Sabina
GOLD & SILVER CORP.

The BACK RIVER PROJECT

Other Approvals

Volume 12

Prepared by:

Rescan™
an ERM company

December 2013

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Sabina GOLD & SILVER CORP.

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Back River Project Fact Sheet

December 2013

Location

- Located in the western Kitikmeot Region of Nunavut at approximately 65° north latitude, and 106° west longitude. About 400 km south of Cambridge Bay and 525 km northeast Yellowknife.
- Primary communities: Kugluktuk, Cambridge Bay, Gjoa Haven, Kugaaruk and Taloyoak
- The closest community areas to the Project are Kingaok, located approximately 160 km north of the Goose Property, and Omingmaktok, located approximately 250 km northeast of the Goose Property

Reserves

- Six mining areas within the Goose and George Properties. Three locations at the Goose Property (Goose, Umwelt, and Llama) and three locations at the George Property (Locale 1, Locale 2, and LCP North).

Site Preparation and Construction Phase

- Site preparation may begin in 2014 (winter roads, fuel depots, laydown areas)
- Full construction of the project could commence as early as 2016 – two years to complete construction
- Approximately $605 M initial capital investment

Operational Phase

- Goose Property: open pit at Llama, Umwelt and Goose deposits; underground at Umwelt deposit
- George Property: Open pits at Locale 1, Locale 2, LCP North

Production

- Production Rate (Ore): 15.0 million tonnes of mill feed for life of mine
- Projected annual 300,000 ounces of gold for about up to 10 years

Processing

- 5,000 tonnes per day
- Standard gravity separation and cyanide leaching circuit
- Tailings facility at Goose Property

Transport

- Gold doré bars shipped out by aircraft

Access Roads

- All-weather roads within George and Goose properties
- Winter road between George and Goose properties
- Winter road to link properties to the Marine Laydown Area at Bathurst Inlet
- Short term winter road link to Tibbett-Contwoyto Winter Road

Re-supply

- Marine supply via open water seasonal shipping (max of 10 ships, average of 3 to 5 per year)
- Year-round by aircraft
- Winter road to the Marine Laydown Area
- Winter road connection to Yellowknife (short term)

Environment

- Extensive baseline studies including terrestrial environment, wildlife (particularly caribou), marine environment, freshwater environment, air quality and resource utilization
- Traditional knowledge information collected and analyzed through an Inuit owned major study - Naonaiyaotit Traditional Knowledge Project
- Will form the foundation of Environmental Impact Statement , and provide information for development of mitigation and management plans

Employment

- Fly-in/fly-out operation
- Direct construction employment up to 1200 person years over a two year period
- Direct operations employment up to 4442 person years for 10 years

Social and Economic Benefits

- Inuit Impact Benefits Agreement with the Kitikmeot Inuit Association
- Opportunities for local businesses
- Royalties and taxes to governments

Closure and Post-closure Phase

- Closure will ensure that the former operational footprint is both physically and chemically stable in the long term for protection of people and the natural environment
- Post closure environmental monitoring will continue sufficient to verify that reclamation has successfully met closure and reclamation objectives

BACK RIVER PROJECT

DRAFT ENVIRONMENTAL IMPACT STATEMENT
Supporting Volume 12:
Other Approvals

December 2013
Project #0194096-0040

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Sabina Gold & Silver Corp.

Prepared by:

Rescan Environmental Services Ltd., an ERM company
Vancouver, British Columbia

Back River Project Site Preparation Summary

Rescan™
an ERM company

Back River Project Site Preparation Summary

Sabina Gold & Silver Corp. (Sabina) is actively developing the Back River Property approximately 75 km south of Bathurst Inlet, in the Kitikmeot Region, Nunavut. The Back River Gold Project is currently under review with the Nunavut Impact Review Board (NIRB), however, Sabina is seeking approvals for the staging of equipment and materials, and the preparation of construction, for the Back River Project prior to completion of the NIRB review and issuance of the Type A water licence and surface leases. The NIRB will consider an application for exception from review for permits, licences or approvals required for ongoing scientific research, continued exploration, and to allow the transport and storage of equipment and materials during the seasonal access under arctic conditions.

Sabina is seeking either exemption or "exception from review" be granted for activities required during two years of site preparation. These activities include access to Crown and Inuit-Owned Lands under land use permits and water use under Type B licences for:

- seasonal operation of the existing exploration camps at Goose and George;
- continued exploration, environmental and engineering data collection;
- operation of the existing and proposed rock quarry locations at the Marine Laydown Area, Goose and George Properties;
- installing and/or increasing bulk fuel storage capacity at the Marine Laydown Area, Goose and George Properties for up to 10 ML at the Marine Laydown Area, 10 ML at Goose Property and up to 5 ML at George;
- building a 6-km all-weather road between the existing Goose Camp and Umwelt exploration area within the Goose Property;
- extending the existing all-weather airstrip to 2,800 m at Goose Property;
- establishing the 100-ha Marine Laydown Area through installation of a camp with capacity up to 50 personnel; marine docking structures for offloading ships and/or barges; a laydown for the delivery of equipment and fuel and supplies for construction of the Back River Project;
- expanding the existing George camp to accommodate 120 personnel; and
- constructing and using a winter road to connect the Marine Laydown Area with the George and Goose Properties.

The transportation and storage of equipment, fuel, and materials during site preparation is essential to the development the Back River Project as it will allow Sabina to progress into timely construction of the Project. These temporary and/or seasonal components would also support advanced exploration and environmental baseline activities in the area and improve safety and environmental protection.

ᓴᓐᓂᖕᒐᔪᓚᐅᑉ ᑰᖕᒐᓂ ᓴᓇᕙᐅᓂᐊᖅᑐᒥ ᐸᕐᓇᐃᔪᑎᓄᑦ ᐅᓂᒃᑳᖅ

ᓴᐱᓇᒃᑯᑦ ᒍᓗᓂᒃ ᓴᕕᖃᔾᔭᓂᓗ ᑎᒥᖁᑎᐊ (ᓴᐱᓇ) ᒫᓐᓇ ᐸᕐᓇᐃᓪᓚᖏᓯᕐᒪᑕ ᓴᓇᕕᓕᓂᐊᖅᑕᒥᓂᒃ ᓴᓐᓂᖕᒐᔪᓚᐅᑉ ᑰᖕᒐᓂ ᐱᖁᑎᒥᓂ ᐃᒪᖄ 75-ᑭᓛᒥᑐᓂᒃ ᐅᖕᒐᓯᖕᓂᖅᑲᖅᑐᒥ ᓂᒡᒋᖖᒑᖕᒐᓂ ᕿᖕᒐᐅᑉ ᑲᖏᖅᓯᖕᒐᓂᑦ, ᕿᑎᕐᒥᐅᓂ, ᓄᓇᕗᒥ. ᓴᓐᓂᖕᒐᔪᓚᐅᑉ ᑰᖕᒐᓂ ᒍᓗᓂᒃ ᐅᔭᖅᓂᐊᕐᕕᐅᔪᒪᔪᒥ ᕿᒥᕈᔭᐅᖕᒪᑦ ᓄᓇᕗᒥᐅᓄᑦ ᐃᒃᐱᖕᓇᕐᑐᓂᒃ ᑲᑎᒪᔨᖏᓐᓄᑦ (NIRB), ᑮᓯᐊᓂᓕ, ᓴᐱᓇᒃᑯᑦ ᐊᑯᓐᓂᖕᒐᓂ ᑐᒃᓯᖃᐅᑎᕐᑲᓕᕐᒪᑕ ᐅᓯᒃᑲᖅᑕᖅᑕᐅᓂᐊᖅᑐᓄᑦ ᐃᓕᐅᖅᑲᐃᕕᒃᓴᒥᒃ ᐋᕿᒃᓯᐃᔪᒪᓪᓗᑎᒃ ᓴᓇᕙᐅᓂᐊᖅᑑᑉ ᖃᓂᒋᔭᖕᒐᓂ ᓯᒡᔭᒥ ᑕᐃᑯᖕᒐ ᑎᑭᑦᑐᒥᒃ ᓴᓐᓂᖕᒐᔪᓚᐅᑉ ᑰᖕᒐᓄᑦ ᓴᓇᕙᐅᔪᒪᔪᒧᑦ, ᓴᓇᕙᒋᔪᒪᔭᖕᒐᓄᑦ ᐅᓯᒃᑲᖅᑕᕆᓐᓇᐅᑎᒥᒃ ᑕᐃᒃᑯᐊ ᐊᓯᖏᑦ NIRB-ᑯᓐᓄᑦ ᐊᕝᑎᓕᓈᔪᑏᑦ ᕿᒥᕈᔭᐅᔪᑦ ᓯᓕ ᐱᐊᓂᓚᐅᖏᓐᓂᖏᓐᓂ ᐃᒪᕐᒥᒃ ᐊᑐᕈᓐᓇᐅᑎᒥᒃ ᑐᒃᓯᕋᖅᑐᑦ ᓇᓗᓇᐃᒃᑯᑕᕐᑲᖅᑐᒥᒃ Type A-ᒥᒃ ᐃᒪᕐᒧᑦ ᓚᐃᓴᓃᕈᒪᔪᑦ ᐊᒻᒪᓗ ᒪᓂᕋᖕᒐᓂᒃ ᐊᑐᕈᓐᓇᐅᑎᒥᒃ. NIRB-ᑯᓪᓕ ᒫᓐᓇ ᐃᓯᒪᒃᓴᖅᓯᐅᕈᑎᕐᑲᕐᒪᑕ ᑕᒪᐃᓐᓂᓕᒫᖅ ᐊᕝᑎᖕᒐᓂᒃ ᐱᔪᓐᓇᐅᑎᓂᒃ, ᓚᐃᓴᓂᒃ ᐊᖏᕈᑎᓂᓗ ᓯᓚᑦᑐᒃᓴᐅᑎᓄᑦ ᖃᐅᔾᔭᕈᑕᐅᔪᓂᒃ, ᕿᓂᖅᑐᓂᓗ ᓴᕕᖃᔾᔭᓂᒃ, ᒫᓇᓕ ᐅᓯᒃᑲᖅᑕᐅᔪᑦ ᓂᐅᕋᐃᕝᕙᒃᓴᖕᒐᓂᒃ ᑕᒫᓂ ᐃᓂᒃᓴᖕᒋᓐᓂᓗ ᐃᖏᕋᕕᒃᓴᖕᒐᓄᓪᓗ ᓯᕐᓗᐊᕐᑲᕐᕕᐅᓂᐊᖅᑐᓪᓗ ᒪᓂᕋᒃᓴᖕᒋᓐᓂᒃ ᓴᓇᖅᑯᑏᑦ ᐃᒡᓗᒃᓴᔭᐃᓪᓗ ᑕᒪᑐᒪᓂ ᐅᑭᐅᒃᑯᑦ ᓄᓇᖕᒐᓄᑦ ᑎᑭᑦᑐᓐᓇᕐᓂᑦᑎᓐᓂ ᐱᔪᓐᓇᐅᑎᑖᕈᒪᔪᑦ ᑕᐃᒪᓐᓇ.

ᓴᐱᓇᒃᑯᑦ ᓯᕗᓂᖕᒐᓂ ᐅᑭᐅᒃᑯᑦ ᐱᔪᒪᔪᑦ ᐊᓯᖏᑦ ᓄᖅᑲᖕᒐᑎᑕᐅᓚᐅᑲᒃᑎᓪᓗᒋᑦ ᐱᔪᓐᓇᐅᑎᑖᕋᓯᐊᕈᑎᖏᑦ 'ᐃᒻᒥᒃᑰᖕᒐᔪᒥᒃ ᕿᒥᕈᔪᑕᐅᔪᑦ' ᐊᓯᖖᒑᖕᒐᓂᒃ ᐱᖅᑳᕈᒪᔪᑦ ᐅᑭᐅᓄᑦ ᒪᕐᕿᖕᓄᑦ ᐸᕐᓇᐃᔪᑎᒃᓴᓂᒃ ᓴᓇᕕᒃᓴᒥᓄᑦ. ᑕᒪᒃᑯᐊ ᓴᓇᔭᐅᓂᖕᒋᓐᓂ ᐸᕐᓇᐃᔫᑏᑦ. ᐅᓯᒃᑲᖅᑕᓈᕐᑲᕐᓂᐊᕐᒪᑕ ᐱᖁᑎᖕᒋᓐᓂᒃ ᑕᒪᐅᖕᒐ ᐊᖅᑯᐋᖅᓯᓗᑎᒃ ᑲᓇᑕᐅᑉ ᐃᓄᐃᓪᓗ ᓄᓇᖁᑎᖕᒋᓐᓂᒃ ᐊᑐᐊᕐᓗᒍ ᓄᓇᒥᒃ ᐊᑐᕈᓐᓇᐅᑎᑖᕈᑎᒋᓯᒪᔭᖕᒐᑦ ᐃᒪᖕᒐᓂᓗ ᑕᒫᓂ ᐊᑐᐊᒐᕐᑲᖅᓯᑕ ᓇᓗᓇᐃᒃᑯᑕᕐᑲᖅᑐᒥᒃ Type B ᓚᐃᓴᓃᕈᒪᔪᑦ ᐅᑯᓄᖕᒐ:

- ᐅᑭᐅᒃᑯᑦ ᐊᐅᓚᑕᐅᓂᐊᖅᑐᓂᒃ ᖃᐅᔾᔭᕐᕕᖕᒥᓄᑦ ᑎᑭᕐᑲᑦᑕᕈᓐᓇᕐᓂᐊᕐᒪᑕ ᓄᓇᓕᖃᓛᒥᓄᑦ ᒎᓯᒥ ᔪᐊᔾᔨᒥᓗ,
- ᑲᔪᓯᑎᑦᑎᒍᓐᓇᕐᓂᐊᕐᒪᑕ ᖃᐅᔾᔭᕈᑕᐅᔪᓂᒃ, ᐅᑭᐅᒃᑯᑦ ᐊᕝᑎᓕᓈᔪᑎᓂᒃ ᓴᓇᕙᐅᓂᐊᖅᑐᓂᓗ ᖃᐅᔾᔭᕈᑎᓂᒃ ᑲᑎᖅᓯᐃᓗᑎᒃ;
- ᑲᔪᓯᑎᑏᓐᓇᖃᓗᐊᕐᓗᑎᒃ ᐊᕝᑎᓕᓈᔾᔭᓄᑦ ᖃᐅᔾᔭᖅᑕᐅᔪᓂᒃ ᑐᐊᐸᒃᑕᕐᕕᒃ ᐊᑐᖅᑕᐅᓂᐊᕐᒪᑦ ᓯᒡᔭᖕᒐᓂ ᑐᓚᒃᑕᕐᕕᓕᐅᕐᓗᑎᒃ ᐃᑳᕈᑎᓕᐅᓗᑎᓗ ᐅᒥᐊᕐᔪᐊᓄᑦ ᓂᐅᕋᐃᕕᒃᓴᒥᒃ, ᒎᓯᒥ ᔪᐊᔾᔨᒥᓗ ᓴᓇᕕᒃᓴᒥ;.
- ᐃᓕᐅᖅᑲᐃᓗᑎᒃ/ᑕᒪᐅᖕᒐᖅᑎᑦᑎᒃᑲᓐᓂᕐᓗᑎᓗ ᐅᒃᓯᐊᓗᖃᐅᑎᒃᓴᓂᒃ ᖃᑦᑕᐅᔭᕐᔪᐊᓂᒃ ᓯᒡᔭᖕᒐᓂ ᓂᐅᕋᐃᕝᕙᒃᓴᒥ, ᒎᓯᒥ ᔪᐊᔾᔨᒥᓗ ᓴᓇᕙᐅᔪᒪᔪᒥ ᐊᑐᖅᑕᐅᓂᐊᖅᑐᓂᒃ ᑎᑭᓪᓗᒍ 10- ML ᓯᒡᔭᖕᒐᓂ, 10- ML ᒎᓯᒥ ᐊᒻᒪᓗ ᑎᑭᓪᓗᒍ 5- ML ᔪᐊᔾᔨᒥ;
- ᐊᖅᑯᑎᓕᐅᕐᓗᑎᒃ 6-ᑭᓛᒥᑐᒥᒃ ᑕᑭᓂᖅᑲᖅᑐᒥᒃ ᑕᐃᒪᖕᒐᓄᑦ ᐊᑐᖅᑕᐅᔪᓐᓇᖅᑐᒥᒃ ᓂᐅᕋᐃᕙᖕᒐᓂᑦ ᒎᓯᒧᑦ ᓄᓇᓕᖃᓛᖕᒐᓄᑦ ᐊᒻᒪᓗ ᐊᒻᕗᐊᓪᑯᓐᓄᑦ Umwelt ᕿᓂᕐᕕᐅᔪᒧᑦ ᑕᒪᑐᒪᓂ ᒎᓯᒥ ᓄᓇᕐᑯᑎᕐᑲᕐᕙᐊᓂ;
- ᑕᑭᓕᒋᐊᖅᑎᑦᑎᓗᑎᒃ ᒫᓐᓇ ᐊᖅᑯᑎᒋᔭᐅᔪᒥᒃ ᒥᑦᑕᕐᕙᖕᒐᓄᑦ 2800-ᒦᑐᒧᑦ ᒎᓯᒥ ᓴᓇᕙᐊᓂ;
- ᐱᒋᐊᖅᑎᑦᑎᓗᑎᒃ 100-Hᐃᒃᑐᒥᒃ ᐊᒃᑎᒋᓂᕐᑲᖅᑐᒥᒃ ᑐᓚᒃᑕᕐᕙᐊᓂ ᓂᐅᕋᐃᕙᐅᓂᐊᖅᑐᒥᒃ ᑕᒫᓂ ᓯᒡᔭᖕᒐᓂ ᓴᓇᔭᐅᓂᖕᒐᓂ ᑕᖕᒫᕐᕙᓕᐅᕐᓗᑎᒃ ᐃᓄᕐᑲᓪᓗᐊᖅᑐᒥᒃ 50-ᓂᒃ ᐃᖅᑲᓇᐅᔭᖅᑎᓂᒃ; ᑐᓚᒃᑕᕐᕙᓕᐅᕐᓗᑎᒃ ᐅᒥᐊᕐᔪᐊᓄᑦ ᓂᐅᕋᐃᕝᕙᐅᓂᐊᖅᑐᒥᒃ/ᓯᑲᐅᕈᓗᖕᓄᓪᓗ; ᓂᐅᕋᐃᕙᒃᓴᒥᒃ ᒪᓂᖅᑲᒃᓴᐃᓗᑎᒃ ᓴᓇᖅᑯᑎᓄᑦ ᐃᓕᐅᖅᑲᐃᕝᕙᒃᓴᒥᒃ ᐊᒻᒪᓗ ᐅᕐᓯᐊᓗᓄᑦ ᓯᓇᒃᑯᑖᓄᓪᓗ ᐊᓯᖏᓐᓄᑦ ᐅᓯᒃᑲᖅᑕᓚᐅᖏᓐᓂᖏᓐᓂ ᓴᓐᓂᖕᒐᔪᓚᐅᑉ ᑰᖕᒐᓂ ᓴᓇᕙᖕᒐᓄᑦ;
- ᐊᖏᒡᓕᒋᐊᖅᑎᑦᑎᓗᑎᒃ ᒫᓐᓇ ᑕᖕᒫᖅᓯᒪᕙᐊᓂᒃ ᔪᐊᔾᔨᒥ ᐃᓄᕐᑲᕈᓐᓇᖅᓯᓂᐊᕐᒪᑦ 120-ᓂᒃ ᓴᓇᔨᓂᒃ; ᐊᒻᒪᓗ

- ᓴᓇᐅᑎᕆᓗᑎᒃ ᐅᑭᐅᒃᑯᑦ ᐊᖏᑯᑎᒥᒃ ᑎᑭᑦᑐᒥᒃ ᓯᓚᖏᓚᓄᑦ ᓂᐅᕐᐃᐃᖏᓪᓗᑦ ᑎᑭᑦᓗᒍ ᔨᐊᕆᒥ ᐊᒡᓚᓗ ᒍᓯᒥ ᐱᖏᑎᖏᑐᓄᑦ

ᐅᓯᒃᖢᕐᒃᑕᐅᓂᐊᖏᓚᒪᑕ ᓴᓇᖏᑯᑎᒃᓴᖏᑦᑐᑦ ᑕᒪᐅᖏᓪᓕ, ᐅᖏᓯᐊᓗᐃᐟᓗ ᓴᓇᔨᓄᑦ ᐊᑐᖏᑕᐅᓂᐊᖏᑐᑦ, ᐊᒡᓚᓗ ᓯᓇᒃᑯᑦ ᐸᖏᓇᐃᔨᑕᐅᓂᐊᖏᑐᑦ ᐱᕐᓯᐊᑎᖏᓇᓯᐊᖏᑐᒃ ᓴᐟᓂᖏᓪᓕ ᓴᐱᒪᓇᐃᐅᔨᒥᒃ ᑕᐃᒪᐟᓇ ᓴᐱᓇᒃᑯᑦ ᐅᓴᖏᓪᓂᐊᖏᑐᖏᓪᓗᑦ ᐱᕐᓯᐊᑎᑕᐅᔨᒪᔨᑦ ᑲᔨᓯᔨᐟᓇᖏᓂᐊᖏᑐᑕ ᐊᖕᒪᒪᑎᓗᑎᒃ ᓴᓇᓴᐅᔨᓂᒃ ᓴᓇᖏᐅᔨᒥᒃ. ᑕᒃᑯᐊ ᐊᑯᐟᓂᖏᓄ ᐋᖅᑭᒃᓯᓚᒪᑎᐊᖏᓴᖏᑕ ᐅᑭᐅᖏᑦᓇᒃᑯᑦ ᐊᖕᒪᓗ ᐅᑭᐅᓪᒪᒃᑯᑦ ᐊᑐᑕᐅᑎᐊᖏᓴᖏᓂᐊᖏᑐᓗᓄᑦ ᐃᒃᔨᖏᓂᐊᖏᑐᓗᓄᑦ ᓯᐅᓂᖏᓄ ᐸᖏᓇᐃᓪᓕᖏᑎᓂᓗᑎᑦ ᖃᐅᔨᓴᖏᑎᒃᓴᖏᑦᑐᑦ ᐊᐟᑎᑎᓪᓚᔨᓄᑦ ᑕᒪᓄ ᑐᐟᖏᓚᐃᑎᓴᐅᔨᓂᒃ ᖃᐅᔨᓴᖏᑎᒃᓴᖏᑦᑐᑦ ᐊᖕᒪᓗ ᐃᓗᐊᖏᓴᐟᓂᓗᑎᑦᑐᓗᒍ ᐊᖏᑕᖏᓴᖏᑎᓗᑎᓗᒍ ᐊᐟᑎᖏᓄᒃ ᖃᐅᔨᓴᖏᑎᓄᑦ ᓴᐳᑎᕆᐊᖏᓪᓕᖏᓐᓂᓗ.

Hanningayuq Kuugaa Havaktaugialik Nayugaanit Upalungairutiata Nailiyauhimayuq

Sabina Gold & Silver Corp. (Sabina) tadja upalungaiyaivlutik uvani Hanningayuq Kuugaa Havagvianit 75 km ungahingniani tununngani Qingaup nunaani, iluani Qitirmiut Aviktquhimayumi, Nunavunmi. Hamna Hanningayuq Kuugaa Kulu Havaktaugialik huli ihivgiuqtauhimmaaqhimayuq ukuninngat Nunavut Avatilirinirmut Katimayiit (NIRB), huli Sabina tukhiqhimmaqhutik angiriirutikhamut ihuaqhaiyaanganit ihuaqutikhait ingniqutikhainillu, upalungaiyariiqhutik igluliugakhamut, ukuninngat Hanningayum Havaariyakhait iniriaraluaqhuni haffuminngat NIRB tigut ihivriuqhaijut titirialiglu angiriaqaqhuni ukuninngat Qanuriningania A imaup laisikhaat qaanganingalu aturialingnit. Una NIRB-kkut huli ihumaliuriaqaqhutik hamna atuqtakhaanit naamagiyaukpat ihivriuqhimaningit aturiakhait maliktakhait, laisikhait angiriirutainillu kiugialik aturaarnahuarumik qauyihainirnit ihivriuqhiyunut qauyihaihimmaarniarumik, taimaa agyaqhiiyaangani tutquumavikhainillu ihuaqutikhamut parnautikhamillu havangnaqhikpat qaayurnaqpiaqtumi ukiuqtaqtumi qanurilinganianit.

Sabina-tkut qiniqhiavlutik tuniyauhimagumik uuminngaluniit ‘naamagiyaukpat ihivriuqtauhimayunit’ angiqtaunniqqat huliyakhautikhanut uvani aippaagut ukiukhamut nayugakhaanit upalungaiyauyunit. Tahapkuat huliyakhait ilaliutauhimavlutik atulaaqhimayut ukuninngat Kavamat Nunaqutait unalu Inuit Nanminiriyangit Nunanganit malikhimalugu nunat atuqtaunikhainnut angiriirutit unalu imaup atuqtaunikhainut malikhimayangit Qanurinnianit B laisianit haffuminngat:

- Auyannguraangat aulattitivikhait aturiiqhimayunit qauyihainirnut nayugaat uvani Goose uvanilu George-milu;
- Huli qauyihaihimmaarlutik, avatingillu nanminiqaqtut havaktut naunaiyainiq kititiqtauhimayunit;
- Aulattitihimayut aturaaqhimayangit unalu angiriiqhimayauyut uyaqqat hauvikhait nayugaat uvani Taryum Tulaanit inianit, uvani Gooselu George lu Nanminilingnit;
- Illuaqhaiyut unalu/ angiklivluniuk angiyaaqtut uqhuryuavikhat tutquumaviat uvani Taryum Tulaanit inianit, uvani Gooselu George lu Nanminilingnit naahimalugu 5 ML uvani George mi;
- Igluliuqhutik ukuninngat 6 km ukiuraalungnit aturnaqtumik apqutikhait uvani apqutitaaqhimayut uvani Goose nayugaat unalu Umwelt qauyihaivikhait iluani Goose Nanminiriyangait havaangit;
- Tahinahuarlugu tamainnut aturnaqtumik ukiuraalungmi milvikhait imaatut 2800 uvan Goose Nanminiriyangit havaangit;
- Havalihaaqhimalugit ukuninngat 100 ha Taryum Tulaanit inianit illirinahuarlugu ilaaqhimalugu nayugakhaat havaktut 50 nit inuqalaaqtumik; taryum tulagvikhaat iniat agyaqattaqtakhait umiarjuat unalu/ agjaqattartunulluniit; una tulagvikhaat agyaqattautiyunut ihuaqutinut uqhuryuanullu igluliurutikhainillu Hanningayum Kugaa Havaariyakhait;
- Angiklinahuarlugu atuqtaaqhimayut uvani George nayugaanit inugiakhilaariangani ukuninngat 120 inuqalaaqtumik; unalu
- Igluliuqtut atuqhimalugillu ukiuraalungmit apqutianit katilviuyaanganit Taryum Tulaanit inianit ilaliutihimalugit Georgelu Gooselu Nanminiqaqhimayut Havaktunit.

Hamna agyaqhimayut unalu tutquumavikhait ihuaqutikhanut, uqhuryuanut, unalu parnautikhait upalungaiyariirumik nayugaanit ihumagigialik pivallianirnut haffuminngat Hanningayum Kuugaa Havaariyangit taimaa ilaliutigiangani Sabina pinahuariangani havaamingnit haffuminngat Havaariyakhanut. Tahapkuat havaktaullaktut unalu / uuminngaluniit ukiunnguraangat ilaliutainnaak taimaa ikayuutaulaaqhutik avatingnut kiglikhaat huliyakhainit uvani nayugaanit ihuaqhiinahuarlugillu attarnaqtunit avatinut hapumminahuarnikkut.

Preamble – Structure of Volume 12

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Preamble – Structure of Volume 12

The development of the Back River Project will require a Project Certificate to be issued by the Nunavut Impact review Board. This is issued after the completion of the environmental impact review process and after it has been determined that the Project should proceed.

The Project will also require Type A Water Licences from the Nunavut Water Board, which can only be issued after a Project Certificate is obtained. Sabina intends to use the Nunavut Impact Review Board and Nunavut Water Board Coordinated Process in order to expedite the Type A Water Licences associated with the Project. Through ongoing engagement and consultation, Sabina has come to recognize the significance of infrastructure development to the residents and communities of the Kitikmeot Region. For this reason, Sabina is seeking two Type A water licences for the Back River Project. The application for the mine sites development at Goose and George Properties is within Volume 11 of the Back River Project DEIS and the application for access through the Marine Laydown Area and winter road corridors is presented in Volume 12, Appendix V12-1A. Sabina is of the opinion that separating the authorizations for the access to the area may foster potential partnerships and economic development within the Region. Sabina's intent is to maintain these components within the current NIRB environmental assessment.

The Project will require land use permits and/or leases from the Kitikmeot Inuit Association for development on Inuit Owned Land (Appendix V12-1B). The Project will also require land use permits and/or leases from Aboriginal Affairs and Northern Development Canada for infrastructure located on Crown land (Appendix V12-1C).

Authorizations will also be required from the Department of Fisheries and Oceans and Transport Canada for some project activities and components. The associated requests and applications are presented in Volume 12, Appendices V12-1D, and V12-1E, respectively.

As the above noted applications are related to the construction, operation and closure of the Back River Project much of the related information is presented within the other documents of the DEIS Volumes 1 through 10. The applications presented in Volume 12, Appendices V12-1A to V12-1E include references to the appropriate DEIS content for support of these applications.

The focus of Volume 12 is the approvals requested as part of site preparation and are presented as standalone applications. Information that is required under multiple applications for site preparation is presented in the text of this document (Volume 12) with applications in the appendices. Volume 12 includes:

- Section 1- translated summary for those components and activities associated with site preparation activities;
- Section 2 – location map and figures;
- Section 3 - proponent information;
- Section 4 – overall description of Project Components and Activities for site preparation (note that this is also presented in DEIS Volume 2, Chapter 6);
- Section 5 – environmental assessment summary of site preparation activities;
- Section 6 – Spills Contingency Plan for exploration and site preparation activities;

- Section 7 – Closure Plan for exploration and site preparation activities; and
- Section 8 – Transportation Plan for exploration and site preparation activities.

Sabina is seeking approvals for the staging of equipment and materials for the Project prior to completion of the NIRB review. In particular, Sabina is formally requesting exceptions to proceed with the site development work pursuant to Section 12.10.2(b) of the Nunavut Land Claims Agreement (NLCA) to allow for the required approvals and licences to be granted.

In its *draft NIRB Technical Guide Series - Proponents' Guide* (April 2013), NIRB will consider an application for exception from review under the following circumstances for permits, licences or approvals:

- to facilitate scientific research and/or the collection of data to support the review of a project proposal;
- to allow continued exploration and/or bulk sampling programs while a related project is undergoing review; and/or
- to facilitate the limited transport and storage of equipment and materials related to a project undergoing review, in recognition of the seasonal constraints imposed by the arctic conditions of the Nunavut Settlement Area.

The activities that Sabina is seeking either exemption or 'exception from review' be granted are those associated with site preparation that would be supported by the existing exploration camps and associated infrastructure. These "exceptions from review" include components and/or activities that would:

- support ongoing exploration and environmental baseline activities;
- improve safety and environmental protection for exploration activities;
- support timely delivery of equipment, fuel and materials for construction and development of the Back River Project.

These include:

NWB authorizations needed for site preparation and ongoing exploration/project advancement activities would include:

- Renewal and amendment of Type B water licence **2BEGEO1015** (Appendix V12-2A) to include:
  - Improved and increased bulk fuel storage capacity;
  - Increase water use volume;
- Renewal and amendment of Type B water licence **2BEGOO1015** (Appendix V12-2B) to include:
  - Improved and increased fuel storage capacity;
  - Increase water use volume;
  - revised and increased bulk fuel storage capacity;
  - water crossings associated with all-weather corridor from Goose to Umwelt;
  - water crossings associated with all-weather corridor from Goose to Quarry area; and
  - water crossings associated with extending existing airstrip.

New Type B water licences would be needed to include:

- water use/waste disposal at the Marine Laydown Area camp location and water use along the winter road between the Marine Laydown Area and the Goose and George Properties (Appendix V12-2C).

The intent is to permit these winter road under 4 separate Type B water licences for a five-year period to accommodate ongoing exploration and baseline studies in the Bathurst Inlet area and to support site preparations activities (as outlined in Volume 2, Section 2). Once the Type A application for access is issued, these Type B will be terminated.

Aboriginal Affairs and Northern Development Canada (AANDC) authorizations needed for site preparation and ongoing exploration/project advancement activities would include:

- Amendment to **N2011F0029** to include (Appendix V12-2D):
  - activities that are part of ongoing exploration and environmental studies on Crown Land;
  - construct and operate winter road from Marine Laydown Area to Goose and George Properties; and
  - annual renewals up to end of year 2016.

The intent is to amend the existing winter road corridor permit to allow ongoing exploration, environmental baseline data collection, and site preparation to the end of the permit's five-year period. Once the Licence of Occupation for access is issued, this authorization will be terminated.

Existing Mineral tenure managed by AANDC may also require renewal and/or conversion to new tenure regulations may also be required during ongoing exploration and site preparation activities. These applications are not included in this Volume and will be submitted as required.

KIA authorizations needed for site preparation and ongoing exploration/project advancement activities would include:

- amendment to licence **KTL304C017** (Appendix V12-2E) to include:
  - improved and increased fuel storage capacity;
  - extending all-weather airstrip to 2,800 m;
  - six-kilometre (km) all-weather road and from existing Goose exploration camp to Umwelt exploration area;
  - laydown area and pad in the Umwelt exploration area;
  - new rock quarry areas;
- amendment to quarry agreement **KTP11001** (Appendix V12-2F) to include:
  - additional quarry areas within the current meters and bounds;
- amendment to licence **KTL304C018** (Appendix V12-2G) to include:
  - increased camp capacity;
  - improved and increased fuel storage capacity;
  - laydown area and pad in the Fold Lake exploration area;
  - new rock quarry areas;
- amendment to **KTL304F049** to include (Appendix V12-2H):

- activities that are part of ongoing exploration and environmental studies on Inuit Owned Lands;
- construct and operate winter road from Marine Laydown Area to Goose and George Properties;
- construct and operate a seasonal camp for up to 50 people to be initial phase of Marine Laydown Area;
- quarry areas to allow cut and fill activities;
- bulk fuel storage and laydown areas for delivery of Project materials and supplies; and
- annual renewals up to end of year 2016.

The intent is to amend the existing winter road corridor licence to allow ongoing exploration, environmental baseline data collection, and site preparation. Once the commercial lease for the Marine Laydown Area is issued, the existing winter road land use licence would be terminated.

- New KIA authorizations include:
  - Rock quarry operations and associated explosives storage at Goose to support ongoing existing camp improvements and site preparation activities (Appendix V12-2I)
  - Rock quarry operations and associated explosives storage at the Marine Laydown Area to support cut and fill operations as part of site preparation needs (Appendix V12-2J).

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BACK RIVER PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
Supporting Volume 12:
Other Approvals

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Acronyms and Abbreviations

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Acronyms and Abbreviations

Terminology used in this document is defined where it is first used. The following list will assist readers who may choose to review only portions of the document.

AANDC	Aboriginal Affairs and Northern Development Canada
AST	aboveground storage tank
CCME	Canadian Council of Ministers of the Environment
DFO	Fisheries and Oceans Canada
GN	Government of Nunavut
GNWT	Government of Northwest Territories
GPR	Ground Penetrating Radar
HDPE	high-density polyethylene
INAC	Indian and Northern Affairs Canada (now AANDC)
KIA	Kitikmeot Inuit Association
km	kilometre
NIRB	Nunavut Impact Review Board
NLCA	Nunavut Land Claims Agreement
NU	Nunavut
NWB	Nunavut Water Board
NWT	Northwest Territories
OPEP	Oil Pollution Emergency Plan
RCMP	Royal Canadian Mounted Police
Sabina	Sabina Gold & Silver Corp.
TIA	Tailings Impoundment Area
WHMIS	Workplace Hazardous Materials Information System

1. Back River Project Site Preparation Summary

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1. Back River Project Site Preparation Summary

Sabina Gold & Silver Corp. (Sabina) is actively developing the Back River Property approximately 75 km south of Bathurst Inlet, in the Kitikmeot Region, Nunavut (NU). The Back River Gold Project is currently under review with the Nunavut Impact Review Board (NIRB); however, Sabina is seeking approvals for the staging of equipment and materials, and the preparation of construction, for the Back River Project prior to completion of the NIRB review and issuance of the Type A water licence and surface leases. NIRB will consider an application for exception from review for permits, licences, or approvals required for ongoing scientific research, continued exploration, and to allow the transport and storage of equipment and materials during the seasonal access under arctic conditions.

