November 2009

MELIADINE GOLD PROJECT

Terrestrial Vegetation and Wildlife Baseline Synthesis Report

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DRAFT REPORT

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EXECUTIVE SUMMARY

Comaplex Minerals Corporation (Comaplex) is proposing to construct and operate a gold mine, known as the Meliadine Gold Project (Project) 30 kilometres (km) north of Rankin Inlet, and 80 km south of the Chesterfield Inlet in the Kivalliq Region of Nunavut. The proposed Project site is located on a peninsula between the east, south and west basins of Meliadine Lake on Inuit Owned Land.

Wildlife and vegetation studies have been undertaken since the mid-1990s when Western Mining Corporation International Ltd. (WMC) undertook a multi-year gold exploration program in the Project area. The terrestrial baseline report represents a synthesis of all respective vegetation and wildlife studies that have taken place since this time.

To facilitate the assessment and interpretation of potential effects associated with the Project, it is necessary to define appropriate spatial boundaries. Spatial boundaries were developed with consideration of both vegetation and wildlife components.

The Regional Study Area (RSA) was selected to capture any effects that may extend beyond the immediate Project area and subsequently to assess potential cumulative effects on vegetation and wildlife in the broader regional context. A Local Study Area also was defined for the vegetation component to assess the immediate direct and indirect effects of the Project on vegetation resources.

Vegetation Baseline

The vegetation baseline report section represents a synthesis of all data collected during the 1998 to 2009 field programs and provides a summary of baseline conditions concerning the abundance and distribution of plant communities, occurrence of rare plants, and metal concentrations present in soils and plant tissues. Mapping of plant communities within the LSA was based on interpretation of 1:10 000 air photos or orthophotographs in conjunction with results from field data.

Baseline vegetation surveys at the Meliadine Gold Project (Project) in 1998, 2008 and 2009. The purpose of these studies was to document flora species and characterize plant community types that may be affected by the Project development. Baseline studies included detailed vegetation inventory surveys in the vicinity of the Project development and aerial reconnaissance surveys in the broader regional area. The objectives of the vegetation baseline study were to:

- collect quantitative vegetation and plant community data;
- define and map plant communities using these collected data;
- identify and report on valued components (VCs);
- describe and map the occurrence of rare plants or unusual plant associations within the local study area (LSA); and
- develop a regional ecological classification system.

The regional land cover classification map was developed using satellite imagery, remote sensing software, and GIS to provide information on the relative abundance and distribution of vegetation types within the RSA. Field

data were collected over the summers of 1998, 2008, and 2009 on 416 sites across the range of vegetation types within the Project area, including 337 plots in 1998, 59 plots in 2008, and 20 plots in 2009. Classification of vegetation cover types was based on the classification system developed in 1998 for consistency; modifications were made to account for inclusions of any new community types or associations.

The RSA boundary was established to assess the importance of the Project within a broader regional context, as it forms the foundation for quantifying potential effects of the Project on regional vegetation resources and wildlife habitat. The RSA was defined as a 52 km radius from the proposed Project and covers an area of approximately 850 000 ha. The RSA falls within the Maguse River Upland Ecoregion portion of the Southern Arctic Ecozone and is characterized by an abundance of waterbodies surrounded by uplands with terrestrial vegetation underlain by areas of continuous permafrost. Eight land cover classes were identified for the regional ecological land classification (ELC). Heath vegetation represents the dominant vegetation cover in the RSA at 445 926 ha (52%) of the RSA, whereas wetlands and riparian areas are distributed over 122 575 ha (14%) of the RSA. The remaining 280 983 ha (33%) of the RSA are classified as water (predominantly lakes and the tidal basin of Hudson's Bay) and a small percentage of bare ground and rock outcrops.

The mine site LSA boundary encompasses the Meliadine West site, F Zone pit, and the Discovery Zone pit sites and was defined by the expected spatial extent of the immediate direct (e.g., Project footprint) and indirect effects (e.g., dust deposition) of the Project on surrounding soil, vegetation, and wildlife resources. The LSA for the anticipated mine sites was defined by the extent of the potential effects of the Project and is characteristic of regional habitat conditions and vegetation within the Maguse River Upland Ecoregion. However, the major landforms in the LSA are dominated by a large esker that runs northwest/southeast and numerous drumlins or drumlinoid ridges. The LSA for the proposed all-weather road was defined by the expected limit of direct and indirect effects from the road on the surrounding vegetation and was delineated by a 1 km buffer on either side of the anticipated right-of-way surrounding the proposed road alignment. The LSA for the road contains vegetation and landscape terrain features that are typical of the regional conditions. However, the proposed road is located primarily on high ground and tends to follow the ridge lines of eskers and bedrock outcrops.

