Photo 8.7-3 Boulder barrier in the Umwelt Outflow Stream 100 m upstream from Goose Lake

8.6.2.4 Rascal Stream

In order to accommodate the airstrip extension, a realignment of Rascal Stream (RS) is required (Figure 5.2-1). Approximately 250 m downstream of Rascal Lake, the outflow splits into two, separate streams: Rascal Stream East (RSE), and Rascal Stream West (RSW). RSE flows northeast towards Goose Lake flowing through the location of the proposed airstrip. RSW flows to the northwest initially passing through Gosling Ponds 1 and 2 and eventually through Gander Pond prior to reaching Goose Lake (Figure 2-1). A small outflow from Gosling Pond 1 also flows east into RSE. Baseline hydrological studies found that approximately 70% of water in Rascal Lake Outflow passes through RSE before entering Goose Lake during spring freshet; the remaining 30% flows northwards through RSW (Rescan 2012a, 2012b, 2014b). Discharge is low in both streams during summer months; however flow in RSW was 0 m^3/s for extended periods on each of the three years of sampling, indicating that this stream is ephemeral.

RSE is the main migratory corridor for Artic Grayling moving between the Goose and Wolf watersheds throughout the open-water season and likely provides a critical pathway for fish migrating between summer and winter rearing habitat. Rascal Lake has a maximum depth of 3.7 m and, along with Goose Lake, likely provides overwintering habitat to fish that rear in both West and East Rascal streams.

Electrofishing, fry and spawner surveys show that Arctic Grayling utilize the full length of RSE for spawning and rearing. Populations overwintering upstream in Rascal Lake and downstream in Goose Lake may use the stream as a migration corridor when moving between summer and winter habitat.

RSW flows from Rascal Lake through Gander Pond and into Goose Lake. Arctic Grayling, Burbot, Slimy Sculpin, and Ninespine Stickleback have been caught in Gander Pond and RSW. A fry survey of RSW in 2013 found that Arctic Grayling do utilize this stream, but in far lower densities than in RSE.

8.6.3 Mitigation and Management

8.6.3.1 All-weather Road Stream Crossings

Due to limited habitat, the installation of road and culvert crossings at four locations along the all-weather road is not anticipated to result in direct adverse effects on fish or fish habitat. However, it is recognized that construction activities, culvert sizing, and culvert installation have the potential to result in the mobilization of sediments that could affect water quality and downstream fish habitats. The following erosion and sediment control (ESC) measures will therefore be implemented to avoid or minimize these effects:

- Culverts will be sized to handle maximum seasonal flows, thereby avoiding backwatering and potential erosion. Their design and installation will follow Northern Land Use Guidelines prepared by Indian and Northern Affairs Canada (now Aboriginal Affairs and Northern Development Canada (INAC 2010);
- In the Gander Pond Inflow Stream and the Echo Lake Outflow Stream, culverts will be embedded to approximately 15-20 percent of the culvert diameter to avoid bed erosion and subsequent perching (elevation drop at the culvert invert), and to permit fish passage if fish are present in the stream. Embedment may not be feasible at the Umwelt Lake Outlet Stream due to its boulder field characteristics; and
- Inlets and outlets will be suitably stabilized with rip-rap or similar material to prevent erosion.

8.6.3.2 Rascal Stream Diversion

The proposed stream re-alignment will permanently divert the flow from RSE into RSW by placing a set of two rock berms just north of Gosling Pond 1 (Figure 5.2-1). The two berms will be 180 and 270 m in length, lined with a geomembrane, 2.3 m in height, 6 m wide and with 1.5:1 H:V side slopes. To facilitate fish passage across the proposed temporary all-weather road, two 2.5 metre diameter by 16.5 metre-long box or Corrugated Steel Pipe (CSP) culverts will be installed approximately 109 metres upstream of the inflow of RSW to Goose Lake.

The re-alignment of Rascal Stream to divert all water from RSE downstream of the berm location into RSW will result in the loss of 8,702 m^2 (17,203 habitat units) of fish bearing habitat in RSE (see Appendix K). RSE is used heavily by Arctic Grayling for spawning and rearing. The re-alignment of this watercourse will result in the original highly productive stream being re-directed through the enhanced RSW before entering Goose Lake.

The re-alignment of Rascal Stream to divert all water from RSE downstream of the berm location into RSW will open up 103,887 m^2 (51,984 habitat units) of available fish bearing habitat in RSW (see Appendix K for the habitat gain budget). This will yield a net gain of 51,537 m^2 (38,896 habitat units) when removing the fisheries value of the existing, low quality fish habitat.

For a detailed assessment of the effects of the diversion on fish habitat budgets, please see Appendix K.

8.7 Human Environment - Archaeology

8.7.1 Baseline Summary

The Project area is within the lands traditionally used by the Copper Inuit, who are ethnographically defined as a group of the Central Eskimo. The territory of the Copper Inuit includes: portions of Victoria and Banks Islands; the Barrenlands south to Back River; Beechey Lake west to Contwoyto Lake; and extends from Wise Point, west of the Coppermine River and east to Perry River (Damas 1984). Early explorations of the area in were conducted by Samuel Hearne (1770 and 1772), John Franklin (1819-1822), George Back (1833-1834) and Vilhjalmur Stefansson and the Canadian Arctic Expedition (1910 and 1913 to 1918).

Previous archaeological research in the Arctic indicates that the earliest archaeological materials from this region date to approximately 3,500 BP and are associated with the Pre-Dorset culture (3,800 to 2,700 BP) (McGhee 1996). Artifacts from later cultural traditions including the Dorset (2,700 to 1,000 BP), Thule (1,100 to 200 BP), and Taltheilei (2,600 to 200 BP) are also expected within the RSA.

