**Shoreline Aggregates – Point Rousse (EA Reg # 200.20.3378) - Water Management Plan**

(73.5 ha Quarry Area) Baie Verte District– Mine Lease #189 (11299M) / Surface Lease #107

October 2, 2023
(Submission Date of Quarry Lease Application)

May 5, 2024
(Water Resource Management Plan Submission Date)

Attached Documentation: Figure 1, Figure 2, Figure 3 & Google Earth Images

## Introduction

Shoreline Aggregates Inc. (Shoreline) is a subsidiary company of Guy J. Bailey Limited, a company which operates as a producer and exporter of rock aggregate materials to international markets. Since 2016, Shoreline has operated in the Point Rousse Project area within the Pine Cove Mine Lease (#189) on the Baie Verte Peninsula, which was formerly held by Signal Gold Inc. and recently acquired by Maritime Resources Corp. (Maritime). Shoreline and Maritime have reached an agreement to provide Shoreline access to the ~ 73.5 ha quarry lease through Maritime's mining/surface lease (Mine Lease #189 (11299M) / Surface Lease #107).

The main purpose for this quarry is to expand development of the available rock resource within the lease area over a 20-year development plan to produce 750,000 $m^3$ of aggregate annually for export to international markets. The total expansion will cover a 40.26 ha area of undeveloped land in the central lease area beginning at 123 m elevation and reaching a final quarry floor at 83 m and 23 m above sea level (asl). The rock will be processed in the current processing and main operations area that includes an existing wash plant setup. The final aggregate products will be loaded onto ships at the Point Rousse marine terminal for export to foreign markets.

The submission of this Water Management plan is required as part of the issuance of a 73.5 Ha quarry lease and is conditional to the release from Environmental Assessment (Reg # 200.20.3378).

## Site Location and Access

The project is located on the Point Rousse Peninsula, in the northern portion of the Baie Verte Peninsula on NTS Map Sheet 12H/16 (**Figure 1**). The proposed quarry lease area sits within the southwestern corner of Maritime Resources mining lease (Mine Lease #189 (11299M) / Surface Lease #107) which is located approximately 4.0 km northeast of the Town of Baie Verte. The southern portion of the lease application area lies within the municipal boundary and planning area of Baie Verte (**Figure 2**).

Access to the site is gained from the Ming's Bight Road (Route 418) along a ~ 3.8 km long gravel access road owned by Maritime Resource's to access the Pine Cove mine (**Figure 2**). The quarry lease area is an additional ~ 1.7 km west of the mine site along the access road and continues south beyond the lease area to Shorelines South Brook Quarry Lease (File #711:12700). The access road passes along the east side of the main quarry development area

reaching the 90 m elevation in the north and ~51 m elevation contour at the South Brook bridge. The access road will be used during development to transport overburden to its stockpile locations and quarried rock to the processing and main operations area. Haul roads within the quarry footprint during each stage of development will be modified and relocated to allow the safest most practical flow of operations.

The topography of the quarry area is hilly with elevations ranging from ~ 3 m to ~ 123 m above sea level (asl). The lowest elevation is located at the Point Rousse marine terminal and the shoreline of Baie Verte. The highest elevation is in the central portion of the lease and within the proposed quarry development area. Elevations decline outwards from the peak in elevation.

The eastern lease boundary boarders Pine Cove Pond and the decommissioned open pit Pine Cove Mine . Exposed benches in the open pit wall sit between 4 m and 7 m in height, are 8 m and 15 m wide and have a general slope of < 30 degrees. Elevations rise from ~55 m to 95 m asl and include a large stockpile of grubbing material in the eastern lease boundary preserved for future reclamation. Pine Cove Pond is at ~59 m asl and a 50 m wide buffer zone is established where no cutting or development will occur. South Brook passes through the southern lease boundary and is between 24 m to 39 m asl. A bridge crosses South Brook at the southern lease boundary though no development will occur within a 50 m buffer to the brook.

