



2022-2023 OSM WORK PLAN APPLICATION

This form will be used to assess the merits of the proposed work plan and its fit with the Oil Sands Monitoring (OSM) Program mandate and strategic priorities. Applicants must complete the form in its entirety. Applicants that fail to use this form and complete all sections in the timeframe will not be considered.

OSM Work Plan Submission Deadline: The deadline for submission of proposed work plans is October 5, 2021 at 4:30 PM Mountain Standard time.	October 5, 2021 4:30 PM MST
Decision Notification	Mid to Late January 2022

The OSM Program is governed by the Freedom of Information and Protection of Privacy Act (FOIP) and may be required to disclose information received under this Application, or other information delivered to the OSM Program in relation to a Project, when an access request is made by anyone in the public. Applicants are encouraged to familiarize themselves with FOIP. All work plans are public documents.

WORK PLAN COMPLETION

Please **Enable Macros** on the form when prompted.

The applicant is required to provide information in sufficient detail to allow the evaluation team to assess the work plan. Please follow the requirements/instructions carefully while at the same time being concise in substantiating the project's merits. The OSM Program is not responsible for the costs incurred by the applicant in the preparation and submission of any proposed work plan.

When working on this form, please maintain Macros compatibility by always saving your draft and your final submission as a **Microsoft Word Macro-Enabled Document**, failure to do so will result in loss of form functionality. This form was created using Microsoft word 2016 on a PC and may not have functionality on other versions of Microsoft on PC or MACS.

All work plans under the OSM Program require either a government lead or a government coordinator. This will ensure that the financial tables (for Alberta Environment and Parks & Environment and Climate Change Canada) are completed accurately for work plan consideration. **However, if an Indigenous community, environmental nongovernmental organization or any other external partner is completing a work plan proposal, they would only complete the grant or contract budget component of the Human Resources & Financials Section** for their project. The government coordinator within Alberta Environment & Parks would be responsible for completing the remaining components of the Human Resources and Financial Section of this Work Plan Application, as they are responsible for contract and grant facilitation of successful submissions. All other sections outside of Human Resources & Financials Section of this work plan proposal are to be completed in full by all applicants.

The OSM Program recognizes that majority of work planning submissions are a result of joint effort and monitoring expertise. Should the applicant wish to submit supplemental materials in addition to their application additional resources are available in the Work Planning Form and Distribution Package, accessible here: [Work Planning Form and Distribution Package](#)

Should you have any **questions** about completing this work planning form or uploading your final submission documents, please send all inquiries by email to: OSM.Info@gov.ab.ca.



WORK PLAN SUBMISSION

Upon completion of this application, please submit the appropriately named work plan (**Microsoft Word Macro-Enabled Document**) and all supporting documents to the link provided below. Failure to follow the naming convention provided may result in oversight of your application.

Please upload (by drag and dropping) the **WORK PLAN SUBMISSION & ALL SUPPORTING DOCUMENTS** here:

[WORK PLAN SUBMISSION LINK \(CTRL+CLICK HERE\)](#)

Please use the following file naming convention when submitting your **WORK PLAN**:

202223_wkpln_WorkPlanTitle_ProjectLeadLastNameFirstName

Example:

202223_wkpln_OilSandsResiduesinFishTissue_SmithJoe

If applicable, please use the following file naming convention when submitting your supplementary or supporting files. Please number them according to the guidance and examples provided:

202223_sup##_WorkPlanTitle_ProjectLeadLastNameFirstName

Examples:

202223_sup01_OilSandsResiduesinFishTissue_SmithJoe

202223_sup02_OilSandsResiduesinFishTissue_SmithJoe

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202223_sup10_OilSandsResiduesinFishTissue_SmithJoe

Do not resave your work plan or documents under any other naming conventions. If you need to make revisions and resubmit before the work planning deadline of October 5, 2021, **DO NOT** rename your submission. When resubmitting, simply resubmit with the exact naming convention so that it replaces the original submission. **DO NOT** add any additional components such as versioning or dates to the file naming convention. Please direct any questions regarding the submission or naming of submissions to OSM.Info@gov.ab.ca.



WORK PLAN APPLICATION

PROJECT INFORMATION	
Project Title:	Mikisew Cree First Nation – Community Based Monitoring
Lead Applicant, Organization, or Community:	Mikisew Cree First Nation
Work Plan Identifier Number: <i>If this is an on-going project please fill the identifier number for 20/21 fiscal by adjusting the last four digits: Example: D-1-2020 would become D-1-2022</i>	New workplan – previous 14_2022
Project Region(s):	Athabasca
Project Start Year: <i>First year funding under the OSM program was received for this project (if applicable)</i>	2022
Project End Year: <i>Last year funding under the OSM program is requested Example: 2022</i>	2025
Total 2022/23 Project Budget: <i>For the 2022/23 fiscal year</i>	\$420,000.00
Requested OSM Program Funding: <i>For the 2022/23 fiscal year</i>	\$400,000.00
Project Type:	Community Based Monitoring
Project Theme:	Surface Water
Anticipated Total Duration of Projects (Core and Focused Study (3 years))	Year 3
Current Year	Focused Study: Choose an item.
	Core Monitoring: Year 1

CONTACT INFORMATION	
Lead Applicant/ Principal Investigator: <i>Every work plan application requires one lead applicant. This lead is accountable for the entire work plan and all deliverables.</i>	Melody Lepine
Job Title:	Director
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PROJECT SUMMARY

Should your application be successful, The OSM Program reserves the right to publish this work plan application. Please check the box below to acknowledge you have read and understand:

I acknowledge and understand

In the space below please provide a summary (300 words max) of the proposed project that includes a brief overview of the project drivers and objectives, the proposed approach/methodology, project deliverables, and how the project will deliver to the OSM Program objectives. The summary should be written in plain language.

The Mikisew Cree First Nation – Community Based Monitoring (MCFN-CBM) program seeks continued funding from the Oilsands Monitoring Program to monitor changes to water quality, water quantity, fish health, and wetlands in the Peace Athabasca Delta. Our community members are concerned about changes they are seeing on the land. They have expressed concerns about decreasing water quantity and declining water quality in the Peace-Athabasca Delta (PAD). Data collected on the extent of changes to our resources will inform future studies on the extent to which changes are attributable to oilsands development and operations.

Using both western science and Cree knowledge, we seek to provide answers about the state of the Delta, water quality in the Delta, the health of wild foods, and provide information on water quantity to support safe water navigation for our community. In addition to measuring water quality and quantity using scientific methods, the MCFN-CBM program has formed a Land Users Advocates Network comprised of Elders and Land Users to inform monitoring from an Indigenous perspective. The Land Users Advocates Network will be piloting a methodology for assessing changes to the land and water using a Mikisew Indigenous Knowledge Index, that supports Knowledge Holders in collecting, interpreting and validating changes on the land within a Cree knowledge system.

Monitoring data and knowledge will be reported on through an annual technical report as well as a plain language summary. Quarterly newsletters will be created for community members to provide updates on MCFN-CBM activities.

1.0 Merits of the Work Plan

All work plans under the OSM Program must serve the mandate of the program by determining (1) if changes in indicators are occurring in the oil sands region and (2) if the changes are caused by oil sands development activities and (3) the contribution in the context of cumulative effects. In the space below please provide information on the following:

- Describe the key drivers for the project identifying linkages to the EEM framework particularly as it relates to surveillance, confirmation and limits of change (as per OC approved Key Questions).
- Explain the knowledge gap as it relates to the EEM framework that is being addressed along with the context and scope of the problem as well as the Source – pathway – Receptor Conceptual Models .
- Describe how the project meets the mandate of the OSM Program
- Discuss results of previous monitoring/studies/development and what has been achieved to date.

The Mikisew Cree First Nation- Government and Industry Relations (MCFN-GIR)'s Community Based Monitoring (CBM) answer to community concerns about changing environmental conditions in their homelands. The program monitors for changes in key indicators of water quality, water quantity, fish health, and ice thickness.

The MCFN CBM program monitors and assesses the effects of upstream oil sands development activities on the PAD ecosystem. Our CBM program is designed following the EEM Framework. Where sufficient data exists we create monitoring triggers, both regionally and site specific. These triggers act as our baseline to understand if conditions in the environment are changing and if these changes are driven by the Oil sands development.

MCFN monitors using both Indigenous and western science ways of knowing. MCFN is developing a set of Indigenous Knowledge indicators that will be used to assess the condition of three priority values: ice, water quality, and whitefish health. We will then work towards the creation of a set of culturally relevant management triggers that will outline when and how our Nation can take action to effectively manage these three priority values. If conditions are static or improving we have the evidence based decision making framework to support shifting monitoring effort to other high priority areas.

Through this work, the program will be able to plan research, align monitoring protocols for select mediums, implement further monitoring mediums, and subsequently evaluate the program. Data gathered through the MCFN CBM program will complement the Real-Time Water Quality focused study, for the purposes of integration with the core OSM surface water quality Technical Advisory Committee.