In 1978, David Morrison conducted a survey of southern Bathurst Inlet and recorded 61 archaeological sites (Morrison 1978, 1979). In 2004 Darren Keith and Andrew Stewart conducted an oral history and archaeological study of a caribou hunting camp site (*Tahikaffaaluk*) at the north end of Bathurst Lake (Keith and Stewart 2005). Additional archaeological investigations have been conducted as part of site-specific baseline work for this Project (Rescan 2012a, Rescan 2013b), the Goose Lake area by Fedirchuk (1997), the BIPR Project (Fedirchuk 2001, Blower 2003, Tischer 2010) and the Hackett River Project (Rescan 2008).

There are 269 known archaeological site with the RSA as of the end of 2013 (Rescan 2013). Of the 269 sites 172 are prehistoric, 39 are historic, 26 are multicomponent sites with both prehistoric and historic features or artifacts, and 34 are of undetermined antiquity. Within the RSA there are 3 burials, 124 campsites, 37 resource gathering sites, 38 lithic workshops, 33 lithic reduction sites, 5 lithic isolated tool sites, 4 lithic isolated finds (debitage), 17 markers (cairns or inuksuk), 1 quarry site, 2 faunal tool sites, 3 historic artifact scatters, and 1 historic isolated find. Of the 269 sites, 83 contain both artifacts and features, 97 contain only features, and 89 contain only artifacts. Artifacts attributable to specific cultural traditions have been identified at 22 of the 269 sites with 19 having artifacts indicative of the Pre-Dorset, one of the Dorset tradition, and two from the Taltheilei tradition.

8.7.2 Potential Effects

8.7.2.1 Goose Property Area: Airstrip Expansion, All-Weather Road, and Quarries

There are no known archaeological sites in direct conflict with the currently proposed Goose Property area site preparation activities for the airstrip expansion, all-weather road, and quarry infrastructure footprint. Archaeological site LjNh-5 is located approximately 162 m south of the Ice Road Alignment. Archaeological siteLjNhj-5 should be marked as “No Work Zones” and should be monitored by a professional archaeologist on a periodic basis to ensure that it has not been impacted by the Project. All of the remaining archaeological sites are located over 1,000 m from the Project airstrip expansion, all-weather road, and quarry infrastructure and no impacts are anticipated.

Archaeological site LjNh-5 is a prehistoric lithic scatter situated at approximately 320 m asl on a knoll overlooking the outlet of an unnamed creek flowing into Goose Lake. The site measures 12 m N-S by 12 m E-W, and consists of a white chert and three white quartz flakes observed in a surface exposure (left *in situ*). No formed tools or diagnostic artifacts were observed and based on the artifacts present the site is determined to have low archaeological significance.

8.7.2.2 Marine Laydown Area: Temporary Laydown Area

There are no known archaeological sites that will be directly impacted by the currently proposed site preparation activities associated with the Temporary Marine Laydown Area infrastructure footprint. Archaeological sites MdNl-6, MdNl-12, MdNl-13, MdNl-17, MdNl-18, and MdNl-20 are located between 150 m and 1,000 m from the proposed footprint. These sites should be marked as “No Work Zones” on Project maps and should be monitored on a periodic basis by a professional archaeologist to ensure that they have not been impacted by the Project. The remaining archaeological sites are located over 1,000 m from the Project infrastructure and no impacts are anticipated from the site preparation infrastructure footprint.

MdNl-6

Archaeological site MdNl-6 is a prehistoric campsite located in a surface exposure overlooking Bathurst Inlet. Site boundaries measure 230 m E-W by 60 m N-S. Vegetation at the site consists of ground-covering bushes, grasses, lichens, and mosses. The site consists of one cache with a pavement of stones beside it (Photo 8.7-1), two stone ovals, and one lithic scatter of approximately 40 white chert, and pink and white quartzite flakes was located in a surface exposure. Seven artifacts which are suggestive of the Arctic Small Tool tradition were collected from the site. Based on the features and artifacts present the site is determined to have high archaeological significance (Rescan 2013).

Photo 8.7-1. Cache (F1) at site MdNl-6

MdNl-12

Archaeological site MdNl-12 is a prehistoric cache site located on a break-in-slope overlooking Bathurst Inlet. Site boundaries measure 10 m N-S by 21 m E-W. Vegetation at the site consists of ground-covering bushes, grasses, lichens, and mosses. The site consists of one cache and one cairn. No artifacts were located at the site.

Based on the artifacts present the site is determined to have moderate archaeological significance (Rescan 2013).

MdNl-13

Archaeological site MdNl-13 is a prehistoric lithic scatter located in a surface exposure on a terrace overlooking Bathurst Inlet. Site boundaries measure 10 m diameter. Vegetation at the site is sparse consisting of patches of mosses, lichens, and grasses. The site consists of one lithic scatter containing two white quartzite flakes. All artifacts were left *in situ*. Based on the artifacts present the site is determined to have moderate archaeological significance (Rescan 2013).

MdNl-17

Archaeological site MdNl-17 is a campsite of undetermined age located on a bench overlooking the Bathurst Inlet. Site boundaries measure 20 m N-S by 10 m E-W. Vegetation at the site consists of ground-covering bushes, grasses, lichens, and mosses. The site consists of one stone circle and one hearth. No artifacts were found at the site. Based on the features present the site is determined to have moderate archaeological significance. (Rescan 2013).

8.7.3 Mitigation and Management

In all cases, avoidance of archaeological sites is the preferred recommendation. If avoidance is not practicable, then additional archaeological work would be required. Any additional archaeological work would be determined in consultation with the Government of Nunavut's Department of Culture and Heritage.

