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Taltson Hydro Overhaul- Environmental Impacts Assessment Summary

Hello Shannon,

The Northwest Territories Power Corporation (NTPC) owns and operates the Taltson Hydroelectric Facility (Taltson Hydro), located 56 km northeast of Fort Smith, Northwest Territories within the Taltson River watershed. Taltson Hydro was built in 1965 and is the main source of power to the South Slave communities of Enterprise, Fort Resolution, Fort Smith, Hay River and K'atlodeeche First Nation. Taltson Hydro operates under the Mackenzie Valley Land and Water Board (MVLWB) Type A Water Licence (WL) MV2011L4-0002

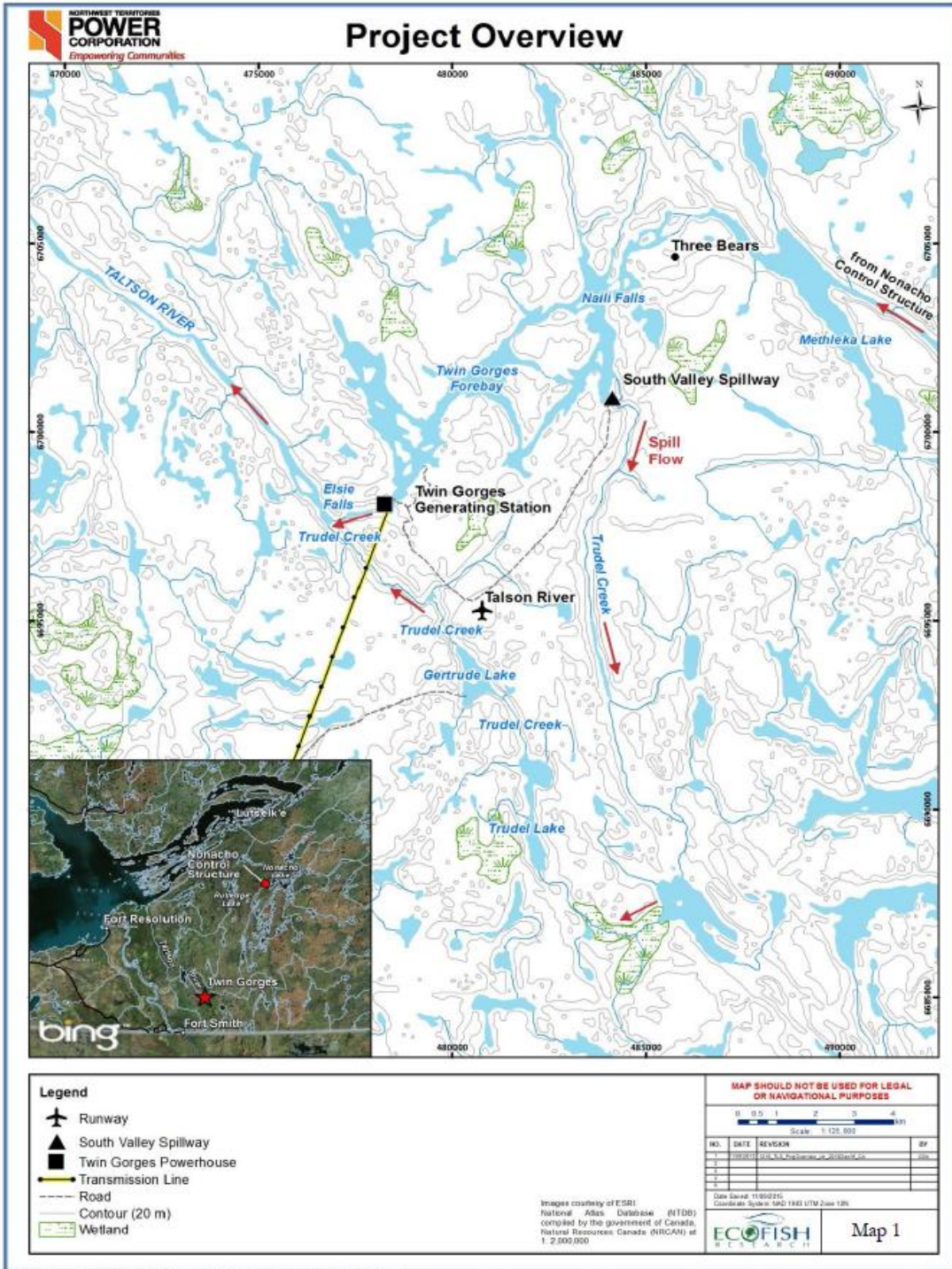
In 2023 NTPC plans to complete the refurbishment of the turbine and generator within the generating plant at Taltson Hydro which is regulated by Type A WL MV2011L4-0002. As required by MV2011L4-0002 *Part G: Conditions Applying to Modifications*. The details of the refurbishment of the turbine are presented in the *Taltson Overhaul Scope Summary for Regulatory Submission*. This letter has been prepared to summarise the environmental impacts assessments for the project. The Taltson Facility and tailrace is presented in Figures 1 and 2.