**Existing Site Plan**

Shoreline Aggregates initially began operating within the Pine Cove Mine lease in 2016, and their aggregate production equipment and operations center has existed within the quarry area footprint for many years. The current quarry lease area contains ~18.74 ha of developed land in the north of the lease area that sits between ~36 m and 50 m asl. This area consists of gravel access roads, processing equipment, product stockpiles, and support buildings. Processing equipment on site includes a crusher/screener setup, multiple material handling conveyors, a maintenance building, shipping containers, office trailer building, three staff trailers, and the marine terminal loading barge. The infrastructure that requires power is supplied from overhead powerlines. The production area also contains seven stockpiles of various processed aggregate materials in addition to a wash plant that utilizes a closed loop water system supplied from within the Maritimes Mine Lease #189 (11299M). A single 22,730 L diesel fuel storage tank is used to fuel heavy equipment and is owned by Western Petroleum (serial # C-277005), held under Gasoline and Associated Products (GAP) registration #13855.

The production and main operations area will be utilized during the 20-year development plan in addition to creating ~40.26 ha of new quarry development in the central lease area. The current quarry access road will be utilized in the development and may be rerouted to allow for efficient operations in the quarry. Clearing the land will consist of harvesting cut trees, stripping overburden and stockpiling in the southern lease boundary area for use as future reclamation material. Quarry development will begin in the high elevations (123 m asl) and progress northward reaching a bench plateau level at 83 m asl after 5 years of development. Exposed development benches above the quarry floors will be a maximum of 10 m high and ~19.33 m in

depth to allow for future 30-degree reclamation sloping and catch benches as required by the Quarry Materials Act.

**Site Drainage**

Quarry operations within the site have been ongoing since 2016, during which time much of the aggregate products have been supplied from the mining operations. The development footprint of the quarry lease area was minimal prior to the proposed 20-year development plan. The drainage from current operations has been managed using drainage channels and berms that direct water away from the development floor that sites between the 34 m and 52 m elevation and dips moderately to the west. Site drainage to the east has ultimately ended up in the Pine Cove Pit, while drainage to the west has led to the ocean. There have been no previous issues with water pooling in the development and main operations area. This is likely due to the abundance of highly permeable aggregate material and underlying blasted rock.

The proposed 20-year quarry development area covers ~40.26 ha of forested land. Grubbing and overburden material will be removed as required and stockpiled in the southern lease area. Quarry development will start at ~123 m elevation along 10 m quarry face heights, reaching lower elevations and moving gradually north and south. Drainage will leave the development area where each quarry floor daylights with adjacent topography. Drainage channels will be directed to the northwest to collect overland runoff during each phase of development. The forested buffer area separating the quarry floor from the shoreline will range from ~370 m to 60 m in width as the development moves northward. This will provide additional filtration of water that leaves the quarry footprint. Before any drainage exits the lease boundary rock check dams, silt screens and hay bales will be utilized as required to remove as much suspended fine material as possible. The location of drainage channels during each production phase will likely change to suit the conditions during each development phase though the overall water management strategy will remain.

The quarry access road will be utilized during development to transport quarried material for processing and grubbing material to the stockpile location. Ditching along the road will provide drainage for areas outside of the development footprint directing surface water to vegetated areas along the eastern boundary. The access road will also act as a berm to contain any site water drained from the reclamation stockpile area in addition to the check dams, hay bales and silt screen to remove suspended particles. During a 1 in 100 year 24-hour climate change rainfall event additional check dam locations are proposed (**Figure 3**). The maximum buffer distance from South Brook will be maintained and site discharge will only enter naturally vegetated areas outside the buffer zone once filtered through these mechanisms.

**Adjacent Waterbodies and Watercourses**

Three waterbodies/watercourses are identified on 1:50,000 NTS scale maps and their regulated 50 m wide buffer zones occur within the lease boundary (**Figure 2 & 3**). The development history of the surrounding mine lease has impacted the location of some waterbodies, watercourses

and wetlands that are identifiable in **Figure 2 & 3**.

The Atlantic Ocean and more specifically Baie Verte is adjacent to parts of the northwestern boundary. The shoreline sits ~ 12 m from the lease boundary at the closest point while the southwestern shoreline sits ~ 400 m from the western boundary. No quarry development will take place within 50 m of the Baie Verte shoreline.

South Brook passes through the southern lease boundary and ranges in width from up to 30 m. The quarry access road leads to a ~24m long bridge that crosses South Brook and provides access to South Brook 90.55 ha quarry (File #711:12700) under Lease #142131. Pine Cove Pond sits just south of the decommissioned Pine Cove Mine pit, along the central portion of the eastern lease boundary.

Shoreline commits to following the control measures outlined in this Water Management Plan and that no overland runoff from the quarry development will enter these waterbodies and the 50 m buffer to all waterbodies and watercourses will be maintained as required by the Department of Industry, Energy and Technology (DIET) and the Department of Environment and Climate Change.

