

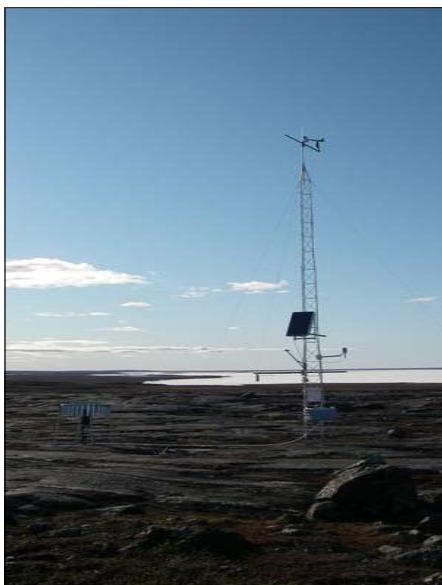


# Ferguson Lake Baseline Studies



## Meteorology

An automated meteorological station was installed at the Ferguson Lake mineral exploration site in mid August 2005 and includes sensors for wind speed and direction, air temperature and relative humidity, solar radiation, rain or snow-water-equivalent precipitation (depends on the season) and snow depth.



The meteorological station installed near the Ferguson Lake Camp

## Hydrology

In the 2007 field season three continuous hydrologic monitoring stations were constructed on the Ferguson Lake Project property. Two hydrometric stations were installed in creeks close to the proposed pit area (W1 and W2) and a reference station (R1) (Figure 1). Manual flow measurements at these locations were conducted at weekly intervals throughout the open water season. The manual flow measurements were used to develop annual flow hydrographs for those watersheds.



A hydrologic monitoring station installed at station R1 (left) and obtaining manual flow measurements at station W2 (right).

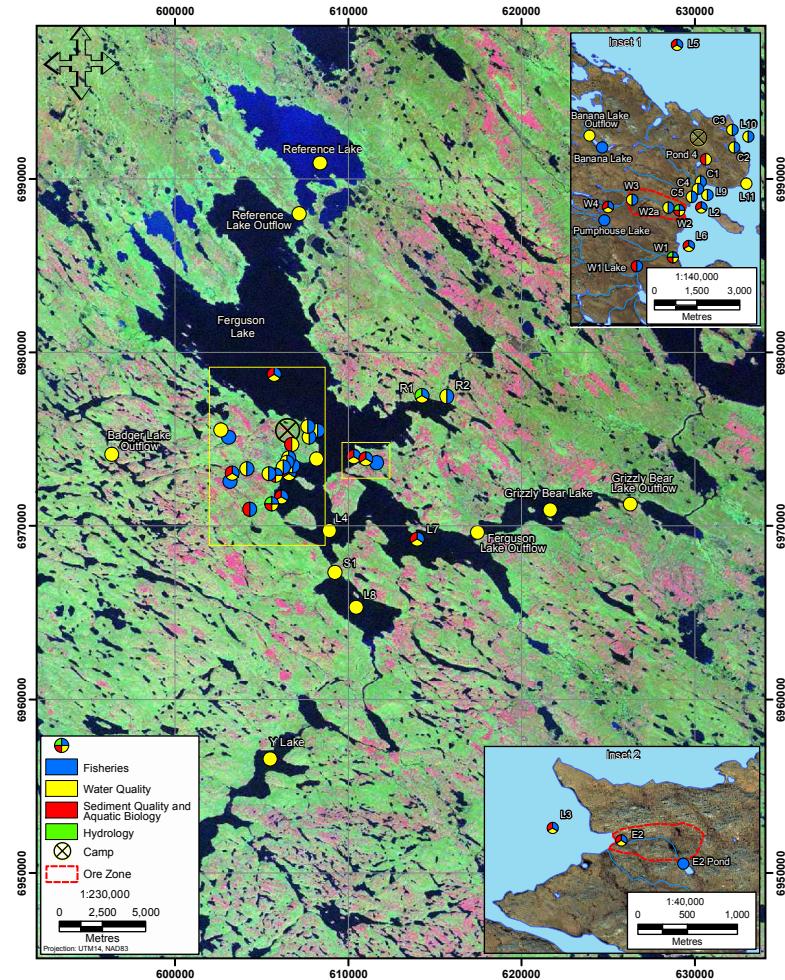


Figure 1  
Sampling Locations for the Ferguson Lake Project, 2007

## Metal Leaching/Acid Rock Drainage (ML/ARD)

The first phase of ML/ARD work began in 2007. 149 one meter samples of half drill core were collected from the Ferguson Lake deposit. Each sample was tested for acid-base accounting (ABA) and total element content. The resulting data was used to begin the characterization of material to be mined and provide information for feasibility and permitting requirements (*i.e.* water licence).

