

Water quality around Iqaluit

Introduction:

INAC helps protect water quality in Canada's North. INAC is responsible for the management of water resources in and around Nunavut and the Northwest Territories much like provinces and municipalities are on other Canadian coastlines.

Water quality data is needed in order to properly manage water resources. INAC collects water quality information and undertakes water quality monitoring. Water quality monitoring is carried out in order to address major development and water planning and management issues. Good water quality data is important for monitoring ecosystem and human health. In addition to these monitoring networks, specific targeted studies are undertaken to respond to particular issues or concerns raised in environmental assessments and license hearings. These targeted studies are often done under the Northern Water Research Studies Program (NWRSP).

INAC's role as the northern water manager requires a broad and long term view of the resource, its potential uses and future demands. Broad-based research programs which seek to understand the watershed as a whole have been undertaken.

The city of Iqaluit is the capital of Nunavut and is the largest community in the province with a population of approximately 6,200. It is located on the southeast end of Baffin Island at the head of Frobisher Bay. A continuous increase in the population size of the community of Iqaluit has led to extensive development in the area, making water quality a concern. In response to growing water quality concerns, INAC developed and implemented a research program that involved monitoring surface water quality in the community in 2004. Water quality data was collected until 2009.

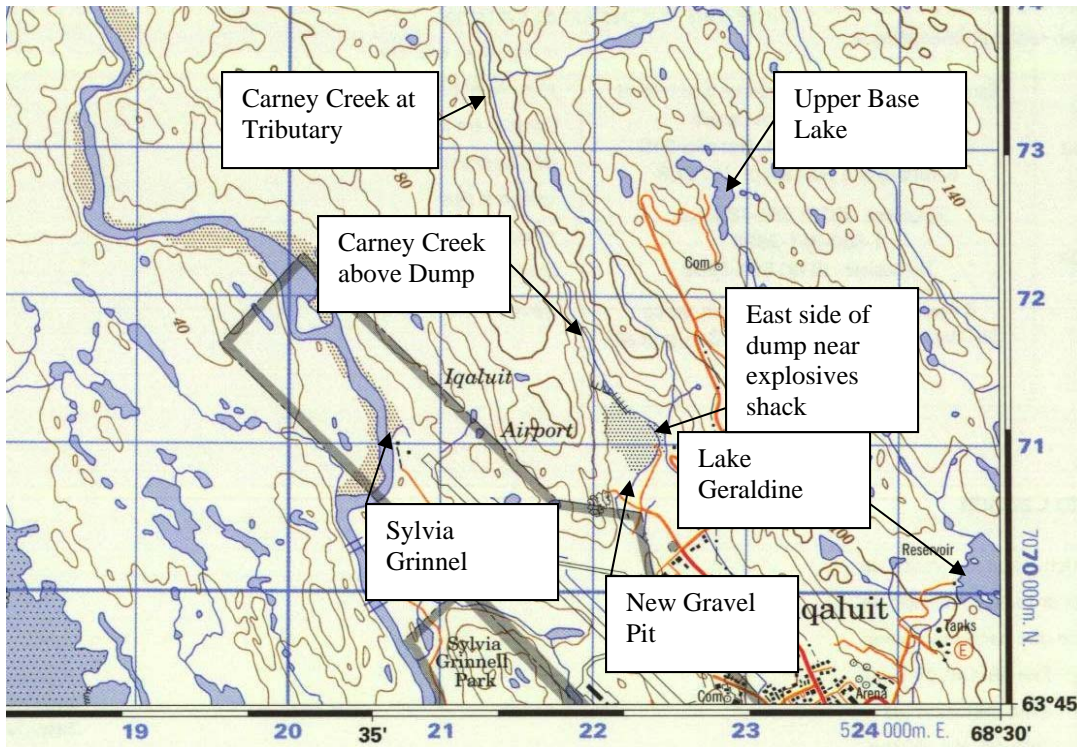
Prior to 2006, 6 sites were monitored, but due to an increase in construction another 4 sites were added to the program. Some of the sites (Sylvia Grinnell, the New Gravel Pit, and the Carney Creek Outlet) required more attention than others due to the areas being linked to the former US base, which is now the community's airport.

Methodology

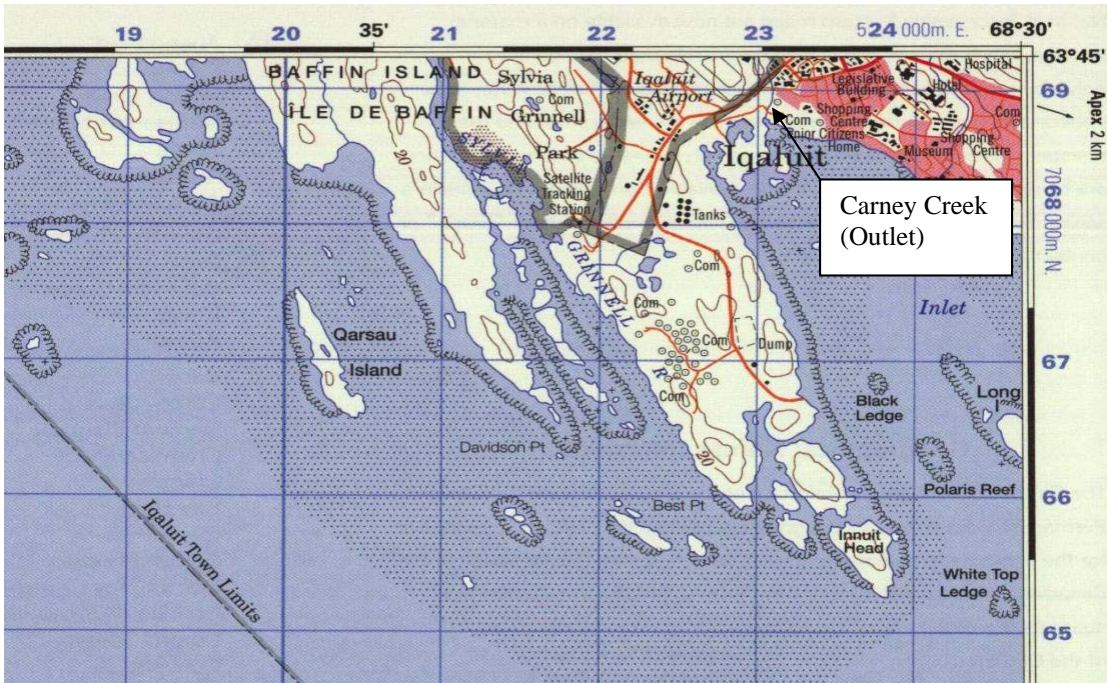
Sampling Sites:

Sampling locations were selected for baseline data collection only and are dispersed throughout the community of Iqaluit. Seven sites were sampled in 2004 and 2005. These sites included two locations at Sylvia Grinnell, one location at Lake Geraldine, three locations at Carney Creek and one location at Apex River. Ten sites were sampled from 2006-2009: two locations at Sylvia Grinnell, one location at Lake Geraldine, three locations at Carney Creek, one location at Apex River, one location at Upper Base Lake, one location at the River northwest of the Gravel Site, and one location at Gravel Source

