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:	Community Led Berry Contamination Study - Conklin
Lead Applicant, Organization, or Community:	Wood Buffalo Environmental Association on behalf of Conklin Resource Development Advisory Committee
Work Plan Identifier Number: *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***	B-CM-3-2223
Project Region(s):	Athabasca
Project Start Year: *First year funding under the OSM program was received for this project (if applicable)*	2017
Project End Year: *Last year funding under the OSM program is requested* ***Example: 2022***	Click or tap here to enter text.
Total 2022/23 Project Budget: *For the 2022/23 fiscal year*	$45,078.00
Requested OSM Program Funding: *For the 2022/23 fiscal year*	$45,078.00
Project Type:	Community Based Monitoring
Project Theme:	Air & Deposition
Anticipated Total Duration of Projects (Core and Focused Study (3 years))	Choose an item.
Current Year	**Focused Study:** Choose an item.
	Core Monitoring: Choose an item.

CONTACT INFORMATION	
Lead Applicant/ Principal Investigator: Every work plan application requires one lead applicant. This lead is accountable for the entire work plan and all deliverables.	Dianne McIsaac
Job Title:	Stakeholder Engagement Coordinator
Organization:	Wood Buffalo Environmental Association
Address:	805 Memorial Drive, Fort McMurray, AB T9K 0K4
Phone:	17807994420
Email:	dmcisaac@wbea.org

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.

This Community Led Berry Contamination Study (the "Project") is a multi-year community-based monitoring project that builds upon work initiated by Conklin, with support from the Wood Buffalo Environmental Association, since 2017.

The Project objective is to monitor berries from culturally significant patches to inform the community questions, including "are the berries safe to eat?" and is driven by the concerns of the participating community members about changes to berry quality and health due to oil sands-related development. The cultural identity of Indigenous peoples is intertwined with their food sovereignty and food security, therefore, the continued access to cultural keystone species of berries is paramount for community health and well-being.

Monitoring is achieved when participants visit each berry patch to spend time on the land, share lived experience and knowledge, observe environmental condition, harvest berries for laboratory analysis of health compounds and contaminants, and in previous years, collect soil samples for laboratory analysis of contaminants (OSM Obj. #1, #2, #4, #9). The Project supports community involvement, to ensure the project is based on community-specific priorities, by hosting a group engagement session each project year where lessons-learned and findings are shared, and project adaptations are discussed (OSM Obj. #1, #2, #4, #9).

In 2022-23, to be cost-effective and adaptive, the Project will focus on priority endpoints only. This approach will allow Conklin to continue some monitoring while the findings from previous years are validated, finalized, and integrated into a standardized program methodology. The Project has produced qualitative and quantitative data for Conklin from 2017, except for 2020 and 2021 (due to Covid-19 and funding respectively), that has provided meaningful insight on their berry condition.

The Project will continue to use best practice methodologies that appropriately braid Indigenous and Western knowledge systems to build trusted relationships between participating Indigenous communities, academic researchers, and provincial and federal government scientists and will aim to produce and share results that can inform the OSM Program of impacts to traditional wild food supplies in the Athabasca region (OSM obj. #2, #4, #9).

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.

KEY DRIVERS and LINK TO EEM:
The key driver for this work plan is Indigenous concerns regarding the condition of local berries and understanding the potential impacts from oil sands development on this ecosystem component, which is highly valued by Indigenous communities and is reflected as such on the OSM conceptual model. The perceived risk from the community is that some berries are (or may become) contaminated, or impure, and if so, cannot be used for their medicinal, nutritional and social properties. This has resulted in some community members abandoning important physical, social, and spiritual practices while being forced to travel longer distances in order to gather berries that they trust. This obvious change to cultural practices is clearly linked to the EEM key question regarding the impact of oil sands development to Indigenous rights and culture.

Truly understanding the impacts to human health cannot be done in isolation of the lived experiences and Traditional Knowledge of the Indigenous peoples who rely on and have historical knowledge of these ecosystems. This Project attempts to address the knowledge gap by braiding Traditional Knowledge practices and western science risk assessment methodologies to answer the following community-driven questions: “are local berries safe to eat?” and “are there changes in berry quality/quantity due to oil sands developments?” Western science environmental knowledge is partial and incomplete and there are ways of knowing determined by culture and values (Berkes, 2009; Harris, 2007:303). Building relationships between the Indigenous and scientific communities to decide together how knowledge is produced, who benefits, and how it is interpreted or validated is paramount to co-producing knowledge that ensures mutual and complementary benefits (e.g. environmental, cultural, political, and economic) (Berkes, 2009; Bonny and Berkes, 2008).