Samples were collected from wall rock and dyke types, low-sulphide PGE gabbro rock, massive sulphide ores, and other rocks. The samples have been selected from along 4-km plus strike and from potential open pit depths and underground operation areas.

## Aquatic Resources and Water Quality

In 2007, aquatic environment baseline studies were conducted for a fifth year in the Ferguson Lake Project area (Figure 1). This work will provide baseline information critical to the development of the upcoming environmental impact assessment for this project. Similar to previous years, streams, lake outflows and lakes of the mine area receiving environment were sampled for physical limnology and water quality. For the first time sediment quality as well as aquatic biology including primary and secondary producers was assessed at a select number of streams and lake stations. Stream stations sampled were intended to characterize the impact of the new camp on water draining the area, stream water quality before development and naturally-occurring ARD at the two ore zones. In addition, lake outflows were sampled to establish a long-term baseline data collection for significant geographical locations, such as the outflow of Ferguson Lake, and the furthest downstream point within the Starfield lease area. Lake stations were predominately situated at key areas of Ferguson Lake and were intended to provide information on the spatial extent of any future changes in water quality. Additional lakes were included in the sampling program to serve as a reference (Reference Lake), monitor potential downstream effects (Grizzly Lake).



Sampling benthic invertebrates at station W2



Water quality station S1

Aquatic study components were organized into two separate groups: streams and lakes. A total of 17 stream/lake outflow stations were sampled on a monthly basis for water quality beginning at freshet in June through to September. Water samples were analyzed for general physical variables, anions, nutrients, total organic carbon (TOC), total Kjeldahl nitrogen and total and dissolved metals at the lowest feasible detection limit. Hydrocarbons also were assessed at three stream sites. Travel blanks, field blanks and 10% duplication were included as part of the field quality assurance and quality control (QA/QC) program. In addition to water quality, four stream sites were sampled for sediment quality and aquatic biology (periphyton and benthic macroinvertebrates) in July. All sediment samples were analyzed for moisture, particle size, nutrients, TOC, total cyanide and total metals. Periphyton and benthic macroinvertebrates were assessed for density and taxonomy providing measures of species richness and diversity at each stream site. Lake water quality and physical limnology (including Secchi depth, dissolved oxygen profiles and temperature profiles) were assessed once in August. At each of the 15 lake sampling stations a single lake water sample was collected each from the surface and mid-depth to determine water quality. During the August sampling 7 lake stations were assessed for sediment quality and aquatic biology (phytoplankton, zooplankton and benthic macroinvertebrates). Analytical parameters, detection limits and QA/QC procedures were identical to those used in stream water and stream sediment sampling. Periphyton, zooplankton and benthic macroinvertebrates were assessed for density and taxonomy, to provide measures of species richness and diversity at each lake station.

## Fish Community and Habitat

Ferguson Lake, streams, ponds, and other lakes within the Project Area were sampled in late August and early September, 2007, to provide baseline fish and fish habitat information (Figure 1). Fish sampling occurred using a combination of gillnets (seven locations), minnow traps (11 locations), and electrofishing (10 locations). As well, detailed fish habitat information was obtained at seven of the stream electrofishing sites. This information consisted of water characteristics, stream depths and widths, substrate composition, habitat types, and cover.

Lake trout and whitefish were captured exclusively using gillnets within Ferguson Lake. These species comprised 93% of the fish species caught within Ferguson Lake. The other five fish species captured using minnow traps included Arctic grayling, burbot, longnose sucker, ninespine stickleback, and slimy sculpin.



Lake whitefish captured in a gillnet set in Ferguson Lake



A Ninespine Stickleback caught at W1

eastern and western sides of Ferguson Lake. However, one pond located along the edge of the ore zone on the eastern side of the lake was abundant with ninespine sticklebacks, and fish were captured in one stream on the western side during a 2006 survey.

Habitat within the two fish-bearing stream sites shared some similar attributes. These features included low conductivity, comparatively high water discharge, and wetted bank widths greater than 3.2 m. As well, the substrate of these streams contained little to no sand, consisting mostly of cobble and boulder. This boulder cover provided greater than 20% of the instream cover, along with some pools and overhanging vegetation.

## Wildlife

In 2007, Rescan Environmental Services conducted a Caribou Survey program and an Incidental Wildlife program to collect wildlife baseline information for the Project. During 2007, wildlife studies were concentrated within the Local Study Area (LSA): an area with a 10 km radius of Ferguson Lake new camp. A Regional Study Area (RSA: 10 – 35 km radius) has been developed and will be used in addition to the LSA for wildlife studies in 2008; however, incidental wildlife observations that were recorded within the RSA in 2007 were reported in the 2007 baseline.



