



Annual Monitoring Plan 2018

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1.0 Introduction

The Morice Water Monitoring Trust (MWMT) is directed through its Trust Agreement to be responsible for monitoring the implementation and effectiveness of British Columbia/Wet'suwet'en government-to-government agreements, and related natural resource management activities, plans, and policies in the Morice Water Management Area (the "Morice Plans"). Baseline data will be collected on habitat supporting salmon and other fish, including water quality and quantity data, and hydrologic integrity that would fill information gaps or reduce information uncertainty. This will provide credible monitoring research and baseline data results in support of environmental effects monitoring and assessment to enable continuous improvement of Morice Plans, resulting in better management of environmental values in the Morice Water Management Area (MWMA).

The MWMT Strategic Direction document outlines core issues in the watershed, including the Trust's scope, purpose, guiding principles, goals, and strategies for management and implementation. The MWMT Monitoring Framework provides operational guidance by defining and categorizing the anticipated risks/pressures in the watershed and sub-units, goals and objectives specific to each category, and tasks required to successfully address objectives. Both documents will assist the Trustees with setting direction and priorities.

One of the primary purposes of MWMT is to gather baseline data within the Morice Water Management Area to determine if water quality is sufficient to maintain the well-being of the Wet'suwet'en (in relation to fish and drinking water). In 2007 and 2008, MWMT developed and implemented a Monitoring Program, which led to the creation of the Morice Water Management Area—Multi-Year Operational Plan (Gordon & Associates 2009). The Operational Plan provides a well-

structured framework for water quality monitoring and was instrumental in developing the MWMT Monitoring Framework—a working document that serves as a 5-year plan for Trust activities. The current management questions (Gordon & Associates 2009) are:

- Is the water safe for drinking?
- Is the water and associated habitat capable of sustaining fish?
- Is the water quality getting better or worse?
- Is the water quality changing because of changes in land use or management practices?
- If water quality problems exist, what are the causes of those problems?
- Are regulatory requirements for water quality being met?

In October 2015, MWMT used the Monitoring Framework to implement a more refined water quality monitoring program and began baseline data collection at 5 sites in the MWMA. Baseline data collection will continue on a monthly basis until March 31, 2019 for the purpose of assessing stream health. The Water Quality Goals include reliable access to safe drinking water, water quality and quantity to sustain the health and well-being of the Wet'suwet'en and water quality that supports aquatic life at reference state. To meet these goals, the MWMA objectives are to:

1. Maintain water temperature within critical limits for salmonid species on all MWMA water bodies.
2. Maintain water quality (chemistry) at or below Provincial Water Quality guidelines for parameters of importance seasonally.

The role of the MWMT is to collect information related to the goals and objectives for the Morice Water Management Area and communicate this information to the Trustees, decision makers, and others as appropriate. MWMT welcomes continued input into key watershed issues in order to maintain a monitoring program that addresses current objectives.

The Annual Monitoring Plan sets out the year's proposed activities and budget which are created from the MWMT Monitoring Framework and is consistent with the MWMT Agreement.

2.0 Budget

The Budget for the **2018/19 (Year 4) Annual Monitoring Program** consists of funding from the MWMT Revenue Trust Account. A summary of proposed activities and budgets is included in Table 1, and individual activities are described in greater detail in Section 3.

Table 1. 2018/19 MWMT Annual Monitoring Plan Budget

Activity/Task	Proposed Budget 2017/2018	Actual Spending 2017/2018	Proposed Budget 2018/2019
MWMT Program Management (Task 1)	\$12,000	\$3,662.78	\$10,000
Trust Project Coordination	\$11,100	\$2,762.78	
Rent (\$75 per month)	\$900	\$900	
MWMT Annual WQ Monitoring Program (Task 2)	\$48,220	\$29,602.33	\$22,400 (MWMT WQ Report-Oliver)
Agreement Monitoring	\$500		
MWMA Stream [and Lake] Water Quality Monitoring	\$43,520 (including spring 5 in 30)	\$29,602.33 (no sampling in 2018)	
Data management and analysis	\$2,200		
Annual reporting	\$2,000		
MWMT 5-in-30 Sampling (Task 3)			\$40,000
MWMA Stream [and Lake] Water Quality Monitoring	N/A	N/A	\$40,000
MWMT Communication (Task 4)	\$1,000	\$234.07	\$5,000
Website maintenance	\$500	\$183.32	
Communication & Extension	\$500	\$50.75	
Total	\$61,220	\$33,499.18	\$77,400

1. Monitoring Year is from April 1 to March 31 annually to coincide with Budget Approval.
2. Endowment Trust Year is the Calendar Year.
3. Revenue Trust Account balance on March 31, 2017 is \$64,324.18.

3.0 Project Synopses for 2018

MWMT Program Management (Task 1)

Project management activities include those functions that are necessary for the effective delivery of MWMT projects. Administration and project management duties will be performed by Northwest Research and Monitoring Ltd.

Budget: \$10,000

Tasks:

- Prepare Trustee Meeting agendas, facilitate meetings, and provide minutes.
- Prepare and update Trust Management documents as directed by Trustees (present bank balance, budget, etc.).
- Manage Trust expenditures as defined by the Annual Monitoring Plan.
- Develop 2017 Annual Monitoring Plan on behalf of the Trustees in coordination with Monitoring Lead:
 - Provide initial description of projects and cost estimates
 - Facilitate discussion in relation to project selection
- Advise Trustees as necessary on strategic and operational planning.
- Coordinate MWMT programs with other programs known to take place in 2018
 - Research grant and partnership opportunities and MWMT Partnership and Grant Recording Document, which tracks process and records grant and partnership contact information.
- Upload and organize data in Dropbox.
- Liaise and collaborate with relevant stakeholders to strengthen existing and build new relationships.