MANDATE OF THE OSM PROGRAM:
This work plan meets the mandate of the OSM Program by addressing all three of the core OSM results:
1) Assess changes in indicators occurring in the oil sands region: Temporal and spatial patterns of Traditional Knowledge-based indicators as well as contamination and health properties in berries at community chosen berry patches are monitored, which are used to directly (through comparison to health risk and environmental thresholds) and indirectly (through other OSM themes) assess potential environmental changes.

2) Determine relationship between changes and oil sands development activities: Participants in the Project have interacted with their local berry patches well before and during oil sands development and have observed and understand the changes that have occurred due to development. In addition, monitoring and understanding the composition of ambient air (using data from the Air & Deposition theme) and correlating it with the soil and berry media collected in this Project can parse natural sources of contaminants from anthropogenic sources.

3) Contribute to context of cumulative effects: Changes in berry quality and quantity, the main driver of this Project, may be a result of exposure to various chemical constituents in air emissions and surface water runoff from facilities which may directly affect the health of local berries (i.e. decrease growth and

berry size), affect the health properties of berries (i.e. decrease antioxidant activity), deposit on the surface of berry plants (i.e. metals in dust emissions) or result in the bioaccumulation of contaminants in berry plant tissues (i.e. uptake of metals via roots and translocation within fruit).

PREVIOUS RESULTS:
1) A total of five participating Indigenous communities in the Athabasca Oil Sands Region have conducted monitoring as part of the Project since 2017, one of which has been involved since 2011.

2) The priority of the Project is to provide data and learnings that are accessible, credible, and useful to the participating Indigenous communities, first and foremost, to help address their concern for and add to the understanding of the quality and quantity of their local berries. This has been achieved through the development and sharing of annual summary reports at yearly engagement sessions with community members. A consistent finding of the Project has been the significance and value that project participant place on relaying and discussing results, and sharing information, with and between the community members and project participants.

3) Information collected through this Project arms Indigenous communities with documented observations and analysis about the condition of their local berries. This information has (or may) influence their decision to consume their local berries and it may be relevant to the community when consulting with decision-makers on new developments or with policy makers on the efficacy of existing policies. Results from this Project have been used as evidence against recent proposed development in consultation between industry and one of the participating communities.

4) Project participants have expressed finding significant value in the field visit/berry harvest component of the Project as a way to continue to practice cultural traditions and visit areas that were traditionally used for berry picking that may no longer be visited regularly due to development activities. Participants have noted improvements to berry condition due to more regular visits and offerings by community Elders.

5) Statistical analysis indicates that certain berry patches within an individual community's traditional territory are statistically similar (replicates) to each other. However, the cultural significance of each patch cannot be validated or replicated using statistical methods. Therefore, monitoring of all community identified patches is recommended until such a time that communities indicate if a sub-set of patches or pooling of samples could occur to understand the health of local berries.

6) Analysis of available monitoring data indicates the importance of understanding the deposition of nitrogen and sulphur species. Air sampling is recommended at each patch to better understand if acidifying emissions and deposition have impacts on berry health parameters in addition to or independent of effects on metal bioavailability. Additionally, soil sampling is recommended to continue for three successive years to understand natural variability and the linkage with deposition. (No air or soil sampling is proposed for 2022-23. A monitoring plan for air sampling at each patch is required prior to wide-spread implementation of this recommendation. In lieu of berry-patch specific air data, regional data available throught the Active Air and Air & Depostion work plans can be used. Soil sampling has been conducted for two consecutive years, and three for some communities. Soil sampling will be paused while findings are validated and incorporated into the Project).

7) Study design reflects the location within the Athabasca oil sands where the community and patches are located. The analytical suite will differ between patches located in the in-situ development area as compared to those in the surface mineable area.

8) Data indicates that trace element concentrations within and between berry patches is highly variable. Therefore, it is recommended that a minimum of three berry samples be analyzed.

9) The data that has been collected is adequate to understand the effects of washing berries. Data indicates that dust emissions and deposition on berries occurs in proximity to surface mining operations. Therefore, assessing the effects of washing on chemical concentrations is only

recommended for communities or patches within the surface mining footprint. (Washing berries is not proposed in 2022-23 but may be proposed as a focused study in subsequent years).