Sabina is seeking either exemption or "exception from review" be granted for activities required during two years of site preparation. These activities include access to Crown and Inuit-Owned Lands under land use permits and water use under Type B licences for:

- seasonal operation of the existing exploration camps at Goose and George;
- continued exploration, environmental and engineering data collection;
- operation of the existing and proposed rock quarry locations at the Marine Laydown Area (cut and fill), Goose and George Properties;
- installing and/or increasing bulk fuel storage capacity at the Marine Laydown Area, Goose and George Properties for up to 10 ML at the Marine Laydown Area, 10 ML at Goose Property, and up to 5 ML at George;
- building a 6-km all-weather road between the existing Goose Camp and Umwelt exploration area within the Goose Property;
- extending the existing all-weather airstrip to 2,800 m at Goose Property;
- establishing the 100 ha Marine Laydown Area through installation of a camp with capacity up to 50 personnel, marine docking structures for offloading ships and/or barges, and a laydown for the delivery of equipment and fuel and supplies for construction of the Back River Project;
- expanding the existing George Camp to accommodate 120 personnel; and
- constructing and using a winter road to connect the Marine Laydown Area with the George and Goose properties.

The transportation and storage of equipment, fuel, and materials during site preparation is essential to the development the Back River Project as it will allow Sabina to progress into timely construction of the Project. These temporary and/or seasonal components would also support advanced exploration and environmental baseline activities in the area and improve safety and environmental protection.

2. Location Maps and Figures

2. Location Maps and Figures

Location maps and figures associated with the construction, operation and closure of the Back River Project Gold Project are presented in Volume 2 of the DEIS. For convenience, the Marine Laydown Area and Road Overview figures are included in this volume (Figures 2-1 and 2-2). Additional maps and figures provided are to support applications and requests associated with the site preparation (preconstruction) activities (Figures 2-3 to 2-7).

PROJECT #0194096-0033 GIS # BAC-15-119 December 16 2013

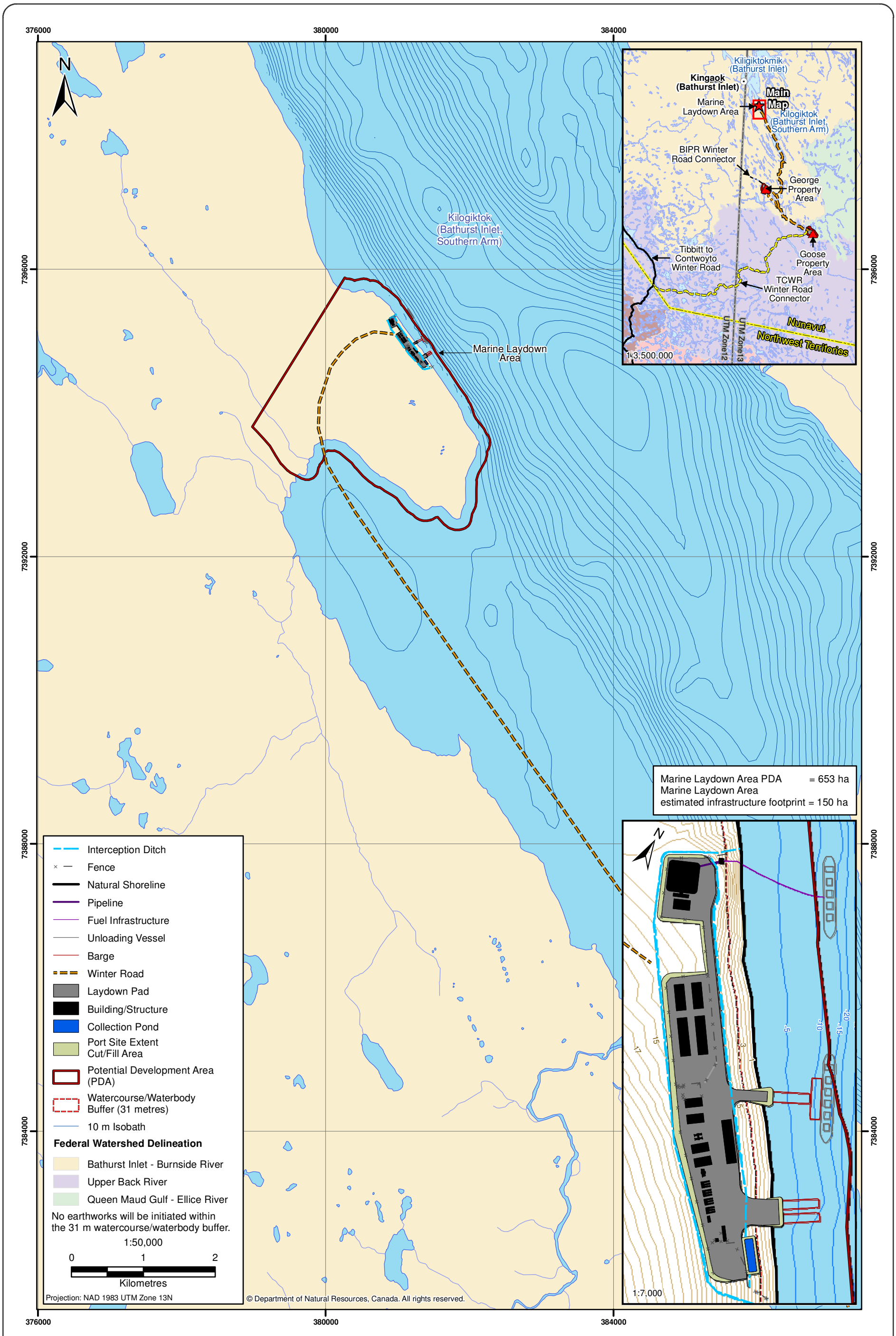

Figure 2-1

Sabina GOLD & SILVER CORP.

Project Development Area and Infrastructure Areas - Marine Laydown Area

Figure 2-1

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PROJECT #0194096-0015 GIS # BAC-15-120 December 16 2013

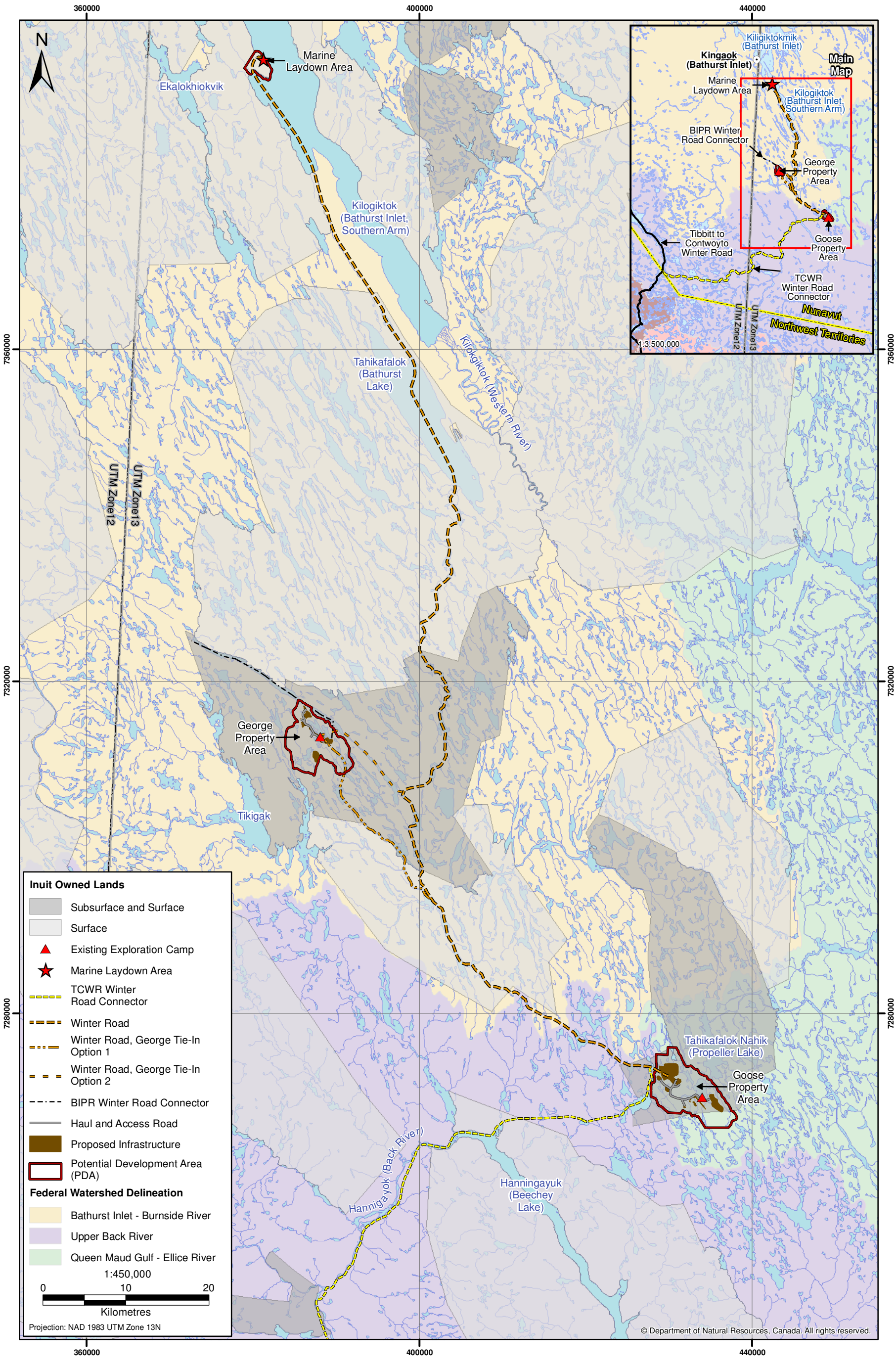


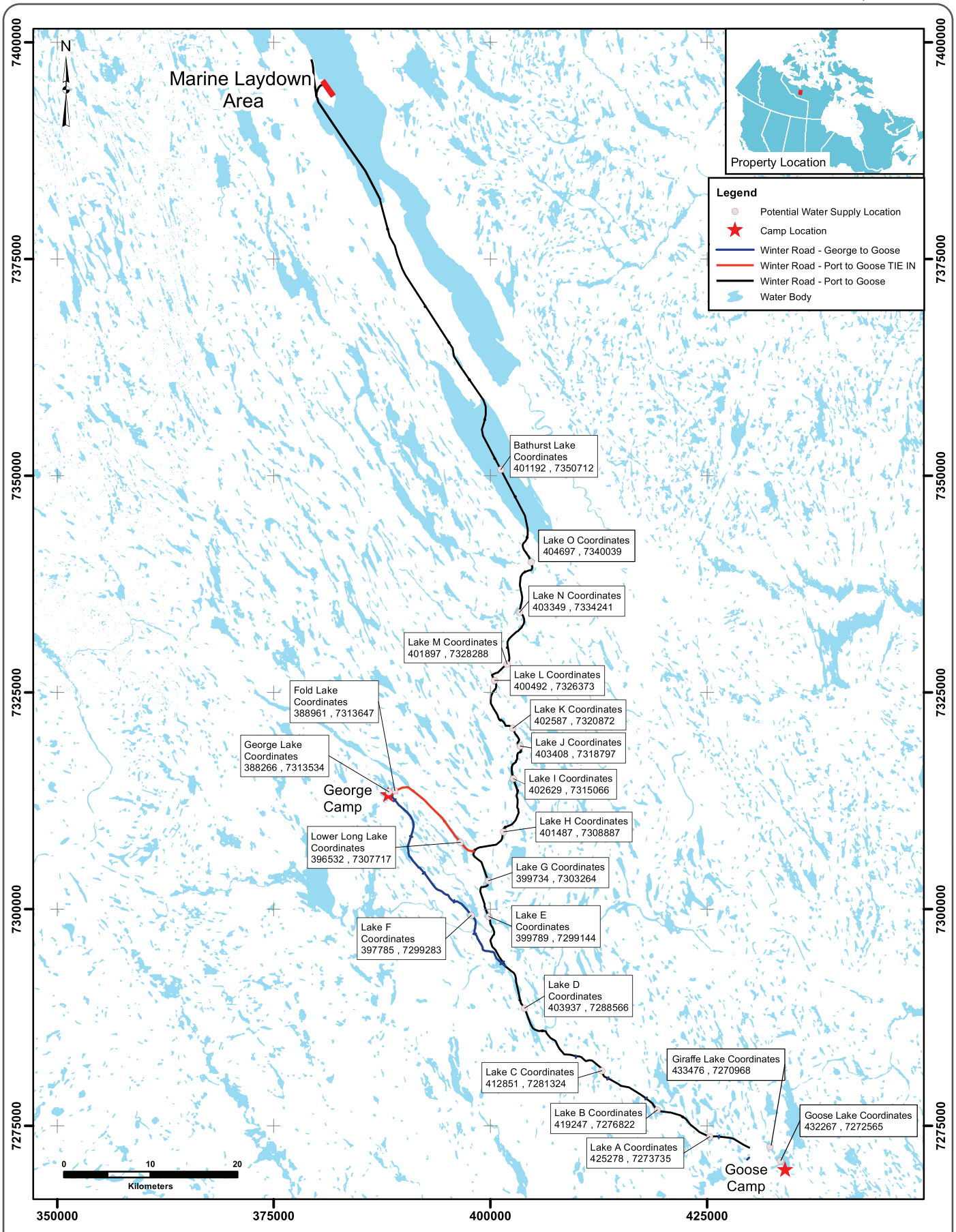
Figure 2-2

Sabina GOLD & SILVER CORP.

Road Corridor Overview

Figure 2-2

Rescan an ERM company



Source: EBA (2013).

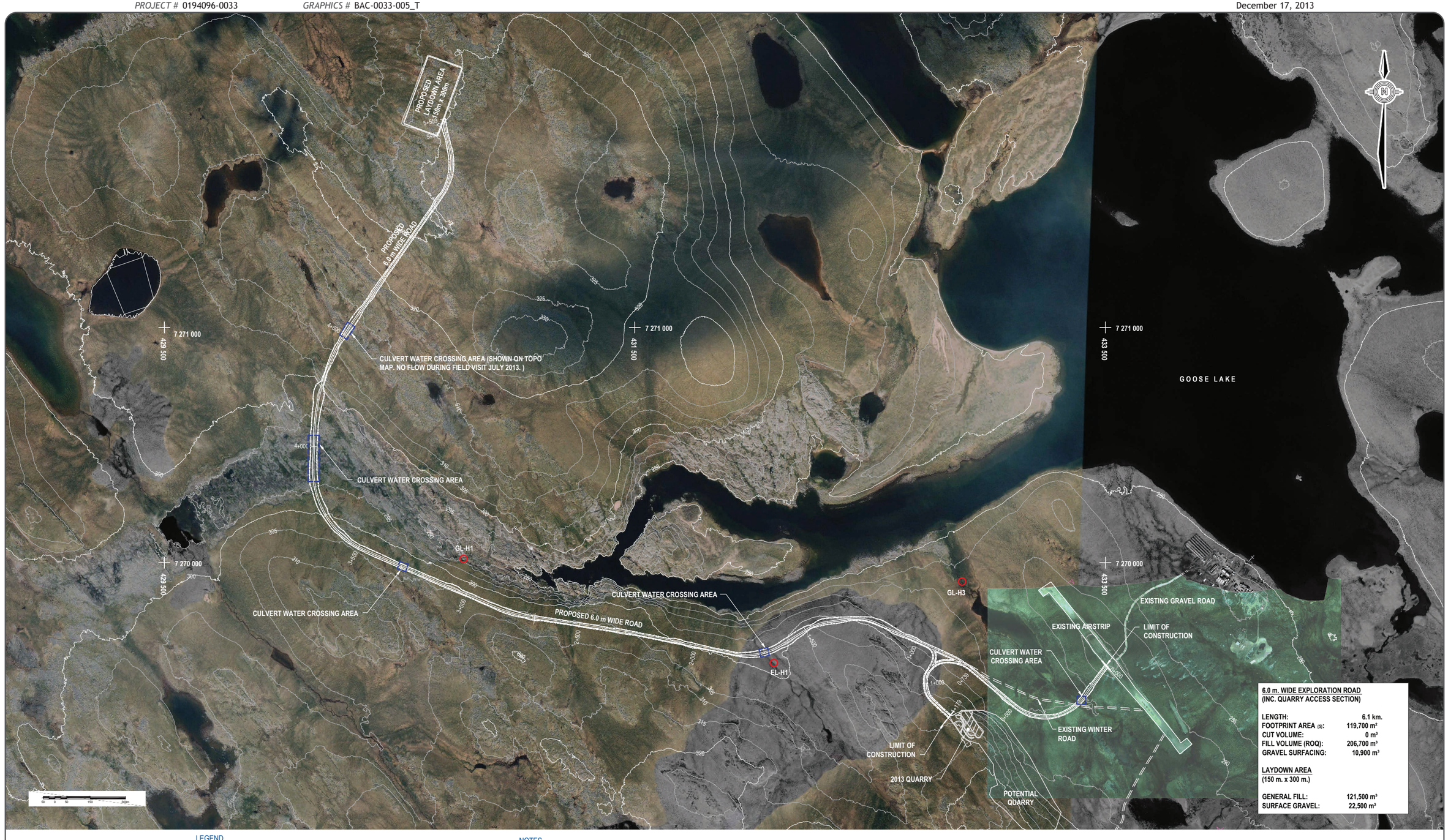
Figure 2-3

Potential Water Supply for Winter Road Option

Sabina GOLD & SILVER CORP.

Rescan an ERM company

PROJECT # 0194096-0033 *GRAPHICS #* BAC-0033-005_T December 17, 2013



6.0 m. WIDE EXPLORATION ROAD
(INC. QUARRY ACCESS SECTION)

LENGTH:	6.1 km.
FOOTPRINT AREA (5):	119,700 m²
CUT VOLUME:	0 m³
FILL VOLUME (ROQ):	206,700 m³
GRAVEL SURFACING:	10,900 m³

LAYDOWN AREA
(150 m. x 300 m.)

GENERAL FILL:	121,500 m³
SURFACE GRAVEL:	22,500 m³

LEGEND

- RESCAN HYDROMETRIC MONITORING LOCATION
- PROPOSED ROAD
- TOE OF PROPOSED ROAD (APPROX. EXTENT OF EMBANKMENT)
- WINTER ROAD, EXISTING
- GRAVEL ROAD, EXISTING

NOTES

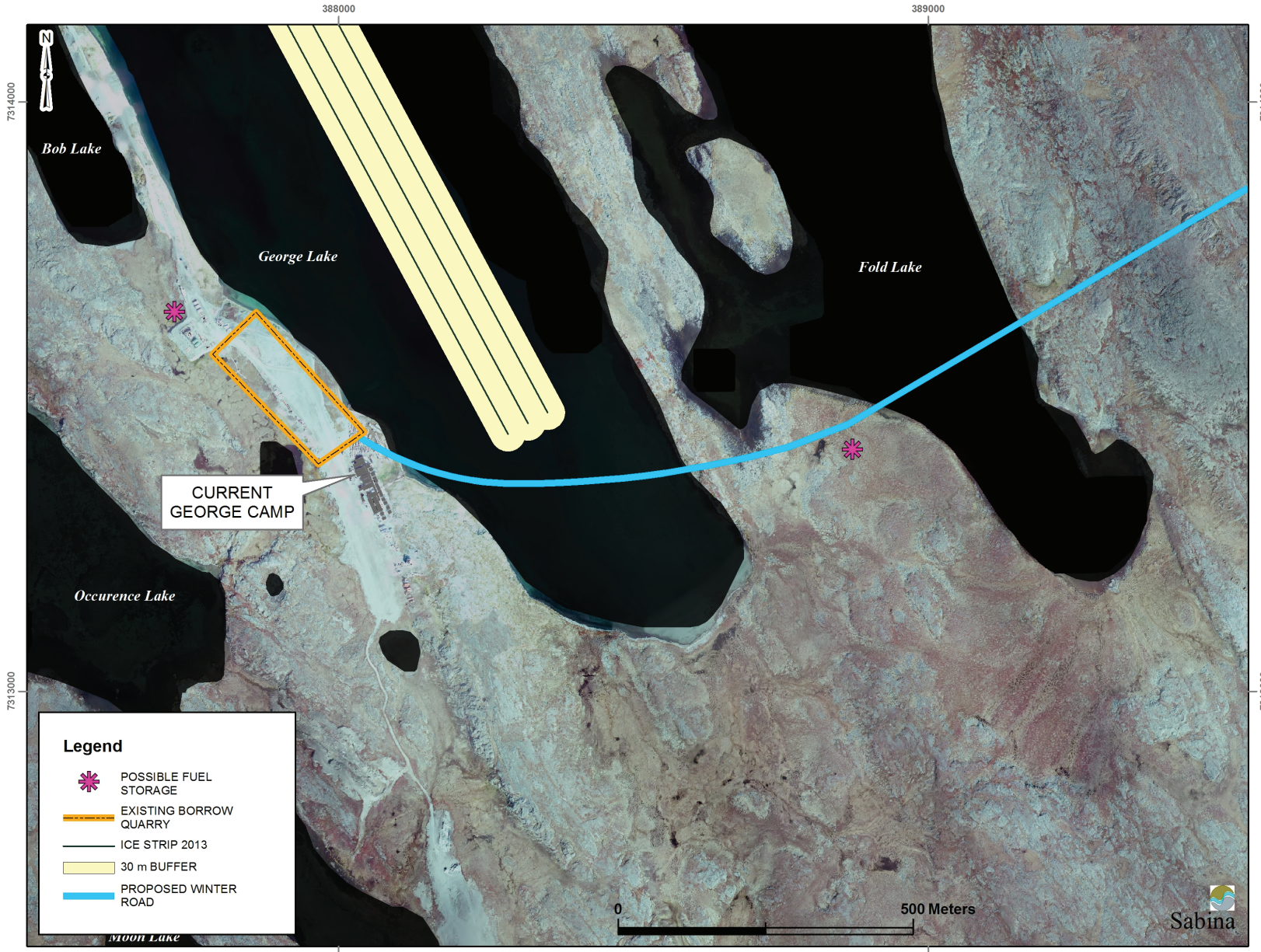
1. HORIZONTAL COORDINATES: UTM NAD 83 ZONE 13.
2. CONTOUR INTERVAL SHOWN AT 5.0m MINOR, 20.0m MAJOR.
3. EXISTING QUARRY AND WINTER ROAD PROVIDED BY SABINA, 2013-05-17.
4. EXISTING AIRSTRIP AND GRAVEL ROAD TO CAMP DRAWN USING 2012 ORTHO PHOTO AND CONFIRMED WITH EBA GPS SURVEY 2013.
5. MATERIAL VOLUMES INCLUDE SAFETY BERMS AND PULLOUTS. SAFETY BERMS ARE NOT SHOWN ON DRAWING, AND BERM FOOTPRINT AREA HAS NOT BEEN INCLUDED IN TOTAL FOOTPRINT AREA PROVIDED.

Source: EBA (2013).

Sabina GOLD & SILVER CORP. Rescan an ERM company

Figure 2-4

Goose-Umwelt Permit Exploratory Road Overall Site Plan



Source: EBA (2013).

Figure 2-5

Sabina GOLD & SILVER CORP.

George Site Layout and Proposed Infrastructure

Figure 2-5

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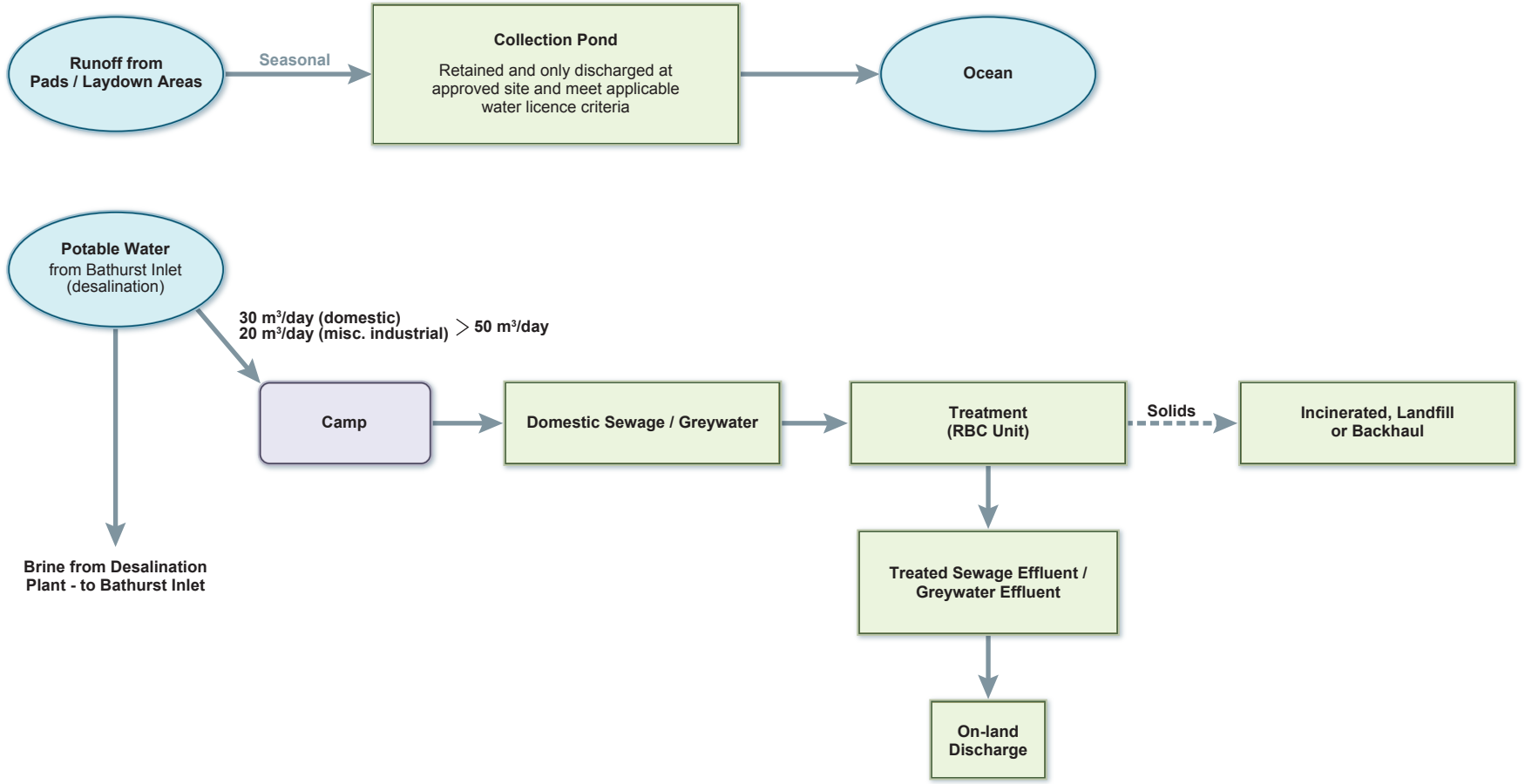

Figure 2-6

Sabina GOLD & SILVER CORP.

Conceptual Water Management - Marine Laydown Area (Construction, Operations, and Active Closure)

Figure 2-6

Rescan an ERM company

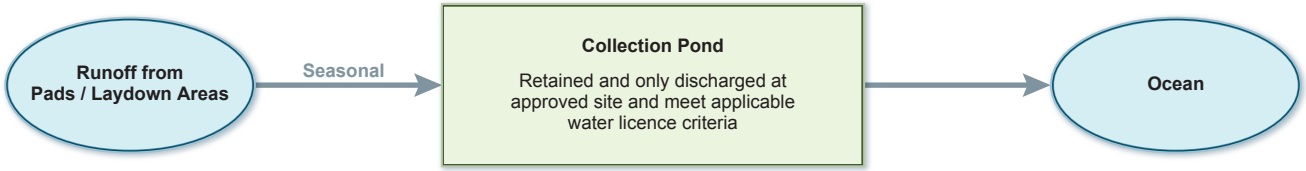

Figure 2-7

Sabina GOLD & SILVER CORP.

Conceptual Water Management - Marine Laydown Area (Post-closure)

Figure 2-7

Rescan an ERM company

3. Proponent Information

3. Proponent Information

Sabina Gold & Silver Corp. is a public Canadian mining company (SBB: TSX) that is focused on development of its 100%-owned Back River Project. Company contact details are as follows:

Sabina Gold & Silver Corp.
930 West 1st Street
Suite 202
North Vancouver, BC
Tel: 604-998-4175 or 888-648-4218
Fax: 604-998-1051

Sabina has been actively completing mineral exploration in the Kitikmeot Region since 2004 initially at the Hackett River Project and at the Back River Project since it was acquired in 2009. Through these continued programs, Sabina has developed a more robust corporate structure and workforce to support advanced exploration and continues to build toward project development and operations. In addition, as the exploration program has grown (initially with a camp of 25), Sabina has expanded its program to include camps that operate with approximately 200 people involved in exploration, engineering and environmental programs.

The representative authorization letter is included in Volume 11, Appendix V11-3A, identifying Mr. Matthew Pickard, VP Environment and Sustainability. Also included in Volume 11, Appendix V11-3A is the list of Sabina officers, evidence of registration and the Sabina's most recent financial statement (as of Q3 2013).

3.1 LAND TENURE

The Property comprises 45 federal mineral leases and 16 federal mining claims covering approximately 128,530 acres or 52,014 ha. The Property is divided into two projects: Goose and George and four exploration prospects: Boot, Boulder, Del, and Bath. All of the tenure is in good-standing and a description of the tenure type, size and ownership of each property is listed in Table 3.3-1. This table includes the six additional claims (11,917 acres) that Sabina staked for the Boulder prospect in 2012.

3.2 MINERAL TENURE

There are six claim groups included in the Property. These are a mix of federal mining leases and federal mining claims. The mining leases have been surveyed by a registered Canadian land surveyor and do not require filing of annual assessment work; however, an annual fee of CDN$1/ acre is required to maintain the leases in good standing. The mining claims have been surveyed and are marked with pickets along claim boundaries and claim posts at the corners of the claims.

All leases and claims are 100% owned by Sabina, and are currently in good standing. Annual reports were delivered to the Kitikmeot Inuit Association (KIA), Aboriginal Affairs and Northern Development Canada (AANDC), the Nunavut Impact Review Board (NIRB), and the Nunavut Water Board (NWB) as per the terms and conditions of authorizations issued for work done on the properties.

DEIS Volume 2, Figure 1.4-1 shows Sabina's claim and lease map of the Property and the adjacent Wishbone area.

3.3 PERMITS, LICENCES, AND AUTHORIZATIONS

Table 3.3-1 and Table 3.3-2 present the current authorizations and permits that are in place for the mineral exploration activities and baseline data collection activities that are occurring on the Property and other exploration Projects held in the area.

Table 3.3-1. Mineral Tenure Status (as of March 31, 2013)

Project/ Prospects	Tenure Name	Area (Acres)	Tenure Type	Registered Ownership as of 31 March 2013 Sabina/Status	Expiry/ Renewal Date
Goose	3694	1,032	Federal Mining Leases (7)	100%/In good standing	10/16/2018
	3695	1,013			10/16/2018
	3696	2,661			10/16/2018
	3697	2,721			10/16/2018
	3698	2,651			10/16/2018
	3699	2,479			10/16/2018
	3700	2,678			10/16/2018
	K12025	2,273	Federal Mining Claims (2)	100%/assessment work pending	5/19/2017
	K12026	1,636			5/19/2017
George	3562	171.7	Federal Mining Leases (19)	100%/In good standing	11/9/2015
	3598	974			12/28/2016
	3599	2,029			12/28/2016
	3600	2,493			12/28/2016
	3601	2,713			12/28/2016
	3602	2,540			12/28/2016
	3603	2,664			12/28/2016
	3604	1,112			12/28/2016
	3605	2,562			12/19/2017
	3606	2,654			12/19/2017
	3607	2,555			12/19/2017
	3608	2,613			12/19/2017
	3649	2,587			12/19/2017
	3650	494.4			12/28/2016
	3651	2,575			12/28/2016
	3653	2,656			12/19/2017
	3677	1,326			10/16/2018
	3729	274.3			10/16/2018
	3730	1,853			10/16/2018
	F98491	2,466.2	Federal Mining Claims (2)	100%/In good standing	11/25/2015
	F98492	2,195			11/25/2015
Boot	3552	2,543	Federal Mining Leases (10)	100%/In good standing	12/30/2017
	3553	2,560			12/30/2017
	3554	2,700			12/30/2017

(continued)

Table 3.3-1. Mineral Tenure Status (as of March 31, 2013; completed)

Project/ Prospects	Tenure Name	Area (Acres)	Tenure Type	Registered Ownership as of 31 March 2013 Sabina/Status	Expiry/ Renewal Date
Boot (*cont'd*)	3555	2,506.6	Federal Mining Leases (10)	100%/In good standing	12/30/2017
	3609	2,672			12/30/2017
	3612	2,668			12/30/2017
	3613	2,531			12/30/2017
	3678	2,621			10/16/2018
	3679	2,475			10/16/2018
	3724	1,338			10/16/2018
Boulder	3466	742	Federal Mining Leases (8)	100%/In good standing	11/18/2015
	3557	2,501			12/30/2017
	3558	2,598			12/30/2017
	3559	2,591			12/30/2017
	3560	2,717			12/30/2017
	3691	642			10/16/2018
	3692	1,128			10/16/2018
	3693	1,657			10/16/2018
	K12027	2,232	Federal Mining Claims (6)	100%/pending	10/15/2014
	K12028	2,491			10/15/2014
	K12029	2,345			10/15/2014
	K12030	2,318			10/15/2014
	K12033	718			10/15/2014
	K12034	1,813			10/15/2014
Bath	5152	2,427.5	Federal Mining Lease (1)	100%/In good standing	3/10/2029
Del	K10862	2,387	Federal Mining Claims (6)	100%/Assessment work pending	9/12/2015
	K10863	2,387			9/12/2015
	K10866	2,387			9/12/2018
	K10867	2,387			9/12/2018
	K10869	2,384			9/12/2013
	K10870	2,411			9/12/2013

Table 3.3-2. Current Authorizations and Permits (as of July 31, 2013)

Permit No.	Permit Name	Type	Expiry	Agency	Description
N33221	Prospector permit		2014-03-31	AANDC	
N2011F0029	Winter road Beechy Area	Class A	2013-12-13	AANDC	
N2010F0017	Winter road Bathurst Inlet to Back River	Class A	2013-09-16	AANDC	Winter Road
N2009F0015	Winter road Hackett to George	Class A	2014-02-28	AANDC	Winter road connecting Hackett and George Camps

(continued)

Table 3.3-2. Current Authorizations and Permits (as of July 31, 2013; completed)

Permit No.	Permit Name	Type	Expiry	Agency	Description
KTL304F049 – Amended	Winter road Bathurst Inlet to Goose Lake and George Lake	Level 3	2013-12-13	KIA	Winter Road
KTL304F012	Winter road Hackett to George	Level 3	2013-12-13	KIA	Winter road connecting Hackett and George Camps
N2010C0016	Back River Mineral Exploration	Class A	2013-10-31	AANDC	
KTL304C017 – Amended	Goose Camp	Level 3	2013-12-13	KIA	Staking/prospecting, exploration (ground/air geophysics), drilling, bulk sampling, bulk fuel storage, camp, winter road, all-weather airstrip and connecting road
KTL204C012 – Amended	Boulder	Level 2	2013-12-13	KIA	Staking/prospecting, exploration (ground/air geophysics), geophysical survey, gridding and drilling
KTL304C018 – Amended	George Camp	Level 3	2013-12-13	KIA	Staking/prospecting, exploration (ground/air geophysics), drilling, bulk sampling, bulk fuel storage, camp, winter road
KTL204C020 – Amended	Boot	Level 2	2013-12-13	KIA	Exploration (air/ground geophysics), staking, prospecting, fly/survival camp and drilling
2BE-GEO1015	George Water	Type B	2015-06-15	NWB	Water use and waste disposal for exploration and clean-up activities
2BE-GOO1015	Goose Water	Type B	2015-03-31	NWB	Industrial water use and waste disposal, bulk sample and exploration
N2012C0003	Wishbone - Malley exploration activities on crown land	Class A	2014-02-06	AAND	Staking/prospecting, exploration (ground/air geophysics), drilling, bulk sampling, bulk fuel storage, camp, winter road
KTL312C004	Wishbone - Malley exploration activities on IOL	Level 3	2013-12-13	KIA	Staking/prospecting, exploration (ground/air geophysics), drilling, bulk sampling, bulk fuel storage, camp, winter road
2BEMLL1217	Wishbone - Malley water	Type B	2017-03-26	NWB	Water use and waste disposal for exploration and clean-up activities

3.4 PROJECT OVERVIEW

The Project includes the Goose Property Area and the George Property Area, a Marine Laydown Area situated in the southern portion of Bathurst Inlet, and interconnecting winter roads. The mine plan for the Project is an estimated ten year operating mine life based on currently known resources, with a total ore feed to a single mill at the Goose Property Area of 15.0 million tonnes. Continued exploration may extend projected mine life.