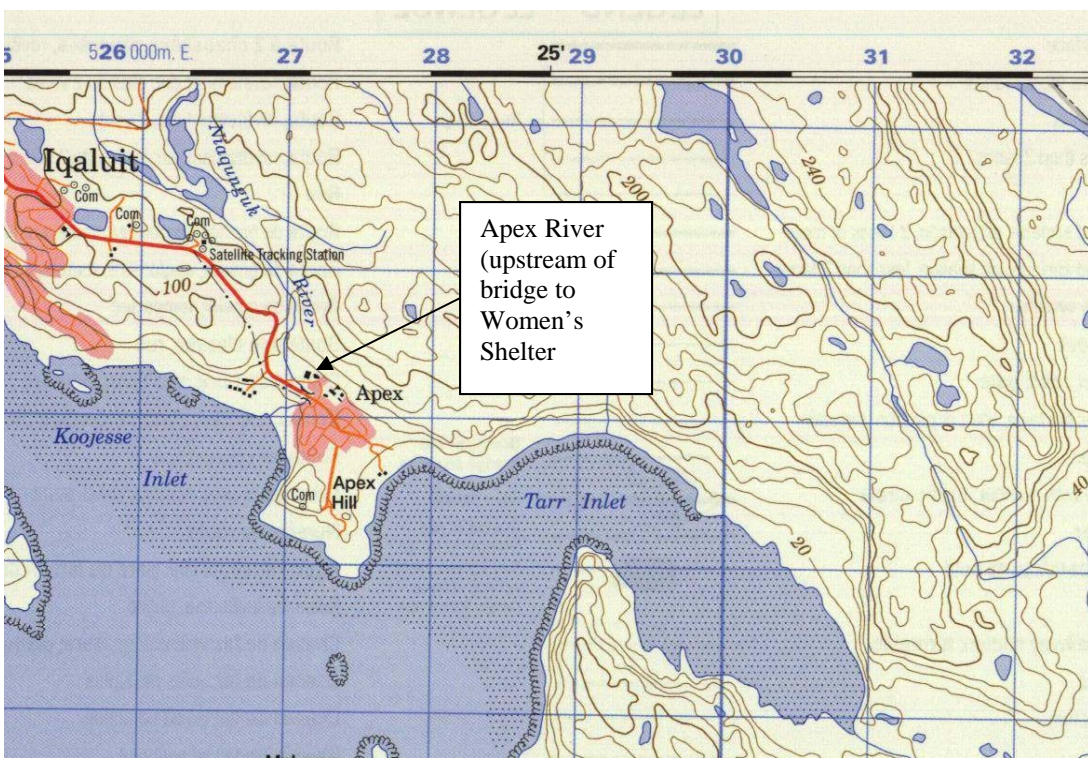
Lake. An additional two sites were sampled in 2008/2009 and were located at the new Gravel Pit and on the East Side of the Dump. Sites were chosen based on proximity to town and in areas of potential contamination. Upper Carney Creek, Sylvia Grinnell, and Apex River locations were selected as “clean” uncontaminated sites where as Upper Base Lake, Carney Creek (Above Dump), the new Gravel Pit, and the East side of the Dump were selected as potentially contaminated sites.



Map 1- Carney Creek (Tributary), Carney Creek (Above Dump), Sylvia Grinnell, and Lake Geraldine locations sampled for baseline water quality data by INAC from 2004-2009 in Iqaluit, Nunavut



Map 2- Carney Creek (Outlet) location sampled for baseline water quality data by INAC from 2004-2009 in Iqaluit, Nunavut



Map 3- Apex River location sampled for baseline water quality data by INAC from 2004-2009 in Iqaluit, Nunavut

Sampling Parameters:

Each sample was tested for a variety of physical, chemical, and biological parameters, including nutrients, metals, and organics. The full suite of parameters is listed in Table 1.

Table 1- Physical, chemical and biological parameters tested by Taiga Environmental Laboratory for each of the 10 locations from 2004-2009 around the community of Iqaluit.

Type	Parameter	Unit
Physical/Chemical	Total Suspended Solids (TSS)	mg/L
	Total Dissolved Solids (TDS)	mg/L
	Hardness	mg/L
	Alkalinity	mg/L
	Colour	CU
	Conductivity	µS/cm
	pH	pH units
Nutrients	Ammonia as Nitrogen (NH4)	mg/L
	Nitrate as Nitrogen (NO3)	mg/L
	Nitrite as Nitrogen (NO2)	mg/L
	Total Nitrogen (nitrate+nitrite)	mg/L
	Total Organic Carbon (TOC)	mg/L
	Turbidity	NTU
	Total Phosphorus (P)	mg/L
	Chemical Oxygen Demand (COD)	mg/L
Major Ions	Calcium (Ca)	mg/L
	Chloride (Cl)	mg/L
	Fluoride (F)	mg/L
	Magnesium (Mg)	mg/L
	Potassium (K)	mg/L
	Silica, Reactive	mg/L
	Sodium (Na)	mg/L
	Sulphate (SO4)	mg/L
Organics	Cyanide	mg/L
	Hexane Extractable Material (HEM)	mg/L
	Benzene	mg/L
	Ethylbenzene	mg/L
	Toluene	mg/L
	Xylenes	mg/L
	Oil and Grease (visible)	
Metals	Aluminum (Al)	µg/L

Antimony (Sb)	µg/L
Arsenic (As)	µg/L
Barium (Ba)	µg/L
Beryllium (Be)	µg/L
Cadmium (Cd)	µg/L
Cesium (Cs)	µg/L
Chromium (Cr)	µg/L
Cobalt (Co)	µg/L
Copper (Cu)	µg/L
Iron (Fe)	µg/L
Lead (Pb)	µg/L
Lithium (Li)	µg/L
Manganese (Mn)	µg/L
Molybdenum (Mo)	µg/L
Nickel (Ni)	µg/L
Rubidium (Rb)	µg/L
Selenium (Se)	µg/L
Silver (Ag)	µg/L
Strontium (Sr)	µg/L
Thallium (Tl)	µg/L
Titanium (Ti)	µg/L
Uranium (U)	µg/L
Vanadium (V)	µg/L
Zinc (Zn)	µg/L

Sampling Summaries

June/September 2004 Sampling Results

Sylvia Grinnell

In June of 2004, Sylvia Grinnell was found to have elevated levels of Total Suspended Solids (3.0 mg/L) compared to the 1999 CCME Protection of Aquatic Life guidelines (0.002 mg/L). Nitrate + Nitrite as Nitrogen was found at a higher than normal concentration (0.2 mg/L) compared to the 1999 CCME guideline of 0.06 mg/L. Cadmium was present at a concentration of 0.1 µg/L and exceeded a guideline of 0.017 µg/L. Copper and Lead also surpassed their guidelines (2-4.0 µg/L and 1-7.0 µg/L, respectively) with concentrations of 4.3 µg/L and 8.35 µg/L, respectively. In September of 2004, Sylvia Grinnell yielded elevated levels of Total Suspended Solids (4.0 mg/L) compared to the 1999 CCME guidelines (0.002 mg/L). Cadmium was also found at a higher than normal concentration (0.1 µg/L) compared to a guideline of 0.017 µg/L.

