	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.002	0.0019	ND	ND	ND	ND	0.0009	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008
Silicon D-Si	4.22	4.07	3.68	3.23	3.26	3.38	3.29	3.38	3.11	2.86	2.91	2.84	3.49	3.32	3.64	3.76	3.87	3.87	3.64	4.44	4.35	4.36	4.29	4.28	3.71	4.11	4.14	4.42	4.43	4.49
Silver D-Ag	0.00007	0.00006	0.00009	0.00008	0.00007	0.00007	0.0001	0.00008	0.00008	0.00008	0.00008	0.0001	ND	ND	ND	ND	ND	ND	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	<0.0001
Sodium D-Na	3.62	3.75	3.73	5.53	5.53	5.43	3.95	4.33	4.84	5.51	5.55	5.55	4.6	4.8	5.2	4.9	5	4.8	4	4.8	4.8	4.9	4.9	4.8	3.2	3.4	4.3	5	5	5.1
Strontium D-Sr	0.775	0.847	0.81	1.25	1.28	1.25	0.903	0.951	1.01	1.29	1.37	1.4	1.1	1.19	1.28	1.25	1.3	1.24	0.971	1.16	1.16	1.19	1.21	1.2	0.659	0.717	0.986	1.18	1.18	1.19
Thallium D-Tl	0.00135	0.00176	0.00175	0.00219	0.0022	0.00216	0.00169	0.00197	0.00202	0.00217	0.00225	0.00234	0.0021	0.00204	0.00212	0.00213	0.00228	0.00215	0.00138	0.00209	0.0021	0.00212	0.00211	0.00211	0.00124	0.00152	0.00183	0.002	0.00194	0.002
Tin D-Sn	0.0001	0.00006	ND	ND	ND	ND	0.00006	0.00006	0.00006	0.00005	ND	0.00006	0.0003	0.0003	0.0003	ND	ND	ND	0.0009	<0.0002	0.0002	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Titanium D-Ti	ND	0.004	0.006	0.007	0.006	ND	ND	ND	ND	ND	ND	0.003	0.012	ND	0.019	ND	ND	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.011	<0.01	0.011
Uranium D-U	0.00714	0.00725	0.0084	0.19 (1)	0.00016	0.00014	0.00695	0.00596	0.00348	0.00021	0.00028	0.00028	0.0035	0.00211	0.00069	0.00142	0.00155	0.00158	0.00289	0.0031	0.00243	0.00226	0.00203	0.00224	0.00479	0.00577	0.00513	0.00324	0.0031	0.00313
Vanadium D-V	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
Zinc D-Zn	147	159	162	161	163	160	153	164	158	147	149	150	183	181	182	184	190	185	106	179	184	183	184	182	118	142	156	168	172	175

Vangorda Pit - 2005 to 2008 Monitoring R
RESULTS OF ANALYSIS

Depth (m)	1	3	5	15	30	40	1	3	5	15	30	40
Sample ID	VL-1 VANGORDA PIT LAKE AT 1M	VL-3 VANGORDA PIT LAKE AT 3 M	VL-5 VANGORDA PIT LAKE AT 5 M	VL-15 VANGORDA PIT LAKE AT 15 M	VL-30 VANGORDA PIT LAKE AT 30 M	VL-40 VANGORDA PIT LAKE AT 40 M	VL-1 VANGORDA PIT LAKE AT 1M	VL-3 VANGORDA PIT LAKE AT 3M	VL-5 VANGORDA PIT LAKE AT 5M	VL-15 VANGORDA PIT LAKE AT 15M	VL-30 VANGORDA PIT LAKE AT 30M	VL-40 VANGORDA PIT LAKE AT 40M
Date Sampled	15/07/09	15/07/09	15/07/09	15/07/09	15/07/09	15/07/09	12/08/09	12/08/09	12/08/09	12/08/09	12/08/09	12/08/09
Time Sampled												
ALS Sample ID	P86756	P86757	P86758	P86759	P86760	P86761	Q27140	Q27141	Q27142	Q27143	Q27144	Q27145
Nature												
Physical Tests												
Hardness (as CaCO3)	852	1060	1110	1020	1150	1130	975	1020	1070	1050	1040	1060
Conductivity (uS/cm)	2000	2300	2400	2400	2400	2400	2360	2440	2450	2440	2480	2480
ORP												
pH	3.3	3.3	3.3	3.3	3.4	3.4	3.6	3.4	3.4	3.4	3.4	3.4
Total Suspended Solids	7	8	7	4	8	8	13	11	8	6	5	4
Dissolved Anions												
Alkalinity-Total CaCO3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sulphate SO4	1100	1400	1400	1400	1500	1400	1300	1300	1300	1300	1300	1300
Chloride (Cl)												
Fluoride (F)												
Bromide (Br)												
Nutrients												
Ammonia Nitrogen N	0.19	0.33	0.36	0.36	0.38	0.4	0.33	0.39	0.37	0.36	0.37	0.36
Nitrate Nitrogen N	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	0.15	0.15	0.15	0.15	<0.02
Nitrite Nitrogen N	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	0.15	0.15	0.15	0.15	<0.02
Nitrite/Nitrate Nitrogen N	0.04	0.02	0.02	<0.02	<0.02	<0.02	0.02	0.15	0.15	0.15	0.15	<0.02
Dissolved ortho-Phosphate P	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Phosphate P	0.005	<0.005	<0.005	0.005	<0.005	<0.005	0.006	0.005	0.005	0.005	0.005	0.006
Total Metals												
Aluminum T-Al	2.61	1.67	1.33	1.26	1.11	1.14	1.47	1.28	1.33	1.43	1.39	1.38
Antimony T-Sb	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic T-As	0.0018	0.0022	0.0019	0.0017	0.0019	0.0015	0.0028	0.0022	0.0016	0.0014	0.0014	0.0018
Barium T-Ba	0.0296	0.0272	0.0263	0.026	0.0223	0.0227	0.0277	0.0265	0.0249	0.0249	0.0234	0.0242
Beryllium T-Be	0.0005	0.0003	0.0002	0.0003	0.0002	0.0003	0.0003	0.00026	0.00028	0.00028	0.00023	0.00024
Bismuth T-Bi	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
Boron T-B	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Cadmium T-Cd	0.162	0.137	0.13	0.128	0.127	0.127	0.136	0.133	0.135	0.137	0.136	0.135
Calcium T-Ca	0.173	0.23	0.24	0.241	0.25	0.244	0.252	0.266	0.261	0.264	0.267	0.261
Chromium T-Cr	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Cobalt T-Co	0.593	0.645	0.661	0.655	0.669	0.664	0.707	0.739	0.735	0.762	0.772	0.759
Copper T-Cu	1.4	0.83	0.637	0.559	0.493	0.49	0.641	0.602	0.618	0.64	0.622	0.606
Iron T-Fe	37.4	40.6	41.9	38.3	49.5	49.4	41.1	45.6	43.5	43.3	42.7	44
Lead T-Pb	0.398	0.258	0.237	0.24	0.266	0.265	0.292	0.256	0.246	0.251	0.258	0.256
Lithium T-Li	0.04	0.047	0.05	0.049	0.052	0.051	0.047	0.048	0.048	0.049	0.048	0.047
Magnesium T-Mg	0.0861	0.102	0.104	0.103	0.104	0.105	0.109	0.115	0.116	0.121	0.123	0.121
Manganese T-Mn	36.5	42.6	42.7	42.2	43.4	42.8	45.9	48.5	48.9	51.4	52.3	51.1
Molybdenum T-Mo	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Nickel T-Ni	0.486	0.549	0.569	0.559	0.572	0.57	0.603	0.63	0.632	0.651	0.659	0.647
Phosphorus T-P												
Potassium T-K	0.0021	0.0026	0.0028	0.0026	0.0027	0.0026	0.00298	0.00309	0.00312	0.0031	0.00318	0.00309
Selenium T-Se	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0002	<0.0002	<0.0002	0.0002	0.0002	0.0002
Silicon T-Si	4.22	4.29	4.26	3.47	4.16	4.15	3.93	3.75	3.71	3.71	3.76	3.69
Silver T-Ag	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00006	0.00007	0.00006	0.00006	0.00007	0.00005
Sodium T-Na	0.827	1.11	1.2	1.21	1.23	1.25	1.1	1.15	1.14	1.15	1.15	1.14
Strontium T-Sr	0.827	1.11	1.2	1.21	1.23	1.25	1.1	1.15	1.14	1.15	1.15	1.14
Thallium T-Tl	0.00172	0.00188	0.00189	0.00199	0.002	0.00197	0.00202	0.00205	0.002	0.00201	0.00202	0.00197
Tin T-Sn	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Titanium T-Ti	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Uranium T-U	0.00665	0.00448	0.00362	0.0035	0.00319	0.00317	0.00415	0.00357	0.00376	0.00414	0.00411	0.00402
Vanadium T-V	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc T-Zn	143	154	155	154	159	158	163	169	169	176	179	175
Dissolved Metals												
Aluminum D-Al	2.79	1.68	1.51	1620	1.21	1.22	1.33	1.16	1.25	1.31	1.26	1.27
Antimony D-Sb	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic D-As	0.0012	0.0019	0.0013	0.0015	0.0018	0.0017	0.0011	0.0014	0.0012	0.001	0.0013	0.0014
Barium D-Ba	0.0312	0.0277	0.0289	0.0269	0.0245	0.0239	0.0238	0.022	0.0235	0.0232	0.0221	0.0222
Beryllium D-Be	0.0006	0.0002	0.0003	0.0003	<0.0002	0.0002	0.00031	0.00026	0.00026	0.00031	0.00027	0.00028
Bismuth D-Bi	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
Boron D-B	<1	<1	<1	<1	<1	<1	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Cadmium D-Cd	0.157	0.133	0.131	0.133	0.128	0.129	0.134	0.128	0.133	0.137	0.132	0.136
Calcium D-Ca	183	244	257	232	268	262	226	238	248	241	237	243
Chromium D-Cr	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Cobalt D-Co	0.657	0.729	0.731	0.692	0.75	0.741	0.691	0.711	0.744	0.744	0.735	0.747
Copper D-Cu	1.61	0.968	0.726	0.926	0.573	0.561	0.623	0.583	0.624	0.621	0.592	0.598
Iron D-Fe	37.4	43	44.6	40.6	51.2	51	41.3	44.6	44.9	44.3	44.7	46.4
Lead D-Pb	0.392	0.255	0.243	0.25	0.264	0.264	0.277	0.243	0.245	0.25	0.248	0.255
Lithium D-Li	0.04	0.048	0.05	0.047	0.052	0.049	0.047	0.049	0.049	0.05	0.049	0.049
Magnesium D-Mg	95.9	110	114	107	118	115	99.8	104	109	110	110	111
Manganese D-Mn	40.2	46.9	46.3	44.9	47.3	46.9	43.9	45.9	48.7	48.9	49	49.8
Molybdenum D-Mo	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Nickel D-Ni	0.536	0.636	0.643	0.603	0.66	0.641	0.586	0.606	0.635	0.63	0.628	0.634
Phosphorus D-P	0	0	0	0	0	0	0	0	0	0	0	0
Potassium D-K	2.3	2.7	2.9	2.5	3	2.9	2.77	2.77	2.99	2.83	2.83	2.92
Selenium D-Se	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Silicon D-Si	4.14	4	4.26	3.94	4.3	4.29	4.27	3.94	3.82	3.89	3.83	3.88
Silver D-Ag	0.0001	0.0002	0.0001	0.0002	0.0001	0.0001	0.00005	0.00004	0.00005	0.00005	0.00005	0.00004
Sodium D-Na	3.6	4.1	4.9	4	4.9	4.8	4.3	4.43	4.61	4.48	4.44	4.51
Strontium D-Sr	0.829	1.13	1.23	1.11	1.22	1.25	1.07	1.11	1.13	1.13	1.12	1.14
Thallium D-Tl	0.00176	0.00191	0.00198	0.00193	0.00197	0.002	0.00192	0.00191	0.00197	0.00196	0.00196	0.00197
Tin D-Sn	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Titanium D-Ti	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Uranium D-U	0.00676	0.0042	0.00372	0.0042	0.00304	0.00304	0.00413	0.00354	0.00378	0.00413	0.00399	0.0041
Vanadium D-V	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc D-Zn	150	169	164	162	169	166	156	160	169	169	168	170



