

**APPENDIX 3-O
TAHLTAN COMMUNITY MEETINGS
OUTREACH MATERIALS**

Assessing and Protecting Wildlife at the KSM Project

Purpose:

To study the wildlife community at KSM and find out:

- What species are present and where do they occur,
- Describe the wildlife populations – how many animals are there?

The Process of Wildlife Protection at KSM:

1. Identify Valued Ecosystem Components (VECs), which are chosen based on:

- Importance to First Nations,
- Provincially/Federally listed species of conservation concern,
- Economically important species,
- “Umbrella” species.



2. In 2007, KSM met with a wildlife working group to describe which wildlife species they would be studying and how. The working group was made up of representatives from the Tahltan Heritage Resources Environmental Assessment Team (THREAT), BC Ministry of Environment (BC MOE), the Canadian Wildlife Service (CWS), the BC Environmental Assessment Office (BC EAO), etc.

- THREAT recommended that the study area be expanded to include some areas for moose and mountain goats.
- THREAT also recommended that groundhogs be added as a species to be studied.

3. Fieldwork on VEC species and groups conducted in 2008, 2009, and 2011.

4. Presented results of fieldwork to wildlife working group in 2009, 2011, and 2012.

- THREAT asked KSM to add Black Bear to the environmental assessment.

5. Project re-design to accommodate wildlife and fisheries issues and First Nation's concerns

- Example – Access road moved from Teigen to Treaty valley due to fish habitat concerns.
- Example – Facilities moved out of Treaty-Unuk saddle.

6. Mitigation measures designed for wildlife for construction, operations, and maintenance

- Example - Road management to reduce area accessible by hunters.
- Example - Camp waste management to reduce attractants for bears.

7. Wildlife Effects Monitoring Plan (WEMP)

- Surveys for VECs every 5 years – moose, goats, and grizzly bears
- Continuous onsite monitoring of wastes, attractants, roads, facilities, wildlife incidents, etc.

Help improve the data: Do you have any knowledge of grizzly bears that you can share with us?

Wildlife Species Studied at KSM

Wildlife Group	Wildlife Species <i>(Valued Ecosystem Component)</i>
Ungulates	Moose
	Mountain Goat
Bears	Grizzly Bear
	Black Bear
Furbearers	American Marten
Groundhogs	Hoary Marmot
Bats	Bats
Birds	Wetland Birds
	Forest and Alpine Birds
	Raptors
Amphibians	Western Toad

Mountain Goat Studies at the KSM Project

Why Study Mountain Goats?

Mountain goats were studied for the KSM Project because:

- The Tahltan Nation have identified that mountain goats are important to the Tahltan at meetings with Seabridge.
- Mountain goats are an economically important species to local hunters and guide outfitters
- The province of BC has identified mountain goats as an important species.



How we looked for Mountain Goats:

We looked at mountain goats in two ways at KSM – habitat mapping and aerial surveys:

- Habitat Mapping – We mapped mountain goat habitat for summer and winter.
 - Summer Habitat – Goat habitat was identified as south and west-facing slopes, above 1,200 in areas with vegetation and close to “escape terrain”.
 - Winter Habitat – The winter habitat for goats was mapped in similar areas as the summer habitat, but further downslope, in treed areas, generally on southern and western slopes.
- Aerial Surveys – We counted how many mountain goats are in the KSM Project area using a helicopter during the summer of 2008 and the winter of 2009.

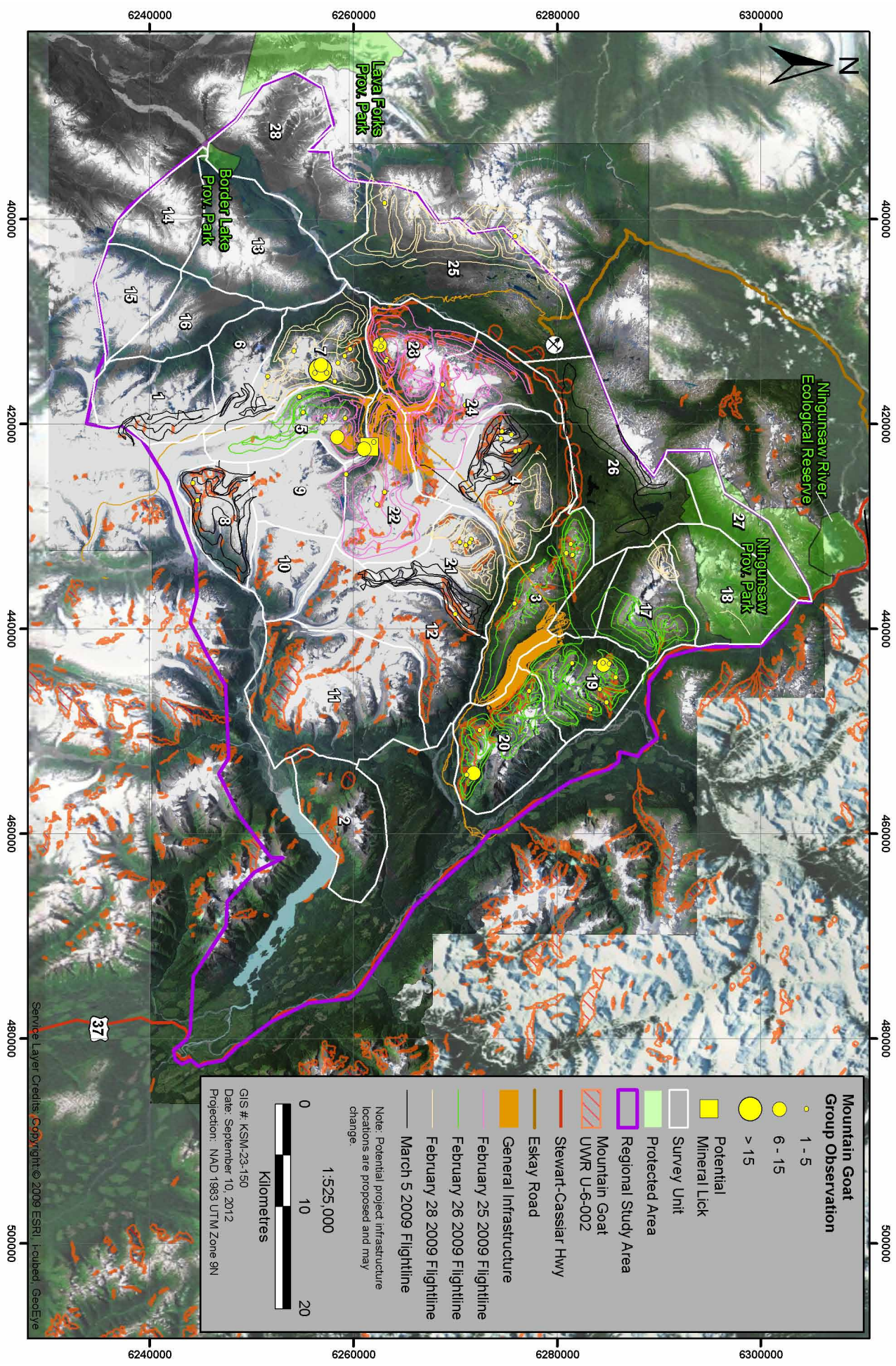
What we found:

- Our habitat mapping shows that about 23% of the KSM Project area has high quality summer habitat and about 17% high quality winter habitat.



- The province of BC has also conducted habitat mapping in this area – their maps (which define “Ungulate Winter Ranges – UWRs) are very similar with ours.
- Summer aerial survey (July 2008)
 - 230 goats were observed
 - 28 kids / 100 adults
 - The largest number of goats were observed on Snowslide Range & John Peaks
- Winter aerial survey (Feb 2009)
 - 179 goats were observed
 - 26 kids / 100 adults
 - The largest number of goats were observed on Snowslide Range, Unuk Finger & John Peaks

Help improve the data: Do you have any knowledge of mountain goats that you can share with us?



Mountain Goat Group Observation

- 1 - 5
- 6 - 15
- > 15

Potential Mineral Lick

Survey Unit

Protected Area

Regional Study Area

Mountain Goat UWR U-6-002

Stewart-Cassiar Hwy

Eskay Road

General Infrastructure

February 25 2009 Flightline

February 26 2009 Flightline

February 28 2009 Flightline

March 5 2009 Flightline

Note: Potential project infrastructure locations are proposed and may change.

1:525,000

0 10 20 Kilometres

GIS #: KSM-23-150
 Date: September 10, 2012
 Projection: NAD 1983 UTM Zone 9N

Service Layer Credits. Copyright © 2009 ESRI. Esri, GeoEye

Grizzly Bear Studies at the KSM Project

Why Study Grizzly Bears?

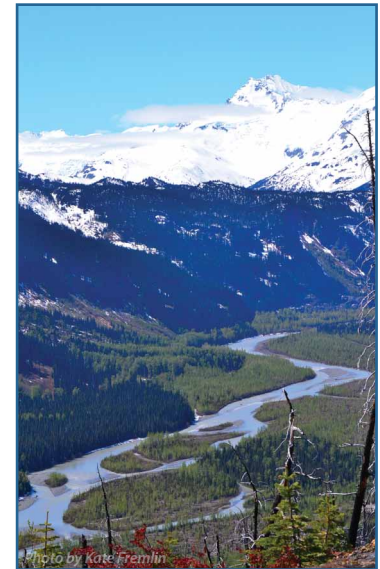
Grizzly bears were studied for the KSM Project because:

- The Tahltan Nation have identified that grizzly bears are important to the Tahltan at meetings with Seabridge.
- Grizzly bears are an economically important species to local hunters and guide outfitters.
- The province of BC has identified grizzly bears as an important species that needs more conservation management in local land management plans.
- Grizzly bears are provincially blue-listed in BC and are federally listed as a species of Special Concern.

How we looked for Grizzly Bears:

We looked at grizzly bears in two ways at KSM – habitat mapping and DNA hair analysis:

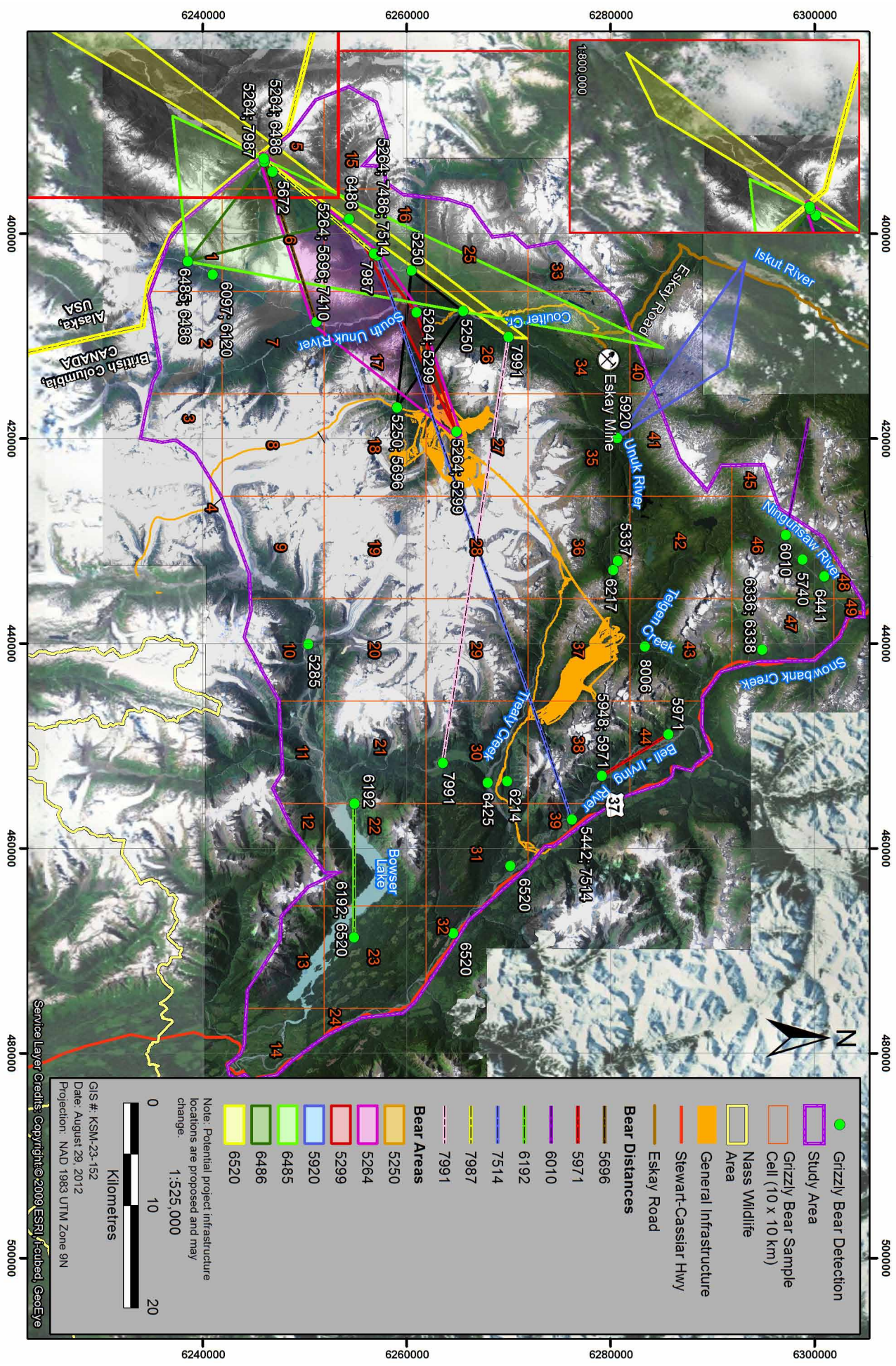
- Habitat Mapping – We mapped grizzly bear habitat for areas where they would want to feed in the spring, summer, and fall and where they would choose to den in the winter:
 - Spring habitat was mapped in low-lying areas such as wetlands with good early-season food resources.
 - As the summer progresses, vegetation ripens at progressively higher elevations. Our maps of bear habitat follow this seasonal shift to higher elevations.
 - For the late summer and fall, important salmon spawning areas were also identified.
- DNA Hair Analysis – By collecting bear hair, we can count how many bears are using the KSM area. During 2008 and 2009, we collected hair samples at stations every 10 km in the study area by wrapping a tree with barbed wire and baited the tree with cows blood. Barbed wire was also strung across trails near salmon streams in fall of 2009. The bear hair was caught on the barbed wire and a DNA lab was able to tell us how many bears occurred in the area.



What we found:

- Our habitat mapping shows that there is more high-quality spring and summer habitat (about 38%) than fall and denning habitat (about 8%) in the KSM Project area.
- Our DNA analysis found that there were 31 grizzly bears in the KSM Project area – 15 females and 16 males.
- The home ranges of each bear averaged between 112 km² to 326 km².
- Bears travel long distances to salmon streams during the fall, particularly on the western side of the study area.

Help improve the data: Do you have any knowledge of grizzly bears that you can share with us?



Moose Studies at the KSM Project

Why Study Moose?

Moose were studied at the KSM Project because:

- The Tahltan Nation have identified that moose are important to the Tahltan at meetings with Seabridge.
- Moose are an economically important species to local hunters and guide outfitters in BC.
- The province of BC has identified moose as an important species.



Photo by Kate Fremlin

How we looked for Moose:

We looked at moose in two ways at KSM – habitat mapping and aerial surveys:

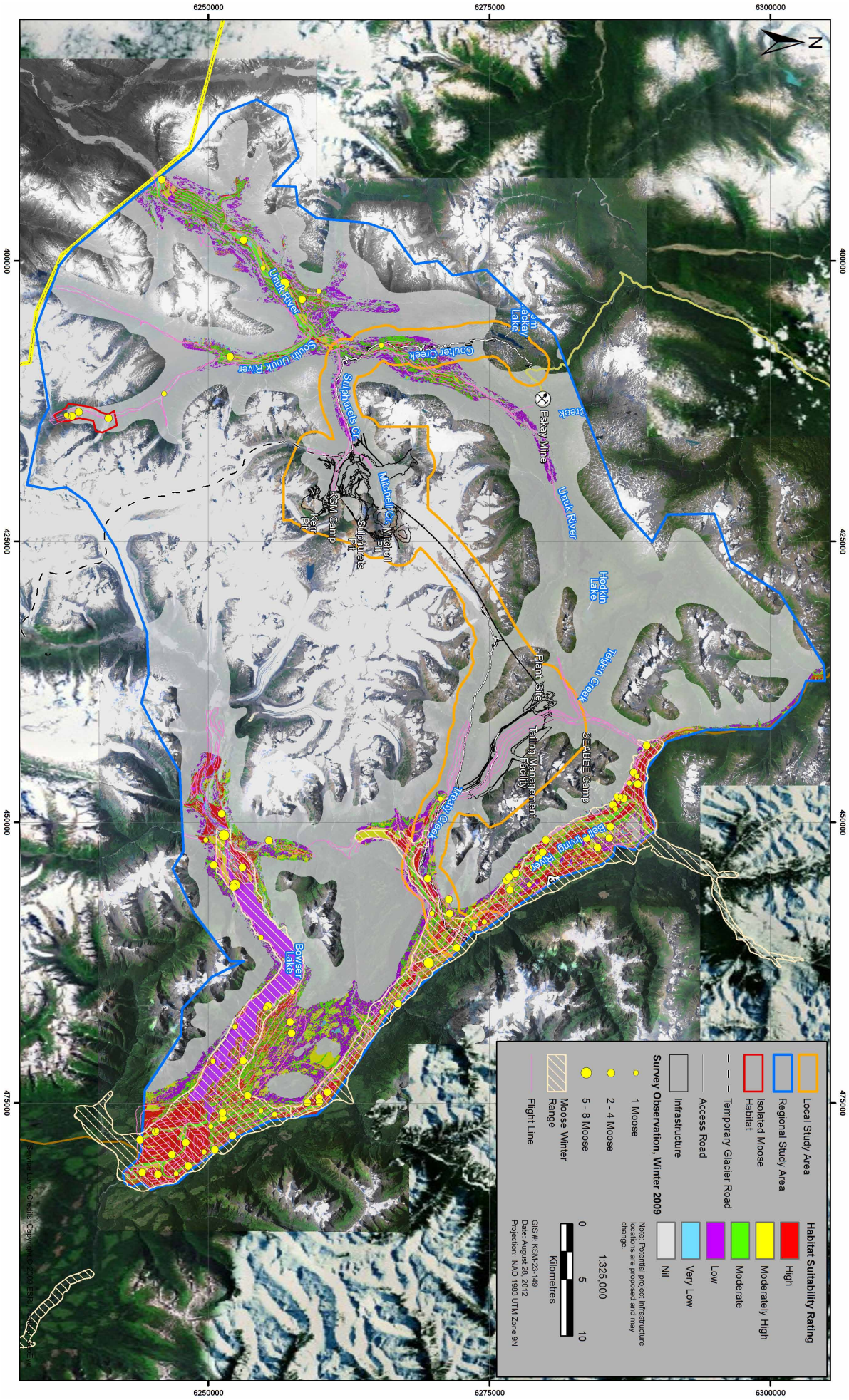
- Habitat Mapping – We mapped moose habitat for the winter by choosing low elevation areas with shrubs (food) and tree cover (less snow). Winter is the most challenging season for moose because food is scarce and snow cover and cold temperatures force moose to use more energy.
- Habitat Mapping - Two maps were made – one for early winter and another for late winter.
 - In the early winter, moose can use large areas of valley bottoms because snow depths are low enough that they can move freely.
 - In late winter months, a much smaller area is mapped because the deeper snow in late winter restricts where moose can go.
- Aerial Surveys – We counted how many moose are in the KSM area using a helicopter survey during the winter of 2009. This method is the Provincial standard. We looked in the valley bottoms that moose use in the winter. We counted bulls, cows and calves

What we found:

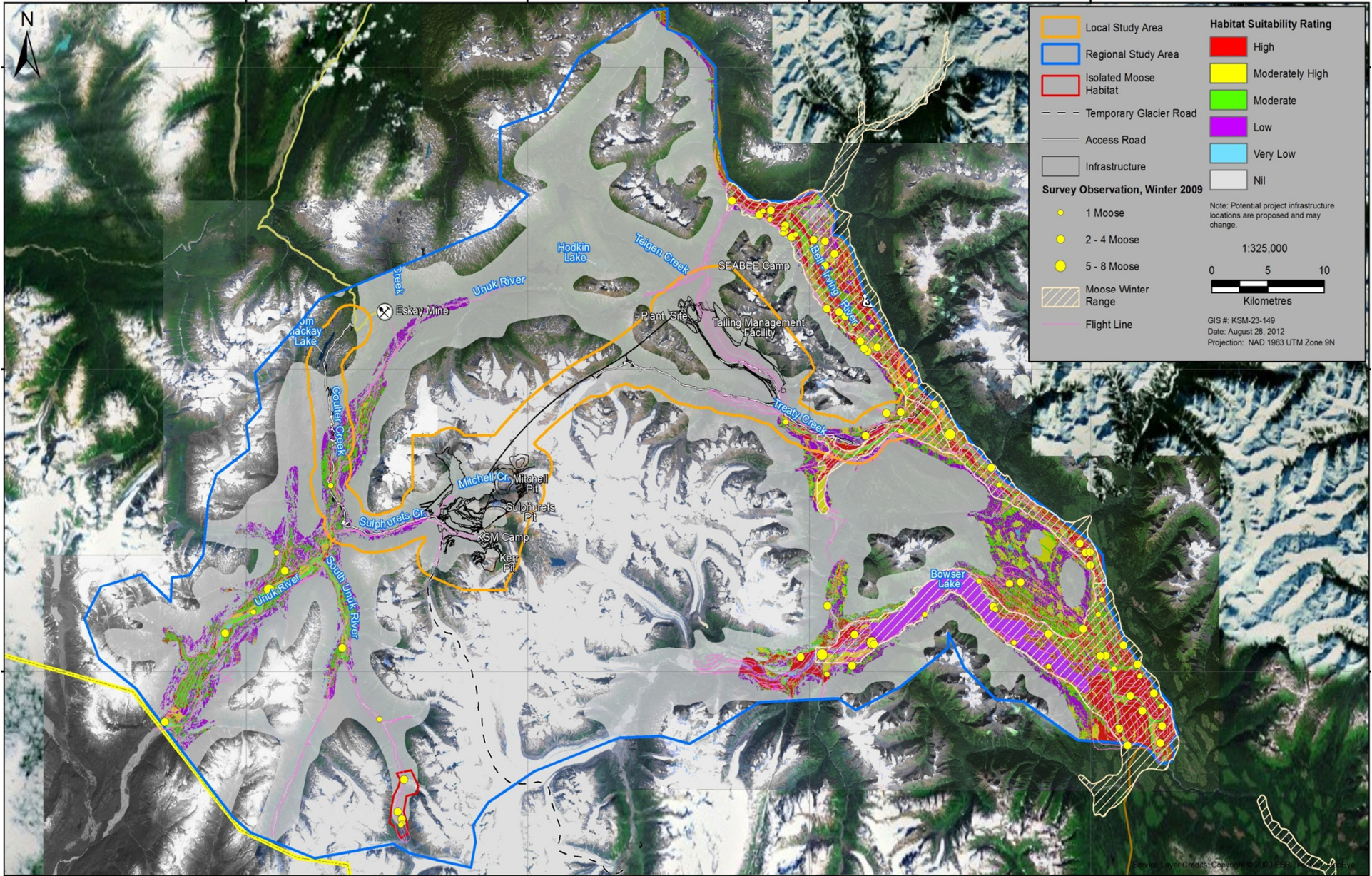
- The KSM area is divided into two large areas – a “coastal area” along the Unuk River, where temperatures are warmer and the valleys are narrow and steep. There is also an “interior area” along the Bell-Irving River, Treaty Creek, Snowbank Creek, and the Bowser Lake. The interior area is colder, has less snow, and has broad valleys with lots of habitat for moose.
- Our habitat mapping shows that about 25% of the KSM Project area has high quality winter habitat for moose. Most of this good-quality habitat is found in the interior area, along Highway 37.
- Our aerial survey found about nine times more moose in the interior area than the coastal area. (Coastal = 12 cows + 2 calves; Interior = 93 cows + 40 calves)
- Our biologists often see moose traveling between valleys drainages in Treaty and Teigen Creeks and Unuk, Bell-Irving, and Bowser Rivers.