Caribou travelling near Ferguson Lake camp

The objective of Local Caribou Monitoring was to determine when large groups of caribou were migrating through the area so that triggers could be identified and incorporated into Wildlife Management Plans. The objectives of the incidental wildlife monitoring program were to: monitor muskox presence and activity relative to the Project area; locate carnivore dens (grizzly bear, wolf, wolverine and fox) for future monitoring of den occupancy and productivity; locate raptor nests for future monitoring of nest occupancy and



Arctic hare (top), a Peregrine Falcon (middle) and a Sandhill Crane (bottom) observed near the Ferguson Lake camp.

productivity; identify potential species at risk occurring in the Project area; and to document all wildlife observations (e.g., small mammals, waterfowl).

A total of 11,339 caribou were observed. The vast majority of caribou (11,266) were observed in July during the post calving period. Most caribou were of unknown age class and gender. The incidental camp observation program was successful in recording 21 wildlife species including

The most common fish captured in streams, ponds, and small lakes associated with Ferguson Lake were ninespine sticklebacks. This species occurred throughout the Project area. No fish were captured in streams located within the ore zones on the eastern side of the lake. One pond located along the edge of the ore zone on the eastern side of the lake was abundant with ninespine sticklebacks, and fish were captured in one stream on the western side during a 2006 survey.

4 carnivores, 2 ungulates, 1 small mammal and 14 species of birds. The four carnivores were the Arctic fox, grizzly bear, least weasel and wolf. The ungulates and small mammal were moose, muskox and Arctic hare. The bird species were bald eagle, Canada goose, gyrfalcon, horned lark, least sandpiper, long-tailed duck, mallard, parasitic jaeger, peregrine falcon, rough-legged hawk, sandhill crane, snow bunting, snowy owl and willow ptarmigan. No carnivore dens were identified. However, five Arctic fox pups were observed within 10 km of camp indicating that an Arctic fox den may be located within this area. Three raptor nests were observed: a gyrfalcon nest, a peregrine falcon nest and an unidentified raptor nest. The grizzly bear and peregrine falcon are designated as Special Concern by the Committee on the Status of Endangered Wildlife in Canada.

## Archaeology

In August 2007, archaeological investigations were conducted at Ferguson Lake for Rescan Environmental Services Ltd. (Rescan) by Jean Bussey (Points West Heritage Consulting Ltd.). Bussey was assisted by Mistrelle Lockhart, of Points West, and various Nunavut residents including Ricky Green, Graham Kusugak, Najuk Kusugak, Jerome Misheralak and Dominic Irsuk. The archaeological investigations were conducted under Class 2 Nunavut Territory Archaeologist Permit 07-002A. This was the third consecutive year that archaeological field work was conducted at Ferguson Lake. The major objective was to determine if archaeological sites were present within proposed development and exploration areas. A secondary objective involved the revisit of recorded sites to assess their status. In addition, members of the recently formed Ferguson Lake Natives Group were invited to the study area to view traditional camping areas they had used in the past and to visit archaeological sites.



Within the Ferguson Lake project area, seven new archaeological sites were discovered near proposed exploration areas; several of these sites will be assessed through subsurface testing or more detailed examination in 2008 and may be mitigated through systematic data recovery.

One previously recorded site, KfLc-3, located near the new camp, was assessed as part of the 2007 investigations. It is proposed that in 2008 either the location containing this site will be protected by the installation of permanent fencing or systematic data recovery involving excavation and surface collection. As part of the site assessment, subsurface testing was undertaken to determine the depth and content of this archaeological site. Although the buried archaeological material was generally less than 15 cm deep, large quantities of flakes were encountered in portions of KfLc-3 indicating that additional work is required if protection is not feasible.

