



# **ENVIRONMENTAL MANAGEMENT PLAN**

## **ARCADIA BAY PROPERTY** Coronation Gulf, Nunavut

**Prepared by:**



**Effective Date: October 6, 2017**

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## 1 INTRODUCTION

The Arcadia Bay Environmental Management Plan (EMP) has been developed on behalf of Transition Metals Corp. and Nunavut Resources Corporation (the Companies) in accordance with applicable legislation, guidelines and best practices.

This EMP will come into effect June 1, 2017, pending approval. Copies and updates to this plan may be obtained via the Companies or APEX Geoscience Ltd. (APEX). The EMP will be replaced, upon approval, if there are any significant changes to the activities outlined in the existing permits which warrant changes to the EMP. Minor changes will be submitted as an addendum to the EMP and submitted to the distribution list as required.

### 1.1 Contact Details

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### 1.2 Purpose and Scope

The purpose of this EMP is to outline Transition Metal Corp.'s (Transition) environmental policy, and to address environmental issues related to exploration at the Arcadia Bay Property. The plan includes the following:

- A summary of regulatory requirements.
- An overview of environmental protection measures.
- Procedures for dealing with archaeological or paleontological sites.
- Potential Impacts and Proposed Mitigation Measures
- Environmental and socio-economic significant areas near the Property
- Wildlife disturbance mitigation practices and appropriate use of firearms.
- Land, flora, and fauna disturbance mitigation
- A summary of hazardous material handling and waste management practices.
- A summary of abandonment and restoration plans.

Emergency response guidelines are beyond the scope of this plan. In the event of an environmental emergency, personnel will defer to the Arcadia Bay Property "Emergency Response Plan" and "Spill Contingency and Fuel Management Plan" for guidance.

### 1.3 Environmental Policy

Transition places high priority on its responsibility for the environment and for the health and safety of the communities in which it operates or proposes to operate. As a mineral exploration company, active in searching for new resources, Transition believes that it has an important role to play in the promotion of sound environmental management. Transition (along with its subsidiaries) affirms its commitment to the environment by ensuring that environmental issues are reviewed as appropriate by its board of directors, and that all employees, consultants, and business partners are aware of their environmental responsibilities.

Transition believes in following best practices for responsible exploration. The company is a member of the Prospectors and Developers Association of Canada who has worked with industry, scientist and government agencies to develop a framework referred to as "E3", to assist its member companies identify and advance best practices. The purpose of the E3 program is to integrate social, environmental and health and safety values into their decisions and operations in an accountable and transparent manner. Effectively applied, the guidance tools provided by E3 assist the company to:

- Assessing and reducing risks
- Minimizing negative impacts (social and environmental) and
- Optimizing the benefits to all involved – local communities, the host country, investors and the company.

Transition is committed to fully comply with all existing laws and regulations to help ensure the protection of the environment. Transition ensures that all employees, contractors and consultants are fully informed on all procedures established to help protect the environment. Transition cooperates with other groups committed to protecting the environment and ensures that employees, consultants, contractors, government, and the public is informed on the procedures followed to help protect the environment.

The company's full Environmental Policy, can be downloaded from the corporate Governance page of their website at <http://www.transitionmetalscorp.com/company/corporate-governance>.

#### **1.4 Applicable Legislation and Guidelines**

Acts, regulations, and guidelines that apply to the storage, handling, transport, spill prevention and response of hazardous materials include, but are not limited to, the following:

##### **1.4.1 Federal**

- Canadian Environmental Protection Act
- Environment Canada's Environmental Emergency (E2) Regulations
- Implementation Guidelines for the Environmental Emergency Regulations
- Canadian Standards Association (CSA) Z1600-14 - Emergency and continuity management program
- National Oil Spill Preparedness and Response Regime
- Environment Canada's Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations
- Environment Canada's Guidelines for the Preparation of Hazardous Material Spill Contingency Plans, 1990
- Species at Risk Act
- Canada Wildlife Act
- Fisheries Act
- Department of Fisheries and Oceans Canada Operational Statements
- Migratory Birds Convention Act
- Nunavut Waters and Nunavut Surface Rights Tribunal Act
- Transportation of Dangerous Goods Act
- Transportation of Dangerous Good Regulations
- National Fire Code of Canada

- Workplace Hazardous Materials Information System
- Canadian Centre for Occupational Health and Safety Act
- CCME Environmental Codes of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products Storage Tank System
- Territorial Lands Act
- Nunavut Land Claims Agreement
- Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations
- Guidelines for Spill Contingency Planning
- Northern Land Use Guidelines

#### **1.4.2 Territorial**

- Northwest Territories and Nunavut Spill Contingency Planning and Reporting Regulations
- Contingency Planning and Spill Reporting In Nunavut – A guide to the New Regulations
- Guideline for Industrial Waste Discharges in Nunavut
- Fire Prevention Act
- Environmental Protection Act
- Mine Health and Safety Act and Regulations
- Public Health Act
- Safety Act
- Nunavut Occupational Health and Safety Regulations
- Environmental Guideline for the General Management of Hazardous Waste
- Nunavut Wildlife Act
- Caribou Protection Plan / Caribou Protection Measures
- Environmental Guideline for the Burning and Incineration of Solid Waste