Within the Goose and George Property Areas there are several mineral targets and a combination of open pit and underground mining methods will be used for mineral extraction. The Marine Laydown Area and winter road corridor will be used for annual resupply from Bathurst Inlet to Goose and George Properties as well as transport of ore from George Property to Goose Property for milling and processing. Waste rock will be stored in designated storage areas on surface or backfilled in mine workings at both properties. Tailings from the mill will be stored in a single Tailings Impoundment Area (TIA) in the area of the mill. Depending on the results of ongoing exploration, the mine and mineral processing plant may operate for more than 10 years.

3.5 CURRENT ACTIVITIES AND INFRASTRUCTURE

Sabina is currently conducting exploration at both the Back River Project and Wishbone-Malley Project including activities such as:

- regional mineral prospecting, sampling and mapping;
- test-pitting (manual and mechanical) for geotechnical and exploration programs;
- diamond drilling – the 2013 program includes 52,000 m of drilling including exploration, conversion, geotechnical and geomechanical programs;
- regional and downhole geophysical programs;
- LiDAR and satellite imaging programs;
- quarry and crushing operations;
- progressive reclamation activities;
- environmental baseline and compliance sampling;
- technical tours and inspections; and
- associated water use to support drill program and camp operations.

As Project development advances it is anticipated that these activities will continue across the Back River Project and Wishbone-Malley Project at the currently identified, and any future, mineral occurrences. Exploration program expenditures at the Back River Project have ranged from $4M to $55M with approximately 20 to 30% spent in the Kitikmeot Region. Sabina's workforce during these programs has been up to 35% Inuit with many returning every year. Sabina anticipates this level of activity will continue at the Back River Project depending on market conditions and corporate development strategy.

These activities in the Kitikmeot Region are supported by two camps – one at Goose Property Area and one at George Property Area. Sabina is also authorized to establish temporary seasonal camps, including Bathurst Inlet area, to support exploration and environmental baseline programs.

3.5.1 Existing On-site Infrastructure

The Goose Property Area currently contains a 120-person all-season camp consisting of sleeping units, dry/kitchen/dining facilities, offices, core processing facility, heavy equipment storage, a maintenance shop, and a fuel tank farm (13 x 75,000-L dual walled enviro-type tanks) and, as of May 31, 2013, fuel storage for 2,300 205-L drums of fuel (P50, Jet A/B, and gasoline). The camp is powered by a 365-kW diesel-powered generator with backup. The camp is operated on a seasonal basis with camp closed annually from early October to late January.

The George Property Area currently contains a 75-person all-season camp consisting of sleeping units, dry/kitchen/dining facilities, core process facility, a machine storage garage, and a fuel tank farm (2 x 75,000-L dual walled enviro-type tanks) and, as of May 31, 2013, fuel storage for 434 205-L drums of fuel (P50, Jet A/B, and gasoline) . A diesel generator (15 kW), with backup, provides power to the site.

During the winter months a 1,830 m (6,000 ft.) ice runway is established at Goose and George camps on adjacent large lakes. During the ice-free months, float-equipped aircraft can land on Goose Lake and other lakes in the Project area. A 530-m long dirt air strip is located on the George Property for use by small aircraft, such as Twin Otters. The Goose Property has a 914-m gravel airstrip suitable for small turboprop aircraft that can be used year-round.

Bulk goods and fuel are typically flown into the Properties by aircraft or hauled by Cat train from a supply barge located at Bathurst Inlet. No significant roads exist at site; only local dirt trails are present around the existing exploration camps at the Goose and George Properties.

These activities are conducted under permits, licences and authorizations as identified in Table 3.3-2. Not included in the list of authorizations is the compliance with Fisheries and Oceans Canada (DFO) operational statements.

Goose Exploration Camp

Water used in camp is taken from Goose Lake with the water source adjacent to the dock, approximately 30 feet offshore in 6 to 8 feet of water. The intake hose is equipped with a screen to prevent entrapment of fish. Drinking water is pumped into a holding pool located in a heated shed adjacent to the kitchen and dry facility. Any larger particles will settle to the bottom of the pool. Filtration is then used to remove smaller suspended material. Final treatment consists of UV and chlorination. The holding pool for camp water will store up to 11 m^3 of water. Up to 5 m^3 is stored in a plastic tank in the core processing facility at Goose camp for on-demand use with the core splitting saws.

Pacto type toilets are used to collect sewage and incinerated daily. Greywater from the kitchen and dry facilities is plumbed to a common line which discharges behind the camp, well away from Goose Lake. The area is mostly bedrock and shallow soil, precluding the digging of a suitable sump. The discharge area is lined with stones to disrupt the flow of water and allow larger particles to come out of suspension, as well as to disperse the flow of water and help alleviate erosion of the topsoil. The greywater percolates into the ground after leaving the discharge point.

The drills are equipped with portable water pumps (with secondary containment drip pans) to take water from lakes local to the area of drilling. The intake hose for each of the pumps is equipped with a screen to prevent entrapment of fish. During drilling, the water is stored in a 500-gallon, trough-type surge tank at the drill where it was then pressurized by a second pump and pumped down the drill hole to cool the drill bit and remove cuttings. Drill water is re-circulated through the hole and new water was added on an as-needed basis to replace any lost through the sludge separation process and to fill the drill hole. Most of the water diverted from the lake and pumped to the drill is not used at the drill site and is allowed to return to the lake; or for land based drilling, the water was allowed to percolate into the soil.

Sludge from the drills was pumped into fibre mega bags, which allow the water to percolate out while retaining the cuttings. The bags are then flown to a trench, or local natural depression, for disposal.

Solid waste in camp is separated at source. Burnable solid waste consisting mainly of paper, food scraps, small wood pieces and plastic packaging is incinerated in a diesel fuel, dual stage forced air

commercial incinerator. Much of the final solid waste generated in camp consists of ashes containing noncombustible metallic residue that accumulates in the incinerator. The ash from the incinerator is placed in empty metal fuel drums, sealed and flown out to Yellowknife for subsequent disposal at a hazardous waste facility.

Tin cans, aerosol cans, glass containers and other non-burnable trash produced by camp operations are flown out to Yellowknife for disposal. Aluminum cans, plastic water bottles and Gatorade bottles were separated and sent back to Yellowknife for recycling.

The primary hazardous wastes generated and managed at Goose Camp are petroleum-based fuel products; diesel, Jet-B, gasoline, engine oil and propane. Other hazardous wastes consist of used aerosol paint cans and expired dry-cell batteries.

Much of the hydrocarbon waste generated on site is retained for use in the waste oil furnace installed to heat the Quonset. Additional waste hydrocarbon products are stored in empty 205-L drums, with the tops sealed with plastic, in secondary containment berms pending backhaul. Empty propane tanks were returned to Yellowknife for recycling and re-use.

Used alkaline batteries and empty paint and aerosol spray cans are placed with the non-combustible kitchen waste and double-bagged in plastic garbage bags and flown back to Yellowknife for disposal.

George Exploration Camp

Water used in the camp is taken from George Lake with the water source adjacent to the dock, approximately 30 feet offshore in 6 to 8 feet of water. The intake hose is equipped with a screen to prevent entrapment of fish. Drinking water is pumped into a holding pool located in a heated shed adjacent to the kitchen and dry facility. Any larger particles will settle to the bottom of the pool. Filtration is then used to remove smaller suspended material. Final treatment consists of UV and chlorination. The holding tank for camp water will store up to 3 m^3 of water. Up to 1 m^3 is stored in a plastic tank in the core processing facility at George camp for on-demand use with the core splitting saws.

Pacto type toilets were used to collect sewage and incinerated daily. Greywater from the kitchen and dry facilities is plumbed to a common line and discharged to the west side of the airstrip into a sediment filled trench. The discharge area is lined with stones to disrupt the flow of water and allow larger particles to come out of suspension, as well as disperse the flow of water and help alleviate erosion of the topsoil. The greywater percolates into the ground after leaving the discharge point.

The drills are equipped with portable water pumps (with secondary containment drip pans) to take water from lakes local to the area of drilling. The intake hose for each of the pumps is equipped with a screen to prevent entrapment of fish. During drilling, the water is stored in a 500-gallon, trough-type surge tank at the drill where it was then pressurized by a second pump and pumped down the drill hole to cool the drill bit and remove cuttings. Drill water is re-circulated through the hole and new water was added on an as-needed basis to replace any lost through the sludge separation process and to fill the drill hole. Most of the water diverted from the lake and pumped to the drill is not used at the drill site and is allowed to return to the lake; or for land based drilling, the water was allowed to percolate into the soil.

Sludge from the drills was pumped into fibre mega bags, which allow the water to percolate out while retaining the cuttings. The bags are then flown to a trench, or local natural depression, for disposal.

Solid waste in camp is separated at source. Burnable solid waste consisting mainly of paper, food scraps, small wood pieces and plastic packaging is incinerated in a diesel fuel, dual stage forced air commercial incinerator. Much of the final solid waste generated in camp consists of ashes containing noncombustible metallic residue that accumulates in the incinerator. The ash from the incinerator is placed in empty metal fuel drums, sealed and flown out to Yellowknife for subsequent disposal at a hazardous waste facility.

Tin cans, aerosol cans, glass containers and other non-burnable trash produced by camp operations are flown out to Yellowknife for disposal. Aluminum cans, plastic water bottles, and Gatorade bottles were separated and sent back to Yellowknife for recycling.

The primary hazardous wastes generated and managed at Goose Camp are petroleum-based fuel products; diesel, Jet-B, gasoline, engine oil and propane. Other hazardous wastes consist of used aerosol paint cans and expired dry-cell batteries.

Much of the hydrocarbon waste generated on site is retained for use in the waste oil furnace installed to heat the Quonset. Additional waste hydrocarbon products is stored in empty 205 L drums, with the tops sealed with plastic, in secondary containment berms pending backhaul. Empty propane tanks were returned to Yellowknife for recycling and re-use.

Used alkaline batteries and empty paint and aerosol spray cans are placed with the non-combustible kitchen waste and double-bagged in plastic garbage bags and flown back to Yellowknife for disposal.

4. Site Preparation Activities and Components

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4. Site Preparation Activities and Components

Site Preparation (or preconstruction) is over a 2 year period (Year -4 to Year -3) with most of the environmental protection measures are incorporated in the planning stage of the Project and are implemented at the onset of site preparation activities and carry through for the life of the Project.

This Section presents an overview of the infrastructure that will be advanced during site preparation and construction which have a "life of Project" use. These include:

- the construction and operation of the Marine Laydown Area;
- the construction and maintenance of winter roads;
- the construction of infrastructure such as all-weather site roads, laydowns areas, airstrips, and fuel storage at the Goose Property, and
- the construction of infrastructure such as all-weather site roads, laydowns areas, increasing existing camp capacity, and fuel storage at the George Property.

The focus of site preparation (Year -4 and -3) is to provide access to the Project and initiate delivery of equipment, materials and supplies for construction. Other activities that will be included in site preparation will include improvements to the establishment of laydown areas, communications network and improvements to camp facilities to house a growing workforce. The scope of activities planned for the Site Preparation is presented in Volume 2, Chapter 6 of the DEIS, and are presented in the following sections to support site preparation applications.

4.1 SITE PREPARATION OF THE MARINE LAYDOWN AREA

The Marine Laydown Area will be developed as a staging area for equipment, material, fuel and supplies required for the operation of the Project and will be constructed in Year -4 during site preparation. The Marine Laydown Area will remain operational until closure. The conceptual layout of the Marine Laydown Area is presented in Section 2 and the characteristics of the facilities that will be constructed at the Marine Laydown Area are presented in Table 4.1-1.

Table 4.1-1. Site Preparation Activities and Components at the Marine Laydown Area

Potential Development Area	653 ha Footprint of facilities within Marine Laydown Area PDA = 98 ha
Site Roads	All-weather roads will be constructed within site. Construction materials will be from locally developed geochemically suitable rock quarries. Roads will be private and not for public use.
Quarry Sites and Borrow Area	Aggregate required for construction: up to 100,000 tonnes Quarry area: cut and fill in balance; local quarry as required Only geochemically suitable rock quarries will be developed
Water Supply	Source: Bathurst Inlet - Desalination unit Quantity: Domestic uses = 30 m^3/day; Industrial use: 20 m^3/day Potable water treatment plant/desalination unit: up to 50 m^3/day
Fuel Storage	On land storage of 10 ML Fuel delivered by sealift during open water season.

(continued)

Table 4.1-1. Site Preparation Activities and Components at the Marine Laydown Area (completed)

Power Generation	Power plant at camp and maintenance facilities: 1 MW
Laydown and Storage Area	Explosives storage area: magazine space for packaged explosives and detonators. General laydown area for material and supplies: 90 ha Hazardous waste transfer area = 2 ha
Waste Management	*Landfarm* – not applicable *Solid waste*: Temporary storage area for nonhazardous noncombustible waste – waste shipped off site during annual sealift. *Incinerator* – at camp combustible waste including sewage treatment plant sludge and pacto waste *Hazardous waste*: Temporary hazardous waste storage area. Hazardous waste shipped off site for ultimate disposal during annual sealift season.
Airstrip	Airstrip capable of accepting small turboprop aircraft constructed on ice during winter. Access by floatplanes during open water, if necessary.
Wastewater Treatment	Sewage Treatment Plant provided for up to 50 person camp during site preparation and up to 100 persons during construction and operations. Capacity of the plant is 30 m^3/day; Treated sewage effluent discharged to the terrestrial environment. Oily water treatment plant - For light vehicle maintenance shops and vehicle wash facility – water treated and recycled within shop. Occasional discharges to the terrestrial environment. Oil to be collected and either burned in an approved waste-heat generator or drummed and removed from site as hazardous waste.
Sewage Treatment	Treated effluent discharged to the terrestrial environment. Waste collected from Pacto systems will be incinerated.
Buildings	Laydown areas; Explosives magazines; Warehousing facility; Emergency facilities (fire and ambulance station); General maintenance building (site services); Waste management building; 50-person Camp and Administration complex complete with kitchen, dry and recreational facilities; Administration complex; Modular desalination water treatment system; Modular sewage treatment system; Diesel power plant; Power utility building;
General Site Drainage	Site drainage designed to contain potentially contaminated runoff and to divert non-contact runoff water from laydown area.
In Water Construction	Floating dock and Unloading ramp Marine footprint area of 0.23 ha

4.1.1 Marine Laydown Area Development Sequence

Construction of the Marine Laydown Areas will begin with site preparation (or preconstruction) activities and is expected to last for two years. During the open water season during the first year of site preparation, earthwork equipment, a prefabricated camp and associated support infrastructure (power supply, water treatment, sewage treatment and incinerator), administrative building and foldaway type maintenance facilities will be staged at the Marine Laydown Area. Material to construct an initial 10 ML fuel storage tank will also be delivered. This tank will be erected and ready to receive fuel shipments during site preparation. Remaining components and material required for the Marine Laydown Area will be delivered and erected so that it will be fully operational for construction.

4.1.2 Use of the Marine Laydown Area

The Marine Laydown Area will be developed for the exclusive use of Sabina's Back River Project.

4.1.3 Site Roads and Water Crossings

The site roads within the Marine Laydown Area will be constructed as all-weather roads. All-weather roads will be constructed with run-of-quarry rock placed directly onto the tundra to preserve the permafrost. A layer of graded surfacing material will be placed to provide a protective trafficking layer. Construction materials are assumed to be from locally developed geochemically suitable rock quarries. The following design criteria apply to access roads:

- design vehicle: B-train;
- minimum width of travelling surface: 10 m; and
- safety berms: where required

Two types of stream crossings are being considered for the site roads:

- relatively small crossings assuming non fish-bearing water; and
- larger crossings assuming fish-bearing water.

The smaller crossings will use large diameter culverts, while the larger crossings will use a combination of single-lane modular free-span bridges or culverts. In the design an allowance will also be included for regular drainage culverts and road signs. Water crossings may be the subject of a DFO authorization or Letter of Advice.

No infilling of lakes or stream crossing will be required for the site road construction. A speed limit will be imposed for site traffic and dusting is not expected to be problematic.

4.1.3.1 Public Access to Roads

Due to safety consideration, all site road networks within the Marine Laydown Area will be restricted to Sabina's use. Visitors (hunters arriving by snowmobile or marine vessel) to the site will be asked to register their presence at the camp's administration centre. Sabina's community communication will emphasize this requirement.

4.1.4 Dock Construction

The beach ramp and dock will be rock-filled structures built perpendicular to shore with above water dimensions measuring approximately 30 x 30 m^2 and 20 x 20 m^2, respectively. The side-slope of constructed infrastructure is assumed to be approximately 2:1, with a maximum depth below high water of 5 m, resulting in a total area of in-water infrastructure of 0.15 ha and 0.08 ha, respectively. The total in-water infrastructure covers 0.230 ha.

4.1.5 Goods and Supply Received at the Marine Laydown Area

Quantities and volumes of goods and material received will vary depending on the phase of the Project as outlined in DEIS Volume 2, Section 6.4.5. Estimated goods and materials to be received at the Marine Laydown Area during site preparation include 20,000 tonnes construction freight, 2,100 tonnes general freight and 4,500 tonnes fuel.

4.1.5.1 Laydown Area and Material Storage

Laydown and material storage areas will be developed during the site preparation stage. An estimated 90 hectares of laydown area will be required to store equipment, materials and supplies for the construction of the site facilities. Laydown areas will be constructed with run-of-quarry rock placed

directly onto the tundra to preserve the permafrost. As per the road construction, a layer of graded surfacing material will be placed to provide a protective trafficking layer. The surface will be sloped to prevent pooling of water and runoff will be directed to the tundra.

With the exception of large preassembly and modular equipment, most material arriving at the Marine Laydown Area will be containerized in sea containers.

4.1.5.2 Construction Material, Equipment and Supplies

The Marine Laydown Area will not be fully functional until the first year of Operation; however, once site development begins, it is expected that some of the larger mining equipment/machinery may be delivered to the Marine Laydown Area for transportation to the Goose or George Properties over the winter road. This equipment could include part of the mining fleet (trucks, shovels) and potential some of the larger mill equipment (ball mill, grinding mill).

4.1.5.3 Consumables, Reagents and Explosives

Consumables, reagents and explosives to be used as part of site preparation activities at the Marine Laydown Area activities will on an 'as-needed' basis with delivery via shipping (in sea cans) or aircraft.

4.1.5.4 Waste Transfer Station

Distinct open waste storage areas will be constructed at the Marine Laydown Area for the storage of non-hazardous waste and hazardous waste.

All waste material will be handled, stored and transported in accordance with the Canadian and Territorial waste regulations. Copies of relevant legal documents will be kept on file at the mine site. Management and safety personnel will provide an overview of the applicable regulations to all employees as part of their initiation and ongoing training. Refer to both the Landfill and Waste Management Plan and the Hazardous Materials Management Plan for more details on waste management (Volume 10).

All hazardous waste originated from the Goose and George properties will be packaged in appropriate containers prior to transportation to the Marine Laydown Area. A dedicated storage pad will be constructed at the Marine Laydown Area to receive and store the hazardous waste until the sealift can remove it from the site. The hazardous waste storage pad will constructed to prevent pooling of water. The pad will be fenced and appropriate signage will be posted.

For non-hazardous wastes, the storage pad will be constructed of crushed aggregate or borrow material and constructed to prevent pooling of water.

4.1.5.5 Loading and Offloading Procedures

Mobile equipment required for offloading the sealift or reloading the sealift vessels will be stationed at the Marine Laydown Area on a permanent basis to be delivered in the first year of site preparation. The type of equipment involved loaders equipped with forks of lifting devices for sea containers. Special machinery may be used for unloading large equipment delivered during the construction phase.

4.1.5.6 Potential Interference or Synergies with Community and Outpost Resupply (Kingaok, Cambridge Bay)

Because Sabina's shipping season coincides with community resupply, Sabina will endeavor to work with local and territorial governments to minimize interference with each other's deliveries and if possible, coordinate joint resupply efforts.

4.1.6 Fuel

4.1.6.1 Land-based Tank Farm

During site preparation, Sabina will construct a 10 ML land based bulk tank farm (either 1 tank at 10 ML or two tanks at 5 ML). The fuel tank farms will be designed to have bermed spill containment with capacity equal to the volume of the largest tank plus 10% of the volume of the remaining tanks OR 110% volume of the largest tank, whichever is greater. In calculating the volume, the footprint of the smaller tanks is subtracted. The above basis is consistent with the document entitled *Design Rationale for Fuel Storage and Distribution Facilities* published by the Department of Public Works of the Northwest Territories (GNWT 2006; refer to Section 4.6 of these guidelines). The lining within the bermed area is an impervious HDPE liner membrane. The design of these facilities will be based on industry standards for installation, jointing, etc., the membrane to ensure its integrity.

Water pooling within this secondary containment will be released to the receiving environment provided it complies with discharge water quality criteria within existing water licences. Treatment will be provided for the pooling water should the water quality exceeds those criteria.

Fuel will be delivered by fuel tankers during the open water season. The floating hose method will be used for transfer of fuel to the on land storage tanks.

Refuelling stations will be equipped with a lined and bermed area to contain minor spills or leaks during refuelling. The liner (e.g., 40-mm hypolon liner or equivalent) will be protected by aggregate bedding. Vehicles and mobile equipment will drive onto this bedding for refuelling. Fuel transfer is done by pumps.

4.1.7 Spill Contingency and Emergency Response

A conceptual Spill Contingency Plan, Oil Pollution Emergency Plan (OPEP) and an Emergency Response Plan have been prepared for the Back River Project including the Marine Laydown Area (see Volume 10, Chapters 5, 6, and 3, respectively).

Since the Marine Laydown Area will contain a major fuel tank farm, the preliminary OPEP is applicable. The OPEP outlines measures to protect the marine environment and minimize impacts from potential fuel spill events. This OPEP outlines potential spill scenarios and provides specific procedures for responding to spills while minimizing potential health and safety hazards, environmental damage and clean-up costs. The OPEP provides instructions to guide all personnel in emergency spill responses, defines the roles and responsibilities of management and responders and outlines the measures taken to prevent spills, the related exercise and evaluation program, and the mechanism for regular updates to the Plan. The OPEP complements the Emergency and Spill Response Plan by providing site specific consideration to the Marine Laydown Area.

4.1.8 Communication System

To meet Occupational Health and Safety requirements, environmental protection, and logistics efficiency communications will be needed between:

- Project - outside Project area (for example Back River Project to Yellowknife, Cambridge Bay, Vancouver);
- Property – Property (between Goose, George and Marine Laydown Area Properties);
- Property – worksite (for example between George Property camp and drill location); and

- Property – access/transportation corridors (road, air, marine).

The primary basis for communication across the Project between the Properties will be the phone system. This will be similar to the current communication network used at the Project with each exploration camp using a site telephone network linked to a C band satellite through a transmission-receiving dish which provides voice communications from site to other telephone links. Back-up communication will be available via satellite using hand-held satellite phones.

For on-site communication at each Property, hand-held VHF radios will be mandatory for all employees working or travelling in remote areas from the main camp. Communication is across a common frequency with separate discrete frequencies for specific work areas or groups. For example, these frequencies cover areas such as General Camp group channel; Helicopter operations channel; Drilling group channel; specialized non dedicated channel for short term jobs so the common camp channel is left clear. Satellite phones and SPOT devices will also be used primarily by field personnel if the work area is outside the VHF radio range. Back-up power sources and replacement batteries for all communications equipment will be available to provide continuous, uninterrupted operation either at fixed facilities or at temporary and/or emergency sites.

Each Property will also have a site based computer network which is linked through an HSe satellite dish which provides network communications to other network/email links within the company as well as others. Wifi communication access would be available around each camp's infrastructure.

Communication between air to ground and marine to ground would be through a dedicated portable radio unit. Communication along the winter road corridors will be accommodated using the VHF radios and/or satellite phone network established as part of the on-site communication and between Properties systems.

Radio repeater towers will be established at various locations along the winter road corridors and in areas of worksites allowing VHF radio contact between field and camp base stations.

4.1.9 Power Generation

Power will be generated on site with the use of 1 MW diesel generator.

4.1.10 Marine Laydown Area Security

Sabina will develop a Marine Security Plan in accordance with the requirements of the *Marine Transportation Security Act* (1994).

Smuggling, particularly alcohol and prohibited substances, could have negative socio-economic effects on the community. Various measures to prevent smuggling will be implemented including specifying prohibited substances and disciplinary actions including referring matters to Royal Canadian Mounted Police (RCMP) if prohibited substances are involved. While it is anticipated that the RCMP will not be involved in security matters, all criminal activities or matters of a grave nature will be referred to the RCMP in Cambridge Bay.

4.1.11 Water Supply

A desalination plant will provide potable water for both the domestic and industrial use at the Marine Laydown Area. The water demand is expected to be 30 m^3/day for domestic use and 20 m^3/day for industrial use.

4.1.12 Sewage and Waste Water Treatment for the Marine Laydown Area

Sewage produced from the 50 person camp needed for site preparation will be treated in a sewage treatment plant and discharge to the marine environment via an outfall.

Sabina will strive to comply with the discharge requirements of the Wastewater System Effluent Regulation (WSER) which is not yet applicable north of the 60th parallel. Until the WSER is applicable to the North, Sabina will comply with the effluent quality criteria presented in Table 4.1-2. These discharge criteria are in line with those imposed on other mining operations within NU.

Table 4.1-2. Proposed Treated Sewage Effluent Discharge Quality Criteria for the Marine Laydown Area

Parameter	Maximum Average Concentration
BOD_5	100 mg/L
Total Suspended Solids	120 mg/L
Fecal Coliform	10,000 CFU/100 mL
Oil and Grease	No visible sheen
pH	between 6.0 - 9.5

4.1.13 Waste Management for the Marine Laydown Area

During site preparation waste management at the Marine Laydown Area will primarily be associated with the waste generated at the camp. Backhauling from Goose and George will be accommodated as feasible; however, regular backhaul from these Properties to the Marine Laydown Area will not be implemented until the Marine Laydown Area is fully operational. Waste management at the Marine Laydown Area during site preparation will be incorporated into existing waste management plans and include reduction/recycling measures, incineration, and temporary storage and backhaul for appropriate handling and disposal.

4.1.14 Conceptual Water Management

The conceptual water management strategy for the Marine Laydown Area is presented in Figures 2-6 and 2-7.

4.1.15 Air Access to the Marine Laydown Area

The access to the Marine Laydown Area will be by float planes during the summer months and turboprop planes during the winter months. A landing strip will be prepared on the Inlet for the winter months. During the shoulder seasons, the Marine Laydown Area will be serviced by helicopters.

4.2 SITE PREPARATION OF THE WINTER ROADS

Two winter roads will be constructed for the Back River Project: 1) connecting the Marine Laydown Area and the Back River Property at Goose and 2) connecting the George site (Figures 2-2 and 2-3 in this volume).

4.2.1 Public Use of Winter Road Corridors

Sabina acknowledges that once the winter roads are constructed, local hunters may use these roads for ease of access to hunting grounds inland. While Sabina's community communication effort will emphasize the safety aspects of using these winter roads, the Company cannot prevent local inhabitants from using the corridor.

4.2.2 Expected Traffic on Winter Roads

These winter roads will be used for the duration of the Project Life. It is expected that vehicle traffic will begin in January to end of April annually. The expected number of vehicles on each road for site preparation is presented in Table 4.2-1. This includes trips by 95t trucks moving cargo, freight and fuel over a 75 trucking window; the estimated vehicular traffic in Table 4.2-1 does not include any personnel movement, equipment movement or public use of the winter road.

Table 4.2-1. Expected Annual Vehicle Traffic on Winter Roads during Site Preparation Activities

	Cargo/Freight/Fuel
Goose/George to Marine Laydown Area	40 to 50 trucks making two return trips per day (up to 15,000 transits*)
George Winter Road Spur	Not applicable

**a transit is an individual truck passing if you were to stand at one point.*

4.2.3 Design and Construction of the Winter Road

The roads will be constructed yearly in December and January and be open to traffic from late January to the end of April with the initial use during site preparation, or preconstruction, of the Back River Project. The annual construction and maintenance requirements of the ice roads will depend on operational and environmental conditions.

4.2.3.1 General Design Criteria

The winter roads will be designed to the following general criteria. Depending on the prevailing conditions, construction will start in early December when the subgrade is sufficiently frozen to support light tracked vehicles and take approximately two months utilizing work fronts from each of the existing Goose exploration camp and the Marine Laydown Area at Bathurst Inlet.

- Project Development Area: 200-m-wide corridor (100 m to each side of road centerline);
- road width:
  - land: 10 m;
  - water: 30 m, typically but as required depending on ice quality, length of season, amount of snow drifting, etc.;
- maximum grade: 5%;
- design vehicle: Super B-train - legal highway load capacity; and
- pullouts: every 1 to 3 km.

4.2.3.2 Design Features to Facilitate Wildlife and Human Movement

Largely constructed at grade, winter roads do not impose any barrier to wildlife or human movement. Speed restrictions, policies giving all wildlife given right-of-way on the roads, and reporting of aggregations of wildlife will serve to protect. Outside of the winter road season, the routes will return to their original state.

4.2.3.3 Goose Property to Marine Laydown Area

The winter road between the Marine Laydown Area and the existing Goose camp will be approximately 160km long and travel over 50% land and 50% water. This will follow the same corridor currently

permitted under land use authorizations N2011F0029 and N2010F0017 (AANDC) and KTL304F049 (KIA). Emergency shelters will be located every 60km along the road.

4.2.3.4 George Winter Road Spur

An approximately 20-km-long winter spur road will connect the existing George exploration camp with the Goose to Marine Laydown Area winter road.

4.2.4 Spill Contingency and Emergency Response

The aspects of mitigating, responding to and otherwise managing spill incidents occurring on transportation corridors during site preparation activities will be under the existing management plans prepared for exploration and associated camp infrastructure. The most recent Spill Contingency Plan is included in section 6.0 of this report. This Plan addresses spills, releases, or discharges of hydrocarbon or other contaminants to land, water, ice, and snow. Depending on the type and quantity of the contaminant and relative locations of the spill, predetermined lines of responses, plans of action, and roles and responsibilities are specified. Besides the customized spill response equipment, including the mobile unit, each vehicle will be outfitted with spill kits.

In general, snow and ice will slow the movement of hydrocarbons. Snow and frozen ground also prevent hydrocarbons from migrating down into soil or at least slow the migration process. Ice prevents seepage of fuel into the water. Snow is generally a good sorbent as hydrocarbons have a tendency to be soaked up through capillary action. However, the use of snow as a sorbent material is to be limited as much as possible. Most response procedures for spills on land may be used for spills on snow and ice. The basic steps are: control the source control; control free product; protect the environment; clean up; and report.

Emergency shelters will be located every 60 km along the winter road corridor in addition to the three camps – the existing Goose exploration camp, the existing George exploration camp and the Marine Laydown Area.

4.2.5 Winter Roads Maintenance

An active and appropriate maintenance program will ensure the safety, stability, and longevity of this seasonal infrastructure. The key maintenance factors are maintaining ice road width, managing snow drift, maintaining a groomed surface, water use, and monitoring of ice thickness.

In areas where ground drift is prevalent, extra width clearing may help reduce snow accumulation as the wind has a tendency to blow the ice road clean. Where ground drift is not prevalent, the additional width clearing will reduce overall winter road maintenance from drifting, as well as allowing fewer pieces of equipment the additional time to manage larger sections of winter road. Extra clearing width also allows for snow storage. Windrows of snow should be flattened as much as possible to ensure that excess weight is not put on the ice.

Equipment used for clearing snow also provides the important function of grooming the ice surface that is damaged through routine traffic. This equipment will also remove dirt and gravel from ice surfaces which can degrade the surface significantly through increased thaw and loss of surface solidity.

Ongoing watering continues to be a critical component in maintaining the integrity of ice roads. Worn and damaged roads are repaired by flooding with shallow water that freezes into a new surface layer. It is especially important to use water to thicken ice-land transitions at shorelines where heavier traffic and naturally thinner ice may affect the performance of these road sections.

Monitoring and recording ice thickness is a critical activity as the weather begins to warm at the end of the ice road season. Traditionally, manual borehole testing programs are completed to determine the safe bearing capacity of ice, and examined for thickness and type of ice present. Another method is to use an electronic profiler or Ground Penetrating Radar (GPR), which provides a continuous readout indicating ice thickness and presence of cracks and other anomalies which might be missed by the test holes. GPR profilers are often used for ice roads that are too long to test manually or areas where there are fluctuations in the ice thickness are expected such as river crossings. Manual borehole testing is still required to determine the ice texture and the thickness of the ice layers.

4.2.6 Water Use for Winter Road Construction and Maintenance

The expected water use for the construction and maintenance of the winter roads is estimated to be up to 121,500 m^3 every year to construct and maintain. The volume used will depend on environmental conditions and operational needs. Water will be drawn from various sources along the alignment of the winter road. Sabina will adhere to the DFO Operational Statements on Mineral Exploration, Culvert Maintenance, Ice Bridges and Snow Fills as well as DFO Under-Ice Water Withdrawal Protocol for the withdrawal of water.

Multiple water supply lakes will be needed along the corridor to provide the water requirements and meet DFO policies. Figure 2-3 provides a map of potential water supply lakes along the corridors; these lakes have been identified from GPR surveys completed in 2013. These lakes meet two criteria as an initial identification – they are along the winter road corridor and are more than 5m deep from preliminary bathymetric surveys.

4.3 SITE PREPARATION OF THE GOOSE PROPERTY

The Goose Property will be the primary site for the Back River Project with the development of three open pits and one underground mine operation. The development of this Property will also include the construction of the necessary infrastructure for the ongoing operation of the Project.

During site preparation activities for the Back River Project, it is anticipated that the existing Goose exploration camp will be used as a staging area to support winter road construction and maintenance as well laydown for equipment and supplies needed for Project construction. To support this:

- Additional bulk fuel storage will be required to support the larger camp, ongoing exploration and baseline studies, and winter road construction. The addition of up to 10 ML of bulk fuel storage capacity may be available through the installation of one 10 ML tank within secondary containment, or multiple variable size tanks to accommodate the diesel fuel requirements.
- The existing all-weather airstrip (with associated water crossings and dust management) will need to be extended to accommodate larger planes.
- Additional quarry material may be accessed for construction of the containment areas needed for increased fuel storage. Associated with quarry development is explosives storage and use as well as all-weather access.
- All-weather road access will be needed for quarry operations with associated water crossings and dust management.