Overview

Taltson Hydro completes a 2-3 week shutdown every summer for annual maintenance. The overhaul shutdown will occur from Mid-April until Mid-October. The 2021 flow data is presented in the Taltson Hydro Annual Water Licence Report- MV2011L4-0002. In 2021 the flow through the plant was only an average of 6% of the total flow around the facility. When the plant shuts down the water is directed through the South Valley Spillway. Due to a legacy design a section of the tailrace below the plant dewateres when the plant is shutdown. The tailrace is the only location that will be impacted by the overhaul shutdown. NTPC completes detailed environmental monitoring as required by the Taltson Aquatic Effects Monitoring Plan (AEMP). The scope of the monitoring plan is not impacted by the overhaul shutdown and the plan will continue to be implemented as approved.

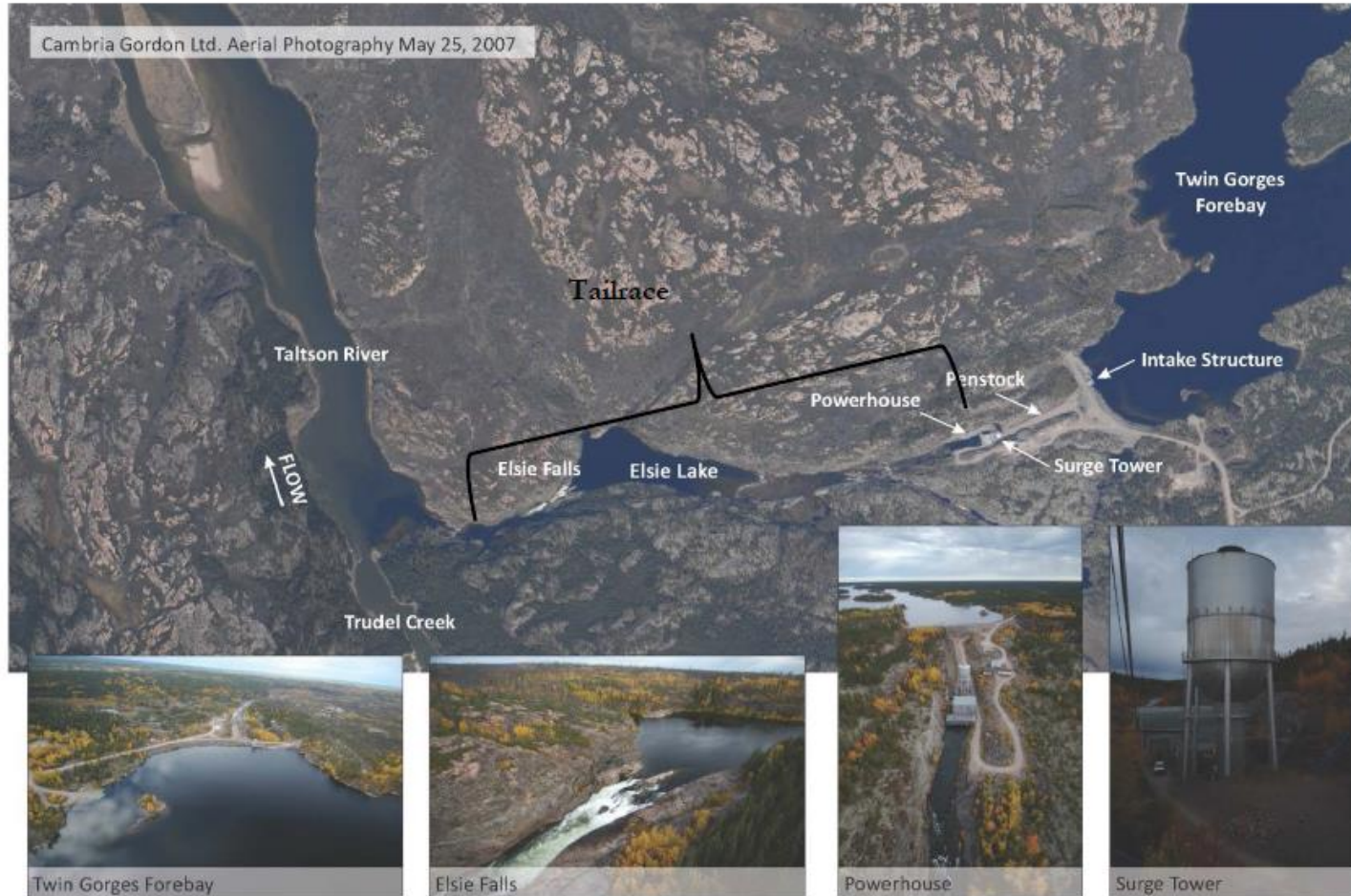
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Figure 1