The CBM program has been collecting water quality and quantity data since 2008. This information has allowed us to develop monitoring triggers in line with the EEM framework. MCFN analyzed the MCFN-CBM dataset to establish water quality monitoring triggers. From the MCFN-CBM dataset, we now have a good understanding of what normal variation of water data should be, and can use the triggers to understand if change is significant from normal.

2.0 Objectives of the Work Plan

List in point form the Objectives of the 2022/23 work plan below

- Environmental effects Monitoring of water quality, water quantity, fish health and winter parameters using western science and Indigenous Knowledge.
- Integrate MCFN-CBM with other oil sand monitoring and research being undertaken in the Peace-Athabasca Delta.
- Integrate data platforms created by the Mikisew Cree with Data Analytics TAC (Kisters)
- Increase community engagement in monitoring initiatives through the Land Users Advocacy Networks, and land-based monitoring camps.

3.0 Scope

Evaluation of Scope Criteria (Information Box Only- No action required)

Your workplan will be evaluated against the criteria below. A successful workplan would:

- be in scope of the OSM Program (e.g., regional boundaries, specific to oil sands development, within boundaries of the Oil Sands Environmental Monitoring Program Regulation)
- integrate western science with Indigenous Community-Based Monitoring
- addresses the EEM framework particularly as it relates to surveillance, confirmation and limits of change as per approved Key Questions.

have an experimental design that addresses the Pressure/Stressor, Pathway/Exposure, Response continuum

- produce data/knowledge aligned with OSM Program requirements and is working with Service Alberta
- uses Standard Operating Procedures/ Best Management Practices/ Standard Methods including for Indigenous Community-Based Monitoring

3.1 Sub Theme

Please select from the dropdown menu below the theme(s) your monitoring work plan relates to:

Surface Water

3.2 Core Monitoring or Focused study

Please select from the dropdown menu below if the monitoring in the work plan is "core monitoring" and/or a "focused study". Core monitoring are long term monitoring programs that have been in operation for at least 3 years, have been previously designated by the OSM program as core, and will continue to operate into the future. Focused studies are short term projects 1-2 years that address a specific emerging issue. For the purposes of 2022/23 work planning all Community Based Monitoring Projects are Focused Studies.

Core Monitoring

3.3 Sub Theme Key Questions

Please select from the dropdown menus below the sub-theme(s) your monitoring work plan relates to and address the Key Questions:

3.3.1 Surface Water Theme

3.3.1.1. Sub Themes:

Cross Cutting

3.4.1.2 Surface Water Key Questions

Explain how your surface water monitoring program addresses the key questions below.

1. Are changes occurring in water quality, biological health (e.g., benthos, fish) and/or water quantity/flows, to what degree are changes attributable to oil sands activities, and what is the contribution in the context of cumulative effects?

The MCFN-CBM program is designed to answer whether there are changes in 1) Water quality; 2) Biological health of Lake Whitefish (a culturally important species); and 3) Water quantity and flows and 4) changes to winter parameters (OS influence on ice and snow including IK indicators)

WATER QUALITY

The community of Fort Chipewyan is concerned about the quality of both their source water, and with their treated drinking water. The concern is due to first hand observations of declines in the quantity and quality of the Athabasca River and in general observations of negative changes to the Peace Athabasca Delta.

Elders and land users have noted Indigenous Knowledge Indicators such as more algae, foamy scum, dirtier water, scum on rim of the tea pots and boats, as well as a stronger smell to the water (MCFN, 2009). MCFN-CBM water quality data, and Parks Canada data (Glozier et al., 2009), show an increase in nutrient levels in the Peace Athabasca Delta over the last 15-30 years. At 5 of the 9 CBM sampling sites recorded, phosphorus levels were above the government guideline of 0.05mg/L (MCFN, 2012). Phosphorus is the main contributor to algae blooms and resultant decreases in water quality. Therefore western science nutrient data indicates that the Peace Athabasca Delta is becoming more eutrophic, which is consistent with Indigenous Knowledge interview findings and Indigenous Knowledge Indicator monitoring.

While eutrophication itself is a concerning trend, a further source of concern about water quality in the Athabasca River is with chemical contamination due to the large scale oil sands development and associated land use changes upstream, which continues to expand.

The Mikisew CBM program water samples show, on average, metal levels that are higher than background sites for all parameters by 9.7 %. Also, the MCFN-CBM program found thirteen heavy metals to be above government guidelines (MCFN, 2012). Of those, arsenic, cadmium, copper, lead, mercury, and zinc are described as priority pollutants of concern in the Kelly and Schindler 2010 report (Kelly et al., 2010). In that report they showed that the oil sands industry releases the 13 elements (Sb, As, Be, Cd, Cr, Cu, Pb, Hg, Ni, Se, Ag, Tl, and Zn) considered priority pollutants (PPE) under the US Environmental Protection Agency's Clean Water Act, via air and water, to the Athabasca River and its watershed. This report also showed that Canada's or Alberta's guidelines for the protection of aquatic life were exceeded for seven of those PPE—cadmium, copper, lead, mercury, nickel, silver, and zinc—in melted snow and/or water collected near or downstream of development (Kelly et al., 2010). These are the same PPE's being detected by the CBM program in the waters of the PAD.

Methyl mercury levels also increased exponentially with proximity to the upgraders (Kirk et al., 2012). Methyl mercury bioaccumulates in the food chain, and can affect wildfood, especially fish that community members will consume. In fact, health advisories for mercury levels exist for the Athabasca

River and recommend that adults refrain from eating large predatory fish more than once per week and that children and women of child-bearing age not eat these fish at all (Jardine, 2003, in McLachlan, 2012). MCFN examines low level mercury and methyl mercury to assist with better cumulative effects understand of mercury, as well as to assist in understanding health risks associated with consumption of wildfoods. Gull and tern eggs (Hebert) have been shown to have elevated mercury levels, high enough to warrant a human health advisory.

Polycyclic Aromatic Hydrocarbons (PAHs) are also increasing at levels above which industry claims is due to the natural erosion of bitumen (Kelly et al. 2009). Fish from the Athabasca River, collected in 2011-2012 demonstrate that the larger 5 ring PAHs (associated with bitumen upgrading) are more concentrated in fish bile from sites closer to oil sands operations. The concentrations of 5 ring PAHs measured in fish bile decrease from the upper to the lower sampling sites on the river system. This suggests that oil sands generated pollution is entering the water and reaching the aquatic food web, (Jones, 2012).

Mikisew has examined PAH levels in water and now fish. Findings were as follows:

- All PAH levels fall under currently accepted Canadian Water Quality Guidelines;
- Sites in the Athabasca River are influenced by liquid fossil fuel combustion; most likely a result of the combustion of fossil fuels for the upgrading of bitumen. Values in the PAD are near zero (Indeno(1,2,3-c, d)pyrene was not detected at every site, as a result, yielding "0" ratio values for most of the PAD sites;
- Levels of PAHs in the PAD are lower than those found throughout the Athabasca River (with the exception at the Mouth of the Athabasca River site);
- At every site (apart from Sandy Point), PAH levels are driven by human influence/factors; and,
- Sites in the Athabasca River, at the mouth of the Athabasca River and the Quatres Fourches sites are influenced by petroleum derived PAHs, while the other sites are mostly influenced by the combustion of wood (most likely a reflection of forest fire activity and/or residential wood burning).

FISH

C3DBT was a significant predictor of Hg in muscle tissue

WATER QUANTITY

In 2011, MCFN and the Athabasca Chipewyan First Nation (ACFN) undertook a joint community-based water monitoring program to address gaps in the provincial and federal government's quantitative assessment of the status of water resources within their territories which are centred around the Peace-Athabasca Delta. Years of declining water levels precipitated action to create the program. The Government of Alberta and upstream industry have displayed a prolonged lack of interest and initiative in quantifying depth changes and their potential linkage to declines in the Athabasca River and Peace River hydrographs.

Upstream industrial water withdrawals on the Athabasca River are of particular concern to MCFN and ACFN in relation to periods of low discharge due to their direct detrimental effect on their traditional-use rights. The CBM program was specifically designed to quantify the temporal and spatial extent to which access is being lost to ACFN and MCFN territories and to determine whether there are identifiable thresholds evident in relation to this loss.

The Peace Athabasca Delta's water-based transportation network provides access by MCFN and ACFN to their territories to sustain their traditional-use rights. Flow regulation on the Peace River, oilsands water withdrawals from the Athabasca River and the growing effect of climate change have all contributed to a decline in the Peace Athabasca Delta's hydrologic recharge leading directly to reduced water depths and a loss of navigability, particularly at critical "pinch points" that are shallower locations which are the first to become impassable as water depths decline. The CBM depth data reveal regions of the Peace Athabasca Delta that behave in characteristic and contrasting ways. Water depth in the southern Peace Athabasca Delta fluctuates most closely with the discharge of the Athabasca River. Although the sites along the edge of Lake Mamawi also reflect that discharge, other factors including the effect of the Peace River obscure its role. Water depth at sites located along the southwest edge of Lake Athabasca are the least correlated with daily discharge of the Athabasca River due to wind and deposition, among other factors. The data document extensive losses of traditional use during the five-year monitoring period.

