



## **Penney Paving Ltd. Badger Chute Quarry (EA Reg # 2281) - Water Management Plan** (10 ha Quarry Area) Exploits District of Newfoundland – Quarry File # 711:13168

January 10, 2023  
(Submission Date of Quarry Permit)

March 05, 2024  
(Water Resource Management Plan Submission Date)

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

### **Introduction**

Penney Paving Limited is a paving and civil construction business based in Grand Falls-Windsor. They provide the region with aggregate products including Class A, Class B, winter sand, concrete aggregate, and asphalt aggregate. The Badger Chute quarry permit holds significant importance to Penney Paving, as it will provide the company with access to a local aggregate source to continue supplying construction materials to projects in the region. Penney Paving's current operating quarry in the area is referred to as the Aspen Brook quarry (File #711:8790) and is set for a full site closure by 2027 once the material has been exhausted. This new quarry site will replace the existing Aspen Brook quarry and both will be operational until the Aspen Brook site is fully rehabilitated by 2027.

The submission of this Water Management plan is required as part of the issuance of a 10 Ha quarry permit (File 711:13168) and is conditional to the release from Environmental Assessment (Reg #. 2281).

Penney Paving Limited operation activities will consist of removing the sand and/or gravel material by heavy equipment, which will then be crushed and screened as required, and stockpiled on site. **The use of water for washing of materials and additional secondary processing of product materials will not be required.** As such this Water Management Plan addresses primarily site water runoff and notes adjacent waterbodies and water courses.

### **Site Location and Access**

The quarry permit area is located 5 km southeast of the Town of Badger in the Exploits District of Central Newfoundland, within the National Topographic System (NTS) Index Map 02D/13 (**Figure 1**). An access road extends from the Trans-Canada Highway (Route 1) and runs 2.2 km southwest providing access to the quarry in addition to other operating quarries in the immediate area (**Figure 2**). A 450 m long access route has been proposed to reach the quarry permit area from the current access road and is in the Licence to Occupy application stage through Crown Lands under File Reference #2024267 (APPLICATION NO. 162316)

The quarry area is situated on top of a plateaued crest of a heavily forested hillside, which rises between 30 m and 45 m from the banks of the Exploits River located 550 m south of the quarry boundary (**Figure 2**). The topography is gentle and not susceptible to erosion. The forested area

south of the boundary would act as a buffer for any overland water runoff from the site that would naturally percolate downhill toward the south. A natural drainage channel is located 300 m west of the boundary and doesn't appear on 1:50,000 scale maps (**Figure 2 & 3**). This natural channel is the closest area where excess surface runoff may be directed during a 1 in 100 year 24-hour climate change rainfall event.

The quarry boundary area is not located within a Municipal Planning Area, Municipal Boundary, Protected Road Zone, or any other legislated land use under the Urban and Rural Planning Act. A Newfoundland Hydro transmission line held under Crown Title #153602, which includes the required 30 m wide easement to the transmission towers centerline, sits ~ 20 m southwest of the permit area boundary. This allows Penney Paving to easily maintain the additional 15 m buffer area to the transmission line easement as required by the Department of Industry, Energy and Technology (DIET)

### **Existing Site Plan**

The quarry permit area is undeveloped, flat, and non-forested. Harvesting was completed between 2020 and 2021 by Exploits River Lumber & Pulp Co. (Exploits Lumber). Elevations within the permit boundary range from 120 m to 122 m elevation. The surficial geology of the area is mapped as glaciofluvial. This material consists of poorly consolidated sand and gravel which provide good drainage and prevent accumulation of surface water. There are no waterbodies, water courses or wetlands within a 500 m radius of the proposed quarry permit. Due to the gentle sloping topography of the quarry area ditching has been designed along the southern boundary where drainage would occur.

### **Site Drainage**

Overland water drainage will naturally follow the topographic profile of the project area. The proposed production area is in the lowest topographic point and so water will naturally drain towards the south and into heavily vegetated areas that buffer this boundary. The production area is relatively flat and individual ~ 0.5 m - 1 m deep drainage channels may be required as necessary to collect surface runoff within the footprints of the active production phases. These potential drainage channel locations will likely change throughout production. The main drainage channel location is depicted on **Figure 3** and would act to collect water from the entire area. In the occasion of a 1 in 100 year 24-hour climate change rainfall event excessive surface water will be directed to the southwest corner of the permit boundary. Here there is a 300 m buffer to the nearest natural drainage channel which would filter any suspended solids and mitigate risk to the to the Exploits River located 500 m to the south (**Figure 2**).