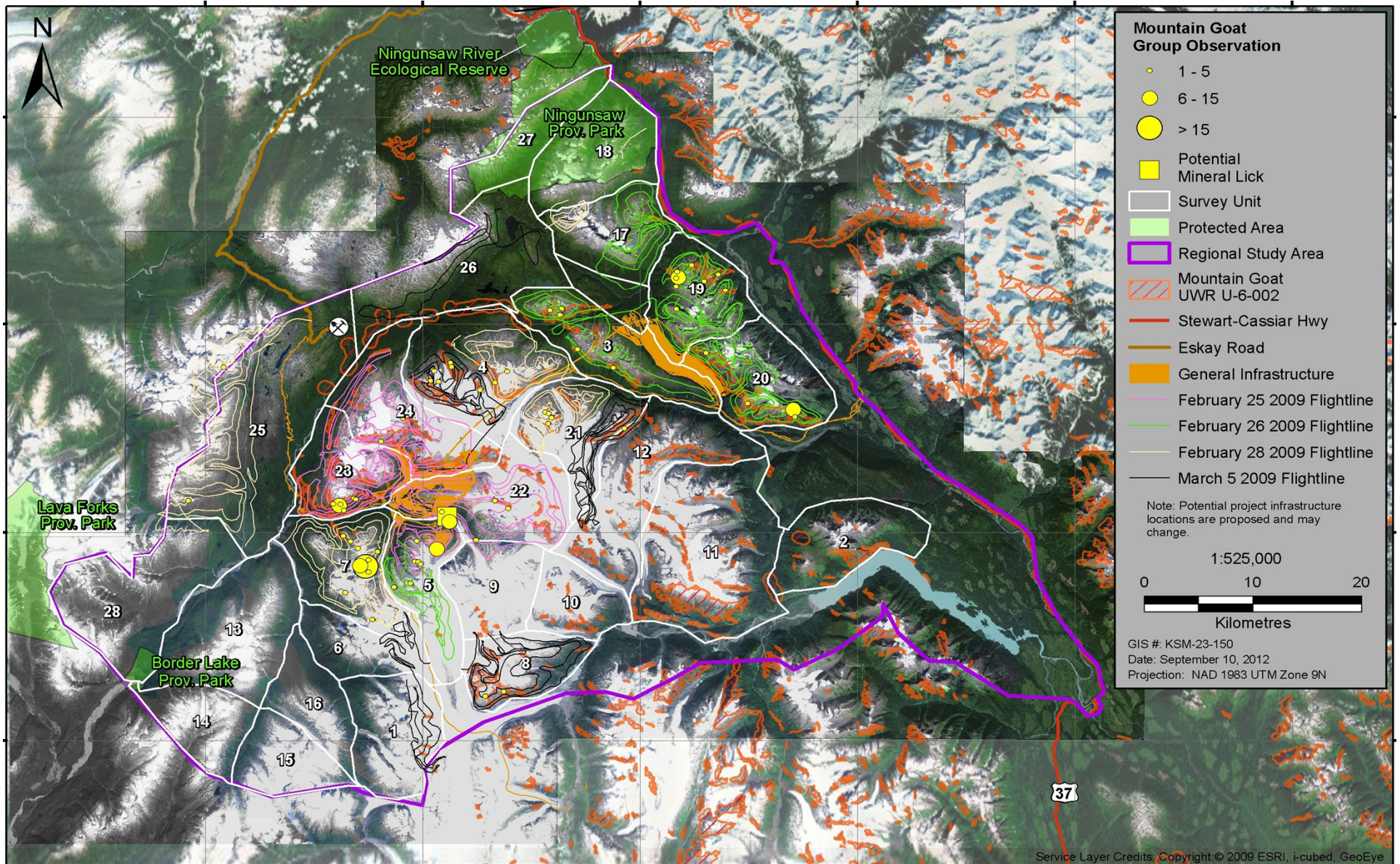


Help improve the data: Do you have any knowledge of moose that you can share with us?