#### **1.5 Other Plans**

The EMP should be considered as a part of the property wide management system. Other management plans in place at the Arcadia Bay Property include:

- Abandonment and Restoration Plan (ARP)
- Emergency Response Plan (ERP)
- Spill Contingency and Fuel Management Plan (SCFMP)
- Waste Management Plan (WMP)

#### **1.6 Property Description and History**

The Arcadia Bay Property is a gold mineral exploration property located within the Kitikmeot region of Nunavut, within the 1:50,000 National Topographic System (NTS) map sheet 076M11. The Property, composed of Inuit-Owned Land (IOL) Parcel CO-31, is located on the shore of Arcadia Bay, on the Coronation Gulf, approximately 160 kilometres (km) east of Kugluktuk, 200 km west of Hope Bay, and 305 km southwest of Cambridge Bay. The Property is centred at approximately 67°42'21.6"N and 111°32'13.2"W or, using the Universal Transverse Mercator (UTM) conformal projection, 483608 E/7510147 N, North American Datum (nad) 83 zone 12. The land parcel measures approximately 7.5 km north-south by 4.5 km east-west covering 2,696 hectares (Appendix 1).

Float or ski-equipped fixed wing aircraft access to the Property is via Salt Lake, located on the northern perimeter of the Property. Alternatively, an airstrip associated with the Ulu deposit is located approximately 95 km to the south or there is also an airstrip at the Tree River Lodge,

located approximately 20 km to the west, which can also be utilized. A helicopter will remain onsite to move personnel and equipment around the project area. A barge landing site, located at the north end of the Property may also be utilized. Barge service is available on the Coronation Gulf for a short season in mid to late summer.

The proposed 2017 exploration activities on the project will include a 12 hole diamond drill program, totaling approximately 2,500 metres (m). A small (12-person) seasonal camp will be required to support the exploration activities at the project. The camp will be located approximately 2 km south of the barge landing, at a historic site used by Orofino Resources Ltd. in the late 1980's. The approximate location of the camp is 67°43'12.9" N and 111°23'6.9" W or 483701E/7511726N UTM NAD 83 Zone 12. The camp structures are expected to include 1 office tent (12X16'), 3 sleeping tents (12X16' each), 1 first aid tent (12X16'), 1 dry (16X20'), 1 generator/storage shack or Weatherhaven tent (14X16'), and 1 core logging/sample storage shack (16X20'). The majority of the structures will be insulated Weatherhaven tents, or similar, with plywood floors.

A fuel cache will be established on stable ground near the camp, primarily to store diesel (to a maximum of 100-205 litre (L) drums) and jet fuel (to a maximum of 50-205 L drums). Small quantities of gasoline (to a maximum of 10-205 L drums) and propane (to a maximum of 50-100 pound (lb) cylinders) will also be stored. Small temporary fuel caches (totaling less than 4,000 L) may also be required to support the exploration activities, such as staking, prospecting, geological sampling and geophysics at the Property.

## **2 ENVIRONMENTAL PROTECTION MEASURES**

Exploration activities at the Arcadia Bay Property will be assessed for environmental impact risks and every measure available will be taken to ensure the protection and preservation of the natural environment. For the duration of the program, all activities will be documented and sites photographed to comply with environmental due diligence. All on-site employees and contractors will be provided with environmental training, and will become familiar with relevant regulations. The Project Supervisor will be responsible for implementing environmental policies and training, and managing the environmental monitoring program.

Environmental training, monitoring, reclamation, and site clearance surveys will be built in to the program budget to ensure adequate resources are being allocated to environmental management. Preference will be given to contractors with high standards of environmental stewardship, and who have a proven track record of sound environmental practice.

## **3 ARCHAEOLOGICAL OR PALEONTOLOGICAL SITES**

There is potential for discovery of previously unknown archaeological or paleontological sites on the Arcadia Bay Property.

Actions will be taken to ensure that any known or undocumented archaeological or palaeontological sites or artifacts are not disturbed. These include, but are not limited to:

- No staff, contractors or project visitors will operate any vehicle over a known or suspected archaeological or palaeontological site.
- No staff, contractors or project visitors will remove, disturb, or displace any archaeological artifact or site, or any fossil or palaeontological site.

- The companies will immediately contact the Government of Nunavut Department of Culture and Heritage (CH) at (867) 934-2046 or (867) 975-5500 should an archaeological site or specimen, or a palaeontological site or fossil, be encountered or disturbed by any land use activity. A report will be prepared documenting the discovery and sent to CH and the Kitikmeot Inuit Association (KIA) Department of Lands, Environment & Resources. Reports will include GPS coordinates, a brief description of the site and/or artifact and photos (if possible).
- Staff, contractors or project visitors will immediately cease any activity that may disturb an archaeological or palaeontological site if encountered during the course of a land use operation until permitted to proceed with the authorization of CH.
- Staff, contractors or project visitors will follow the direction of CH in restoring disturbed archaeological or palaeontological sites to an acceptable condition.
- Staff, contractors or project visitors will provide all information requested by CH concerning all archaeological sites or artifacts and all palaeontological sites and fossils encountered in the course of any land use activity.
- Building of inuksuk is prohibited.
- The Companies will ensure that all persons working under their authority are aware of these conditions concerning archaeological sites and artifacts and palaeontological sites and fossils.