### **Adjacent Water Courses**

No waterbodies or watercourses identifiable on a 1:50,000 NTS scale maps are located immediately adjacent to quarry permit boundary or within 50 m (**Figure 2**).

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

The development operations of this quarry will generally advance from the southernmost boundary towards the northeast. The annual production volume of material from the site is anticipated to be 15,000 m<sup>3</sup>. Processing on site will consist of crushing, screening, and stockpiling of the extracted material. No washing of materials or other secondary product processing will take place on site as noted above.

Construction of the proposed project will consist of clearing the site of grubbing/organics/mineral soil before proceeding to remove any sand/gravel resource material. **All material with a high organic content (topsoil/grubbing) removed during construction/production of the quarry permit area will be preserved and stockpiled for future reclamation work.**

The proposed quarry excavation depths of 5 m are not anticipated to reach the groundwater table. The elevation of the nearest waterbodies to the proposed quarry is ~10 m below the current topography. Additionally, there has been no ponding or standing water noted or observed in the surrounding development areas which share the same site conditions as the Badger Chute Quarry. The high permeability of the sandy material in this area would naturally prevent the ponding of water.

## **Site Water Management**

The Water Resources Management Plan for this quarry will utilise ditching in the production area to collect overland runoff from the site and direct it toward the natural drainage in the area. **Shallow ditching is proposed along the southwest boundary (Figure 3) and would collect water during the quarry development and direct it to the west. This water would naturally flow into the surrounding forest allowing for additional filtration and percolate into the sandy ground preventing any impact on regional water bodies or water courses. Should a 1 in 100-year climate change 24-hour rainfall event occur in the region water would naturally follow the topography and drain into natural drainage channels in the area as noted above. Rock check dams, silt screens and hay bales will be utilized as required to assist in removing suspended particulate matter before the site water exits the quarry permit boundary.** Penney Paving Limited commits to possible overland runoff conforming to the Environmental Control Water and Sewage Regulations, 2003 and to any quarry drainage not entering any watercourses or waterbodies. **As the nearest 1:50,000 water course / waterbody is 560 m away the risk of siltation and negative impacts on aquatic species is extremely low.** A 50 m buffer to all waterbodies and watercourses as required by the Quarry Materials Division will be always maintained.

Dean Courage, P. Geo.  
Senior Geologist  
Office: 709-781-3773 | Cell: 709-727-7516  
Email: [dean.courage@ncdconsulting.ca](mailto:dean.courage@ncdconsulting.ca)  
Web: [www.ncdconsulting.ca](http://www.ncdconsulting.ca)