Lake Geraldine

In June of 2004, Lake Geraldine was found to have elevated levels of Total Suspended Solids (3.0 mg/L) compared to the 1999 CCME Protection of Aquatic Life guidelines (0.002 mg/L). Nitrate + Nitrite as Nitrogen was also found at a higher than normal concentration (0.2 mg/L) compared to a guideline of 0.06 mg/L. Cadmium was present at a concentration of 0.1 µg/L and exceeded the 1999 CCME guidelines (0.017 µg/L). In September of 2004, Lake Geraldine yielded elevated levels of Total Suspended Solids (3.0 mg/L) compared to the 1999 CCME guideline (0.002 mg/L). Cyanide was also found at a higher than normal concentration (0.145 mg/L) compared to a guideline of 0.005 mg/L. Cadmium was present at a concentration of 0.1 µg/L and exceeded its limit of 0.017 µg/L.

Apex River

In June of 2004, the Apex River was found to have elevated levels of Total Suspended Solids (3.0 mg/L) compared to the 1999 CCME Protection of Aquatic Life guidelines (0.002 mg/L). Nitrate + Nitrite as Nitrogen was also found at a higher than normal concentration (0.2 mg/L) compared to the 1999 guideline of 0.06 mg/L. Cadmium was present at a concentration of 0.1 µg/L and exceeded its guideline of 0.017 µg/L. In September of 2004, the Apex River yielded elevated levels of Total Suspended Solids (3.5 mg/L) compared to the 1999 CCME guidelines (0.002 mg/L). Cyanide was found at a higher than normal concentration (0.155 mg/L) compared to a guideline of 0.005 mg/L. Cadmium was present at a concentration of 0.1 µg/L and exceeded its limit of 0.017 µg/L.

Carney Creek (Outlet)

In June of 2004, Carney Creek (at the Outlet) was found to have elevated levels of Total Suspended Solids (3.0 mg/L) compared to the 1999 CCME Protection of Aquatic Life guidelines (0.002 mg/L). Toluene was also found at a higher than normal concentration (0.005 mg/L) compared to the 1999 guideline of 0.002 mg/L. Nitrate + Nitrite as Nitrogen had a concentration of 0.2 mg/L and exceeded a guideline of 0.06 mg/L. Cadmium was present at 0.1 µg/L compared to a guideline of 0.017 µg/L. In September of 2004, Carney Creek (at the Outlet) yielded elevated levels of Total Suspended Solids (3.0 mg/L) compared to the 1999 CCME guidelines (0.002 mg/L). Cyanide was also found at a higher than normal concentration (0.145 mg/L) compared to a guideline of 0.005 mg/L. Cadmium and Manganese exceeded their guidelines (0.017 µg/L and 50 µg/L, respectively) with concentrations of 0.1 µg/L and 88.5 µg/L, respectively.

Carney Creek (Above the Dump)

In June of 2004, Carney Creek (Above the Dump) was found to have elevated levels of Total Suspended Solids (3.0 mg/L) compared to the 1999 CCME Protection of Aquatic Life guidelines (0.002 mg/L). Nitrate + Nitrite as Nitrogen was found at a higher than normal concentration (0.2 mg/L) compared to the 1999 CCME guideline of 0.06 mg/L. Cadmium was present at a concentration of 0.1 µg/L and exceeded its guideline of 0.017 µg/L. In September of 2004, Carney Creek (Above the Dump) yielded elevated levels of

Total Suspended Solids (3.0 mg/L) compared to the 1999 CCME guidelines (0.002 mg/L). Cyanide was also found at a higher than normal concentration (0.150 mg/L) compared to a guideline of 0.005 mg/L. Cadmium was present at a concentration of 0.1 µg/L and exceeded a guideline of 0.017 µg/L.

Carney Creek (Upper)

In June of 2004, Carney Creek (Upper) was found to have elevated levels of Total Suspended Solids (3.0 mg/L) compared to the 1999 CCME Protection of Aquatic Life guidelines (0.002 mg/L). Toluene was also present at a concentration of 0.005 mg/L and exceeded the 1999 CCME guideline of 0.002 mg/L. Nitrate + Nitrite as Nitrogen was found at a higher than normal concentration (0.2 mg/L) compared to a guideline value of 0.06 mg/L. Cadmium was present at a concentration of 0.1 µg/L compared to a guideline of 0.017 µg/L. In September of 2004, Carney Creek (Upper) yielded elevated levels of Total Suspended Solids (4.0 mg/L) compared to the 1999 CCME guidelines (0.002 mg/L). Cyanide was also found at a higher than normal concentration (0.150 mg/L) compared to a guideline of 0.005 mg/L. Cadmium was present at a concentration of 0.1 µg/L and exceeded its limit of 0.017 µg/L.

July/September 2005 Sampling Results

Sylvia Grinnell

In July of 2005, Sylvia Grinnell had elevated levels of Total Suspended Solids (7.5 mg/L) compared to the 1999 CCME Protection of Aquatic Life guideline of 0.002 mg/L. Cadmium was also present at a higher than normal concentration (0.075 µg/L) compared to the guideline value of 0.017 µg/L. Silver exceeded the CCME (1999) guideline (0.1 µg/L) with a concentration of 0.35 µg/L. In September of 2005, Sylvia Grinnell had elevated levels of Toluene (0.005 mg/L) compared to the CCME (1999) guideline of 0.002 mg/L. Total Suspended Solids were also found at a higher than normal concentration (20 mg/L) when compared to a guideline value of 0.002 mg/L. Turbidity was found to be 1.62 NTU compared to a guideline of 1 NTU. Cyanide was found at a concentration of 0.195 mg/L compared to a CCME (1999) guideline of 0.005 mg/L.

Lake Geraldine

In July of 2005, Lake Geraldine yielded elevated levels of Total Suspended Solids (3 mg/L) compared to the 1999 CCME Protection of Aquatic Life guideline of 0.002 mg/L. Cadmium was also present in a higher than normal concentration (0.05 µg/L) compared to the guideline value of 0.017 µg/L. Silver exceeded the CCME (1999) guideline (0.1 µg/L) with a concentration of 0.2 µg/L. In September of 2005, Lake Geraldine was found to have elevated levels of Toluene (0.005 mg/L) compared to a CCME (1999) guideline value of 0.002 mg/L. Total Suspended Solids were also found to be at a higher than normal concentration (4.0 mg/L) when compared to the guideline value of 0.002 mg/L. Cyanide was present at a concentration of 0.194 µg/L compared to a guideline of 0.017 µg/L.

Apex River

In July 2005, the Apex River yielded an elevated level of Total Suspended Solids (3 mg/L) compared to the 1999 CCME Protection of Aquatic Life guideline of 0.002 mg/L. Cadmium was also present at a higher than normal concentration (0.05 µg/L) compared to the guideline value of 0.017 µg/L. Silver exceeded the CCME (1999) guideline (0.1 µg/L) with a concentration of 0.2 µg/L. In September of 2005, the Apex River was found to have an elevated level of Toluene (0.005 mg/L) compared to the CCME (1999) guideline value of 0.002 mg/L. Total Suspended Solids were also found to exceed a guideline value of 0.002 mg/L with a concentration of 3.5 mg/L. Cyanide was present at a concentration of 0.188 mg/L compared to a guideline value of 0.005 mg/L. Cadmium was found at a higher than normal concentration (0.05 µg/L) compared to a CCME (1999) guideline of 0.017 µg/L.

