Webequie Supply Road Project

Webequie First Nation

May 1, 2025

AtkinsRéalis Ref: 661910-4E-L01-PA or 00

APPENDIX K-4: WEBEQUIE SUPPLY ROAD WETLANDS FUNCTION MONITORING PROGRAM

AtkinsRéalis

WSR WEBEQUIE SUPPLY ROAD

WEBEQUIE FIRST NATION

Appendix K4

Wetlands Function Monitoring Program

The regional wetlands functional assessment methodology described in Section 11.4.5 of the EAR-IS and Section 9.26 and 9.3 of the Natural Environment Existing Conditions Report was considered adequate for the purposes of determining the initial assessment of affects on wetland functions resulting from removals. However, moving forward a more refined approach will be necessary to monitor the more localized effects. To achieve this a wetlands function monitoring program using a Level 3 (Detailed Assessment) process will be developed during detailed design. The development of the selected approach will follow the steps outlined below:

1. **Background Review**

The monitoring program will be based on a detailed Level 3 Wetland Functions Assessment protocol designed to capture various observable wetland functions through detailed field observations on hydrologic and hydrogeologic, soils, water quality, vegetation, and wildlife characteristics.

The Wetland Ecological Functions Assessment: An Overview of Approaches (Hanson et. al., 2008) listed a number of different rapid and detailed assessment methods. These methods, along with a few suggested by the CEAA, will be further reviewed for applicability to the development of the monitoring program. The CEAA recommended methods included:

- Ontario Wetland Evaluation System – Northern Manual (OWES);
- Minnesota Routine Assessment Method (MnRAM) Evaluating Wetland Function, (Version 3.4, 2000);
- Functional Assessment of Wetlands – Introduction to Nova Scotia Wetland Evaluation Technique (NovaWET 3.0);
- Wisconsin Wetland Rapid Assessment Methodology (Version 2.0, WDNR, 2014); and
- Alberta Wetland Rapid Evaluation Tool – Actual (ABWRET- A, 2015).

Wetland Functional Assessment Guidebook, Operational Draft Guidebook for Assessing the Functions for Riverine and Slope River Proximal Wetlands in Coastal Southeast and Southcentral Alaska Using the HGM State of Alaska Department of Environmental Conservation June 2003.

Manual for Wetland Ecosystem Services Protocol for Interior Alaska (WESPAK-INT) Version 1.0. 2021.

The monitoring program will be based on an initial detailed baseline functional assessment of each wetland type potentially impacted by the roadway installation. For each wetland type two (2) reference sites will be selected, subject to the same assessment process, to provide benchmarks for the assessment of functional change during construction and operations. The initial assessment program will include the following:

2. **Preparation Stage**

Clearly defined understanding of the goals of the assessment (e.g., early identification of structural changes, development of mitigation, measurable indices of remediation success etc.).

Further review of known assessment methods for applicability to the study area and development of Assessment Method tailored to environment (e.g., could be combination of methodologies, manage lack of cultural data through surrogate data etc.).

Review of background information from baseline studies to assist in site selection.

Choose indicators that efficiently measure the wetland functions selected for monitoring (e.g., water quality, water levels, species diversity, nutrient and pollutant concentrations).

Ensure the indicators adequately capture the various functions that have been selected for monitoring (e.g., hydrological, flora, wildlife, soils and water chemistry).

Refine mapping if necessary.

Determine the frequency and timing of when monitoring will occur (e.g., seasonally, bi-annually, annually) to adequately capture seasonal variations and significant biological occurrences.

3. Fieldwork Program Development

Finalize vegetation class site and control site selection.

Determine number of sampling site and if random sampling is required.

Finalize data collection forms and methods (e.g., quadrats, cruising, physical sampling).

Determine physical sampling requirements (surface/groundwater water quality, vegetation, soils) collection/transport protocols and test parameters if applicable and ensure proper calibration of sampling equipment.

Finalize testing parameters for all physical sampling programs (surface/groundwater water quality, vegetation, soils).

Standardize methods of data collection to ensure reliability and comparability over time as well as consistency with applicable established protocols.

Create a structured process for recording, storing, and managing data to ensure data is accessible and organized for analysis, and modelling processes.

Train field teams to ensure all are familiar with the assessment method and equipment.

4. Site Visit and Data Collection

Conduct general site walkthrough.

Locate and establish sampling sites, plots and standard photo point locations at each site.

Ensure all required sampling forms are completed for the wetland's physical, biological, and chemical conditions.

Keep detailed notes accompanied by photographs of general observations if deemed relevant.

Ensure routine monitoring through the development and adherence of a defined schedule and predefined plots.

Ensure that data collection is complete and accurate with respect to:

- ***Hydrology/Hydrogeology*** - identify water sources, inflow and outflow, evidence of groundwater recharge/discharge, flow patterns, inundation frequency, and duration.

- ***Soils*** - examine soil texture, color, moisture, and organic matter content, acquire samples for laboratory testing for key parameters such as microbial activity, disease risks, pH, nutrient levels, organic matter content, and metals.
- **Vegetation**: - identify plant species, their distribution, and cover, as well as density, and age class if applicable.
- ***Wildlife*** - conduct species and guild specific studies where applicable to determine the usage of the wetland for all wildlife including mammal, birds, amphibians, and macroinvertebrates. Particular attention will be given to known vulnerable species and Species at Risk. Note any opportunistic wildlife sightings across all programs.
- ***Surface and Groundwater Quality*** - conduct onsite data collection for physical parameters (i.e., color, taste, odor, temperature, turbidity, solids, and electrical conductivity), and lab samples for chemical parameters (metals, organics, acidity, alkalinity, chlorine, hardness, nitrogen, phosphorus, sulphate, dissolved oxygen, and biological oxygen demand, and biological parameters such as bacteria, algae, and viruses if applicable.
- ***Anthropomorphic Activity*** - record any observations of camps, trails, hunting, gathering or recreational vehicle use.
- **Analysis of Wetland Functions**
    - Regularly analyze data collected against baseline/benchmarks to ensure the prompt identification of changes, anomalies or trends.
    - Evaluate surface and groundwater functions such as flood protection, water storage, discharge/recharge, and sediment retention.
    - Measure biogeochemical functions, including pollution attenuation, carbon sequestration, and nutrient cycling
    - Assess vegetation maintenance and wildlife habitat functions such as the provision of habitat conditions to support the life processes of flora, birds, mammals, amphibians, reptiles, and fauna, insects, and fish species.
    - Consider social and cultural functions such as recreational, educational, and cultural uses or values.

5. **Data Analysis and Interpretation**

Use reference wetlands as benchmarks to interpret findings.

Develop a functional scoring method of the wetland's functions for comparative purposes between impacted wetland and control benchmarks based on criteria from the chosen assessment method.

Identify Stressors: Determine factors negatively impacting the wetland’s functions (e.g., pollution, invasive species, hydrological alterations).

Develop adaptive management program based on analytical findings.

Regularly review and update the monitoring plan and adaptive management plans to integrate new knowledge, changing conditions, and the advent of new technologies to address any identified issues.

6. Reporting

Produce scheduled reports summarizing findings, trends, and any observed changes.

Ensure that communications are maintained to share results with stakeholders, including local communities, regulatory agencies, conservation and academic organizations when applicable.

By following a structured approach for a comprehensive wetland function monitoring program as outlined above, the proponent can ensure the collection of consistent and applicable data over time. This will allow for the tracking of both the condition and functions of the affected wetlands, as well the early identification of changes to guide management actions.