10) Data from this Project indicate that levels of contaminants of concern are elevated in berries from patches considered unclean by Indigenous members, which are located closer to oil sands development, versus berries from patches considered clean or sacred by Indigenous members, which are located farther away from development.

11) Multiple communities participate in local community-based monitoring to understand the health of berries and potential risks to community members ingesting the local berries. However, the spatial extent of the various local berry patches represents a large geographical region which could be collated and assessed on a Regional scale.

2.0 Objectives of the Work Plan

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

1) Berry Harvest - community participants have found spending time on the land, gathering at the berry patch, to be one of the most valuable components of the Project as it provides additional opportunities for community members to share knowledge, to collect life stories, oral traditions, and participant observations, to practice cultural traditions, and to harvest berries for laboratory analysis. To reduce costs in 2022-23, the Project is proposing one visit to each patch to complete the berry harvest and that the patch visit focuses on key endpoints. In addition to a reduction in cost, this will allow time to validate previous year's findings and adaptation of the Project going forward, as required. Specifically, this means collection of berry samples only (no soil) for analysis of trace elements and health compounds only (no PAHs).

2) Qualitative and Quantitative Summary Report – Data collected during the field season (i.e. qualitative observations at the berry patch and berry sample laboratory analysis) are summarized into an annual report to be shared with and validated by the community participants during the results sharing meeting.

3) Berry Group Results Sharing Meeting - these gatherings provide an opportunity to share available western science results and observations recorded by the researchers to be verified by community members and is considered a critical component of the Project. Community members share their knowledge and lived experiences and the group discuss ways to adapt the monitoring based on results and knowledge and plan the field season logistics. Ideally, the 2022-23 meeting will be an opportunity to share results from the 2022 field season (dependent on laboratory capacity), however, there may also be other outstanding results or project methodolgoies that need to be discussed.

4) Capacity Building - continue to provide opportunities for relationship building, knowledge sharing, time on the land, and educational opportunities for all participants to learn new perspectives and skills. Community project management has been included in to the 2022-23 work plan to provide an opportunity for Project champions to be supported within each community to transition to the Project Lead role in the future. To help achieve this the Project will engage both ICBMAC and the Inidigenous Community-Based Monitoring Facilitation Centre (ICBM FC).

Note: In 2021-22 the Project proposed to host a workshop for all community participants and associated stakeholders to develop a collective understanding of the Project and inform the path forward with the objective of improving Project effectiveness and efficiency for the benefit of the participating communities.

In 2022-23, the ICBMFC may be better suited to explore this opportunity that would engage participating, and interested, community members and western researchers to share Project learnings and knowledge, to match analytical results with lived experiences, discuss Indigenous limits of change

and baseline, and to explore all pathways of impacts on berries to develop a Project that is aligned across the OSM Program.

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:

Air

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.

Focused Study (includes Community-Based 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:

Choose an item.

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?

Click or tap here to enter text.

2. Are changes in water quality and/or water quantity and/or biological health 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. 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?

Click or tap here to enter text.

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

Click or tap here to enter text.

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. 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:

Deposition

3.3.4.2 Air & Deposition - Key Questions

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

1. Are changes are 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?

There is evidence to suggest that changes in air quality, specifically, atmospheric deposition are due to contaminants that can be attributed to oil sands activities. Specifically, data from this Project indicate that levels of contaminants of concern are elevated in berries from patches considered unclean by Indigenous members, which are located closer to oil sands development, versus berries from patches considered clean or sacred by Indigenous members, which are located farther away from development. In addition, an increase in vanadium concentrations in berries picked closer to oil sands development is a trend. Vanadium is a contaminant associated with oil sands development suggesting changes attributable to oil sands activities.