Carney Creek (Outlet)

In July of 2005, Carney Creek (at the Outlet) had elevated levels of Nitrate + Nitrite as Nitrogen (0.10 mg/L) compared to the 1999 CCME Protection of Aquatic Life guideline of 0.06 mg/L. A higher than normal concentration of Toluene (0.005 mg/L) was also present compared to the guideline value of 0.002 mg/L. Total Suspended Solids exceeded the guideline value (0.002 mg/L) with a concentration of 3 mg/L. Turbidity was found to have a concentration of 1.08 NTU compared to the CCME (1999) guideline of 1 NTU. Cadmium had a concentration of 0.05 µg/L compared to a 0.017 µg/L guideline value. Manganese was also found to have an elevated level of 113 µg/L compared to the CCME (1999) guideline (50 µg/L). In September of 2005, Carney Creek (at the Outlet) yielded elevated levels of Ammonia as Nitrogen (0.0065 mg/L) compared to a CCME (1999) guideline of 0.005 mg/L. Toluene was also found at a higher than normal concentration (0.005 mg/L) compared to a guideline value of 0.002 mg/L. Total Suspended Solids exceeded a guideline value of 0.002 mg/L with a concentration of 5.5 mg/L. Cyanide was present at a concentration of 0.1945 mg/L compared to a guideline of 0.005 mg/L. Cadmium was found at a concentration of 0.05 µg/L compared to a CCME (1999) guideline of 0.017 µg/L. Elevated levels of Copper (4.95 µg/L) were present as well compared to a guideline value of 2-4.0 µg/L. A higher concentration of Manganese was present (65.05 µg/L) and exceeded the guideline value of 50 µg/L.

Carney Creek (Above the Dump)

In July of 2005, Carney Creek (Above the Dump) was found to have elevated levels of Toluene (0.005 mg/L) compared to the 1999 CCME Protection of Aquatic Life guideline value of 0.002 mg/L. Total suspended solids were also found at higher than normal concentrations (3 mg/L) compared to the guideline value (0.002 mg/L). Cadmium exceeded the guideline (0.017 µg/L) with a concentration of 0.05 µg/L. In September of 2005, Carney Creek (Above the Dump) yielded higher than normal concentrations of Toluene (0.005 mg/L) compared to a CCME (1999) guideline value of 0.002 mg/L. Cyanide was also present at an elevated concentration (0.189 mg/L) compared to a

guideline value of 0.005 mg/L. Cadmium was found at a concentration of 0.05 µg/L compared to a guideline value of 0.017 µg/L.

Carney Creek (Upper)

In July of 2005, Carney Creek (Upper) was found to have elevated levels of Ammonia as Nitrogen (0.006 mg/L) compared to the 1999 CCME Protection of Aquatic Life guideline of 0.005 mg/L. Toluene was also present in a higher than normal concentration (0.005 mg/L) when compared to the guideline value of 0.002 mg/L. Total suspended solids exceeded the CCME (1999) guideline (0.002 mg/L) with a concentration of 3 mg/L. Cadmium was found at a concentration of 0.05 µg/L compared to a guideline value of 0.017 µg/L. In September of 2005, Carney Creek (Upper) yielded elevated levels of Toluene (0.005 mg/L) compared to a CCME (1999) guideline value of 0.002 mg/L. Total Suspended Solids also exceeded a guideline value of 0.002 mg/L with a concentration of 3 mg/L. Cyanide was present at a concentration of 0.203 mg/L compared to a guideline value of 0.005 mg/L.

Note: The field and lab blanks were a cause of concern due to the high copper and silver concentrations. The bottles must have been contaminated before the samples were taken so the rest of the results may have been affected by this as well.

July/August 2006 Sampling Results

Sylvia Grinnell

In July of 2006, Sylvia Grinnell yielded an elevated level of Total Suspended Solids (4.5 mg/L) compared to the 1999 CCME Protection of Aquatic Life guidelines (0.002 mg/L). Cadmium was also found at a higher than normal concentration (0.05 µg/L) compared to a guideline value of 0.017 µg/L. In August of 2006, Sylvia Grinnell yielded elevated levels of Total Suspended Solids (3.0 mg/L) compared to the 1999 CCME guideline value of 0.002 mg/L. Cadmium was also present at an elevated concentration of 0.05 µg/L compared to the guideline of 0.017 µg/L.

Lake Geraldine

In July of 2006, Lake Geraldine yielded an elevated level of Total Suspended Solids (4 mg/L) compared to the 1999 CCME Protection of Aquatic Life guideline of 0.002 mg/L. Cadmium exceeded the guideline value (0.017 µg/L) with a concentration of 0.19 µg/L. In August of 2006, Lake Geraldine yielded elevated levels of Ammonia as Nitrogen (0.010 mg/L) compared to the 1999 CCME guideline of 0.005 mg/L. Total Suspended Solids were present at a higher than normal concentration (3.0 mg/L) compared to a guideline value of 0.002 mg/L. Turbidity was 1.91 NTU and exceeded the 1999 CCME guideline of 1.0 NTU. Cadmium was present at a concentration of 0.05 µg/L and exceeded the guideline of 0.017 µg/L. Iron was found to be at an elevated concentration of 406 µg/L compared to the 1999 CCME guideline of 300 µg/L. Manganese was present at a concentration of 66 µg/L and exceeded a guideline value of 50 µg/L.

Apex River

In July of 2006, the Apex River yielded elevated levels of Total Suspended Solids (3.0 mg/L) compared to the 1999 CCME Protection of Aquatic Life guideline of 0.002 mg/L. Cadmium was also present at a higher than normal concentration (0.42 µg/L) compared to a guideline value of 0.017 µg/L. In August of 2006, the Apex River yielded elevated levels of Total Suspended Solids (3.0 mg/L) compared to the 1999 CCME guideline of 0.002 mg/L. Cadmium was also found at a concentration of 0.05 µg/L and exceeded a guideline value of 0.017 µg/L.

Carney Creek (Outlet)

In July of 2006, Carney Creek (at the Outlet) was found to have elevated levels of Nitrate + Nitrite as Nitrogen (0.08 mg/L) compared to the 1999 CCME Protection of Aquatic Life guideline of 0.06 mg/L. Total Suspended Solids were present at a concentration of 8.0 mg/L compared to a guideline value of 0.002 mg/L. Turbidity was found to be 1.71 NTU compared to the CCME (1999) guideline of 1 NTU. Iron was present at a higher than normal concentration (500 µg/L) and exceeded the guideline of 300 µg/L. Manganese exceeded the CCME (1999) guideline (50 µg/L) with a concentration of 142 µg/L. In August of 2006, Carney Creek (Outlet) yielded elevated levels of Nitrate + Nitrite as Nitrogen (0.15 mg/L) compared to the 1999 CCME guideline of 0.06 mg/L. Total Suspended Solids were found at a concentration of 4.0 mg/L and exceeded the guideline of 0.002 mg/L. Turbidity was found to be 2.70 NTU compared to a guideline of 1.0 NTU. Cadmium was present at a higher than normal concentration (0.05 µg/L) compared to the 1999 CCME guideline of 0.017 µg/L. Iron was found at an elevated concentration of 805 µg/L and exceeded the guideline of 300 µg/L. Manganese was found at 181 µg/L compared to the 1999 CCME guideline of 50 µg/L.