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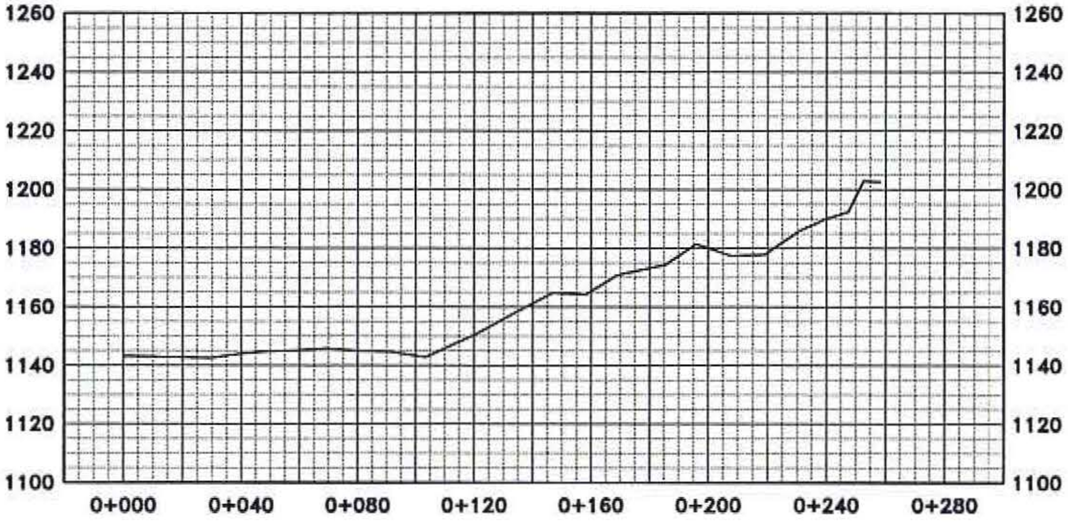
ENVIRONMENTAL SERVICES

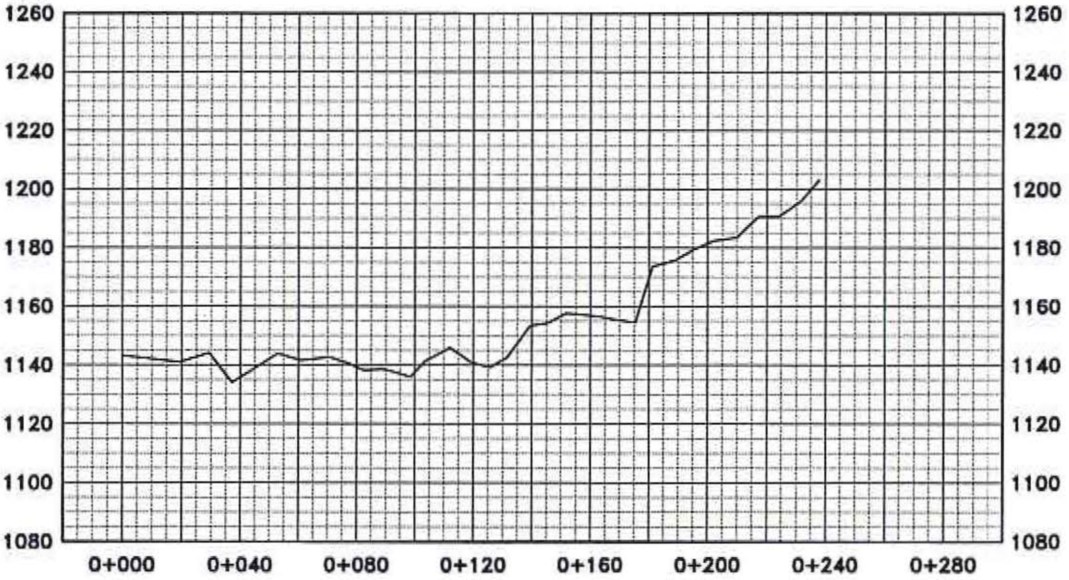
Site Plan of The Grum Pit

Oct. 15, 2009 | Scale: 1:2,500 | Figure 1

Section A



Section B



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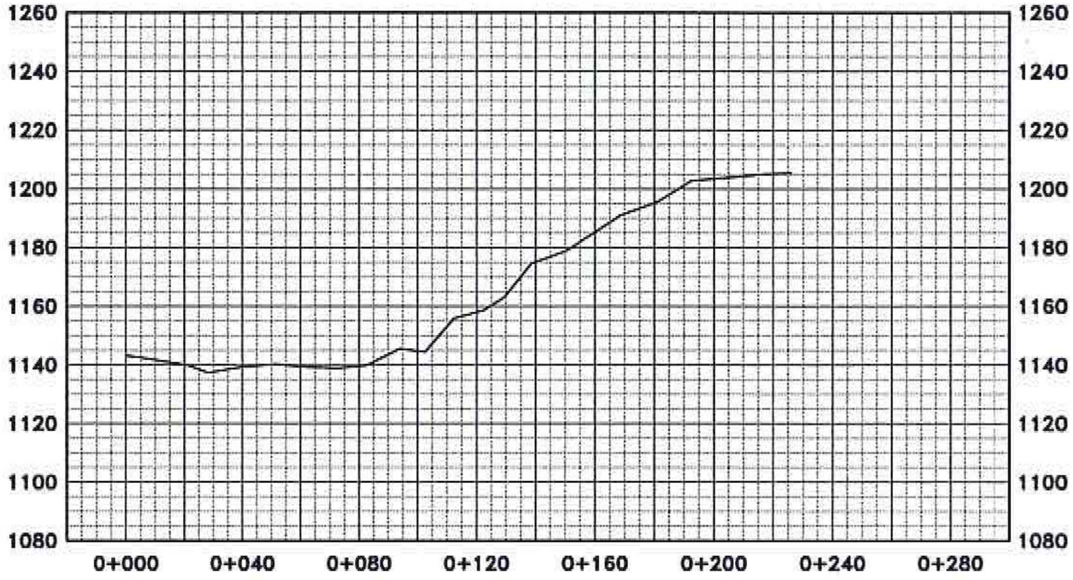
ENVIRONMENTAL SERVICES