In total, 10 plant community types were classified and mapped in the 8251 ha mine and road LSA, including 4 upland terrestrial vegetation classes, 3 wetlands classes, and 3 un-vegetated classes. Upland terrestrial vegetation encompasses 4468 ha (54%) of the LSA, with the heath tundra community type dominating the landscape. Wetlands are distributed over 2273 ha (27%) of the LSA, and the remaining 1509 ha (18%) of the LSA is classified as un-vegetated units that are predominantly composed of waterbodies and rivers. Disturbance features and un-vegetated sand areas represent <1% of the total LSA.

A total of 7 rare plant species were observed within the LSA during the 1998, 2008 and 2009 field programs. Four are designated "Sensitive" by the government of Nunavut (Government of Nunavut 2005) and include pretty milkvetch (*Astragalus eucosmus*), northern tansy-mustard (*Descurainia sophioides*), hairy butterwort (*Pinguicula villosa*), and Lanate willow (*Salix lanata* sp. *calcicola*). One species, *Salix planifolia* sp. *tyrrellii*, was initially recorded as "Threatened" by COSEWIC (1997) but has since been delisted (COSEWIC 2008). Additionally, two species, moor rush (*Juncus stygius*) and false chamomile (*Tripleurospermum maritimum*) have no previous documented records in Nunavut, as they were not included in the *Draft General Status Ranks of Vascular Plants in Nunavut* (Government of Nunavut 2005) and are considered as rare for purposes of this report. No other territorial or federally listed species (Nunavut 2005; COSEWIC 2008) were documented as occurring in the LSA. There are an additional 13 species of rare plants that may have the potential to occur in the LSA, though they

were not encountered during the 1998, 2008, or 2009 surveys. These are all listed as “Sensitive” (Government of Nunavut 2005), with the exception of autumn bluegrass (*Poa autumnalis*), which has been ranked as “Undetermined” due to insufficient data.

Assessments of baseline metal concentrations in plant tissue and soil in the LSA was undertaken in the fall of 2008 and completed in the fall of 2009, to provide a basis for evaluating potential effects of dust borne contaminants containing metals originating from the proposed mine sites and all-weather road. In total, 29 permanent sample sites were established in the vicinity of the mine site and along the road at which plant tissue samples from at least 2 different plant species and a soil sample were collected from each site. Most of the soil metal concentrations were within acceptable guidelines, with the exception of Arsenic (As), which exceeded CCME (2007) guidelines for agricultural use on 12 plots, all but 3 of which were found in the immediate vicinity of the proposed Meliadine West site or along the proposed road near the mine site. Metal concentrations in tissue from selected plant species were also analyzed to provide an understanding of baseline levels of various metals that may be concentrated in plant tissue. The results of the plant tissue metals analyses indicated a wide variability in the range of metal concentrations, with highest levels of arsenic found in alpine manzanita *(Arctostaphylos alpine)*, and water sedge (*Carex aquatilis)* on 2 plots located near the proposed Meliadine West mine site.

Wildlife Baseline

Golder Associates Ltd. (Golder) and Arc Wildlife Services Ltd. completed baseline wildlife surveys at the Meliadine Gold Project (Project) in 1998, 1999, 2000, 2008, and 2009. The objective of wildlife studies were to provide baseline data that are necessary to assess the potential effects of the Project on caribou and other wildlife species, while minimizing uncertainty, and to develop a wildlife mitigation and monitoring plan. The focus of the 2008 and 2009 field program was to gather data to complement the previously collected data that may be required to prepare an environmental effects assessment and to guide project design and environmental mitigation. The objective of this data report is to present a synthesis of the baseline and research data collected to date.

Baseline data, collected over the 5 years of surveys, encompasses the following species or species groups:

- barren-ground caribou (*Rangifer tarandus*);
- arctic fox (*Alopex lagopus*);
- raptors;
- upland birds;
- shorebirds;
- waterfowl;
- Tundra Swan (*Cygnus columbianus*); and
- loons.