Carney Creek (Above the Dump)

In July of 2006, Carney Creek (Above the Dump) yielded elevated levels of Total Suspended Solids (3.0 mg/L) compared to the 1999 CCME Protection of Aquatic Life guideline of 0.002 mg/L. Cadmium was also present at a higher than normal concentration (0.05 µg/L) and exceeded the CCME (1999) guideline of 0.017 µg/L. In August of 2006, Carney Creek (Above the Dump) yielded elevated levels of Nitrate + Nitrite as Nitrogen (0.14 mg/L) compared to the 1999 CCME guideline of 0.06 mg/L. Total Suspended Solids were present at 3.0 mg/L and exceeded the guideline of 0.002 mg/L. Cadmium was found at a concentration of 0.05 µg/L compared to a guideline value of 0.017 µg/L.

Carney Creek (Upper)

In July of 2006, Carney Creek (Upper) yielded elevated levels of Ammonia as Nitrogen (0.006 mg/L) compared to the 1999 CCME Protection of Aquatic Life guideline of 0.005 mg/L. Total Suspended Solids (4.0 mg/L) were found to exceed the CCME (1999)

guideline of 0.002 mg/L. Turbidity was found to be 1.39 NTU compared to a guideline of 1 NTU. Cadmium was present at a concentration of 0.05 µg/L compared to a guideline value of 0.017 µg/L.

Upper Base Lake

In July of 2006, Upper Base Lake yielded elevated levels of Total Suspended Solids (3.0 mg/L) compared to the 1999 CCME Protection of Aquatic Life guideline of 0.002 mg/L. Cadmium was also present at a higher than normal concentration (0.05 µg/L) compared to a guideline value of 0.017 µg/L. In August of 2006, Upper Base Lake was found to have higher than normal concentrations of Total Suspended Solids (3.0 mg/L) compared to the 1999 CCME guideline of 0.002 mg/L. Cadmium was present at a concentration of 0.1 µg/L compared to the guideline of 0.017 µg/L. Silver was found at a concentration of 0.4 µg/L and exceeded the 1999 CCME guideline of 0.1 µg/L.

River North-West of Gravel Site

In July of 2006, the River North-West of the Gravel Site yielded higher than normal concentrations of Total Suspended Solids (3.0 mg/L) compared to the 1999 CCME Protection of Aquatic Life guideline (0.002 mg/L). Cadmium was also present at an elevated level (0.05 µg/L) compared to the 1999 CCME guideline (0.017 µg/L).

Gravel Source Lake

In July of 2006, Gravel Source Lake yielded elevated levels of Ammonia as Nitrogen (0.006 mg/L) compared to the 1999 CCME Protection of Aquatic Life guidelines (0.005 mg/L). Total Suspended Solids were also present at higher than normal concentrations (3.0 mg/L) compared to the 1999 CCME guideline of 0.002 mg/L.

July 2007 Sampling Results

Sylvia Grinnell

In July of 2007, Sylvia Grinnell yielded elevated levels of Total Suspended Solids (3.0 mg/L) compared to the 1999 CCME Protection of Aquatic Life guidelines (0.002 mg/L). Cadmium was present at a concentration of 0.05 µg/L and exceeded the 1999 CCME guideline of 0.017 µg/L. Selenium was found at a concentration of 1.3 µg/L compared to a guideline value of 1.0 µg/L.

Lake Geraldine

In July of 2007, Lake Geraldine was found to have elevated levels of Total Suspended Solids (3.0 mg/L) compared to the 1999 CCME Protection of Aquatic Life guidelines (0.002 mg/L). Cadmium was also present at higher than normal concentrations (0.1 µg/L).

and exceeded the 1999 CCME guideline of 0.017 µg/L. Selenium was found at a concentration of 1.8 µg/L and exceeded a guideline of 1.0 µg/L.

Apex River

In July of 2007, the Apex River yielded elevated levels of Total Suspended Solids (3.0 mg/L) compared to the 1999 CCME Protection of Aquatic Life guidelines (0.002 mg/L). Cadmium was also present at a higher than normal concentration (0.1 µg/L) and exceeded the 1999 CCME guideline of 0.017 µg/L. Selenium was found at a concentration of 1.2 µg/L compared to the guideline value of 1.0 µg/L.

Carney Creek (Outlet)

In July of 2007, Carney Creek (at the Outlet) was found to have elevated levels of Total Suspended Solids (3.0 mg/L) compared to the 1999 CCME Protection of Aquatic Life guidelines (0.002 mg/L). Turbidity was found to be 1.35 NTU and exceeded the 1999 CCME guideline of 1.0 NTU. Cadmium was present at higher than normal concentrations (0.05 µg/L) compared to a guideline of 0.017 µg/L. Selenium was found at a concentration of 4.6 µg/L and exceeded the 1999 CCME guideline of 1.0 µg/L.

Carney Creek (Above the Dump)

In July of 2007, Carney Creek (Above the Dump) yielded elevated levels of Total Suspended Solids (3.0 mg/L) compared to the 1999 CCME Protection of Aquatic Life guidelines (0.002 mg/L). Cadmium was also present at higher than normal concentrations (0.05 µg/L) and exceeded the 1999 CCME guideline of 0.017 mg/L. Selenium was found to have a concentration of 1.6 µg/L compared to a guideline of 1.0 µg/L.

Upper Base Lake

In July of 2007, Upper Base Lake was found to have elevated levels of Total Suspended Solids (3.0 mg/L) compared to the 1999 CCME Protection of Aquatic Life guidelines (0.002 mg/L). Cadmium was also present at a higher than normal concentration (0.05 µg/L) compared to the 1999 CCME guideline (0.017 µg/L). Selenium was found at a concentration of 1.7 µg/L and exceeded a guideline of 1.0 µg/L.

July/August 2008 Sampling Results

Sylvia Grinnell

In July of 2008, Sylvia Grinnell was found to have elevated levels of Total Suspended Solids (7.5 mg/L) compared to the 1999 CCME Protection of Aquatic Life guidelines (0.002 mg/L). Total Nitrogen was also found at a higher than normal concentration (0.75 mg/L) compared to the 1999 CCME guideline value of 0.06 mg/L. Cadmium was present at a concentration of 0.05 µg/L and exceeded the guideline of 0.017 µg/L. In August of 2008, Sylvia Grinnell yielded an elevated level of Total Suspended Solids (3.0 mg/L)

compared to the 1999 CCME guideline value of 0.002 mg/L. Turbidity exceeded a guideline of 1 NTU with a value of 1.155 NTU. Total Nitrogen was also present at a higher than normal concentration (0.12 mg/L) compared to the guideline (0.06 mg/L). Toluene had a concentration of 0.005 mg/L and exceeded a guideline of 0.002 mg/L. Cadmium had a concentration of 0.05 µg/L compared to a guideline of 0.017 µg/L.

Lake Geraldine

In July of 2008, Lake Geraldine was found to have elevated levels of Total Suspended Solids (3.0 mg/L) compared to the 1999 CCME Protection of Aquatic Life guidelines (0.002 mg/L). Total Nitrogen was also found at a higher than normal concentration (0.09 mg/L) compared to the 1999 CCME guideline value of 0.06 mg/L. Cadmium was present at a concentration of 0.05 µg/L and exceeded the guideline of 0.017 µg/L. In August of 2008, Lake Geraldine yielded an elevated level of Total Suspended Solids (3.0 mg/L) compared to the 1999 CCME guideline (0.002 mg/L). Total Nitrogen was also found at a higher than normal concentration (0.09 mg/L) compared to the guidelines (0.06 mg/L). Toluene was present at a concentration of 0.005 mg/L and exceeded the 1999 CCME guideline (0.002 mg/L). Cadmium was found at a concentration of 0.05 µg/L compared to a guideline value of 0.017 µg/L.