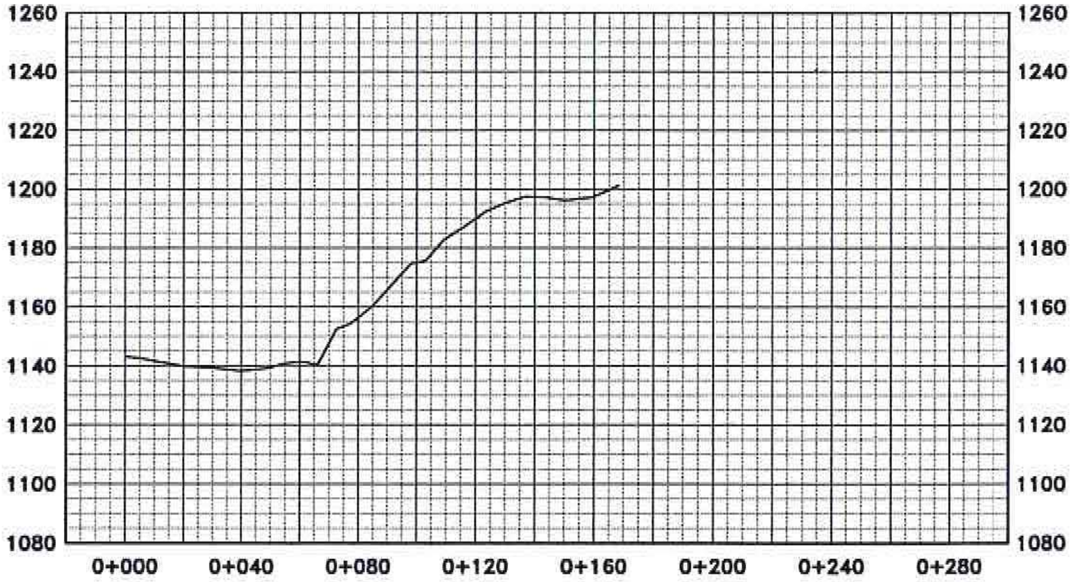
Grum Pit - Sections A & B

Oct. 15, 2009	Scale: H,V 1:2,500	Figure 2

Section C



Section D



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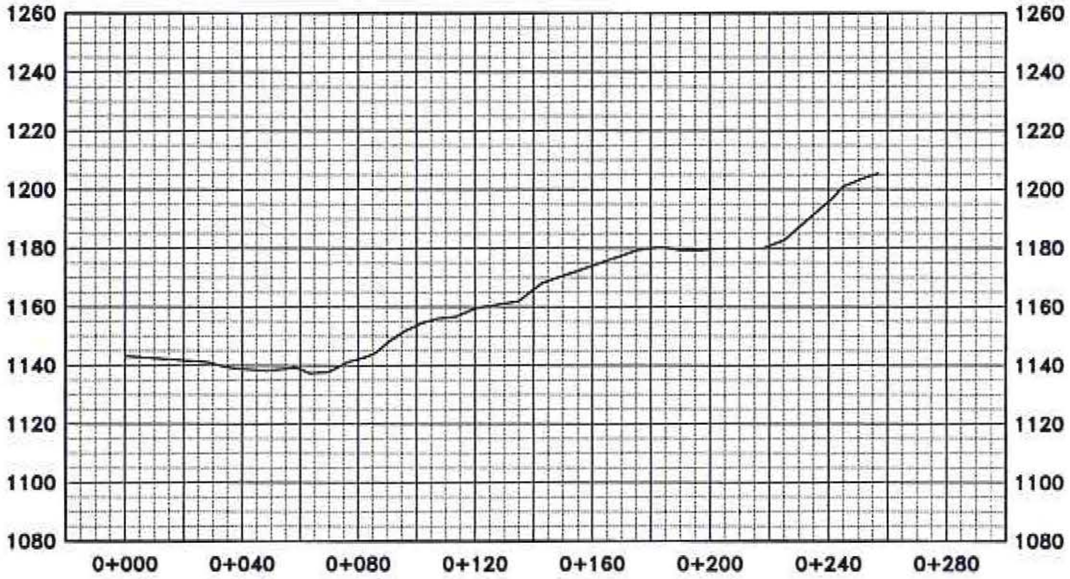
ENVIRONMENTAL SERVICES

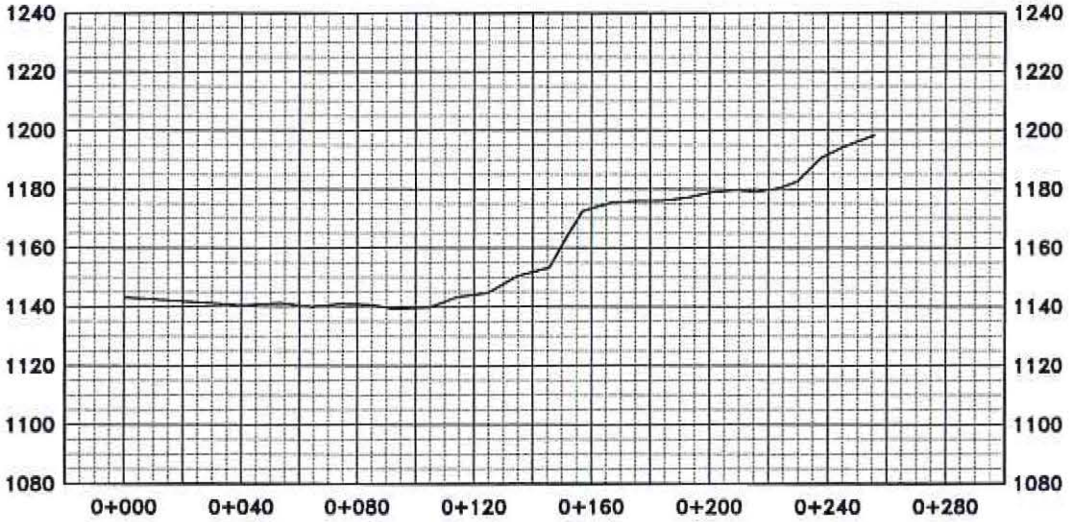
Grum Pit - Sections C & D

Oct. 15, 2009	Scale: H,V 1:2,500	Figure 3

Section E



Section F



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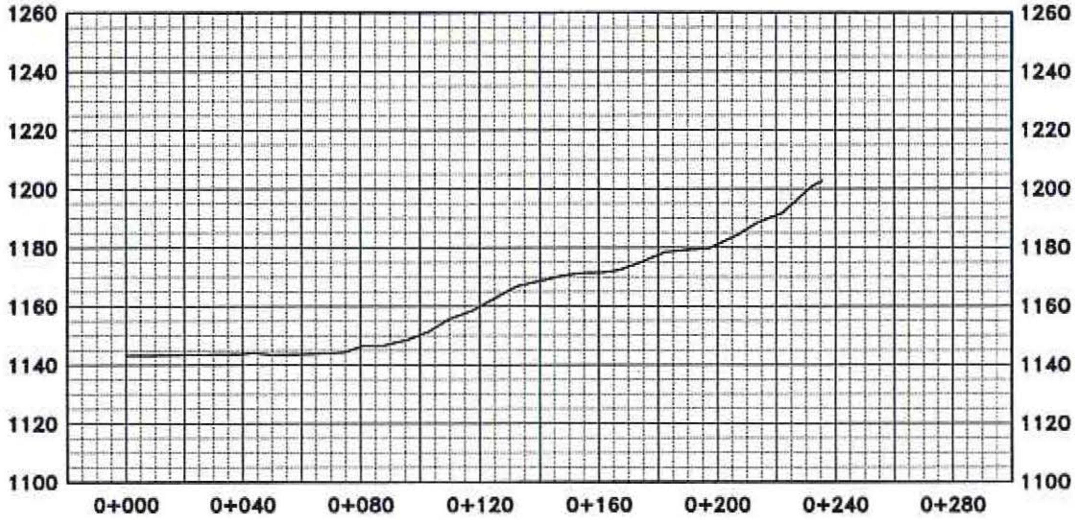
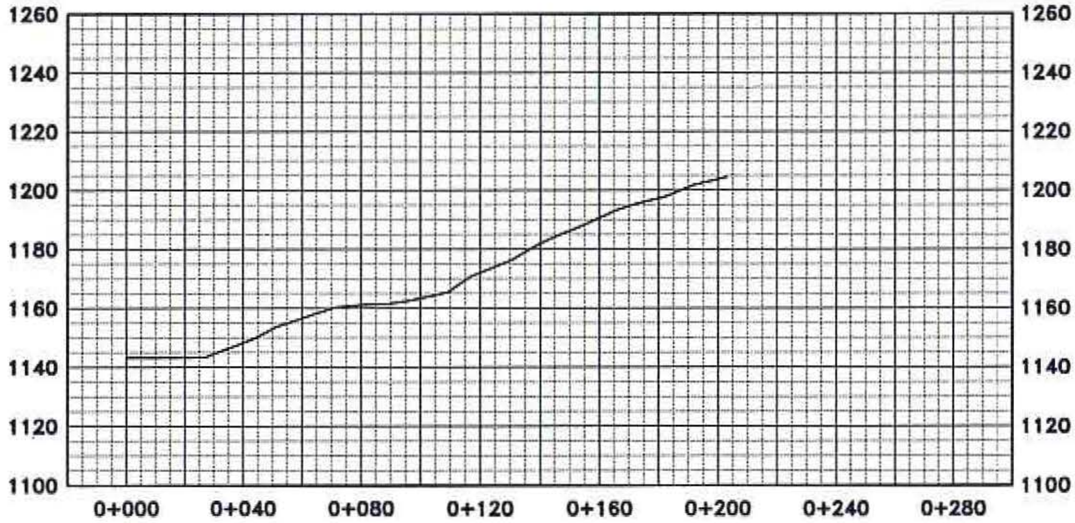
Grum Pit - Sections E & F

Oct. 15, 2009	Scale: H,V 1:2,500	Figure 4

Section G



Section H



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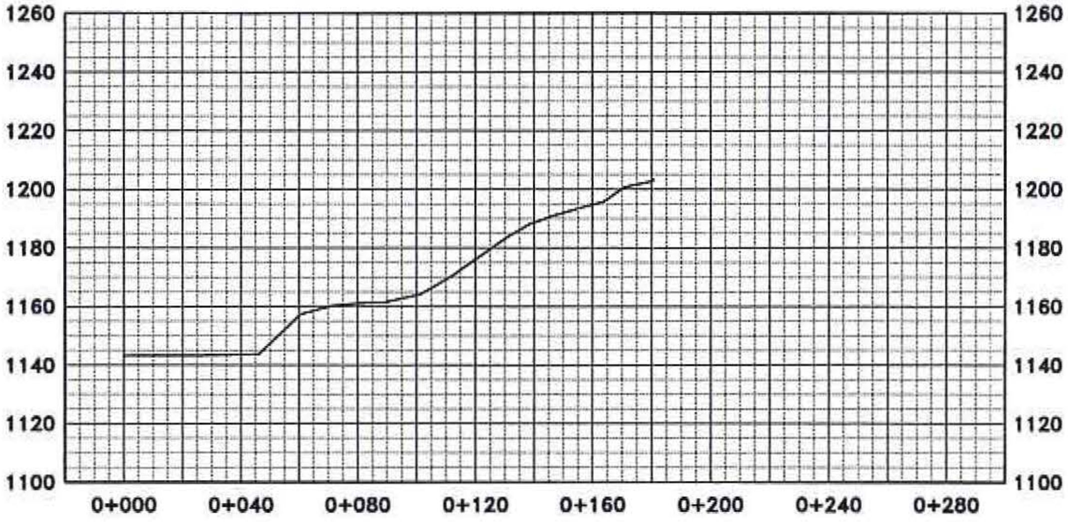
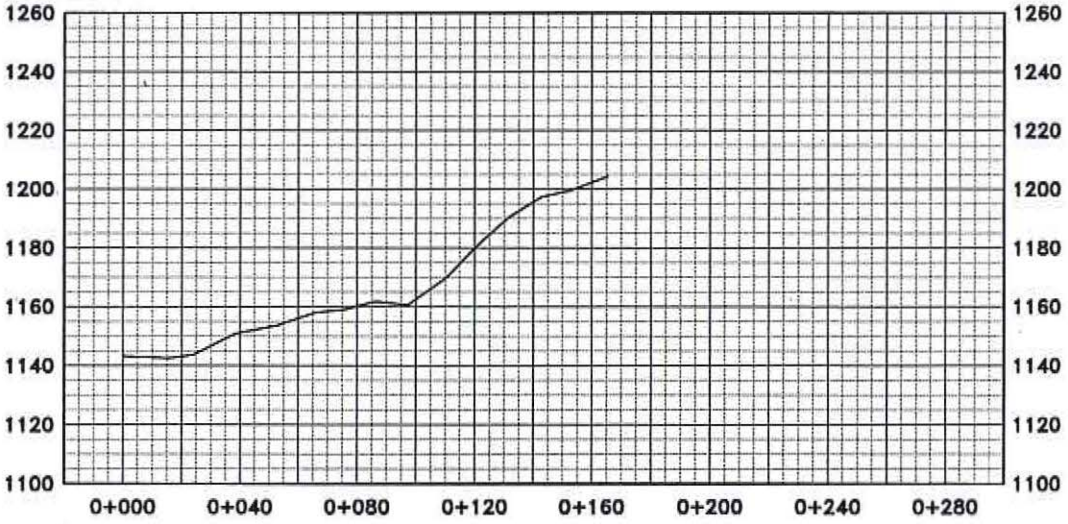
Grum Pit - Sections G & H