In all study years, aerial surveys for caribou were completed in a 1214 km^2 (1998 to 2000) or 8495 km^2 (2008 to 2009) study area. Fox den surveys were completed in 1998 and 2008 in a 10 km radius from the Project. Raptor nest surveys were conducted over suitable habitat within 10 km of the Project area as well as along the proposed road alignment to Rankin Inlet in all years. Surveys for upland breeding birds were completed in the Project area in 2008 and 2009 as well as the Discovery area in 2008. Aerial surveys for waterfowl were completed in June and July of 2008 and 2009 within 4 strata, each covering an area of 32 km^2 in the overall study area during each survey. Loon and swan nesting surveys were completed in 1998, 1999, 2000, and 2009 within 2 survey areas, a potentially impacted area and a control area, with areas of 39 km^2 and 51 km^2, respectively.

Key baseline findings in the Project study area include:

- barren-ground caribou of the Qamanirjuaq herd are regular but transient visitors during their spring migration and calving periods;
- 37 bird species have been observed including 14 species of waterfowl, 5 species of shorebird, 3 species of raptor, and 2 owl species;
- the most common species of upland birds are Lapland Longspur (*Calcarius lapponicus)*, Horned Lark (*Eremophila alpestris)*, and Savannah Sparrow (*Passerculus sandwichensis)*;
- shorebirds are uncommon and have not been documented breeding;
- Pacific Loons (*Gavia pacifica)* and Tundra Swans (*Cygnus columbianus)* are confirmed, regular breeding summer residents;
- Peregrine Falcon (*Falco peregrines)*, Rough-legged Hawk *(Buteo lagopus)*, and Gyrfalcon (*Falco rusticolus)* have been documented and confirmed as breeding;
- Short-eared Owls (*Asio flammeus)* have been documented and nest observations indicate that they are likely breeding;

  Sandhill Cranes (*Grus canadensis*) occur throughout the study area in summer and are confirmed as breeding;
- arctic fox and arctic hare (*Lepus arcticus*) are common residents;
- wolves (*Canis lupus*), muskox (*Ovibos moschatus)*, and polar bears (*Ursus martimus)* are infrequently observed;
- grizzly bears (*Ursus arctos)*, wolverines (*Gulo gulo*) or their sign were not seen in the study area during wildlife surveys for Project; and
- polar bear and the Peregrine Falcon are the only species that are listed under COSEWIC as of “Special Concern” that have been documented in the study area.

LIST OF ABBREVIATIONS

Acronyms	
AGL	Above ground level
GPS	Global positioning system
BQCMB	Beverly and Qamanirjuaq Caribou Management Board
CCME	Canadian Council of Ministers of Environment
Comaplex	Comaplex Minerals Corporation
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CWS	Canadian Wildlife Service
Discovery	Discovery Project
EC	Environment Canada
GNDoE	Government of Nunavut Department of Environment
Golder	Golder Associates Ltd.
ICPMS	Inductively coupled plasma mass spectrometry
KAI	Kappa Index of Agreement
n	Number or sample size
PRISM	Program for Regional and International Shorebird Monitoring
Project	Meliadine Gold Project
SARA	Species at Risk Act
SD	Standard deviation
SE	Standard error
TTA	Training and test area
UTM	Universal Transverse Mercator
VCF	Visibility correction factor
WMC	Western Mining Corporation
ZOI	Zone of influence
Units	
ha	Hectare
km	Kilometre
km^2	Square kilometre
km/h	Kilometres per hour
m	Metre
mg/kg	Milligram per kilogram
%	Percent