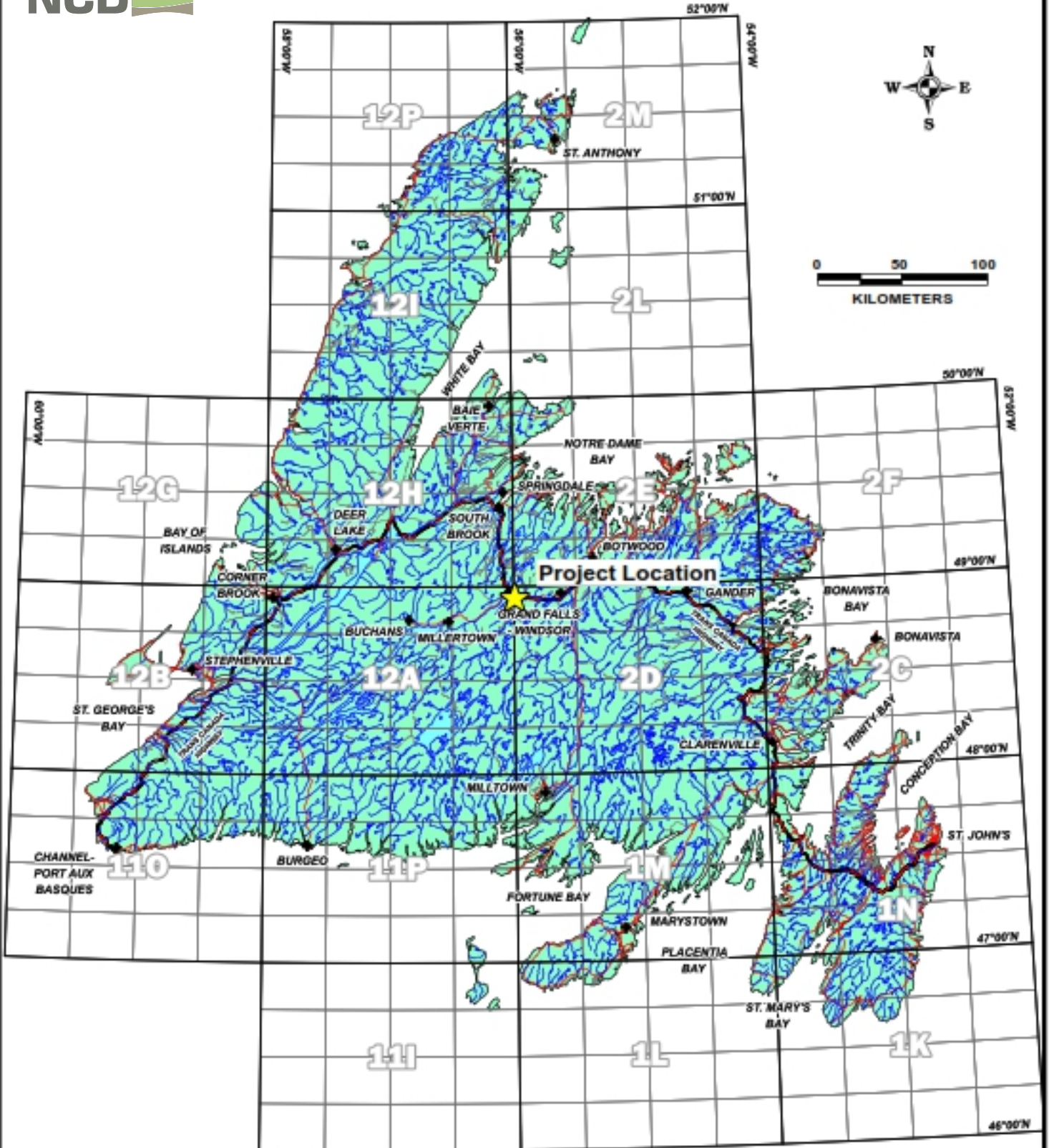


Figure 1: Project Location Map (NTS 2D/13)



