APPENDIX E

YELLOWKNIFE GOLD PROJECT

APPENDIX E

WILDLIFE REPORT

A) Aerial Moose Surveys - 2004

B) Waterfowl Surveys - 2004

February, 2005

Tyhee NWT Corp

APPENDIX E

WILDLIFE REPORT

A) Aerial Moose Surveys – 2004
B) Waterfowl Surveys – 2004

APPENDIX E (A)

AERIAL MOOSE SURVEYS – 2004

TYHEE NWT CORP

YELLOWKNIFE GOLD PROJECT

.

Prepared for:

TYHEE NWT Corp

Prepared by:

EBA ENGINEERING CONSULTANTS LTD.
Yellowknife, Northwest Territories

FEBRUARY 2005

EXECUTIVE SUMMARY

During 2004, EBA Engineering Consultants Ltd. (EBA) conducted wildlife studies in the Yellowknife Gold Project (YGP) area for Tyhee NWT Corp. A moose survey was flown on November 16, 2004 in the region of Giauque Lake, Northwest Territories. The objective was to survey a 625 km^2 area to determine moose density and distribution across the study area.

Moose were present in the YGP study area and occur in low densities. A total of 10 moose (four bulls, four cows, one yearling and one calf) were documented along 273 km of transect resulting in an approximate animal density of one moose for every 27 km^2. Wildlife observations documented during the aerial survey also identified, seven caribou, six wolves, one wolverine, one red fox and one northern hawk owl.

TABLE OF CONTENTS

LIST OF FIGURES

1.0 INTRODUCTION

1.1 General

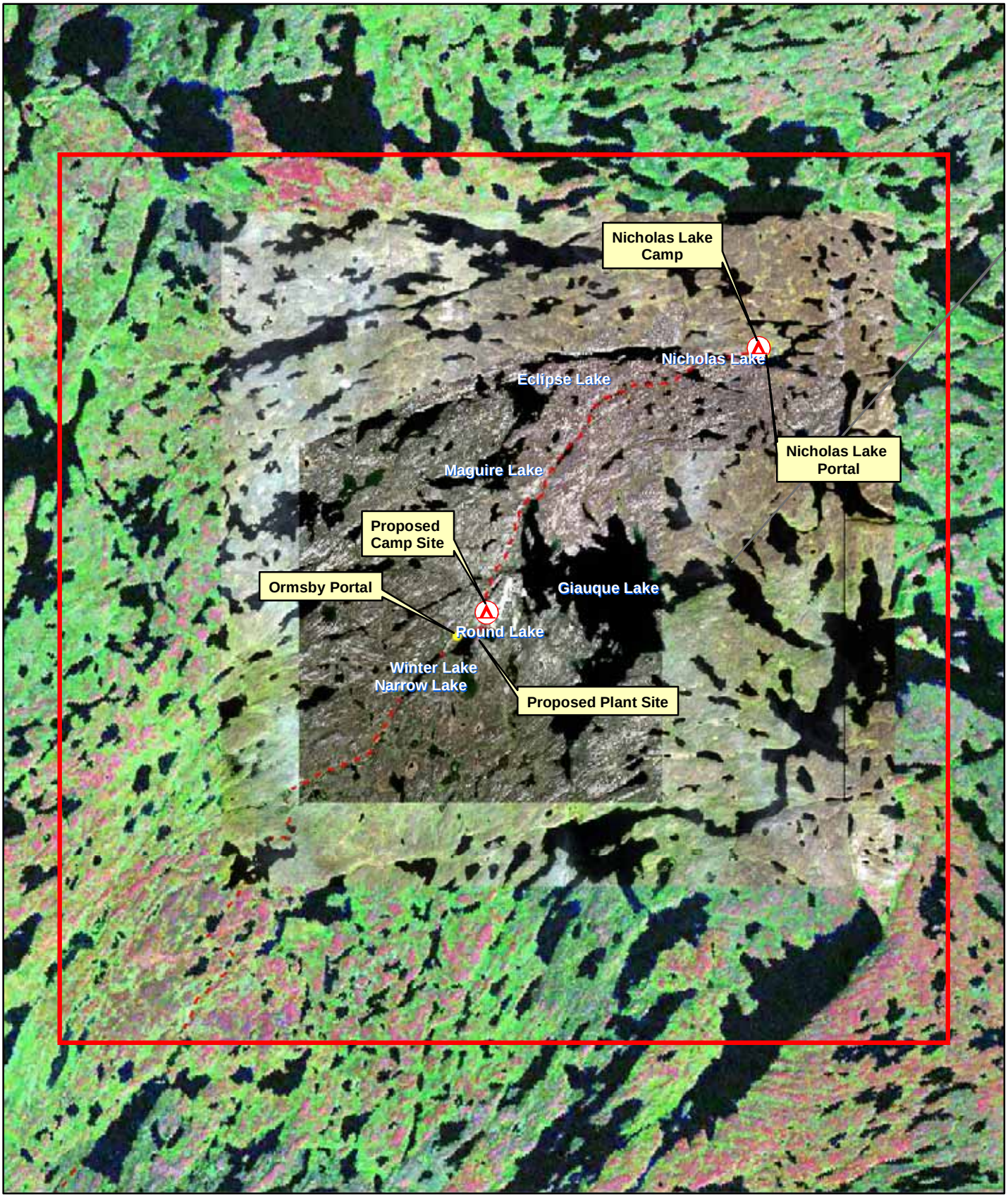
Tyhee NWT Corp (Tyhee) retained EBA Engineering Consultants Ltd. (EBA) to conduct wildlife surveys during 2004, specifically aerial moose surveys, in the region of the Yellowknife Gold Project's (YGP) study area, in the vicinity of Giauque Lake, Northwest Territories (NWT).

The objective of the wildlife survey was to determine moose presence and distribution in the YPG study area.

1.2 Study Area

The YGP's camp is located near Giauque Lake, approximately 85 km north of Yellowknife, NWT at 63^{o} 10' north latitude and 113^{o} 53' west longitude. The study area is 25 km by 25 km (625 km^{2}) with the camp situated in the center (Figure 1). Boundaries of the study area are demarcated by the following lakes: Goodwin Lake in the southwest corner, McCrea River in the southeast corner, Nicholas Lake in the northeast corner and the northwest corner approximately 8 km east of Fishing Lake.

The YGP lies within the Coppermine River Upland Ecoregion. This is a smaller unit of the Taiga Shield Ecozone, a large generalized unit at the top of the ecological hierarchy as defined by the Canada Committee on Ecological Land Classification. An ecoregion is part of an ecozone characterized by distinctive regional ecological factors, including climate, physiography, vegetation, soil, water, fauna and land use (Ecological Stratification Working Group 1995).



Legend

Wildlife Study Area

Winter Road

Note: Road Route is Approximate

Scale 1:150,000

0 0.5 1 2 3 4 5 km

UTM Z12 NAD83

Yellowknife Gold Project

YGP Wildlife Study Area Boundaries 2004

Kyhee NWT Corp

EBA ENGINEERING CONSULTANTS LTD.

February, 2005

Figure 1

Figure1_StudyArea.mxd

2.0 MOOSE

2.1 Introduction

Moose occur throughout the boreal forest of the NWT. They have been observed on arctic or mountain tundra and have been seen far above treeline (NTKP, 2001), yet still a rare occurrence. Their distribution in NWT and Nunavut is believed to be increasing (DRWED, 2005).

The number of moose in the NWT is unknown, but is estimated at more than 10,000 (DRWED, 2005). Densities are relatively low in the NWT, ranging from 3 moose to 17 moose per 100 km² (Graf 1992. Moose are generally non-migratory and occupy the boreal forest throughout the year. Their distribution includes portions of the transition zone, but densities decline with reduced forest cover. Moose occur within the project area at low densities.

Current research suggests the population trend is variable and typically related to environmental factors such as forest fires. Moose prefer early successional forests and fire has been responsible for sustaining much of the present moose range (Bromley and Buckland, 1995).

Moose habitats can be broadly categorized as fire-influenced, non- or limited-fire influenced, or aquatic (Peek 1998). Within the first two (forested) habitats, moose generally prefer semi-open successional stages with an abundance of browse. Such sites are commonly found on floodplains and in riparian areas or wetlands, as well as in regenerating burns. Use of aquatic habitats may occur during all non-winter months, but generally peaks during late June to early August, when plant nutrition and digestibility are highest (Peek 1998). This period coincides with the peak of insect harassment and moose may seek relief in water for this reason as well.

Moose are well adapted to both cold and snow; but deep (>71 cm) or crusty snow can influence winter distribution, behavior and survival (Franzmann 2000). As snow depths and hardness are typically (but not always) greater in open areas, moose may seek more closed canopies when these conditions develop (Peek 1998). Within the boreal forest, moose are non-migratory.

Although moose are dietary generalists and consume many plants, their preference for palatable and nutritious species strongly influences their habitat associations. Riparian willow communities appear to be a major factor determining moose distribution and are used throughout the year. During spring, moose may be attracted to wetlands and other openings, in search of early-emerging grasses and sedges. When aquatic vegetation becomes available in summer, moose spend more time in and near ponds. During fall and winter, their diet concentrates on browse and moose are typically found near stands of preferred species such as willow. Generally, the best-quality moose food habitats are

early successional stages of forests, riparian areas and lakeshores and alder stands. However, during late winter, moose may have to compromise between their needs for nutritious and palatable foods and for reduced snow depths under closed canopies.

2.2 Studies Completed in 2004

Moose studies carried out in 2004 included one aerial survey on November 16. This survey was designed to determine the number of moose and their distribution across the study area, in relation to the YGP near Giauque Lake.

2.3 Methods

The Department of Resources, Wildlife and Economic Development (DRWED) conducted an aerial moose survey in 2004, which covered an area from the Tibbitt to Contwoyto Winter Road corridor west and north of the Ingraham Trail. The YGP lies within this survey area. The results of this survey have yet to be published (D. Cluff, pers. comm.).

Surveys designed to determine density estimates for ungulates are expensive. DRWED will be publishing moose density estimates from their survey in the near future for the YGP and adjacent regions. The 2004 survey design was influenced by the knowledge DRWED would be conducting aerial moose surveys in the region with the information being made available to us. A presence/not present survey (also called reconnaissance or distribution survey) was the chosen methodology. This approach allowed the distribution of moose in relation to YGP's camp, and other portions of the study area, to be documented and can be compared with future surveys.

A flight route within the study area was selected prior to the aerial survey. Because moose show a habitat affinity towards selecting browse during the fall and early-winter, our survey focused on areas supporting extensive patches of willow, birch and alder, such as riparian zones, lakeshores and early successional stands.

The survey route was selected starting at the south end of the YGP study area and proceeded northward. Transect routes followed lakeshores and rivers. UTM coordinates were determined for starting and stopping points for segment. These UTM coordinates were loaded into a Compaq iPAQ computer, equipped with a Global Positioning System (GPS) unit. A remote antenna was used for increased accuracy.

The survey timing was important for maximizing the observer's ability at classifying moose. The aerial survey was conducted in mid-November, which is the best period for differentiating between adult bulls, adult cows, yearlings and calves (Resources Inventory Committee 2002). The survey was conducted using a Cessna 185 aircraft.

Prior to the survey, weather conditions were documented. All wildlife observations and locations were recorded on the iPAQ/GPS unit and in a field notebook. The information recorded for each wildlife observation included a waypoint, species, number of individuals, sex and maturity and habitat type. Incidental observations of carnivores (bears, wolves and wolverines), raptors and other miscellaneous species were documented.

2.4 Results for 2004

A total of ten moose were observed along 273 km of transect. Survey results indicate an approximate animal density of one moose for every 27 km^2. This result seems reasonable, as it lies within DRWED's upper and lower density estimates for previous studies, where moose densities were estimated to be one moose per 17 km^2 for good quality moose habitat and one moose per 33 km^2 for poor quality moose habitat (Graf 1992). To protect individual moose, the location of the observations have not been plotted or provided in this report. This is a common and prudent practice that most moose researchers follow. The general area flown is show in Figure 2.

Wildlife observations documented during the aerial survey include ten moose (four bulls, four cows, one yearling and one calf), seven caribou, six wolves, one wolverine, one red fox and one northern hawk owl.

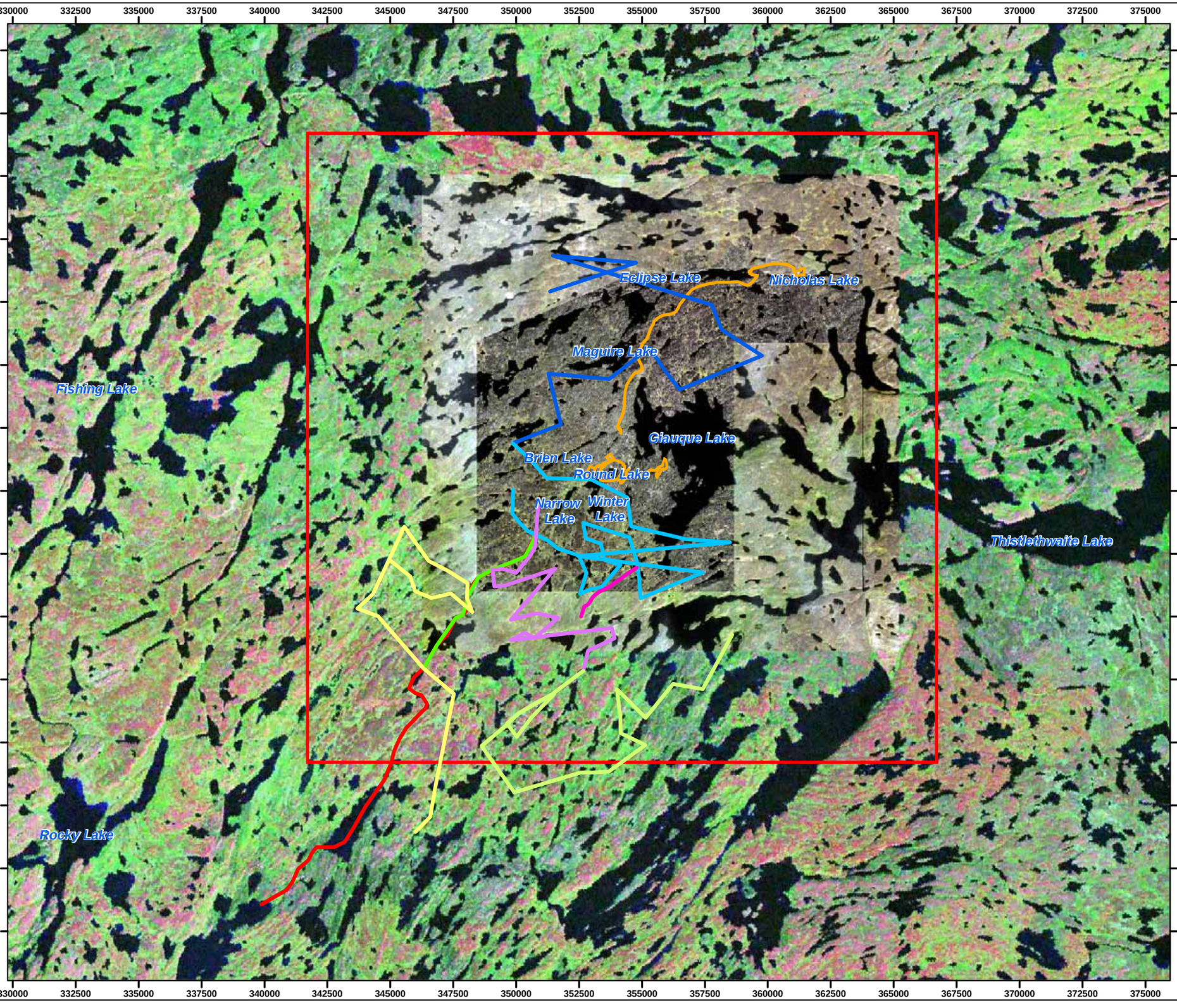
3.0 DISCUSSION

As stated above, initial results suggest an approximate animal density of one moose for every 27 km^2. This estimate lies within DRWED's upper and lower density estimates for previous studies. EBA's results are reasonable and conform to the available moose habitat. Based on vegetation studies conducted in 2004 (EBA 2005), the majority of the habitat (75%) is forested spruce lichen, spruce moss, jack pine lichen and open lake; while willow riparian represents less than 2% of the study area. Conifer-dominated landscapes are sub-optimal moose habitat. Based on these recent vegetation studies, the predominant moose habitat is considered to be poor quality, which corroborates our results of one moose for every 27 km^2.

Moose are generally associated most closely with early successional forest stages and respond positively to uplands recently burned. There have been a number of large forest fires in the region over the past years, the largest occurring six years ago in 1998. This has set back large patches of forest cover to earlier successional stages. These patches of young shrubs are now providing high quality moose browse. The optimal successional stage for browse production in the boreal forest occurs between 11 years and 30 years post-fire, and generally peaks at around 15 years (Franzmann 2000), although these values probably vary regionally (LeResche and Davis 1973). Moose densities often increase substantially following fires; however, they may not heavily use large burns until revegetation is adequate to provide security cover (Peek 1998). Given these

conditions, it is reasonable to assume that moose densities will increase within the study area over the next decade, as a result of fires burning off the forest cover.

These results will be examined and compared with DRWED's forthcoming report once it has been released. Future surveys will compliment these results and will be used for comparative purposes.