GLOSSARY

Arctic	The region above 66.5 degrees North latitude
Baseline	Background, existing, pre-activity, or pre-construction environmental conditions
Biodiversity	The number and variety of organisms found within a specified geographic region
Calving Period	The time of year when caribou use calving grounds for the birth of newborn caribou. The period commences with the initiation of calving and includes some time prior to calving, i.e., congregation of cows and calves. Defined for the Qamanirjuaq herd as late May to late June.
Carnivore	A mammal that eats animals
Ecosystem	A spatially defined system including all biological organisms and abiotic environment, interacting as a functional unit
Ecozone	Area of the Earth's surface representative of large, general ecological units characterized by interactive and adjusting biotic and abiotic factors
Eskers	Long, narrow bodies of sand and gravel deposited by a subglacial stream running between ice walls or in an ice tunnel, left behind after melting of the ice of a retreating glacier
Eyrie	The nest of a bird of prey, built in a high, inaccessible place
Fern	Vascular plant that does not make seeds
GPS	Global positioning system, a global satellite navigation aid
Habitat	The natural environment in which an animal or plant lives
Lichen	Any complex organism of the group Lichenes, composed of a fungus in symbiotic union with an alga and having a greenish, grey, yellow, brown, or blackish thallus that grows in leaflike, crustlike, or branching forms on rocks, trees and other surfaces
Liverwort	Non-vascular plant that does not make seeds
Local Study Area	Defines the spatial extent directly or indirectly affected by the project
Mean	The average of a numerical set, the sum of the observations divided by the number of observations
Microtopography	Very small scale variations in the height and roughness of the ground surface
Migration	Movements from one region to another of birds, fish, or mammals in search of food or shelter, often on an annual basis according to season
Moss	Non-vascular plant that does not make seeds
Non-Vascular Plant	Plants that do not possess conductive tissues for the transport of water and food
Nutrient Regime	The relative supply of nutrients available for plant growth at a give site
pH	The degree of acidity (or alkalinity) of soil or solution. The pH scale is generally presented from 1 (most acidic) to 14 (most alkaline). A difference of one pH unit represents a ten-fold change in hydrogen ion concentration
Plant Community	A group of interacting plant species that exist within a defined space and time
Point Count	A circular plot survey where observers spend a prescribed time looking and listening for birds
Population index	An estimate of waterfowl in a given area based on observations in a sub-sampled area and adjusted for birds not observed

Post-calving period	The time of year after the calving period, when cows and newborn calves congregate. Caribou disperse during this period and areas used include the calving grounds and a substantial extension to the south and west of the calving ground. Defined for the Qamanirjuaq herd as late June to the end of July.
Rare Plant	A native plant species found in restricted areas, at the edge of its range or in low numbers within a province, state, territory or country
Regional Study Area	The area that is beyond the limits of local study areas that may be affected by the Project. The regional study area for this study was defined to be an area with a 52 km radius centered on the Project
Riparian	Refers to terrain, vegetation or simply a position next to or associated with a stream, floodplain or standing waterbody
Sedge	Any plant of the genus Carex, perennial herbs, often growing in dense tufts in marshy places. They have triangular jointless stems, a spiked inflorescence and long grass-like leaves which are usually rough on the margins and midrib. There are several hundred species.
Simpson Inverse Index	Used to quantify the biodiversity of a habitat. It takes into account the number of species present, as well as the relative abundance of each species
Standard deviation	Statistical measurement of the variation in a distribution
Standard error	The standard deviation of the mean
Species at Risk	Species that are listed under Schedule 1 of the *Species at Risk Act* (SARA) as “extirpated”, “endangered”, or “threatened”
Species diversity	A measure of biodiversity that takes into account the number of species present, as well as the abundance of each species. Species diversity indices are mathematical estimators of diversity based on sample data (i.e., Simpson’s Inverse Index)
Species richness	The simplest measure of biodiversity of the different species making up the richness of an area
Strata	Singular stratum
Topographic	The configuration of a surface including its relief and the position of its natural and man-made features
Transect	A straight survey line
Tundra	A treeless, level or gently rolling plain of the Arctic region. It has a marshy surface where mosses, lichens, and low shrubs grow with mucky soil and permafrost underneath
Upland bird	Songbird and shorebird species
UTM	Universal Transverse Mercator. A mapping grid; the globe is divided into numbered zones, and within each zone, northing and easting values are used to located any point on the Earth’s surface
Vascular plant	Plants that possess conductive tissues for the transport of water and food
Waterfowl	A bird that frequents the water or lives on or near rivers, lakes, seas, etc.; some waterfowl are long-legged waders (such as cranes and herons), whereas others are web-footed swimmers (such as ducks and geese). The term is commonly used to refer to swimming game birds.
Wildlife	Species of plant or animal that are not tamed or domesticated
Wildlife species	As defined in the federal Species at Risk Act (SARA), “wildlife species” mean a species, subspecies, or variety of geographically or genetically distinct population of animal, plan or other organism, other than a bacterium or virus, that is wild by nature and (a) is native to Canada; or (b) has extended its range into Canada without human intervention and has been present in Canada for at least 50 years

Zone of Influence	A geographic area where, if a mine effect was evident, the probability of occurrence values would be highest adjacent to the mine and decrease at as distance from the mine increases

The scientific style and format used in this report follows the recommendations outlined in the "Scientific Style and Format – The CSE Manual for Authors, Editors, and Publishers" 7th Edition prepared by the Council of Scientific Editors. This 2006 publication recommends the preferred format for use of numbers in the text (i.e., use of numerals for numbers with the exception of zero and one, or at the beginning of a sentence), the modern format for citing references, as well as many other style and format conventions.