The findings corroborate and extend the Aboriginal Extreme Flow (AXF) concept which was put forth in 2010 to provide a preliminary threshold for maintaining territorial access in relation to the discharge of the Athabasca River at Fort McMurray. It is given support by the overall convergence of water depth evident at various sites (not only those in the southern PAD) as discharge (QFM) declines below about 500-600 m³/s. While factors other than Athabasca River discharge are at play in the convergence, there is a correlation with QFM, suggesting that the AXF successfully isolates the effect of one key factor related to declining water depths in the PAD: the effect of declining flows in the Athabasca River and in particular, the effect of oilsands withdrawals from the Athabasca River during critical periods of traditional use. As QFM inches down below 500 m³/s, there arises a widespread cumulative loss in ability to navigate along these waterways. Below the AXF, oilsands water withdrawals are disproportionately damaging to traditional use than they would be at higher river discharges.

Almost one hundred occurrences of water depth below the AXF were documented in the five years of monitoring and many of those measurements represent periods of lost use through critical passageways resulting in sustained lost access to large areas of territory. The findings point to the need to gather additional CBM data during low discharge of the Athabasca River (300-600 m³/s) to further refine the AXF. Additional study may include examination of the role of the Peace River freshet, any lag effects from previous years, and local effects of wind and sedimentation.

The Government of Alberta's Surface Water Quantity Management Framework (SWQMF) currently provides no benefit to Aboriginal navigability yet it recognizes the need to do so. The threshold for action is set far too high to be useful: it requires an effect from oilsands withdrawals of at least 10% in the Aboriginal Navigation Index (ANI) for a management response to be possible. It also assumes a depth requirement of 100 cm rather than the 122 cm determined from empirical research. In addition, the SWQMF does not incorporate the science-based AXF. There is also no hydrometric station downstream of the oilsands disturbances to verify the withdrawal data and confirm the flow rates being delivered to the PAD.

A recent example illustrates the discord between the configuration of the SWQMF and the objective of protecting Aboriginal navigability. Although in 2015 the AER recorded the second lowest fall-season average weekly QFM at 394 m³/s and acknowledged that this was associated with "widespread navigation difficulties", AER continued to authorize oilsands operators to withdraw an average throughout the fall season of 4.54 m³/s. AER confirms this arrangement and recognizes that these withdrawals were permitted despite knowledge of widespread limitations being already in place affecting pre-existing ACFN and MCFN rights-holders from exercising their water-based traditional-use rights. AER notes that this practice is well within the thresholds that it has established within the SWQMF which indicates that no management response is required.

The CBM findings dispute the approach to monitoring and management of Aboriginal navigability taken in the SWQMF and offers solutions to fix it. The correlation between the AXF and loss of access provides a practical management indicator that the SWQMF can incorporate immediately to enable the Government of Alberta to intervene at the appropriate time to protect these traditional land-use rights. This could be achieved by lowering the ANI change threshold required for action and by integrating it in the SWQMF with recognition of the AXF.

In addition, the minimum depth required for passage should be corrected and a reliable hydrometric station installed upstream of the PAD. Associated decision-making within the SWQMF should be adjusted so that consideration of priority instream Aboriginal rights is more appropriately balanced against the recent rights granted to oilsands operators. MCFN-CBM findings suggest that the SWQMF be modified so that oilsands water withdrawals are reduced in stages as Athabasca River discharge at Fort McMurray approaches the AXF (here revised to be ~500 m³/s) and that oilsands operators take the steps necessary to be able to halt water withdrawals when the Athabasca River discharge drops below the AXF during specific priority periods within the hunting seasons, as identified by ACFN and MCFN. Unfortunately the SWQMF's disregard for Aboriginal navigability in the PAD is a widespread problem within the oilsands region and is not restricted to the GoA's SWQMF. Oilsands mines continue to be proposed for approval based partly on their promise of adhering to the rules of the SWQMF. However, as the CBM highlights, the

SWQMF rules do not protect navigation-related traditional-use rights and thus adherence to it is not a useful criterion for evaluating proposed oilsands mines.

2. Are changes in water quality and/or water quantity and/or biological health informing Indigenous key questions and concerns?

Changes in environmental condition will be assessed by land-users and Elders, based on observations from being on the land and place-based knowledge passed down through generations. MCFN has developed an Indigenous Knowledge Indicators Index to support knowledge holders and Elders communicate the changes to the landscape that they are observing.

The whitefish work, in partnership with Mark McMaster and Keegan Hicks, is an approach that ties community Indigenous Knowledge with western science. Therefore the community is engaged in the monitoring and monitoring is done in a way that collects trusted results, and answers to questions surrounding health that the community has. Therefore results that explain mercury levels and PAH levels are tied to the fishers own knowledge of fish and quality.

3. Are data produced following OSM Program requirements and provided into the OSM Program data management system?

This workplan proposes to collaborate with the ICBMAC and the data analytic TAC to get MCFN database data onto a custom Kisters platform. This CBM data portal 'pilot' can be adopted by the wider ICBM program in the following fiscal after ICBMAC and grassroots community consent.

Currently, MCFN collects data on a custom app based application known as Geokeeper. All water quality data is available as a .csv file. All data is to be made available for the OSM program data management system, except that which is IK and closed by default. Efforts are to be made with IT/Analytics Tac, the OSM PO Branch and the Athabasca University Facilitation centre to establish an upload process, data sharing agreements and QA/QC standard. The

MCFN has already joined with the Gordon Foundation to put CBM water quality data onto Mackenzie DataStream platform. The Mackenzie DataStream is an initiative to have free, water quality data available to the communities across the Mackenzie watershed to better understand how the changes they are experiencing compare across the region.

4. Do methodologies use relevant Standard Operating Procedures/ Best Management Practices/ Standard Methods?

Yes;
 - CBM specific SOPs have been developed for water quality lab collections.
 - Standardized data QA/QC processes have been formalized and reviewed by expert third party, and available to share
 - CBM has adopted fish monitoring SOPs used by ECCC and AEP, and furthermore have an Indigenous Knowledge Index, that could be useful in the development of the broader CBM for OSM.

5. How does the monitoring identify integration amongst projects, themes or with communities?

Integration with other OSM projects is occurring in the following ways:

- The MCFN-CBM program is highly coordinated with the Athabasca Chipewyan First Nation CBM program. We share methods, protocols, and data. We have also started to integrate with Fort Chipewyan Metis Association, Smith's Landing First Nation, Cold Lake First Nation and Chipewyan Prairie First Nation

- MCFN is a key partner in the ICBMAC, and in the overall ICBM program design
 - MCFN also has a wetlands workplan which is integrated with Danielle Cobbaert and Donald Baird (wetlands TAC) to assess wetlands in the Peace Athabasca Delta.

MCFN is also a partner in the Athabasca Chipewyan FN led Air Monitoring in Fort Chipewyan workplan

- MCFN is working in coordination with Philippe Thomas (ECCC) on a biological health study of aquatic furbearers.
- MCFN co-wrote the Whitefish SOP and training developmet with Keegan Hicks (AEP) and Mark McMaster and Erin Ussery(ECCC). Part of this integration will include continuation of a whitefish camp in the Peace Athabasca Delta, including joint field work. Laboratory analysis is undertaken by Mark McMaster and Keegan Hicks, whereby all data is shared, the MCFN report on the findings, as well as the findings of the IK. This year, continued effort will be undertaken to examine specific Indigenous indicators of fish health.

6. 7.6. Where does the monitoring fit on the conceptual model within the EEM framework for the theme area and relative to the conceptual model for the OSM Program theme area? How will this work advance understanding transition towards of the conceptual model EEM framework?

Under the surface water conceptual model, this workplan addresses the following:

Pressure:

Spills, Weather, and habitat

Stressors:

Nutrients, Inorganic and organic substances, pH and hydrology (pinch points)

Pathways:

Fluvial transport

Responses:

Water quality and fish as well as traditional use

Of the Programatic conceptual model this workplan will also address:

Valued Components such as Traditional resources and cultural practices and access to land

7. Is the work plan contributing to Programmatic State of Environment Reporting?

Long-term data is available for the MCFN CBM monitoring (2011 to 2021). These data can serve as supplements to the State of the Environment (SOE) reporting for water quality.



3.3.2 Groundwater Theme

3.3.2.1 Sub Themes:

Choose an item.

3.3.2.2 Groundwater Key Questions

Explain how your groundwater monitoring program addresses the key questions below.

1. Are changes occurring in groundwater quality and/or quantity, to what degree are changes attributable to oil sands activities, are changes affecting other ecosystems, and what is the contribution in the context of cumulative effects?