Legend

- Wildlife Study Area
- Proposed Footprint

Transects

- Powerline Route
- Route 1
- Route 2
- Route 3
- Route 4
- Route 5
- Route 6
- Winter Road Route

N
W E
S

Scale 1:150,000

Km
0 0.5 1 2 3 4 5

Imagery Source: IKONOS (July 27 and August 2 2004)
Landsat TM (August 11 2001)

Yellowknife Gold Project

Transects Flown During Moose Survey, 2004

Tyhee NWT Corp	EBA ENGINEERING CONSULTANTS LTD.
March, 2005	Figure 2

1740082_Figure2_moose-survey_v2.mxd

4.0 LITERATURE CITED

Bromley, M. and Buckland, L. 1995. *Biological information for the Slave Geological Province.* Department of Renewable Resources, Government of the Northwest Territories. Manuscript Report No. 83.

Cluff, D. *Personal Communication, 2001*. Regional biologist, North Slave Region. Resources, Wildlife and Economic Development (DRWED), Government of the Northwest Territories, Yellowknife.

DRWED (Resources, Wildlife and Economic Development). 2005. *NWT Species 2000. General Status Ranks of Wild Species in the Northwest Territories.* Government of the Northwest Territories (GNWT), DRWED, Yellowknife NT. 50 pp. Also available at: http://nwtwildlife.rwed.gov.nt.ca/monitor. Accessed January 20, 2005.

EBA Engineering Consultants Ltd. In press Ecological Land Classification Field Report. Prepared by EBA Engineering Consultants Ltd., for Tyhee NWT Corp., Yellowknife, NWT.

Ecological Stratification Working Group. 1995: *A national ecological framework for Canada.* Agriculture and Agra-Food Canada, Research Branch, Centre or Land and Biological Resources Research, Environment Canada, State of the Environment Directorate, Ecozone Analysis Branch, Ottawa-Hull. 125 pp.

Franzmann, A.W. 2000. *Moose*. In S. Demarais and P.R. Krausman, eds., Ecology and management of large mammals in North America. 578-600 pp. Prentice Hall. Upper Saddle River, NJ.

Graf, R.P. 1992. *Status and management of moose in the Northwest Territories, Canada*. Alces Suppl. 1:22-28.

LeResche, R.E. and Davis, J.L.. 1973. Importance of nonbrowse foods to moose on the Kenai Peninsula, Alaska. J*ournal of Wildlife Management* 37: 279-287.

NTKP (Naonayaotit Traditional Ecological Knowledge Project) 2001. *Traditional knowledge of the Inuit of the western Kitikmeot.* (Unpublished GIS database). Kugluktuk, NT.

Peek, J.M. 1998. *Habitat relationships.* In A.W Franzmann and C.C. Schwartz, eds., Ecology and management of North American moose. 351-375 pp. Smithsonian Institution Press, Washington.

Renecker, L.A. and C.C. Schwartz. 1998. *Food habits and feeding behavior*. In A.W Franzmann and C.C. Schwartz, eds., Ecology and management of North American moose. 403-439 pp. Smithsonian Institution Press, Washington.

Resources Inventory Committee. 2002. *Aerial-based Inventory Methods for Selected Ungulates: Bison, Mountain Goat, Mountain Sheep, Moose, Elk, Deer and Caribou.* Standards for Components of British Columbia's Biodiversity No. 32. Prepared by Ministry of Sustainable Resource Management, Terrestrial Information Branch for the Terrestrial Ecosystems Task Force. Version 2.0. http://www.for.gov.bc.ca/ric.

APPENDIX E (B)

WATERFOWL SURVEYS – 2004

TYHEE NWT CORP.

YELLOWKNIFE GOLD PROJECT

Prepared for:

TYHEE NWT CORP

Prepared by:

EBA ENGINEERING CONSULTANTS LTD.
Yellowknife, Northwest Territories

FEBRUARY 2005

EXECUTIVE SUMMARY

Tyhee NWT Corp. retained EBA Engineering Consultants Ltd. (EBA), during the summer of 2004, to conduct waterfowl investigations in the vicinity of the Yellowknife Gold Project (YGP). The objective was to document the presence of waterfowl occupying selected lakes near the YGP study area.

Waterfowl were present in the YGP study area during the spring, summer and fall. Surveys were conducted on July 31, 2004, August 1, 2004 and August 15, 2004. Seventeen lakes were surveyed and included large lakes, small lakes, boreal and bog ponds. This included Giauque, Maguire, Eclipse, Nicholas, Brien, Winter, Narrow and Round lakes, in addition to nine unnamed boreal and bog ponds.

A total of 67 observations were documented representing 13 different species. The four most common waterfowl species documented were White-winged Scoters, Surf Scoters, Greater Scaups and Common Loons.

Each prescribed lake was assessed in relation to waterfowl habitat quality. Giauque, Maguire, Eclipse, Nicholas, Brien, and Narrow lakes were rated low for waterfowl habitat quality. These lakes possess limited amounts of emergent vegetation and have low primary productivity. Winter and Round lakes were rated as having medium amounts of waterfowl habitat. These lakes possess moderate amounts of emergent vegetation but have low primary productivity. Nine miscellaneous ponds were also surveyed, which included small boreal, fen and bog ponds. The miscellaneous ponds contained good quality waterfowl habitat and possessed many breeding pairs.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1.0 INTRODUCTION

1.1 General

Tyhee NWT Corp. (Tyhee) retained EBA Engineering Consultants Ltd. (EBA) to conduct baseline waterfowl surveys (includes ducks, grebes, swans and geese), as part of the Yellowknife Gold Project (YGP). The surveys conducted in 2004, included ground based inventories on selected lakes, previously determined as the YGP wildlife study area (study area). The prescribed lakes were chosen in relation to the location of the existing YGP camp in the vicinity of Giauque Lake, Northwest Territories (NWT).

Objectives of the waterfowl surveys were to document the presence of waterfowl on selected lakes occurring within the YGP study area.

The Department of Resources, Wildlife and Economic Development (DRWED), Government of the Northwest Territories (GNWT) recognizes 42 species of waterfowl (this includes ducks, grebes, swans and geese) occurring within the NWT (GNWT 2000). Waterfowl represent a large and diverse assemblage of species, which belong to three family groups. These species are widely distributed throughout the NWT and occupy most wetland habitat types. The diverse habitats of the boreal forest support populations of many species of waterfowl during parts of their life cycles (e.g., breeding, molting and migrating).

Waterfowl breed throughout much of North America; however, regions that attract greater breeding densities include the Prairie Pothole and Parkland Regions in central Canada, the Peace-Athabasca Delta and the Mackenzie Delta (Anonymous 1998). Within the NWT, waterfowl breed throughout the boreal forest, the transition zone and the tundra at varying densities.

Of the 42 species known to occur in the NWT, 24 species may be present in the YGP study area (Table 1), some are summer residents while others are migratory. Waterfowl are common in the YGP study area during early spring, summer and fall but are not present in the NWT during winter. At the Territorial level, five species are considered "Sensitive," and 19 species are classified as "Secure" (DRWED 2001). The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) has assessed two of the 24 waterfowl species and has ascribed a status of "Not At Risk" to two species. The remaining 22 species have not been evaluated by COSEWIC.

1.2 Study Area

The YGP project is located approximately 85 km north of Yellowknife, NWT at 63° 10' North latitude and 113° 53' West longitude. The study area is 25 km by 25 km (625 km^2), with the YGP camp situated in the center (Figure 1).

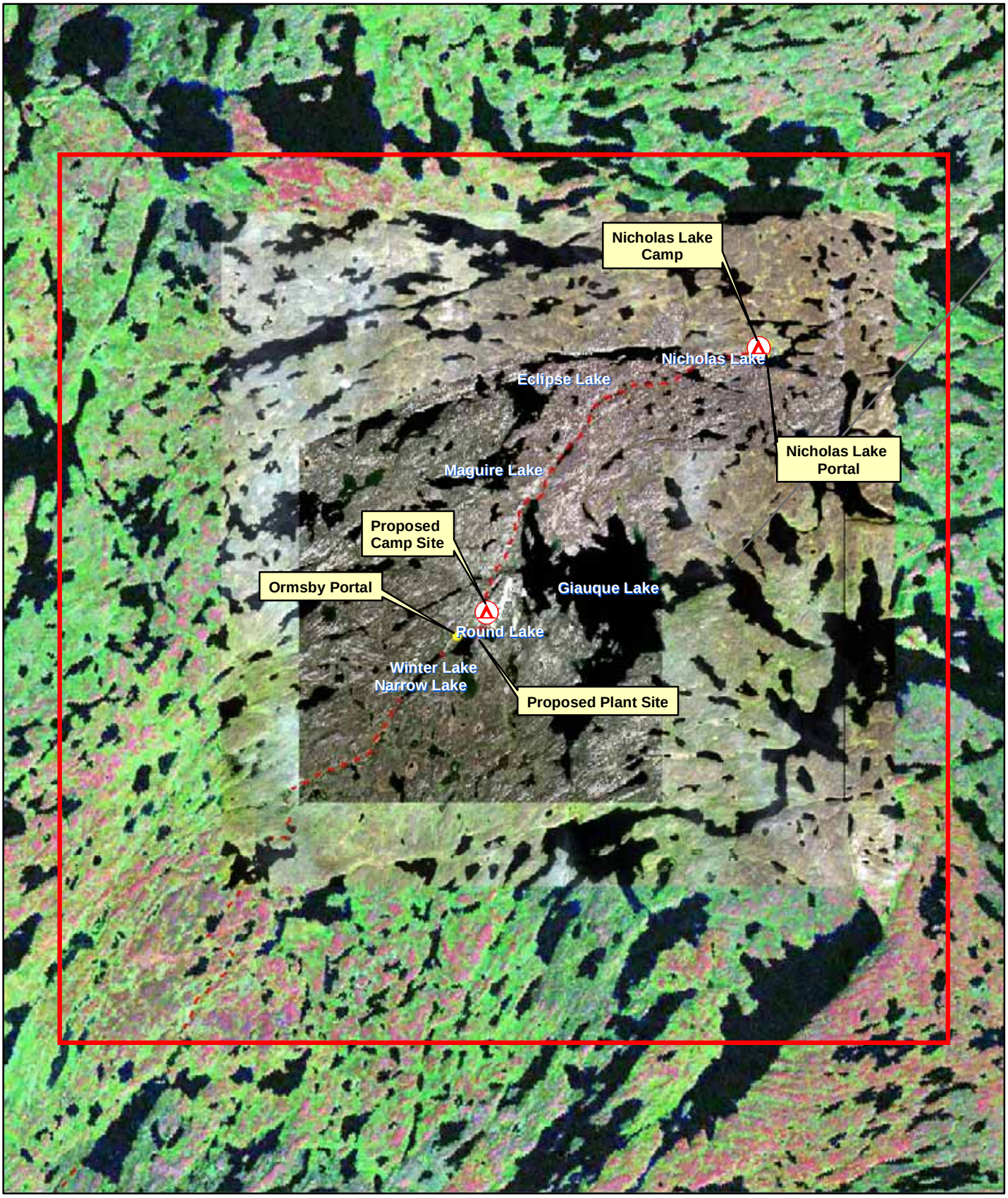
The YGP lies within an area known as the Coppermine River Upland Ecoregion that is a smaller unit of the Taiga Shield Ecozone. The Taiga Shield Ecozone is a complex of several ecoregions and is a large generalized unit at the top of the ecological hierarchy, as defined by the Canada Committee on Ecological Land Classification. An ecozone consists of ecoregions characterized by distinctive regional ecological factors, including climate, physiography, flora, soil, water, fauna and land use (Ecological Stratification Working Group 1995).

2.0 METHODS

Waterfowl studies carried out in 2004 included surveys conducted on July 31, August 1 and August 25. Additional waterfowl information was gathered during the other components of the 2004 field program, such as water sampling and ecological land classification. Surveys were designed to document the presence and distribution of waterfowl on selected lakes, within the study area near Giauque Lake.

The "Look-See" method was the chosen technique for conducting waterfowl surveys in 2004. This is an appropriate methodology for counting birds, such as waterfowl, breeding at low density in remote areas (Biddy *et al*. 1992). This technique involves selecting lakes prior to conducting fieldwork and setting up observation stations at the predetermined water bodies. Observation stations are the standard approach for the "Look-See" method for surveying breeding (mated pairs) and non-breeding waterfowl during mid-summer. This technique is useful for surveying birds in all lifecycle stages and is the preferred method for counting breeding pairs and broods for all but the most conspicuous species (e.g., swans and geese) (Ministry of Environment, Lands and Parks 1999). This approach is appropriate for loons, grebes, coots, swans, geese and dabbling, diving and sea ducks.

Surveys were designed to determine waterfowl species present. Small lakes were surveyed on foot (ground surveys), while a boat was used on larger lakes. Boats allow more area to be covered in a shorter period of time than from the ground, plus they allow a closer view of birds on the larger water bodies. A fixed-wing aircraft was used to survey one small remote lake, Brien Lake.



Legend

Wildlife Study Area

Winter Road

Note: Road Route is Approximate

Scale 1:150,000

0 0.5 1 2 3 4 5 km

UTM Z12 NAD83

Yellowknife Gold Project

YGP Wildlife Study Area Boundaries 2004

Kyhee NWT Corp

EBA ENGINEERING CONSULTANTS LTD.

February, 2005

Figure 1

Figure1_StudyArea.mxd

Table 1
Waterfowl Species within the YGP Study Area and their Status

Common Name	Scientific Name	RWED Status [1]	COSEWIC Status [2]
Northern Pintail	*Anas acuta*	Sensitive	Not evaluated
Greater Scaup*	*Aythya marila*	Sensitive	Not evaluated
Long-tailed Duck*	*Clangula hyemalis*	Sensitive	Not evaluated
Surf Scoter*	*Melanitta perspicillata*	Sensitive	Not evaluated
White-winged Scoter*	*Melanitta fusca*	Sensitive	Not evaluated
Common Loon*	*Gavia immer*	Secure	Not at risk
Pacific Loon*	*Gavia pacifica*	Secure	Not evaluated
Red-throated Loon	*Gavia stellata*	Secure	Not evaluated
Red-necked Grebe*	*Podiceps grisegena*	Secure	Not at risk
Horned Grebe*	*Podiceps auritus*	Secure	Not evaluated
Canada Goose	*Branta Canadensis*	Secure	Not evaluated
Mallard*	*Anas platyrhynchos*	Secure	Not evaluated
Tundra Swan*	*Cygnus columbianus*	Secure	Not evaluated
Green-winged teal*	*Anas crecca*	Secure	Not evaluated
Blue-winged teal	*Anas discors*	Secure	Not evaluated
American Wigeon*	*Anas Americana*	Secure	Not evaluated
Northern Shoveler*	*Anas clypeata*	Secure	Not evaluated
Ring-necked Duck*	*Aythya collaris*	Secure	Not evaluated
Canvasback	*Aythya valisineria*	Secure	Not evaluated
Redhead	*Aythya Americana*	Secure	Not evaluated
Common Goldeneye	*Bucephala clangula*	Secure	Not evaluated
Bufflehead*	*Bucephala albeola*	Secure	Not evaluated
Ruddy Duck	*Oxyura jamaicensis*	Secure	Not evaluated
Common Merganser*	*Mergus merganser*	Secure	Not evaluated
Red-breasted merganser*	*Mergus serrator*	Secure	Not evaluated

[1] (DRWED 2001).
[2] (COSEWIC 2002).
* **Bird species observed in 2004**.
Species list based on Godfrey 1979, Peterson (1990), Dunn (1999), and Sibley 2000

The ground survey of lakes was completed by two staff members hiking to a selected lake. From a strategic observation point, the staff slowly scanned the entire lake using a spotting scope. Each scan lasted for a minimum of 15 minutes, to provide ample time to spot birds that may have been diving or hiding.

At each observation point, the following data were recorded: date, UTM coordinates weather parameters, species (all incidental bird and mammal species were recorded), numbers of birds seen, behavioural notes, adjacent terrestrial ecosystem unit(s) and any predators of waterfowl.

Breeding territories were confirmed based on one of the following two observation criteria: 1) adult pair on the lake during one visit, or 2) one adult with a brood.

Anecdotal information on other wildlife species occurring in the area was also collected. The presence of wildlife (based on actual observation, or inferred from tracks, burrows, browse and droppings or scat) was recorded. Additional information was also noted as to the associated habitat and how the animal was interacting with the habitat such as browsing, digging, etc Photographs were taken where appropriate, i.e., willow bark striped by bears and UTM coordinates were collected for each observation.

Common names of species have been used in the text and are based on the current American Ornithologists' Union (AOU) naming convention (AOU 2005). By convention, common names of birds characteristically begin with capital letters and is the style followed in this report.