This report also uses the National Standard of Canada SI Metric Units as identified in the CAN/CSA-Z234.1-00 Metric Practice Guide (Reaffirmed 2006) prepared by the Canadian Standards Association.

Common species names in this report follow the guidelines of the American Society of Ichthyologist and Herpetologists, The American Ornithologists' Union, and the American Society of Mammalogists.

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Vegetation

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Wildlife

1.0 INTRODUCTION

1.1 Background and Scope

Comaplex Minerals Corporation (Comaplex) is proposing to construct and operate a gold mine, known as the Meliadine Gold Project (Project) 30 kilometres (km) north of Rankin Inlet (Figure 1-1), and 80 km south of the Chesterfield Inlet in the Kivalliq Region of Nunavut. The proposed Project site is located on a peninsula between the east, south and west basins of Meliadine Lake on Inuit Owned Land.

Meliadine Lake covers an area of 107 square kilometres (km^2) with a maximum length of 31 km (Environment Canada 1973). It features a highly convoluted shoreline, 465 km in length, with over 200 islands. Most of the lake drains via the Meliadine River, which originates at the south end of the lake and flows through a series of waterbodies and short river segments into Hudson Bay (distance of 39 km). A second, smaller outflow from the west basin of Meliadine Lake drains into Peter Lake, which discharges into Hudson Bay through the Diana River system (distance of 70 km).

The Project area is within the zone of continuous permafrost approximately 400 km north of the tree line with typical sub-arctic vegetation. The terrain is dominated by glacial landforms that include drumlins of glacial till, eskers consisting of gravels and sands, and numerous shallow lakes. The glacial deposits form low relief ridges oriented in a northwest-southeast direction. Regional drainage patterns are controlled by these ridges and the prevailing permafrost.

Wildlife and vegetation studies have been undertaken since the mid-1990s when Western Mining Corporation International Ltd. (WMC) undertook a multi-year gold exploration program in the Project area. The terrestrial baseline report represents a synthesis of all respective vegetation and wildlife studies that have taken place since this time.

1.2 Objectives

1.2.1 Vegetation Baseline

Vegetation studies were carried out in 1998, 2008, and 2009 for the Project to document flora species and characterize plant community types that may be affected by the Project development. Baseline studies included detailed vegetation inventory surveys in the vicinity of the Project development and aerial reconnaissance surveys in the broader regional area. The objectives of the vegetation baseline study were to

