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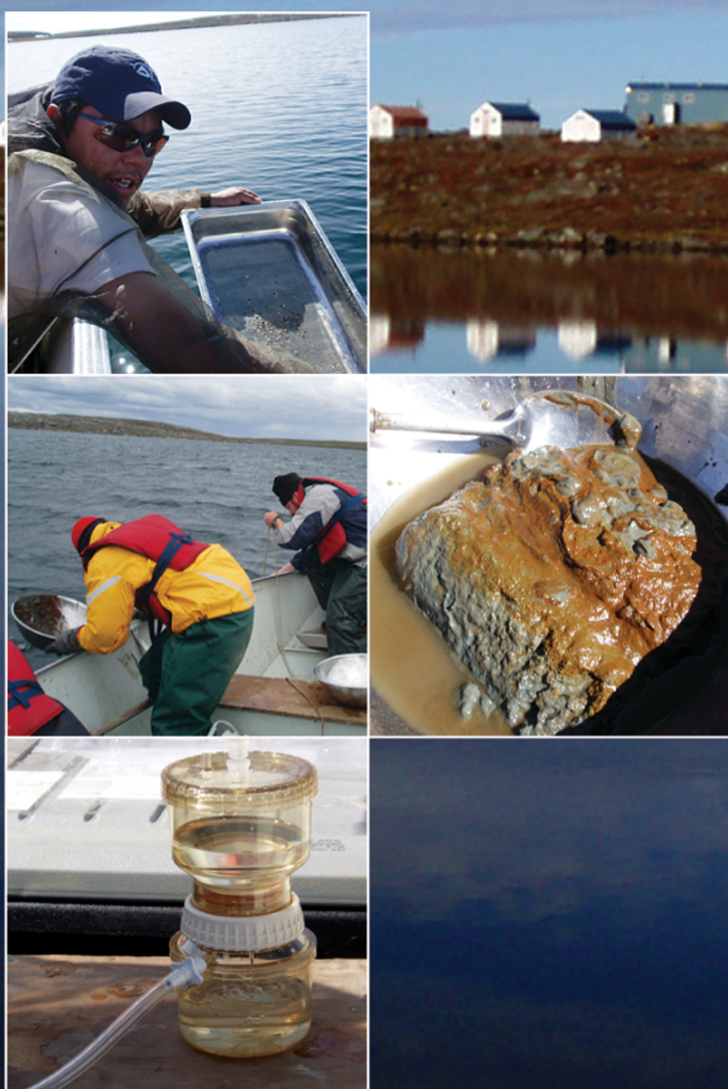
Aquatic Effects Management Program Monitoring - Meadowbank Gold Project, 2006



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ACKNOWLEDGEMENTS

Azimuth would like to thank Agnico-Eagle Mines Ltd. (AEM; formerly Cumberland Resources Ltd.) for their support of this program and for facilitating our work by providing logistical assistance and help whenever needed. Key personnel conducting this project were as follows:

- Randy Baker (Azimuth) – Randy managed the project, participated in core AEMP sampling, and wrote the report.
- Rachel Gould (Azimuth[1]) – Rachel participated in the fall sampling program, managed data analyses, and provided document preparation support.
- Tom Mannik and Juda Nasauyaituk (Baker Lake) – Tom and Judah assisted in many of the AEMP tasks. Tom's been involved in the project since its inception in the mid-1990s, so his experience was invaluable.
- Ryan Vanengen (Azimuth[2]) – Ryan was involved in core and target AEMP sampling. He was also involved in compiling data, interpreting results, and report writing for specific aspects of this report.
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- Jason Shaw (Caslys Consulting Ltd.) – Jason provided mapping and GIS services for the report.
- Gary Mann (Azimuth) – Gary was involved in the late fall AEMP sampling including the targeted study on high value habitat use by fish. Gary also reviewed/edited the report.

[1] Rachel conducted this work while at Azimuth; she is currently working for AEM as Project Manager: Environmental Permitting and Compliance Monitoring.

[2] Ryan conducted this work while at Azimuth; he is currently working for AEM as Environmental Coordinator of the Meadowbank Project.

- Maggie McConnell (Azimuth) – Maggie provided statistical analysis and interpretation of the benthic community data, technical editing of the report, and document production support.

PROFESSIONAL LIABILITY STATEMENT

This report has been prepared by Azimuth Consulting Group Inc. (Azimuth), for the use of Agnico-Eagle Mines Ltd. (AEM), who has been party to the development of the scope of work for this project and understands its limitations. The extent to which previous investigations were relied on is detailed in the report.

This report is intended to provide baseline environmental information to support the Aquatic Effects Management Program (AEMP) for AEM's Meadowbank Project. The AEMP monitoring scope and design was developed in consideration of a specific project development plan. It is not applicable to any other sites, nor should it be relied upon for types of development other than those to which it refers. Any variation from the proposed development may necessitate modification of the AEMP and may potentially reduce the utility of this baseline data.

Any use, reliance on, or decision made by a third party based on this report is the sole responsibility of such third party. Azimuth accepts no liability or responsibility for any damages that may be suffered or incurred by any third party as a result of the use of, reliance on, or any decision made based on this report.

The findings, conclusions and recommendations in this report reflect our best professional judgment and have been developed in a manner consistent with the level of skill normally exercised by environmental professionals currently practicing under similar conditions in the area. The findings contained in this report are based, in part, upon information provided by others and are valid only as of the date of this report. Azimuth has assumed the data or other information provided by others is factual and accurate. If any of the information is inaccurate, site conditions change, new information is discovered, and/or unexpected site conditions are encountered in future work, then modifications by Azimuth to the findings, conclusions and recommendations of this report may be necessary.

GLOSSARY AND ACRONYMS

AEMP – Aquatic Effects Management Program

Aquatic – Pertaining to plants or animals that live in freshwater or marine environments.

Arctic – The Arctic is a geographic region that is circumpolar in extent and generally characterized as being north of the treeline, in an area of continuous permafrost.

Anadromous fish – Fish that spend at least part of their adult lives feeding in marine water and making annual or semi-annual migrations into freshwater lakes to over winter and reproduce.

AWPAR – All-Weather Private Access Road.

Baseline Aquatic Ecosystem Report (BAER) – A comprehensive summary of all aquatic baseline studies (to 2005) conducted on the project area lakes since 1996, and a comparison to aquatic studies of other lakes in the Keewatin District of the Canadian Arctic.

Baseline studies – Initial scientific investigations that determine the present condition of an area to establish a basic reference for future studies. These studies have been conducted to document pre-project conditions.

Benthic – Pertaining to the bottom region of a water body, such as a lake.

Benthic invertebrates / Benthos – Assemblage of organisms living in or on the bottom sediment of a water body and dependent upon the decomposition cycle for most, if not all, of their food supply.

Biomass – The total mass of living organisms usually expressed as a weight per unit area or volume (e.g., mg/m^3 of water).

Bivalves – Molluscs with shells consisting of two halves (i.e., valves) such as clams.

CCME – Canadian Council for Ministers of the Environment.

Chironomids – Midges (two-winged insects) in the order Diptera. The aquatic larval form of this insect is typically the most abundant and diverse group of insects found in lakes.

Core monitoring – Consists of general monitoring for water and sediment quality, phytoplankton, periphyton, benthic invertebrates and fish – tailored based on our understanding of mine construction, operation and infrastructure (e.g., dikes, effluents, stream crossings, roads, etc.). Core monitoring will be implemented prior to and during construction and operation of the mine and will be conducted each year, until closure. Core monitoring is integrated with and complemented by targeted monitoring.

Density of organisms – A term that describes abundance. The total number of living organisms expressed per unit area (e.g., $\#/m^2$) or volume ($\#/m^3$).

Dissolved concentrations (water) – The concentration of chemical parameters in water filtered through a 0.45 µm glass fiber filter. This is operationally defined as the dissolved fraction in water.

Dipteran insects – Insects of the Order Diptera, consisting of flies having two-wings that includes chironomids, flies, and mosquitoes.

Diversity – A measure (e.g., Shannon-Weaver index) of the variety of living organisms in an area (e.g., number or richness of species).

DQOs – Data Quality Objectives.

Ecosystem – A community of interacting organisms considered together with the chemical and physical factors that make up their environment.

EEM – Environmental Effects Monitoring.

Effect – A change to an ecosystem component due to human activities. The effect may have a negative, positive or neutral impact.

Environment – Components of the earth including land, water, air, and all layers of the atmosphere. Also included are organic and inorganic matter, living organisms, and all interacting natural systems.

Environmental Impact Assessment (EIA) – A quantitative approach to environmental studies designed to identify, predict, and interpret information about the potential geographic and temporal scale and magnitude of impacts caused by industrial activities directly and indirectly associated with an industrial development on ecological health, and human health and well-being.

Eutrophic – Nutrient-rich waters with high primary productivity.

Food chain – Organisms that are linked together in a series that, by consuming lower level organisms, transfer nutrients and energy from one group to another.

Food web – The concept used to describe the relationships of organisms within an ecosystem that are interconnected through various feeding linkages, resulting in the transfer of nutrients and energy.

Freshet – The increased flow of water over a relatively short period of time, usually during spring, caused by snowmelt.

Global Positioning System (GPS) – A sophisticated system used to define a precise geographic location with the aid of a satellite system. Units are typically expressed as UTM (Universal Transverse Mercator) or in latitude and longitude.

Groundwater – Water found in soil or in pores, and crevices under the ground.

Habitat – The *Fisheries Act* (Section 34) defines fish habitat as: “spawning grounds and nursery, rearing, food supply and migration areas on which fish depend directly or indirectly in order to carry out their life processes.”

HDPE – High-density polyethylene.

HSD – This refers to the statistical term Tukey’s HSD, where the HSD means “Honestly significant difference.”

Hydrology – The study of the properties of water and its movements in relation to land.

Impact – An effect, either positive or negative, of an activity or process on ecological components of a receiving environment.

Invertebrates – A collective term for all animals without a backbone or spinal column and includes all aquatic animal organisms except fish.

ISQGs – Interim Sediment Quality Guidelines.

Larva – The immature stage, between egg and pupa, of an insect with complete metamorphosis. Many insect larvae are aquatic, including chironomids, mayflies, stoneflies, and caddisflies.

Limnology – The study of freshwater lakes including biological, geological, physical, and chemical aspects.

Littoral – The region of a lake, including water and sediment, from the surface to a depth at which photosynthesis ceases, usually within the upper 10m of the water column.

Meadowbank Project Area lakes – Those lakes that are potentially directly or indirectly affected by mine development and include Third Portage, Second Portage, Turn, Tehek, Vault and Wally Lakes.

MMER – Metal Mining Effluent Regulations

Micro (µ) – A unit of measurement denoting a factor of one-millionth, such as µg/g.

Milligram (mg) – A unit of measurement denoting a factor of one-thousandth, such as mg/g.

Mitigation – An activity aimed at avoiding, controlling, or reducing the severity or duration of adverse physical, biological, and/or socio-economic impacts of a project activity.

NIRB – Nunavut Impact Review Board.

NNLP – No Net (Habitat) Loss Plan.

Nutrient – Any substance that provides essential nourishment for the maintenance of life (e.g., carbon, nitrogen, and phosphorous).

Nutrient enrichment – The enhancement of nutrients in a water body over and above the concentration that will be considered typical for the region.

Oligochaetes – True worms from the Phylum Annelida (segmented worms) that are common in sediment of freshwater habitats.

Oligotrophic – Nutrient deficient waters with low productivity. The vast majority of Arctic lakes are oligotrophic.

Organic Carbon (sediments) – The non-mineral fraction of the sediments that consists of organic carbon, expressed as a percent (%) of the total weight of sediment. This includes all forms of carbon except carbonates.

PELs – Probable Effects Level concentrations.

Periphyton – The collective name given to the community of algae that exists attached to underwater surfaces, such as rocks, in lakes and streams.

Permafrost – Subsoil that has been frozen for at least two years.

Phytoplankton – Microscopic or small floating plants suspended in the water column of aquatic ecosystems.

Planktonic – Referring to organisms with limited mobility that are free-floating and living in the water column.

Predator – Any organism that consumes another organism.

Prey – Any organism that is consumed by another organism.

Primary consumers – Organisms such as zooplankton that feed on primary producers (e.g., phytoplankton) for their source of nutrients and energy.

Primary production – Production by photosynthetic organisms, such as algae, phytoplankton and periphyton. Photosynthetic organisms comprise the bottom of the food chain.

Primary productivity – A term given to the rate at which new biomass (i.e., plant tissue) is generated by photosynthetic organisms (i.e., plants) using energy captured from the sun.

Quality Assurance / Quality Control (QA/QC) – Sampling and analytical procedures (such as lab replicate sample analysis) that are integrated in field collection and analytical procedures to ensure acceptable data quality.

Reference lakes – Lakes that are used as controls for comparison to project lakes and include an internal reference lake (Third Portage Lake - south basin) and an external reference lake (Inuggugayualik Lake).

Richness – The number of unique taxa (e.g., species) found at a particular location.

RPD – Relative Percent Difference.

Sampling and analysis plan (SAP) – A detailed description of the approach and methods for sampling, including: goals, rationale/approach, statistical design, sampling schedule, operating plans and procedures, quality assurance/quality control, and a plan for interpretation and evaluation.

Secchi disc - An eight-inch disk with black and white quadrants used to measure water clarity.

Secondary productivity – The rate of increase in biomass of organisms that consume plants or other primary producers.

Secondary consumer – Organisms such as forage fish that consume primary consumers (e.g., zooplankton) for their source of nutrients and energy.

Sediment grain size – Refers to the size and relative size distribution of the particles that make up the sediment. Typically they are divided into four groups including clay, silt, sand and gravel.

Sediment Quality Guidelines (Interim) [ISQG] – Reference concentrations of contaminants in sediments that, if exceeded, indicates that organism-level effects may occur.

SOPC – Stressor of potential concern; stressors are any physical, chemical or biological entity that can induce an adverse effect on environmental systems.

Stratification – Vertical differences in water temperature, causing a density difference between warm, less dense surface water and cold, more dense bottom water, retarding or preventing mixing of surface and bottom water.

Targeted monitoring: Targeted studies are specific studies that typically have narrower temporal or spatial bounds (than core monitoring studies) or are designed to address specific questions related to particular components of mine development during construction or operation. Targeted monitoring is integrated with and complementary to the core monitoring design.

Total metals concentrations (water) – The total concentration of a metal in the water, which includes both freely dissolved and particle-bound forms of the metal.

Total Suspended Solids (TSS) – The weight of solids that are suspended in a given volume of water, expressed as weight per unit volume (e.g., mg/L).

Trophic Levels – A functional classification of organisms in an ecosystem according to feeding relationships, from primary producers through primary consumers, through secondary consumers.

Turbidity – A condition of reduced transparency in water caused by suspended colloidal or particulate material; measured by a turbidimeter and recorded as nephrelometric turbidity units (NTU).

Ultra-oligotrophic – Lakes with extremely low nutrient levels, high water clarity, low primary productivity, and a dominance of small unicellular phytoplankton species.

Total phosphorous concentrations are typically <0.005ug/L in these lakes (Vollenweider, 1968).

VECs – Valued Ecosystem Components; In the NIRB Terms of Reference it states "Valued Ecosystem Components (VECs) have been identified in consultation with regulatory authorities and members of the local community. They include fish and wildlife species populations, habitat, air quality, water quality, surface water quantity and distribution, vegetation cover, and permafrost."

Watershed – An entire geographic area that contributes surface and groundwater to a particular lake, river, or stream.

Water Quality Guidelines – Reference concentrations of contaminants in water (e.g., CCME guidelines) that, if exceeded, indicates that organism-level effects may occur.

Zooplankton – Small, floating or weakly swimming animals found in fresh and marine waters, such as copepods and cladocerans.

EXECUTIVE SUMMARY

The Aquatic Effects Management Program (AEMP) describes the aquatic management and environmental monitoring program for the Meadowbank project area lakes as part of Cumberland Resources Ltd. Meadowbank Gold Project. This (2006) is the first formal year of pre-construction monitoring since Cumberland has received regulatory approval of its Environmental Impact Assessment (EIA) from the Nunavut Impact Review Board (NIRB). This report builds on historic aquatic monitoring studies of the project lakes since 1996 and as summarized in the Baseline Aquatic Ecosystem Report (BAER, 2005).

The overall objective of the AEMP is to ensure that the aquatic environment and its resources are protected by monitoring all aspects of mine operations with the potential to adversely affect the aquatic environment, including the all-weather private access road (AWPAR). Application of this management program will ensure that project-related adverse impacts are detected and mitigated, so that construction and operational activities do not cause any undue harm to local and regional water quality, sediment quality or biota (invertebrates and fish).

The AEMP is a dynamic, working document. It is a practical guide that identifies the source of physical and chemical stressors to the receiving environment, pathways of potential exposure, the ecological receptors at potential risk, mitigation measures, and the specific parameters to be monitored, their frequency, geographic location and duration.

The Meadowbank AEMP monitoring strategy has two primary components:

1. *Core Monitoring Program* is a general strategy to monitor water and sediment quality, benthic invertebrates and fish that is tailored to our understanding of mine construction, operation, and infrastructure. This general design will be implemented prior to and during construction and operation of the mine and will be conducted each year, until closure. Note that requirements under Environment Canada's Metal Mining Effluent Regulations (MMER) are considered part of the foundation to core studies pertaining specifically to mine effluent sources.
2. *Targeted Monitoring Studies* are specific studies that typically have narrower temporal or spatial bounds or are designed to address specific questions related to particular components of mine development during construction or operation. These are integrated with, and complementary to, the core monitoring design.

Core monitoring studies consisted of seasonal sampling of limnological parameters, water chemistry, sediment chemistry, phytoplankton abundance and biomass (mg/m^3)

and abundance (#/sample) and richness (taxa/sample) of benthic invertebrates from all near-field, far-field and reference stations in project lakes.

Limnological parameters and water chemistry were typical of ultra-oligotrophic Arctic lakes with no meaningful differences in any parameter related to season, among lakes or over time, since water was first analyzed in 1996. Chlorophyll α concentrations were extremely low, ranging from 0.133 to 0.413 µg/L and reflect the low nutrient levels in the project lakes. Total metals concentrations showed remarkable consistency among all project lakes and with previous years. Concentrations of all metals except the common salts (calcium, magnesium), aluminum (0.0060 to 0.0144 mg/L), cadmium (South basin of Third Portage Lake [0.000085mg/L] and Second Portage Lake [0.000025 mg/L], both in August) and lead (0.00066 mg/L in Second Portage Lake) were below laboratory detection limits and well below CCME (2006a) water quality guidelines for the protection of aquatic life.

Sediment total organic carbon (TOC), grain size and metals chemistry in 2006 were very similar within and among lakes and over time. Metals concentrations were very similar regardless of their collection location and illustrates the strong regional influence and history of sediment deposition in the all of the project lakes. In 2006, as in previous years, arsenic, chromium and copper exceeded sediment quality in all lakes.

Phytoplankton species composition, abundance and biomass from project and reference lakes were very similar throughout the open water season and was dominated by chrysophytes, followed by of chlorophytes, diatoms and dinoflagellates. Phytoplankton biomass was generally lowest in spring (early July) and seasonally increased to maximums by the fall, although the magnitude of increase throughout the open water season was relatively small. Total phytoplankton biomass ranged between 100 mg/m^3 and 150 mg/m^3 and was relatively similar within and among lakes. Phytoplankton species composition, abundance and biomass in 2006 were very consistent with historic seasonal data and are typical of oligotrophic, nutrient poor lakes. Simpson's diversity index averaged 0.85, with no significant difference among sampling stations, lakes or time of year. Species richness ranged from 26 to 48 species over the duration of sampling, with an average of 38 species per sampling event.

Benthic invertebrate samples were collected from each of the AEMP monitoring locations. Insects were dominant both in terms of numbers of organisms and taxa identified at all lake stations, whether sieved through 500-μm or 250-μm mesh sieves. Abundance and richness of organisms were similar for the most part among lake stations, for both spring and late summer. Where differences existed, Wally Lake stations showed greater abundance and/or richness than at least one other lake station.

Targeted studies consisted of seasonal and sieve mesh size trends in benthic invertebrates, sediment coring, fish anadromy and parasite surveys, Portage Lakes connecting channels and Portage ponds evaluation and fish spawning habitat survey.

Targeted studies for benthos were included to address seasonal trends (4 events over the open water period) and the influence of sieve mesh size (250-μm vs. 500-μm; i.e., the latter to conform with MMER recommendations). Differences in benthos among seasons were uncommon for the most part. However, there was a tendency for an increase in abundance and richness in the spring and fall and a decrease in late summer. It is likely that this trend coincides with natural benthic invertebrate fluctuations (i.e., emergence of taxa).

As expected, the 250-μm mesh size sieve retained more organisms and taxa, representing an approximate 1.5 to 2 fold difference over the 500-μm sieve. Additionally, the top dominant taxa were the same for both sieves sizes and the number of organisms counted in each of these dominant taxa, were also very similar between sieve mesh sizes.

Visual inspection of sediment cores did not reveal any unusual features or characteristics such as varves, perturbations, unusual color, or grain size or any other feature that would suggest there has been anything but a slow, uniform deposition of fine sediments within the project lakes.

Several fishing episodes conducted periodically during the summer of 2006 failed to capture any arctic char, thus strontium levels in fins could not be verified.

Results of both external and internal examinations of fish revealed that the cestode parasite identified was *Diphyllobothrium* sp. and not *Cotylurus*, as was originally reported. *Diphyllobothrium* sp. appears to be a relatively common and widespread parasite that is present in most fish. All fish appeared to be in good health, regardless of the parasite load that they were carrying.

It is not recommend that any of the Portage Lakes connecting channels be modified to improve opportunities for fish passage; the merits of providing access to non-migratory fish to lakes where there is already a population in equilibrium is debatable.

Of the eight small ponds that drain into Second or Third Portage Lake, four contain no fish. Only ponds NP-1 (Dogleg), NP-2, NP-3 and NP-7 have sufficient depth to contain viable fish populations. However, the drainage area of each of these ponds is so small that drainage out of the lakes is negligible. None of the ponds have good hydraulic connections to a larger lake, so the fish populations are isolated and have been for many tens or hundreds of years.

The habitat characteristics that were expected from a high value area were found and these correspond well to habitats that are suitable for spawning for the target fish species. Although numbers of fish caught were relatively low, fish appear to be occupying habitat that matches their preferred spawning substrate types.

1.0 INTRODUCTION

1.1 Background

This Aquatic Effects Management Program (AEMP) for the Meadowbank Gold Project, 75 km north of Baker Lake, describes the rationale, framework, strategy, methodology and results of aquatic monitoring activities during the 2006 open-water season. This is the first formal year of baseline aquatic monitoring during the pre-construction phase and establishes the monitoring protocol and specific sampling locations to be carried forward throughout mine life.

Management consists of a range of activities including monitoring, assessment, mitigation, and intervention, if necessary. Many of these activities are embedded in the project itself and are integral to its success. Monitoring is designed to detect potential adverse effects on aquatic Valued Ecosystem Components (VECs) arising from any mine-related activity, in order that (further) mitigation can be applied, if necessary, to eliminate or reduce adverse effects. The AEMP has been designed to detect and mitigate, if necessary, any potential impacts to the aquatic environment based on the comprehensive Aquatic Ecosystem/Fish Habitat Environmental Impact Assessment (Cumberland Resources, 2005).

The AEMP is a dynamic and practical process that identifies the source of physical and chemical stressors to the receiving environment, pathways of potential exposure, the ecological receptors at potential risk, mitigation measures, and potential residual effects. The AEMP also recognizes and integrates, when appropriate, monitoring requirements under the No-Net-Loss policy of the *Fisheries Act* and the Metal Mining Effluent Regulations [MMER; includes Environmental Effects Monitoring (EEM) for mines]. This simplifies and harmonizes monitoring requirements so that an integrated ecosystem approach is taken such that physical, chemical, and biological effects and mitigation and monitoring programs are linked.

It is also noteworthy that the concept of adaptive management is embedded within the AEMP strategy. As more information about the relationship between mining activities and their potential effects on the receiving environment become better understood, monitoring strategies (parameters, frequency, location) can be altered to ensure that all valued ecosystem components are well protected over the life of the mine.

1.2 Environmental Setting

Understanding the environmental setting of the project lakes is integral to understanding the design of the AEMP. The Meadowbank project lakes are situated in the barren-ground central Arctic region of Nunavut within an area of continuous permafrost. These are headwater, ultra-oligotrophic (small drainage areas, very nutrient poor and unproductive) lakes, situated on the watershed boundary that separates two main drainages – the Arctic and Hudson Bay drainages. Only a few hundred meters to the north of Second and Third Portage Lakes is the divide between water that flows north to the Arctic Ocean via the Meadowbank and the Back River system or to Chesterfield Inlet and Hudson Bay via the Quoich River system. There is an impassable falls on the Quoich River, about 50 km upstream from Chesterfield Inlet that is a barrier to upstream fish movement, preventing access by anadromous species such as arctic char. There are no spring spawning fish such as suckers or arctic grayling in the project lakes or their vicinity.

The landscape consists of rolling hills and relief with low growing vegetative cover and poor soil development. Numerous lakes are interspersed among boulder fields, eskers and bedrock outcrops, with indistinct and complex drainages. The main lakes in the Meadowbank project area (**Figure 1-1**) include Third Portage Lake (TP), Second Portage Lake (SP), Tehek Lake (TE), Turn Lake (TURN) and the Vault Lake system – Vault, Wally and Drilltrail Lakes. All of the project lakes have small drainage areas relative to the surface area of the lakes themselves. This is a common feature of headwater lakes. Third Portage Lake is relatively large, with a surface area of 36.0 km^2 and a drainage area of 89 km^2, resulting in a low drainage area to surface area of 2.5. Second Portage Lake is much smaller with a surface area of 4.1 km^2 and a drainage area of 14.6 km^2 (ratio of 3.5). Local inflow from surrounding terrain is the predominant influence on water movement within the system.

Hydrology of the project area lakes is highly influenced by geographic location, the headwater nature of the watershed and by season. Because of their headwater nature, small drainage area and near absence of stream habitat, small, ephemeral channels connect project area lakes. There is no flow between lakes during most of the year. During early spring (late June), once connecting channels melt, initial discharge is high and gradually diminishes throughout the summer, reaching base levels by early to mid-August. Channels between lakes freeze by late-September or October.

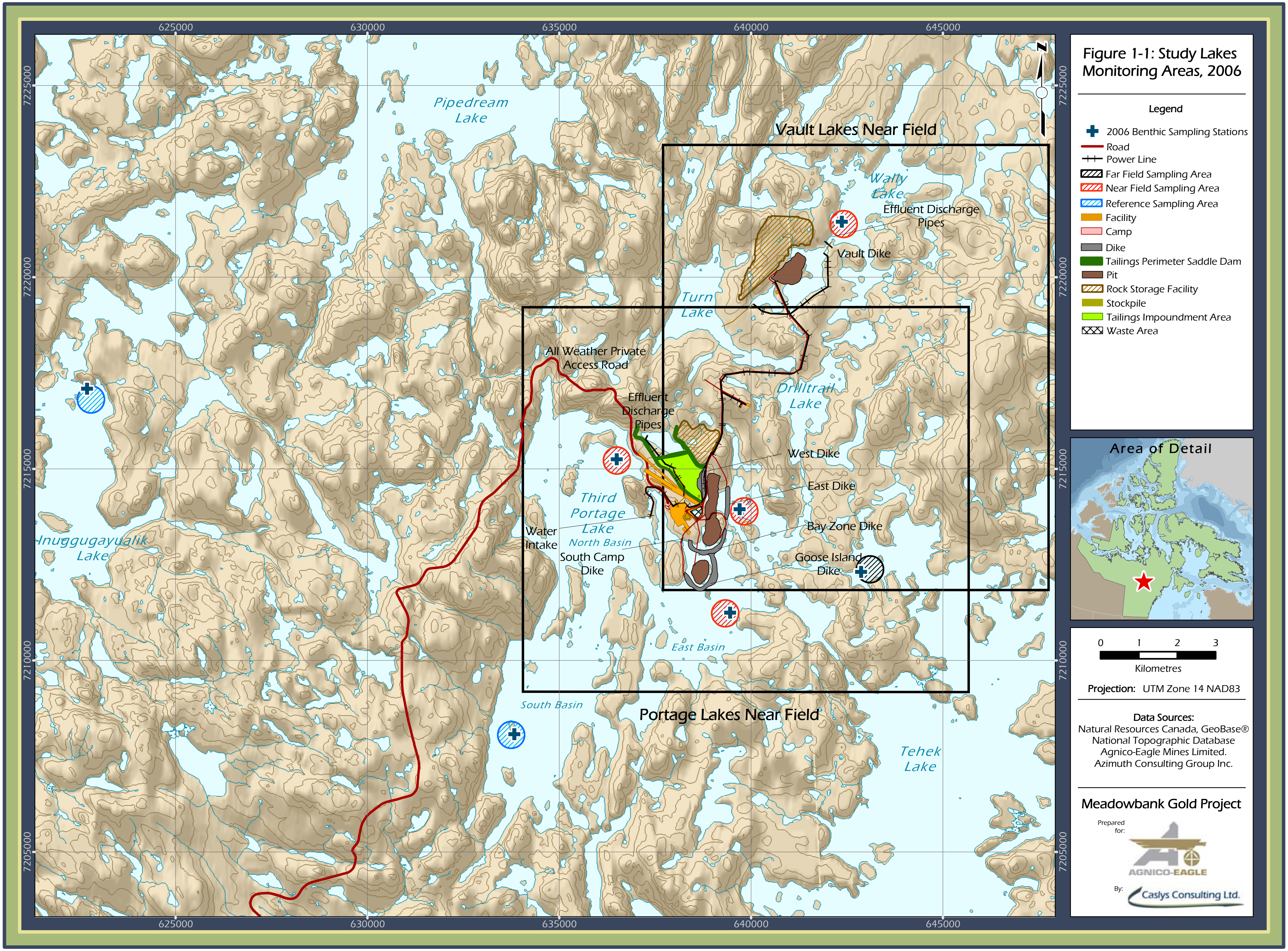


Figure 1-1: Study Lakes Monitoring Areas, 2006
Legend
2006 Benthic Sampling Stations
Road
Power Line
Far Field Sampling Area
Near Field Sampling Area
Reference Sampling Area
Facility
Camp
Dike
Tailings Perimeter Saddle Dam
Pit
Rock Storage Facility
Stockpile
Tailings Impoundment Area
Waste Area
Area of Detail
0 1 2 3
Kilometres
Projection: UTM Zone 14 NAD83
Data Sources:
Natural Resources Canada, GeoBase®
National Topographic Database
Agnico-Eagle Mines Limited.
Azimuth Consulting Group Inc.
Meadowbank Gold Project
Prepared for:
AGNICO-EAGLE
By:
Caslys Consulting Ltd.
625000
630000
635000
640000
645000
7225000
7220000
7215000
7210000
7205000
N
Pipedream Lake
Vault Lakes Near Field
Wally Lake
Effluent Discharge Pipes
Vault Dike
Turn Lake
All Weather Private Access Road
Effluent Discharge Pipes
Drilltrail Lake
West Dike
East Dike
Bay Zone Dike
Goose Island Dike
Third Portage Lake
North Basin
Water Intake
South Camp Dike
Inuggugayualik Lake
East Basin
South Basin
Portage Lakes Near Field
Tehek Lake

Net water flow in the system is south. Third Portage drains into Second Portage Lake via three channels that, with the exception of early spring freshet, are impassable by fish (despite an average annual discharge of about 10 million m^3; AMEC, 2005). Vault, Wally, and Drilltrail Lakes also drain south to join Second Portage Lake, just upstream of its outlet to Tehek Lake. Thus, discharge from the Portage and Vault Lakes into Tehek Lake is via a single connecting channel that is passable by fish during the entire open water season. This provides an ideal location to detect any changes in downstream hydrology and water quality parameters over time. To take advantage of this feature the general locations of sampling stations from project lakes since 1996 have included this location to facilitate ease of comparison and interpretation among years.

Meadowbank project area lakes are ultra-oligotrophic, soft water, nutrient poor, and isothermal with neutral pH and high oxygen concentrations year round. Limnological conditions tend to be very stable, with uniform, vertical temperature, oxygen, and nutrient distributions and only minor, temporary stratification. Water clarity is extremely high. Secchi depth is typically 10 m or more. The headwater nature of the project area lakes means that there are no large streams entering or exiting the watershed and the drainage areas are relatively small. Therefore, there are no external sources of nutrients or sediment that will contribute to nutrient enrichment or productivity of the system. Other factors contributing to low productivity include low light levels during the winter months, extended periods of ice cover and low water temperatures.

The ice-free season on these lakes is very short, with ice break-up in late-June and ice-up beginning in late September or early October. Maximum ice thickness is at least 2 m by March/April. Because the lakes are ice covered for most of the year, gas exchange with the atmosphere is limited, although oxygen concentrations usually remain high under the ice because of the low rates of biological activity and decomposition of organic material (processes that consume oxygen from the water) (BAER, 2005).

Primary productivity (algal growth, phytoplankton, periphyton) in oligotrophic Arctic lakes is typically very low and the Meadowbank area lakes are no exception. Chlorophyll α concentrations, and abundance and biomass of plankton is very low (BAER, 2005).

At least 40 species of phytoplankters, represented by six major classes of algae (chrysophytes, diatoms, chlorophytes, dinoflagellates, cryptophytes, and cyanophytes), were identified in the Meadowbank project lakes. Chrysophytes (golden-brown algae) are small, usually unicellular phytoplankton, and were very numerous in lake water samples, frequently having the greatest biomass due to their large numbers. The major phytoplankton species found in Meadowbank project lakes are consistent with dominant and commonly occurring phytoplankton species usually found in oligotrophic lakes with circum-neutral pH and low nutrient concentrations (Wetzel, 1983).

Benthic invertebrates (collectively referred to as “benthos”) are small animals that live on or in the bottom sediments and are an important food source for most fish species, especially young-of-the-year and juvenile lake trout, round whitefish, and arctic char (Machniak, 1975; Scott and Crossman, 1979). The benthic invertebrate community of Meadowbank project lakes is numerically dominated by the aquatic larval stages of insects, especially chironomids, both in terms of abundance and species diversity. This is typical of most Arctic and temperate lakes and was consistent within and among project, reference and regional lakes (BAER, 2005). In addition to chironomid insects, Sphaeriidae bivalves clams were relatively abundant followed by oligochaete worms, Hydracarina (mites), cladocerans, harpacticoid copepods, eubranchiopods (tadpole shrimp; a common organism found in stomachs of round whitefish), amphipods, Turbellaria (flatworms), and stoneflies (Trichoptera).

Fish compose the upper trophic level of aquatic organisms in Arctic lakes. As the top of the food web, fishes exert a degree of control and structure on the lower trophic levels. Consistent with the typical species composition of many Arctic lakes (Scott and Crossman, 1979; Johnson, 1980), lake trout and round whitefish dominate abundance in all lakes. The project lakes typically contain a large biomass of fish, comprised primarily of very large (>5 kg), old (>20 years) lake trout. The low nutrient concentrations and short growing season result in low annual productivity, which, coupled with the cold water environment, result in high competition for resources and very slow fish growth rates.

Overall, the Meadowbank project lakes support healthy communities of plankton, benthos and fish that are typical of oligotrophic Arctic lakes. Biological productivity of the lakes, reflected in growth and biomass of plankton and fish, is limited by nutrient availability, cold water and a short growing season.

1.3 Objectives

The overall objective of the AEMP is ensure that the aquatic environment and its resources are protected by monitoring all aspects of mine operations with the potential to adversely affect the aquatic environment, including the all-weather private access road (AWPAR). Application of this management program will ensure that project-related adverse impacts are detected and mitigated, so that construction and operational activities do not cause any undue harm to local and regional water quality, sediment quality or biota (invertebrates and fish).

Many of the mitigation measures described herein (and summarized in the Aquatic Ecosystem/Fish Habitat EIA) are imbedded in the project design and considered best practice in mine design. One of the specific objectives of this document is to describe the monitoring program for aquatic systems, including locations of monitoring stations and monitored parameters that will provide an early-warning system. Thus, any potential adverse effects (unexpected or predicted) can be detected at an early stage and appropriate mitigation measures implemented.

Finally, the AEMP will also serve to focus and integrate monitoring efforts to ensure compliance with regulatory instruments and agreements, both federally and territorially, such as the DFO No Net Loss Plan, Nunavut Water Board water licence conditions, and Environment Canada's MMER policy.

1.4 Approach

This AEMP takes an integrated, ecosystem-based approach that links mitigation and monitoring of physical/chemical effects on key ecological receptors in the receiving environment. At its core, the AEMP addresses the same key questions that were the focus of the Meadowbank EIA (water quality, fish habitat and fish populations) and has two primary components: monitoring and if necessary, mitigation. The AEMP incorporates mitigation into mine design from the outset, but it can also be improved/changed or adapted based on learning and the results of monitoring. The Meadowbank monitoring strategy has two primary components; Core Monitoring and Targeted Monitoring.

Core Monitoring Program – The core program consists of a general strategy to monitor water and sediment quality, phytoplankton, periphyton, benthic invertebrates and fish. The core program is tailored based on our understanding of mine construction, operation and infrastructure (e.g., dikes, effluents, stream crossings, roads, etc.). This general design will be implemented prior to and during construction and operation of the mine and will be conducted each year, including post-closure. Note that requirements under the Metal Mining Effluent Regulations (MMER) are considered part of the foundation to core studies pertaining specifically to mine effluent sources. Given the complexity of MMER monitoring, a separate document (MMER, 2005) has been prepared that is complementary to the AEMP and is specific to effluent monitoring and receiving environment effects.

Targeted Monitoring Studies – Targeted studies are specific studies that typically have narrower temporal or spatial bounds or are designed to address specific questions related to particular components of mine development during construction or operation. These are integrated with, and complementary to, the core monitoring design. Target studies addressed in the 2006 program included: seasonal benthic sampling, sediment coring, surveys of fish anadromy, fish parasites and fish spawning, an evaluation of Portage Lakes connecting channels and North Portage ponds.

The core monitoring program will be conducted in three areas to ensure that mine-related impacts (both predicted and unexpected) are detected early and supplemental mitigation can be quickly implemented. The basic design includes near-field, far-field and reference stations (**Figures 1-1 and 1-2**), whose locations were determined in consideration of the proposed mine development and of baseline work (BAER, 2005). The station types were as follows:

- *Near-field area* – Stations are situated in close proximity to the development, in particular near dikes and effluent sources (**Figure 1-1**). These stations provide the first line of defense or early-warning locations for introductions of stressors into the receiving environment. These stations include: Third Portage North (TPN), Third Portage East (TPE), Second Portage (SP) and Wally Lake (WAL). Note that the locations of near-field station locations for water chemistry may not exactly correspond with near-field station locations for benthos or sediment chemistry because of the influence of water depth on these parameters.

- *Far-field area* – The intent of this station is to monitor well downstream of project infrastructure to provide insights into the spatial extent of any effects observed at the near-field stations. The Tehek Lake (TE) station is a key location that will ultimately determine whether or not contaminants are detectable downstream of the entire mine development. Lake waters from Second and Third Portage Lakes and the Vault Lakes (Vault, Wally, Drilltrail) meet at the southern end of Second Portage Lake and discharge via a single channel into Tehek Lake. Monitoring the water and sediment quality and benthic invertebrates in the basin adjoining the discharge point from Second Portage Lake will determine definitively if mine-related contaminants or other adverse effects can be detected downstream of the project lakes.

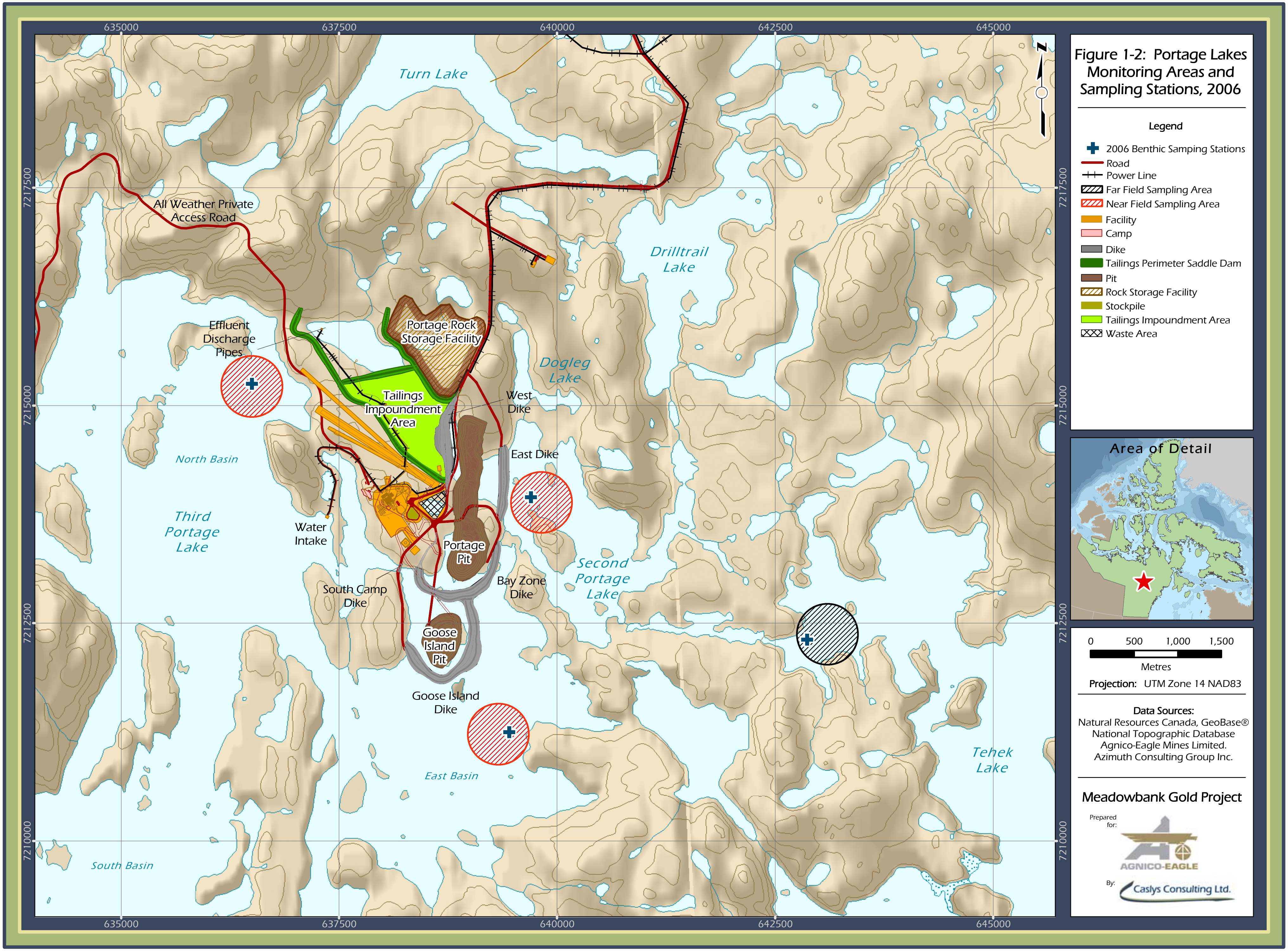


Figure 1-2: Portage Lakes Monitoring Areas and Sampling Stations, 2006

- *Reference Lakes area* – By definition, reference stations are sufficiently removed from the mine that they are presumed to be unaffected by any infrastructure (roads, dikes, runways) and point sources (aerial and aquatic) associated with mine development. Internal (Third Portage South) and external (Inuggugayualik Lake) reference areas were chosen for the purposes of making comparisons with the project lakes (BAER, 2005). Monitoring of reference areas is important because it is necessary to distinguish between possible mine-related changes in water quality or ecological parameters and natural changes, unrelated to the mine. The internal reference area (at the extreme headwaters of Third Portage Lake) is far removed from the mine, upstream of the development area and is removed from the prevailing wind direction. The external reference area (Inuggugayualik Lake) is situated about 16 km west of the mine site (**Figure 1-1**). Inuggugayualik Lake is a headwater lake of the Meadowbank River system that flows north to the Arctic Ocean. Despite the different drainage basin, Inuggugayualik Lake satisfies the requirements of an external reference lake from a physical/chemical perspective because it is at the same latitude, has similar geology, relief and climate, does not have any significant inflows and has similar limnological parameters, water chemistry and aquatic biological community structure to the project lakes (BAER, 2005).

It is critical that core information collected from across these stations is as comparable as possible. For example, differences in water depth and sediment grain size composition can tremendously affect benthic invertebrate community composition, relative abundance and species richness. Therefore, as much as possible, benthos sampling stations will be situated in similar water depths (8 to 10 m) and have similar grain size distribution to minimize natural differences among stations that confound data interpretation. It is very important that natural differences be minimized in order that changes over time that may be due to mine-related influences can be distinguished from natural differences.

It is important to note that routine monitoring of water chemistry as part of the core program will be harmonized with requirements to monitor effluent and receiving environment chemistry under the MMER program for mines (see MMER, 2005). The MMER program focuses on chemistry, toxicity and ecological effects related to mine effluent and does not consider other mine-related impacts that are covered by the AEMP core monitoring program.

The scope of the AEMP encompasses all construction, operation, and post-closure activities that have the potential to adversely affect aquatic receiving environments, including water quality, sediment chemistry, lower trophic level biota (periphyton, phytoplankton, benthic invertebrates) and fish.

The AEMP is dynamic and adaptive and will change over time with increasing information about how the mine will be designed, constructed and operated. The management program described here is based on the best information available at the time that this document was written. Specific details, such as proposed mitigation measures, the location of monitoring stations, parameters to be measured and their frequency, were developed based on our understanding of the baseline environmental conditions, described in the Baseline Aquatic Ecosystem Report (BAER, 2005), on many years of field investigation and on our professional judgment and experience. As the AEMP is applied, its components may change in response to new information, to optimize sampling effort and maximize our ability to detect and respond to potential adverse effects.

2.0 METHODS

2.1 Core Monitoring Program

2.1.1 Study Design and Station Selection

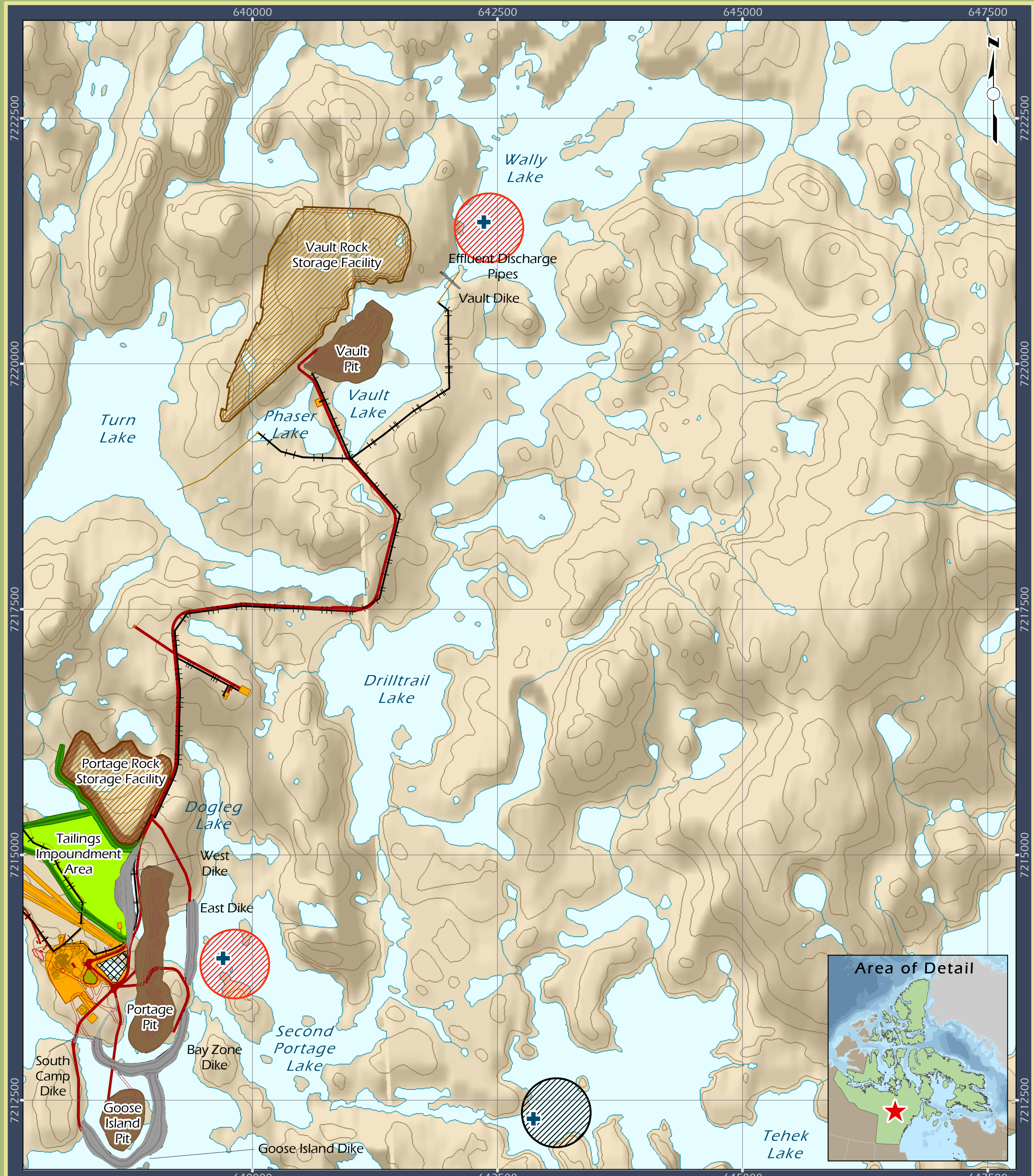
The Meadowbank study area (**Figure 1-1**) includes Third Portage Lake (TP), Second Portage Lake (SP), Tehek Lake (TE), Wally Lake (WAL) and Inuggugayualik Lake (INUG). These 2006 sampling stations were selected to match some of the locations sampled historically and provide temporal continuity. The 2006 stations were also located strategically, to establish a monitoring strategy such that possible deleterious, mine-related effects can be detected early in the mine development/operation stages.

2.1.1.1 Near-field and Far-field Stations

The specific location of sampling stations within near-field and far-field areas was based on selecting similar depth, slope and sediment grain size characteristics for each station over the entire study area. These physical characteristics have a tremendous influence on the population structure and abundance of organisms, particularly for benthic invertebrates. Once a station met these requirements, a Garmin Model 12 hand held Global Positioning System (GPS) was used to acquire a Universal Transverse Locator (UTM) position in NAD 83 coordinates. Station locations were then plotted on georeferenced base maps. Close-up views of near-field stations surrounding the Portage / Goose Pit area and the Vault / Wally area are depicted in **Figures 1-2 and 2-1**, respectively.

Near-field sampling stations were selected within the major basins of Second and Third Portage Lakes (SP, TPN, TPE) and Wally Lake (WAL) to detect possible changes in water and sediment chemistry and the benthic invertebrate community. These stations are located in the vicinity of the proposed dike and/or dam structures accessing or capturing open pit mine areas within the study lakes.

A far-field sampling station was also established downstream of both deposits, within the ultimate receiving environment, Tehek Lake (TE). This ensures that the spatial bounds of all mine-related effects are assessed and quantified to provide assurance that monitoring and mitigation measures implemented during mine construction and operation are effective.



Legend

- 2006 Benthic Sampling Stations
- Road
- Power Line
- Far Field Sampling Area
- Near Field Sampling Area
- Dike
- Tailings Perimeter Saddle Dam
- Pit
- Rock Storage Facility
- Stockpile
- Tailings Impoundment Area
- Waste Area

0 500 1,000 1,500

Metres

Projection: UTM Zone 14 NAD83

Data Sources:
Natural Resources Canada, GeoBase®
National Topographic Database
Agnico-Eagle Mines Limited.
Azimuth Consulting Group Inc.

Figure 2-1: Vault Lakes Monitoring Areas and Sampling Stations, 2006

Meadowbank Gold Project

Prepared for: AGNICO-EAGLE

By: Caslys Consulting Ltd.

2.1.1.2 *Reference Stations*

Ecosystems are dynamic and change naturally over time for a variety of reasons. The establishment of internal and external control or reference lakes, removed from potential effects of the mine development and its infrastructure (e.g., roads, effluent streams), allows the AEMP to account for natural temporal changes. The reference stations for the AEMP are as follows:

- Internal – Given the large size of Third Portage Lake, the southern basin (TPS) of the lake can serve as an internal reference area. The southern basin is at the extreme headwaters of the Third Portage drainage basin and is up-current from the mine site.

- External – Inuggugayualik Lake (INUG), about 16 km west of the mine site (**Figure1-1**), is a headwater lake of the Meadowbank River system that drains north to the Arctic Ocean as part of the Back River system. Despite its location in another drainage, this lake is similar to the other project lakes from a biological perspective (e.g., similar fish community), which satisfies the requirements of an external reference lake.

2.1.2 Timing

Field sampling in 2006 was conducted during four time periods; just after ice-off in the spring (July 11 to 17), early summer (August 5 to 7) late summer (August 17 to 21), and the fall (September 8 to 11). Because of the relatively short open-water season at this latitude, the July field sampling effort was conducted as soon after ice-off as possible to capture the spring data. Subsequent sampling events occurred at approximate 2 to 3 week intervals. A chronology of the timing of each major parameter collected is summarized in **Table 2-1**.

2.1.3 General Limnology

Vertical temperature (°C), oxygen (mg/L) and conductivity (µS/cm) depth profiles were acquired using a YSI Model 85 temperature – oxygen meter with a 10 m cable. Profiles were acquired from each station and sampling event (spring, early summer, late summer, fall) to track changes in oxygen and temperature over depth (**Table 2-1**).

Table 2-1: Chronology of Limnology, Water, Sediment, Phytoplankton and Benthos Collections from Meadowbank Study Lakes, 2006.

Project Lake	UTM (NAD 83)		Station	Week	July				August				September		
	Easting	Northing			1	2	3	4	1	2	3	4	1	2	3
Third Portage	14W 639450	7211250	TPE		Ice		Limno Water Sed Phyto Benthos		Limno Phyto Benthos		Limno Water Phyto Benthos			Limno Phyto Benthos	
Third Portage	14 W636500	7215250	TPN		Ice		Limno Water Sed Phyto Benthos		Limno Phyto Benthos		Limno Water Phyto Benthos			Limno Phyto Benthos	
Third Portage	14 W633825	7208075	TPS		Ice		Limno Water Sed Phyto Benthos		Limno Phyto Benthos		Limno Water Phyto Benthos			Limno Phyto Benthos	
Second Portage	14 W639700	7213950	SP		Ice		Limno Water Sed Phyto Benthos		Limno Phyto Benthos		Limno Water Phyto Benthos			Limno Phyto Benthos	

Project Lake	UTM (NAD 83)		Station	Week	July				August				September		
	Easting	Northing			1	2	3	4	1	2	3	4	1	2	3
Wally	15 W360415	7221315	WAL		Ice		Limno Water Sed Phyto Benthos		Limno Phyto Benthos		Limno Water Phyto Benthos			Limno Phyto Benthos	
Tehek	15 W360050	7212175	TEHEK		Ice		Limno Water Sed Phyto Benthos		Limno Phyto Benthos		Limno Water Phyto Benthos			Limno Phyto Benthos	
Inuggugayualik	14 W622700	7216900	INUG		Ice		Limno Water Sed Phyto Benthos		Limno Phyto Benthos		Limno Water Phyto Benthos			Limno Phyto Benthos	

2.1.4 Water Chemistry

Water samples were collected from each of the sampling stations in each lake in the spring and late summer of 2006 from a 4.5 m aluminum boat with a 25 hp motor. Water samples were collected by pumping lake water from the appropriate depth according to the limnological profile described above, using weighted C-flex (food-grade silicone) tubing and a diaphragm pump connected to a 12 volt battery. The procedures for collecting water samples were as follows:

The vessel was navigated to the sampling station from a down current direction to prevent possible contamination of the water column; a GPS (NAD 83) position was recorded as well as total depth (as determined with a Hawkeye handheld digital depth sounder).

Vertical temperature and oxygen profiles were taken to determine the depth at which water samples would be collected. Water samples were pumped from 3 m below the surface, or pumped from the surface to a depth of 8 m and back to the surface into a high-density polyethylene (HDPE) bucket to form a composite sample.

The silicon tubing was weighted (plastic-coated lead weight), hung over the side of the boat and the pump was turned on to prime the tubing. Once primed, the pump was allowed to run for at least 2 minutes to thoroughly flush the tubing and to ensure that there was no cross-contamination between stations.

Water samples were collected for analysis of conventional parameters (conductivity, total dissolved and suspended solids, hardness, pH), dissolved anions (alkalinity, bromide, chloride, fluoride, silicate, sulphate), nutrients (nitrate, nitrite, ammonia, phosphate), organics (total and dissolved organic carbon), radium-226 and total metals concentrations.

1-L of water was filtered through a hand vacuum pump and Whatman ashless filter paper, wrapped in foil and frozen. The filter was then analyzed for chlorophyll α.

ALS Environmental (ALS) in Vancouver, BC provided all of the sampling containers and appropriate preservatives for the water and filter samples. All samples were stored in the dark and kept on ice immediately following collection and during transport to the laboratory. A completed chain-of-custody form accompanied the samples during transport.

All of the measured water chemistry concentrations were tabulated and compared against each other, and, when available, the federal Canadian Council of Ministers of the Environment (CCME, 2006a) water quality guidelines for the protection of aquatic life. These guidelines are intended to provide a conservative level of protection to freshwater aquatic life from anthropogenic contaminants or other physical changes (suspended solids, temperature).

2.1.5 Sediment Chemistry

Collection of sediment was accomplished in the spring (July 11 to 17) of 2006 using available, proven sample collection and handling techniques (Environment Canada, 1984). Sediment was collected from all stations using a standard Petite Ponar grab (sampling area of 0.023 m^2). At least three grabs were composited from each station to reduce the influence of within-station variability. Sediments for chemistry analysis were only collected after benthic invertebrates to avoid possible disturbance of biota. Only one set of chemistry was collected from each station for this year because metals concentrations are not seasonally variable.

Only those grab samples that met the following acceptability criteria were retained for analysis: did not contain large foreign objects; adequate penetration depth (i.e., >10 cm); not overfilled (sediment surface not touching the top of sampler); did not leak (there was overlying water present and no visible leaks); and was undisturbed (sediment surface was relatively flat). Grabs that did not satisfy these conditions were discarded.

Overlying water was removed from acceptable grabs and a description of the sediment was recorded including: color, odor, grain size, and the presence of other materials (e.g., organic debris, vegetation, apparent biota). The upper 3 to 4 cm of sediment was removed with a pre-cleaned stainless steel spoon and homogenized in a stainless steel bowl until the sediments had a uniform consistency. Pre-cleaned stainless steel utensils were used to completely fill (i.e., no head space) the 250 ml glass sample jars.

Sampling jars were placed in a cooler with ice packs and transported to ALS in Vancouver, BC for analysis. A completed chain-of-custody form accompanied the samples during transport. Sediment samples were analyzed for pH, total organic carbon, particle size (% gravel, sand, silt and clay) and total metals concentration.

Similar to water parameters, sediment quality guideline (SQG) concentrations for metals have also been developed by the CCME (2006b). These SQG concentrations are divided into two categories: Interim Sediment Quality Guidelines (ISQG) and Probable Effects Level (PEL) concentrations. ISQGs are conservative values that have been derived from available toxicological information and a weight-of-evidence approach to determine the minimum concentration at which adverse effects have been observed in the literature. The PEL is less conservative and represents a concentration at which adverse effects are observed, based on laboratory studies. It is important to realize that background metals concentrations in sediments routinely exceed PEL concentrations, especially in mineralized areas and this does not mean that adverse effects should be expected. All of the measured sediment chemistry concentrations from the study lakes were tabulated and compared against each other and, when available, the SQGs.

2.1.6 Phytoplankton

Phytoplankton are microscopic, unicellular plant species that are suspended in the water column and, as primary producers, comprise the base of the food web. There are seven major groups of phytoplankton present in lakes: cyanophytes (blue green algae), chlorophytes (green algae), euglenophytes, chrysophytes (golden-brown algae), diatoms, cryptophytes and dinoflagellates. Annual production of phytoplankton can vary widely depending upon water temperature, nutrient concentration, time of year, water clarity and amount of sunlight and predation by zooplankton. Estimates of phytoplankton biomass (mg/m^3) are useful as gross indicators of lake productivity.

Unfiltered water (75 ml) was collected from each sampling station during each sampling event (spring, early summer, late summer, fall) in 2006 for phytoplankton analysis. Dependent on the general limnology of the lake, water was collected from a depth of 3 m, or a composite water sample was collected from the top 8 m. Samples were preserved in the field with a small amount of Lugol's solution and later transported to Winnipeg, MB for taxonomic identification and analysis by W. Finlay Inc. For the analysis, 10 ml aliquots of preserved sample were gravity settled for 24 hours. Counts were performed on an inverted microscope at magnifications of 125X, 400X, and 1200X with phase contrast illumination. Cell counts were performed using the Ütermohl technique as modified by Nauwerck (1963). Cell counts were converted to wet weight biomass (mg/m^3) by estimating cell volume, similar to the methods used for periphyton (Vollenweider, 1968; Rott, 1981). A specific gravity of 1 was assumed for cellular mass. All biomass (mg/m^3) and density (cells/L) estimates are summed by major taxa, per station and sampling event.

Simpson's diversity index was calculated for each station to quantify phytoplankton species diversity among stations and seasons. Simpson's diversity (D) is calculated as follows:

$$D = 1 - \Sigma S (p_i)^2$$

Where: S is the total number of taxa/station; pi is the relative proportion of the *ith* taxa at each station (based on relative abundance). The number of species occurring per sample was calculated to measure the species richness among stations and seasons.

2.1.7 Benthic Invertebrates

Benthic invertebrates are small animals that live in or on bottom sediments. The most commonly encountered organisms include the aquatic larval stages (i.e., resembling worms) of many insects, especially chironomids. Other common organisms are oligochaete worms, small bivalve clams and amphipods. Benthic invertebrates form a very important food source for all juvenile fish, especially lake trout, arctic char and lake whitefish.

It is very important to sample benthic invertebrates from similar water depth and grain size because of the strong influence of these factors on population structure and abundance of organisms. For this reason, benthos were collected from fine grain sediments with shallow slopes at water depths ranging from 7 to 10 m. A hand held depth meter was used to determine water depth and slope and a Petite Ponar grab was used to determine grain size and grab penetration to gauge bottom hardness before quantitative samples were collected.

Four sets of benthic invertebrate collections were made, harmonized with limnology and phytoplankton during spring (July 11-17), early summer (August 5-7), late summer (August 17-21) and fall (September 8-11) (**Table 2-1**). Benthic invertebrates were acquired from bottom sediments at each station using a Petite Ponar grab (0.023 m^2). Two independent grabs per station were composited to form a single sample to reduce sampling variation within stations and to increase surface area sampled (i.e., to 0.046 m^2). Grab samples were sieved in the field through either a 250-μm or a 500-μm mesh sieve. All material (sand, organics, organisms) retained in the sieve were rinsed into either a 500-ml or 1-L HDPE jar and fixed with a 10% buffered formalin solution.

Historic sampling of the project lakes has been conducted using a 250-μm sieve. However, the Environmental Effects Monitoring (EEM) program under MMER stipulates that a 500-μm mesh size be used to process benthos. Therefore, we considered 2006 a ‘transition’ year, where the same station was sampled with both a 250-μm and a 500-μm mesh to gather information on both size classes, before a full transition to 500-μm, as per MMER, takes place in 2007 and beyond.

Two composite grabs from each of two independent sampling locations (e.g., TPE-1 and TPE-2) from each sampling station (i.e., TPE) was made using a 500-μm sieve. A third location (i.e., TPE-3) was sampled using a 250-μm sieve. All three samples were shipped to ZEAS (Zaranko Environmental Assessment Services) Inc., Nobleton, Ontario for processing. In the laboratory, the third sample (the 250-μm sample) was split into 250-μm and 500-μm fractions, so that we can compare the benthic communities from both fractions within the same sample. These data allow for the comparison among mesh sizes; they will help to interpret historical data relative to future MMER-related data.

At the laboratory, all samples were rinsed in water to remove the formalin and re-screened through a series of three sieves (1 mm, 500-μm and 180-μm) to make sorting easier. Organisms were removed, enumerated, and identified. If there was a large number of one or two particular species, and/or there was a lot of debris in the sample, subsampling was performed. For the coarse fraction, the entire sample was always processed. All enumerated samples were stored in 70% isopropyl alcohol and archived.

Density of organisms/grab sample was determined from the total number of organisms enumerated (see **Section 3.1.5**). Note that there are a number of groups that are quite small in size and are not reliably retained by even the 250-μm sieve. These include nematodes and ostracods (very small crustaceans) and they were not reported, nor were they included in density calculations. Similarly, small numbers of planktonic copepods or adult flying insects that were present in some samples were not included in density calculations because they were not actually part of the bottom sample.

The following endpoints were used for assessing benthic community structure, based on sensitivity, objectivity, ease of interpretation and cost-effectiveness:

Taxa richness (i.e., corresponds to the number of species or taxa per sample and provides a measure of diversity).

Total abundance (i.e., number of organisms per sample).

Abundance and richness of all major taxa (e.g., insects, molluscs, worms).

Statistical analyses were used to explore both the spatial and temporal influence (i.e., lake effect and season effect) on total abundance and richness, and abundance and richness of all major taxa groups. Differences among lake stations and among seasons are investigated independently using ANOVA. Where significant differences exist, post-hoc testing Tukey's HSD multiple comparisons or Bonferroni adjustment was used to determine which lake stations or seasons were different from one another.

Statistical analyses were also used to look at sieve mesh size influence on total abundance and richness, and abundance and richness of all major taxa groups. Differences within each lake station were investigated using paired t-tests. Data were plotted and simply examined visually, where significant differences exist.

2.1.8 Quality Assurance / Quality Control

The objective of quality assurance and quality control (QA/QC) is to assure that the chemical and biological data collected are representative of the material or populations being sampled, are of known quality, are properly documented, and are scientifically defensible. Data quality was assured throughout the collection and analysis of samples using specified standardized procedures, by the employment of laboratories that have been certified for all applicable methods, and by staffing the program with experienced samplers. The use of standard, referenced analytical methods provided data that are comparable to environmental data collected previously at this and other sites. The use of standardized and recorded sampling methods ensured that samples were representative of the sampled matrices, and allowed better data interpretation.

Laboratory QA/QC – Data Quality Objectives (DQOs) are numerically definable measures of analytical accuracy, analytical precision, and completeness. Analytical precision was measured by the analysis of laboratory duplicates. Although field replicate samples were collected, results of field replicates were not compared against precision limits; rather they were used to assess sampling variability and sample homogeneity and are discussed with the field data. Completeness for this study is defined as the percentage of valid analytical results.

The general DQOs for this project were as follows:

Analytical Precision = 25% Relative Percent Difference (RPD) for concentrations that exceed 10x the method detection limit.

Completeness = 95% valid data obtained.

Analytical precision is a measurement of the variability associated with duplicate (i.e., two) or replicate (i.e., more than two) analyses of the same sample in the laboratory and is determined by analysis of matrix spike duplicates or laboratory duplicates. These results were assessed using the RPD between duplicate measurements. The equation used to calculate RPD is:

$$RPD = \frac{(A - B)}{((A + B)/2)} \times 100$$

Where: A = analytical result; B = duplicate result.

RPD values may be either positive or negative, and ideally should provide a mix of the two, clustered around zero. Consistently positive or negative values may indicate a bias. Large variations in RPD values are often observed between duplicate samples when the concentrations of analytes are very low and approaching the detection limit. The reason for this is apparent if one considers duplicate samples with concentrations of an analyte of 0.0005 and 0.0007 mg/L. In absolute terms, the concentration difference between the two is only 0.0002 mg/L, a very tiny amount; however, the RPD value is 33.3%. This may sometimes lead to a belief that the level of precision is less than it actually is.

Field QA/QC: Water Sampling – Field QA/QC standards during water sampling were maintained for every sample and included the following standard procedures:

Thoroughly flushed C-flex tubing and pump to prevent cross-contamination between stations.

Thoroughly rinsed all sample containers with site water prior to sample collection.

Collected a field duplicate at a subset of stations to assess sampling variability and sample homogeneity; a RPD of 50% for concentrations that exceed 10x the MDL is considered acceptable.

Travel blanks, where distilled water is used to fill sample vessels and then preserved and transported to the laboratory with the field samples, were utilized to assess for any cross contamination issues in the field.

Field QA/QC: Sediment Sampling – Field QA/QC during sediment sampling was careful to avoid cross-contamination between sampling areas by rinsing and decontaminating the Petite Ponar grab, stainless steel compositing bowls and spoons between stations. This entailed rinsing the grab with site water to remove sediment and organic material, scrubbing with phosphate-free critical cleaning detergent, and again rinsing with site water.