Apex River

In July of 2008, the Apex River was found to have elevated levels of Total Suspended Solids (3.0 mg/L) compared to the 1999 CCME Protection of Aquatic Life guidelines (0.002 mg/L). Nitrate + Nitrite as Nitrogen was also found at a higher than normal concentration (0.09 mg/L) compared to the 1999 CCME guideline value of 0.06 mg/L. Total Nitrogen also exceeded the guideline value (0.06 mg/L) with a concentration of 0.13 mg/L. Cadmium was present at a concentration of 0.05 µg/L compared to a guideline value of 0.017 µg/L. In August of 2008, the Apex River yielded elevated levels of Total Suspended Solids (3.0 mg/L) compared to the 1999 CCME guidelines (0.002 mg/L). Total Nitrogen was found in a higher than normal concentration (0.09 mg/L) and exceeded a guideline value of 0.06 mg/L. Toluene was present at a concentration of 0.005 mg/L compared to a guideline of 0.002 mg/L. Cadmium was found at an elevated level of 0.05 µg/L compared to the 1999 CCME guidelines (0.017 µg/L).

Carney Creek (Outlet)

In July of 2008, Carney Creek (at the Outlet) was found to have elevated levels of Total Suspended Solids (6.0 mg/L) compared to the 1999 CCME Protection of Aquatic Life guidelines (0.002 mg/L). Turbidity exceeded the guideline value (1 NTU) with a value of 1.95 NTU. Nitrate + Nitrite as Nitrogen was also present at a higher than normal concentration (0.31 mg/L) compared to the 1999 CCME guideline value of 0.06 mg/L. Total Nitrogen also exceeded the guideline (0.06 mg/L) with a concentration of 0.36 mg/L. Cadmium was found to have a concentration of 0.05 µg/L compared to the guideline value of 0.017 µg/L. Iron and Manganese exceeded the CCME guidelines (300 µg/L and 50 µg/L, respectively) with concentrations of 425 µg/L and 132 µg/L,

respectively. In August of 2008, Carney Creek (at the Outlet) yielded elevated levels of Total Suspended Solids (3.0 mg/L) compared to the 1999 CCME guidelines (0.002 mg/L). Turbidity exceeded a guideline of 1 NTU with a value of 1.11 NTU. Nitrate + Nitrite as Nitrogen was found at a higher than normal concentration (0.1 mg/L) compared to a guideline of 0.06 mg/L. Total Nitrogen was present at a concentration of 0.25 mg/L and exceeded a guideline of 0.06 mg/L. Toluene was found to have an elevated level (0.005 mg/L) compared to the 1999 CCME guideline (0.002 mg/L). Cadmium and Manganese also exceeded their guidelines (0.017 µg/L and 50 µg/L, respectively) with values of 0.05 µg/L and 55.8 µg/L, respectively.

Carney Creek (Above the Dump)

In July of 2008, Carney Creek (Above the Dump) was found to have elevated levels of Total Suspended Solids (16.0 mg/L) compared to the 1999 CCME Protection of Aquatic Life guidelines (0.002 mg/L). Turbidity exceeded the 1999 CCME guidelines (1 NTU) with a value of 3.32 NTU. Nitrate + Nitrite as Nitrogen was also found at a higher than normal concentration (0.14 mg/L) compared to a guideline of 0.06 mg/L. Total Nitrogen was present at a concentration of 0.29 mg/L compared to a guideline value of 0.06 mg/L. Cadmium was found at a concentration of 0.05 µg/L and exceeded the 1999 CCME guideline (0.017 µg/L). Iron was present at a concentration of 428 µg/L compared to a guideline value of 300 µg/L. In August of 2008, Carney Creek (Above the Dump) yielded an elevated level of Total Suspended Solids (3.0 mg/L) compared to the 1999 CCME guidelines (0.002 mg/L). Total Nitrogen was also present at a higher than normal concentration (0.13 mg/L) and exceeded the guideline value of (0.06 mg/L). Toluene was found at a concentration of 0.005 mg/L compared to a guideline of 0.002 mg/L.

Carney Creek (Upper)

In July of 2008, Carney Creek (Upper) was found to have elevated levels of Total Suspended Solids (14.0 mg/L) compared to the 1999 CCME Protection of Aquatic Life guidelines (0.002 mg/L). Turbidity exceeded the 1999 CCME guideline (1 NTU) with a value of 1.21 NTU. Nitrate + Nitrite as Nitrogen was also found at a higher than normal concentration (0.09 mg/L) compared to a guideline value of 0.06 mg/L. Total Nitrogen was present at a concentration of 0.26 mg/L and exceeded the 1999 CCME guideline (0.06 mg/L). Cadmium was found at a concentration of 0.07 µg/L compared to a guideline value of 0.017 µg/L. In August of 2008, Carney Creek (Upper) yielded elevated levels of Total Suspended Solids (3.0 mg/L) compared to the 1999 CCME guidelines (0.002 mg/L). Nitrate + Nitrite as Nitrogen was also found at a higher than normal concentration (0.12 mg/L) and exceeded the 1999 CCME guidelines (0.06 mg/L). Total Nitrogen exceeded its guideline (0.06 mg/L) as well with a concentration of 0.12 mg/L. Toluene was present at a concentration of 0.005 mg/L compared to the guideline value of 0.002 mg/L. Cadmium was found at 0.05 µg/L and exceeded its guideline of 0.017 µg/L.

Upper Base Lake

In July 2008, Upper Base Lake was found to have elevated levels of Total Suspended Solids (3.0 mg/L) compared to the 1999 CCME Protection of Aquatic Life guidelines (0.002 mg/L). Total Nitrogen was also found at a higher than normal concentration (0.14 mg/L) compared to the 1999 CCME guidelines (0.06 mg/L). Cadmium was present at a concentration of 0.05 µg/L and exceeded the guideline value of 0.017 µg/L. In August of 2008, Upper Base Lake yielded elevated levels of Total Suspended Solids (3.0 mg/L) compared to the 1999 CCME guidelines (0.002 mg/L). Total Nitrogen was found at a higher than normal concentration (0.11 mg/L) and exceeded the guideline value of 0.06 mg/L. Toluene had a concentration of 0.005 mg/L compared to a guideline of 0.002 mg/L. Cadmium was present at a concentration of 0.05 µg/L and exceeded the 1999 CCME guideline value of 0.017 µg/L.

River North-West of Gravel Site

In July of 2008, the River North-West of the Gravel Site was found to have elevated levels of Total Suspended Solids (3.0 mg/L) compared to the 1999 CCME Protection of Aquatic Life guidelines (0.002 mg/L). Total Nitrogen was also found at a higher than normal concentration (0.12 mg/L) compared to the 1999 CCME guideline value of 0.06 mg/L. Cadmium was present at a concentration of 0.05 µg/L and exceeded the guideline (0.017 µg/L). In August of 2008, the River North-West of the Gravel Site yielded elevated levels of Total Suspended Solids (3.0 mg/L) compared to the 1999 CCME guidelines (0.002 mg/L). Total Nitrogen was also found at a higher than normal concentration (0.07 mg/L) and exceeded the 1999 CCME guideline (0.06 mg/L). Toluene was present at a concentration of 0.005 mg/L compared to a guideline value of 0.002 mg/L. Cadmium was found at 0.05 µg/L and exceeded its guideline of 0.017 µg/L.