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Figure 2



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Furbearing Mammals

Under the previous water licence for Taltson Hydro NTPC developed and completed a Water Effects Monitoring Program (WEMP) that included monitoring and assessment of fur-bearing mammal use and habitat in the Taltson basin and any impacts from operations.

Past fur-bearing assessments are presented on the registry for water licence N1L4-0154. No fur-bearing mammal use was ever noted in the tailrace area below the facility between the facility and the confluence with the South Valley Spillway/Taltson River as it is not suitable habitat with steep canyon walls and rock faces. As such the overhaul shutdown have no impact on furbearing mammals in this area as there are no fur-bearing mammals use in the areas that are dewatered.

Fur-bearing mammal use was noted in the forebay during past monitoring completed under the WEMP. As such NTPC completed an assessment of the environmental implications of the water level changes in the Forebay Reservoir from the extended overhaul shutdown for furbearing semi-aquatic mammals that may be residing in lodges or burrows on the shoreline of the Forebay Reservoir. This Technical Memo is included in Appendix A. this investigation found that the impacts to fur-bearing mammals in the forebay are negligible to minimal given the very small increase in water level in the forebay that the shutdown results in (average of 35-56cm).

Fisheries Aquatic Habitat

Detailed flow data is reported annually under Taltson Hydro Annual Water Licence Report-MV2011L4-0002. The flow through the South Valley Spillway varies widely based on flow through the system. In 2021 flow ranged from 146 cms to 842cms through the South Valley Spillway. Given this wide variation in flow and the minimal amount of flow that goes through the plant (6% average) the additional flow added to the South Valley Spillway during a shutdown is negligible in comparison to the natural variations in flow this area experiences and as such any impacts to aquatic habitat in the South Valley Spillway from the overhaul shutdown are negligible. This determination is supported by past monitoring reports completed under the WEMP for N1L4-0154 and the AEMP for MV2011L4-0002.

Due to a legacy design the annual maintenance shutdown at Taltson result in the dewatering of 700 m of riverbed in the spillway which results in fish stranding mortalities. NTPC has been in close communication with Fisheries and Oceans Canada (DFO) on this issue since 2012. Through stakeholder engagement, NTPC identified several measures

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to improve fish habitat to offset fish mortalities. NTPC applied to DFO in 2018 for a Fisheries Act Authorization (FAA) to continue operations while enhancing fish habitat to offset fish mortalities. DFO issued FAA 18-HCAA-01487 for the annual Taltson shutdown in August 2020 and NTPC is implementing the required offsetting measures which include a habitat installation project at Bluefish Hydro in 2021 and a Walleye Spawning Study in 2022 for the Little Buffalo River and Slave River.

NTPC has been engaged with DFO since early 2021 on what is required under FAA 18-HCAA-01487 for the overhaul shutdown. NTPC completed an assessment of the potential impact to fisheries in the tailrace area and Elsie Lake. This document is included in Appendix B for reference for the MVLWB but DFO is the lead regulator for this file. NTPC is gathering further data during the 2022 shutdown on Elise Lake to determine if the overhaul shutdown will result in an increase or decrease in fish mortality and will submit an FAA amendment to DFO in the fall of 2022 for the overhaul shutdown. The FAA amendment will involve stakeholder engagement for which the MVLWB will be included in the process.

If you have any questions regarding or if there is any further information we can provide please contact me at mmiller@ntpc.com.

Sincerely,



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Northwest Territories Power Corporation

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Appendix A- Taltson Overhaul Furbearing Assessment Memo

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Appendix B- Taltson Overhaul Fisheries Assessment Memo