These activities and components are included in Figure 2-4 and are shown relative to the overall Project infrastructure. Waste management, hazardous materials management, fuel handling will be in compliance with the existing management plans with the regulatory agencies. The Spill Contingency Plan is presented in Section 6.1.

4.3.1 Water Use during Site Preparation

During site preparation and construction it is anticipated that the sources will be Goose Lake (currently used as water supply for exploration camp) and that the supply will be 297 m^3/day. Domestic use (for camp) will peak at 45 m^3/day (camp/domestic use) plus industrial use of 70 m^3/day. This industrial use may include truck washing, dust management, winter road construction and maintenance, water crossings, discharge from containment, and collection/runoff. Water use during site preparation will also include ongoing exploration drilling activities, or winter road construction/maintenance, at a rate of 182 m^3/day sourced from lakes near drilling activities.

4.3.1.1 Water Supply

Water consumption has been estimated on the basis of domestic requirements (to support camps) and industrial requirements (to support exploration and support facilities water uses). Freshwater supply will be pumped from Goose Lake. Exploration drilling obtains water from local lakes near drilling areas incompliance with DFO under-ice water taking protocols. The existing water use and waste management is presented in Section 3.5 of this volume.

4.3.1.2 Water Intake Design

The existing water intake is designed in accordance with DFO guidelines for water intakes. Technical specifications and as-built water distribution will be provided within 60 days of activities during site preparation activities of any changes to the water treatment and distribution network.

4.3.1.3 Water Treatment Methods

Both domestic and industrial water supply will be drawn from Goose Lake and treated using the current installations at the exploration camps. The treatment plant consists of filtration followed UV disinfection then pumped to holding tanks for distribution around camp.

Industrial water used in maintenance shops or wash down of vehicles will not be treated; water will be pumped to a holding tank for use. To the extent possible industrial and wash water will be collected, treated for suspended solids removal and recycled. Water used for drilling and winter road construction is not treated prior to use.

4.3.2 Goose Exploration Camp – All-weather Road and Associated Water Crossings

4.3.2.1 Site Roads and Water Crossings

The site road at the Goose Property to be constructed during site preparation activities will be constructed as all-weather roads. This initial 6-km road (Figure 2-4) will access the existing rock quarry and a proposed laydown area northwest of the existing exploration camp. This road corridor and new laydown area is needed for additional bulk fuel storage and laydown needed for Project development that is in an area outside the current projected mine workings boundary.

All-weather roads will be constructed with run-of-quarry rock placed directly onto the tundra to preserve the permafrost. A layer of graded surfacing material will be placed to provide a protective trafficking layer. Construction materials are from locally developed geochemically suitable rock quarries already permitted or under application. Roads will be private and not for public use and road embankments are designed to facilitate ungulate passage.

Some of the key, common design criteria for all-weather Access Roads are:

- design speed: 50 km/h;

- maximum super-elevation: 4%;
- side slopes: 3:1;
- maximum grade: 10% for short lengths, 6% normal;
- minimum horizontal curve radius: 100 m;
- drainage: major culverts and bridges to be designed to a 1-in-50-year return period;
- design vehicle: B-train;
- minimum width of travelling surface: 6 m for site preparation; and
- safety berms: where required.

Two types of stream crossings are being considered for the site roads:

- relatively small crossings assuming non fish-bearing water; and
- larger crossings assuming fish-bearing water.

The smaller crossings will use large diameter culverts, while the larger crossings will use a combination of single-lane modular free-span bridges or culverts. In the design an allowance will also be included for regular drainage culverts and road signs. Water crossings may be the subject of a DFO authorization or Letter of Advice.

No infilling of lakes or stream crossing will be required for the site road construction. Speed limit will be imposed for site traffic and dusting is not expected to be problematic.

4.3.2.2 Public Access to Roads

Due to safety consideration, all site road networks within the Goose Property will be restricted to Sabina's use. Visitors (hunters arriving by snowmobile) to the site will be asked to register their presence at the camps administration centre. Sabina's community communication will emphasize this requirement.

4.3.2.3 Laydown Area and Material Storage

Laydown and material storage areas will be developed during the site preparation stage. An estimated 40 ha of laydown area will be required to store equipment, materials and supplies for the construction of the site facilities. Laydown areas will be constructed with run-of-quarry rock placed directly onto the tundra to preserve the permafrost. As per the road construction, a layer of graded surfacing material will be placed to provide a protective trafficking layer. The surface will be sloped to prevent pooling of water and runoff will be directed to the tundra.

With the exception of large preassembly and modular equipment, most material used for construction will be containerized in sea containers.

4.3.3 Site Water Management during Site Preparation

Site water management during site preparation will be based on the current best management practices already implemented on-site to meet the following objectives:

- To intercept and collect waters that may have been in contact with exploration and camp infrastructure;

- To divert as much water as possible to avoid contact and to direct these to downstream drainage systems; and
- To sample contact waters for potential contaminants and, if necessary, to treat to remove contaminants to meet permitted water quality guidelines prior to release.

Where contact waters have the potential to contain suspended solids drainage will be directed to silt fences or sedimentation ponds for removal of suspended solids. This drainage may be released to the environment.

During site preparation activities, where flows may directly or indirectly enter a waterbody, runoff water quality will comply with the discharge criteria presented in Table 4.3-1.

Table 4.3-1. Proposed Surface Runoff Water Quality Criteria

Parameter	Maximum Average Concentration (mg/L)	Concentration of Grab Sample (mg/L)
Total Suspended Solid	50	100

4.3.4 Quarries/Borrow Sources and Overburden

During site preparation activities, the existing rock quarry west of the existing exploration camp will be accessed. This material will be used to construct the secondary containment for the bulk fuel tanks, the laydown pad, and extend the all-weather airstrip. An additional quarry has been identified in the Umwelt open pit area. Only quarries with geochemically and physically suitable material will be developed.

Quarry operations are outlined in the Borrow Pits and Quarry Management Plan (Volume 10, Chapter 16).

4.3.5 Diesel Fuel Supply and Storage during Site Preparation

During site preparation Sabina will construct one 10 ML land based bulk tank farm (either 1 x 10 ML tanks or 2 x 5 ML tanks). The fuel tank farms will be designed to have bermed spill containment with capacity equal to the volume of the largest tank plus 10% of the volume of the remaining tanks OR 110% volume of the largest tank, whichever is greater. In calculating the volume, the footprint of the smaller tanks is subtracted. The above basis is consistent with the document entitled *Design Rationale for Fuel Storage and Distribution Facilities* published by the Department of Public Works of the Northwest Territories (GNWT 2006; refer to Section 4.6 of these guidelines). The lining within the bermed area is an impervious HDPE liner membrane. The design of these facilities will be based on industry standards for installation, jointing, etc., the membrane to ensure its integrity.

Water pooling within this secondary containment will be released to the receiving environment provided it complies with discharge water quality criteria within existing water licences. Treatment will be provided for the pooling water should the water quality exceeds those criteria.

Fuel will be delivered either by truck over the winter road network or by air using bulk fuel air delivery and transport via truck along the all-weather road to the bulk storage tanks. Fuel transfer will incorporate hoses and pumps within secondary containment.

Refuelling stations will be equipped with a lined and bermed area to contain minor spills or leaks during refuelling. The liner (e.g., 40-mm hypolon liner or equivalent) will be protected by aggregate bedding. Vehicles and mobile equipment will drive onto this bedding for refuelling. Fuel transfer is done by pumps.

Arctic diesel-grade fuel will be used by motor vehicle and mining equipment on the site. Limited quantities of propane and gasoline will be used in maintenance facilities for smaller motorized equipment and machinery.

4.3.6 Explosives and Ammonium Nitrate Storage during Site Preparation

Ammonium nitrate and fuel oil would be used as the explosive for quarries and these products will be transported and stored on site in accordance with territorial and federal regulations. For site preparation, prepackaged explosives will continue to be delivered by air transportation and stored as per current management and best management practices.

4.3.7 Air Transportation

At the onset of site preparation activities, an all-weather airstrip and apron capable of servicing passenger and large cargo aircraft will be constructed at the Goose Property, at the site of the current exploration/development gravel airstrip. This airstrip will serve as the main air access to the Project throughout the life of the Project. The all-weather airstrip will be designed to Transport Canada standard TP 312 *Aerodrome Standards and Recommended Practices* (Transport Canada 2005). The airstrip will be up to 2,900-m long, 45-m wide, and may be hard-surfaced during the construction phase of project development. It will be equipped with lights and instrumentation in accordance with appropriate federal regulations. The airstrip buildings will include a radio shack/communications, a stand-alone power supply (generator), waiting room, and dispatch office.

Construction of the airstrip extension will be as per the construction of the current airstrip. Figure 2-5 shows the extended airstrip location.

4.3.8 Communication Systems

See Section 4.1.8 for a description of the communications currently used at the Back River Project. A similar approach would be used during site preparation

4.4 SITE PREPARATION OF THE GEORGE PROPERTY

The development of George Property includes three open pit mine and two underground mines and will include the construction of the necessary infrastructure for the ongoing mining operation. Construction activities at the George Property are expected to begin during Year 4 of operation.

During site preparation activities for the Back River Project, it is anticipated that the existing exploration camp will be used as a staging area to support winter road construction and maintenance and possibly as laydown for equipment and supplies. To support this:

- The existing camp will require an expansion to accommodate up to 120 personnel. This will include additional buildings and infrastructure in the existing location. This increase in camp will also require additional water supply under the current water licence; George Lake is the water supply lake and this will remain the source with the increased camp capacity.
- Additional bulk fuel storage will be required to support the larger camp, ongoing exploration and baseline studies, and winter road construction. The addition of up to 5 ML of bulk fuel storage capacity may be available through the installation of one 5-ML tank within secondary containment, or multiple variable size tanks to accommodate the diesel fuel requirements.
- Additional quarry material may be accessed for construction of the containment areas needed for increased fuel storage. Associated with quarry development is explosives storage and use as well as all-weather access.

- All-weather access will be needed for quarry operations with associated water crossings and dust management

The site preparation components and activities are included in Figure 2-5. Waste management, hazardous materials management, fuel handling will be in compliance with the existing management plans with the regulatory agencies. The Spill Contingency Plan is presented in Section 6.2.

4.4.1 Water Use during Site Preparation

During site preparation and construction it is anticipated that the sources will be George Lake (currently used as water supply for exploration camp) and that the supply will be 245 m^3/day. Domestic use (for camp) will peak at 45 m^3/day (camp/domestic use) plus industrial use of 70 m^3/day. This industrial use may include truck washing, dust management, winter road construction and maintenance, water crossings, discharge from containment, and collection/runoff. Water use during site preparation will also include ongoing exploration drilling activities, or winter road construction/maintenance, at a rate of 130 m^3/day sourced from lakes near drilling activities.

The existing water use and waste management is presented in Section 3.5 of this volume.

4.4.1.1 Water Supply

Water consumption has been estimated on the basis of domestic requirements (to support camps) and industrial requirements (to support exploration and support facilities water uses). Freshwater supply will be pumped from George Lake. Exploration drilling obtains water from local lakes near drilling areas incompliance with DFO under-ice water taking protocols.

4.4.1.2 Water Intake Design

The existing water intake is designed in accordance with DFO guidelines for water intakes. Technical specifications and as-built water distribution will be provided within 60 days of activities during site preparation activities.

4.4.1.3 Water Treatment Methods

Both domestic and industrial water supply will be drawn from George Lake and treated using the current installations at the exploration camps. The treatment plant consists of filtration followed UV disinfection then pumped to holding tanks for distribution around camp.

Industrial water used in maintenance shops or wash down of vehicles will not be treated; water will be pumped to a holding tank for use. To the extent possible industrial and wash water will be collected, treated for suspended solids removal and recycled. Water used for drilling and winter road construction/maintenance is not treated prior to use.

4.4.2 Site Water Management during Site Preparation

Site water management during site preparation will be based on the current best management practices already implemented on-site to meet the following objectives:

- to intercept and collect waters that may have been in contact with exploration and camp infrastructure;
- to divert as much water as possible to avoid contact and to direct these to downstream drainage systems; and

- to sample contact waters for potential contaminants and, if necessary, to treat to remove contaminants to meet permitted water quality guidelines prior to release.

Where contact waters have the potential to contain suspended solids drainage will be directed to silt fences or sedimentation ponds for removal of suspended solids. This drainage may be released to the environment.

During site preparation activities, where flows may directly or indirectly enter a waterbody, runoff water quality will comply with the discharge criteria presented in Table 4.3-1.

4.4.3 Quarries/Borrow Sources and Overburden

During site preparation activities, the existing borrow pit adjacent to the existing exploration camp will be accessed. This material will be used to construct the secondary containment for the bulk fuel tanks and the laydown pad. Only material that is geochemically and physically suitable material will be developed.

Quarry operations are outlined in the Borrow Pits and Quarry Management Plan (Volume 10, Chapter 16).

4.4.4 Diesel Fuel Supply and Storage during Site Preparation

During site preparation Sabina will construct up to 5-ML land-based bulk tank farm (either one 5-ML tank or smaller containment unit tanks). The fuel tank farms will be designed to have bermed spill containment with capacity equal to the volume of the largest tank plus 10% of the volume of the remaining tanks OR 110% volume of the largest tank, whichever is greater. In calculating the volume, the footprint of the smaller tanks is subtracted. The above basis is consistent with the document entitled *Design Rationale for Fuel Storage and Distribution Facilities* published by the Department of Public Works of the Northwest Territories (GNWT 2006; refer to Section 4.6 of these guidelines). The lining within the bermed area is an impervious HDPE liner membrane. The design of these facilities will be based on industry standards for installation, jointing, etc., the membrane to ensure its integrity.

Water pooling within this secondary containment will be released to the receiving environment provided it complies with discharge water quality criteria within existing water licences. Treatment will be provided for the pooling water should the water quality exceeds those criteria.

Fuel will be delivered either by truck over the winter road network or by air using bulk fuel air delivery and transport via truck along the all-weather road to the bulk storage tanks. Fuel transfer will incorporate hoses and pumps within secondary containment.

Refuelling stations will be equipped with a lined and bermed area to contain minor spills or leaks during refuelling. The liner (e.g., 40-mm hypolon liner or equivalent) will be protected by aggregate bedding. Vehicles and mobile equipment will drive onto this bedding for refuelling. Fuel transfer is done by pumps.

Arctic diesel grade fuel will be used by motor vehicle and mining equipment on the site. Limited quantities of propane and gasoline will be used in maintenance facilities for smaller motorized equipment and machinery.

4.4.5 Explosives and Ammonium Nitrate Storage during Site Preparation

Ammonium nitrate and fuel oil would be used as the explosive for quarries and these products will be transported and stored on site in accordance with territorial and federal regulations. For site

preparation, prepackaged explosives will continue to be delivered by air transportation and stored as per current management and best management practices.

4.4.6 Communication Systems

See Section 4.1.8 for a description of the communications currently used at the Back River Project. A similar approach would be used during site preparation.

5. Environmental Assessment of Site Preparation Activities

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5. Environmental Assessment of Site Preparation Activities

5.1 NIRB SCREENING AND DECISIONS

Information provided for Screening 06EN033 and 08EA084 and previous screenings would be applicable for all of these components as they are currently part of the ongoing exploration activities. The current applications for site preparation do not represent a change in the scope of work for the project.

Information provided for screening NIRB-04RN015 (for Miramar Winter Road) and NIRB-09RN066 (for Sabina Winter Road) would be applicable for the applications for the winter road corridor from the Marine Laydown Area to Goose and George Properties.

These screening decisions are presented in Appendix V12-3A and summarized in Table 5.1-1.

5.2 POTENTIAL ENVIRONMENTAL IMPACTS

The Goose exploration camp is located on the slope of the western bank of Goose Lake and consists of a 120-person camp constructed for support services directed towards exploration activities. The lakeshore is approximately 50 m toward the north and the regional topographical gradient surrounding the camp ranges from 2 to 6% towards the north. The camp is approximately 300 m in length from east to west and 100 m wide from north to south, covering an area of 30,000 m^2. A small but visible creek runs east northeast on the eastern side of the camp. The camp facilities are located on natural tundra underlain by a 10 cm organic layer overlying silt-sand parent material.

The George Lake camp is located on the western shore of George Lake and consists of an approximate 75-person camp. Camp facilities consist of weatherhaven and wooden structures for sleeping and living quarters and a large Quonset hut for vehicle maintenance and storage. These facilities are located on the eastern side of an esker which has been partially leveled for use as an airstrip. The lakeshore is approximately 60 m to the east of the camp buildings. A lined, bermed bulk fuel storage area is located approximately 100 m off the northwest end of the airstrip.

The temporary satellite camps located in areas for exploration over 20 km away from the existing camps will consist of approximately 4 to 6 weatherhaven-type structures which are set up for the duration of the exploration program and/or resupply period.

Regionally, this exploration area lies within the Takijuq Lake Uplands ecoregion, which covers the south central portion of the West Kitikmeot region. This area is made up of broad, sloping uplands, plateaus, and lowlands. Much of the area is largely composed of unvegetated rock outcrops and boulder fields. The landscape is characterized by higher elevations, which are moderated by open water during the late summer and early fall. The exploration properties occur within the Bathurst Inlet- Burnside Watershed and the area is dotted by thousands of lakes, collected by streams or by one of the major rivers in the area (e.g., Burnside, Mara).

The exploration area lies within two geological provinces; the Slave Province and the Bear Province. The Slave Geological Province is underlain by granite and related gneisses, as well as by sedimentary and volcanic rocks (more than 2.5 billion years old). The Bear Geological Province contains mainly volcanic and sedimentary rocks ranging in age from about two billion years. The area is underlain by generally northwest-southeast trending Archean metasediments and metavolcanics of the Yellowknife

Group. The metavolcanics and metasediments are bounded by granite and similar felsic intrusives of Archean age. Metasediments consist of quartzite, greywacke, quartz-biotite schist, marble, calcareous quartzite and paragneiss derived from the metasediments. Intercalated within the metasediments are mafic to intermediate volcanic rocks as well as felsic volcanic rocks consisting of ash, tuff, rhyolite and chert. Locally, mineral deposits containing pyrite, pyrrhotite, sphalerite with minor chalcopyrite, galena and tetrahedrite are present.

The climate, soils and vegetation of the area are arctic in character. Plant cover is characteristic of the Arctic Tundra community. Shrubs are sparsely distributed on the mesic sites near the rivers and lakes. On the interfluves are found low-growing perennials; grasses and sedges and some flowering species. The eskers support very little plant cover.

In general, lakes in the area contain extremely clear, low nutrient, low metal water, indicative of pristine high Arctic lakes. Most lakes have near-neutral waters, with very low hardness and alkalinity. However, naturally high metal concentrations are present in some lakes, indicating their proximity to surface mineralized areas.

The area is in a zone of continuous permafrost. The active layer in the exploration project area ranges from approximately 1 to 2 m, but may be greater in areas where there is loose, sandy soil at the edges of lakes or ponds. Talik features are potentially present under larger lakes. The depth of permafrost in the region is approximately 500 m. Permafrost greatly increases ground stability at depth but at surface it can increase rates of soil erosion through formation of ice wedges, pingos, palsas, ice lenses, and thermokarst.

Several observations of caribou have been noted in the area during previous exploration programs. These are typically single or small groups of transitory animals; calving areas for the Bathurst herd are known to exist west of Bathurst Inlet and the Ahiak herd are known to calve east of Bathurst Inlet in the Queen Maud Gulf area. Other wildlife noted in the area includes muskox, wolves and grizzly bears.

Table 5.1-1. Indentification of Potential Environmental Impacts from Exploration Activities and Back River Project Site Preparation

	Back River Project PROJECT ACTIVITIES – Exploration and Site Preparation	ENVIRONMENTAL COMPONENTS Atmospheric Environment Air Quality	Noise and Vibration	Climate and Meteorology	Terrestrial Environment Surface and Bedrock Geology	Permafrost	Eskers and Other Unique or Fragile Landscapes	Vegetation	Caribou, including Habitat and Migration Patterns	Grizzly Bear, including Habitat and Migration Patterns	Muskox, including Habitat and Migration Patterns	Wolverine/Furbearers, including Habitat and Migration Patterns	Birds, including Habitat and Migration Patterns	Raptors	Freshwater Environment Hydrology/ Limnology	Groundwater	Limnology and Bathymetry	Water Quality	Sediment Quality	Fish/Aquatic Habitat	Fish Community (lake trout, Arctic grayling)	Marine Environment Physical Processes	Water Quality	Sediment Quality	Fish/Aquatic Habitat	Fish Community (Arctic char)	Seabirds/Seaducks	Ringed Seals	Human Environment Archaeological and Cultural Historic Sites	Paleontological	Non-traditional Land and Resource Use	Socio-ec: Business and Economic Development	Socio-ec: Employment	Health, Safety and Community Well-being	Subsistence Economy and Land Use	Country Foods/Human Health
Winter Roads	Water use for Winter Road construction and maintenance	M	M					M	M	M	M	M	M	M	M			M	M		M							M		M	P	P		M	
	Winter Road construction and use	M	M					M	M	M	M	M	M	M	M			M	M		M											P			
	Machinery and Vehicle Refueling/Fuel Storage and Handling																	M	M		M															
	Machinery and Vehicle Emissions	M		M																																
	Chemicals , Hazardous Material Transport, Storage and Handling																	M	M		M							M								M
	Explosives Transport, Storage and Handling																	M	M	M	M	M			M	M										
	Hiring and Managing Labour and Construction Workforce																													P	P	P				
	Taxes, Contracts, Purchases																													P	P	P				
Marine Laydown Area	Camp	M	M			M		M	M	M	M	M	M	M					M	M				M	M						P				
	Quarry (cut and fill): Stripping, Drilling, Blasting, Excavation	M	N		N	M			M	M	M	M	M	M				M													P				
	Surface Water Management						M					M	M		M	M		M	M	M	M	M			M	M										M
	Road and Airstrip Use and Maintenance	M	M			M		M	M	M	M	M	M	M				M	M	M	M	M			M	M						P				
	Water Use (Desalination treatment and discharge)												M	M	M		M			M	M				M	M										
	Diesel Power Generation	N		N																																
	Incinerator	M		M																																
	Sewage Treatment Plant and discharge																	M	M	M	M	M			M	M										
	Equipment Maintenance/ Fuel Storage and Handling																	M	M			M										P				
	Chemical and Hazardous Material Storage and Management																	M	M			M														M
	Explosives Storage and Handling																	M	M	M	M	M			M	M										
	Air Transport of Personnel and Goods	N	N	N			M		M	M	M	M	M	M																P	P					
	Machine and Vehicle Emissions	M		M																							M	M								
	Marine Transport of Goods	N	N	N			M		M	M	M	M	M	M				M	M	M	M	M	M	M	M	M	M	M	M		P	P				M
	Hiring and Managing Operations Work Force																													P	P	P				
	Taxes, Contracts, Purchases																													P	P	P		P		

(continued)

Table 5.1-1. Indentification of Potential Environmental Impacts from Exploration Activities and Back River Project Site Preparation (continued)

Back River Project	PROJECT ACTIVITIES - Exploration and Site Preparation	ENVIRONMENTAL COMPONENTS																																					
		Atmospheric Environment	Air Quality	Noise and Vibration	Climate and Meteorology	Terrestrial Environment	Surface and Bedrock Geology	Permafrost	Eskers and Other Unique or Fragile Landscapes	Vegetation	Caribou, including Habitat and Migration Patterns	Grizzly Bear, including Habitat and Migration Patterns	Muskox, including Habitat and Migration Patterns	Wolverine/Furbearers, including Habitat and Migration Patterns	Birds, including Habitat and Migration Patterns	Raptors	Freshwater Environment	Hydrology/ Limnology	Groundwater	Limnology and Bathymetry	Water Quality	Sediment Quality	Fish/Aquatic Habitat	Fish Community (lake trout, Arctic grayling)	Marine Environment	Physical Processes	Water Quality	Sediment Quality	Fish/Aquatic Habitat	Fish Community (Arctic char)	Seabirds/Seaducks	Ringed Seals	Human Environment	Archaeological and Cultural Historic Sites	Paleontological	Non-traditional Land and Resource Use	Socio-ec: Business and Economic Development	Socio-ec: Employment	Health, Safety and Community Well-being	Subsistence Economy and Land Use	Country Foods/Human Health
Goose Exploration Camp	Camp		M	M				M		M	M	M	M	M	M	M							M	M														P			
	Diamond drilling; testpitting; mapping; sampling		M	N			N	M			M	M	M	M	M	M					M																	P			
	Quarry: Stripping, Drilling, Blasting, Excavation		M	N			N	M			M	M	M	M	M	M					M																	P			
	Surface Water Management									M					M	M		M	M		M	M	M	M																	M
	Airstrip Extension (earthworks, stripping, clearing and excavating)		M	M				M		N	M	M	M	M	M	M					M	M	M	M																	
	All-weather road from airstrip to Umwelt exploration area (with associated water crossings)		M	M				M		N	M	M	M	M	M	M					M	M	M	M														P			
	Road and Airstrip Use and Maintenance		M	M				M		M	M	M	M	M	M	M					M	M	M	M														P			
	Water Use (and treatment)														M	M		M		M			M	M																	
	Diesel Power Generation		N		N																																				
	Incinerator		M		M																																				
	Sewage Treatment Plant and discharge																				M	M	M	M																	
	Equipment Maintenance/ Fuel Storage and Handling																				M	M																P			
	Chemical and Hazardous Material Storage and Management																				M	M																			M
	Explosives Storage and Handling																				M	M	M	M																	
	Air Transport of Personnel and Goods		N	N	N						M	M	M	M	M	M																					P	P			
	Machine and Vehicle Emissions		M		M																																				
	Hiring and Managing Operations Work Force																																				P	P	P		
	Taxes, Contracts, Purchases																																				P	P	P		P

(continued)

Table 5.1-1. Indentification of Potential Environmental Impacts from Exploration Activities and Back River Project Site Preparation (completed)

Back River Project	PROJECT ACTIVITIES - Exploration and Site Preparation	Atmospheric Environment	Air Quality	Noise and Vibration	Climate and Meteorology	Terrestrial Environment	Surface and Bedrock Geology	Permafrost	Eskers and Other Unique or Fragile Landscapes	Vegetation	Caribou, including Habitat and Migration Patterns	Grizzly Bear, including Habitat and Migration Patterns	Muskox, including Habitat and Migration Patterns	Wolverine/Furbearers, including Habitat and Migration Patterns	Birds, including Habitat and Migration Patterns	Raptors	Freshwater Environment	Hydrology/ Limnology	Groundwater	Limnology and Bathymetry	Water Quality	Sediment Quality	Fish/Aquatic Habitat	Fish Community (lake trout, Arctic grayling)	Marine Environment	Physical Processes	Water Quality	Sediment Quality	Fish/Aquatic Habitat	Fish Community (Arctic char)	Seabirds/Seaducks	Ringed Seals	Human Environment	Archaeological and Cultural Historic Sites	Paleontological	Non-traditional Land and Resource Use	Socio-ec: Business and Economic Development	Socio-ec: Employment	Health, Safety and Community Well-being	Subsistence Economy and Land Use	Country Foods/Human Health
		ENVIRONMENTAL COMPONENTS																																							
George Exploration Camp	Camp		M	M				M		M	M	M	M	M	M	M							M	M					M	M								P			
	Diamond drilling; testpitting; mapping; sampling		M	N			N	M			M	M	M	M	M	M					M																	P			
	Quarry: Ripping, Excavation		M	N			N	M			M	M	M	M	M	M					M																	P			
	Surface Water Management									M					M	M		M	M		M	M	M	M	M				M	M											M
	Airstrip Use and Maintenance		M	M				M		M	M	M	M	M	M	M					M	M	M	M	M				M	M								P			
	Water Use (and treatment)														M	M		M		M			M	M					M	M											
	Diesel Power Generation		N		N																																				
	Incinerator		M		M																																				
	Sewage Treatment Plant and discharge																				M	M	M	M	M				M	M											
	Camp expansion and fuel storage increase (earthworks, stripping, clearing and excavating)		M	M				M		N	M	M	M	M	M	M					M	M	M	M														P			
	Equipment Maintenance/ Fuel Storage and Handling																				M	M			M													P			
	Chemical and Hazardous Material Storage and Management																				M	M			M																M
	Explosives Storage and Handling																				M	M	M	M	M				M	M											
	Air Transport of Personnel and Goods		N	N	N						M	M	M	M	M	M																					P	P			
	Machine and Vehicle Emissions		M		M																										M	M									
	Hiring and Managing Operations Work Force																																				P	P	P		
	Taxes, Contracts, Purchases																																				P	P	P		P

Notes:
Please indicate in the matrix cells whether the interaction causes an impact and whether the impact is:
P: Positive
N: Negative and non-mitigatable
M: Negative and mitigatable
U: Unknown
If no impact is expected then please leave the cell blank

6. Spills Contingency Plan

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6. Spills Contingency Plan

6.1 GOOSE SPILL CONTINGENCY PLAN

The following is an excerpt from the January 2013 Goose Spill Contingency submitted to the relevant authorizing agencies as per existing authorizations. Appendices referred to within are not included in this document and are available upon request.

6.1.1 Introduction and Background

6.1.1.1 Background

Sabina is actively exploring the Back River property mineral rights Including the Goose Property (and primary exploration camp at Goose Lake), as well as George Property (and a satellite exploration camp at George Lake), and unoccupied claim groups referred to as Boot Property, Boulder Property, Wishbone Property, Malley/Needle Property and Del Property.

The Back River exploration project is located in western NU, south of Bathurst Inlet within the Slave Structural Province. It lies approximately 525 km northeast of Yellowknife, Northwest Territories (NWT) and 400 km south of Cambridge Bay, NU. The project area is within the zone of continuous permafrost, and is represented on National Topographic System 1:250,000 scale map sheets 76F, 76G, 76J, and 76K.

6.1.1.2 Purpose

This spill emergency plan has been implemented to ensure that Sabina respects all applicable laws, regulations and requirements from federal and territorial authorities. Sabina has obtained and complies with all required permits, approvals and authorizations required for the operations. The following regulations and documents constitute an integral part of the Plan:

- The *Canadian Environmental Protection Act, 1999* (1999) controls hazardous substances from their production and/or import, their consumption, storage and/or disposal.
- The federal *Fisheries Act* (1985) protects fish and their habitat from pollution and disturbances. DFO reviews permit applications and restoration plans submitted by other agencies.
- The federal *Transportation of Dangerous Goods Act, 1992* (1992) and Regulations ensure the protection of public health and safety, and the environment during the handling and transport of dangerous goods. The Regulations apply to all modes of transportation, by road, by sea, and by air.
- The federal Territorial Land Use Regulations (CRC, C. 1524) define regulatory measures to maintain appropriate environmental practices for any land use activities on territorial lands that are under the control, management and administration of the Crown. These regulations require that land use permits be issued for operations such as mineral exploration and mining.
- The Guidelines for Preparation of Hazardous Material Spill Contingency Plans (INAC 2007) describe parameters that should be considered in the development of hazardous material spill emergency plans. It also defines the information that should be incorporated into a comprehensive contingency plan.

- The Canadian Council of Ministers of the Environment Code of Practice for Used Oil Management (CCME 1989) defines appropriate environmental options for handling, storage, collection, recycling, transport, reuse and/or disposal of used oils in Canada. It helps regulatory authorities formulate provincial and/or regional strategies for used oil management.
- The Nunavut *Environmental Protection Act* (1988) governs the protection of the environment from contaminants. The act defines offences and penalties as well as the powers of government inspectors.
- The Nunavut Spill Contingency Planning and Reporting Regulations (NWT Reg. (Nu) 068-93) describe requirements for spill reporting and emergency planning.
- The Field Guide for Oil Spill Response in Arctic Waters developed for the Emergency Prevention, Preparedness and Response Working Group (1998), describes precise response methods and strategies for emergency response operations and provides technical support documentation.
- The Land Transportation Emergency Response Guideline for Petroleum Spills developed by the Canadian Petroleum Products Institute (2008) outlines scope, emergency response code of practice, response time guidelines, response equipment and personnel capability requirements.
- The *Canada Shipping Act* (2001), as amended by Chapter 36, stipulates that operators of designated Oil Handling Facilities must have an on-site Oil Pollution Emergency Plan.
- The Canada Shipping Act Response Organizations and Oil Handling Facilities Regulations (SOR/95-405) apply.

This document is a review and analysis of the preparedness for events which may occur due to unforeseen circumstances. The plan details response actions to be taken in the event of unintentional materials release during the ongoing exploration program and associated support such as camps and overland transport. The plan is dynamic and will be updated at least annually to address any significant changes in operating plans, should they occur.

A copy of the plan will be available at the exploration camps and headquarter offices.

6.1.1.3 Sabina Social and Environmental Policy

Sabina is committed to environmentally responsible and socially acceptable exploration and mining practices. We are dedicated to creating and maintaining a safe environment for both the land we occupy and the people that drive its success. The company's philosophy is to conduct its operations to protect not only the environment, but the health and safety of its employees and the public as well.

Sabina also subscribes to the principles of sustainable development in mining. While exploration and mining cannot occur without an impact on the surrounding natural environment and communities, our responsibility is to limit negative environmental and social impacts and to enhance positive impacts.

To achieve these goals, Sabina is committed to:

- Seek to be environmental leaders in the mining community by integrating responsible environmental management as an essential component of all business decisions.
- Comply with all applicable laws, regulations and standards; uphold the spirit of the law and where laws do not adequately protect the environment, apply standards that minimize any adverse environmental impacts resulting from its operations.

- Communicate openly with employees, the regulatory community and the public on environmental issues and address concerns pertaining to potential hazards and impacts.
- Assess the potential effects of operations and integrate protective measures into the planning process to prevent or reduce impacts to the environment and on public health and safety.
- Take appropriate corrective actions should unexpected environmental impacts occur. This will also include taking appropriate action to prevent reoccurrence of these impacts.
- Provide adequate resources, personnel and training so that all employees are aware of and able to support implementation of the environmental and social policy.
- Conduct and support research and programs that improve understanding of the local environment, conserve resources, minimize waste, improve processes, and protect the environment.
- Work with the appropriate local regulators and agencies, maximize benefits to the affected communities and residents.
- Balance all decisions with best management practices, scientific principles and traditional knowledge.

6.1.1.4 Sabina Policy on Initiation for Cleanup Activities

Sabina initiates clean up activity when, in the opinion of management, Sabina is clearly associated, or likely associated with the spilled product. The guiding principles of Sabina's *Spill Contingency Plan* is to comply or exceed existing regulations to ensure protection of the environment, and to keep employees, government officials and the public aware of our plans.

6.1.1.5 Risk Management

The likelihood of a significant spill event occurring at Back River at either the Goose or George tank farms is very low, due to the double-walled tanks contained in the lined, bermed area, and the prescribed procedures for fuel transfer and anti-siphon devices in the tanks.

The greatest likelihood of an incident is associated with drummed fuel including the rupture of drums during movement or leaks during storage. The first risk can be mitigated through proper operator training of equipment operation, clear marking and segregation of fuel supplies and heightened operator awareness when working near fuel supplies. The second risk is mitigated with secondary containment and frequent inspection of the drums (carried out during regular yard duties). Additional hazards are present during refueling operations (mitigated with drip trays and absorbent mat), and during local drum movement (e.g., from storage to helipads), which is mitigated by using experienced operators, carefully securing the drums to the loader during movement, and safe driving practices.

As salt is delivered in pelletized form, any spill is easily cleaned up. Regular inspection of this storage area will allow for rapid detection of any spill.

Frequent inspections of the greywater line will turn up any leaks in the system which can be quickly repaired. Any issues would likely be noticed by most people in camp as either moisture and/or an odour would be present.