Gravel Source Lake

In July of 2008, Gravel Source Lake was found to have elevated levels of Total Suspended Solids (3.0 mg/L) compared to the 1999 CCME Protection of Aquatic Life guidelines (0.002 mg/L). Cadmium was also found at a higher than normal concentration (0.05 µg/L) compared to the 1999 CCME guideline (0.017 µg/L). In August of 2008, Gravel Source Lake yielded elevated levels of Total Suspended Solids (3.0 mg/L) compared to the 1999 CCME guidelines (0.002 mg/L). Total Nitrogen was found at a higher than normal concentration (0.07 mg/L) as well, compared to a guideline of 0.06 mg/L. Toluene was present at 0.005 mg/L and exceeded the 1999 CCME guideline of 0.002 mg/L. Cadmium had a concentration of 0.05 µg/L compared to a guideline of 0.017 µg/L.

New Gravel Pit (Near the Blasting Site)

In July of 2008, the New Gravel Pit (Near the Blasting Site) sampling site was found to have elevated levels of Total Suspended Solids (3.0 mg/L) compared to the 1999 CCME Protection of Aquatic Life guidelines (0.002 mg/L). Nitrate + Nitrite as Nitrogen was also

found at a higher than normal concentration (0.08 mg/L) compared to the 1999 CCME guidelines (0.06 mg/L). Total Nitrogen was found at a concentration of 0.23 mg/L and exceeded the guideline value of 0.06 mg/L. Cadmium was present at a concentration of 0.1 µg/L compared to a guideline of 0.017 µg/L. In August of 2008, the New Gravel Pit (Near the Blasting Site) yielded elevated levels of Total Suspended Solids (3.0 mg/L) compared to the 1999 CCME guidelines (0.002 mg/L). Total Nitrogen was found at a higher than normal concentration (0.145 mg/L) and exceeded its guideline of 0.06 mg/L. Nitrate + Nitrite as Nitrogen also exceeded its guideline (0.06 mg/L) with a value of 0.095 mg/L. Toluene had a concentration of 0.005 mg/L compared to a guideline of 0.002 mg/L. Cadmium was present with a concentration of 0.05 µg/L and exceeded its CCME guideline of 0.017 µg/L.

East Side of the Dump (Near the Explosives Shack)

In July of 2008, the East Side of the Dump (Near the Explosives Shack) sampling site was found to have elevated levels of Total Suspended Solids (4.0 mg/L) compared to the 1999 CCME Protection of Aquatic Life guidelines (0.002 mg/L). Turbidity also exceeded the 1999 CCME guideline (1 NTU) with a value of 1.47 NTU. Total Nitrogen was present at a concentration of 0.15 mg/L compared to a guideline of 0.06 mg/L. Cadmium was found at a concentration of 0.1 µg/L and exceeded a guideline of 0.017 µg/L.

August 2009 Sampling Results

Sylvia Grinnell

In August of 2009, Sylvia Grinnell was found to have elevated levels of Total Suspended Solids (3.0 mg/L) compared to the 1999 CCME Protection of Aquatic Life guidelines (0.002 mg/L). Total Nitrogen was also found at a higher than normal concentration (0.115 mg/L) compared to the 1999 CCME guideline (0.06 mg/L).

Lake Geraldine

In August of 2009, Lake Geraldine yielded elevated levels of Total Suspended Solids (3.0 mg/L) compared to the 1999 CCME Protection of Aquatic Life guidelines (0.002 mg/L). Total Nitrogen was also found at a higher than normal concentration (0.09 mg/L) compared to the 1999 CCME guideline (0.06 mg/L). Cadmium was present at a concentration of 0.1 µg/L and exceeded a guideline of 0.017 µg/L.

Apex River

In August of 2009, the Apex River was found to have elevated levels of Total Suspended Solids (3.0 mg/L) compared to the 1999 Protection of Aquatic Life guidelines (0.002 mg/L). Total Nitrogen was also found at a higher than normal concentration (0.23 mg/L) compared to the 1999 CCME guideline (0.06 mg/L). Cadmium was present at a concentration of 0.05 µg/L and exceeded a guideline value of 0.017 µg/L.

Carney Creek (Outlet)

In August of 2009, Carney Creek (at the Outlet) was found to have elevated levels of Nitrate + Nitrite as Nitrogen (0.12 mg/L) compared to the 1999 CCME Protection of Aquatic Life guideline (0.06 mg/L). Total Suspended Solids were also found to be at a higher than normal concentration (6.0 mg/L) compared to the 1999 guideline (0.002 mg/L). Turbidity exceeded its guideline (1 NTU) with a value of 2.10 NTU. Total Nitrogen was present at a concentration of 0.30 mg/L compared to a guideline of 0.06 mg/L. Cadmium was recorded at 0.1 µg/L and exceeded its guideline of 0.017 µg/L. Iron and Manganese had elevated levels (581 µg/L and 159 µg/L, respectively) compared to guidelines of 300 µg/L and 50 µg/L, respectively.

Carney Creek (Above the Dump)

In August of 2009, Carney Creek (Above the Dump) yielded elevated levels of Nitrate + Nitrite as Nitrogen (0.12 mg/L) compared to the 1999 CCME Protection of Aquatic Life guidelines (0.06 mg/L). Total Suspended Solids were also found at a higher than normal concentration (3.0 mg/L) compared to the 1999 guidelines (0.002 mg/L). Total Nitrogen was present at a concentration of 0.16 mg/L and exceeded its guideline of 0.06 mg/L. Cadmium was found at 0.1 µg/L compared to a guideline of 0.017 µg/L.

Carney Creek (Upper)

In August of 2009, Carney Creek (Upper) was found to have elevated levels of Nitrate + Nitrite as Nitrogen (0.11 mg/L) compared to the 1999 CCME Protection of Aquatic Life guidelines (0.06 mg/L). Total Suspended Solids were also found at a higher than normal concentration (3.0mg/L) compared to the 1999 guideline (0.002 mg/L). Total Nitrogen was present at a concentration of 0.18 mg/L and exceeded its guideline of 0.06 mg/L. Cadmium was found with a concentration of 0.1 µg/L compared to a guideline of 0.017 µg/L.

Upper Base Lake

In August of 2009, Upper Base Lake was found to have elevated levels of Total Suspended Solids (3.0 mg/L) compared to the 1999 CCME Protection of Aquatic Life guidelines (0.002 mg/L). Total Nitrogen was also found at a higher than normal concentration (0.15 mg/L) compared to the 1999 guideline of 0.06 mg/L. Cadmium was present at a concentration of 0.1 µg/L and exceeded the guideline value of 0.017 µg/L.

New Gravel Pit (Near the Blasting Site)

In August of 2009, the New Gravel Pit (Near the Blasting Site) sampling site was found to have elevated levels of Nitrate + Nitrite as Nitrogen (0.13 mg/L) compared to the 1999 CCME Protection of Aquatic Life guidelines (0.06 mg/L). Total Suspended Solids were also found at a higher than normal concentration (3.0 mg/L) compared to the 1999 guidelines (0.002 mg/L). Total Nitrogen had a concentration of 0.16 mg/L and exceeded

a guideline of 0.06 mg/L. Cadmium was present at a concentration of 0.1 µg/L and surpassed its limit of 0.017 µg/L.