***Nunavut Department of Culture and Heritage:***

***Phone:*** 867-975-5500

***Fax:*** 867-975-5504

***Kitikmeot Inuit Association***

***Phone:*** 867-982-3310

***Department of Lands, Environment & Resources:***

***Fax:*** 867-982-3311

## **4 IDENTIFICATION OF POTENTIAL IMPACTS AND PROPOSED MITIGATION MEASURES**

### **4.1 Designated Environmental and Socio-Economic Areas**

Although the Arcadia Bay Property does not contain any federal or territorial protected areas, there are a number of sensitive or protected areas near the Property such as:

- As the Property is located along the shore of Arcadia Bay, south of the Coronation Gulf, it is adjacent to the Victoria Island Caribou Sea Ice Crossing,
- The Bathurst Elu Inlets Bird Habitat is approximately 60 km to the north-east,
- A caribou freshwater crossing is approximately 50 km south-west,
- And a caribou calving area is approximately 80 km to the south-east.

The Arcadia Bay Property is also located within an area of traditional use and has been defined as a char area of abundance as well as having a high Mineral Potential.

The companies will ensure that all staff, contractors and guests to the Property will respect and preserve all natural, cultural, or historical resources.

## **4.2 Wildlife**

### **4.2.1 General Disturbance Mitigation**

There is a potential to disturb wildlife by noise (helicopter, generators, drilling) or human interaction. Such disturbances can cause stress-induced health problems and mortality. Wildlife can also be displaced through loss of habitat. Monitoring and mitigation strategies will be in place at the Arcadia Bay Property to minimize the potential for any impact to wildlife and habitat. Mitigation measures specific to the project are outlined below.

All interaction with wildlife is discouraged; however, employees and contractors will be trained in the appropriate actions to take when encountering wildlife in the field. Intentionally approaching, disturbing, or feeding wildlife is strictly prohibited. Any incidents will be thoroughly investigated and disciplined. All wildlife, and their dwelling sites, will be respected and efforts will be made to avoid them. All personnel will be required to record any wildlife sightings and will be instructed on the appropriate action to take when encountering wildlife in the field.

Animal sightings will be recorded in the "Wildlife Record Log" and reported as part of the "Wildlife and Environment" section of the Arcadia Bay Property Annual Report. If any wildlife enters any of the area of operations at the Arcadia Bay Property, protection measures will be followed and operations will be halted until the animal has moved out of the vicinity. Any bears or nuisance wildlife will be immediately reported to the project supervisor, the KIA and the Nunavut Department of Environment. Emergency Wildlife Contacts are listed in Appendix 2.

The majority of field activities planned for the Arcadia Bay Property are very low impact. Geochemical sampling and geological mapping require no mechanized equipment and ground geophysical surveys do not require the use of any sizable or noisy machinery. Diamond drilling may cause noise disturbances to passing animals, but care will be taken to position drill sites away from any wildlife nests or dwellings.

Aircraft support is required to support operations at the Arcadia Bay Property. Helicopter support will be required for daily operations including pick up/drop off of field personnel and drill rig and fuel moves. Possible impacts that may arise from the use of aircraft include fuel spills, and noise disturbance. When low altitude flights are necessary, such as deploying field personnel, all efforts will be taken to avoid wildlife, dwellings, and nests. Pilots will be instructed not to land where wildlife is present unless it is an emergency situation. If a landing occurs for any reason in the presence of wildlife, it will be documented and submitted as part of the "Wildlife and Environment" section of the Arcadia Bay Property Annual Report.

Procedures will be put in place to ensure aquatic life will also be protected on the Property. Working in and around waterbodies will be done in such a way that prevents disturbance to any aquatic life and habitat. Waterlines will be properly placed and screened in accordance with the "Freshwater Intake End-of-Pipe Screen Guideline" (DFO). All sumps, fuel caches, hazardous materials storage, drill sites and camps will be located at least 31 m from the high water mark of any water-body and no wastes will ever be allowed to enter any water-bodies.



#### **4.2.2 Caribou Mitigation and Monitoring**

Although the Arcadia Bay Property lies outside of critical caribou habitat, the Companies recognize special consideration is required and the following measures will be strictly followed to mitigate potential impacts on caribou:

- Caribou avoidance will always be the priority mitigation measure.
- Whenever possible, drilling activities will be planned to avoid caribou.
- The Government of Nunavut, local hunters and trappers organization, community members and any other interested parties will be consulted in order to incorporate Inuit Qaujimajatuqangit into the project planning.
- The Companies will communicate with regarding caribou sightings and appraised movements in the area
- Whenever possible, local community members will be employed as wildlife and environmental monitors.
- All sightings of caribou will be reported to the project supervisor, included in the report will be the number of caribou and distance from camp or work site, their approximate numbers, direction of movement and general behaviour.
- Wildlife reports, containing information on sightings and interactions of all wildlife, denning sites, raptor nests and any work suspensions will be submitted annually to regulators, including the KIA, NIRB and the Government of Nunavut Ecosystem Biologist.
- The companies will establish a caribou alert system to alert personnel of the number and distance of caribou from camp, barge landing, drill sites, and mapping, prospecting or sampling areas.
- The location of caribou will be monitored during all helicopter flights, the pilot and passengers will survey for any caribou and report any potential sightings to the project supervisor.
- In the event caribou cows calve in proximity to the camps or work areas, operations will be suspended (e.g. drilling, mapping, prospecting, sampling, helicopter flights, snowmobile and ATV) in all work areas within 10 km of any area occupied by cows and calves until caribou have moved out of the 10 km radius.
- When safe to do so, flights lower than 610 m (e.g. airborne surveys and shorter transportation flights) will be suspended in the presence of caribou cows and calves.
- During the spring pre-calving migration (April 15 – June 1), fall post –calving migration (June 15 – August 1) and pre-breeding rut migration (August 1 – November 10) periods, the shores of water bodies within proximity of the Property will be surveyed. The Companies will suspend all operations within 10 km of any caribou crossing until the caribou have safely crossed.
- Activities will be suspended if concentrations of caribou (50 or more) approach within 2 km of drilling operations. Activities will not resume until all of the caribou have moved out of the area.
- A 1 km buffer zone will be used as a measure of a safe distance for working in areas where caribou (less than 50) are present. If caribou come within 1 km of any work site, work activities will immediately cease until the caribou have moved safely beyond the buffer zone.
- Absolutely no activities will be conducted that will interfere with caribou cows and calves. All activities that may interfere with caribou cows and calves will cease.
- The Companies will insure that absolutely no exploration activities will cause a diversion to the migration patterns of any caribou.

#### **4.2.3 Carnivore Mitigation and Monitoring**

As with the caribou, Transition commits to comply with all current environmental legislation and Best Practices, and work with all concerned stakeholders, including federal, territorial, local and Inuit administrations, as well as local community members, to develop mitigation, management and monitoring programs which take into consideration all wildlife, including grizzly bears, wolves and wolverines. Transition has been in contact with the GN Wildlife Deterrent Specialist, Mike Harte, in order to obtain information regarding specific mitigation and deterrent programs with respect to Grizzly Bears, Wolves and Wolverines. Disturbance mitigation measures may include activities such as the use of an electric fences around the camp to minimize any interaction. The Arcadia Bay Environmental Plan will subsequently be updated with any additional information that the GN Wildlife Deterrent Specialist and all stakeholders can provide. Any changes to this, and any other Plans, will be included with the Annual Reports submitted to the KIA, NWB and NIRB.

#### **4.2.4 Moose and Muskox Mitigation and Monitoring**

As the Project area is located within moose and muskox habitat, specific monitoring and mitigating measures for these species will be implemented. These measures may include, but not be limited to:

- Avoidance of all wildlife, including moose and muskox will always be the priority mitigation measure.
- All exploration and drilling activities will be planned to avoid wildlife, including moose and muskox.
- The Government of Nunavut, local hunters and trappers organization, community members and any other interested parties will be consulted in order to incorporate Inuit Qaujimagatuqangit into the project planning.
- The Companies will communicate with all interested stakeholders regarding any moose and muskox sightings and appraised movements in the area
- Knowledgeable local community members will be employed as wildlife and environmental monitors.
- All sightings of wildlife, including moose and muskox will be reported to the project supervisor, included in the report will be the number of animals and distance from camp or work site, their approximate numbers, direction of movement and general behaviour.
- Wildlife reports, containing information on sightings and interactions of all wildlife, denning sites, raptor nests and any work suspensions will be submitted annually to regulators, including the KIA, NWB, NIRB and the GN Ecosystem Biologist.
- In the event moose or muskox cows calve in proximity to the camps or work areas, operations will be suspended (e.g. drilling, mapping, prospecting, sampling, helicopter flights, snowmobile and ATV) in all work areas within 10 km of any area occupied by cows and calves until the animals have moved out of the 10 km radius.
- When safe to do so, flights lower than 610 m (e.g. airborne surveys and shorter transportation flights) will be suspended in the presence of all wildlife including moose and muskox.
- If moose or muskox come within 1 km of any work site, work activities will immediately cease until the animals have moved safely beyond the buffer zone.

#### **4.2.5 Species at Risk**

The Companies recognize that with any project, there is a potential for activities to negatively affect wildlife, and of greatest concern, are species at risk. Although all wildlife will be protected

and treated with respect during all activities at the Arcadia Bay Property, special consideration will be given to the species identified below. All observations of wildlife will be recorded and submitted to all interested parties, including the Department of Environment and Natural Resources, annually and any human-wildlife interaction will be reported immediately.

**4.2.5.1 Peregrine Falcon, anatum/tundrius complex, Red-necked Phalarope and Short-eared owl– Special Concern (COSEWIC/SARA)**

- Raptor, Red-necked Phalarope and Owl nests, as well as all birds, their nests and eggs will always be avoided during exploration activities.
- Any observed nests will be recorded and included in the wildlife record submitted annually
- All staff, contractors and project visitors will be trained to never approach or disturb nests
- All staff, contractors and project visitors will be trained on how to identify Red-necked Phalarope nests via descriptions provided by Environment Canada and photos.
- Excessive hovering or circling over areas likely to have birds will be avoided
- Any nest found will be recorded, photographed and reported to the Government of Nunavut Ecosystems Biologist. In the case of the Red-necked Phalarope, Environment Canada will be notified as well.
- The Government of Nunavut Ecosystems Biologist will be asked to advise on the establishment of an appropriate buffer zone, determined by the species and the surrounding habitat, to protect it until the young have naturally left the nest.