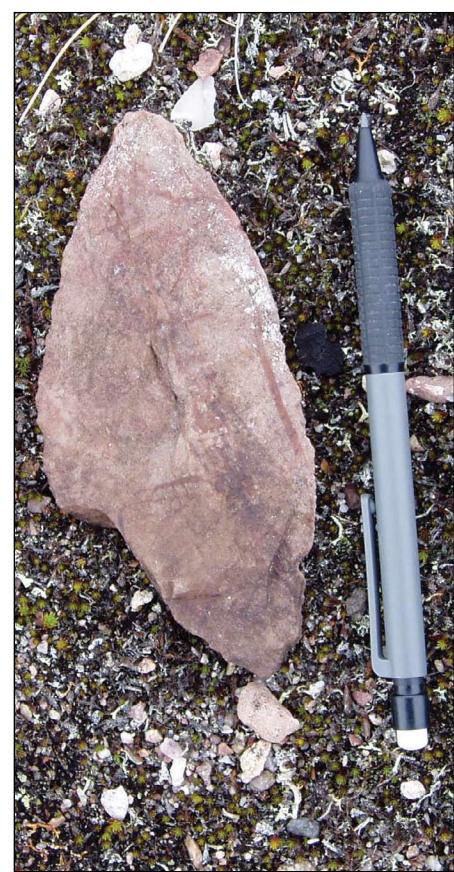


Heavy stone circle with birch



Close-up of top of rock mound

As a result of the two tours conducted in 2007, four traditional camp locations were examined. One of these four locations also contains evidence of prehistoric use. These sites are not threatened by activities associated with the Starfield Project because they are located many kilometers from current development and exploration areas.



Close-up of artifact

# 2008 Baseline Studies

Studies proposed for 2008 are comprised of ten components, each of which will provide research necessary for an Environmental Assessment and for future project planning:

## Meteorology

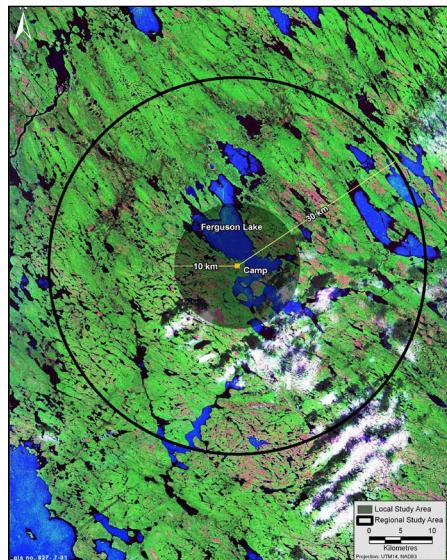
The established meteorology station will continue to record all essential climate data. The data set will be expanded in 2008 to include water balance estimates as well as snow water content and density surveys and permafrost monitoring.

## Hydrology

Monthly monitoring of the three established hydrologic stations will continue to obtain annual runoff volumes, peak discharges and monthly distribution. Two additional stations will be established to cover a larger area of the proposed development and better characterize baseline conditions.

## Hydrogeology

A hydrogeology program will be established for the first time in 2008. Initial work will involve site reconnaissance of the area during the drilling program in order to collect available circumstantial information for an intensive field season in the summer of 2009.



Wildlife Local and Regional Study Area



Ferguson Lake Camp

## Metal Leaching/Acid Rock Drainage

Initial analyses of core samples still require additional samples to improve our understanding of the ML/ARD status of certain rock units and areas of the deposit. In addition five on-site kinetic barrels will be constructed and every two to four weeks, water draining from the barrels will be collected and analyzed for metals.

## Aquatic Biology and Water quality

Water quality, sediment quality and physical limnology will be continued to be monitored at key lake stations and streams throughout the proposed development area. New stations, in particular wetland habitats will be established in 2008 to better characterize the project area. In addition primary (phytoplankton and periphyton) and secondary (zooplankton and benthos) producer communities will be surveyed to establish baseline conditions.

## Fisheries Surveys

Fish habitat and community surveys will be continued into the 2008 research program at previously identified key lakes, streams and ponds. The same methods will be used as in previous years to identify natural temporal trends and additional sites will be established to better characterize areas of new proposed development.

## Ecosystems, Vegetation, and Soils

Research in 2008 will initially begin with background data collection, topographic modeling, ecosystem mapping and terrain mapping. Field work will cover the proposed development area to

characterize soils, plants and ecosystems (including plants and ecosystems that are rare, endangered, unique or sensitive).

## Wetland Ecosystem Assessment

Wetlands in the proposed development area will be fully characterized for the first time initially through literature review, site reconnaissance and preliminary mapping and satellite imagery. Additional work will involve aquatic biology and water quality at some known sites as well as characterization of surface and groundwater fluctuations.

## Wildlife

The proposed research includes compilation of existing information on pertinent wildlife species and fieldwork to be completed in the 2008. To establish temporal trends, wildlife surveys including caribou surveys, breeding bird and waterfowl surveys and raptor nesting sites will be continued. In addition carnivore den site surveys, assessment of grizzly bear populations and small mammal surveys will be essential to better characterize wildlife populations within the proposed development area.

## Archaeology

A more intensive investigation of six previously recorded archaeological sites in the project area will be conducted in 2008. Additional surveys of the project area will be completed focusing on the area of the newly proposed airstrip. All data collected from the sites will be analyzed and artifacts will be catalogued.

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