Oct. 15, 2009	Scale: H,V 1:2,500	Figure 5

Section I



Section J



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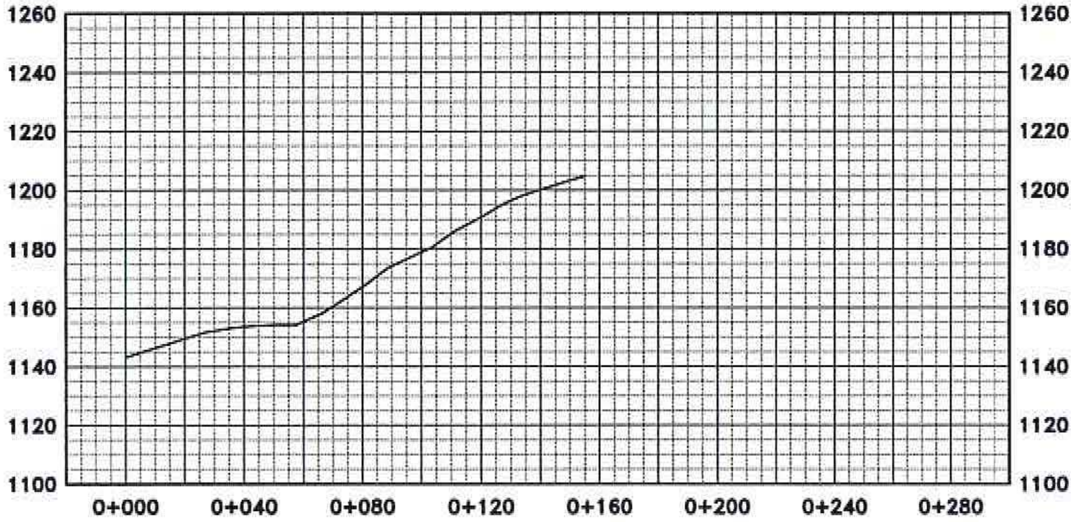
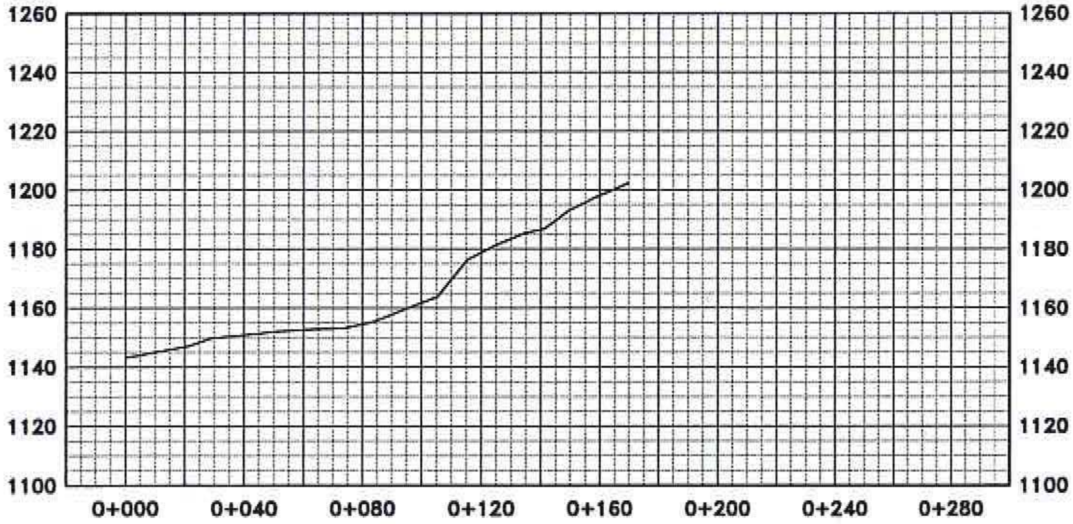
Grum Pit - Sections I & J

Oct. 15, 2009	Scale: H,V 1:2,500	Figure 6

Section K



Section L



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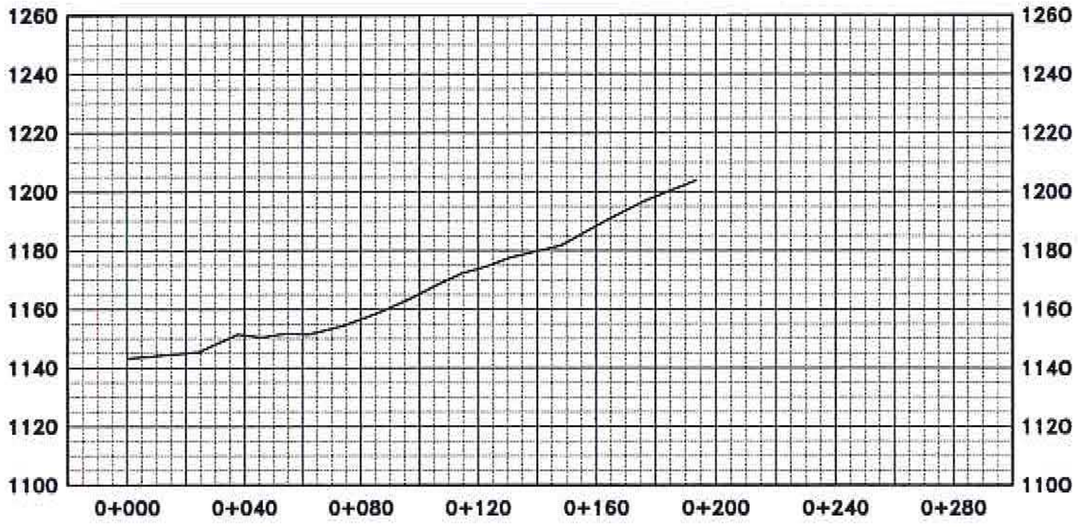
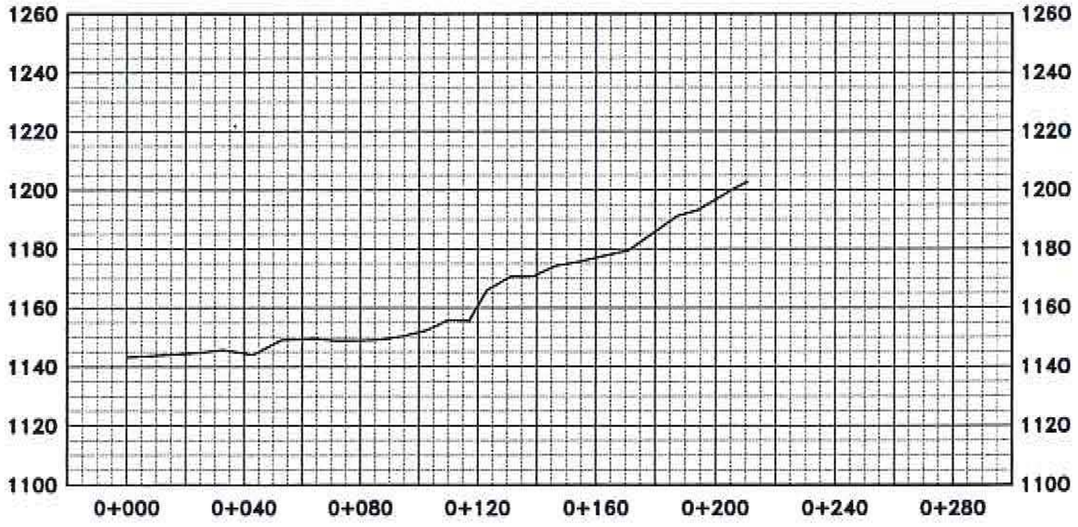
Grum Pit - Sections K & L

