BACK RIVER PROJECT:
ENVIRONMENTAL BASELINE STUDIES
SEPTEMBER 2006

-FINAL REPORT-

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March 2007 06-1373-045

EXECUTIVE SUMMARY

Dundee Precious Metals Inc. (DPMI) is currently undertaking exploration activities to assess the feasibility of constructing and operating a new gold mine (the Back River Project) in the Back River area in the Kitikmeot region of Nunavut, approximately 500 km northeast of Yellowknife, NT. The project consists of six gold deposits, five of which are located in the George Lake area and one in the Goose Lake area, 65 km southeast of George Lake. Proposed plans for the mine include an airstrip, and may include a permanent road (72 km in length) to access proposed port facilities at Bathurst Inlet. An access road between George Lake and Goose Lake would also be required. These developments will require Environmental Impact Statement (EIS)-level studies to meet federal (*Fisheries Act* and *Canadian Environmental Assessment Act*) and territorial (Nunavut Impact Review Board) regulatory guidelines.

To address regulatory guidelines, reliable and scientifically defensible baseline (pre-development) information is required to characterize the status of existing aquatic resources in the region. Although previous baseline studies have been conducted for several environmental components in the project area (Norecol 1989; Sekerak 1990; Homestake 1992; Bion Research 1994; Hubert and Associates 1994; Canamera 1996; Norecol Dames & Moore 1997), many of these studies are outdated and limited in scope. In 2005, DPM contracted Golder Associates Ltd. (Golder) to conduct supplementary environmental work and generate a rigorous and credible database for a future EIS report for the proposed mining operations near Goose and George lakes.

The objective of the September 2006 field program was to update and address data gaps from previous environmental baseline studies. To address temporal variability in baseline data of aquatic resources, the 2006 field program repeated several components of work conducted by Golder in 2005 (Golder 2006). These previous components included 1) water quality data collection, 2) hydrology data collection, and 3) meteorological monitoring station maintenance and data retrieval for the Goose Lake area. The September 2006 program expanded the water quality and hydrology data collection in the George Lake area. It also included a fish inventory and reconnaissance-level bathymetric survey for assessing fish habitat in lakes and streams in the project area.

Meteorology

DPMI implemented and maintains a meteorological monitoring program at George Lake. The data will be useful for supporting components of the environmental assessment that will be necessary for permitting the project and

also for supporting other environmental studies. The data may also contribute to a regional data bank, should one become established.

For the period from July 2005 through August 2006, the meteorological monitoring program included hourly measurements of the following components: rainfall, temperature, wind speed, wind direction, relative humidity, and solar radiation. Sensors were mounted on a 3 m tripod located a few hundred metres to the east of the abandoned camp facilities at George Lake on a rise, co-located with several existing radio towers. Measurements were taken throughout the year.

The temperature ranged from a high of 26.6°C in July 2005 to a low of -41.5°C in January 2006. The average temperature recorded was -6.2°C. The average recorded wind speed was 17.0 km/h. The highest sustained wind speed over the course of an hour was 124.3 km/h. The wind blew most frequently from the south-southeast in the winter and from the north-northeast during the summer. Relative humidity values ranged from a low of 23.5% in August 2006 to a high of 99.4% in May 2006. Solar radiation was predictably low in the winter, with the recorded monthly peak occurring in June 2006.

Hydrology

During the 2006 program (4-13 September), hydrometric measurements were collected from two regions near Back River: Goose Lake, including Ellice River, and George Lake. Specifically, discharge and water surface measurements were taken at the outflow of Goose Lake, one tributary to Goose Lake, and the outflows of George and Occurrence lakes. Water surface measurements were also collected at Goose, George, Bob, Lytle, and Fold lakes. Water surface measurements in the Goose Lake area were based on previously established benchmarks and were comparable to those taken during the September 2005 program. Water surface measurements in the George Lake area were based on new benchmarks established for future monitoring programs.