MWMT Research and Planning (Task 2)

Morice water monitoring summary reports have been produced in prior years but have not yet provided a strong foundation for planning future years' Annual Monitoring Plans (AMP), or for showing progress towards meeting the 2009 objectives. Task #1 is intended to provide a stronger foundation and evaluate monitoring efforts to date in light of the objectives of the MWMT.

Budget: \$22,400

Objectives:

1. Evaluate monitoring efforts to date considering MWMT objectives.
2. Use information from Task 1, Objective 1, to provide a stronger foundation for planning future annual monitoring plans.
3. Provide a report of Morice Water Quality Monitoring efforts to-date, to serve as meaningful reference material for developing a framework for long-term monitoring.

Tasks:

Prepare a **water quality monitoring summary report** for the period of record held by the MWMT and the Office of the Wet'suwet'en (OW). The report will include (1) maps (showing

where monitoring activities have taken place), (2) descriptions of monitoring activities, (3) water quality data, (4) data analyses and (5) interpretations.

Summary reports for 2016 and 2017 and other similar documents predating this report will be consulted. Additionally, water quality data from some industry (e.g. Pacific Trails Pipeline), and government (e.g. BC Ministry of Environment - MOE, Forest and Range Evaluation Program - FREP) sources relevant to the area (Upper Morice Water Management Area will be reviewed

For items (4) and (5):

- Determine how lab analysis results below method detection limits (non-detects) will be addressed in the new report (e.g. leave at MDL, half MDL or replace with zero), and provide a rationale for the choice.
- Graph key parameters and compare results to WQGs. Key parameters will be chosen in consultation with the MWMT and BC MOE. Compile all monitoring data into tables and include comparisons with BCWQGs and CCME WQGs where BC WQGs do not exist.
- Using the BC Guidance for the Derivation and Application of Water Quality Objectives in British Columbia, determine if, based on existing data, any site specific water quality guidelines (SSWQG) can be proposed at present. Where this is not possible, determine what additional sampling and interpretation will be necessary to propose such guidelines. Parameters to be chosen for these analyses will be made in consultation with the MWMT and BC MOE. (see http://www.env.gov.bc.ca/wat/wq/pdf/wqo_2013.pdf). The above analyses will include evaluation of seasonal variability of water quality based on the data available. To assess seasonal variability, descriptive statistics will be generated (e.g. mean, median, min, max, SD, SE, 95% CI, sample sizes and detection frequency for each season).
- Determine if power analysis is feasible for any of the data, and if so, complete the analyses.

Setting the Course Towards a Long-Term Monitoring Program: Terms of Reference for a Template Approach

A long-term monitoring template approach will simplify the monitoring program so that it runs efficiently, provides scientific/technical capacity building for the Wet'suwet'en, and provide meaningful results to the various groups wishing to use the information for educational and decision making purposes. The results of this contract will be used as reference material to build the template approach. Specifically, the template approach to be created after this contract is completed will:

- a) Lay out the scientific and technical framework for the monitoring regime, starting with the questions that need to be answered, and the key locations and parameters that need to be sampled to answer the questions,
- b) Provide the standard operating procedures and experimental design that will allow statistical rigor, so that there is confidence in the data and interpretations,
- c) Standardize the data archiving, analysis, interpretation and reporting formats to ensure that the data and interpretations are of use for the purposes of education and decision making,
- d) Have provisions for evolution of the monitoring and reporting program as new information is gathered, land and water use changes occur, budgets fluctuate, and program partners are added.

e) Work in harmony with the federal **Wild Salmon Policy** (<http://www.pac.dfo-mpo.gc.ca/fm-gp/species-especies/salmon-saumon/wsp-pss/index-eng.html>), the concept of **Environmental Flows** (eflows –file:///C:/Users/Owner/Downloads/factsheet_eflows_final_030914.pdf and <https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-licensing-rights/water-policies/environmental-flow-needs>), and the **BC Water Sustainability Act** (<http://www.bclaws.ca/civix/document/id/lc/statreg/14015>)

MWMT 5-in-30 Sampling (Task 3)

Budget: \$30,000

This is included as a special sampling event to use the \$10,000 provided from the government for lab fees before the funds expire at the end of March. The total spending is likely to be closer to \$40,000.

Five sampling sessions will be completed in a five-week period spanning from February to March. Obtaining this large dataset in a short time period will assist in determining seasonal variation.

MWMT Communication (Task 4)

Budget: \$3,000

A key role of the MWMT is to collect, summarize, and communicate information in suitable format(s) to governments, the public, and industry to assist them with tracking progress towards goals and objectives and making resource management decisions.

MWMT Goals/Objectives:

- To communicate MWMT monitoring results to the appropriate organizations so they are informed of the available information and data.
- To communicate issues or problems that may lead to ecosystem impacts to the relevant parties in a timely manner.
- To meet communication commitments of the Trust.

Tasks:

- Continue to develop a Communication Strategy that sets communication expectations for the MWMT.
- Document information management requirements (how to identify information/data and make it accessible).
- Post reports, news, and updates regularly on MWMT website (moricetrust.ca).
- Present all reports and data to MWMT and other stakeholders as instructed by the board.
- Communicate important events and findings to the board in appropriately timed manner.
- Create written and visual presentations about the MWMT for information and marketing purposes.

Timetable of deliverables for 2017/2018 MWMT Communication:

Task/Deliverable	Timeline
Update Website	December 2018
Upload AMP and AMR on Website	December 2018