Field QA/QC: Biota Sampling – Standard procedures were used to collect biota samples. All sampling gear was thoroughly rinsed between sampling stations to ensure that there was no inadvertent introduction of biota from one station to another. Field replicate samples were collected for phytoplankton and benthos to determine natural heterogeneity in sampling. A minimum of two grabs were composited for sediment and benthos samples to increase surface area sampled and reduce heterogeneity.

Laboratory replicate counts were performed on 5 to 10% of all samples for benthos. Replicate samples were chosen at random and processed at different times from the original analysis to reduce bias. Data quality objectives (DQO) for replicate counts should be within ± 20% of the first count (i.e., the RPD). Field replicate RPD values less than 50% are usually indicative that sampling bias is not excessive and that the resident biota population has been sampled representatively.

2.2 Targeted Monitoring Studies

Several targeted studies were undertaken during the 2006 field season. These stemmed from requests from the Department of Fisheries and Oceans Iqaluit as a follow-up to their review of the BAER (2005) and EIA. DFO and Cumberland Resources came to agreement on the scope of outstanding issues regarding baseline aquatic environment studies at Meadowbank. The memo provided to DFO appears in **Appendix A**. It was agreed that a two-year window of opportunity for further collection of baseline data would focus on the following parameters:

- Implementation of the Aquatic Effects Management Program (AEMP) with a focus on water quality and benthic invertebrate community. This is a core study component.
- Water and sediment chemistry collection in the vicinity of planned dike structures as per the AEMP design. This is also a core study component.
- Sampling for benthic invertebrates focused on late summer/early fall according to the sampling design, timing and frequency laid out in the AEMP and as per guidance in the Metal Mining Effluent Regulations.
- Additionally, a subset of benthic stations was sampled more frequently (e.g., bi-weekly) throughout the course of the open water season to acquire seasonality data during 2006 to strengthen the baseline data.
- Sediment cores were collected from Second and Third Portage Lakes to document vertical structure/stratification of lake sediment prior to dike construction. Cores were examined for evidence of varves or other anomalous features that would suggest dramatic or sudden changes in the history of sediment deposition in the lakes.

- Confirmation of gut parasite taxonomy for lake trout.
- Supplemental sampling of strontium concentration of arctic char fins from Inuggugayualik Lake to determine if there are any anadromous fish in this lake system.
- Evaluation of candidate connecting channel locations and fish population and habitat information of small, isolated ponds (north portage ponds) as part of investigations in support of the No Net Loss Plan (NNLP), 2006.
- Spot gillnetting and underwater video transects in areas of high value habitat in Second and Third Portage Lakes to identify and chart spawning shoals for arctic char, lake trout and round whitefish prior to dewatering.

All of these studies were implemented in 2006, with some overlap between what we consider to be core studies (i.e., benthic sampling) and targeted studies, where multiple collections of benthos were made. The MMER clearly states that benthos are to be collected once annually, preferably during late summer or fall. This protocol will be followed throughout the rest of mine life. Further detail on each targeted study component, that is not covered within the above methods are described below.

Note that implementation of the AEMP and specifically, strategic location of sampling stations and the focus on water quality, sediment quality and benthos are core components and will not be described within the context of a targeted study. However, results of seasonal sampling of benthos which is not a routine part of the AEMP, for example, will be described as a targeted study.

Seasonal Benthic Sampling – Four collections of benthic invertebrates from multiple stations and multiple mesh sizes were made to more fully describe seasonal dynamics in community structure, abundance, and diversity of organisms.

Sediment Coring – A collection of sediment cores was made from two near-field sampling areas from two different locations (Third Portage – East Basin; Second Portage Lake) to document vertical structure/stratification of lake sediment prior to dike construction. DFO wanted Cumberland to demonstrate that there had been no catastrophic or unusual perturbations of the lake sediment that might historically have influenced sediment chemistry. This was done by visual inspection of the cores with a photographic record taken of each core. No chemical analysis of the sediment within the cores was undertaken.

Fish Anadromy Survey – Sampling of pelvic fins for strontium concentrations in arctic char and lake trout from Inuggugayualik Lake was proposed to verify that the arctic char in this reference lake are in fact landlocked and not anadromous char. A previous survey did not reveal strontium concentrations in the range of anadromy; however the size of char captured was quite large, up to 6 kg. This largest specimen (6 kg) was not sampled for strontium.

Parasite Survey – During the course of gillnetting to capture fish for strontium, a subsample of fish was destructively sampled to correctly identify the gut parasites of lake trout, arctic char and round whitefish. Mortality will be minimized as much as possible and will be opportunistic depending on gillnet mortality. Sampling will occur in Second or Third Portage Lakes and Inuggugayualik Lake.

No Net Loss of Habitat – Candidate connecting channel locations and small ponds were investigated in 2006 in support of the NNLP (2006) for Meadowbank. Some of the small, isolated ponds (north portage ponds) will be permanently isolated as a result of creation of the Second Portage tailings disposal facility. These ponds were evaluated for connectivity to larger lakes and presence/absence of fish populations. In addition, connecting channels between lakes were evaluated in support of the NNLP (2006) to determine if additional lake habitat could be 'created' by establishing connections between lakes where none existed before and where fish passage is currently not possible.

Fish Spawning Survey – Spot gillnetting in Second and Third Portage Lakes was conducted in August/September to identify possible spawning shoals used by lake trout, round whitefish and arctic char. Spawning areas in both lakes were surveyed at this time using drop video camera transects to further delineate spawning habitats. Gillnet and video transect locations were recorded using a GPS to chart suspected/confirmed spawning shoals. After dewatering, the shoals will be photographed and used as "design surrogates" for fish habitat compensation as part of NNLP at closure.

3.0 RESULTS AND DISCUSSION

3.1 Core Monitoring Program

3.1.1 QA/QC

QA/QC procedures consisted of a combination of careful field collection and sample handling, the collection of field duplicate samples and travel blanks, and the analysis of laboratory duplicates and standard reference materials. Results of the QA/QC analyses are presented in **Tables 3-1 to 3-4** for water and sediment chemistry, phytoplankton and benthos respectively.

Results of laboratory duplicates of water samples (conventional parameters, dissolved anions, nutrients, organic parameters, total metals) showed a high level of consistency with original samples. No relative percent difference (RPD) values exceeded the 25% threshold. The measured concentrations in the travel blanks did not exceed the laboratory method detection limits (MDL) for any measured parameters except in one instance for total phosphate; a concentration of 0.0030 mg/L was measured in the August 2006 travel blank, slightly above the MDL of 0.0020 mg/L.

The water sample field duplicate had two exceedences of the RPD objective of 50%. Total organic carbon had measured concentrations of 2.08 and 3.85 mg/L, resulting in a RPD of -59.7%. The MDL for total organic carbon is 0.50 mg/L; consequently, the measured concentrations were within 10x the MDL. Therefore, this parameter meets the QA/QC data quality objective. Chlorophyll α had measured concentrations of 0.279 and 0.142 µg /L, resulting in a RPD of 65.1%. Chlorophyll α is a highly variable biological parameter; consequently, this magnitude of difference is to be expected. Both of the measured concentrations of chlorophyll α were well within the observed range of concentrations in the study lakes (0.133 - 0.413 µg/L).

Similar precision was accomplished for the laboratory sediment sample duplicates. Only one RPD value exceeded the 25% objective (mercury RPD of 26.5%). However, the concentrations of mercury in the sediment samples (0.0218 and 0.0167 mg/kg) were within 10x the MDL (0.005). Consequently, this sample, along with the other sediment concentrations, met the QA/QC data quality objective.

Table 3-1: QA/QC Data for Water Parameters, Meadowbank Study Lakes, 2006.

	Travel Blank July-06	Tehek Lake			Travel Blank August-06	Tehek Lake			Third Portage Lake - North Basin		
		TE 12-Jul-06	Lab Dup QC# 513044	RPD (%)		TE 17-Aug-06	Lab Dup QC# 519041	RPD (%)	TPN 21-Aug-06	Field Dup 21-Aug-06	RPD (%)
Conventional Parameters											
Physical Tests											
Conductivity (uS/cm)	<2.0	9.20	9.09	1.2	<2.0	18.5	17.9	3.3	13.3	13.8	-3.7
Total Dissolved Solids (mg/L)	<10	-	-	-	<10	10	<10	0	<10	<10	0
Hardness (mg/L)	<0.54	<3.0	<3.0	0	<0.66	-	-	-	5.31	5.20	2.1
pH	5.44				5.64	6.95	6.95	0	6.76	6.85	-1.3
Total Suspended Solids (mg/L)	<3.0				<3.0	<3.0	<3.0	0	<3.0	<3.0	0
Dissolved Anions (mg/L)											
Total Alkalinity	<2.0	6.0	6.6	-9.5	<2.0	6.3	5.6	11.8	4.1	4.0	2.5
Alkalinity - Bicarbonate	<2.0	-	-	-	<2.0	-	-	-	4.1	4.0	2.5
Alkalinity - Carbonate	<2.0	-	-	-	<2.0	-	-	-	<2.0	<2.0	0
Alkalinity - Hydroxide	<2.0	-	-	-	<2.0	-	-	-	<2.0	<2.0	0
Bromide	<0.050	-	-	-	<0.050	<0.050	<0.050	0	<0.050	<0.050	0
Chloride	<0.50	-	-	-	<0.50	0.60	0.60	0	0.69	0.68	1.5
Fluoride	<0.020	-	-	-	<0.020	0.060	0.060	0	0.075	0.071	5.5
Silicate	<1.0	-	-	-	<1.0	-	-	-	<1.0	<1.0	0
Sulphate	<0.50	-	-	-	<0.50	2.08	2.07	0.5	1.40	1.39	0.7
Nutrients (mg/L)											
Ammonia Nitrogen	<0.0050	0.0067	0.0073	-8.6	<0.020	<0.020	<0.020	0	<0.020	<0.020	0
Total Kjeldahl Nitrogen	<0.050	0.097	0.102	-5.0	<0.050	0.268	0.276	-2.9	0.079	0.071	10.7
Nitrate Nitrogen	<0.0050	<0.0050	<0.0050	0	<0.0050	<0.0050	<0.0050	0	<0.005	0.0052	-3.9
Nitrite Nitrogen	<0.0010	-	-	-	<0.0010	<0.0010	<0.0010	0	<0.0010	<0.0010	0
Dissolved ortho-Phosphate	<0.0010	-	-	-	<0.0010	<0.0010	<0.0010	0	<0.0010	<0.0010	0

	Travel Blank July-06	Tehek Lake			Travel Blank August-06	Tehek Lake			Third Portage Lake - North Basin		
		TE 12-Jul-06	Lab Dup QC# 513044	RPD (%)		TE 17-Aug-06	Lab Dup QC# 519041	RPD (%)	TPN 21-Aug-06	Field Dup 21-Aug-06	RPD (%)
Total Phosphate	<0.0020	-	-	-	0.0030	0.0047	0.0052	-10.1	0.0051	0.0044	14.7
Organic Parameters											
Chlorophyll a (ug/L)	-	-	-	-	-	-	-	-	0.279	0.142	65.1
Dissolved Organic Carbon (mg/L)	-	2.09	2.05	1.9	<0.50	2.11	2.33	-9.9	1.51	1.69	-11.3
Total Organic Carbon (mg/L)	<0.50	2.15	2.24	-4.1	<0.50	2.83	2.89	-2.1	2.08	3.85	-59.7
Total Metals (mg/L)											
Aluminum	<0.0050	0.0144	0.0147	-2.1	<0.0050	-	-	-	0.0070	0.0072	-2.8
Antimony	<0.00050	<0.00050	<0.00050	0	<0.00050	-	-	-	<0.00050	<0.00050	0
Arsenic	<0.00050	<0.00050	<0.00050	0	<0.00050	-	-	-	<0.00050	<0.00050	0
Barium	<0.020	<0.020	<0.020	0	<0.020	-	-	-	<0.020	<0.020	0
Beryllium	<0.0010	<0.0010	<0.0010	0	<0.0010	-	-	-	<0.0010	<0.0010	0
Boron	<0.10	<0.10	<0.10	0	<0.10	-	-	-	<0.10	<0.10	0
Cadmium2	<0.000017	<0.000017	<0.000017	0	<0.000017	-	-	-	<0.000017	<0.000017	0
Calcium	<0.050	2.36	2.34	0.9	<0.10	-	-	-	1.22	1.19	2.5
Chromium3	<0.0010	<0.0010	<0.0010	0	<0.0010	-	-	-	<0.0010	<0.0010	0
Cobalt	<0.00030	<0.00030	<0.00030	0	<0.00030	-	-	-	<0.00030	<0.00030	0
Copper	<0.0010	<0.0010	<0.0010	0	<0.0010	-	-	-	<0.0010	<0.0010	0
Iron	<0.030	<0.030	<0.030	0	<0.030	-	-	-	<0.030	<0.030	0
Lead	<0.00050	<0.00050	<0.00050	0	<0.00050	-	-	-	<0.00050	<0.00050	0
Lithium	<0.0050	<0.0050	<0.0050	0	<0.0050	-	-	-	<0.0050	<0.0050	0
Magnesium	<0.10	0.80	0.79	1.3	<0.10	-	-	-	0.55	0.54	1.8
Manganese	<0.00030	0.00218	0.00222	-1.8	<0.00030	-	-	-	0.00106	0.00103	2.9
Mercury	<0.000020	<0.000020	<0.000020	0	<0.000020	-	-	-	<0.000020	<0.000020	0
Molybdenum	<0.0010	<0.0010	<0.0010	0	<0.0010	-	-	-	<0.0010	<0.0010	0

	Travel Blank July-06	Tehek Lake			Travel Blank August-06	Tehek Lake			Third Portage Lake - North Basin		
		TE 12-Jul-06	Lab Dup QC# 513044	RPD (%)		TE 17-Aug-06	Lab Dup QC# 519041	RPD (%)	TPN 21-Aug-06	Field Dup 21-Aug-06	RPD (%)
Nickel	<0.0010	<0.0010	<0.0010	0	<0.0010	-	-	-	<0.0010	<0.0010	0
Potassium	<2.0	<2.0	<2.0	0	<2.0	-	-	-	<2.0	<2.0	0
Selenium	<0.0010	<0.0010	<0.0010	0	<0.0010	-	-	-	<0.0010	<0.0010	0
Silver	<0.000020	<0.000020	<0.000020	0	<0.000020	-	-	-	<0.000020	<0.000020	0
Sodium	<2.0	<2.0	<2.0	0	<2.0	-	-	-	<2.0	<2.0	0
Thallium	<0.00020	<0.00020	<0.00020	0	<0.00020	-	-	-	<0.00020	<0.00020	0
Tin	<0.00050	<0.00050	<0.00050	0	<0.00050	-	-	-	<0.00050	<0.00050	0
Titanium	<0.010	<0.010	<0.010	0	<0.010	-	-	-	<0.010	<0.010	0
Uranium	<0.00020	<0.00020	<0.00020	0	<0.00020	-	-	-	<0.00020	<0.00020	0
Vanadium	<0.030	<0.030	<0.030	0	<0.030	-	-	-	<0.030	<0.030	0
Zinc	<0.0050	<0.0050	<0.0050	0	<0.0050	-	-	-	<0.0050	<0.0050	0

Note: RPD = Relative Percent Difference (%) = ((original - duplicate) / (original + duplicate)/2) x 100. Shaded RPDs exceed 25% (lab duplicates) or 50% (field duplicates).

Table 3-2: QA/QC Data for Sediment Parameters, Meadowbank Study Lakes, 2006.

	Tehek Lake		RPD (%)
	TE 7/12/2006	**Lab Dup** QC# 513043	
Conventional Parameters			
pH	5.70	5.70	0
Total Metals (mg/kg dw)			
Antimony	<10	<10	0
Arsenic	29.4	29.4	0
Barium	98.1	96.0	2.2
Beryllium	1.82	1.77	2.8
Cadmium	<0.50	<0.50	0
Chromium	48.4	48.2	0.4
Cobalt	9.3	9.1	2.2
Copper	51.5	51.7	-0.4
Lead	<30	<30	0
Mercury	0.0218	0.0167	26.5
Molybdenum	8.4	8.3	1.2
Nickel	30.1	30.1	0
Selenium	<2.0	<2.0	0
Silver	<2.0	<2.0	0
Thallium	<1.0	<1.0	0
Tin	<5.0	<5.0	0
Vanadium	31.3	30.1	3.9
Zinc	94.1	92.0	2.3

Note: RPD = Relative Percent Difference (%) = ((original - duplicate) / (original + duplicate)/2) x 100. Shaded RPDs exceed 25% (lab duplicates).

Table 3-3: QA/QC Data for Phytoplankton, Meadowbank Study Lakes, 2006.

	Wally Lake		
	WAL 13-Jul-06	**Field Duplicate**	**RPD** (%)
Phytoplankton Density (cells/L)			
Cyanophyte	0	129312	-200.0
Chlorophyte	21752	37120	-52.2
Euglenophyte	0	0	0.0
Chrysophyte	1193144	1350592	-12.4
Diatom	81640	151696	-60.0
Cryptophyte	72840	88008	-18.9
Dinoflagellate	15968	15968	0.0
Total	1385344	1772696	**-24.5**
Mean RPD			-49.1
Phytoplankton Biomass (mg/m^3)			
Cyanophyte	0	7.7	-200.0
Chlorophyte	1.8	2.0	-13.5
Euglenophyte	0.0	0.0	0.0
Chrysophyte	117.1	106.9	9.1
Diatom	8.3	10.8	-26.4
Cryptophyte	7.5	7.6	-1.8
Dinoflagellate	6.5	10.1	-43.3
Total	141.1	145.1	**-2.8**
Mean RPD			-34.8
# Species	31	30	3.3
Simpsons Diversity	0.84	0.83	1.3

Note: RPD = Relative Percent Difference (%) = ((original - duplicate) / (original + duplicate)/2) x 100. Shaded RPDs exceed 50% (field duplicates).

Table 3-4: QA/QC Data for Benthic Invertebrates, Meadowbank, 2006.

Date Collected	Station	Number of Organisms Fraction 1	Number of Organisms Fraction 2	Number of Organisms Whole Sample	Precision (%)	Accuracy (%)
07/11/2006	TPE-1	61	70	131	12.9	6.9
09/11/2006	WAL-1	582	640	1222	9.1	4.7

Notes: Precision is the percent difference between the fractions; accuracy is the percent difference between fraction 2 and the whole sample; an error of <20% is acceptable.

Date Collected	Station	Number of Organisms Recovered	Number of Organisms in Re-sort	Percent Recovery
07/17/2006	TPS-1	98	2	98.0%
08/05/2006	TPN-3	186	8	95.9%
08/17/2006	TPE-1	122	0	100.0%
09/08/2006	TPE-3	252	8	96.9%
09/08/2006	TPS-1	59	0	100.0%
09/09/2006	TE-1	72	0	100.0%
09/09/2006	TE-2	68	1	98.6%
09/09/2006	TE-3	90	5	94.7%
09/11/2006	INUG-3	77	0	100.0%
			Average % Recovery	**98.2%**

Notes: Percent Recovery = (#orgs. recovered / (#orgs. recovered + #orgs. in re-sort))*100

Date Collected (Spring)	Station	Fraction Sorted (500-μm)	Fraction Sorted (250-μm)	Date Collected (Early Summer)	Station	Fraction Sorted (500-μm)	Fraction Sorted (250-μm)
11/7/2006	TPE-3	Whole	1/2	08/05/2006	TPE-3	Whole	Whole
07/17/2006	TPN-3	Whole	Whole	08/05/2006	TPN-3	Whole	Whole
07/17/2006	TPS-3	Whole	1/8	08/05/2006	TPS-3	Whole	1/2
12/7/2006	SP-3	Whole	Whole	08/06/2006	SP-3	Whole	Whole
12/7/2006	TE-3	Whole	Whole	08/06/2006	TE-3	Whole	Whole
07/13/2006	WAL-3	1/4	1/4	08/07/2006	WAL-3	1/4	1/4
07/15/2006	INUG-3	Whole	Whole	08/07/2006	INUG-3	Whole	Whole

Date Collected (Late Summer)	Station	Fraction Sorted (500-μm)	Fraction Sorted (250-μm)	Date Collected (Fall)	Station	Fraction Sorted (500-μm)	Fraction Sorted (250-μm)
08/17/2006	TPE-3	Whole	Whole	09/08/2006	TPE-3	Whole	1/8
08/21/2006	TPN-3	Whole	Whole	09/08/2006	TPN-3	Whole	Whole
08/21/2006	TPS-3	Whole	Whole	09/08/2006	TPS-3	Whole	1/4
08/18/2006	SP-3	Whole	1/2	09/09/2006	TE-3	Whole	1/2
08/17/2006	TE-3	Whole	1/2				
08/18/2006	WAL-3	1/8	1/8				
08/19/2006	INUG-3	Whole	Whole				

The phytoplankton field duplicate evaluated the variability of phytoplankton density (cells/L) and biomass (mg/m^3) in Wally Lake. Within taxa variability was moderately high. For example, Cyanophytes had an RPD of -200% for density and biomass because cyanophytes were present in the duplicate sample but not the original. Chlorophytes and diatoms had density RPDs of -52% and -60%, respectively. Because very small volumes of water are examined for phytoplankton density and biomass, and because abundance of cells is extremely high, this magnitude of difference is to be expected for biological samples with such a high degree of natural variability. However, overall RPD on total abundance (-24) and biomass (-3) was low and well within the data quality objective.

ZEAS assures a high degree of QA/QC by scanning all large fraction sorts to assure that no large, unusual or unique species are missed. Two halves of samples TPE-1 (spring) and WAL-1 (fall) were sorted for sub-sampling error calculations. Replicate counts of small fraction sorts were very accurate (4.7-6.9%) and show a high degree of reproducibility (9.1-12.9%). Random re-sorts of 10% of benthic samples were conducted to determine if any animals were missed. Percent recovery was 98.2% on average, suggesting that the vast majority of animals observed in benthic samples by the taxonomist were recovered. However, the success of sample preservation in a few cases was questioned (see highlighted samples in **Appendix C**); these samples (Third Portage North late summer grabs for both the 500-μm and 250-μm sieves and Tehek late summer grabs for 2 of 3 replicates for 500-μm) possibly had reduced counts but were provisionally retained in the statistical analyses. This potential problem was taken into consideration when drawing any conclusions involving these samples.

A reference collection of benthic taxa has been compiled. Samples processed at 500-μm were sorted in their entirety; however, many samples processed at 250-μm were split due to the large number of organisms in these samples. Pupae and immatures were not counted toward total number of taxa unless they were the sole representative of their taxa group.

3.1.2 Limnology and Water Chemistry

The Meadowbank project lakes are ultra-oligotrophic (i.e., clear, nutrient poor), soft water, isothermal and well mixed throughout the open water season with high oxygen concentration, near neutral pH and low turbidity.

Vertical temperature and dissolved oxygen profiles measured at each sampling station and sampling event showed little difference between surface and bottom water (**Figures 3-1 to 3-7**). Basically, water temperatures increased through the open water season from ice-off (early July) to peak during the mid-August sampling event, before declining again, to reach their lowest levels during the mid-September sampling event.

Very minor temperature stratification was observed in Tehek Lake (**Figure 3-4**) in the spring (12 July 2006) sampling, but was not evident at any other time of year. It is not unusual for minor temperature stratification to occur over a few windless days. Given the frequency of wind events at Meadowbank, it is unlikely that any of the lakes are ever stratified by more than two or three degrees for more than a few days (BAER, 2005). Dissolved oxygen concentrations were always high, related to temperature and were nearly always completely saturated.

Figure 3-1: Temperature (°C) and Dissolved Oxygen (mg/L) Profiles for Third Portage Lake – East Basin, 2006.

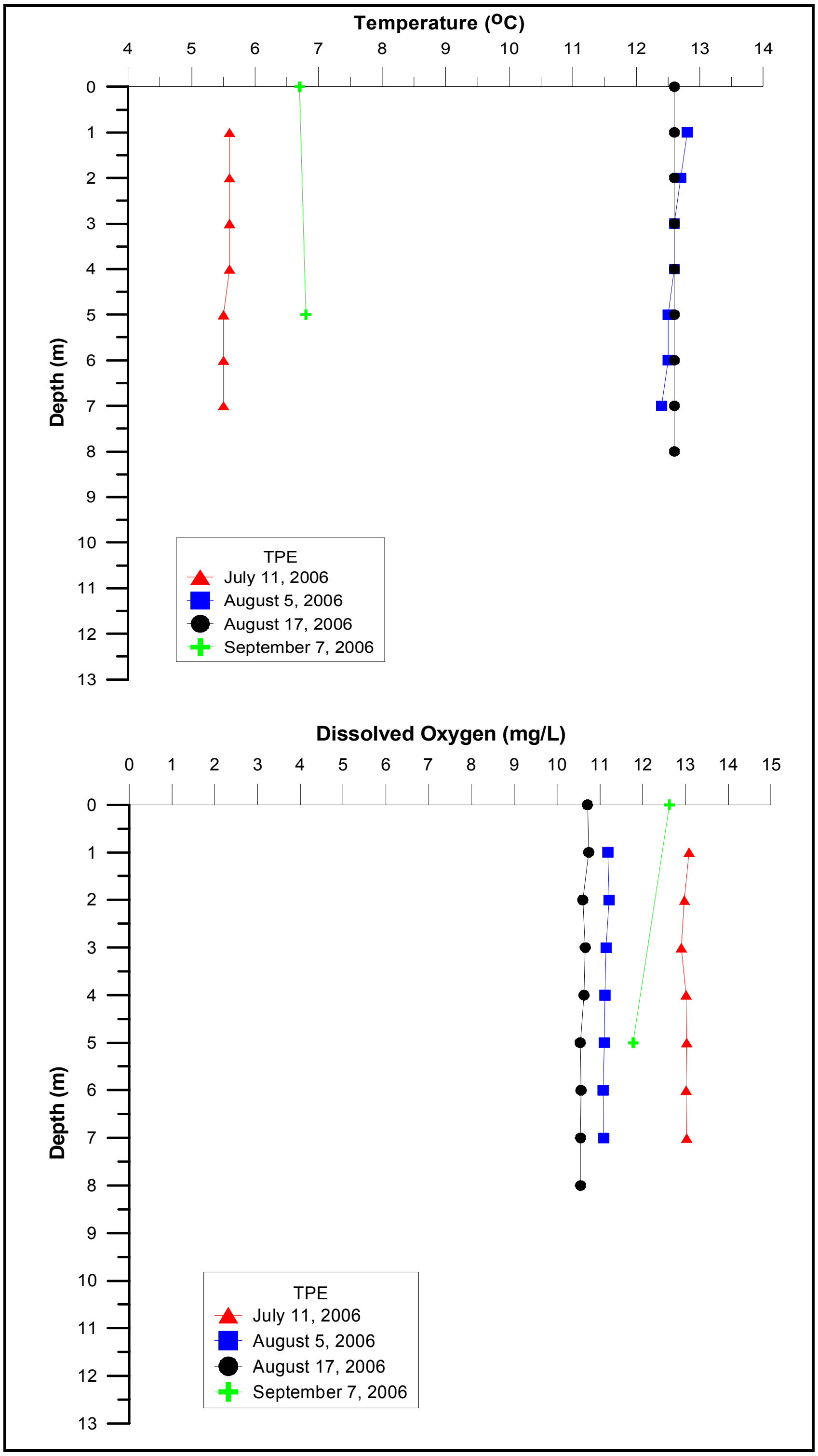


Figure 3-2: Temperature (°C) and Dissolved Oxygen (mg/L) Profiles for Third Portage Lake – North Basin, 2006.

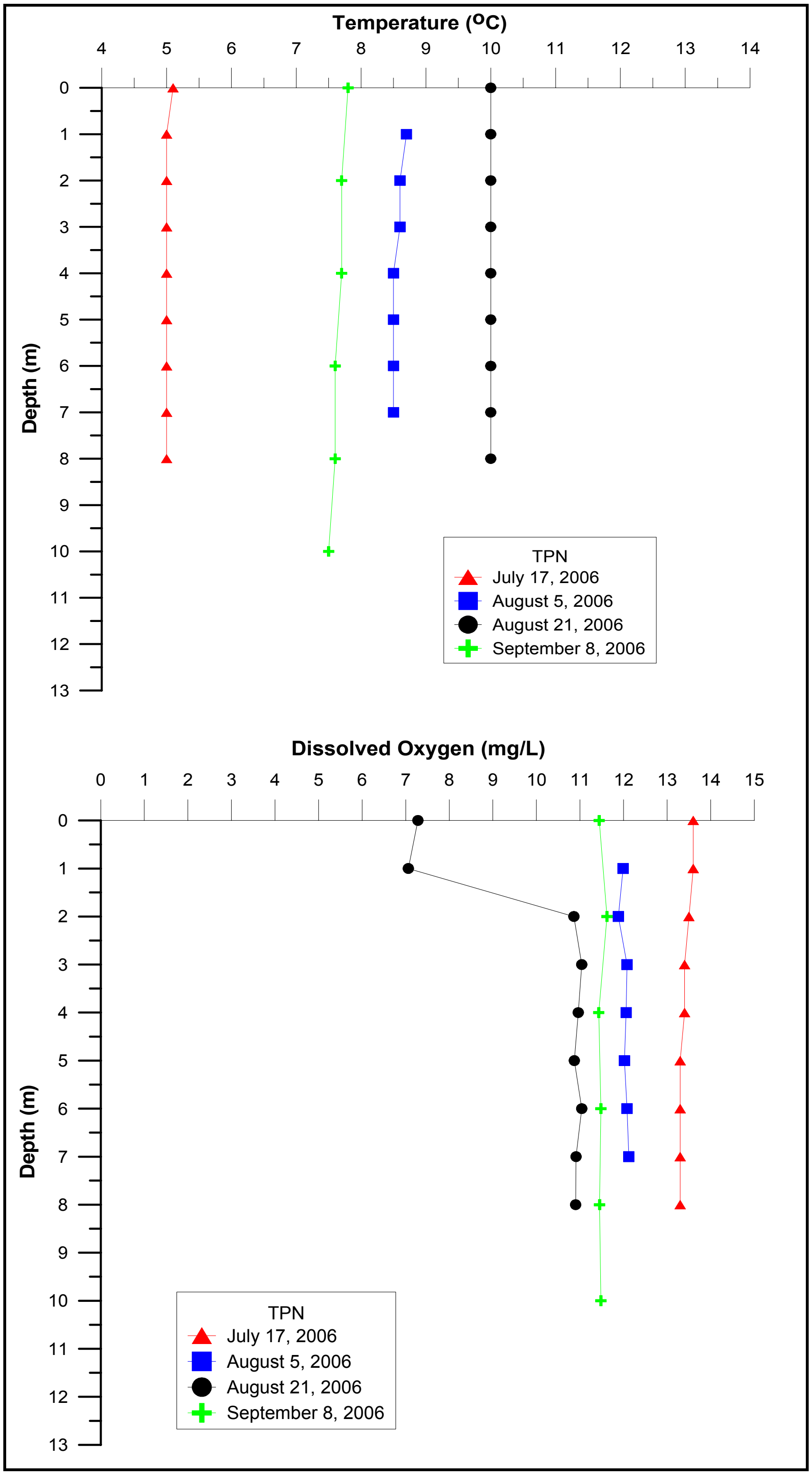


Figure 3-3: Temperature (°C) and Dissolved Oxygen (mg/L) Profiles for Third Portage Lake – South Basin, 2006.

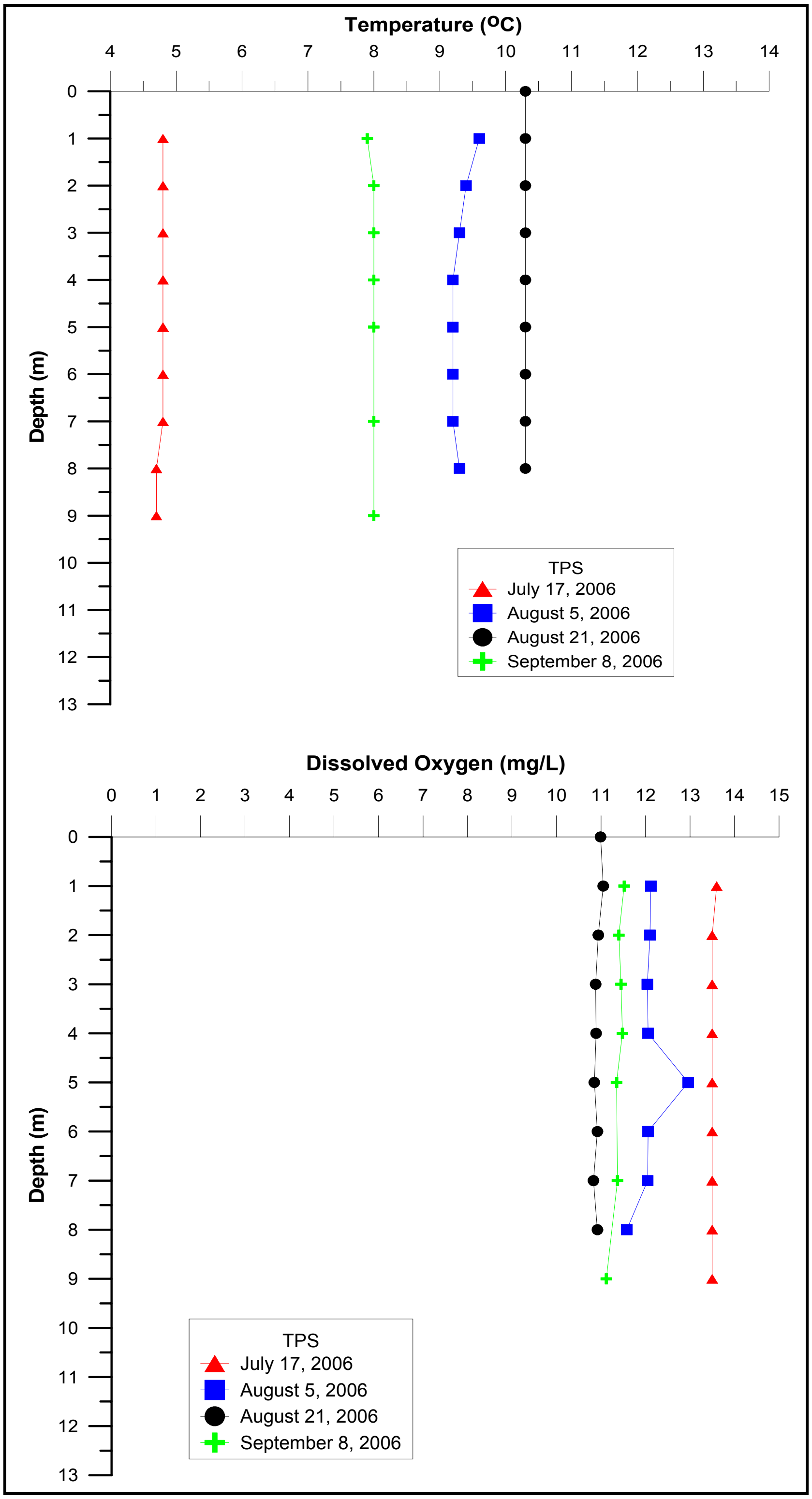


Figure 3-4: Temperature (°C) and Dissolved Oxygen (mg/L) Profiles for Tehek Lake, 2006.

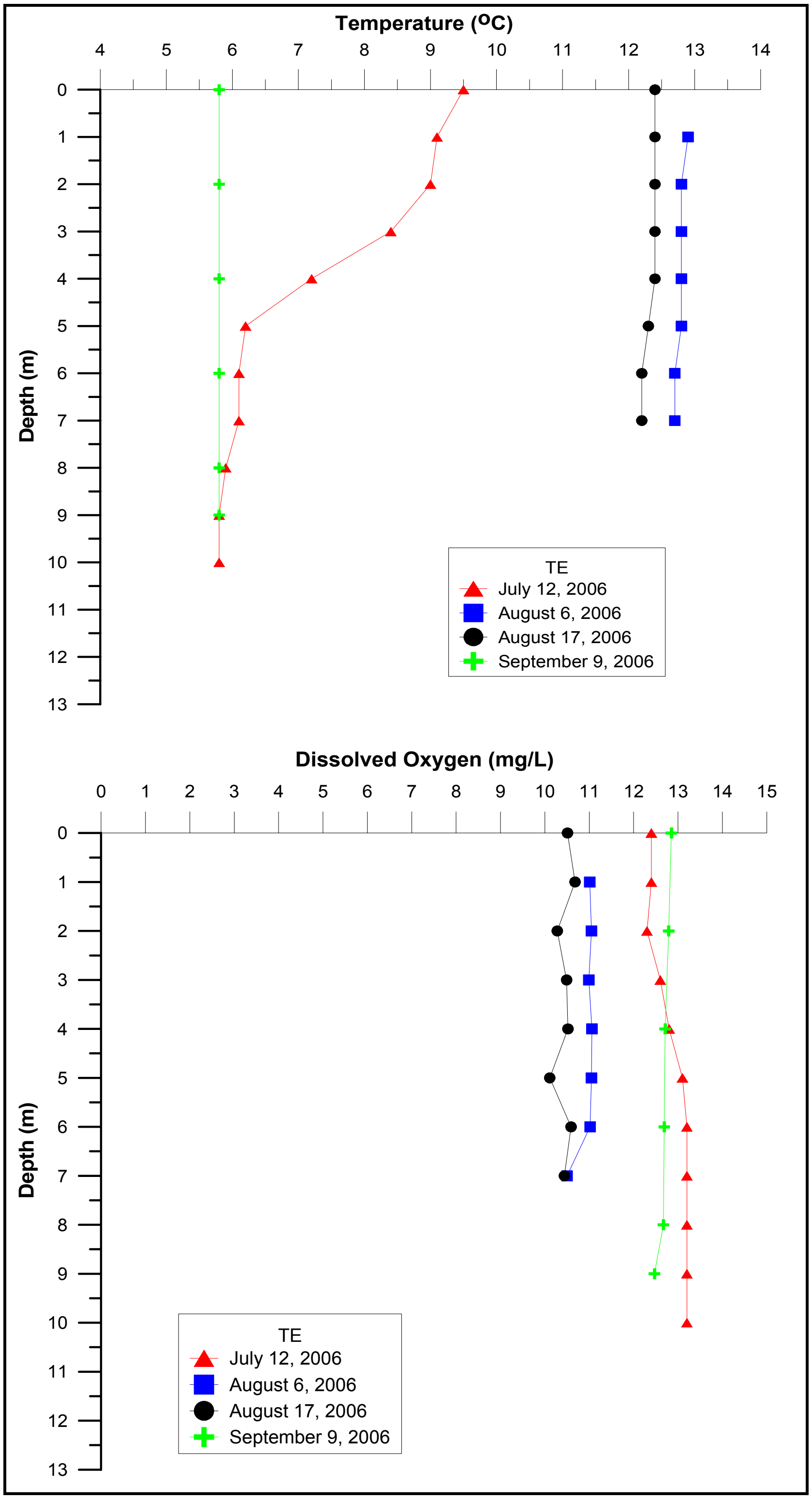


Figure 3-5: Temperature (°C) and Dissolved Oxygen (mg/L) Profiles for Second Portage Lake, 2006.

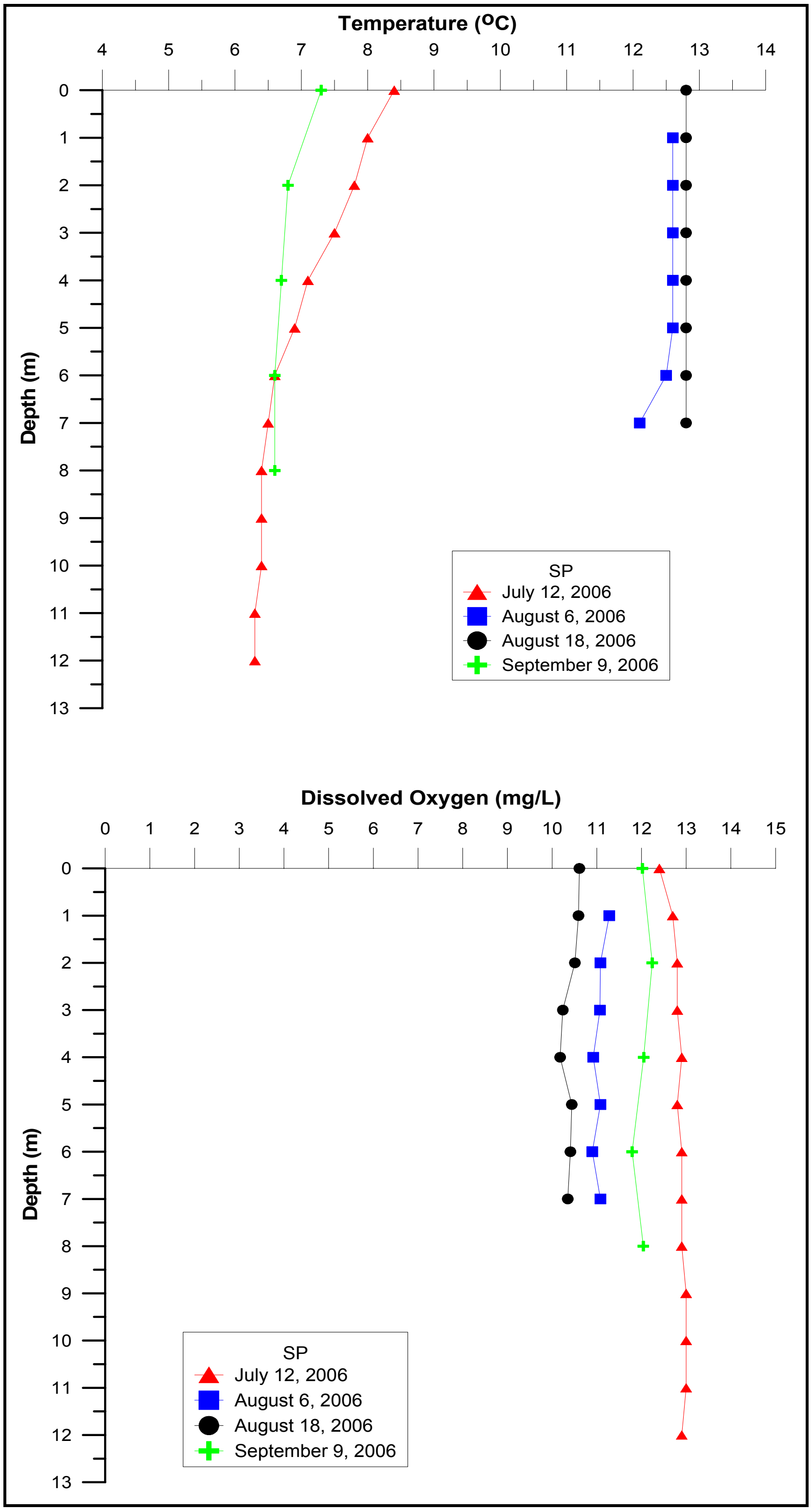


Figure 3-6: Temperature (°C) and Dissolved Oxygen (mg/L) Profiles for Wally Lake, 2006.

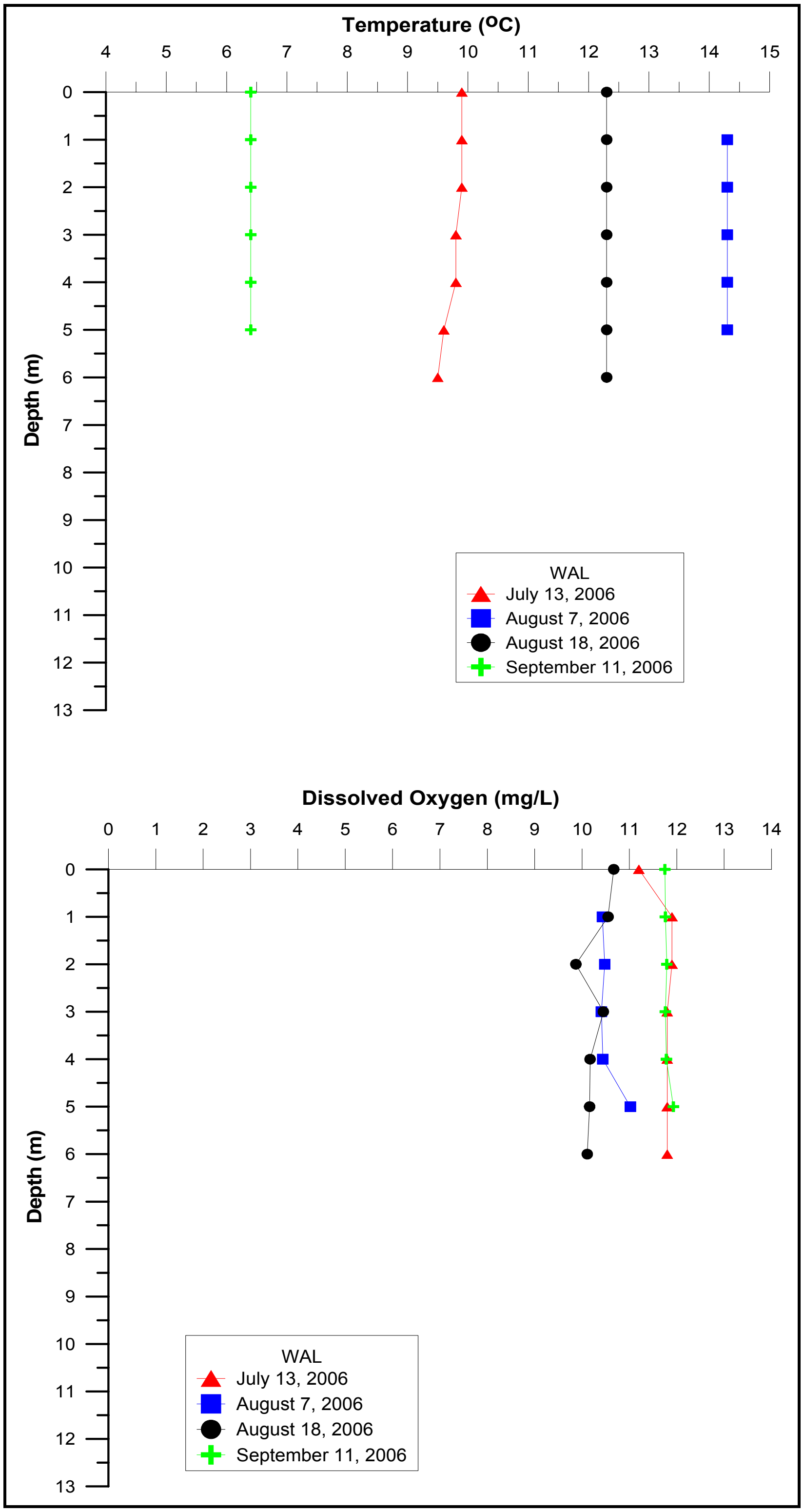
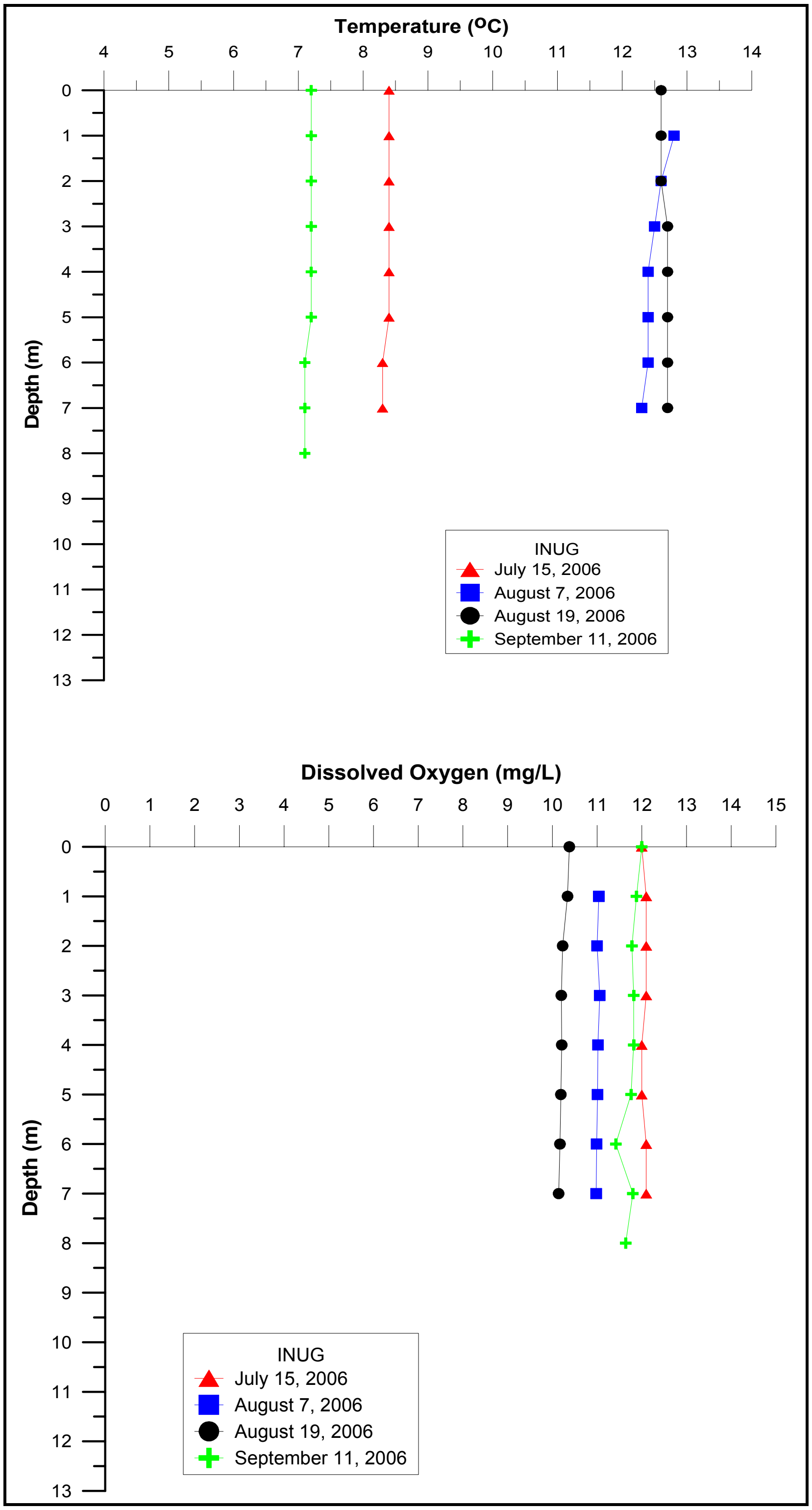


Figure 3-7: Temperature (°C) and Dissolved Oxygen (mg/L) Profiles for Inuggugayualik Lake, 2006.



Maximum water temperature reached varied among lakes and is related to water depth and volume of the basin being measured. For example, water temperatures were lowest in the large, deep north and south basins of Third Portage Lake (**Figure 3-2 and 3-3**, respectively) in early spring (4.7 °C to 5.1 °C) shortly after ice-off and barely exceeded 10 °C as a maximum. Water temperatures in all lakes increased through July, reaching a high of 14.3 °C in Wally Lake, the shallowest lake, by early August. By the fall (early September), water temperature in all of the lakes had declined, cooling more quickly in the shallow lakes or basins including Third Portage East (**Figure 3-1**), Tehek Lake (**Figure 3-4**), Second Portage Lake (**Figure 3-5**) and Wally Lake (**Figure 3-6**) than the deep north and south basins in Third Portage Lake (**Figures 3-2 and 3-3**).

Water samples collected for chemical analysis in the spring and late summer in 2006 (**Table 2-1**) were acquired from a depth of 3 m at all stations and sampling events except for Tehek Lake in the spring. Because there was slight stratification at this station, the water sample was a composite from the upper 8 m of the water column.

Conventional water quality parameters measured in 2006 in the spring and late summer were similar among the study lakes (**Table 3-5**) and typical of ultra-oligotrophic lakes (Welch et al, 1989) in this region of the Arctic. There were no meaningful differences in any parameter related to season. Results from 2006 also closely resembled results from previous years (1996 to 1998, 2002 to 2005; BAER, 2005).

Total suspended and dissolved solids in surface waters were low, and below laboratory method detection limits (<3.0 mg/L and <10 mg/L, respectively), as were most of the dissolved anions. The pH of the surface waters was circum-neutral (6.47 to 7.30). Conductivity was lowest in Third Portage Lake (11.5 to 13.3 µS/cm) and Inuggugayualik Lake (13.0 to 13.2 µS/cm) and slightly higher elsewhere in the study lakes: Second Portage (20.0 to 20.4 µS/cm), Tehek (18.5 to 19.3 µS/cm) and Wally (26.6 to 28.5 µS/cm) Lakes. Nutrient concentrations (nitrogen, carbon, phosphorus) in the study lakes were also very low, generally below laboratory detection limits, and did not differ appreciably within or between lakes and seasons. Dissolved organic carbon ranged from 1.41 to 2.23 mg/L.

Chlorophyll α concentrations in the study lakes were extremely low, ranging from 0.133 to 0.413 µg/L which are typical of ultra-oligotrophic lakes (0.01 to 0.5 µg/L) (Wetzel, 1975). The low productivity is primarily a reflection of low nutrient levels in the project lakes, as well as cold water temperature, and short growing season.

Table 3-5: Conventional Water Chemistry and Total Metals (mg/L), Meadowbank Study Lakes, July and August, 2006.

	CCME (2006) Guideline[1]	Third Portage Lake						Second Portage Lake		Tehek Lake		Wally Lake		Inuggugayualik Lake	
		South TPS		East TPE		North TPN		SP		TE		WAL		INUG	
		17-Jul-06	21-Aug-06	11-Jul-06	17-Aug-06	17-Jul-06	21-Aug-06	12-Jul-06	17-Aug-06	12-Jul-06	17-Aug-06	13-Jul-06	18-Aug-06	15-Jul-06	19-Aug-06
Conventional Parameters															
Physical Tests															
Conductivity (uS/cm)	NA	12.6	11.7	12.1	11.5	12.7	13.3	20.4	20.0	19.3	18.5	26.6	28.5	13.0	13.2
Total Dissolved Solids (mg/L)	NA	10	<10	<10	<10	<10	<10	13	13	12	10	16	19	<10	<10
Hardness (mg/L)	NA	5.44	5.08	5.33	5.09	5.57	5.31	9.70	8.60	9.20	7.36	13.5	13.0	5.73	5.36
pH	6.5 - 9.0	6.63	6.93	6.47	6.80	6.60	6.76	6.67	6.95	6.60	6.95	7.30	7.08	6.71	6.91
Total Suspended Solids (mg/L)	NA	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
Dissolved Anions (mg/L)															
Total Alkalinity	NA	4.2	4.0	5.0	3.9	3.7	4.1	7.0	6.6	6.0	6.3	8.4	9.5	4.4	5.0
Alkalinity - Bicarbonate	NA	4.2	4.0	5.0	3.9	3.7	4.1	7.0	6.6	6.0	6.3	8.4	9.5	4.4	5.0
Alkalinity - Carbonate	NA	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Alkalinity - Hydroxide	NA	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Bromide	NA	<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
Chloride	NA	<0.50	<0.50	<0.50	<0.50	<0.50	0.69	0.50	0.57	<0.50	0.60	<0.50	0.59	0.72	0.76
Fluoride	NA	0.053	0.058	0.056	0.063	0.053	0.075	0.049	0.057	0.051	0.060	0.032	0.042	0.049	0.057
Silicate	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Sulphate	NA	1.43	1.39	1.33	1.31	1.40	1.40	2.43	2.30	2.29	2.08	3.01	3.12	0.91	0.90
Nutrients (mg/L)															
Ammonia Nitrogen[2]	26 @ pH6.5; 8.2 @ pH7.0	<0.0050	<0.020	<0.0050	<0.020	<0.0050	<0.020	0.0073	<0.020	0.0067	<0.020	0.0060	<0.020	0.0073	<0.020
Total Kjeldahl Nitrogen	NA	0.063	0.050	0.083	0.202	0.068	0.079	0.084	0.171	0.097	0.268	0.080	0.111	0.077	0.119
Nitrate Nitrogen	2.9	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0174
Nitrite Nitrogen	0.060	<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
Dissolved ortho-Phosphate	NA	<0.0010	0.0022	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0016	0.0024
Total Phosphate	NA	0.0048	0.0030	<0.0020	0.0039	0.0028	0.0051	0.0034	0.0048	0.0029	0.0047	0.0036	0.0067	0.0038	0.0043
Organic Parameters															
Chlorophyll a (ug/L)	NA	-	0.174	0.236	0.220	-	0.279	0.185	0.302	0.133	0.213	0.396	0.413	0.402	0.208
Dissolved Organic Carbon (mg/L)	NA	1.41	1.43	1.78	1.85	1.53	1.51	1.92	2.00	2.09	2.11	2.23	1.94	1.98	1.88
Total Organic Carbon (mg/L)	NA	1.81	1.70	2.28	2.02	1.57	2.08	2.44	2.25	2.15	2.83	2.51	2.84	2.50	2.55
Radiological Parameters															
Radium-226 (Bq/L)	NA	-	-	-	<0.0050	-	-	-	<0.0050	-	<0.0050	-	0.0060	-	0.0080
Total Metals (mg/L)															
Aluminum	0.1 @ pH >6.5	0.0076	0.0114		0.0103	0.0094	0.0070	0.0098	0.0107	0.0144	0.0123	0.0080	0.0060	0.0117	0.0096
Aluminum	0.005 @ pH<6.5			0.0068											

	CCME (2006) Guideline[1]	Third Portage Lake						Second Portage Lake		Tehek Lake		Wally Lake		Inuggugayualik Lake	
		South TPS		East TPE		North TPN		SP		TE		WAL		INUG	
		17-Jul-06	21-Aug-06	11-Jul-06	17-Aug-06	17-Jul-06	21-Aug-06	12-Jul-06	17-Aug-06	12-Jul-06	17-Aug-06	13-Jul-06	18-Aug-06	15-Jul-06	19-Aug-06
Antimony	NG	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Arsenic	0.005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Barium	NG	<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
Beryllium	NG	<0.0010	<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
Boron	NG	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Cadmium[3]	0.000017	<0.000017	<0.000085	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017	0.000025	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017
Calcium	NG	1.26	1.16	1.24	1.17	1.29	1.22	2.51	2.19	2.36	1.83	3.68	3.49	1.16	1.08
Chromium[4]	0.001	<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	NG	<0.00030	<0.00050	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Copper	0.002	<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
Iron	0.3	<0.030	<0.030	<0.030	0.033	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Lead	0.001	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00066	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Lithium	NG	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Magnesium	NG	0.56	0.53	0.54	0.52	0.57	0.55	0.83	0.76	0.80	0.68	1.05	1.03	0.69	0.65
Manganese	0.05	0.00123	0.00112	0.00291	0.00123	0.00103	0.00106	0.00282	0.00164	0.00218	0.00136	0.00196	0.00088	0.00467	0.00203
Mercury	0.000026	<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
Molybdenum	0.073	<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
Nickel	0.025	<0.0010	<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
Potassium	NG	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Selenium	0.001	<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
Silver	0.0001	<0.000020	<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
Sodium	NG	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Thallium	0.0008	<0.00020	<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
Tin	NG	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Titanium	NG	<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	NG	<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
Vanadium	NG	<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
Zinc	0.03	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

Notes: NG = no guideline. [1] Canadian Water Quality Guidelines for the Protection of Aquatic Life, CCME, July 2006. [2] Guidelines are for 10 °C. [3] Interim cadmium guideline. [4] Chromium guideline is for Cr VI, which yields the most conservative guideline. Shaded concentrations exceed the CCME guideline.

Total metals concentrations measured in 2006 from surface waters in the spring and late summer showed remarkable similarity among all project lakes (**Table 3-5**) and with results from previous years (BAER, 2005). Concentrations of all metals except the common salts (calcium, magnesium), aluminum (0.0060 to 0.0144 mg/L), cadmium (South basin of Third Portage Lake [0.000085mg/L] and Second Portage Lake [0.000025 mg/L], both in August) and lead (0.00066 mg/L in Second Portage Lake) were below laboratory detection limits and, well below CCME (2006a) water quality guidelines for the protection of aquatic life.

The concentration of aluminum in the East basin of Third Portage Lake in July (0.0068 mg/L) marginally exceeded the CCME guideline; at this station the pH of the water (6.47) was below the CCME guideline of 6.5, which reduced the aluminum guideline from 0.1 to 0.005 mg/L. The pH of the water at this station rose to 6.8 during the late summer sampling event; consequently aluminum no longer exceeded the CCME guideline.

It is important to note that the cadmium guideline is conservative and well below any actual concentrations reported in the literature associated with adverse effects. Furthermore, even at concentrations associated with adverse effects in the literature, aquatic biota have been shown to adapt or acclimate to elevated metals concentrations. Consequently, the observed results should be considered natural and unlikely to be having any impacts on pelagic biota.

All of the limnological data, conventional water quality parameters and metals concentrations indicate that water quality in the study lakes is very high, as would be expected given the remote location and pristine conditions. In addition, because the study lakes are situated in the uppermost reaches of the Quioch River system, they do not receive inputs from upstream lakes or streams that might carry suspended and dissolved solids and/or nutrients into the study lakes. Therefore, all inputs into the lakes are restricted to small watersheds in the immediate vicinity of the lakes and this helps to explain why the lakes are so nutrient poor and relatively unproductive.

Radioactivity was monitored in the project lakes for the first time in 2006, to establish a background level. Under the MMER, radioactivity in effluent is monitored in the form of radium-226, a relative of uranium. Authorized limits for radium-226 have been set as 0.37 Becquerels (Bq)/L for the maximum monthly mean concentration, 0.74 Bq/L for the maximum concentration in a composite sample and 1.11 Bq/L for the maximum concentration in a grab sample of effluent. Radium-226 concentrations were mostly below detection (<0.005 Bq/L), but were detectable from Wally and Inuggugayualik Lakes at concentrations slightly greater than detection (0.006 and

0.008 Bq/L respectively; **Table 3-5**). These concentrations were well below MMER limits.

Water quality in the Meadowbank project lakes remains very high and is unchanged relative to the very first water samples collected from the lakes 10 years ago, at the early stages of exploration of the property. The lakes continue to be ultra-oligotrophic, nutrient poor, unproductive and very low in all constituents, including salts, nutrients and metals.

3.1.3 Sediment Chemistry

Total metals concentrations (mg/kg dry weight), total organic carbon (TOC) and particle size were measured in sediment from each sampling station during the spring sampling event (**Table 3-6**). Sediment chemistry was measured only once during the year because sediment characteristics tend to be stable and do not change within or between years, except in response to widespread anthropogenic or natural disturbances (e.g., floods, forest fires, landslides, etc.). Because the study lakes are headwater lakes, there are no stream sources of sediments; therefore, sedimentation rates in the lakes are likely extremely low. Previous sampling episodes of sediment chemistry from different locations within the project lakes bear this out (BAER, 2005), as there is very little variability within or between project lakes.

Sediment was acquired from between 7 m and 10 m water depth at all stations to ensure consistency and to provide relevant information for benthic communities sampled from the same depths/locations. For this reason, and partly because of the similar geochemistry of the lakes, sediment grain size was consistent among lakes and was dominated by fine sediments (70 to 90% silt/clay; **Table 3-6**) with lesser amounts of sand. Sediment from the Tehek Lake sampling location was slightly sandier (20%) than the other lakes (<10%).

TOC concentrations ranged from 2.27% to 8.22% dry weight over all lakes, which is reasonably high for such an oligotrophic system and illustrates the likely very small amount of inorganic input into the lakes and low sedimentation rate. These values are consistent with TOC concentrations measured in previous years (BAER, 2005).

The sediment metals concentrations measured in each of the study lakes (**Table 3-6**) was also relatively consistent with no major spatial differences either within (i.e., Third Portage Lake) or among lakes. Sediment chemistry was very similar for nearly all metals regardless of collection location, illustrating the strong regional influence and depositional history of sedimentation in the all of the project lakes.

Sediment metals concentrations were compared against CCME (2006b) ISQG and PEL guidelines for those metals for which there are guidelines (arsenic, cadmium, chromium, copper, lead, mercury and zinc). An exceedence of these guideline values does not necessarily imply that adverse effects have occurred or are expected to occur. These values are relatively conservative and do not reflect site-specific conditions, regional geochemistry or adaptations by benthic organisms to regional characteristics.

Table 3-6: Conventional Sediment Chemistry and Total Metals (mg/kg), Meadowbank Study Lakes, July 2006.

	Sediment Quality Guidelines (CCME 2002)[1]		Third Portage Lake			Second Portage Lake	Tehek Lake	Wally Lake	Inuggugayualik Lake
			South TPS	East TPE	North TPN	SP	TE	WAL	INUG
	ISQG	PEL	17-Jul-06	11-Jul-06	17-Jul-06	12-Jul-06	12-Jul-06	13-Jul-06	15-Jul-06
Conventional Parameters									
Physical Tests									
pH			5.80	5.82	5.97	5.86	5.70	6.34	5.72
Organic Parameters									
Total Organic Carbon (% dw)			4.01	2.27	3.74	3.26	2.32	8.22	4.71
Particle Size									
Gravel (>2.00mm) (%)			<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sand (2.00mm - 0.063mm) (%)			2.90	12.8	3.50	7.70	21.2	8.30	7.80
Silt (0.063mm - 4um) (%)			35.9	26.7	35.3	27.0	33.4	42.3	51.7
Clay (<4um) (%)			61.2	60.5	61.2	65.3	45.4	49.4	40.5
Total Metals (mg/kg dw)									
Antimony	NG	NG	<10	<10	<10	<10	<10	<10	<10
Arsenic	5.9	17	38.0	17.9	26.2	29.4	29.4	29.4	126
Barium	NG	NG	114	104	102	132	98.1	104	169
Beryllium	NG	NG	1.67	1.77	1.35	2.63	1.82	1.29	1.36
Cadmium	0.6	3.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chromium	37.3	90	127	84.4	125	88.0	48.4	53.9	98.0
Cobalt	NG	NG	18.4	14.5	23.8	14.3	9.3	8.5	15.2
Copper	35.7	197	82.8	54.7	59.1	93.8	51.5	112	49.8
Lead	35	91.3	<30	<30	<30	<30	<30	30	<30
Mercury	0.17	0.486	0.0209	0.0144	0.0192	0.0185	0.0218	0.0495	0.0290
Molybdenum	NG	NG	7.1	<4.0	4.2	8.2	8.4	5.5	6.6
Nickel	NG	NG	83.8	52.9	88.5	63.2	30.1	48.3	108
Selenium	NG	NG	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Silver	NG	NG	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Thallium	NG	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tin	NG	NG	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Vanadium	NG	NG	42.6	39.0	41.2	49.0	31.3	27.4	41.4
Zinc	123	315	112	102	98.9	143	94.1	115	96.5

Notes: NG = no guideline. [1] Canadian Sediment Quality Guidelines for the Protection of Aquatic Life, CCME 2002; ISQG = Interim freshwater Sediment Quality Guideline, PEL = Probable Effect Level. Shaded concentrations exceed the ISQG; Boxed concentrations exceed the PEL.

Arsenic, chromium and copper concentrations exceeded ISQGs in all lakes; arsenic concentrations exceeded PELs in all lakes, and chromium exceeded the PEL in Third Portage (TPN and TPS) and Inuggugayualik Lakes (**Table 3-6**). This is very consistent with what has been observed in previous years from project and reference lakes; with the same metals exceeding the ISQG for the same stations in the same lakes each year. The range in concentration of metals among stations and lakes was relatively small for all metals, usually less than 1 x the average concentration. A notable exception was arsenic from Inuggugayualik Lake (126 mg/kg) relative to the other lakes (18 to 38 mg/kg). However, arsenic concentrations in sediment from Inuggugayualik Lake for 1998 and 2002 were 18 and 24 mg/kg, respectively, which is similar to what was observed in 2006 in other project lakes. This simply illustrates the spatial heterogeneity that can sometimes exist and also illustrates the value of long-term data.

The zinc concentration in Second Portage Lake marginally exceeded the ISQG in 2006 (**Table 3-6**). Zinc concentrations in historical data (BAER, 2005) occasionally even exceeded the CCME PEL value, showing that the mineralized nature of the regional geology can result in variability both within and among stations.

3.1.4 Phytoplankton

A total of 102 phytoplankton species were identified in the study lakes, represented by seven major taxa: cyanophytes (blue green algae), chlorophytes (green algae), euglenophytes, chrysophytes (golden-brown algae), diatoms, cryptophytes and dinoflagellates (**Appendix B**).

Phytoplankton species composition, abundance and biomass from project and reference lakes were realtively similar throughout the open water season. The phytoplankton assemblages were dominated numerically (79% of all cells) and by biomass (74%) by chrysophytes, with small populations of chlorophytes, diatoms and dinoflagellates persisting seasonally (**Tables 3-7 and 3-8**). The dominant chrysophyte genera were *Chrysococcus*, *Dinobryon bavaricum* Imhof, *D. sertularia* Ehrenberg, *Chrysochromulina laurentiana* Kling and *Uroglena volvox* Ehrenberg. *Cyclotella michiganiana* Skvortzow was the dominant diatom and *Peridinium pusillum* (Penard) Lemmermann constituted the dominant dinoflagellate. In Second Portage Lake in the fall, *Botryococcus braunii* Kutzing, a colonial chlorophyte, increased in abundance and co-dominated with the previously mentioned chrysophytes. These phytoplankton species were reported as the dominant species in the Saqvaqjuac Lakes (Welch et al., 1989) and in Char Lake (Kalff et al., 1975). A chart of the phytoplankton species presence/absence at each sampling station in 2006, by season, is presented in **Appendix B**.