Water Quality

The objective of the water quality survey was to collect additional baseline data on waterbodies that may be affected by future mining development. Sampling was conducted during late summer (4-10 September 2006) on Goose and George lakes and associated streams. Both surface and bottom water samples were taken from Goose and George lakes. Four small lakes in the George Lake area were also sampled for surface water (Occurrence, Bob, Fold, and Lytle lakes).

Surface water temperatures of study lakes and streams ranged from 5.9 to 12.3°C. The dissolved oxygen (DO) concentrations were near saturation levels and ranged from 11.2 to 14.1 mg/L. Conductivity was generally low (22.8 to 90.5 µS/cm), typical of waterbodies within the Nunavut region. The pH levels were generally within the neutral to slightly alkaline range (6.8 to 8.9); however, one inflow stream to George Lake had acidic water (pH = 4.3) and high conductivity (1015 µS/cm) approaching saline conditions. Both George and Goose lakes were isothermic and uniformly mixed during the late-summer sampling period. All recorded concentrations of DO were above the Canadian Council of Ministers of the Environment (CCME) minimum guideline for the protection of aquatic life (6.5 mg/L) and early life stages of fish (9.5 mg/L).

Twelve of the 14 waterbodies and watercourses examined for water quality at the Back River Project in September 2006 had one or more metals with elevated values that exceeded CCME guidelines for the protection of aquatic life. Of particular concern were two inflows to George Lake (W02 and W03) that had metals at concentrations above the guidelines to protect aquatic life. Of the metals tested, aluminum, cadmium, copper, iron, nickel, and zinc had concentrations above CCME guidelines. Both cadmium and copper exceeded CCME guidelines at the majority of stations sampled, whereas mercury, arsenic, chromium, molybdenum, selenium, silver, and thallium were recorded at concentrations within the guideline limits at all stations sampled.

Fish Communities

Fish sampling was conducted in Goose Lake, its outflow and at the George Lake area, including George, Slave, Lytle, Bob, Occurrence and Moon lakes. Streams connecting George Lake to Occurrence Lake, and the Occurrence Lake outflow were also sampled for fish. The sampling resulted in the capture of 101 fish representing six species, including lake trout, round whitefish, burbot, slimy sculpin, lake whitefish, and Arctic grayling.

The fish communities in lakes were dominated by lake trout (77% of total catch), followed by round whitefish (17%), lake whitefish (4%), and Arctic grayling (1%). All lakes in the Back River Project area supported fish with the exception of Moon, Slave, Occurrence, and Lytle lakes; however, Occurrence and Lytle lakes may provide seasonal habitat for fish moving between George Lake and waterbodies lower in the watershed. Electrofishing in study streams yielded a community dominated by burbot and slimy sculpin (each species contributing 44% of total catch). Arctic grayling was also present in the study streams (11% of total catch).

Fish sampling results suggested that the Goose Lake system had a community comprised of all six study species, whereas the George Lake system had only four species present (lake whitefish, Arctic grayling, burbot, and slimy sculpin). Cisco spp. and ninespine stickleback were not captured during this inventory but are known to occur in the study region, for example, at waterbodies in lower reaches of the watershed.

Lake Habitat (Bathymetry)

Reconnaissance-level bathymetric surveys were completed in Goose, George, Fold, Bob, Occurrence, Lytle, Moon, and Slave lakes. The deepest lake was Goose Lake at 24.8 m, followed by George Lake at 17.3 m, Fold Lake at 15.1 m, Bob Lake at 6.7 m, Occurrence Lake at 1.8 m, Lytle Lake at 1.4 m and both Moon and Slave lakes at 1.1 m. The latter four lakes likely provide poor over-wintering habitat for fish given their shallow waters.

Field Report - Back River Project
Wildlife and Wildlife Habitat
2007

Prepared for

Dundee Precious Metals Inc.