3.0 RESULTS FOR 2004

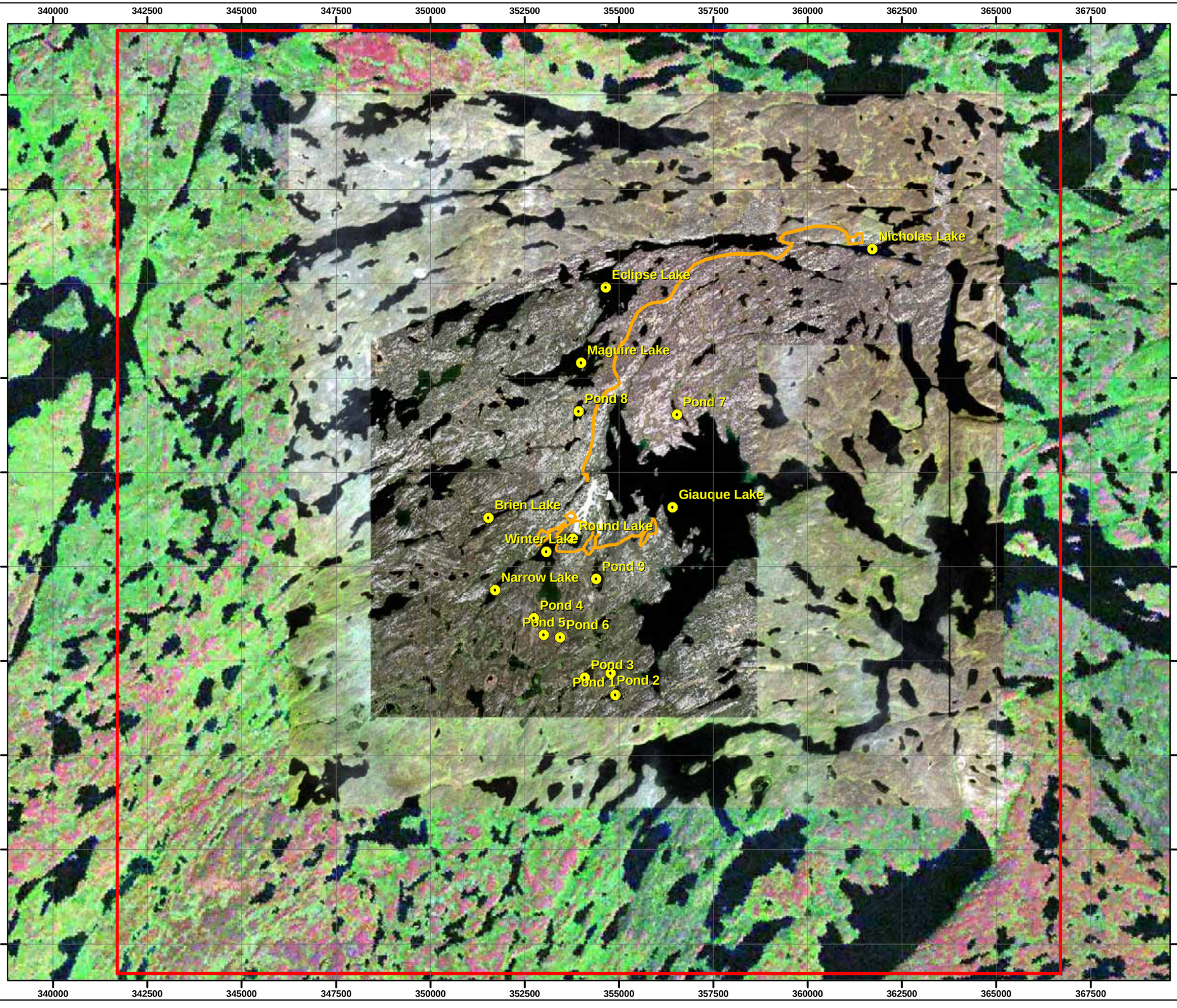
Waterfowl surveys were conducted on July 31, 2004, August 1, 2004 and August 13, 2004. Seventeen lakes were surveyed and included large water bodies, small lakes, boreal and bog ponds (Figure 2). Eight larger lakes were surveyed and included Giauque, Maguire, Eclipse, Nicholas, Brien, Winter, Narrow and Round. In addition, nine unnamed boreal and bog ponds were also surveyed. These smaller water bodies were adjacent to the larger lakes mentioned above. Small ponds, i.e., bog ponds, were surveyed as encountered during our travels.

A total of 67 observations were documented representing 13 different species (Table 2). The four most common waterfowl species documented were White-winged Scoters, Surf Scoters, Greater Scaups and Common Loons. Table 2 presents species and numbers of waterfowl seen on lakes surveyed. These observations were recorded on July 31st, August 1 and 13 and, consequently, the records do not necessarily represent waterfowl territories but post-nuptial groups of males. Table 3 presents the incidental wildlife observations documented during the waterfowl investigations.

Table 2
Incidental Wildlife Observations Documented During Waterfowl Investigations, 2004

Taxon	Species	Number
Mammal	caribou pellets	Many
Mammal	moose pellet	Many
Mammal	moose tracks	Many
Mammal	snowshoe hare pellets	Many
Mammal	wolf scat old	4
Bird	Ptarmigan pellets	Many
Bird	Common Redpolls	20
Bird	Pineskins	10
Bird	Spruce Grouse dust bowls	5
Bird	Common Tern	4
Bird	Herring Gull	3
Bird	Least Sandpiper	3
Bird	Mew Gull	3
Bird	American Robin	2
Bird	Common Nighthawk feeding	2
Bird	Common Raven	1
Bird	Common Snipe and nest	1
Bird	Flycatcher Perch	1
Bird	Northern Waterthursh	1
Bird	Olive-sided Flycatcher	1
Bird	Northern Hawk owl	1

The primary productivity within a given water body influences the rest of the lake's food chain and the extent in which these resources develop. Kerekes (1990) established a positive correlation between waterfowl densities and a lake's primary productivity, independent of lake size, depth and shoreline development. In general, the higher the primary productivity in a lake, the greater the number of waterfowl territories.



Legend

- Lakes Surveyed
- Wildlife Study Area
- Proposed Footprint

N
W
E
S

Scale 1:100,050

0 1 2 4 6 Km

Imagery Source: IKONOS (July 27 and August 2 2004)
Landsat TM (August 11 2001)

Yellowknife Gold Project

Lakes Surveyed During 2004
Waterfowl Investigations

Tyhee NWT Corp

EBA ENGINEERING CONSULTANTS LTD.

February, 2005

Figure 2

Project No. 1740082

Table 3

Species Observed During Waterfowl Investigations, 2004

Species	Water body																	
	Eclipse Lake	Giauque Lake	Maguire Lake	Narrow Lake	Brien Lake	Nicholas Lake	Round Lake	Winter Lake	Pond 1	Pond 2	Pond 3	Pond 4	Pond 5	Pond 6	Pond 7	Pond 8	Pond 9	Total
White-winged Scoter	4						2	18							4	6		**34**
Surf Scoter							8	21								1		**30**
Greater Scaup							1	3						8	7	4		**23**
Common Loon	7	4				1	1											**13**
Bufflehead												1	2	1	4		4	**12**
Pacific Loon									1	1	2						1	**5**
Horned Grebe															1		2	**3**
Ring-necked Ducks							3											**3**
Red-breasted Merganser	2																	**2**
Mallard														1	1			**2**
Tundra Swans							2											**2**
Blue-winged Teal	1																	**1**
American Wigeon															1			**1**
Total	**14**	**4**	**0**	**0**	**0**	**1**	**17**	**42**	**1**	**1**	**2**	**1**	**2**	**10**	**18**	**11**	**7**	**131**

Giauque Lake

Due to the size of Giauque Lake, only the western half was surveyed. Giauque Lake was rated low for waterfowl habitat quality. It possesses limited amounts of emergent vegetation and low primary productivity. A Common Loon was documented on this lake.

Maguire Lake

Maguire Lake was rated low for waterfowl habitat quality. It possesses limited amounts of emergent vegetation and low primary productivity. No waterfowl were documented on Maguire Lake during the waterfowl investigations.

Eclipse Lake

Eclipse Lake was rated low for waterfowl habitat quality. It possesses limited amounts of emergent vegetation and low primary productivity. Waterfowl species documented on Eclipse Lake included Common Loons, White-winged Scoters, Red-breasted Mergansers and Blue-winged Teal.

Nicholas Lake

Nicholas Lake was rated low for waterfowl habitat quality. It possesses limited amounts of emergent vegetation and low primary productivity. Loons were the only species recorded on Nicholas Lake.

Brien Lake

Brien Lake was rated low for waterfowl habitat quality. It possesses limited to low quantities of emergent vegetation and low primary productivity. No waterfowl species were recorded on Brien Lake.

Winter Lake

Winter Lake was rated medium for waterfowl habitat quality. It possesses moderate amounts of emergent vegetation and low primary productivity. The greatest number of waterfowl was documented on Winter Lake and included Surf and White-winged Scoters and Greater Scaups. In July, outside the waterfowl investigations, approximately 70 molting scaups were identified on Winter Lake. The majority of these birds represent post-nuptial molting individuals.

Narrow Lake

Narrow Lake was rated low for waterfowl habitat quality. It possesses limited amounts of emergent vegetation and low primary productivity. No waterfowl were observed on

Narrow Lake. However, Mr. Robert E. Draho observed a total of seven ducks (species not identified) on May 28, 2004 and June 1, 2004 (R. Draho pers. comm.).

Round Lake

Round Lake was rated medium for waterfowl habitat quality. It possesses moderate amounts of emergent vegetation but has low primary productivity. Round Lake was one of two water bodies possessing the greatest number of waterfowl species and Surf Scoters, Ring-necked Ducks, White-winged Scoters, Tundra Swans, Greater Scaups and Common Loon.

Miscellaneous Water bodies

Nine miscellaneous ponds were also surveyed. These included small boreal, fen and bog ponds. Typically, these ponds were surveyed en route to other lakes and were all adjacent to the bigger lakes discussed above. These small ponds contained good quality waterfowl habitat and possessed many breeding pairs. Species encountered on these small water bodies include Greater Scaups, Buffleheads, Mallards, White-winged and Surf Scoters, Pacific Loons, Horned Grebes and American Wigeon.

4.0 SUMMARY

The observed difference in the numbers of birds documented in the YGP study area on the larger lakes compared to those on the smaller lakes is likely due to differences in lake characteristics. Larger lakes are associated with lower primary productivity and relatively poorer shoreline vegetation, resulting in lower quality nesting habitat and hiding cover for birds. In contrast, many of the small lakes and ponds have higher primary productivity and greater shoreline vegetation, potentially containing more suitable nesting habitat for waterfowl. The greatest numbers of waterfowl were documented on the small ponds adjacent to the larger lakes. Waterfowl surveys will be conducted earlier in 2005, to document bird territories and densities. Abiotic habitat attributes will be compared in relation to waterfowl densities.

5.0 LITERATURE CITED

Anonymous. 1998. *North American Waterfowl Management Plan - Update*. Joint publication between the U.S. Department of the Interior, Fish and Wildlife Service, SEMARNAP Mexico, and Environment Canada, Canadian Wildlife Service. 34 pp.

AOU. 2005. *Check-list of North American Birds.* 6th edition American Ornithologists Union. http://www.aou.org/checklist/index.php3.

Bergman, R.D. and Derksen, D.V.. 1977. Observations on Arctic and Red-throated Loons at Storkersen Point, Alaska. *Arctic* 30:41-51.

Bibby, C.J., Burgess, N.D. and Hill, D.A. 1993. *Bird Census Techniques*. Academic Press. Toronto. 257 pp.

COSEWIC (Committee on the Status of Endangered Wildlife in Canada) 2002. *Canadian Species at Risk, May 2001.* Committee on the Status of Endangered Wildlife in Canada. Ottawa ON. 31 pp.

Dickson, D. L. 1992. *The Red-Throated Loon As An Indicator Of Environmental Quality*. Can. Wildl. Serv. Occas. Pap.; No. 73. 20p. WR 233

Draho, R.E. *Personal Communication, 2005*. EBA Hydrologist. Vancouver, B.C.

DRWED (Department of Resources, Wildlife and Economic Development). 2001. *NWT Species 2000. General Status Ranks of Wild Species in the Northwest Territories*. Government of the Northwest Territories (GNWT), RWED, Yellowknife NT. 50pp. Also available at: http://nwtwildlife.rwed.gov.nt.ca/monitor. Accessed January 20, 2005.

Dunn, J. L. 1999. N*ational Geographic Field Guide to the Birds of North America*. 3rd edition. 480 pp.

EBA Engineering Consultants Ltd. In press. Ecological Land Classification Field Report in progress. Prepared by EBA Engineering Consultants Ltd. for Tyhee NWT Corp., Yellowknife, NT.

Ecological Stratification Working Group. 1995. *A national ecological framework for Canada.* Agriculture and Agra-Food Canada, Research Branch, Centre or Land and Biological Resources Research, Environment Canada, State of the Environment Directorate, Ecozone Analysis Branch, Ottawa-Hull. 125 pp.

Godfrey, W. E. 1979. *Birds of Canada.* National Museum of Natural Sciences, National Museum of Canada, Ottawa, Ontario. 428 pp.

Graves, J. and Hall, E. 1988. *Arctic Animals*. Department of Renewable Resources, Government of the Northwest Territories, Yellowknife.

Kerekes, J. 1990. Possible correlation of summer common loon (*Gavia immer*) population with the trophic state of a water body. *Verh. Int. Ver. Limnol*. 24:349-353.

McIntyre, J.W. and Barr, J.F. 1983. *Pre-migration Behavior of Common Loons on the autumn staging grounds.* Wilson Bull. 95:121-125.

Ministry of Environment, Lands and Parks. 1999. I*nventory methods for waterfowl and allied species: Loons, Grebes, Swans, Geese, Ducks, American Coot and Sandhill Crane*. Standards for components of British Columbia's biodiversity; No. 18. May 11, 1999, Version 2.0 Prepared by Ministry of Environment, Lands and Parks Resources Inventory Branch for the Terrestrial Ecosystem Task Force Resources Inventory Committee (Canada). Terrestrial Ecosystems Task Force.

Orth, D.J. 1983. Chapter 4: Aquatic Habitat Measurements. In Nielsen, L.A. and D.L. Johnson (eds.), *Fisheries Techniques*. American Fisheries Society. Bethesda, Maryland. 468 pp.

Peterson, R. T. 1980. *Peterson Field Guide to Birds*. Houghton Mifflin Company, Boston, Massachusetts. 384 pp.

Ruggles, A.K. 1994. Habitat Selection by Loons in Southcentral Alaska. *Hydrobiologia* 279/280: 421-430.

Sibley, D.A. 2003. *The Sibley Field Guide to Birds of Western North America*. Knopf Publisher. New York, New York. 471 pp.

Tyhee NWT Corp




YELLOWKNIFE GOLD PROJECT

2005 WILDLIFE STUDIES

May 2006

CREATING AND DELIVERING BETTER SOLUTIONS

eba

Tyhee NWT Corp

2005 WILDLIFE STUDIES
YELLOWKNIFE GOLD PROJECT

1740180.006

May 2006

EBA Engineering Consultants Ltd.
p. 604.685.0275 • f. 604.684.6241 • Oceanic Plaza, 9th Floor
1066 West Hastings Street • Vancouver, British Columbia V6E 3X2 • CANADA

EXECUTIVE SUMMARY

The Yellowknife Gold Project, operated by Tyhee NWT Corp, is an advanced gold exploration project located approximately 85 km north of Yellowknife, NT. Baseline environmental studies began in 2004 and continued in 2005 to support future regulatory applications and to address the interests of the Canadian Wildlife Service and GNWT Environment and Natural Resources. In 2005, the environmental baseline wildlife studies conducted in the Project area included: aerial ungulate surveys, breeding bird survey, owl survey, waterfowl survey and carnivore/esker surveys. This report provides the results of the wildlife studies completed in 2005.

Aerial Ungulate Surveys

Aerial ungulate surveys were conducted on February 4, March 7 and April 18, 2005 within a 25 km by 25 km study area centred on the Property. Each survey consisted of six transects 25 km long and spaced 5 km apart. The effective observation width was 1 km giving a total survey area of 150 km^2 or 24% of the study area.

During the February 4th aerial survey, 22 caribou were observed on transect in five separate groups, yielding a density estimate of 92 ± 40 caribou (using Jolly's Method 2) for the entire survey area. Other wildlife observations included 22 caribou off-transect, four moose and several wolf tracks.

During the March 07 survey, 122 caribou were observed on transect in four separate groups yielding a density estimate of 492 ± 340 caribou in the entire survey area. Other wildlife observations included 30 caribou off-transect, Common Raven, wolf, moose and wolverine and numerous tracks, trails, kill sites, feeding areas and beds.

During the April 18, 2005 survey, 48 caribou were observed on transect in four separate groups, yielding a density estimate of 196 ± 90 caribou for the entire survey area. One group of four caribou were also observed off-transect. One moose was also observed along with numerous caribou trails, tracks and beds. A further 238 caribou were observed en-route to the Project area from Yellowknife.

Breeding Bird Survey

Fifty-eight breeding bird point count plots were completed between June 8 and 16, 2005. A total of 187 birds were documented within the sample plots, representing 34 different species. The most commonly observed birds were Blackpoll Warbler, White-crowned Sparrow, Chipping Sparrow, Palm Warbler and Ruby-crowned Kinglet.

Mixed and deciduous woodland had the highest average number of birds, followed by treed fens and bog complex. The burn areas had the lowest average number of bird observations. The highest average species richness was found in treed fens and bogs, followed by mixed and deciduous woodland and complex. Burn areas had the lowest average species richness. The results for mixed and deciduous woodland, treed fens and bogs and complex must be interpreted with caution as each had few sample locations.

Owl Survey

An owl survey was completed on the night of April 18, 2005 at seven locations along the winter road leading to the Property. At each location, a series of calls were broadcast using a CD player connected to a megaphone. No owls responded to the recorded calls at any of the call playback survey stations. However, it is likely that owls were present in the vicinity of the Project area, but were not detected on the night of the survey. The survey date was timed to coincide with the period that owls should be present in the region. Local abundance of prey may have been a factor. Small mammal prey populations were thought to be low in the winter of 2005, forcing owls to winter further south in the territory and in Northern Alberta.

Waterfowl Survey

Two waterfowl surveys were conducted during the periods June 10 - 15, 2005 and July 18 - August 3, 2005. Both surveys focussed on Round Lake, Winter Lake, Narrow Lake, Brien Lake, and nine separate ponds in the vicinity of the Project area.