For any sites that are in close proximity to proposed development areas, but not within immediate impact zones, it is recommended that the areas be designated as "No Work Zones" during construction activities and the site boundaries marked with metal stakes at least one metre high with rope tied between the stakes. Periodic monitoring by a professional archaeologist should also be conducted to confirm that sites are not impacted. No further work is necessary for sites that are well outside of the impact zone of the proposed development; however, it is recommended that they be designated as "No Work Zones" on Project maps.

Should any archaeological materials be encountered during site preparation activities, all work in the immediate area must cease, and the Government of Nunavut, Department of Culture and Heritage and the Project Archaeologist must be contacted.

9.0 MANAGEMENT PLANS

The following management plans have been developed for the proposed site preparation activities and are included as appendices to the 2015 Site Preparation Application Package.

- Spill Contingency and Emergency Response Plan (Appendix C);
- Waste Management Plan (Appendix D);
- Hazardous Materials Management Plan (Appendix E);
- Quarry Management Plan (Appendix F);
- Transportation Management Plan (Appendix G);
- Abandonment and Restoration Plan (Appendix H); and

- Oil Pollution Emergency Plan (Appendix I).

The following sections provide a summary of each of the management plans.

9.1 Spill Contingency and Emergency Response Plan

The purpose of the Spill Contingency and Emergency Response Plan (SCERP) is to outline Sabina's approach to risk management and to ensure that an adequate level of emergency and spill response preparedness is available for 2015 Site Preparation Activities at the Back River Project.

The SCERP outlines Sabina's state of preparedness for events which may occur due to unforeseen circumstances and details response actions to be taken in the event of unintentional materials release or other emergency situations during the 2015 Site Preparation Activities. The SCERP is dynamic and will be updated at least annually to address any significant changes in operating plans, should they occur.

9.2 Waste Management Plan

The purpose of the Waste Management Plan (WMP) is to outline Sabina's plan for managing non-hazardous wastes, recyclables and treated sewage during the 2015 site preparation activities.

The following general waste management measures are presented in the WMP:

- Non-hazardous wastes will be sorted and temporarily stored before being backhauled to Yellowknife for recycling or disposal;
- Contact waters from general construction activities will be managed through the use of sediment fans and retention areas;
- Contact waters that collect in the secondary containment of fuel storage areas will be treated with an oil/water separator, contained within a dedicated berm/tank system and tested for compliance with current water license thresholds; and
- Hazardous waste will be management in accordance with the Hazardous Materials Management Plan (HMMP).

9.3 Hazardous Materials Management Plan

The purpose of the HMMP is to provide a consolidated source of information on the safe and environmentally sound transportation, storage, and handling of the major hazardous products that will be used during the 2015 site preparation activities.

The HMMP is based on the following principles of best practice management for hazardous materials:

- Identify and prepare materials and waste inventories;
- Allocate clear responsibility for managing hazardous materials;
- Describe methods for transport, storage, handling, and use;
- Identify means of long-term storage and disposal;
- Prepare contingency and emergency response plans (see SCERP);

- Ensure training for management, workers, and contractors whose responsibilities include handling hazardous materials; and
- Maintain and review records of hazardous material consumption and incidents in order to anticipate and avoid impacts on personal health and the environment.

9.4 Quarry Management Plan

The Quarry Management Plan (QMP) outlines Sabina's conceptual plans to develop quarries in support of the 2015 Site Preparation activities in an environmentally sound manner. General mitigation measures that Sabina will apply to these and any other quarries or borrow areas are presented, along with development plans for the two quarries associated with the Site Preparation activities. Specific mitigation measures are identified for the construction, operation and closure of each of the two quarries, and a monitoring program is prescribed.

The QMP describes the following key environmental protection measures:

- Only geochemically suitable material will be quarried and used as construction material for site preparation;
- Quarries will be developed to be free draining and berms will be constructed to divert surface water flows away from quarries and associated stockpiles. If present, runoff will be sampled and compared to the quarry runoff criteria outlined in the QMP; and
- Strategic placement of crushers to minimize dust migration beyond quarry boundaries.

9.5 Transportation Management Plan

The TMP has been developed to outline construction, operation and management of access and transportation associated with the 2015 site preparation activities including the all-weather airstrip and all-weather road.

The purpose of the TMP is to ensure sound management of water and waste associated with construction and operation of transportation corridors to minimize impacts to the local environment.

The TMP includes inspection and maintenance procedures, and outlines management measures to minimize potential impacts to wildlife and water quality, and to reduce potential impacts of dust.

9.6 Abandonment and Reclamation Plan

The Abandonment and Reclamation Plan is intended to describe closure scenarios for the 2015 Site Preparation activities at Goose and the MLA. Three scenarios are presented:

- **Site Preparation progresses directly into mine development:** Under this scenario, no closure and reclamation activities related to site preparation activities are required; this scenario would null and void this Plan, and all closure and reclamation activities will be completed as per a future Mine Closure and Reclamation Plan approved under Sabina's Type A Water Licence.
- **Delay between Site Preparation and mine development:** This scenario assumes an unspecified period of time between completion of the Site Preparation activities and mine development. Under normal circumstances, Sabina would continue to operate its camp seasonally with shut-down periods. The scale of the camp is such that full-time presence on-site is not required. Under this scenario, Sabina would have to relinquish control of the site. The landowner would need to conduct an initial site visit with a contractor to confirm site conditions and that there are no unnecessary risks to be addressed between the time of

receivership and implementation of the abandonment and restoration measures the following summer (for example, unsecure explosives or fuel storage; an open camp exposed to the elements, etc.).

- **No mine development:** This scenario assumes that the main Project will not progress into mine development by the end of the Site Preparation activities. Under this scenario, there will be no mine development and the abandonment and restoration measures described in the Plan will be implemented.