More broadly, estimates of contaminants deposited in terrestrial ecosystems, based on air quality and atmospheric deposition monitoring data, demonstrated that deposition levels are elevated within approximately 50km of major oil sands emission sources. Beyond 50km deposition levels rapidly decreased to near background levels which suggest a link to oil sands activities (Edgerton et al. 2020). Additionally, nitrogen and sulphur deposition estimates for sites close to emissions sources exceeded levels expected to cause environmental change via acidification and should be further assessed (Davidson et al., 2020). Long-term monitoring of acid sensitive uplands has demonstrated linkages between the aerial deposition of contaminants and changes in tree growth, understory vegetation, soil, and lichen (Davidson et. al, 2020). Changes to air quality on berry quality is compounded by landscape alterations. Changes in both plant community composition and single species abundance have been demonstrated in response to hydrologic changes associated with roads and seismic lines (Willier, 2017) and in response to low-impact, wide-spread disturbance (Ficken et al., 2019). Plant community composition and single species metrics have been shown to respond to changes in abiotic conditions and edge effects resulting from seismic lines (Dabros et al., 2017, Dawe et al., 2017) and evidence suggest that invasive species may spread faster on linear features created by oil and gas development (Roberts et al., 2018).

2. Are changes informing Indigenous key questions and concerns?

The qualitative and quantitative indicators collected as part of this Project to assess the changes to the condition of berries and berry patches are based on the lived experiences and Traditional Knowledge of the community Elders and knowledge holders. This data has been recorded at almost every site visit since Project inception and will continue to be documented. Previously, berries harvested have been analyzed for trace elements, polycyclic aromatic hydrocarbons (PAHs), and health promoting compounds. An annual report is completed each year to summarize the data collected and shared with each Indigenous community so the Project can continue to adapt to ensure the data collected is providing information that is useful to each participating Indigenous community.

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

For project deliverables where Indigenous Knowledge (IK) has been documented, the rights to that knowledge reside with the originating IK expert and Indigenous community. Summaries of this information will be included into final project reports that can be shared with the OSM Program, with the

consent of the IK expert and the relevant Indigenous community. Final reports to the OSM Program will not contain unfinished, original IK data or research, nor other IK-related information without consent of the relevant IK experts and Indigenous community.

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

Relevant methodologies used by this Project include:
1)The International Society of Ethnobiology (The ISE Code of Ethics, found online: http://www.ethnobiology.net/what-we-do/core-programs/ise-ethics-program/code-of-ethics/code-in-english/)
2) Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans, Chapter 9: Research Involving the First Nations, Inuit and Métis Peoples of Canada, found online: http://www.frqnt.gouv.qc.ca/documents/10191/186009/TCPS2.+pdf/6a8ab915-431b-428d-aa86-b22ca5c78053
3) The WBEA Standard Operation Procedures for: Passive Sampling, Berry Sampling, and Soil Sampling for the Berry Contamination Project. Available upon request.
4) US EPA. 1997. Soil Sampling – Standard Operating Procedure
5) Air Monitoring Directive, Chapter 4
6) The Project has developed a Program Framework (available December 31, 2021) that demonstrates the methodology behind the Project and how the Project adheres to best practices, with the intent for this to be used as a guidance document for communities interested in participating.

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

Multiple communities participate in this Project at the local level to understand the health of berries and potential risks to members ingesting the local berries. This monitoring offers the opportunity for these communities to integrate because the spatial extent of the various local berry patches represents a large geographical region which could be collated and assessed on a regional scale to provide sufficient data to understand berry quality spatially across the Athabasca Oil Sands Region. In addition, this Project will engage the Terrestrial Biological Monitoring theme researchers that are working with similar species and/or in similar locations to identify overlap and to leverage monitoring programs and variables for covariate analysis. Lastly, deposition maps for compounds of interest under development by the Air & Deposition theme should be used by this Project to inform the locations of monitoring sites (berry patches), to sharpen the list of indicators of concern, and to better understand the findings from this Project.

Note: In 2021-22 the Project proposed to host a workshop for all community participants and associated stakeholders to develop a collective understanding of the Project and inform the path forward with the objective of improving Project effectiveness and efficiency for the benefit of the participating communities.

In 2022-23, the ICBMFC may be better suited to explore this opportunity that would engage participating, and interested, community members and western researchers to share Project learnings and knowledge, to match analytical results with lived experiences, discuss Indigenous limits of change and baseline, and to explore all pathways of impacts on berries to develop a Project that is aligned across the OSM Program.

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?

To transition towards a fit within the EEM framework the Project must develop a clear understanding of: (1) regulatory and community expectations for monitoring that will guide the adjustment of the current long-term surveillance program to fit the OSM adaptive monitoring framework; (2) how the current monitoring design addresses the community-driven questions and OSM objectives; (3) berry and soil

indicators where the adaptive monitoring approach is adequate, and (4) baselines and limits of change based on Indigenous ways of knowing that will inform future monitoring activities.