Click or tap here to enter text.

2. Are changes in groundwater quality and/or quantity informing Indigenous key questions and concerns Indigenous concerns and health?

Click or tap here to enter text.

3. Are data produced following OSM Program requirements and provided into the OSM Program data management system?

Click or tap here to enter text.

4. Do methodologies use relevant Standard Operating Procedures/ Best Management Practices/ Standard Methods?

Click or tap here to enter text.

5. How does the monitoring identify integration amongst projects, themes or with communities?

Click or tap here to enter text.

6. Where does the monitoring fit within the EEM framework and relative to the theme area? How will this work advance transition towards the EEM framework?

Click or tap here to enter text.

7. Where does the monitoring fit on the conceptual model for the theme area and relative to the conceptual model for the OSM Program? How will this work advance understanding of the conceptual model?

Click or tap here to enter text.

8. Is the work plan contributing to Programmatic State of Environment Reporting?

Click or tap here to enter text.



3.3.3 Wetlands Theme

3.3.3.1 Sub Themes:

Choose an item.

3.3.3.2 Wetland - Key Questions

Explain how your wetland monitoring program addresses the key questions below.

1. Are changes occurring in wetlands due to contaminants and hydrological processes, to what degree are changes attributable to oil sands activities, and what is the contribution in the context of cumulative effects?

Click or tap here to enter text.

2. Are changes in wetlands informing Indigenous key questions and concerns?

Click or tap here to enter text.

3. Are data produced following OSM Program requirements and provided into the OSM Program data management system?

Click or tap here to enter text.

4. Do methodologies use relevant Standard Operating Procedures/ Best Management Practices/ Standard Methods?

Click or tap here to enter text.

5. How does the monitoring identify integration amongst projects, themes or with communities?

Click or tap here to enter text.

6. Where does the monitoring fit within the EEM framework and relative to the theme area? How will this work advance transition towards the EEM framework?

Click or tap here to enter text.

7. Where does the monitoring fit on the conceptual model for the theme area and relative to the conceptual model for the OSM Program? How will this work advance understanding of the conceptual model?

Click or tap here to enter text.

8. Is the work plan contributing to Programmatic State of Environment Reporting?

Click or tap here to enter text.



3.3.4 Air Theme

3.3.4.1 Sub Themes:

Choose an item.

3.3.4.2 Air & Deposition - Key Questions

Explain how your air & deposition monitoring program addresses the key questions below.

1. Are changes occurring in air quality, to what degree are changes attributable to oil sands emissions, and what is the contribution in the context of cumulative effects?

Click or tap here to enter text.

2. Are changes informing Indigenous key questions and concerns?

Click or tap here to enter text.

3. Are data produced following OSM Program requirements and provided into the OSM Program data management system?

Click or tap here to enter text.

4. Do methodologies use relevant Standard Operating Procedures/ Best Management Practices/ Standard Methods?

Click or tap here to enter text.

5. How does the monitoring identify integration amongst projects, themes or with communities?

Click or tap here to enter text.

6. Where does the monitoring fit within the EEM framework and relative to the theme area? How will this work advance transition towards the EEM framework?

Click or tap here to enter text.

7. Where does the monitoring fit on the conceptual model for the theme area and relative to the conceptual model for the OSM Program? How will this work advance understanding of the conceptual model?

Click or tap here to enter text.

8. Is the work plan contributing to Programmatic State of Environment Reporting? (Answer Box)

Click or tap here to enter text.



3.3.5 Terrestrial Biology Theme

3.3.5.1 Sub Themes:

Choose an item.

3.3.5.2 Terrestrial Biology - Key Questions

Explain how your terrestrial biological monitoring program addresses the key questions below.

1. Are changes occurring in terrestrial ecosystems due to contaminants and landscape alteration, to what degree are changes attributable to oil sands activities, and what is the contribution in the context of cumulative effects?

Click or tap here to enter text.

2. Are changes in terrestrial ecosystems informing Indigenous key questions and concerns?

Click or tap here to enter text.

3. Are data produced following OSM Program requirements and provided into the OSM Program data management system?

Click or tap here to enter text.

4. Do methodologies use relevant Standard Operating Procedures/ Best Management Practices/ Standard Methods?

Click or tap here to enter text.

5. How does the monitoring identify integration amongst projects, themes or with communities?

Click or tap here to enter text.

6. Where does the monitoring fit within the EEM framework and relative to the theme area? How will this work advance transition towards the EEM framework?

Click or tap here to enter text.

7. Where does the monitoring fit on the conceptual model for the theme area and relative to the conceptual model for the OSM Program? How will this work advance understanding of the conceptual model?

Click or tap here to enter text.

8. Is the work plan contributing to Programmatic State of Environment Reporting?

Click or tap here to enter text.



3.3.6 Cross-Cutting Across Theme Areas

3.3.6.1 Sub Themes:

Choose an item.

If "Other" was selected from the drop down list above please describe below:

Click or tap here to enter text.

3.3.6.2 Cross-Cutting - Key Questions

Explain how your cross-cutting monitoring program addresses the key questions below.

1. Is data produced following OSM Program requirements and provided into the OSM Program data management system?

Click or tap here to enter text.

2. Do methodologies use relevant Standard Operating Procedures/ Best Management Practices/ Standard Methods?

Click or tap here to enter text.

3. How does the monitoring identify integration amongst projects, themes or with communities?

Click or tap here to enter text.

4. Where does the monitoring fit within the EEM framework and relative to the theme area? How will this work advance transition towards the EEM framework?

Click or tap here to enter text.

5. Where does the monitoring fit on the conceptual model for the theme area and relative to the conceptual model for the OSM Program? How will this work advance understanding of the conceptual model?

Click or tap here to enter text.

6. Is the work plan contributing to Programmatic State of Environment Reporting?

Click or tap here to enter text.

4.0 Mitigation

Evaluation of Mitigation Criteria (Information Box Only- No action required)

Your workplan will be evaluated against the criteria below. A successful workplan would potentially inform:

- efficacy of an existing regulation or policy
- an EPEA approval condition
- a regional framework (i.e., LARP)
- an emerging issue

Explain how your monitoring program informs management, policy and regulatory compliance. As relevant give consideration for the EEM framework and the approved Key Questions.

The MCFN-CBM program collects water quality, water quantity, fish health, and ice data to inform how our Nation engages with the province on policy development. Water quantity data gathered through the MCFN-CBM program, along with the development and validation of the Aboriginal Extreme Flow has been used to refine the Water Quantity Management Framework under the Lower Athabasca Regional Plan (LARP). We will continue to use our data to inform management, policy, and regulatory compliance.

5.0 Indigenous Issues

Evaluation of Indigenous Issues Criteria (Information Box Only- No action required)

Your workplan will be evaluated against the criteria below. A successful workplan would potentially:

- Investigate Indigenous communities key questions and concerns
- Includes culturally relevant receptor(s) and indicator(s)
- Include or be driven by Indigenous communities (participatory or collaborative)
- Develop capacity in Indigenous communities
- Include a Council Resolution or Letter of Support from one or more Indigenous communities
- Describe how ethics protocols and best practices regarding involvement of Indigenous peoples will be adhered to
- Provide information on how Indigenous Knowledge will be collected, interpreted, validated, and used in a way that meets community Indigenous Knowledge protocols

Explain how your monitoring activities are inclusive and respond to Indigenous key questions and concerns and inform the ability to understand impacts on concerns and inform Section 35 Rights

Mikisew Elders, Knowledge Holders, and elected leadership have been actively involved in guiding the Mikisew Guardian program since its inception. Their involvement is integral to ensuring that the program is grounded in Mikisew stewardship values, provides information to support decision-making, and answers to community priorities.

Elders and Land Users have informed the selection of CBM sites and indicators to ensure that they are relevant to the community and address the concerns that our community has.

The waters of the Peace-Athabasca Delta are central to Cree people's culture, well-being, spirituality, and economies. The CBM program is heavily focused on monitoring surface water quality, quantity, and fish health because water is such an important resource for their community.

The MCFN-CBM program hires local community-members as CBM Guardians, which builds capacity within our community. Youth are invited to participate in on-the-land camp to facilitate knowledge transmission from Elders to youth and to involve them in scientific monitoring. This work builds future capacity in the community.

A Land Users Advocacy Network has been established, comprised of Mikisew land users and knowledge holders. The network will meet three times a year to discuss observations of changes on the land and provide recommendations on stewardship activities. These recommendations will be provided to MCFN leadership to support decision making. The network will enhance community involvement in monitoring, and provide opportunities for Knowledge Holders to contribute their understanding to decision-makers.

We will refine a Mikisew Indigenous Knowledge Index, a tool to help us assess the health of the land and communicate Mikisew knowledge, values, and perspective into resource management processes. The Mikisew Indigenous Knowledge index will provide a numerical summary of the state of the environment from the Knowledge Holders perspectives, to compliment their narrative-based assessments.