The Abandonment and Reclamation Plan also details closure objectives, commitments to progressive reclamation, post-closure monitoring, and estimated closure and reclamation costs.

9.7 Oil Pollution Emergency Plan

An Oil Pollution Emergency Plan (OPEP) has been developed to specifically assist in implementing measures to protect the marine environment and minimize impacts from potential spill events at the MLA site.

The OPEP outlines potential spill scenarios, and provides specific procedures for responding to spills while minimizing potential health and safety hazards and environmental damage. It also provides instructions specific to the MLA to guide all personnel in emergency spill response situations, defines the roles and responsibilities of management and responders and outlines the measures taken to prevent spills, and the related exercise and evaluation programme.

10.0 INDEPENDENCE OF ACTIVITIES

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

The all-weather road, airstrip extension and Umwelt and Goose Quarries are considered to be integral to each other, and as such constitute a group of activities that cannot be approved independent of each other. For example, the Umwelt Quarry relies upon the construction of the all-weather road. Since the quarried material will be used to construct the airstrip extension, the permitting of the quarry is necessary to carry out work at the airstrip.

The TLA at Bathurst Inlet is considered a separate activity from the activities at the Goose Property. While important for the Project timeline, it is not dependant on the activities at Goose, nor are they dependant on the permitting of the TLA.

11.0 CONSULTATION

Public consultation and engagement is a legal requirement in Nunavut, an industry best practice, and important corporate commitment. Effective public consultation and engagement helps ensure that community members are informed and knowledgeable about proposed projects, that community support for those projects is more readily obtained, and sustainable development goals are achieved. A key goal of Sabina's public consultation and engagement program has been to ensure the Company obtains a 'social licence to operate', by securing the support of a majority of residents from potentially impacted local communities. In order to obtain this goal, a number of process goals have been followed, including:

- Identification and prioritization of communities and community stakeholder groups;
- Developing an understanding of key community and stakeholder views regarding the Project;
- Addressing community and stakeholder issues and expectations; and
- Continuous improvement.

The establishment of open, respectful, and jointly beneficial relationships with local communities and stakeholders have been, and will continue to be, key priorities for Sabina. Sabina further recognizes the unique characteristics of the Inuit lifestyle and has strived to engage local communities in a culturally sensitive and appropriate manner. The Company is also committed to maintaining ongoing dialogue with local communities and will continue to be open to suggestions as to how its public consultation and engagement activities can be improved.

Sabina has and will continue to engage with the Kitikmeot Inuit Association (KIA), which is the primary Inuit organization with rights and responsibilities in the Project area. Kitikmeot Region communities have also been a key focus of Sabina's public consultation and engagement activities. These communities have been categorized based on the different levels of consultation and engagement employed by Sabina in each location. Categories were determined using a community's proximity to the Project, their potential to be affected by Project-related socio-economic and ecosystemic effects, and linkages to other aspects of the Project.

A number of Northwest Territories Aboriginal organizations have been engaged for the Project. Engagement has occurred (or will occur) primarily through informational meetings with the leadership and other representatives of

these organizations. Publically available TK from these organizations has also been reviewed by Sabina and documented in a report on Northwest Territories Aboriginal traditional knowledge.

Sabina's public consultation and engagement program is multi-faceted. It includes a commitment to cultural sensitivity and inclusiveness, and the use of various community engagement methods and tools. These include public meetings, meetings with key stakeholders and stakeholder groups, meetings with community advisory groups in Cambridge Bay and Kugluktuk, Project site visits, social media (e.g., websites and Twitter/email/RSS feeds), a Project newsletter, other distribution materials, establishment of a Cambridge Bay office, use of local employees and contractors including a Cambridge Bay-based Community Liaison Officer, execution of a TK study in partnership with the KIA, execution of various socio-economic/environmental studies, the eventual negotiation of an Inuit Impact and Benefit Agreement with the KIA, other forms of community engagement (e.g., radio shows, trade show participation, cross-cultural training, and community advertisements), and community donations.

Sabina began its public consultation and engagement program in June 2012. Since that time, dozens of formal meetings and numerous informal meetings with Project stakeholders have been held. Meeting minutes were taken during many of Sabina's public consultation and engagement activities, and have been incorporated into a public consultation database that contains over 150 topic directories. This database has been analyzed to identify key issues and concerns amongst communities and stakeholders. These can be categorized under three main themes: community benefits and engagement, employment and training, and environmental management and monitoring.

Community Benefits and Engagement

Information obtained through public consultation and engagement has played a role in the planning and design of the Project in a number of ways including baseline data collection, impact prediction, significance assessment, and the development of mitigation and monitoring programs. Public consultation and engagement will also provide new information to be considered as the Project advances. .

Sabina has gone through extensive effort to ensure no significant negative socio-economic and environmental effects will result from the Project, and has used both scientific methods and TK in this process. Likewise, Sabina has developed policies and plans that address three key areas of concern for local communities: caribou, fish and water quality, and mine tailings and contaminants. Sabina has additionally committed to providing various opportunities to the Kitikmeot Region including preferential employment, contracting, and training for local Inuit, continued implementation of a Kitikmeot-focussed donations policy, and the paying of all applicable taxes and royalties to governing bodies. An Inuit Impact and Benefit Agreement (IIBA) to be negotiated with the KIA will further outline Sabina's benefits-oriented commitments. Sabina hopes to additionally fly Kitikmeot employees directly to site or through Cambridge Bay.