The total number of birds observed during the first survey period in June 2005 was 193. The most abundant waterfowl recorded were Lesser Scaup, Surf Scoter and Greater Scaup. The total number of birds observed during the second survey period (July 18 - August 3, 2005) was 133. The most abundant waterfowl recorded during this period were Scaup spp., Surf Scoter, Ring-necked Duck and Pacific Loon.. Sixteen waterfowl species were observed in 2005. In general, the results for 2005 are similar to those reported in 2004.

Carnivore/Esker Surveys

Two main eskers are located near the Project area. These are a four km long esker located approximately 1.5 km southeast of Round Lake and a second esker (2.5 km long) located at the south end of Giauque Lake about 4.5 km southeast of Round Lake. To determine if there are carnivore dens or other wildlife uses in these eskers, a series of surveys were conducted including an aerial survey of the first esker on April 18, a ground survey of the first esker on July 12 and 13 and a ground survey of the second esker on August 3, 2005.

One unoccupied fox den was found on the first esker and evidence of black bear, wolf and fox were recorded on both eskers. Based on the observations obtained from these three surveys and from other incidental observations recorded during other surveys, wildlife use of the eskers appears to be generally similar to that found elsewhere in the study area in terms of species diversity or number of observations.

TABLE OF CONTENTS

PAGE

TABLES

FIGURES

APPENDICES

1.0 INTRODUCTION

1.1 BACKGROUND

The Yellowknife Gold Project, operated by Tyhee NWT Corp (Tyhee), is an advanced gold exploration project located approximately 85 km north of Yellowknife, NT (Figure 1). A portion of the Property contains the historic Discovery Mine and the Nicholas Lake Gold Deposit.

Baseline environmental studies began in 2004 and continued in 2005 to support future regulatory applications and to address the interests of the Canadian Wildlife Service (CWS) and GNWT Environment and Natural Resources (ENR). In 2005, EBA Engineering Consultants Ltd (EBA) continued to undertake further environmental baseline wildlife studies within and around the Yellowknife Gold Project area ("the Property"). These studies included:

- Aerial ungulate surveys
- Breeding bird survey
- Owl survey
- Waterfowl survey
- Carnivore/esker surveys.

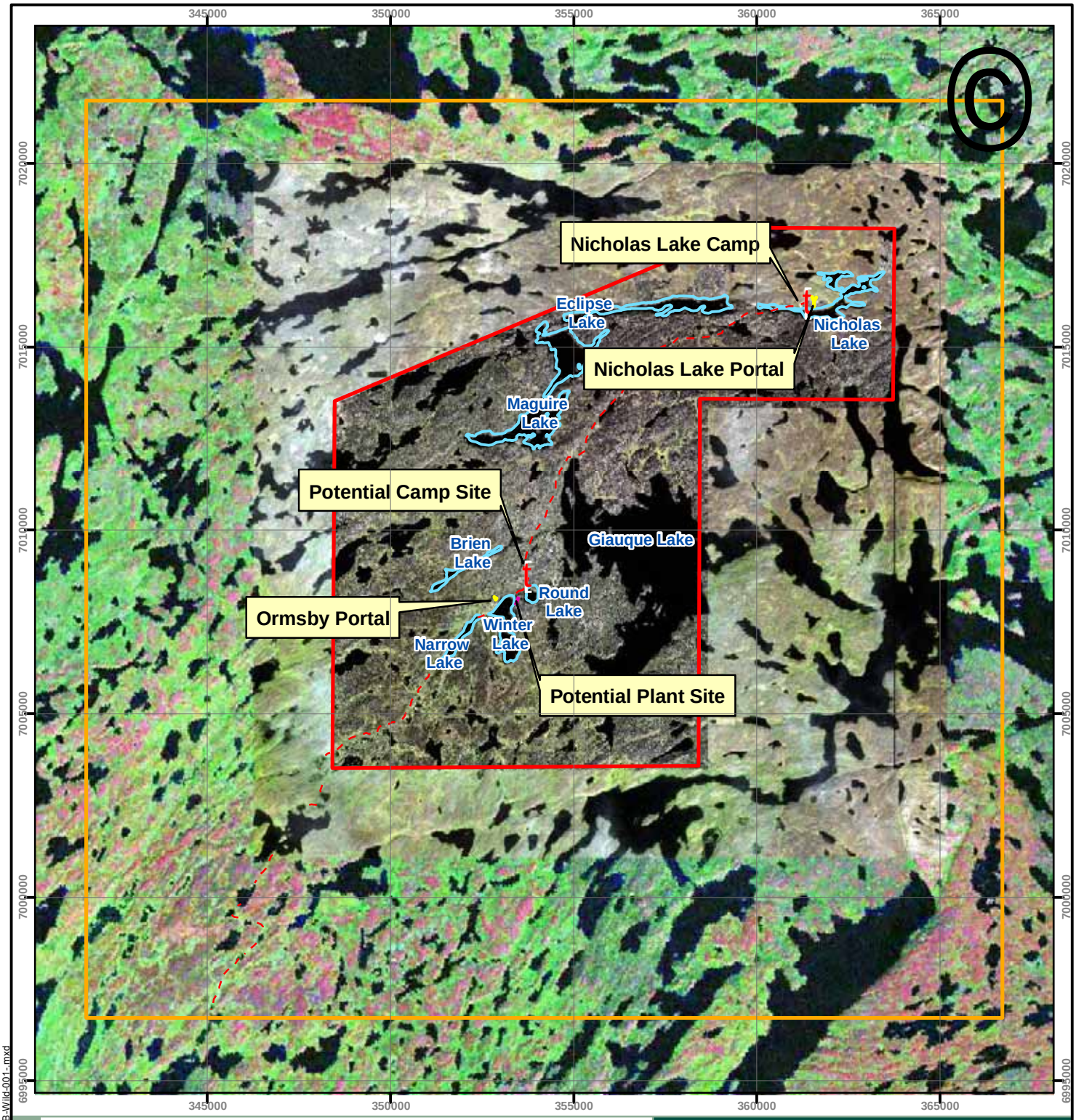
The purpose of these surveys was to document and characterize wildlife and wildlife habitat within the project area and to establish baseline conditions for anticipated environmental assessment and as a basis for future monitoring programs associated with Project implementation and operation. This report provides the results of the wildlife studies completed in 2005.

1.2 STUDY AREA

The Yellowknife Gold Project camp is located near Giauque Lake, approximately 85 km north of Yellowknife, NWT at 63° 10' North Latitude and 113° 53' West Longitude. Two study areas were used for the wildlife surveys. The aerial ungulate surveys were completed in a 25 km by 25 km (625 km^2) area with the Tyhee camp situated in the center (Figure 1). Boundaries of this study area are demarcated by the following waterbodies: Goodwin Lake in the southwest corner, McCrae River in the southeast corner, Nicholas Lake in the northeast corner and the northwest corner approximately 8 km east of Fishing Lake. The ground-based surveys were conducted within the Local Study Area (LSA), a smaller irregularly shaped area measuring 14,475 ha (Figure 1).

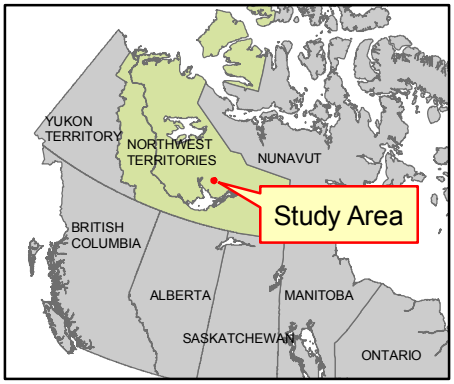
The Project area lies within the Coppermine River Upland Ecoregion, a division of the Taiga Shield Ecozone. Bedrock outcrops are common, and maximum elevation reaches about 490 m asl. Permafrost is discontinuous to continuous, with low to medium ice content with sparse ice wedges throughout. The limit of tree growth is reached along the

northern boundaries of this Ecoregion. Vegetation consists of open, often stunted stands of black spruce (*Picea mariana*) and tamarack (*Larix laricina*), with secondary amounts of white spruce (*Picea glauca*) and ground cover of dwarf birch (*Betula* sp.), ericaceous shrubs (Ericaceae), cottongrass (*Eriophorum* spp.), lichen and moss. Drier sites can support open stands of white spruce, ericaceous shrubs and a ground cover of mosses and lichens. Poorly drained sites support tussock vegetation of sedge (*Carex* spp.), cottongrass, and sphagnum moss (*Sphagnum* spp.).



LEGEND

- Local Study Area
- Ungulate Study Area
- 2004 Study Lakes
- Winter Road
- t Camps



NOTES
Base data source: IKONOS Imagery
Landsat 7
Road route is approximate

YELLOWKNIFE GOLD PROJECT

Yellowknife Gold Property Study Area

PROJECTION: UTM Zone 12	DATUM: NAD83	
Scale: 1:150,000 (1 0.5 0 1 2 3 4 Kilometres)		Tyhee NWT Corp; EBA Engineering Consultants Ltd.
FILE No: 1740180_B-Wild-001		DATE: May 11, 2006
JOB NO: 1740180	REVISION NO: 3	
OFFICE: EBA-VANC	DRAWN: KMW	CHECK: XX

Figure 1

Q:\VancouverGIS\0701_YEL\1740180_TyheeMaps\006_wildlife\1740180_B-Wild-001-.mxd

2.0 AERIAL UNGULATE SURVEYS

2.1 INTRODUCTION

Aerial surveys are the optimal approach to survey ungulates including caribou and moose and also provide an opportunity to observe and record the presence of other large incidental wildlife, including wolves[1], bears, wolverine and birds of prey and their nests. Three formal aerial surveys were conducted in 2005. The primary purpose of these surveys was to determine the distribution, abundance and habitat use of caribou in the Project area.

2.2 METHODS

The three aerial ungulate surveys were conducted on:

- February 4, 2005
- March 7, 2005
- April 18, 2005

The surveys covered the 25 km by 25 km (625 km^2) study area described in Section 1.2 and shown on Figure 1. All surveys used systematic transects oriented north-south. Transects were 25 km long and spaced 5 km apart. There were six transects for a total survey length of 150 km. The effective observation width was 1 km (500 m on each side of the helicopter) giving a total survey area of 150 km or 24% of the aerial survey study area.

A Bell 206B helicopter was used for all surveys. Three people flew on each survey: the pilot, a navigator/observer in the front-left seat and observer in the right-rear seat. The pilot concentrated on maintaining altitude, ground speed and staying on transect. The navigator plotted individual observations on a map, collected waypoints for each observation, pointed out animals, and counted those animals beneath the helicopter.

Prior to each survey, weather conditions were documented and the aircraft windows were calibrated to the proper transect strip width. Flight altitude and ground speed averaged 90 m (agl) and 150 kph, respectively.

All wildlife observed, on and off transect, were recorded. For caribou, all individuals seen within the effective survey strip were recorded as "In" while those beyond the transect boundary were recorded as "Out." The following information was recorded for each wildlife observation:

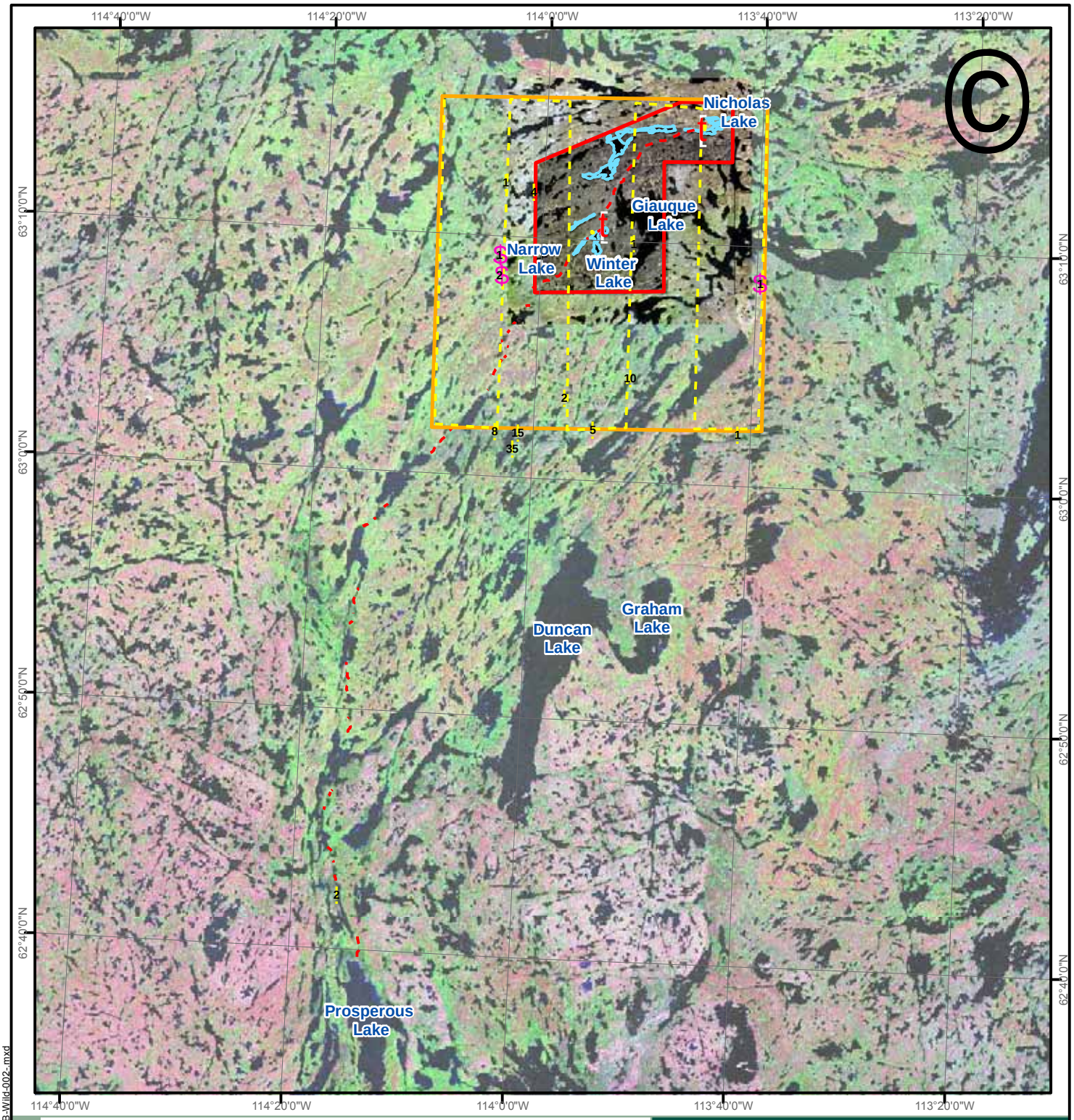
[1] Appendix A provides a list of all species mentioned in the text and includes both common name and scientific name and general habitat associations.

- Transect number;
- GPS waypoint, using a hand-held Magellan 12CX Global Position System (GPS), with a remote antenna for increased accuracy;
- Species;
- Number of caribou "In" and "Out;"
- Dominant composition of caribou group;
- Dominant activity;
- Overall directional movement of caribou, if moving;
- Habitat type;
- Habitat modifier;
- Additional observations of any wildlife and den locations.

Incidental observations of moose, carnivores (bears, wolves and wolverines), raptors, and other miscellaneous species such as arctic hare, ravens, ptarmigan, etc., and other noteworthy observations were documented, such as nesting and denning sites. Caribou density estimates were calculated using Jolly's Method 2 (Jolly, 1969).

2.3 RESULTS AND DISCUSSION

Figures 2-4 show the survey transects, the location of caribou observed and other wildlife observations for each of the three surveys. Table 1 shows the actual number of caribou observed while on-transect and the corrected density estimate (using Jolly's Method 2) for the entire 625 km^2 survey area.