- collect quantitative vegetation and plant community data;
- define and map plant communities using these collected data;
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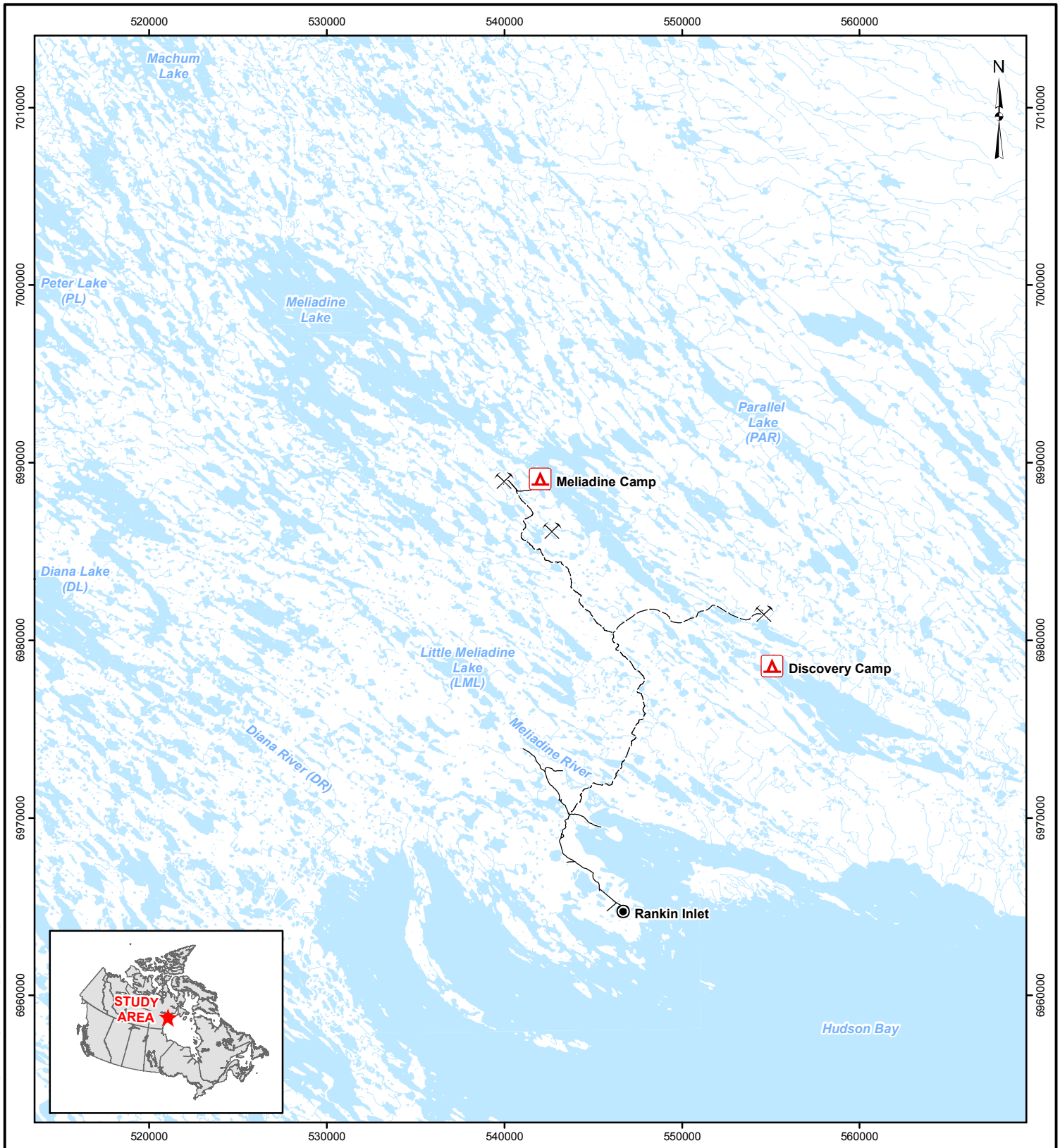
- describe and map the occurrence of rare plants or unusual plant associations within the local study area (LSA); and
- develop a regional ecological classification system.



LEGEND

- Camp
- Proposed Mine Site
- Road - Existing
- Proposed Road
- Watercourse
- Waterbody

6 0 6

SCALE 1:300,000 KILOMETRES

REFERENCE

Base data obtained from Comaplex Minerals Corporation
Projection: UTM Zone 15 Datum: NAD 83

DRAFT

PROJECT

COMAPLEX MINERALS CORP

COMAPLEX MINERALS CORPORATION
MELIADINE GOLD PROJECT
NUNAVUT

TITLE

LOCATION OF THE MELIADINE GOLD PROJECT

Golder Associates
Edmonton, Alberta

PROJECT NO. 09-1373-0010			PHASE No. 1000	
DESIGN	LV	28 Oct. 2009	SCALE AS SHOWN	REV. 0
GIS	CDB	28 Oct. 2009		
CHECK	LV	22 Nov. 2009		
REVIEW	CO	22 Nov. 2009		

FIGURE 1-1

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1.2.2 Wildlife Baseline

Baseline wildlife studies at the Meliadine Gold Project were initiated by Arc Wildlife Services Ltd. in May 1998 and continued through 2000. Further studies were completed in 2008 and 2009 by Golder Associates Ltd. The 2008 and 2009 wildlife studies were designed to update and augment the existing baseline data for all major categories of terrestrial wildlife present, including species at risk. Also in 2009, additional data were collected to address data gaps in the Tiriganiaq, Discovery, and F Zone deposit areas and survey duration for some components. The studies were designed to collect baseline data within the terrestrial study area, including the proposed Project footprint and the proposed all-weather road corridor. The objective of wildlife studies were to provide baseline data that are necessary to assess the potential effects of the Project on caribou and other wildlife species, while minimizing uncertainty, and to develop a wildlife mitigation and monitoring plan. The objective of this data report is to present a synthesis of the baseline and research data collected to date.