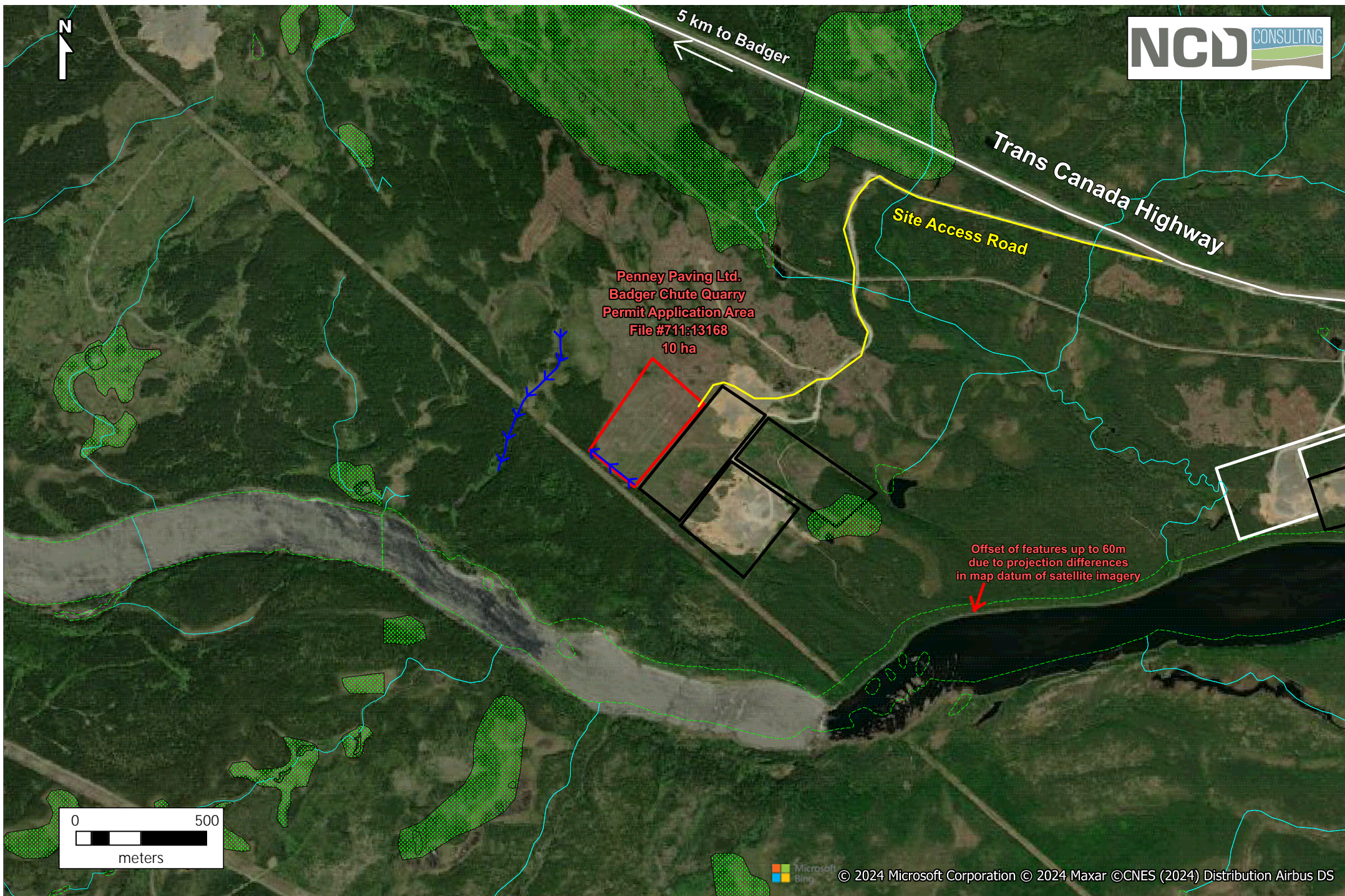