The likelihood of drill additives entering a water body is extremely small. With the exception of on-ice drilling, drills are located at least 31 m above the high water mark of lakes, ponds and streams, with vegetation and overburden material providing an effective mechanical barrier to the transport of materials to the water body. As an added mitigation measure, geo-textile cloth fences are constructed

on the downhill side of all new drill setups. For on-ice drilling, excess return water is pumped to a point on shore more than 31 m from the estimated high water mark (difficult to determine conclusively due to snow cover). Snow and lake ice also create an effective barrier and containment mechanism for spills of material at the drill site, allowing for easy cleanup. Drill sites are inspected for cleanliness upon completion of the hole.

Despite the mitigation measures taken, should any incident arise as a result of human error or unforeseen circumstances, the operating procedures outlined in this document will be implemented.

6.1.1.6 Existing Facilities

The Sabina mineral exploration camps are located in the Kitikmeot Region approximately 525 km northeast of Yellowknife, NWT and 400 km south of Cambridge Bay, NU.

6.1.1.7 Goose Camp

The Goose Camp is the primary camp for the Back River Project and is located on the slope of the western shore of Goose Lake. It has the capacity to support up to 120 people (as of June 2012) and is accessible by air only using Goose Lake (ice and open water), a gravel airstrip north of Goose Lake and an all-weather airstrip and road west of the camp. The lakeshore is approximately 50 m toward the north and the regional topographical gradient surrounding the camp ranges from 2 to 6% towards the north. The camp is approximately 300 m in length from east to west and 100 m wide from north to south, covering an area of 30,000 m^2. The camp facilities are located on natural tundra underlain by a 10-cm organic layer overlying silt-sand parent material.

- Latitude: 65° 32’N, Longitude: 106° 25’W
- UTM Coordinates 569405 E, 7265007N on NTS Map Sheet 76G/09

6.1.1.8 Temporary Camps for Resupply and Exploration

Temporary camps for up to 20 people are established for a season in target areas located 20 km or more from the main camps and would be established for safety, environmental and economic reasons. The intent is not to establish a network of camps across the exploration area, but to have the opportunity and flexibility to establish these temporary camps as needed. No sewage system will be installed in the camp as no water is needed for Pacto toilets. All solid waste will be carried to the existing camps (Goose and/or George) and disposed as outlined in the approved waste management plan.

Greywater generated in the kitchen, showers and laundry facilities is collected in 500-litre plastic holding tanks. All cleaning agents are biodegradable and phosphate free. On an as-needed basis, the grey-water would be pumped to a suitable disposal sump located well back from the local waterways and would be allowed to naturally percolate into the underlying ground.

6.1.1.9 Overland Corridors

A winter road links the two camps (Goose and George) and extends to Bathurst Inlet. Temporary camp facilities and fuel and chemical storage areas may also be accessed as needed to support exploration activities.

Overland transportation occurs during mid-February to mid-May depending on environmental conditions and operational requirements. Environmental conditions that will determine the route include:

- Ice thickness of a sufficient thickness to support heavy equipment so that pumping and using water to build up will be unnecessary.

- Snow thickness will be a minimum of 15 cm on land to prevent damage to soil and vegetation.
- Weather conditions permit safe transport of equipment and materials.

Diesel fuels and lubricants will be used during the construction and operation of the winter road. Other fuel and materials to be transported along the corridor include diesel fuel, aviation gas, drilling additives such as calcium chloride and construction materials.

Storage of these products and wastes will be in compliance with legislation and the National Fire Code that ensures the hazardous materials are stored safely, in a dry manner with clear labeling and secondary containment. All storage areas will be clearly identified with proper labeling and signage. All storage areas will be regularly inspected and stored at least 100 m from the high water mark of any water body within secondary containment.

Material Safety Data Sheet (MSDS) information for the potential contaminants and products to be transported along the winter road are available on-site.

6.1.2 Materials Transport and Storage

6.1.2.1 Fuel Storage

Diesel fuel is required to generate power on site, heat buildings, and fuel mobile equipment. The diesel fuel storage at the camps consists of 205-L drums as well as double walled tanks (up to 75,000 L ULC-approved) and bladders (up to 50,000 L) situated within a lined secondary berm. Secondary containment (Instaberms) is used for all of the drummed fuel on site. Supplies will be replenished with quantities dependent on the scope of the program. Inventories of fuel at each site are dynamic and dependent on exploration activities and personnel in camp.

Drummed fuel is required to support drilling and helicopter activities outside of camp and strategically relocated as required. All drums are located at least 30 m above the high water mark of any water body to a maximum volume of 10,000 L (approximately 50 drums) in each cache. Specialized oils and greases used by the drilling contractors are stored in sheds or sea-cans designated for that purpose. Propane tanks are stored on pallets, strapped together and area marked with pylons.

6.1.2.2 Domestic Greywater, Sewage and Contact Water

Greywater from the kitchen and shower facilities is screened for coarse particles (e.g., food), and released to a sump for settling, after which it is released to the environment. Sewage is dealt with using a Pacto toilet system with incineration of the waste generated.

Contact water is water that collects within the fuel secondary containment berms. This water is transferred out of each containment once the depth of water is equal, or greater, than 10 cm and treated using oil/water separator. Post treatment, the contact water is contained within a dedicated berm/tank system and tested for compliance with current water licence thresholds. If in compliance with current thresholds of the water licence it is released to the environment.

6.1.2.3 Solid Waste

Combustible solid wastes generated from the camp activities are incinerated. Products such as putrescible domestic and office waste are burned. Non-combustible wastes such as scrap metal, non-reusable barrels, incinerator ash, etc., are placed in mega bags and are removed from site using back-haul flights to Yellowknife. Hazardous solid waste for backhaul is sealed in drums for transport to Yellowknife.

Although the potential for waste rock (including drill core) currently stored to be acid producing is unlikely, any such waste would be disposed of in an approved location and under acceptable practices. Preliminary acid rock drainage studies indicate a low likelihood of acid generation.

Drill cuttings are collected and returned from the drill location to Goose camp for disposal in the trench. Sludge from the core saws is also collected and disposed in the exploration trench south of camp.

6.1.2.4 Chemicals

Sabina is committed to the safe and proper handling of waste materials to ensure minimal environmental impact and land disturbance. Waste chemicals that require special attention and handling include waste oil, hydraulic oil, lubricating oil, calcium chloride, grease, and ethylene glycol.

Waste oil is used to either, heat the warehouse, maintenance and core logging facilities, or to fuel the incinerator at Goose camp. If not used to fuel heaters or incinerator, waste oil and oil from filters are backhauled for appropriate disposal. Drained spent oil filters will be stored in drums for removal from the site for disposal at an authorized disposal facility.

There are minimal quantities of reagents such as dilute HCl (< 5L), concentrated HNO_3 (vials of < 10 mL), and other materials on site for geological testing and environmental sample preservation.

Calcium chloride is added to the fresh water to form a brine solution that acts as antifreeze when drilling in permafrost conditions. The drilling return water is reheated and reused using a mega-bag system which catches the drill cuttings as well. Salt is stored in bags, with 28 sealed in a mega bag and placed on a pallet.

Explosive products, when/if on-site, will be stored in appropriate facilities at designated explosives storage site(s).

Fire extinguishers and dust suppression is also used on site as needed and is stored in appropriate facilities. Small quantities of various household chemicals are on site for domestic use.

MSDS will be collected and kept at the site for all chemicals and fuel products. Appropriate storage and handling of these products will be undertaken.

6.1.3 Roles and Responsibilities

The general response and notification chart is presented in the following:

6.1.3.1 All Employees (First Responders)

- Immediately warn other personnel working near the spill area.
- Evacuate the area if the health and safety of personnel is threatened.
- Notify direct supervisor or site superintendent, who will initiate the spill response operations.
- In the absence of danger, take any safe and reasonable measure to stop, contain and identify the nature of the spill.
- Participate in spill response as directed by the Site Superintendent.

6.1.3.2 Emergency Response Team (Spill Cleanup Crew)

- Members determined by Operations Superintendent based on response needs.
- Conduct cleanup of significant spills under direction of Site Superintendent.

6.1.3.3 Operations Superintendent

- Assemble and manage the Emergency Response Team, as required.
- Ensures cleanup is completed to Sabina standards in line with direction from the Manager, Logistics and TS, Health and Safety Superintendent, Environmental Superintendent, and Environmental Coordinator.
- Notify Manager, Logistics and TS, Health and Safety Superintendent, and Environmental Superintendent/Coordinator of incident.
- Provides update within Sabina in camp and headquarters.
- Record date, location (GPS), material spilled, volume, reason for release, any negative impact, status of cleanup, and corrective actions taken.
- Keep and maintain database of all reportable and non-reportable spills as identified in the Plan.
- Conducts ongoing monitoring of cleanup operations leading to close-out.
- Notify HQ staff including VP Project Development and Director, Environment and Community Relations for any reportable spills as identified in this Plan
- Classify spill level as minor, moderate or major and ensure appropriate response initiated
- Assists in developing effective spill management and prevention practices.
- As directed by the VP Project Development and Manager, Logistics and TS report spill to 24-hour Spill Reporting Line.
- Liaise with NWT/NU applicable agencies regarding ongoing cleanup activities.
- Coordinate inspections and spill closure by applicable agencies.
- Assist in spill response training and exercises.

6.1.3.4 Manager Logistics and Technical Services

- Provides advice and ensures cleanup is completed to Sabina standards in line with direction from the Operations Superintendent and Director, Environment and Community Relation.
- Ensures Emergency Response Team is adequately trained in spill response.
- Ensures Emergency response and/or monitoring equipment and supplies are regularly inspected and maintained
- Organizes with Operations Superintendent spill response training and exercises.
- Leads investigation and identify measure and/or training to prevent similar spills.

6.1.3.5 Environmental Superintendent and Coordinator

- Provides advice and ensures spill is documented appropriately as per this plan and regulatory requirements.

- Record date, location (GPS), material spilled, volume, reason for release, any negative impact, status of cleanup, and corrective actions taken; confirm these details with Operations Superintendent.
- Obtain photographs of spill site before clean up starts if possible and after the cleanup has been completed. Take pictures of undisturbed area beside the spill area for a comparison. If spill occurs on snow, stake or otherwise identify the affected area so that it can be evaluated once the snow melts.
- As directed by the Director, Environment and Community Relations and Project Manager liaise with NWT/NU applicable agencies regarding ongoing cleanup activities, inspections and incident closure
- Assist in initial and ongoing response efforts.
- Provide advice to assist with cleanup.
- Coordinate inspections and spill closure by applicable agencies.
- Assist with investigation and identify measure and/or training to prevent similar spills.

6.1.3.6 Health and Safety Superintendent

- Assist in initial and ongoing response efforts.
- Provide advice to assist with cleanup.
- Assist with investigation and identify measure and/or training to prevent similar spills.

6.1.3.7 VP Project Development and Director, Environment, Safety and Community Relations

- Engage Legal Counsel and Sabina Senior Management and Board of Directors as required.
- Notify and update Senior Management and Board members as required.

6.1.4 Training and Testing

6.1.4.1 Training

Site Orientation

On site orientation will be provided to all onsite personnel to ensure employees are aware of:

- What First Responders are to do in case of a spill.
- The location of MSDS sheets and Spill Report Forms.
- The location of the Spill Response Kits.
- The general locations of fire extinguishers and firefighting equipment.
- The location of the Spill Action Plan and the Fire Action Plan.

Role Specific

Specific on-site training will be provided to all employees, whose job function may have a higher probability of experiencing a spill, to ensure they are aware of:

- Workplace Hazardous Materials Information System (WHMIS) and Transportation of Dangerous Goods.

- Identify and avoid the conditions which may lead to a spill.
- Develop an understanding of the potential environmental impacts of a spill.
- Develop and understanding of the financial costs of a spill.
- Recognize the hazards associated with sources of ignition (smoking, electrical sparks) near a fuel source.
- Spill kit contents and use of them.
- Turn off valves to stop the flow of fuel.

For employees involved in fuel handling, additional training would be provided regarding appropriate refueling techniques and drum handling procedures.

Emergency Response Team

Members of the Emergency Response Team will be provided a higher level of training to allow for safe and adequate response. This includes:

- All information given as part of the Role Specific Training.
- Fire extinguishers and water pump locations and use.
- Details of the Spill Action Plan and the Fire Action Plan.
- Identify, evaluate and mitigate the hazards posed by any spilled product by using appropriate PPE (personal protective equipment).

6.1.4.2 Testing

A spills drill is to be held twice annually, approximately 6 months apart, at each field operation. This drill must include a familiarization of all onsite personnel on their responsibilities including what to do in case of a spill. The drill must also include a hands-on scenario where the Emergency Response Team utilizes equipment to deal with the spill scenario. The drill may be broken down into two or more sessions to ensure adequate coverage. Records of this testing are to be kept on file and posted to provide access for those who were unable to attend.

6.1.5 Spill Response Equipment

6.1.5.1 General Equipment

Heavy equipment and aircraft may be used in the area for emergency use to respond to spill incidents. Spill kits and spill response equipment are to be located in key locations and are to be accessible to responders.

6.1.5.2 Mobile Response Unit

A mobile Environmental Response Unit is available to Sabina from a major fuel supplier (Shell) in Yellowknife or Cambridge Bay. This unit can be transported to the site from Cambridge Bay in less than three hours weather permitting.

6.1.6 Spill Response Procedure

A spill is defined as the discharge of a hazardous product out of its containment and into the environment. Potential hazards to humans, vegetation, water resources, fish and wildlife vary in severity, depending on several factors including nature of the material, quantity spilled, location and

season. Fuel is the main product that may be spilled and therefore spill response procedures focus on this hazardous material. Other chemicals that may be spilled include sewage water, and small quantities of lubricants and oils.

All site personnel are briefed on the procedures to be followed to report a spill and initiate spill response. The first person to notice a spill must take the following steps:

- Immediately warn other personnel working near the spill area.
- Evacuate the area if the health and safety of personnel is threatened.
- Notify their supervisor or onsite management, who will initiate the spill response operations.
- In the absence of danger, and before the spill response team arrives at the scene, take any safe and reasonable measure to stop, contain and identify the nature of the spill.

The following details the steps to be taken in the event of a spill. Steps are listed in order of importance; however, circumstances and conditions may alter the order of these steps to meet a specific situation.

6.1.6.1 Source Control

Reduce or stop the flow of product without endangering anyone. This may involve very simple actions such as turning off a pump, closing a valve, sealing a puncture hole with almost anything handy (e.g., a rag, a piece of wood, tape, etc.), raising a leaky or discharging hose at a level higher than the product level inside the tank, or transferring fuel from leaking containers.

6.1.6.2 Control of Free Product

Prevent or limit the spread of the spilled material. Accumulate/concentrate spilled product in an area to facilitate recovery. Barriers positioned down-gradient of the spill will slow or stop the progression of the spill. Barriers can consist of absorbent booms, dikes, berms, or trenches (dug in the ground or in ice).

6.1.6.3 Protection

Evaluate the potential dangers of the spill in order to protect sensitive ecosystems and natural resources. Block or divert the spilled material away from sensitive receptors. This can also be achieved by using various types of barriers.

6.1.6.4 Clean Up the Spill

Recover and containerize as much free product as possible. Recover and containerize/treat contaminated soil, water, and snow. Pressure-wash contaminated bedrock surfaces, shorelines, ice and recover as much as possible oily water for containerization and/or treatment.

6.1.6.5 Report the Spill

Provide basic information such as date and time of the spill, type and amount of product discharged, photographic records, location and approximate size of the spill, actions already taken to stop and contain the spill, meteorological conditions and any perceived threat to human health or the environment.

6.1.6.6 Response by Spill Location

Spills on Land

Response to spills on land will include the general procedures previously detailed. The main spill control techniques involve the use of two types of barriers: dikes and trenches. Barriers should be placed down-gradient (down-slope) from the source of the spill, and as close as possible to the source of the spill. Barriers slow the progression of the fuel and also serve as containment to allow for recovery.

Depending on the volume spilled, the site of the spill as well as available material, a dike may be built with soil, booms, lumber, snow, etc. A plastic liner should be placed at the foot of and over the dikes to protect the underlying soil or other material and to facilitate recovery of the fuel. Construct dikes in such a way as to accumulate a thick layer of free product in a single area (V shaped or U shaped).

Trenches are useful in the presence of permeable soil and when the spilled fuel is migrating below the ground surface. A plastic liner should be placed on the down-gradient edge of the trench to protect the underlying soil. Liners should not be placed at the bottom of the trench to allow water to continue flowing underneath the layer of floating oil.

The use of large quantities of absorbent materials to recover important volumes of fuel should be avoided. Large volumes of free-product should be recovered, as much as possible, by using vacuums and pumps, and containerized. Mixtures of water and fuel may be processed through an oil-water separator. Absorbent sheets should be used to soak up residual fuel on water, on the ground (soil and rock), and on vegetation

Spills on Water

Response to spills on water includes the general procedures previously detailed. Various containment, diversion and recovery techniques are discussed in the following sections. The following elements must be taken into consideration when conducting response operations:

- type of water body or water course (lake, ocean, stream, river);
- water depth and surface area;
- wind speed and direction;
- resonance and range of tides;
- type of shoreline; and
- seasonal considerations (open-water, freeze-up, break-up, frozen).

Containment of an oil slick on the ocean requires the deployment of mobile floating booms to intercept, control, contain and concentrate (i.e., increase thickness) the floating oil. One end of the boom is anchored to shore while the other is towed by a boat or other means and used to circle the oil slick and return it close to shore for recovery using a skimmer. Reducing the surface area of the slick increases its thickness and thereby improves recovery. Mechanical recovery equipment (i.e., skimmers and oil/water separators) will be mobilized to site if required.

If oil is spilled in a lake it may not be possible to deploy booms using a boat. In this case, measures are taken to protect sensitive and accessible shoreline. The oil slick is monitored to determine the direction of migration. In the absence of strong winds the oil will likely flow towards the discharge of

the lake. Measures are taken to block and concentrate the oil slick at the lake discharge using booms where it will subsequently be recovered using a portable skimmer, a vacuum, or sorbent materials.

In small slowly-flowing rivers, streams, channels, inlets or ditches, inverted weirs (i.e., siphon dams) is used to stop and concentrate moving oil for collection while allowing water to continue to flow unimpeded. In the case of floating oil, in a stream, heading for a culvert (i.e., at a road crossing) a culvert block is used to stop and concentrate moving oil for collection while allowing water to continue to flow unimpeded. In both cases oil will then be recovered using a portable skimmer or sorbent materials.

In the case of spills in larger rivers, with fast moving currents, diversion booming is used to direct the oil slick ashore for recovery. Single or multiple booms (i.e., cascading) may be used for diversion. Typically, the booms are anchored across the river at an angle. The angle will depend on the current velocity. Choosing a section of a river that is both wider and shallower makes boom deployment easier. Diversion booming may also be used to direct an oil slick away from a sensitive area to be protected.

Spills on Snow and Ice

In general, snow and ice will slow the movement of hydrocarbons. The presence of snow may also hide the oil slick and make it more difficult to follow its progression. Snow is generally a good natural sorbent, as hydrocarbons have a tendency to be soaked up by snow through capillary action. However, the use of snow as a sorbent material is to be limited as much as possible. Snow and frozen ground also prevent hydrocarbons from migrating down into soil or at least slow the migration process. Ice prevents seepage of fuel into the water.

Response to spills on snow and ice includes the general procedures previously detailed. Most response procedures for spills on land may be used for spills on snow and ice. The use of dikes (i.e., compacted snow berms lined with plastic sheeting) or trenches (dug in ice) slow the progression of the fuel and also serve as containment to allow recovery of the fuel. Free-product is recovered by using a vacuum, a pump, or sorbent materials. Contaminated snow and ice is scraped up manually or using heavy equipment depending on volumes. The contaminated snow and ice is placed in containers or within plastic lined berms on land. If required, a contaminated snow storage site is to be located in close proximity to one of the four main work sites to facilitate inspection and monitoring, in an area which is still easily accessible once it is time to remove the snow (i.e., spring or summer), and at least 30 m away from any body of water or ditch. Once enough snow has melted, the oily water is removed from the storage and processed through an oil-water separator that would be mobilized to site. Hydrocarbons recovered will be burned in the camp incinerator or shipped off-site for processing.

6.1.6.7 Response by Material Spilled

Fuel

Detection of leaks will be using two methods - a fuel inventory reconciliation and inspection. A weekly reconciliation of storage volumes will be completed and a spill response will be initiated in the event of any unexplained loss over five or more weeks.

Weekly inspections will be conducted to ensure either there has not been a leak or that the conditions of the area could result in a leak. These inspections will include the fuel drums and storage containers, secondary containment sumps and associated spill containment devices, any pumps and product-handling equipment, and an overfill protection devices. These inspections will be recorded to include who completed the inspections, areas included in the visual inspection and any deficiencies noted.

Fuel spills, leaks at storage facilities or vehicle accidents will be handled by following these steps:

- identify the source of the leak or spill;
- contact the Environmental Coordinator/Site Superintendent;
- stop leaks from tank or barrel by;
  - turning off valves;
  - utilizing patching kits to seal leaks;
  - placing plastic sheeting at the foot of the tank or barrel to prevent seepage into the ground;
  - containing the spill and the source if possible; and
- take photographs of the spill site before and after the clean-up.

Small spills will be cleaned up by removing the contaminated soil and storing it in empty 205-L drums for backhaul and disposal at an approved hazardous waste disposal site. Should a large spill occur, cleanup and disposal efforts will be coordinated as necessary with the appropriate authorities and agencies.

6.1.6.8 Domestic Sewage, Solid Waste, and Contact Water

Any problems with the sewage disposal system, incinerator or other waste disposal mechanism will be immediately reported to the Operations Superintendent.

In the event of a power failure, the stand by generator will be put into operation as soon as possible. Similarly, in the case of a pump failure, the backup pump will be put on-line. Any greywater drainage problems will be addressed as quickly as possible to minimize the chance of a spill. As necessary appropriate safety equipment and personal protective clothing will be available to site personnel.

6.1.6.9 Chemical

Assess the hazard of the spilled material by referring to the relevant MSDS sheet. Each response will vary based on the material. If the chemical is hazardous, ensure personnel protective equipment is utilized (latex gloves, eye protection, etc.) before approaching the spill. As chemicals are only used in extremely small quantities on site use absorbent mats to soak up spilled liquids and place in appropriate container for treatment and/or disposal.

6.1.6.10 Response to a Fire

Various products, including fuel, may be flammable under certain circumstances. It is important to ensure that the spill does not present a risk of fire prior to commencing the cleanup. If a fire does break out refer to relevant site fire-fighting procedures.

6.1.6.11 Disposal

Appropriate disposal, as directed by the Environmental Manager, for any recovered product and contaminated soil, water or absorbent clean up material is regulated and must be authorized by the agency investigating the incident. Obtain approval from all appropriate government agencies before disposal. A hazardous waste generator number has been acquired and used by the expeditor when disposing of camp waste.

Fuel contaminated soil can be remediated at camp through incineration or alternatively, the contaminated soil can be flown out to Yellowknife for disposal in an approved disposal/treatment site.

Any non-reusable recovered product, contaminated soil and clean up material, which cannot be incinerated, will be stored in containers and returned to camp prior to disposal.

6.1.7 Spill Potential Analysis

6.1.7.1 Camps

Fuel

Fuel spills could potentially occur from:

- fuel storage containment (tanks, barrels) leaks;
- spills during drum transport from aircraft to fuel storage area;
- spills from vehicles or equipment as a result of accidents; and
- spills during fuel transfer from barrels to equipment or heaters.

Spills occurring during fuel handling, transfer or storage operations will be minimized by:

- secondary containment;
- proper storage of barrels;
- inspections of the storage facilities and barrels;
- inventory tracking;
- staff training in proper fuel handling procedures;
- spill response training for personnel associated with fuel handling;
- immediate cleanup of minor spills;
- enclosing spigots on fuel containers with absorbent mat to collect any slow drips; and
- fuel line walkers will be used to monitor the fittings etc during fuel transfers.

The potential for spills affecting surface waters is low, as fuel storage and transfer points are located away from watercourses and lakes. Close inspection of fuel transfer activities will be undertaken during all times while fuel is being pumped/transferred to equipment. Secondary containment will be used at all refueling points and storage areas.

Domestic Sewage and Solid Waste

Waste from the kitchen and Pacto systems are carried to the incinerator in a small trailer, with virtually no risk of spillage. The greywater lines are routinely inspected for leaks and repaired as necessary. The screens at the greywater sump are cleaned of debris daily.

Solid Waste

Failures may occur in the handling of solid waste through the following situations:

- incinerator at Goose camp fails;
- accidental damage to the incinerator and its components, or the heaters and/or their fuel supplies;

- mechanical breakdown; and
- improper maintenance.

Visual inspection of the incinerator and its combustion products will be carried out frequently, typically in the normal course of operation. The incinerator will be operated according to the manufacturer's instructions.

Chemicals

Any chemicals brought on site are stored in manufacturers' approved packaging. Although unlikely, leaks may occur resulting in minor spills of chemical product in storage. It is more likely a leak will occur during the transfer of chemicals or from accidental failure of containers.

Sabina provides training to its staff in product handling and inspection procedures, which we feel, will result in reduced occurrences of chemical spills.

6.1.7.2 Overland Transport

Table 6.1-1 identifies possible incidents which may occur along the winter and all-weather road, the consequences of that incident and the preventative measures to be implemented.

Table 6.1-1. Summary of Potential Incidents and Preventative Measures along Transportation Corridors

Incident	Description	Consequences	Preventative Measures
Refueling of vehicles	Refueling hose could break, spring a leak, overfilling of equipment tank, spillage from gas storage tank.	Puddles of fuel over limited area Hose breaks at equipment and sprays a large amount of fuel over a larger area "slick" flows steadily from equipment	All refueling will occur in area 30 m from waterways in designated areas Personnel will be aware of emergency shut-off valves and trained in spills response Spill Kit available Refueling occur within containment and/or absorbent material in place
Vehicle storage and operation	Vehicles could leak fuel while in operation or during a stop along route.	Puddles of fuel over limited area to the entire contents of a tank being discharged.	Vehicles will stop 31 m from waterways Vehicles parked on ice will have absorbent material placed underneath Personnel will be trained in spills response Spill Kit available
Fuel containers leaking	Fuel being brought to the vehicles could leak fuel while in operation or during a stop along route.	Puddles of fuel over limited area to the entire contents of a tank being discharged.	Regular visual inspection will occur to ensure tanks are not leaking Personnel will be trained in spills response Spill Kit available
Vehicle accident	Accident on road that involves equipment going off road/overturning.	This worst case scenario could result in a tank of fuel and any materials being transported spilling entire contents over a large area.	Safe road corridor will flagged Speed limits will be in effect Transportation of Dangerous Goods manifest if necessary Coordination and communication between the cat-haul and camps will be maintained Camp personnel will be ready to mobilize in case of accident Spill kit available with cat-haul and on-site

(continued)

Table 6.1-1. Summary of Potential Incidents and Preventative Measures along Transportation Corridors (completed)

Incident	Description	Consequences	Preventative Measures
Temporary fuel storage leakage and/or spill	Fuel caches leak fuel or due to accident contents are spilled	Puddles of fuel over limited area Storage container breaks and fuel spreads over a larger area	All storage will occur in area 30 m from waterways Secondary containment berms will be used for fuel caches Personnel will be aware of emergency shut-off valves and trained in spills response Spill Kit available Regular monitoring and inventory tracking will occur at these remote/temporary fuel storage areas
Calcium Chloride spill	Bags of salt could be torn and spilled in temporary storage area or in transport	Tears and bag breakages could lead to salt spread over limited area Bags could break in a manner that salt is spread over a larger area	Personnel will be trained in proper material handling and transport methods Salt will be stored and transported in 50 lb bags on pallets wrapped in plastic Secondary containment will be used at temporary storage locations Spill kits and equipment available.

6.1.7.3 Fire Prevention

The most serious spill incident would involve fire and a hydrocarbon-based fuel source. In order to minimize the risk of fire, **No Smoking** and **Flammable** signs will be posted as needed at storage areas and with the cat-haul train along with a dry chemical fire extinguisher. Workers will be trained in the use of the fire extinguisher and be instructed of the risk caused by electrical and open flame fire hazards near fuel.

6.1.8 Reporting Procedures

All spills are to be reported to the Operations Superintendent or their designated representative. It is their responsibility to notify headquarters staff and external parties as outlined in the roles and responsibilities of this Plan.

An internal log of spills, no matter how small, is to be kept and maintained by the Operations Superintendent. Each record will include date, location, material spilled, volume, reason for release, any negative impact, status of cleanup, and corrective actions taken. Photo's (before, during and after cleanup) shall also be taken of all significant spills.

Reportable spills, as identified in this Plan, are to be externally reported to the NWT/Nunavut Spill Response Line. The Operations Superintendent will ensure spills are reported externally as required. The Spill response form is to be completed for all externally reported spills and forwarded to the NWT/Nunavut Spill Response Centre within the required 24 hour reporting period. The Manager, Logistics and TS, or their designate, will notify Sabina Headquarter senior management of any reportable spills as listed below.

Any spill, or incident that may likely result in a spill, of an amount equal to or greater than the amount of site specific criteria shall be promptly externally reported. Spills adjacent to or into a surface water or ground water access shall be externally reported regardless of quantity.

Spills within secondary containment will be reported and included in the internal log. In the situation that the spill within the containment is above the thresholds noted below, an external report to the NWT/Nunavut Spills Response Centre will be submitted if the spill exceeds 40% capacity of the secondary containment.

6.2 GEORGE SPILL CONTINGENCY PLAN

The following is an excerpt from the January 2013 George Spill Contingency submitted to the relevant authorizing agencies as per existing authorizations. Appendices referred to within are not included in this document and are available upon request.

6.2.1 Introduction and Background

6.2.1.1 Background

Sabina is actively exploring the Back River property mineral rights Including the Goose Property (and primary exploration camp at Goose Lake), as well as George Property (and a satellite exploration camp at George Lake), and unoccupied claim groups referred to as Boot Property, Boulder Property, Wishbone Property, Malley/Needle Property and Del Property.

The Back River exploration project is located in western NU, south of Bathurst Inlet within the Slave Structural Province. It lies approximately 525 km northeast of Yellowknife, NWT, and 400 km south of Cambridge Bay, NU. The project area is within the zone of continuous permafrost, and is represented on National Topographic System 1:250,000 scale map sheets 76F, 76G, 76J, and 76K.

6.2.1.2 Purpose

This spill emergency plan has been implemented to ensure that Sabina respects all applicable laws, regulations and requirements from federal and territorial authorities. Sabina has obtained and complies with all required permits, approvals and authorizations required for the operations. The following regulations and documents constitute an integral part of the Plan:

- The *Canadian Environmental Protection Act, 1999* (1999) controls hazardous substances from their production and/or import, their consumption, storage and/or disposal.
- The federal *Fisheries Act* (1985) protects fish and their habitat from pollution and disturbances. DFO reviews permit applications and restoration plans submitted by other agencies.
- The federal *Transportation of Dangerous Goods Act, 1992* (1992) and Regulations ensure the protection of public health and safety, and the environment during the handling and transport of dangerous goods. The Regulations apply to all modes of transportation, by road, by sea, and by air.
- The federal Territorial Land Use Regulations (CRC, C. 1524) define regulatory measures to maintain appropriate environmental practices for any land use activities on territorial lands that are under the control, management and administration of the Crown. These regulations require that land use permits be issued for operations such as mineral exploration and mining.
- The Guidelines for Preparation of Hazardous Material Spill Contingency Plans (INAC 2007) describe parameters that should be considered in the development of hazardous material spill emergency plans. It also defines the information that should be incorporated into a comprehensive contingency plan.

- The Canadian Council of Ministers of the Environment Code of Practice for Used Oil Management (CCME 1989) defines appropriate environmental options for handling, storage, collection, recycling, transport, reuse and/or disposal of used oils in Canada. It helps regulatory authorities formulate provincial and/or regional strategies for used oil management.
- The Nunavut *Environmental Protection Act* (1988) governs the protection of the environment from contaminants. The act defines offences and penalties as well as the powers of government inspectors.
- The Nunavut Spill Contingency Planning and Reporting Regulations (NWT Reg. (Nu) 068-93) describe requirements for spill reporting and emergency planning.
- The Field Guide for Oil Spill Response in Arctic Waters developed for the Emergency Prevention, Preparedness and Response Working Group (1998), describes precise response methods and strategies for emergency response operations and provides technical support documentation.
- The Land Transportation Emergency Response Guideline for Petroleum Spills developed by the Canadian Petroleum Products Institute (2008) outlines scope, emergency response code of practice, response time guidelines, response equipment and personnel capability requirements.
- The *Canada Shipping Act* (2001), as amended by Chapter 36, stipulates that operators of designated Oil Handling Facilities must have an on-site Oil Pollution Emergency Plan.
- The Canada Shipping Act Response Organizations and Oil Handling Facilities Regulations (SOR/95-405) apply.

This document is a review and analysis of the preparedness for events which may occur due to unforeseen circumstances. The plan details response actions to be taken in the event of unintentional materials release during the ongoing exploration program and associated support such as camps and overland transport. The plan is dynamic and will be updated at least annually to address any significant changes in operating plans, should they occur.

A copy of the plan will be available at the exploration camps and headquarter offices.

6.2.1.3 Sabina Environmental Policy

Sabina takes its responsibility to act as a steward of the environment seriously. To fulfill this responsibility, Sabina strives to:

- Ensure that we design our activities and operate in compliance with all environmental regulations to minimize our impact on the environment.
- Promote responsibility and accountability of managers, employees and contractors to protect the environment and make environmental performance an essential part of the management/contractor review process.
- Provide resources, personnel and training to enable management, employees and contractors to implement programs and policies to protect the environment.
- Communicate openly with employees, contractors, local stakeholders and government on our environmental protection and sustainability programs and performance. We will also address any concerns pertaining to potential hazards and impacts.
- Promote the development and implementation of systems and technologies to reduce environmental risks.

- Establish and maintain appropriate emergency response plans for all activities and facilities.
- Maintain a self-monitoring program at each facility to ensure compliance and to proactively address plans to correct potential deficiencies.
- Work cooperatively with government agencies, local communities and contractors to develop and enhance systems and technologies to improve environmental and sustainability practices.
- Encourage all employees, contractors or stakeholders to report to management any known or suspected departures from this policy or its related procedures.

6.2.1.4 Sabina Policy on Initiation for Cleanup Activities

Sabina initiates clean up activity when, in the opinion of management, Sabina is clearly associated, or likely associated with the spilled product. The guiding principles of Sabina's *Comprehensive Spill Contingency Plan* (2011) is to comply or exceed existing regulations to ensure protection of the environment, and to keep employees, government officials and the public aware of our plans.

6.2.1.5 Risk Management

The likelihood of a significant spill event occurring at Back River at either the Goose or George tank farms is very low, due to the double-walled tanks contained in the lined, bermed area, and the prescribed procedures for fuel transfer and anti-siphon devices in the tanks.

The greatest likelihood of an incident is associated with drummed fuel including the rupture of drums during movement or leaks during storage. The first risk can be mitigated through proper operator training of equipment operation, clear marking and segregation of fuel supplies and heightened operator awareness when working near fuel supplies. The second risk is mitigated with secondary containment and frequent inspection of the drums (carried out during regular yard duties). Additional hazards are present during refueling operations (mitigated with drip trays and absorbent mat), and during local drum movement (e.g., from storage to helipads), which is mitigated by using experienced operators, carefully securing the drums to the loader during movement, and safe driving practices.

As salt is delivered in pelletized form, any spill is easily cleaned up. Regular inspection of this storage area will allow for rapid detection of any spill.

Frequent inspections of the greywater line will turn up any leaks in the system which can be quickly repaired. Any issues would likely be noticed by most people in camp as either moisture and/or an odour would be present.

The likelihood of drill additives entering a water body is small. With the exception of on-ice drilling, drills are located at least 31 m above the high water mark of lakes, ponds and streams, with vegetation and overburden material providing an effective mechanical barrier to the transport of materials to the water body. As an added mitigation measure, geo-textile cloth fences are constructed on the downhill side of all new drill setups. For on-ice drilling, excess return water is pumped to a point on shore more than 31 m from the estimated high water mark (difficult to determine conclusively due to snow cover). Snow and lake ice also create an effective barrier and containment mechanism for spills of material at the drill site, allowing for easy cleanup. Drill sites are inspected for cleanliness upon completion of the hole.