	Local Study Area		High
	Regional Study Area		Moderately High
	Isolated Moose Habitat		Moderate
	Temporary Glacier Road		Low
	Access Road		Very Low
	Infrastructure		Nil
	1 Moose	Note: Potential project infrastructure locations are proposed and may change.	
	2 - 4 Moose	1:325,000	
	5 - 8 Moose	0 5 10	
	Moose Winter Range	Kilometres	
	Flight Line	GIS # KSM/23-149 Date: August 28, 2012 Projection: NAD 1983 UTM Zone 8N	





Mountain Goat Group Observation

- 1 - 5
- 6 - 15
- > 15
- Potential Mineral Lick
- Survey Unit
- Protected Area
- ▭ Regional Study Area
- ▨ Mountain Goat UWR U-6-002
- Stewart-Cassiar Hwy
- Eskay Road
- General Infrastructure
- February 25 2009 Flightline
- February 26 2009 Flightline
- February 28 2009 Flightline
- March 5 2009 Flightline

Note: Potential project infrastructure locations are proposed and may change.

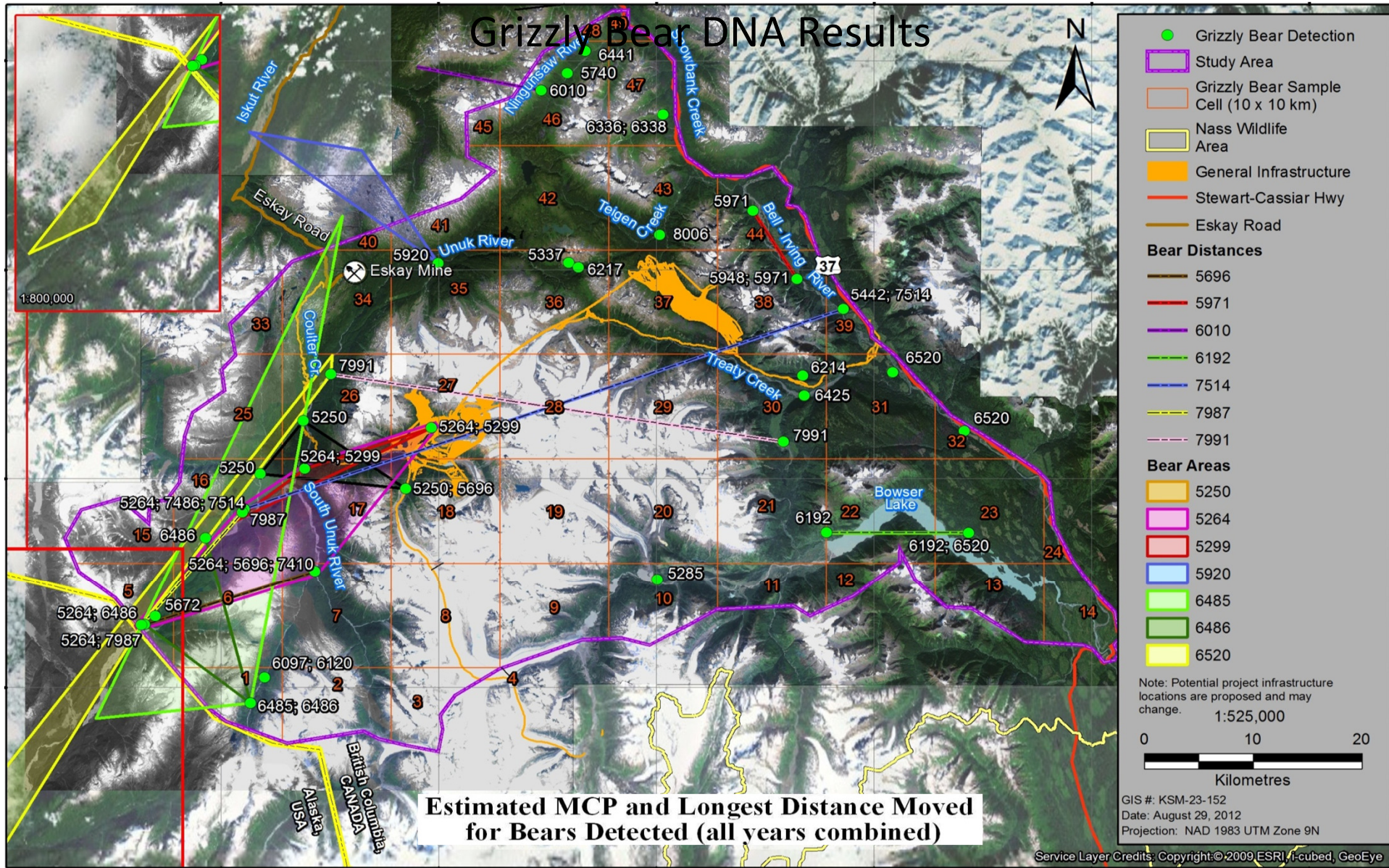
1:525,000

0 10 20

Kilometres

GIS # : KSM-23-150
 Date : September 10, 2012
 Projection : NAD 1983 UTM Zone 9N

Grizzly Bear DNA Results



Estimated MCP and Longest Distance Moved for Bears Detected (all years combined)

WORKING TOGETHER ON THE KSM PROJECT

Seabridge has been working with the Tahltan Heritage Resources Environmental Assessment Team (THREAT) since 2008 to gain input into the KSM Project:

- THREAT has participated in 10 meetings with Seabridge about the project design and the environmental assessment process
- THREAT representatives have participated in 19 project Working Group meetings with federal and provincial representatives to discuss the project design and address issues
- Seabridge funded a Tahltan Traditional Knowledge Study and has worked with THREAT to incorporate knowledge into the project design and environmental assessment application
- THREAT and Tahltan representatives have participated in four visits to the project site

Seabridge and THREAT have worked to address a number of issues related to:

- Fisheries and wildlife
- Air, water and groundwater quality
- Metal leaching and acid rock drainage

In response to THREAT feedback, Seabridge has made several changes to the project design, including:

- Adding a lined pond at the tailings management facility (TMF)
- Changing the access road to avoid sensitive habitat
- Changing the discharge location from the TMF to address concerns about the potential impacts on fish
- Conducting ice archaeology studies at the KSM Project site

KSM Regional and Local Wildlife Study Areas

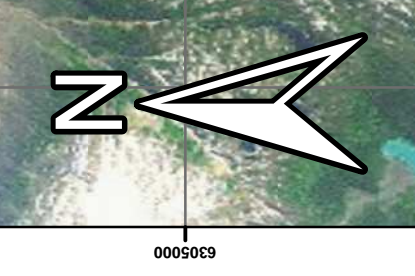
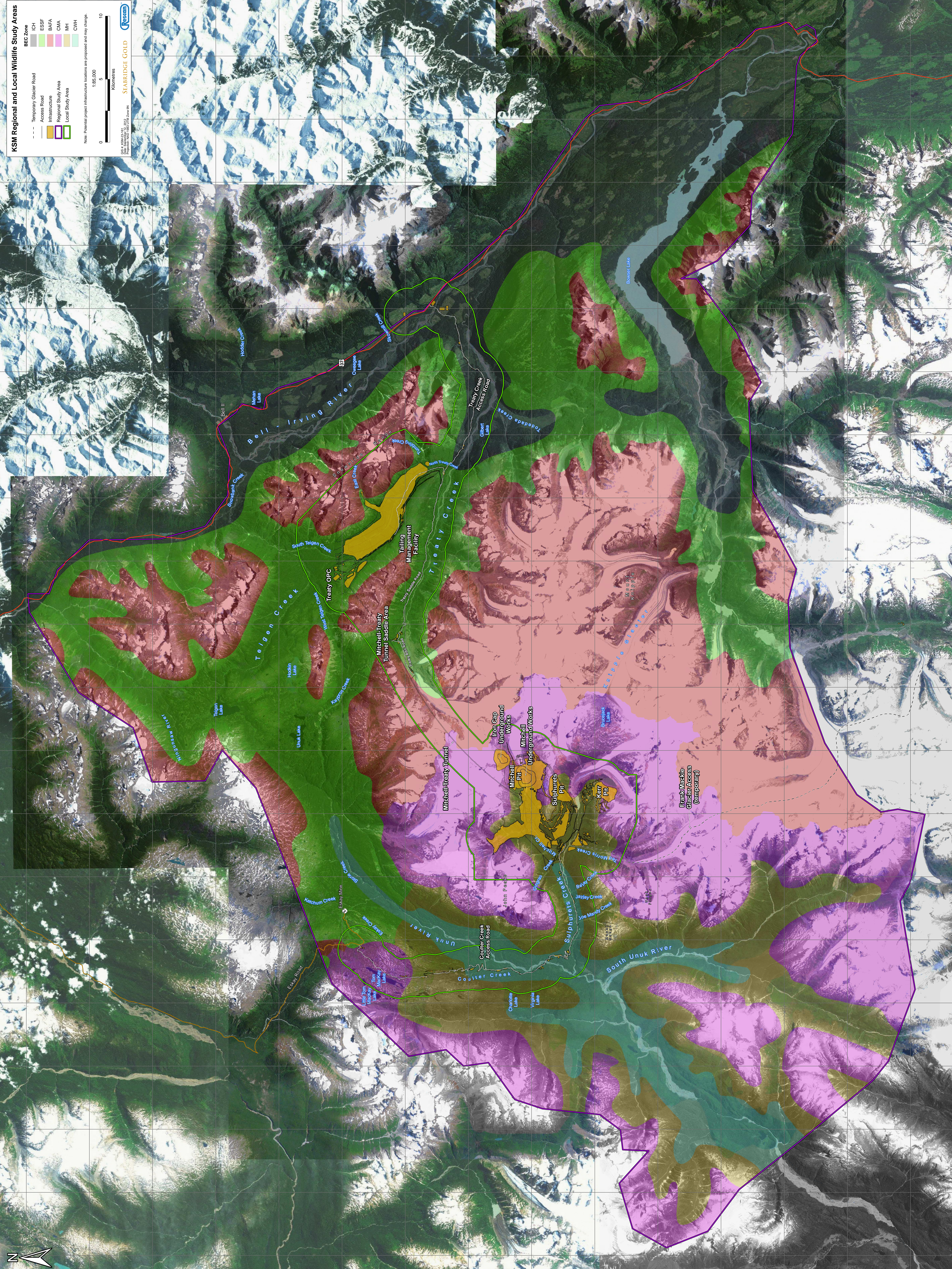
BEC Zone

- ICH
- ESSF
- BAFA
- CMA
- MH
- CWH

- - - Temporary Glacier Road
 - - - Access Road
 - - - Infrastructure
 - - - Regional Study Area
 - - - Local Study Area

Note: Potential project infrastructure locations are proposed and may change.

0 5 10
Kilometres
1:85,000
SEABRIDGE GOLD



Moose Surveys at KSM

Regional Study Area (RSA)

Wildlife surveys for all VECs were conducted throughout the RSA. The LSA is contained within the RSA and surveyed at the same time.

Local Study Area (LSA)

The only VEC that was specifically surveyed for in the LSA was bats.