2.0 SUMMARY OF WORK COMPLETED

2.1 Vegetation

Initial baseline vegetation surveys were completed in 1998 for the immediate Project area, and additional vegetation surveys along the all-weather road, Discovery Zone pit, and F Zone pit were completed in 2008 and 2009. Results of the 1998 vegetation surveys were presented in the 1999 report "1998 Vegetation Baseline Studies, WMC International Ltd., Meliadine West Gold Project" (Burt 1999). Results presented within the 1999 report were updated with the 2008 and 2009 results, and the information has been integrated into this Vegetation Baseline Report.

2.2 Wildlife

A multi-year gold exploration program conducted by WMC began north of Rankin Inlet in 1995 and included wildlife baseline studies from 1998 to 2000 (Jalkotzy 1999, 2000a, 2000b). Those studies focused on barren-ground caribou (*Rangifer tarandus*), arctic foxes (*Alopex lagopus*), Tundra Swans (*Cygnus columbianus*), loons and other waterfowl, and raptors. Golder Associates Ltd. (Golder) completed further baseline wildlife surveys at the Project in June and July 2008 (Golder 2008) and between May and July 2009. These wildlife baseline studies, which build upon the previous studies conducted by Arc Wildlife Services Ltd. in 1998, 1999, and 2000, were designed to update and augment the existing data. Table 2-1 summarizes baseline wildlife studies conducted to date. The focus of the 2008 and 2009 field program was to gather data to complement previously collected data that may be required to prepare an environmental effects assessment and to guide project design and environmental mitigation.

Table 2-1: Summary of Work Completed

Surveys	1998	1999	2000	2008	2009
Caribou – aerial surveys	√	√	√	√	√
Fox dens – ground surveys	√			√	
Raptor – aerial surveys	√			√	√
Upland bird – point count surveys				√	√
Shorebirds – PRISM surveys				√	√
Waterfowl – aerial surveys	√			√	√
Loon and Swans – nest surveys	√	√	√		√

A number of species of concern, including barren-ground caribou, wolves (*Canis lupus*), wolverine (*Gulo gulo*), bear species, raptors, and waterfowl, occur in and around the Project (Table 2-2). Both traditional and scientific knowledge indicate that barren-ground caribou of the Qamanirjuaq herd likely use this area during seasonal migrations (Beverly and Qamanirjuaq Caribou Management Board [BQCMB 1999]). Numerous migratory passerine and shorebird species breed in the uplands and lowlands of this tundra habitat. Six species that have ranges within the study area are listed by Committee on the Status of Endangered Wildlife in Canada (COSEWIC), including 2 of that are also listed by the Species at Risk Act (SARA) (Table 2-2).

Table 2-2: Species of Concern in the Study Area

Species	Scientific Name	COSEWIC Status[a]	SARA Status[b]	Nunavut Status[c]	Record of Presence in Project Area[d]
Polar bear	*Ursus martimus*	Special Concern	-	Sensitive	Observed within the Project area (1998, 1999, 2000)
Grizzly bear	*Ursus arctos*	Special Concern	-	Sensitive	Mark Ittinuar- observations northwest of project area
Wolverine	*Gulo gulo*	Special Concern	-	Sensitive	Mark Ittinuar- observations northwest of project area
Grey wolf	*Canis lupus*	Not at Risk	-	Sensitive	Observed within Project area (2008)
Peregrine Falcon (tundra)	*Falco peregrinus*	Special Concern	Schedule 3 Special Concern	May be at Risk	Observed within Project area (1998,1999, 2000); confirmed nesting (2008, 2009)
Short-eared Owl	*Asio flammeus*	Special Concern	Schedule 3 Special Concern	Sensitive	Observed within Project area (2000, 2008, 2009)
Common Eider	*Somateria mollisima*	-	-	Sensitive	Observed within Project area (2008, 2009)
King Eider	*Somateria spectabilis*	-	-	Sensitive	Observed within Project area (2009)
Northern Pintail	*Anas acuta*	-	-	Sensitive	Observed within Project area (1998, 2008, 2009)
Least Sandpiper	*Calidris minutilla*	-	-	Sensitive	Observed within Project area (2008, 2009)
Semipalmated Sandpiper	*Calidris pusilla*	-	-	Sensitive	Observed within Project area (2008, 2009)
Horned Lark	*Eremophila alpestris*	-	-	Sensitive	Observed within Project area (1998, 2008, 2009)
American Tree Sparrow	*Spizella arborea*	-	-	Sensitive	Observed within Project area (2008)
Snow Bunting	*Plectrophenax nivalis*	-	-	Sensitive	Observed within Project area (2008, 2009)
White-crowned Sparrow	*Zonotrichia leucophrys*	-	-	Sensitive	Observed within Project area (2008)
American Pipit	*Anthus rubescens*	-	-	Sensitive	Observed within Project area (1998, 2008, 2009)