Key specific information and findings from community engagement includes the following:

- Inuit culture, harvesting, and livelihoods should not be negatively affected by the Project;
- Kitikmeot communities should receive maximum benefit from the Project;
- Fear that the Project will prematurely shut down, promised benefits won't be realized, and negative socio-economic effects will result;
- Communities should be regularly engaged about the Project, throughout the mineral development process;
- Inuit should play a role in Project-related environmental management and monitoring;

- Mechanisms pertaining to the permitting, regulation, and oversight of the Project are unclear in some instances;
- Employment and Training
  - Preferential employment opportunities should be made available to Inuit from the Kitikmeot Region;
  - Training and apprenticeship programs should be established to help those without mining skills and experience to become meaningfully employed;
  - Mandatory criminal record checks will mean that many Kitikmeot residents will not be considered for employment;
  - Youth should be a focus of the employment and training initiatives developed by Sabina;
  - Routing employees through Yellowknife should be avoided as it leads to issues pertaining to substance abuse, absenteeism, and family instability;
  - Programs should be developed to support workers and their families dealing with personal, financial, and employment-related issues;
- Environmental Management and Monitoring
  - A comprehensive environmental management and monitoring program should be developed. Key areas of concern for local communities include caribou, fish, water quality, and mine tailings and contaminants;
  - Archaeological sites within the Project footprint must be protected;
  - Spill training, avoidance, and response capabilities must be developed by the Company;
  - Cumulative and transboundary effects of the Project must be assessed and managed; and
  - Guarantees must be in place that mine closure will be done properly.

A complete list of meetings and major correspondence between Sabina, Community and Stakeholder groups is presented in Appendix L.

12.0 MAJOR DEVELOPMENT

As defined in Article 26, Section 26.1.1, of the NLCA, a major development includes:

- A water power generation or water exploitation project in the Nunavut Settlement Area, or
- Is a project involving development or exploitation, but not exploration, of resources wholly or partly under Inuit Owned Lands.

The proposed site preparation activities are required to support additional exploration activity; as such, they do not constitute a major development.

13.0 REGULATORY REQUIREMENTS

Table 13.0-1 presents all of the regulator related permits, licenses, agreements and land leases required to authorize the site preparation activities.

Table 13.0-1: Current Permits, Licenses and Authorizations

Permit No.	Permit Name	Expiry	Issuing Agency
KTL304C017	Goose Lake Exploration	2014-12-13	KIA
KTP11Q001	Goose Lake Rock Quarry	2014-12-13	KIA
KTP12Q001	Goose Lake Airstrip borrow area	2014-12-13	KIA
N2010C0016	Back River Mineral Exploration	2014-10-31	AANDC
2BE-GOO1015	Goose Lake Water License	2015-03-31	NWB
KTL204C012	Boulder exploration	2014-12-13	KIA
KTL204C020	Boot exploration	2014-12-13	KIA
KTL312C004	Wishbone-Malley Exploration	2014-12-13	KIA
N2012C0003	Wishbone-Malley Mineral Exploration	2015-02-06	AANDC
2BE-MLL1217	Wishbone-Malley Water License	2017-03-26	NWB
KTL304F049	Winter road – Bathurst Inlet to Goose and George Lake	2014-12-13	KIA
N2011F0029	Winter road – Goose Lake to George Lake	2014-12-13	AANDC
N2010F0017	Winter road – Bathurst Inlet to Back River Project	2014-09-16	AANDC
KTL304C018	George Lake Exploration	2014-12-13	KIA
KTP12Q002	George Lake Borrow Quarry	2014-12-13	KIA
2BE-GEO1015	George Lake Water License	2015-06-15	NWB

Please see Appendix A of the Site Preparation Application Package for details.

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APPENDIX C

SPILL CONTINGENCY AND EMERGENCY RESPONSE PLAN

Comprehensive Spill Contingency & Emergency Response Plan 2015 Site Preparation Activities

October 2014

Table of Contents

1. INTRODUCTION AND BACKGROUND

1.1. Background

Sabina Gold & Silver Corp. (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 the Boot, Boulder, Wishbone, Malley/Needle and Del properties.

The Back River Project is located in western Nunavut, south of Bathurst Inlet within the Slave Structural Province. It lies approximately 525 kilometres northeast of Yellowknife, NWT 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.

1.2. Purpose

The purpose of the Spill Contingency and Emergency Response Plan (SCERP) is to outline Sabina's approach to risk management and to ensure that an adequate level of emergency and spill response preparedness is available for 2015 Site Preparation Activities at the Back River Project.

This SCERP has been developed to ensure that Sabina respects all applicable laws, regulations and requirements of the federal and territorial authorities. Sabina has applied for, or already obtained all required permits, approvals and authorizations required for the operations described below, in Section **Error! Reference source not found.**.

This document outlines Sabina's state of preparedness for events which may occur due to unforeseen circumstances. The SCERP details response actions to be taken in the event of unintentional materials release or other emergency situations during the 2015 Site Preparation Activities. The SCERP is dynamic and will be updated at least annually to address any significant changes in operating plans, should they occur.

A copy of the SCERP will be available at Sabina's exploration camps and headquarter offices.

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 effects and to enhance positive effects.

To achieve these goals, Sabina is committed to:

- Seeking 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 effects that could result 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.
- Working 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.

1.4. Sabina Policy on Initiation for Cleanup Activities

Sabina initiates cleanup activities when, in the opinion of management, Sabina is clearly associated, or likely associated with the spilled product. The guiding principles of Sabina's comprehensive SCERP is to comply with or exceed existing regulations to ensure protection of the environment, and to keep employees, government officials and the public aware of our plans.

2. ONGOING AND PROPOSED SITE PREPARATION ACTIVITIES

Activities planned for 2015 are divided into two groups, ongoing activities and proposed activities. The following sections describe each group.

Ongoing activities include:

- Goose Camp operations;
- Exploration and support activities; and
- Ice-based airstrip.