**4.2.5.2 Barren-ground Caribou (Dolphin/Union herds) and Polar Bear - Special Concern (COSEWIC/SARA)**

- Refer to Section 5.2.2 regarding mitigation for caribou.
- All staff, contractors and visitors to the project will be properly trained in wildlife disturbance mitigation, including deterrent and interaction measures
- Proper measures will be taken in camp, barge landing, drill sites and in the field to reduce the attraction of wildlife including proper storage and handling of food and waste
- All polar bears and other wildlife, as well as their dens, will be avoided at all times by field crews
- Any observations of polar bears will be recorded and submitted with the annual report and any human-wildlife interaction will be reported immediately.
- All personnel on site will have bear safety training and be aware of the penalties for shooting Polar bears, even in self defense.
- In the event of problem bears (or other wildlife), non-lethal deterrents will always be used whenever possible with lethal rounds only being used in defense of life or property.

**4.2.5.3 Grizzly Bear and Wolverine – Special Concern (COSEWIC)**

- All staff, contractors and visitors to the project will be properly trained in wildlife disturbance mitigation, including deterrent and interaction measures
- Proper measures will be taken in camp, barge landing, drill sites and in the field to reduce the attraction of wildlife including proper storage and handling of food and waste
- All bears, wolverines and other wildlife, as well as their dens, will be avoided at all times by field crews
- Any observations of bears and wolverines will be recorded and submitted with the annual report and any human-wildlife interaction will be reported immediately.
- All personnel on site will have bear safety training and be aware of the penalties for shooting bears (and other wildlife), even in self defense.

- In the event of problem bears (or other wildlife), non-lethal deterrents will always be used whenever possible with lethal rounds only being used in defense of life or property.

#### **4.2.6 Migratory Birds**

The Companies have implemented the following mitigation measures to prevent potential impacts on migratory birds. All Companies' employees, contractors and visitors will be instructed and must strictly adhere to the following:

- All staff, consultants and project visitors will be educated in, and comply, with all applicable legislation and regulations.
- All wildlife, including birds and their dens and nests will be respected
- Approaching any wildlife, including birds or nests will be strictly prohibited.
- Never destroy nests or eggs of any birds.
- Avoid disturbing nests and known concentrations of birds by maintaining a 1.5 km buffer when in transit by aircraft.
- Avoid approaching known nest while on foot.
- Attempt to prevent birds from nesting on man-made structures.
- Minimize flights during migration, nesting and moulting.
- Avoid areas used by flocks of migrating waterfowl by 3 km.
- Avoid excessive hovering or circling over areas likely to have birds.
- The Companies prohibit depositing substances harmful to migratory birds into waters.
- Migratory bird observations will be included in the Wildlife Observation logs and submitted with the annual report
- Any inadvertent disruption of migratory birds, nests or eggs will be immediately reported.
- Special care and concern, including monitoring will take place during migratory bird nesting periods in the area (mid-May to mid-August).
- Any nest found will be recorded, photographed and reported to the Government of Nunavut Ecosystems Biologist. The government biologist will be asked to advise on the establishment of an appropriate buffer zone, determined by the species and the surrounding habitat, to protect it until the young have naturally left the nest.
- The Companies understand that there is risk that migratory birds, their nests or eggs can be inadvertently harmed or disturbed as a result of activities, including mineral exploration, and will take every effort to reduce the chances of incidental take. Appropriate mitigation measures will be utilized and compliance enforced with strict penalties for those who do not adhere to the proper operating procedures including, but not limited, to termination of employment.

#### **4.2.7 Firearms**

Registered 12-gauge shotguns will be located in camp and at drill sites to ensure the safety of all personnel on the Property. Twelve-gauge shotguns are the preferred firearm to be used for the purposes of bear deterrence as they are capable of firing both non-lethal deterrents and lethal rounds. All firearms in camp will be stored unloaded and be regulated by the Project Supervisor. Firearms at drill sites will be stored unloaded in gun cases.

All persons carrying or handling a firearm must have a valid Firearms License and be approved by the Project Supervisor. Hunting is strictly prohibited for all employees and contractors, and will result in immediate termination and potential charges for any territorial hunting violations. Firearms discharge of any kind must be reported immediately to the Project Supervisor. Use of firearms against nuisance or aggressive wildlife is considered only as a last resort. Non-lethal

deterrents will always be used whenever possible to deter problem wildlife with lethal rounds only being used in defense of life or property.

#### **4.3 Vegetation, Soil and Permafrost Disturbance Mitigation**

The Property is situated between the Arctic Circle and the Coronation Gulf on the Arctic Ocean. The climate is sub-arctic with temperatures ranging from -40° C in the winter to +25° C during portions of July and August. The Property is located above the tree line with the dominant vegetation being shrubs, grasses, moss and lichen. The exploration area is largely barren with rock outcrop occupying most of the high ground. A number of large and numerous small lakes, swamps and mossy tundra occupy the majority of low lying areas.