LEGEND

- Local Study Area
- Ungulate Study Area
- 2004 Study Lakes
- Winter Road
- Camps
- Survey Transects

Aerial Observations

- Caribou
- Moose
- Wolverine

* Number indicates number of animals

NOTES
Base data source: IKONOS Imagery
Landsat 7
Road route is approximate

YELLOWKNIFE GOLD PROJECT

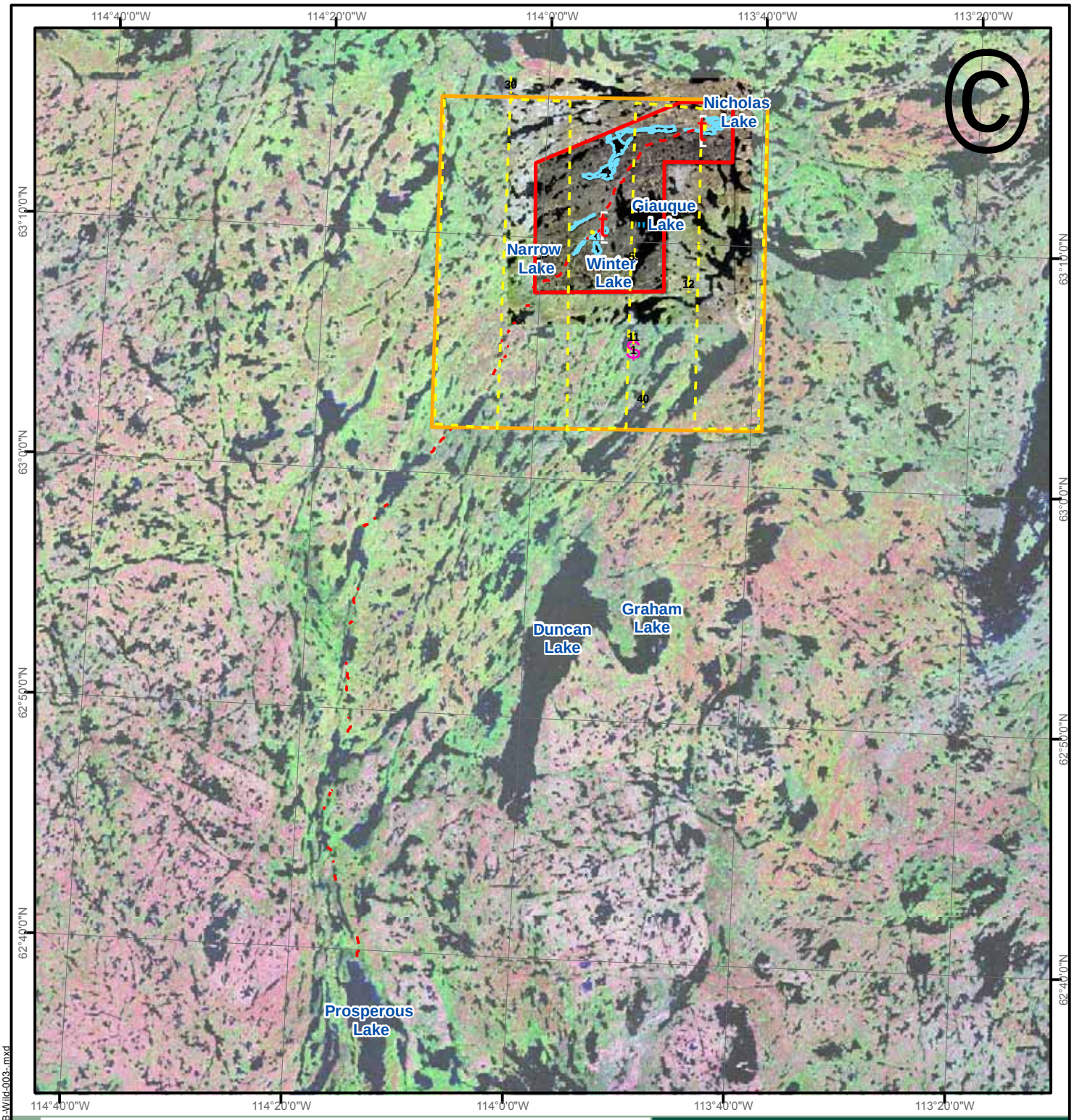
Aerial Wildlife Transects and Observations, February 4, 2005

PROJECTION: UTM Zone 12	DATUM: NAD83
Scale: 1:425,000 (5 2.5 0 5 10 Kilometres)	
FILE No: 1740180_B-Wild-002	DATE: May 11, 2006
JOB NO: 1740180	REVISION NO: 2
OFFICE: EBA-VANC	DRAWN: KMW / CHECK: XX

Tyhee NWT Corp
EBA Engineering Consultants Ltd.

Figure 2

Q:\Vancouver\GIS\0701 YEL\1740180 Tyhee\Maps\006 wildlife\1740180 B-Wild-002-.mxd



LEGEND

- Local Study Area
- Ungulate Study Area
- 2004 Study Lakes
- Winter Road
- Camps
- Survey Transects

Aerial Observations

- Caribou
- Moose
- Wolverine

* Number indicates number of animals

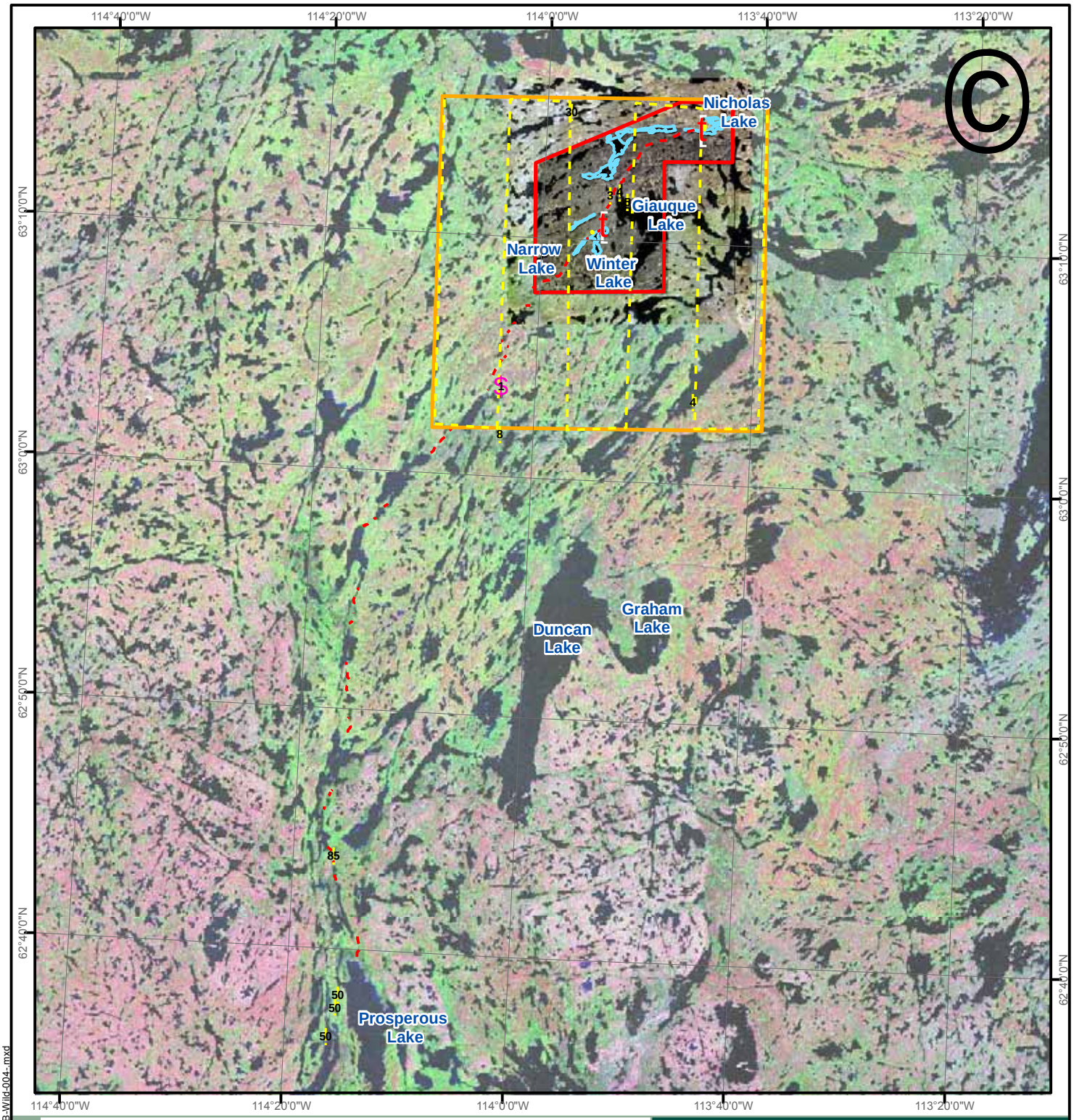
NOTES
Base data source: IKONOS Imagery
Landsat 7
Road route is approximate

YELLOWKNIFE GOLD PROJECT

Aerial Wildlife Transects and Observations, March 7, 2005

PROJECTION: UTM Zone 12	DATUM: NAD83	Tyhee NWT Corp
Scale: 1:425,000 (5 2.5 0 5 Kilometres)		EBA Engineering Consultants Ltd.
FILE No: 1740180_B-Wild-003		DATE: May 11, 2006
JOB NO: 1740180	REVISION NO: 2	
OFFICE: EBA-VANC	DRAWN: KMW / CHECK: XX	Figure 3

Q:\Vancouver\GIS\0701 YEL\1740180 Tyhee\Maps\006 wildlife\1740180 B-Wild-003-.mxd



LEGEND

- Local Study Area
- Ungulate Study Area
- 2004 Study Lakes
- Winter Road
- t Camps
- Survey Transects

Aerial Observations

- 1 Caribou
- $ Moose
- 1 Wolverine

* Number indicates number of animals

NOTES
Base data source: IKONOS Imagery
Landsat 7
Road route is approximate

YELLOWKNIFE GOLD PROJECT

Aerial Wildlife Transects and Observations, April 18, 2005

PROJECTION: UTM Zone 12	DATUM: NAD83
Scale: 1:425,000	
5 2.5 0 5 10 Kilometres	
FILE No: 1740180_B-Wild-004	DATE: May 11, 2006
JOB NO: 1740180	REVISION NO: 2
OFFICE: EBA-VANC	DRAWN: KMW / CHECK: XX

Tyhee NWT Corp
EBA Engineering Consultants Ltd.

Figure 4

Q:\Vancouver\GIS\0701 YEL\1740180 Tyhee\Maps\006 wildlife\1740180 B-Wild-004-.mxd

TABLE 1 SUMMARY OF RESULTS FOR EACH AERIAL SURVEY

Survey Date	Number of Visual Caribou Observations	Corrected Density Estimate
February 4, 2005	22	92 ± 40
March 7, 2005	122	492 ± 340
April 18, 2005.	48	196 ± 90

During the February 4th aerial survey, 22 caribou were observed in five separate groups. This yields a density estimate of 92 ± 40 caribou in the entire survey area. During the survey, 58 caribou were also seen off-transect. Other wildlife observations included four moose and several wolf tracks. Numerous caribou trails, tracks and beds were also recorded.

During the second survey on March, 07, 122 caribou were observed in four separate groups. This gives a density estimate of 492 ± 340 caribou in the entire survey area. The large variance associate with the March 7 survey was due to the fact that all caribou were in a small number of groups and not evenly spread across the study area. A group of 30 caribou were also seen off-transect, in the northwest corner of the survey area. Other wildlife observations included Common Raven, wolf, moose and wolverine and numerous tracks, trails, kill sites, feeding areas and beds.

During the April 18, 2005 survey, 48 caribou were observed in four separate groups. This gives a density estimate of 196 ± 90 caribou in the entire survey area. One group of four caribou were also observed off-transect. A further 238 caribou were observed en-route to the Project area from Yellowknife. One moose was also observed on April 18, 2005 along with numerous caribou trails, tracks and beds.

On February 10, 2005, 22 caribou were observed incidentally while downloading data from the meteorological station.

3.0 BREEDING BIRD SURVEY

3.1 INTRODUCTION

Birds are commonly used in baseline inventories and monitoring programs as they represent an abundant and diverse group of species that are relatively easy to observe and monitor, particularly as the males exhibit conspicuous territorial behaviour.

The purpose of the Yellowknife Gold Project's breeding bird survey was to document species presence and evidence of breeding territories that can be referenced in the future to identify potential effects of mine development on the bird community and for future monitoring programs. The point count survey protocol used here, a common protocol used throughout North America, focussed on upland birds, mostly perching birds, although all birds observed belonging to any group were recorded.

3.2 METHODS

A fixed-radius point count survey methodology was selected for the breeding bird surveys. Point counts are a widely used survey method for estimating songbird abundance. They are easy to conduct using trained observers to record birds from a single point for a designated time period. The application of this bird survey methodology can provide trend data for monitoring population changes and is capable of predicting population changes in response to habitat change. The benefit of using point counts is the ability to identify a wide range of bird species.

Potential point count survey station locations were pre-selected prior to the fieldwork and refined while on-site. Station locations were placed in each ecosystem type (using the ecosystem mapping completed in 2005) proportional to their total coverage in the study area. In this way, common ecosystems would have a greater level of sampling than less common ecosystems.

Breeding bird surveys were carried out between June 8 to 16, 2005. Bird surveys are normally conducted during the breeding season, when most species of songbirds are on territory and singing (Ralph and Scott 1981; Verner 1985; Bibby *et al.* 1992). Ralph *et al.* (1993) recommend that fieldwork for population surveys in temperate North America be conducted from May 1 to June 19.

Singing rate is thought to be highest just before official sunrise and then declines slowly for the next four hours. Ralph *et al.* (1993) and Banci and Moore (1996) believe the best time for surveys is within these four hours because the singing rate is most stable. During the breeding season, these time periods represent the time of day when birds are most visual and vocal (Robbins 1981; Skirvin, 1981; Dawson 1981). This timeframe was also tested and confirmed in 1996 (Banci and Moore 1997). Consequently, all breeding bird surveys are conducted when birds are most conspicuous during the day.

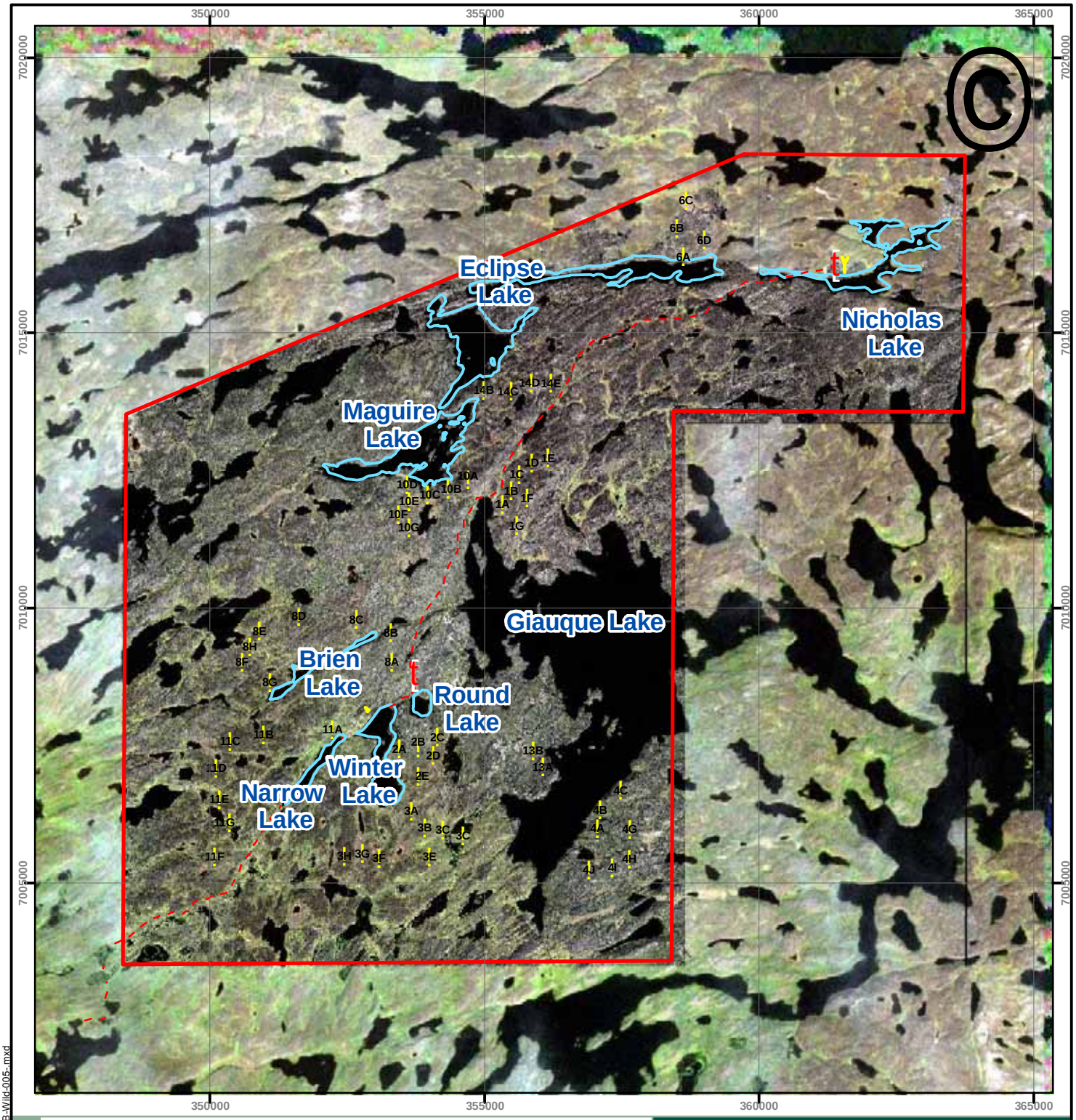
Each survey station site was accessed by a combination of boat and foot. Surveys commenced at 4:00 am and continued until 10:00 am. Surveys were curtailed when observation conditions became unsatisfactory due to weather.

Effort was made to place the point count entirely within the identified ecosystem, with a minimum of 100 m from any edge. Particular care was given to not disturb the birds when approaching stations. Prior to commencing a given survey, surveyors recorded the date, location, weather conditions, basic habitat conditions, crewmembers and start time. Surveyors waited a minimum of 2 to 5 minutes before beginning each survey to allow birds to resume their normal behaviour.

Bird presence was recorded at spatial and temporal intervals: 0-5 and 5-10 minutes; and, 0-50 m, 50-100 m, >100 m and fly-over. A fly-over detection is defined as a bird detected above the highest vegetation during a point-count survey and not stopping within the point count survey area. Bird species were identified visually and/or by territorial calls. Five types of data were recorded for each bird observation: observation number, time, number of individual birds, species, sex where possible, and behavioural activity (flushed, territorial display, etc.). Once the survey was completed the data sheets were reviewed. Additional observations were discussed amongst the two biologists and documented on data sheets and in field notebooks.

3.3 RESULTS AND DISCUSSION

Fifty-eight breeding bird point counts plots were completed between June 8 to 16, 2005 (Figure 4). Table 2 lists the number of plots completed by broad ecosystem unit (see Appendix A in EBA 2005 for an ecological description of the broad units). The majority of plots were located within dry coniferous woodland and burn. These two units represent approximately 70% of all terrestrial areas within the LSA. There were three plots located in each of mixed and deciduous woodland and treed fens and bogs. Two plots were located in complexes, areas that contained more than one habitat type. Habitat types present within the LSA that were not sampled were either types that naturally occur in small areas and would not fit a 100 m radius plot or were inaccessible.