Proposed site preparation activities include:

- Ice road and associated water use;
- All-weather airstrip extension;
- Rascal Lake outflow stream realignment;
- Construction and use of a 6km all –weather road and associated crossings; and
- Quarry development and operation; and
- Staging of a Temporary Laydown Area (TLA) at the site of the proposed MLA.

2.1. Description of Ongoing Activities

Goose Exploration Camp

During site preparation activities for the Back River Property, it is anticipated that the existing Goose Exploration Camp (Goose Camp) will be used for ongoing exploration, engineering and baseline studies, and other site preparation activities.

Operation of Goose Camp

The Goose Camp will be utilized as a base for the aforementioned activities. No changes to the current camp accommodations are proposed.

Resupply of Goose Camp

The resupply of the Goose Camp and associated activities will take place utilizing all-weather and/or ice-based airstrips. No changes to the current resupply methodology are proposed.

Diesel Fuel Resupply and Storage

Additional fuel may be required for the proposed site preparation activities; this fuel will be supplied via aircraft and stored in the existing Goose Camp fuel storage area.

Arctic-grade diesel fuel will be used by motor vehicles and mining equipment on the site. Limited quantities of propane and gasoline will be used in maintenance facilities for smaller motorized equipment and machinery. All fuel to be used during the 2015 site preparation activities will be stored

within the existing 75,000 L tanks, within secondary containment. The Goose Camp fuel storage currently includes six 75,000 L tanks in tertiary containment and seven 75,000 L tanks that will require installation of a lined containment area, if used in 2015.

Explosives and Ammonium Nitrate Storage

Prepackaged explosives will continue to be delivered by air transport, sited and stored in accordance with legislative requirements and best management practices. Two magazines are currently located at Goose Camp; it is anticipated that additional magazines may be required.

Exploration and Study Support

Ongoing exploration and scientific studies to support the permitting and engineering phases will continue onsite. These may include geological mapping, drilling, geophysics, environmental baseline studies, and engineering studies. These activities, although based out of Goose Camp, may occur over the entire Project area.

Ice-based Airstrip

An ice-based airstrip on Goose Lake will be required for the delivery of equipment and materials necessary for site preparation activities. The ice-strip, which has been constructed in previous seasons on Goose Lake, will be built to Transportation Canada regulations and standards. No additional water use is currently anticipated for this activity.

2.2. Description of Proposed Site Preparation Activities

2.2.1 Goose Property

Ice Roads and Water Use

Ice roads, totalling approximately 6 km in length, will be required to connect and access the proposed quarries and explosives storage locations at the Goose Property. To support this work, water for construction will be necessary. It is estimated that 120 m3/day of water will be required to build and maintain this access during ice road operations. In the open water season, an estimated 70 m3/day of this total volume will be used for dust suppression and compaction of placed construction materials.

Quarries

A total estimated volume of 550,000 m^3 of quarried material will be required to complete the outlined site preparation activities. Two quarries have been identified for use: the existing quarry next to the airstrip and a new quarry located within the footprint of the future Umwelt open pit. Up to 550,000 m^3 of rock will be required to support site preparation activities, and this material will be extracted from one or both of these quarries. As such, Sabina is seeking approval to extract up to 550,000 m^3 of rock from each of the existing quarry and the proposed Umwelt quarry. The total volume of rock extracted from one or both quarries, however, will not exceed 550,000 m3.

Only geochemically and physically suitable material will be developed, and handled per current quarry management plans.

All-weather Airstrip Extension

The current airstrip will be extended to allow for servicing passenger and cargo aircraft. This airstrip will serve as the main air access to the Goose Property throughout the life of the Project. The all-weather airstrip will be designed to Transport Canada standard TP 312 Aerodrome Standards and Recommended Practices (2005). The airstrip will be approximately 1,524 m long and 45 m wide.

Rascal Lake Outflow Stream Realignment

One of the Rascal Lake outflows currently intersects the extended airstrip footprint. A realignment of the natural watercourse will be required to divert the water currently flowing from Rascal Lake directly to Goose Lake, to flow via Gander Pond to Goose Lake. This realignment will require the construction of two berms to divert 100% of the flow from Rascal Lake through Gander Pond to discharge into a nearby area of Goose Lake. Berm construction material will be sourced from an approved quarry source.

All-weather Road and Associated Water Crossings

The proposed road alignment at the Goose Property will be constructed as an all-weather road. This road alignment, totaling approximately 5 km in length, is required to access the existing rock quarry, the new Umwelt quarry, and the extended all-weather airstrip.

The all-weather road 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 will consist of geochemically suitable rock sourced from the existing quarry and/or Umwelt quarry.

Stream flow through the road alignment will be conveyed using appropriately sized culverts.

2.2.2 Temporary Laydown Area

A TLA will be staged at the site of the future MLA location. Activities will include the offloading of two barges containing materials, equipment, and fuel for future use; these materials will be stored at the TLA. Explosives magazines will also be offloaded to the TLA and stored empty for 2015.

Arrival and offloading of the barges and staging of the TLA will occur in the open-water season of 2015 over a period of approximately 25 days. The barges will come from a western route, either from the Lower Mainland or from Hay River.

Material Storage and Access

An estimated laydown area of up to 1 ha will be required to store equipment, materials and fuel for future Project works. With the exception of large preassembly and modular equipment, materials arriving at the TLA will be housed in sea containers. The equipment and materials will be placed on dunnage or swamp mats to protect the permafrost.

The TLA will be accessed from the barge landing area using swamp mats provisionally placed directly onto the tundra to preserve the permafrost. Once the equipment and fuel are stored, the swamp mats along this corridor will be removed and transported offsite with the outgoing barges.