Does this project include an Integrated Community Based Monitoring Component?

Yes



6.0 Measuring Change

Evaluation of Measuring Change Criteria (Information Box Only- No action required)

Your workplan will be evaluated against the criteria below. A successful workplan would potentially:

- assess changes in environmental conditions compared to baseline (e.g., validation of EIA predictions)
- report uncertainty in estimates and monitoring is of sufficient power to detect change due to oil sands development on reasonable temporal or spatial scales
- include indicators along the spectrum of response (e.g., individual, population, community)
- focus on areas of highest risk (where change is detected, where change is greater than expected, where development is expected to expand (collection of baseline))
- measure change along a stressor gradient or a stressor/reference comparison

Explain how your monitoring identifies environmental changes and can be assessed against a baseline condition. As relevant give consideration for the EEM framework and the approved Key Questions.

Our CBM program is designed following the EEM Framework. For all of our data (water quality, water quantity, ice thickness, fish health etc.) we QA/QC data and then where sufficient data exists we create monitoring triggers, both regionally and site specific. These triggers act as our baseline to understand if conditions in the environment are changing and if these changes are driven by the Oil sands development. Given the strongly linked cumulative effects of hydroelectric development and climate change with the potential oil sands impacts, study design as other ICBMs come on line is critical for our regional understanding.

Furthermore the Mikisew have Indigenous Knowledge indicators that we also rank as an index and can assess under an EEM framework.

Data collected through the MCFN-CBM program informs how our Nation engages with the province on policy development. We have used our data to call for stronger regulatory compliance. The monitoring that we have done on water quantity, along with the development and validation of the Aboriginal Extreme Flow has been used to refine the Water Quantity Management Framework under the Lower Athabasca Regional Plan (LARP). We will continue to use our data to inform management, policy, and regulatory compliance.

The Whitefish camp is designed to collect three years of baseline data (modelled after the OSM core fish monitoring program). Three years of data were collected at Lake Claire (2018-2020). 2021 whitefish collections began at Peace River (Rocky Point), a site of high traditional use. We are working with Mark McMaster and Keegan Hicks to assess our baseline data for whitefish and create decision triggers for the PAD. Management triggers for the Nation are still in consideration but are ranked on 1) access to site 2) quantity (population) of harvest 3) quality of harvest.

Study design involves samples from 20 male and 20 female whitefish (based off of year three collections) and is of sufficient power to detect levels of change we have determined significant enough to trigger changes in monitoring frequency and focus.

Monitoring triggers have been established for 7 sites in the PAD from water chemistry, based on EEM approaches in partnership with Kelly Munkittrick. Current monitoring therefore is assessing the state of water quality against our 8 year understanding of the natural variation.



7.0 Accounting for Scale

Evaluation of Accounting for Scale Criteria (Information Box Only- No action required)

Your workplan will be evaluated against the criteria below. A successful workplan would potentially be:

- appropriate to the key question and indicator of interest
- relevant to sub-regional and regional questions
- relevant to organism, population and/or community levels of biological organization
- where modelled results are validated with monitored data
- where monitoring informs on environmental processes that occur at a regional scale. e.g. Characterizing individual sources to gain a regional estimate of acid deposition and understand signal from individual contributing sources.

Explain how your monitoring tracks regional and sub-regional state of the environment, including cumulative effects. As relevant give consideration for the EEM framework and the approved Key Questions.

For the whitefish camp in the PAD we are primarily looking for stressors from the Athabasca Oil Sands, with the noted caveat that whitefish populations are assumed to be from the Athabasca river, however we cannot yet rule our populations coming from the Peace river or even resident populations. This project design assesses change in fish health indicators within a site, between sites and between years within two areas with assistance from Mark McMaster and team. Similar methods are used across teams. If effects are documented and not understood, we will then use focused studies to investigate the causes of the observed changes.

The water quality methodology will also add to the transect nature of the OSM core water program, getting better cumulative effects data to answer to gaps in the spatial understanding of the PAD in particular. This will also provide baseline data for areas potentially to be impacted by oil and gas developments along the Athabasca River. Work on the Peace River is important to gain a better regional understanding of the various water inputs to the PAD.

8.0 Transparency

Evaluation of Transparency Criteria (Information Box Only- No action required)

Your workplan will be evaluated against the criteria below. A successful workplan would potentially include:

- a plan for dissemination of monitoring data, including appropriate timing, format, and aligns with OSM program data management plan
- demonstrated transparency in past performance
- identified an annual progress report as a deliverable
- reporting of monitoring results occurs at timing and format that is appropriate for recipient audience.

Explain how your monitoring generates data and reporting that is accessible, credible and useful. As relevant give consideration for the EEM framework and the approved Key Questions.

The MCFN-CBM program has a plan for timely reporting of monitoring data to support collaboration with other OSM partners, provide information back to communities in an accessible format, and support our Nation's decision-making.

Accessible reporting will occur through the following products:

1. CBM Annual Progress Report: Including a technical summary of findings from both Western Science and Indigenous Knowledge components of the project. Scientists and other technical practitioners are the target audience of this report.
2. Four Quarterly Community Newsletters: Providing updates on the program, stories from the field, and plain language summary of data analysis from the monitoring season. MCFN community members are the target of the newsletters.
3. Fish Camp Technical Report & Plain Language Summary: Results from the Whitefish Sampling Camp will be shared in a technical report, accompanied by a plain-language summary that is appropriate for community members.
4. Wall Calendar: A community-oriented product that shares information from the CBM program, and provides an opportunity for community members to track their observations of changes on the land.
5. Three Land Users Advocacy Network Meetings: 3 meetings with group of Land Users and Knowledge holders to gather their observations, and disseminate scientific findings back to them.

All monitoring data will undergo QA/QC and analysis during the quarter following the end of the field season. Contaminant analyses will be undertaken by accredited laboratories. Indigenous knowledge findings will be interpreted and validated by a group of participating Elders and Knowledge Holders.

9.0 Efficiency

Evaluation of Efficiency Criteria (Information Box Only- No action required)

Your workplan will be evaluated against the criteria below. A successful workplan would include:

- appropriately addressed a risk-informed allocation of resources
- identified the role and justification for each staff member on the proposed work plan
- identified in-kind and leveraged resources (e.g., resources and approaches are appropriately shared with other OSM projects where possible)
- established partnerships (value-added) and demonstrated examples of coordinated efficiencies (e.g., field, analytical)
- identified co-location of monitoring effort
- demonstrated monitoring activities and information collected are not duplicative
- considered sampling/measurement/methods compatibility to other data sources (e.g., AER)

Explain how your monitoring is integrated with other OSM projects and incorporates community-based participation and/or engagement in proposed monitoring activities. As relevant give consideration for the EEM framework and the approved Key Questions.

This work plan builds off of over 11 years of CBM experience. MCFN has demonstrated leadership in development of OSM Operational Framework Agreement and has been engaged in the Oil Sands Monitoring project for 9 years. MCFN has established relationships with Environment and Climate Change Canada, Government of Alberta, Parks Canada, and University of Alberta and Ottawa. We hope to strengthen these relationships and work towards stronger monitoring integration with these organizations through this work plan.

MCFN has coordinated with AEP, ECCC, and other Indigenous groups in a variety of ways include study design, sharing of methods, coordination of analysis, and ensuring that sampling methods are compatible between data sources to ensure efficiencies.

The MCFN-CBM program is highly coordinated with the Athabasca Chipewyan First Nation (ACFN) CBM program. We share methods, protocols, and data. MCFN & ACFN lab analyses are done in coordination to support efficiencies. We have also started to integrate with Fort Chipewyan Metis Association.

- MCFN is continuing a partnership with Keegan Hicks (AEP) and Paul Drevnick and Mark McMaster (ECCC) through the "OSM Monitoring Fish Health and Community" program to study the health of Lake Whitefish through an annual Whitefish Camp. Lab analyses are done in coordination with AEP and ECCC.

- MCFN is entering into a partnership with Donald Baird & Danielle Cobbaert Partnering on "OSM Integrated Wetland Monitoring" to 7 additional community relevant sample sites in the Peace Athabasca Delta. CBM staff will participate in data collection. Mikisew will submit a stand alone workplan however the work has been fully integrated with the Wetlands TAC for 2 years already.

The MCFN Community Based Monitoring Program is highly participatory. Community members are hired as CBM Guardians; Elders and Land Users are engaged in program design as well in the gathering and interpretation of Indigenous knowledge; youth are involved in CBM on the land camps; and accessible reporting is done to share information with MCFN members.



10.0 Work Plan Approach/Methods

10.1 List the Key Project Phases and Provide Bullets for Each Major Task under Each Project Phase *

- Environmental effects Monitoring of water quality, water quantity, fish health and winter parameters using western science and Indigenous Knowledge.
- Integrate MCFN-CBM with other oil sand monitoring and research being undertaken in the Peace-Athabasca Delta.
- Integrate data platforms created by the Mikisew Cree with Data Analytics TAC (Kisters)
- Increase community engagement in monitoring initiatives through the Land Users Advocacy Networks, and land-based monitoring camps.