Vegetation and permafrost can potentially be impacted by camp and drilling activities. Mitigation measures to reduce the impact include limiting the amount of vegetation disruption to ensure proper shade coverage and reduction in the potential for ground thaw and subsidence. Footpaths can be marked using stakes and flagging tape to ensure that impacts to vegetation are confined to a small area or boardwalks can be built between camp buildings to reduce damage to vegetation on high-traffic footpaths. Areas that have patterned ground, clay-rich soil and or wetlands will be avoided. Heat radiating from camp buildings may thaw permafrost, so all heated camp structures will be slightly elevated above the ground to allow air circulation. Earth may be required to be moved in order to construct sumps in camp and at drill sites; however natural depressions and areas free of vegetation will be used whenever possible. Any topsoil moved will be collected to use in re-vegetation efforts. If a sump is excavated, it will be barricaded until it can be back-filled.

Soil quality can be impacted from spills of fuel and other materials and waste discharge. Preventative measures include appropriate and approved storage locations and containers with secondary containment. All fuel, hazardous materials and drilling will be a minimum of 31 m from the ordinary high water mark of any watercourses. Refueling and chemical transfers will be done with precision and appropriate due-diligence will be taken. Drums and hoses will be inspected regularly for leaks and pans or absorbent pads will be placed below fuel transfer areas and stationary machinery. See the Arcadia Bay Property "Spill Contingency and Fuel Management" for more information.

#### **4.4 Air and Noise Quality**

Impacts on air quality can result from discharge of exhaust from airplanes, helicopters, drilling operations and diesel generators, as well as emissions from incineration. Given the remote location with lack of air quality issues which currently exists within the Property location, the short duration and small scope of activities are not expected to result in any measurable air quality impacts. An Environment Canada approved batch waste, controlled air, dual chamber incinerator will be utilized to burn combustible waste, therefore reducing harmful emissions. All non-combustible or recyclable waste will be back-hauled to Kugluktuk and/or Yellowknife for proper disposal.

Noise can result from the use of planes, helicopters, the barge and drills and to a lesser degree from activities within the camp, which can disturb wildlife. Mitigation measures include, but are not be limited to: helicopter avoidance of any raptor nests, bear dens and wolf dens, waterfowl and shorebird staging areas during critical seasons and near large mammals. In addition drill activities and associated work will cease if caribou cows and/or calves appear nearby.

#### **4.5 Drilling Operations**

Drilling contracts will be awarded to companies that exhibit high standards of environmental practice and who are willing to adhere to the environmental policies of the Arcadia Bay Property.

The following conditions are imposed for drilling activities:

- Sites will be as small as possible while still allowing adequate area for fire protection.
- All stored fuel, drill additives and any other chemicals will be stored in secondary containment.
- Biodegradable drill additives will be used whenever possible.
- Recirculation and filtration equipment will be used to minimize the amount of water used and additives released into the environment. Secondary containment for additives will be placed around the hole.
- Any residual drill water will be contained in sumps. Sumps will be positioned down slope from the drill collar in such a manner that runoff flows into the sump. Sumps will be positioned a minimum of 31 m from the normal high water mark of any water body.
- If any artesian water flow is detected, the hole will be plugged and cemented in bedrock to prevent continued flow. Any artesian water flow will be reported to KIA and the Nunavut Water Board.

#### **5 HAZARDOUS MATERIALS**

All hazardous materials will be handled and stored in accordance with the Arcadia Bay Property SCFMP. Fuels and other hazardous materials will be stored within "Arctic Insta-Berms", or similar products, for secondary containment. Hazardous material storage sites will be located a minimum of 31 m from the normal high water mark of any water body. Electric or hand wobble pumps equipped with filtration devices will be used for the transfer of diesel, jet fuel, and gasoline from their storage containers directly to their end-use fuel tanks. Portable drip trays or mini-berms will be used to mitigate the risk of any spillage, and fully stocked spill kits will be available at all refueling stations, barge landing, drill sites, and at various locations throughout camp.

All hazardous materials will be clearly labeled in accordance with the Workplace Hazardous Materials Information System (WHMIS) and other applicable legislation. Labels will include, but not limited to, the type of fuel, safe handling procedures, reference to Material Safety Data Sheets (MSDS), company name, and the date of delivery to site. Signs with the same information, along with MSDS for each fuel type will be posted at each hazardous material storage or transfer site. "No Smoking" signs will be posted at each fuel cache, drill site, and fuel transfer area.

All personnel required to handle hazardous materials will be trained in WHMIS, the Transportation of Dangerous Goods Act, and the Arcadia Bay Property SCFMP and ERP.

Contacts for Hazardous Waste Issues are listed in Appendix 3 of this plan.

#### **6 WASTE MANAGEMENT PLANNING**

All wastes will be handled and disposed of in accordance with the Arcadia Bay Property WMP and will comply with federal and territorial legislation. Waste management operations at the Arcadia Bay Property comprise a number of activities with the common goal of reducing the amount of waste generated on site and to ensure that any wastes created are reused, recycled, or disposed of in a responsible manner. Wastes will be separated at the source into a number of categories

including: materials for incineration, inert recyclables, inert non-combustible materials, and hazardous materials.