**Quarrying Method and Production Related to Water Management**

The 5-year development plan footprint will cover 21.26 ha, followed by an additional 19.0 ha development footprint in the 6–20-year development plan. Production will begin at the peaked elevation areas at 123 m asl. Each stage of production will create a plateaued area of land which daylights along the topographic contour for that elevation. Generally, this daylighting will happen along the north and south side of each production level. The overlying production benches will exist along the east and west side of each production level. By the end of year 5, a 20.22 ha area of land will plateau at 83 m elevation. After 20 years of development the main quarry floor will be lowered to 33 m asl and be approximately 800 m in length and ~200 m in width. Implemented drainage channels will direct overland run-off towards the north and away from the South Brook buffer zone.

Overland water drainage from the quarry lease area will follow the natural topographic profile of the surrounding vegetated areas. On each quarry floor level overland drainage will be controlled by individual ~ 0.5 m - 1 m deep drainage channels that trend northwest and range in length from 200 m and 800 m depending on the quarry level. Each quarry floor will implement one or more channels depending on the drainage needs and have a grade allowing water to filter northwest until reaching the natural topography. Drainage channels will be lined with rock check dams, silt fence and hay bales, as required, to filter water before discharge into vegetated areas. Where water exits the lease boundary it will enter forested land that dips towards the coastline providing additional filtration.

Removed grubbing from the development area will be transported to the proposed stockpile location in the southern lease area via the quarry access road (**Figure 3**). A drainage ditch following the access road from north to south may require check dams, silt screens and hay bales to remove suspended material prior to reaching South Brook along the southern lease boundary (**Figure 3**). The clearing of treed areas and organics/subsoils will happen in yearly phases and not all at once, as dictated by development and demand. This will minimize

disturbances of the land within the quarry area and reduce excessive siltation of site drainage water.

During the later stages of development in the 6-20-year plan, quarry drainage ditches will continue to direct overland water runoff northwest across each quarry floor development and flow down over numerous production benches to the quarry floor at a 23 m elevation. As the 23 m quarry floor daylights with topography the drainage will enter ~60 m of forested land separating the lease boundary from the coastline (**Figure 3**). As much of the quarry will contain blasted rock and processed aggregate material the water permeability will be high, thus preventing any water from accumulating and ponding within the lease area.

Rock check dams, silt screens and hay bales will be utilized as required to assist in removing suspended particulate matter before drainage exits the lease boundary. The location of drainage channels during each production phase will likely change to suit the conditions during each development phase though the overall water management strategy will remain.

In the event of a 1 in 100 year 24-hour climate change rainfall event excessive surface water may require additional containment ditches or check dams to manage water flow across the quarry floor and before it leaves the quarry lease area. Check dam locations are proposed where quarry floors daylight with topography and along the quarry access road drainage ditch (**Figure 3**). The access road drainage ditch will collect surface runoff water from areas adjacent to the access road and the proposed grubbing stockpile to ensure water site water drainage meets the Environmental Control Water and Sewage Regulations (2003), before reaching waterbodies adjacent to the eastern lease boundary and South Brook.

**Wash Plant Setup**

Shoreline Aggregates utilizes a closed loop wash plant system for washing various aggregate products on site. The wash plant setup consists of a slurry tank, a sand washer, and multiple wash screens and stackers to produce the adjacent washed product stockpiles. The wash plant system utilizes the existing Phase II Tailings Storage Facility (TSF2) located within the Pine Cove Mine lease (**Figure 3**) as a water source and to remove washed fines prior to recirculation back to the wash plant. Approval has been granted to Shoreline for use the TSF2 however the permitting, long term management and annual inspections will remain the responsibility of Maritime Resources. Additionally, this facility remains part of the reclamation and closure plan for the Pine Cove Mine lease with associated financial assurance. Shoreline will be responsible for seasonal maintenance as it relates to their aggregate washing operations and maintaining operational criteria established for their use of this facility.

The water management plan for the wash plant system includes designed flood containment for a 1 in 100-year 24-hour rainfall event, and emergency overflow spillway containment to ensure minimal impact to surrounding environment. The water from the TSF2 used in the wash plant system is replenished from internal sources within the mine and aggregate operations footprint including groundwater inflow from natural sloping, or overland flow captured from onsite drainage. No external water source has been required, however, to provide assurance of supply and remain in compliance with regulations, Shoreline Aggregates maintains water use licenses

(WUL) for two external sources (Decker's Pond WUL-21-11744 and South Brook WUL-20-11024).