Table 3-7: Seasonal Density (cells/L) of Major Phytoplankton Groups, Meadowbank Study Lakes, 2006.

Station	Date	Phytoplankton Density (cells/L)							
		Cyanophyte	Chlorophyte	Euglenophyte	Chrysophyte	Diatom	Cryptophyte	Dinoflagellate	Total
Third Portage Lake									
TPS	17-Jul-06	57672	107760	0	948688	45304	55488	9784	1224696
TPS	5-Aug-06	0	165832	200	1176392	51688	36320	19568	1450000
TPS	21-Aug-06	14368	130312	0	746352	67856	43504	1600	1003992
TPS	8-Sep-06	37520	187984	0	1182976	148080	52288	1200	1610048
TPE	11-Jul-06	0	53888	0	1400880	9584	94792	7984	1567128
TPE	5-Aug-06	0	79824	0	1424632	94392	29736	27168	1655752
TPE	17-Aug-06	0	72840	0	815792	61272	14968	6000	970872
TPE	8-Sep-06	2200	110560	0	1539376	160448	7384	20568	1840536
TPN	17-Jul-06	0	94592	0	1063632	1600	53888	16768	1230480
TPN	5-Aug-06	0	101976	0	933936	72840	29536	16168	1154456
TPN	21-Aug-06	0	166832	0	959072	96192	94392	30136	1346624
TPN	8-Sep-06	0	368784	0	1108536	66456	52088	400	1596264
Second Portage Lake									
SP	12-Jul-06	0	30736	0	1530192	94808	36520	3600	1695856
SP	6-Aug-06	0	58272	0	916568	41520	80024	2400	1098784
SP	18-Aug-06	200	187184	0	959472	46704	51288	15968	1260816
SP	9-Sep-06	1000	309512	0	1011560	81040	109560	800	1513472
Tehek Lake									
TE	12-Jul-06	7184	16768	0	1250016	56504	15368	7384	1353224
TE	6-Aug-06	0	79824	0	1108736	143496	44904	23952	1400912
TE	17-Aug-06	0	158848	0	1152040	88808	21952	2200	1423848
TE	9-Sep-06	3000	266608	0	1381128	132728	66856	9184	1859504

Station	Date	Phytoplankton Density (cells/L)							
		Cyanophyte	Chlorophyte	Euglenophyte	Chrysophyte	Diatom	Cryptophyte	Dinoflagellate	Total
Wally Lake									
WAL	13-Jul-06	0	21752	0	1193144	81640	72840	15968	1385344
WAL	7-Aug-06	0	289160	0	1491288	64272	7984	1200	1853904
WAL	18-Aug-06	21552	404304	0	1081600	100392	51088	14968	1673904
WAL	11-Sep-06	0	223904	0	1992400	98592	60072	200	2375168
Inuggugayualik Lake									
INUG	15-Jul-06	0	36520	0	1710192	162448	155864	19568	2084592
INUG	7-Aug-06	0	145680	0	1502856	145280	65256	43704	1902776
INUG	19-Aug-06	0	289760	0	932536	225304	22352	200	1470152
INUG	11-Sep-06	50288	297544	200	1942880	69056	122728	51488	2534184
Relative Abundance (%)		0.4	10.2	0.001	79.1	5.8	3.6	0.9	100.0

Table 3-8: Seasonal Phytoplankton Biomass (mg/m³) and Diversity, Meadowbank Study Lakes, 2006.

Station	Date	Phytoplankton Biomass (mg/m^3)								# Species	Simpsons Diversity
		Cyanophyte	Chlorophyte	Euglenophyte	Chrysophyte	Diatom	Cryptophyte	Dinoflagellate	Total		
Third Portage Lake											
TPS	17-Jul-06	0.7	1.1	0.0	79.4	6.7	9.1	10.1	107.1	30	0.87
TPS	5-Aug-06	0.0	3.4	1.6	86.6	6.0	2.7	17.1	117.4	36	0.88
TPS	21-Aug-06	0.1	5.5	0.0	71.7	10.7	2.7	4.5	95.3	34	0.87
TPS	8-Sep-06	3.8	3.9	0.0	112.4	17.5	5.1	3.7	146.4	38	0.84
TPE	11-Jul-06	0.0	3.8	0.0	120.3	1.1	7.0	9.8	142.0	33	0.87
TPE	5-Aug-06	0.0	3.5	0.0	101.4	6.5	2.4	35.8	149.6	35	0.87
TPE	17-Aug-06	0.0	3.0	0.0	75.4	10.5	1.5	16.0	106.5	32	0.83
TPE	8-Sep-06	0.2	8.6	0.0	119.1	19.1	0.4	22.9	170.4	41	0.84
TPN	17-Jul-06	0.0	3.7	0.0	83.6	2.1	6.9	12.7	109.0	30	0.82
TPN	5-Aug-06	0.0	6.0	0.0	80.6	8.8	2.8	13.9	112.1	27	0.81
TPN	21-Aug-06	0.0	4.4	0.0	80.8	12.6	5.6	11.9	115.4	29	0.86
TPN	8-Sep-06	0.0	21.3	0.0	89.9	10.5	4.8	0.9	127.3	35	0.89
Second Portage Lake											
SP	12-Jul-06	0.0	2.6	0.0	119.5	9.8	2.5	8.0	142.4	33	0.85
SP	6-Aug-06	0.0	2.8	0.0	92.7	6.1	5.3	7.5	114.5	32	0.85
SP	18-Aug-06	0.4	7.9	0.0	71.8	6.3	3.6	11.7	101.7	38	0.81
SP	9-Sep-06	0.3	130.7	0.0	125.6	14.1	10.8	1.7	283.3	44	0.87
Tehek Lake											
TE	12-Jul-06	1.1	0.9	0.0	88.4	6.4	1.9	3.8	102.6	26	0.84
TE	6-Aug-06	0.0	3.9	0.0	100.2	15.3	4.1	16.1	139.7	36	0.86
TE	17-Aug-06	0.0	5.7	0.0	93.3	9.9	1.4	15.4	125.7	37	0.84
TE	9-Sep-06	0.4	10.2	0.0	148.5	18.9	9.3	14.3	201.7	45	0.89

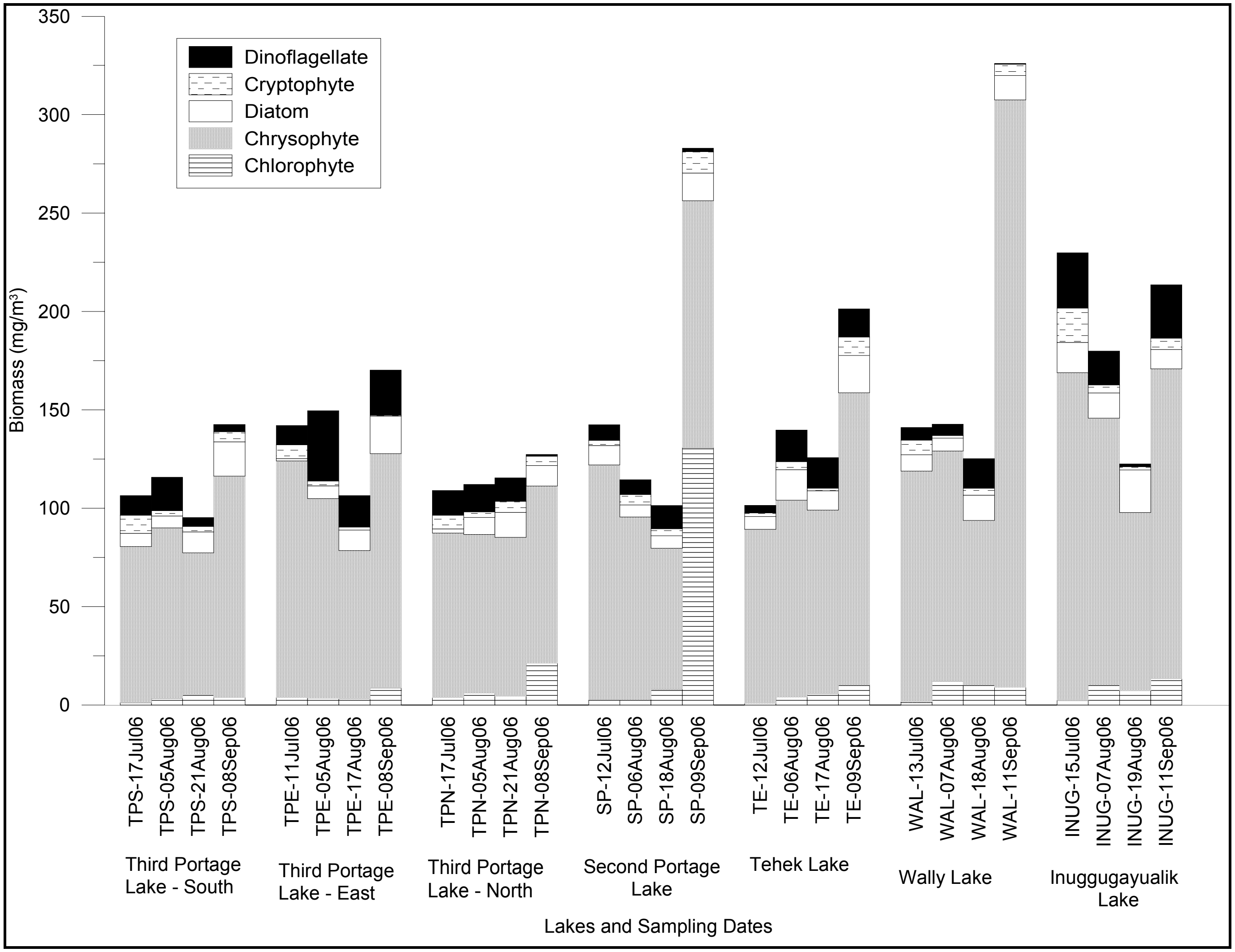
Station	Date	Phytoplankton Biomass (mg/m³)								# Species	Simpsons Diversity
		Cyanophyte	Chlorophyte	Euglenophyte	Chrysophyte	Diatom	Cryptophyte	Dinoflagellate	Total		
Wally Lake											
WAL	13-Jul-06	0.0	1.8	0.0	117.1	8.3	7.5	6.5	141.1	31	0.84
WAL	7-Aug-06	0.0	12.1	0.0	117.0	6.5	1.4	5.8	142.7	37	0.82
WAL	18-Aug-06	0.2	10.2	0.0	83.5	12.9	3.4	15.2	125.4	40	0.89
WAL	11-Sep-06	0.0	9.0	0.0	298.5	12.4	5.7	0.4	326.1	41	0.85
Inuggugayualik Lake											
INUG	15-Jul-06	0.0	2.3	0.0	166.6	15.4	17.4	28.1	229.8	38	0.87
INUG	7-Aug-06	0.0	10.3	0.0	135.5	12.9	4.0	17.2	179.8	39	0.90
INUG	19-Aug-06	0.0	7.5	0.0	90.3	21.7	1.7	1.3	122.5	36	0.91
INUG	11-Sep-06	2.5	13.4	0.4	157.5	9.8	5.8	27.1	216.4	48	0.88
Relative Abundance (%)		0.2	7.1	0.05	74.1	7.1	3.3	8.1			

Chrysophytes are small, usually unicellular, and are very numerous in lake water; they frequently comprise the greatest biomass by virtue of their large numbers. This group comprised 79% of the total phytoplankton density (cells/L) in the study lakes with chlorophytes having the next highest density at only 10.2% (**Table 3-7**). The relative cell abundance of major phytoplankton groups in 2006 was very similar to previous years (BAER, 2005). Chrysophytes comprised between 76% and 86% of all individuals enumerated from all lakes in July and August 2002. The dominant species in 2002 were *Dinobryon sociale*, *Chrysocosccus* and *Uroglena*, which were also dominant in 2006.

Phytoplankton biomass (mg/m^3) is generally a more important statistic ecologically. Trends in biomass were similar to density, with chrysophytes dominating biomass (74.1%) (**Table 3-8**). Dinoflagellates were the next most important group at 8.1%; because of their relatively large size, although they are not numerous, they contribute a greater proportion of biomass. Diatoms and chlorophytes each comprised 7.1% of total biomass. The biomass of diatoms (10%) and dinoflagellates (12%) in 2002 was similar to current data. Diatoms are a diverse and important group, although the majority of species are sessile and associated with littoral substrates such as rocks and attached vegetation (Wetzel, 1983). Because of this limitation in habitat, the abundance of diatoms in the water column is often reduced relative to other groups. Dinoflagellates are common, unicellular, flagellated motile algae that are useful for biomonitoring purposes because particular species are very sensitive to changes in certain water chemistry variables such pH, dissolved organic matter, and temperature.

A major objective of the 2006 work was to examine the seasonal productivity of the project lakes, by sampling the phytoplankton community as soon after ice-off as possible, and again at intervals of roughly two weeks. Biomass in the project lakes was generally lowest in spring (early July) and seasonally increased to maximums by the fall (**Figure 3-8**); however, the magnitude of increase throughout the open water season was relatively small. With the abundance of sunlight early in spring, and the transparency of the ice and water, water column productivity increased significantly despite an ice cover. Given that nutrients are lacking in the project lakes this is the limiting factor to productivity, not solar energy. Thus, by the time it was safe to sample on the lakes, productivity had reached equilibrium and increased only slightly with warmer water temperatures.

Figure 3-8: Seasonal Biomass (mg/m^3) of Major Phytoplankton Groups, Meadowbank Study Lakes, 2006.



Total phytoplankton biomass was relatively similar within and among project lakes, ranging mainly between about 100 to 200 mg/m^3 (**Figure 3-8**). The only exception to this was Second Portage Lake in September due to large numbers of chlorophytes in this sample (**Figure 3-8**). While Second Portage and Wally Lakes showed high biomass in September, mean biomass combined over the seasons was slightly higher in Inuggugayualik Lake (**Figure 3-9**). Lowest biomass occurred in the south basin of Third Portage Lake (TPS) (**Figure 3-9**). This lake basin is large, deep, and cold; and the low temperatures may have reduced productivity in this area. Phytoplankton biomass in 2006 was consistent with historic data. As an example: in 2002 biomass ranged from 101 to 174 mg/m^3 in July and from 145 to177 mg/m^3 in August, which is within the range observed this year. This level of productivity is quite low and is typical of oligotrophic, nutrient poor lakes.

Biomass was also comparable to estimates reported for oligotrophic lakes (Jade Lake and Spring Lake) in the Saqvaqjuac region near Chesterfield Inlet in the late 1970's and early 1980's (Welch et al, 1989) and Char Lake (Kalff et al, 1975).

Species diversity and richness are measures of ecosystem health. Species diversity (Simpson's diversity index) averaged 0.85, with no significant difference among sampling stations, lakes or time of year (**Table 3-8**). Species richness (number of species occurring in a sample) ranged from 26 to 48 species over the duration of sampling, with an average of 38 species per sampling event. The number of species increased slightly in all lakes through the open water season (**Figure 3-10 and Table 3-8**). These species diversity and richness estimates are typical for northern and boreal lakes based on published studies (e.g., Findlay et al. 2001).

3.1.5 Benthic Invertebrates

3.1.5.1 Taxonomic Abundance and Richness

This section gives a general description of observations made on abundance and richness of all major taxa (e.g., insects, molluscs, worms). Summarized data are presented in **Tables 3-9 and 3-10** and raw data are provided in **Appendix C**.

Figure 3-9: Phytoplankton Mean Total Biomass, +/- 1 Standard Deviation, Meadowbank Study Lakes, 2006.

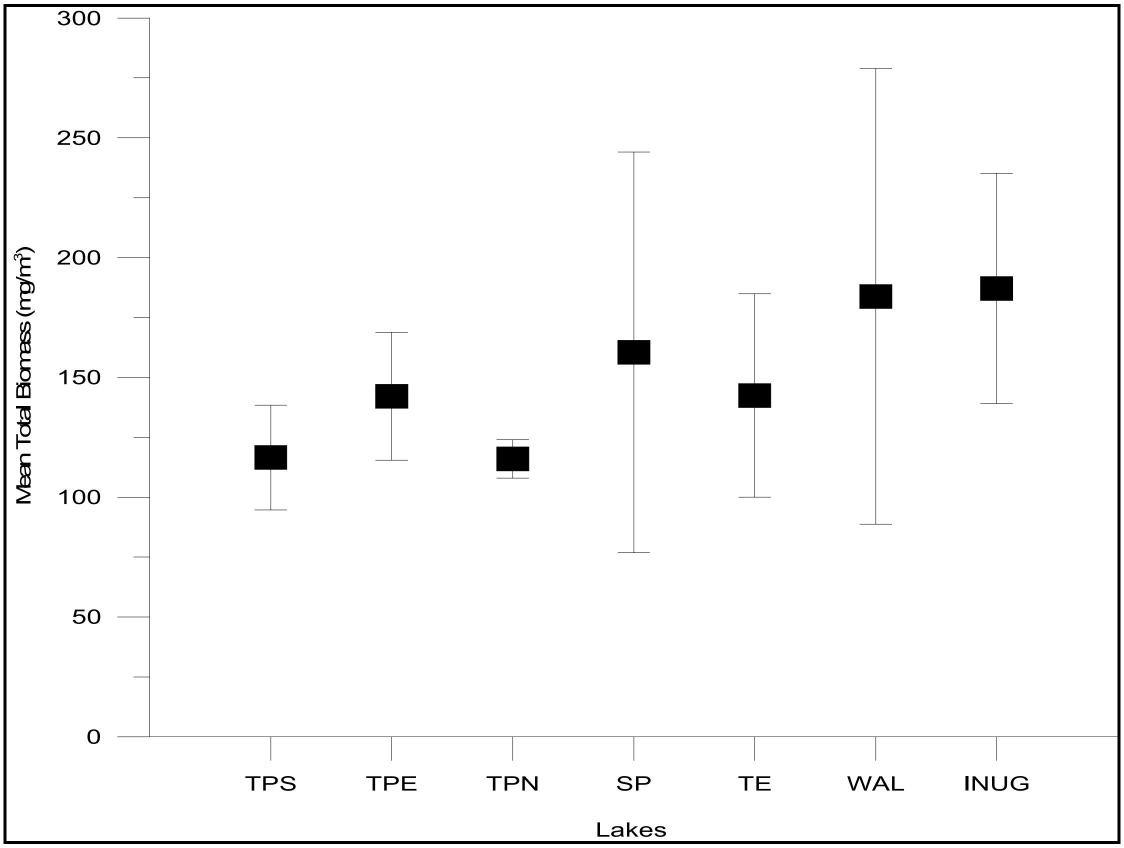
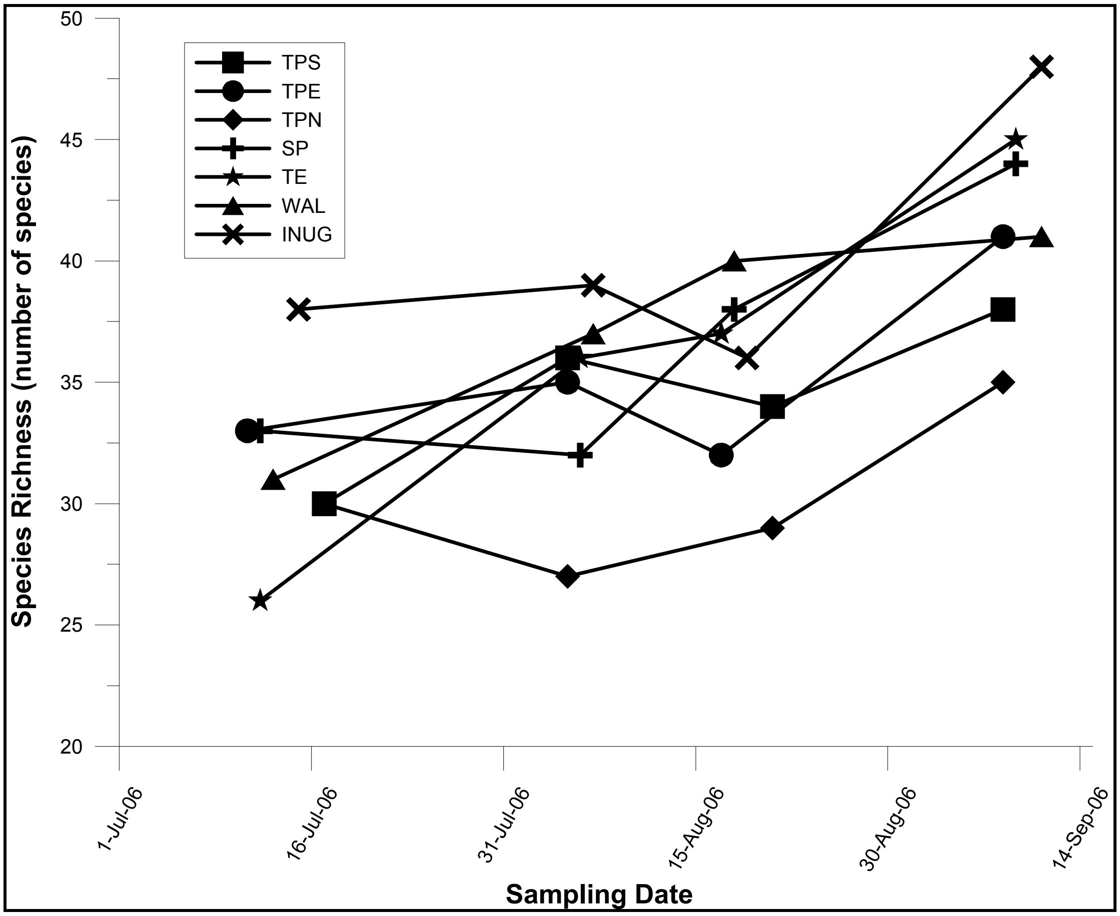


Figure 3-10: Phytoplankton Species Richness, Meadowbank Study Lakes, 2006.



A total of at least 44 taxa were identified and enumerated in the benthic invertebrate samples collected from the seven lake stations (**Appendix C**). The abundance of roundworms (Nematoda) and seed shrimp (Ostracoda) is reported but is not included in statistical comparisons of total number of genera or abundance. Because of their small size they are not consistently retained on a 250 or 500-μm sieve, thus their presence would be confounding if they were used to quantitatively compare abundance estimates among stations.

Insects, almost exclusively chironomids, were dominant in terms of numbers of organisms enumerated and taxa identified at all lake stations, whether sieved through 500-μm or 250-μm mesh sieves (**Tables 3-9 and 3-10**). Clearly, chironomid larvae (F. Chironomidae) were the dominant taxonomic group over all stations with about 2/3 of all taxa identified consisting of chironomids within five subfamilies (**Appendix C**). Nine genera of chironomids dominated richness.

The most abundant chironomid genus was *Corynocera* (SF. Chironominae); however, this chironomid was only found in Wally Lake in large numbers, apart from that, a few were found in Inuggugayualik Lake. *Paratanytarsus* (SF. Chironominae) was abundant but mainly in Third Portage (east and north stations) and Wally Lakes and was rarely found in the remaining lakes. *Micropsectra* (SF. Chironominae) was also abundant throughout the lake stations, to a lesser degree in Second Portage, Tehek, and Inuggugayualik Lakes.

In addition to chironomid larvae, *Cyclocalyx/Neopisidium*, a genus of the family Sphaeriidae (fingernail clams), was also abundant throughout the lakes except was completely absent from Wally Lake. Oligochaete worms were also reasonably abundant in the lake sediments; generally, at least one oligochaete genus was present at all stations (**Appendix C**).

Table 3-9: Benthic Invertebrate Abundance for each Major Taxa Group and both Sieve Mesh Sizes, Meadowbank Study Lakes, 2006.

Station	Date	Mean Abundance from 500-um sieve (#/sample)[1]				Total	Total Abundance from 250-um sieve (#/sample)				Total
		Oligochaetes	Insects	Molluscs	Other Taxa		Oligochaetes	Insects	Molluscs	Other Taxa	
Third Portage Lake											
TPE	11-Jul-06	3.3	136.0	20.0	5.0	164.3	5	276	23	9	313
TPE	5-Aug-06	3.0	63.0	19.0	1.7	86.7	3	72	19	7	101
TPE	17-Aug-06	1.3	120.7	27.0	1.0	150.0	13	193	31	13	250
TPE	8-Sep-06	0.7	98.7	36.0	1.3	136.7	17	374	48	41	480
Relative Abundance (%)		***1.5***	***77.8***	***19.0***	***1.7***		***3.3***	***80.0***	***10.6***	***6.1***	
TPN	17-Jul-06	1.0	106.0	20.0	0.7	127.7	1	153	25	8	187
TPN	5-Aug-06	0.0	77.0	18.3	1.3	96.7	0	145	11	6	162
TPN*	21-Aug-06	0.0	0.7	2.7	0.7	4.0	0	3	6	1	10
TPN	8-Sep-06	1.3	32.7	17.0	2.0	53.0	1	110	16	19	146
Relative Abundance (%)		***0.8***	***76.9***	***20.6***	***1.7***		***0.4***	***81.4***	***11.5***	***6.7***	
TPS	17-Jul-06	0.0	89.0	12.3	1.0	102.3	8	123	15	17	163
TPS	5-Aug-06	5.3	58.7	25.7	1.0	90.7	2	46	22	7	77
TPS	21-Aug-06	0.0	30.3	13.7	0.7	44.7	2	38	7	10	57
TPS	8-Sep-06	2.0	36.7	15.7	0.3	54.7	11	79	20	5	115
Relative Abundance (%)		***2.5***	***73.4***	***23.0***	***1.0***		***5.6***	***69.4***	***15.5***	***9.5***	
Second Portage Lake											
SP	12-Jul-06	2.0	59.0	14.0	1.0	76.0	3	104	11	2	120
SP	6-Aug-06	1.3	27.3	18.7	2.0	49.3	1	50	25	5	81
SP	18-Aug-06	0.3	12.0	12.7	3.7	28.7	0	33	11	8	52
SP	9-Sep-06	0.0	21.7	19.0	1.3	42.0	NA	NA	NA	NA	
Relative Abundance (%)		***1.9***	***61.2***	***32.8***	***4.1***		***1.6***	***73.9***	***18.6***	***5.9***	

Station	Date	Mean Abundance from 500-*u*m sieve (#/sample)[1] Oligochaetes	Insects	Molluscs	Other Taxa	Total	Total Abundance from 250-*u*m sieve (#/sample) Oligochaetes	Insects	Molluscs	Other Taxa	Total
Tehek Lake											
TE	12-Jul-06	3.0	53.7	23.3	3.3	83.3	8	120	23	2	153
TE	6-Aug-06	2.0	21.3	24.3	2.3	50.0	3	39	27	12	81
TE*	17-Aug-06	0.0	14.3	19.3	1.0	34.7	0	78	25	27	130
TE	9-Sep-06	1.7	35.0	24.3	6.3	67.3	1	63	17	20	101
Relative Abundance (%)		***2.8***	***52.8***	***38.8***	***5.5***		***2.6***	***64.5***	***19.8***	***13.1***	
Wally Lake											
WAL	13-Jul-06	0.3	193.0	34.0	0.3	227.7	4	384	56	4	448
WAL	7-Aug-06	1.0	409.3	22.0	3.0	435.3	0	1068	16	8	1092
WAL	18-Aug-06	1.3	565.0	26.0	5.7	598.0	0	872	24	8	904
WAL	11-Sep-06	5.7	1082.3	22.7	5.0	1115.7	NA	NA	NA	NA	
Relative Abundance (%)		***0.4***	***94.7***	***4.4***	***0.6***		***0.2***	***95.1***	***3.9***	***0.8***	
Inuggugayualik Lake											
INUG	15-Jul-06	1.7	71.7	8.0	2.7	84.0	2	71	4	1	78
INUG	7-Aug-06	1.7	37.0	16.7	2.7	58.0	4	57	12	15	88
INUG	19-Aug-06	1.7	18.7	12.7	2.0	35.0	3	68	16	16	103
INUG	11-Sep-06	2.0	42.3	18.7	2.3	65.3	NA	NA	NA	NA	
Relative Abundance (%)		***2.9***	***70.0***	***23.1***	***4.0***		***3.3***	***72.9***	***11.9***	***11.9***	
Overall Benthos											
Relative Abundance (%)		***1.0***	***84.4***	***13.1***	***1.5***		***1.7***	***84.1***	***9.3***	***4.9***	

Notes: [1] Abundance for each taxa group is the average of 3 reps for each station (500-um only); * Late summer counts for TPN and TE may be low due to poor sample preservation.

Table 3-10: Benthic Invertebrate Richness and Diversity Index for each Major Taxa Group and both Sieve Mesh Sizes, Meadowbank Study Lakes, 2006.

Station	Date	Mean Richness from 500-*u*m sieve (#/sample)[1]				Simpsons Diversity	Total Richness from 250-*u*m sieve (#/sample)				Simpsons Diversity
		Oligochaetes	Insects	Molluscs	Other Taxa		Oligochaetes	Insects	Molluscs	Other Taxa	
Third Portage Lake											
TPE	11-Jul-06	1.3	9.0	1.0	1.0	0.72	2	13	1	1	0.85
TPE	5-Aug-06	1.0	9.7	1.0	1.0	0.82	1	11	1	1	0.90
TPE	17-Aug-06	0.7	6.0	1.0	0.7	0.70	4	12	1	2	0.86
TPE	8-Sep-06	0.7	8.3	1.0	1.0	0.71	3	11	1	2	0.85
Mean Richness (%)		***0.9***	***8.3***	***1.0***	***0.9***		***2.5***	***11.8***	***1.0***	***1.5***	
TPN	17-Jul-06	0.7	11.0	1.0	0.7	0.77	1	15	1	2	0.84
TPN	5-Aug-06	0.0	11.3	1.0	0.7	0.86	0	15	1	1	0.88
TPN*	21-Aug-06	0.0	0.7	0.7	0.7	0.73	0	3	1	1	0.67
TPN	8-Sep-06	1.0	8.7	1.0	0.7	0.83	1	13	1	1	0.86
Mean Richness (%)		***0.4***	***7.9***	***0.9***	***0.7***		***0.5***	***11.5***	***1.0***	***1.3***	
TPS	17-Jul-06	0.0	8.7	1.0	1.0	0.82	1	10	1	3	0.90
TPS	5-Aug-06	1.7	9.7	1.0	0.7	0.83	0	10	1	2	0.87
TPS	21-Aug-06	0.0	9.3	1.0	0.3	0.86	1	11	1	2	0.91
TPS	8-Sep-06	2.0	10.3	1.0	0.3	0.86	4	13	1	1	0.89
Mean Richness (%)		***0.9***	***9.5***	***1.0***	***0.6***		***1.5***	***11.0***	***1.0***	***2.0***	
Second Portage Lake											
SP	12-Jul-06	2.0	9.7	1.0	0.7	0.87	3	13	1	1	0.90
SP	6-Aug-06	1.3	5.7	1.0	1.0	0.78	1	9	1	1	0.82
SP	18-Aug-06	0.3	4.0	1.0	1.0	0.68	0	9	1	1	0.88
SP	9-Sep-06	0.0	4.3	1.0	1.0	0.72	NA	NA	NA	NA	NA
Mean Richness (%)		***0.9***	***5.9***	***1.0***	***0.9***		***1.3***	***10.3***	***1.0***	***1.0***	

Station	Date	Mean Richness from 500-*u*m sieve (#/sample)[1]				Simpsons Diversity	Total Richness from 250-*u*m sieve (#/sample)				Simpsons Diversity
		Oligochaetes	Insects	Molluscs	Other Taxa		Oligochaetes	Insects	Molluscs	Other Taxa	
Tehek Lake											
TE	12-Jul-06	1.3	9.7	1.0	1.3	0.82	3	16	1	1	0.91
TE	6-Aug-06	1.0	7.0	1.0	1.3	0.71	1	12	1	3	0.83
TE*	17-Aug-06	0.0	2.3	1.3	0.7	0.61	0	11	1	2	0.90
TE	9-Sep-06	0.7	7.3	1.0	1.0	0.78	0	10	1	2	0.87
Mean Richness (%)		***0.8***	***6.6***	***1.1***	***1.1***		***1.0***	***12.3***	***1.0***	***2.0***	
Wally Lake											
WAL	13-Jul-06	0.3	10.0	1.7	0.3	0.80	1	9	1	1	0.79
WAL	7-Aug-06	0.7	7.3	2.0	0.7	0.59	0	8	2	1	0.71
WAL	18-Aug-06	0.7	8.7	1.3	1.0	0.44	0	11	2	1	0.66
WAL	11-Sep-06	2.0	12.0	2.0	1.0	0.50	NA	NA	NA	NA	NA
Mean Richness (%)		***0.9***	***9.5***	***1.8***	***0.8***		***0.3***	***9.3***	***1.7***	***1.0***	
Inuggugayualik Lake											
INUG	15-Jul-06	1.3	11.0	2.0	1.3	0.86	1	14	2	1	0.91
INUG	7-Aug-06	1.3	9.0	1.3	1.3	0.87	3	16	1	2	0.93
INUG	19-Aug-06	1.0	6.3	2.0	1.0	0.82	1	12	2	2	0.90
INUG	11-Sep-06	0.7	8.0	2.0	1.0	0.85	NA	NA	NA	NA	NA
Mean Richness (%)		***1.1***	***8.6***	***1.8***	***1.2***		***1.7***	***14.0***	***1.7***	***1.7***	
Overall Benthos											
Mean Richness (%)		***0.8***	***8.0***	***1.2***	***0.9***		***1.3***	***11.5***	***1.2***	***1.5***	

Notes: [1] Richness for each taxa group is the average of 3 reps for each station (500-um only); * Late summer counts for TPN and TE may be low due to poor sample preservation.

3.1.5.2 Inter-Lake Trends

This section explores the spatial influence (i.e., lake effect) on total abundance and richness, and abundance and richness of all major taxa groups. Differences among lake stations were investigated independently using ANOVA. Where significant differences exist, post-hoc testing Tukey's HSD multiple comparisons or Bonferroni adjustment was used to determine which lake stations were different from one another.

The statistical results from ANOVA and post-hoc tests for all variables (total abundance, abundance of each of four major taxa groups, total richness, and richness of each of four major taxa groups) are presented and plotted in **Table 3-11 and Figure 3-11**.

Comparisons among lakes focused on two seasons: spring and late summer. These seasons were selected to assess potential differences among lakes just after ice break up and late in the summer. The spring highlights potential differences after the long winter season. The late summer is the season that will be targeted for long-term AEMP sampling.

Abundance and richness of organisms (total and individual taxa groups) were similar for the most part among lake stations, for both seasons (**Figure 3-11**). Only a few significant differences were found (**Table 3-11**) and these were for total and insect abundance (both seasons), mollusc abundance (spring), total and insect richness (late summer), and mollusc richness (both seasons). The one trend common to all cases with significant differences is: Wally Lake station had greater abundance and/or richness than at least one other lake station. Also common was the observation that Third Portage Lake – North basin or Inuggugayualik Lake had significantly lower abundance and/or richness than most other lakes. However, the Third Portage North results were strongly influenced by the late summer data, which were likely low due to poor sample preservation.

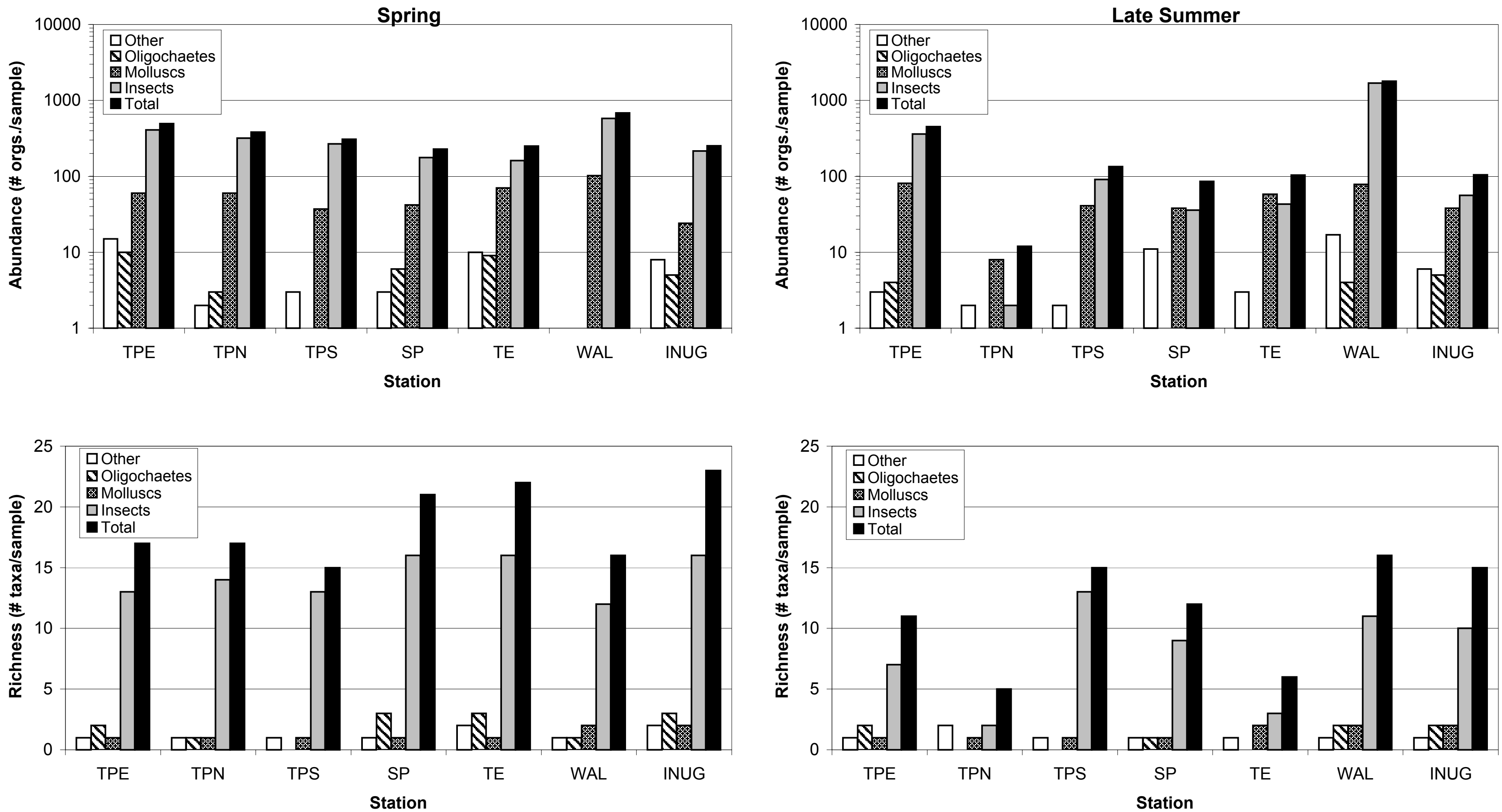
Apart from Wally Lake, total abundance of organisms ranged from approximately 230 to 500 organisms/sample (spring) and 10 to 450 organisms/sample (late summer) (**Figure 3-11**). Total abundance in Wally Lake was much greater than the other lakes and ranged from about 680/sample (spring) to about 1800/sample (late summer). Total richness ranged from 15 to 23 taxa/sample (spring) and 5 to 16 taxa/sample (late summer).

Table 3-11: ANOVA Results Testing Differences Among Lake Stations for Spring and Late Summer, 2006.

Dependent Variable	Season[1]	Lake Effect		
		S or NS[2]	p-value	Result[3]
(Log) Total Abundance	Spring	S	0.009	WAL>INUG,SP,TE.
	LT Summer*	S	<0.001	WAL>TPE>(INUG,SP,TE,TPS)>TPN.
(Log) Oligochaete Abundance	Spring	NS	0.341	
	LT Summer	NS	0.521	
(Log) Insect Abundance	Spring	S	0.012	WAL>SP,TE.
	LT Summer*	S	<0.001	WAL>TPE>(INUG,SP,TE,TPS)>TPN.
(Log) Mollusc Abundance	Spring	S	0.002	WAL>TPS,INUG; (TE,TPE,TPN)>INUG.
	LT Summer	NS	0.108	
(Log) Other Taxa Abundance	Spring	NS	0.111	
	LT Summer	NS	0.188	
Total Richness	Spring	NS	0.603	
	LT Summer*	S	<0.001	(WAL,TPS,INUG)>(TE,TPN); WAL>SP; TPE>TPN.
Oligochaete Richness	Spring	NS	0.109	
	LT Summer	NS	0.386	
Insect Richness	Spring	NS	0.850	
	LT Summer*	S	<0.001	(WAL,TPS,INUG)>(TE,TPN); (WAL,TPS)>SP; TPE>TPN.
Mollusc Richness	Spring	S	<0.001	WAL>(SP,TE,TPE,TPN,TPS); (SP,TE,TPE,TPN,TPS)>INUG.
	LT Summer*	S	0.019	INUG>TPN.
Other Taxa Richness	Spring	NS	0.186	
	LT Summer	NS	0.747	

Notes: [1] LT Summer = late summer; [2] S = significant, NS = nonsignificant; [3] TPE,TPN,TPS = Third Portage Lake - East, North, South basins, SP = Second Portage Lake, TE = Tehek Lake, WAL = Wally Lake, INUG = Inuggugayualik Lake; * Late summer counts for TPN and TE may be low due to poor sample preservation.

Figure 3-11: Benthic Invertebrate Abundance and Richness (total and individual taxa groups) for Meadowbank Study Lakes, Spring (left) and Late Summer (right), 2006.



Notes:TPE,TPN,TPS = Third Portage Lake - East, North, South basins; SP = Second Portage Lake; TE = Tehek Lake; WAL = Wally Lake; INUG = Inuggugayualik Lake;

Late summer counts for TPN and TE may be low due to poor sample preservation.

3.2 Targeted Monitoring Studies

3.2.1 Seasonal Benthic Sampling

Four collections of benthic invertebrates from multiple mesh sizes were made to more fully describe seasonal dynamics in community structure, abundance and diversity of organisms.

3.2.1.1 Inter-Season Trends

This section explores the temporal influence (i.e., season effect) on total abundance and richness, and abundance and richness of all major taxa groups. Differences between seasons were investigated independently using ANOVA. Where significant differences exist, post-hoc testing Tukey's HSD multiple comparisons or Bonferroni adjustment was used to determine which seasons were different from one another.

The statistical results from ANOVA and post-hoc tests for all variables (total abundance, abundance of each of four major taxa groups, total richness, and richness of each of four major taxa groups) are presented and plotted in **Table 3-12 and Figure 3-12**.

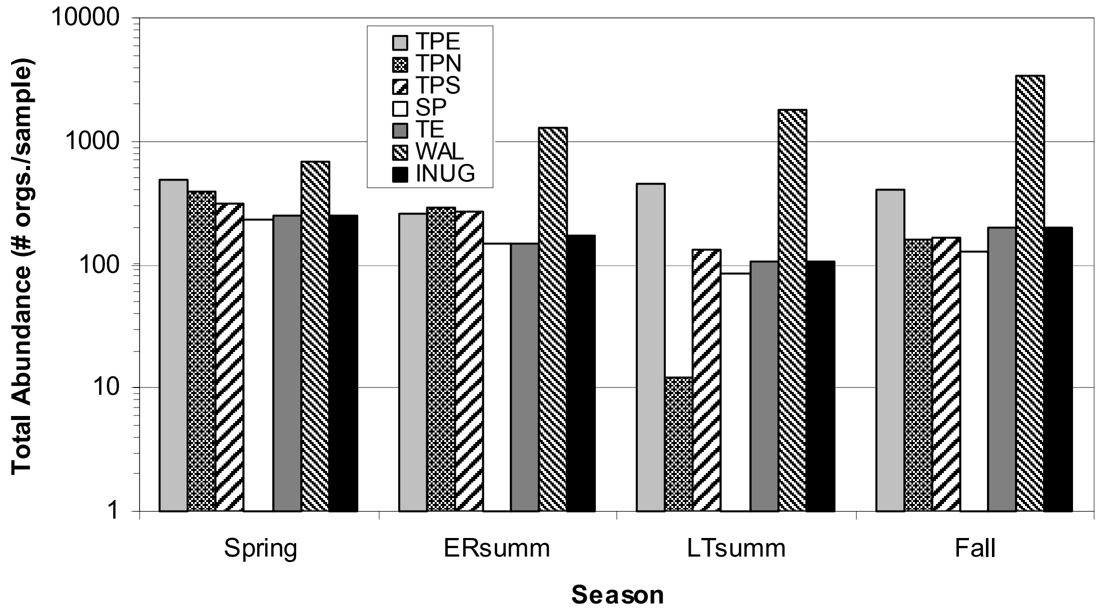
To simplify inter-season effects, comparisons are made only on a selection of lake stations: Third Portage Lake – North basin, Second Portage, Wally, and Inuggugayualik Lakes. Abundance and richness of organisms (total and individual taxa groups) between seasons were similar in about 2/3 of all cases (**Figure 3-12**). A number of significant differences were found (**Table 3-12**) and among these common trends emerge. Firstly, data collected in the spring were greater in abundance and richness than those collected during at least one other season, as shown for Second Portage and Inuggugayualik Lakes in **Table 3-12**. Secondly, data collected in the late summer were often lower in abundance and richness than those collected during at least one other season, as shown for Third Portage Lake – North basin in **Table 3-12**. Finally, data collected in the fall, in Wally Lake only, were greater in abundance and richness than those collected during at least one other season. These seasonal differences in abundance and richness (higher in spring and fall, lower in late summer) likely coincide with natural benthic invertebrate fluctuations (i.e., emergence of taxa).

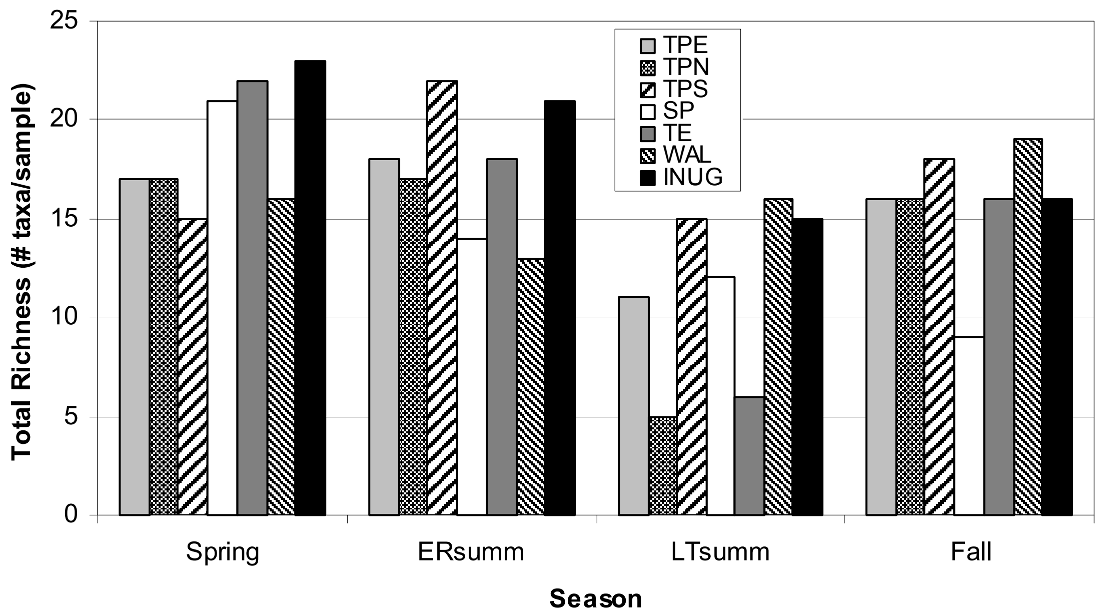
Table 3-12: ANOVA Results Testing Differences Between Seasons for Four Meadowbank Study Lakes, 2006.

Dependent Variable	Lake Station[1]	Season Effect		
		S or NS[2]	p-value	Result[3]
(Log) Total Abundance	TPN*	S	<0.001	All>LTsumm; (Spring,ERsumm)>Fall.
	SP	NS	0.073	
	WAL	S	0.010	Fall>Spring.
	INUG	S	0.030	Spring>LTsumm.
(Log) Oligochaete Abundance	TPN	NS	0.374	
	SP	NS	0.531	
	WAL	NS	0.083	
	INUG	NS	0.365	
(Log) Insect Abundance	TPN*	S	<0.001	All>LTsumm; (Spring,ERsumm)>Fall.
	SP	S	0.036	Spring>LTsumm.
	WAL	S	0.008	Fall>Spring.
	INUG	S	0.008	Spring>LTsumm.
(Log) Mollusc Abundance	TPN*	S	0.010	All>LTsumm.
	SP	NS	0.680	
	WAL	NS	0.707	
	INUG	NS	0.084	
(Log) Other Taxa Abundance	TPN	NS	0.288	
	SP	NS	0.070	
	WAL	NS	0.424	
	INUG	NS	0.898	
Total Richness	TPN*	S	<0.001	All>LTsumm.
	SP	S	0.008	Spring>(LTsumm, Fall).
	WAL	S	0.011	Fall>(ERsumm,LTsumm).
	INUG	NS	0.265	
Oligochaete Richness	TPN*	S	0.006	Fall>(ERsumm,LTsumm).
	SP	S	0.019	Spring>Fall.
	WAL	S	0.015	Fall>Spring.
	INUG	NS	0.821	
Insect Richness	TPN*	S	<0.001	All>LTsumm.
	SP	S	0.021	Spring>(LTsumm,Fall).
	WAL	S	0.007	Fall>ERsumm.
	INUG	NS	0.274	
Mollusc Richness	TPN	NS	0.441	
	SP	IS	--	
	WAL	NS	0.219	
	INUG	NS	0.052	
Other Taxa Richness	TPN	NS	1.00	
	SP	NS	0.441	
	WAL	NS	0.219	
	INUG	NS	0.596	

Notes: [1] TPN = Third Portage Lake - North basin, SP = Second Portage Lake, WAL = Wally Lake, INUG = Inuggugayualik Lake; [2] S = significant, NS = nonsignificant, IS = insufficient data; [3] All = 4 seasons, ERsumm = early summer, LTsumm = late summer; * Late summer counts for TPN may be low due to poor sample preservation.

Figure 3-12: Benthic Invertebrate Total Abundance (top) and Total Richness (bottom) for each season, 2006.





Notes: TPE,TPN,TPS = Third Portage Lake - East, North, South basins; SP = Second Portage Lake; TE = Tehek Lake; WAL = Wally Lake; INUG = Inuggugayualik Lake; ERsumm = early summer; LTsumm = late summer; Late summer counts for TPN and TE may be low due to poor sample preservation.

3.2.1.2 Sieve Mesh Size Comparisons

As mentioned earlier, 2006 was a transition year between the historic use of a 250-μm sieve and the future use of a 500-μm sieve to be consistent with MMER. Comparisons are made between samples from each station that were split into two fractions, one sieved through each mesh size, in order to gather information on these two size classes of organisms. This section looks at sieve mesh size influence on total abundance and richness, and abundance and richness of all major taxa groups. Paired t-tests were used to test for differences in key benthic community metrics between sieve mesh sizes. Data were plotted and simply examined visually, where significant differences exist.

The statistical results from paired t-tests for all variables (total abundance, abundance of each of four major taxa groups, total richness, and richness of each of four major taxa groups) are presented **Table 3-13** and plotted in **Figure 3-13**.

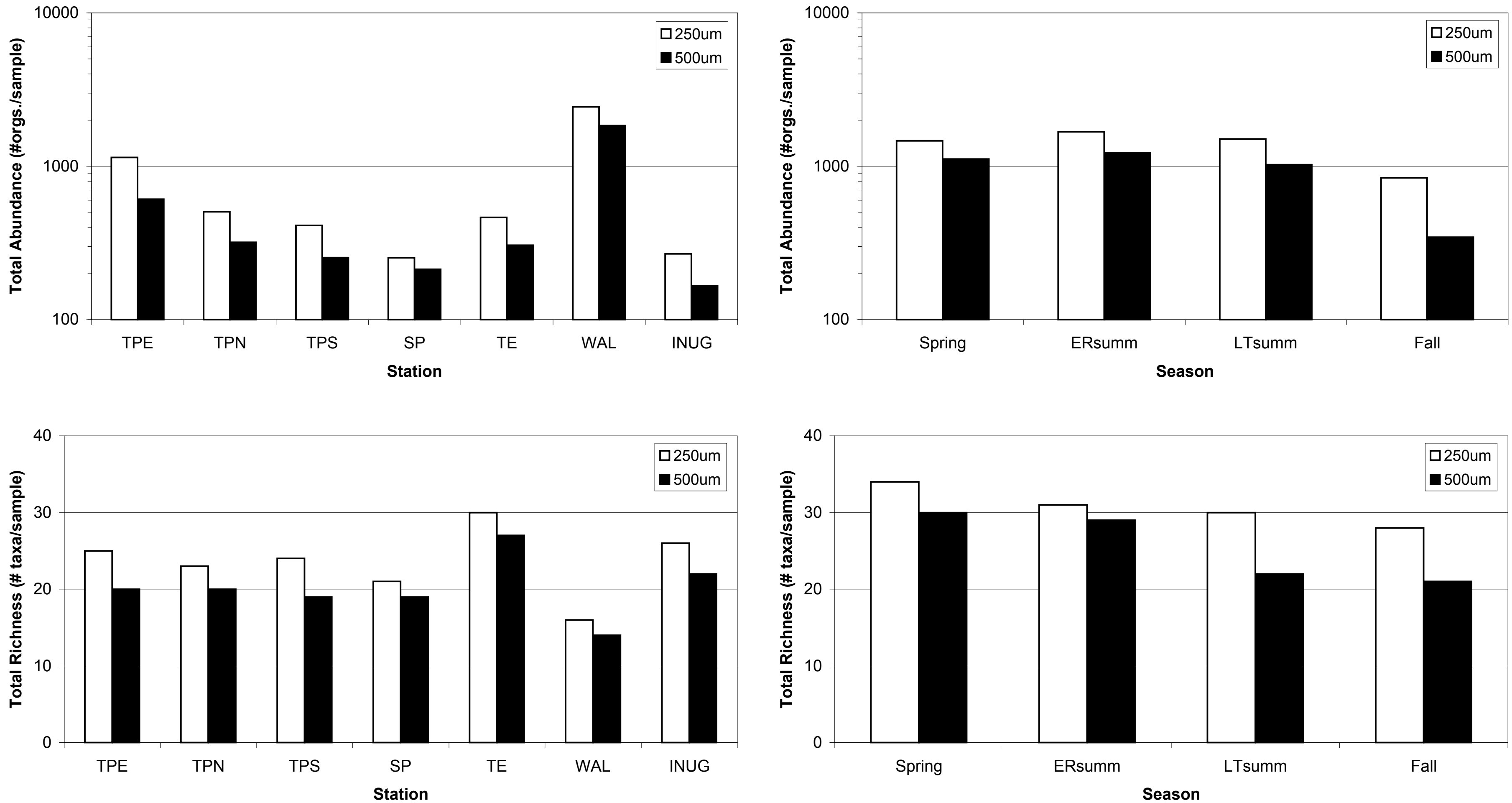
Abundance and richness of organisms (total and individual taxa groups) were different between mesh sizes in all cases with the exception of mollusc abundance and richness (**Table 3-13**). As expected, the 250-μm mesh size sieve retained more organisms and taxa, representing an approximate 1.5 to 2 fold difference over the 500-μm sieve (**Figure 3-13**).

Table 3-13: Paired T-Test Results Testing Differences Between 250-µm and 500-µm Sieve Mesh Sizes.

Dependent Variable	**N**	**Sieve Mesh Size Effect**		
		S or NS[1]	**p-value**	**Result**
(Log) Total Abundance	25	S	<0.001	250-*um*>500-*um*
(Log) Oligochaete Abundance	15	S	0.015	250-*um*>500-*um*
(Log) Insect Abundance	25	S	<0.001	250-*um*>500-*um*
(Log) Mollusc Abundance	25	NS	0.166	
(Log) Other Taxa Abundance	21	S	<0.001	250-*um*>500-*um*
Total Richness	25	S	<0.001	250-*um*>500-*um*
Oligochaete Richness	25	S	0.009	250-*um*>500-*um*
Insect Richness	25	S	<0.001	250-*um*>500-*um*
Mollusc Richness	IS	--		
Other Taxa Richness	25	S	<0.001	250-*um*>500-*um*

Notes: [1] S = significant, NS = nonsignificant, IS = insufficient data.

Figure 3-13: Benthic Invertebrate Total Abundance (top) and Total Richness (bottom) for both 250-um and 500-um Sieve Mesh Sizes, Meadowbank Study Lakes, 2006.



Notes: TPE,TPN,TPS = Third Portage Lake - East, North, South basins; SP = Second Portage Lake; TE = Tehek Lake; WAL = Wally Lake; INUG = Inuggugayualik Lake; ERsumm = early summer; LTsumm = late summer.

While there were expected differences in many metrics between the two mesh sizes, further comparisons were made using dominant taxa to see how well each characterized the community. Interestingly, in order of abundance, the top eight dominant taxa were the same for both sieves sizes (**Figure 3-14**). Furthermore, the number of organisms counted in each of these dominant taxa, were also very similar between sieve mesh sizes (**Figure 3-14**).

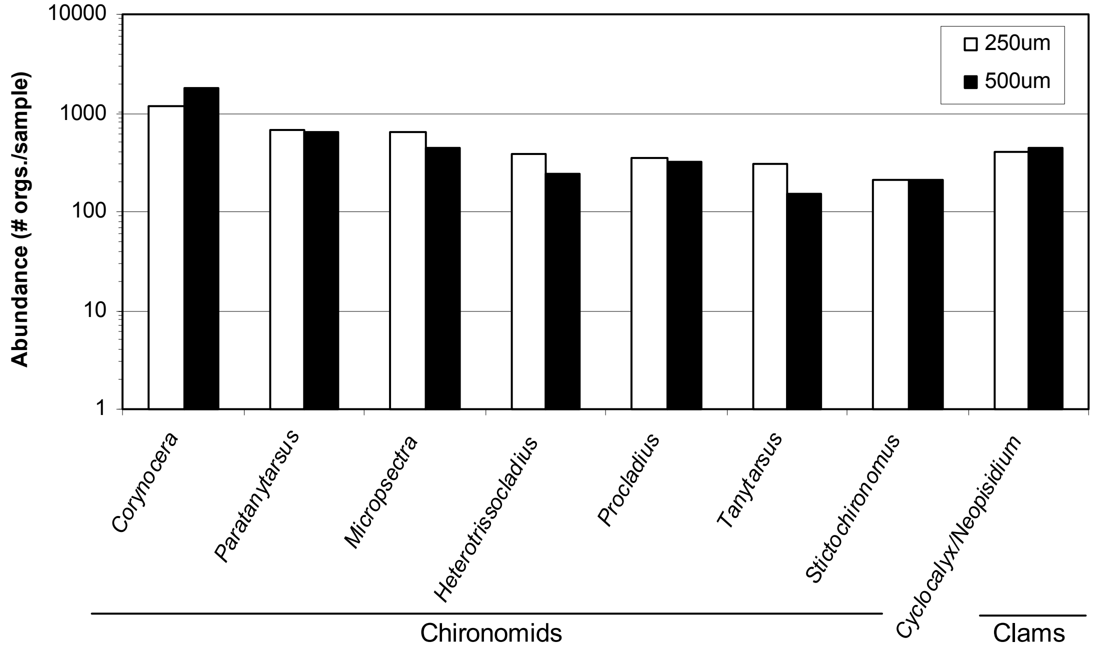
These comparisons are important to help document this transition and facilitate comparisons with historical data in the future. However, there will be at least two full pre-development sampling years, so it is unlikely that future comparisons will need to rely on the 250-μm sieve results from past years.

3.2.2 Sediment Coring

Sediment cores were collected from four locations; Third Portage – East Basin, Second Portage Lake, Vault Lake and Phaser Lake to document vertical structure/stratification of lake sediment prior to dike construction. Multiple cores were taken from Second and Third Portage Lakes. Different sections of the core were analyzed by Golder Associates for Geotechnical purposes, to support dike construction.

Visual inspection of the cores did not reveal any unusual features or characteristics such as varves, perturbations, unusual color, or grain size or any other feature that would suggest there has been anything but a slow, uniform deposition of fine sediments within the project lakes. In some cases relatively shallow cores (<20 cm) were collected, presumably because of hard substrate (rock or compact clay) beneath the fine silt/clay bottom layer. Shallower cores were usually acquired from shallow water depths (<5 m) where there has been less sediment accumulation. A full description of the individual cores taken is provided in **Appendix D**. A photographic record of the sediment cores is also provided in this appendix.

Figure 3-14: Dominant Benthic Invertebrate Taxa for both 250-µm and 500-µm Sieve Mesh Sizes.



3.2.3 Fish Anadromy Survey

Sampling of pelvic fins for strontium concentrations in arctic char and lake trout from Inuggugayualik Lake was proposed to verify that the arctic char in this reference lake are in fact landlocked and that a portion of the population is not anadromous. A previous survey revealed strontium concentrations in the range of landlocked or non-anadromous fish. There was some doubt expressed by DFO as to whether all char were landlocked because one char captured weighed six kilograms, which is unusually large for a non-anadromous fish (strontium was not measured in this fish). A three kg char was also captured and according to fin strontium concentration, was landlocked.

Several fishing episodes conducted periodically during the summer of 2006 failed to capture any arctic char, so strontium levels in fins could not be verified. Additional efforts will target the verification of the status of arctic char in Inuggugayualik Lake.

3.2.4 Parasite Survey

A small number of lake trout from Third Portage and the reference lake, Inuggugayualik Lake, were destructively sampled to correctly identify the internal and external parasite taxonomy and loading. Results of external and internal examinations revealed that the cestode parasite identified was *Diphyllobothrium* sp., not *Cotylurus* as was originally reported (**Table 3-14**). *Diphyllobothrium* sp. appears to be a relatively common and widespread parasite that is present in most fish. It was particularly common attached to the gut and pyloric caecae.

Other parasites identified internally were cestode like worms in the intestinal tract. No swim bladder nematodes were identified. One unidentified parasite was identified in the kidney.

The frequency of infestation of *Diphyllobothrium* sp. in lake trout from Third Portage Lake and Inuggugayualik Lake appeared to be similar, with most fish from both lakes having moderate infestations. All fish appeared to be in good health, regardless of the parasite load that they were carrying.

3.2.5 Portage Lakes Connecting Channels

An evaluation of the connectivity between project lakes and adjacent connecting headwater lakes was conducted on July 8, 2006 at five channels (**Figure 3-15**). The objective of this exercise was to assess whether fish passage between the connecting lakes and the project lakes was possible and if not, determine if improvements to the channels could be made to allow fish to move between the lakes and thereby increase habitat available to fish in the project lakes. The following summarizes our assessment of the connectivity of these channels, their locations depicted in **Figure 3-15**.

TE-1 – Approximately six kilometers east of the outlet from the project lakes at Second Portage, a large lake north of Tehek drains south into the large western basin with possible over-wintering habitat. The channel is predominantly boulder with observable pools, runs and riffles. Channel depth is adequate and would allow for fish species to move between the lakes during freshet and possibly through the summer. Although lake trout or char are not present in the stream channel, it may sustain stickleback and/or sculpin. However, because the channel currently allows fish passage, no improvement to the stream channel is necessary.

DT-1 – A moderate size lake drains west into the lower end of Drilltrail Lake (**Figure 3-15**). The lakes are separated by a boulder field with no connectivity. Fish passage is not possible. Given the width and length of the channel and small flow, it would be impractical to alter the channel. There is a risk of exposure of permafrost and channel erosion.

Table 3-14: Biological Data and Parasite Load in Lake Trout from Inuggugayualik and Third Portage Lakes, 2006.

Lake	Date	Length	Sex/ Maturity	Stomach Contents	Parasite Evaluation								General Health
					General Observations	Gill	Pylorus	Stomach Internal	Stomach External	Intestinal Tract	Swim Bladder	Other	
Innugugayualik	July 14/15	520	M6	Copepoda, Chironomids	Cestoda in gut	NA	Nil	Cestoda	*Diphyllobothrium* larvae	Flat spaghetti like Cestoda	Nil	-	Good health
Innugugayualik		490	M6	Chironomids	Cestoda in gut	NA	Nil	Nil	Diphyllobothrium larvae	Nil	Nil	Parasite in Kidney	Good health
Innugugayualik		540	M6	Chironomids	Cestoda in gut	NA	Nil	Nil	*Diphyllobothrium* larvae	Nil	Nil	-	Good health
Innugugayualik													
Innugugayualik		520	F5	Chironomids, unknown insects	Cestoda in gut	NA	Nil	Cestoda	*Diphyllobothrium* larvae	Nil	Nil	-	Good health
Innugugayualik		580	F5	Chironomids	Cestoda in gut	NA	Nil	Nil	*Diphyllobothrium* larvae	Nil	Nil	-	Good health
Innugugayualik		510	M7	digested Chironomids	Cestoda in gut	NA	Nil	Nil	*Diphyllobothrium* larvae	Nil	Nil	-	Good health
Innugugayualik		720	M7	Stonefly nymphs	No cysts; No parasites	NA	Nil	Nil	Nil	Nil	Nil	-	Good health
Innugugayualik		540	M6	Chironomids	Cestoda in gut; pink flesh	NA	Nil	Cestoda	*Diphyllobothrium* larvae	Nil	Nil	-	Good health
Innugugayualik		740	M10	Chironomids	Cestoda in gut; light pink flesh	NA	Nil	Cestoda	*Diphyllobothrium* larvae	Nil	Nil	-	Good health
Innugugayualik		710	M7	Chironomids	Cestoda in gut	NA	Few Cysts		*Diphyllobothrium* larvae	Nil	Nil	-	Good health
Innugugayualik		770	F5	Empty Stomach	Nil	NA	Nil	Nil	Nil	Nil	Nil	-	Good health
Third Portage	9-Aug-06	540	F2	1 Fish Remains (FR); 1 RNWH;	Nil	Nil	Nil	Nil	Nil	Nil	Nil	-	Very Good health
Third Portage	21-Aug-06	551	F2	Empty	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Very Good health
Third Portage		604	F1	1 BRBT; FR	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Very Good health
Third Portage		552	F2	Empty	Cestoda cysts throughout gut	Nil	Nil	Cestoda	Cestoda *Diphillobothrium*	Nil	Nil	Nil	Good health

Lake	Date	Length	Sex/ Maturity	Stomach Contents	Parasite Evaluation								General Health
					General Observations	Gill	Pylorus	Stomach		Intestinal Tract	Swim Bladder	Other	
								Internal	External				
Third Portage		630	M6	Empty	Light infestation of *Diphillobothrium*	Nil	Few	Cestoda	Cestoda *Diphillobothrium*	Nil	Nil	Nil	Good health
Third Portage		601	M7	15 SLSC	Tape worm and *Diphyllobothrium* in gut; discoloured liver	Nil	Few	Cestode worms	Tape Worm	Nil	Nil	Nil	Good health

Legend

Lake connecting channel locations

NP ponds

0 1,000 2,000 3,000

Metres

Projection: UTM Zone 14 NAD83

Data Sources:
Natural Resources Canada, GeoBase®
National Topographic Database
Cumberland Resources Ltd.
Azimuth Consulting Group Inc.

Figure 3-15: Location of Lake Connecting Channels and Small, North Portage (NP) Ponds Investigated in 2006.

Meadowbank Gold Project

Prepared for: CUMBERLAND RESOURCES LTD.

By: CASLYS Consulting Ltd.

WAL-1 and WAL-2 – Northwest of Wally Lake there are two small lakes that drain east into Wally Lake north of Vault Lake. Both channels are boulder dominated with very poor or nil connectivity during open water season and freshet. Neither channel contains productive fish habitat and as there is very little surface flow. Alteration of channel morphology here should not be considered.

WAL-3 – A large lake drains westwards into the north area of Wally Lake (**Figure 3-15**). Channel length is approximately 20m with boulder and cobble dominated substrate with small portions of gravel. No pools were visible with riffle portions observed between exposed boulders. This channel may be inhabited by slimy sculpin and during freshet, would have sufficient flow and volume to all fish to move between Wally and this unnamed lake. Selective boulder removal might improve connectivity and fish passage during freshet and perhaps the open-water season. However, as species like lake trout and whitefish are not strongly motivated to move between lakes, even when there is excellent connectivity (BAER, 2005), the value of channel improvements here is debatable.

In summary, none of the connecting channels should be modified to improve opportunities for fish passage. Notwithstanding the risk of exposure of permafrost and sedimentation, downstream flow is small in most of the channels, with passage only possible at TE-1 and WAL-3 during freshet. Furthermore, the merits of providing access to non-migratory fish to lakes where there is already a population in equilibrium is debatable. Thus, in our final NNLP (2006), we did not recommend that this be used to offset habitat loss as a result of mine development.

3.2.6 North Portage Ponds

A survey of five small ponds (**Figure 3-15**) was conducted during 2006 to investigate whether any of these ponds are capable of sustaining fish populations. Investigation of some of these very small north portage ponds was not made during baseline studies focused on larger lakes. Previous surveys have examined ponds NP-1 (Dogleg Lake), NP-2 and NP-3 and each of these have viable populations of lake trout and round whitefish (BAER, 2005).