Phase 1

- Undertake water quality, water quantity, fish health and snow and ice monitoring, using Indigenous Knowledge and western science;
- Continue EEM trigger development for all indicators

Phase 2

- Increase community engagement
- Continued development and engagement with Mikisew's Land Users advocates Network (Elder's council),
- Complete community focused data visualization platforms

Phase 3

- Develop linkages between MCFN's CBM program, other regional CBM initiatives, and Oil Sands Monitoring initiatives;
- Integrate findings with other regional CBM programs and OSM projects.
- Integrate CBM data with Data Analytics TAC and Kister's program – includes use and ownership agreement development

10.2 Describe how changes in environmental Condition will be assessed *

- Changes in environmental condition will be assessed by land-users and Elders, based on observations from being on the land and place-based knowledge passed down through generations. MCFN has develop an Indigenous Knowledge Indicators Index to support knowledge holders and Elders communicate the changes to the landscape that they are observing.
- Trend analyses will be undertaken for water quality and water quantity data, using CBM data collected over the past ten years. Current year data will be assessed against current and existing EEM triggers (for water, fish and ice).
- In consultation with other scientists, MCFN-CBM program is identifying appropriate fish health end points that can be used to assess the health status of fish species that are of cultural importance to our community.

10.3 Are There Benchmarks Being Used to Assess Changes in Environmental Condition? If So, Please Describe, If Not, State "NONE" *

- MCFN has established an 'Aboriginal Extreme Flow' policy which correlates rate of flow on the Athabasca to water depth in the Delta. The AXF represents the threshold at which safe navigation by the boat is impeded in the Delta.
- MCFN has identified end points and triggers for fish health in the Delta, in partnership with OSM scientists, and building off of workshops and field research conducted in 2018 . These triggers are used in assessing condition and trends in fish health.
- We compare our water quality findings to the CCME Canadian Water Quality Guidelines for the Protection of Aquatic Life to assess the condition of water quality in the Delta. The Mikisew will also be testing a new Sec 35 management trigger or benchmark related to their 9 years

of ice thickness monitoring. Here we are testing the use of a 'safe travel days' index to describe how safe winter travel conditions are impacted by oil sands withdrawals, and in an attempt to distinguish these particular impacts from the cumulative picture of hydro and climate change.

(e.g., objectives, tiers, triggers, limits, reference conditions, thresholds, etc.)

10.4 Provide a Brief Description of the Western Science or Community-Based Monitoring Indigenous Community-Based Monitoring Methods by Project Phase *

1. Water Quality: At each site information is collected on water temperature, conductivity, dissolved oxygen, pH, salinity, ORP as well as Indigenous Indicators of water health. Additionally, weather descriptions are logged and a geographical position is taken. All data is collected on a custom app based database system containing internal quality control features. Monitoring staff employ a YSI Pro Plus meter, and a Analite NEP 160 Turbidity meter or a WTW Multi 3410 Turbidity meter. Additionally, lab collections are taken 3 times per year.
2. Water Depth: Staff take ten depth readings, evenly distributed across each cross section of a channel. The information enables a reasonable resolution of the variability of the bed and provides options for analysis of regional correlations.
3. Snow & Ice: At each site snow depth, ice depth, Indigenous Knowledge Indicators of ice quality and water chemistry are taken. Data is used to track changing conditions related to climate change and development and also provide valuable information to the community about winter travel safety.
4. Fish Methods: Sampling methods allow for rigorous sampling, while also allowing fish to be used for dryfish making, a cultural food source. 100 yards of 4.5 inch mesh nets. Fish are processed for the following metrics: fork length (mm), weight (g), gonad weight (g), liver weight (g), sex, sexual maturity. Otoliths are removed for sampling, 204g of flesh is taken from the anterior for Hg and PAC analysis, liver is stored for sampling. The sampled fish is scaled, gutted, and prepared for dryfish. Then a sample is taken from anterior part of fish for Hg and PACs (2-4 grams).
5. Indigenous Knowledge Indicators - Observation of Indigenous Knowledge indicators will be undertaken by CBM Guardians as well as the Land Users Advocates Network who will participate in tracking and sharing their observations and understanding of what is seen on the land. Validation and analysis of indigenous knowledge observations will take place twice a year at seasonal cultural gatherings. These gatherings will be an opportunity to compile observation, interpret and analyze observations orally, as per traditional practices. An Indigenous Knowledge Index will be used to help Elders and land users assess the health of the Peace Athabasca Delta and communicate Mikisew knowledge, values, and perspective into resource management processes.

10.5 List the Key Indicators Measured, If Not Applicable, State N/A *

1. Water Quality -Routine, pH, Conductivity, Alkalinity, All Anions, Total Nitrate (NO₂) + Nitrate (NO₃), All Cations, Hardness, Nitrogen: Total, Dissolved, Turbidity, TSS, TDS, Ammonia, Phosphorus: Total, Dissolved, Ortho, Carbon: Total and Dissolved, Metals (Al, As, Ba, Be, Cd, Cr, Cu, Cn, Fe, Pb, Li, Mn, Hg spectated, Mo, Ni, Se, Ag, V, Zn). The MCFN-CBM may add PAH and naphthenic acids as well.
2. Water Quantity - Channel depth is currently used as a measure of water quantity
3. Snow and Ice - Ice thickness - Snow depth
4. Fish – Fork length, weight, liver weight, gonad weight, sex, sexual maturity, Hg and PAC concentrations in anterior flesh, Hg and PAC concentrations in liver.
5. Indigenous knowledge indicators - Based on guidance from Elders and land-users, a suite of Indigenous Knowledge indicators have been developed. These indicators are the signs that community members look for to recognize the well-being of the Delta.

11.0 Knowledge Translation

In the space below, please provide the following:

- Describe the plan for knowledge transfer and distribution of learnings from the project. This could include workshops, publications, best practice documentation, marketing plan, etc.
- Demonstrate that the knowledge transfer plan is appropriate for the intended end-users.

Knowledge transfer will occur through:

1. CBM Annual Progress Report: Including a technical summary of findings from both Western Science and Indigenous Knowledge components of the project. Scientists and other technical practitioners are the target audience of this report.
2. Four Quarterly Community Newsletters: Providing updates on the program, stories from the field, and plain language summary of data analysis from monitoring season. MCFN community members are the target of the newsletters.
3. Fish Camp Technical Report & Plain Language Summary: Results from the Whitefish Sampling Camp will be shared in a technical report, accompanied by a plain-language summary that is appropriate for community members.
4. Wall Calendar: A community-oriented product that shares information from the CBM program, and provides an opportunity for community members to track their observations of changes on the land.
5. Three Land Users Advocacy Network Meetings: 3 meetings with group of Land Users and Knowledge holders to gather their observations, and disseminate scientific findings back to them.

12.0 External Partners

List by project or project phase each component that will be delivered by an external party (including analytical laboratories) and name the party. Describe and name the associate work plan/grant/contract for these services. * state none if not required

1. Bruce Maclean – Principal, Maclean Environmental Consulting
Responsibility: MCFN- CBM program design & implementation, data analysis, reporting.
2. Taiga Environmental Laboratory – Taiga Environmental Laboratory is a full-service analytical laboratory that performs a wide range of organic and inorganic chemical analyses on surface water. It is accredited by the Canadian Association for Laboratory Accreditation (CALA) to ISO/IEC 17025 standards and accreditation is limited to the tests named on the scope of testing.

*To ensure complete work plan proposal submission, all grants and contracts listed in this section should also be captured in Grants & Contracts.

13.0 Data Sharing and Data Management

For 2022-23 the following approach will be taken by the OSM Program related to data sharing.

For all work plans of a **western science** nature funded under the OSM Program, data sharing is a condition of funding and must align with the principle of "**Open by Default**". In this case, all data is to be shared with the OSM Program as directed by the OSM Program Data Management work plan.

For all work plans involving **Indigenous Knowledge** as defined below and funded under the OSM Program, data sharing is a condition of funding and the Indigenous Knowledge components of the work plan must align with the principle of "**Protected by Default**". In this case, all data as defined as Indigenous Knowledge, are to be retained by the Indigenous community to which the Indigenous Knowledge is held.

Indigenous Knowledge is defined as:

"The knowledge held by First Nations, Inuit and Métis peoples, the Aboriginal peoples of Canada. Traditional knowledge is specific to place, usually transmitted orally, and rooted in the experience of multiple generations. It is determined by an Aboriginal community's land, environment, region, culture and language. Traditional knowledge is usually described by Aboriginal peoples as holistic, involving body, mind, feelings and spirit. Knowledge may be expressed in symbols, arts, ceremonial and everyday practices, narratives and, especially, in relationships. The word tradition is not necessarily synonymous with old. Traditional knowledge is held collectively by all members of a community, although some members may have particular responsibility for its transmission. It includes preserved knowledge created by, and received from, past generations and innovations and new knowledge transmitted to subsequent generations. In international or scholarly discourse, the terms traditional knowledge and Indigenous knowledge are sometimes used interchangeably."