Combustible waste will be burned in a batch feed dual-chamber controlled air incinerator, in accordance with the Environmental Guideline for the Burning and Incineration of Solid Waste by the Nunavut Department of Environment and the Canada-Wide Standards (CWS) for Dioxins and Furans by the Canadian Council of Ministers of the Environment. All attempts will be made to reduce the moisture content of waste to be incinerated, which will decrease the amount of smoke produced and increase the completeness of combustion. All waste will be covered and stored inside sheds or other secure buildings to keep rain and snow out of the waste and reduce the attraction for wildlife. If wet waste must be burned, such as organic (food) waste, the wet waste will be mixed with dry waste to reduce the overall moisture content of the batch.

All inert materials that cannot be incinerated will be placed in appropriate sealed containers and removed from site for reuse, recycling or proper disposal at an accredited facility.

All hazardous wastes will be sealed in appropriate containers, labeled, documented and removed from site for proper disposal at a licensed disposal facility. A waste manifest will accompany hazardous waste in transit and all parties involved will be properly accredited.

Camp greywater will be stored and treated in an excavated sump, which will allow for slow infiltration into the soil and will be located at least 31 m from the normal high water mark of any water body. If available, coarse gravel will be placed in the bottom of the sump to provide filtration, and supports will be built on the sides to prevent slumping. Filters will be installed on kitchen drains to ensure solid food wastes do not enter the sumps and have the potential to attract wildlife. The sump will maintain a minimum 1 m freeboard at all times. The sump and pipe will be inspected at regular intervals for leaks or overflow. When full, greywater sumps will be covered with enough material to allow for future ground settlement.

Privy pits (outhouses) will be located at least 31 m from the ordinary high water mark of a water body. To control sewage pathogens, outhouses will be periodically treated with lime. When full, the pits will be covered with at least 30 centimetres (cm) of compacted soil. Alternatively to outhouses, a pacto system will be used and waste incinerated.

## **7 ABANDONMENT AND RESTORATION**

Prior to land use permit or lease termination, all structures, equipment, supplies, fuel, and wastes will be removed from the Property with the exception of drill core stacks, which will be permanently secured on site. Any materials of value will be salvaged. Any contaminated areas around the camp, barge landing or drill sites that have gone unnoticed will be treated as per the "Spill Contingency and Fuel Management Plan". A thorough inspection of all areas of activity will be conducted, and photographs will be taken to include in the final reports submitted to the Water Resource Inspector and as part of the Annual Report submitted to KIA, NWB and NIRB. All relevant regulatory agencies will be notified once the final clean-up has concluded.

Any wooden floors will be burned in accordance with the Nunavut Environmental Guideline for the Burning and Incineration of Solid Waste. The open burning of structures will only occur after approval from KIA and NWB. A request letter will be submitted to the regulating authorities, which will include the characteristic and volume of material to be burned.

Areas disturbed by activities related to exploration at the Arcadia Bay Property will be fertilized, as per recommendation by the Inspector, to encourage re-vegetation. Any eroded or washed out areas related to exploration activities will be filled and re-contoured to natural levels.

After site reclamation is complete, annual monitoring may occur. The monitoring may include soil and water testing, measuring and documenting plant re-growth, examining potential run off and erosion problems, and checking the stability and condition of core racks and boxes. Reports, including photographs, will be submitted to all appropriate regulatory bodies.