Each pond was first surveyed from the air by helicopter to determine approximate water depth and substrate distribution to evaluate the overall likelihood of presence of fish and the over-wintering potential of the ponds. Based on aerial survey results, if we believed that the ponds were sufficiently deep (i.e., > 2.5 m), gillnets were set in the ponds to verify the presence/absence and species composition of fish.

NP-4 is a small isolated pond that drains into the northwest corner of Second Portage Lake via a small braided channel with vegetation as substrate. The pond is only 2 m deep with a boulder (70%) cobble (30%) substrate with little or no transition zone to finer substrates. It does not have sufficient depth to contain fish.

NP-5 also flows into the northwest arm of Second Portage Lake via a small vegetated channel. Depth is approximately 2.7 m with a primarily boulder bottom (70%) with a small amount of cobble (25%) with a small amount of fines. Depth is insufficient to support fish.

NP-6 is a very small, isolated pond on the isthmus separating Second and Third Portage Lakes. Bottom substrate is predominantly boulder (85%) with some cobble (15%) and no fines. There is no outlet channel from this lake as it is isolated within a depression. Depth is only 2.5 m and is insufficient to support fish.

NP-7 had a maximum water depth of 7.1 m. There was a steep transition zone between littoral and deep habitat with what appeared to be good spawning/nursery habitat. Multi-mesh gillnets (1.5, 2 and 3 inch mesh net), were set on August 11 to determine the presence of fish. Lake trout (n=7) and arctic char (n=3) were captured with an average length of 45 cm. A small braided channel connects NP-7 to Third Portage Lake at the north end of the small arm adjacent to the proposed mine development. Fish are unable to move between the lakes, even during freshet because the connecting channel is shallow and braided with vegetation and exposed soil substrate. The presence of fish indicates that there is sufficient depth for overwintering and other life history requirements.

Pond NP-8 is a small, isolated pond situated on 'camp island' that has shallow depth (2.0 m) and a small discharge channel with boulder or subsurface drainage. Bottom substrate is very coarse (70 % boulder, 30% cobble) with no fines. Depth is too shallow to support fish.

Of the eight small ponds that drain into Second or Third Portage Lake in the vicinity of the proposed mine development (**Figure 3-15**), four contain no fish. Only ponds NP-1 (Dogleg), NP-2, NP-3 and NP-7 have sufficient depth to contain viable fish populations. However, the drainage area of each of these ponds is so small that drainage out of the lakes is negligible. None of the ponds have good hydraulic connections to a larger lake, so the fish populations are isolated and have been for many tens or hundreds of years.

3.2.7 Fish Spawning Survey

A survey to identify possible spawning shoals used by the most dominant fish species present (lake trout, round whitefish and arctic char) was conducted in Second and Third Portage Lakes between September 9–19, 2006.

This targeted study was designed to provide further confirmation of the presence of valuable fish spawning habitat and to offer visual documentation of the characteristics and recorded locations for these habitats, such that they can be used as "design surrogates" for fish habitat compensation, as part of the NNL at closure. This program is not intended to be a complete and detailed survey and mapping exercise of all high value fish habitat locations.

A number of transects were established through areas of suspected or confirmed high value fish habitat in the two lakes. Characteristics of lake substrates were recorded using a towed underwater video camera along each of the transects and gillnets were set in proximity to determine whether fish were actively using the areas. The gillnet and transect locations were recorded using GPS and are shown in **Figure 3-16**.

The following is a brief description of preferred spawning habitat in the study lakes for each of the target fish, as summarized in Cumberland Resources, 2006:

- ***Lake trout*** spawn during the fall (Sept., Oct., Nov.) in relatively shallow areas on a variety of sloping and steep shorelines and shoals, at depths of at least 2 m. Lake trout prefer a mixture of large boulder and cobble, free of silt with many interstitial spaces.

- ***Round whitefish*** spawn during the fall (Oct., Nov.) in shallow inshore areas on submerged reefs and shoals, at depths of at least 2 m. Round whitefish prefer gravel and cobble substrates, but periodically spawn on sand and silt.

- ***Arctic char*** spawn during the fall (Sept., Oct.) in shallow waters, at depths of 3 to 6 m. Arctic char prefer cobble and gravel shoals, but periodically spawn in vegetated littoral zones. The latter are uncommon in the project lakes.

A total of 11 transects were conducted in Second (SP-01, SP-02A, SP-02B, SP-03A, and SP-03B) and Third (TP-01A, TP-01B, TP-03A, TP-03B, TP-03C, and TP-03D) Portage Lakes to survey suspected spawning habitat (i.e., high value habitats; NNPL, 2006). Detailed habitat characteristics of each transect are provided in **Appendix E**. A summary is provided in **Table 3-15**, with particular emphasis on the relative presence of three key substrate types: boulder/cobble, cobble/gravel and uniform fines.

Comparing these general observations to the preferred fish spawning habitat it is evident that suitable habitat is present and can be found in many pockets along these transects. The habitat characteristics that were expected from a high value area were found and these correspond well to habitats that are suitable for spawning for the target fish species.

Fishing effort was limited to keep mortality low (i.e., short gillnet sets to ensure fish were released shortly after capture) and to allow sufficient time to survey other high-value habitats. Given the low fishing effort, results and conclusions drawn are of the qualitative nature and should be applied generally.

Gillnets were set in proximity to most of the underwater video transects in Second Portage Lake (4/5), but to only a few of the transects in Third Portage Lake (2/6) (**Figure 3-16**). However, results of gillnetting, despite the limited effort, confirm fish presence at high value habitats in most cases (**Table 3-16**). Fish were caught in proximity to two of the transects fished in Second Portage Lake (SP-02A and SP-02B) and to two of the transects fished in Third Portage Lake (TP-03B and TP-03D). Interestingly, these four transects have a greater proportion of the ‘boulder/cobble mixed with gravel/fines’ substrate type than the other transects with associated gillnets. Although numbers of fish caught were relatively low, fish appear to be occupying habitat that matches their preferred spawning substrate types.

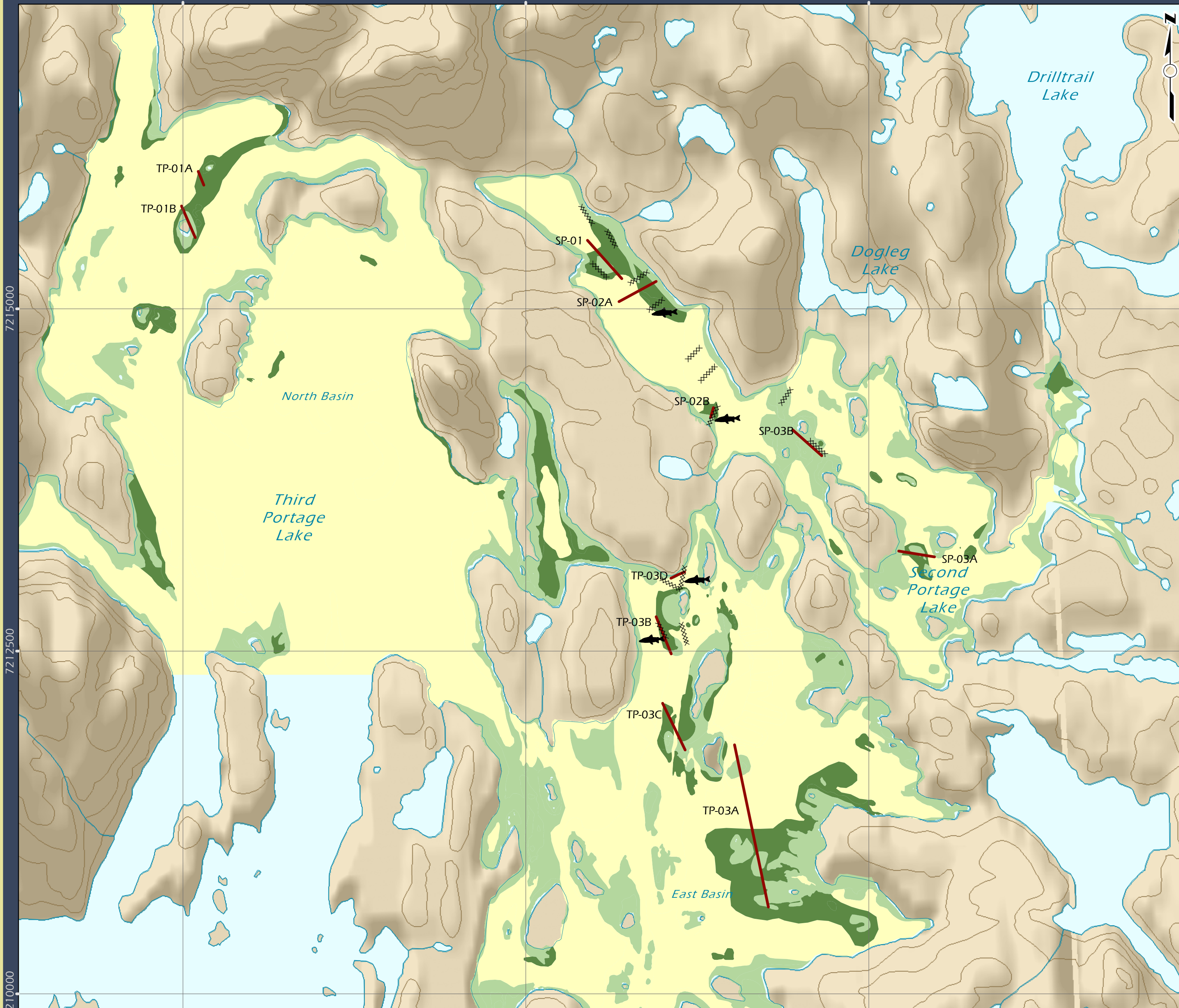


Figure 3-16: Transect and Gillnet Locations, Fish Spawning Survey, 2006, with Relative Value of Fish Habitat

Legend

- Fish Spawning Survey Transect
- Gillnet Location
- Fish Capture Location

Relative Value of Fish Habitat

- High
- Moderate
- Low

0 500 1,000
Metres

Projection: UTM Zone 14 NAD83

Data Sources:
Natural Resources Canada, GeoBase®
National Topographic Database
Agnico-Eagle Mines Limited.
Azimuth Consulting Group Inc.

Meadowbank Gold Project

Prepared for: AGNICO-EAGLE

By: Caslys Consulting Ltd.

Table 3-15: Summary of Habitat Characteristics for Transects, Fish Spawning Survey, 2006.

Lake	Date (2006)	Transect ID	Habitat Type (~%)[1]					
			B/C		C/G		UF	
			Total	>2m	Total	>2m	Total	>2m
Second Portage Lake	Sept.09	SP-01	**38%**	31%	**31%**	23%	**31%**	31%
	Sept.10	SP-02A	**30%**	25%	**30%**	30%	**40%**	40%
	Sept.10	SP-02B	**60%**	40%	**20%**	20%	**20%**	20%
	Sept.13	SP-03A	**29%**	18%	**6%**	6%	**65%**	65%
	Sept.13	SP-03B	**71%**	4%	**8%**	0%	**21%**	17%
Third Portage Lake	Sept.17	TP-01A	**17%**	17%	**0%**	0%	**83%**	83%
	Sept.17	TP-01B	**61%**	29%	**26%**	26%	**13%**	13%
	Sept.17	TP-03A	**67%**	19%	**19%**	4%	**15%**	10%
	Sept.17	TP-03B	**69%**	31%	**22%**	22%	**9%**	9%
	Sept.17	TP-03C	**79%**	50%	**11%**	11%	**11%**	11%
	Sept.17	TP-03D	**33%**	33%	**33%**	13%	**33%**	33%

Notes: [1] proportion of total transect that is composed of B/C = boulder/cobble, C/G = cobble/gravel, UF = uniform fines; and, proportion of total transect that is composed of the given habitat type and is found at >2m depth.

Table 3-16: Gillnet Capture Information, Fish Spawning Survey, 2006.

Lake	Date (2006)	Depth Range (m)	Capture yes/no	Fish Captures			Catch/Effort	Associated Transect	
				ID	Length (mm)	Sex/Maturity[1]		ID	Location[2]
Second Portage Lake	Sept.10	2 - 5	no	-	-	-	0 / 1.8hrs	SP-02A	E-W; NW arm of SPL
	Sept.10	**2 - 10**	**yes**	**ARCH**	**646**	**M8**	**4 / 1.5hrs**	**SP-02A**	
					432	**M8**			
					420	**M8**			
					436	**M8**			
	Sept.12	1.5 - 3.7	no	-	-	-	0 / 2.0hrs	SP-01	N-S; NW arm of SPL
	Sept.12	1.7 - 3.3	no	-	-	-	0 / 1.7hrs	SP-01	
	Sept.13	1.5 - 4.5	no	-	-	-	0 / 5.0hrs	SP-01	
	Sept.13	1.6 - 5.2	no	-	-	-	NA	SP-03B	N-S; NE section of SPL
	Sept.13	1.6 - 1.9	no	-	-	-	NA	SP-03B	
	Sept.13	**1.7 - 3.3**	**yes**	**LKTR**	**569**	**M6**	**1 / 2.5hrs**	**SP-02B**	E-W; N Portage Pit in SPL
	Sept.15	NA	no	-	-	-	0 / 4.0hrs	SP-02B	
	Sept.15	NA	no	-	-	-	0 / 4.0hrs	SP-02B	
Third Portage Lake	**Sept.18**	**NA**	**yes**	**ARCH**	**512**	**M8**	**1 / 3.4hrs**	**TP-03D**	'V' shape; E basin of TPL
		NA	**yes**	**LKTR**	**520**	**F1**	**2 / 3.5hrs**	**TP-03D**	
				LKTR	**563**	**F5**			
	Sept.18	NA	no	-	-	-	0 / 6.8hrs	TP-03D	
	Sept.19	**NA**	**yes**	**LKTR**	**512**	**F5**	**1 / 4.0hrs**	**TP-03B**	N-S; E basin of TPL
		NA	no	-	-	-	0 / 6.0hrs	"	
	Sept.19	NA	no	-	-	-	0 / 9.8hrs	TP-03B	

Notes: [1] F/M = female/male; 1/6 = juvenile; 2/7 = will spawn this year; 3/8 = ripe and ready, 4/9 spent; 5/10 spawned in previous years, but not this year. [2] N = North, S = South, E = East, W = West; SPL = Second Portage Lake, TPL = Third Portage Lake. ARCH = arctic char, LKTR = lake trout; NA = not available.

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APPENDICES

APPENDIX A

RESPONSES TO FISHERIES AND OCEANS CANADA (DFO) INFORMATION REQUESTS.

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February 10, 2006

Mr. Derrick Moggy
Habitat Management Biologist
Fisheries and Oceans Canada
Eastern Arctic Area
P.O. Box 358
Iqaluit, NU
X0A 0H0

Dear Mr. Moggy:

RE: Responses to Fisheries and Oceans Canada (DFO) Information Requests

Cumberland is pleased to provide DFO with responses to their information requests.

1. Follow-up Summary of Supplemental Aquatic Baseline Studies

DFO and Cumberland Resources came to agreement on the scope of outstanding issues regarding baseline aquatic environment studies at Meadowbank. It was agreed that a two-year window of opportunity for further collection of baseline data would focus on the following parameters:

- Implementation of the Aquatic Effects Management Program (AEMP) with a emphasis on water quality and benthic invertebrate community
- Water, sediment chemistry and benthos collection in the vicinity of planned dike structures as per the AEMP design
- Sampling for benthic invertebrates targeted late summer/early fall according to the sampling design, timing and frequency laid out in the AEMP and as per guidance in the Metal Mining Effluent Regulations
- Additionally, a subset of benthic stations will be sampled more frequently (e.g., bi-weekly) throughout the course of the open water season to acquire seasonality data during 2006 and 2007 to strengthen the baseline data
- Collection of sediment cores from a small set of stations in Second and Third Portage Lake to document vertical structure/stratification of lake sediment prior to dike construction
- Confirmation of gut parasite taxonomy for lake trout
- Supplemental sampling of strontium concentration of arctic char fins from Inuggugayualik Lake to determine if there are any anadromous in this lake system.

2. Discrepancy in Accounting of Steep Slope Habitat Between NNL and Baseline Habitat Report

The text as stated in the No Net Loss (2005) report shall be considered correct. This habitat was quantitatively assessed and included as quantifiable habitat units (HUs) within the No Net Loss Report. Strike text reading “Although the slope….sediment grain size” from page 3-5 of the Baseline Fish Habitat Report (FHAR, 2005).

3. Clarification of Mitigation of Phaser Lake Water Levels to Minimize Impacts to Overwintering Fish Habitat

Cumberland Resources has agreed to investigate two possible means to avoid impacts to overwintering habitat in Phaser Lake: 1) maintain current lake elevation and construct a barrier across the natural outlet of Phaser Lake draining to Wally Lake to prevent flow from reaching the future Vault Pit; and 2) lower water level by 1 m as planned, but construct a deep hole (~ 6 – 8 m) adjacent to the lake so that additional overwintering habitat is provided to replace lost overwintering habitat as a result of drawdown. Note that both options still require that discharge from Phaser Lake be directed towards Turn Lake via a constructed channel, so that drainage flows south from Phaser Lake and not north towards Vault pit. Both options will ensure that adverse impacts to the isolated, resident population of lake trout and round whitefish in Phaser Lake are minimized or eliminated. The result of this evaluation may not be available before February 10, but will be presented to DFO prior to the hearings in Baker Lake at the end of March.

4. Rationale for Airstrip Extension and Impacts to Third Portage Lake Fish Habitat

Cumberland chose to account for potential "worst-case scenario" habitat loss in Third Portage Lake in the NNL plan in the event that the airstrip had to be extended near the end of mine life. Cumberland prefers to avoid extending the airstrip if at all possible. Cumberland has agreed to investigate whether the current airstrip alignment could be slightly altered to minimize the likelihood that the airstrip will not encroach into the water in the event that an extension is required. Feedback will be provided to DFO prior to the March hearings in Baker Lake.

5. Channel Modifications for Portage Lake Connecting Channels

Cumberland has a commitment to maintaining natural water levels in Third Portage Lake during mine lake dewatering and throughout mine operations. The easternmost channel that currently passes about 50% of the water from Third to Second Portage Lake may need to be slightly widened. Whether or not the channel will have to be temporarily deepened during dewatering of Second Portage north arm is uncertain, given the large redundancy in capacity of this channel to discharge water. A decision to further widen or deepen the channel will be made during the detailed engineering phase. The engineering to maintain a consistent water level in Third Portage Lake by controlling invert elevation is relatively simple.

To provide perspective on natural water level and discharge patterns and how these will change during mine development and pit dewatering, the following text is paraphrased from the Physical EIA (2005).

Hydrologic monitoring undertaken by AMEC (2005a and b) concluded that differences in water level and discharge from Third Portage Lake during 100-year wet and 100-year dry events are relatively small because of the very low annual precipitation and the large discharge capacity of the connecting channels, that provides great redundancy to pass water.

Lake areas impounded during dike construction will be dewatered and water pumped to adjacent lakes to allow for pit development. The dewatering volume and discharge relative to volume and discharge in the receiving environment lakes specific to Second Portage East Dike, Bay Zone Dike, Goose Island Dike and Vault Dike are presented in Table 1 (Physical EIA, 2005). Note that dewatering of Goose Island and Vault pit developments do not occur coincidentally so there is no cumulative impact. The largest volume of water pumped is from Second Portage Lake within the proposed Tailings Impoundment Area.

Table 1: Increase in Lake Volume (Million m³) and Discharge from Dewatering of Meadowbank Project Lake Impoundments.

Impoundment	Dewatering Volume (M m^3)	Receiving Lake	Receiving Lake Volume (M m^3)	Percent Volume Increase	Annual Average Discharge (Mm^3)	Potential Maximum % Increase in Discharge
Second Portage	12.2	Third Portage	228	5.3	10.0	122
Bay Zone	0.4	Third Portage	228	0.17	10.0	4
Goose Island	2.2	Third Portage	228	0.96	10.0	22

The dewatering volume behind the Tailings Dike has by far the greatest likelihood to impact lake level and discharge from Third Portage Lake. A semi-quantitative assessment of the effects of dewatering on water level and discharge is provided as an example of the potential magnitude of effects.

Second Portage Lake behind the East Dike will be drawn down by 28 m to allow construction of Portage Pit. Bay Zone dike will eliminate the western most connecting channel so that water does not flow from Third Portage Lake into the dewatered future pit. 12.2 M m^3 water will be pumped from Second Portage Lake into the north basin of Third Portage Lake, which is equivalent to 5.3% of lake volume.

The magnitude of increase in water level in Third Portage Lake depends on the volume and rate of water added to the lake during dewatering and precipitation during the dewatering year. Seasonal discharge curves (AMEC, 2005a) from the hydrology data indicate that about 70% of the annual discharge from Third Portage lakes occurs during freshet, a four to six-week period between early-June and mid-July. After that time, until freeze-up of the connecting channels in October, discharge rapidly diminishes through the open water period. Thus, there is a large natural capacity to discharge excess water for most of the rest of the open water season (late July through October) without compromising lake level in Third Portage Lake.

AMEC (2005b) quantitatively modeled a variety of dewatering scenarios to predict possible changes in water level and discharge from Third Portage Lake over a range of precipitation events, including “normal”, 10-year and 100-year wet and dry scenarios.

- During a normal year, maximum lake level of Third Portage Lake is 25 cm higher than fall minimum lake level (Table 2).
- During a 100-year precipitation event, maximum lake level is 32 cm higher than the fall low, only 7 cm higher elevation than during a normal precipitation year.
- During a 100-year dry precipitation event, maximum lake elevation is only 8 cm lower than a normal maximum.

Thus, regardless of precipitation event (normal, extremely wet or extremely dry), differences in maximum spring water level in freshet are relatively small. Furthermore, regardless of precipitation, low water level in Third Portage Lake during fall is very similar, with only a 5 cm difference between the two extremes. This is because of naturally low annual precipitation and redundancy in discharge capacity between lakes. That is, during an extremely wet year there is still plenty of time during the open water season to discharge that extra water. Thus, adding 12.2 Mm^3 to Third Portage Lake during a single season does not significantly alter water level or discharge.

Table 4.2: Natural Variability of Water Levels in Third Portage Lake.

Precipitation Scenario	Peak Discharge (m^3/s)	Maximjm Spring Water Level (m)	Minimum Fall Water Level (m)	Annual Water Level Change (cm)
1:100 year wet	5.26	134.19	133.87	32
Average scenario	2.57	134.09	133.84	25
1:100 year dry	1.19	133.99	133.82	17

Notes: Source: AMEC, 2005b

Modeling of the dewatering scenarios assumed that the westernmost connecting channel was not present and the easternmost channel had been modified to accommodate the flow from the lost western channel (AMEC, 2005b). If necessary, the easternmost channel can be modified to ensure that water can be passed from Third Portage Lake without compromising channel integrity and water elevation. The model results presented here assumes an altered channel (i.e., with a discharge capacity equivalent to current conditions) and examines implications of dewatering during a normal year, and 100-year wet and 100-year dry scenarios (Table 3).

During a normal year, adding 12.6 Mm^3 of water will cause lake level to rise to 134.13 m, which is only 4 cm higher than if dewatering had not occurred (Table 2). Because the surface area of Third Potage Lake (36 km^2) is so large, the additional volume does not translate to significantly higher lake elevation. If dewatering occurred during a 100-year wet event, spring water level would rise to 134.23 m, which is 14 cm higher than normal. In fall, lake elevation is only 5 cm higher than during 100-year precipitation event.

In an extremely dry year, lake level would only be 5 cm less than normal (134.04 m). Because water pumped to Third Portage from the Second Portage impoundment occurs over 4 months, this extends beyond spring freshet, thus not all water can be discharged during the same year as dewatering. Approximately two-thirds of the dewatering volume will be discharged before the connecting channels freeze, leaving approximately 4 Mm^3 of water to overwinter in Third Portage Lake and be passed the following spring.

If dewatering occurs during a normal precipitation year, lake elevation is predicted to be 133.98 m, which is 14 cm higher than if dewatering had not occurred (Table 3). However, the relative difference in water level between a wet year and a dry year during fall is only 2 cm. This level (133.99 m) is well below the normal spring high water level (134.09) and within the typical range of water level and the ice scour and wave zone of the lake.

Table 3: Year -1 Water Level Impacts on Third Portage Lake as a Result of Portage Pit Dewatering

Precipitation Scenario	Peak Discharge (m^3/s)	Spring Water Level (m)	Fall Water Level (m)	Annual Water Level Change (cm)
1:100 year wet	6.89	134.23	133.99	24
Average	3.66	134.13	133.98	15
1:100 year dry	1.76	134.04	133.97	7

Notes: Source: AMEC, 2005b

The following spring (assuming normal precipitation), the maximum spring water level is predicted to be 134.15 m (Table 4), which is only 6 cm higher than the normal water level based on historic data (Table 2). This is despite the additional 4 Mm^3 that has overwintered in Third Portage Lake. In fact, regardless of precipitation scenario during dewatering, spring maximum water level is virtually identical. Thus, spring maximum water level (134.15 cm) is predicted to be only 6 cm higher than a normal precipitation year (Table 2) in the absence of dewatering.

Table 4: Year 1 Water Level Impacts on Third Portage Lake as a Result of Portage Pit Dewatering (Normal precipitation)

Precipitation Scenario	Peak Discharge (m^3/s)	Spring Water Level (m)	Fall Water Level (m)	Annual Water Level Change (cm)
1:100 year wet	3.94	134.15	133.85	30
Average	3.86	134.14	133.85	29
1:100 year dry	3.78	134.14	133.85	29

For all scenarios, water elevation returns to normal fall elevation (133.85 m), regardless of precipitation event during dewatering by the end of the second summer.

Whether the easternmost connecting channel will be altered and to what degree will be determined during the detailed design phase. Cumberland is committed to ensuring that water level in Third Portage Lake is not compromised during mine operations and at post-closure.

6. Blasting Peak Particle Velocities

Cumberland assures DFO that infilling and possible impacts to fish habitat will not be used as a mitigation measure to increase the distance between fish bearing waters and blasting sites where the PPV could exceed 13 mm/s. Blast monitoring and alternative management actions such as further reductions in charge weight and avoidance of egg incubation periods by fish will be used to ensure that PPV remains below 13 mm/s.

7. Intake Pipes

Conceptual plans for installation of the intake pipes will be provided to DFO prior to the hearings in March. Golder will provide conceptual drawings based on what has been installed at the Diavik Diamond mine.

8. Request for Conceptual Drawings of Bridges and Culverts along the All-Weather Road (AWR)

Bridge crossings have been planned for all but two streams containing fish populations, not including stickleback. Large diameter culverts will be used to cross all other streams, some of which contain stickleback, most of which are ephemeral or drain non-fish-bearing waterbodies.

The Habitat and Fisheries Assessment of the AWR (2005) surveyed each stream crossing within the approximate location where the road would be situated. It is important to note that the final crossing location selected might differ from the specific area surveyed because of geotechnical, ease of construction, quarry location, and other considerations. Note that if the final crossing location differs by a few hundred meters, fish populations and habitat utilization of the stream as surveyed and reported will be very similar.

The clear-span length of each bridge is 14 m, with abutments constructed from 10 m wide rock-filled concrete cribs on either side at the approaches. These abutments will encroach within the bankfull streambed at each crossing to varying degrees, depending on stream width at the final crossing location.

Given the very flat nature of the landscape during freshet wetted stream width is can be much greater than bankfull width. During freshet streams typically exceed bankfull to overflow over vegetation adjacent to the stream channel for a period of up to several days or weeks. This habitat is not functional and will not be included within the No Net Loss (NNL 2005) plan along the AWR. The footprint area occupied by the bridge approaches within bankfull width within the defined stream channel of each bridge will be accounted for and compensated under NNL.

It is not possible to provide conceptual drawings of each bridge and culvert prior to the February 10 2006 deadline. However, conceptual diagrams will be provided to DFO prior to the end of March NIRB hearings in Baker Lake. Potential loss of habitat will be assessed and compensated for as per guidance from DFO. Cumberland Resources is committed to ensuring that uninhibited fish passage is possible at all times beneath bridges and through culverts, including during freshet and that any loss of fish habitat resulting from installation of bridges and culverts is replaced.

9. Describe How Specific Compensation Measures are Ascribed to Specific Components and Phases to Ensure Productive Capacity of Habitat

On January 25 2006 Cumberland Resources (C. Goodings and R. Baker) met with D. Moggy (Department of Fisheries and Oceans Habitat Iqaluit) and B. Stewart at the Freshwater Institute Winnipeg to discuss and resolve habitat compensation issues. At this meeting both parties agreed that it would be extremely difficult to link specific compensation areas with specific lake areas affected for long-term monitoring programs, with the exception of the Tailings Impoundment Area (TIA; see IR#17). Given the length of time between now and when most compensation would be enacted (20 – 30 years), it is premature to be overly prescriptive with respect to linking specific areas of habitat loss and habitat gain, and would ignore information gathered over the intervening period as more becomes known.

Habitat units (HUs) lost as a result of specific major mine components (e.g., footprint area of dikes, pits) during construction and operation have been quantitatively assessed and balanced against HUs gained during construction/operation and post-closure within the NNL (2005). This document was careful to account for habitat loss and gain for specific components over time.

It was agreed that a key component to the success of compensation features is the use of “adaptive management” which is explicitly outlined in the Aquatic Effects Management Program (AEMP). It addition, it was agreed that there are several practical realities that must be reconciled against the that the need for detailed, prescriptive monitoring plans for constructed compensation areas at this time to ensure no net loss of productive capacity. These are:

- The lakes are ultra-oligotrophic and are not habitat limited. If it is learned that fish do not immediately utilize constructed habitat features, this does not mean that the constructed habitat does not have value.
- Other mine sites in the NWT and Nunavut are also using or have proposed to use dike surfaces and artificial reefs or underwater structures as habitat compensation. At this point in time, DFO does not have good information to indicate how these features are functioning. It was agreed that this information would be provided to Cumberland when available.
- There are no other proven compensation features that are currently available. The options proposed by Cumberland Resources are similar to what are being used elsewhere in the Arctic.
- The majority of habitat compensation features will be constructed behind the dikes and will not be available to fish for up to 20 years, so it is premature at this time to provide assurances that the compensation measures proposed will guarantee the lack of adverse effects.

Adaptive management will be used over the course of mine life to adopt those habitat features that have been demonstrated to be most beneficial at other mine sites. Note that responses to IRs #12, #16 and #17 are also relevant to this IR and should be consulted.

10. What is the Fish Salvage Option Chosen by Baker Lake Residents?

The community of Baker Lake has not yet decided on the fate of fish harvested from impoundments during dewatering . That is, will they be completely harvested or harvested and live fish transplanted to adjacent lakes. DFO and Cumberland agreed that the transplant of fish from the impoundment to an adjacent lake would not result in a long-term increase in fish biomass in the recipient lake. It is acknowledged that transplanting large fish is logistically difficult and hard on the fish and would compromise their survival. Thus, if the opinion of Cumberland or DFO is solicited, we have agreed to a harmonized answer and would advise the community to harvest fish to avoid wastage. However, in recognition of the desire of some residents to salvage fish, Cumberland would propose that fish smaller than a fork length of 15 cm would be transplanted to an adjacent lake. All other fish would be sacrificed for use as food for people and/or dogs.

11. How Were Goose Island Finger Dikes Integrated into the Impact Assessment?

Cumberland clarified to DFO that the amount of habitat loss (HU) beneath the footprint of the Goose Island Dike Fingers has been considered within the context of the NNL (2005) report. It was acknowledged that a “catch-22” situation exists with respect to habitat compensation. If high value habitat is to be created from low value habitat, there will necessarily be the need to work in the lake that may cause a loss of habitat as a result of the compensation action.

Table 4.1 of the NNL (2005) reported a total HADD of 47 HUs lost beneath the footprint of the Goose Island fingers constructed south of the Goose Island Dike. Table 5.2 of the NNL (2005) estimates that the number of HUs recovered from the exterior of the finger dikes is 67 HUs, a gain of 20 HUs that extends over mine life as well as into the indefinite future. This one of the few viable compensation measures that is possible during mine operation.

It was agreed that habitat utilization of the Goose Island Fingers would be closely monitored as a surrogate for future site-specific compensation structures. What is learned about the functionality and utilization of the exteriors of the dike fingers would be incorporated into habitat compensation features constructed within the dikes.

12. Request for Detailed Description of Compensation Measures Dedicated to Specific Mine Components and Phases to Maintain Productive Capacity

This issue closely relates to IR#9 and the reader is referred to the answer to that request. It is premature to provide detailed descriptions of fish habitat compensation features and how these relate to particular components or phases that will not be available to fish for at least 15 – 20 years from now. The AWR report has provided conceptual diagrams (plan view and cross-sectional) of habitat compensation features/structures to be constructed within the pits before the dikes are breached and the pits are re-flooded at the end of mine life (post-closure). It was agreed that an adaptive management approach would be taken to ensure that compensation features designed and constructed are based on knowledge that will be gained over the next 10 years at least. Cumberland is committed to ensuring that best practices and technologies are implemented to ensure that constructed fish habitat compensation features incorporate the most recent knowledge to optimize productive capacity of fish habitat.

13. Rejected by NIRB

14. Discrepancy between the AEMP and EIA Regarding Lake NP-2

The AEMP will be revised to reflect the fact that the re-alignment of the Waste Rock Pile does not impact NP-2, a small fish-bearing pond. Note that the NNL does not account for loss of this small lake.

15. Monitoring of the AWR was not Described in the AEMP

Cumberland acknowledges that the AEMP did not specifically address monitoring of the AWR. An addendum to the AEMP will be prepared that specifically addresses monitoring requirements for streams crossed by bridges and culverts along the AWR. The following framework for monitoring was agreed to by Cumberland and DFO in Winnipeg on January 25.

Fish-Bearing Streams Crossed by Bridges – For fish-bearing streams crossed by bridges monitoring of migratory fish populations themselves is not proposed, to avoid direct impacts to fish. Bridges allow for unobstructed migrations by fish. However, at least twice-monthly monitoring and documentation of structural integrity of bridge abutments that may intrude into the stream channel will be conducted during the entire open water season. This is necessary to ensure that there is no compromise of structural integrity and introduction of suspended sediments to the water course. This is especially important during spring spawning by arctic grayling.

Fish-Bearing Streams Crossed by Culverts – For fish-bearing streams crossed by culverts, monitoring of fish movements through the culverts will be undertaken for at least the first two years after construction. Culverts will be embedded in the substrate and lined with natural materials to ensure that there is no visible barrier posed. Culverts will be designed to ensure that a velocity barrier is not imposed during freshet. Note that there are only two streams crossed by culverts C01 (small numbers of grayling) and C05 (several species) that contain fish other than ninespine stickleback. The recommended practice is to install hoop nets above and below the culverts during early spring and fin clip captured fish prior to release. Re-capture of fish will verify that fish are able to move up- or downstream through the culvert. If it is demonstrated that fish are able to move through the culverts, no further monitoring of fish populations is necessary. All culverts will be visually inspected twice-monthly during the open water season to assess integrity of the culvert and to ensure that erosion of the culvert is not occurring or that sediment is being introduced to the stream.

Non-Fish Bearing Culvert Crossings – For non-fish bearing streams or streams containing only ninespine stickleback no monitoring of fish populations is recommended. However, structural integrity of culverts will be inspected twice-monthly during the open water season to ensure that sediment is not being introduced to the stream and carried downstream to a fish-bearing waterbody.

Standard construction practices appropriate for the Arctic environment with continuous permafrost will be followed. Stream channel habitat impacted by approaches of bridges or by culverts will be compensated for.

16. What are Specific Habitat Compensation Features to Account for Habitat Loss Associated with the Proposed TIA

This information request also partly relates to the text provided for IR#9, with the exception that this relates specifically to the Tailings Impoundment Area (TIA). At the meeting in Winnipeg, Cumberland agreed to designate a specific compensation area that would be intended to balance permanent habitat loss within the TIA.
Table 5.2 of the NNL report provides an accounting of permanent habitat loss associated with all structures, including habitat within the TIA and beneath dike structures that are not removed at closure, including the Tailings and East dikes. The NNL also accounts for all HUs created along dike exteriors and interiors (at re-flooding), from habitat features constructed within former re-flooded lake bottom and within former terrestrial areas (islands, former isthmus separating Second and Third Portage Lake, incursions into former terrestrial lands north of the Portage Pit) that will be enhanced when flooded.

It is reasonable that specific habitat compensation features be designated to account for habitat loss associated with the TIA over the long-term. To recognize the importance of this habitat loss, specific compensation areas have been designated below.

Table DFO 1. Accounting of HUs Lost Within the TIA Versus HUs Gained from Compensation

Mine Component – HU Loss	Low	Medium	High	Total HUs
East Dike Footprint	3.0	36.3	0.0	39.3
Tailings Dike Footprint	18.1	3.9	0.2	22.2
Tailings Impoundment Area	130.6	126.9	113	370.5
TOTAL HUs Lost				**- 432.0**
Mine Component – HU Gain	**Low**	**Medium**	**High**	**Total HUs**
East Dike Exterior	0.0	2.1	2.1	4.2
East Dike Interior	0.0	2.0	0.4	2.4
Tailings Dike Exterior	0.0	5.1	9.2	14.3
Flooded Terrestrial Area	226.7	186.7	55.0	468.4
½ Re-flooded Lake Bottom	11.9	142.1	319.4	473.4
TOTAL HUs Gained				**+ 962.7**

We have taken a conservative approach and have accounted for loss of habitat beneath dike footprints as well as within the TIA, which totals 432 HUs (Table DFO 1). This habitat is permanently lost during operation and post-closure of the mine.

Habitat compensation areas specifically related to the TIA presented in the above table and include the East Dike (interior and exterior), Tailings Dike interior, flooded former terrestrial area between Second and Third Portage lakes and one-half of the re-flooded original lake bottom. The other half would be surrounding the Goose Pit and lake area west of the former isthmus separating Third Portage from Second Portage at the connecting channels. Thus, the area designated as compensation for loss of habitat within the TIA and its associated structures lies within the area of Second Portage Lake that will become part of Third Portage Lake at post-closure. The net loss of habitat is 432 HUs. There is a net gain of 962.7 HUs at post-closure, a difference of + 530 HUs. Thus, there is a residual gain in HUs that will, over time, account for habitat loss from the TIA. The positive habitat compensation is important as the TIA moves forward to assist with Schedule 2 application under the Metal Mining Effluent Regulations (MMER).

17. <u>Request for a Detailed Fish Habitat Compensation Monitoring Plan Specific to the TIA</u>

The response to IR#17 is also partly embedded within the responses to IRs 9, 12, and 16. Cumberland Resources recognizes the need to verify the extent to which the planned habitat compensation will account for habitat loss within the TIA to ensure that there is no loss of productivity over the long-term. However, as agreed to at the meeting in Winnipeg, it is premature to prepare a detailed monitoring program for an activity that might not take place for 20 years. A draft monitoring program will be prepared over the next two years in consultation with the Department of Fisheries and Oceans, prior to mine development, and will likely incorporate the following elements:

- Sampling of pore water chemistry to determine dissolved metals concentration in order to assess potential effects on periphyton growth and incubation of fish eggs. This is currently listed as a targeted study within the AEMP.
- Habitat utilization by fish using minnow traps, trap nets to capture small fish, and gill nets. CPUE statistics will be compared with reference areas. Utilization is expected to increase over time as the habitat is colonized by periphyton and invertebrates.
- Underwater video monitoring of slope, grain size and stability of external dikes and submerged habitat features illustrated within the NNL document.
- Underwater video monitoring of select habitat types to determine the presence and magnitude of spawning by fish over new habitat.
- DFO and Cumberland have agreed that there is a unique opportunity to closely evaluate physical habitat features after dewatering of the northwest arm and relate fish population

structure, species composition, biomass and other metrics to this habitat. We have agreed to "squeeze the science" from this opportunity and use the information gathered to assist in designing and developing a more relevant habitat compensation strategy for the Tailings Impoundment Area. Thus, until dewatering occurs, it is premature to develop detailed plans as much will be learned during and shortly after dewatering.

Cumberland Resources is committed to an adaptive management approach that will utilize and build on knowledge gathered over the next few years based on monitoring and habitat utilization studies conducted at other northern mines where dikes and submerged habitat structures (e.g., reefs, shoals) have been used as compensatory habitat.

18. Public Consultation in Baker Lake Regarding Habitat Loss as a Result of the TIA

Numerous consultations have been held in Baker Lake regarding the proposed project. Use of Second Portage Lake north arm as a TIA has been raised at all public meetings. To date no one has indicated a concern or commented on the use of a portion of Second Portage Lake as a TIA. All of the questions have revolved around the fate of the fish removed from the impoundment. If required, Cumberland Resources will provide DFO with whatever additional information is necessary after the NIRB hearings in late March.

Yours truly,

CUMBERLAND RESOURCES LTD.

Craig Goodings
Manager, Environmental and Regulatory Affairs

CG/bg

cc: Ms. Stephanie Briscoe, NIRB, Cambridge Bay, NU

APPENDIX B

PRESENCE (+) / ABSENCE (-) MATRIX OF PHYTOPLANKTON SPECIES, 2006.

	Species & Code	Third Portage Lake - South Basin TPS				Third Portage Lake - North Basin TPN				Third Portage Lake - East Basin TPE			
		17-Jul-06	5-Aug-06	21-Aug-06	8-Sep-06	17-Jul-06	5-Aug-06	21-Aug-06	8-Sep-06	11-Jul-06	5-Aug-06	17-Aug-06	8-Sep-06
	Cyanophyte												
1012	Aphanothece sp.	-	-	-	+	-	-	-	-	-	-	-	-
1014	Chroococcus limneticus Lemmermann	+	-	+	-	-	-	-	-	-	-	-	-
1024	Woronichinia naegelianum (Unger) Elenk.	+	-	-	-	-	-	-	-	-	-	-	-
1037	Myxobaktron smithii *	-	-	-	-	-	-	-	-	-	-	-	-
1044	Anabaena planctonica Brunnthaler	-	-	-	-	-	-	-	-	-	-	-	-
1046	Anabaena circinalis Rabenhorst	-	-	-	-	-	-	-	-	-	-	-	-
1054	Planktolyngbya limnetica	-	-	-	+	-	-	-	-	-	-	-	+
1073	Snowella sp	-	-	-	-	-	-	-	-	-	-	-	-
1089	Cyanodictyon sp.	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorophyte												
2100	Pyramidomonas tetrarhynchus Schmarda	-	-	+	+	-	-	-	-	+	-	-	-
2101	Carteria spp.	-	-	+	-	-	-	-	+	-	-	-	-
2105	Chlamydomonas spp.	-	-	+	+	+	-	+	+	+	-	-	+
2107	Chlorogonium maximum Skuja	-	-	-	-	-	-	-	-	-	-	-	-
2112	Sphaerocystis schroeteri Chodat	+	+	+	+	-	-	+	+	-	-	+	-
2120	Oocystis submarina v. variabilis Skuja	-	+	+	+	-	-	-	+	-	+	+	+
2121	Oocystis lacustris Chodat	+	-	-	-	+	+	+	-	-	-	-	-
2125	Paulschulzia pseudovolvox (Schulz and Teiling) Skuja	-	-	-	-	+	-	-	-	-	-	-	-
2127	Tetraedron minimum (Brunow) Hansgrig	-	-	-	-	-	-	-	-	-	-	-	-
2135	Scenedesmus sp.	-	-	-	+	-	-	-	-	-	-	-	-
2137	Dictyosphaerium simplex Sukja	-	-	-	-	-	-	-	+	-	-	-	-
2138	Monoraphidium komarkovae (Nyg.) Komarkova-Legnero	-	-	-	-	-	-	-	-	+	-	-	-
2143	Monoraphidium minutum (Nag.) Komarkova-Legnerova	-	-	-	-	-	-	-	-	-	-	-	-
2145	Crucigenia quadrata Morr.	-	+	-	-	+	-	-	-	-	-	-	-
2164	Quadrigula closterioides (Bohl.) Printz	-	-	-	-	-	-	-	-	-	-	-	-
2167	Elakatothrix gelatinosa Willen	-	+	+	+	-	+	+	+	-	+	-	+
2174	Closterium sp.	-	-	-	-	-	-	+	-	-	-	-	-
2178	Cosmarium sp.	-	+	-	+	-	+	+	-	-	-	-	-
2183	Euastrum sinuosum Lenorm.	-	-	-	-	-	-	-	-	-	-	-	-
2187	Staurodesmus extensus (Andersson) Teiling	-	+	+	+	+	+	+	+	-	-	+	+
2193	Staurodesmus paradoxum Meyen	-	-	-	-	-	-	-	-	+	-	+	-
2199	Spondylosium planum (Wolle) W. and G.S. West	-	-	-	-	-	-	-	-	+	+	+	+
2204	Ankrya judai (G.M. Smith) Fott	-	-	-	-	+	-	-	-	-	-	-	-
2205	Mougeotia sp.	-	-	-	-	-	-	-	-	-	-	+	+
2206	Botryococcus braunii Kutzing	-	-	+	-	-	+	-	+	-	+	-	+
2215	Tetraedron caudatum (Corda) Hansgrig	-	-	-	-	-	-	-	-	-	-	-	-
2235	Ankistrodesmus spiralis Lemmermann	-	+	+	+	+	-	+	+	+	+	-	+
2247	Oocystis gigas Archer	-	+	-	-	-	-	-	-	-	-	-	-
	Euglenophyte												
3305	Trachelomonas volvocina Ehrenberg	-	-	-	-	-	-	-	-	-	-	-	-
3306	Trachelomonas hispida (Perty) Stein	-	+	-	-	-	-	-	-	-	-	-	-
	Chrysophyte												
4351	Small chrysophyceae	+	+	+	+	+	+	+	+	+	+	+	+
4352	Large chrysophyceae	+	+	+	+	+	-	-	+	+	+	+	-
4355	Chrysochromulina parva Lackey	-	+	-	+	-	+	-	+	+	+	-	-
4357	Chrysococcus sp.	+	+	+	+	+	+	+	+	+	+	+	+
4358	Chrysostephanospaera globulifera Scherffel	-	-	-	-	-	-	-	-	-	+	-	+
4360	Kephyrion spirale (Lackey) Conrad	-	-	-	-	-	-	-	-	-	+	-	-
4361	Kephyrion boreale Skuja	+	+	+	-	-	+	-	-	+	+	+	+
4362	Kephyrion sp.	-	-	-	-	-	-	-	-	+	-	-	-
4363	Spinifiromonas sirratus *	+	+	+	+	-	-	+	+	+	+	+	+
4367	Mallomonas duerrschmidtiae Siver, Hamer and Kling	-	-	-	-	-	-	-	-	-	-	+	-
4368	Mallomonas crassisquama (Asmund) Fott	-	-	-	-	-	-	-	-	-	-	-	+
4370	Mallomonas akrokomos Asmund and Kristiansen	-	-	-	-	-	-	-	-	-	-	-	-

		Third Portage Lake - South Basin TPS				Third Portage Lake - North Basin TPN				Third Portage Lake - East Basin TPE			
	Species & Code	17-Jul-06	5-Aug-06	21-Aug-06	8-Sep-06	17-Jul-06	5-Aug-06	21-Aug-06	8-Sep-06	11-Jul-06	5-Aug-06	17-Aug-06	8-Sep-06
	Chrysophyte con't												
4378	Dinobryon borgei Lemmermann	+	-	+	+	+	+	-	-	+	+	+	+
4381	Dinobryon mucronutom Nygaard	-	+	+	+	-	+	+	+	+	+	+	+
4383	Dinobryon bavaricum Imhof	+	+	+	+	-	+	+	+	+	+	+	+
4384	Dinobryon bavaricum v vanhoeffenii (Bachmann) Kriege	-	-	-	-	-	+	-	-	-	-	-	-
4387	Dinobryon cylindricum Imhof	+	-	-	-	-	-	-	-	+	-	-	-
4388	Dinobryon sertularia Ehrenberg	+	+	+	-	+	+	-	+	+	+	+	-
4390	Dinobryon sociale Ehrenberg	-	-	+	-	+	-	-	-	-	-	-	-
4394	Epiphyxis sp.	-	-	-	+	-	-	-	+	-	+	+	+
4396	Chrysolkos skuja (Nauwerck) Willen	+	+	+	+	+	+	+	-	+	-	+	+
4400	Ochromonas sp.	-	-	-	-	-	-	-	-	-	-	-	-
4401	Uroglena volvox Ehrenberg	+	+	+	+	-	-	+	+	+	+	+	+
4407	Pseudokephyrion entzii Conrad	+	+	-	+	+	+	+	+	-	+	+	+
4411	Bitrichia chodatii (Reverdin) Chodat	-	+	+	-	+	-	-	+	+	+	-	+
4413	Chrysochromulina laurentiana Kling	+	+	-	+	+	+	+	+	+	+	+	+
4414	Stichogloea spp.	-	-	-	-	-	-	-	-	-	-	-	+
4418	Salpingoeca frequentissima (Zach.) Lemmermann	+	-	-	+	-	-	-	+	-	-	+	+
4425	Mallomonas hamata Asmund	+	-	-	-	+	-	-	-	-	-	-	-
4436	Dinobryon attenatum Hill	-	-	+	+	+	-	-	+	-	+	-	-
4437	Pteridomonas sp.	-	-	-	-	-	-	-	-	-	+	-	+
4439	Chrysosphaerella brevispina	-	-	-	-	-	-	-	-	-	-	-	-
4448	Rhizochrysis scherffelii Pascher	-	-	-	-	-	-	-	-	-	-	-	-
4459	Tribonema bombycinum Derbest & Solier	-	-	-	+	-	-	-	-	-	-	-	-
	Diatom												
5507	Cyclotella stelligera Cleve and Grunow	+	+	+	+	+	+	+	+	+	-	+	+
5511	Rhizosolenia eriense H.L. Smith	+	+	-	+	-	-	+	-	+	-	+	+
5513	Tabellaria fenestrata (Lyngbye) Kutzing	-	-	+	-	-	-	+	-	-	-	-	-
5514	Tabellaria flocculsa (Roth) Kutzing	-	-	-	-	-	-	+	-	-	+	+	+
5515	Fragilaria crotonensis Kitton	-	-	-	-	+	-	-	-	-	-	-	-
5518	Synedra acus Kutzing	-	-	-	+	-	-	-	+	-	-	-	+
5546	Gyrosigma sp	+	-	-	-	-	-	-	-	-	-	-	-
5547	Frustulia rhomboides (Ehrenberg) de Toni	-	-	-	-	-	-	-	-	-	-	-	-
5551	Cyclotella michiganiana Skvortzow	-	+	+	+	-	+	+	+	+	+	+	+
5702	Achnanthes minutissima Kutzing	-	-	-	+	-	-	-	-	-	-	-	-
5720	Cyclotella bodanica Eulenst.	-	-	-	-	-	-	-	+	-	-	-	-
5726	Eucocconeis sp.	-	-	-	-	-	-	-	-	-	-	-	+
5767	Nitzschia fonticola Grunow	-	-	-	-	-	-	-	-	-	-	-	+
5826	Cymbella gracilis (Rabhorst) Cleve	-	-	-	-	-	-	-	-	-	-	-	-
5834	Cymbella microcephala Grunow	-	-	-	-	-	-	-	-	-	-	-	+
5854	Pinnularia borealis Ehrenberg	-	-	-	-	+	-	-	-	-	-	-	-
5874	Nitzschia palea (Kutzing) W. Smith	-	-	-	-	-	-	-	-	-	-	-	-
5916	Fragilaria capucina Grunow	+	+	+	-	-	-	-	-	+	+	-	-
	Cryptophyte												
6554	Rhodomonas minuta Skuja	+	+	-	-	+	+	+	+	+	-	+	-
6558	Cryptomonas erosa Ehrenberg	+	+	+	+	+	+	+	+	+	+	+	+
6559	Cryptomonas ovata Ehrenberg	-	+	-	-	-	-	-	-	-	-	-	-
6565	Cryptomonas rostratiformis Skuja	+	-	-	+	+	+	+	+	+	-	-	-
6568	Katablepharis ovalis Skuja	+	+	+	+	+	+	+	+	+	+	+	+
	Dinoflagellate												
7628	Gymnodinium mirabile Penard	-	-	-	-	-	-	-	-	-	-	-	-
7629	Gymnodinium palustre Schilling	+	+	+	+	+	+	-	-	+	+	+	+
7631	Gymnodinium helveticum Penard	-	-	-	-	-	-	-	-	-	-	-	-
7632	Gymnodinium sp.	+	+	-	-	+	+	+	-	+	+	-	+
7639	Peridinium pusillum (Penard) Lemmermann	+	+	+	+	+	+	+	+	+	+	+	+
7641	Peridinium aciculiferum Lemmermann	-	-	-	-	+	-	-	-	-	-	-	-

	Second Portage Lake SP				Tehek Lake TE				Wally Lake WAL				Inuggugayualik Lake INUG			
Species & Code	12-Jul-06	6-Aug-06	18-Aug-06	9-Sep-06	12-Jul-06	6-Aug-06	17-Aug-06	9-Sep-06	13-Jul-06	7-Aug-06	18-Aug-06	11-Sep-06	15-Jul-06	7-Aug-06	19-Aug-06	11-Sep-06
Cyanophyte																
1012 Aphanothece sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1014 Chroococcus limneticus Lemmermann	-	-	-	-	-	-	-	-	+	-	+	-	-	-	-	-
1024 Woronichinia naegelianum (Unger) Elenk.	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
1037 Myxobaktron smithii *	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
1044 Anabaena planctonica Brunnthaler	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
1046 Anabaena circinalis Rabenhorst	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
1054 Planktolyngbya limnetica	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-
1073 Snowella sp	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
1089 Cyanodictyon sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
Chlorophyte																
2100 Pyramidomonas tetrarhynchus Schmarda	-	+	-	-	-	-	+	+	-	-	+	-	-	+	+	-
2101 Carteria spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2105 Chlamydomonas spp.	+	+	+	+	-	-	+	+	+	+	+	+	+	+	+	+
2107 Chlorogonium maximum Skuja	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
2112 Sphaerocystis schroeteri Chodat	-	-	+	+	-	-	-	-	-	+	+	+	-	-	-	+
2120 Oocystis submarina v. variabilis Skuja	-	-	+	+	-	-	-	+	-	-	+	+	-	-	+	+
2121 Oocystis lacustris Chodat	-	-	-	-	-	-	+	-	-	-	-	-	-	+	-	-
2125 Paulschulzia pseudovolvox (Schulz and Teiling) Skuja	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2127 Tetraedron minimum (Brunow) Hansgrig	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
2135 Scenedesmus sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2137 Dictyosphaerium simplex Sukja	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	+
2138 Monoraphidium komarkovae (Nyg.) Komarkova-Legnerc	+	+	+	+	-	+	+	+	+	-	+	-	+	-	-	-
2143 Monoraphidium minutum (Nag.) Komarkova-Legnerova	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-	-
2145 Crucigenia quadrata Morr.	-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-
2164 Quadrigula closterioides (Bohl.) Printz	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
2167 Elakatothrix gelatinosa Willen	-	+	+	+	-	+	+	+	-	+	+	+	+	+	+	+
2174 Closterium sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2178 Cosmarium sp.	-	-	-	+	-	-	-	+	-	-	+	+	-	+	-	-
2183 Euastrum sinuosum Lenorm.	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2187 Staurodesmus extensus (Andersson) Teiling	+	-	-	+	-	+	+	-	+	+	+	+	-	-	+	+
2193 Staurodesmus paradoxum Meyen	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
2199 Spondylosium planum (Wolle) W. and G.S. West	-	-	+	-	+	+	+	+	+	+	-	-	-	+	-	+
2204 Ankrya judai (G.M. Smith) Fott	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2205 Mougeotia sp.	-	+	-	-	-	-	-	-	-	-	-	-	+	-	-	+
2206 Botryococcus braunii Kutzing	-	-	-	+	-	-	-	-	-	+	+	+	+	-	+	+
2215 Tetraedron caudatum (Corda) Hansgrig	+	+	+	+	-	+	+	-	-	+	+	-	-	-	-	-
2235 Ankistrodesmus spiralis Lemmermann	+	+	+	+	+	+	-	+	+	+	-	+	-	-	+	-
2247 Oocystis gigas Archer	-	-	+	+	-	+	-	-	-	+	-	-	-	+	-	-
Euglenophyte																
3305 Trachelomonas volvocina Ehrenberg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
3306 Trachelomonas hispida (Perty) Stein	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chrysophyte																
4351 Small chrysophyceae	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
4352 Large chrysophyceae	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+
4355 Chrysochromulina parva Lackey	-	+	-	-	-	+	+	+	+	+	-	+	+	+	-	+
4357 Chrysococcus sp.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
4358 Chrysostephanospaera globulifera Scherffel	-	+	+	-	-	+	-	+	-	+	+	+	-	-	-	-
4360 Kephyrion spirale (Lackey) Conrad	-	-	-	-	-	-	-	-	+	-	-	-	-	+	-	-
4361 Kephyrion boreale Skuja	-	-	+	+	-	+	+	+	-	+	+	-	+	+	-	+
4362 Kephyrion sp.	-	-	+	-	-	+	-	+	-	-	-	-	-	-	-	-
4363 Spinifiromonas sirratus *	-	+	+	+	+	-	+	-	+	-	+	+	+	+	-	+
4367 Mallomonas duerrschmidtiae Siver, Hamer and Kling	-	-	-	-	-	+	-	-	+	-	+	-	-	+	-	-
4368 Mallomonas crassisquama (Asmund) Fott	-	-	-	+	-	-	-	+	-	-	-	-	-	+	+	-
4370 Mallomonas akrokomos Asmund and Kristiansen	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-

Code	Species & Code	Second Portage Lake SP				Tehek Lake TE				Wally Lake WAL				Inuggugayualik Lake INUG			
		12-Jul-06	6-Aug-06	18-Aug-06	9-Sep-06	12-Jul-06	6-Aug-06	17-Aug-06	9-Sep-06	13-Jul-06	7-Aug-06	18-Aug-06	11-Sep-06	15-Jul-06	7-Aug-06	19-Aug-06	11-Sep-06
	Chrysophyte con't																
4378	Dinobryon borgei Lemmermann	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+
4381	Dinobryon mucronutom Nygaard	+	-	+	+	-	+	+	+	-	+	+	+	+	-	+	+
4383	Dinobryon bavaricum Imhof	-	+	+	+	-	+	+	+	-	+	+	+	-	+	+	+
4384	Dinobryon bavaricum v vanhoeffenii (Bachmann) Kriege	-	-	+	-	-	-	-	-	-	+	+	+	+	+	+	+
4387	Dinobryon cylindricum Imhof	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
4388	Dinobryon sertularia Ehrenberg	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+
4390	Dinobryon sociale Ehrenberg	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	-
4394	Epiphyxis sp.	+	-	-	+	-	-	-	+	-	-	-	-	-	-	-	+
4396	Chrysolkos skuja (Nauwerck) Willen	+	-	-	-	+	+	+	-	+	-	-	+	+	+	-	+
4400	Ochromonas sp.	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
4401	Uroglena volvox Ehrenberg	+	+	-	+	+	+	+	+	+	+	+	+	-	+	-	+
4407	Pseudokephyrion entzii Conrad	+	+	-	+	+	-	+	-	+	+	+	+	+	+	+	+
4411	Bitrichia chodatii (Reverdin) Chodat	-	-	-	-	-	-	+	+	-	-	+	+	-	-	+	+
4413	Chrysochromulina laurentiana Kling	+	+	-	+	-	+	-	+	+	+	+	+	+	+	-	+
4414	Stichogloea spp.	-	-	-	-	-	-	-	+	-	-	+	+	+	+	+	+
4418	Salpingoeca frequentissima (Zach.) Lemmermann	-	+	+	+	-	-	+	+	-	+	-	+	+	+	+	+
4425	Mallomonas hamata Asmund	-	-	+	-	-	-	-	+	-	-	-	+	-	-	-	+
4436	Dinobryon attenatum Hill	-	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-
4437	Pteridomonas sp.	-	-	+	+	-	-	+	+	-	-	-	-	-	+	+	+
4439	Chrysosphaerella brevispina	+	-	-	-	-	-	-	-	+	-	-	-	+	-	-	-
4448	Rhizochrysis scherffelii Pascher	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
4459	Tribonema bombycinum Derbest & Solier	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Diatom																
5507	Cyclotella stelligera Cleve and Grunow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
5511	Rhizosolenia eriense H.L. Smith	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
5513	Tabellaria fenestrata (Lyngbye) Kutzing	-	-	-	-	-	+	-	-	-	-	-	-	+	-	-	+
5514	Tabellaria flocculsa (Roth) Kutzing	+	+	+	+	+	+	-	+	-	+	+	+	+	-	+	+
5515	Fragilaria crotonensis Kitton	+	-	-	-	-	-	-	-	+	-	-	-	+	-	-	-
5518	Synedra acus Kutzing	-	-	-	+	-	-	-	+	-	-	-	+	-	-	-	+
5546	Gyrosigma sp	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5547	Frustulia rhomboides (Ehrenberg) de Toni	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
5551	Cyclotella michiganiana Skvortzow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
5702	Achnanthes minutissima Kutzing	+	-	-	-	+	-	+	-	+	-	+	-	-	-	+	-
5720	Cyclotella bodanica Eulenst.	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-
5726	Eucocconeis sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5767	Nitzschia fonticola Grunow	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5826	Cymbella gracilis (Rabhorst) Cleve	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
5834	Cymbella microcephala Grunow	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5854	Pinnularia borealis Ehrenberg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5874	Nitzschia palea (Kutzing) W. Smith	-	-	-	+	-	-	-	-	-	-	+	-	-	-	-	-
5916	Fragilaria capucina Grunow	-	+	+	-	+	+	+	-	-	+	+	-	-	+	+	-
	Cryptophyte																
6554	Rhodomonas minuta Skuja	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+
6558	Cryptomonas erosa Ehrenberg	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
6559	Cryptomonas ovata Ehrenberg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6565	Cryptomonas rostratiformis Skuja	-	-	-	+	-	+	+	+	+	+	-	+	+	-	+	+
6568	Katablepharis ovalis Skuja	+	+	+	+	+	+	-	+	+	-	+	+	+	+	+	+
	Dinoflagellate																
7628	Gymnodinium mirabile Penard	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
7629	Gymnodinium palustre Schilling	+	+	-	-	-	-	+	+	+	+	-	-	+	-	-	+
7631	Gymnodinium helveticum Penard	-	-	-	-	-	-	+	+	+	-	-	-	+	-	-	-
7632	Gymnodinium sp.	-	-	+	-	+	+	-	+	+	-	+	-	+	+	+	+
7639	Peridinium pusillum (Penard) Lemmermann	+	+	+	+	+	+	+	+	+	+	-	+	+	-	-	+
7641	Peridinium aciculiferum Lemmermann	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

APPENDIX C

BENTHIC INVERTEBRATE RAW DATA, 2006.

Date Collected	Spring: July 11-17, 2006																												
Station	TPE				TPN				TPS				SP				TE				WAL				INUG				DUP
Sieve size	500 µm			250 µm	500 µm			250 µm	500 µm			250 µm	500 µm			250 µm	500 µm			250 µm	500 µm			250 µm	500 µm			250 µm	500 µm
Replicate	I	II	III	III	I	II	III	III	I	II	III	III	I	II	III	III	I	II	III	III	I	II	III	III	I	II	III	III	I
ROUNDWORMS																													
P. Nematoda	-	1	6	16	1	-	-	7	3	3	5	29	-	-	6	6	-	-	1	1	-	-	4	8	1	1	-	15	-
FLATWORMS																													
P. Platyhelminthes																													
Cl. Turbellaria																													
indeterminate	-	-	-	-	-	-	-	-	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ANNELIDS																													
P. Annelida																													
WORMS																													
Cl. Oligochaeta																													
F. Enchytraeidae	-	-	-	2	-	-	-	-	-	-	-	8	-	-	-	-	-	-	-	1	-	-	-	4	-	-	-	-	-
F. Naididae																													
Nais	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Tubificidae																													
Rhyacodrilus coccineus	2	4	3	3	-	-	-	-	-	-	-	-	-	-	1	1	-	-	3	3	-	-	-	-	-	2	-	-	-
Tasserkidrilus americanus	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	1	-	-	3	3	-	-	-	-	1	-	1	1	-
immatures with hair chaetae	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-	-	-	-	-	1	-
F. Lumbriculidae																													
Lumbriculus	1	-	-	-	-	1	1	1	-	-	-	-	1	1	1	1	-	1	1	-	-	1	-	-	-	1	-	-	4
ARTHROPODS																													
P. Arthropoda																													
MITES																													
Cl. Arachnida																													
O. Acarina	6	6	3	9	-	1	1	7	1	1	1	1	1	2	-	2	6	1	2	2	-	1	-	4	3	2	1	1	-
HARPACTICOIDS																													
O. Harpacticoida	-	-	-	-	-	-	-	1	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SEED SHRIMPS																													
Cl. Ostracoda	-	-	15	49	-	1	3	16	-	1	10	18	1	-	5	9	-	-	1	2	-	-	4	4	-	-	-	10	-
TADPOLE SHRIMP																													
O. Notostraca																													
Lepidurus arcticus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	2	-	-	-	-
INSECTS																													
Cl. Insecta																													
BEETLES																													
O. Coleoptera																													
F. Staphylinidae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CADDISFLIES																													
O. Trichoptera																													
F. Limnephilidae																													
Grammotaulius	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
Grensia praeterita	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	1	-	-	-	-	-	-	-
immature	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-

Date Collected	Spring: July 11-17, 2006																												
Station	TPE				TPN				TPS				SP				TE				WAL				INUG				DUP
Sieve size	500 µm			250 µm	500 µm			250 µm	500 µm			250 µm	500 µm			250 µm	500 µm			250 µm	500 µm			250 µm	500 µm			250 µm	500 µm
Replicate	I	II	III	III	I	II	III	III	I	II	III	III	I	II	III	III	I	II	III	III	I	II	III	III	I	II	III	III	I
<u>TRUE FLIES</u>																													
O. Diptera																													
MIDGES																													
F. Chironomidae																													
chironomid pupae	18	16	11	13	5	4	4	4	27	41	27	27	7	8	8	8	5	10	11	15	4	2	-	-	18	7	7	9	13
S.F. Chironominae																													
Cladotanytarsus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	- -		-	-	-	-	-	-	-
Corynocera	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	87	54	100	172	-	-	1	1	-
Dicrotendipes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Micropsectra	74	76	75	79	29	29	17	22	13	9	12	20	8	10	8	8	6	2	21	21	-	16	24	24	16	15	8	9	17
Paracladopelma	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	-	-	-	-	-	-	-	-	-
Paratanytarsus	1	4	17	43	-	-	3	5	-	-	-	-	-	1	-	-	-	-	-	1	6	11	48	72	-	2	-	1	-
Sergentia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stempellinella	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	1	1	-	-	-	-	-	-	-	-	-
Stictochironomus	-	-	-	-	-	-	-	-	1	-	-	-	12	4	23	23	1	-	24	24	39	6	44	48	7	44	12	15	7
Tanytarsus	-	-	-	-	3	2	2	3	-	6	3	3	3	-	15	16	3	-	5	8	13	2	12	12	-	2	4	7	3
S.F. Diamesinae																													
Protanypus	-	-	-	-	-	-	-	-	-	1	1	1	-	1	-	-	1	-	-	-	-	-	-	-	-	1	1	1	-
Pseudodiamesa	-	-	-	-	2	-	1	1	6	13	15	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Orthocladiinae																													
Abiskomyia	1	-	-	-	-	1	-	1	-	-	1	1	-	-	1	1	-	-	-	-	-	-	-	-	5	2	2	4	-
Cricotopus	-	1	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Heterotrissocladius	5	6	49	71	24	64	60	65	26	7	20	28	-	-	5	5	2	-	8	8	-	-	-	-	3	2	4	4	3
Hydrobaenus	1	-	3	3	2	3	-	-	-	-	-	-	-	2	4	4	-	-	5	5	1	4	8	8	-	-	1	1	1
Mesocricotopus	-	-	-	8	-	-	4	12	1	-	-	-	-	-	3	3	-	-	2	2	-	-	-	-	-	-	-	-	-
Paracladius	-	-	3	7	-	-	-	2	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Parakiefferiella	-	-	1	3	1	1	3	8	2	-	7	15	-	-	3	6	-	-	3	9	-	-	-	-	-	-	1	5	-
Psectrocladius (Monopsectrocladius)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	-	-	-	-	-	-	-
Psectrocladius	-	-	-	2	1	1	2	4	-	-	-	-	2	2	4	5	1	2	2	2	1	1	8	8	2	3	1	3	-
Zalutschia	1	3	3	3	1	1	4	4	-	1	-	-	1	2	-	-	2	2	3	3	-	-	-	-	-	5	1	1	-
S.F. Prodiamesinae																													
Monodiamesa	-	1	-	2	-	1	1	1	-	-	1	1	1	2	3	3	2	2	3	4	-	2	-	-	2	2	1	1	2
S.F. Tanypodinae																													
Procladius	3	9	16	24	10	3	6	6	4	4	5	5	8	6	17	18	5	10	12	12	16	19	24	24	10	11	9	9	4
Thienemannimyia complex	2	1	4	10	5	9	9	14	3	3	7	7	-	-	-	-	-	-	2	2	2	4	16	16	-	-	-	-	-
indeterminate	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Empididae																													
Chelifera	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	1	-	-	-	-
<u>MOLLUSCS</u>																													
P. Mollusca																													
CLAMS																													
Cl. Bivalvia																													
F. Sphaeriidae																													
Cyclocalyx/Neopisidium	15	22	23	23	19	16	25	25	13	9	15	15	15	16	11	11	24	23	23	23	-	-	-	-	8	8	2	2	18
Cyclocalyx	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19	23	56	-	-	-	-	-	-
Cyclocalyx nitidum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	
Cyclocalyx (Pisidium)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	56	-	-	-	-	
Sphaerium nitidum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	1	-	-	1	3	2	-	-
TOTAL NUMBER OF ORGANISMS[1]	**131**	**149**	**213**	**313**	**103**	**137**	**143**	**187**	**97**	**95**	**115**	**163**	**62**	**57**	**109**	**120**	**60**	**53**	**137**	**153**	**193**	**150**	**340**	**448**	**80**	**113**	**59**	**78**	**74**
TOTAL NUMBER OF TAXA[2]	**13**	**11**	**13**	**17**	**11**	**14**	**15**	**19**	**10**	**10**	**12**	**15**	**12**	**12**	**16**	**18**	**12**	**8**	**20**	**21**	**11**	**16**	**10**	**12**	**14**	**16**	**17**	**18**	**11**

Notes:

[1] Number of organisms totals exclude nematodes and ostracods

[2] Number of taxa totals exclude nematodes, ostracods, chironomid pupae and tubificidae and limnephilidae immature

Highlighted columns indicate samples not preserved properly.