**Site Water Management**

The Water Resources Management Plan for this quarry, during the 20-year production plan, includes implementing drainage channels (0.5 m -1 m deep) along each quarry floor development to direct surface water flow towards the northwest where it can enter a buffer area of forested land and follow the natural topography towards the coastline (**Figure 3**). This also protects the waterbodies/watercourses along the eastern and southern lease boundary from water drainage originating inside the quarry. As production continues to the north the forested buffer zone will range between 370 m and 60 m in width providing filtration through natural vegetation. The location of the drainage channels during each production phase will likely change to suit the conditions during each development phase though the overall water management strategy will remain the same. The abundance of blasted rock and crushed aggregate will assist in permeable flow of water in the subsurface and ensure that water leaving the development area conforms to the Environmental Control Water and Sewage Regulations (2003). It should also be noted that a rock quarry inherently produces less silty site water compared to a sand and gravel site where the material being extracted naturally contains more finer particles.

Water management outside of the development area will be controlled along the quarry access road and parallel drainage channel/ditch which follows a steep contour towards the south. This drainage ditch will also collect any overland runoff from the grubbing stockpile which is located ~90 m from South Brook at its closest point. Implemented check dams along the road in addition to hay bales and/or silt screen will filter water that could potentially reach South Brook.

Shoreline commits to any overland runoff conforming to the Environmental Control Water and Sewage Regulations, 2003 for water quality standards prior to leaving the lease boundary or entering watercourses or waterbodies. This will be ensured by the Water Management Plan outlined above in this report. The 50 m buffers from all waterbodies and watercourses will be maintained. Implementing rock check dams, silt screens and hay bales as required will avoid negative impacts to aquatic species.

Dean Courage, P. Geo.
Senior Geologist
Office: 709-781-3773 | Cell: 709-727-7516
Email: dean.courage@ncdconsulting.ca
Web: www.ncdconsulting.ca