Despite the mitigation measures taken, should any incident arise as a result of human error or unforeseen circumstances, the operating procedures outlined in this document will be implemented.

6.2.1.6 Existing Facilities

The Sabina mineral exploration camps are located in the Kitikmeot Region approximately 525 km northeast of Yellowknife, NWT, and 400 km south of Cambridge Bay, NU.

George Camp

The George Camp is the secondary camp for the Back River Project and is located on the slope of the western shore of George Lake. It has the capacity to support up to 75 people (as of June 2012) and is accessible by air only using George Lake (ice and open water). These facilities are located on the eastern side of an esker which has been partially leveled for use as an airstrip. The area is approximately 1,400 ft x 75 ft. The lakeshore is approximately 60 m to the east of the camp buildings. A lined, bermed bulk fuel storage area is located approximately 100 m off the northwest end of the airstrip.

- Latitude: 65° 55'N, Longitude: 107° 25'W
- UTM coordinates: 613886 E, 7311032N on NTS Map Sheet 76 G/14

Temporary Camps for Resupply and Exploration

Temporary camps for up to 20 people are established for a season in target areas located 20 km or more from the main camps and would be established for safety, environmental and economic reasons. The intent is not to establish a network of camps across the exploration area, but to have the opportunity and flexibility to establish these temporary camps as needed. No sewage system will be installed in the camp as no water is needed for Pacto toilets. All solid waste will be carried to the existing camps (Goose and/or George) and disposed as outlined in the approved waste management plan.

Greywater generated in the kitchen, showers and laundry facilities is collected in 500 litre, plastic holding tanks. All cleaning agents are biodegradable and phosphate free. On an as-needed basis the grey-water would be pumped to a suitable disposal sump located well back from the local waterways and would be allowed to naturally percolate into the underlying ground.

Overland Corridors

A winter road links the two camps (Goose and George) and extends to Bathurst Inlet. Temporary camp facilities and fuel and chemical storage areas may also be accessed as needed to support exploration activities.

Overland transportation occurs during mid-February to mid-May depending on environmental conditions and operational requirements. Environmental conditions that will determine the route include:

- ice thickness of a sufficient thickness to support heavy equipment so that pumping and using water to build up will be unnecessary;
- snow thickness will be a minimum of 15 cm on land to prevent damage to soil and vegetation; and
- weather conditions permit safe transport of equipment and materials.

Diesel fuels and lubricants will be used during the construction and operation of the winter road. Other fuel and materials to be transported along the corridor include diesel fuel, aviation gas, drilling additives such as calcium chloride and construction materials.

Storage of these products and wastes will be in compliance with legislation and the National Fire Code that ensures the hazardous materials are stored safely, in a dry manner with clear labeling and secondary containment. All storage areas will be clearly identified with proper labeling and signage. All storage areas will be regularly inspected and be at least 100 m from the high water mark of any water body and include secondary containment.

MSDS information for the potential contaminants and products to be transported along the winter road are available on-site.

6.2.2 Materials Transport and Storage

6.2.2.1 Fuel Storage

Diesel fuel is required to generate power on-site, heat buildings and to fuel mobile equipment. The diesel fuel storage at the camps consists of 205-L drums as well as double walled tanks (up to 75,000 L ULC-approved) and bladders (up to 50,000 L) situated within a lined secondary berm. Secondary containment (Instaberms) is used for all of the drummed fuel on site.

Supplies will be replenished with quantities dependent on the scope of the program. Inventories of fuel at each site are dynamic and dependent on exploration activities and personnel in camp.

Drummed fuel is required to support drilling and helicopter activities outside of camp and strategically relocated as required. All drums are located at least 31 m above the high water mark of any water body to a maximum volume of 10,000 L (approximately 50 drums) in each cache. Specialized oils and greases used by the drilling contractors are stored in sheds or sea-cans designated for that purpose. Propane tanks are stored on pallets, strapped together and area marked with pylons.

6.2.2.2 Domestic Greywater, Sewage and Contact Water

Greywater from the kitchen and shower facilities is screened for coarse particles (e.g., food), and released to a sump for settling, after which it is released to the environment. Sewage is dealt with using a Pacto toilet system with incineration of the waste generated.

Contact water is water that collects within the fuel secondary containment berms. This water is transferred out of each containment once the depth of water is equal, or greater, than 10 cm and treated using oil/water separator. Post treatment, the contact water is contained within a dedicated berm/tank system and tested for compliance with current water licence thresholds. If in compliance with current thresholds of the water licence it is released to the environment.

6.2.2.3 Solid Waste

Combustible solid wastes generated from the camp activities are incinerated. Products such as putrescible domestic and office waste are burned. Non-combustible wastes such as scrap metal, non-reusable barrels, incinerator ash, etc., are placed in mega bags and are removed from site using back-haul flights to Yellowknife. Hazardous solid waste for backhaul is sealed in drums for transport to Yellowknife.

Although the potential for waste rock (including drill core) currently stored to be acid producing is unlikely, any such waste would be disposed of in an approved location and under acceptable practices. Preliminary acid rock drainage studies indicate a low likelihood of acid generation.

Drill cuttings are collected in sumps adjacent to the drill location or are returned from the drill location to in camp for disposal in the trench. Sludge from the core saws is also collected and disposed in the exploration trench.

6.2.2.4 Chemicals

Sabina is committed to the safe and proper handling of waste materials to ensure minimal environmental impact and land disturbance. Waste chemicals that require special attention and handling include waste oil, hydraulic oil, lubricating oil, calcium chloride, grease, and ethylene glycol.

Waste oil is used to heat the warehouse and maintenance facilities. If not used to fuel heaters, waste oil and oil from filters are backhauled for appropriate disposal. Drained spent oil filters will be stored in drums for removal from the site for disposal at an authorized disposal facility.

There are minimal quantities of reagents such as dilute HCl (< 5L), concentrated HNO_3 (vials of < 10mL), and other materials on site for geological testing and environmental sample preservation.

Calcium chloride is added to the fresh water to form a brine solution that acts as antifreeze when drilling in permafrost conditions. The drilling return water is reheated and reused using a mega bag system which catches the drill cuttings as well. Salt is stored in bags, with 28 sealed in a mega bag and placed on a pallet.

Explosive products, when/if on-site, will be stored in appropriate facilities at designated explosives storage site(s).

Fire extinguishers and dust suppression is also used on site as needed and is stored in appropriate facilities. Small quantities of various household chemicals are on site for domestic use.

MSDS will be collected and kept at the site for all chemicals and fuel products. Appropriate storage and handling of these products will be undertaken.

6.2.3 Roles and Responsibilities

The general response and notification chart is presented in the following:

6.2.3.1 All Employees (First Responders)

- Immediately warn other personnel working near the spill area.
- Evacuate the area if the health and safety of personnel is threatened.
- Notify direct supervisor or site superintendent, who will initiate the spill response operations.
- In the absence of danger, take any safe and reasonable measure to stop, contain and identify the nature of the spill.
- Participate in spill response as directed by the Site Superintendent.

6.2.3.2 Emergency Response Team (Spill Cleanup Crew)

- Members determined by Operations Superintendent based on response needs.
- Conduct cleanup of significant spills under direction of Site Superintendent.

6.2.3.3 Operations Superintendent

- Assemble and manage the Emergency Response Team, as required.
- Ensures cleanup is completed to Sabina standards in line with direction from the Manager, Logistics and TS, Health and Safety Superintendent, Environmental Superintendent, and Environmental Coordinator.
- Notify Manager, Logistics and TS, Health and Safety Superintendent, and Environmental Superintendent/Coordinator of incident.
- Provides update within Sabina in camp and headquarters.
- Record date, location (GPS), material spilled, volume, reason for release, any negative impact, status of cleanup, and corrective actions taken.
- Keep and maintain database of all reportable and non-reportable spills as identified in the Plan.
- Conducts ongoing monitoring of cleanup operations leading to close-out.
- Notify HQ staff including Manager Logistics and Technical Services, VP Project Development and Director, Safety, Health, Environment and Community Relations for any reportable spills as identified in this Plan. Non-reportable spills will be reported on a regular basis to Sabina HQ staff through the Manger Logistics and Technical Services.
- Classify spill level as minor, moderate or major and ensure appropriate response initiated.
- Assists in developing effective spill management and prevention practices.
- As directed by the VP Project Development and Manager, Logistics and TS report spill to 24-hour Spill Reporting Line.
- Liaise with NWT/NU applicable agencies regarding ongoing cleanup activities.
- Coordinate inspections and spill closure by applicable agencies.
- Assist in spill response training and exercises.

6.2.3.4 Manager Logistics and Technical Services

- Provides advice and ensures cleanup is completed to Sabina standards in line with direction from the Operations Superintendent and Director, Environment and Community Relation.
- Ensures Emergency Response Team is adequately trained in spill response.
- Ensures Emergency response and/or monitoring equipment and supplies are regularly inspected and maintained
- Organizes with the Operations Superintendent spill response training and exercises.
- Leads investigation and identify measures and/or training to prevent similar spills.
- Provides communication link between HQ and Operations Superintendent

6.2.3.5 Environmental Superintendent and Coordinator

- Provide advice and ensure spill is documented appropriately as per this plan and regulatory requirements.

- Record date, location (GPS), material spilled, volume, reason for release, any negative impact, status of cleanup, and corrective actions taken; confirm these details with Operations Superintendent.
- Obtain photographs of spill site before clean up starts if possible and after the cleanup has been completed. Take pictures of undisturbed area beside the spill area for a comparison. If spill occurs on snow, stake or otherwise identify the affected area so that it can be evaluated once the snow melts.
- As directed by the Director, Environment and Community Relations and Project Manager liaise with NWT/NU applicable agencies regarding ongoing cleanup activities, inspections and incident closure
- Assist in initial and ongoing response efforts.
- Provide advice to assist with cleanup.
- Coordinate inspections and spill closure by applicable agencies.
- Assist with investigation and identify measure and/or training to prevent similar spills.

6.2.3.6 Health and Safety Superintendent

- Assist in initial and ongoing response efforts.
- Provide advice to assist with cleanup.
- Assist with investigation and identify measure and/or training to prevent similar spills.

6.2.3.7 VP Project Development and Director, Environment, Safety, and Community Relations

- Engage Legal Counsel and Sabina Senior Management and Board of Directors as required.
- Notify and update Senior Management and Board members as required.

6.2.4 Training and Testing

6.2.4.1 Training

Site Orientation

On site orientation will be provided to all onsite personnel to ensure employees are aware of:

- what First Responders are to do in case of a spill;
- the location of MSDS sheets and Spill Report Forms;
- the location of the Spill Response Kits;
- the general locations of fire extinguishers and firefighting equipment; and
- the location of the Spill Action Plan and the Fire Action Plan.

Role Specific

Specific on-site training will be provided to all employees, whose job function may have a higher probability of experiencing a spill, to ensure they are aware of:

- WHMIS and Transportation of Dangerous Goods.

- Identify and avoid the conditions which may lead to a spill.
- Develop an understanding of the potential environmental impacts of a spill.
- Develop and understanding of the financial costs of a spill.
- Recognize the hazards associated with sources of ignition (smoking, electrical sparks) near a fuel source.
- Spill kit contents and use of them.
- Turn off valves to stop the flow of fuel.

For employees involved in fuel handling, additional training would be provided regarding appropriate refueling techniques and drum handling procedures.

Emergency Response Team

Members of the Emergency Response Team will be provided a higher level of training to allow for safe and adequate response. This includes:

- All information given as part of the Role Specific Training.
- Fire extinguishers and water pump locations and use.
- Details of the Spill Action Plan and the Fire Action Plan.
- Identify, evaluate and mitigate the hazards posed by any spilled product by using appropriate PPE (personal protective equipment).

6.2.4.2 Testing

A spills drill is to be held twice annually, approximately 6 months apart, at each field operation. This drill must include a familiarization of all onsite personnel on their responsibilities including what to do in case of a spill. The drill must also include a hands-on scenario where the Emergency Response Team utilizes equipment to deal with the spill scenario. The drill may be broken down into two or more sessions to ensure adequate coverage. Records of this testing are to be kept on file and posted to provide access for those who were unable to attend.

6.2.5 Spill Response Equipment

6.2.5.1 General Equipment

Heavy equipment and aircraft may be used in the area for emergency use to respond to spill incidents. Spill kits and spill response equipment are to be located in key locations and are to be accessible to responders.

6.2.5.2 Mobile Response Unit

A mobile Environmental Response Unit is available to Sabina from a major fuel supplier (Shell) in Yellowknife or Cambridge Bay. This unit can be transported to the site from Cambridge Bay in less than three hours weather permitting.

6.2.6 Spill Response Procedure

A spill is defined as the discharge of a hazardous product out of its containment and into the environment. Potential hazards to humans, vegetation, water resources, fish and wildlife vary in severity, depending on several factors including nature of the material, quantity spilled, location and

season. Fuel is the main product that may be spilled and therefore spill response procedures focus on this hazardous material. Other chemicals that may be spilled include sewage water, and small quantities of lubricants and oils.

All site personnel are briefed on the procedures to be followed to report a spill and initiate spill response. The first person to notice a spill must take the following steps:

- immediately warn other personnel working near the spill area;
- evacuate the area if the health and safety of personnel is threatened;
- notify their supervisor or onsite management, who will initiate the spill response operations; and
- in the absence of danger, and before the spill response team arrives at the scene, take any safe and reasonable measure to stop, contain and identify the nature of the spill.

The following details the steps to be taken in the event of a spill. Steps are listed in order of importance; however, circumstances and conditions may alter the order of these steps to meet a specific situation.

6.2.6.1 Source Control

Reduce or stop the flow of product without endangering anyone. This may involve very simple actions such as turning off a pump, closing a valve, sealing a puncture hole with almost anything handy (e.g., a rag, a piece of wood, tape, etc.), raising a leaky or discharging hose at a level higher than the product level inside the tank, or transferring fuel from leaking containers.

6.2.6.2 Control of Free Product

Prevent or limit the spread of the spilled material. Accumulate/concentrate spilled product in an area to facilitate recovery. Barriers positioned down-gradient of the spill will slow or stop the progression of the spill. Barriers can consist of absorbent booms, dikes, berms, or trenches (dug in the ground or in ice).

6.2.6.3 Protection

Evaluate the potential dangers of the spill in order to protect sensitive ecosystems and natural resources. Block or divert the spilled material away from sensitive receptors. This can also be achieved by using various types of barriers.

6.2.6.4 Clean Up the Spill

Recover and containerize as much free product as possible. Recover and containerize/treat contaminated soil, water, and snow. Pressure-wash contaminated bedrock surfaces, shorelines, ice and recover as much as possible oily water for containerization and/or treatment.

6.2.6.5 Report the Spill

Provide basic information such as date and time of the spill, type and amount of product discharged, photographic records, location and approximate size of the spill, actions already taken to stop and contain the spill, meteorological conditions and any perceived threat to human health or the environment.

6.2.6.6 Response by Spill Location

Spills on Land

Response to spills on land will include the general procedures previously detailed. The main spill control techniques involve the use of two types of barriers: dikes and trenches. Barriers should be placed down-gradient (down-slope) from the source of the spill, and as close as possible to the source of the spill. Barriers slow the progression of the fuel and also serve as containment to allow for recovery.

Depending on the volume spilled, the site of the spill as well as available material, a dike may be built with soil, booms, lumber, snow, etc. A plastic liner should be placed at the foot of and over the dikes to protect the underlying soil or other material and to facilitate recovery of the fuel. Construct dikes in such a way as to accumulate a thick layer of free product in a single area (V shaped or U shaped).

Trenches are useful in the presence of permeable soil and when the spilled fuel is migrating below the ground surface. A plastic liner should be placed on the down-gradient edge of the trench to protect the underlying soil. Liners should not be placed at the bottom of the trench to allow water to continue flowing underneath the layer of floating oil.

The use of large quantities of absorbent materials to recover important volumes of fuel should be avoided. Large volumes of free-product should be recovered, as much as possible, by using vacuums and pumps, and containerized. Mixtures of water and fuel may be processed through an oil-water separator. Absorbent sheets should be used to soak up residual fuel on water, on the ground (soil and rock), and on vegetation

Spills on Water

Response to spills on water includes the general procedures previously detailed. Various containment, diversion and recovery techniques are discussed in the following sections. The following elements must be taken into consideration when conducting response operations:

- type of water body or water course (lake, ocean, stream, river);
- water depth and surface area;
- wind speed and direction;
- resonance and range of tides;
- type of shoreline; and
- seasonal considerations (open-water, freeze-up, break-up, frozen).

Containment of an oil slick on the ocean requires the deployment of mobile floating booms to intercept, control, contain and concentrate (i.e., increase thickness) the floating oil. One end of the boom is anchored to shore while the other is towed by a boat or other means and used to circle the oil slick and return it close to shore for recovery using a skimmer. Reducing the surface area of the slick increases its thickness and thereby improves recovery. Mechanical recovery equipment (i.e., skimmers and oil/water separators) will be mobilized to site if required.

If oil is spilled in a lake it may not be possible to deploy booms using a boat. In this case, measures are taken to protect sensitive and accessible shoreline. The oil slick is monitored to determine the direction of migration. In the absence of strong winds the oil will likely flow towards the discharge of

the lake. Measures are taken to block and concentrate the oil slick at the lake discharge using booms where it will subsequently be recovered using a portable skimmer, a vacuum, or sorbent materials.

In small, slowly flowing rivers, streams, channels, inlets or ditches, inverted weirs (i.e., siphon dams) is used to stop and concentrate moving oil for collection while allowing water to continue to flow unimpeded. In the case of floating oil, in a stream, heading for a culvert (i.e., at a road crossing) a culvert block is used to stop and concentrate moving oil for collection while allowing water to continue to flow unimpeded. In both cases oil will then be recovered using a portable skimmer or sorbent materials.

In the case of spills in larger rivers, with fast moving currents, diversion booming is used to direct the oil slick ashore for recovery. Single or multiple booms (i.e., cascading) may be used for diversion. Typically, the booms are anchored across the river at an angle. The angle will depend on the current velocity. Choosing a section of a river that is both wider and shallower makes boom deployment easier. Diversion booming may also be used to direct an oil slick away from a sensitive area to be protected.

Spills on Snow and Ice

In general, snow and ice will slow the movement of hydrocarbons. The presence of snow may also hide the oil slick and make it more difficult to follow its progression. Snow is generally a good natural sorbent, as hydrocarbons have a tendency to be soaked up by snow through capillary action. However, the use of snow as a sorbent material is to be limited as much as possible. Snow and frozen ground also prevent hydrocarbons from migrating down into soil or at least slow the migration process. Ice prevents seepage of fuel into the water.

Response to spills on snow and ice includes the general procedures previously detailed. Most response procedures for spills on land may be used for spills on snow and ice. The use of dikes (i.e., compacted snow berms lined with plastic sheeting) or trenches (dug in ice) slow the progression of the fuel and also serve as containment to allow recovery of the fuel. Free-product is recovered by using a vacuum, a pump, or sorbent materials. Contaminated snow and ice is scraped up manually or using heavy equipment depending on volumes. The contaminated snow and ice is placed in containers or within plastic lined berms on land. If required, a contaminated snow storage site is to be located in close proximity to one of the four (4) main work sites to facilitate inspection and monitoring, in an area which is still easily accessible once it is time to remove the snow (i.e., spring or summer), and at least 30 m away from any body of water or ditch. Once enough snow has melted, the oily water is removed from the storage and processed through an oil-water separator that would be mobilized to site. Hydrocarbons recovered will be burned in the camp incinerator or shipped off-site for processing.

6.2.6.7 Response by Material Spilled

Fuel

Detection of leaks will be using two methods - a fuel inventory reconciliation and inspection. A weekly reconciliation of storage volumes will be completed and a spill response will be initiated in the event of any unexplained loss over five or more weeks.

Weekly inspections will be conducted to ensure either there has not been a leak or that the conditions of the area could result in a leak. These inspections will include the fuel drums and storage containers, secondary containment sumps and associated spill containment devices, any pumps and product-handling equipment, and an overfill protection devices. These inspections will be recorded to include who completed the inspections, areas included in the visual inspection and any deficiencies noted.

Fuel spills, leaks at storage facilities or vehicle accidents will be handled by following these steps:

- identify the source of the leak or spill;
- contact the Environmental Coordinator/Site Superintendent;
- stop leaks from tank or barrel by;
  - turning off valves;
  - utilizing patching kits to seal leaks;
  - placing plastic sheeting at the foot of the tank or barrel to prevent seepage into the ground;
  - containing the spill and the source if possible; and
- take photographs of the spill site before and after the clean-up.

Small spills will be cleaned up by removing the contaminated soil and storing it in empty 205-L drums for backhaul and disposal at an approved hazardous waste disposal site. Should a large spill occur, cleanup and disposal efforts will be coordinated as necessary with the appropriate authorities and agencies.

Domestic Sewage, Solid Waste, and Contact Water

Any problems with the sewage disposal system, incinerator or other waste disposal mechanism will be immediately reported to the Operations Superintendent.

In the event of a power failure, the stand by generator will be put into operation as soon as possible. Similarly, in the case of a pump failure, the backup pump will be put on-line. Any greywater drainage problems will be addressed as quickly as possible to minimize the chance of a spill. As necessary appropriate safety equipment and personal protective clothing will be available to site personnel.

Chemical

Assess the hazard of the spilled material by referring to the relevant MSDS sheet. Each response will vary based on the material. If the chemical is hazardous, ensure personnel protective equipment is utilized (latex gloves, eye protection, etc.) before approaching the spill. As chemicals are only used in extremely small quantities on site use absorbent mats to soak up spilled liquids and place in appropriate container for treatment and/or disposal.

6.2.6.8 Response to a Fire

Various products, including fuel, may be flammable under certain circumstances. It is important to ensure that the spill does not present a risk of fire prior to commencing the cleanup. If a fire does break out refer to relevant site firefighting procedures.

6.2.6.9 Disposal

Appropriate disposal, as directed by the Environmental Manager, for any recovered product and contaminated soil, water or absorbent clean up material is regulated and must be authorized by the agency investigating the incident. Obtain approval from all appropriate government agencies before disposal. A hazardous waste generator number has been acquired and used by the expeditor when disposing of camp waste.

Fuel contaminated soil can be remediated at camp through incineration or alternatively, the contaminated soil can be flown out to Yellowknife for treatment and/or disposal in an approved site.

Any non-reusable recovered product, contaminated soil and clean up material, which cannot be incinerated, will be stored in containers and returned to camp prior to disposal.

6.2.7 Spill Potential Analysis

6.2.7.1 Camps

Fuel

Fuel spills could potentially occur from:

- fuel storage containment (tanks, barrels) leaks;
- spills during drum transport from aircraft to fuel storage area;
- spills from vehicles or equipment as a result of accidents; and
- spills during fuel transfer from barrels to equipment or heaters.

Spills occurring during fuel handling, transfer or storage operations will be minimized by:

- secondary containment;
- proper storage of barrels
- inspections of the storage facilities and barrels;
- inventory tracking;
- staff training in proper fuel handling procedures;
- spill response training for personnel associated with fuel handling;
- immediate cleanup of minor spills; and
- enclosing spigots on fuel containers with an absorbent mat to collect any slow drips.

The potential for spills affecting surface waters is low, as fuel storage and transfer points are located away from watercourses and lakes. Close inspection of fuel transfer activities will be undertaken during all times while fuel is being pumped/transferred to equipment. Secondary containment will be used at all refueling points and storage areas.

Domestic Sewage and Solid Waste

Waste from the kitchen and Pacto systems are carried to the incinerator in a small trailer, with virtually no risk of spillage. The greywater lines are routinely inspected for leaks and repaired as necessary. The screens at the greywater sump are cleaned of debris daily.

Solid Waste

Failures may occur in the handling of solid waste through the following situations:

- the incinerator at George Camp fails;
- accidental damage to the incinerator and its components, or the heaters and/or their fuel supplies;
- mechanical breakdown; and

- improper maintenance.

Visual inspection of the incinerator and its combustion products will be carried out frequently, typically in the normal course of operation. The incinerator will be operated according to the manufacturer's instructions.

Chemicals

Any chemicals brought on site are stored in manufacturers' approved packaging. Although unlikely, leaks may occur resulting in minor spills of chemical product in storage. It is more likely a leak will occur during the transfer of chemicals or from accidental failure of containers.

Sabina provides training to its staff in product handling and inspection procedures, which we feel, will result in reduced occurrences of chemical spills.

6.2.7.2 Overland Transport

Possible incidents which may occur along the winter and all-weather road, the consequences of that incident and the preventative measures to be implemented are similar to those presented for Goose (Table 6.1-1).

6.2.7.3 Fire Prevention

The most serious spill incident would involve fire and a hydrocarbon-based fuel source. In order to minimize the risk of fire, **No Smoking** and **Flammable** signs will be posted as needed at storage areas and with the cat-haul train along with a dry chemical fire extinguisher. Workers will be trained in the use of the fire extinguisher and be instructed of the risk caused by electrical and open flame fire hazards near fuel.

6.2.8 Reporting Procedures

All spills are to be reported to the Operations Superintendent or their designated representative. It is their responsibility to notify headquarters staff and external parties as outlined in the roles and responsibilities of this Plan.

An internal log of spills, no matter how small, is to be kept and maintained by the Operations Superintendent. Each record will include date, location, material spilled, volume, reason for release, any negative impact, status of cleanup, and corrective actions taken. Photo's (before, during and after cleanup) shall also be taken of all significant spills.

Reportable spills, as identified in this Plan, are to be externally reported to the NWT/Nunavut Spill Response Line. The Operations Superintendent will ensure spills are reported externally as required. The Spill response form is to be completed for all externally reported spills and forwarded to the NWT/Nunavut Spill Response Centre within the required 24 hour reporting period. The Manager, Logistics and TS, or their designate, will notify Sabina Headquarter senior management of any reportable spills as listed below.

Any spill, or incident that may likely result in a spill, of an amount equal to or greater than the amount listed in the site specific criteria shall be promptly externally reported. Spills adjacent to or into a surface water or ground water access shall be externally reported regardless of quantity.

Spills within secondary containment will be reported and included in the internal log. In the situation that the spill within the containment is above the thresholds noted below, an external report to the

NWT/Nunavut Spills Response Centre will be submitted if the spill exceeds 40% capacity of the secondary containment.

6.3 MARINE LAYDOWN AREA SPILL CONTINGENCY PLAN

A conceptual Spill Contingency Plan, OPEP, and an Emergency Response Plan have been prepared for the Back River Project including the Marine Laydown Area (see Volume 10, Chapters 5, 6 and 3, respectively).

7. Closure Plan

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7. Closure Plan

7.1 GOOSE PROPERTY CLOSURE (SEPTEMBER 2012)

The following is an excerpt from the 2012 Abandonment and Restoration Plan submitted to the relevant authorizing agencies as per existing authorizations. Appendices referred to within are not included in this document and are available upon request.

7.1.1 Introduction

7.1.1.1 General

Sabina is actively exploring the Back River property mineral rights (encompassing the primary exploration camp at Goose Lake, as well as a satellite camp at George Lake and unoccupied claim groups at Boot Lake, Boulder Pond, Wishbone and Del Lake). Advanced exploration programs have been carried out in previous years with similar activities anticipated as Sabina continues to advance the project.

Sabina is also responsible for maintaining all permits and claims required for the project in good standing.

Operating and managing an exploration project on tundra requires a lot of effort from all parties involved. The area is environmentally sensitive and all aspects of exploration because of our activities, products and services will be risk assessed with management protocols developed, implemented and communicated to our employees, interested parties and suppliers to eliminate or minimize any negative impacts to the receiving environment.

The exploration program is planned to start in February and end IN October each year. Crew, equipment and supplies will be flown into Goose camp from Yellowknife via Twin Otter or similar aircraft. Equipment, personnel and supplies will be moved between Goose and George camps by helicopter. At the end of the season the crew will be demobilized back to Yellowknife using float-equipped aircraft or using the all-weather strip located west of camp. Drill equipment and supplies may remain at the project area for use during subsequent exploration seasons.

The Back River project will employ up to 130 to 160 people, including contractors. In addition to Sabina's contingent of northern hires (estimated at up to 20% of the staff) the contractors working on site will also be encouraged to hire Inuit employees. Due to staff turnover and schedule rotations, there will typically be up to 100 Sabina personnel at Goose camp and up to 60 Sabina personnel at George camp at any given time.

Sabina will implement this Abandonment and Restoration Plan and will continue to look for ways to minimise or eliminate negative impacts to the environment as a result of its activities, products and services at Sabina's Back River properties.

7.1.1.2 Sabina Social and Environmental Policy

Sabina takes its responsibility to act as a steward of the environment seriously. To fulfill this responsibility, Sabina strives to:

- Ensure that we design our activities and operate in compliance with all environmental regulations to minimize our impact on the environment.

- Promote responsibility and accountability of managers, employees and contractors to protect the environment and make environmental performance an essential part of the management/contractor review process.
- Provide resources, personnel and training to enable management, employees and contractors to implement programs and policies to protect the environment.
- Communicate openly with employees, contractors, local stakeholders and government on our environmental protection and sustainability programs and performance. We will also address any concerns pertaining to potential hazards and impacts.
- Promote the development and implementation of systems and technologies to reduce environmental risks.
- Establish and maintain appropriate emergency response plans for all activities and facilities.
- Maintain a self-monitoring program at each facility to ensure compliance and to proactively address plans to correct potential deficiencies.
- Work cooperatively with government agencies, local communities and contractors to develop and enhance systems and technologies to improve environmental and sustainability practices.
- Encourage all employees, contractors or stakeholders to report to management any known or suspected departures from this policy or its related procedures.

7.1.1.3 Legal Requirement

Under the terms of the KIA Land Use Licences and the NWB Water Use Licences, Sabina is obligated to rehabilitate the areas used to its previous standard of human utilization and natural productivity.

7.1.1.4 Site Location and Description

The Back River exploration project is located in the Kitikmeot, south of Bathurst Inlet within the Slave Structural Province. It is approximately 525 kilometres northeast of Yellowknife and 400 kilometres south of Cambridge Bay, NU. The project area is within the zone of continuous permafrost, and is represented on National Topographic System 1:250,000 scale map sheets 76F, 76G, 76J, and 76K.

The primary base of operations is at Goose Lake and a smaller satellite camp at George Lake. Coordinates for the camps are as follows:

- Goose Camp 65°32’ north 106°25’ west
- George Camp 65°55’ north 107°27’ west

The Goose camp is located on the slope of the western bank of Goose Lake and consists of a camp capable of supporting up to 120 people constructed for support services directed towards exploration activities. The lakeshore is approximately 50 m toward the north and the regional topographical gradient surrounding the camp ranges from 2 to 6% towards the north. The camp is approximately 300 m in length from east to west and 100 m wide from north to south, covering an area of 30,000 square metres (m^2). A small creek runs east northeast, east of the camp. The camp facilities are located on natural tundra underlain by a 10 centimetre organic layer overlying silt-sand parent material.

7.1.1.5 Scope of Reporting

This Abandonment and Restoration Plan has been written to meet the requirements of the NWB licences and applies to the Goose Camp and all unoccupied claim groups referenced in Section 1.1.

Subject to annual review and revision, it will remain applicable throughout the duration of the NWB licences or until a material change in the scope of the project occurs.

The current revision of the Abandonment and Restoration Plan has been prepared for the 2012 exploration program. The Plan also takes into consideration the likelihood of premature camp closure due to:

- sudden drop in gold prices which could make the project uneconomical;
- drop in resource grade to a value lower than anticipated;
- non-compliance to legislative requirements;
- natural disasters;
- force majeur; and
- change of ownership/operator.

In situations as such mentioned above, this plan provides the base strategy for anticipated tasks of restoring the Goose camp in an event where exploration activity has ceased, either on a short term or a long term basis.

The plan will be reviewed annually and updated with current information.

Section 1 of the plan gives a brief account of the ownership of the property, the environmental policy, legal requirements and a brief description of the camp. Section 2 outlines responsibilities for execution of the plan. Section 3 outlines a brief time schedule for restoration activities after completion of each exploration program. A list of infrastructure at Back River is compiled and a short brief on Progressive Restoration program is provided. Sections 4 and 5 of the plan provide details of how each exploration aspect will be addressed, while the final section (Section 6) outlines when the next review of the plan would be conducted.

7.1.2 Responsibilities for the Plan

Senior personnel at the Back River Project site (at the main camp at Goose Lake) are responsible for the implementation of this Plan. However, every employee, contractor or visitor arriving on the Back River project site has a responsibility to ensure that they adhere to the Sabina environmental policy. The policy will be communicated to all employees, contractors and visitors during their stay at Back River in a formal site orientation program given by the Site Superintendent.

Contact information for key personnel is included and will be updated on an as-needed basis.

7.1.3 Schedule for Abandonment and Restoration

For each exploration season, the closure of the Back River Project campsite should take approximately 14 to 21 days to complete, allowing for variable weather conditions. As exploration activities vary from year to year and the end of the field season is difficult to predict months in advance, the restoration program will commence as late as September 15 each year, and end no later than October 31. Since Goose Lake is the main camp servicing outlying exploration areas, it would take the longest to shut down. Outlying drill sites will take minimal time as their shut down requirements are much less. Other sites in the Back River Project area include the George Lake camp and diamond drill sites. These would take place simultaneously with exploration as there is the proper support infrastructure at this time (personnel, aircraft).

7.1.3.1 Progressive Reclamation

Sabina will continue a program of progressive reclamation at Back River. Progressive restoration will be ongoing during the height of its exploration program thereby reducing the need for a full-scale restoration program at the closure of each exploration phase. Ongoing significant restoration activities are described below.

Contaminated Area Reclamation

Recycle of Water Contaminated Fuel

Contaminated fuels are recycled primarily as fuel for the garbage incinerator or as fuel for the water heaters used in the drilling program. If present in sufficient quantities, contaminated fuel may be recycled for camp heating purposes. As a last resort, it may be transported off the property for disposal at an appropriate facility. For water with minor amounts of hydrocarbons, depending on quantities, consideration is also being given to activated charcoal filters which remove the hydrocarbons.

Contaminated Top Soil

Spills are handled as per the Comprehensive Spill Contingency Plan. Enviromat is immediately applied to absorb spills of hydrocarbons, minimizing the amount of soil required to be removed. Remaining contaminated soils are removed and stored in barrels for transportation to permitted disposal sites.

Non-combustible Solid Waste Placement

Solid waste including metal scraps, drill rods, household items, etc. are stored in an appropriate marshalling area for backhaul. The material is arranged in such a way that it can be easily removed from the property during winter months, and disposal will be appropriate to the material being removed, either an approved disposal facility, a metal recycler, or an approved designated landfill.

Ash from the incinerator is stored in empty 205 L drums for backhaul and disposal.

Reclamation of Exploration Trenches

Work commenced on infilling the exploration trenches located immediately south of the camp at Goose Lake in 2009 and was completed in 2011. The trenches have been filled in using the excavated material, the ground was contoured to match the surrounding area and natural vegetation will be allowed to reclaim the site. One trench is currently used as a sump for drill and core cuttings; this one will be maintained for this purpose.

7.1.4 Winter Restoration Plan

The winter restoration plan is intended to cover short-term (seasonal) closure of the Back River Project. The tasks involved are important to the success of future exploration programs but requires less effort.

7.1.4.1 Buildings and Content

All tents and building complexes will be secured for the winter. All the office equipment; household furniture; kitchen equipment; recreational equipment and other mobile heavy equipment will be winterised and left secured on site. Any equipment not capable of withstanding the harsh winter conditions will be removed and stored in either Yellowknife or Vancouver.

7.1.4.2 Water Supply System

Water pumps, filtering systems, water lines and any other equipment associated with the water supply system will be drained and winterised. The water pump shed will be secured.

7.1.4.3 Sewage System

The sewage system will be drained with no greywater remaining in the discharge pipe. Solid waste will be incinerated onsite.