Date Collected	Early Summer: August 5-7, 2006																											
Station	TPE				TPN				TPS				SP				TE				WAL				INUG			
Sieve size	500 µm			250 µm	500 µm			250 µm	500 µm			250 µm	500 µm			250 µm	500 µm			250 µm	500 µm			250 µm	500 µm			250 µm
Replicate	I	II	III	III	I	II	III	III	I	II	III	III	I	II	III	III	I	II	III	III	I	II	III	III	I	II	III	III
ROUNDWORMS																												
P. Nematoda	-	2	5	8	1	-	3	15	3	1	4	18	2	-	5	7	1	1	-	1	-	-	16	76	-	2	4	6
FLATWORMS																												
P. Platyhelminthes																												
Cl. Turbellaria																												
indeterminate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ANNELIDS																												
P. Annelida																												
WORMS																												
Cl. Oligochaeta																												
F. Enchytraeidae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Naididae																												
Nais	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Tubificidae																												
Rhyacodrilus coccineus	-	4	-	-	-	-	-	-	5	2	-	-	1	-	1	1	-	-	-	-	-	-	-	-	-	-	1	1
Tasserkidrilus americanus	-	-	-	-	-	-	-	-	5	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
immatures with hair chaetae	1	-	-	2	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	1
F. Lumbriculidae																												
Lumbriculus	3	-	1	1	-	-	-	-	-	1	-	-	1	1	-	-	2	2	2	2	1	2	-	-	1	-	1	1
ARTHROPODS																												
P. Arthropoda																												
MITES																												
Cl. Arachnida																												
O. Acarina	2	2	1	7	1	-	3	6	2	-	1	5	1	2	3	5	-	2	2	8	-	1	8	8	1	3	3	4
HARPACTICOIDS																												
O. Harpacticoida	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	11
SEED SHRIMPS																												
Cl. Ostracoda	-	-	10	86	1	-	8	17	-	-	12	20	-	-	4	7	-	-	6	32	-	-	-	16	-	-	3	9
TADPOLE SHRIMP																												
O. Notostraca																												
Lepidurus arcticus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	2	2	-	-	-	-	1	-	-	-
INSECTS																												
Cl. Insecta																												
BEETLES																												
O. Coleoptera																												
F. Staphylinidae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CADDISFLIES																												
O. Trichoptera																												
F. Limnephilidae																												
Grammotaulius	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grensia praeterita	-	1	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
immature	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Date Collected	Early Summer: August 5-7, 2006																											
Station	TPE				TPN				TPS				SP				TE				WAL				INUG			
Sieve size	500 µm			250 µm	500 µm			250 µm	500 µm			250 µm	500 µm			250 µm	500 µm			250 µm	500 µm			250 µm	500 µm			250 µm
Replicate	I	II	III	III	I	II	III	III	I	II	III	III	I	II	III	III	I	II	III	III	I	II	III	III	I	II	III	III
TRUE FLIES																												
O. Diptera																												
MIDGES																												
F. Chironomidae																												
chironomid pupae	2	5	-	1	13	12	3	3	7	11	3	3	5	7	7	7	1	3	1	1	3	12	16	16	6	2	3	4
S.F. Chironominae																												
Cladotanytarsus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Corynocera	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	121	200	440	524	1	-	1	1
Dicrotendipes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Micropsectra	24	52	8	8	14	17	31	32	24	12	1	1	1	-	2	2	1	-	-	-	-	-	4	20	5	1	6	6
Paracladopelma	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Paratanytarsus	1	2	3	10	11	7	11	19	2	-	-	4	-	-	-	-	-	-	3	6	1	15	140	216	-	-	1	2
Sergentia	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stempellinella	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	5	-	1	1	1	-	-	-	-	-	-	-	1
Stictochironomus	5	4	7	7	-	1	-	-	11	18	-	-	2	9	6	6	1	-	-	-	26	25	44	56	7	5	8	8
Tanytarsus	1	3	-	2	8	6	4	5	3	3	-	-	1	-	1	1	-	-	-	1	1	31	60	152	1	-	1	4
S.F. Diamesinae																												
Protanypus	1	-	-	1	-	1	-	-	-	2	-	-	-	-	-	-	-	-	2	2	-	-	-	-	-	-	1	1
Pseudodiamesa	-	-	-	-	-	-	1	1	3	5	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Orthocladiinae																												
Abiskomyia	-	-	-	-	-	-	-	1	2	-	-	-	-	1	-	-	1	-	-	-	-	-	-	-	6	6	2	4
Cricotopus	-	-	-	-	-	-	1	2	-	-	-	2	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-
Heterotrissocladius	2	7	9	9	6	10	23	27	7	6	8	12	-	-	-	-	1	2	-	-	-	-	-	-	3	6	8	9
Hydrobaenus	-	-	-	-	-	1	1	1	1	3	-	-	-	-	-	-	-	-	1	1	-	-	-	-	1	-	-	-
Mesocricotopus	-	-	-	-	1	2	10	17	-	-	-	-	-	-	-	2	-	-	-	1	-	-	-	-	-	-	-	-
Paracladius	-	2	-	-	1	2	-	-	-	1	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	1
Parakiefferiella	-	-	1	2	-	-	-	3	-	1	-	-	-	-	4	4	-	-	-	1	-	-	-	-	-	-	-	4
Psectrocladius (Monopsectrocladius)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Psectrocladius	1	-	2	2	1	-	2	2	-	-	1	3	-	-	1	1	-	1	-	-	-	2	40	52	-	2	1	1
Zalutschia	2	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
S.F. Prodiamesinae																												
Monodiamesa	2	-	2	3	1	2	1	2	-	-	1	1	-	-	1	1	1	-	4	4	-	-	-	-	-	-	1	2
S.F. Tanypodinae																												
Procladius	8	14	8	17	5	3	4	6	12	9	11	11	3	6	21	21	8	11	15	18	5	5	24	24	3	14	7	7
Thienemannimyia complex	1	3	6	10	4	2	8	23	2	1	-	6	-	-	-	-	-	-	-	-	1	3	8	8	-	-	1	1
indeterminate	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Empididae																												
Chelifera	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	-	-	-	-	-	-	-	-
MOLLUSCS																												
P. Mollusca																												
CLAMS																												
Cl. Bivalvia																												
F. Sphaeriidae																												
Cyclocalyx/Neopisidium	14	24	19	19	28	16	11	11	23	32	22	22	12	19	25	25	19	27	27	27	-	-	-	-	13	22	11	12
Cyclocalyx	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	28	12	-	-	-	-	-
Cyclocalyx nitidum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-
Cyclocalyx (Pisidium)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	-	-	-
Sphaerium nitidum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	4	4	-	4	-	-	-
TOTAL NUMBER OF ORGANISMS[1]	**70**	**123**	**67**	**101**	**94**	**82**	**114**	**162**	**109**	**112**	**51**	**77**	**28**	**46**	**74**	**81**	**37**	**50**	**63**	**81**	**178**	**328**	**800**	**1092**	**54**	**61**	**59**	**88**
TOTAL NUMBER OF TAXA[2]	**14**	**12**	**12**	**14**	**12**	**13**	**14**	**17**	**14**	**16**	**9**	**13**	**9**	**7**	**11**	**12**	**10**	**8**	**13**	**17**	**10**	**11**	**11**	**11**	**13**	**8**	**18**	**22**

Notes:

[1] Number of organisms totals exclude nematodes and ostracods

[2] Number of taxa totals exclude nematodes, ostracods, chironomid pupae and tubificidae and limnephilidae immature

Highlighted columns indicate samples not preserved properly.

Date Collected	Late Summer: August 17-21, 2006																											
Station	TPE				TPN				TPS				SP				TE				WAL				INUG			
Sieve size	500 µm			250 µm	500 µm			250 µm	500 µm			250 µm	500 µm			250 µm	500 µm			250 µm	500 µm			250 µm	500 µm			250 µm
Replicate	I	II	III	III	I	II	III	III	I	II	III	III	I	II	III	III	I	II	III	III	I	II	III	III	I	II	III	III
ROUNDWORMS																												
P. Nematoda	3	15	17	56	-	-	-	-	5	2	4	17	2	-	14	22	-	-	-	2	2	5	-	56	-	1	2	3
FLATWORMS																												
P. Platyhelminthes																												
Cl. Turbellaria																												
indeterminate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ANNELIDS																												
P. Annelida																												
WORMS																												
Cl. Oligochaeta																												
F. Enchytraeidae	-	-	-	5	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Naididae																												
Nais	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Tubificidae																												
Rhyacodrilus coccineus	-	-	3	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	1	-	-
Tasserkidrilus americanus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
immatures with hair chaetae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lumbriculidae																												
Lumbriculus	-	-	1	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	-	-	-	1	3	3
ARTHROPODS																												
P. Arthropoda																												
MITES																												
Cl. Arachnida																												
O. Acarina	1	-	2	8	1	-	-	1	2	-	-	9	3	4	4	8	-	2	1	15	2	7	8	8	3	2	1	8
HARPACTICOIDS																												
O. Harpacticoida	-	-	-	5	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	12	-	-	-	-	-	-	-	8
SEED SHRIMPS																												
Cl. Ostracoda	1	-	26	63	-	-	3	4	1	1	9	21	-	-	5	11	-	-	2	22	-	-	16	64	-	-	8	13
TADPOLE SHRIMP																												
O. Notostraca																												
Lepidurus arcticus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
INSECTS																												
Cl. Insecta																												
BEETLES																												
O. Coleoptera																												
F. Staphylinidae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CADDISFLIES																												
O. Trichoptera																												
F. Limnephilidae																												
Grammotaulius	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grensia praeterita	-	-	-	-	-	-	-	-	1	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
immature	-	-	-	1	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Date Collected	Late Summer: August 17-21, 2006																											
Station	TPE				TPN				TPS				SP				TE				WAL				INUG			
Sieve size	500 µm			250 µm	500 µm			250 µm	500 µm			250 µm	500 µm			250 µm	500 µm			250 µm	500 µm			250 µm	500 µm			250 µm
Replicate	I	II	III	III	I	II	III	III	I	II	III	III	I	II	III	III	I	II	III	III	I	II	III	III	I	II	III	III
TRUE FLIES																												
O. Diptera																												
MIDGES																												
F. Chironomidae																												
chironomid pupae	2	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
S.F. Chironominae																												
Cladotanytarsus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	-	-	-	-
Corynocera	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	431	425	440	480	1	1	-	-
Dicrotendipes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Micropsectra	45	103	69	72	-	-	-	-	3	6	4	4	-	-	-	6	-	-	-	8	3	2	16	56	2	-	1	6
Paracladopelma	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Paratanytarsus	25	27	21	41	-	-	-	1	10	3	4	7	-	-	-	2	-	-	-	2	36	34	136	208	-	1	1	1
Sergentia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stempellinella	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stictochironomus	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	24	10	8	8	-	8	11	14
Tanytarsus	-	1	-	-	-	-	-	-	2	1	1	1	-	-	-	4	-	-	-	4	-	4	16	56	-	-	1	1
S.F. Diamesinae																												
Protanypus	-	-	-	1	-	-	-	-	2	2	-	-	-	-	1	3	-	-	-	2	-	-	-	-	-	-	-	-
Pseudodiamesa	-	-	-	-	1	-	-	-	7	9	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Orthocladiinae																												
Abiskomyia	-	-	-	2	-	-	-	-	-	1	-	1	-	1	1	1	-	-	-	-	-	-	-	-	2	3	3	3
Cricotopus	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heterotrissocladius	3	8	13	16	-	-	-	-	2	5	3	7	-	1	2	2	-	-	1	11	-	-	-	-	-	-	-	-
Hydrobaenus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mesocricotopus	-	-	-	3	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	13
Paracladius	-	-	-	-	-	-	-	-	-	-	-	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Parakiefferiella	-	-	-	2	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	10	-	-	-	-	-	-	-	1
Psectrocladius (Monopsectrocladius)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	8	-	-	-	-
Psectrocladius	-	1	2	7	-	-	-	-	-	-	1	1	-	-	1	1	-	-	-	-	9	-	8	8	-	-	-	-
Zalutschia	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	4	-	-	-	16	-	-	8	8	-	-	-	16
S.F. Prodiamesinae																												
Monodiamesa	-	-	-	4	-	-	-	1	-	-	-	-	-	-	-	-	2	2	2	2	3	2	-	-	1	-	1	1
S.F. Tanypodinae																												
Procladius	7	2	8	16	-	-	1	1	4	-	4	4	-	12	10	10	16	7	13	17	24	9	16	16	5	3	8	9
Thienemannimyia complex	4	6	12	25	-	-	-	-	1	5	2	8	-	1	-	-	-	-	-	-	3	4	16	16	-	-	1	1
indeterminate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Empididae																												
Chelifera	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
MOLLUSCS																												
P. Mollusca																												
CLAMS																												
Cl. Bivalvia																												
F. Sphaeriidae																												
Cyclocalyx/Neopisidium	31	19	31	31	2	-	6	6	21	13	7	7	16	11	11	11	28	2	25	25	-	-	-	-	9	12	14	15
Cyclocalyx	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32	22	16	-	-	-	-	-
Cyclocalyx nitidum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	-	-	-	1
Cyclocalyx (Pisidium)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	-	-	-	-
Sphaerium nitidum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	8	-	1	1	1	-
TOTAL NUMBER OF ORGANISMS[1]	**118**	**169**	**163**	**250**	**5**	**0**	**7**	**10**	**56**	**49**	**29**	**57**	**24**	**32**	**30**	**52**	**49**	**13**	**42**	**130**	**570**	**520**	**704**	**904**	**24**	**33**	**48**	**103**
TOTAL NUMBER OF TAXA[2]	**7**	**8**	**10**	**19**	**4**	**0**	**2**	**5**	**11**	**12**	**9**	**15**	**4**	**8**	**7**	**11**	**4**	**4**	**5**	**14**	**11**	**11**	**13**	**14**	**8**	**10**	**13**	**17**

Notes:

[1] Number of organisms totals exclude nematodes and ostracods

[2] Number of taxa totals exclude nematodes, ostracods, chironomid pupae and tubificidae and limnephilidae immature

Highlighted columns indicate samples not preserved properly.

Date Collected	Fall: September 8-11, 2006																								
Station	TPE				TPN				TPS				SP			TE				WAL			INUG		
Sieve size	500 µm			250 µm	500 µm			250 µm	500 µm			250 µm	500 µm			500 µm			250 µm	500 µm			500 µm		
Replicate	I	II	III	III	I	II	III	III	I	II	III	III	I	II	III	I	II	III	III	I	II	III	I	II	III
ROUNDWORMS																									
P. Nematoda	1	2	5	37	-	-	3	5	3	-	7	19	-	1	3	1	1	-	2	-	3	-	-	1	1
FLATWORMS																									
P. Platyhelminthes																									
Cl. Turbellaria																									
indeterminate	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ANNELIDS																									
P. Annelida																									
WORMS																									
Cl. Oligochaeta																									
F. Enchytraeidae	-	-	-	8	-	-	-	-	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Naididae																									
Nais	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Tubificidae																									
Rhyacodrilus coccineus	-	-	-	-	-	-	-	-	1	1	1	1	-	-	-	-	1	-	-	1	3	1	-	-	-
Tasserkidrilus americanus	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
immatures with hair chaetae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	1	-	-	-	1	-	-
F. Lumbriculidae																									
Lumbriculus	-	1	1	1	2	1	1	1	-	1	1	1	-	-	-	1	-	-	-	6	3	3	2	-	3
ARTHROPODS																									
P. Arthropoda																									
MITES																									
Cl. Arachnida																									
O. Acarina	1	2	-	40	3	-	3	19	-	-	1	5	1	1	2	12	3	4	8	5	4	6	2	1	4
HARPACTICOIDS																									
O. Harpacticoida	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	-	-	-	-	-
SEED SHRIMPS																									
Cl. Ostracoda	-	2	34	122	1	-	5	31	-	-	27	39	-	-	-	-	-	3	21	-	-	-	-	1	-
TADPOLE SHRIMP																									
O. Notostraca																									
Lepidurus arcticus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
INSECTS																									
Cl. Insecta																									
BEETLES																									
O. Coleoptera																									
F. Staphylinidae	-	-	-	-	-	-	1	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
CADDISFLIES																									
O. Trichoptera																									
F. Limnephilidae																									
Grammotaulius	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grensia praeterita	1	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	1	1	1	-	-	-	-
immature	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	-	-	-

Date Collected	Fall: September 8-11, 2006																								
Station	TPE				TPN				TPS				SP			TE				WAL			INUG		
Sieve size	500 µm			250 µm	500 µm			250 µm	500 µm			250 µm	500 µm			500 µm			250 µm	500 µm			500 µm		
Replicate	I	II	III	III	I	II	III	III	I	II	III	III	I	II	III	I	II	III	III	I	II	III	I	II	III
TRUE FLIES																									
O. Diptera																									
MIDGES																									
F. Chironomidae																									
chironomid pupae	1	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Chironominae																									
Cladotanytarsus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	-	-	-
Corynocera	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	867	605	791	1	1	-
Dicrotendipes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	1	-	3	-	-
Micropsectra	48	64	67	139	1	8	4	41	7	9	7	27	4	6	2	4	8	11	25	31	22	36	-	5	7
Paracladopelma	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Paratanytarsus	4	21	13	37	3	6	2	3	3	3	3	7	-	-	-	1	-	1	1	216	246	225	-	-	5
Sergentia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stempellinella	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stictochironomus	-	-	-	-	1	2	-	-	2	1	-	-	4	7	-	-	4	2	2	13	7	5	3	12	16
Tanytarsus	1	3	7	15	-	2	-	-	-	-	-	-	-	-	-	-	-	-	4	4	22	16	1	2	1
S.F. Diamesinae																									
Protanypus	-	-	2	2	1	1	1	1	2	-	1	1	-	-	-	-	1	-	-	-	-	-	1	1	-
Pseudodiamesa	-	-	-	-	-	-	-	-	11	6	4	4	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Orthocladiinae																									
Abiskomyia	2	2	-	-	-	-	2	2	1	1	1	1	1	-	-	-	-	3	3	4	-	-	5	9	-
Cricotopus	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	-	-	-
Heterotrissocladius	3	1	12	92	2	1	6	7	5	1	9	13	-	-	2	-	-	1	3	-	-	-	-	-	-
Hydrobaenus	-	-	-	8	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mesocricotopus	-	1	-	-	-	-	-	17	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Paracladius	-	-	-	-	-	-	-	4	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Parakiefferiella	-	-	-	16	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Psectrocladius (Monopsectrocladius)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Psectrocladius	-	-	-	8	-	-	2	2	1	1	1	5	-	-	-	-	-	-	-	4	3	4	-	-	-
Zalutschia	-	2	-	-	1	-	-	-	-	-	1	1	3	-	2	1	1	9	11	-	-	-	7	1	-
S.F. Prodiamesinae																									
Monodiamesa	-	-	-	8	-	-	1	1	-	-	-	-	-	-	-	-	6	1	1	4	1	4	-	2	-
S.F. Tanypodinae																									
Procladius	5	10	12	36	14	11	8	13	3	5	4	8	11	13	9	20	15	12	12	22	29	20	5	16	21
Thienemannimyia complex	2	6	5	13	6	3	8	17	6	5	3	3	-	-	-	-	-	-	-	9	7	8	1	1	-
indeterminate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Empididae																									
Chelifera	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
MOLLUSCS																									
P. Mollusca																									
CLAMS																									
Cl. Bivalvia																									
F. Sphaeriidae																									
Cyclocalyx/Neopisidium	35	25	48	48	21	14	16	16	13	14	20	20	11	34	12	30	26	17	17	-	-	-	10	24	17
Cyclocalyx	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	15	21	-	-	-
Cyclocalyx nitidum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyclocalyx (Pisidium)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sphaerium nitidum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	2	1	2	1	2
TOTAL NUMBER OF ORGANISMS[1]	**104**	**138**	**168**	**480**	**55**	**49**	**55**	**146**	**56**	**49**	**59**	**115**	**36**	**61**	**29**	**71**	**68**	**63**	**101**	**1222**	**973**	**1152**	**44**	**76**	**76**
TOTAL NUMBER OF TAXA[2]	**11**	**12**	**10**	**17**	**11**	**10**	**13**	**16**	**12**	**13**	**16**	**19**	**8**	**5**	**6**	**9**	**10**	**11**	**13**	**18**	**17**	**16**	**13**	**13**	**9**

Notes:

[1] Number of organisms totals exclude nematodes and ostracods

[2] Number of taxa totals exclude nematodes, ostracods, chironomid pupae and tubificidae and limnephilidae immature

Highlighted columns indicate samples not preserved properly.

APPENDIX D

NOTES AND PHOTOS FOR SEDIMENT CORES, 2006.

Third Portage Lake

Large lake with various basins. Sed sampling confined to northern portion of east basin. Boulder ridges throughout. Sediment substrate in areas requested for sampling. Variable substrate encountered during sediment sampling, including soft clayey silt and compact clay.

Sample Location ID		**STP1**					
Sample UTM Coordinates		**N: 7212823**	**E:638445**	**NAD 83 14W**			
Date		Aug 13/05					
Time		13:50					
Water Column Depth		5.25m	**Core Length: 17cm**				
Sample ID	**# of contain.**	**Description Depth from surface (cm)**	**General**	**Texture/ colour**	**Bio Structure**	**Debris**	**Presence of Sheen**
STP1A	1 jar	0-3.2	Oxidized layer	Fine brown sediment, wet/ fluid, with orange/yellow oxidized layers	Periphyton layer	None	No
STP1B	2 x jar	3.2-11	Clay	Fine dark grey/ blueish clayey silt layer, moderately compact	None	None	No
STP1C	1 jar 1 bag	11-17	Clay	Fine dark grey/ blueish clayey silt layer, moderately compact	None	None	No
		17	Unable to advance corer deeper and maintain a recoverable sample; compact clay substrate.				

Sample Location ID		**STPD1**					
Sample UTM Coordinates		**N: 7212888**	**E:0638824**	**NAD 83 14W**			
Date		Aug 13/05					
Time		14:30					
Water Column Depth		7.19m	**Core Length: 38cm**				
Sample ID	**# of contain.**	**Description Depth from surface (cm)**	**General**	**Texture/ colour**	**Bio Structure**	**Debris**	**Presence of Sheen**
STPD1A	1 jar	0-13	Oxidized layer	Fine brown sediment layer, wet/ fluid, with orange/yellow oxidized layers (minor), Major component: grey clayey silt	Periphyton layer	None	No
		13-38	Clayey Silt	Fine dark grey/ blueish clayey silt layer, set, moderately compact	None	None	No
		38	Unable to advance corer deeper and maintain a recoverable sample				
STP1B	2 X jar	10-20	Clayey Silt	Fine dark grey/ blueish clayey silt layer, moderately compact, moist	None	None	No
SSP1C	1 jar 1 bag	30-38					

Sample Location ID		**STPD2**		
Sample UTM Coordinates		N: 7211900	E:0638582	NAD 83 14W

Date		Aug 13/05					
Time		15:08					
Water Column Depth		6.23m	Core Length: 34cm				

Sample ID	**# of contain.**	**Description** **Depth from surface (cm)**	**General**	**Texture/ colour**	**Bio Structure**	**Debris**	**Presence of Sheen**
STPD2A	1 jar	0-2.2	Oxidized layer	Fine brown sediment layer, wet/ fluid, with orange/yellow oxidized layers (minor and narrow), Major component: grey clayey silt	Small Periphyton layer	None	No
		2.2-34	Clayey Silt	Fine dark grey/ blueish clayey silt layer, moderately compact	None	None	No
		34	Unable to advance corer deeper and maintain a recoverable sample				
STP2B	1 jar 1 bag	10-20	Clayey Silt	Fine dark grey/ blueish clayey silt layer, moderately compact, moist	None	None	No
STP2C	2X jar	30-34					

Second Portage Lake

Large lake with boulder shore lines and sheer drops in the middle of the lake. A boulder ridge divides SSP1 from SSP2 and SSP3. Variable substrate encountered during sediment sampling, including soft clayey silt and hard compact clay.

Sample Location ID		**SSP1**					
Sample UTM Coordinates		N: 7215792	E:0637465	NAD 83 14W			
Date		Aug 13/05					
Time		9:43					
Water Column Depth		7.18m	Core Length: 28cm				
Sample ID		**Description**					
	# of contain.	**Depth from surface**	**General**	**Texture/ colour**	**Bio Structure**	**Debris**	**Presence of Sheen**
SSP1A	1 jar	0-6.5	Oxidized layer	Fine brown sediment, wet/ fluid, with orange/yellow oxidized layers	Periphyton layer	None	No
		6.5-28	Clayey Silt	Fine dark grey/ blueish clayey silt layer, moderately compact	None	None	No
		28	Unable to advance corer deeper and maintain a recoverable sample				
SSP1B	1 jar 1 bag	10-20	Clayey Silt	Fine dark grey/ blueish clayey silt layer, moderately compact	None	None	No
SSP1C	1 bag	20-28					

Photos
SSP1 core
SSP1 sampling

Sample Location ID		**SSP2**					
Sample UTM Coordinates		N: 7215003	E:0638531	NAD 83 14W			
Date		Aug 13/05					
Time	**# of**	9:43					
Water Column Depth	**contain.**	5.4 m	**Core Length: 8.6cm**				
Sample ID		**Description**					
		Depth from surface	**General**	**Texture/ colour**	**Bio Structure**	**Debris**	**Presence of Sheen**
SSP2A	1 jar	0-1.8	Oxidized layer	Fine brown layer of silty sed, wet/ fluid, defined ox layer, narrow	Periphyton layer	None	No
SSP2B	1 jar	1.8-8.6	Compact Clay	Light brown compact clay, clean	None	Small Black organic fibres	No
		8.6	Unable to advance corer deeper while maintaining adequate recovery, deeper compact clay substrate.				

Photos
SSP2 core

Sample location ID:		**SSP3**					
Sample UTM Coordinates		N: 7214517	E:0638412	NAD 83 14W			
Date		Aug 13/05					
Time	**# of**	9:43					
Water Column Depth	**contain.**	12.3m	**Core length: 10.5cm**				
Sample ID		**Description**					
		Depth from surface	**General**	**Texture/ colour**	**Bio Structure**	**Debris**	**Presence of Sheen**
SSP3A	1 jar	0-1.8	Oxidized layer	Fine brown layer of silty clay, with coarse grained sand in silty clay, oxidized layer/ colouring, smaller ox layer	Periphyton layer	None	No
SSP3B	1 jar 1 bag	1.8-10.5	Clay	Light brown compact clay, clean	None	Small Black organic fibres	No
		10.5	Unable to advance corer deeper while maintaining adequate recovery, deeper compact clay substrate.				

Second Portage Lake

Sample location ID:		**SSP4**					
Sample UTM Coordinates		N: 7214192	E:0639206	NAD 83 14W			
Date		Aug 13/05					
Time		9:43					
Water Column Depth		8.19m	**Core length: 32cm**				
Sample ID		**Description**					
	# of contain.	**Depth from surface**	**General**	**Texture/ colour**	**Bio Structure**	**Debris**	**Presence of Sheen**
SSP4A	1 jar	0-4.5	Oxidized layer	Fine brown silt with some grey silty clay, wet/ fluid, with orange/yellow oxidized layer	Periphyton layer	None	No
		4.5-32	Clayey Silt	Fine dark grey/ blueish clayey silt layer, moderately compact	None	None	No
		32	Unable to advance corer deeper and maintain a recoverable sample				
SSP4B	1 jar 1 bag	10-20	Clayey Silt	Fine dark grey/ blueish clayey silt layer, moderately compact, moist	None	None	No
SSP4C	1 bag	20-32					

Vault Lake

Vault is a relatively small shallow U-shaped lake with two deep basins at NE side of lake and SW arm of the lake divided by boulder shelves. Two samples taken in approx. area as requested. Soft substrate encountered in sample areas.

Sample location ID	**SV1**						
Sample UTM Coordinates		N: 7219570	E:0358991 NAD 83 15W				
Date		11-Aug					
Time		9:45					
Water Column Depth		6.62	Core length:42cm				
Sample ID		**Description**					
	# of contain.	**Depth from surface**	**General**	**Texture/ colour**	**Bio Structure**	**Debris**	**Presence of Sheen**
SV1 A	1 jar	0-11	Oxidized layer	Orangish brown liquidy sed, with orange/yellow oxidized layer, when compressed distributes to ~ 0-8cm interval	Periphyton layer	None	No
SV1B	2X jars	11-20 20-30	Clayey Silt	Fine dark grey clayey silt layer, compact	None	None	No
SV1 C	1 Bag	30-42	Clayey Silt	Fine dark grey clayey silt layer, compact	None	None	No
		42	Bottom of core				

Photos
SV1core Aug 11
SV 1 sampling aug 11

Site Location ID	**SV2**						
Sample UTM Coordinates		N: 7220529	E:0359268 NAD 83 15W				
Date		11-Aug					
Time		10:20					
Water Column Depth		6.6 m	**Core length:36 cm**				
Sample ID		**Description**					
	# of contain.	**Depth from surface**	**General**	**Texture/ colour**	**Bio Structure**	**Debris**	**Presence of Sheen**
SV2 A	1 jar	0-4.5 4.5- 10	Oxidized layer	Defined oxidized layer, orangish oxidized granuals distributed throughout 0-4.5 cm	Periphyton layer	None	No
SV2 B	2 jars	10-20	Clayey silt	Fine dark grey/ green silt layer, compact	None	Small Black	No
SV2 C	1 Bag	30-36	Clayey silt	Fine dark grey/ green clayey silt layer, compact	None	None	No
		36	Unable to advance corer deeper, possibly due to parent material (boulder subgrade??)				

Site Location		Phaser Lake					
Sample UTM Coordinates		**SV3A & B**	N: 7219723	E:0640518			
NAD 83 14W		**SV3C**	N: 7219701	E:0640493			

General Description

Small shallow lake with predominantly boulder cobble substrate, small pocket of sediment in the Northeast Bay, ~400m north from requested location. No other sediment pockets observed

Date		Aug 9/05					
Time		16:15					
Water Column Depth		**3.58m**	**Core length:32 cm**				
Sample ID	**# of contain.**	**Description Depth from surface (cm)**	**General**	**Texture/ colour**	**Bio Structure**	**Debris**	**Presence of Sheen**
		0-12	Oxidized layer	Fine light brown sediment, wet/ fluid, with orange/yellow oxidized layers (approximately 3 layers at 0-8cm from surface)	Periphyton layer	None	No
SV3A	2 jars 1 bag	12-22	Clayey silt	Fine dark grey clayey silt layer, set, compact	None	Small Black organic fibres/ shells?? External to core,	No
		22-32	Clayey silt	Fine dark grey clayey silt layer, set, compact	None	None	No
		32	Unable to advance corer deeper, possibly due to parent material (boulder subgrade??)				
Photo ID		Description					
SV3 A		Sediment sample in corer					
SV3 B		Sediment core					
SV3 C		Separated 10-20 cm section					
Date		Aug 10/05					
Time		9:00					
Water Column Depth		**3.6 m**	**Core length: 30cm**				
		0-10	Oxidized layer	Fine light brown sediment, wet/ fluid, with orange/yellow oxidized layers (approximately 3 layers at 0-8cm from surface)	Periphyton layer	None	No
SV3B	1 bag	10-22	Clayey silt	Fine dark grey clayey silt layer, set, compact	None	None	No
		22-30	Clayey silt	Fine dark grey clayey silt layer, set, compact	None	None	No
		30	Unable to advance corer deeper, possibly due to parent material (boulder subgrade??) in shallow water				
Date		Aug 10/05					
Time		18:00					
Water Column Depth		**4.78m**	**Core length:35 cm**				
SV3 C	1 jar	0-8	Oxidized layer	Major, fine brown silty sed, Minor orangish oxidized layers, fragmented throughout layer	Periphyton layer	None	No
		8-35	Same as SV3A and B		None	None	No

APPENDIX C – Photographic Record of Sediment Cores

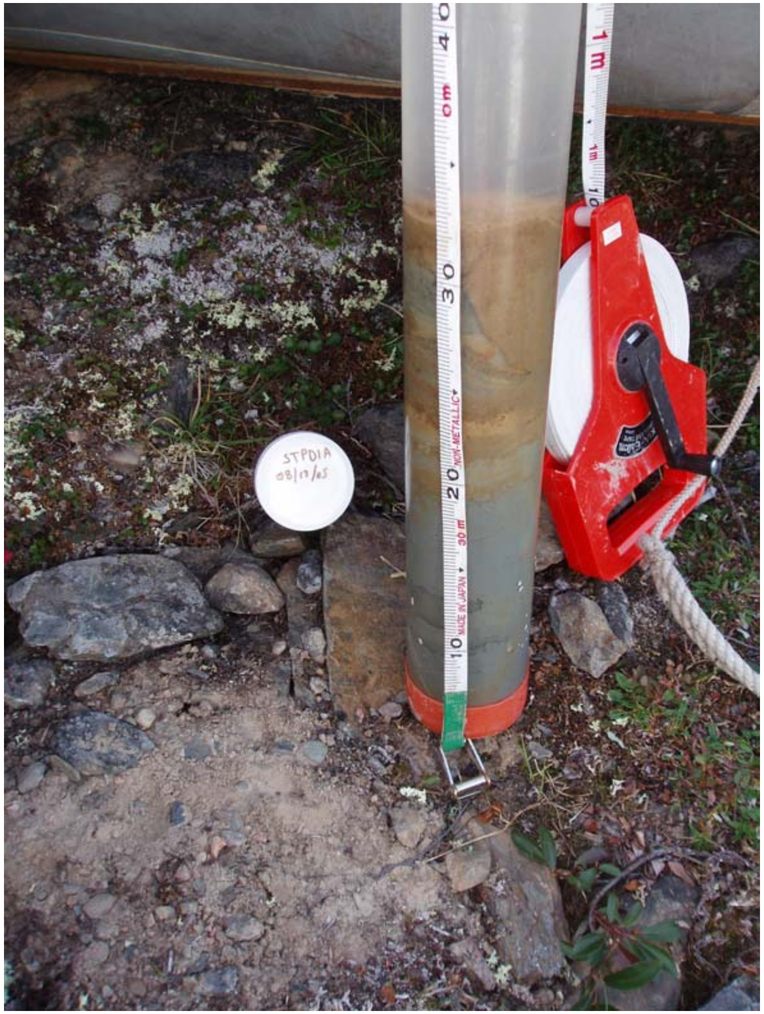
Second Portage Lake

Second Portage Lake

APPENDIX C – Photographic Record of Sediment Cores

Second Portage Lake

Third Portage Lake



APPENDIX C – Photographic Record of Sediment Cores

Third Portage Lake

Vault Lake

APPENDIX C – Photographic Record of Sediment Cores

Phaser Lake

Phaser Lake

APPENDIX E

DETAILED HABITAT CHARACTERISTICS FOR TRANSECTS, FISH SPAWNING SURVEY, 2006.

TAPE 1

Time mm:ss	Transect	Depth	Habitat Description
00:00	SP-01	1.7	Cobble/gravel; exposed fines
01:14	SP-01	2.8	Boulders/cobble; exposed fines
02:14	SP-01	3.5	Cobble/gravel; exposed fines
03:14	SP-01	3.9	Boulders/cobble; exposed fines
05:14	SP-01	5.8	Cobble/gravel; exposed fines
06:14	SP-01	3.5	Cobble/gravel; exposed fines
08:14	SP-01	2.5	Mostly boulders/some cobble
10:14	SP-01	2.0	Boulders/cobble
11:14	SP-01	4.0	Uniform fines; odd boulder/cobble
12:14	SP-01	4.8	Uniform fines
13:14	SP-01	4.6	Uniform fines
14:14	SP-01	3.5	Uniform fines
15:14	SP-01	2.1	Boulders/cobble
15:14	SP-02A	--	--
16:50	SP-02A	7.5	Uniform fines
17:20	SP-02A	6.5	Uniform fines
17:50	SP-02A	5.6	Uniform fines
18:20	SP-02A	4.4	Uniform fines; odd boulder/cobble
18:50	SP-02A	3.1	Cobble/gravel; exposed fines
19:20	SP-02A	2.4	Boulders/cobble
19:50	SP-02A	2.5	Boulders/cobble
20:20	SP-02A	2.4	Boulders/cobble
20:50	SP-02A	2.4	Cobble
21:20	SP-02A	3.0	Uniform fines; odd boulder/cobble
21:50	SP-02A	3.1	Cobble/gravel; exposed fines
22:50	SP-02A	3.1	Cobble/gravel; exposed fines
23:20	SP-02A	3.1	Cobble/gravel; exposed fines
23:50	SP-02A	2.8	Boulders/cobble with small gravel/fines
24:20	SP-02A	2.8	Boulders/cobble; exposed fines
25:20	SP-02A	4.4	Uniform fines
25:50	SP-02A	5.0	Uniform fines (30m from shore)
26:20	SP-02A	5.0	Uniform fines
27:20	SP-02A	2.1	Boulder/cobble; furry
27:50	SP-02A	1.5	Boulders/cobble; furry

Time mm:ss	Transect	Depth	Description
27:50	SP-02B	1.2	Boulders/cobble; furry
28:50	SP-02B	1.8	Boulders/cobble
29:20	SP-02B	2.1	Boulders/cobble with small gravel
29:50	SP-02B	2.3	Boulders/cobble with small gravel/fines
30:20	SP-02B	4.2	Boulders/cobble; exposed fines
30:50	SP-02B	5.0	Boulders/cobble; exposed fines
31:20	SP-02B	5.3	Boulders/cobble; exposed fines
31:50	SP-02B	6.1	Uniform fines
32:20	SP-02B	6.5	Boulders/cobble; exposed fines
32:50	SP-02B	--	Uniform fines
32:50	SP-03A	--	--
33:20	SP-03A	2.0	Mostly boulders/some cobble
33:50	SP-03A	1.4	Boulders/cobble
34:20	SP-03A	2.5	Boulders/cobble with small gravel
34:50	SP-03A	3.0	Uniform fines; odd boulder/cobble
35:20	SP-03A	3.7	Uniform fines
35:50	SP-03A	3.4	Uniform fines
36:20	SP-03A	4.3	Uniform fines
36:50	SP-03A	5.0	Uniform fines
37:50	SP-03A	5.3	Uniform fines
38:20	SP-03A	5.0	Uniform fines
38:50	SP-03A	4.0	Uniform fines
39:20	SP-03A	3.9	Uniform fines
39:50	SP-03A	3.0	Uniform fines
40:50	SP-03A	2.8	Boulders/cobble
41:50	SP-03A	2.3	Boulders/cobble
42:20	SP-03A	2.5	Boulders/cobble; exposed fines
43:00	SP-03A	4.9	Uniform fines; odd boulder

Time h:mm:ss	Transect	Depth	Description
43:06	SP-03B	--	--
43:36	SP-03B	1.7	Boulders/cobble
44:06	SP-03B	1.6	Boulders/cobble
44:36	SP-03B	1.4	Mostly boulders/some cobble
45:06	SP-03B	1.2	Mostly boulders/some cobble
45:36	SP-03B	1.4	Boulders/cobble
46:06	SP-03B	1.4	Boulders/cobble
46:36	SP-03B	1.4	Boulders/cobble
47:06	SP-03B	1.4	Boulders/cobble
47:36	SP-03B	1.7	Boulders/cobble
48:06	SP-03B	1.5	Boulders/cobble
48:36	SP-03B	1.5	Boulders/cobble
49:06	SP-03B	1.5	Mostly boulders/some cobble
49:36	SP-03B	<1.5	Mostly boulders/some cobble
50:06	SP-03B	<1.5	Boulders/cobble
50:36	SP-03B	<1.5	Boulders/cobble
51:06	SP-03B	1.5	Cobble/gravel
51:21	SP-03B	1.9	Boulders/cobble; exposed fines
51:36	SP-03B	2.4	Boulders/cobble
52:06	SP-03B	1.5	Boulders/cobble with small gravel/fines
52:36	SP-03B	1.8	Uniform fines; odd boulder
53:06	SP-03B	3.0	Uniform fines; odd boulder
53:36	SP-03B	4.0	Uniform fines
54:06	SP-03B	6.3	Uniform fines
54:56	SP-03B	6.4	Uniform fines

TAPE 2

Time mm:ss	Transect	Depth	Habitat Description
00:00	TP-01A	--	--
00:30	TP-01A	5.2	Uniform fines
01:00	TP-01A	4.5	Uniform fines
01:30	TP-01A	4.1	Uniform fines; odd boulder
02:00	TP-01A	4.2	Uniform fines; odd boulder
02:30	TP-01A	4.0	Uniform fines
03:00	TP-01A	4.1	Boulders/cobble; exposed fines
03:30	TP-01A	4.5	Uniform fines; odd boulder
04:00	TP-01A	5.1	Boulders/cobble; exposed fines
04:30	TP-01A	6.2	Uniform fines
05:00	TP-01A	7.4	Uniform fines
05:30	TP-01A	8.1	Uniform fines
06:00	TP-01A	8.5	Uniform fines
06:00	TP-01B	--	--
06:30	TP-01B	8.0	Uniform fines; odd boulder/cobble
07:00	TP-01B	5.2	Uniform fines
07:30	TP-01B	4.0	Boulders/cobble with small gravel/fines
07:45	TP-01B	3.0	Boulders/cobble with small gravel/fines
08:00	TP-01B	2.5	Boulders/cobble
08:30	TP-01B	2.3	Boulders/cobble
09:00	TP-01B	2.2	Mostly boulders/some cobble
09:30	TP-01B	2.0	Boulders/cobble
10:00	TP-01B	1.6	Boulders/cobble
10:30	TP-01B	1.5	Mostly boulders/some cobble
11:00	TP-01B	1.7	Mostly boulders/some cobble
11:30	TP-01B	1.6	Boulders/cobble
12:00	TP-01B	1.6	Boulders/cobble
12:30	TP-01B	2.0	Boulders/cobble
13:00	TP-01B	2.6	Boulders/cobble with small gravel
13:07	TP-01B	2.6	Boulders/cobble with small gravel
13:30	TP-01B	2.4	Boulders/cobble with small gravel
14:00	TP-01B	2.7	Mostly boulders/some cobble
14:30	TP-01B	2.3	Boulders/cobble
15:00	TP-01B	2.1	Boulders/cobble
15:30	TP-01B	1.9	Boulders/cobble
16:00	TP-01B	1.8	Mostly boulders/some cobble
16:30	TP-01B	2.0	Boulders/cobble
17:00	TP-01B	2.1	Boulders/cobble
17:30	TP-01B	2.6	Mostly boulders/some cobble
17:45	TP-01B	2.5	Cobble/gravel
18:00	TP-01B	2.8	Cobble/gravel
18:15	TP-01B	2.8	Boulders/cobble with small gravel
18:30	TP-01B	3.0	Boulders/cobble
19:00	TP-01B	3.7	Uniform fines; odd boulder/cobble
19:15	TP-01B	4.5	Uniform fines; odd boulder/cobble

Time mm:ss	Transect	Depth	Description
19:32	TP-03A	8.8	--
20:00	TP-03A	8.2	No visual
20:30	TP-03A	7.4	Uniform fines; furry
21:00	TP-03A	4.8	Uniform fines; odd boulder/cobble; furry
21:30	TP-03A	4.2	Boulders/cobble with small gravel/fines
22:00	TP-03A	2.4	Boulders/cobble
22:30	TP-03A	2.3	Boulders/cobble
23:00	TP-03A	2.0	Mostly boulders/some cobble
23:30	TP-03A	2.9	Boulders/cobble
24:00	TP-03A	4.0	Boulders/cobble
24:30	TP-03A	4.2	Uniform fines; odd boulder/cobble
25:00	TP-03A	1.5	Boulders/cobble
25:30	TP-03A	1.3	Boulders/cobble
26:00	TP-03A	1.3	Boulders/cobble
26:30	TP-03A	<1.3	Boulders/cobble
27:00	TP-03A	<1.3	Mostly boulders/some cobble
27:30	TP-03A	<1.3	Mostly boulders/some cobble
28:00	TP-03A	1.7	Mostly boulders/some cobble
28:30	TP-03A	1.6	Boulders/cobble
29:00	TP-03A	2.3	Boulders/cobble
29:30	TP-03A	2.5	Mostly boulders/some cobble
30:00	TP-03A	3.8	Boulders/cobble with small gravel/fines
30:30	TP-03A	3.0	Uniform fines; furry
31:00	TP-03A	2.0	Boulders/cobble
31:30	TP-03A	2.0	Boulders/cobble
32:00	TP-03A	1.7	Mostly boulders/some cobble
32:30	TP-03A	1.6	Boulders/cobble
33:00	TP-03A	1.4	Boulders/cobble
33:30	TP-03A	1.3	Boulders/cobble
34:00	TP-03A	<1.3	Boulders/cobble
34:30	TP-03A	1.3	Boulders/cobble
35:00	TP-03A	1.3	Boulders/cobble
35:30	TP-03A	<1.3	Boulders/cobble
36:00	TP-03A	1.3	Boulders/cobble
36:30	TP-03A	1.3	Boulders/cobble with small gravel/fines
37:00	TP-03A	<1.3	Boulders/cobble with small gravel/fines
37:30	TP-03A	--	Boulders/cobble with small gravel/fines
38:00	TP-03A	2.0	Boulders/cobble with small gravel/fines
38:30	TP-03A	--	Boulders/cobble with small gravel/fines
39:00	TP-03A	--	Boulders/cobble with small gravel; furry
40:30	TP-03A	3.0	Uniform fines; odd boulder/cobble
41:30	TP-03A	--	Uniform fines; odd boulder/cobble
42:00	TP-03A	--	Uniform fines; odd boulder/cobble
43:00	TP-03A	--	Boulders/cobble with small gravel/fines
44:00	TP-03A	--	Boulders/cobble
45:00	TP-03A	--	Mostly boulders/some cobble
46:00	TP-03A	--	Boulders/cobble
47:01	TP-03A	3.5	Boulders/cobble; exposed fines
47:30	TP-03A	3.0	Boulders/cobble; exposed fines
49:00	TP-03A	4.0	Boulders/cobble; exposed fines

Time h:mm:ss	Transect	Depth	Description
49:47	TP-03C	4.0	--
50:30	TP-03C	2.5	Boulders/cobble
51:00	TP-03C	2.4	Boulders/cobble
51:30	TP-03C	2.3	Boulders/cobble
52:00	TP-03C	2.1	Mostly boulders/some cobble
52:30	TP-03C	2.4	Boulders/cobble
53:00	TP-03C	2.4	Boulders/cobble with small gravel
53:30	TP-03C	2.9	Mostly boulders/some cobble
54:00	TP-03C	3.0	Boulders/cobble
54:30	TP-03C	2.3	Boulders/cobble
55:00	TP-03C	1.9	Boulders/cobble
55:30	TP-03C	1.9	Boulders/cobble
56:00	TP-03C	2.2	Boulders/cobble; furry
56:30	TP-03C	2.1	Boulders/cobble
57:00	TP-03C	2.0	Boulders/cobble
57:30	TP-03C	2.1	Boulders/cobble with small gravel
58:00	TP-03C	4.8	Boulders/cobble
58:30	TP-03C	5.9	Uniform fines
59:00	TP-03C	5.2	Uniform fines
1:00:00	TP-03C	4.0	Uniform fines
1:00:30	TP-03C	2.5	Boulders/cobble with small gravel/fines
1:01:00	TP-03C	2.3	Boulders/cobble
1:01:30	TP-03C	2.2	Boulders/cobble
1:02:00	TP-03C	2.1	Mostly boulders/some cobble
1:02:30	TP-03C	1.1	Mostly boulders/some cobble
1:03:00	TP-03C	0.5	Mostly boulders/some cobble
1:03:30	TP-03C	0.5	Mostly boulders/some cobble
1:04:00	TP-03C	0.5	Boulders/cobble
1:04:30	TP-03C	<0.5	Boulders/cobble

TAPE 3

Time mm:ss	Transect	Depth	Habitat Description
00:00	TP-03B	--	--
00:30	TP-03B	3.5	Uniform fines
01:00	TP-03B	3.0	All boulders
01:15	TP-03B	2.5	Boulders/cobble; exposed fines
01:30	TP-03B	2.2	Boulders/cobble
02:00	TP-03B	2.2	Boulders/cobble
02:30	TP-03B	2.0	Boulders/cobble
03:00	TP-03B	2.1	Boulders/cobble with small gravel
03:30	TP-03B	2.0	Boulders/cobble
04:00	TP-03B	2.2	Boulders/cobble with small gravel
04:30	TP-03B	2.1	Boulders/cobble
05:00	TP-03B	2.3	Boulders/cobble with small gravel
05:30	TP-03B	2.4	Boulders/cobble with small gravel
06:00	TP-03B	2.3	Boulders/cobble
06:30	TP-03B	2.2	Boulders/cobble
07:00	TP-03B	2.2	Boulders/cobble
07:30	TP-03B	2.1	Boulders/cobble
08:00	TP-03B	1.8	Boulders/cobble
08:30	TP-03B	1.7	Boulders/cobble
09:00	TP-03B	1.6	Mostly boulders/some cobble
09:30	TP-03B	1.5	All boulders
10:00	TP-03B	1.4	All boulders
10:30	TP-03B	<1.4	All boulders
11:00	TP-03B	<1.4	All boulders
11:30	TP-03B	<1.4	All boulders
12:00	TP-03B	1.6	Boulders/cobble
12:30	TP-03B	2.0	Boulders/cobble
13:00	TP-03B	2.3	Boulders/cobble with small gravel
13:30	TP-03B	2.7	Boulders/cobble with small gravel/fines
13:45	TP-03B	2.8	Cobble/gravel
14:00	TP-03B	2.9	Boulders/cobble; exposed fines
14:30	TP-03B	4.2	Uniform fines
15:00	TP-03B	3.6	Uniform fines

Time mm:ss	Transect	Depth	Description
15:03	TP-03D	--	--
15:30	TP-03D	--	--
16:00	TP-03D	5.2	Uniform fines; odd boulder/cobble
16:30	TP-03D	6.8	Uniform fines
17:00	TP-03D	6.6	Uniform fines
17:30	TP-03D	6.3	Uniform fines
18:00	TP-03D	3.4	Uniform fines; odd boulder/cobble
19:00	TP-03D	1.8	Boulders/cobble with small gravel/fines
19:30	TP-03D	2.4	Boulders/cobble with small gravel/fines
20:00	TP-03D	3.1	Boulders/cobble with small gravel/fines
20:15	TP-03D	2.9	Boulders/cobble
20:30	TP-03D	1.9	Boulders/cobble with small gravel/fines
21:00	TP-03D	2.5	Boulders/cobble; exposed fines
21:20	TP-03D	2.7	Boulders/cobble with small gravel/fines
21:45	TP-03D	4.9	Boulders/cobble; exposed fines
22:00	TP-03D	4.5	Boulders/cobble; exposed fines
22:30	TP-03D	4.8	Boulders/cobble; exposed fines

APPENDIX F

RAW DATA AND LABORATORY REPORTS, 2006.

1. Water and Sediment Chemistry Data – July 2006
2. Water Chemistry Data – August 2006
3. Sediment Characteristics
4. Phytoplankton Biomass, Cell Density and Species Data
5. Benthic Invertebrate QA/QC

Project: Meadowbank Soil, Water, and Filter Analysis
Report to: Azimuth Consulting Group Inc.
ALS File No.: X9007
Date Received: 7/20/2006
Date: 8/22/2006

RESULTS OF ANALYSIS

Sample ID	TPE-1 SED	TE-1 SED	TPS-1 SED	TPN-1 SED	SP-1 SED	WAL-1 SED	INUG-1 SED	ALS TRAVEL BLANK	TPE-1 SW	TE-1 SW	TPS-1 SW
Date Sampled	7/11/2006	7/12/2006	7/17/2006	7/17/2006	7/12/2006	7/13/2006	7/15/2006		7/11/2006	7/12/2006	7/17/2006
Time Sampled											
ALS Sample ID	1	2	3	4	5	6	7	8	9	10	11
Nature	Sediment/Soil	Sediment/Soil	Sediment/Soil	Sediment/Soil	Sediment/Soil	Sediment/Soil	Sediment/Soil	Water	Water	Water	Water
Physical Tests											
Conductivity (uS/cm)	-	-	-	-	-	-	-	<2.0	12.1	19.3	12.6
Total Dissolved Solids	-	-	-	-	-	-	-	<10	<10	12	10
Hardness CaCO3	-	-	-	-	-	-	-	<0.54	5.33	9.20	5.44
pH	5.82	5.70	5.80	5.97	5.86	6.34	5.72	5.44	6.47	6.60	6.63
Total Suspended Solids	-	-	-	-	-	-	-	<3.0	<3.0	<3.0	<3.0
Dissolved Anions											
Alkalinity-Total CaCO3	-	-	-	-	-	-	-	<2.0	5.0	6.0	4.2
Alkalinity-Bicarbonate CaCO3	-	-	-	-	-	-	-	<2.0	5.0	6.0	4.2
Alkalinity-Carbonate CaCO3	-	-	-	-	-	-	-	<2.0	<2.0	<2.0	<2.0
Alkalinity-Hydroxide CaCO3	-	-	-	-	-	-	-	<2.0	<2.0	<2.0	<2.0
Bromide Br	-	-	-	-	-	-	-	<0.050	<0.050	<0.050	<0.050
Chloride Cl	-	-	-	-	-	-	-	<0.50	<0.50	<0.50	<0.50
Fluoride F	-	-	-	-	-	-	-	<0.020	0.056	0.051	0.053
Silicate SiO2	-	-	-	-	-	-	-	<1.0	<1.0	<1.0	<1.0
Sulphate SO4	-	-	-	-	-	-	-	<0.50	1.33	2.29	1.43
Nutrients											
Ammonia Nitrogen N	-	-	-	-	-	-	-	<0.0050	<0.0050	0.0067	<0.0050
Total Kjeldahl Nitrogen N	-	-	-	-	-	-	-	<0.050	0.083	0.097	0.063
Nitrate Nitrogen N	-	-	-	-	-	-	-	<0.0050	<0.0050	<0.0050	<0.0050
Nitrite Nitrogen N	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.0010	<0.0010
Dissolved ortho-Phosphate P	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.0010	<0.0010
Total Phosphate P	-	-	-	-	-	-	-	<0.0020	<0.0020	0.0029	0.0048
Total Metals											
Aluminum T-Al	-	-	-	-	-	-	-	<0.0050	0.0068	0.0144	0.0076
Antimony T-Sb	<10	<10	<10	<10	<10	<10	<10	<0.00050	<0.00050	<0.00050	<0.00050
Arsenic T-As	17.9	29.4	38.0	26.2	29.4	29.4	126	<0.00050	<0.00050	<0.00050	<0.00050
Barium T-Ba	104	98.1	114	102	132	104	169	<0.020	<0.020	<0.020	<0.020
Beryllium T-Be	1.77	1.82	1.67	1.35	2.63	1.29	1.36	<0.0010	<0.0010	<0.0010	<0.0010
Boron T-B	-	-	-	-	-	-	-	<0.10	<0.10	<0.10	<0.10

Project: Meadowbank Soil, Water, and Filter Analysis
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RESULTS OF ANALYSIS

Sample ID	TPE-1 SED	TE-1 SED	TPS-1 SED	TPN-1 SED	SP-1 SED	WAL-1 SED	INUG-1 SED	ALS TRAVEL BLANK	TPE-1 SW	TE-1 SW	TPS-1 SW
Date Sampled	7/11/2006	7/12/2006	7/17/2006	7/17/2006	7/12/2006	7/13/2006	7/15/2006		7/11/2006	7/12/2006	7/17/2006
Time Sampled											
ALS Sample ID	1	2	3	4	5	6	7	8	9	10	11
Nature	Sediment/Soil	Sediment/Soil	Sediment/Soil	Sediment/Soil	Sediment/Soil	Sediment/Soil	Sediment/Soil	Water	Water	Water	Water
Cadmium T-Cd	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.000017	<0.000017	<0.000017	<0.000017
Calcium T-Ca	-	-	-	-	-	-	-	<0.050	1.24	2.36	1.26
Chromium T-Cr	84.4	48.4	127	125	88.0	53.9	98.0	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt T-Co	14.5	9.3	18.4	23.8	14.3	8.5	15.2	<0.00030	<0.00030	<0.00030	<0.00030
Copper T-Cu	54.7	51.5	82.8	59.1	93.8	112	49.8	<0.0010	<0.0010	<0.0010	<0.0010
Iron T-Fe	-	-	-	-	-	-	-	<0.030	<0.030	<0.030	<0.030
Lead T-Pb	<30	<30	<30	<30	<30	30	<30	<0.00050	<0.00050	<0.00050	<0.00050
Lithium T-Li	-	-	-	-	-	-	-	<0.0050	<0.0050	<0.0050	<0.0050
Magnesium T-Mg	-	-	-	-	-	-	-	<0.10	0.54	0.80	0.56
Manganese T-Mn	-	-	-	-	-	-	-	<0.00030	0.00291	0.00218	0.00123
Mercury T-Hg	0.0144	0.0218	0.0209	0.0192	0.0185	0.0495	0.0290	<0.000020	<0.000020	<0.000020	<0.000020
Molybdenum T-Mo	<4.0	8.4	7.1	4.2	8.2	5.5	6.6	<0.0010	<0.0010	<0.0010	<0.0010
Nickel T-Ni	52.9	30.1	83.8	88.5	63.2	48.3	108	<0.0010	<0.0010	<0.0010	<0.0010
Potassium T-K	-	-	-	-	-	-	-	<2.0	<2.0	<2.0	<2.0
Selenium T-Se	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<0.0010	<0.0010	<0.0010	<0.0010
Silver T-Ag	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<0.000020	<0.000020	<0.000020	<0.000020
Sodium T-Na	-	-	-	-	-	-	-	<2.0	<2.0	<2.0	<2.0
Thallium T-Tl	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.00020	<0.00020	<0.00020	<0.00020
Tin T-Sn	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<0.00050	<0.00050	<0.00050	<0.00050
Titanium T-Ti	-	-	-	-	-	-	-	<0.010	<0.010	<0.010	<0.010
Uranium T-U	-	-	-	-	-	-	-	<0.00020	<0.00020	<0.00020	<0.00020
Vanadium T-V	39.0	31.3	42.6	41.2	49.0	27.4	41.4	<0.030	<0.030	<0.030	<0.030
Zinc T-Zn	102	94.1	112	98.9	143	115	96.5	<0.0050	<0.0050	<0.0050	<0.0050
Organic Parameters											
Chlorophyll a (a,b,c,d)	-	-	-	-	-	-	-	-	-	-	-
Dissolved Organic Carbon C	-	-	-	-	-	-	-	-	1.78	2.09	1.41
Total Organic Carbon C	2.27	2.32	4.01	3.74	3.26	8.22	4.71	<0.50	2.28	2.15	1.81
Particle Size											
Gravel (>2.00mm) (%)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	-	-	-	-
Sand (2.00mm - 0.063mm) (%)	12.8	21.2	2.90	3.50	7.70	8.30	7.80	-	-	-	-
Silt (0.063mm - 4um) (%)	26.7	33.4	35.9	35.3	27.0	42.3	51.7	-	-	-	-
Clay (<4um) (%)	60.5	45.4	61.2	61.2	65.3	49.4	40.5	-	-	-	-

Footnotes:
< = Less than the detection limit indicated.
Water samples only - Results are expressed as milligrams per litre except where noted.
Sediment/Soil samples only - Results are expressed as milligrams per dry kilogram except where noted.
Sediment/Soil samples only - Total Organic Carbon results are expressed as percent, dry weight basis.
(a) Chlorophyll a results are expressed as ug per filter.
(b) NA = Not Available due to a laboratory error. These two filters were
(c) mistakenly leached together. The combined result for the two filters is
(d) 0.213 ug per filter.