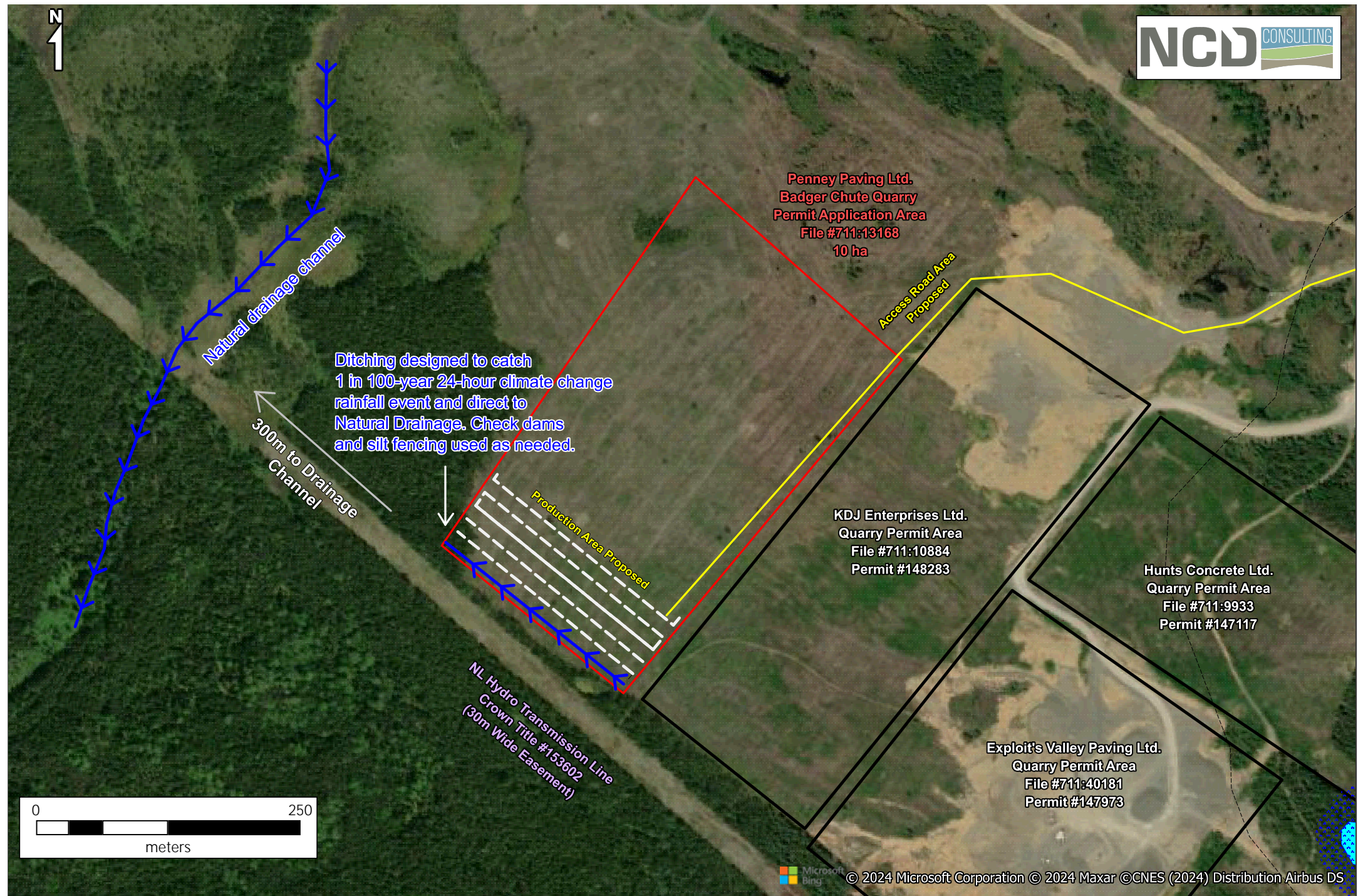