LEGEND

- Local Study Area
- 2004 Study Lakes
- Winter Road
- t Camps
- ! Breeding Bird Survey Location

NOTES

Base data source: IKONOS Imagery
Landsat 7
Road route is approximate

YELLOWKNIFE GOLD PROJECT

Breeding Bird Survey Locations, 2005

PROJECTION: UTM Zone 12	DATUM: NAD83	Tyhee NWT Corp
Scale: 1:100,000 (1 0.5 0 1 2 Kilometres)		EBA Engineering Consultants Ltd.
FILE No: 1740180_B-Wild-005		DATE: May 11, 2006
JOB NO: 1740180	REVISION NO: 1	
OFFICE: EBA-VANC	DRAWN: KMW / CHECK: XX	Figure 5

Q:\VancouverGIS\0701_YEL\1740180_TyheeMaps\006_wildlife\1740180_B-Wild-005-.mxd

TABLE 2 NUMBER OF BREEDING BIRD POINT COUNT PLOTS BY BROAD HABITAT TYPE	
Broad Unit	Number of Plots
Dry coniferous woodland	31
Burn	19
Mixed and deciduous woodland	3
Treed fens and bogs	3
Complex	2
Total	**58**

During breeding bird surveys, a total of 187 birds were documented within the sample plots, representing 34 different species [2]. Table 3 list the species observed in descending order of number of observations. Blackpoll Warbler, White-crowned Sparrow, Chipping Sparrow, Palm Warbler and Ruby-crowned Kinglet were the most common species. Table 4 indicates the number of observations by species and habitat.

TABLE 3 NUMBER OF BIRD OBSERVATIONS BY SPECIES			
Species	Number of Observations	Species	Number of Observations
Blackpoll Warbler	21	Yellow Warbler	2
White-crowned Sparrow	21	Bohemian Waxwing	1
Chipping Sparrow	15	Harris's Sparrow	1
Palm Warbler	15	Lesser Yellowlegs	1
Ruby-crowned Kinglet	15	Northern Water thrush	1
Fox Sparrow	12	Olive-sided Flycatcher	1
Swainson's Thrush	11	Orange-crowned Warbler	1
American Robin	10	Savannah Sparrow	1
Hermit Thrush	9	Solitary Sandpiper	1
Yellow-rumped Warbler	9	Spruce Grouse	1
Gray-cheeked Thrush	6	Tree Swallow	1
Rusty Blackbird	5	White-winged Crossbill	1
Alder Flycatcher	4	Yellow-rumped Warbler	1
Dark-eyed Junco	3	Yellow-billed Flycatcher	1
Gray Jay	2	Unknown shorebird	1
Lincoln's Sparrow	4	Unknown thrush	1
Ruby-crowned Kinglet	2	Unknown Ptarmigan	1
Wilson's Warbler	4		

[2] Appendix A is a bird checklist and provides scientific names and territorial and federal conservation status for all species observed within the Yellowknife Gold Property.

TABLE 4 NUMBER OF BIRD OBSERVATIONS BY SPECIES AND HABITAT

Species	Habitat (Number of Point Count Locations in Habitat)					
	Burn (20)	Dry coniferous woodland (31)	Mixed and deciduous woodland (3)	Treed fens and bogs (3)	Complex (2)	Grand Total (59)
Alder Flycatcher		3			1	4
American Robin	3	6	1			10
Blackpoll Warbler	6	11	3	1		21
Bohemian Waxwing		1				1
Chipping Sparrow		11	1	2	1	15
Dark-eyed Junco	1	2				3
Fox Sparrow		9	1	1	1	12
Gray Jay		1	1			2
Gray-cheeked Thrush	4		1	1		6
Harris's Sparrow	1					1
Hermit Thrush	6	1	2			9
Lesser Yellowlegs				1		1
Lincoln's Sparrow	2	2				4
Northern Waterthrush					1	1
Olive-sided Flycatcher		1				1
Orange-crowned Warbler		1				1
Palm Warbler	9	5		1		15
Ptarmigan		1				1
Ruby-crowned Kinglet		10	2	1		13
Rusty Blackbird		4			1	5
Savannah Sparrow		1				1
Solitary Sandpiper				1		1
Spruce Grouse		1				1
Swainson's Thrush	6	9				15
Tree Swallow	1					1
White-crowned Sparrow	12	6	1	2		21
White-winged Crossbill				1		1
Wilson's Warbler	2	1			1	4
Yellow Warbler		1			1	2
Yellow-rumped Warbler		6	2		2	10
Yellow-bellied Flycatcher		1				1
Unknown			1			1
Unknown shorebird		1				1
Unknown thrush	1					1
Total number of observations	54	96	16	12	9	187

To identify habitats that support the greatest number of individual birds and those that support the greatest number of species (species richness), average number of observations per plot and average species richness per plot for each habitat type were calculated (Table 5). Mixed and deciduous woodland had the highest average number of birds, followed by treed fens and bogs and complex. The burn areas had the lowest average number of bird observations.

The highest average species richness was found in treed fens and bogs, followed by mixed and deciduous woodland and complex. Burn areas had the lowest average species richness. The results for mixed and deciduous woodland, treed fens and bogs and complex must be interpreted with caution as each had few sample locations. Results for these three habitats may have occurred by chance alone.

TABLE 5 SUMMARY OF AVERAGE NUMBER OF BIRD OBSERVATIONS AND AVERAGE SPECIES RICHNESS PER SAMPLE PLOT OF EACH HABITAT

Species	Habitat (Number of Point Count Locations in Habitat)					
	Burn (20)	Dry coniferous woodland (31)	Mixed and deciduous woodland (3)	Treed fens and bogs (3)	Complex (2)	Grand Total (59)
Total number of observations	54	96	16	12	9	187
Average number of observations per plot	2.7	3.1	5.3	4.0	4.5	3.2
Total species richness	13	25	11	10	8	34
Average species richness per plot	2.4	3.1	4.3	6.0	4.0	3.1

3.4 INCIDENTAL BIRD OBSERVATIONS

Birds were also recorded separate from the point counts while en-route to survey stations, during the survey but beyond the plot-sampling radius (100 m), and within plots but not within the 10-minute sampling time interval. A total of 250 incidental bird observations were recorded and listed in Table 6. Only those species not reported for the point counts are listed here. Although these observations cannot be used in the same quantitative way as for the point counts, they do contribute to the list of bird species known to occur in the Project area (Appendix A).

TABLE 6 INCIDENTAL BIRD OBSERVATIONS

Species	Species
American Redstart	Nighthawks
American Tree Swallow	Osprey
American Wigeon	Pacific Loon

TABLE 6 INCIDENTAL BIRD OBSERVATIONS	
Species	Species
Bonaparte's Gull	Red-necked Grebe
Canada Goose	Ruffed Grouse
Common Loon	Sandhill Crane
Common Raven	Surf Scoter
Common Snipe	Tennessee Warbler
Eastern Phoebe	White-throated Sparrow
Herring Gull	White-winged Scoter
Mallard	

4.0 OWL SURVEY

4.1 INTRODUCTION

Many owls are nocturnal and are known to respond to recorded owl calls. An owl broadcast survey using recorded owl calls was conducted to determine the presence and distribution of owl species at or near the Yellowknife Gold Project area.

Six owl species could potentially be present in the project area: Boreal Owl, Great Gray Owl, Great Horned Owl, Northern Hawk Owl, Short-eared Owl and Snowy Owl. Northern Hawk Owl (a diurnal owl) and Short-eared Owl do not readily respond to recorded call playbacks and were therefore not explicitly surveyed. Short-eared Owl also do not return to the Northwest Territories until early May. Snowy Owl would only be present in winter.

4.2 METHODS

Observation stations were pre-selected along the existing winter road both south and north of the project site. The winter road provided the only suitable access for locating observation stations. The distance between stations was set at 1.0 km. This distance was selected as being close enough to have complete coverage of the camp and project area given the species being surveyed, yet far enough apart to minimize the potential for double-counting calling owls.

Stations were all surveyed on the night of April 18, 2005, beginning at 10 pm and ending at 3:15 am on April 19th. Survey conditions were clear, with no precipitation or cloud cover.

At each station, a series of playback calls were broadcast using a CD player connected to a megaphone. Each call of each of the three species was broadcast for 20 seconds, followed by 60 seconds of listening. This was repeated three times for each species (at 0, 120 and 240 degrees), starting from the smallest owl species (Boreal Owl) to the largest (Great Gray Owl). The total time at each station was approximately 18 minutes. This included a two-minute listening period at the beginning of the survey to listen for owls calling spontaneously.

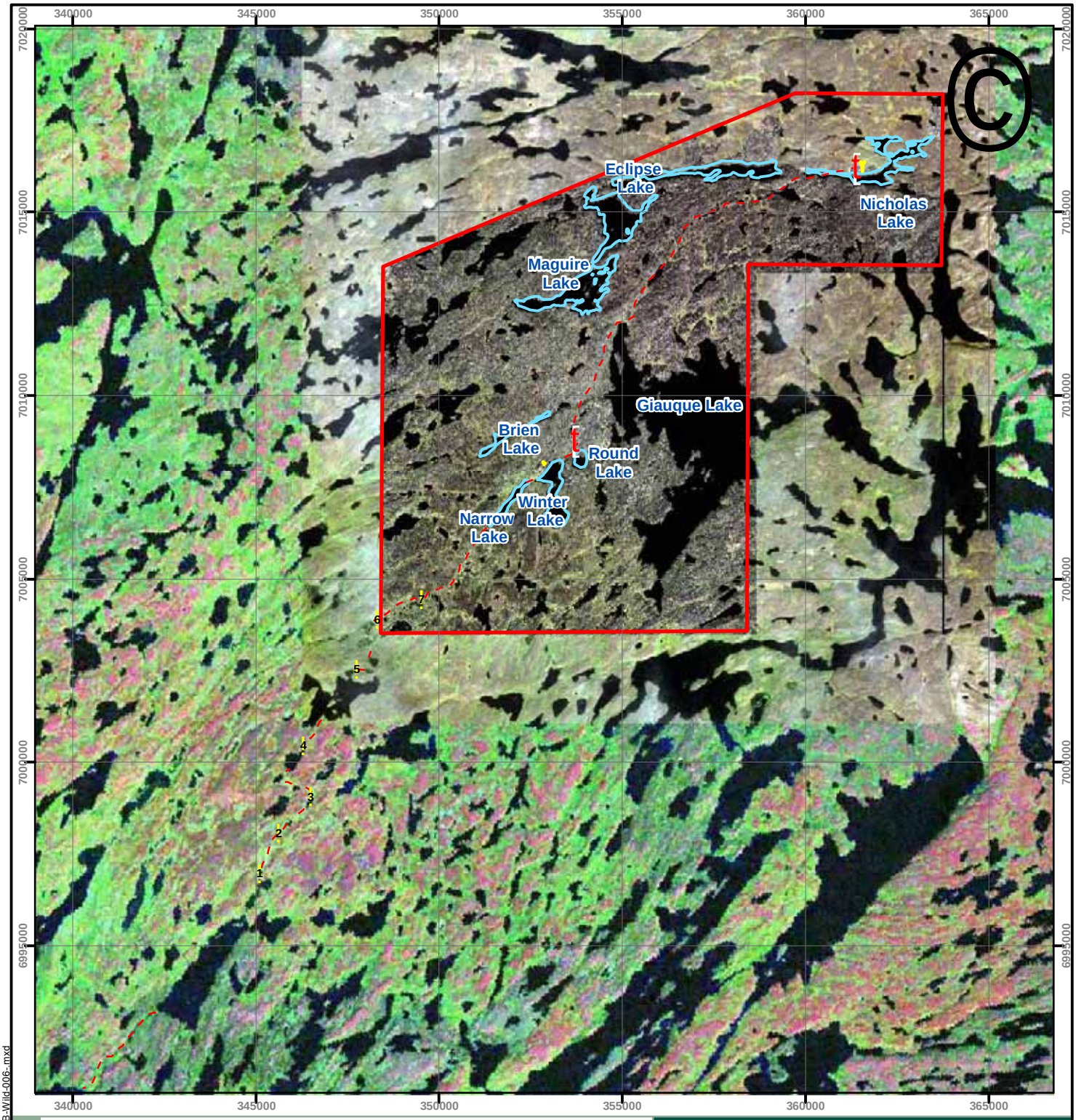
4.3 RESULTS AND DISCUSSION

A total of seven owl stations were completed, all located south of the project area. The survey was terminated when noise from the mine portal was too loud to effectively hear owls calling. In addition, during the survey period, the road north of the mine was drifted in with snow, effectively cutting off access to further owl sampling stations.

No owls were recorded at any of the seven owl call playback survey stations. However, it is likely that owls were present in the vicinity of the Project area, but were not detected on the night of the survey. The survey date was timed to coincide with the period that owls should be present in the region. Local abundance of prey may have been a factor. Small mammal prey populations were thought to be low in the winter of 2005, forcing owls to winter further south in the territory and in Northern Alberta.

A Great Horned Owl was known to inhabit the old Discovery Mine head frame. The head frame has since been removed by the federal government as part of INAC's site remediation program and, as a result, the location of those owls is unknown.

Other wildlife or wildlife sign observations recorded during the owl survey included Spruce Grouse, ptarmigan, Bald Eagle, wolf and American marten.



LEGEND

- Local Study Area
- 2004 Study Lakes
- Winter Road
- Camps
- Owl Survey Stations

NOTES
Base data source: IKONOS Imagery
Landsat 7
Road route is approximate

YELLOWKNIFE GOLD PROJECT

Owl Survey Locations, 2005

PROJECTION: UTM Zone 12	DATUM: NAD83	Tyhee NWT Corp
Scale: 1:150,000 (1 0.5 0 1 2 3 4 5 Kilometres)		EBA Engineering Consultants Ltd.
FILE No: 1740180_B-Wild-006		DATE: May 11, 2006
JOB NO: 1740180	REVISION NO: 1	
OFFICE: EBA-VANC	DRAWN: KMW / CHECK: XX	Figure 6

Q:\Vancouver\GIS\0701 YEL\1740180 Tyhee\Maps\006 wildlife\1740180 B-Wild-006-.mxd

5.0 WATERFOWL SURVEYS

5.1 INTRODUCTION

Waterfowl surveys were first conducted in the Yellowknife Gold Project (YGP) area in 2004 (EBA 2005). Two waterfowl surveys were conducted in 2005.

The NWT is home to few year-round resident birds, but is host to numerous migratory species during the brief snow-free period. The importance of the NWT for nesting and brood-rearing activities is evident in the 16 migratory bird sanctuaries that have been established in the NWT, covering 11 million hectares (Graves and Hall 1988). The majority of these sanctuaries are for the protection of waterfowl. One-fifth of the North American population of all ducks, geese and swans nest in the Northwest Territories (Graves and Hall 1988). None of the sanctuaries are in the project area.

The YGP area is small compared to the length and breadth of the bird migratory pathways. Waterfowl present in the project area and surrounding region, are considered to be a Valued Ecosystem Component (VEC), due to their rich species' diversity and important cultural importance as a food source for Aboriginal and non-aboriginal residents.

The former GNWT Department of Resources, Wildlife and Economic Development (RWED) (now Department of Environment and Natural Resources – ENR), recognizes 42 species of waterfowl (this includes ducks, grebes, swans and geese) occurring within the NWT (GNWT 2000). Waterfowl represent a large and diverse assemblage of species, which belong to three Family groups. These species are widely distributed throughout the NWT and occupy most wetland habitat types. The diverse habitats of the boreal forest support populations of many species of waterfowl during some part of their life cycles (e.g., breeding, moulting and migrating).

Waterfowl breed throughout much of North America, however, regions that attract greater breeding densities include the Prairie Pothole and Parkland Regions in central Canada, the Peace-Athabasca Delta and the Mackenzie Delta (Anonymous 1998). Within the NWT, waterfowl breed throughout the boreal forest, the transition zone and the tundra at varying densities.

Of the 42 species known to occur in the NWT, 24 species have the potential to be present in the YGP study area (Table 8), some are summer residents while others are migrants. Waterfowl are common in the YGP area during early spring, summer and fall but are not present in the NWT during winter. At the Territorial level, five species are considered "Sensitive," and 19 species are classified as "Secure" (RWED 2001). The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) has assessed two of the 24 waterfowl species and has ascribed a status of "Not At Risk" to two species. The remaining 22 species have not been evaluated by COSEWIC. The current status of each of the species that may occur in the YGP study area is noted in Table 7.

5.2 METHODS

Two waterfowl surveys were conducted in 2005. The first waterfowl survey took place June 10-15, 2005 and the second survey was completed between July 18 and August 3, 2005. Both surveys included Round Lake, Winter Lake, Brien Lake, Narrow Lake, and Ponds 1 through 9 (see Figure 7).