Oct. 15, 2009	Scale: H,V 1:2,500	Figure 7

Section M



Section N



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ENVIRONMENTAL SERVICES

Grum Pit - Sections M & N

Oct. 15, 2009	Scale: H,V 1:2,500	Figure 8

Leachate Analysis

Lithology			**LOD**	3G0	3G0	3G0
Sample ID				**GTTAL 03**	**GTTAL 27**	**GTTAL 28**
Parameter	**Method**	**Units**	**LOD**			
Volume Nanopure water		mL	1	750	750	750
Sample Weight		g	0.01	250	250	250
pH	Meter		0.01	7.89	7.07	7.55
Redox	Meter	mV	1	325	339	332
Conductivity	Meter	uS/cm	1	241	2521	2378
Acidity (to pH 4.5)	Titration	mg CaCO3/L	0.1	#N/A	#N/A	#N/A
Total Acidity (to pH 8.3)	Titration	mg CaCO3/L	0.1	3.7	6.9	6.6
Alkalinity	Titration	mg CaCO3/L	0.1	64.9	15.5	24.3
Sulphate	Turbidimetry	mg/L	1	72	1858	1735
Ion Balance						
Major Anions	Calculation	meq/L	0.01	2.80	39.02	36.63
Major Cations	Calculation	meq/L	0.01	2.40	35.76	32.77
Difference	Calculation	meq/L	0.01	0.39	3.26	3.87
Balance (%)	Calculation	%	0.01	7.6%	4.4%	5.6%
Dissolved Metals						
Hardness CaCO3	Calculation	mg/L	0.5	116	1780	1630
Aluminum Al	ICP-MS	mg/L	0.0002	0.011	0.004	0.004
Antimony Sb	ICP-MS	mg/L	0.00002	0.00007	0.0001	0.0003
Arsenic As	ICP-MS	mg/L	0.00002	0.00009	0.0002	0.0002
Barium Ba	ICP-MS	mg/L	0.00002	0.0466	0.0201	0.0189
Beryllium Be	ICP-MS	mg/L	0.00001	<0.00001	<0.00005	<0.00005
Bismuth Bi	ICP-MS	mg/L	0.000005	<0.000005	<0.00003	<0.00003
Boron B	ICP-MS	mg/L	0.05	<0.05	<0.3	<0.3
Cadmium Cd	ICP-MS	mg/L	0.000005	0.000015	0.00067	0.00007
Calcium Ca	ICP-MS	mg/L	0.05	17.4	440	333
Chromium Cr	ICP-MS	mg/L	0.0001	<0.0001	<0.0005	<0.0005
Cobalt Co	ICP-MS	mg/L	0.000005	0.000235	0.00013	0.00142
Copper Cu	ICP-MS	mg/L	0.00005	0.00131	0.0006	0.001
Iron Fe	ICP-MS	mg/L	0.001	0.014	0.007	0.006
Lead Pb	ICP-MS	mg/L	0.000005	0.000482	0.00012	0.00009
Lithium Li	ICP-MS	mg/L	0.0005	0.0036	0.018	0.008
Magnesium Mg	ICP-MS	mg/L	0.05	17.7	166	195
Manganese Mn	ICP-MS	mg/L	0.00005	0.00916	0.0051	0.0446
Mercury Hg	ICP-MS	ug/L	0.01	<0.01	<0.05	<0.05
Molybdenum Mo	ICP-MS	mg/L	0.00005	0.00019	0.003	0.0044
Nickel Ni	ICP-MS	mg/L	0.00002	0.00058	0.0118	0.0194
Phosphorus P	ICP-MS	mg/L	0.002	<0.002	<0.01	<0.01
Potassium K	ICP-MS	mg/L	0.05	1.53	2.35	2.28
Selenium Se	ICP-MS	mg/L	0.00004	0.00008	0.0105	0.0109
Silicon Si	ICP-MS	mg/L	0.1	0.203	<0.5	<0.5
Silver Ag	ICP-MS	mg/L	0.000005	0.00003	<0.00003	<0.00003
Sodium Na	ICP-MS	mg/L	0.05	0.89	1.54	0.64
Strontium Sr	ICP-MS	mg/L	0.00005	0.0954	0.708	0.59
Sulphur (S)	ICP-MS	mg/L	3	24	614	559
Thallium Tl	ICP-MS	mg/L	0.000002	0.000234	0.00124	0.00076
Tin Sn	ICP-MS	mg/L	0.00001	<0.00001	<0.00005	<0.00005
Titanium Ti	ICP-MS	mg/L	0.0005	<0.0005	<0.003	<0.003
Uranium U	ICP-MS	mg/L	0.000002	0.000241	0.00087	0.00126
Vanadium V	ICP-MS	mg/L	0.0002	<0.0002	<0.001	<0.001
Zinc Zn	ICP-MS	mg/L	0.0001	0.0062	0.0179	0.0034
Zirconium Zr	ICP-MS	mg/L	0.0001	<0.0001	<0.0005	<0.0005

Leachate Analysis

Lithology		3G0	4EC	4EC	4EC
Sample ID		**GTTAL 17**	**GTTAL 04**	**GTTAL 05**	**GTTAL 06**
Parameter	**Method**				
Volume Nanopure water		750	750	750	750
Sample Weight		250	250	250	250
pH	Meter	7.72	2.52	2.90	5.52
Redox	Meter	319	508	416	259
Conductivity	Meter	930	3270	1924	528
Acidity (to pH 4.5)	Titration	#N/A	1225	192.3	#N/A
Total Acidity (to pH 8.3)	Titration	5.6	1850	975.0	174.9
Alkalinity	Titration	28.0	#N/A	#N/A	3.9
Sulphate	Turbidimetry	495	2298	1189	266
Ion Balance					
Major Anions	Calculation	10.87	47.88	24.77	5.62
Major Cations	Calculation	10.47	43.33	24.85	5.61
Difference	Calculation	0.41	4.55	-0.08	0.01
Balance (%)	Calculation	1.9%	5.0%	-0.2%	0.0%
Dissolved Metals					
Hardness CaCO3	Calculation	512	181	19.3	118
Aluminum Al	ICP-MS	0.0033	37.9	26.7	<0.02
Antimony Sb	ICP-MS	0.00044	0.0346	0.032	0.002
Arsenic As	ICP-MS	0.00052	1.89	0.53	0.003
Barium Ba	ICP-MS	0.0213	0.005	0.01	0.016
Beryllium Be	ICP-MS	<0.00001	0.0018	0.002	<0.001
Bismuth Bi	ICP-MS	<0.000005	<0.0001	<0.0005	<0.0005
Boron B	ICP-MS	<0.05	<1	<5	<5
Cadmium Cd	ICP-MS	0.000069	0.0057	0.484	0.115
Calcium Ca	ICP-MS	115	35	2	23
Chromium Cr	ICP-MS	<0.0001	0.12	0.075	<0.01
Cobalt Co	ICP-MS	0.000465	0.74	0.0942	0.0631
Copper Cu	ICP-MS	0.00075	0.907	8.26	0.033
Iron Fe	ICP-MS	0.003	596	144	0.132
Lead Pb	ICP-MS	0.00011	2.45	0.152	3.47
Lithium Li	ICP-MS	0.0221	0.06	<0.05	<0.05
Magnesium Mg	ICP-MS	54.5	22.7	3	15
Manganese Mn	ICP-MS	0.0118	1.34	4.03	2.04
Mercury Hg	ICP-MS	<0.01	0.8	<1	<1
Molybdenum Mo	ICP-MS	0.0012	0.013	<0.005	<0.005
Nickel Ni	ICP-MS	0.00139	0.303	0.133	0.298
Phosphorus P	ICP-MS	<0.002	0.993	<0.2	<0.2
Potassium K	ICP-MS	6.53	0.8	<1	<1
Selenium Se	ICP-MS	0.00048	0.0092	<0.004	<0.004
Silicon Si	ICP-MS	0.288	<2	<10	<10
Silver Ag	ICP-MS	<0.000005	0.0013	0.0007	<0.0005
Sodium Na	ICP-MS	1.75	0.5	<1	<1
Strontium Sr	ICP-MS	0.516	0.06	0.017	0.045
Sulphur (S)	ICP-MS	169	681	410	157
Thallium Tl	ICP-MS	0.000296	0.0281	0.0008	0.159
Tin Sn	ICP-MS	0.00004	0.0008	<0.001	<0.001
Titanium Ti	ICP-MS	<0.0005	0.22	<0.05	<0.05
Uranium U	ICP-MS	0.000856	0.0098	0.0299	<0.0002
Vanadium V	ICP-MS	<0.0002	0.049	<0.02	<0.02
Zinc Zn	ICP-MS	0.0075	10.5	396	102
Zirconium Zr	ICP-MS	<0.0001	0.015	<0.01	<0.01

Leachate Analysis

Lithology		4EC	4EC	4EC	4EC
Sample ID		**GTTAL 07**	**GTTAL 08**	**GTTAL 22**	**GTTAL 23**
Parameter	**Method**				
Volume Nanopure water		750	750	750	750
Sample Weight		250	250	250	250
pH	Meter	7.27	3.51	2.74	6.77
Redox	Meter	247	413	509	356
Conductivity	Meter	630	1752	4100	1257
Acidity (to pH 4.5)	Titration	#N/A	33.3	275.0	#N/A
Total Acidity (to pH 8.3)	Titration	82.7	348.8	1150	28.5
Alkalinity	Titration	13.8	#N/A	#N/A	18.6
Sulphate	Turbidimetry	322	1042	2912	796
Ion Balance					
Major Anions	Calculation	6.98	21.71	60.67	16.96
Major Cations	Calculation	6.73	21.05	52.80	14.43
Difference	Calculation	0.25	0.66	7.87	2.53
Balance (%)	Calculation	1.8%	1.5%	6.9%	8.1%
Dissolved Metals					
Hardness CaCO3	Calculation	263	691	1760	700
Aluminum Al	ICP-MS	<0.01	4.59	5.66	0.002
Antimony Sb	ICP-MS	0.001	0.0006	0.002	0.0025
Arsenic As	ICP-MS	<0.001	0.0163	0.0692	0.0001
Barium Ba	ICP-MS	0.028	0.0158	0.0177	0.0287
Beryllium Be	ICP-MS	<0.0005	0.0033	0.0197	<0.00005
Bismuth Bi	ICP-MS	<0.0003	<0.0001	<0.0001	<0.00003
Boron B	ICP-MS	<3	<1	<1	<0.3
Cadmium Cd	ICP-MS	0.317	0.191	0.125	0.0497
Calcium Ca	ICP-MS	90.5	166	445	217
Chromium Cr	ICP-MS	<0.005	0.003	0.048	<0.0005
Cobalt Co	ICP-MS	0.0299	0.461	0.575	0.00803
Copper Cu	ICP-MS	0.011	37.5	2.9	0.0007
Iron Fe	ICP-MS	<0.05	19.4	172	0.006
Lead Pb	ICP-MS	1.32	0.25	0.657	0.188
Lithium Li	ICP-MS	<0.03	0.014	<0.01	0.005
Magnesium Mg	ICP-MS	8.9	66.9	158	38.5
Manganese Mn	ICP-MS	0.952	40	17.5	0.16
Mercury Hg	ICP-MS	<0.5	<0.2	<0.2	<0.05
Molybdenum Mo	ICP-MS	<0.003	<0.001	0.001	0.0006
Nickel Ni	ICP-MS	0.042	0.322	4.1	0.0152
Phosphorus P	ICP-MS	<0.1	<0.04	0.105	<0.01
Potassium K	ICP-MS	<0.5	<0.2	<0.2	1.23
Selenium Se	ICP-MS	<0.002	0.0028	0.0062	0.0006
Silicon Si	ICP-MS	<5	4.03	<2	<0.5
Silver Ag	ICP-MS	<0.0003	0.0003	0.0004	0.00003
Sodium Na	ICP-MS	<0.5	<0.2	<0.2	0.49
Strontium Sr	ICP-MS	0.203	0.349	0.623	0.209
Sulphur (S)	ICP-MS	110	366	939	254
Thallium Tl	ICP-MS	0.0563	0.00339	0.00141	0.00924
Tin Sn	ICP-MS	<0.0005	<0.0002	<0.0002	<0.00005
Titanium Ti	ICP-MS	<0.03	<0.01	<0.01	<0.003
Uranium U	ICP-MS	<0.0001	0.0577	0.383	0.00003
Vanadium V	ICP-MS	<0.01	<0.004	<0.004	<0.001
Zinc Zn	ICP-MS	46.9	90.1	164	12.1
Zirconium Zr	ICP-MS	<0.005	<0.002	<0.002	<0.0005