7.1.4.4 Waste Incinerator

The fuel supply for the incinerator is shut off using a series of valves. The fuel remains in an artificial berm in the double-walled tank adjacent to the incinerator throughout the winter. The area will be inspected for petroleum spills or contamination. If such is the case, the area will be dealt with as outlined in Section 3.2.1.2.

7.1.4.5 Electrical System

The generator shed and the surrounding area will be inspected for signs of spills and remaining wastes such as oil and grease. As the generator shed is lined with enviromat, the likelihood of unnoticed external spills is slim. If topsoil is contaminated, an attempt will be made to remove as much as possible with enviromat; remaining contaminated soil will be stored in empty drums for disposal at a hazardous waste facility. The generator will be drained of its fuel. Remaining waste fuel, oil and grease will be stored in approved storage containers which are labelled for that usage and reused during summer operations. The generator will be winterised and the shed will be secured for winter. Electrical wires, plugs and sockets will remain in their installed locations. All electrical cords temporarily connected to a building or machinery during summer work program will be unplugged, rolled and stored in the workshop.

7.1.4.6 Camp Heating Systems

Each 205-L fuel barrel attached to respective tent or building will be secured within the secondary containment container. The remaining fuel in the line will be allowed to burn out. The lid will be secured to prevent snow from filling up the container. Empty propane cylinders will be transported to Yellowknife for refilling or recycling. Many of the sleeping quarters have been converted to electric heat; no special treatment is required for these buildings.

7.1.4.7 Petroleum Products and Storage Facilities

An on-site fuel cache is of great importance during camp start-up in the late winter. Diesel fuel will be stored in the six double-walled envirotanks and two bladders within the lined, bermed tank farm. Minimal quantities of diesel in barrels, and any unused barrels of jet fuel will be stored within self-supporting artificial berms, and clearly marked as to the location to facilitate snow clearing activities during camp opening the following spring. The Site Superintendent will be responsible for determining the possible access to these fuel resources prior to the start of the next exploration program.

Empty drums at remote drill sites will be transported to the Goose camp, crushed, counted and transported to Yellowknife for recycling. This work is typically done progressively as fuel caches are no longer required or as drill setups are dismantled.

Fuel farm secondary containment area will be cleared of any debris. In the springtime, meltwater within the containment area will be tested for F1 (C6-C10) and F2 (C10-C16) hydrocarbons and benzene, toluene, ethyl benzene, and xylene. If the analytical data confirms that the water meets

regulatory criteria, it is then released onto the tundra in such a manner as to avoid direct entry to a surface water body. Residual water after pumping and collected rainwater are allowed to evaporate over the summer and are unlikely to present a problem during camp shutdown in the fall.

The spill response team and camp management must be notified immediately of any spill. The Environmental Coordinator/Site Superintendent or designate will ensure spills are reported as required and that the relevant form is filled out as completely as possible. It is the intention of Sabina to report all spills over 25 litres and to maintain an inventory of all spills less than 25 litres, which can be viewed by any inspector or agency representative.

The number for the NWT/Nunavut 24-Hour Spill Line is (867) 920-8130. For direction on how to proceed in the event of a spill, Andrew Keim and Eva Paul of AANDC can be reached at (867) 975-4295, or the 24-hour Emergency Pager at (867) 222-1984.

7.1.4.8 Chemicals

Chemicals stored on site will consist of drill additives, oil, grease, drill salt and household biodegradable cleaners. Chlorine is necessary and is used to treat our drinking water system. All drill additives are stored in poly-lined “sea cans” and the remaining salt will be counted and stored in designated areas of the property. Drill salt is in impermeable bags and stored on pallets. Empty bags will be disposed with combustible garbage. Sabina will inspect the storage area for possible spills and contamination.

7.1.4.9 Spill Response Kits

Sabina will carry out an inventory of the Spill kits located on the property. All kits will be relocated into a secured building, except for kits designated for the remaining petroleum areas over the winter months.

7.1.4.10 Transportation

All transport areas will be inspected for contamination. Areas will be remediated using enviromat and removal of contaminated soil should any contamination be found.

7.1.4.11 Drill Sites

The diamond drills will be dismantled into the main components as per the drilling contractor procedure and secured along with ancillary equipment and rods. The drills will be moved by helicopter over the tundra and left on designated storage areas on the property until the next drilling season. All drill sites will be inspected for contamination. Any remaining waste will be taken back to the camp and disposed of accordingly. Diamond drill site restoration will commence as soon as practical after completion of the hole. Site clean-up of litter, debris and drill fluids will commence immediately. Drill core and core boxes will be properly secured and stored at the designated core storage area. Photographs will be taken before and after the drilling has been completed.

7.1.4.12 General Camp Area

A general inspection of the camp area will be carried out. Waste items will be picked up, and areas contaminated by petroleum products and unnoticed from the previous year will be reclaimed.

7.1.4.13 Final Documentation

A year-end inventory of all equipment and buildings left on site will be carried out prior to leaving site. Photos of the camp and drill lay down storage area will be taken. Site inspections and monitoring will

be done during occupancy and photos taken. Once the site is secured for winter, it will be documented with photos.

7.1.5 Final Abandonment and Restoration Plan

7.1.5.1 Administration

Buildings Structures

All the reusable tents, frames, tarpaulins, and wooden structures will be dismantled and where possible be recycled for use at another exploration site.

Other combustible, non-recyclable building structures will be incinerated onsite. Non-combustible structures or materials such as nails, screws, bent metal frames will be recovered, packed and transported out to an approved landfill, likely in Yellowknife or Alberta.

Office and Household Furniture

All reusable office, household, kitchen and recreational equipment will be packed and transported for use at other exploration camps. Some equipment, depending on what level of liability is accepted by Sabina may be donated to the local community or schools. That equipment which is not reusable will be recycled or disposed of at an approved disposal facility, appropriate to the type of material.

Water Supply System

Water pumps, filtering systems, water lines and any other equipment associated with the water supply system will be disassembled, lines drained, packed and transported out of Back River for use at other exploration camps.

Water lines that are not usable will be disposed of at an approved facility.

Sewage System

The Pactos will be dismantled and relocated to another exploration camp or transported to Yellowknife for disposal. All lines from showers, washing machines and sinks will be drained, disconnected, securely packed and transported off property to an approved landfill site.

Waste Incinerator

Once the camp is entirely dismantled to the satisfaction of the supervisor in-charge, all remaining combustible waste will be burned. The incinerator will be dismantled and shipped to another exploration camp or to Yellowknife for sale or disposal in an approved facility.

Electrical System

All electrical wires will be removed from the buildings and any other installation on property. Extensions cords and other fittings will be reused at other camps in the District. Used electrical wires will be packed and transported to Yellowknife for recycling. Unused bulbs and fluorescent tubes will be packed and relocated to other camps.

The generator shed and the surrounding area will be inspected for signs of spills and remaining wastes such as oil and grease. The area will be cleaned as necessary.

The generator will be drained of its fuel. Remaining waste fuel, oil and grease will be stored in approved storage containers, labelled and transported offsite. The generator will be dismantled and transported offsite to another exploration camp or to Yellowknife for sale.

Camp Heating Systems

Each 205 L fuel barrel attached to tents or buildings will be disconnected with the remaining fuel in the line allowed to burn out. The drums will be appropriately labelled and stored with other petroleum products. The secondary containment container will be closed, secured and stored ready for transportation offsite. The fuel burner will be dismantled and remaining fuel will be allowed to drain off into waste oil collecting system. All fuel lines will be drained, disconnected and packed for use in other camps or transported to an approved disposal facility. The area around each installation will be inspected for contamination and reclaimed as per the Spill Contingency Plan. All empty propane cylinders will be transported to Yellowknife for recycling.

Petroleum Products and Storage Facilities

205-litre Drums

The fuel storage area will consist of segregated groups of drums with empties stored separately from the full drums. An inventory of remaining fuel will be made and full drums inspected. WHMIS labels will be attached to the drums before transportation offsite. Remaining waste fuel will be labelled with WHMIS labels and transported to other camps for heating purposes or transported to Yellowknife for disposal in an approved facility.

In 2006 a drum crusher was purchased and installed at the Goose camp. Empty drums will be crushed and palletted for backhaul and disposal. Some drums will be retained for waste containment and subsequent backhaul.

All unused jet fuel will be relocated to other exploration camps for use in further exploration programs, or returned to Yellowknife. The areas around the drums will be inspected for contamination.

Tidy Tanks

All Tidy tanks will be disconnected from any tents or buildings. All installations will be disconnected and drained. An inventory of the remaining fuel in each tank will be recorded. The tanks will be secured and transported to other camps or to Yellowknife for sale or disposal. The area around the tanks will be inspected for contamination.

AST Tanks and Bladders

All installations on respective tanks and bladders will be disconnected and various hatches inspected and locked.

An inventory of the remaining fuel in each tank will be recorded. The aboveground storage tanks (ASTs) will only be moved during winter months to either another camp or using winter road to a designated area on the coast and loaded onto a barge for transportation to Hay River or to Yellowknife during summer months. The bladders would be emptied, collapsed and transported (via air) to either another camp or off-site.

Lined Fuel Farm

Once ASTs have been removed, the area will be inspected for contamination. If contamination is evident, then procedures outlined in the Spill Contingency Plan will be applied to reclaim the area.

Otherwise, the high-density polyethylene (HDPE) liner will be removed, rolled and packed for transportation offsite to either another exploration camp or an approved landfill. The berms will be pushed in with a front loader and levelled to cover exposed area.

Household Chemicals

Household cleaners will mainly be stored in the kitchen and dry. Upon camp closure, any unused products will either be transported to other camps or disposed of at an appropriate facility. Half-empty containers will be taken off site to be properly disposed in an approved discharge facility. Empty containers will either be recycled or disposed of with regular garbage.

Transportation

Airstrips and Connecting Corridors

A very short emergency airstrip occurs on naturally denuded material to the north of the Goose Camp. The area will be cleared of any debris and inspected for potential top soil contamination due to refuelling of aircraft. If contamination is evident, then procedures outlined in the Spill Contingency Plan will be applied to reclaim the impacted area.

A 915-m all-weather airstrip to be installed during the 2012 to 2013 exploration season will be cleared of any debris and inspected for potential contamination due to refuelling of aircraft. If contamination is evident, then procedures outline in the Spill Contingency Plan will be applied to reclaim the impacted area. The airstrip alignment would be scarified, applied with fertilizer and peat, to support natural re-vegetation. The associated connecting all-weather road (approximately 700 m) would have culverts removed, be scarified, and fertilizer/peat application to support natural re-vegetation.

Rock Quarries

The rock quarries, accessed to provide construction and maintenance material for the airstrip and connecting road, will be cleared of any debris and inspected for contamination. If contamination is evident, then procedures outlined in the Spill Contingency Plan will be applied to reclaim the impacted area. The application of peat/fertilizer to encourage revegetation may also be implemented in limited areas of the rock quarries.

Jetty/Dock

The jetty, consisting of black plastic poly cells will be removed and dismantled. The cells will be used elsewhere. Any timber, nails, screws and metals frames will be packed and disposed with scrap metals in approved landfills.

Helipad

The four timber helipads at Goose camp will be dismantled and material salvaged and recycled. The area will be cleared of any debris and inspected for contamination. If contamination is evident, then procedures outlined in the Spill Contingency Plan will be applied to reclaim the impacted area.

7.1.5.2 Exploration

Drill Site Management

The diamond drills will be dismantled into its main components as per the drilling contractor procedure, packaged and secured along with its ancillary equipment and rods. The drills will be moved by helicopter over the tundra and left at designated storage areas on the property before transporting offsite.

All drill sites will be inspected for contamination. All wastes will be taken back to the camp by the drillers and disposed of as appropriate. As part of Sabina's progressive reclamation activities, diamond drill sites will be restored as soon as practical after the drill has been moved to the next site and sumps (if present – Sabina currently uses a mega bag system for capturing drill cuttings) have drained enough to be levelled. Photos are taken prior to and after the drill work is completed and an inspection sheet is in place for the geologist to verify the site was left in good condition.

Drill Holes Management

Drill Sump

All drill sumps (if constructed) will be re-contoured and allowed to naturally re-vegetate. Natural sumps (if used) will simply be allowed to re-vegetate.

Iron Casing Management

Casing protruding above ground will be flush cut off to a level that will not pose a hazard. The cut portion will be disposed of in an approved landfill in Yellowknife or recycled as scrap metal. Drill holes which encounter artesian water flow will be plugged with cement and capped. The collar locations of all holes will be surveyed in and will be recorded in the exploration reports.

Chemicals associated with Drilling operations

Drill Additives, Cement and Salt Management

All remaining drill additives and salt will be inventoried, packed and transported to other projects or transported to Yellowknife or Hay River for re-sale or disposal at an appropriate facility. Empty containers and pallets will be incinerated (pallets), recycled if possible or disposed of with regular garbage.

Drill Core

Drill core will be properly secured and stored at a designated core storage area on the property for long-term storage. A site reference plan will be maintained to catalogue the core.

7.1.5.3 Environmental

Long-term Monitoring

Ongoing monitoring will be conducted during the summer months to ensure the area has been cleared of any hazards that may cause a significant adverse impact to the receiving environment. The monitoring will continue after the final abandonment until the land is relinquished and accepted by the owner. Weather collection data (Goose/George Lake weather stations) and environmental baseline data (e.g., water sampling data) will be turned over to whoever takes over the property.

Documentation and Final Inspection

A detailed project site reclamation and remediation report will be created by Sabina which will specifically document and catalogue project reclamation activities. This report will be generated for distribution to specific governing agencies. This report will identify all reclamation efforts undertaken at the project site and will be supported with information pertaining to contractors used, methodology, costs and findings. Digital photographs will be taken which will support the reclamation activities. These will be appended to the report.

Land Relinquishment

Once the reclamation plan is accepted and approved by Sabina, the permit holder will invite and organize a final site inspection visit with community representatives, Land Inspectors, Nunavut Water Board and the KIA. Other government organisations such as Environment Canada and DFO will be invited to visit the area. A written submission will be sent to the regulatory authorities asking to relinquish the land.

7.1.5.4 Abandonment and Restoration Cost Estimates

The approximate costing will be reviewed annually relative to the long-term exploration strategy for the project and may include the following items:

- Infrastructure Demolition Cost
- Transportation – (Labour, equipment, recycle, relocation of waste etc.)
- Labour Cost
  - Offsite Administrative Cost
  - Contractor
- Rehabilitation Cost
  - Site Supervision - (Sabina)
  - Remedial supplies
  - Native species supplies
  - Contractor
- Environmental Monitoring Cost
  - Labour - (Sabina or Contractor)
  - Transportation – (Field sampling)
  - Analytical Cost – (External Lab)
  - Reporting – (Sabina or Contractor)
  - Consultant Costs
- Final Documentation – (Labour Cost – Sabina or Contractor)
- Land Relinquishment – (Travel, Reports, Site Visits, Meetings, etc.)

7.1.6 Review of the Abandonment and Restoration Plan

The Back River Abandonment and Restoration Plan will be reviewed on an annual basis. The next planned internal review is scheduled to take place in 2013.

7.2 GEORGE PROPERTY CLOSURE (JANUARY 2013)

The following is an excerpt from the January 2013 Abandonment and Restoration Plan submitted to the relevant authorizing agencies as per existing authorizations. Appendices referred to within are not included in this document.

7.2.1 Introduction

7.2.1.1 General

Sabina is actively exploring the Back River property mineral rights (encompassing the primary exploration camp at Goose Lake, as well as a satellite camp at George Lake and unoccupied claim groups at Boot Lake, Boulder Pond, Wishbone and Del Lake). Advanced exploration programs have been carried out in previous years with similar activities anticipated in 2010 and beyond as Sabina continues to advance the project.

Sabina is also responsible for maintaining all permits and claims required for the Project in good standing.

Operating and managing an exploration project on tundra requires a lot of effort from all parties involved. The area is environmentally sensitive and all aspects of exploration because of our activities, products and services will be risk assessed with management protocols developed, implemented and communicated to our employees, interested parties and suppliers to eliminate or minimize any negative impacts to the receiving environment.

The 2013 program is planned to start in March and end in September. Crew, equipment and supplies will be flown into camp from Yellowknife via Twin Otter or similar aircraft. Equipment, personnel and supplies will be moved between Goose camp and George camp by helicopter. At the end of the season the crew will be demobilized back to Yellowknife using float-equipped aircraft or the all-weather airstrip in camp. Drill equipment and supplies may remain at the project area for use during subsequent exploration seasons.

The 2013 Back River project will employ up to 160 people, including contractors. In addition to Sabina's contingent of northern hires (estimated at up to 20% of the staff), the contractors working on site will also be encouraged to hire Inuit employees. Due to staff turnover and schedule rotations, there will typically be up to 60 people at George camp at any given time.

Sabina will implement this Abandonment and Restoration Plan and will continue to look for ways to minimise or eliminate negative impacts to the environment as a result of its activities, products and services at Sabina's Back River properties.

7.2.1.2 Sabina Social and Environmental Policy

Sabina takes its responsibility to act as a steward of the environment seriously. To fulfill this responsibility, Sabina strives to:

- Ensure that we design our activities and operate in compliance with all environmental regulations to minimize our impact on the environment.
- Promote responsibility and accountability of managers, employees and contractors to protect the environment and make environmental performance an essential part of the management/contractor review process.
- Provide resources, personnel and training to enable management, employees and contractors to implement programs and policies to protect the environment.
- Communicate openly with employees, contractors, local stakeholders and government on our environmental protection and sustainability programs and performance. We will also address any concerns pertaining to potential hazards and impacts.

- Promote the development and implementation of systems and technologies to reduce environmental risks.
- Establish and maintain appropriate emergency response plans for all activities and facilities.
- Maintain a self-monitoring program at each facility to ensure compliance and to proactively address plans to correct potential deficiencies.
- Work cooperatively with government agencies, local communities and contractors to develop and enhance systems and technologies to improve environmental and sustainability practices.
- Encourage all employees, contractors or stakeholders to report to management any known or suspected departures from this policy or its related procedures

7.2.1.3 Legal Requirement

Under the terms of the KIA Land Use Licences and the NWB Water Use Licences, Sabina is obligated to rehabilitate the areas used to its previous standard of human utilization and natural productivity.

7.2.1.4 Site Location and Description

The Back River exploration project is located in the Kitikmeot, south of Bathurst Inlet within the Slave Structural Province. It is approximately 525 km northeast of Yellowknife and 400 km south of Cambridge Bay, NU. The project area is within the zone of continuous permafrost, and is represented on National Topographic System 1:250,000 scale map sheets 76F, 76G, 76J, and 76K.

The primary base of operations is at Goose Lake, supported by a satellite camp at George Lake used for resupply, staging, drill support and emergencies. Coordinates for the camps are as follows:

- Goose Camp 65º32’ north 106º25’ west; and
- George Camp 65º55’ north 107º27’ west.

The George Camp is located on the western shore of George Lake and consists of an approximate 60-person satellite camp. These facilities are located on the eastern side of an esker which has been partially leveled for use as an airstrip.

The lakeshore is approximately 50 m toward the east of the camp buildings. A lined, bermed bulk fuel storage area is located approximately 100 m off the northwest end of the airstrip. Substrate material consists of bedrock and esker material (glacially-derived sand and gravel).

7.2.1.5 Scope of Reporting

This Abandonment and Restoration Plan has been written to meet the requirements of the Nunavut Water Board (NWB) licences and applies to the George camp, operated under NWB Licence 2BE-GEO1015. Subject to annual review and revision, it will remain applicable throughout the duration of the NWB licences or until a material change in the scope of the project occurs.

The current revision of the Abandonment and Restoration Plan has been prepared for ongoing exploration activities. The plan also takes into consideration the likelihood of premature camp closure due to:

- sudden drop in gold prices which could make the project uneconomical;
- drop in resource grade to a value lower than anticipated;

- non-compliance to legislative requirements;
- natural disasters;
- force majeur; and
- change of ownership/operator.

In situations as such mentioned above, this plan provides the base strategy for anticipated tasks of restoring George camp in an event where exploration activity has ceased, either on a short term or a long term basis. The plan will be reviewed annually and updated with current information.

Section 1 of the plan gives a brief account of the ownership of the property, the environmental policy, legal requirements and a brief description of the camp. Section 2 outlines responsibilities for execution of the plan. Section 3 outlines a brief time schedule for restoration activities after completion of each exploration program. A list of infrastructure at Back River is compiled and a short brief on progressive restoration program is provided. Sections 4 and 5 of the plan provide details of how each exploration aspect will be addressed, while the final section (Section 6) outlines when the next review of the plan would be conducted.

7.2.2 Responsibilities for the Plan

Senior personnel at the Back River Project site (at the main camp at Goose) are responsible for the implementation of this Plan. However, every employee, contractor or visitor arriving on the Back River project site has a responsibility to ensure that they adhere to the Sabina environmental policy. The policy will be communicated to all employees, contractors and visitors during their stay at Back River in a formal site orientation program given by the Site Superintendent.

Contact information for key personnel is included and will be updated on an as-needed basis.

7.2.3 Schedule for Abandonment and Restoration

For each exploration season, the closure of the Back River Project sites should take approximately 14 to 21 days to complete, allowing for variable weather conditions. As exploration activities vary from year to year and the end of the field season is difficult to predict months in advance, the restoration program will commence as late as September 15 each year, and end no later than October 31. Since Goose is the main camp servicing outlying exploration areas, it would take the longest to shut down. Outlying drill sites will take minimal time as their shut down requirements are much less. Other sites in the Back River Project area include the George camp and diamond drill sites. These would close down simultaneously with exploration as there is the proper support at this time (personnel, aircraft).

7.2.3.1 Progressive Reclamation

Sabina has embarked on a program of progressive reclamation over the entire Back River project area. Progressive restoration will be ongoing during the height of its exploration program thereby reducing the need for a full-scale restoration program at the closure of each exploration phase. Ongoing significant restoration activities are described below.

Contaminated Area Reclamation

Recycling of Water-contaminated Fuel

Contaminated fuels are recycled primarily as fuel for the garbage incinerator or as fuel for the water heaters used in the drilling program. If present in sufficient quantities, contaminated fuel may be recycled for camp heating purposes. As a last resort, it may be transported off the property for

disposal at an appropriate facility. For water with minor amounts of hydrocarbons, depending on quantities, consideration is also being given to activated charcoal filters which remove the hydrocarbons.

Contaminated Top Soil

Spills are handled as per the Comprehensive Spill Contingency Plan. Enviromat is immediately applied to absorb spills of hydrocarbons, minimizing the amount of soil required to be removed. Remaining contaminated soils are removed and stored in barrels for transportation to permitted disposal sites.

Non-combustible Solid Waste

Solid waste including metal scraps, drill rods, household items, etc. are stored in an appropriate marshalling area for backhaul. The material is arranged in such a way that it can be easily removed from the property during winter months, and disposal will be appropriate to the material being removed, either to an approved disposal facility, metal recycler, or an approved designated landfill.

Ash from the incinerator is stored in empty 205-L drums for backhaul and disposal.

7.2.4 Winter Restoration Plan

The winter restoration plan is intended to cover short-term (seasonal) closure of the Back River Project. The tasks involved are important to the success of future exploration programs but requires less effort.

7.2.4.1 Buildings and Content

All tents and building complexes will be secured for the winter. All the office equipment; household furniture; kitchen equipment; recreational equipment and other mobile heavy equipment will be winterised and left secured on site. Any equipment not capable of withstanding the harsh winter conditions will be removed and stored in either Yellowknife or Vancouver.

7.2.4.2 Water Supply System

Water pumps, filtering systems, water lines and any other equipment associated with the water supply system will be drained and winterised. The water pump shed will be secured.

7.2.4.3 Sewage System

The sewage system will be drained with no graywater remaining in the discharge pipe. Solid waste will be moved to Goose Lake for incineration.

7.2.4.4 Waste Incinerator

The fuel supply for the incinerator is shut off using a series of valves. The fuel remains in an artificial berm in the double-walled tank adjacent to the incinerator throughout the winter. The area will be inspected for petroleum spills or contamination. If such is the case, the area will be dealt with as outlined in Section 3.2.1.2.

7.2.4.5 Electrical System

The generator and surrounding area will be inspected for signs of spills and remaining wastes such as oil and grease. If topsoil is contaminated, an attempt will be made to remove as much as possible with enviromat; remaining contaminated soil will be stored in empty drums for disposal at a hazardous waste facility. The generator will be drained of its fuel. Remaining waste fuel, oil and grease will be

stored in approved storage containers which are labelled for that usage and reused during summer operations. The generator will be winterised and the shed will be secured for winter. Electrical wires, plugs and sockets will remain in their installed locations. All electrical cords temporarily connected to a building or machinery during summer work program will be unplugged, rolled and stored in the workshop.

7.2.4.6 Camp Heating Systems

Each 205-L fuel barrel attached to respective tent or building will be secured within the secondary containment container. The remaining fuel in the line will be allowed to burn out. The lid of the containment container will be secured to prevent snow from filling up the designated containment area.

All empty propane cylinders will be transported to Yellowknife for recycling.

7.2.4.7 Petroleum Products and Storage Facilities

An on-site fuel cache is of great importance during camp start-up in the late winter. Diesel fuel will be stored in the double-walled envirotanks and bladders within the lined, bermed tank farm. Minimal quantities of diesel in barrels, and any unused barrels of jet fuel will be stored within self-supporting artificial berms or the tank farm berm, and clearly marked as to the location to facilitate snow clearing activities during camp opening the following spring. The Operations Superintendent will be responsible for determining the possible access to these fuel resources prior to the start of the next exploration program.

Empty drums at remote drill sites will be transported to the Goose Lake camp, crushed, and transported to Yellowknife for disposal/recycling. This work is typically done progressively as fuel caches are no longer required or as drill setups are dismantled.

Fuel farm secondary containment area will be cleared of any debris. In the springtime, meltwater within the containment area will be tested for F1 (C6-C10) and F2 (C10-C16) hydrocarbons and benzene, toluene, ethyl benzene, and xylene. If the analytical data confirms that the water meets regulatory criteria, it is then released onto the tundra in such a manner as to avoid direct entry to a surface water body. Residual water after pumping and collected rainwater are allowed to evaporate over the summer and are unlikely to present a problem during camp shutdown in the fall.

The Sabina spill response team and camp management must be notified immediately of any spill based on actions outlined in the Spill Contingency Plan. The Environmental and Operations Superintendents or their designate will ensure spills are reported as required and that the relevant form is filled out as completely as possible. It is the intention of Sabina to report all spills over 25 L and to maintain an inventory of all spills less than 25 L, which can be viewed by any inspector or agency representative.

7.2.4.8 Chemicals

Chemicals stored on site will consist of drill additives, oil, grease, drill salt and household biodegradable cleaners. Chlorine is necessary and is used to treat our drinking water system. All drill additives are stored in poly-lined “sea cans” and the remaining salt will be stored in designated areas of the property. Drill salt is in impermeable bags and stored on pallets. Empty bags will be disposed with combustible garbage. Sabina will inspect the storage area for possible spills and contamination.

7.2.4.9 Spill Response Kits

Sabina will carry out an inventory of the spill kits located on the property. All kits will be relocated into a secured building, except for kits designated for the remaining petroleum areas over the winter months.

7.2.4.10 Transportation

All transport areas will be inspected for contamination. Areas will be remediated using enviromat and removal of contaminated soil should any contamination be found.

7.2.4.11 Drill Sites

The diamond drills will be dismantled into the main components as per the drilling contractor procedure and secured along with ancillary equipment and rods. The drills will be moved by helicopter over the tundra and left on designated storage areas on the property until the next drilling season. All drill sites will be inspected for contamination. Any remaining waste will be taken back to the camp and disposed of accordingly. Diamond drill site restoration will commence as soon as practical after completion of the hole. Site clean-up of litter, debris and drill fluids will commence immediately. Drill core and core boxes will be properly secured and stored at the designated core storage area. Photographs will be taken before and after the drilling has been completed.

7.2.4.12 General Camp area

A general inspection of the camp area will be carried out. Waste items will be picked up, and areas contaminated by petroleum products and unnoticed from the previous year will be reclaimed.

7.2.4.13 Final Documentation

A year-end inventory of all equipment and buildings left on site will be carried out prior to leaving site. Photos of the camp and drill lay down storage area will be taken. Site inspections and monitoring will be done during occupancy and photos taken. Once the site is secured for winter, it will be documented with photos.

7.2.5 Final Abandonment and Restoration Plan

7.2.5.1 Administration

Buildings Structures

All the reusable tents, frames, tarpaulins, and wooden structures will be dismantled and where possible be recycled for use at another exploration site.

Other combustible, non-recyclable building structures will be incinerated onsite. Non-combustible structures or materials such as nails, screws, bent metal frames will be recovered, packed and transported out to an approved landfill, likely in Yellowknife or Alberta.

Office and Household Furniture

All reusable office, household, kitchen and recreational equipment will be packed and transported for use at other exploration camps. Equipment, if appropriate, may be donated to the local community or schools. That equipment which is not reusable will be recycled or disposed of at an approved disposal facility, appropriate to the type of material.

Water Supply System

Water pumps, filtering systems, water lines and any other equipment associated with the water supply system will be disassembled, lines drained, packed and transported out of Back River for use at other exploration camps.

Water lines that are not usable will be disposed of at an approved facility.

Sewage System

The Pactos will be dismantled and relocated to another exploration camp or transported to Yellowknife for disposal. All lines from showers, washing machines and sinks will be drained, disconnected, securely packed and transported off property to an approved landfill site.

Waste Incinerator

Once the camp is entirely dismantled to the satisfaction of the supervisor in-charge, all remaining combustible waste will be burned. The incinerator will be dismantled and shipped to another exploration camp or to Yellowknife for sale or disposal in an approved facility.

Electrical System

All electrical wires will be removed from the buildings and any other installation on property.

Extensions cords and other fittings will be reused at other camps in the District. Used electrical wires will be packed and transported to Yellowknife for recycling. Unused bulbs and fluorescent tubes will be packed and relocated to other camps.

The generator and surrounding area will be inspected for signs of spills and remaining wastes such as oil and grease. The area will be cleaned as necessary.

The generator will be drained of its fuel. Remaining waste fuel, oil and grease will be stored in approved storage containers, labelled and transported offsite. The generator will be dismantled and transported offsite to another exploration camp or to Yellowknife for sale.

Camp Heating Systems

Each 205-L fuel barrel attached to tents or buildings will be disconnected with the remaining fuel in the line allowed to burn out. The drums will be appropriately labelled and stored with other petroleum products. The secondary containment container will be closed, secured and stored ready for transportation offsite. The fuel burner will be dismantled and remaining fuel will be allowed to drain off into waste oil collecting system. All fuel lines will be drained, disconnected and packed for use in other camps or transported to an approved disposal facility. The area around each installation will be inspected for contamination and reclaimed as per the Spill Contingency Plan. All empty propane cylinders will be transported to Yellowknife for recycling.

Petroleum Products and Storage Facilities

205-litre Drums

The fuel storage area will consist of segregated groups of drums with empties stored separately from the full drums. An inventory of remaining fuel will be made and full drums inspected. WHMIS labels will be attached to the drums before transportation offsite. Remaining waste fuel will be labelled with

WHMIS labels and transported to other camps for heating purposes or transported to Yellowknife for disposal in an approved facility.

In 2006, a drum crusher was purchased and installed at the Goose Lake camp. Empty drums will be crushed and palletted for backhaul and disposal. Some drums will be retained for waste containment and subsequent backhaul.

All unused jet fuel will be relocated to other exploration camps for use in further exploration programs, or returned to Yellowknife. The areas around the drums will be inspected for contamination.

Tidy Tanks

All Tidy tanks will be disconnected from any tents or buildings. All installations will be disconnected and drained. An inventory of the remaining fuel in each tank will be recorded. The tanks will be secured and transported to other camps or to Yellowknife for sale or disposal. The area around the tanks will be inspected for contamination.

AST Tanks

All installations on respective tanks will be disconnected and various hatches inspected and locked.

An inventory of the remaining fuel in each tank will be recorded. The ASTs will only be moved during winter months to either another camp or using winter road to a designated area on the coast and loaded onto a barge for transportation to Hay River or to Yellowknife during summer months.

Lined Fuel Farm

Once ASTs have been removed, the area will be inspected for contamination. If contamination is evident, then procedures outlined in the Spill Contingency Plan will be applied to reclaim the area.

Otherwise, the high-density polyethylene (HDPE) liner will be removed, rolled and packed for transportation offsite to either another exploration camp or an approved landfill. The berms will be pushed in with a front loader and levelled to cover exposed area.

7.2.5.2 Household Chemicals

Household cleaners will mainly be stored in the kitchen and dry. Upon camp closure, any unused products will either be transported to other camps or disposed of at an appropriate facility. Half-empty containers will be taken off site to be properly disposed in an approved discharge facility. Empty containers will either be recycled or disposed of with regular garbage.

7.2.5.3 Transportation

Airstrip

A 750-m air strip exists at the George Camp located on a natural esker and no additional gravel materials were used for construction purposes. Inspection for potential top soil contamination due to refuelling of aircrafts will continue until cessation of flights and related activities.

Helipad

Helipads were installed at George Camp adjacent to the west side of the airstrip. Inspection for potential top soil contamination due to refuelling of aircrafts will continue until no more flights will use the pads at the close of the program.

7.2.5.4 Exploration

Drill Sites Management

The diamond drills will be dismantled into its main components as per the drilling contractor procedure, packaged and secured along with its ancillary equipment and rods. The drills will be moved by helicopter over the tundra and left at designated storage areas on the property before transporting offsite.

All drill sites will be inspected for contamination. All wastes will be taken back to the camp by the drillers and disposed of as appropriate. As part of Sabina's progressive reclamation activities, diamond drill sites will be restored as soon as practical after the drill has been moved to the next site and sumps (if present – Sabina currently uses a megabag system for capturing drill cuttings) have drained enough to be levelled. Photos are taken prior to and after the drill work is completed and an inspection sheet is in place for the geologist to verify the site was left in good condition.

Drill holes Management

Drill Sump

All drill sumps (if constructed) will be re-contoured and allowed to naturally re-vegetate. Natural sumps (if used) will simply be allowed to re-vegetate.

Iron Casing Management

Casing protruding above ground will be flush cut off to a level that will not pose a hazard. The cut portion will be disposed of in an approved landfill in Yellowknife or recycled as scrap metal. Drill holes which encounter artesian water flow will be plugged with cement and capped. The collar locations of all holes will be surveyed in and will be recorded in the exploration reports.

Drill Additives, Cement and Salt Management

All remaining drill additives and salt will be inventoried, packed and transported to other projects or transported to Yellowknife or Hay River for re-sale or disposal at an appropriate facility. Empty containers and pallets will be incinerated (pallets), recycled if possible or disposed of with regular garbage.

Drill Core

Drill core will be properly secured and stored at a designated core storage area on the property for long-term storage. A site reference plan will be maintained to catalogue the core.

Excavated Trench

The excavated trenches will be backfilled with local soil. The area will be re-contoured to match the surrounding landscape, and allowed to re-vegetate.

7.2.5.5 Environmental

Long-term Monitoring

Ongoing monitoring will be conducted during the summer months to ensure the area has been cleared of any hazards that may cause a significant adverse impact to the receiving environment. The monitoring will continue after the final abandonment until the land is relinquished and accepted by the owner. Weather collection data (Goose/George weather stations) and environmental baseline data (e.g., water sampling data) will be turned over to whoever takes over the property.

Documentation and Final Inspection

A detailed project site reclamation and remediation report will be created by Sabina which will specifically document and catalogue project reclamation activities. This report will be generated for distribution to specific governing agencies. This report will identify all reclamation efforts undertaken at the project site and will be supported with information pertaining to contractors used, methodology, costs and findings. Digital photographs will be taken which will support the reclamation activities. These will be appended to the report.

7.2.5.6 Land Relinquishment

Once the reclamation activities are completed and are accepted and approved by Sabina, the permit holder will invite and organise a final site inspection visit with community representatives, inspectors and other regulators, Nunavut Water Board and the KIA. Other government organisations such as Environment Canada and Department of Fisheries and Oceans may also be invited to visit the area. A written submission will be sent to the regulatory authorities asking to relinquish the land.