This definition was taken from the Canadian Government's Tri-council Policy Statement for Ethical Research involving Humans (Chapter 9, pg. 113) and is an interim definition specific to the Oil Sands Monitoring Program.

Data Sharing and Data Management *Continued*

13.1 Has there, or will there be, a Data Sharing Agreement established through this Project? *

YES

13.2 Type of Quantitative Data Variables:

Discrete

13.3 Frequency of Collection:

Monthly

13.4 Estimated Data Collection Start Date:

2022-04-01

13.5 Estimated Data Collection End Date:

2023-03-31

13.6 Estimated Timeline For Upload Start Date:

2022-10-31

13.7 Estimated Timeline For Upload End Date:

2023-04-30

13.8 Will the data Include traditional knowledge as defined by and provided by an Indigenous representative, Community or Organization?

YES

TABLE 13.9 Please describe below the Location of Data and Data Type:

Add a Data Source by clicking on the table and then clicking on the blue "+" symbol on the bottom right side of table

Name of Dataset	Location of Dataset (E.g.: Path, Website, Database, etc.)	Data File Formats (E.g.: csv, txt, API, accdb, xls, etc.)	Security Classification
MCFN_WaterQuality Other (Describe in Description Section)	MCFN Internal Database	.csv	Open by Default
MCFN_WaterQuantity Other (Describe in Description Section)	MCFN Internal Database	.csv	Open by Default
MCFN_Whitefish Other (Describe in Description Section)	MCFN Internal Database	.csv	Open by Default



<i>MCFN_IKIndex</i> Other (Describe in Description Section)	MCFN Internal Database	.csv	Protected by Default
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14.0 2022/23 Deliverables

Add an additional deliverable by clicking on the table and then clicking on the blue "+" symbol on the bottom right side of table.

Type of Deliverable	Delivery Date	Description
Technical Report	Q4	A technical summary of findings from both Western Science and Indigenous Knowledge components of the project.
OSM Program Annual Progress Report (required)	Q4	OSM Program Annual Progress Report on water quality, water quantity, fish health.
Public Dissemination Document	Q1	Q1 Community Newsletter - Providing updates on the program, stories from the field, and plain language summary of data analysis from monitoring season.
Public Dissemination Document	Q2	Q2 Community Newsletter - Providing updates on the program, stories from the field, and plain language summary of data analysis from monitoring season. Click or tap here to enter text.
Public Dissemination Document	Q3	Q3 Community Newsletter - Providing updates on the program, stories from the field, and plain language summary of data analysis from monitoring season. Click or tap here to enter text.
Public Dissemination Document	Q4	Q4 Community Newsletter - Providing updates on the program, stories from the field, and plain language summary of data analysis from monitoring season. Click or tap here to enter text.
Stakeholder or Community Presentation	Q2	Community meeting to share results with community members, receive input, and answer questions. Click or tap here to enter text.



Technical Report	Q2	Results from the Whitefish Sampling Camp will be shared in a technical report, accompanied by a plain-language summary that is appropriate for community members. Click or tap here to enter text.
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15.0 Project Team & Partners

In the space below please provide information on the following:

- Describe key members of the project team, including roles, responsibilities and expertise relevant to the proposed project.
- Describe the competency of this team to complete the project.
- Identify any personnel or expertise gaps for successful completion of the project relative to the OSM Program mandate and discuss how these gaps will be addressed.
- Describe the project management approach and the management structure.

The MCFN-CBM program has been operating for ten years, and has strong experience developing and implementing community based monitoring projects. The program has demonstrated a strong ability to work in collaboration with government-led monitoring initiatives as well as other CBM programs. Since the inception of the program, Elders and community members have been involved in various aspects of the program demonstrating the programs ability to meaningfully and respectfully engage community members.

In the past year MCFN-GIR has hired a Environmental Affairs Manager, Environment Coordinator, Community Based Monitoring Coordinator, and one new CBM Guardian greatly increasing our capacity and expertise within our team. With the additions to the team, we do not expect to have any personnel or expertise gaps that would inhibit successful completion of the project.

We have developed strong partnerships with other OSM monitoring projects which has fostered integration and collaboration between MCFN-GIR and OSM partners.

1. Melody Lepine – Director of MCFN- GIR

Role: Melody provides oversight and direction to the MCFN-CBM program.

Expertise: Melody is a co-chair of the Oilsands Monitoring Program Oversight Committee. Melody has a Masters of Science in Environment and Management from Royal Roads University. She has worked with the MCFN-GIR for over a decade. She has managed six oil sands regulatory interventions, co-developed the Mikisew Cree consultation protocol, and managed numerous traditional land use studies and oil sands application reviews. She initiated MCFN's community based environmental monitoring program and participates in multiple government policy initiatives.

2. Benjamin Sey – Environmental Affairs Manager, MCFN- GIR

Role: Benjamin manages the MCFN-CBM program operations and works with the Nation's leadership to ensure that MCFN-CBM data informs policy and management decisions.

Expertise:

Benjamin holds a Ph.D. in Renewable Resources Management from McGill University and a Master of Soil Science from the University of Alberta. Ben's professional experience spans working in Government, Industry, Academia, and with First Nations communities. This diverse experience includes his previous work as a Reclamation

Specialist for Syncrude and CNRL, as well as serving as the Dean of the School of Energy and Environmental Sciences at Lakeland College. Prior to joining MCFN GIR, he served as the Regulatory and Environmental Lead for the Fort McKay First Nation.

3. Lindsay Wong – Environmental Coordinator, MCFN-GIR

Role: Lindsay is responsible for program coordination and coordinates data analysis & reporting.

Expertise: Lindsay holds a Masters of Science from the University of Saskatchewan which focused on GIS analysis, policy development and community engagement.

4. Jocelyn Marten – Community Based Monitoring Coordinator, MCFN-GIR

Role: Coordinate community participation; Coordinate CBM Guardian work; Logistics for meetings & camps; Coordinate external scientist; Oversee sampling chain of custody; Community reporting

Expertise: Jocelyn is a skilled program coordinator with many years of experience working in community engagement in Fort Chipewyan. She is actively involved with engaging the MCFN of Fort Chipewyan, Trappers, Hunters and Traditional Knowledge Keepers into community events and initiatives

5. Ryan Castor – CBM Guardian, MCFN-GIR

Role: Data collection & management; gathering IK observations; Participation at seasonal gatherings; General labour

Expertise: 5+ year of experience as a CBM Guardian; experienced land user

6. Matthew Courtoreille – CBM Guardian, MCFN-GIR

Role: Data collection & management; gathering IK observations; Participation at seasonal gatherings; General labour

Expertise: Holds a Certificate in Community Based Environmental Monitoring through Keyano College.

7. Cynthia Marten – CBM Guardian, MCFN-GIR

Expertise: Holds a Certificate in CBEM from Keyano College.

8. Willis Flett – Community Engagement - GIR

16.0 Project Human Resources & Financing

Section 16.1 Human Resource Estimates

Building off of the competencies listed in the previous section, please complete the table below. Add additional rows as necessary. This table must include **ALL staff involved** in the project, their role and the % of that staff's time allocated to this work plan. The AEP calculated amount is based on an estimate of \$120,000/year for FTEs. This number cannot be changed. The OSM program recognizes that this is an estimate.

Table 16.1.1 AEP

Add an additional AEP Staff member by clicking on the table and then clicking on the blue "+" symbol on the bottom right side of table. The total FTE (Full Time Equivalent) is Auto Summed (in Table 16.2.1) and converted to a dollar amount.

Name (Last, First)	Role	% Time Allocated to Project
Drevnick, Paul	Coordinate Aquatic TAC lab	0%

Table 16.1.2 ECCC

Add an additional ECCC Staff member by clicking on the table and then clicking on the blue "+" symbol on the bottom right side of table. The total FTE (Full Time Equivalent) is Auto Summed in Table 16.2.2

Name (Last, First)	Role	% Time Allocated to Project
Click or tap here to enter text.	Click or tap here to enter text.	0%

The tables below are the financial tables for Alberta Environment & Parks (AEP) and Environment & Climate Change Canada. All work plans under the OSM Program require either a government lead or a government coordinator.

Section 16.2 Financing

The OSM Program recognizes that many of these submissions are a result of joint effort and monitoring initiatives. A detailed "PROJECT FINANCE BREAKDOWN" must be provided using the Project Finance Breakdown Template provided, accessible here (ctrl + click the link below). Please note that completion of this Project Finance Breakdown Template is mandatory and must be submitted along with each workplan.