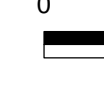
Survey

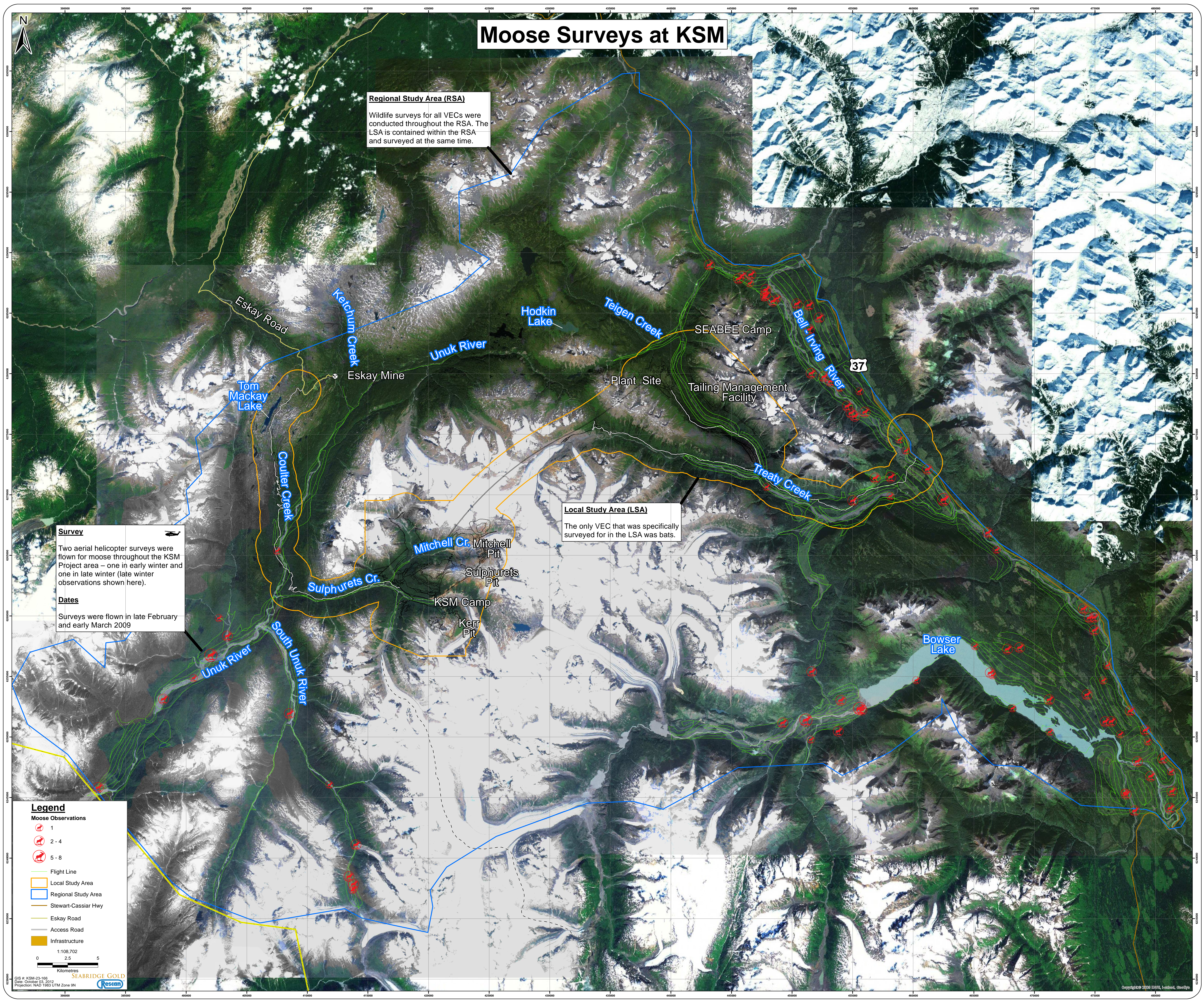
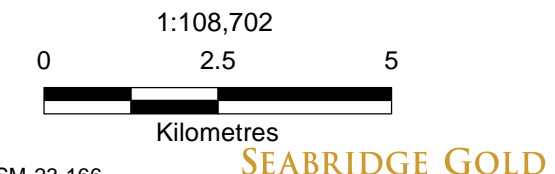
Two aerial helicopter surveys were flown for moose throughout the KSM Project area – one in early winter and one in late winter (late winter observations shown here).

Dates

Surveys were flown in late February and early March 2009

Legend

-  Moose Observations 1
-  Moose Observations 2 - 4
-  Moose Observations 5 - 8
-  Flight Line
-  Local Study Area
-  Regional Study Area
-  Stewart-Cassiar Hwy
-  Eskay Road
-  Access Road
-  Infrastructure



Mountain Goat Surveys at KSM

Regional Study Area (RSA)
Wildlife surveys for all VECs were conducted throughout the RSA. The LSA is contained within the RSA and surveyed at the same time.

Local Study Area (LSA)
The only VEC that was specifically surveyed for in the LSA was bats.

Survey
Two aerial helicopter surveys were flown for goats throughout the KSM Project area – one in the summer and one in the winter (summer observations shown here).

Dates
Surveys were flown in July 2008 and February and March 2009

Legend

- Goat Observations (Summer)
 - 1 - 5
 - 5 - 15
 - > 15
- Flight Line
- Local Study Area
- Regional Study Area
- Stewart-Cassiar Hwy
- Eskay Road
- Access Road
- Infrastructure

Scale: 0, 2.5, 5 Kilometres
1:108,702

SEABRIDGE GOLD
Rescan

GIS #: KSM-23-167
Date: October 23, 2012
Projection: NAD 1983 UTM Zone 9N