Leachate Analysis

Lithology		4EC	4EC	4EC	4EC
Sample ID		**GTTAL 25**	**GTTAL 26**	**GTTAL 35**	**GTTAL 36**
Parameter	**Method**				
Volume Nanopure water		750	750	750	750
Sample Weight		250	250	250	250
pH	Meter	3.92	8.1	6.45	7.35
Redox	Meter	459	246	373	339
Conductivity	Meter	3410	1354	1734	1013
Acidity (to pH 4.5)	Titration	17.2	#N/A	#N/A	#N/A
Total Acidity (to pH 8.3)	Titration	1350	7.9	167.3	78.6
Alkalinity	Titration	#N/A	62.4	7.8	22.1
Sulphate	Turbidimetry	2605	845	1214	576
Ion Balance					
Major Anions	Calculation	54.27	18.85	25.45	12.44
Major Cations	Calculation	53.36	16.95	22.35	11.79
Difference	Calculation	0.91	1.90	3.10	0.65
Balance (%)	Calculation	0.8%	5.3%	6.5%	2.7%
Dissolved Metals					
Hardness CaCO3	Calculation	1420	843	953	521
Aluminum Al	ICP-MS	0.839	0.0022	0.009	<0.002
Antimony Sb	ICP-MS	0.012	0.00041	<0.0004	0.0031
Arsenic As	ICP-MS	0.293	0.00025	0.0066	0.001
Barium Ba	ICP-MS	0.002	0.0235	0.0219	0.0344
Beryllium Be	ICP-MS	0.003	<0.00001	<0.0002	<0.0001
Bismuth Bi	ICP-MS	<0.0005	<0.000005	<0.0001	<0.00005
Boron B	ICP-MS	<5	<0.05	<1	<0.5
Cadmium Cd	ICP-MS	1.04	0.000739	0.158	0.0911
Calcium Ca	ICP-MS	488	219	224	152
Chromium Cr	ICP-MS	<0.01	<0.0001	<0.002	<0.001
Cobalt Co	ICP-MS	0.35	0.0015	0.191	0.0303
Copper Cu	ICP-MS	2.29	0.00023	0.005	0.0026
Iron Fe	ICP-MS	1.69	0.005	<0.02	<0.01
Lead Pb	ICP-MS	0.249	0.00225	1.72	0.991
Lithium Li	ICP-MS	<0.05	0.0082	0.011	<0.005
Magnesium Mg	ICP-MS	49	72.1	95.4	34.2
Manganese Mn	ICP-MS	1.75	0.101	6.82	0.475
Mercury Hg	ICP-MS	<1	<0.01	<0.2	<0.1
Molybdenum Mo	ICP-MS	<0.005	0.0214	<0.001	<0.0005
Nickel Ni	ICP-MS	0.512	0.00541	0.491	0.0781
Phosphorus P	ICP-MS	<0.2	<0.002	<0.04	<0.02
Potassium K	ICP-MS	<1	1.76	1.1	1.57
Selenium Se	ICP-MS	<0.004	0.00443	0.0153	0.0007
Silicon Si	ICP-MS	<10	0.347	<2	<1
Silver Ag	ICP-MS	0.0007	<0.000005	0.0001	0.00011
Sodium Na	ICP-MS	<1	0.66	0.4	0.18
Strontium Sr	ICP-MS	0.196	0.424	0.102	0.113
Sulphur (S)	ICP-MS	975	295	378	186
Thallium Tl	ICP-MS	0.0042	0.00174	0.00323	0.00247
Tin Sn	ICP-MS	<0.001	<0.00001	<0.0002	<0.0001
Titanium Ti	ICP-MS	<0.05	<0.0005	<0.01	<0.005
Uranium U	ICP-MS	0.0314	0.00516	0.00008	<0.00002
Vanadium V	ICP-MS	<0.02	<0.0002	<0.004	<0.002
Zinc Zn	ICP-MS	800	0.115	98.2	43.1
Zirconium Zr	ICP-MS	<0.01	<0.0001	<0.002	<0.001

Leachate Analysis

Lithology		4EC	5A0/5B0	5A0/5B0	5A0/5B0
Sample ID		**GTTAL 37**	**GTTAL 12**	**GTTAL 09**	**GTTAL 10**
Parameter	**Method**				
Volume Nanopure water		750	750	750	750
Sample Weight		250	250	250	250
pH	Meter	6.89	7.86	8.08	7.94
Redox	Meter	360	275	228	259
Conductivity	Meter	669	232	196	265
Acidity (to pH 4.5)	Titration	#N/A	#N/A	#N/A	#N/A
Total Acidity (to pH 8.3)	Titration	234.5	4.6	5.0	4.9
Alkalinity	Titration	8.7	51.5	79.0	78.6
Sulphate	Turbidimetry	355	72	37	71
Ion Balance					
Major Anions	Calculation	7.57	2.53	2.35	3.05
Major Cations	Calculation	7.85	2.21	1.94	2.69
Difference	Calculation	-0.28	0.32	0.41	0.36
Balance (%)	Calculation	-1.8%	6.8%	9.6%	6.3%
Dissolved Metals					
Hardness CaCO3	Calculation	139	108	94.7	130
Aluminum Al	ICP-MS	<0.004	0.0113	0.0159	0.0089
Antimony Sb	ICP-MS	0.0024	0.00045	0.00013	0.00053
Arsenic As	ICP-MS	0.0039	0.00057	0.00022	0.00025
Barium Ba	ICP-MS	0.0269	0.0324	0.0515	0.0473
Beryllium Be	ICP-MS	<0.0002	<0.00001	<0.00001	<0.00001
Bismuth Bi	ICP-MS	<0.0001	<0.000005	<0.000005	<0.000005
Boron B	ICP-MS	<1	<0.05	<0.05	<0.05
Cadmium Cd	ICP-MS	0.112	0.000069	0.000009	0.000011
Calcium Ca	ICP-MS	39.3	11.6	14	22.4
Chromium Cr	ICP-MS	<0.002	<0.0001	0.0002	0.0001
Cobalt Co	ICP-MS	0.0774	0.000435	0.000087	0.000198
Copper Cu	ICP-MS	0.013	0.00057	0.00059	0.00025
Iron Fe	ICP-MS	<0.02	0.008	0.006	0.003
Lead Pb	ICP-MS	2.3	0.00154	0.000098	0.000065
Lithium Li	ICP-MS	<0.01	0.0086	0.0051	0.0119
Magnesium Mg	ICP-MS	9.9	19.2	14.5	18
Manganese Mn	ICP-MS	0.612	0.01	0.00463	0.00428
Mercury Hg	ICP-MS	<0.2	0.02	<0.01	<0.01
Molybdenum Mo	ICP-MS	<0.001	0.0376	0.00872	0.00161
Nickel Ni	ICP-MS	0.454	0.0025	0.00038	0.00057
Phosphorus P	ICP-MS	<0.04	<0.002	<0.002	<0.002
Potassium K	ICP-MS	0.7	1.2	1.29	2.34
Selenium Se	ICP-MS	<0.0008	0.00372	0.00049	0.00042
Silicon Si	ICP-MS	<2	0.304	0.272	0.251
Silver Ag	ICP-MS	0.0001	<0.000005	0.000011	<0.000005
Sodium Na	ICP-MS	<0.2	0.46	0.34	0.66
Strontium Sr	ICP-MS	0.152	0.0598	0.0728	0.107
Sulphur (S)	ICP-MS	120	24	12	24
Thallium Tl	ICP-MS	0.0152	0.00063	0.000046	0.000041
Tin Sn	ICP-MS	<0.0002	0.00007	<0.00001	<0.00001
Titanium Ti	ICP-MS	<0.01	<0.0005	<0.0005	<0.0005
Uranium U	ICP-MS	0.00008	0.000241	0.000375	0.000726
Vanadium V	ICP-MS	<0.004	<0.0002	<0.0002	<0.0002
Zinc Zn	ICP-MS	163	0.0101	0.0014	0.0013
Zirconium Zr	ICP-MS	<0.002	<0.0001	0.0002	<0.0001