To facilitate these efforts, personnel (10-14 staff) will be shuttled on a daily basis from the Goose Camp to the TLA. Minimal temporary structures (e.g. tents) will be used at the TLA site; these may include a first aid room, lunch room, and restrooms (pactos). Food, water, and waste will be temporarily stored and removed periodically. Local measures will be implemented to minimize wildlife attraction to the TLA.

Diesel Fuel Supply and Storage

Sabina will require 600,000 L of diesel fuel for future site preparation; this fuel will be shipped to the MLA (via barge) and stored in land-based steel tanks at the TLA. The tertiary containment for fuel tanks will be Arctic-grade manufactured instaberms or similar product. These will be placed on a stable foundation of interlocking swamp mats that will remain for the duration of the facility.

The capacity of each berm will be 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 design of these containment products will be based on Arctic installation and industry storage standards. Fuel transfer will incorporate hoses and pumps within tertiary containment. Transfer methodology is described in the attached Oil Pollution Emergency Plan (OPEP).

3. RISK MANAGEMENT AND EMERGENCY CONTACTS

3.1. Risk Management

The likelihood of a significant spill event occurring at either the existing Goose tank farm or the proposed temporary fuel storage area at the MLA is very low, due to the use of double-walled tanks contained in the lined, bermed areas, or within instaberms, and the prescribed procedures for fuel transfer and anti-siphon devices in the tanks.

The greatest likelihood of an incident is 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 of the solid product can be easily cleaned up. Regular inspection of storage areas will allow for rapid detection of any spill.

Explosives will be delivered in designated containers approved for transport of explosives and stored within the original packaging in the magazines. Strict housekeeping and tracking standards will be kept. Any spill of explosive material would be immediately cleaned up and regular inspection will allow for rapid detection of any spill.

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

Despite the mitigation measures taken, should any incident arise as a result of human error or unforeseen circumstances, the operating procedures outlined in this SCERP will be implemented. An Oil Pollution Emergency Plan (OPEP) has also been developed which will be the governing document for spills occurring at the MLA.

3.2. Emergency Contact Information

Contact information for all Sabina staff members involved in emergency response is presented in Table 1 and will be updated in future iterations of this SCERP. External contacts that may provide additional assistance as necessary are presented in Tables 2 and 3. Key government contacts are provided in Table 4.

These contacts are reviewed and updated with every review of the SCERP.

Table 1 Emergency Response Team

Title	Name	Telephone No.
Environmental Superintendent	Cheryl Wray	(778) 588 1999
Environmental Coordinator	Merle Keefe	(778) 588 1999
Operations Superintendent	Rick Peter	(778) 558 5995

Manager Site Operations	John Laitin	(604) 998-4187
VP Sustainability	Matthew Pickard	(604) 998-4175
VP Project Development	Wes Carson	(604) 998-4175

Table 2 External Emergency Response Contacts

Emergency Situation	Agency Contact	Telephone No.
Medical emergency / medevac	Kitikmeot Regional Health Centre	867-983-4500
	Cambridge Bay Heath Center	867-983-4500
	Stanton General Hospital	1-800-661-0867
	Air Tindi	867-669-8200
Poisonous substance ingestion	Poison Control Centre	1-800-268-9017
Search and Rescue	Cambridge Bay RCMP	867-983-0123
	Kitikmeot Search and Rescue	867-983-5100
Fatality	Cambridge Bay RCMP	867-983-0123
Workers' Safety and Compensation Commission	Incident and Injury Reporting	1-800-661-0792
Hazardous material spill	Emergency/ Spill Report Line	867-920-8130
Crime	Cambridge Bay RCMP	867-983-0123
Wildlife management	Department of Environment – Cambridge Bay	867-983-4164

Table 3 External Spill Response Contacts

Expediting Company	Contact Name	Telephone No.
Shell Canada, Mobile Environmental Response	Steve Bassett	867-874-2562
Kitnuna	Wilf Wilcox	867-983-2331
Nuna Logistics Ltd.	Court Smith	867-682-4667
Dupont (Fuel Dye)	-	905-821-5660
Frontier Mining (Sorbents)	-	867-920-7617
Acklands (Sorbents)	-	867-873-4100 867-920-5359