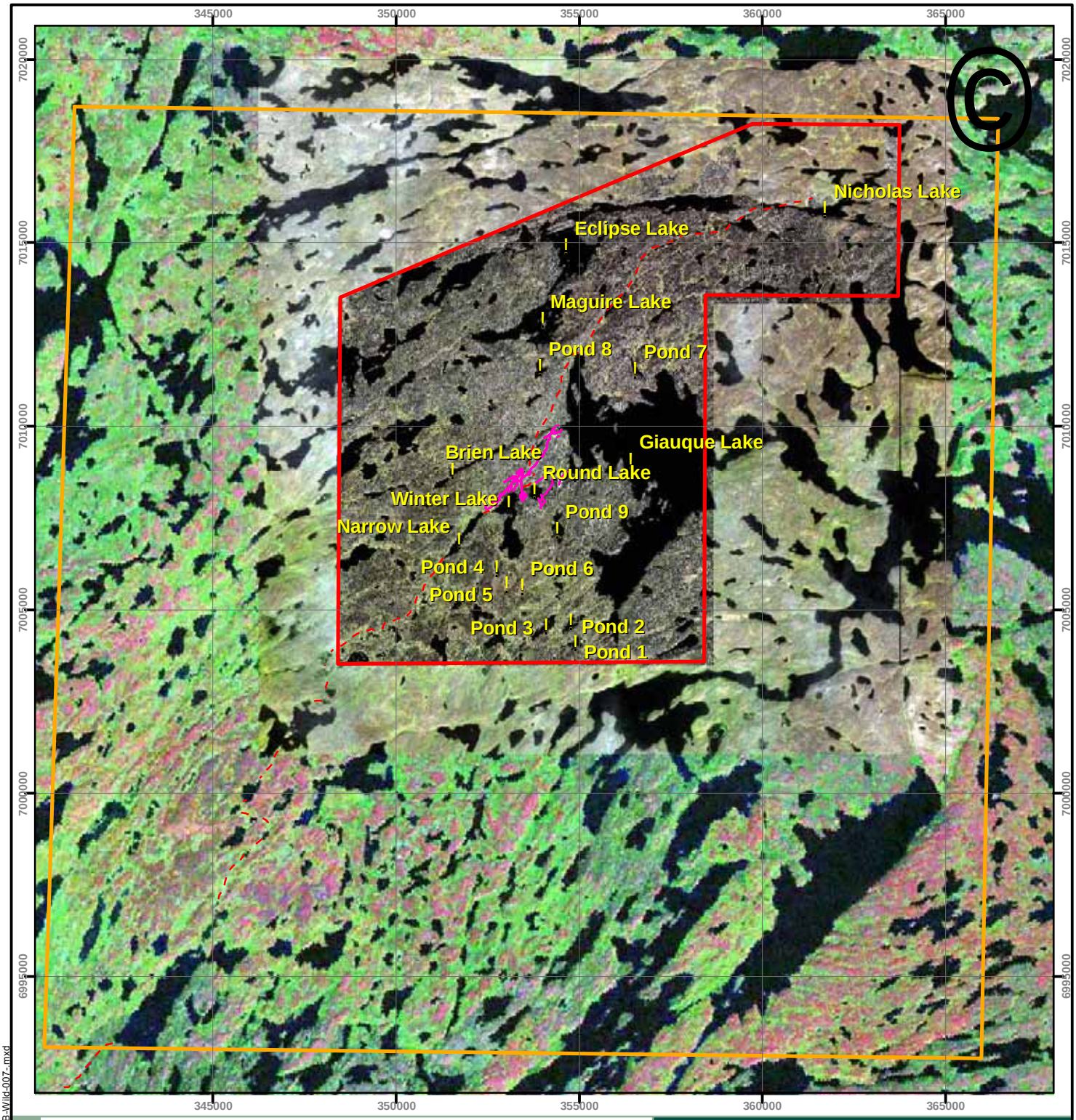
The "Look-See" method was the chosen technique for conducting waterfowl surveys in 2004 and continued in 2005. This is an appropriate methodology for counting birds, such as waterfowl, breeding at low densities in remote areas (Biddy *et al*. 1992). This technique involves selecting lakes prior to conducting fieldwork and setting up observation stations at the predetermined water bodies. Observation stations are the standard approach for the "Look-See" method for surveying breeding (mated pairs) and non-breeding waterfowl during mid-summer. This technique is useful for surveying birds in all lifecycle stages, and is the preferred method for counting breeding pairs and broods for all but the most elusive waterfowl species.

Surveys were designed to determine waterfowl species present and territories where possible. Small lakes were surveyed on foot (ground surveys), while a boat was used on larger lakes. Boats allow more area to be covered in a shorter period of time than from the ground, plus they allow a closer view of birds on the larger water bodies. A fixed-wing aircraft was used to survey one small remote lake, Brien Lake.

For lakes surveyed from the ground, two staff members hiked to a selected lake and from a vantage point, slowly scanned the entire lake using a spotting scope. Each scan lasted for a minimum of 15 minutes to provide ample time to spot birds that may have been diving or hiding.

For each site the following data were recorded: date, UTM coordinates, weather parameters, species (all bird and incidental mammal species were recorded), numbers of birds seen, behavioural notes, adjacent terrestrial ecosystem unit(s), and any predators of waterfowl.

Breeding territories were confirmed based on one of the following two criteria: a pair of adults on the lake during one visit, or one adult with a brood.



LEGEND

- Local Study Area
- Ungulate Study Area
- Winter Road
- Proposed Footprint
- Lakes/Ponds Surveyed

NOTES

Base data source: IKONOS Imagery
Landsat 7
Road route is approximate

YELLOWKNIFE GOLD PROJECT

Waterfowl Survey Lakes and Ponds

PROJECTION: UTM Zone 12	DATUM: NAD83	Tyhee NWT Corp
Scale: 1:150,000		EBA Engineering Consultants Ltd.
1 0.5 0 1 2 3 4 5 Kilometres		
FILE No: 1740180_B-Wild-006		DATE: May 11, 2006
JOB NO: 1740180	REVISION NO: 2	
OFFICE: EBA-VANC	DRAWN: KMW	CHECK: XX

Figure 7

Q:\VancouverGIS\0701 YEL\1740180 Tyhee\Maps\006 wildlife\1740180 B-Wild-007-.mxd

5.3 RESULTS AND DISCUSSION

Table 7 lists the species observed during each of the two survey periods. Narrow Lake was surveyed twice in the first survey period and Winter Lake was surveyed twice in the second survey period. In both cases, the second survey was conducted opportunistically when biologists were conducting other surveys near each of the lakes.

The most abundant waterfowl recorded during the first survey (June 10-15, 2005) were Lesser Scaup, Surf Scoter and Greater Scaup. The total number of birds observed was 193. The most abundant waterfowl recorded during the second survey (July 18 and August 3, 2005) were Scaup spp., Surf Scoter, Ring-necked Duck and Pacific Loon. Total number of birds observed was 133. Sixteen waterfowl species were observed in 2005. This is three less than the number of species observed in 2004 (Table 8). In general, the results for 2005 are similar to those for 2004. The previous waterfowl report for the 2004 field program (EBA 2005) provides a discussion of factors that contribute to the distribution and abundance of waterfowl in the YGP area and includes an assessment of lake productivity for waterfowl (Table 9).

Other birds and wildlife observed and recorded while en-route to the primary ponds included: Pacific Loon, Lesser Scaup, Surf Scoter, Alder Flycatcher, Bald Eagle, Osprey, Lesser Yellowlegs, Rusty Blackbird and moose (observed adjacent to Pond 4).

TABLE 7 WATERFOWL SPECIES OBSERVED WITHIN THE PROJECT AREA DURING THE 2005 FIELD SURVEYS

Waterbody	Surveyed June 10-15, 2005	Surveyed July 19-21 and August 3, 2005
Brien Lake	4 Bufflehead 15 Lesser Scaup 2 Ring-necked Duck 9 Surf Scoter	2 Surf Scoter
Narrow Lake	**June 10;** 2 Lesser Scaup **June 12:** 1 American Wigeon 3 Bonaparte's Gull 20 Lesser Scaup 3 Red-breasted Merganser 23 Surf Scoter 8 White-winged Scoter	2 Osprey
Round Lake	2 Bufflehead 5 Ring-necked Duck 19 Scaup sp. 4 Surf Scoter	1 Greater Scaup 4 Horned Grebe 1 Red-Necked Grebe 15 Ring-Necked Duck 2 Surf Scoter
Winter Lake	None	**July 20:**

TABLE 7 WATERFOWL SPECIES OBSERVED WITHIN THE PROJECT AREA DURING THE 2005 FIELD SURVEYS

Waterbody	Surveyed June 10-15, 2005	Surveyed July 19-21 and August 3, 2005
		23 Surf Scoter 2 unknown 6 White-winged Scoter **August 3:** 1 Common Loon 23 Scaup sp. 7 Scoter sp. 1 White-winged Scoter
Pond 1	None	1 Pacific Loon
Pond 2	2 Pacific Loon	2 Red-necked Grebe 5 Ring-necked Duck 7 Scaup sp.
Pond 3	7 Lesser Scaup 4 Surf Scoter	2 Pacific Loon 4 Scaup sp. 9 Unknown Ducks
Pond 4	1 Lesser Scaup 1 Pacific Loon	None
Pond 5	1 Lesser Scaup	None
Pond 6	None	None
Pond 7	None	3 Red-necked Grebe 1 Unknown Duckling
Pond 8	None	3 Pacific Loon
Pond 9	None	8 Pacific Loon

TABLE 8 WATERFOWL SPECIES POTENTIALLY OCCURRING AND RECORDED* IN 2004 AND 2005 WITHIN THE PROJECT AREA AND CONSERVATION STATUS

Common Name	RWED Status [1]	COSEWIC Status [2]	2004	2005
Northern Pintail	Sensitive	Not evaluated		
Greater Scaup	Sensitive	Not evaluated	*	*
Long-tailed Duck	Sensitive	Not evaluated	*	
Surf Scoter	Sensitive	Not evaluated	*	*
White-winged Scoter	Sensitive	Not evaluated	*	*
Common Loon	Secure	Not At Risk	*	*
Pacific Loon	Secure	Not evaluated	*	*

TABLE 8 WATERFOWL SPECIES POTENTIALLY OCCURRING AND RECORDED* IN 2004 AND 2005 WITHIN THE PROJECT AREA AND CONSERVATION STATUS

Common Name	RWED Status [1]	COSEWIC Status [2]	2004	2005
Red-throated Loon	Secure	Not evaluated		
Red-necked Grebe	Secure	Not At Risk	*	*
Horned Grebe	Secure	Not evaluated	*	*
Canada Goose	Secure	Not evaluated		
Mallard	Secure	Not evaluated	*	
Tundra Swan	Secure	Not evaluated	*	
Green-winged teal	Secure	Not evaluated	*	*
Blue-winged teal	Secure	Not evaluated		
American Wigeon	Secure	Not evaluated	*	*
Northern Shoveler	Secure	Not evaluated	*	
Ring-necked Duck	Secure	Not evaluated	*	*
Canvasback	Secure	Not evaluated		
Redhead	Secure	Not evaluated		
Common Goldeneye	Secure	Not evaluated		
Bufflehead	Secure	Not evaluated	*	*
Ruddy Duck	Secure	Not evaluated		
Common Merganser	Secure	Not evaluated	*	*
Red-breasted merganser	Secure	Not evaluated		*

* Waterfowl species recorded in YGP Study Area during 2004 and 2005
[1] (RWED 2001).
[2] (COSEWIC 2005).
Species list based on Godfrey 1979; Sibley 2000; Peterson (1990) and Dunn (1999).

TABLE 9 WATERFOWL HABITAT RATED FOR EACH LAKE SURVEYED, 2004

Common Name	RWED Status [1]	COSEWIC Status [2]	2004	2005
Brien Lake	Ericaceous/Rocky	Limited	Low	Low
Winter Lake	Ericaceous	Emergent Moderate	Low	Medium
Narrow Lake	Very Rocky	Limited	Low	Low
Round Lake	Ericaceous	Emergent Moderate	Low	Medium
Miscellaneous Ponds (n=9)	Emergent	Extensive	High	High

6.0 CARNIVORE (ESKER) SURVEYS

6.1 INTRODUCTION

Eskers and other glacio-fluvial deposits can provide important habitat for a variety of wildlife species. Glacio-fluvial deposits can be especially important for carnivores (wolf, fox and bear) as they provide good substrate for the construction of dens.

There are two eskers near the Project area. One of the eskers is located approximately 1.5 km southeast of Round Lake, lying in a southwest-northeast orientation and measuring about 4 km long (Figure 8). The second esker is 2.5 km long and is located at the south end of Giauque Lake about 4.5 km southeast of Round Lake. This esker also lies in a southwest-northeast orientation. To determine if there are carnivore dens or other wildlife uses in these eskers, a series of surveys were conducted.

6.2 METHODS

The esker surveys included:

- An aerial survey of the first esker was flown on April 18, 2005.
- A ground survey of the first esker was conducted on July 12 and 13, 2005.
- A ground survey of the second esker was conducted on August 3, 2005.

Observations included, but weren't exclusive to, signs such as bear rocks and logs and claw marks, pellets, scat and hair, tracks and game rails, skulls and other bones, nest holes, visuals and actual dens.

6.3 RESULTS

6.3.1 April Aerial Survey

This survey was conducted at the same times as the aerial ungulate survey described in Section 3.3.3. Figure 4 shows the aerial survey route that also included the survey of the esker. No dens or carnivore activity were observed during this survey. The ground was snow-covered generally making den observations difficult.

6.3.2 Esker #1 Ground Survey

The July ground survey route is shown in Figure 8. One red fox den site was found. This den was located in an open canopy mixed jack pine and white spruce stand, with some black spruce and a lichen-dominated under story. This den was unoccupied in 2005 but likely used in 2004. No other carnivore dens were found, however, black bear, wolf and fox sign (scat, evidence of feeding and claw marks) were found, as well as many other wildlife observations. A total of 319 wildlife observations were recorded of the following mammal species, in order of abundance of sign: moose, caribou, wolf, red fox, snowshoe hare, black bear, red squirrel, porcupine and American marten.

Incidental observations of birds included Belted Kingfisher, Yellow-bellied Sapsucker, Northern Flicker, Hairy Woodpecker and ptarmigan (unknown species).

6.3.3 Esker #2 Ground Survey

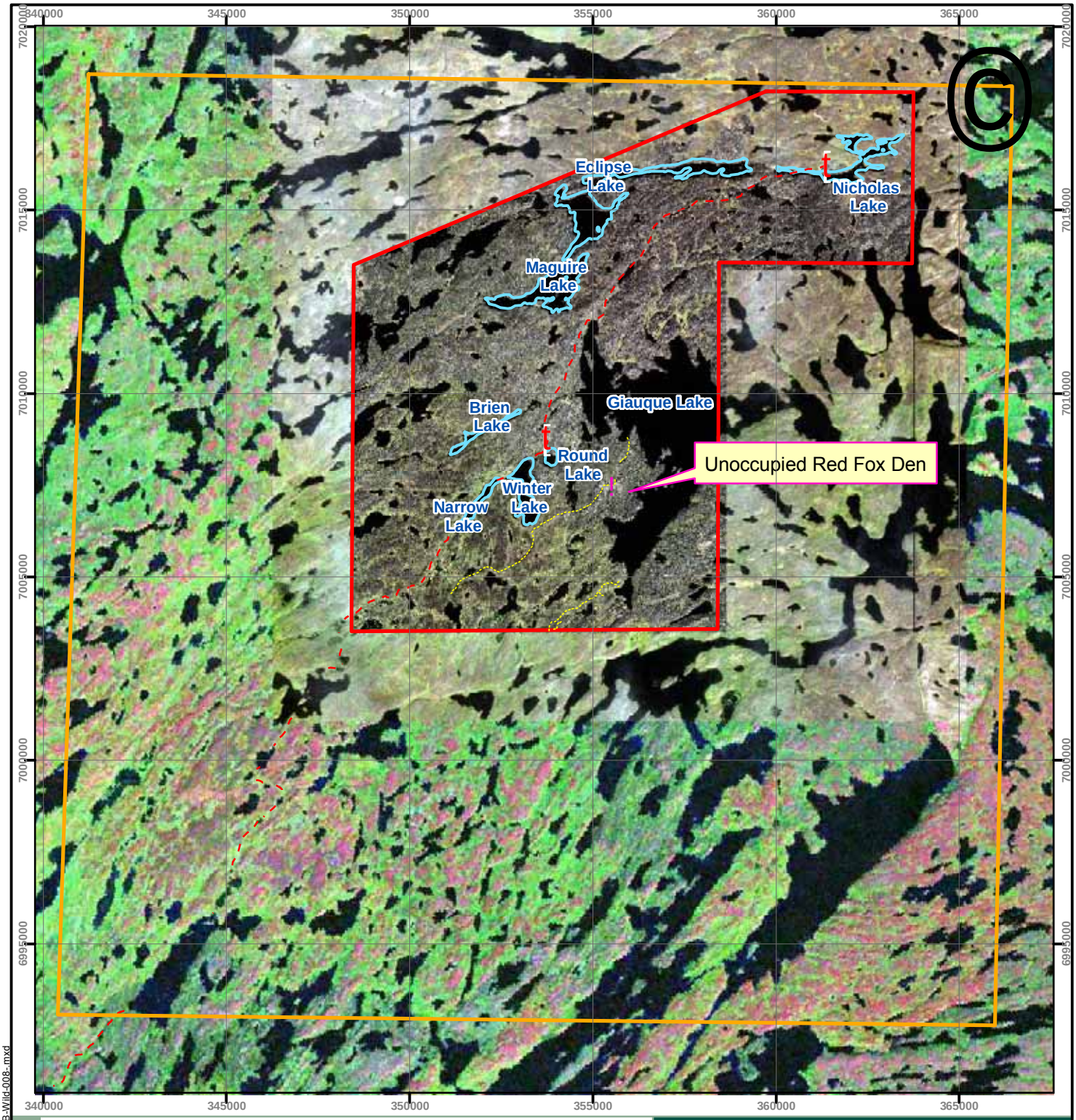
This esker was surveyed on foot on August 3, 2005. No dens were found. The esker generally provides poor denning habitat due to the presence of high amounts of bedrock and coarse rock fragments.

A total of 134 wildlife observations were recorded of the following mammal species, in order of abundance of sign: moose, caribou, black bear, American marten, snowshoe hare, red fox, beaver and red squirrel.