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RESULTS OF ANALYSIS

Sample ID	TPN-1 SW	SP-1 SW	WAL-1 SW	INUG-1 SW	TPE-1 FILTER	TE-1 FILTER	TPS-1 FILTER	TPN-1 FILTER	SP-1 FILTER	WAL-1 FILTER	INUG-1 FILTER
Date Sampled	7/17/2006	7/12/2006	7/13/2006	7/15/2006	7/11/2006	7/12/2006	7/17/2006	7/17/2006	7/12/2006	7/13/2006	7/15/2006
Time Sampled											
ALS Sample ID	12	13	14	15	16	17	18	19	20	21	22
Nature	Water	Water	Water	Water	Filter	Filter	Filter	Filter	Filter	Filter	Filter
Physical Tests											
Conductivity (uS/cm)	12.7	20.4	26.6	13.0	-	-	-	-	-	-	-
Total Dissolved Solids	<10	13	16	<10	-	-	-	-	-	-	-
Hardness CaCO3	5.57	9.70	13.5	5.73	-	-	-	-	-	-	-
pH	6.60	6.67	7.30	6.71	-	-	-	-	-	-	-
Total Suspended Solids	<3.0	<3.0	<3.0	<3.0	-	-	-	-	-	-	-
Dissolved Anions											
Alkalinity-Total CaCO3	3.7	7.0	8.4	4.4	-	-	-	-	-	-	-
Alkalinity-Bicarbonate CaCO3	3.7	7.0	8.4	4.4	-	-	-	-	-	-	-
Alkalinity-Carbonate CaCO3	<2.0	<2.0	<2.0	<2.0	-	-	-	-	-	-	-
Alkalinity-Hydroxide CaCO3	<2.0	<2.0	<2.0	<2.0	-	-	-	-	-	-	-
Bromide Br	<0.050	<0.050	<0.050	<0.050	-	-	-	-	-	-	-
Chloride Cl	<0.50	0.50	<0.50	0.72	-	-	-	-	-	-	-
Fluoride F	0.053	0.049	0.032	0.049	-	-	-	-	-	-	-
Silicate SiO2	<1.0	<1.0	<1.0	<1.0	-	-	-	-	-	-	-
Sulphate SO4	1.40	2.43	3.01	0.91	-	-	-	-	-	-	-
Nutrients											
Ammonia Nitrogen N	<0.0050	0.0073	0.0060	0.0073	-	-	-	-	-	-	-
Total Kjeldahl Nitrogen N	0.068	0.084	0.080	0.077	-	-	-	-	-	-	-
Nitrate Nitrogen N	<0.0050	<0.0050	<0.0050	<0.0050	-	-	-	-	-	-	-
Nitrite Nitrogen N	<0.0010	<0.0010	<0.0010	<0.0010	-	-	-	-	-	-	-
Dissolved ortho-Phosphate P	<0.0010	<0.0010	<0.0010	0.0016	-	-	-	-	-	-	-
Total Phosphate P	0.0028	0.0034	0.0036	0.0038	-	-	-	-	-	-	-
Total Metals											
Aluminum T-Al	0.0094	0.0098	0.0080	0.0117	-	-	-	-	-	-	-
Antimony T-Sb	<0.00050	<0.00050	<0.00050	<0.00050	-	-	-	-	-	-	-
Arsenic T-As	<0.00050	<0.00050	<0.00050	<0.00050	-	-	-	-	-	-	-
Barium T-Ba	<0.020	<0.020	<0.020	<0.020	-	-	-	-	-	-	-
Beryllium T-Be	<0.0010	<0.0010	<0.0010	<0.0010	-	-	-	-	-	-	-
Boron T-B	<0.10	<0.10	<0.10	<0.10	-	-	-	-	-	-	-

Project: Meadowbank Soil, Water, and Filter Analysis
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RESULTS OF ANALYSIS

Sample ID	TPN-1 SW	SP-1 SW	WAL-1 SW	INUG-1 SW	TPE-1 FILTER	TE-1 FILTER	TPS-1 FILTER	TPN-1 FILTER	SP-1 FILTER	WAL-1 FILTER	INUG-1 FILTER
Date Sampled	7/17/2006	7/12/2006	7/13/2006	7/15/2006	7/11/2006	7/12/2006	7/17/2006	7/17/2006	7/12/2006	7/13/2006	7/15/2006
Time Sampled											
ALS Sample ID	12	13	14	15	16	17	18	19	20	21	22
Nature	Water	Water	Water	Water	Filter	Filter	Filter	Filter	Filter	Filter	Filter
Cadmium T-Cd	<0.000017	<0.000017	<0.000017	<0.000017	-	-	-	-	-	-	-
Calcium T-Ca	1.29	2.51	3.68	1.16	-	-	-	-	-	-	-
Chromium T-Cr	<0.0010	<0.0010	<0.0010	<0.0010	-	-	-	-	-	-	-
Cobalt T-Co	<0.00030	<0.00030	<0.00030	<0.00030	-	-	-	-	-	-	-
Copper T-Cu	<0.0010	<0.0010	<0.0010	<0.0010	-	-	-	-	-	-	-
Iron T-Fe	<0.030	<0.030	<0.030	<0.030	-	-	-	-	-	-	-
Lead T-Pb	<0.00050	<0.00050	<0.00050	<0.00050	-	-	-	-	-	-	-
Lithium T-Li	<0.0050	<0.0050	<0.0050	<0.0050	-	-	-	-	-	-	-
Magnesium T-Mg	0.57	0.83	1.05	0.69	-	-	-	-	-	-	-
Manganese T-Mn	0.00103	0.00282	0.00196	0.00467	-	-	-	-	-	-	-
Mercury T-Hg	<0.000020	<0.000020	<0.000020	<0.000020	-	-	-	-	-	-	-
Molybdenum T-Mo	<0.0010	<0.0010	<0.0010	<0.0010	-	-	-	-	-	-	-
Nickel T-Ni	<0.0010	<0.0010	<0.0010	<0.0010	-	-	-	-	-	-	-
Potassium T-K	<2.0	<2.0	<2.0	<2.0	-	-	-	-	-	-	-
Selenium T-Se	<0.0010	<0.0010	<0.0010	<0.0010	-	-	-	-	-	-	-
Silver T-Ag	<0.000020	<0.000020	<0.000020	<0.000020	-	-	-	-	-	-	-
Sodium T-Na	<2.0	<2.0	<2.0	<2.0	-	-	-	-	-	-	-
Thallium T-Tl	<0.00020	<0.00020	<0.00020	<0.00020	-	-	-	-	-	-	-
Tin T-Sn	<0.00050	<0.00050	<0.00050	<0.00050	-	-	-	-	-	-	-
Titanium T-Ti	<0.010	<0.010	<0.010	<0.010	-	-	-	-	-	-	-
Uranium T-U	<0.00020	<0.00020	<0.00020	<0.00020	-	-	-	-	-	-	-
Vanadium T-V	<0.030	<0.030	<0.030	<0.030	-	-	-	-	-	-	-
Zinc T-Zn	<0.0050	<0.0050	<0.0050	<0.0050	-	-	-	-	-	-	-
Organic Parameters											
Chlorophyll a (a,b,c,d)	-	-	-	-	0.236	0.133	NA	NA	0.185	0.396	0.402
Dissolved Organic Carbon C	1.53	1.92	2.23	1.98	-	-	-	-	-	-	-
Total Organic Carbon C	1.57	2.44	2.51	2.50	-	-	-	-	-	-	-
Particle Size											
Gravel (>2.00mm) (%)	-	-	-	-	-	-	-	-	-	-	-
Sand (2.00mm - 0.063mm) (%)	-	-	-	-	-	-	-	-	-	-	-
Silt (0.063mm - 4um) (%)	-	-	-	-	-	-	-	-	-	-	-
Clay (<4um) (%)	-	-	-	-	-	-	-	-	-	-	-

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DETECTION LIMITS

Sample ID	TPE-1 SED	TE-1 SED	TPS-1 SED	TPN-1 SED	SP-1 SED	WAL-1 SED	INUG-1 SED	ALS TRAVEL BLANK	TPE-1 SW	TE-1 SW	TPS-1 SW
Date Sampled	7/11/2006	7/12/2006	7/17/2006	7/17/2006	7/12/2006	7/13/2006	7/15/2006		7/11/2006	7/12/2006	7/17/2006
Time Sampled											
ALS Sample ID	1	2	3	4	5	6	7	8	9	10	11
Nature	Sediment/Soil	Sediment/Soil	Sediment/Soil	Sediment/Soil	Sediment/Soil	Sediment/Soil	Sediment/Soil	Water	Water	Water	Water
Physical Tests											
Conductivity (uS/cm)	-	-	-	-	-	-	-	2.0	2.0	2.0	2.0
Total Dissolved Solids	-	-	-	-	-	-	-	10	10	10	10
Hardness CaCO3	-	-	-	-	-	-	-	0.54	0.54	0.54	0.54
pH	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
Total Suspended Solids	-	-	-	-	-	-	-	3.0	3.0	3.0	3.0
Dissolved Anions											
Alkalinity-Total CaCO3	-	-	-	-	-	-	-	2.0	2.0	2.0	2.0
Alkalinity-Bicarbonate CaCO3	-	-	-	-	-	-	-	2.0	2.0	2.0	2.0
Alkalinity-Carbonate CaCO3	-	-	-	-	-	-	-	2.0	2.0	2.0	2.0
Alkalinity-Hydroxide CaCO3	-	-	-	-	-	-	-	2.0	2.0	2.0	2.0
Bromide Br	-	-	-	-	-	-	-	0.050	0.050	0.050	0.050
Chloride Cl	-	-	-	-	-	-	-	0.50	0.50	0.50	0.50
Fluoride F	-	-	-	-	-	-	-	0.020	0.020	0.020	0.020
Silicate SiO2	-	-	-	-	-	-	-	1.0	1.0	1.0	1.0
Sulphate SO4	-	-	-	-	-	-	-	0.50	0.50	0.50	0.50
Nutrients											
Ammonia Nitrogen N	-	-	-	-	-	-	-	0.0050	0.0050	0.0050	0.0050
Total Kjeldahl Nitrogen N	-	-	-	-	-	-	-	0.050	0.050	0.050	0.050
Nitrate Nitrogen N	-	-	-	-	-	-	-	0.0050	0.0050	0.0050	0.0050
Nitrite Nitrogen N	-	-	-	-	-	-	-	0.0010	0.0010	0.0010	0.0010
Dissolved ortho-Phosphate P	-	-	-	-	-	-	-	0.0010	0.0010	0.0010	0.0010
Total Phosphate P	-	-	-	-	-	-	-	0.0020	0.0020	0.0020	0.0020
Total Metals											
Aluminum T-Al	-	-	-	-	-	-	-	0.0050	0.0050	0.0050	0.0050
Antimony T-Sb	10	10	10	10	10	10	10	0.00050	0.00050	0.00050	0.00050
Arsenic T-As	5.0	5.0	5.0	5.0	5.0	5.0	5.0	0.00050	0.00050	0.00050	0.00050
Barium T-Ba	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.020	0.020	0.020	0.020
Beryllium T-Be	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.0010	0.0010	0.0010	0.0010
Boron T-B	-	-	-	-	-	-	-	0.10	0.10	0.10	0.10

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DETECTION LIMITS

Sample ID	TPE-1 SED	TE-1 SED	TPS-1 SED	TPN-1 SED	SP-1 SED	WAL-1 SED	INUG-1 SED	ALS TRAVEL BLANK	TPE-1 SW	TE-1 SW	TPS-1 SW
Date Sampled	7/11/2006	7/12/2006	7/17/2006	7/17/2006	7/12/2006	7/13/2006	7/15/2006		7/11/2006	7/12/2006	7/17/2006
Time Sampled											
ALS Sample ID	1	2	3	4	5	6	7	8	9	10	11
Nature	Sediment/Soil	Sediment/Soil	Sediment/Soil	Sediment/Soil	Sediment/Soil	Sediment/Soil	Sediment/Soil	Water	Water	Water	Water
Cadmium T-Cd	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.000017	0.000017	0.000017	0.000017
Calcium T-Ca	-	-	-	-	-	-	-	0.050	0.050	0.050	0.050
Chromium T-Cr	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0010	0.0010	0.0010	0.0010
Cobalt T-Co	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.00030	0.00030	0.00030	0.00030
Copper T-Cu	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0010	0.0010	0.0010	0.0010
Iron T-Fe	-	-	-	-	-	-	-	0.030	0.030	0.030	0.030
Lead T-Pb	30	30	30	30	30	30	30	0.00050	0.00050	0.00050	0.00050
Lithium T-Li	-	-	-	-	-	-	-	0.0050	0.0050	0.0050	0.0050
Magnesium T-Mg	-	-	-	-	-	-	-	0.10	0.10	0.10	0.10
Manganese T-Mn	-	-	-	-	-	-	-	0.00030	0.00030	0.00030	0.00030
Mercury T-Hg	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.000020	0.000020	0.000020	0.000020
Molybdenum T-Mo	4.0	4.0	4.0	4.0	4.0	4.0	4.0	0.0010	0.0010	0.0010	0.0010
Nickel T-Ni	5.0	5.0	5.0	5.0	5.0	5.0	5.0	0.0010	0.0010	0.0010	0.0010
Potassium T-K	-	-	-	-	-	-	-	2.0	2.0	2.0	2.0
Selenium T-Se	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0010	0.0010	0.0010	0.0010
Silver T-Ag	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.000020	0.000020	0.000020	0.000020
Sodium T-Na	-	-	-	-	-	-	-	2.0	2.0	2.0	2.0
Thallium T-Tl	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.00020	0.00020	0.00020	0.00020
Tin T-Sn	5.0	5.0	5.0	5.0	5.0	5.0	5.0	0.00050	0.00050	0.00050	0.00050
Titanium T-Ti	-	-	-	-	-	-	-	0.010	0.010	0.010	0.010
Uranium T-U	-	-	-	-	-	-	-	0.00020	0.00020	0.00020	0.00020
Vanadium T-V	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.030	0.030	0.030	0.030
Zinc T-Zn	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0050	0.0050	0.0050	0.0050
Organic Parameters											
Chlorophyll a	-	-	-	-	-	-	-	-	-	-	-
Dissolved Organic Carbon C	-	-	-	-	-	-	-	-	0.50	0.50	0.50
Total Organic Carbon C	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.50	0.50	0.50	0.50
Particle Size											
Gravel (>2.00mm) (%)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	-	-	-	-
Sand (2.00mm - 0.063mm) (%)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	-	-	-	-
Silt (0.063mm - 4um) (%)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	-	-	-	-
Clay (<4um) (%)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	-	-	-	-

Project: Meadowbank Soil, Water, and Filter Analysis
Report to: Azimuth Consulting Group Inc.
ALS File No.: X9007
Date Received: 7/20/2006
Date: 8/22/2006

DETECTION LIMITS

Sample ID	TPN-1 SW	SP-1 SW	WAL-1 SW	INUG-1 SW	TPE-1 FILTER	TE-1 FILTER	TPS-1 FILTER	TPN-1 FILTER	SP-1 FILTER	WAL-1 FILTER	INUG-1 FILTER
Date Sampled	7/17/2006	7/12/2006	7/13/2006	7/15/2006	7/11/2006	7/12/2006	7/17/2006	7/17/2006	7/12/2006	7/13/2006	7/15/2006
Time Sampled											
ALS Sample ID	12	13	14	15	16	17	18	19	20	21	22
Nature	Water	Water	Water	Water	Filter	Filter	Filter	Filter	Filter	Filter	Filter
Physical Tests											
Conductivity (uS/cm)	2.0	2.0	2.0	2.0	-	-	-	-	-	-	-
Total Dissolved Solids	10	10	10	10	-	-	-	-	-	-	-
Hardness CaCO3	0.54	0.54	0.54	0.54	-	-	-	-	-	-	-
pH	0.010	0.010	0.010	0.010	-	-	-	-	-	-	-
Total Suspended Solids	3.0	3.0	3.0	3.0	-	-	-	-	-	-	-
Dissolved Anions											
Alkalinity-Total CaCO3	2.0	2.0	2.0	2.0	-	-	-	-	-	-	-
Alkalinity-Bicarbonate CaCO3	2.0	2.0	2.0	2.0	-	-	-	-	-	-	-
Alkalinity-Carbonate CaCO3	2.0	2.0	2.0	2.0	-	-	-	-	-	-	-
Alkalinity-Hydroxide CaCO3	2.0	2.0	2.0	2.0	-	-	-	-	-	-	-
Bromide Br	0.050	0.050	0.050	0.050	-	-	-	-	-	-	-
Chloride Cl	0.50	0.50	0.50	0.50	-	-	-	-	-	-	-
Fluoride F	0.020	0.020	0.020	0.020	-	-	-	-	-	-	-
Silicate SiO2	1.0	1.0	1.0	1.0	-	-	-	-	-	-	-
Sulphate SO4	0.50	0.50	0.50	0.50	-	-	-	-	-	-	-
Nutrients											
Ammonia Nitrogen N	0.0050	0.0050	0.0050	0.0050	-	-	-	-	-	-	-
Total Kjeldahl Nitrogen N	0.050	0.050	0.050	0.050	-	-	-	-	-	-	-
Nitrate Nitrogen N	0.0050	0.0050	0.0050	0.0050	-	-	-	-	-	-	-
Nitrite Nitrogen N	0.0010	0.0010	0.0010	0.0010	-	-	-	-	-	-	-
Dissolved ortho-Phosphate P	0.0010	0.0010	0.0010	0.0010	-	-	-	-	-	-	-
Total Phosphate P	0.0020	0.0020	0.0020	0.0020	-	-	-	-	-	-	-
Total Metals											
Aluminum T-Al	0.0050	0.0050	0.0050	0.0050	-	-	-	-	-	-	-
Antimony T-Sb	0.00050	0.00050	0.00050	0.00050	-	-	-	-	-	-	-
Arsenic T-As	0.00050	0.00050	0.00050	0.00050	-	-	-	-	-	-	-
Barium T-Ba	0.020	0.020	0.020	0.020	-	-	-	-	-	-	-
Beryllium T-Be	0.0010	0.0010	0.0010	0.0010	-	-	-	-	-	-	-
Boron T-B	0.10	0.10	0.10	0.10	-	-	-	-	-	-	-

Project: Meadowbank Soil, Water, and Filter Analysis
Report to: Azimuth Consulting Group Inc.
ALS File No.: X9007
Date Received: 7/20/2006
Date: 8/22/2006

DETECTION LIMITS

Sample ID	TPN-1 SW	SP-1 SW	WAL-1 SW	INUG-1 SW	TPE-1 FILTER	TE-1 FILTER	TPS-1 FILTER	TPN-1 FILTER	SP-1 FILTER	WAL-1 FILTER	INUG-1 FILTER
Date Sampled	7/17/2006	7/12/2006	7/13/2006	7/15/2006	7/11/2006	7/12/2006	7/17/2006	7/17/2006	7/12/2006	7/13/2006	7/15/2006
Time Sampled											
ALS Sample ID	12	13	14	15	16	17	18	19	20	21	22
Nature	Water	Water	Water	Water	Filter	Filter	Filter	Filter	Filter	Filter	Filter
Cadmium T-Cd	0.000017	0.000017	0.000017	0.000017	-	-	-	-	-	-	-
Calcium T-Ca	0.050	0.050	0.050	0.050	-	-	-	-	-	-	-
Chromium T-Cr	0.0010	0.0010	0.0010	0.0010	-	-	-	-	-	-	-
Cobalt T-Co	0.00030	0.00030	0.00030	0.00030	-	-	-	-	-	-	-
Copper T-Cu	0.0010	0.0010	0.0010	0.0010	-	-	-	-	-	-	-
Iron T-Fe	0.030	0.030	0.030	0.030	-	-	-	-	-	-	-
Lead T-Pb	0.00050	0.00050	0.00050	0.00050	-	-	-	-	-	-	-
Lithium T-Li	0.0050	0.0050	0.0050	0.0050	-	-	-	-	-	-	-
Magnesium T-Mg	0.10	0.10	0.10	0.10	-	-	-	-	-	-	-
Manganese T-Mn	0.00030	0.00030	0.00030	0.00030	-	-	-	-	-	-	-
Mercury T-Hg	0.000020	0.000020	0.000020	0.000020	-	-	-	-	-	-	-
Molybdenum T-Mo	0.0010	0.0010	0.0010	0.0010	-	-	-	-	-	-	-
Nickel T-Ni	0.0010	0.0010	0.0010	0.0010	-	-	-	-	-	-	-
Potassium T-K	2.0	2.0	2.0	2.0	-	-	-	-	-	-	-
Selenium T-Se	0.0010	0.0010	0.0010	0.0010	-	-	-	-	-	-	-
Silver T-Ag	0.000020	0.000020	0.000020	0.000020	-	-	-	-	-	-	-
Sodium T-Na	2.0	2.0	2.0	2.0	-	-	-	-	-	-	-
Thallium T-Tl	0.00020	0.00020	0.00020	0.00020	-	-	-	-	-	-	-
Tin T-Sn	0.00050	0.00050	0.00050	0.00050	-	-	-	-	-	-	-
Titanium T-Ti	0.010	0.010	0.010	0.010	-	-	-	-	-	-	-
Uranium T-U	0.00020	0.00020	0.00020	0.00020	-	-	-	-	-	-	-
Vanadium T-V	0.030	0.030	0.030	0.030	-	-	-	-	-	-	-
Zinc T-Zn	0.0050	0.0050	0.0050	0.0050	-	-	-	-	-	-	-
Organic Parameters											
Chlorophyll a	-	-	-	-	0.00060	0.00060	0.00060	0.00060	0.00060	0.00060	0.00060
Dissolved Organic Carbon C	0.50	0.50	0.50	0.50	-	-	-	-	-	-	-
Total Organic Carbon C	0.50	0.50	0.50	0.50	-	-	-	-	-	-	-
Particle Size											
Gravel (>2.00mm) (%)	-	-	-	-	-	-	-	-	-	-	-
Sand (2.00mm - 0.063mm) (%)	-	-	-	-	-	-	-	-	-	-	-
Silt (0.063mm - 4um) (%)	-	-	-	-	-	-	-	-	-	-	-
Clay (<4um) (%)	-	-	-	-	-	-	-	-	-	-	-

Project: Meadowbank Soil, Water, and Filter Analysis
Report to: Azimuth Consulting Group Inc.
ALS File No.: X9007
Date Received: 7/20/2006
Date: 8/22/2006

UNITS

Sample ID	TPE-1 SED	TE-1 SED	TPS-1 SED	TPN-1 SED	SP-1 SED	WAL-1 SED	INUG-1 SED	ALS TRAVEL BLANK	TPE-1 SW	TE-1 SW	TPS-1 SW
Date Sampled	7/11/2006	7/12/2006	7/17/2006	7/17/2006	7/12/2006	7/13/2006	7/15/2006		7/11/2006	7/12/2006	7/17/2006
Time Sampled											
ALS Sample ID	1	2	3	4	5	6	7	8	9	10	11
Nature	Sediment/Soil	Sediment/Soil	Sediment/Soil	Sediment/Soil	Sediment/Soil	Sediment/Soil	Sediment/Soil	Water	Water	Water	Water
Physical Tests											
Conductivity (uS/cm)	-	-	-	-	-	-	-	uS/cm	uS/cm	uS/cm	uS/cm
Total Dissolved Solids	-	-	-	-	-	-	-	mg/L	mg/L	mg/L	mg/L
Hardness CaCO3	-	-	-	-	-	-	-	mg/L	mg/L	mg/L	mg/L
pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH
Total Suspended Solids	-	-	-	-	-	-	-	mg/L	mg/L	mg/L	mg/L
Dissolved Anions											
Alkalinity-Total CaCO3	-	-	-	-	-	-	-	mg/L	mg/L	mg/L	mg/L
Alkalinity-Bicarbonate CaCO3	-	-	-	-	-	-	-	mg/L	mg/L	mg/L	mg/L
Alkalinity-Carbonate CaCO3	-	-	-	-	-	-	-	mg/L	mg/L	mg/L	mg/L
Alkalinity-Hydroxide CaCO3	-	-	-	-	-	-	-	mg/L	mg/L	mg/L	mg/L
Bromide Br	-	-	-	-	-	-	-	mg/L	mg/L	mg/L	mg/L
Chloride Cl	-	-	-	-	-	-	-	mg/L	mg/L	mg/L	mg/L
Fluoride F	-	-	-	-	-	-	-	mg/L	mg/L	mg/L	mg/L
Silicate SiO2	-	-	-	-	-	-	-	mg/L	mg/L	mg/L	mg/L
Sulphate SO4	-	-	-	-	-	-	-	mg/L	mg/L	mg/L	mg/L
Nutrients											
Ammonia Nitrogen N	-	-	-	-	-	-	-	mg/L	mg/L	mg/L	mg/L
Total Kjeldahl Nitrogen N	-	-	-	-	-	-	-	mg/L	mg/L	mg/L	mg/L
Nitrate Nitrogen N	-	-	-	-	-	-	-	mg/L	mg/L	mg/L	mg/L
Nitrite Nitrogen N	-	-	-	-	-	-	-	mg/L	mg/L	mg/L	mg/L
Dissolved ortho-Phosphate P	-	-	-	-	-	-	-	mg/L	mg/L	mg/L	mg/L
Total Phosphate P	-	-	-	-	-	-	-	mg/L	mg/L	mg/L	mg/L
Total Metals											
Aluminum T-Al	-	-	-	-	-	-	-	mg/L	mg/L	mg/L	mg/L
Antimony T-Sb	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/L	mg/L	mg/L
Arsenic T-As	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/L	mg/L	mg/L
Barium T-Ba	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/L	mg/L	mg/L
Beryllium T-Be	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/L	mg/L	mg/L
Boron T-B	-	-	-	-	-	-	-	mg/L	mg/L	mg/L	mg/L

Project: Meadowbank Soil, Water, and Filter Analysis
Report to: Azimuth Consulting Group Inc.
ALS File No.: X9007
Date Received: 7/20/2006
Date: 8/22/2006

UNITS

Sample ID	TPE-1 SED	TE-1 SED	TPS-1 SED	TPN-1 SED	SP-1 SED	WAL-1 SED	INUG-1 SED	ALS TRAVEL BLANK	TPE-1 SW	TE-1 SW	TPS-1 SW
Date Sampled	7/11/2006	7/12/2006	7/17/2006	7/17/2006	7/12/2006	7/13/2006	7/15/2006		7/11/2006	7/12/2006	7/17/2006
Time Sampled											
ALS Sample ID	1	2	3	4	5	6	7	8	9	10	11
Nature	Sediment/Soil	Sediment/Soil	Sediment/Soil	Sediment/Soil	Sediment/Soil	Sediment/Soil	Sediment/Soil	Water	Water	Water	Water
Cadmium T-Cd	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/L	mg/L	mg/L
Calcium T-Ca	-	-	-	-	-	-	-	mg/L	mg/L	mg/L	mg/L
Chromium T-Cr	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/L	mg/L	mg/L
Cobalt T-Co	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/L	mg/L	mg/L
Copper T-Cu	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/L	mg/L	mg/L
Iron T-Fe	-	-	-	-	-	-	-	mg/L	mg/L	mg/L	mg/L
Lead T-Pb	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/L	mg/L	mg/L
Lithium T-Li	-	-	-	-	-	-	-	mg/L	mg/L	mg/L	mg/L
Magnesium T-Mg	-	-	-	-	-	-	-	mg/L	mg/L	mg/L	mg/L
Manganese T-Mn	-	-	-	-	-	-	-	mg/L	mg/L	mg/L	mg/L
Mercury T-Hg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/L	mg/L	mg/L
Molybdenum T-Mo	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/L	mg/L	mg/L
Nickel T-Ni	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/L	mg/L	mg/L
Potassium T-K	-	-	-	-	-	-	-	mg/L	mg/L	mg/L	mg/L
Selenium T-Se	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/L	mg/L	mg/L
Silver T-Ag	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/L	mg/L	mg/L
Sodium T-Na	-	-	-	-	-	-	-	mg/L	mg/L	mg/L	mg/L
Thallium T-Tl	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/L	mg/L	mg/L
Tin T-Sn	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/L	mg/L	mg/L
Titanium T-Ti	-	-	-	-	-	-	-	mg/L	mg/L	mg/L	mg/L
Uranium T-U	-	-	-	-	-	-	-	mg/L	mg/L	mg/L	mg/L
Vanadium T-V	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/L	mg/L	mg/L
Zinc T-Zn	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/L	mg/L	mg/L
Organic Parameters											
Chlorophyll a	-	-	-	-	-	-	-	-	-	-	-
Dissolved Organic Carbon C	-	-	-	-	-	-	-	-	mg/L	mg/L	mg/L
Total Organic Carbon C	%	%	%	%	%	%	%	mg/L	mg/L	mg/L	mg/L
Particle Size											
Gravel (>2.00mm) (%)	%	%	%	%	%	%	%	-	-	-	-
Sand (2.00mm - 0.063mm) (%)	%	%	%	%	%	%	%	-	-	-	-
Silt (0.063mm - 4um) (%)	%	%	%	%	%	%	%	-	-	-	-
Clay (<4um) (%)	%	%	%	%	%	%	%	-	-	-	-

Project: Meadowbank Soil, Water, and Filter Analysis
Report to: Azimuth Consulting Group Inc.
ALS File No.: X9007
Date Received: 7/20/2006
Date: 8/22/2006

UNITS

Sample ID	TPN-1 SW	SP-1 SW	WAL-1 SW	INUG-1 SW	TPE-1 FILTER	TE-1 FILTER	TPS-1 FILTER	TPN-1 FILTER	SP-1 FILTER	WAL-1 FILTER	INUG-1 FILTER
Date Sampled	7/17/2006	7/12/2006	7/13/2006	7/15/2006	7/11/2006	7/12/2006	7/17/2006	7/17/2006	7/12/2006	7/13/2006	7/15/2006
Time Sampled											
ALS Sample ID	12	13	14	15	16	17	18	19	20	21	22
Nature	Water	Water	Water	Water	Filter	Filter	Filter	Filter	Filter	Filter	Filter
Physical Tests											
Conductivity (uS/cm)	uS/cm	uS/cm	uS/cm	uS/cm	-	-	-	-	-	-	-
Total Dissolved Solids	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Hardness CaCO3	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
pH	pH	pH	pH	pH	-	-	-	-	-	-	-
Total Suspended Solids	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Dissolved Anions											
Alkalinity-Total CaCO3	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Alkalinity-Bicarbonate CaCO3	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Alkalinity-Carbonate CaCO3	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Alkalinity-Hydroxide CaCO3	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Bromide Br	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Chloride Cl	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Fluoride F	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Silicate SiO2	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Sulphate SO4	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Nutrients											
Ammonia Nitrogen N	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Total Kjeldahl Nitrogen N	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Nitrate Nitrogen N	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Nitrite Nitrogen N	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Dissolved ortho-Phosphate P	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Total Phosphate P	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Total Metals											
Aluminum T-Al	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Antimony T-Sb	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Arsenic T-As	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Barium T-Ba	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Beryllium T-Be	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Boron T-B	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-

Project: Meadowbank Soil, Water, and Filter Analysis
Report to: Azimuth Consulting Group Inc.
ALS File No.: X9007
Date Received: 7/20/2006
Date: 8/22/2006

UNITS

Sample ID	TPN-1 SW	SP-1 SW	WAL-1 SW	INUG-1 SW	TPE-1 FILTER	TE-1 FILTER	TPS-1 FILTER	TPN-1 FILTER	SP-1 FILTER	WAL-1 FILTER	INUG-1 FILTER
Date Sampled	7/17/2006	7/12/2006	7/13/2006	7/15/2006	7/11/2006	7/12/2006	7/17/2006	7/17/2006	7/12/2006	7/13/2006	7/15/2006
Time Sampled											
ALS Sample ID	12	13	14	15	16	17	18	19	20	21	22
Nature	Water	Water	Water	Water	Filter	Filter	Filter	Filter	Filter	Filter	Filter
Cadmium T-Cd	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Calcium T-Ca	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Chromium T-Cr	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Cobalt T-Co	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Copper T-Cu	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Iron T-Fe	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Lead T-Pb	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Lithium T-Li	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Magnesium T-Mg	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Manganese T-Mn	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Mercury T-Hg	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Molybdenum T-Mo	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Nickel T-Ni	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Potassium T-K	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Selenium T-Se	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Silver T-Ag	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Sodium T-Na	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Thallium T-Tl	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Tin T-Sn	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Titanium T-Ti	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Uranium T-U	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Vanadium T-V	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Zinc T-Zn	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Organic Parameters											
Chlorophyll a	-	-	-	-	ug	ug	ug	ug	ug	ug	ug
Dissolved Organic Carbon C	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Total Organic Carbon C	mg/L	mg/L	mg/L	mg/L	-	-	-	-	-	-	-
Particle Size											
Gravel (>2.00mm) (%)	-	-	-	-	-	-	-	-	-	-	-
Sand (2.00mm - 0.063mm) (%)	-	-	-	-	-	-	-	-	-	-	-
Silt (0.063mm - 4um) (%)	-	-	-	-	-	-	-	-	-	-	-
Clay (<4um) (%)	-	-	-	-	-	-	-	-	-	-	-

Project: Meadowbank Soil, Water, and Filter Analysis
Report to: Azimuth Consulting Group Inc.
ALS File No.: X9007
Date Received: 7/20/2006
Date: 8/22/2006

DUPLICATE RESULTS

Sample ID	TE-1 SED	TE-1 SED	RPD %	TE-1 SW	TE-1 SW	RPD %
Date Sampled	7/12/2006	QC# 513043		7/12/2006	QC# 513044	
Time Sampled						
ALS Sample ID	2			10		
Nature	Sediment/Soil			Water		
Physical Tests						
Hardness CaCO3	-	-	-	9.20	9.09	1.2
pH	5.70	5.70	0	-	-	-
Total Suspended Solids	-	-	-	<3.0	<3.0	0
Dissolved Anions						
Alkalinity-Total CaCO3	-	-	-	6.0	6.6	9.52
Nutrients						
Ammonia Nitrogen N	-	-	-	0.0067	0.0073	8.57
Total Kjeldahl Nitrogen N	-	-	-	0.097	0.102	5.03
Nitrate Nitrogen N	-	-	-	<0.0050	<0.0050	0
Total Metals						
Aluminum T-Al	-	-	-	0.0144	0.0147	2.06
Antimony T-Sb	<10	<10	0	<0.00050	<0.00050	0
Arsenic T-As	29.4	29.4	0	<0.00050	<0.00050	0
Barium T-Ba	98.1	96.0	2.16	<0.020	<0.020	0
Beryllium T-Be	1.82	1.77	2.79	<0.0010	<0.0010	0
Boron T-B	-	-	-	<0.10	<0.10	0
Cadmium T-Cd	<0.50	<0.50	0	<0.000017	<0.000017	0
Calcium T-Ca	-	-	-	2.36	2.34	0.851
Chromium T-Cr	48.4	48.2	0.414	<0.0010	<0.0010	0
Cobalt T-Co	9.3	9.1	2.17	<0.00030	<0.00030	0
Copper T-Cu	51.5	51.7	0.388	<0.0010	<0.0010	0
Iron T-Fe	-	-	-	<0.030	<0.030	0
Lead T-Pb	<30	<30	0	<0.00050	<0.00050	0
Lithium T-Li	-	-	-	<0.0050	<0.0050	0
Magnesium T-Mg	-	-	-	0.80	0.79	1.26
Manganese T-Mn	-	-	-	0.00218	0.00222	1.82
Mercury T-Hg	0.0218	0.0167	26.5	<0.000020	<0.000020	0
Molybdenum T-Mo	8.4	8.3	1.2	<0.0010	<0.0010	0
Nickel T-Ni	30.1	30.1	0	<0.0010	<0.0010	0
Potassium T-K	-	-	-	<2.0	<2.0	0
Selenium T-Se	<2.0	<2.0	0	<0.0010	<0.0010	0
Silver T-Ag	<2.0	<2.0	0	<0.000020	<0.000020	0
Sodium T-Na	-	-	-	<2.0	<2.0	0
Thallium T-Tl	<1.0	<1.0	0	<0.00020	<0.00020	0
Tin T-Sn	<5.0	<5.0	0	<0.00050	<0.00050	0
Titanium T-Ti	-	-	-	<0.010	<0.010	0
Uranium T-U	-	-	-	<0.00020	<0.00020	0
Vanadium T-V	31.3	30.1	3.91	<0.030	<0.030	0
Zinc T-Zn	94.1	92.0	2.26	<0.0050	<0.0050	0
Organic Parameters						
Dissolved Organic Carbon C	-	-	-	2.09	2.05	1.93
Total Organic Carbon C	-	-	-	2.15	2.24	4.1

Project: Meadowbank Water/Filter Analysis
Report to: Azimuth Consulting Group Inc.
ALS File No.: Z1669
Date Received: 8/24/2006
Date: 9/28/2006

RESULTS OF ANALYSIS

Sample ID	TPE-1	TPN-1	TPS-1	TE-1	SPL-1	WAL-1	INUG-1	DUP
Date Sampled	8/17/2006	8/21/2006	8/21/2006	8/17/2006	8/17/2006	8/18/2006	8/19/2006	8/21/2006
Time Sampled	13:55	10:00	13:00	18:15	14:15	9:50	9:30	10:00
ALS Sample ID	1	2	3	4	5	6	7	8
Nature	Water	Water	Water	Water	Water	Water	Water	Water
Physical Tests								
Conductivity (uS/cm)	11.5	13.3	11.7	18.5	20.0	28.5	13.2	13.8
Total Dissolved Solids	<10	<10	<10	10	13	19	<10	<10
Hardness CaCO3	5.09	5.31	5.08	7.36	8.60	13.0	5.36	5.20
pH	6.80	6.76	6.93	6.95	6.95	7.08	6.91	6.85
Total Suspended Solids	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
Dissolved Anions								
Alkalinity-Total CaCO3	3.9	4.1	4.0	6.3	6.6	9.5	5.0	4.0
Alkalinity-Bicarbonate CaCO3	3.9	4.1	4.0	6.3	6.6	9.5	5.0	4.0
Alkalinity-Carbonate CaCO3	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Alkalinity-Hydroxide CaCO3	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Bromide Br	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chloride Cl	<0.50	0.69	<0.50	0.60	0.57	0.59	0.76	0.68
Fluoride F	0.063	0.075	0.058	0.060	0.057	0.042	0.057	0.071
Silicate SiO2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Sulphate SO4	1.31	1.40	1.39	2.08	2.30	3.12	0.90	1.39
Nutrients								
Ammonia Nitrogen N	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Total Kjeldahl Nitrogen N	0.202	0.079	0.050	0.268	0.171	0.111	0.119	0.071
Nitrate Nitrogen N	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0174	0.0052
Nitrite Nitrogen N	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Dissolved ortho-Phosphate P	<0.0010	<0.0010	0.0022	<0.0010	<0.0010	<0.0010	0.0024	<0.0010
Total Phosphate P	0.0039	0.0051	0.0030	0.0047	0.0048	0.0067	0.0043	0.0044
Total Metals								
Aluminum T-Al	0.0103	0.0070	<0.025	0.0123	0.0107	0.0060	0.0096	0.0072
Antimony T-Sb	<0.00050	<0.00050	<0.0025	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Arsenic T-As	<0.00050	<0.00050	<0.0025	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Barium T-Ba	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Beryllium T-Be	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron T-B	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10

Project: Meadowbank Water/Filter Analysis
Report to: Azimuth Consulting Group Inc.
ALS File No.: Z1669
Date Received: 8/24/2006
Date: 9/28/2006

RESULTS OF ANALYSIS

Sample ID	TPE-1	TPN-1	TPS-1	TE-1	SPL-1	WAL-1	INUG-1	DUP
Date Sampled	8/17/2006	8/21/2006	8/21/2006	8/17/2006	8/17/2006	8/18/2006	8/19/2006	8/21/2006
Time Sampled	13:55	10:00	13:00	18:15	14:15	9:50	9:30	10:00
ALS Sample ID	1	2	3	4	5	6	7	8
Nature	Water	Water	Water	Water	Water	Water	Water	Water
Cadmium T-Cd	<0.000017	<0.000017	<0.000085	<0.000017	0.000025	<0.000017	<0.000017	<0.000017
Calcium T-Ca	1.17	1.22	1.16	1.83	2.19	3.49	1.08	1.19
Chromium T-Cr	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt T-Co	<0.00030	<0.00030	<0.0015	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Copper T-Cu	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Iron T-Fe	0.033	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Lead T-Pb	<0.00050	<0.00050	<0.0025	<0.00050	0.00066	<0.00050	<0.00050	<0.00050
Lithium T-Li	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Magnesium T-Mg	0.52	0.55	0.53	0.68	0.76	1.03	0.65	0.54
Manganese T-Mn	0.00123	0.00106	<0.0015	0.00136	0.00164	0.00088	0.00203	0.00103
Mercury T-Hg	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Molybdenum T-Mo	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Nickel T-Ni	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Potassium T-K	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Selenium T-Se	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Silver T-Ag	<0.000020	<0.000020	<0.00010	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Sodium T-Na	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Thallium T-Tl	<0.00020	<0.00020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin T-Sn	<0.00050	<0.00050	<0.0025	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Titanium T-Ti	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium T-U	<0.00020	<0.00020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Vanadium T-V	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Zinc T-Zn	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Organic Parameters								
Chlorophyll a	-	-	-	-	-	-	-	-
Dissolved Organic Carbon C	1.85	1.51	1.43	2.11	2.00	1.94	1.88	1.69
Total Organic Carbon C	2.02	2.08	1.70	2.83	2.25	2.84	2.55	3.85
Radiological Parameters (a,b)								
Radium-226	<0.0050	-	-	<0.0050	<0.0050	0.0060	0.0080	-

Footnotes: < = Less than the detection limit indicated.
Water samples only - Results are expressed as milligrams per litre except where noted.
Filter samples only - Chlorophyll a results are expressed as micrograms per filter.
(a) Radium-226 results are expressed as Bq/L. This analysis was subcontracted
(b) to SRC.

Project: Meadowbank Water/Filter Analysis
Report to: Azimuth Consulting Group Inc.
ALS File No.: Z1669
Date Received: 8/24/2006
Date: 9/28/2006

RESULTS OF ANALYSIS

Sample ID	TRAVEL BLANK	TPE-1	TPN-1	TPS-1	TE-1	SPL-1	WAL-1	INUG-1	DUP
Date Sampled		8/17/2006	8/21/2006	8/21/2006	8/17/2006	8/17/2006	8/18/2006	8/19/2006	8/21/2006
Time Sampled		13:55	10:00	13:00	18:15	14:15	9:50	9:30	10:00
ALS Sample ID	9	1a	2a	3a	4a	5a	6a	7a	8a
Nature	Water	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter
Physical Tests									
Conductivity (uS/cm)	<2.0	-	-	-	-	-	-	-	-
Total Dissolved Solids	<10	-	-	-	-	-	-	-	-
Hardness CaCO3	<0.66	-	-	-	-	-	-	-	-
pH	5.64	-	-	-	-	-	-	-	-
Total Suspended Solids	<3.0	-	-	-	-	-	-	-	-
Dissolved Anions									
Alkalinity-Total CaCO3	<2.0	-	-	-	-	-	-	-	-
Alkalinity-Bicarbonate CaCO3	<2.0	-	-	-	-	-	-	-	-
Alkalinity-Carbonate CaCO3	<2.0	-	-	-	-	-	-	-	-
Alkalinity-Hydroxide CaCO3	<2.0	-	-	-	-	-	-	-	-
Bromide Br	<0.050	-	-	-	-	-	-	-	-
Chloride Cl	<0.50	-	-	-	-	-	-	-	-
Fluoride F	<0.020	-	-	-	-	-	-	-	-
Silicate SiO2	<1.0	-	-	-	-	-	-	-	-
Sulphate SO4	<0.50	-	-	-	-	-	-	-	-
Nutrients									
Ammonia Nitrogen N	<0.020	-	-	-	-	-	-	-	-
Total Kjeldahl Nitrogen N	<0.050	-	-	-	-	-	-	-	-
Nitrate Nitrogen N	<0.0050	-	-	-	-	-	-	-	-
Nitrite Nitrogen N	<0.0010	-	-	-	-	-	-	-	-
Dissolved ortho-Phosphate P	<0.0010	-	-	-	-	-	-	-	-
Total Phosphate P	0.0030	-	-	-	-	-	-	-	-
Total Metals									
Aluminum T-Al	<0.0050	-	-	-	-	-	-	-	-
Antimony T-Sb	<0.00050	-	-	-	-	-	-	-	-
Arsenic T-As	<0.00050	-	-	-	-	-	-	-	-
Barium T-Ba	<0.020	-	-	-	-	-	-	-	-
Beryllium T-Be	<0.0010	-	-	-	-	-	-	-	-
Boron T-B	<0.10	-	-	-	-	-	-	-	-

Project: Meadowbank Water/Filter Analysis
Report to: Azimuth Consulting Group Inc.
ALS File No.: Z1669
Date Received: 8/24/2006
Date: 9/28/2006

RESULTS OF ANALYSIS

Sample ID	TRAVEL BLANK	TPE-1	TPN-1	TPS-1	TE-1	SPL-1	WAL-1	INUG-1	DUP
Date Sampled		8/17/2006	8/21/2006	8/21/2006	8/17/2006	8/17/2006	8/18/2006	8/19/2006	8/21/2006
Time Sampled		13:55	10:00	13:00	18:15	14:15	9:50	9:30	10:00
ALS Sample ID	9	1a	2a	3a	4a	5a	6a	7a	8a
Nature	Water	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter
Cadmium T-Cd	<0.000017	-	-	-	-	-	-	-	-
Calcium T-Ca	<0.10	-	-	-	-	-	-	-	-
Chromium T-Cr	<0.0010	-	-	-	-	-	-	-	-
Cobalt T-Co	<0.00030	-	-	-	-	-	-	-	-
Copper T-Cu	<0.0010	-	-	-	-	-	-	-	-
Iron T-Fe	<0.030	-	-	-	-	-	-	-	-
Lead T-Pb	<0.00050	-	-	-	-	-	-	-	-
Lithium T-Li	<0.0050	-	-	-	-	-	-	-	-
Magnesium T-Mg	<0.10	-	-	-	-	-	-	-	-
Manganese T-Mn	<0.00030	-	-	-	-	-	-	-	-
Mercury T-Hg	<0.000020	-	-	-	-	-	-	-	-
Molybdenum T-Mo	<0.0010	-	-	-	-	-	-	-	-
Nickel T-Ni	<0.0010	-	-	-	-	-	-	-	-
Potassium T-K	<2.0	-	-	-	-	-	-	-	-
Selenium T-Se	<0.0010	-	-	-	-	-	-	-	-
Silver T-Ag	<0.000020	-	-	-	-	-	-	-	-
Sodium T-Na	<2.0	-	-	-	-	-	-	-	-
Thallium T-Tl	<0.00020	-	-	-	-	-	-	-	-
Tin T-Sn	<0.00050	-	-	-	-	-	-	-	-
Titanium T-Ti	<0.010	-	-	-	-	-	-	-	-
Uranium T-U	<0.00020	-	-	-	-	-	-	-	-
Vanadium T-V	<0.030	-	-	-	-	-	-	-	-
Zinc T-Zn	<0.0050	-	-	-	-	-	-	-	-
Organic Parameters									
Chlorophyll a	-	0.220	0.279	0.174	0.213	0.302	0.413	0.208	0.142
Dissolved Organic Carbon C	<0.50	-	-	-	-	-	-	-	-
Total Organic Carbon C	<0.50	-	-	-	-	-	-	-	-
Radiological Parameters (a,b)									
Radium-226	-	-	-	-	-	-	-	-	-

Project: Meadowbank Water/Filter Analysis
Report to: Azimuth Consulting Group Inc.
ALS File No.: Z1669
Date Received: 8/24/2006
Date: 9/28/2006

DETECTION LIMITS

Sample ID	TPE-1	TPN-1	TPS-1	TE-1	SPL-1	WAL-1	INUG-1	DUP
Date Sampled	8/17/2006	8/21/2006	8/21/2006	8/17/2006	8/17/2006	8/18/2006	8/19/2006	8/21/2006
Time Sampled	13:55	10:00	13:00	18:15	14:15	9:50	9:30	10:00
ALS Sample ID	1	2	3	4	5	6	7	8
Nature	Water	Water	Water	Water	Water	Water	Water	Water
Physical Tests								
Conductivity (uS/cm)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Total Dissolved Solids	10	10	10	10	10	10	10	10
Hardness CaCO3	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66
pH	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
Total Suspended Solids	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Dissolved Anions								
Alkalinity-Total CaCO3	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Alkalinity-Bicarbonate CaCO3	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Alkalinity-Carbonate CaCO3	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Alkalinity-Hydroxide CaCO3	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Bromide Br	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050
Chloride Cl	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Fluoride F	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020
Silicate SiO2	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Sulphate SO4	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Nutrients								
Ammonia Nitrogen N	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020
Total Kjeldahl Nitrogen N	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050
Nitrate Nitrogen N	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050
Nitrite Nitrogen N	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
Dissolved ortho-Phosphate P	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	0.0020	0.0020	0.0020	0.0020
Total Metals								
Aluminum T-Al	0.0050	0.0050	0.025	0.0050	0.0050	0.0050	0.0050	0.0050
Antimony T-Sb	0.00050	0.00050	0.0025	0.00050	0.00050	0.00050	0.00050	0.00050
Arsenic T-As	0.00050	0.00050	0.0025	0.00050	0.00050	0.00050	0.00050	0.00050
Barium T-Ba	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020
Beryllium T-Be	0.0010	0.0010	0.0050	0.0010	0.0010	0.0010	0.0010	0.0010
Boron T-B	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10

Project: Meadowbank Water/Filter Analysis
Report to: Azimuth Consulting Group Inc.
ALS File No.: Z1669
Date Received: 8/24/2006
Date: 9/28/2006

DETECTION LIMITS

Sample ID	TPE-1	TPN-1	TPS-1	TE-1	SPL-1	WAL-1	INUG-1	DUP
Date Sampled	8/17/2006	8/21/2006	8/21/2006	8/17/2006	8/17/2006	8/18/2006	8/19/2006	8/21/2006
Time Sampled	13:55	10:00	13:00	18:15	14:15	9:50	9:30	10:00
ALS Sample ID	1	2	3	4	5	6	7	8
Nature	Water	Water	Water	Water	Water	Water	Water	Water
Cadmium T-Cd	0.000017	0.000017	0.000085	0.000017	0.000017	0.000017	0.000017	0.000017
Calcium T-Ca	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Chromium T-Cr	0.0010	0.0010	0.0050	0.0010	0.0010	0.0010	0.0010	0.0010
Cobalt T-Co	0.00030	0.00030	0.0015	0.00030	0.00030	0.00030	0.00030	0.00030
Copper T-Cu	0.0010	0.0010	0.0050	0.0010	0.0010	0.0010	0.0010	0.0010
Iron T-Fe	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030
Lead T-Pb	0.00050	0.00050	0.0025	0.00050	0.00050	0.00050	0.00050	0.00050
Lithium T-Li	0.0050	0.0050	0.025	0.0050	0.0050	0.0050	0.0050	0.0050
Magnesium T-Mg	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Manganese T-Mn	0.00030	0.00030	0.0015	0.00030	0.00030	0.00030	0.00030	0.00030
Mercury T-Hg	0.000020	0.000020	0.000020	0.000020	0.000020	0.000020	0.000020	0.000020
Molybdenum T-Mo	0.0010	0.0010	0.0050	0.0010	0.0010	0.0010	0.0010	0.0010
Nickel T-Ni	0.0010	0.0010	0.0050	0.0010	0.0010	0.0010	0.0010	0.0010
Potassium T-K	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Selenium T-Se	0.0010	0.0010	0.0050	0.0010	0.0010	0.0010	0.0010	0.0010
Silver T-Ag	0.000020	0.000020	0.00010	0.000020	0.000020	0.000020	0.000020	0.000020
Sodium T-Na	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Thallium T-Tl	0.00020	0.00020	0.0010	0.00020	0.00020	0.00020	0.00020	0.00020
Tin T-Sn	0.00050	0.00050	0.0025	0.00050	0.00050	0.00050	0.00050	0.00050
Titanium T-Ti	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
Uranium T-U	0.00020	0.00020	0.0010	0.00020	0.00020	0.00020	0.00020	0.00020
Vanadium T-V	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030
Zinc T-Zn	0.0050	0.0050	0.025	0.0050	0.0050	0.0050	0.0050	0.0050
Organic Parameters								
Chlorophyll a	-	-	-	-	-	-	-	-
Dissolved Organic Carbon C	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Total Organic Carbon C	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Radiological Parameters								
Radium-226	0.0050	-	-	0.0050	0.0050	0.0050	0.0050	-

Project: Meadowbank Water/Filter Analysis
Report to: Azimuth Consulting Group Inc.
ALS File No.: Z1669
Date Received: 8/24/2006
Date: 9/28/2006

DETECTION LIMITS

Sample ID	TRAVEL BLANK	TPE-1	TPN-1	TPS-1	TE-1	SPL-1	WAL-1	INUG-1	DUP
Date Sampled		8/17/2006	8/21/2006	8/21/2006	8/17/2006	8/17/2006	8/18/2006	8/19/2006	8/21/2006
Time Sampled		13:55	10:00	13:00	18:15	14:15	9:50	9:30	10:00
ALS Sample ID	9	1a	2a	3a	4a	5a	6a	7a	8a
Nature	Water	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter
Physical Tests									
Conductivity (uS/cm)	2.0	-	-	-	-	-	-	-	-
Total Dissolved Solids	10	-	-	-	-	-	-	-	-
Hardness CaCO3	0.66	-	-	-	-	-	-	-	-
pH	0.010	-	-	-	-	-	-	-	-
Total Suspended Solids	3.0	-	-	-	-	-	-	-	-
Dissolved Anions									
Alkalinity-Total CaCO3	2.0	-	-	-	-	-	-	-	-
Alkalinity-Bicarbonate CaCO3	2.0	-	-	-	-	-	-	-	-
Alkalinity-Carbonate CaCO3	2.0	-	-	-	-	-	-	-	-
Alkalinity-Hydroxide CaCO3	2.0	-	-	-	-	-	-	-	-
Bromide Br	0.050	-	-	-	-	-	-	-	-
Chloride Cl	0.50	-	-	-	-	-	-	-	-
Fluoride F	0.020	-	-	-	-	-	-	-	-
Silicate SiO2	1.0	-	-	-	-	-	-	-	-
Sulphate SO4	0.50	-	-	-	-	-	-	-	-
Nutrients									
Ammonia Nitrogen N	0.020	-	-	-	-	-	-	-	-
Total Kjeldahl Nitrogen N	0.050	-	-	-	-	-	-	-	-
Nitrate Nitrogen N	0.0050	-	-	-	-	-	-	-	-
Nitrite Nitrogen N	0.0010	-	-	-	-	-	-	-	-
Dissolved ortho-Phosphate P	0.0010	-	-	-	-	-	-	-	-
Total Phosphate P	0.0020	-	-	-	-	-	-	-	-
Total Metals									
Aluminum T-Al	0.0050	-	-	-	-	-	-	-	-
Antimony T-Sb	0.00050	-	-	-	-	-	-	-	-
Arsenic T-As	0.00050	-	-	-	-	-	-	-	-
Barium T-Ba	0.020	-	-	-	-	-	-	-	-
Beryllium T-Be	0.0010	-	-	-	-	-	-	-	-
Boron T-B	0.10	-	-	-	-	-	-	-	-

Project: Meadowbank Water/Filter Analysis
Report to: Azimuth Consulting Group Inc.
ALS File No.: Z1669
Date Received: 8/24/2006
Date: 9/28/2006

DETECTION LIMITS

Sample ID	TRAVEL BLANK	TPE-1	TPN-1	TPS-1	TE-1	SPL-1	WAL-1	INUG-1	DUP
Date Sampled		8/17/2006	8/21/2006	8/21/2006	8/17/2006	8/17/2006	8/18/2006	8/19/2006	8/21/2006
Time Sampled		13:55	10:00	13:00	18:15	14:15	9:50	9:30	10:00
ALS Sample ID	9	1a	2a	3a	4a	5a	6a	7a	8a
Nature	Water	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter
Cadmium T-Cd	0.000017	-	-	-	-	-	-	-	-
Calcium T-Ca	0.10	-	-	-	-	-	-	-	-
Chromium T-Cr	0.0010	-	-	-	-	-	-	-	-
Cobalt T-Co	0.00030	-	-	-	-	-	-	-	-
Copper T-Cu	0.0010	-	-	-	-	-	-	-	-
Iron T-Fe	0.030	-	-	-	-	-	-	-	-
Lead T-Pb	0.00050	-	-	-	-	-	-	-	-
Lithium T-Li	0.0050	-	-	-	-	-	-	-	-
Magnesium T-Mg	0.10	-	-	-	-	-	-	-	-
Manganese T-Mn	0.00030	-	-	-	-	-	-	-	-
Mercury T-Hg	0.000020	-	-	-	-	-	-	-	-
Molybdenum T-Mo	0.0010	-	-	-	-	-	-	-	-
Nickel T-Ni	0.0010	-	-	-	-	-	-	-	-
Potassium T-K	2.0	-	-	-	-	-	-	-	-
Selenium T-Se	0.0010	-	-	-	-	-	-	-	-
Silver T-Ag	0.000020	-	-	-	-	-	-	-	-
Sodium T-Na	2.0	-	-	-	-	-	-	-	-
Thallium T-Tl	0.00020	-	-	-	-	-	-	-	-
Tin T-Sn	0.00050	-	-	-	-	-	-	-	-
Titanium T-Ti	0.010	-	-	-	-	-	-	-	-
Uranium T-U	0.00020	-	-	-	-	-	-	-	-
Vanadium T-V	0.030	-	-	-	-	-	-	-	-
Zinc T-Zn	0.0050	-	-	-	-	-	-	-	-
Organic Parameters									
Chlorophyll a	-	0.00060	0.00060	0.00060	0.00060	0.00060	0.00060	0.00060	0.00060
Dissolved Organic Carbon C	0.50	-	-	-	-	-	-	-	-
Total Organic Carbon C	0.50	-	-	-	-	-	-	-	-
Radiological Parameters									
Radium-226	-	-	-	-	-	-	-	-	-

Project: Meadowbank Water/Filter Analysis
Report to: Azimuth Consulting Group Inc.
ALS File No.: Z1669
Date Received: 8/24/2006
Date: 9/28/2006

UNITS

Sample ID	TPE-1	TPN-1	TPS-1	TE-1	SPL-1	WAL-1	INUG-1	DUP
Date Sampled	8/17/2006	8/21/2006	8/21/2006	8/17/2006	8/17/2006	8/18/2006	8/19/2006	8/21/2006
Time Sampled	13:55	10:00	13:00	18:15	14:15	9:50	9:30	10:00
ALS Sample ID	1	2	3	4	5	6	7	8
Nature	Water	Water	Water	Water	Water	Water	Water	Water
Physical Tests								
Conductivity (uS/cm)	uS/cm	uS/cm	uS/cm	uS/cm	uS/cm	uS/cm	uS/cm	uS/cm
Total Dissolved Solids	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Hardness CaCO3	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
pH	pH	pH	pH	pH	pH	pH	pH	pH
Total Suspended Solids	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Dissolved Anions								
Alkalinity-Total CaCO3	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Alkalinity-Bicarbonate CaCO3	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Alkalinity-Carbonate CaCO3	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Alkalinity-Hydroxide CaCO3	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Bromide Br	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Chloride Cl	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Fluoride F	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Silicate SiO2	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Sulphate SO4	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Nutrients								
Ammonia Nitrogen N	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Total Kjeldahl Nitrogen N	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Nitrate Nitrogen N	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Nitrite Nitrogen N	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Dissolved ortho-Phosphate P	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Total Phosphate P	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Total Metals								
Aluminum T-Al	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Antimony T-Sb	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Arsenic T-As	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Barium T-Ba	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Beryllium T-Be	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Boron T-B	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L

Project: Meadowbank Water/Filter Analysis
Report to: Azimuth Consulting Group Inc.
ALS File No.: Z1669
Date Received: 8/24/2006
Date: 9/28/2006

UNITS

Sample ID	TPE-1	TPN-1	TPS-1	TE-1	SPL-1	WAL-1	INUG-1	DUP
Date Sampled	8/17/2006	8/21/2006	8/21/2006	8/17/2006	8/17/2006	8/18/2006	8/19/2006	8/21/2006
Time Sampled	13:55	10:00	13:00	18:15	14:15	9:50	9:30	10:00
ALS Sample ID	1	2	3	4	5	6	7	8
Nature	Water	Water	Water	Water	Water	Water	Water	Water
Cadmium T-Cd	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Calcium T-Ca	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Chromium T-Cr	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Cobalt T-Co	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Copper T-Cu	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Iron T-Fe	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Lead T-Pb	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Lithium T-Li	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Magnesium T-Mg	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Manganese T-Mn	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mercury T-Hg	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Molybdenum T-Mo	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Nickel T-Ni	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Potassium T-K	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Selenium T-Se	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Silver T-Ag	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Sodium T-Na	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Thallium T-Tl	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Tin T-Sn	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Titanium T-Ti	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Uranium T-U	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Vanadium T-V	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Zinc T-Zn	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Organic Parameters								
Chlorophyll a	-	-	-	-	-	-	-	-
Dissolved Organic Carbon C	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Total Organic Carbon C	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Radiological Parameters								
Radium-226	Bq/L	-	-	Bq/L	Bq/L	Bq/L	Bq/L	-

Project: Meadowbank Water/Filter Analysis
Report to: Azimuth Consulting Group Inc.
ALS File No.: Z1669
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Date: 9/28/2006

UNITS

Sample ID	TRAVEL BLANK	TPE-1	TPN-1	TPS-1	TE-1	SPL-1	WAL-1	INUG-1	DUP
Date Sampled		8/17/2006	8/21/2006	8/21/2006	8/17/2006	8/17/2006	8/18/2006	8/19/2006	8/21/2006
Time Sampled		13:55	10:00	13:00	18:15	14:15	9:50	9:30	10:00
ALS Sample ID	9	1a	2a	3a	4a	5a	6a	7a	8a
Nature	Water	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter
Physical Tests									
Conductivity (uS/cm)	uS/cm	-	-	-	-	-	-	-	-
Total Dissolved Solids	mg/L	-	-	-	-	-	-	-	-
Hardness CaCO3	mg/L	-	-	-	-	-	-	-	-
pH	pH	-	-	-	-	-	-	-	-
Total Suspended Solids	mg/L	-	-	-	-	-	-	-	-
Dissolved Anions									
Alkalinity-Total CaCO3	mg/L	-	-	-	-	-	-	-	-
Alkalinity-Bicarbonate CaCO3	mg/L	-	-	-	-	-	-	-	-
Alkalinity-Carbonate CaCO3	mg/L	-	-	-	-	-	-	-	-
Alkalinity-Hydroxide CaCO3	mg/L	-	-	-	-	-	-	-	-
Bromide Br	mg/L	-	-	-	-	-	-	-	-
Chloride Cl	mg/L	-	-	-	-	-	-	-	-
Fluoride F	mg/L	-	-	-	-	-	-	-	-
Silicate SiO2	mg/L	-	-	-	-	-	-	-	-
Sulphate SO4	mg/L	-	-	-	-	-	-	-	-
Nutrients									
Ammonia Nitrogen N	mg/L	-	-	-	-	-	-	-	-
Total Kjeldahl Nitrogen N	mg/L	-	-	-	-	-	-	-	-
Nitrate Nitrogen N	mg/L	-	-	-	-	-	-	-	-
Nitrite Nitrogen N	mg/L	-	-	-	-	-	-	-	-
Dissolved ortho-Phosphate P	mg/L	-	-	-	-	-	-	-	-
Total Phosphate P	mg/L	-	-	-	-	-	-	-	-
Total Metals									
Aluminum T-Al	mg/L	-	-	-	-	-	-	-	-
Antimony T-Sb	mg/L	-	-	-	-	-	-	-	-
Arsenic T-As	mg/L	-	-	-	-	-	-	-	-
Barium T-Ba	mg/L	-	-	-	-	-	-	-	-
Beryllium T-Be	mg/L	-	-	-	-	-	-	-	-
Boron T-B	mg/L	-	-	-	-	-	-	-	-

Project: Meadowbank Water/Filter Analysis
Report to: Azimuth Consulting Group Inc.
ALS File No.: Z1669
Date Received: 8/24/2006
Date: 9/28/2006

UNITS

Sample ID	TRAVEL BLANK	TPE-1	TPN-1	TPS-1	TE-1	SPL-1	WAL-1	INUG-1	DUP
Date Sampled		8/17/2006	8/21/2006	8/21/2006	8/17/2006	8/17/2006	8/18/2006	8/19/2006	8/21/2006
Time Sampled		13:55	10:00	13:00	18:15	14:15	9:50	9:30	10:00
ALS Sample ID	9	1a	2a	3a	4a	5a	6a	7a	8a
Nature	Water	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter
Cadmium T-Cd	mg/L	-	-	-	-	-	-	-	-
Calcium T-Ca	mg/L	-	-	-	-	-	-	-	-
Chromium T-Cr	mg/L	-	-	-	-	-	-	-	-
Cobalt T-Co	mg/L	-	-	-	-	-	-	-	-
Copper T-Cu	mg/L	-	-	-	-	-	-	-	-
Iron T-Fe	mg/L	-	-	-	-	-	-	-	-
Lead T-Pb	mg/L	-	-	-	-	-	-	-	-
Lithium T-Li	mg/L	-	-	-	-	-	-	-	-
Magnesium T-Mg	mg/L	-	-	-	-	-	-	-	-
Manganese T-Mn	mg/L	-	-	-	-	-	-	-	-
Mercury T-Hg	mg/L	-	-	-	-	-	-	-	-
Molybdenum T-Mo	mg/L	-	-	-	-	-	-	-	-
Nickel T-Ni	mg/L	-	-	-	-	-	-	-	-
Potassium T-K	mg/L	-	-	-	-	-	-	-	-
Selenium T-Se	mg/L	-	-	-	-	-	-	-	-
Silver T-Ag	mg/L	-	-	-	-	-	-	-	-
Sodium T-Na	mg/L	-	-	-	-	-	-	-	-
Thallium T-Tl	mg/L	-	-	-	-	-	-	-	-
Tin T-Sn	mg/L	-	-	-	-	-	-	-	-
Titanium T-Ti	mg/L	-	-	-	-	-	-	-	-
Uranium T-U	mg/L	-	-	-	-	-	-	-	-
Vanadium T-V	mg/L	-	-	-	-	-	-	-	-
Zinc T-Zn	mg/L	-	-	-	-	-	-	-	-
Organic Parameters									
Chlorophyll a	-	ug	ug	ug	ug	ug	ug	ug	ug
Dissolved Organic Carbon C	mg/L	-	-	-	-	-	-	-	-
Total Organic Carbon C	mg/L	-	-	-	-	-	-	-	-
Radiological Parameters									
Radium-226	-	-	-	-	-	-	-	-	-

Project: Meadowbank Water/Filter Analysis
Report to: Azimuth Consulting Group Inc.
ALS File No.: Z1669
Date Received: 8/24/2006
Date: 9/28/2006

DUPLICATE RESULTS

Sample ID	TE-1	TE-1	RPD %
Date Sampled	8/17/2006	QC# 519041	
Time Sampled	18:15		
ALS Sample ID	4		
Nature	Water		
Physical Tests			
Conductivity (uS/cm)	18.5	17.9	3.3
Total Dissolved Solids	10	<10	0
pH	6.95	6.95	0
Total Suspended Solids	<3.0	<3.0	0
Dissolved Anions			
Alkalinity-Total CaCO3	6.3	5.6	11.8
Bromide Br	<0.050	<0.050	0
Chloride Cl	0.60	0.60	0
Fluoride F	0.060	0.060	0
Sulphate SO4	2.08	2.07	0.482
Nutrients			
Ammonia Nitrogen N	<0.020	<0.020	0
Total Kjeldahl Nitrogen N	0.268	0.276	2.94
Nitrate Nitrogen N	<0.0050	<0.0050	0
Nitrite Nitrogen N	<0.0010	<0.0010	0
Dissolved ortho-Phosphate P	<0.0010	<0.0010	0
Total Phosphate P	0.0047	0.0052	10.1
Organic Parameters			
Dissolved Organic Carbon C	2.11	2.33	9.91
Total Organic Carbon C	2.83	2.89	2.1

Sediment Characteristics, Meadowbank Study Lakes, 2006.

Sample Event	Sample Location	Date	General	Texture and Colour	Benthos	Debris	Additional Comments
1	TPE-1	11-Jul	Very Soft Silty Clay	Light Brown/ tan flocculent layer (0.5cm); Very soft, mousse like consistency, uniform; little sand particulate	Chironomid larvae and homes	None	All samples consisted of 2 petite ponar composite grabs per seive (2 X 500; 1 X 250 um)
1	TPN-1	17-Jul	Very Soft silty clay	Thin oxidized brown rusty surface (1.0cm); Top 2.5 cm are loose uncompacted; compacted below; Light grey clay uniform clay below.	Very few chironomids visible; few tube segments	None	
1	TPS-1	17-Jul	Soft Silty Clay	Thin brown oxidized layer; light grey silty clay layer with compact soft clay; few sand grains	Surface with many chironomids (emergent chironomid noted), red chironimids??, oligochaetes and associated tube segements	None	
1	SP-1	12-Jul	Very Soft Silty Clay	Thin rusty oxidized layer (1-2 mm); Homogenous grey soft silty clay (mousse like consistency); Sand fines and minor course grains.	Many Chironomids	None	
1	TE-1	12-Jul	Soft Silty Clay	Thin very orange oxidized layer, very loose flocculent;	Chironomid larvae and tube segements (oligochaets and chironomids)	None	
1	WAL-1	13-Jul	Loose Silty Clay	Oxidized flocculent layer; light grey firm sediment below;	Many Chironomid larvae and oligochaete tubes (greatest proportion of segments and other debris compared to other ref sites)	Vegetation	
1	INUG-1	13-Jul	Soft Clay	Highly oxidized flocculent layer (1-2 cm); Varves within upper layer with small dark black band. Indistinct layers through soft clay.	Chironomid exoskeletons and tube segments (fewer than other reference sites)	None	

Sediment Characteristics, Meadowbank Study Lakes, 2006.

Sample Event	Sample Location	Date	General	Texture and Colour	Benthos	Debris	Additional Comments
2	TPE-1	5-Aug	Very Soft Silty Clay	Orange/ Brown flocculent layer (1.0 cm); Very soft, mousse like consistency, uniform; little sand particulate	Chironomid larvae and tube segements (oligochaets and chironomids)	None	All samples consisted of 2 petite ponar composite grabs per seive (2 X 500; 1 X 250 um)
2	TPN-1	5-Aug	Very Soft silty clay	Thin oxidized brown rusty surface (1.0 cm); Grey brown silty clay; Top 2.5 cm are loose uncompacted; compacted below; Light grey clay homogenized uniform clay below.	Few chironomids visible; many tube casings of oligochaetes and chironomids (of the lesser)	None	
2	TPS-1	5-Aug	Soft Silty Clay	Thin brown oxidized layer; Grey silty clay layer with compact soft clay, homogenized texture; few sand grains	Surface with many chironomids, oligochaetes and associated tube segements	None	
2	SP-1	6-Aug	Very Soft Silty Clay	Thin rusty oxidized layer (1-2 mm); Homogenous soft grey silty clay (mousse like consistency); Sand fines and minor course grains.	Many Chironomids	None	
2	TE-1	6-Aug	Soft Silty Clay	Orange oxidized layer (3-5 cm), very loose flocculent; grey coloured silty clay below	Few chironomid larvae and tube segements	None	
2	WAL-1	7-Aug	Loose Silty Clay	Oxidized flocculent layer; light grey firm sediment with silky texture below; few sand grains	Many Chironomid larvae (pink chironomids) and oligochaete tube segments	Vegetation/ veg segments	250 Seive clogged very quickly
2	INUG-1	7-Aug	Soft Clay	Highly oxidized flocculent layer (2.5 cm); Varves within upper layer with small dark black band (Annoxic/ Oxic transition??). Indistinct varves (layers) through soft clay.	Chironomid exoskeletons and tube segments (fewer than other reference sites)	None	

Phytoplankton Biomass Data, Baker Lake, 2006 (for Randy Baker).

Station	date	Cyanophyte mg m^{-3}	Chlorophyte mg m^{-3}	Euglenophyte mg m^{-3}	Chrysophyte mg m^{-3}	Diatoms mg m^{-3}	Cryptophytes mg m^{-3}	Dinoflagellates mg m^{-3}	Total biomass mg m^{-3}	# species	Simpsons diversity
DUP	13Jul2006	7.7	2.0	0.0	106.9	10.8	7.6	10.1	145.1	30	0.83
INGU	15Jul2006	0.0	2.3	0.0	166.6	15.4	17.4	28.1	229.8	38	0.87
INGU	07Aug2006	0.0	10.3	0.0	135.5	12.9	4.0	17.2	179.8	39	0.90
INGU	19Aug2006	0.0	7.5	0.0	90.3	21.7	1.7	1.3	122.5	36	0.91
INGU	11Sep2006	2.5	13.4	0.4	157.5	9.8	5.8	27.1	216.4	48	0.88
SP	12Jul2006	0.0	2.6	0.0	119.5	9.8	2.5	8.0	142.4	33	0.85
SP	06Aug2006	0.0	2.8	0.0	92.7	6.1	5.3	7.5	114.5	32	0.85
SP	18Aug2006	0.4	7.9	0.0	71.8	6.3	3.6	11.7	101.7	38	0.81
SP	09Sep2006	0.3	130.7	0.0	125.6	14.1	10.8	1.7	283.3	44	0.87
TE	12Jul2006	1.1	0.9	0.0	88.4	6.4	1.9	3.8	102.6	26	0.84
TE	06Aug2006	0.0	3.9	0.0	100.2	15.3	4.1	16.1	139.7	36	0.86
TE	17Aug2006	0.0	5.7	0.0	93.3	9.9	1.4	15.4	125.7	37	0.84
TE	09Sep2006	0.4	10.2	0.0	148.5	18.9	9.3	14.3	201.7	45	0.89
TPE	11Jul2006	0.0	3.8	0.0	120.3	1.1	7.0	9.8	142.0	33	0.87
TPE	05Aug2006	0.0	3.5	0.0	101.4	6.5	2.4	35.8	149.6	35	0.87
TPE	17Aug2006	0.0	3.0	0.0	75.4	10.5	1.5	16.0	106.5	32	0.83
TPE	08Sep2006	0.2	8.6	0.0	119.1	19.1	0.4	22.9	170.4	41	0.84
TPN	17Jul2006	0.0	3.7	0.0	83.6	2.1	6.9	12.7	109.0	30	0.82
TPN	05Aug2006	0.0	6.0	0.0	80.6	8.8	2.8	13.9	112.1	27	0.81
TPN	21Aug2006	0.0	4.4	0.0	80.8	12.6	5.6	11.9	115.4	29	0.86
TPN	08Sep2006	0.0	21.3	0.0	89.9	10.5	4.8	0.9	127.3	35	0.89
TPS	17Jul2006	0.7	1.1	0.0	79.4	6.7	9.1	10.1	107.1	30	0.87
TPS	05Aug2006	0.0	3.4	1.6	86.6	6.0	2.7	17.1	117.4	36	0.88
TPS	21Aug2006	0.1	5.5	0.0	71.7	10.7	2.7	4.5	95.3	34	0.87
TPS	08Sep2006	3.8	3.9	0.0	112.4	17.5	5.1	3.7	146.4	38	0.84
WAL	13Jul2006	0.0	1.8	0.0	117.1	8.3	7.5	6.5	141.1	31	0.84
WAL	07Aug2006	0.0	12.1	0.0	117.0	6.5	1.4	5.8	142.7	37	0.82
WAL	18Aug2006	0.2	10.2	0.0	83.5	12.9	3.4	15.2	125.4	40	0.89
WAL	11Sep2006	0.0	9.0	0.0	298.5	12.4	5.7	0.4	326.1	41	0.85

Phytoplankton Cell Density, Baker Lake, 2006 (for Randy Baker).