Table 4 Key Government Contacts

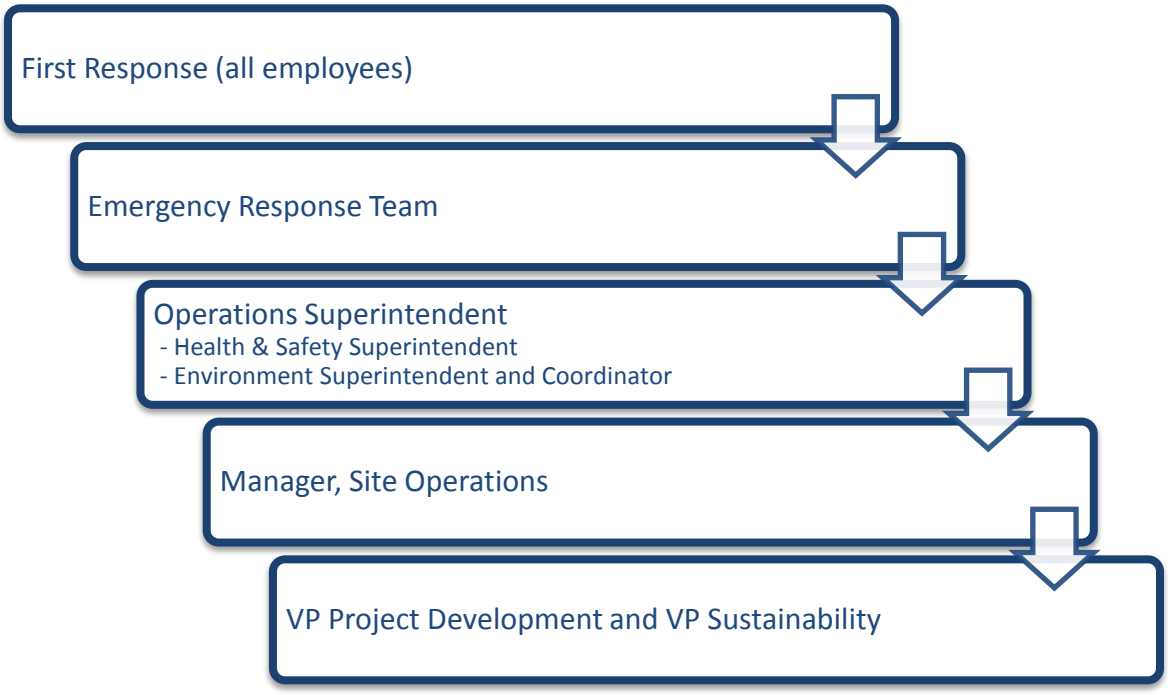
Agency/Organization	Contact	Telephone No.
Aboriginal Affairs and Northern Development Canada	Eva Paul, Water Resources Officer Baba Pederson, Resource Mgmt. Officer Erik Allain A/Manager of Field Ops	867-982-4308 867-975-4296 867-975-4295
Canadian Coast Guard	-	1-800-265-0237

Department of Fisheries and Oceans	Margaret Keast	867-979-8000
Environment Canada	Craig Broome, Manager of Enforcement Wade Romanko, Env. Emerg. Officer	867-669-4730 867-669-4736
Government of Nunavut Environmental Protection	Robert Eno, Director Environment	867-979-7800
Kitikmeot Inuit Association (KIA)	-	867-983-2458
Nunavut Water Board	N/A, Exec. Director Phyllis Beaulieu, Manager of Licensing	867-360-6338
RCMP (Kugluktuk)	-	867-982-2111
RCMP (Yellowknife)	-	867-669-1111

4. ROLES AND RESPONSIBILITIES

The initial stage of any spill or emergency incident and resultant response is critical. An effective and timely response is essential to minimize environmental impacts and prevent an emergency situation from escalating to a higher level. Therefore, all relevant personnel must be fully aware of their individual duties and responsibilities as presented in this SCERP.

The general response and notification chart is:



4.1. All Employees (First Responders)

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

4.2. Emergency Response Team

- Members determined by Operations Superintendent based on response needs;
- Members report to the scene of the incident;
- Work closely with the Operations Superintendent to determine appropriate response strategy;
- Contact departmental resources via radio as required during the emergency response;
- Direct ERT members in their respective tasks as required; and

- Participate in a post-emergency debriefing session.

4.3. Operations Superintendent

- Evaluate the initial situation and assess the magnitude of the emergency;
- Assemble and manage the Emergency Response Team, as required;
- Develop an overall plan of action;
- Notify Manager, Site Operations, Health & Safety Superintendent, and Environmental Superintendent and Coordinator of incident;
- For spills, report to NWT-NU 24-hour Spill Report Line at 867-920-8130 and ensure cleanup is completed to Sabina standards in line with direction from the Manager, Site Operations, Health & Safety Superintendent, Environmental Superintendent Coordinator;
- Provide liaison with management to keep them informed of response activities;
- Act as the spokesperson with government agencies as appropriate;
- Document all actions and decisions;
- Collect photographic records of the event and response efforts;
- Participate in post-emergency debriefing;
- Assist in the accident/incident investigation process;
- Complete Government Agency notification processes;
- Document the cause of the emergency and effectiveness of the response effort, and recommend the appropriate measures to prevent a recurrence;
- Ensures Emergency Response Team is adequately trained;
- Ensures Emergency response and/or monitoring equipment and supplies are regularly inspected and maintained;
- Ensure that all involved departments complete reporting process; and
- Prepare and submit follow-up documentation required by appropriate regulators.

4.4. Manager Site Operations

- Provides advice and ensures response is completed to Sabina standards in line with direction from the Operations Superintendent and VP Sustainability;
- Organize with Operations Superintendent emergency response training and exercises; and
- Lead investigation and identify measure and/or training to prevent similar incidents occurring.

4.5. Environmental Superintendent and Coordinator

- Provides advice and ensures incident is documented appropriately as per this plan and regulatory requirements;
- For spills; 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.
- For spills; 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 VP Sustainability and Site Superintendent liaise with NWT/NU applicable agencies regarding on-going cleanup activities, inspections and incident closure;
- Assist in initial and ongoing response efforts;
- Provide advice to assist with cleanup;
- Co-ordinate inspections by applicable agencies; and
- Assist with investigation and identify measure and/or training to prevent similar incidents occurring.

4.6. Health & Safety Superintendent

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

4.7. VP Project Development and VP Sustainability

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

5. TRAINING AND TESTING

Sabina will ensure that personnel involved in emergency and spill response have received prior training and the requisite skills to safely minimize risks and respond to emergencies.

The personnel directly linked to emergency and spill response operations will receive training to familiarize themselves with the SCERP and Hazardous Materials Management Plan (HMMP) on a regular basis according to their duties and responsibilities. All completed training will be recorded in the training register.

The personnel directly linked to emergency and spill response operations, contract employees and the other responders identified in this SCERP should take part in the annual training program. Training will be conducted to ensure adequate numbers of responders are available for all levels, times, and work shifts.

5.1. Training

4.1.1 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 an emergency situation;
- 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.

5.1.2. 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 an 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; and
- Turn off valves to stop the flow of fuel.

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