Incidental observations of birds included Merlin, ptarmigan, Pine Siskin, Wilson's Warbler, Nighthawk, Arctic Tern and Spruce Grouse.

6.4 DISCUSSION

The purpose of the carnivore/esker survey was to first determine if there are carnivore dens along these two eskers and second, to generally document evidence of carnivores within the study area. One unoccupied fox den was found and evidence of black bear, wolf and fox were recorded. Based on the observations obtained from these three surveys and from other incidental observations recorded during other surveys, wildlife use of the eskers appears to be generally similar to that found elsewhere in the study area in terms of species diversity or number of observations.



LEGEND

- Local Study Area
- Ungulate Study Area
- 2004 Study Lakes
- Winter Road
- Camps
- Esker Surveys
- Unoccupied Red Fox Den

NOTES
Base data source: IKONOS Imagery
Landsat 7
Road route is approximate

YELLOWKNIFE GOLD PROJECT

Location of Esker Surveys

PROJECTION: UTM Zone 12	DATUM: NAD83	Tyhee NWT Corp
Scale: 1:150,000 (1 0.5 0 1 2 3 4 5 Kilometres)		EBA Engineering Consultants Ltd.
FILE No: 1740180_B-Wild-008		DATE: May 11, 2006
JOB NO: 1740180	REVISION NO: 2	
OFFICE: EBA-VANC	DRAWN: KMW / CHECK: XX	Figure 8

Q:\VancouverGIS\0701_YEL\1740180_TyheeMaps\006_wildlife\1740180_B-Wild-008-.mxd

7.0 OTHER WILDLIFE OBSERVATIONS

Wildlife observations were also recorded incidentally during other non-wildlife surveys or site visits. These miscellaneous observations are listed in Table 10.

TABLE 10 INCIDENTAL WILDLIFE OBSERVATIONS RECORDED DURING OTHER SURVEYS

Survey	Date (2005)	Observations
Meteorological Station Data Download	Feb 10	22 Caribou observed
Water Quality Sampling	April 21	21 Caribou on airstrip, 4 caribou on Eclipse Lake
Rare Plant Survey	July 30	Abandoned red fox den. This is the same den as found during the esker/carnivore survey.
Rare Plant Survey	August, 13 and 14	Black bear ant logs, digs and scat, Lesser yellow legs, Pacific Loon, Ptarmigan and wood frog

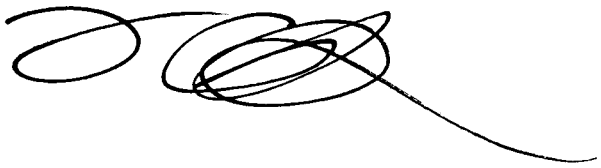
8.0 CLOSURE

EBA is pleased to present Tyhee NWT Corp. with this 2005 Wildlife Studies Program report for the Yellowknife Gold Project. We trust everything is found to be satisfactory. If there are questions or if EBA can be of further assistance, please do not hesitate to contact us.

Respectfully submitted,
EBA Engineering Consultants Ltd.

Prepared by:

Jeff Matheson, M.Sc., R.P.Bio, P.Biol
Senior Wildlife Biologist



Tim Abercrombie, M.Sc.
Environmental Scientist

Reviewed By:

Richard Hoos, M.Sc., R.P.Bio
Principal consultant

REFERENCES

Anonymous. 1998. North American Waterfowl Management Plan - Update. Joint publication between the U.S. Department of the Interior, Fish and Wildlife Service, SEMARNAP Mexico, and Environment Canada, Canadian Wildlife Service. 34 pp.

AOU. 2005. Check-list of North American Birds, Seventh Edition. http://www.aou.org/checklist/index.php3.

Bergman, R.D. and D.V. Derksen. 1977. Observations on Arctic and Red-throated Loons at Storkersen Point, Alaska. Arctic 30:41-51.

Bibby, C.J., N.D. Burgess and D.A. Hill. 1993, Bird Census Techniques. Academic Press. Toronto. 257 pp.

Burt, W.H. and R. P. Grossenheider. 1980. Peterson Field Guide to Mammals. Houghton Mifflin Company, Boston, Massachusetts. 289 pp.

COSEWIC (Committee on the Status of Endangered Wildlife in Canada) 2005. Canadian Species at Risk, May 2001. Committee on the Status of Endangered Wildlife in Canada. Ottawa ON. 31 pp.

Dickson, D. Lynne. 1992. The Red-Throated Loon as an Indicator of Environmental Quality. Can. Wildl. Serv. Occas. Pap.: No. 73. 20p. WR 233.

Dunn, J. L. 1999. National Geographic Field Guide to the Birds of North America. 3rd edition. 480 pp.

EBA Engineering Consultants Ltd. 2005. Ecological Land Classification – Field Report. Appendix A of the Yellowknife Gold Project Description Report. February 2005.

EBA Engineering Consultants Ltd. 2005. Wildlife Report. A. Aerial Moose Surveys – 2004. B Waterfowl Surveys – 2004. Appendix E of the Yellowknife Gold Project Description Report. February, 2005 .

EBA Engineering Consultants Ltd. 2006. Vegetation Studies at the Yellowknife Gold Project, Tyhee NWT. In prep.

Ecological Stratification Working Group. 1995. A National Ecological Framework for Canada. Agriculture and Agra-Food Canada, Research Branch, Centre or Land and Biological Resources Research, Environment Canada, State of the Environment Directorate, Ecozone Analysis Branch, Ottawa-Hull. 125 pp.

Godfrey, W. E. 1979. Birds of Canada. National Museum of Natural Sciences, National Museum of Canada, Ottawa, Ontario. 428 pp.

Graves, J. and E. Hall. 1988. Arctic Animals. Department of Renewable Resources, Government of the Northwest Territories, Yellowknife.

Kerekes, J. 1990. Possible correlation of summer common loon (*Gavia immer*) population with the trophic state of a water body. Verh. Int. Ver. Limnol. 24:349-353.

McIntyre, J.W. and J.F. Barr. 1983. Pre-migration Behavior of Common Loons on the autumn staging grounds. Wilson Bull. 95:121-125.

Ministry of Environment, Lands and Parks. 1999. Inventory methods for waterfowl and allied species: Loons, Grebes, Swans, Geese, Ducks, American Coot and Sandhill Crane. Standards for components of British Columbia's biodiversity; No. 18. May 11, 1999, Version 2.0. Prepared by Ministry of Environment, Lands and Parks Resources Inventory Branch for the Terrestrial Ecosystem Task Force Resources Inventory Committee (Canada). Terrestrial Ecosystems Task Force.

Peterson, R. T. 1980. Peterson Field Guide to Birds. Houghton Mifflin Company, Boston, Massachusetts. 384 pp.

Ruggles, A.K. 1994. Habitat Selection by Loons in Southcentral Alaska. Hydrobiologia 279/280: 421-430.

RWED (Resources, Wildlife and Economic Development). 2001. NWT Species 2000. General Status Ranks of Wild Species in the Northwest Territories. Government of the Northwest Territories (GNWT), RWED, Yellowknife NT. 50pp. Also available at: http://nwtwildlife.rwed.gov.nt.ca/monitor. Accessed January 20, 2005.

Sibley, D.A. 2003. The Sibley Field Guide to Birds of Western North America. Knopf Publisher. New York, New York. 471 pp.

APPENDIX

APPENDIX A PHOTOGRAPHS

Photo 1
Biologist conducting a breeding bird point count survey.

Photo 2
Waterfowl survey of Narrow Lake.

Photo 3
One of the small waterfowl survey ponds.

Photo 4
Another small waterfowl survey pond.

Photo 5
Ungulate trail documented during the esker survey.

Photo 6
Bear claw marks on tree trunk documented during one of the esker surveys.

Photo 7
Dead tree shredded by a black bear looking for insects.

Photo 8
Caribou antler found during the esker survey.

APPENDIX

APPENDIX B SPECIES CHECKLIST

APPENDIX

APPENDIX A SPECIES CHECKLIST

Wildlife species mentioned in the text and observed in the Yellowknife Gold Property to date. Species are listed in taxonomic order.

Common Name	Scientific Name	Habitat	COSEWIC Status	NWT Status
Birds				
Red-throated Loon	Gavia stellata	somewhat shallow freshwater ponds and lakes		Secure
Common Loon	Gavia immer	freshwater lakes or large rivers; must be large enough to support sufficient prey (fish) and be relatively free from disturbances	Not At Risk - 1997	Secure
Pacific Loon	Gavia pacifica	freshwater lakes		Secure
Horned Grebe	Podiceps auritus	small to medium sized ponds and shallow bays of lakes		Secure
Red-necked Grebe	Podiceps grisegena	small shallow lakes, or protects marsh areas and bays on larger lakes;medium to large ponds, small shallow lakes, shallow bays of larger lakes, riverine wetlands	Not At Risk - 1982	Secure
Tundra Swan	Cygnus columbianus	marshy lakes and ponds on tundra (water not necessary)		Secure
Canada Goose	Branta canadensis	variety of areas: tressless and forested country		Secure
Green-winged Teal	Anas crecca	freshwater ponds, arshes, shallow edges of lakes		Secure
Mallard	Anas platyrhynchos	freshwater in both treeless and wooded areas		Secure
Northern Pintail	Anas acuta	shallow freshwater		Sensitive
Blue-winged Teal	Anas discors	shallow freshwater		Secure
Northern Shoveler	Anas clypeata	very shallow freshwater		Secure
American Wigeon	Anas americana	freswater sloughs		Secure

Common Name	Scientific Name	Habitat	COSEWIC Status	NWT Status
Canvasback	Aythya valisineria	deep freshwater		Secure
Redhead	Aytha americana	shallow freshwater		Secure
Ring-necked Duck	Aythya collaris	shallow freshwater, often acidic		Secure
Greater Scaup	Aytha marila	deep freshwater		Secure
Lesser Scaup	Aythya affinis	interior freshwater		Sensitive
Oldsquaw	Clangula hyemalis	tundra freshwater or near salt water		Sensitive
Surf Scoter	Melanitta perspicillata	coastal and larger freshwater		Sensitive
White-winged Scoter	Melanitta fusca	coastal and larger freshwater		Sensitive
Common Goldeneye	Bucephala clangula	woodland lakes and muskeg ponds		Secure
Bufflehead	Bucephala albeola	woodland freshwater		Secure
Common Merganser	Mergus merganser	woodland freshwater		Secure
Red-breasted Merganser	Mergus serrator	salt and freshwater		Secure
Ruddy Duck	Oxyura jamaicensis	shallow freshwater		Secure
Osprey	Pandion haliatus	in vicinity of salt and freshwater		Secure
Bald Eagle	Haliaeetus leucocephalus	found along sea coasts or large inland lakes and rivers below the tree line	Not At Risk - 1984	Secure
Merlin	Falco columbarius	open to semi-open habitat for foraging and trees or cliffs for nesting	Not At Risk - 1985	Secure
Spruce Grouse	Dendragapus canadensis	coniferous and mixedwood forests		Secure
Willow Ptarmigan	Lagopus lagopus	tundra = moist, vegetated areas; mountains = willow areas		Secure
Rock Ptarmigan	Lagopus muta (Lagopus mutus)	tundra = drier areas than for Willow ptarmigan; mountains = higher areas		Sensitive
Ruffed Grouse	Bonasa umbellus	deciduous and mixed woodland		Secure
Sandhill Crane	Grus canadensis	marshes, bogs and flat tundra		Secure
Lesser Yellowlegs	Tringa flavipes	open woodland with nearby water		Sensitive
Solitary Sandpiper	Tringa solitaria	woodland and open margins of water		Undetermined
Bonaparte's Gull	Larus philadelphia	in coniferous woodlands near freshwater		Secure

Common Name	Scientific Name	Habitat	COSEWIC Status	NWT Status
Herring Gull	Larus argentatus	coastal and larger freshwater		Secure
Arctic Tern	Sterna paradisaea	sand and gravel beaches and tundra near water		Secure
Great Horned Owl	Bubo virginianus	deciduous and coniferous forests; may nest in trees, grottes, and on the ground		Secure
Snowy Owl	Bubo scandiacus (Nyctea scandiaca)	low tundra with dwarf shrub vegetation, in high-arctic tundra with rocky promontories	Not At Risk -1995	Secure
Northern Hawk Owl	Surnia ulula	open mixed coniferous and deciduous forests or moderately dense forests bordering open areas	Not at Risk - 1992	Secure
Great Grey Owl	Strix nebulosa	extensive boreal forest interspersed with Sphagnum bogs, muskegs, and other open spaces	Not At Risk - 1996	Secure
Short-eared Owl	Asio flammeus	low-arctic tundra, open areas, marshes, and prairie	Vulnerable - 1994	Sensitive
Boreal Owl (Richardson's Owl)	Aegolius funereus	nest in tree cavity made by pileated woodpeckers, and/or northern flickers; forests dominated by black spruce, white spruce, balsam fir, balsam poplar, white birch, and especially trembling aspen	Not At Risk - 1995	Secure
Common Nighthawk	Chordeiles minor	in open woodland or in city		Secure
Belted Kingfisher	Ceryle alcyon	near fish-inhabited water with perches; nests in sleep earth banks		Secure
Hairy Woodpecker	Picoides villosus	deciduous, coniferous or mixedwood forests		Secure
Northern Flicker	Colaptes auratus	open woodlands of all kinds		Sensitive
Olive-sided Flycatcher	Contopus cooperi (formerly C.borealis)	high, often dead trees; nests in conifers		Sensitive
Yellow-bellied Flycatcher	Empidonax flaviventris	moss-floored thickets and woodlands: nest on ground		Secure
Alder Flycatcher	Empidonax alnorum	alder or willow thickets by water; nest in bushes		Secure
Eastern Phoebe	Sayornis phoebe	near running water; nest in rock niches		Secure

Common Name	Scientific Name	Habitat	COSEWIC Status	NWT Status
Tree Swallow	Tachycineta bicolor	forages over water or moist areas; cavity nester		Secure
Gray Jay	Perisoreus canadensis	coniferous and mixedwood forests		Secure
Common Raven	Corvus corax	forages widely but prefers lake and river shores; nest on cliffs or in trees		Secure
Ruby-crowned Kinglet	Regulus calendula	coniferous woodlands and muskeg		Secure
Gray-cheeked Thrush	Catharus minimus	coniferous woods		Secure
Swainson's Thrush	Catharus ustulatus	deciduous tall shrubs and coniferous woods		Secure
Hermit Thrush	Catharus guttatus	mixed dec/con or pure con forest		Secure
American Robin	Turdus migratorius	open areas in country and residential		Secure
Bohemian Waxwing	Bombycilla garrulus	coniferous woodlands and muskeg		Secure
Tennessee Warbler	Vermivora peregrina	con, dec and mixed woodlands and bogs		Secure
Orange-crowned Warbler	Vermivora celata	brushy and open dec forests		Secure
Yellow Warbler	Dendroica petechia	thickets near water		Secure
Yellow-rumped Warbler	Dendroica coronata	conifer and mixed woods		Secure
Palm Warbler	Dendroica palmarum	bogs or barrens		Secure
Blackpoll Warbler	Dendroica striata	con woods		Sensitive
American Redstart	Setophaga ruticilla	open areas of dec and mixed woodland		Secure
Northern Waterthrush	Seiurus noveboracensis	shrubby thickets near water		Secure
Wilson's Warbler	Wilsonia pusilla	shrubs near water		Secure
American Tree Sparrow	Spizella arborea	open woody shrubs		Sensitive
Chipping Sparrow	Spizella passerina	openings and edges of woodlands		Secure
Savannah Sparrow	Passerculus sandwichensis	open areas		Secure
Fox Sparrow	Passerella iliaca	woodland thickets and edges		Undetermined
Lincoln's Sparrow	Melospiza lincolnii	bogs and moist meadows		Secure
White-throated Sparrow	Zonotrichia albicollis	edges of woodlands		Sensitive
White-crowned Sparrow	Zonotrichia leucophrys	woodland thickets		Secure
Harris's Sparrow	Zonotrichia querula	trees between forest and tundra region		Sensitive
Dark-eyed Junco	Junco hyemalis	con and mixed woods		Secure

Common Name	Scientific Name	Habitat	COSEWIC Status	NWT Status
Rusty Blackbird	Euphagus carolinus	wet woods		Sensitive
White-winged Crossbill	Loxia leucoptera	open coniferous or mixed woodland		Secure
Mammals				
Red Squirrel	Tamiasciurus hudsonicus	a variety of habitats, although preferably coniferous forest, especially spruce and pine trees		Secure
Gray Wolf	Canis lupus	arctic tundra, moutain-tops, plains, coniferous forests	Not at risk - 1999	Secure
Red Fox	Vulpes vulpes	semi-open country (lakeshores, natural clearings in forests, alpine and arctic tundra)		Secure
Black Bear	Ursus americanus	coniferous or deciduous forest, swamps and berry patches	Not at Risk - 1999	Secure
Marten	Martes americana	climax coniferous forest (Douglas fir, cedar, hemlock forests, balck spruce, white cedar swamps) (avoids burns)		Secure
Wolverine	Gulo gulo	large, sparsely inhabited wilderness areas with adequate year-round food supplies (large ungulates and carrion)	western population = Special Concern (2003)	Secure
Moose	Alces alces	subclimax (early successional) stages of forests, lakeshores, alder swamp, arcitc tundra		Secure
Barrenground Caribou	Rangifer tarandus groenlandicus	summer = northern tundra winter = southern tundra and taiga		Secure
Human	Homo sapiens			Not Assessed
Beaver	Castor canadensis	slow-flowing streams, lakes, rivers, and marshes		Secure