In association with

Aurora Wildlife Research

AED Consulting

March 2008

Reference: **GLL 72706**

Distribution:

2 Dundee Precious Metals Inc.

1 Gartner Lee Limited

Gartner Lee

Executive Summary

As part of initial environmental baseline requirements, wildlife field activities were conducted in 2007. These studies were associated with Dundee Precious Metals Inc.'s Back River Project south of Bathurst Inlet. The overall objective of these field studies was to provide baseline data on wildlife species and habitats presumed to be of concern or importance to regulators and communities. A Back River Project Regional Study Area (RSA) was developed to incorporate a 30 km buffer around the proposed development footprint as known in early 2007, resulting in an area of approximately 11,500 km^2. Field activities in 2007 focussed on ungulates, carnivore den sites, raptors, and upland breeding birds.

Ungulates

Five aerial surveys were conducted in 2007 to collect information on barren-ground caribou (*Rangifer tarandus groenlandicus*) and muskoxen (*Ovibos moschatus*) in the RSA. One kilometre wide transects spaced at 8-km intervals (~12.5% coverage) were flown between mid-May and mid-September using a fixed-wing aircraft. The greatest numbers of caribou on transect were observed in mid-May and late July (11.3 and 13.9 caribou/100 km^2, respectively). Two caribou herds used or came close to the RSA during 2007. Animals from the Ahiak herd were present in May, migrated out of the area to calving grounds east of Bathurst Inlet by early June, and returned into the area in late July (including nursery groups). Nursery groups of Bathurst caribou swept through just west of the RSA in mid-July. Few caribou remained in the RSA by mid-September. In general, caribou used the southern half of the RSA to a greater extent, possibly avoiding the more rugged and rocky northern portions.

Muskoxen were observed in low numbers throughout the study area during each survey. The maximum density was observed in late July (2.02 muskoxen/100 km^2). Including muskoxen observed on and off transect, 40–43 animals were the most recorded in any survey. Overall, calves comprised 10% of muskoxen on transect ($n = 50$) and 12% off transect ($n = 82$).

Carnivores

The 2007 carnivore program consisted of aerial esker surveys for dens. A low-level helicopter survey of major eskers and other glacio-fluvial deposits (primarily along rivers) was conducted in mid-June, and most sites were re-visited in early August. Five active wolf (*Canis lupus*) dens and three active red fox (*Vulpes vulpes*) dens were found. Pups were observed at four of the wolf dens, but to minimize disturbance no effort was expended to obtain an accurate count of litter size. No grizzly bear (*Ursus arctos*) or wolverine (*Gulo gulo*) dens were found during the aerial den site surveys. However, two grizzly bear dens were found during upland breeding bird surveys. Eleven grizzly bears were observed during various aerial surveys within the RSA, all single animals except for one group of a female with two cubs of the year.

Raptors

Occupancy (mid-June) and productivity (early August) surveys for raptors were conducted to establish baseline data on distribution and productivity. The raptor study area covered

approximately 6,600 km^2, and all cliffs and potential nesting habitat within this area were surveyed by helicopter. Eighty occupied raptor sites were observed during the June surveys, distributed in clumps following the topography of the area. Peregrine falcons (*Falco peregrinus tundrius*) were the most common raptor (39 occupied sites), followed by rough-legged hawks (*Buteo lagopus*; 27 sites). Nine golden eagle (*Aquila chrysaetos*), one gyrfalcon (*Falco concolor*), and four occupied raven (*Corvus corax*) nests were also found. Very poor nesting success of the later nesting species was documented. Only 7% of occupied peregrine falcon sites and 4% of rough-legged hawk sites were productive, likely related to the late spring and poor spring weather.