[PROJECT FINANCE BREAKDOWN TEMPLATE \(CTRL+CLICK HERE\)](#)

Table 16.2.1 Funding Requested BY ALBERTA ENVIRONMENT & PARKS

Organization – Alberta Environment & Parks ONLY	Total % time allocated to project for AEP staff	Total Funding Requested from OSM
Salaries and Benefits <i>(Calculated from Table 16.1.1 above)</i>	0.00%	\$0.00
Operations and Maintenance		
Consumable materials and supplies		\$32560.00
Conferences and meetings travel		\$0.00
Project-related travel		\$0.00
Engagement		\$0.00
Reporting		\$0.00
Overhead		\$0.00
Total All Grants <i>(Calculated from Table 16.4 below)</i>		\$0.00
Total All Contracts <i>(Calculated from Table 16.5 below)</i>		\$0.00
Sub- TOTAL <i>(Calculated)</i>		\$0.00
Capital*		\$0.00
AEP TOTAL <i>(Calculated)</i>		\$0.00

* The Government of Alberta Financial Policies (Policy # A600) requires that all **capital asset** purchases comply with governmental and departmental legislation, policies, procedures, directives and guidelines. **Capital assets** (Financial Policy # A100, Government of Alberta, January 2014) are tangible assets that: have economic life greater than one year; are acquired, constructed, or developed for use on a continuing basis; are not held for sale in ordinary course of operations; are recorded and tracked centrally; have a cost greater than \$5,000.

Some **examples of capital asset equipment include:** laboratory equipment, appliances, boats, motors, field equipment, ATV's/snowmobiles, stationary equipment (pier/sign/weather), fire/safety equipment, pumps/tanks, heavy equipment, irrigation systems, furniture, trailers, vehicles, etc. (Financial Policy # A100, Government of Alberta, January 2014).

Table 16.2.2 Funding Requested BY ENVIRONMENT & CLIMATE CHANGE CANADA

Organization – Environment & Climate Change Canada ONLY	Total % time allocated to project for ECCC staff	Total Funding Requested from OSM
Salaries and Benefits FTE <i>(Please manually provide the number in the space below)</i>		
Salaries and Benefits		\$0.00
Operations and Maintenance		
Consumable materials and supplies		\$0.00
Conferences and meetings travel		\$0.00
Project-related travel		\$0.00
Engagement		\$0.00
Reporting		\$0.00
Overhead		\$0.00
ECCC TOTAL <i>(Calculated)</i>		\$0.00

* ECCC cannot request capital under the OSM program. Any capital requirements to support long-term monitoring under the OSM program should be procured by Alberta and captured in that budget table.

Table 16.3

Complete ONE table per Grant recipient.

Add a Recipient by clicking on the table and then clicking on the blue "+" symbol on the bottom right side of table. The total of all Grants is Auto Summed in Table 16.2.1

GRANT RECIPIENT - ONLY: Name	Melody Lepine – Director, Mikisew Cree First Nation – Government & Industry Relations
GRANT RECIPIENT - ONLY: Organization	Mikisew Cree First Nation – Government & Industry Relations
Category	Total Funding Requested from OSM
Salaries and Benefits	\$230,000.00
Operations and Maintenance	
Consumable materials and supplies	\$40,000.00
Conferences and meetings travel	\$2,000.00
Project-related travel	\$23,000.00
Engagement	\$30,000.00
Reporting	\$35,000.00
Overhead	\$40,000.00
GRANT TOTAL <i>(Calculated)</i>	\$0.00

Table 16.4

Complete ONE table per Contract recipient.

Add a Recipient by clicking on the table and then clicking on the blue "+" symbol on the bottom right side of table. This section is only to be completed should the applicant intend to contract components or stages of the project out to external organizations. The total of all Contracts is Auto Summed in Table 16.2.1

CONTRACT RECIPIENT - ONLY: Name	Click or tap here to enter text.
CONTRACT RECIPIENT - ONLY: Organization	Click or tap here to enter text.
Category	Total Funding Requested from OSM
Salaries and Benefits	\$0.00
Operations and Maintenance	
Consumable materials and supplies	\$0.00
Conferences and meetings travel	\$0.00
Project-related travel	\$0.00
Engagement	\$0.00
Reporting	\$0.00
Overhead	\$0.00
CONTRACT TOTAL <i>(Calculated)</i>	\$0.00

Table 16.5 GRAND TOTAL Project Funding Requested from OSM Program

The table below is auto calculated, please do not try to manually manipulate these contents.

Category	Total Funding Requested from OSM
Salaries and Benefits <i>Sums totals for salaries and benefits from AEP and ECCC ONLY</i>	\$0.00
Operations and Maintenance	
Consumable materials and supplies <i>Sums totals for AEP and ECCC ONLY</i>	\$0.00
Conferences and meetings travel <i>Sums totals for AEP and ECCC ONLY</i>	\$0.00
Project-related travel <i>Sums totals for AEP and ECCC ONLY</i>	\$0.00
Engagement <i>Sums totals for AEP and ECCC ONLY</i>	\$0.00
Reporting <i>Sums totals for AEP and ECCC ONLY</i>	\$0.00
Overhead <i>Sums totals for AEP and ECCC ONLY</i>	\$0.00
Total All Grants (from table 16.2.1 above) <i>Sums totals for AEP Tables ONLY</i>	\$0.00
Total All Contracts (from table 16.2.1 above) <i>Sums totals for AEP Tables ONLY</i>	\$0.00
Sub- TOTAL	\$0.00
Capital* <i>Sums total for AEP</i>	\$0.00
GRAND PROJECT TOTAL	\$0.00

Some **examples of capital asset equipment include:** laboratory equipment, appliances, boats, motors, field equipment, ATV's/snowmobiles, stationary equipment (pier/sign/weather), fire/safety equipment, pumps/tanks, heavy equipment, irrigation systems, furniture, trailers, vehicles, etc. (*Financial Policy # A100, Government of Alberta, January 2014*).

17.0 FINANCIAL MANAGEMENT

The OSM Program reserves the right to reallocate project funding during the current fiscal year on the basis of project performance and financial overspend or underspend.

Please check this box to acknowledge you have read and understand

In the space below please describe the following:

- Discuss how potential cost overruns and cost underruns will be managed.
- If this is a continuing project from last year, identify if this project was overspent or underspent in the previous year and explain why.
- Describe what risks and/or barriers may affect this project.

This is to be the 4th year of a multi-year project. Last fiscal year (2019-2020;2020-2021; 2021-22(current fiscal)) we demonstrated our ability to fulfill project deliverables, despite disruptions due to Covid-19. We successfully trained staff virtually, hosted multiple engagement sessions via zoom with Elders and Land Users. The MCFN-CBM was able to successfully carry out sampling, and collect samples for external researchers who were unable to travel to the areas due to COVID-19 travel restrictions. We expect that the program will also run on time and on budget again this year. Strict safety measures are in place with the MCFN-CBM staff, and contingency plans are in place to allow sampling to continue in the event that a staff member is unable to work due to illness or stricter lock down measures. The MCFN-CBM program has had a consistent staff team which has enabled us to fulfill project deliverables. We have long standing relationships with the consultants and labs that we work with that have a proven track record of delivering analyses on time.



18.0 Alternate Sources of Project Financing – In-Kind Contributions

Table 18.1 In-kind Contributions

Add an In Kind Contribution by clicking on the table and then clicking on the blue "+" symbol on the bottom right side of table.

DESCRIPTION	SOURCE	EQUIVALENT AMOUNT (\$CAD)
Environmental Manager time	Mikisew Cree - GIR	\$20,000.00
TOTAL		\$0.00



19.0 Consent & Declaration of Completion

Lead Applicant Name

Melody Lepine

Title/Organization

Director, Mikisew Cree First Nation – Government and Industry Relations

Signature

Melody Lepine

Date

2021-09-30

Government Lead / Government Coordinator Name (if different from lead applicant)

Click or tap here to enter text.

Title/Organization

Click or tap here to enter text.

Signature

Click or tap here to enter text.

Date

Click or tap to enter a date.



PROGRAM OFFICE USE ONLY

Governance Review & Decision Process

this phase follows submission and triggers the Governance Review

TAC Review (Date):

Click or tap to enter a date.

ICBMAC Review (Date):

Click or tap to enter a date.

SIKIC Review (Date):

Click or tap to enter a date.

OC Review (Date):

Click or tap to enter a date.

Final Recommendations:

Decision Pool:

Choose an item.

Notes:

Click or tap here to enter text.

Post Decision: Submission Work Plan Revisions Follow-up Process

This phase will only be implemented if the final recommendation requires revisions and follow-up from governance

ICBMAC Review (Date):

Click or tap to enter a date.

SIKIC Review (Date):

Click or tap to enter a date.

OC Review (Date):

Click or tap to enter a date.

Comments:

Decision Pool:

Choose an item.

Notes & Additional Actions for Successful Work Plan Implementation:

Click or tap here to enter text.