[a] COSEWIC Status: Committee on the Status of Endangered Wildlife in Canada. http://www.cosewic.gc.ca/eng/sct1/searchform_e.cfm, accessed 30 July 2008

[b] SARA Status: Species at Risk Act. http://www.sararegistry.gc.ca/default_e.cfm, accessed 30 July 2008

[c] Nunavut Wild Species – General Status of Wild Species in Nunavut. Government of Nunavut. Department of Sustainable Development. 33p.

[d] Information obtained from Jalkotzy (1999, 2000a, 2000b) and from Mark Ittinuar of Rankin Inlet during 2008 field programs.

[e] "-" indicates that species is not listed under COSEWIC or SARA

3.0 STUDY AREA

The Project is located approximately 30 km north of Rankin Inlet in Nunavut (Figure 1-1). To facilitate the assessment and interpretation of potential effects associated with the Project, it is necessary to define appropriate spatial boundaries. Spatial boundaries were developed with consideration of both vegetation and wildlife components.

The Regional Study Area (RSA) was selected to capture any effects that may extend beyond the immediate Project area and subsequently to assess potential cumulative effects on vegetation and wildlife in the broader regional context. A Local Study Area also was defined for the vegetation component to assess the immediate direct and indirect effects of the Project on vegetation resources.

3.1 Regional Study Area

The regional study area (RSA) was established to assess the importance of the Project within a broader regional context (Figure 3-1), as it forms the foundation for quantifying potential effects of the Project to regional vegetation resources and wildlife habitat. The RSA was defined as a 52 km radius from the proposed Project and covers an area of approximately 850 000 ha. The RSA boundary was defined with consideration of the spatial requirements for the wildlife study, as RSA level information will be used as the foundation from which to quantify potential effects of the Project on both vegetation resources and wildlife habitat. Thus, the RSA must be of sufficient size to encompass the potential zone of influence on caribou from mining activities (Johnson et al. 2005).

The RSA is located within the Maguse River Upland Ecoregion portion of the Southern Arctic Ecozone (Ecological Stratification Working Group 1995). This ecoregion is classified as having a low arctic ecoclimate, with long cold winters and short cool summers with prolonged periods of misty weather. The average annual frost free period is less than 90 days (Fletcher and Young, ca. 1976*)* and mean summer temperatures are around 6°C, whereas mean winter temperatures are -24°C (Ecological Stratification Working Group 1995). Mean annual precipitation is variable and ranges from 250 to 400 mm, with more than 400 mm occurring south of Eskimo Point (now Arviat). The landscape of the Maguse River Upland Ecoregion is dominated by broad, sloping uplands and lowlands of crystalline Archean origin, interspersed by hummocky bedrock outcrops that are covered with discontinuous acidic, sandy, granitic till and prominent fluvio-glacial ridges or eskers (Ecological Stratification Working Group 1995). Areas of continuous permafrost with medium ice content are quite common, and soils are typically composed of Turbic Cryosols, with Organic (Mesisol) and Regosolic soils occurring in areas without permafrost (Ecological Stratification Working Group 1995).

The regional landscape is dominated by an abundance of waterbodies surrounded by uplands with terrestrial vegetation. Open water, including rivers, lakes, and a portion of Hudson Bay, represent a large proportion of the study area. The most common terrestrial plant community in the RSA is heath tundra, which is dominated by low-growing heath shrubs, such as marsh Labrador tea (*Ledum palustre*), bearberry (*Arctostaphylos* sp.), and black crowberry (*Empetrum nigrum*). Drier areas associated with bedrock outcrops and boulder fields are characterized by abundant lichens, with limited vascular plant cover. Poorly drained areas in the regional landscape are predominantly characterized by graminoid tussock-hummock communities, with low shrub communities occurring along riparian areas adjacent to stream, ponds, and lakes. Wetlands account for 25 to 50% of the land area and are predominantly characterized by low- and high-centred polygon