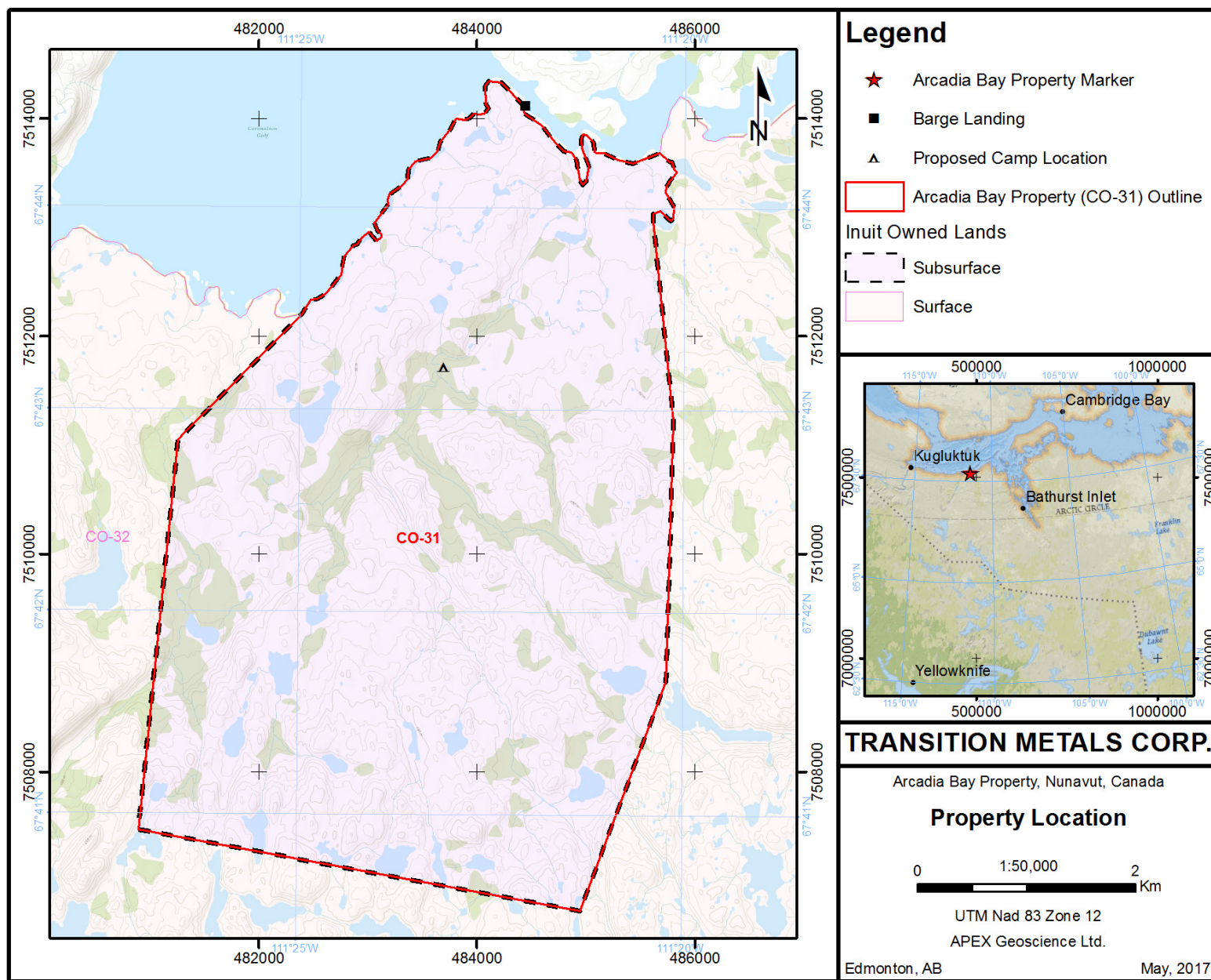
Further details on abandonment and restoration can be found in the Arcadia Bay Property ARP.



# **Appendix 1**

## **Arcadia Bay Property**

### **Figures**



## **Appendix 2**

### **Arcadia Bay Property**

### **Wildlife Emergency Contacts**

<b>Name</b>	<b>Company/Position</b>	<b>Phone Number(s)</b>
TBD	Project Supervisor	TBD
Nunavut Department of Environment	Iqaluit Main Office	(867) 975-7700
Nunavut Department of Environment, Wildlife Office	Kitikmeot Office (Kitikmeot Region)	(867) 982-7450
Jared Ottenhof	Kitikmeot Inuit Association Lands/Environment Officer	(867) 982-3310

<b>Name</b>	<b>Position</b>	<b>Community</b>	<b>Phone</b>
Akeeagok, Russell	Conservation Officer	Kugluktuk	(867) 982-7450
Gissing, Drikus	Wildlife Director	Iqaluit	(867) 975-7734

# **Appendix 3**

## **Arcadia Bay Property**

### **Hazardous Waste Contacts**

## **Hazardous Waste Contacts**

Environmental Protection Division  
Nunavut Department of Environment  
Inuksugait Plaza, P.O. Box 1000, Stn. 1300  
Iqaluit, NU X0A 0H0  
Tel: 867-975-7700  
Fax: 867-975-7742  
Email: [environment@gov.nu.ca](mailto:environment@gov.nu.ca)

Dr. Maureen Baikie  
Office of Chief Medical Officer of Health  
Nunavut Department of Health  
P.O. Box 1000, Stn. 1000  
Iqaluit, NU X0A 0H0  
Tel: 975-5743  
Email: [mbaikie@gov.nu.ca](mailto:mbaikie@gov.nu.ca)

Workers' Safety and Compensation  
Commission  
Qamutiq Building, 2<sup>nd</sup> Floor  
611 Queen Elizabeth Way, Box 669  
Iqaluit, NU x0A 0H0  
Tel: 867-979-8500  
Fax: 867-979-8501

NU-NT 24 Hour Spill Report Line  
Tel: 867-920-8130  
Fax: 867-873-6924  
Email: [spills@gov.nt.ca](mailto:spills@gov.nt.ca)

Nunavut Emergency Management  
Emergency 24 Hour  
Headquarters: 867-979-6262 / 1-800-693-1666  
Kitikmeot: 1-867-983-2542

Nunavut Department of Community  
and Government Services  
W.G. Brown Building, 4<sup>th</sup> Floor  
P.O. Box 1000, Stn. 700  
Iqaluit, NU X0A 0H0  
Tel: 867-975-5400/5413  
Fax: 867-975-5305

Robert Prima  
Office of the Fire Marshall  
Protection Services  
Nunavut Department of Community  
and Government Services  
Tel: 867-975-5310  
Fax: 867-979-4221

Emergency Measures (24 Hours) Toll Free 1-800-693-1666  
Emergency Services Response (24 Hours) 867-979-6262  
Emergency Services Response (24 Hours) 867-979-0211, Press 911 at prompt  
Emergency Measures Operations FAX 867- 979-4221/979-3364