Upland Breeding Birds

Surveys for songbirds, shorebirds, and other land birds (herein termed upland breeding birds) were conducted in late June close to the proposed mine sites and roads as known in early 2007. Sixty plots (each 400 m x 400 m; 16 hectare in size) and 47 transects (400 – 2,000 m in length) were surveyed, covering both major and less common habitats with the survey area. Thirty-six species of birds were observed during the survey. An additional two bird species were recorded on other surveys within the larger RSA. The species assemblage was representative of the common diversity and abundance of species found in the low Arctic tundra. The relative abundance of eight species of songbirds in 60 plots (a total of 960 ha) was 0.92 songbirds/ha, and in 47 transects (1,190 ha) was 0.70 songbirds/ha. In 22 plots (352 ha) where shorebirds were present, the relative abundance was 0.25 adults/ha for all eight species combined, and for 25 transects (624 ha) it was 0.13 adults/ha. Eskers provided a large diversity of bird species because they encompass and border several habitat types.

Field Report Back River Project
Freshwater Aquatic Resources
2007

Prepared for

Dundee Precious Metals Inc.

In association with

Northwest Hydraulic Consultants

March 2008

Reference: **GLL 72707, 72709, 72712**

Distribution:

2 Dundee Precious Metals

3 Gartner Lee Limited

1 Northwest Hydraulic Consultants

Gartner Lee

Executive Summary

As part of environmental baseline requirements, field activities concerning fresh water aquatic resources were conducted in 2007. These studies were associated with Dundee Precious Metals Inc.'s Back River Project south of Bathurst Inlet, Nunavut. Two potential gold deposits, George Lake and Goose Lake, are being explored along with other prospective areas of gold mineralization. The overall objective of these field studies was to provide baseline data on aquatic resources presumed to be of concern or importance to regulators and communities, specifically local hydrology, water and sediment quality, and fisheries. Project study areas were developed based on previous sampling programs and the anticipated area of impact associated with mine development.

Snow pack depths and densities were measured along a potential access route from Goose Lake to Bathurst Inlet. Hydrology studies were concentrated in the Goose Lake and George Lake study areas. Stream and lake levels and stream discharges were measured. Eight hydrometric stations located near the Goose Lake site, and six hydrometric stations at the George Lake site were installed and monitored. Also, water levels were monitored on one site along the proposed road route between the two camps. The data showed that stream flow peaked in late June to early July. Generally, flow decreased steadily throughout the summer, but increased slightly in late August and early September. Data collection was discontinued in mid-September, at which time all data loggers were downloaded for a final time, and reprogrammed for recording over the winter season.

The water quality program was designed to capture seasonal variability in the aquatic environment. This included sampling during spring freshet in early July as well as during open water conditions in summer and fall periods in both the George Lake and Goose Lake study areas. Sampling results were compared to the CCME guidelines for protection of aquatic life. Copper was commonly above the guidelines in lakes and streams. Lone Cow Pond (L317), along strike of the George Lake deposit, had many parameters that exceeded guidelines. Based on the water quality and the lack of anthropogenic metal sources, elevated metals can most likely be attributed to highly mineralized geologic formations in the area through surface or sub-surface interaction. The comparison of total metals to dissolved metals suggests that suspended solids are not a significant source of metal in the George Lake and Goose Lake study areas.

The sediment quality program consisted of one sampling event in August. Sediments were collected from four lakes in the George Lake study area and one lake in the Goose Lake study area, and evaluated using two CCME guidelines: the Probable Effects Level and the Interim Sediment Quality Guideline. It is evident that arsenic is a parameter of concern in the lake sediments of the Goose Lake and George Lake study areas; however, arsenic in the water column was at or below detection limits in most water samples. It is anticipated that it will be necessary to conduct aquatic toxicity tests in order to better understand potential toxicity of arsenic at these sites as well as to develop site-specific guidelines.

Lake L411 in the George Lake local study area was studied to determine fish-bearing capacity, as it was relevant to a proposed airstrip expansion. Based on morphometry, the lake was determined to be non-fishbearing; maximum depth of the lake was shallow such that it would freeze to the bottom over winter and no inlet or outlet channels were observed.