7.2.6 Abandonment and Restoration Cost Estimates

The approximate costing will be reviewed annually relative to the long-term exploration strategy for the project and may include the following items:

- Infrastructure Demolition Cost
- Transportation – (Labour, equipment, recycle, relocation of waste etc.)
- Labour Cost
  - Offsite Administrative Cost
  - Contractor
- Rehabilitation Cost
  - Site Supervision - (Sabina)
  - Remedial supplies
  - Native species supplies
  - Contractor
- Environmental Monitoring Cost
  - Labour - (Sabina or Contractor)
  - Transportation – (Field sampling)
  - Analytical Cost – (External Lab)
  - Reporting – (Sabina or Contractor)
  - Consultant Costs
- Final Documentation – (Labour Cost – Sabina or Contractor)
- Land Relinquishment – (Travel, Reports, Site Visits, Meetings, etc.)

7.2.7 Review of the Abandonment and Restoration Plan

The Back River Abandonment and Restoration Plan will be reviewed on an annual basis. The next planned internal review is scheduled to take place in 2013.

7.3 MARINE LAYDOWN AREA CLOSURE

Seasonal and final closure and reclamation of the Marine Laydown Area will be incorporated into closure plans to reflect infrastructure, regulatory requirements and other Project-specific protocols. It will be updated on a regular basis and submitted in compliance with current authorizations.

7.3.1 Seasonal Closure

The seasonal closure plan is intended to cover short-term (seasonal) closure of the Marine Laydown Area. The tasks involved are similar to those implemented at the current Goose and George exploration camps and are important to ensure the security if the site and the success of future programs. The conceptual seasonal closure may include:

- All tents and building complexes will be secured for the winter. All the office equipment; household furniture; kitchen equipment; recreational equipment and other mobile heavy equipment will be winterised and left secured on site. Any equipment not capable of withstanding the harsh winter conditions will be removed and stored in either Yellowknife or Vancouver.
- Water pumps, filtering systems, water lines and any other equipment associated with the water supply system will be drained and winterised. The water pump shed will be secured. The sewage system will be drained with no graywater remaining in the discharge pipe.
- The fuel supply for the incinerator is shut off using a series of valves. The fuel remains in an artificial berm in the double-walled tank adjacent to the incinerator throughout the winter. The area will be inspected for petroleum spills or contamination.
- The generator and surrounding area will be inspected for signs of spills and remaining wastes such as oil and grease. If topsoil is contaminated, an attempt will be made to remove as much as possible with enviromat; remaining contaminated soil will be stored in empty drums for disposal at a hazardous waste facility. The generator will be drained of its fuel. Remaining waste fuel, oil and grease will be stored in approved storage containers which are labelled for that usage and reused during summer operations. The generator will be winterised and the shed will be secured for winter. Electrical wires, plugs and sockets will remain in their installed locations.
- The quarry area (cut and fill) will operate in a manner such that it blends in with the existing topography and surrounding landscape. Seasonal closure of quarry areas will focus on progressive reclamation measures to ensure the site is secure to protect employees, the public and wildlife; has drainage and erosion control measures to minimize runoff to local waterways; and is cleared of all material, equipment, debris, and hazardous/contaminated materials.
- Diesel fuel will be stored in the double-walled envirotanks, bladders and tanks within a lined, bermed tank farm. Minimal quantities of diesel in drums, and any unused barrels of jet fuel will be stored within self-supporting artificial berms or the tank farm berm, and clearly marked as to the location to facilitate snow clearing activities during camp opening the following spring.
- Fuel farm secondary containment area will be cleared of any debris. In the springtime, meltwater within the containment area will be tested for F1 (C6-C10) and F2 (C10-C16) hydrocarbons and benzene, toluene, ethyl benzene, and xylene. If the analytical data confirms that the water meets regulatory criteria, it is then released onto the tundra in such a manner as to avoid direct entry to a surface water body. Residual water after pumping and collected rainwater are allowed to evaporate over the summer and are unlikely to present a problem during camp shutdown in the fall.

- Chemicals stored on site will be secured in designated areas and the area will be inspected for possible spills and contamination. All transportation and refueling areas will be inspected for contamination. Areas will be remediated using enviromat and removal of contaminated soil should any contamination be found.
- A general inspection of the camp area will be carried out. Waste items will be picked up, and areas contaminated by petroleum products and unnoticed from the previous year will be reclaimed. A year-end inventory of all equipment and buildings left on site will be carried out prior to leaving site.

7.3.2 Final Closure and Reclamation Plan

The final closure plan is intended to cover the long-term reclamation of the Marine Laydown Area and its closure is presented as part of the overall Back River Closure Plan in DEIS Volume 10, Chapter 29, which includes the following tasks to ensure the long-term physical and chemical stability of the area:

- All the reusable tents, frames, tarpaulins, and wooden structures will be dismantled and where possible be recycled for use at another site if feasible.
- Other combustible, non-recyclable building structures will be incinerated onsite. Non-combustible structures or materials such as nails, screws, bent metal frames will be recovered, packed and transported out to an approved landfill.
- All reusable office, household, kitchen and recreational equipment will be packed and transported for use at other Sabina camps. Equipment, if appropriate, may be donated to the local community or schools. That equipment which is not reusable will be recycled or disposed of at an approved disposal facility, appropriate to the type of material.
- Water pumps, filtering systems, water lines and any other equipment associated with the water supply system will be disassembled, lines drained, packed and transported out of Marine Laydown Area for use at other exploration camps. Water lines that are not usable will be disposed off site at an approved facility.
- The sewage treatment systems will be dismantled and relocated to another Sabina exploration camp or transported to Yellowknife for disposal. All lines from showers, washing machines and sinks will be drained, disconnected, securely packed and transported off property to an approved landfill site.
- Once the camp is entirely dismantled, all remaining combustible waste will be burned. The incinerator will be dismantled and shipped to another exploration camp or to Yellowknife for sale or disposal in an approved facility.
- All electrical wires will be removed from the buildings and any other installation on property. Used electrical wires will be packed and transported to Yellowknife for recycling. Unused bulbs and fluorescent tubes will be packed and relocated to other camps.
- The generator and surrounding area will be inspected for signs of spills and remaining wastes such as oil and grease. The area will be cleaned as per Spill Contingency Plan as necessary.
- The generator will be drained of its fuel. Remaining waste fuel, oil and grease will be stored in approved storage containers, labelled and transported offsite. The generator will be dismantled and transported offsite to another exploration camp or to Yellowknife for sale.
- Fuel supply for building heating will be disconnected with the remaining fuel in the line allowed to burn out. The drums will be appropriately labelled and stored with other petroleum products. The secondary containment container will be closed, secured and stored ready for

transportation offsite. All fuel lines will be drained, disconnected and packed for use in other camps or transported to an approved disposal facility. The area around each installation will be inspected for contamination and reclaimed as per the Spill Contingency Plan. All empty propane cylinders will be transported to Yellowknife for recycling.

- The rock quarries and borrow pits, accessed to provide construction and maintenance material will be cleared of any equipment, storage, structures and debris and inspected for contamination. If contamination is evident, then procedures outlined in the Spill Contingency Plan will be applied to reclaim the impacted area. Overburden and topsoil may be used for site grading and re-contouring and application of peat/fertilizer to encourage re-vegetation may also be implemented in limited areas of the rock quarries. Access may be blocked (if required) and the boundary flagged.
- Bulk fuel storage tanks will be dismantled and moved during winter months to either another camp or loaded onto a barge for transportation to Hay River or to Yellowknife for disposal. Once the tanks have been removed, the area will be inspected for contamination. If contamination is evident, then procedures outlined in the Spill Contingency Plan will be applied to reclaim the area. The high-density polyethylene (HDPE) liner will be removed, rolled and packed for transportation offsite to either another exploration camp or an approved landfill. The berms will be pushed in with a front loader and levelled to cover exposed area.
- Helipads will be inspected for potential top soil contamination due to refuelling of aircrafts will continue until no more flights will use the pads at the close of the program.
- All remaining chemicals, hazardous materials and drill additives and salt will be inventoried, packed and transported to other projects or transported to Yellowknife or Hay River for re-sale or disposal at an appropriate facility. Empty containers and pallets will be incinerated (pallets), recycled if possible or disposed of with regular garbage.
- Ongoing monitoring will be conducted and will continue after the final abandonment until the land is relinquished and accepted by the owner. Once the reclamation activities are completed and are accepted and approved by Sabina, the permit holder will invite and organise a final site inspection visit with community representatives, inspectors and other regulators, Nunavut Water Board, and the KIA. Other government organisations such as Environment Canada and Department of Fisheries and Oceans may also be invited to visit the area. A written submission will be sent to the regulatory authorities asking to relinquish the land.

8. Transportation Plan

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8. Transportation Plan

The following is an excerpt from the January 2013 Transportation Plan submitted to the relevant authorizing agencies as per existing authorizations. Figures and appendices referred to within are not included in this document.

8.1 INTRODUCTION

Sabina is actively exploring the Back River– Hackett River area under valid land use, mineral tenure, and water permits.

This Transportation Management Plan has been developed to outline construction, operation and management of access and transportation to the Goose Camp including construction, operation and closure of an all-weather airstrip, a connecting road to Goose camp and associated rock quarries. This Plan provides construction and operating maintenance methods and best management practices that will be used at Goose camp as well as all of Sabina's projects. The purpose of this Plan is to ensure sound management of water and waste deposited to water to minimize the impacts to the local environment during construction, operation and closure of the transportation corridors. Implementing best management practices and working responsibly will ensure the protection of the environment and personnel safety.

Sabina will implement this Transportation Management Plan and will continue to look for opportunities to minimize or eliminate negative impacts to the environment as a result of its activities, products and services at Sabina's Projects.

8.1.1 Existing Facilities

The Back River exploration project is located in western Nunavut, south of Bathurst Inlet within the Slave Structural Province. It lies approximately 525 km northeast of Yellowknife, NWT and 400 km south of Cambridge Bay, NU. The project area is within the zone of continuous permafrost, and is represented on National Topographic System 1:250,000 scale map sheets 76F, 76G, 76J, and 76K.

8.1.1.1 Goose Camp

The Goose Camp is the primary camp for the Back River Project and is located on the slope of the western shore of Goose Lake. It has the capacity to support up to 120 people. The lakeshore is approximately 50 m toward the north and the regional topographical gradient surrounding the camp ranges from 2 to 6% towards the north. The camp is approximately 300 m in length from east to west and 100 m wide from north to south, covering an area of 30,000 m^2. A small creek runs east northeast, east of the camp. The camp facilities are located on natural tundra underlain by a 10 cm organic layer overlying silt-sand parent material.

- Latitude: 65° 32'N, Longitude: 106° 25'W
- UTM Coordinates 569405 E, 7265007N on NTS Map Sheet 76G/09

Supplies and personnel access the site at Goose Lake via charter air carrier; there is currently no all-weather road access to the site at any point through the year. In the winter, an ice strip on Goose Lake is used and float-equipped aircraft are used in the summer time. When possible, wheel-equipped aircraft will use a gravel strip located to the northwest of Goose Lake camp. All travel throughout the

project area is accomplished using helicopters, including drill moves and drilling support. In the winter when there is sufficient snow cover to avoid damage to the tundra, local transport in the Goose Lake area is done with snowmobiles; a Caterpillar D6 may be used for drill moves.

The original airstrip at Goose Lake camp is on beach sediments on the northwest side of Goose Lake and was used for a 4 to 5 week period during spring breakup. This airstrip is approximately 365 m long by 25 m wide, oriented approximately northeast - southwest. In 2012, a new airstrip, measuring 800 m by 40 m, was built about 500 m southwest of Goose Camp, aligned northwest - southwest, visible in the background in Figure 2-4.

Ice airstrips on Goose Lake involve clearing of snow and ensuring the appropriate ice thickness. These strips vary with each year, but are approximately 1,585 m long by 36 m wide and oriented approximately northwest - southeast.

Charter flights to/from Yellowknife are flown at the pilot's discretion depending on weather conditions, but may be expected to be at an altitude of 5,000 to 10,000 feet above sea level. These flights occur twice weekly with supplemental flights added as required. Resupply flights occur early in the season and may be any day of the week, and 24 hours a day in the case of the Hercules. All of these flights pass over the Ekati/Diavik area en route to the project sites.

Helicopter flights in the area may occur anywhere from one every two to three days to several per day, depending on the operational requirements at the time. The most highly travelled flight routes include the corridor between Goose Lake and George Lake. As per several of our operating licences, the pilots are instructed to maintain a minimum altitude of 1,000 feet (300 m) above ground level unless weather or operating requirements indicate otherwise.

8.1.1.2 George Camp

The George Lake camp is located on the western shore of George Lake and has capacity for approximately 60 people. These facilities are located on the eastern side of an esker which has been partially leveled for use as an airstrip. The lakeshore is approximately 60 m to the east of the camp buildings. A lined, bermed bulk fuel storage area is located approximately 100 m off the northwest end of the airstrip.

- Latitude: 65° 55'N, Longitude: 107° 25'W
- UTM coordinates: 613886 E, 7311032N on NTS Map Sheet 76 G/14

Supplies and personnel access the site at George Lake via charter air carrier; there is no all-weather road access to the site at any point through the year. In the winter, an ice strip on George Lake is used and float-equipped aircraft are used in the summer time. When possible, wheel-equipped aircraft use the prepared esker strip at the George camp. All travel throughout the project area is accomplished using helicopters, including drill moves and drilling support. In the winter when there is sufficient snow cover to avoid damage to the tundra, local transport in the George Lake area is done with snowmobiles, and a Caterpillar D6 may be used for drill moves.

The airstrip at George Lake is on an esker which is used throughout the exploration season. The strip is located immediately adjacent to the camp buildings at this site. This airstrip is approximately 365 m long by 25 m and oriented approximately northeast - southwest, visible beside the camp in Figure 2-5. Ice airstrips on George Lake involve clearing of snow and ensuring the appropriate ice thickness. These strips vary with each year, but are approximately 1,585 m long by 36 m wide, oriented approximately northwest - southeast.

Charter flights to/from Yellowknife are flown at the pilot's discretion depending on weather conditions, but may be expected to be at an altitude of 5,000 to 10,000 feet above sea level. These flights occur twice weekly with supplemental flights added as required. Resupply flights occur early in the season and may be any day of the week, and 24 hours a day in the case of the Hercules. All of these flights pass over the Ekati/Diavik area en route to the project sites.

Helicopter flights in the area may occur anywhere from one every two to three days to several per day, depending on the operational requirements at the time. The most highly travelled flight routes include the corridor between Goose Lake and George Lake. As per several of our operating licences, the pilots are instructed to maintain a minimum altitude of 1,000 feet (300 m) above ground level unless weather or operating requirements indicate otherwise.

8.1.1.3 Temporary Camps for Resupply and Exploration

Temporary camps for up to 20 people are established for a season in target areas located 20 km or more from the main camps and would be established for safety, environmental and economic reasons. The intent is not to establish a network of camps across the exploration area, but to have the opportunity and flexibility to establish these temporary camps as needed. All transportation to and around these camps would be similar to the current practices at Goose and George camps, except that no airstrips on land have been built or planned.

8.1.2 Proposed Facilities (2013)

8.1.2.1 Goose Camp

Sabina is proposing to complete the construction of the existing 800-m by 40-m all-weather airstrip at the Goose Camp and of the existing approximately 600-m-long road connecting the airstrip with the camp. This infrastructure will require the development and operation of rock quarries to supply aggregate.

The Goose Camp is operational seasonally, February 1 to October 15 inclusive. The camp is shut down during all other periods. Access to the site is via aircraft and, depending on the season, can be on Goose Lake (water or ice) or the gravel airstrip southwest of camp. Sabina sees the completion of the all-weather strip as an important move toward improving operations and personnel safety, fiscal responsibility and environmental protection.

Completion of the airstrip and connecting road will be phased to match weather conditions, design, purchasing and acquisition needs, seasonal operations at camp and the construction schedule. Table 8.1-1 presents the general concept of development:

Table 8.1-1. Airstrip and Connecting Road Development

Phase 2	Timing	Activities
	Q1 2013	Award contract and additional permitting needs (e.g., explosives)
		Start procurement and mobilization of equipment and supplies
		Develop access and initiate quarry operations.
		Drilling, blasting and crushing at quarries. Ongoing quarry activities to stockpile; depends on design/operational needs.
	Q2 2013	Transport of crushed material to airstrip/road area during snow/ice cover conditions
	Q3 – Q4 2013	Use airstrip to support end-of-season exploration activities and camp closure

Phase 1 of the airstrip construction was completed in 2012, involving cutting and filling a strip approximately 900 m long by 50 m wide. A wet area between the airstrip and camp is too wide for a free-span installation and environmental conditions indicate that there are no fish or fish habitat in this area. For this reason, culverts were installed in this section of the corridor.

Phase 2 will involve drilling, blasting and crushing construction material in the quarry. The airstrip and the access road between the airstrip and the camp will be completed by laying down layers of blasted and crushed rock.

8.1.3 Scope

This Transportation Management Plan has been written to meet requirements under the NWB licence and applies to all Sabina projects in the Kitikmeot region. Subject to annual internal review and revision, it will remain applicable throughout the duration of the NWB licence, or until a material change in the scope of the project occurs.

The goal of any management plan is to reduce and prevent impacts to the environment while ensuring personnel safety and appropriate fiscal considerations during mineral exploration activities.

8.2 AIRSTRIP AND ROAD CONSTRUCTION AND OPERATION

8.2.1 Winter Road and Ice Airstrip Infrastructure

Currently, environmental conditions determine the route selected for winter road corridors including:

- ice of a sufficient thickness to support equipment so that pumping and using water to build up ice will be unnecessary;
- snow thickness will be a minimum of 15 cm on land to prevent damage to soil and vegetation; and
- weather conditions permit safe transport of equipment and materials .

Once the camps are open, the road route will be determined by means of reconnaissance trips using helicopters and/or snow machines. The road route determined will be staked to facilitate driving and to help with snow plowing. While the road is in use, any litter or contamination will be removed by Sabina personnel and relocated to the existing camps for disposal. When the winter road corridor use ends, the corridor is inspected for any remaining litter and contamination, cleaned, stakes are removed and snow piled/or removed at the entrance to prevent further use of the route. At break-up the road will melt. During the summer months, the route is inspected using a helicopter and any further reclamation work will be built into progressive reclamation for the exploration program.

Surface preparation will include verification that ice thickness will support equipment weight. It is also anticipated that movement of snow may be required in some areas to ensure a safe operating grade for the equipment and to a minimum thickness to protect underlying vegetation and soil.

Speed and road grades will be determined by safety, operational needs of the equipment, road conditions and weather/environmental conditions. The public will not have access to the corridor.

The routes identified are mainly along frozen lakes and streams with short overland traverses. It is anticipated that these freshwater systems are fish-bearing. Because the corridor is used only during the winter and for a limited number of trips, the risk of impact to fish and fish habitat is minimal.

Construction and operation of the ice airstrips on the local lakes are also dependent on environmental conditions including:

- prevalent wind direction and speeds for safe landing/takeoff;
- ice thickness of a sufficient thickness to support equipment and aircraft so that pumping and using water to build up will be unnecessary; and
- weather conditions permit safe transport of equipment and materials.

Once camps are open, the priority is to determine the optimal airstrip route, using snow machines. The orientation determined is staked to facilitate snow plowing; snow is removed using equipment already on-site within the staked area to allow additional freezing and thickening of the ice. Surface preparation will include verification that ice thickness will support aircraft weight. Flooding and ice build-up methods are not used to construct ice airstrip.

Once the appropriate thickness and area is available, the airstrip is inspected by authorities and approved for use.

While the airstrip is in use, any litter or contamination is removed by Sabina personnel and relocated to the existing camps for disposal. When the ice airstrip use is completed, the area is inspected for any remaining litter and contamination, cleaned, and stakes are removed. At break-up the airstrip will melt.

8.2.2 All-weather Road and Airstrip Infrastructure

The proposed all-weather airstrip and connecting road will be privately-owned infrastructure, built entirely on Inuit Owned Lands currently permitted by Sabina from the KIA. The airstrip and road will be constructed, inspected, and maintained by Sabina to support exploration activity at the Back River Project.

The design of the airstrip is in accordance with Transport Canada's *Aerodrome Standards and Recommended Practices* (Transport Canada 2005). The construction of the road follows generally accepted good engineering practices for building roads in permafrost areas of the Northwest Territories and Nunavut. The airstrip and road design is detailed in the SRK Consulting (Canada) Inc.'s August 2011 memo "Goose Lake Airstrip Design."

Environmental considerations are incorporated into design and routing. Wind direction and speeds, in addition to existing terrain and ground conditions, determine the optimal airstrip orientation. Road alignment, connecting the airstrip to the camp and airstrip to the quarries, considered the existing terrain and topography to determine the optimal route for equipment movement. The design aimed to minimize the project footprint. Additional fieldwork determined that the airstrip and road alignments did not include any archaeological sites or vegetation/wildlife species under the *Species at Risk Act* (2002). Establishing fish and fish habitat included water quality and quantity, fish population and fish habitat studies. These data have been incorporated to determine the optimal alignment for the airstrip and road and the associated water crossings.

8.2.3 Rock Quarries

The proposed rock quarry locations will be on Inuit-Owned Lands currently permitted by Sabina from the KIA. The proposed 2013 quarry will be constructed, inspected, and maintained by Sabina to support construction and operation of the all-weather airstrip, access road, and camp at the Goose Property.

Fieldwork has indicated that the underlying geology of the 2013 quarry area is a gabbro dike. This material will be suitable to quarry using drill/blast methods followed by crushing and sorting to generate the material needed for construction and operation. The total volume estimated for use in 2013 is approximately 30,000 m^3. Acid rock drainage/metal leaching potential was investigated within the proposed quarry area, and the material has a low potential for generating acidic drainage due to the low sulphide content.

Permafrost conditions exist across the Project area and environmental data collected to date indicate that the active layer is approximately 2 to 3 m thick and the permafrost extends to a depth of approximately 500 m. Given the nature of the gabbro dike, it is not anticipated that ice lenses would be encountered during quarry operations.

Incorporated into the proposed location are environmental considerations. Proximity of the gabbro units close to the airstrip and road corridor minimizes transport needs for the quarry operations, minimizing the project footprint.

Quarry operations are outlined in the Borrow Pits and Quarry Management Plan (DEIS Volume 10, Chapter 16). An important component of the quarry operations will be water management to ensure minimal impact to the local watercourses and groundwater. Quarry operations will be above the current water levels of the area. Ponding of water within the operations will be minimized by sloping the quarry floor and installing drainage channels to direct drainage to an area, or areas, within the quarry boundaries. Minimizing water ponding in the quarry will minimize permafrost degradation and will allow for ongoing monitoring of drainage prior to controlled release to the environment. Sediment fences will be used to eliminate the outflow of silt within the drainage system.

Additional fieldwork determined that the quarry location did not include any archaeological sites or vegetation/wildlife species under the *Species at Risk Act* (2002).

8.2.4 Watercrossings

The proposed all-weather airstrip and connecting road and the associated water crossings will be privately-owned infrastructure, built entirely on Inuit-Owned Lands currently permitted by Sabina from the KIA. The airstrip and road will be constructed, inspected, and maintained by Sabina to support exploration activity at the Back River Project.

The airstrip and road design is detailed in the SRK Consulting (Canada) Inc.'s August 2011 memo "Goose Lake Airstrip Design." The culvert water crossing is included in this report and includes 0.5-m diameter culverts installed along the connecting road and the southern apron of the airstrip.

The preferred water crossing method is currently a snow/ice bridge installed during the winter months, connecting the quarry area to the airstrip as no structures are placed on the stream bed and no alteration of natural channel processes occur. Access between the airstrip/camp area and quarry will cease as soon as the area begins to thaw in spring. Inspection and clean-up will be as for the road corridor in Section 8.2.1 above.

Environmental considerations focused on fish and fish habitat for the water crossings (Rescan 2011). Sabina is of the opinion that the winter water crossing does not result in any fisheries habitat alteration, disruption and destruction and compliance with DFO Operational Statements is required. This includes OS-5 (Clear-span bridges), OS-7 (culvert maintenance), OS-10 (ice bridges and snow fills), and OS-24 (mineral exploration activities).

8.3 INSPECTION AND MAINTENANCE

Sabina has sole responsibility for the ongoing inspection and maintenance of all of the components of the airstrip and road, including the road bed, the airstrip foundation, the culverts and the quarry site. Sabina will have the Site Supervisor, or their designate, responsible for ongoing inspection and maintenance. The following is a summary of the procedures that will be applied.

8.3.1 Surface Inspection and Maintenance

Sabina recognizes that a good inspection program will lead to the early identification of areas of the airstrip and road where improvements are necessary. The early resolution of any deficiencies will result in less ongoing maintenance and repair of the infrastructure.

The road and its shoulders will be inspected bi-weekly (at a minimum) during the summer period for evidence of seasonal freeze and thaw adjacent to the toe of the road embankment. Such movements are expected and may lead to longitudinal cracking and thaw settlement especially for portions of the road founded on thaw-susceptible (ice-rich) soil. When such areas are discovered, the affected area will be repaired using granular material and/or crushed rock. Sabina will maintain stockpiles of such material in the quarry area.

The road and airstrip will be inspected for signs of accumulation of ponded water, either on the surface or along the sides. Where noticed, the site supervisor will evaluate and monitor the accumulation to determine why water is accumulating in these areas. Based on these evaluations, the site supervisor will take remedial action where and when necessary to correct the cause of such ponding, such as grading of the surface to remove areas of ponding or installation of additional culverts if the road is causing excessive water ponding.

The quarry will also be inspected bi-weekly (at a minimum) to monitor wall conditions, ponding of water and snow accumulations. Remedial action will be taken as soon as problems are noted. The site supervisor will conduct periodic inspections (minimum of bi-weekly) of the road to ensure that the road is maintained for safe travel of personnel, equipment and supplies. These inspections will be recorded and any deficiency recorded and followed up by corrective action.

These periodic inspections will include an inspection of the water crossings and a visual observation of the road surface to assess the status of the road foundation.

During the summer, the road surface will be maintained with gravel being spread as required and regular grading of the road. In fall, winter and spring, maintenance will be adjusted according to the weather conditions. Snow clearing along the road will be done to ensure that the road can be operated safely. The manner in which the snow is cleared will also take into account the road configuration to ensure that snow accumulation will not cause any problems during the freshet.

Inspection frequency will be increased during the following critical time periods:

- just prior to spring freshet to ensure that the culverts and stream crossings are in good state to accommodate the rapid spring thaw;
- during the spring freshet to ensure that the culverts and stream crossings are not impeding spring freshet and to initiate action when and where required to prevent wash outs; and
- just after heavy rainfall events to monitor water accumulation, to ensure that culverts and diversion/collection channels and ponds are passing precipitation as planned and to initiate action when and where required to prevent erosion and wash outs.

The amount of dust generated along the road and airstrip is dependent on the dryness of the surface, the number of vehicles, weight and speed, and maintenance of the driving surface. Regular grading of the road and airstrip combined with the addition of granular material to the surface will be needed. This will improve road safety and also reduce dust. In areas or times identified by the site supervisor as being prone to high dust levels or areas where safe road visibility is impaired or in areas where dust deposition is impacting fish habitat and/or water quality, the site supervisor will arrange mitigation measures as appropriate. This could involve actions such as grading of the road surface, placement of new coarser topping, and/or watering of the road surface. Use of chemical dust suppressants will be only used as a last resort and only in accordance with the *Environmental Guidance for Dust Suppression* published by the Government of Nunavut Department of Environment (2002), available online at the following website: http://env.gov.nu.ca/sites/default/files/Guideline%20Dust%20Suppression.pdf

All Sabina employees and contractors are instructed to report any road and airstrip maintenance problems or hazardous conditions to Project Management. Regular scheduled safety meetings will incorporate discussion and reminders related to all-weather airstrip and road use, operation and maintenance.

8.3.2 Watercourse Crossings Inspection and Maintenance

The watercourse crossing inspection and maintenance program has three main components:

- a regular inspection program to identify issues relating to watercourse crossings, such as structural integrity and hydraulic function;
- an event inspection program to track the impacts of large storm events on watercourse crossings, such as structural integrity and hydraulic function; and
- a culvert location inspection program to ensure that culverts have been installed in the right location with respect to the watercourse and that culvert capacity is adequate to ensure that the culvert(s) pass the water under all hydraulic conditions. In most cases there will be multiple culverts installed at different elevations at each stream crossing to ensure that these culverts can adequately pass normal summer flows as well as spring freshet and heavy rainfall flows.

8.3.2.1 Regular Crossing Inspection and Maintenance

During the freshet period, crossings inspections will be performed twice a week (mid-May through June) and weekly during the remainder of the ice-free period prior to fall freeze-up (July through October).

These inspection activities for each watercourse crossing will consist of:

- Visual inspection of its infrastructure to identify defects, cracks or any other risks to structural integrity. Particular attention will be paid to the inlet and outlet structures of culverts.
- Visual inspection to identify sediment or other debris accumulation impeding the free flow of water through the crossings. Maintenance operations will consist of hand removal of accumulated debris and repairing damage as soon as possible.
- Visual inspection of the upstream and downstream channel to identify bed erosion or scour around the watercourse crossing. Particular attention will also be paid to potential sources of sediment transport at the crossing. Inspection results will be recorded to help track change in conditions over time. Maintenance operations will consist of undertaking remediation of any detected problems and repairing damage as soon as possible.

8.3.2.2 Event Crossing Inspection and Maintenance

Following heavy or prolonged rainfall, each watercourse crossing will be inspected to identify potential risks to the crossing's structural integrity, debris accumulation and whether erosion and scour have occurred. Results will be recorded to help track changes in condition over time. The remediation of any detected problem and any necessary damage repairs will be undertaken as soon as possible, under the direction of the site supervisor.

8.3.2.3 Culvert Location Inspection

Culvert crossings will be visually inspected to confirm they have been properly executed and installed. These culverts will initially be installed during low flow conditions and thus it is possible that a culvert will not be sited correctly to pass all ponding of water through the road. The intent is to check for such conditions during the first snow melt and after rain so that adjustments can be made accordingly. Additional culverts will be installed, if necessary, should the inspection indicate that the culverts were installed in a location that does not optimally route water flows.

8.3.3 Snow Clearing

The Goose Property is expected to experience snow drifts because of strong winds over winter. As much of this snow as possible will be cleared to the downwind side of the road and airstrip to limit the wind re-depositing the same snow on the cleared road. Routine spring snow management will include the removal of any snow that accumulates at culverts so that water at freshet can move freely through the culverts and waterway. In the case of culverts, snow is removed from both ends but not from the inside.

8.3.4 Accidents and Malfunctions

8.3.4.1 Emergency Response

As a private road the responsibility for response to any emergency or accident lies solely with Sabina. It will be Sabina personnel that respond and deal with any emergencies that occur on the road and airstrip. Sabina has people on site trained in emergency response (firefighting, first aid, spill response) and, where appropriate, Sabina in such urgent circumstances will request assistance from other parties in the area (e.g., Xstrata Zinc and Sabina George camp). Sabina does not anticipate that emergency response will result in any demand on local public service providers in Kugluktuk or Cambridge Bay (fire, police, ambulance, medical, and maintenance). In most circumstances the emergency response will be met by Sabina personnel.

Sabina's emphasis will be on prevention with ongoing awareness, training, and ongoing safety measures, while at the same time keeping resources close at hand to respond to emergencies at the Project in a timely manner.

Sabina is fully responsible for the design, construction and maintenance of the road and airstrip for private use. Sabina will ensure its vehicles and equipment are in good working order and train its employees on airstrip/road safety (including use of helmets, seatbelts, speed limits, and improving visibility using reflective clothing and vehicle lights) and emergency response (first aid, firefighting, and emergency response). Emergency response also incorporates nursing/medical staff available at Goose Camp.

8.3.4.2 Accidents and Malfunctions

Despite the preventative and mitigation measures taken, should any incident arise as a result of human error or unforeseen circumstances, the response procedures outlined in the *Comprehensive Spill Contingency Plan* (Sabina 2011) will be implemented.

8.4 ENVIRONMENT MANAGEMENT

8.4.1 Wildlife

Wildlife may occasionally be observed on or immediately along the side of the all-weather airstrip and connecting road. Caribou and other wildlife will have the right-of-way at all times. In case of problems (e.g., groups of caribou), the project management and environmental personnel on site will be manage the situation. The project personnel will be notified by radio if any wildlife is observed on the road according to current communication procedures.

The following protocol will be implemented on the road and airstrip for the protection of wildlife:

- Vehicular traffic speeds on the access road will be limited to 50 km/hr.
- Prior to aircraft landing on the airstrip, a visual inspection will be conducted to identify the presence of any wildlife. If possible, the wildlife will be escorted off the airstrip; the flight crew will be notified by radio that such action is taking place and that they are not to land until it has been completed. If the wildlife cannot be escorted from the airstrip within a reasonable length of time, the flight crew will be instructed to divert to the George airstrip or to return to Yellowknife at the pilot's discretion.
- Where small to moderate aggregations of caribou (i.e., 1 to 50 animals) are observed within 100 m of the road, travel speeds will be reduced to 30 km/hr.
- Where large aggregations of caribou (i.e., 50 or more) are observed within 100 m of the road, at the discretion of the site supervisor, vehicle movements may be suspended until the animals have moved away from the road.
- If caribou are on the airstrip, at the discretion of the site supervisor, aircraft movement may be suspended and the aircraft diverted to George camp or back to Yellowknife until the animals have moved away from the area.
- Caribou and all wildlife will be given right-of-way on the road. Vehicles must stop until the animals are off the road.
- Locations of large aggregations of animals must be reported to the site supervisor who will inform all potentially affected employees and the environmental representative.
- All incidents between vehicles and wildlife must be reported to the Project Management/Environmental Department whether they are:
  - near-miss;
  - collision with injury to the wildlife; or
  - accidental death.
- Each incident will be investigated by the site supervisor and the environment department and measures taken to avoid re-occurrence. Disciplinary measures will be taken against any employee if the investigation concludes that the accident is the result of negligence.
- In the case of the accidental death of an animal, the Project Manager/Environmental Department will contact the Government of Nunavut Conservation Officer, KIA Senior Lands

Manager and the Hunting and Trapping Organization office in Kugluktuk and Cambridge Bay. The carcass will be removed from the road and incinerated to avoid attracting scavengers such as Arctic fox, wolves, grizzly bear, and/or wolverine.

8.5 MONITORING PROGRAM

8.5.1 Wildlife

Wildlife monitoring will be incorporated into current wildlife tracking according to the terms and conditions of current land use permits. This includes a log of sightings that detail wildlife observed, estimate of numbers and nearest kilometre marking along the road. The data will be aggregated and made available on-site during inspections.

8.5.2 Water Quality

Two water crossings use culverts; these are the best locations to monitor water quality. Water in these locations would have a greater probability of being in contact with any construction material, dust and spilled material. These locations provide access to an upstream and downstream component of the waterway and historic data is available as they have been included in baseline monitoring to date.

There could also be drainage from the quarry area. When there is noticeable flow out of a quarry, likely during spring melt, a water sample will be collected before this water enters a receiving water body. Standing water, unless it is to be discharged to the environment, will not be collected as it poses little risk to the receiving environment.

Water samples would be collected on a monthly basis over the open water period, late June to September inclusive. The parameters to be collected are similar to current terms and conditions of the water licence and include:

- physical parameters – field pH and water temperature, lab pH, conductivity, major anions and cations, turbidity, and total suspended solids; and
- total and dissolved metals.

The results will be compiled in camp, made available during inspection and included in the NWB annual report.

8.6 REVIEW OF THE TRANSPORTATION MANAGEMENT PLAN

The activities and costing of transportation management activities will be reviewed internally on an annual basis relative to the long-term exploration strategy for the Project and operational needs.

References

Rescan™
an ERM company

References

Definitions of the acronyms and abbreviations used in this reference list can be found in the Glossary and Abbreviations section.

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