Figure 2: Regional Map of Rivers, Waterbodies and Wetlands (1:50,000 scale map features)

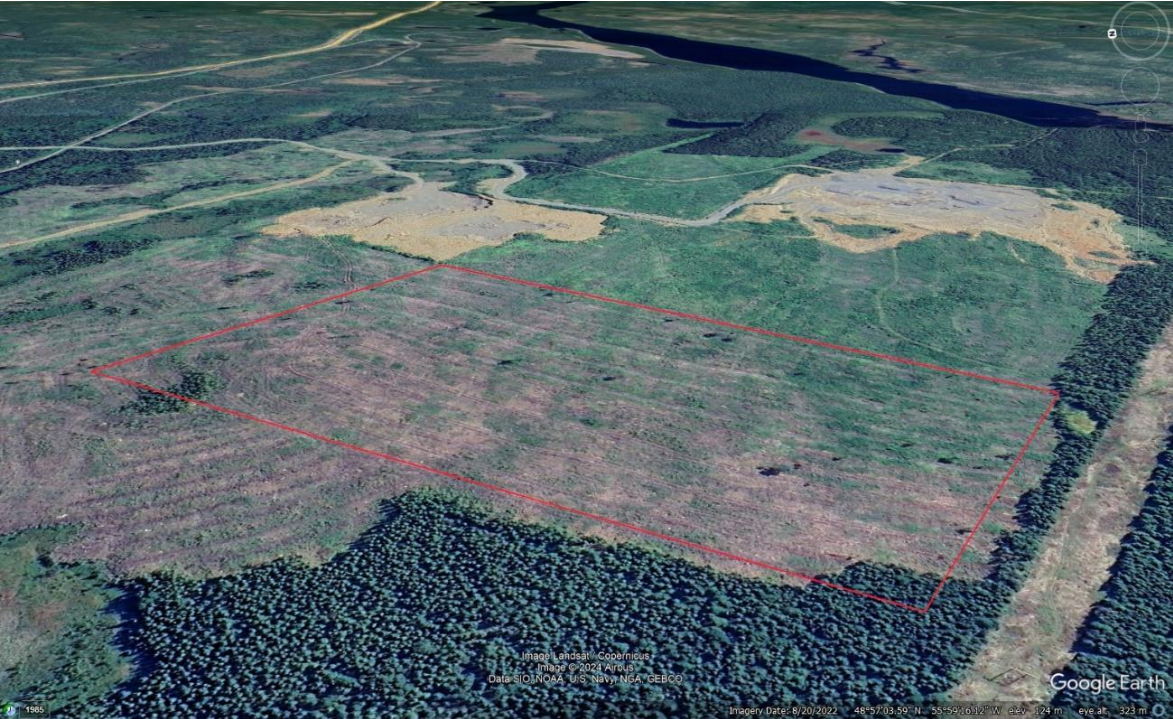




**Figure 3: Water Management Plan**



**Google Earth Images**

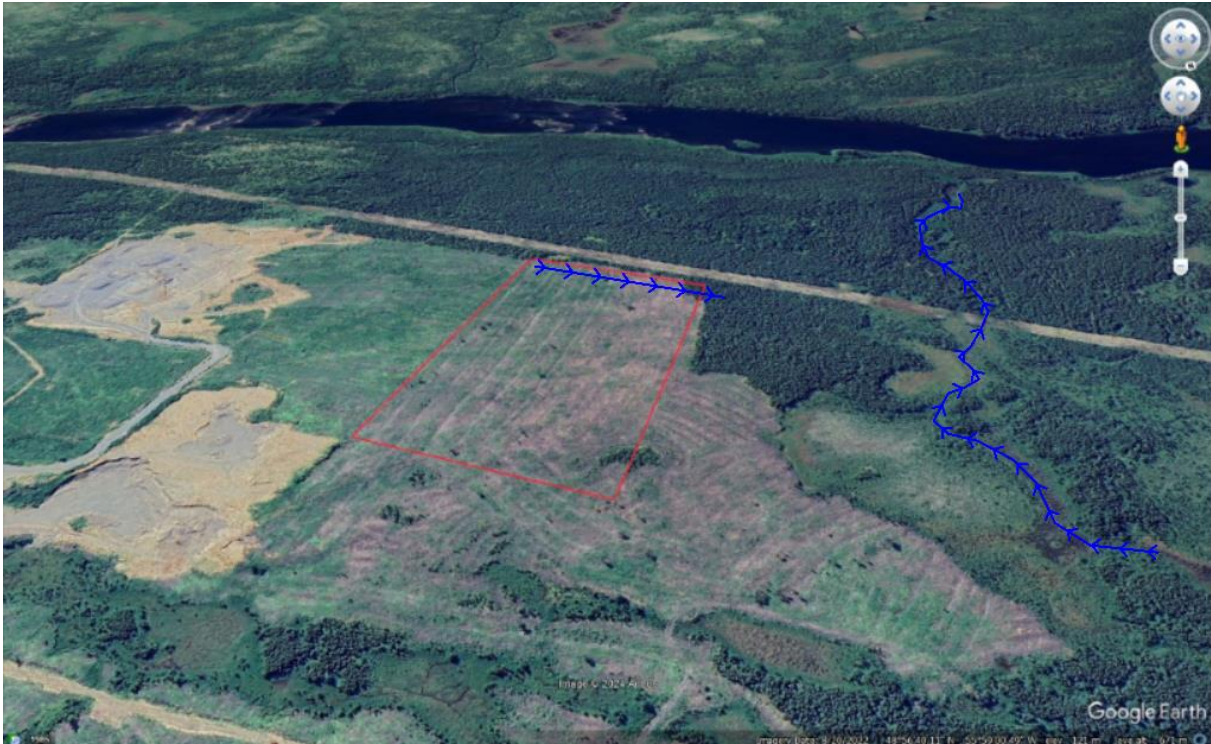


**Plate 1: View of the permit boundary looking east**



**Plate 2: View of the permit boundary looking south.**





**Plate 3: View of the permit boundary looking south showing quarry drainage channel and natural drainage channel to the right.**



**Plate 4: Regional view of the area looking north.**





**Plate 5: View of the permit boundary looking east showing distance to nearest waterbody.**