Station	date	Cyanophyte cells L^{-1}	Chlorophyte cells L^{-1}	Euglenophyte cells L^{-1}	Chrysophyte cells L^{-1}	Diatoms cells L^{-1}	Cryptophytes cells L^{-1}	Dinoflagellates cells L^{-1}	Total density cells L^{-1}
DUP	13Jul2006	129312	37120	0	1350592	151696	88008	15968	1772696
INGU	15Jul2006	0	36520	0	1710192	162448	155864	19568	2084592
INGU	07Aug2006	0	145680	0	1502856	145280	65256	43704	1902776
INGU	19Aug2006	0	289760	0	932536	225304	22352	200	1470152
INGU	11Sep2006	50288	297544	200	1942880	69056	122728	51488	2534184
SP	12Jul2006	0	30736	0	1530192	94808	36520	3600	1695856
SP	06Aug2006	0	58272	0	916568	41520	80024	2400	1098784
SP	18Aug2006	200	187184	0	959472	46704	51288	15968	1260816
SP	09Sep2006	1000	309512	0	1011560	81040	109560	800	1513472
TE	12Jul2006	7184	16768	0	1250016	56504	15368	7384	1353224
TE	06Aug2006	0	79824	0	1108736	143496	44904	23952	1400912
TE	17Aug2006	0	158848	0	1152040	88808	21952	2200	1423848
TE	09Sep2006	3000	266608	0	1381128	132728	66856	9184	1859504
TPE	11Jul2006	0	53888	0	1400880	9584	94792	7984	1567128
TPE	05Aug2006	0	79824	0	1424632	94392	29736	27168	1655752
TPE	17Aug2006	0	72840	0	815792	61272	14968	6000	970872
TPE	08Sep2006	2200	110560	0	1539376	160448	7384	20568	1840536
TPN	17Jul2006	0	94592	0	1063632	1600	53888	16768	1230480
TPN	05Aug2006	0	101976	0	933936	72840	29536	16168	1154456
TPN	21Aug2006	0	166832	0	959072	96192	94392	30136	1346624
TPN	08Sep2006	0	368784	0	1108536	66456	52088	400	1596264
TPS	17Jul2006	57672	107760	0	948688	45304	55488	9784	1224696
TPS	05Aug2006	0	165832	200	1176392	51688	36320	19568	1450000
TPS	21Aug2006	14368	130312	0	746352	67856	43504	1600	1003992
TPS	08Sep2006	37520	187984	0	1182976	148080	52288	1200	1610048
WAL	13Jul2006	0	21752	0	1193144	81640	72840	15968	1385344
WAL	07Aug2006	0	289160	0	1491288	64272	7984	1200	1853904
WAL	18Aug2006	21552	404304	0	1081600	100392	51088	14968	1673904
WAL	11Sep2006	0	223904	0	1992400	98592	60072	200	2375168

Phytoplankton Species Data, Baker Lake, 2006 (for Randy Baker).

Station	Date	Species code	Species name	density cells/L-1	biomass mg/m-3	length µ	width µ	cell volume µ3
DUP	13Jul2006	1014	Chroococcus limneticus Lemmermann	14368.00	0.20	3.00	3.00	14.10
DUP	13Jul2006	1044	Anabaena planctonica Brunnthaler	114944.00	7.52	5.00	5.00	65.40
DUP	13Jul2006	2105	Chlamydomonas spp.	14368.00	0.72	6.00	4.00	50.30
DUP	13Jul2006	2138	Monoraphidium komarkovae (Nyg.) Komarkova-Legnerova	7184.00	0.46	38.00	1.80	64.50
DUP	13Jul2006	2187	Staurodesmus extensus (Andersson) Teiling	400.00	0.25	16.00	14.00	625.50
DUP	13Jul2006	2199	Spondylosium planum (Wolle) W. and G.S. West	14368.00	0.54	6.00	6.00	37.70
DUP	13Jul2006	2235	Ankistrodesmus spiralis Lemmermann	800.00	0.04	35.00	2.00	55.00
DUP	13Jul2006	4351	Small chrysophyceae	301728.00	4.25	3.00	3.00	14.10
DUP	13Jul2006	4352	Large chrysophyceae	14368.00	2.58	7.00	7.00	179.60
DUP	13Jul2006	4355	Chrysochromulina parva Lackey	43104.00	2.82	5.00	5.00	65.40
DUP	13Jul2006	4357	Chrysococcus sp.	610640.00	39.94	5.00	5.00	65.40
DUP	13Jul2006	4360	Kephyrion spirale (Lackey) Conrad	7184.00	0.24	4.00	4.00	33.50
DUP	13Jul2006	4363	Spinifiromonas sirratus****************	7184.00	0.81	6.00	6.00	113.10
DUP	13Jul2006	4378	Dinobryon borgei Lemmermann	43104.00	1.22	6.00	3.00	28.30
DUP	13Jul2006	4388	Dinobryon sertularia Ehrenberg	64656.00	14.63	12.00	6.00	226.20
DUP	13Jul2006	4390	Dinobryon sociale Ehrenberg	35920.00	8.13	12.00	6.00	226.20
DUP	13Jul2006	4396	Chrysolkos skuja (Nauwerck) Willen	50288.00	1.19	5.00	3.00	23.60
DUP	13Jul2006	4407	Pseudokephyrion entzii Conrad	114944.00	3.85	4.00	4.00	33.50
DUP	13Jul2006	4413	Chrysochromulina laurentiana Kling	50288.00	26.33	10.00	10.00	523.60
DUP	13Jul2006	4436	Dinobryon attenatum Hill	7184.00	0.94	10.00	5.00	130.90
DUP	13Jul2006	5507	Cyclotella stelligera Cleve and Grunow	21552.00	0.53	2.50	5.00	24.50
DUP	13Jul2006	5511	Rhizosolenia eriense H.L. Smith	100576.00	7.82	11.00	3.00	77.80
DUP	13Jul2006	5515	Fragilaria crotonensis Kitton	15200.00	1.08	68.00	2.00	71.20
DUP	13Jul2006	5702	Achnanthes minutissima Kutzing	14368.00	1.32	22.00	4.00	92.20
DUP	13Jul2006	6554	Rhodomonas minuta Skuja	35920.00	2.82	9.00	5.00	78.50
DUP	13Jul2006	6558	Cryptomonas erosa Ehrenberg	1800.00	1.99	22.00	12.00	1105.80
DUP	13Jul2006	6568	Katablepharis ovalis Skuja	50288.00	2.81	8.00	5.00	55.90
DUP	13Jul2006	7629	Gymnodinium palustre Schilling	600.00	2.64	21.00	20.00	4398.20
DUP	13Jul2006	7632	Gymnodinium sp.	14368.00	5.30	11.00	8.00	368.60
DUP	13Jul2006	7639	Peridinium pusillum (Penard) Lemmermann	1000.00	2.14	16.00	16.00	2144.70
INGU	15Jul2006	2105	Chlamydomonas spp.	7184.00	0.36	6.00	4.00	50.30
INGU	15Jul2006	2138	Monoraphidium komarkovae (Nyg.) Komarkova-Legnerova	7184.00	0.51	42.00	1.80	71.30
INGU	15Jul2006	2167	Elakatothrix gelatinosa Willen	21552.00	0.27	8.00	2.00	12.60
INGU	15Jul2006	2205	Mougeotia sp.	200.00	0.29	52.00	6.00	1470.30
INGU	15Jul2006	2206	Botryococcus braunii Kutzing	400.00	0.86	16.00	16.00	2144.70
INGU	15Jul2006	4351	Small chrysophyceae	301728.00	2.47	2.50	2.50	8.20
INGU	15Jul2006	4352	Large chrysophyceae	35920.00	6.45	7.00	7.00	179.60
INGU	15Jul2006	4355	Chrysochromulina parva Lackey	14368.00	0.69	4.50	4.50	47.70

Phytoplankton Species Data, Baker Lake, 2006 (for Randy Baker).

Station	Date	Species code	Species name	density cells/L-1	biomass mg/m-3	length µ	width µ	cell volume µ3
INGU	15Jul2006	4357	Chrysococcus sp.	574720.00	37.59	5.00	5.00	65.40
INGU	15Jul2006	4361	Kephyrion boreale Skuja	7184.00	0.81	6.00	6.00	113.10
INGU	15Jul2006	4363	Spinifiromonas sirratus***************	14368.00	2.07	6.50	6.50	143.80
INGU	15Jul2006	4370	Mallomonas akrokomos Asmund and Kristiansen	7184.00	2.17	16.00	6.00	301.60
INGU	15Jul2006	4378	Dinobryon borgei Lemmermann	57472.00	1.36	5.00	3.00	23.60
INGU	15Jul2006	4381	Dinobryon mucronutom Nygaard	28736.00	3.39	9.00	5.00	117.80
INGU	15Jul2006	4384	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	14368.00	5.53	15.00	7.00	384.80
INGU	15Jul2006	4388	Dinobryon sertularia Ehrenberg	251440.00	56.88	12.00	6.00	226.20
INGU	15Jul2006	4390	Dinobryon sociale Ehrenberg	86208.00	13.54	12.00	5.00	157.10
INGU	15Jul2006	4396	Chrysolkos skuja (Nauwerck) Willen	43104.00	1.02	5.00	3.00	23.60
INGU	15Jul2006	4407	Pseudokephyrion entzii Conrad	136496.00	1.92	3.00	3.00	14.10
INGU	15Jul2006	4413	Chrysochromulina laurentiana Kling	43104.00	22.57	10.00	10.00	523.60
INGU	15Jul2006	4414	Stichogloea spp.	86208.00	4.34	6.00	4.00	50.30
INGU	15Jul2006	4418	Salpingoeca frequentissima (Zach.) Lemmermann	7184.00	0.36	6.00	4.00	50.30
INGU	15Jul2006	4439	Chrysosphaerella brevispina	200.00	3.19	0.00	0.00	15960.00
INGU	15Jul2006	4448	Rhizochrysis scherffelii Pascher	200.00	0.29	14.00	14.00	1436.80
INGU	15Jul2006	5507	Cyclotella stelligera Cleve and Grunow	600.00	0.69	9.00	18.00	1145.10
INGU	15Jul2006	5511	Rhizosolenia eriense H.L. Smith	129312.00	10.06	11.00	3.00	77.80
INGU	15Jul2006	5513	Tabellaria fenestrata (Lyngbye) Kutzing	200.00	0.14	72.00	6.00	678.60
INGU	15Jul2006	5514	Tabellaria flocculsa (Roth) Kutzing	1200.00	1.35	22.00	14.00	1128.90
INGU	15Jul2006	5515	Fragilaria crotonensis Kitton	2400.00	0.24	96.00	2.00	100.50
INGU	15Jul2006	5551	Cyclotella michiganiana Skvortzow	28736.00	2.89	4.00	8.00	100.50
INGU	15Jul2006	6554	Rhodomonas minuta Skuja	64656.00	5.64	10.00	5.00	87.30
INGU	15Jul2006	6558	Cryptomonas erosa Ehrenberg	4000.00	3.89	23.00	11.00	971.50
INGU	15Jul2006	6565	Cryptomonas rostratiformis Skuja	1000.00	1.78	26.00	14.00	1778.80
INGU	15Jul2006	6568	Katablepharis ovalis Skuja	86208.00	6.09	9.00	5.00	70.70
INGU	15Jul2006	7629	Gymnodinium palustre Schilling	3400.00	15.67	22.00	20.00	4607.70
INGU	15Jul2006	7631	Gymnodinium helveticum Penard	200.00	5.03	50.00	31.00	25158.90
INGU	15Jul2006	7632	Gymnodinium sp.	14368.00	4.81	10.00	8.00	335.10
INGU	15Jul2006	7639	Peridinium pusillum (Penard) Lemmermann	1600.00	2.63	16.00	14.00	1642.00
INGU	07Aug2006	2100	Pyramidomonas tetrarhynchus Schmarda	200.00	0.13	15.00	13.00	663.70
INGU	07Aug2006	2105	Chlamydomonas spp.	14368.00	0.34	5.00	3.00	23.60
INGU	07Aug2006	2121	Oocystis lacustris Chodat	21552.00	1.08	6.00	4.00	50.30
INGU	07Aug2006	2143	Monoraphidium minutum (Nag.) Komarkova-Legnerova	7184.00	0.32	7.00	4.00	44.00
INGU	07Aug2006	2167	Elakatothrix gelatinosa Willen	93392.00	1.03	7.00	2.00	11.00
INGU	07Aug2006	2178	Cosmarium sp.	200.00	0.31	21.00	20.00	1539.40
INGU	07Aug2006	2199	Spondylosium planum (Wolle) W. and G.S. West	7184.00	0.27	6.00	6.00	37.70
INGU	07Aug2006	2247	Oocystis gigas Archer	1600.00	6.79	36.00	15.00	4241.20

Phytoplankton Species Data, Baker Lake, 2006 (for Randy Baker).

Station	Date	Species code	Species name	density cells/L^{-1}	biomass mg/m^{-3}	length μ	width μ	cell volume μ^3
INGU	07Aug2006	4351	Small chrysophyceae	272992.00	1.15	2.00	2.00	4.20
INGU	07Aug2006	4352	Large chrysophyceae	28736.00	3.25	6.00	6.00	113.10
INGU	07Aug2006	4355	Chrysochromulina parva Lackey	79024.00	2.65	4.00	4.00	33.50
INGU	07Aug2006	4357	Chrysococcus sp.	445408.00	29.13	5.00	5.00	65.40
INGU	07Aug2006	4360	Kephyrion spirale (Lackey) Conrad	7184.00	0.10	3.00	3.00	14.10
INGU	07Aug2006	4361	Kephyrion boreale Skuja	14368.00	1.63	6.00	6.00	113.10
INGU	07Aug2006	4363	Spinifiromonas sirratus***************	7184.00	0.81	6.00	6.00	113.10
INGU	07Aug2006	4367	Mallomonas duerrschmidtiae Siver, Hamer and Kling	200.00	0.13	19.00	8.00	636.70
INGU	07Aug2006	4368	Mallomonas crassisquama (Asmund) Fott	400.00	0.69	23.00	12.00	1734.20
INGU	07Aug2006	4378	Dinobryon borgei Lemmermann	43104.00	1.22	6.00	3.00	28.30
INGU	07Aug2006	4383	Dinobryon bavaricum Imhof	201152.00	37.92	10.00	6.00	188.50
INGU	07Aug2006	4383	Dinobryon bavaricum Imhof	600.00	1.29	0.00	0.00	2150.00
INGU	07Aug2006	4384	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	7184.00	2.40	13.00	7.00	333.50
INGU	07Aug2006	4388	Dinobryon sertularia Ehrenberg	71840.00	13.54	10.00	6.00	188.50
INGU	07Aug2006	4388	Dinobryon sertularia Ehrenberg	200.00	1.36	0.00	0.00	6780.00
INGU	07Aug2006	4396	Chrysolkos skuja (Nauwerck) Willen	43104.00	1.02	5.00	3.00	23.60
INGU	07Aug2006	4401	Uroglena volvox Ehrenberg	43104.00	2.82	5.00	5.00	65.40
INGU	07Aug2006	4407	Pseudokephyrion entzii Conrad	107760.00	1.52	3.00	3.00	14.10
INGU	07Aug2006	4413	Chrysochromulina laurentiana Kling	28736.00	15.05	10.00	10.00	523.60
INGU	07Aug2006	4414	Stichogloea spp.	14368.00	0.72	6.00	4.00	50.30
INGU	07Aug2006	4418	Salpingoeca frequentissima (Zach.) Lemmermann	7184.00	0.17	5.00	3.00	23.60
INGU	07Aug2006	4437	Pteridomonas sp.	79024.00	16.94	8.50	8.50	214.40
INGU	07Aug2006	5507	Cyclotella stelligera Cleve and Grunow	400.00	0.46	9.00	18.00	1145.10
INGU	07Aug2006	5511	Rhizosolenia eriense H.L. Smith	93392.00	7.27	11.00	3.00	77.80
INGU	07Aug2006	5551	Cyclotella michiganiana Skvortzow	50288.00	5.05	4.00	8.00	100.50
INGU	07Aug2006	5916	Fragilaria capucina Grunow	1200.00	0.10	81.00	2.00	84.80
INGU	07Aug2006	6554	Rhodomonas minuta Skuja	14368.00	0.72	9.00	4.00	50.30
INGU	07Aug2006	6558	Cryptomonas erosa Ehrenberg	600.00	0.46	22.00	10.00	767.90
INGU	07Aug2006	6568	Katablepharis ovalis Skuja	50288.00	2.81	8.00	5.00	55.90
INGU	07Aug2006	7632	Gymnodinium sp.	43104.00	14.44	10.00	8.00	335.10
INGU	07Aug2006	7632	Gymnodinium sp.	600.00	2.76	22.00	20.00	4607.70
INGU	19Aug2006	2100	Pyramidomonas tetrarhynchus Schmarda	200.00	0.11	14.00	12.00	527.80
INGU	19Aug2006	2105	Chlamydomonas spp.	7184.00	0.42	7.00	4.00	58.60
INGU	19Aug2006	2120	Oocystis submarina v. variabilis Skuja	57472.00	1.36	5.00	3.00	23.60
INGU	19Aug2006	2145	Crucigenia quadrata Morr.	57472.00	0.08	2.00	2.00	1.40
INGU	19Aug2006	2164	Quadrigula closterioides (Bohl.) Printz	28736.00	0.54	12.00	2.00	18.80
INGU	19Aug2006	2167	Elakatothrix gelatinosa Willen	122128.00	1.54	8.00	2.00	12.60
INGU	19Aug2006	2187	Staurodesmus extensus (Andersson) Teiling	1600.00	1.27	18.00	14.00	791.70

Station	Date	Species code	Species name	density cells/L^{-1}	biomass mg/m^{-3}	length µ	width µ	cell volume µ^3
INGU	19Aug2006	2206	Botryococcus braunii Kutzing	600.00	1.29	16.00	16.00	2144.70
INGU	19Aug2006	2235	Ankistrodesmus spiralis Lemmermann	14368.00	0.86	38.00	2.00	59.70
INGU	19Aug2006	4351	Small chrysophyceae	215520.00	2.22	2.70	2.70	10.30
INGU	19Aug2006	4352	Large chrysophyceae	14368.00	1.63	6.00	6.00	113.10
INGU	19Aug2006	4357	Chrysococcus sp.	208336.00	13.63	5.00	5.00	65.40
INGU	19Aug2006	4368	Mallomonas crassisquama (Asmund) Fott	2200.00	1.47	20.00	8.00	670.20
INGU	19Aug2006	4378	Dinobryon borgei Lemmermann	14368.00	0.54	8.00	3.00	37.70
INGU	19Aug2006	4381	Dinobryon mucronutom Nygaard	7184.00	0.48	8.00	4.00	67.00
INGU	19Aug2006	4383	Dinobryon bavaricum Imhof	158048.00	29.79	10.00	6.00	188.50
INGU	19Aug2006	4383	Dinobryon bavaricum Imhof	3600.00	9.99	0.00	0.00	2775.00
INGU	19Aug2006	4384	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	14368.00	5.16	14.00	7.00	359.20
INGU	19Aug2006	4388	Dinobryon sertularia Ehrenberg	64656.00	14.63	12.00	6.00	226.20
INGU	19Aug2006	4407	Pseudokephyrion entzii Conrad	86208.00	1.22	3.00	3.00	14.10
INGU	19Aug2006	4411	Bitrichia chodatii (Reverdin) Chodat	7184.00	0.36	6.00	4.00	50.30
INGU	19Aug2006	4414	Stichogloea spp.	107760.00	7.22	8.00	4.00	67.00
INGU	19Aug2006	4418	Salpingoeca frequentissima (Zach.) Lemmermann	21552.00	0.90	5.00	4.00	41.90
INGU	19Aug2006	4437	Pteridomonas sp.	7184.00	1.06	7.50	7.50	147.30
INGU	19Aug2006	5507	Cyclotella stelligera Cleve and Grunow	1400.00	2.20	10.00	20.00	1570.80
INGU	19Aug2006	5511	Rhizosolenia eriense H.L. Smith	93392.00	4.62	7.00	3.00	49.50
INGU	19Aug2006	5514	Tabellaria flocculsa (Roth) Kutzing	600.00	0.68	22.00	14.00	1128.90
INGU	19Aug2006	5547	Frustulia rhomboides (Ehrenberg) de Toni	200.00	1.29	64.00	16.00	6434.00
INGU	19Aug2006	5551	Cyclotella michiganiana Skvortzow	122128.00	12.27	4.00	8.00	100.50
INGU	19Aug2006	5702	Achnanthes minutissima Kutzing	7184.00	0.63	21.00	4.00	88.00
INGU	19Aug2006	5916	Fragilaria capucina Grunow	400.00	0.04	86.00	2.00	90.10
INGU	19Aug2006	6554	Rhodomonas minuta Skuja	7184.00	0.32	8.00	4.00	44.70
INGU	19Aug2006	6558	Cryptomonas erosa Ehrenberg	600.00	0.46	22.00	10.00	767.90
INGU	19Aug2006	6565	Cryptomonas rostratiformis Skuja	200.00	0.26	26.00	12.00	1306.90
INGU	19Aug2006	6568	Katablepharis ovalis Skuja	14368.00	0.61	7.00	5.00	42.80
INGU	19Aug2006	7632	Gymnodinium sp.	200.00	1.32	26.00	22.00	6589.00
INGU	11Sep2006	1037	Myxobaktron smithii **********************	28736.00	1.93	8.00	4.00	67.00
INGU	11Sep2006	1089	Cyanodictyon sp.	21552.00	0.54	0.00	0.00	25.00
INGU	11Sep2006	2105	Chlamydomonas spp.	28736.00	0.68	5.00	3.00	23.60
INGU	11Sep2006	2112	Sphaerocystis schroeteri Chodat	71840.00	2.41	4.00	4.00	33.50
INGU	11Sep2006	2120	Oocystis submarina v. variabilis Skuja	143680.00	4.74	7.00	3.00	33.00
INGU	11Sep2006	2137	Dictyosphaerium simplex Sukja	28736.00	0.12	2.00	2.00	4.20
INGU	11Sep2006	2167	Elakatothrix gelatinosa Willen	14368.00	0.23	10.00	2.00	15.70
INGU	11Sep2006	2187	Staurodesmus extensus (Andersson) Teiling	400.00	0.28	17.00	14.00	706.20
INGU	11Sep2006	2199	Spondylosium planum (Wolle) W. and G.S. West	7184.00	0.27	6.00	6.00	37.70

Phytoplankton Species Data, Baker Lake, 2006 (for Randy Baker).

Station	Date	Species code	Species name	density cells/L^{-1}	biomass mg/m^{-3}	length µ	width µ	cell volume µ^3
INGU	11Sep2006	2205	Mougeotia sp.	800.00	0.81	36.00	6.00	1017.90
INGU	11Sep2006	2206	Botryococcus braunii Kutzing	1800.00	3.86	16.00	16.00	2144.70
INGU	11Sep2006	3305	Trachelomonas volvocina Ehrenberg	200.00	0.41	18.00	18.00	2035.80
INGU	11Sep2006	4351	Small chrysophyceae	718400.00	3.02	2.00	2.00	4.20
INGU	11Sep2006	4352	Large chrysophyceae	14368.00	1.63	6.00	6.00	113.10
INGU	11Sep2006	4355	Chrysochromulina parva Lackey	114944.00	3.85	4.00	4.00	33.50
INGU	11Sep2006	4357	Chrysococcus sp.	352016.00	23.02	5.00	5.00	65.40
INGU	11Sep2006	4361	Kephyrion boreale Skuja	35920.00	4.06	6.00	6.00	113.10
INGU	11Sep2006	4363	Spinifiromonas sirratus***************	35920.00	5.17	6.50	6.50	143.80
INGU	11Sep2006	4378	Dinobryon borgei Lemmermann	28736.00	0.81	6.00	3.00	28.30
INGU	11Sep2006	4381	Dinobryon mucronutom Nygaard	21552.00	2.82	10.00	5.00	130.90
INGU	11Sep2006	4383	Dinobryon bavaricum Imhof	179600.00	40.63	12.00	6.00	226.20
INGU	11Sep2006	4383	Dinobryon bavaricum Imhof	3000.00	10.17	0.00	0.00	3390.00
INGU	11Sep2006	4384	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	14368.00	4.79	13.00	7.00	333.50
INGU	11Sep2006	4388	Dinobryon sertularia Ehrenberg	14368.00	2.71	10.00	6.00	188.50
INGU	11Sep2006	4394	Epiphyxis sp.	21552.00	1.63	9.00	4.00	75.40
INGU	11Sep2006	4396	Chrysolkos skuja (Nauwerck) Willen	7184.00	0.20	6.00	3.00	28.30
INGU	11Sep2006	4401	Uroglena volvox Ehrenberg	165232.00	18.69	6.00	6.00	113.10
INGU	11Sep2006	4407	Pseudokephyrion entzii Conrad	43104.00	0.97	3.50	3.50	22.40
INGU	11Sep2006	4411	Bitrichia chodatii (Reverdin) Chodat	14368.00	0.34	5.00	3.00	23.60
INGU	11Sep2006	4413	Chrysochromulina laurentiana Kling	50288.00	26.33	10.00	10.00	523.60
INGU	11Sep2006	4414	Stichogloea spp.	71840.00	3.61	6.00	4.00	50.30
INGU	11Sep2006	4418	Salpingoeca frequentissima (Zach.) Lemmermann	28736.00	1.20	5.00	4.00	41.90
INGU	11Sep2006	4425	Mallomonas hamata Asmund	200.00	0.27	26.00	10.00	1361.40
INGU	11Sep2006	4437	Pteridomonas sp.	7184.00	1.54	8.50	8.50	214.40
INGU	11Sep2006	5507	Cyclotella stelligera Cleve and Grunow	1800.00	2.83	10.00	20.00	1570.80
INGU	11Sep2006	5511	Rhizosolenia eriense H.L. Smith	21552.00	1.07	7.00	3.00	49.50
INGU	11Sep2006	5513	Tabellaria fenestrata (Lyngbye) Kutzing	200.00	0.14	72.00	6.00	678.60
INGU	11Sep2006	5514	Tabellaria flocculsa (Roth) Kutzing	1200.00	1.35	22.00	14.00	1128.90
INGU	11Sep2006	5518	Synedra acus Kutzing	1200.00	0.10	76.00	2.00	79.60
INGU	11Sep2006	5551	Cyclotella michiganiana Skvortzow	43104.00	4.33	4.00	8.00	100.50
INGU	11Sep2006	6554	Rhodomonas minuta Skuja	93392.00	4.17	8.00	4.00	44.70
INGU	11Sep2006	6558	Cryptomonas erosa Ehrenberg	400.00	0.29	21.00	10.00	733.00
INGU	11Sep2006	6565	Cryptomonas rostratiformis Skuja	200.00	0.31	23.00	14.00	1573.60
INGU	11Sep2006	6568	Katablepharis ovalis Skuja	28736.00	0.98	7.00	4.00	34.20
INGU	11Sep2006	7628	Gymnodinium mirabile Penard	200.00	4.89	36.00	36.00	24429.00
INGU	11Sep2006	7629	Gymnodinium palustre Schilling	400.00	2.43	24.00	22.00	6082.10
INGU	11Sep2006	7632	Gymnodinium sp.	50288.00	18.54	11.00	8.00	368.60

Phytoplankton Species Data, Baker Lake, 2006 (for Randy Baker).

Station	Date	Species code	Species name	density cells/L^{-1}	biomass mg/m^{-3}	length µ	width µ	cell volume µ^3
INGU	11Sep2006	7639	Peridinium pusillum (Penard) Lemmermann	600.00	1.29	16.00	16.00	2144.70
SP	12Jul2006	2105	Chlamydomonas spp.	14368.00	0.84	7.00	4.00	58.60
SP	12Jul2006	2138	Monoraphidium komarkovae (Nyg.) Komarkova-Legnerova	7184.00	0.63	52.00	1.80	88.20
SP	12Jul2006	2187	Staurodesmus extensus (Andersson) Teiling	200.00	0.16	18.00	14.00	791.70
SP	12Jul2006	2193	Staurodesmus paradoxum Meyen	200.00	0.82	30.00	26.00	4084.10
SP	12Jul2006	2215	Tetraedron caudatum (Corda) Hansgrig	7184.00	0.03	3.00	3.00	4.70
SP	12Jul2006	2235	Ankistrodesmus spiralis Lemmermann	1600.00	0.09	34.00	2.00	53.40
SP	12Jul2006	4351	Small chrysophyceae	502880.00	4.12	2.50	2.50	8.20
SP	12Jul2006	4352	Large chrysophyceae	50288.00	9.03	7.00	7.00	179.60
SP	12Jul2006	4357	Chrysococcus sp.	251440.00	16.44	5.00	5.00	65.40
SP	12Jul2006	4378	Dinobryon borgei Lemmermann	57472.00	2.17	8.00	3.00	37.70
SP	12Jul2006	4381	Dinobryon mucronutom Nygaard	7184.00	0.94	10.00	5.00	130.90
SP	12Jul2006	4387	Dinobryon cylindricum Imhof	14368.00	4.42	12.00	7.00	307.90
SP	12Jul2006	4388	Dinobryon sertularia Ehrenberg	215520.00	48.75	12.00	6.00	226.20
SP	12Jul2006	4390	Dinobryon sociale Ehrenberg	7184.00	1.35	10.00	6.00	188.50
SP	12Jul2006	4394	Epiphyxis sp.	14368.00	1.08	9.00	4.00	75.40
SP	12Jul2006	4396	Chrysolkos skuja (Nauwerck) Willen	79024.00	1.86	5.00	3.00	23.60
SP	12Jul2006	4401	Uroglena volvox Ehrenberg	129312.00	8.46	5.00	5.00	65.40
SP	12Jul2006	4407	Pseudokephyrion entzii Conrad	172416.00	5.78	4.00	4.00	33.50
SP	12Jul2006	4413	Chrysochromulina laurentiana Kling	14368.00	7.52	10.00	10.00	523.60
SP	12Jul2006	4439	Chrysosphaerella brevispina	14368.00	7.52	10.00	10.00	523.60
SP	12Jul2006	5507	Cyclotella stelligera Cleve and Grunow	200.00	0.23	9.00	18.00	1145.10
SP	12Jul2006	5511	Rhizosolenia eriense H.L. Smith	7184.00	0.46	9.00	3.00	63.60
SP	12Jul2006	5514	Tabellaria flocculsa (Roth) Kutzing	200.00	0.26	25.00	14.00	1282.80
SP	12Jul2006	5515	Fragilaria crotonensis Kitton	8000.00	0.84	100.00	2.00	104.70
SP	12Jul2006	5546	Gyrosigma sp	200.00	0.17	59.00	6.00	834.10
SP	12Jul2006	5551	Cyclotella michiganiana Skvortzow	71840.00	7.22	4.00	8.00	100.50
SP	12Jul2006	5702	Achnanthes minutissima Kutzing	7184.00	0.66	22.00	4.00	92.20
SP	12Jul2006	6554	Rhodomonas minuta Skuja	14368.00	0.72	9.00	4.00	50.30
SP	12Jul2006	6558	Cryptomonas erosa Ehrenberg	600.00	0.90	22.00	14.00	1505.20
SP	12Jul2006	6568	Katablepharis ovalis Skuja	21552.00	0.92	7.00	5.00	42.80
SP	12Jul2006	7629	Gymnodinium palustre Schilling	200.00	0.84	20.00	20.00	4188.80
SP	12Jul2006	7639	Peridinium pusillum (Penard) Lemmermann	3200.00	5.25	16.00	14.00	1642.00
SP	12Jul2006	7641	Peridinium aciculiferum Lemmermann	200.00	1.87	31.00	24.00	9349.40
SP	06Aug2006	2100	Pyramidomonas tetrarhynchus Schmarda	200.00	0.17	17.00	14.00	872.30
SP	06Aug2006	2105	Chlamydomonas spp.	7184.00	0.17	5.00	3.00	23.60
SP	06Aug2006	2138	Monoraphidium komarkovae (Nyg.) Komarkova-Legnerova	7184.00	0.41	34.00	1.80	57.70
SP	06Aug2006	2167	Elakatothrix gelatinosa Willen	21552.00	0.27	8.00	2.00	12.60

Phytoplankton Species Data, Baker Lake, 2006 (for Randy Baker).

Station	Date	Species code	Species name	density cells/L^{-1}	biomass mg/m^{-3}	length µ	width µ	cell volume µ^3
SP	06Aug2006	2183	Euastrum sinuosum Lenorm.	200.00	0.50	25.00	23.00	2508.90
SP	06Aug2006	2205	Mougeotia sp.	400.00	0.40	35.00	6.00	989.60
SP	06Aug2006	2215	Tetraedron caudatum (Corda) Hansgrig	7184.00	0.03	3.00	3.00	4.70
SP	06Aug2006	2235	Ankistrodesmus spiralis Lemmermann	14368.00	0.86	38.00	2.00	59.70
SP	06Aug2006	4351	Small chrysophyceae	208336.00	1.50	2.40	2.40	7.20
SP	06Aug2006	4352	Large chrysophyceae	35920.00	6.45	7.00	7.00	179.60
SP	06Aug2006	4355	Chrysochromulina parva Lackey	14368.00	0.48	4.00	4.00	33.50
SP	06Aug2006	4357	Chrysococcus sp.	330464.00	21.61	5.00	5.00	65.40
SP	06Aug2006	4358	Chrysostephanospaera globulifera Scherffel	7184.00	1.72	7.70	7.70	239.00
SP	06Aug2006	4363	Spinifiromonas sirratus***************	21552.00	2.44	6.00	6.00	113.10
SP	06Aug2006	4378	Dinobryon borgei Lemmermann	7184.00	0.17	5.00	3.00	23.60
SP	06Aug2006	4383	Dinobryon bavaricum Imhof	35920.00	6.77	10.00	6.00	188.50
SP	06Aug2006	4383	Dinobryon bavaricum Imhof	4200.00	8.19	0.00	0.00	1950.00
SP	06Aug2006	4388	Dinobryon sertularia Ehrenberg	71840.00	16.25	12.00	6.00	226.20
SP	06Aug2006	4401	Uroglena volvox Ehrenberg	50288.00	3.29	5.00	5.00	65.40
SP	06Aug2006	4407	Pseudokephyrion entzii Conrad	79024.00	1.11	3.00	3.00	14.10
SP	06Aug2006	4413	Chrysochromulina laurentiana Kling	43104.00	22.57	10.00	10.00	523.60
SP	06Aug2006	4418	Salpingoeca frequentissima (Zach.) Lemmermann	7184.00	0.19	5.50	3.00	25.90
SP	06Aug2006	5507	Cyclotella stelligera Cleve and Grunow	800.00	0.92	9.00	18.00	1145.10
SP	06Aug2006	5511	Rhizosolenia eriense H.L. Smith	14368.00	0.91	9.00	3.00	63.60
SP	06Aug2006	5514	Tabellaria flocculsa (Roth) Kutzing	1600.00	1.81	22.00	14.00	1128.90
SP	06Aug2006	5551	Cyclotella michiganiana Skvortzow	21552.00	2.17	4.00	8.00	100.50
SP	06Aug2006	5916	Fragilaria capucina Grunow	3200.00	0.30	90.00	2.00	94.20
SP	06Aug2006	6554	Rhodomonas minuta Skuja	35920.00	1.81	9.00	4.00	50.30
SP	06Aug2006	6558	Cryptomonas erosa Ehrenberg	1000.00	1.64	24.00	14.00	1642.00
SP	06Aug2006	6568	Katablepharis ovalis Skuja	43104.00	1.84	7.00	5.00	42.80
SP	06Aug2006	7629	Gymnodinium palustre Schilling	400.00	3.26	27.00	24.00	8143.00
SP	06Aug2006	7639	Peridinium pusillum (Penard) Lemmermann	2000.00	4.29	16.00	16.00	2144.70
SP	18Aug2006	1024	Woronichinia naegelianum (Unger) Elenk.	200.00	0.40	0.00	0.00	2000.00
SP	18Aug2006	2105	Chlamydomonas spp.	14368.00	0.20	3.00	3.00	14.10
SP	18Aug2006	2112	Sphaerocystis schroeteri Chodat	28736.00	0.12	2.00	2.00	4.20
SP	18Aug2006	2120	Oocystis submarina v. variabilis Skuja	21552.00	0.51	5.00	3.00	23.60
SP	18Aug2006	2138	Monoraphidium komarkovae (Nyg.) Komarkova-Legnerova	21552.00	1.50	41.00	1.80	69.60
SP	18Aug2006	2167	Elakatothrix gelatinosa Willen	35920.00	0.62	11.00	2.00	17.30
SP	18Aug2006	2199	Spondylosium planum (Wolle) W. and G.S. West	43104.00	1.63	6.00	6.00	37.70
SP	18Aug2006	2215	Tetraedron caudatum (Corda) Hansgrig	7184.00	0.03	3.00	3.00	4.70
SP	18Aug2006	2235	Ankistrodesmus spiralis Lemmermann	14368.00	0.79	35.00	2.00	55.00
SP	18Aug2006	2247	Oocystis gigas Archer	400.00	2.51	30.00	20.00	6283.20

Phytoplankton Species Data, Baker Lake, 2006 (for Randy Baker).

Station	Date	Species code	Species name	density cells/L^{-1}	biomass mg/m^{-3}	length µ	width µ	cell volume µ^3
SP	18Aug2006	4351	Small chrysophyceae	265808.00	1.12	2.00	2.00	4.20
SP	18Aug2006	4352	Large chrysophyceae	28736.00	4.13	6.50	6.50	143.80
SP	18Aug2006	4357	Chrysococcus sp.	466960.00	30.54	5.00	5.00	65.40
SP	18Aug2006	4358	Chrysostephanospaera globulifera Scherffel	14368.00	4.62	8.50	8.50	321.60
SP	18Aug2006	4361	Kephyrion boreale Skuja	7184.00	0.53	5.20	5.20	73.60
SP	18Aug2006	4362	Kephyrion sp.	14368.00	0.32	3.50	3.50	22.40
SP	18Aug2006	4363	Spinifiromonas sirratus***************	7184.00	0.81	6.00	6.00	113.10
SP	18Aug2006	4378	Dinobryon borgei Lemmermann	28736.00	0.68	5.00	3.00	23.60
SP	18Aug2006	4381	Dinobryon mucronutom Nygaard	14368.00	1.69	9.00	5.00	117.80
SP	18Aug2006	4383	Dinobryon bavaricum Imhof	50288.00	9.48	10.00	6.00	188.50
SP	18Aug2006	4383	Dinobryon bavaricum Imhof	3600.00	7.11	0.00	0.00	1975.00
SP	18Aug2006	4384	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	7184.00	2.40	13.00	7.00	333.50
SP	18Aug2006	4388	Dinobryon sertularia Ehrenberg	35920.00	5.64	12.00	5.00	157.10
SP	18Aug2006	4388	Dinobryon sertularia Ehrenberg	200.00	1.36	0.00	0.00	6780.00
SP	18Aug2006	4418	Salpingoeca frequentissima (Zach.) Lemmermann	7184.00	0.17	5.00	3.00	23.60
SP	18Aug2006	4425	Mallomonas hamata Asmund	200.00	0.33	26.00	11.00	1647.20
SP	18Aug2006	4437	Pteridomonas sp.	7184.00	0.86	7.00	7.00	119.70
SP	18Aug2006	5507	Cyclotella stelligera Cleve and Grunow	1000.00	1.82	10.50	21.00	1818.40
SP	18Aug2006	5511	Rhizosolenia eriense H.L. Smith	21552.00	1.68	11.00	3.00	77.80
SP	18Aug2006	5514	Tabellaria flocculsa (Roth) Kutzing	400.00	0.45	22.00	14.00	1128.90
SP	18Aug2006	5551	Cyclotella michiganiana Skvortzow	21552.00	2.17	4.00	8.00	100.50
SP	18Aug2006	5916	Fragilaria capucina Grunow	2200.00	0.15	65.00	2.00	68.10
SP	18Aug2006	6554	Rhodomonas minuta Skuja	43104.00	2.17	9.00	4.00	50.30
SP	18Aug2006	6558	Cryptomonas erosa Ehrenberg	1000.00	0.97	23.00	11.00	971.50
SP	18Aug2006	6568	Katablepharis ovalis Skuja	7184.00	0.51	9.00	5.00	70.70
SP	18Aug2006	7632	Gymnodinium sp.	14368.00	6.70	11.00	9.00	466.50
SP	18Aug2006	7632	Gymnodinium sp.	400.00	2.43	24.00	22.00	6082.10
SP	18Aug2006	7639	Peridinium pusillum (Penard) Lemmermann	1200.00	2.57	16.00	16.00	2144.70
SP	09Sep2006	1054	Planktolyngbya limnetica	800.00	0.09	136.00	1.00	106.80
SP	09Sep2006	1073	Snowella sp	200.00	0.24	0.00	0.00	1200.00
SP	09Sep2006	2105	Chlamydomonas spp.	7184.00	0.36	6.00	4.00	50.30
SP	09Sep2006	2112	Sphaerocystis schroeteri Chodat	28736.00	0.96	4.00	4.00	33.50
SP	09Sep2006	2120	Oocystis submarina v. variabilis Skuja	50288.00	1.19	5.00	3.00	23.60
SP	09Sep2006	2137	Dictyosphaerium simplex Sukja	100576.00	0.42	2.00	2.00	4.20
SP	09Sep2006	2138	Monoraphidium komarkovae (Nyg.) Komarkova-Legnerova	28736.00	2.24	46.00	1.80	78.00
SP	09Sep2006	2167	Elakatothrix gelatinosa Willen	7184.00	0.09	8.00	2.00	12.60
SP	09Sep2006	2178	Cosmarium sp.	200.00	0.28	20.00	20.00	1396.30
SP	09Sep2006	2187	Staurodesmus extensus (Andersson) Teiling	200.00	0.13	16.00	14.00	625.50

Phytoplankton Species Data, Baker Lake, 2006 (for Randy Baker).

Station	Date	Species code	Species name	density cells/L^{-1}	biomass mg/m^{-3}	length μ	width μ	cell volume μ^3
SP	09Sep2006	2206	Botryococcus braunii Kutzing	57472.00	123.26	16.00	16.00	2144.70
SP	09Sep2006	2215	Tetraedron caudatum (Corda) Hansgrig	21552.00	0.10	3.00	3.00	4.70
SP	09Sep2006	2235	Ankistrodesmus spiralis Lemmermann	7184.00	0.43	38.00	2.00	59.70
SP	09Sep2006	2247	Oocystis gigas Archer	200.00	1.26	30.00	20.00	6283.20
SP	09Sep2006	4351	Small chrysophyceae	143680.00	0.60	2.00	2.00	4.20
SP	09Sep2006	4352	Large chrysophyceae	35920.00	4.06	6.00	6.00	113.10
SP	09Sep2006	4357	Chrysococcus sp.	474144.00	31.01	5.00	5.00	65.40
SP	09Sep2006	4361	Kephyrion boreale Skuja	7184.00	0.81	6.00	6.00	113.10
SP	09Sep2006	4363	Spinifiromonas sirratus***************	14368.00	4.62	8.50	8.50	321.60
SP	09Sep2006	4368	Mallomonas crassisquama (Asmund) Fott	400.00	0.46	22.00	10.00	1151.90
SP	09Sep2006	4381	Dinobryon mucronutom Nygaard	7184.00	0.94	10.00	5.00	130.90
SP	09Sep2006	4383	Dinobryon bavaricum Imhof	71840.00	16.25	12.00	6.00	226.20
SP	09Sep2006	4383	Dinobryon bavaricum Imhof	5200.00	22.92	0.00	0.00	4407.00
SP	09Sep2006	4388	Dinobryon sertularia Ehrenberg	14368.00	2.71	10.00	6.00	188.50
SP	09Sep2006	4388	Dinobryon sertularia Ehrenberg	200.00	1.36	0.00	0.00	6780.00
SP	09Sep2006	4394	Epiphyxis sp.	7184.00	0.42	7.00	4.00	58.60
SP	09Sep2006	4400	Ochromonas sp.	7184.00	0.54	9.00	4.00	75.40
SP	09Sep2006	4401	Uroglena volvox Ehrenberg	93392.00	6.11	5.00	5.00	65.40
SP	09Sep2006	4407	Pseudokephyrion entzii Conrad	50288.00	1.13	3.50	3.50	22.40
SP	09Sep2006	4413	Chrysochromulina laurentiana Kling	50288.00	26.33	10.00	10.00	523.60
SP	09Sep2006	4418	Salpingoeca frequentissima (Zach.) Lemmermann	14368.00	0.34	5.00	3.00	23.60
SP	09Sep2006	4437	Pteridomonas sp.	14368.00	5.02	10.00	10.00	349.10
SP	09Sep2006	5507	Cyclotella stelligera Cleve and Grunow	1800.00	2.83	10.00	20.00	1570.80
SP	09Sep2006	5511	Rhizosolenia eriense H.L. Smith	7184.00	0.56	11.00	3.00	77.80
SP	09Sep2006	5514	Tabellaria flocculsa (Roth) Kutzing	800.00	0.90	22.00	14.00	1128.90
SP	09Sep2006	5518	Synedra acus Kutzing	6000.00	0.54	86.00	2.00	90.10
SP	09Sep2006	5551	Cyclotella michiganiana Skvortzow	64656.00	6.50	4.00	8.00	100.50
SP	09Sep2006	5720	Cyclotella bodanica Eulenst.	400.00	2.57	16.00	32.00	6434.00
SP	09Sep2006	5874	Nitzschia palea (Kutzing) W. Smith	200.00	0.16	83.00	6.00	782.30
SP	09Sep2006	6554	Rhodomonas minuta Skuja	86208.00	7.53	10.00	5.00	87.30
SP	09Sep2006	6558	Cryptomonas erosa Ehrenberg	1200.00	0.88	21.00	10.00	733.00
SP	09Sep2006	6565	Cryptomonas rostratiformis Skuja	600.00	1.23	30.00	14.00	2052.50
SP	09Sep2006	6568	Katablepharis ovalis Skuja	21552.00	1.20	8.00	5.00	55.90
SP	09Sep2006	7639	Peridinium pusillum (Penard) Lemmermann	800.00	1.72	16.00	16.00	2144.70
TE	12Jul2006	1054	Planktolyngbya limnetica	7184.00	1.13	200.00	1.00	157.10
TE	12Jul2006	2107	Chlorogonium maximum Skuja	200.00	0.19	74.00	4.00	929.90
TE	12Jul2006	2199	Spondylosium planum (Wolle) W. and G.S. West	14368.00	0.54	6.00	6.00	37.70
TE	12Jul2006	2235	Ankistrodesmus spiralis Lemmermann	2200.00	0.14	40.00	2.00	62.80

Phytoplankton Species Data, Baker Lake, 2006 (for Randy Baker).

Station	Date	Species code	Species name	density cells/L^{-1}	biomass mg/m^{-3}	length μ	width μ	cell volume μ^3
TE	12Jul2006	4351	Small chrysophyceae	265808.00	2.18	2.50	2.50	8.20
TE	12Jul2006	4352	Large chrysophyceae	43104.00	7.74	7.00	7.00	179.60
TE	12Jul2006	4357	Chrysococcus sp.	402304.00	26.31	5.00	5.00	65.40
TE	12Jul2006	4363	Spinifiromonas sirratus***************	7184.00	0.81	6.00	6.00	113.10
TE	12Jul2006	4378	Dinobryon borgei Lemmermann	21552.00	0.61	6.00	3.00	28.30
TE	12Jul2006	4387	Dinobryon cylindricum Imhof	14368.00	3.25	12.00	6.00	226.20
TE	12Jul2006	4388	Dinobryon sertularia Ehrenberg	114944.00	26.00	12.00	6.00	226.20
TE	12Jul2006	4390	Dinobryon sociale Ehrenberg	50288.00	9.48	10.00	6.00	188.50
TE	12Jul2006	4396	Chrysolkos skuja (Nauwerck) Willen	86208.00	2.44	6.00	3.00	28.30
TE	12Jul2006	4401	Uroglena volvox Ehrenberg	43104.00	2.82	5.00	5.00	65.40
TE	12Jul2006	4407	Pseudokephyrion entzii Conrad	193968.00	6.50	4.00	4.00	33.50
TE	12Jul2006	4436	Dinobryon attenatum Hill	7184.00	0.30	9.00	3.00	42.40
TE	12Jul2006	5507	Cyclotella stelligera Cleve and Grunow	600.00	0.69	9.00	18.00	1145.10
TE	12Jul2006	5511	Rhizosolenia eriense H.L. Smith	14368.00	0.71	7.00	3.00	49.50
TE	12Jul2006	5514	Tabellaria flocculsa (Roth) Kutzing	1200.00	1.35	22.00	14.00	1128.90
TE	12Jul2006	5551	Cyclotella michiganiana Skvortzow	21552.00	2.17	4.00	8.00	100.50
TE	12Jul2006	5702	Achnanthes minutissima Kutzing	7184.00	0.66	22.00	4.00	92.20
TE	12Jul2006	5916	Fragilaria capucina Grunow	11600.00	0.85	70.00	2.00	73.30
TE	12Jul2006	6558	Cryptomonas erosa Ehrenberg	1000.00	1.11	22.00	12.00	1105.80
TE	12Jul2006	6568	Katablepharis ovalis Skuja	14368.00	0.80	8.00	5.00	55.90
TE	12Jul2006	7632	Gymnodinium sp.	7184.00	3.35	11.00	9.00	466.50
TE	12Jul2006	7639	Peridinium pusillum (Penard) Lemmermann	200.00	0.43	16.00	16.00	2144.70
TE	06Aug2006	2138	Monoraphidium komarkovae (Nyg.) Komarkova-Legnerova	7184.00	0.50	41.00	1.80	69.60
TE	06Aug2006	2167	Elakatothrix gelatinosa Willen	14368.00	0.18	8.00	2.00	12.60
TE	06Aug2006	2187	Staurodesmus extensus (Andersson) Teiling	600.00	0.38	16.00	14.00	625.50
TE	06Aug2006	2199	Spondylosium planum (Wolle) W. and G.S. West	14368.00	0.54	6.00	6.00	37.70
TE	06Aug2006	2215	Tetraedron caudatum (Corda) Hansgrig	14368.00	0.07	3.00	3.00	4.70
TE	06Aug2006	2235	Ankistrodesmus spiralis Lemmermann	28736.00	1.45	32.00	2.00	50.30
TE	06Aug2006	2247	Oocystis gigas Archer	200.00	0.84	20.00	20.00	4188.80
TE	06Aug2006	4351	Small chrysophyceae	136496.00	1.12	2.50	2.50	8.20
TE	06Aug2006	4352	Large chrysophyceae	7184.00	1.29	7.00	7.00	179.60
TE	06Aug2006	4355	Chrysochromulina parva Lackey	165232.00	7.88	4.50	4.50	47.70
TE	06Aug2006	4357	Chrysococcus sp.	438224.00	28.66	5.00	5.00	65.40
TE	06Aug2006	4358	Chrysostephanospaera globulifera Scherffel	14368.00	4.62	8.50	8.50	321.60
TE	06Aug2006	4361	Kephyrion boreale Skuja	7184.00	0.81	6.00	6.00	113.10
TE	06Aug2006	4362	Kephyrion sp.	57472.00	0.81	3.00	3.00	14.10
TE	06Aug2006	4367	Mallomonas duerrschmidtiae Siver, Hamer and Kling	200.00	0.13	19.00	8.00	636.70
TE	06Aug2006	4378	Dinobryon borgei Lemmermann	14368.00	0.41	6.00	3.00	28.30

Phytoplankton Species Data, Baker Lake, 2006 (for Randy Baker).

Station	Date	Species code	Species name	density cells/L^{-1}	biomass mg/m^{-3}	length μ	width μ	cell volume μ^3
TE	06Aug2006	4381	Dinobryon mucronutom Nygaard	14368.00	1.50	8.00	5.00	104.70
TE	06Aug2006	4383	Dinobryon bavaricum Imhof	71840.00	16.25	12.00	6.00	226.20
TE	06Aug2006	4383	Dinobryon bavaricum Imhof	2200.00	7.46	0.00	0.00	3390.00
TE	06Aug2006	4388	Dinobryon sertularia Ehrenberg	64656.00	14.63	12.00	6.00	226.20
TE	06Aug2006	4396	Chrysolkos skuja (Nauwerck) Willen	7184.00	0.17	5.00	3.00	23.60
TE	06Aug2006	4401	Uroglena volvox Ehrenberg	93392.00	4.45	4.50	4.50	47.70
TE	06Aug2006	4413	Chrysochromulina laurentiana Kling	14368.00	10.01	11.00	11.00	696.90
TE	06Aug2006	5507	Cyclotella stelligera Cleve and Grunow	1400.00	1.89	9.50	19.00	1346.80
TE	06Aug2006	5511	Rhizosolenia eriense H.L. Smith	50288.00	3.91	11.00	3.00	77.80
TE	06Aug2006	5513	Tabellaria fenestrata (Lyngbye) Kutzing	200.00	0.13	71.00	6.00	669.20
TE	06Aug2006	5514	Tabellaria flocculsa (Roth) Kutzing	200.00	0.23	22.00	14.00	1128.90
TE	06Aug2006	5551	Cyclotella michiganiana Skvortzow	86208.00	8.66	4.00	8.00	100.50
TE	06Aug2006	5916	Fragilaria capucina Grunow	5200.00	0.52	96.00	2.00	100.50
TE	06Aug2006	6554	Rhodomonas minuta Skuja	28736.00	1.12	7.00	4.00	39.10
TE	06Aug2006	6558	Cryptomonas erosa Ehrenberg	1000.00	0.77	22.00	10.00	767.90
TE	06Aug2006	6565	Cryptomonas rostratiformis Skuja	800.00	1.42	26.00	14.00	1778.80
TE	06Aug2006	6568	Katablepharis ovalis Skuja	14368.00	0.80	8.00	5.00	55.90
TE	06Aug2006	7632	Gymnodinium sp.	21552.00	10.05	11.00	9.00	466.50
TE	06Aug2006	7632	Gymnodinium sp.	200.00	1.32	26.00	22.00	6589.00
TE	06Aug2006	7639	Peridinium pusillum (Penard) Lemmermann	2200.00	4.72	16.00	16.00	2144.70
TE	17Aug2006	2100	Pyramidomonas tetrarhynchus Schmarda	200.00	0.16	16.00	14.00	821.00
TE	17Aug2006	2105	Chlamydomonas spp.	7184.00	0.81	6.00	6.00	113.10
TE	17Aug2006	2121	Oocystis lacustris Chodat	50288.00	1.19	5.00	3.00	23.60
TE	17Aug2006	2138	Monoraphidium komarkovae (Nyg.) Komarkova-Legnerova	14368.00	0.59	35.00	1.50	41.20
TE	17Aug2006	2167	Elakatothrix gelatinosa Willen	71840.00	1.24	11.00	2.00	17.30
TE	17Aug2006	2187	Staurodesmus extensus (Andersson) Teiling	200.00	0.13	16.00	14.00	625.50
TE	17Aug2006	2193	Staurodesmus paradoxum Meyen	400.00	1.31	28.00	24.00	3284.00
TE	17Aug2006	2199	Spondylosium planum (Wolle) W. and G.S. West	7184.00	0.27	6.00	6.00	37.70
TE	17Aug2006	2215	Tetraedron caudatum (Corda) Hansgrig	7184.00	0.03	3.00	3.00	4.70
TE	17Aug2006	4351	Small chrysophyceae	136496.00	0.98	2.40	2.40	7.20
TE	17Aug2006	4352	Large chrysophyceae	28736.00	3.25	6.00	6.00	113.10
TE	17Aug2006	4355	Chrysochromulina parva Lackey	79024.00	2.65	4.00	4.00	33.50
TE	17Aug2006	4357	Chrysococcus sp.	510064.00	33.36	5.00	5.00	65.40
TE	17Aug2006	4361	Kephyrion boreale Skuja	21552.00	2.09	5.70	5.70	97.00
TE	17Aug2006	4363	Spinifiromonas sirratus***************	7184.00	0.24	4.00	4.00	33.50
TE	17Aug2006	4378	Dinobryon borgei Lemmermann	7184.00	0.17	5.00	3.00	23.60
TE	17Aug2006	4381	Dinobryon mucronutom Nygaard	21552.00	1.63	9.00	4.00	75.40
TE	17Aug2006	4383	Dinobryon bavaricum Imhof	100576.00	18.96	10.00	6.00	188.50

Phytoplankton Species Data, Baker Lake, 2006 (for Randy Baker).

Station	Date	Species code	Species name	density cells/L^{-1}	biomass mg/m^{-3}	length μ	width μ	cell volume μ^3
TE	17Aug2006	4383	Dinobryon bavaricum Imhof	2600.00	8.81	0.00	0.00	3390.00
TE	17Aug2006	4388	Dinobryon sertularia Ehrenberg	50288.00	11.38	12.00	6.00	226.20
TE	17Aug2006	4396	Chrysolkos skuja (Nauwerck) Willen	21552.00	0.51	5.00	3.00	23.60
TE	17Aug2006	4401	Uroglena volvox Ehrenberg	79024.00	5.17	5.00	5.00	65.40
TE	17Aug2006	4407	Pseudokephyrion entzii Conrad	50288.00	0.46	2.60	2.60	9.20
TE	17Aug2006	4411	Bitrichia chodatii (Reverdin) Chodat	7184.00	0.20	6.00	3.00	28.30
TE	17Aug2006	4418	Salpingoeca frequentissima (Zach.) Lemmermann	14368.00	0.34	5.00	3.00	23.60
TE	17Aug2006	4437	Pteridomonas sp.	14368.00	3.08	8.50	8.50	214.40
TE	17Aug2006	5507	Cyclotella stelligera Cleve and Grunow	600.00	0.69	9.00	18.00	1145.10
TE	17Aug2006	5511	Rhizosolenia eriense H.L. Smith	28736.00	3.25	9.00	4.00	113.10
TE	17Aug2006	5551	Cyclotella michiganiana Skvortzow	50288.00	5.05	4.00	8.00	100.50
TE	17Aug2006	5702	Achnanthes minutissima Kutzing	7184.00	0.66	22.00	4.00	92.20
TE	17Aug2006	5916	Fragilaria capucina Grunow	2000.00	0.21	100.00	2.00	104.70
TE	17Aug2006	6554	Rhodomonas minuta Skuja	21552.00	0.84	7.00	4.00	39.10
TE	17Aug2006	6558	Cryptomonas erosa Ehrenberg	200.00	0.15	21.00	10.00	733.00
TE	17Aug2006	6565	Cryptomonas rostratiformis Skuja	200.00	0.41	30.00	14.00	2052.50
TE	17Aug2006	7629	Gymnodinium palustre Schilling	1200.00	5.03	20.00	20.00	4188.80
TE	17Aug2006	7631	Gymnodinium helveticum Penard	400.00	9.42	50.00	30.00	23561.90
TE	17Aug2006	7639	Peridinium pusillum (Penard) Lemmermann	600.00	0.99	16.00	14.00	1642.00
TE	09Sep2006	1046	Anabaena circinalis Rabenhorst	3000.00	0.43	6.50	6.50	143.80
TE	09Sep2006	2100	Pyramidomonas tetrarhynchus Schmarda	600.00	0.60	17.00	15.00	1001.40
TE	09Sep2006	2105	Chlamydomonas spp.	7184.00	0.20	6.00	3.00	28.30
TE	09Sep2006	2120	Oocystis submarina v. variabilis Skuja	79024.00	1.86	5.00	3.00	23.60
TE	09Sep2006	2137	Dictyosphaerium simplex Sukja	14368.00	0.06	2.00	2.00	4.20
TE	09Sep2006	2138	Monoraphidium komarkovae (Nyg.) Komarkova-Legnerova	21552.00	1.68	46.00	1.80	78.00
TE	09Sep2006	2167	Elakatothrix gelatinosa Willen	57472.00	0.63	7.00	2.00	11.00
TE	09Sep2006	2178	Cosmarium sp.	200.00	0.28	20.00	20.00	1396.30
TE	09Sep2006	2199	Spondylosium planum (Wolle) W. and G.S. West	7184.00	0.27	6.00	6.00	37.70
TE	09Sep2006	2235	Ankistrodesmus spiralis Lemmermann	79024.00	4.59	37.00	2.00	58.10
TE	09Sep2006	4351	Small chrysophyceae	502880.00	2.11	2.00	2.00	4.20
TE	09Sep2006	4352	Large chrysophyceae	21552.00	2.44	6.00	6.00	113.10
TE	09Sep2006	4355	Chrysochromulina parva Lackey	21552.00	1.03	4.50	4.50	47.70
TE	09Sep2006	4357	Chrysococcus sp.	201152.00	13.16	5.00	5.00	65.40
TE	09Sep2006	4358	Chrysostephanospaera globulifera Scherffel	14368.00	7.52	10.00	10.00	523.60
TE	09Sep2006	4361	Kephyrion boreale Skuja	7184.00	0.81	6.00	6.00	113.10
TE	09Sep2006	4362	Kephyrion sp.	14368.00	0.15	2.70	2.70	10.30
TE	09Sep2006	4368	Mallomonas crassisquama (Asmund) Fott	200.00	0.23	22.00	10.00	1151.90
TE	09Sep2006	4378	Dinobryon borgei Lemmermann	79024.00	3.35	9.00	3.00	42.40

Phytoplankton Species Data, Baker Lake, 2006 (for Randy Baker).

Station	Date	Species code	Species name	density cells/L^{-1}	biomass mg/m^{-3}	length μ	width μ	cell volume μ^3
TE	09Sep2006	4381	Dinobryon mucronutom Nygaard	21552.00	2.54	9.00	5.00	117.80
TE	09Sep2006	4383	Dinobryon bavaricum Imhof	186784.00	42.25	12.00	6.00	226.20
TE	09Sep2006	4383	Dinobryon bavaricum Imhof	1400.00	4.75	0.00	0.00	3390.00
TE	09Sep2006	4388	Dinobryon sertularia Ehrenberg	57472.00	13.00	12.00	6.00	226.20
TE	09Sep2006	4394	Epiphyxis sp.	7184.00	0.60	10.00	4.00	83.80
TE	09Sep2006	4401	Uroglena volvox Ehrenberg	64656.00	7.31	6.00	6.00	113.10
TE	09Sep2006	4411	Bitrichia chodatii (Reverdin) Chodat	14368.00	0.34	5.00	3.00	23.60
TE	09Sep2006	4413	Chrysochromulina laurentiana Kling	79024.00	41.38	10.00	10.00	523.60
TE	09Sep2006	4414	Stichogloea spp.	14368.00	0.72	6.00	4.00	50.30
TE	09Sep2006	4418	Salpingoeca frequentissima (Zach.) Lemmermann	57472.00	1.36	5.00	3.00	23.60
TE	09Sep2006	4425	Mallomonas hamata Asmund	200.00	0.39	26.00	12.00	1960.40
TE	09Sep2006	4437	Pteridomonas sp.	14368.00	3.08	8.50	8.50	214.40
TE	09Sep2006	5507	Cyclotella stelligera Cleve and Grunow	2200.00	3.46	10.00	20.00	1570.80
TE	09Sep2006	5511	Rhizosolenia eriense H.L. Smith	50288.00	4.43	7.00	4.00	88.00
TE	09Sep2006	5514	Tabellaria flocculsa (Roth) Kutzing	600.00	0.80	26.00	14.00	1334.10
TE	09Sep2006	5518	Synedra acus Kutzing	7400.00	0.70	90.00	2.00	94.20
TE	09Sep2006	5551	Cyclotella michiganiana Skvortzow	71840.00	7.22	4.00	8.00	100.50
TE	09Sep2006	5720	Cyclotella bodanica Eulenst.	400.00	2.34	15.50	31.00	5849.40
TE	09Sep2006	6554	Rhodomonas minuta Skuja	43104.00	5.42	10.00	6.00	125.70
TE	09Sep2006	6558	Cryptomonas erosa Ehrenberg	1200.00	0.92	22.00	10.00	767.90
TE	09Sep2006	6565	Cryptomonas rostratiformis Skuja	1000.00	1.78	26.00	14.00	1778.80
TE	09Sep2006	6568	Katablepharis ovalis Skuja	21552.00	1.22	9.00	4.00	56.50
TE	09Sep2006	7629	Gymnodinium palustre Schilling	800.00	4.87	24.00	22.00	6082.10
TE	09Sep2006	7631	Gymnodinium helveticum Penard	200.00	4.43	47.00	30.00	22148.20
TE	09Sep2006	7632	Gymnodinium sp.	7184.00	2.89	12.00	8.00	402.10
TE	09Sep2006	7639	Peridinium pusillum (Penard) Lemmermann	1000.00	2.14	16.00	16.00	2144.70
TPE	11Jul2006	2100	Pyramidomonas tetrarhynchus Schmarda	200.00	0.16	16.00	14.00	821.00
TPE	11Jul2006	2105	Chlamydomonas spp.	14368.00	0.48	4.00	4.00	33.50
TPE	11Jul2006	2138	Monoraphidium komarkovae (Nyg.) Komarkova-Legnerova	14368.00	1.32	44.00	2.00	92.20
TPE	11Jul2006	2193	Staurodesmus paradoxum Meyen	200.00	0.82	30.00	26.00	4084.10
TPE	11Jul2006	2199	Spondylosium planum (Wolle) W. and G.S. West	21552.00	0.81	6.00	6.00	37.70
TPE	11Jul2006	2235	Ankistrodesmus spiralis Lemmermann	3200.00	0.20	40.00	2.00	62.80
TPE	11Jul2006	4351	Small chrysophyceae	416672.00	3.42	2.50	2.50	8.20
TPE	11Jul2006	4352	Large chrysophyceae	35920.00	6.45	7.00	7.00	179.60
TPE	11Jul2006	4355	Chrysochromulina parva Lackey	35920.00	2.35	5.00	5.00	65.40
TPE	11Jul2006	4357	Chrysococcus sp.	287360.00	18.79	5.00	5.00	65.40
TPE	11Jul2006	4361	Kephyrion boreale Skuja	14368.00	2.07	6.50	6.50	143.80
TPE	11Jul2006	4362	Kephyrion sp.	129312.00	1.82	3.00	3.00	14.10

Phytoplankton Species Data, Baker Lake, 2006 (for Randy Baker).

Station	Date	Species code	Species name	density cells/L^{-1}	biomass mg/m^{-3}	length µ	width µ	cell volume µ^3
TPE	11Jul2006	4363	Spinifiromonas sirratus***************	21552.00	2.44	6.00	6.00	113.10
TPE	11Jul2006	4378	Dinobryon borgei Lemmermann	50288.00	1.90	8.00	3.00	37.70
TPE	11Jul2006	4381	Dinobryon mucronutom Nygaard	7184.00	0.94	10.00	5.00	130.90
TPE	11Jul2006	4383	Dinobryon bavaricum Imhof	86208.00	19.50	12.00	6.00	226.20
TPE	11Jul2006	4387	Dinobryon cylindricum Imhof	28736.00	7.58	14.00	6.00	263.90
TPE	11Jul2006	4388	Dinobryon sertularia Ehrenberg	43104.00	9.75	12.00	6.00	226.20
TPE	11Jul2006	4396	Chrysolkos skuja (Nauwerck) Willen	122128.00	3.46	6.00	3.00	28.30
TPE	11Jul2006	4401	Uroglena volvox Ehrenberg	50288.00	5.69	6.00	6.00	113.10
TPE	11Jul2006	4411	Bitrichia chodatii (Reverdin) Chodat	7184.00	0.27	8.00	3.00	37.70
TPE	11Jul2006	4413	Chrysochromulina laurentiana Kling	64656.00	33.85	10.00	10.00	523.60
TPE	11Jul2006	5507	Cyclotella stelligera Cleve and Grunow	200.00	0.23	9.00	18.00	1145.10
TPE	11Jul2006	5551	Cyclotella michiganiana Skvortzow	7184.00	0.72	4.00	8.00	100.50
TPE	11Jul2006	5916	Fragilaria capucina Grunow	2200.00	0.15	65.00	2.00	68.10
TPE	11Jul2006	6554	Rhodomonas minuta Skuja	43104.00	2.41	10.00	4.00	55.90
TPE	11Jul2006	6558	Cryptomonas erosa Ehrenberg	1000.00	1.11	22.00	12.00	1105.80
TPE	11Jul2006	6565	Cryptomonas rostratiformis Skuja	400.00	0.71	26.00	14.00	1778.80
TPE	11Jul2006	6568	Katablepharis ovalis Skuja	50288.00	2.81	8.00	5.00	55.90
TPE	11Jul2006	7629	Gymnodinium palustre Schilling	200.00	0.92	22.00	20.00	4607.70
TPE	11Jul2006	7632	Gymnodinium sp.	7184.00	3.35	11.00	9.00	466.50
TPE	11Jul2006	7632	Gymnodinium sp.	200.00	4.89	36.00	36.00	24429.00
TPE	11Jul2006	7639	Peridinium pusillum (Penard) Lemmermann	400.00	0.66	16.00	14.00	1642.00
TPE	05Aug2006	2120	Oocystis submarina v. variabilis Skuja	43104.00	1.02	5.00	3.00	23.60
TPE	05Aug2006	2167	Elakatothrix gelatinosa Willen	7184.00	0.08	7.00	2.00	11.00
TPE	05Aug2006	2199	Spondylosium planum (Wolle) W. and G.S. West	14368.00	0.54	6.00	6.00	37.70
TPE	05Aug2006	2206	Botryococcus braunii Kutzing	800.00	1.15	14.00	14.00	1436.80
TPE	05Aug2006	2235	Ankistrodesmus spiralis Lemmermann	14368.00	0.68	30.00	2.00	47.10
TPE	05Aug2006	4351	Small chrysophyceae	229888.00	3.24	3.00	3.00	14.10
TPE	05Aug2006	4352	Large chrysophyceae	21552.00	3.87	7.00	7.00	179.60
TPE	05Aug2006	4355	Chrysochromulina parva Lackey	107760.00	5.14	4.50	4.50	47.70
TPE	05Aug2006	4357	Chrysococcus sp.	423856.00	27.72	5.00	5.00	65.40
TPE	05Aug2006	4358	Chrysostephanospaera globulifera Scherffel	57472.00	1.36	5.00	3.00	23.60
TPE	05Aug2006	4360	Kephyrion spirale (Lackey) Conrad	7184.00	0.16	3.50	3.50	22.40
TPE	05Aug2006	4361	Kephyrion boreale Skuja	7184.00	0.81	6.00	6.00	113.10
TPE	05Aug2006	4363	Spinifiromonas sirratus***************	14368.00	1.63	6.00	6.00	113.10
TPE	05Aug2006	4378	Dinobryon borgei Lemmermann	14368.00	0.47	7.00	3.00	33.00
TPE	05Aug2006	4381	Dinobryon mucronutom Nygaard	21552.00	2.54	9.00	5.00	117.80
TPE	05Aug2006	4383	Dinobryon bavaricum Imhof	14368.00	3.25	12.00	6.00	226.20
TPE	05Aug2006	4383	Dinobryon bavaricum Imhof	2000.00	7.30	0.00	0.00	3650.00

Phytoplankton Species Data, Baker Lake, 2006 (for Randy Baker).