Leachate Analysis

Lithology		5A0/5B0	5A0/5B0	5A0/5B0	5A0/5B0
Sample ID		**GTTAL 13**	**GTTAL 14**	**GTTAL 15**	**GTTAL 16**
Parameter	**Method**				
Volume Nanopure water		750	750	750	750
Sample Weight		250	250	250	250
pH	Meter	8.00	7.98	7.99	7.47
Redox	Meter	283	287	297	320
Conductivity	Meter	144	155	250	1161
Acidity (to pH 4.5)	Titration	#N/A	#N/A	#N/A	#N/A
Total Acidity (to pH 8.3)	Titration	4.7	4.1	4.0	6.2
Alkalinity	Titration	74.7	70.6	65.8	30.2
Sulphate	Turbidimetry	10	23	70	695
Ion Balance					
Major Anions	Calculation	1.70	1.89	2.77	15.08
Major Cations	Calculation	1.46	1.60	2.50	13.67
Difference	Calculation	0.24	0.30	0.27	1.41
Balance (%)	Calculation	7.5%	8.5%	5.1%	4.9%
Dissolved Metals					
Hardness CaCO3	Calculation	70.5	78	118	674
Aluminum Al	ICP-MS	0.0524	0.0203	0.0133	0.0033
Antimony Sb	ICP-MS	0.0003	0.00024	0.00057	0.00248
Arsenic As	ICP-MS	0.00039	0.00029	0.00104	0.00262
Barium Ba	ICP-MS	0.0426	0.0332	0.0422	0.02
Beryllium Be	ICP-MS	<0.00001	<0.00001	<0.00001	<0.00001
Bismuth Bi	ICP-MS	<0.000005	<0.000005	<0.000005	<0.000005
Boron B	ICP-MS	<0.05	<0.05	<0.05	<0.05
Cadmium Cd	ICP-MS	0.000016	0.000008	0.000009	0.00341
Calcium Ca	ICP-MS	21.2	10.7	18.8	125
Chromium Cr	ICP-MS	0.0002	0.0002	0.0002	<0.0001
Cobalt Co	ICP-MS	0.000035	0.000112	0.000125	0.00286
Copper Cu	ICP-MS	0.00054	0.00025	0.00042	0.00088
Iron Fe	ICP-MS	0.057	0.01	0.004	0.005
Lead Pb	ICP-MS	0.000182	0.000545	0.000142	0.00642
Lithium Li	ICP-MS	0.0011	0.0065	0.0058	0.0194
Magnesium Mg	ICP-MS	4.27	12.4	17.2	87.8
Manganese Mn	ICP-MS	0.00094	0.00437	0.00314	0.0241
Mercury Hg	ICP-MS	<0.01	<0.01	<0.01	<0.01
Molybdenum Mo	ICP-MS	0.00224	0.00051	0.0228	0.0125
Nickel Ni	ICP-MS	0.00054	0.00059	0.00127	0.00328
Phosphorus P	ICP-MS	0.002	<0.002	<0.002	<0.002
Potassium K	ICP-MS	1.4	1.07	5.02	3.37
Selenium Se	ICP-MS	0.00013	0.00015	0.00087	0.00186
Silicon Si	ICP-MS	1.49	0.373	0.283	0.402
Silver Ag	ICP-MS	<0.000005	<0.000005	<0.000005	0.00002
Sodium Na	ICP-MS	0.45	0.31	0.46	2.04
Strontium Sr	ICP-MS	0.0631	0.0392	0.0536	0.617
Sulphur (S)	ICP-MS	3	7	23	222
Thallium Tl	ICP-MS	0.000049	0.000078	0.000136	0.000521
Tin Sn	ICP-MS	0.00007	<0.00001	0.00004	<0.00001
Titanium Ti	ICP-MS	0.0011	<0.0005	<0.0005	<0.0005
Uranium U	ICP-MS	0.000926	0.000214	0.00124	0.000495
Vanadium V	ICP-MS	<0.0002	<0.0002	<0.0002	<0.0002
Zinc Zn	ICP-MS	0.0017	0.0068	0.0011	0.611
Zirconium Zr	ICP-MS	<0.0001	<0.0001	<0.0001	<0.0001

Leachate Analysis

Lithology		5A0/5B0	5A0/5B0	5A0/5B0	5A0/5B0
Sample ID		**GTTAL 19**	**GTTAL 20**	**GTTAL 21**	**GTTAL 29**
Parameter	**Method**				
Volume Nanopure water		750	750	750	750
Sample Weight		250	250	250	250
pH	Meter	7.65	7.47	7.78	7.69
Redox	Meter	318	336	324	328
Conductivity	Meter	242	1470	542	1359
Acidity (to pH 4.5)	Titration	#N/A	#N/A	#N/A	#N/A
Total Acidity (to pH 8.3)	Titration	5.1	6.5	5.7	6.4
Alkalinity	Titration	64.8	27.7	45.5	40.1
Sulphate	Turbidimetry	63	943	254	845
Ion Balance					
Major Anions	Calculation	2.61	20.20	6.20	18.41
Major Cations	Calculation	2.36	18.54	5.47	16.77
Difference	Calculation	0.24	1.66	0.73	1.64
Balance (%)	Calculation	4.9%	4.3%	6.2%	4.6%
Dissolved Metals					
Hardness CaCO3	Calculation	114	919	262	832
Aluminum Al	ICP-MS	0.0143	0.0035	0.0055	0.008
Antimony Sb	ICP-MS	0.00073	0.00009	0.00035	<0.0001
Arsenic As	ICP-MS	0.00319	0.00007	0.00025	0.0005
Barium Ba	ICP-MS	0.0164	0.0238	0.0198	0.0193
Beryllium Be	ICP-MS	<0.00001	<0.00001	<0.00001	<0.00005
Bismuth Bi	ICP-MS	<0.000005	<0.000005	<0.000005	<0.00003
Boron B	ICP-MS	<0.05	<0.05	<0.05	<0.3
Cadmium Cd	ICP-MS	0.000011	0.000339	0.000059	0.00007
Calcium Ca	ICP-MS	21.5	245	49.1	217
Chromium Cr	ICP-MS	<0.0001	<0.0001	<0.0001	<0.0005
Cobalt Co	ICP-MS	0.00034	0.000346	0.000028	0.00108
Copper Cu	ICP-MS	0.00045	0.00034	0.00032	0.0025
Iron Fe	ICP-MS	0.003	0.006	0.003	<0.005
Lead Pb	ICP-MS	0.000073	0.000041	0.000053	0.00014
Lithium Li	ICP-MS	0.0121	0.0202	0.0121	0.005
Magnesium Mg	ICP-MS	14.7	74.7	34	70.5
Manganese Mn	ICP-MS	0.00508	0.0275	0.00087	0.0251
Mercury Hg	ICP-MS	<0.01	<0.01	<0.01	<0.05
Molybdenum Mo	ICP-MS	0.00119	0.00503	0.0135	0.0061
Nickel Ni	ICP-MS	0.00108	0.00281	0.00117	0.0094
Phosphorus P	ICP-MS	<0.002	<0.002	<0.002	<0.01
Potassium K	ICP-MS	2	3.51	7.5	2.35
Selenium Se	ICP-MS	0.00034	0.00641	0.00043	0.0115
Silicon Si	ICP-MS	0.509	0.285	0.372	<0.5
Silver Ag	ICP-MS	0.000007	0.000006	0.000008	<0.00003
Sodium Na	ICP-MS	0.67	1.18	0.66	1.5
Strontium Sr	ICP-MS	0.16	0.922	0.13	0.662
Sulphur (S)	ICP-MS	23	335	85	282
Thallium Tl	ICP-MS	0.000089	0.000064	0.000177	0.00006
Tin Sn	ICP-MS	<0.00001	0.00001	<0.00001	<0.00005
Titanium Ti	ICP-MS	<0.0005	<0.0005	<0.0005	<0.003
Uranium U	ICP-MS	0.000607	0.000734	0.000831	0.00346
Vanadium V	ICP-MS	<0.0002	<0.0002	<0.0002	<0.001
Zinc Zn	ICP-MS	0.0011	0.0151	0.0043	0.0165
Zirconium Zr	ICP-MS	<0.0001	<0.0001	<0.0001	<0.0005

Leachate Analysis

Lithology		5A0/5B0	5A0/5B0	5A0/5B0	5A0/5B0
Sample ID		**GTTAL 30**	**GTTAL 31**	**GTTAL 32**	**GTTAL 33**
Parameter	**Method**				
Volume Nanopure water		750	750	750	750
Sample Weight		250	250	250	250
pH	Meter	7.97	7.78	8.00	8.07
Redox	Meter	311	319	307	302
Conductivity	Meter	216	573	309	265
Acidity (to pH 4.5)	Titration	#N/A	#N/A	#N/A	#N/A
Total Acidity (to pH 8.3)	Titration	4.6	5.4	4.7	4.2
Alkalinity	Titration	65.1	53.6	73.9	96.7
Sulphate	Turbidimetry	51	279	99	61
Ion Balance					
Major Anions	Calculation	2.36	6.88	3.54	3.20
Major Cations	Calculation	2.21	5.92	3.30	2.71
Difference	Calculation	0.15	0.97	0.25	0.50
Balance (%)	Calculation	3.3%	7.6%	3.6%	8.4%
Dissolved Metals					
Hardness CaCO3	Calculation	107	290	160	133
Aluminum Al	ICP-MS	0.0165	0.0078	0.0092	0.0095
Antimony Sb	ICP-MS	0.00062	0.00021	0.00041	0.00013
Arsenic As	ICP-MS	0.00292	0.00013	0.00072	0.00037
Barium Ba	ICP-MS	0.029	0.0167	0.0246	0.0259
Beryllium Be	ICP-MS	<0.00001	<0.00001	<0.00001	<0.00001
Bismuth Bi	ICP-MS	<0.000005	<0.000005	<0.000005	<0.000005
Boron B	ICP-MS	<0.05	<0.05	<0.05	<0.05
Cadmium Cd	ICP-MS	0.000008	0.00001	0.000005	<0.000005
Calcium Ca	ICP-MS	31.9	60.4	28.6	18.5
Chromium Cr	ICP-MS	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt Co	ICP-MS	0.000541	0.000494	0.00041	0.000074
Copper Cu	ICP-MS	0.00268	0.00068	0.00044	0.00081
Iron Fe	ICP-MS	0.005	0.002	0.002	0.002
Lead Pb	ICP-MS	0.000075	0.000035	0.000064	0.00015
Lithium Li	ICP-MS	0.0046	0.0064	0.0087	0.0042
Magnesium Mg	ICP-MS	6.56	33.9	21.6	21
Manganese Mn	ICP-MS	0.00703	0.0154	0.0041	0.00089
Mercury Hg	ICP-MS	<0.01	0.17	0.04	0.01
Molybdenum Mo	ICP-MS	0.0016	0.0015	0.00126	0.00189
Nickel Ni	ICP-MS	0.00122	0.00183	0.00143	0.0006
Phosphorus P	ICP-MS	<0.002	<0.002	<0.002	<0.002
Potassium K	ICP-MS	1.73	2.93	2.51	1.52
Selenium Se	ICP-MS	0.00018	0.00044	0.00034	0.00082
Silicon Si	ICP-MS	0.643	0.466	0.302	0.409
Silver Ag	ICP-MS	<0.000005	0.00005	0.00001	<0.000005
Sodium Na	ICP-MS	0.72	0.76	0.61	0.36
Strontium Sr	ICP-MS	0.235	0.203	0.0998	0.0771
Sulphur (S)	ICP-MS	19	87	32	20
Thallium Tl	ICP-MS	0.000015	0.000049	0.000045	0.000201
Tin Sn	ICP-MS	<0.00001	<0.00001	<0.00001	<0.00001
Titanium Ti	ICP-MS	0.0011	<0.0005	<0.0005	<0.0005
Uranium U	ICP-MS	0.000834	0.00192	0.00102	0.000617
Vanadium V	ICP-MS	<0.0002	<0.0002	<0.0002	<0.0002
Zinc Zn	ICP-MS	0.0019	0.002	0.0014	0.0005
Zirconium Zr	ICP-MS	<0.0001	<0.0001	<0.0001	<0.0001