East Side of the Dump (Near the Explosives Shack)

In August of 2009, the East Side of the Dump (Near the Explosives Shack) sampling site was found to have elevated levels of Nitrate + Nitrite as Nitrogen (0.12 mg/L) compared to the 1999 CCME Protection of Aquatic Life guidelines (0.06 mg/L). Total Suspended Solids were also found at a higher than normal concentration (3.0 mg/L) compared to the 1999 CCME guidelines (0.002 mg/L). Total Nitrogen had a concentration of 0.15 mg/L and exceeded its guideline of 0.06 mg/L. Cadmium was present at a concentration of 0.1 µg/L and surpassed its limit of 0.017 µg/L.

June 2010 Sampling Results

Sylvia Grinnell

In June of 2010, Sylvia Grinnell was found to have elevated levels of Ammonia as Nitrogen (0.01 mg/L) and Nitrate + Nitrite as Nitrogen (0.11 mg/L) compared to the 1994 CCME Protection of Aquatic Life guidelines (0.005 and 0.06 mg/L, respectively). Cadmium was also present at a higher than normal concentration (0.05 µg/L) compared to a guideline of 0.017 µg/L.

Lake Geraldine

In June of 2010, Lake Geraldine was found to have elevated levels of Ammonia as Nitrogen (0.01 mg/L) and Nitrate + Nitrite as Nitrogen (0.11 mg/L) compared to the 1994 CCME Protection of Aquatic Life guidelines of 0.005 mg/L and 0.06 mg/L. Total Nitrogen had a concentration of 0.09 mg/L and exceeded its guideline of 0.06 mg/L. Cadmium was present at 0.1 µg/L compared to a guideline of 0.017 µg/L.

Apex River

In June of 2010, the Apex River was found to have elevated levels of Ammonia as Nitrogen (0.01 mg/L) and Nitrate + Nitrite as Nitrogen (0.13 mg/L) compared to the 1994 CCME Protection of Aquatic Life guidelines (0.005 and 0.06 mg/L, respectively). Total Nitrogen had a concentration of 0.09 mg/L compared to a guideline of 0.06 mg/L. Cadmium was present at a concentration of 0.05 µg/L and exceeded its limit of 0.017 µg/L.

Carney Creek (Outlet)

In June of 2010, Carney Creek at the Outlet was found to have elevated levels of Ammonia as Nitrogen (0.01 mg/L) and Nitrate + Nitrite as Nitrogen (0.18 mg/L) compared to the 1994 CCME Protection of Aquatic Life guidelines of 0.005 mg/L and 0.06 mg/L, respectively. Toluene was present at a higher than normal concentration

(0.005 mg/L) compared to a guideline of 0.002 mg/L. Total Nitrogen had a concentration of 0.13 mg/L and exceeded its limit of 0.06 mg/L. Aluminum, Cadmium, and Iron had concentrations of 286, 0.1, and 926 µg/L compared to guidelines of 100, 0.017, and 300 µg/L. Manganese was present at 141 µg/L and exceeded a limit of 50 µg/L.

Carney Creek (Above the Dump)

In June of 2010, Carney Creek (Above the Dump) was found to have elevated levels of Ammonia as Nitrogen (0.01 mg/L) and Nitrate + Nitrite as Nitrogen (0.13 mg/L) compared to the 1994 CCME Protection of Aquatic Life guidelines of 0.005 mg/L and 0.06 mg/L, respectively. Toluene was also found to exceed the CCME guideline of 0.002 mg/L with a value of 0.005 mg/L. Total Nitrogen had a value of 0.08 mg/L compared to a guideline of 0.06 mg/L. Cadmium was present at a concentration of 0.05 µg/L and exceeded its guideline of 0.017 µg/L.

Carney Creek (Upper)

In June of 2010, Carney Creek (Upper) was found to have elevated levels of Ammonia as Nitrogen (0.01 mg/L) and Nitrate + Nitrite as Nitrogen (0.12 mg/L) compared to the 1994 CCME Protection of Aquatic Life guidelines of 0.005 mg/L and 0.06 mg/L, respectively. Toluene was also found to exceed the CCME guideline of 0.002 mg/L with a value of 0.005 mg/L. Total Nitrogen had a value of 0.12 mg/L compared to a guideline of 0.06 mg/L. Cadmium was present at a concentration of 0.05 µg/L and exceeded its guideline of 0.017 µg/L.

Upper Base Lake

In June of 2010, Upper Base Lake was found to have elevated levels of Ammonia as Nitrogen (0.01 mg/L) as well as Nitrate + Nitrite as Nitrogen (0.13 mg/L) compared to the 1994 CCME Protection of Aquatic Life guideline values of 0.005 mg/L and 0.06 mg/L, respectively. Toluene was present at a higher than normal concentration (0.005 mg/L) compared to a guideline of 0.002 mg/L. Total Nitrogen also exceeded its guideline (0.06 mg/L) with a value of 0.12 mg/L. Cadmium had a concentration of 0.05 mg/L compared to a guideline of 0.017 µg/L.

New Gravel Pit (Near the Blasting Site)

In June of 2010, the New Gravel Pit (Near the Blasting Site) was found to have elevated levels of Ammonia as Nitrogen (0.01 mg/L) and Nitrate + Nitrite as Nitrogen (0.18 mg/L) compared to the 1994 CCME Protection of Aquatic Life guidelines of 0.005 mg/L and 0.06 mg/L, respectively. Toluene was also found to exceed its guideline (0.002 mg/L) with a concentration of 0.005 mg/L. Total Nitrogen had a value of 0.14 mg/L compared to a guideline of 0.06 mg/L. Cadmium was present at a concentration of 0.05 µg/L compared to the CCME guideline of 0.017 µg/L.

East Side of the Dump (Near the Explosives Shack)

In June of 2010, the sampling site on the East side of the dump (Near the explosives shack) was found to have elevated levels of Ammonia as Nitrogen (0.01 mg/L) and Nitrate + Nitrite as Nitrogen (0.14 mg/L) compared to the 1994 CCME Protection of Aquatic Life guidelines of 0.005 mg/L and 0.06 mg/L, respectively. Toluene was also found at a higher than normal concentration (0.005 mg/L) compared to a CCME guideline of 0.002 mg/L. Total Nitrogen was present at a concentration of 0.11 mg/L compared to its guideline (0.06 mg/L). Aluminum exceeded the guideline (100 µg/L) with a concentration of 1670 µg/L. Cadmium, Iron, and Lead had concentrations of 0.1, 1810, and 1.1 µg/L compared to guidelines of 0.017, 300, and 1 µg/L, respectively.

Note: Parameters that exceeded the CCME guidelines may have done so due to the minimum detection limit (MDL) for this particular lab (Taiga Environmental Laboratory); For example, the MDL for Cadmium is 0.05 µg/L which exceeds the acceptable limit of 0.017 µg/L. Of the parameters that exceeded regulations-concentrations were not high enough to be a cause of concern with the water quality. PCB concentrations also exceeded the CCME guidelines due to the MDL for this parameter. Again, concentrations were not high enough to take any action. Hexane extractable material was found at different locations and although there is no guideline for it, it is something that should be addressed because as there should not be any HEM present in the water.

Most of the parameters tested were low enough to be background levels except for the PCB's and HEM's present. The PCB and HEM concentrations found in the samples must have come from an outside source. Possible contamination may be attributed to a former contaminated site located above Carney Creek or from a former metal dump which the creek flows through.