Station	Date	Species code	Species name	density cells/L^{-1}	biomass mg/m^{-3}	length μ	width μ	cell volume μ^3
TPE	05Aug2006	4388	Dinobryon sertularia Ehrenberg	43104.00	9.75	12.00	6.00	226.20
TPE	05Aug2006	4388	Dinobryon sertularia Ehrenberg	200.00	1.70	0.00	0.00	8475.00
TPE	05Aug2006	4394	Epiphyxis sp.	14368.00	1.08	9.00	4.00	75.40
TPE	05Aug2006	4401	Uroglena volvox Ehrenberg	64656.00	3.08	4.50	4.50	47.70
TPE	05Aug2006	4407	Pseudokephyrion entzii Conrad	294544.00	3.03	2.70	2.70	10.30
TPE	05Aug2006	4411	Bitrichia chodatii (Reverdin) Chodat	14368.00	0.72	6.00	4.00	50.30
TPE	05Aug2006	4413	Chrysochromulina laurentiana Kling	35920.00	18.81	10.00	10.00	523.60
TPE	05Aug2006	4436	Dinobryon attenatum Hill	14368.00	1.08	9.00	4.00	75.40
TPE	05Aug2006	4437	Pteridomonas sp.	21552.00	4.62	8.50	8.50	214.40
TPE	05Aug2006	5511	Rhizosolenia eriense H.L. Smith	71840.00	4.06	8.00	3.00	56.50
TPE	05Aug2006	5514	Tabellaria flocculsa (Roth) Kutzing	200.00	0.23	22.00	14.00	1128.90
TPE	05Aug2006	5551	Cyclotella michiganiana Skvortzow	21552.00	2.17	4.00	8.00	100.50
TPE	05Aug2006	5916	Fragilaria capucina Grunow	800.00	0.08	96.00	2.00	100.50
TPE	05Aug2006	6558	Cryptomonas erosa Ehrenberg	1000.00	1.21	24.00	12.00	1206.40
TPE	05Aug2006	6568	Katablepharis ovalis Skuja	28736.00	1.23	7.00	5.00	42.80
TPE	05Aug2006	7629	Gymnodinium palustre Schilling	1600.00	12.55	26.00	24.00	7841.40
TPE	05Aug2006	7632	Gymnodinium sp.	14368.00	4.81	10.00	8.00	335.10
TPE	05Aug2006	7639	Peridinium pusillum (Penard) Lemmermann	11200.00	18.39	16.00	14.00	1642.00
TPE	17Aug2006	2112	Sphaerocystis schroeteri Chodat	28736.00	0.12	2.00	2.00	4.20
TPE	17Aug2006	2120	Oocystis submarina v. variabilis Skuja	28736.00	0.68	5.00	3.00	23.60
TPE	17Aug2006	2187	Staurodesmus extensus (Andersson) Teiling	400.00	0.22	15.00	14.00	549.80
TPE	17Aug2006	2193	Staurodesmus paradoxum Meyen	200.00	0.66	28.00	24.00	3284.00
TPE	17Aug2006	2199	Spondylosium planum (Wolle) W. and G.S. West	14368.00	0.54	6.00	6.00	37.70
TPE	17Aug2006	2205	Mougeotia sp.	400.00	0.80	40.00	8.00	2010.60
TPE	17Aug2006	4351	Small chrysophyceae	143680.00	0.60	2.00	2.00	4.20
TPE	17Aug2006	4352	Large chrysophyceae	14368.00	2.58	7.00	7.00	179.60
TPE	17Aug2006	4357	Chrysococcus sp.	352016.00	23.02	5.00	5.00	65.40
TPE	17Aug2006	4361	Kephyrion boreale Skuja	21552.00	1.88	5.50	5.50	87.10
TPE	17Aug2006	4363	Spinifiromonas sirratus***************	7184.00	0.47	5.00	5.00	65.40
TPE	17Aug2006	4367	Mallomonas duerrschmidtiae Siver, Hamer and Kling	200.00	0.12	18.00	8.00	603.20
TPE	17Aug2006	4378	Dinobryon borgei Lemmermann	14368.00	0.54	8.00	3.00	37.70
TPE	17Aug2006	4381	Dinobryon mucronutom Nygaard	57472.00	3.37	7.00	4.00	58.60
TPE	17Aug2006	4383	Dinobryon bavaricum Imhof	35920.00	6.77	10.00	6.00	188.50
TPE	17Aug2006	4383	Dinobryon bavaricum Imhof	3800.00	15.16	0.00	0.00	3990.00
TPE	17Aug2006	4388	Dinobryon sertularia Ehrenberg	28736.00	5.42	10.00	6.00	188.50
TPE	17Aug2006	4394	Epiphyxis sp.	21552.00	1.63	9.00	4.00	75.40
TPE	17Aug2006	4396	Chrysolkos skuja (Nauwerck) Willen	7184.00	0.20	6.00	3.00	28.30
TPE	17Aug2006	4401	Uroglena volvox Ehrenberg	21552.00	1.41	5.00	5.00	65.40

Phytoplankton Species Data, Baker Lake, 2006 (for Randy Baker).

Station	Date	Species code	Species name	density cells/L^{-1}	biomass mg/m^{-3}	length µ	width µ	cell volume µ^3
TPE	17Aug2006	4407	Pseudokephyrion entzii Conrad	57472.00	0.81	3.00	3.00	14.10
TPE	17Aug2006	4413	Chrysochromulina laurentiana Kling	21552.00	11.28	10.00	10.00	523.60
TPE	17Aug2006	4418	Salpingoeca frequentissima (Zach.) Lemmermann	7184.00	0.17	5.00	3.00	23.60
TPE	17Aug2006	5507	Cyclotella stelligera Cleve and Grunow	800.00	1.26	10.00	20.00	1570.80
TPE	17Aug2006	5511	Rhizosolenia eriense H.L. Smith	35920.00	2.79	11.00	3.00	77.80
TPE	17Aug2006	5514	Tabellaria flocculsa (Roth) Kutzing	3000.00	4.31	28.00	14.00	1436.80
TPE	17Aug2006	5551	Cyclotella michiganiana Skvortzow	21552.00	2.17	4.00	8.00	100.50
TPE	17Aug2006	6554	Rhodomonas minuta Skuja	7184.00	0.28	7.00	4.00	39.10
TPE	17Aug2006	6558	Cryptomonas erosa Ehrenberg	600.00	0.69	23.00	12.00	1156.10
TPE	17Aug2006	6568	Katablepharis ovalis Skuja	7184.00	0.51	9.00	5.00	70.70
TPE	17Aug2006	7629	Gymnodinium palustre Schilling	800.00	4.87	24.00	22.00	6082.10
TPE	17Aug2006	7639	Peridinium pusillum (Penard) Lemmermann	5200.00	11.15	16.00	16.00	2144.70
TPE	08Sep2006	1054	Planktolyngbya limnetica	2200.00	0.25	142.00	1.00	111.50
TPE	08Sep2006	2105	Chlamydomonas spp.	7184.00	0.36	6.00	4.00	50.30
TPE	08Sep2006	2120	Oocystis submarina v. variabilis Skuja	14368.00	0.72	6.00	4.00	50.30
TPE	08Sep2006	2167	Elakatothrix gelatinosa Willen	43104.00	0.61	9.00	2.00	14.10
TPE	08Sep2006	2187	Staurodesmus extensus (Andersson) Teiling	800.00	0.56	17.00	14.00	706.20
TPE	08Sep2006	2199	Spondylosium planum (Wolle) W. and G.S. West	14368.00	0.54	6.00	6.00	37.70
TPE	08Sep2006	2205	Mougeotia sp.	200.00	0.28	49.00	6.00	1385.40
TPE	08Sep2006	2206	Botryococcus braunii Kutzing	1800.00	3.86	16.00	16.00	2144.70
TPE	08Sep2006	2235	Ankistrodesmus spiralis Lemmermann	28736.00	1.62	36.00	2.00	56.50
TPE	08Sep2006	4351	Small chrysophyceae	359200.00	1.51	2.00	2.00	4.20
TPE	08Sep2006	4357	Chrysococcus sp.	596272.00	39.00	5.00	5.00	65.40
TPE	08Sep2006	4358	Chrysostephanospaera globulifera Scherffel	7184.00	1.93	8.00	8.00	268.10
TPE	08Sep2006	4361	Kephyrion boreale Skuja	7184.00	0.81	6.00	6.00	113.10
TPE	08Sep2006	4363	Spinifiromonas sirratus***************	7184.00	1.03	6.50	6.50	143.80
TPE	08Sep2006	4368	Mallomonas crassisquama (Asmund) Fott	200.00	0.22	21.00	10.00	1099.60
TPE	08Sep2006	4378	Dinobryon borgei Lemmermann	35920.00	1.02	6.00	3.00	28.30
TPE	08Sep2006	4381	Dinobryon mucronutom Nygaard	43104.00	5.64	10.00	5.00	130.90
TPE	08Sep2006	4383	Dinobryon bavaricum Imhof	165232.00	37.38	12.00	6.00	226.20
TPE	08Sep2006	4383	Dinobryon bavaricum Imhof	1800.00	6.10	0.00	0.00	3390.00
TPE	08Sep2006	4394	Epiphyxis sp.	64656.00	3.79	7.00	4.00	58.60
TPE	08Sep2006	4396	Chrysolkos skuja (Nauwerck) Willen	21552.00	0.51	5.00	3.00	23.60
TPE	08Sep2006	4401	Uroglena volvox Ehrenberg	71840.00	4.70	5.00	5.00	65.40
TPE	08Sep2006	4407	Pseudokephyrion entzii Conrad	14368.00	0.48	4.00	4.00	33.50
TPE	08Sep2006	4411	Bitrichia chodatii (Reverdin) Chodat	7184.00	0.17	5.00	3.00	23.60
TPE	08Sep2006	4413	Chrysochromulina laurentiana Kling	7184.00	3.76	10.00	10.00	523.60
TPE	08Sep2006	4414	Stichogloea spp.	50288.00	2.53	6.00	4.00	50.30

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Station	Date	Species code	Species name	density cells/L^{-1}	biomass mg/m^{-3}	length μ	width μ	cell volume μ^3
TPE	08Sep2006	4418	Salpingoeca frequentissima (Zach.) Lemmermann	35920.00	0.85	5.00	3.00	23.60
TPE	08Sep2006	4437	Pteridomonas sp.	43104.00	7.70	8.00	8.00	178.70
TPE	08Sep2006	5507	Cyclotella stelligera Cleve and Grunow	1000.00	1.15	9.00	18.00	1145.10
TPE	08Sep2006	5511	Rhizosolenia eriense H.L. Smith	64656.00	3.20	7.00	3.00	49.50
TPE	08Sep2006	5514	Tabellaria flocculsa (Roth) Kutzing	400.00	0.41	20.00	14.00	1026.30
TPE	08Sep2006	5518	Synedra acus Kutzing	1000.00	0.08	76.00	2.00	79.60
TPE	08Sep2006	5551	Cyclotella michiganiana Skvortzow	71840.00	7.22	4.00	8.00	100.50
TPE	08Sep2006	5726	Eucocconeis sp.	7184.00	3.95	21.00	10.00	549.80
TPE	08Sep2006	5767	Nitzschia fonticola Grunow	7184.00	0.48	16.00	4.00	67.00
TPE	08Sep2006	5834	Cymbella microcephala Grunow	7184.00	2.64	26.00	6.00	367.60
TPE	08Sep2006	6558	Cryptomonas erosa Ehrenberg	200.00	0.15	22.00	10.00	767.90
TPE	08Sep2006	6568	Katablepharis ovalis Skuja	7184.00	0.25	7.00	4.00	34.20
TPE	08Sep2006	7629	Gymnodinium palustre Schilling	600.00	3.65	24.00	22.00	6082.10
TPE	08Sep2006	7632	Gymnodinium sp.	14368.00	5.78	12.00	8.00	402.10
TPE	08Sep2006	7639	Peridinium pusillum (Penard) Lemmermann	5600.00	13.51	18.00	16.00	2412.70
TPN	17Jul2006	2105	Chlamydomonas spp.	7184.00	0.47	5.00	5.00	65.40
TPN	17Jul2006	2121	Oocystis lacustris Chodat	50288.00	2.53	6.00	4.00	50.30
TPN	17Jul2006	2125	Paulschulzia pseudovolvox (Schulz and Teiling) Skuja	200.00	0.32	0.00	0.00	1582.00
TPN	17Jul2006	2145	Crucigenia quadrata Morr.	28736.00	0.04	2.00	2.00	1.40
TPN	17Jul2006	2187	Staurodesmus extensus (Andersson) Teiling	200.00	0.16	18.00	14.00	791.70
TPN	17Jul2006	2204	Ankrya judai (G.M. Smith) Fott	7184.00	0.16	14.00	2.00	22.00
TPN	17Jul2006	2235	Ankistrodesmus spiralis Lemmermann	800.00	0.05	36.00	2.00	56.50
TPN	17Jul2006	4351	Small chrysophyceae	423856.00	3.48	2.50	2.50	8.20
TPN	17Jul2006	4352	Large chrysophyceae	86208.00	15.48	7.00	7.00	179.60
TPN	17Jul2006	4357	Chrysococcus sp.	222704.00	14.56	5.00	5.00	65.40
TPN	17Jul2006	4378	Dinobryon borgei Lemmermann	21552.00	0.81	8.00	3.00	37.70
TPN	17Jul2006	4388	Dinobryon sertularia Ehrenberg	7184.00	1.35	10.00	6.00	188.50
TPN	17Jul2006	4390	Dinobryon sociale Ehrenberg	79024.00	17.88	12.00	6.00	226.20
TPN	17Jul2006	4396	Chrysolkos skuja (Nauwerck) Willen	43104.00	1.02	5.00	3.00	23.60
TPN	17Jul2006	4407	Pseudokephyrion entzii Conrad	122128.00	2.10	3.20	3.20	17.20
TPN	17Jul2006	4411	Bitrichia chodatii (Reverdin) Chodat	7184.00	0.20	6.00	3.00	28.30
TPN	17Jul2006	4413	Chrysochromulina laurentiana Kling	50288.00	26.33	10.00	10.00	523.60
TPN	17Jul2006	4425	Mallomonas hamata Asmund	200.00	0.39	26.00	12.00	1960.40
TPN	17Jul2006	4436	Dinobryon attenatum Hill	200.00	0.04	10.00	6.00	188.50
TPN	17Jul2006	5507	Cyclotella stelligera Cleve and Grunow	1000.00	1.15	9.00	18.00	1145.10
TPN	17Jul2006	5515	Fragilaria crotonensis Kitton	400.00	0.04	90.00	2.00	94.20
TPN	17Jul2006	5854	Pinnularia borealis Ehrenberg	200.00	0.97	72.00	16.00	4825.50
TPN	17Jul2006	6554	Rhodomonas minuta Skuja	28736.00	1.61	10.00	4.00	55.90

Phytoplankton Species Data, Baker Lake, 2006 (for Randy Baker).

Station	Date	Species code	Species name	density cells/L^{-1}	biomass mg/m^{-3}	length µ	width µ	cell volume µ^{3}
TPN	17Jul2006	6558	Cryptomonas erosa Ehrenberg	3400.00	3.93	23.00	12.00	1156.10
TPN	17Jul2006	6565	Cryptomonas rostratiformis Skuja	200.00	0.41	30.00	14.00	2052.50
TPN	17Jul2006	6568	Katablepharis ovalis Skuja	21552.00	0.92	7.00	5.00	42.80
TPN	17Jul2006	7629	Gymnodinium palustre Schilling	1000.00	4.19	20.00	20.00	4188.80
TPN	17Jul2006	7632	Gymnodinium sp.	14368.00	4.81	10.00	8.00	335.10
TPN	17Jul2006	7639	Peridinium pusillum (Penard) Lemmermann	1200.00	1.85	15.00	14.00	1539.40
TPN	17Jul2006	7641	Peridinium aciculiferum Lemmermann	200.00	1.81	30.00	24.00	9047.80
TPN	05Aug2006	2121	Oocystis lacustris Chodat	57472.00	2.89	6.00	4.00	50.30
TPN	05Aug2006	2167	Elakatothrix gelatinosa Willen	43104.00	0.68	10.00	2.00	15.70
TPN	05Aug2006	2178	Cosmarium sp.	200.00	0.44	24.00	22.00	2211.70
TPN	05Aug2006	2187	Staurodesmus extensus (Andersson) Teiling	400.00	0.28	17.00	14.00	706.20
TPN	05Aug2006	2206	Botryococcus braunii Kutzing	800.00	1.72	16.00	16.00	2144.70
TPN	05Aug2006	4351	Small chrysophyceae	165232.00	0.69	2.00	2.00	4.20
TPN	05Aug2006	4355	Chrysochromulina parva Lackey	21552.00	1.03	4.50	4.50	47.70
TPN	05Aug2006	4357	Chrysococcus sp.	438224.00	28.66	5.00	5.00	65.40
TPN	05Aug2006	4361	Kephyrion boreale Skuja	14368.00	0.78	4.70	4.70	54.40
TPN	05Aug2006	4378	Dinobryon borgei Lemmermann	7184.00	0.20	6.00	3.00	28.30
TPN	05Aug2006	4381	Dinobryon mucronutom Nygaard	28736.00	3.39	9.00	5.00	117.80
TPN	05Aug2006	4383	Dinobryon bavaricum Imhof	43104.00	9.75	12.00	6.00	226.20
TPN	05Aug2006	4383	Dinobryon bavaricum Imhof	6800.00	13.43	0.00	0.00	1975.00
TPN	05Aug2006	4384	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	43104.00	8.13	10.00	6.00	188.50
TPN	05Aug2006	4388	Dinobryon sertularia Ehrenberg	400.00	4.07	0.00	0.00	10170.00
TPN	05Aug2006	4396	Chrysolkos skuja (Nauwerck) Willen	57472.00	1.63	6.00	3.00	28.30
TPN	05Aug2006	4407	Pseudokephyrion entzii Conrad	93392.00	1.32	3.00	3.00	14.10
TPN	05Aug2006	4413	Chrysochromulina laurentiana Kling	14368.00	7.52	10.00	10.00	523.60
TPN	05Aug2006	5507	Cyclotella stelligera Cleve and Grunow	1000.00	1.57	10.00	20.00	1570.80
TPN	05Aug2006	5551	Cyclotella michiganiana Skvortzow	71840.00	7.22	4.00	8.00	100.50
TPN	05Aug2006	6554	Rhodomonas minuta Skuja	14368.00	1.13	9.00	5.00	78.50
TPN	05Aug2006	6558	Cryptomonas erosa Ehrenberg	400.00	0.29	21.00	10.00	733.00
TPN	05Aug2006	6565	Cryptomonas rostratiformis Skuja	400.00	0.88	32.00	14.00	2189.30
TPN	05Aug2006	6568	Katablepharis ovalis Skuja	14368.00	0.49	7.00	4.00	34.20
TPN	05Aug2006	7629	Gymnodinium palustre Schilling	1200.00	7.30	24.00	22.00	6082.10
TPN	05Aug2006	7632	Gymnodinium sp.	14368.00	5.30	11.00	8.00	368.60
TPN	05Aug2006	7639	Peridinium pusillum (Penard) Lemmermann	600.00	1.29	16.00	16.00	2144.70
TPN	21Aug2006	2105	Chlamydomonas spp.	7184.00	0.30	5.00	4.00	41.90
TPN	21Aug2006	2112	Sphaerocystis schroeteri Chodat	43104.00	0.18	2.00	2.00	4.20
TPN	21Aug2006	2121	Oocystis lacustris Chodat	21552.00	0.61	6.00	3.00	28.30
TPN	21Aug2006	2167	Elakatothrix gelatinosa Willen	79024.00	1.49	12.00	2.00	18.80

Phytoplankton Species Data, Baker Lake, 2006 (for Randy Baker).

Station	Date	Species code	Species name	density cells/L^{-1}	biomass mg/m^{-3}	length µ	width µ	cell volume µ^3
TPN	21Aug2006	2174	Closterium sp.	200.00	0.09	74.00	4.00	465.00
TPN	21Aug2006	2178	Cosmarium sp.	400.00	0.56	20.00	20.00	1396.30
TPN	21Aug2006	2187	Staurodesmus extensus (Andersson) Teiling	1000.00	0.41	14.00	12.00	410.50
TPN	21Aug2006	2235	Ankistrodesmus spiralis Lemmermann	14368.00	0.77	34.00	2.00	53.40
TPN	21Aug2006	4351	Small chrysophyceae	431040.00	3.97	2.60	2.60	9.20
TPN	21Aug2006	4357	Chrysococcus sp.	165232.00	10.81	5.00	5.00	65.40
TPN	21Aug2006	4363	Spinifiromonas sirratus***************	14368.00	0.94	5.00	5.00	65.40
TPN	21Aug2006	4381	Dinobryon mucronutom Nygaard	35920.00	4.70	10.00	5.00	130.90
TPN	21Aug2006	4383	Dinobryon bavaricum Imhof	122128.00	23.02	10.00	6.00	188.50
TPN	21Aug2006	4383	Dinobryon bavaricum Imhof	3600.00	9.76	0.00	0.00	2712.00
TPN	21Aug2006	4396	Chrysolkos skuja (Nauwerck) Willen	50288.00	1.42	6.00	3.00	28.30
TPN	21Aug2006	4401	Uroglena volvox Ehrenberg	35920.00	2.35	5.00	5.00	65.40
TPN	21Aug2006	4407	Pseudokephyrion entzii Conrad	57472.00	1.29	3.50	3.50	22.40
TPN	21Aug2006	4413	Chrysochromulina laurentiana Kling	43104.00	22.57	10.00	10.00	523.60
TPN	21Aug2006	5507	Cyclotella stelligera Cleve and Grunow	1600.00	2.51	10.00	20.00	1570.80
TPN	21Aug2006	5511	Rhizosolenia eriense H.L. Smith	14368.00	0.81	8.00	3.00	56.50
TPN	21Aug2006	5513	Tabellaria fenestrata (Lyngbye) Kutzing	200.00	0.15	80.00	6.00	754.00
TPN	21Aug2006	5514	Tabellaria flocculsa (Roth) Kutzing	1000.00	1.23	24.00	14.00	1231.50
TPN	21Aug2006	5551	Cyclotella michiganiana Skvortzow	79024.00	7.94	4.00	8.00	100.50
TPN	21Aug2006	6554	Rhodomonas minuta Skuja	28736.00	1.45	9.00	4.00	50.30
TPN	21Aug2006	6558	Cryptomonas erosa Ehrenberg	600.00	0.48	23.00	10.00	802.90
TPN	21Aug2006	6565	Cryptomonas rostratiformis Skuja	400.00	0.82	30.00	14.00	2052.50
TPN	21Aug2006	6568	Katablepharis ovalis Skuja	64656.00	2.89	8.00	4.00	44.70
TPN	21Aug2006	7632	Gymnodinium sp.	28736.00	9.63	10.00	8.00	335.10
TPN	21Aug2006	7639	Peridinium pusillum (Penard) Lemmermann	1400.00	2.30	16.00	14.00	1642.00
TPN	08Sep2006	2101	Carteria spp.	7184.00	1.93	8.00	8.00	268.10
TPN	08Sep2006	2105	Chlamydomonas spp.	7184.00	0.36	6.00	4.00	50.30
TPN	08Sep2006	2112	Sphaerocystis schroeteri Chodat	122128.00	4.09	4.00	4.00	33.50
TPN	08Sep2006	2120	Oocystis submarina v. variabilis Skuja	57472.00	1.63	6.00	3.00	28.30
TPN	08Sep2006	2137	Dictyosphaerium simplex Sukja	14368.00	0.06	2.00	2.00	4.20
TPN	08Sep2006	2167	Elakatothrix gelatinosa Willen	71840.00	1.01	9.00	2.00	14.10
TPN	08Sep2006	2187	Staurodesmus extensus (Andersson) Teiling	200.00	0.11	15.00	14.00	549.80
TPN	08Sep2006	2206	Botryococcus braunii Kutzing	2200.00	6.72	18.00	18.00	3053.60
TPN	08Sep2006	2235	Ankistrodesmus spiralis Lemmermann	86208.00	5.41	40.00	2.00	62.80
TPN	08Sep2006	4351	Small chrysophyceae	359200.00	5.06	3.00	3.00	14.10
TPN	08Sep2006	4352	Large chrysophyceae	14368.00	2.58	7.00	7.00	179.60
TPN	08Sep2006	4355	Chrysochromulina parva Lackey	50288.00	3.29	5.00	5.00	65.40
TPN	08Sep2006	4357	Chrysococcus sp.	287360.00	18.79	5.00	5.00	65.40

Station	Date	Species code	Species name	density cells/L-1	biomass mg/m-3	length µ	width µ	cell volume µ3
TPN	08Sep2006	4363	Spinifiromonas sirratus***************	7184.00	0.63	5.50	5.50	87.10
TPN	08Sep2006	4381	Dinobryon mucronutom Nygaard	7184.00	0.85	9.00	5.00	117.80
TPN	08Sep2006	4383	Dinobryon bavaricum Imhof	93392.00	17.60	10.00	6.00	188.50
TPN	08Sep2006	4383	Dinobryon bavaricum Imhof	2000.00	5.42	0.00	0.00	2712.00
TPN	08Sep2006	4388	Dinobryon sertularia Ehrenberg	35920.00	8.13	12.00	6.00	226.20
TPN	08Sep2006	4388	Dinobryon sertularia Ehrenberg	200.00	1.36	0.00	0.00	6780.00
TPN	08Sep2006	4394	Epiphyxis sp.	7184.00	0.42	7.00	4.00	58.60
TPN	08Sep2006	4401	Uroglena volvox Ehrenberg	136496.00	11.89	5.50	5.50	87.10
TPN	08Sep2006	4407	Pseudokephyrion entzii Conrad	50288.00	1.44	3.80	3.80	28.70
TPN	08Sep2006	4411	Bitrichia chodatii (Reverdin) Chodat	7184.00	0.17	5.00	3.00	23.60
TPN	08Sep2006	4413	Chrysochromulina laurentiana Kling	21552.00	11.28	10.00	10.00	523.60
TPN	08Sep2006	4418	Salpingoeca frequentissima (Zach.) Lemmermann	21552.00	0.51	5.00	3.00	23.60
TPN	08Sep2006	4436	Dinobryon attenatum Hill	7184.00	0.48	8.00	4.00	67.00
TPN	08Sep2006	5507	Cyclotella stelligera Cleve and Grunow	1000.00	1.82	10.50	21.00	1818.40
TPN	08Sep2006	5518	Synedra acus Kutzing	400.00	0.04	100.00	2.00	104.70
TPN	08Sep2006	5551	Cyclotella michiganiana Skvortzow	64656.00	6.50	4.00	8.00	100.50
TPN	08Sep2006	5720	Cyclotella bodanica Eulenst.	400.00	2.12	15.00	30.00	5301.40
TPN	08Sep2006	6554	Rhodomonas minuta Skuja	21552.00	1.08	9.00	4.00	50.30
TPN	08Sep2006	6558	Cryptomonas erosa Ehrenberg	1600.00	1.28	23.00	10.00	802.90
TPN	08Sep2006	6565	Cryptomonas rostratiformis Skuja	200.00	0.36	26.00	14.00	1778.80
TPN	08Sep2006	6568	Katablepharis ovalis Skuja	28736.00	2.03	9.00	5.00	70.70
TPN	08Sep2006	7639	Peridinium pusillum (Penard) Lemmermann	400.00	0.86	16.00	16.00	2144.70
TPS	17Jul2006	1014	Chroococcus limneticus Lemmermann	57472.00	0.24	2.00	2.00	4.20
TPS	17Jul2006	1024	Woronichinia naegelianum (Unger) Elenk.	200.00	0.42	0.00	0.00	2100.00
TPS	17Jul2006	2112	Sphaerocystis schroeteri Chodat	79024.00	0.33	2.00	2.00	4.20
TPS	17Jul2006	2121	Oocystis lacustris Chodat	28736.00	0.81	6.00	3.00	28.30
TPS	17Jul2006	4351	Small chrysophyceae	122128.00	1.12	2.60	2.60	9.20
TPS	17Jul2006	4352	Large chrysophyceae	79024.00	14.19	7.00	7.00	179.60
TPS	17Jul2006	4357	Chrysococcus sp.	352016.00	23.02	5.00	5.00	65.40
TPS	17Jul2006	4361	Kephyrion boreale Skuja	7184.00	0.70	5.70	5.70	97.00
TPS	17Jul2006	4363	Spinifiromonas sirratus***************	7184.00	0.81	6.00	6.00	113.10
TPS	17Jul2006	4378	Dinobryon borgei Lemmermann	43104.00	1.22	6.00	3.00	28.30
TPS	17Jul2006	4383	Dinobryon bavaricum Imhof	14368.00	3.25	12.00	6.00	226.20
TPS	17Jul2006	4387	Dinobryon cylindricum Imhof	7184.00	0.94	10.00	5.00	130.90
TPS	17Jul2006	4388	Dinobryon sertularia Ehrenberg	21552.00	4.88	12.00	6.00	226.20
TPS	17Jul2006	4396	Chrysolkos skuja (Nauwerck) Willen	57472.00	1.36	5.00	3.00	23.60
TPS	17Jul2006	4401	Uroglena volvox Ehrenberg	64656.00	7.31	6.00	6.00	113.10
TPS	17Jul2006	4407	Pseudokephyrion entzii Conrad	136496.00	1.92	3.00	3.00	14.10

Phytoplankton Species Data, Baker Lake, 2006 (for Randy Baker).

Station	Date	Species code	Species name	density cells/L^{-1}	biomass mg/m^{-3}	length µ	width µ	cell volume µ^3
TPS	17Jul2006	4413	Chrysochromulina laurentiana Kling	28736.00	17.42	10.50	10.50	606.10
TPS	17Jul2006	4418	Salpingoeca frequentissima (Zach.) Lemmermann	7184.00	0.17	5.00	3.00	23.60
TPS	17Jul2006	4425	Mallomonas hamata Asmund	400.00	1.07	26.00	14.00	2668.30
TPS	17Jul2006	5507	Cyclotella stelligera Cleve and Grunow	1400.00	2.93	11.00	22.00	2090.70
TPS	17Jul2006	5511	Rhizosolenia eriense H.L. Smith	43104.00	3.35	11.00	3.00	77.80
TPS	17Jul2006	5546	Gyrosigma sp	200.00	0.35	69.00	8.00	1734.20
TPS	17Jul2006	5916	Fragilaria capucina Grunow	600.00	0.06	100.00	2.00	104.70
TPS	17Jul2006	6554	Rhodomonas minuta Skuja	35920.00	2.01	10.00	4.00	55.90
TPS	17Jul2006	6558	Cryptomonas erosa Ehrenberg	4600.00	5.09	22.00	12.00	1105.80
TPS	17Jul2006	6565	Cryptomonas rostratiformis Skuja	600.00	1.23	30.00	14.00	2052.50
TPS	17Jul2006	6568	Katablepharis ovalis Skuja	14368.00	0.81	9.00	4.00	56.50
TPS	17Jul2006	7629	Gymnodinium palustre Schilling	400.00	2.01	24.00	20.00	5026.50
TPS	17Jul2006	7632	Gymnodinium sp.	7184.00	3.35	11.00	9.00	466.50
TPS	17Jul2006	7639	Peridinium pusillum (Penard) Lemmermann	2200.00	4.72	16.00	16.00	2144.70
TPS	05Aug2006	2112	Sphaerocystis schroeteri Chodat	93392.00	0.39	2.00	2.00	4.20
TPS	05Aug2006	2120	Oocystis submarina v. variabilis Skuja	14368.00	0.34	5.00	3.00	23.60
TPS	05Aug2006	2145	Crucigenia quadrata Morr.	28736.00	0.14	3.00	3.00	4.70
TPS	05Aug2006	2167	Elakatothrix gelatinosa Willen	14368.00	0.18	8.00	2.00	12.60
TPS	05Aug2006	2178	Cosmarium sp.	200.00	0.20	18.00	18.00	1017.90
TPS	05Aug2006	2187	Staurodesmus extensus (Andersson) Teiling	200.00	0.13	16.00	14.00	625.50
TPS	05Aug2006	2235	Ankistrodesmus spiralis Lemmermann	14368.00	0.77	34.00	2.00	53.40
TPS	05Aug2006	2247	Oocystis gigas Archer	200.00	1.26	30.00	20.00	6283.20
TPS	05Aug2006	3306	Trachelomonas hispida (Perty) Stein	200.00	1.59	38.00	20.00	7958.70
TPS	05Aug2006	4351	Small chrysophyceae	251440.00	2.06	2.50	2.50	8.20
TPS	05Aug2006	4352	Large chrysophyceae	35920.00	4.06	6.00	6.00	113.10
TPS	05Aug2006	4355	Chrysochromulina parva Lackey	100576.00	3.37	4.00	4.00	33.50
TPS	05Aug2006	4357	Chrysococcus sp.	359200.00	23.49	5.00	5.00	65.40
TPS	05Aug2006	4361	Kephyrion boreale Skuja	14368.00	0.54	8.00	3.00	37.70
TPS	05Aug2006	4363	Spinifiromonas sirratus***************	14368.00	1.25	5.50	5.50	87.10
TPS	05Aug2006	4381	Dinobryon mucronutom Nygaard	7184.00	0.85	9.00	5.00	117.80
TPS	05Aug2006	4383	Dinobryon bavaricum Imhof	21552.00	4.88	12.00	6.00	226.20
TPS	05Aug2006	4383	Dinobryon bavaricum Imhof	4800.00	17.52	0.00	0.00	3650.00
TPS	05Aug2006	4388	Dinobryon sertularia Ehrenberg	28736.00	4.51	12.00	5.00	157.10
TPS	05Aug2006	4388	Dinobryon sertularia Ehrenberg	600.00	5.09	0.00	0.00	8475.00
TPS	05Aug2006	4396	Chrysolkos skuja (Nauwerck) Willen	86208.00	2.44	6.00	3.00	28.30
TPS	05Aug2006	4401	Uroglena volvox Ehrenberg	50288.00	2.40	4.50	4.50	47.70
TPS	05Aug2006	4407	Pseudokephyrion entzii Conrad	158048.00	2.23	3.00	3.00	14.10
TPS	05Aug2006	4411	Bitrichia chodatii (Reverdin) Chodat	21552.00	0.61	6.00	3.00	28.30

Phytoplankton Species Data, Baker Lake, 2006 (for Randy Baker).

Station	Date	Species code	Species name	density cells/L^{-1}	biomass mg/m^{-3}	length μ	width μ	cell volume μ^3
TPS	05Aug2006	4413	Chrysochromulina laurentiana Kling	21552.00	11.28	10.00	10.00	523.60
TPS	05Aug2006	5507	Cyclotella stelligera Cleve and Grunow	800.00	1.26	10.00	20.00	1570.80
TPS	05Aug2006	5511	Rhizosolenia eriense H.L. Smith	14368.00	1.12	11.00	3.00	77.80
TPS	05Aug2006	5551	Cyclotella michiganiana Skvortzow	35920.00	3.61	4.00	8.00	100.50
TPS	05Aug2006	5916	Fragilaria capucina Grunow	600.00	0.06	89.00	2.00	93.20
TPS	05Aug2006	6554	Rhodomonas minuta Skuja	7184.00	0.56	9.00	5.00	78.50
TPS	05Aug2006	6558	Cryptomonas erosa Ehrenberg	200.00	0.15	22.00	10.00	767.90
TPS	05Aug2006	6559	Cryptomonas ovata Ehrenberg	200.00	0.71	40.00	16.00	3574.40
TPS	05Aug2006	6568	Katablepharis ovalis Skuja	28736.00	1.23	7.00	5.00	42.80
TPS	05Aug2006	7629	Gymnodinium palustre Schilling	200.00	1.57	26.00	24.00	7841.40
TPS	05Aug2006	7632	Gymnodinium sp.	14368.00	4.81	10.00	8.00	335.10
TPS	05Aug2006	7639	Peridinium pusillum (Penard) Lemmermann	5000.00	10.72	16.00	16.00	2144.70
TPS	21Aug2006	1014	Chroococcus limneticus Lemmermann	14368.00	0.06	2.00	2.00	4.20
TPS	21Aug2006	2100	Pyramidomonas tetrarhynchus Schmarda	200.00	0.17	17.00	14.00	872.30
TPS	21Aug2006	2101	Carteria spp.	7184.00	0.75	8.00	5.00	104.70
TPS	21Aug2006	2105	Chlamydomonas spp.	14368.00	0.47	7.00	3.00	33.00
TPS	21Aug2006	2112	Sphaerocystis schroeteri Chodat	28736.00	0.96	4.00	4.00	33.50
TPS	21Aug2006	2120	Oocystis submarina v. variabilis Skuja	21552.00	0.51	5.00	3.00	23.60
TPS	21Aug2006	2167	Elakatothrix gelatinosa Willen	50288.00	0.79	10.00	2.00	15.70
TPS	21Aug2006	2187	Staurodesmus extensus (Andersson) Teiling	400.00	0.25	16.00	14.00	625.50
TPS	21Aug2006	2206	Botryococcus braunii Kutzing	400.00	1.22	18.00	18.00	3053.60
TPS	21Aug2006	2235	Ankistrodesmus spiralis Lemmermann	7184.00	0.40	35.00	2.00	55.00
TPS	21Aug2006	4351	Small chrysophyceae	215520.00	0.91	2.00	2.00	4.20
TPS	21Aug2006	4352	Large chrysophyceae	21552.00	3.87	7.00	7.00	179.60
TPS	21Aug2006	4357	Chrysococcus sp.	258624.00	16.91	5.00	5.00	65.40
TPS	21Aug2006	4361	Kephyrion boreale Skuja	14368.00	1.39	5.70	5.70	97.00
TPS	21Aug2006	4363	Spinifiromonas sirratus***************	14368.00	1.63	6.00	6.00	113.10
TPS	21Aug2006	4378	Dinobryon borgei Lemmermann	14368.00	0.47	7.00	3.00	33.00
TPS	21Aug2006	4381	Dinobryon mucronutom Nygaard	28736.00	3.39	9.00	5.00	117.80
TPS	21Aug2006	4383	Dinobryon bavaricum Imhof	57472.00	10.83	10.00	6.00	188.50
TPS	21Aug2006	4383	Dinobryon bavaricum Imhof	5800.00	15.73	0.00	0.00	2712.00
TPS	21Aug2006	4388	Dinobryon sertularia Ehrenberg	35920.00	8.13	12.00	6.00	226.20
TPS	21Aug2006	4388	Dinobryon sertularia Ehrenberg	200.00	1.76	0.00	0.00	8814.00
TPS	21Aug2006	4390	Dinobryon sociale Ehrenberg	400.00	2.03	0.00	0.00	5085.00
TPS	21Aug2006	4396	Chrysolkos skuja (Nauwerck) Willen	35920.00	1.02	6.00	3.00	28.30
TPS	21Aug2006	4401	Uroglena volvox Ehrenberg	28736.00	1.88	5.00	5.00	65.40
TPS	21Aug2006	4411	Bitrichia chodatii (Reverdin) Chodat	7184.00	0.17	5.00	3.00	23.60
TPS	21Aug2006	4436	Dinobryon attenatum Hill	7184.00	1.63	12.00	6.00	226.20

Phytoplankton Species Data, Baker Lake, 2006 (for Randy Baker).

Station	Date	Species code	Species name	density cells/L^{-1}	biomass mg/m^{-3}	length µ	width µ	cell volume µ^3
TPS	21Aug2006	5507	Cyclotella stelligera Cleve and Grunow	2000.00	3.64	10.50	21.00	1818.40
TPS	21Aug2006	5513	Tabellaria fenestrata (Lyngbye) Kutzing	800.00	0.54	72.00	6.00	678.60
TPS	21Aug2006	5551	Cyclotella michiganiana Skvortzow	64656.00	6.50	4.00	8.00	100.50
TPS	21Aug2006	5916	Fragilaria capucina Grunow	400.00	0.04	89.00	2.00	93.20
TPS	21Aug2006	6558	Cryptomonas erosa Ehrenberg	400.00	0.29	21.00	10.00	733.00
TPS	21Aug2006	6568	Katablepharis ovalis Skuja	43104.00	2.44	9.00	4.00	56.50
TPS	21Aug2006	7629	Gymnodinium palustre Schilling	400.00	2.53	25.00	22.00	6335.50
TPS	21Aug2006	7639	Peridinium pusillum (Penard) Lemmermann	1200.00	1.97	16.00	14.00	1642.00
TPS	08Sep2006	1012	Aphanothece sp.	35920.00	3.59	0.00	0.00	100.00
TPS	08Sep2006	1054	Planktolyngbya limnetica	1600.00	0.21	165.00	1.00	129.60
TPS	08Sep2006	2100	Pyramidomonas tetrarhynchus Schmarda	200.00	0.11	14.00	12.00	527.80
TPS	08Sep2006	2105	Chlamydomonas spp.	14368.00	0.41	6.00	3.00	28.30
TPS	08Sep2006	2112	Sphaerocystis schroeteri Chodat	50288.00	0.21	2.00	2.00	4.20
TPS	08Sep2006	2120	Oocystis submarina v. variabilis Skuja	14368.00	0.34	5.00	3.00	23.60
TPS	08Sep2006	2135	Scenedesmus sp.	57472.00	0.16	2.00	2.00	2.80
TPS	08Sep2006	2167	Elakatothrix gelatinosa Willen	21552.00	0.34	10.00	2.00	15.70
TPS	08Sep2006	2178	Cosmarium sp.	200.00	0.12	15.00	15.00	589.00
TPS	08Sep2006	2187	Staurodesmus extensus (Andersson) Teiling	800.00	0.56	17.00	14.00	706.20
TPS	08Sep2006	2235	Ankistrodesmus spiralis Lemmermann	28736.00	1.62	36.00	2.00	56.50
TPS	08Sep2006	4351	Small chrysophyceae	431040.00	4.44	2.70	2.70	10.30
TPS	08Sep2006	4352	Large chrysophyceae	7184.00	0.81	6.00	6.00	113.10
TPS	08Sep2006	4355	Chrysochromulina parva Lackey	7184.00	0.24	4.00	4.00	33.50
TPS	08Sep2006	4357	Chrysococcus sp.	445408.00	29.13	5.00	5.00	65.40
TPS	08Sep2006	4363	Spinifiromonas sirratus****************	7184.00	0.81	6.00	6.00	113.10
TPS	08Sep2006	4378	Dinobryon borgei Lemmermann	7184.00	13.93	7.00	23.00	1938.90
TPS	08Sep2006	4381	Dinobryon mucronutom Nygaard	7184.00	0.75	8.00	5.00	104.70
TPS	08Sep2006	4383	Dinobryon bavaricum Imhof	71840.00	13.54	10.00	6.00	188.50
TPS	08Sep2006	4383	Dinobryon bavaricum Imhof	4000.00	10.85	0.00	0.00	2712.00
TPS	08Sep2006	4394	Epiphyxis sp.	7184.00	0.54	9.00	4.00	75.40
TPS	08Sep2006	4396	Chrysolkos skuja (Nauwerck) Willen	43104.00	1.02	5.00	3.00	23.60
TPS	08Sep2006	4401	Uroglena volvox Ehrenberg	71840.00	8.13	6.00	6.00	113.10
TPS	08Sep2006	4407	Pseudokephyrion entzii Conrad	7184.00	0.16	3.50	3.50	22.40
TPS	08Sep2006	4413	Chrysochromulina laurentiana Kling	50288.00	26.33	10.00	10.00	523.60
TPS	08Sep2006	4418	Salpingoeca frequentissima (Zach.) Lemmermann	7184.00	0.17	5.00	3.00	23.60
TPS	08Sep2006	4436	Dinobryon attenatum Hill	7184.00	0.85	9.00	5.00	117.80
TPS	08Sep2006	4459	Tribonema bombycinum Derbest & Solier	800.00	0.72	32.00	6.00	904.80
TPS	08Sep2006	5507	Cyclotella stelligera Cleve and Grunow	2600.00	2.98	9.00	18.00	1145.10
TPS	08Sep2006	5511	Rhizosolenia eriense H.L. Smith	7184.00	0.72	8.00	4.00	100.50

Phytoplankton Species Data, Baker Lake, 2006 (for Randy Baker).

Station	Date	Species code	Species name	density cells/L^{-1}	biomass mg/m^{-3}	length µ	width µ	cell volume µ^3
TPS	08Sep2006	5518	Synedra acus Kutzing	1800.00	0.17	90.00	2.00	94.20
TPS	08Sep2006	5551	Cyclotella michiganiana Skvortzow	129312.00	13.00	4.00	8.00	100.50
TPS	08Sep2006	5702	Achnanthes minutissima Kutzing	7184.00	0.66	22.00	4.00	92.20
TPS	08Sep2006	6558	Cryptomonas erosa Ehrenberg	1400.00	1.03	21.00	10.00	733.00
TPS	08Sep2006	6565	Cryptomonas rostratiformis Skuja	600.00	1.19	29.00	14.00	1984.10
TPS	08Sep2006	6568	Katablepharis ovalis Skuja	50288.00	2.84	9.00	4.00	56.50
TPS	08Sep2006	7629	Gymnodinium palustre Schilling	200.00	1.57	26.00	24.00	7841.40
TPS	08Sep2006	7639	Peridinium pusillum (Penard) Lemmermann	1000.00	2.14	16.00	16.00	2144.70
WAL	13Jul2006	2105	Chlamydomonas spp.	7184.00	0.10	3.00	3.00	14.10
WAL	13Jul2006	2127	Tetraedron minimum (Brunow) Hansgrig	7184.00	1.25	10.00	10.00	174.50
WAL	13Jul2006	2187	Staurodesmus extensus (Andersson) Teiling	200.00	0.14	17.00	14.00	706.20
WAL	13Jul2006	2199	Spondylosium planum (Wolle) W. and G.S. West	7184.00	0.27	6.00	6.00	37.70
WAL	13Jul2006	4351	Small chrysophyceae	186784.00	0.78	2.00	2.00	4.20
WAL	13Jul2006	4352	Large chrysophyceae	71840.00	12.90	7.00	7.00	179.60
WAL	13Jul2006	4355	Chrysochromulina parva Lackey	21552.00	1.03	4.50	4.50	47.70
WAL	13Jul2006	4357	Chrysococcus sp.	416672.00	27.25	5.00	5.00	65.40
WAL	13Jul2006	4360	Kephyrion spirale (Lackey) Conrad	7184.00	0.07	2.70	2.70	10.30
WAL	13Jul2006	4363	Spinifiromonas sirratus***************	7184.00	0.81	6.00	6.00	113.10
WAL	13Jul2006	4367	Mallomonas duerrschmidtiae Siver, Hamer and Kling	400.00	0.72	24.00	12.00	1809.60
WAL	13Jul2006	4378	Dinobryon borgei Lemmermann	21552.00	0.61	6.00	3.00	28.30
WAL	13Jul2006	4388	Dinobryon sertularia Ehrenberg	35920.00	8.13	12.00	6.00	226.20
WAL	13Jul2006	4390	Dinobryon sociale Ehrenberg	7184.00	1.63	12.00	6.00	226.20
WAL	13Jul2006	4396	Chrysolkos skuja (Nauwerck) Willen	21552.00	0.51	5.00	3.00	23.60
WAL	13Jul2006	4401	Uroglena volvox Ehrenberg	251440.00	21.90	5.50	5.50	87.10
WAL	13Jul2006	4407	Pseudokephyrion entzii Conrad	93392.00	1.32	3.00	3.00	14.10
WAL	13Jul2006	4413	Chrysochromulina laurentiana Kling	50288.00	35.05	11.00	11.00	696.90
WAL	13Jul2006	4439	Chrysosphaerella brevispina	200.00	4.39	0.00	0.00	21966.00
WAL	13Jul2006	5507	Cyclotella stelligera Cleve and Grunow	800.00	1.45	10.50	21.00	1818.40
WAL	13Jul2006	5511	Rhizosolenia eriense H.L. Smith	57472.00	4.47	11.00	3.00	77.80
WAL	13Jul2006	5515	Fragilaria crotonensis Kitton	9000.00	0.94	100.00	2.00	104.70
WAL	13Jul2006	5551	Cyclotella michiganiana Skvortzow	7184.00	0.72	4.00	8.00	100.50
WAL	13Jul2006	5702	Achnanthes minutissima Kutzing	7184.00	0.66	22.00	4.00	92.20
WAL	13Jul2006	6554	Rhodomonas minuta Skuja	43104.00	3.76	10.00	5.00	87.30
WAL	13Jul2006	6558	Cryptomonas erosa Ehrenberg	400.00	0.46	23.00	12.00	1156.10
WAL	13Jul2006	6565	Cryptomonas rostratiformis Skuja	600.00	1.23	30.00	14.00	2052.50
WAL	13Jul2006	6568	Katablepharis ovalis Skuja	28736.00	2.03	9.00	5.00	70.70
WAL	13Jul2006	7629	Gymnodinium palustre Schilling	200.00	1.01	24.00	20.00	5026.50
WAL	13Jul2006	7631	Gymnodinium helveticum Penard	1400.00	0.19	16.00	4.00	134.00

Phytoplankton Species Data, Baker Lake, 2006 (for Randy Baker).

Station	Date	Species code	Species name	density cells/L^{-1}	biomass mg/m^{-3}	length µ	width µ	cell volume µ^3
WAL	13Jul2006	7632	Gymnodinium sp.	14368.00	5.30	11.00	8.00	368.60
WAL	07Aug2006	2105	Chlamydomonas spp.	14368.00	0.20	3.00	3.00	14.10
WAL	07Aug2006	2112	Sphaerocystis schroeteri Chodat	57472.00	0.59	2.70	2.70	10.30
WAL	07Aug2006	2167	Elakatothrix gelatinosa Willen	114944.00	1.08	6.00	2.00	9.40
WAL	07Aug2006	2187	Staurodesmus extensus (Andersson) Teiling	200.00	0.13	16.00	14.00	625.50
WAL	07Aug2006	2199	Spondylosium planum (Wolle) W. and G.S. West	35920.00	1.35	6.00	6.00	37.70
WAL	07Aug2006	2206	Botryococcus braunii Kutzing	1000.00	1.77	15.00	15.00	1767.10
WAL	07Aug2006	2215	Tetraedron caudatum (Corda) Hansgrig	7184.00	0.03	3.00	3.00	4.70
WAL	07Aug2006	2235	Ankistrodesmus spiralis Lemmermann	57472.00	3.16	35.00	2.00	55.00
WAL	07Aug2006	2247	Oocystis gigas Archer	600.00	3.77	30.00	20.00	6283.20
WAL	07Aug2006	4351	Small chrysophyceae	165232.00	0.69	2.00	2.00	4.20
WAL	07Aug2006	4352	Large chrysophyceae	35920.00	6.45	7.00	7.00	179.60
WAL	07Aug2006	4355	Chrysochromulina parva Lackey	14368.00	0.48	4.00	4.00	33.50
WAL	07Aug2006	4357	Chrysococcus sp.	208336.00	13.63	5.00	5.00	65.40
WAL	07Aug2006	4358	Chrysostephanospaera globulifera Scherffel	14368.00	4.62	8.50	8.50	321.60
WAL	07Aug2006	4361	Kephyrion boreale Skuja	7184.00	0.81	6.00	6.00	113.10
WAL	07Aug2006	4378	Dinobryon borgei Lemmermann	43104.00	1.22	6.00	3.00	28.30
WAL	07Aug2006	4381	Dinobryon mucronutom Nygaard	14368.00	1.69	9.00	5.00	117.80
WAL	07Aug2006	4383	Dinobryon bavaricum Imhof	100576.00	18.96	10.00	6.00	188.50
WAL	07Aug2006	4383	Dinobryon bavaricum Imhof	3800.00	15.20	0.00	0.00	4000.00
WAL	07Aug2006	4384	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	7184.00	2.58	14.00	7.00	359.20
WAL	07Aug2006	4388	Dinobryon sertularia Ehrenberg	28736.00	6.50	12.00	6.00	226.20
WAL	07Aug2006	4388	Dinobryon sertularia Ehrenberg	400.00	4.07	0.00	0.00	10170.00
WAL	07Aug2006	4401	Uroglena volvox Ehrenberg	718400.00	34.27	4.50	4.50	47.70
WAL	07Aug2006	4407	Pseudokephyrion entzii Conrad	86208.00	1.22	3.00	3.00	14.10
WAL	07Aug2006	4413	Chrysochromulina laurentiana Kling	7184.00	3.76	10.00	10.00	523.60
WAL	07Aug2006	4418	Salpingoeca frequentissima (Zach.) Lemmermann	35920.00	0.85	5.00	3.00	23.60
WAL	07Aug2006	5507	Cyclotella stelligera Cleve and Grunow	200.00	0.23	9.00	18.00	1145.10
WAL	07Aug2006	5511	Rhizosolenia eriense H.L. Smith	35920.00	2.79	11.00	3.00	77.80
WAL	07Aug2006	5514	Tabellaria flocculsa (Roth) Kutzing	200.00	0.29	28.00	14.00	1436.80
WAL	07Aug2006	5551	Cyclotella michiganiana Skvortzow	21552.00	0.53	2.50	5.00	24.50
WAL	07Aug2006	5826	Cymbella gracilis (Rabhorst) Cleve	200.00	2.06	81.00	18.00	10306.00
WAL	07Aug2006	5916	Fragilaria capucina Grunow	6200.00	0.58	90.00	2.00	94.20
WAL	07Aug2006	6554	Rhodomonas minuta Skuja	7184.00	0.36	9.00	4.00	50.30
WAL	07Aug2006	6558	Cryptomonas erosa Ehrenberg	600.00	0.66	22.00	12.00	1105.80
WAL	07Aug2006	6565	Cryptomonas rostratiformis Skuja	200.00	0.36	26.00	14.00	1778.80
WAL	07Aug2006	7629	Gymnodinium palustre Schilling	600.00	4.49	27.00	23.00	7478.60
WAL	07Aug2006	7639	Peridinium pusillum (Penard) Lemmermann	600.00	1.29	16.00	16.00	2144.70

Phytoplankton Species Data, Baker Lake, 2006 (for Randy Baker).

Station	Date	Species code	Species name	density cells/L^{-1}	biomass mg/m^{-3}	length µ	width µ	cell volume µ^3
WAL	18Aug2006	1014	Chroococcus limneticus Lemmermann	21552.00	0.18	2.50	2.50	8.20
WAL	18Aug2006	2100	Pyramidomonas tetrarhynchus Schmarda	200.00	0.19	16.00	15.00	942.50
WAL	18Aug2006	2105	Chlamydomonas spp.	14368.00	0.48	4.00	4.00	33.50
WAL	18Aug2006	2112	Sphaerocystis schroeteri Chodat	186784.00	2.63	3.00	3.00	14.10
WAL	18Aug2006	2120	Oocystis submarina v. variabilis Skuja	64656.00	1.22	4.00	3.00	18.80
WAL	18Aug2006	2138	Monoraphidium komarkovae (Nyg.) Komarkova-Legnerova	21552.00	1.68	46.00	1.80	78.00
WAL	18Aug2006	2143	Monoraphidium minutum (Nag.) Komarkova-Legnerova	14368.00	0.63	7.00	4.00	44.00
WAL	18Aug2006	2167	Elakatothrix gelatinosa Willen	64656.00	0.81	8.00	2.00	12.60
WAL	18Aug2006	2178	Cosmarium sp.	200.00	0.20	18.00	18.00	1017.90
WAL	18Aug2006	2187	Staurodesmus extensus (Andersson) Teiling	800.00	0.44	15.00	14.00	549.80
WAL	18Aug2006	2206	Botryococcus braunii Kutzing	800.00	1.72	16.00	16.00	2144.70
WAL	18Aug2006	2215	Tetraedron caudatum (Corda) Hansgrig	35920.00	0.17	3.00	3.00	4.70
WAL	18Aug2006	4351	Small chrysophyceae	287360.00	4.05	3.00	3.00	14.10
WAL	18Aug2006	4357	Chrysococcus sp.	352016.00	23.02	5.00	5.00	65.40
WAL	18Aug2006	4358	Chrysostephanospaera globulifera Scherffel	7184.00	2.31	8.50	8.50	321.60
WAL	18Aug2006	4361	Kephyrion boreale Skuja	7184.00	0.42	4.80	4.80	57.90
WAL	18Aug2006	4363	Spinifiromonas sirratus***************	35920.00	3.67	5.80	5.80	102.20
WAL	18Aug2006	4367	Mallomonas duerrschmidtiae Siver, Hamer and Kling	200.00	0.22	21.00	10.00	1099.60
WAL	18Aug2006	4378	Dinobryon borgei Lemmermann	21552.00	0.61	6.00	3.00	28.30
WAL	18Aug2006	4381	Dinobryon mucronutom Nygaard	14368.00	1.08	9.00	4.00	75.40
WAL	18Aug2006	4383	Dinobryon bavaricum Imhof	28736.00	5.96	11.00	6.00	207.30
WAL	18Aug2006	4383	Dinobryon bavaricum Imhof	3800.00	8.59	0.00	0.00	2260.00
WAL	18Aug2006	4384	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	7184.00	2.21	12.00	7.00	307.90
WAL	18Aug2006	4401	Uroglena volvox Ehrenberg	215520.00	14.10	5.00	5.00	65.40
WAL	18Aug2006	4407	Pseudokephyrion entzii Conrad	21552.00	0.30	3.00	3.00	14.10
WAL	18Aug2006	4411	Bitrichia chodatii (Reverdin) Chodat	21552.00	0.51	5.00	3.00	23.60
WAL	18Aug2006	4413	Chrysochromulina laurentiana Kling	28736.00	15.05	10.00	10.00	523.60
WAL	18Aug2006	4414	Stichogloea spp.	28736.00	1.45	6.00	4.00	50.30
WAL	18Aug2006	5507	Cyclotella stelligera Cleve and Grunow	1600.00	2.51	10.00	20.00	1570.80
WAL	18Aug2006	5511	Rhizosolenia eriense H.L. Smith	7184.00	0.81	9.00	4.00	113.10
WAL	18Aug2006	5514	Tabellaria flocculsa (Roth) Kutzing	400.00	0.53	26.00	14.00	1334.10
WAL	18Aug2006	5551	Cyclotella michiganiana Skvortzow	71840.00	7.22	4.00	8.00	100.50
WAL	18Aug2006	5702	Achnanthes minutissima Kutzing	14368.00	1.32	22.00	4.00	92.20
WAL	18Aug2006	5874	Nitzschia palea (Kutzing) W. Smith	200.00	0.12	65.00	6.00	612.60
WAL	18Aug2006	5916	Fragilaria capucina Grunow	4800.00	0.38	76.00	2.00	79.60
WAL	18Aug2006	6554	Rhodomonas minuta Skuja	35920.00	2.01	10.00	4.00	55.90
WAL	18Aug2006	6558	Cryptomonas erosa Ehrenberg	800.00	0.61	22.00	10.00	767.90
WAL	18Aug2006	6568	Katablepharis ovalis Skuja	14368.00	0.80	8.00	5.00	55.90

Phytoplankton Species Data, Baker Lake, 2006 (for Randy Baker).

Station	Date	Species code	Species name	density cells/L^{-1}	biomass mg/m^{-3}	length μ	width μ	cell volume μ^3
WAL	18Aug2006	7632	Gymnodinium sp.	14368.00	6.70	11.00	9.00	466.50
WAL	18Aug2006	7632	Gymnodinium sp.	600.00	8.48	30.00	30.00	14137.20
WAL	11Sep2006	2105	Chlamydomonas spp.	14368.00	0.34	5.00	3.00	23.60
WAL	11Sep2006	2112	Sphaerocystis schroeteri Chodat	28736.00	0.12	2.00	2.00	4.20
WAL	11Sep2006	2120	Oocystis submarina v. variabilis Skuja	14368.00	0.34	5.00	3.00	23.60
WAL	11Sep2006	2145	Crucigenia quadrata Morr.	28736.00	0.04	2.00	2.00	1.40
WAL	11Sep2006	2167	Elakatothrix gelatinosa Willen	28736.00	0.36	8.00	2.00	12.60
WAL	11Sep2006	2178	Cosmarium sp.	200.00	0.20	18.00	18.00	1017.90
WAL	11Sep2006	2187	Staurodesmus extensus (Andersson) Teiling	400.00	0.25	16.00	14.00	625.50
WAL	11Sep2006	2206	Botryococcus braunii Kutzing	600.00	1.29	16.00	16.00	2144.70
WAL	11Sep2006	2235	Ankistrodesmus spiralis Lemmermann	107760.00	6.09	36.00	2.00	56.50
WAL	11Sep2006	4351	Small chrysophyceae	215520.00	3.04	3.00	3.00	14.10
WAL	11Sep2006	4352	Large chrysophyceae	57472.00	10.32	7.00	7.00	179.60
WAL	11Sep2006	4355	Chrysochromulina parva Lackey	14368.00	0.48	4.00	4.00	33.50
WAL	11Sep2006	4357	Chrysococcus sp.	474144.00	31.01	5.00	5.00	65.40
WAL	11Sep2006	4358	Chrysostephanospaera globulifera Scherffel	7184.00	3.76	10.00	10.00	523.60
WAL	11Sep2006	4363	Spinifiromonas sirratus***************	21552.00	2.44	6.00	6.00	113.10
WAL	11Sep2006	4378	Dinobryon borgei Lemmermann	14368.00	0.54	8.00	3.00	37.70
WAL	11Sep2006	4381	Dinobryon mucronutom Nygaard	14368.00	1.88	10.00	5.00	130.90
WAL	11Sep2006	4383	Dinobryon bavaricum Imhof	57472.00	13.00	12.00	6.00	226.20
WAL	11Sep2006	4383	Dinobryon bavaricum Imhof	9000.00	36.61	0.00	0.00	4068.00
WAL	11Sep2006	4384	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	93392.00	35.94	15.00	7.00	384.80
WAL	11Sep2006	4384	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	7200.00	49.87	0.00	0.00	6927.00
WAL	11Sep2006	4388	Dinobryon sertularia Ehrenberg	7184.00	1.63	12.00	6.00	226.20
WAL	11Sep2006	4396	Chrysolkos skuja (Nauwerck) Willen	28736.00	0.68	5.00	3.00	23.60
WAL	11Sep2006	4401	Uroglena volvox Ehrenberg	732768.00	63.82	5.50	5.50	87.10
WAL	11Sep2006	4401	Uroglena volvox Ehrenberg	400.00	22.60	0.00	0.00	56500.00
WAL	11Sep2006	4407	Pseudokephyrion entzii Conrad	35920.00	1.20	4.00	4.00	33.50
WAL	11Sep2006	4411	Bitrichia chodatii (Reverdin) Chodat	21552.00	0.51	5.00	3.00	23.60
WAL	11Sep2006	4413	Chrysochromulina laurentiana Kling	21552.00	11.28	10.00	10.00	523.60
WAL	11Sep2006	4414	Stichogloea spp.	136496.00	6.87	6.00	4.00	50.30
WAL	11Sep2006	4418	Salpingoeca frequentissima (Zach.) Lemmermann	21552.00	0.61	6.00	3.00	28.30
WAL	11Sep2006	4425	Mallomonas hamata Asmund	200.00	0.39	26.00	12.00	1960.40
WAL	11Sep2006	5507	Cyclotella stelligera Cleve and Grunow	2600.00	2.98	9.00	18.00	1145.10
WAL	11Sep2006	5511	Rhizosolenia eriense H.L. Smith	21552.00	1.68	11.00	3.00	77.80
WAL	11Sep2006	5514	Tabellaria flocculsa (Roth) Kutzing	200.00	0.25	24.00	14.00	1231.50
WAL	11Sep2006	5518	Synedra acus Kutzing	2400.00	0.25	98.00	2.00	102.60
WAL	11Sep2006	5551	Cyclotella michiganiana Skvortzow	71840.00	7.22	4.00	8.00	100.50

Phytoplankton Species Data, Baker Lake, 2006 (for Randy Baker).

Station	Date	Species code	Species name	density cells/L^{-1}	biomass mg/m^{-3}	length µ	width µ	cell volume µ^3
WAL	11Sep2006	6554	Rhodomonas minuta Skuja	28736.00	1.12	7.00	4.00	39.10
WAL	11Sep2006	6558	Cryptomonas erosa Ehrenberg	1600.00	1.23	22.00	10.00	767.90
WAL	11Sep2006	6565	Cryptomonas rostratiformis Skuja	1000.00	1.78	26.00	14.00	1778.80
WAL	11Sep2006	6568	Katablepharis ovalis Skuja	28736.00	1.61	8.00	5.00	55.90
WAL	11Sep2006	7639	Peridinium pusillum (Penard) Lemmermann	200.00	0.43	16.00	16.00	2144.70

** 1st number in **species code** = group 1=cyanophyte 2=chlorophyte 3= Euglenophyte 4=chrysophyte 5=diatoms 6=Cryptophyte 7=Dinoflagellates

** total daily biomass is sum of all species on a date.

TABLE 1: CALCULATION OF SUBSAMPLING ERROR FOR BENTHIC MACROINVERTEBRATE SAMPLES FROM NUNAVUT (2006).

Date Collected	Station	Whole Organisms	Number of Organisms in Fraction 1	Number of Organisms in Fraction 2	Number of Organisms in Fraction 3	Number of Organisms in Fraction 4	Actual Density*	Precision % range		Accuracy min	Accuracy max
07/11/2006	TPE-1[a]	0	61	70			131	12.9	-	6.9	-
09/11/2006	WAL-1[a]	0	582	640			1222	9.1	-	4.7	-

[a] two halves sorted for subsampling error calculations.

TABLE 2: PERCENT RECOVERY OF BENTHIC MACROINVERTEBRATES FROM SAMPLES COLLECTED FROM NUNAVUT (2006).

Date Collected	Station	Number of Organisms Recovered	Number of Organisms in Re-sort	Percent Recovery
07/17/2006	TPS-1	98	2	98.0%
08/05/2006	TPN-3	186	8	95.9%
08/17/2006	TPE-1	122	0	100.0%
09/08/2006	TPE-3	252	8	96.9%
09/08/2006	TPS-1	59	0	100.0%
09/09/2006	TE-1	72	0	100.0%
09/09/2006	TE-2	68	1	98.6%
09/09/2006	TE-3	90	5	94.7%
09/11/2006	INUG-3	77	0	100.0%
			Average % Recovery	98.2%

TABLE 3: SAMPLE FRACTIONS SORTED FROM NUNAVUT (2006).

Date Collected	Station	Fraction Sorted (500 µm)	Fraction Sorted (250 µm)	Date Collected	Station	Fraction Sorted (500 um)	Fraction Sorted (250 µm)	Date Collected	Station	Fraction Sorted (500 um)	Fraction Sorted (250 µm)	Date Collected	Station	Fraction Sorted (500 um)	Fraction Sorted (250 µm)
11/7/2006	TPE-3	Whole	1/2	08/05/2006	TPE-3	Whole	Whole	08/17/2006	TPE-3	Whole	Whole	09/08/2006	TPE-3	Whole	1/8
07/17/2006	TPN-3	Whole	Whole	08/05/2006	TPN-3	Whole	Whole	08/21/2006	TPN-3	Whole	Whole	09/08/2006	TPN-3	Whole	Whole
07/17/2006	TPS-3	Whole	1/8	08/05/2006	TPS-3	Whole	1/2	08/21/2006	TPS-3	Whole	Whole	09/08/2006	TPS-3	Whole	1/4
12/7/2006	SP-3	Whole	Whole	08/06/2006	SP-3	Whole	Whole	08/18/2006	SP-3	Whole	1/2	09/09/2006	TE-3	Whole	1/2
12/7/2006	TE-3	Whole	Whole	08/06/2006	TE-3	Whole	Whole	08/17/2006	TE-3	Whole	1/2				
07/13/2006	WAL-3	1/4	1/4	08/07/2006	WAL-3	1/4	1/4	08/18/2006	WAL-3	1/8	1/8				
07/15/2006	INUG-3	Whole	Whole	08/07/2006	INUG-3	Whole	Whole	08/19/2006	INUG-3	Whole	Whole				

QA/QC Notes

Samples processed at 500 µm were sorted in their entirety.

Pupae were not counted toward total number of taxa unless they were the sole representative of their taxa group.
Immatures were not counted toward total number of taxa unless they were the sole representative of their taxa group.
Highlighted samples in yellow were not preserved properly. Live chironomids were found in the sample.