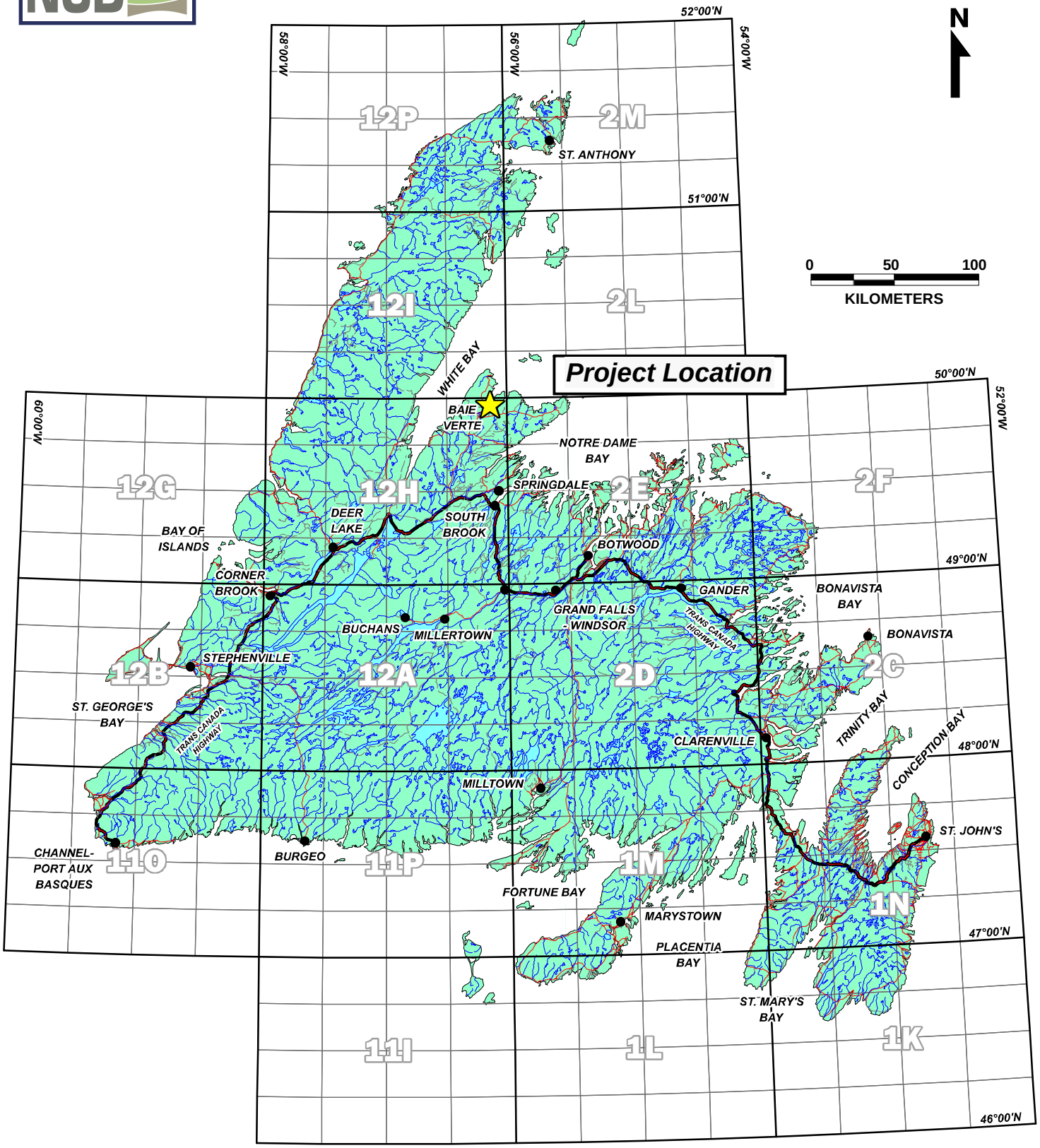


**FIGURE 1: Project Location Map (N.T.S. 12H/16)**

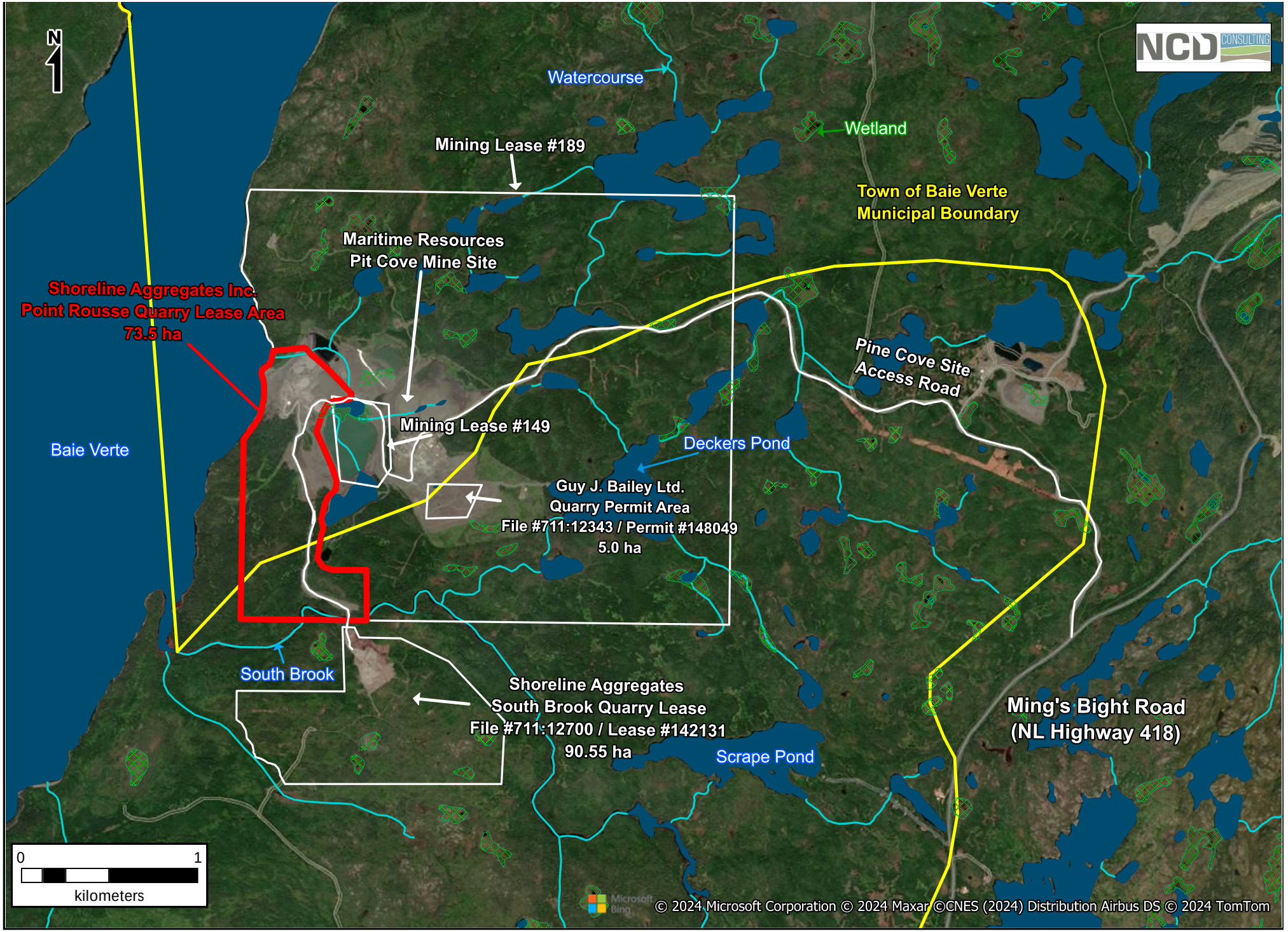


**Figure 2 : Regional Map of 1:50,000 Watercourse, Waterbodies