Leachate Analysis

Lithology		Till	Till	Till	Till
Sample ID		**GTTAL 39**	**GTTAL 40**	**GTTAL 02**	**GTTAL 38**
Parameter	**Method**				
Volume Nanopure water		750	750	750	750
Sample Weight		250	250	250	250
pH	Meter	7.93	7.99	7.65	8.19
Redox	Meter	317	313	347	304
Conductivity	Meter	423	142	500	721
Acidity (to pH 4.5)	Titration	#N/A	#N/A	#N/A	#N/A
Total Acidity (to pH 8.3)	Titration	4.7	4.2	5.0	6.2
Alkalinity	Titration	68.1	76.9	57.7	48.0
Sulphate	Turbidimetry	173	7	174	385
Ion Balance					
Major Anions	Calculation	4.97	1.68	4.78	8.98
Major Cations	Calculation	4.48	1.45	4.84	8.11
Difference	Calculation	0.49	0.23	-0.06	0.87
Balance (%)	Calculation	5.2%	7.3%	-0.6%	5.1%
Dissolved Metals					
Hardness CaCO3	Calculation	209	66	214	400
Aluminum Al	ICP-MS	0.016	0.263	0.0203	0.007
Antimony Sb	ICP-MS	0.00065	0.0038	0.00121	0.00056
Arsenic As	ICP-MS	0.00077	0.00189	0.00315	0.00037
Barium Ba	ICP-MS	0.0313	0.0704	0.0497	0.0217
Beryllium Be	ICP-MS	<0.00001	0.00001	<0.00001	<0.00001
Bismuth Bi	ICP-MS	<0.000005	0.000006	<0.000005	<0.000005
Boron B	ICP-MS	<0.05	<0.05	<0.05	<0.05
Cadmium Cd	ICP-MS	0.000021	0.000038	0.000044	0.000069
Calcium Ca	ICP-MS	46	20.4	67.7	102
Chromium Cr	ICP-MS	<0.0001	0.0008	0.0001	<0.0001
Cobalt Co	ICP-MS	0.00006	0.00011	0.000053	0.000205
Copper Cu	ICP-MS	0.00168	0.00514	0.00175	0.00053
Iron Fe	ICP-MS	0.01	0.185	0.014	0.005
Lead Pb	ICP-MS	0.00004	0.000485	0.000335	0.000119
Lithium Li	ICP-MS	0.0052	0.0023	0.0054	0.0153
Magnesium Mg	ICP-MS	23	3.66	10.9	35.1
Manganese Mn	ICP-MS	0.00788	0.00361	0.0981	0.00965
Mercury Hg	ICP-MS	<0.01	<0.01	<0.01	<0.01
Molybdenum Mo	ICP-MS	0.00352	0.0179	0.00191	0.0031
Nickel Ni	ICP-MS	0.0007	0.00165	0.00081	0.00181
Phosphorus P	ICP-MS	0.006	0.02	0.028	<0.002
Potassium K	ICP-MS	3.33	2.15	3.8	3.58
Selenium Se	ICP-MS	0.00069	0.00453	0.0229	0.00052
Silicon Si	ICP-MS	1.16	1.48	1.4	0.4
Silver Ag	ICP-MS	<0.000005	0.000011	0.000006	<0.000005
Sodium Na	ICP-MS	4.52	1.53	10.7	0.53
Strontium Sr	ICP-MS	0.22	0.107	0.299	0.681
Sulphur (S)	ICP-MS	54	<3	53	126
Thallium Tl	ICP-MS	0.00001	0.000011	0.000022	0.000102
Tin Sn	ICP-MS	<0.00001	0.00002	<0.00001	<0.00001
Titanium Ti	ICP-MS	0.0007	0.0074	<0.0005	<0.0005
Uranium U	ICP-MS	0.00567	0.00649	0.00409	0.00111
Vanadium V	ICP-MS	0.0003	0.0021	0.0009	<0.0002
Zinc Zn	ICP-MS	0.0059	0.0028	0.0008	0.0104
Zirconium Zr	ICP-MS	<0.0001	0.0004	<0.0001	<0.0001

Leachate Analysis

Lithology		***Uncertain- 3G0? 4EC?***	***Uncertain- 5A0/5B0***	***Uncertain- 5A0/5B0? 3G0? 4EC?***	
Sample ID		**GTTAL 24**	**GTTAL 11**	**GTTAL 34**	**Blank**
Parameter	**Method**				
Volume Nanopure water		750	750	750	750
Sample Weight		250	250	250	-
pH	Meter	7.18	8.06	7.15	7.08
Redox	Meter	351	263	332	300
Conductivity	Meter	2057	221	419	<1
Acidity (to pH 4.5)	Titration	#N/A	#N/A	#N/A	#N/A
Total Acidity (to pH 8.3)	Titration	58.5	4.0	6.4	3.6
Alkalinity	Titration	21.9	102.9	25.4	3.0
Sulphate	Turbidimetry	1337	27	194	2
Ion Balance					
Major Anions	Calculation	28.29	2.62	4.55	#N/A
Major Cations	Calculation	25.32	2.40	4.08	#N/A
Difference	Calculation	2.97	0.22	0.47	#N/A
Balance (%)	Calculation	5.5%	4.4%	5.4%	#N/A
Dissolved Metals					
Hardness CaCO3	Calculation	1220	117	199	<0.5
Aluminum Al	ICP-MS	0.002	0.042	0.0034	0.0002
Antimony Sb	ICP-MS	0.0011	0.00049	0.00147	<0.00002
Arsenic As	ICP-MS	0.0005	0.00038	0.00064	<0.00002
Barium Ba	ICP-MS	0.0287	0.0559	0.0272	0.00003
Beryllium Be	ICP-MS	<0.00005	<0.00001	<0.00001	<0.00001
Bismuth Bi	ICP-MS	<0.00003	<0.000005	<0.000005	<0.000005
Boron B	ICP-MS	<0.3	<0.05	<0.05	<0.05
Cadmium Cd	ICP-MS	0.0456	0.000009	0.00203	<0.000005
Calcium Ca	ICP-MS	254	20.2	42.9	<0.05
Chromium Cr	ICP-MS	<0.0005	<0.0001	<0.0001	<0.0001
Cobalt Co	ICP-MS	0.0349	0.000084	0.00369	<0.000005
Copper Cu	ICP-MS	0.0022	0.0003	0.00057	0.0004
Iron Fe	ICP-MS	0.153	0.025	0.002	<0.001
Lead Pb	ICP-MS	0.115	0.000127	0.00496	0.000018
Lithium Li	ICP-MS	0.01	0.0102	0.0035	<0.0005
Magnesium Mg	ICP-MS	143	16.1	22.3	<0.05
Manganese Mn	ICP-MS	0.333	0.00215	0.0685	0.00005
Mercury Hg	ICP-MS	<0.05	<0.01	<0.01	<0.01
Molybdenum Mo	ICP-MS	0.0011	0.0015	0.00577	<0.00005
Nickel Ni	ICP-MS	0.127	0.00049	0.0357	0.00015
Phosphorus P	ICP-MS	<0.01	<0.002	<0.002	<0.002
Potassium K	ICP-MS	1.79	2.06	1.26	<0.05
Selenium Se	ICP-MS	0.0018	0.00044	0.00061	<0.00004
Silicon Si	ICP-MS	<0.5	0.527	0.309	<0.1
Silver Ag	ICP-MS	0.00003	<0.000005	0.000012	<0.000005
Sodium Na	ICP-MS	0.78	0.35	0.78	<0.05
Strontium Sr	ICP-MS	0.4	0.109	0.165	<0.00005
Sulphur (S)	ICP-MS	459	10	62	<3
Thallium Tl	ICP-MS	0.00316	0.000061	0.00195	<0.000002
Tin Sn	ICP-MS	<0.00005	<0.00001	<0.00001	0.00009
Titanium Ti	ICP-MS	<0.003	0.0006	<0.0005	<0.0005
Uranium U	ICP-MS	0.00004	0.000712	0.000132	<0.000002
Vanadium V	ICP-MS	<0.001	<0.0002	<0.0002	<0.0002
Zinc Zn	ICP-MS	25.3	0.0016	1.23	0.0005
Zirconium Zr	ICP-MS	<0.0005	<0.0001	<0.0001	<0.0001