and Wetlands**

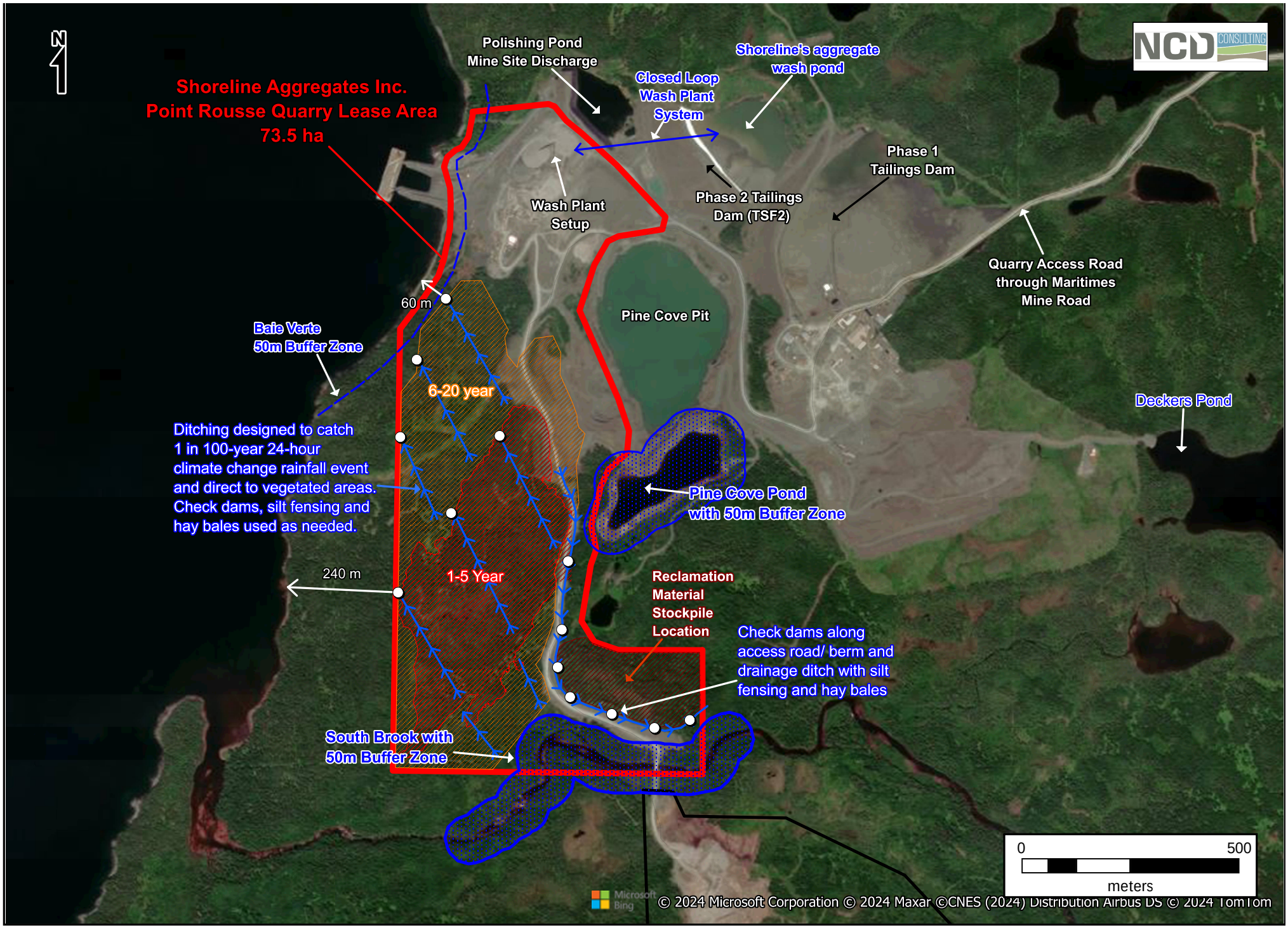


**Figure 3 : Water Management Plan**

# Google Earth Images

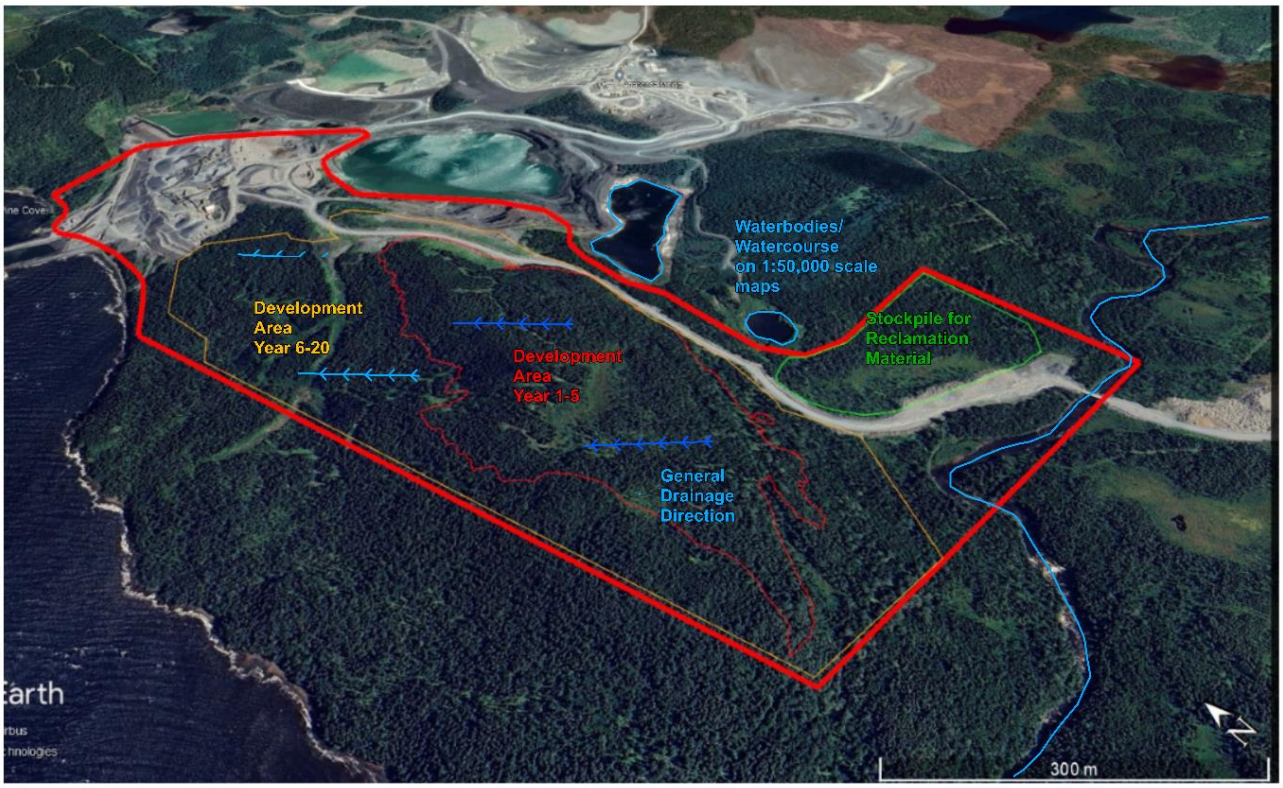


**Plate 1: View of lease boundary looking northeast.**


**Plate 2: View of lease boundary looking north.**


**Plate 3: View of lease boundary looking southwest.**


**Plate 4: View of lease boundary looking northeast.**