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?

On the OSM conceptual model, this Project contributes to the "Traditional resources and cultural practices" valued component and to the "Traditional Food Quality/Quantity; Access to Land and Traditional Resources" on the theme area conceptual model. Through measuring of oil sands related emissions and contaminants in the air, berries, and soil, this work will advance understanding of the theme area priority linkage between contaminant (stressor), atmospheric deposition and contaminant exposure(pathway), and bioaccumulation in food, medicinal, or culturally important species (response).

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

Yes, results from this work plan, with free, prior, informed consent from the participants, will contribute to Programmatic Condition of Environment Reporting.

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.

Information collected through this Project arms Indigenous communities with documented observations and analysis about the condition of their local berries. This information may influence their decision to consume their local berries and it may be relevant to the community when consulting with decision-makers on new developments or with policy makers on the efficacy of existing policies. Results from this Project have been used as evidence against recent proposed development in consultation between industry and a community participating in the Project.

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

This Project was initiated and driven by Indigenous concerns and has continued to be guided by the sharing of Traditional Knowledge by Project participants and the involvement of Indigenous community members in all aspects of the project (e.g., planning, implementation, reporting). Indigenous concerns regarding the health of and impact to local berries due to oil sands development is being addressed through this Project. The use of land to pursue their usual vocation (i.e. harvest traditional foods and partake in cultural practices in local berry patches) is an Indigenous right, as per Section 35, that is being impacted by oil sands development which this Project aims to inform.

In addition, the Project understands that the expectation of the OSM Program is that all such activities are carried out in a manner consistent with relevant ethics standards and protocols/agreements as they relate to First Nations, Métis, and oil sands region communities and that OSM standards and protocol/agreements to that effect are being developed.

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.

Changes in environmental condition will be assessed with long-term monitoring as follows (not all indicators are proposed in 2022-23, see objectives):

1) Assess changes in environmental conditions compared to baseline or reference:
- Monitor berries, soil, and air quality at patches close to and far from development and over several years to assess changes in both spatial and temporal scales.
- Indigenous community members rely on their historical and Traditional Knowledge of the area and plant condition to determine changes in environmental condition and impacts to traditional land use.
2) Report uncertainty in estimates and monitoring is of sufficient power to detect change due to oil sands development on reasonable temporal or spatial scales:
- Contaminants of potential concern and health data is analyzed using an appropriate statistical test to assess change over time and space, as well as correlations between contaminants and health components. Multiple statistical tests have been required due to the variability in environmental monitoring data sets. These include; non-parametric and parametric single and multivariate analysis, Principle Component Analysis (PCA) and regression analysis depending on the distribution and sample size available.
3) Include indicators along the spectrum of response (e.g., individual, population, community):
-Berries (health promoting compounds, PAHs, trace elements, and community-level quantity observations), soil (trace elements and PAHs), and air (nitrogen dioxide and sulphur dioxide) response indicators have been or are being measured.
4) 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)):
-Analysis of washed and unwashed berry samples and monitoring for PAHs are focused in areas of highest risk (i.e. area closest to mining or dust deposition).
- Monitoring is conducted in communities and in locations that are not in close proximity or directly impacted by development, however, since the area has potential to be developed these locations can provide baseline data.
5) Measure change along a stressor gradient or a stressor/reference comparison:
-Each community will aim to monitor a reference location (far from development, patch considered safe) and a patch closer to development (deemed unsafe) for a stressor/reference comparison.

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.

This Project tracks the sub-regional state of the environment by monitoring the quality and quantity of berries local to participating Indigenous communities. Monitoring is conducted at the scale required to answer each community's concerns about the berries and berry patch locations culturally or traditionally relevant to them, specifically, "are local berries safe to eat?" and "are there changes in berry quality/quantity due to oil sands developments?" If collated, the data being collected by the various Indigenous communities could also inform the state of the environment on a regional scale, with the focus on the Athabasca Oil Sands Region.

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.

For project deliverables where Indigenous Knowledge (IK) has been documented, the rights to that knowledge reside with the originating IK expert and Indigenous community. Summaries of this information will be included into final project reports that can be shared with the OSM Program, with the consent of the IK expert and the relevant Indigenous community. Final reports to the OSM Program will not contain unfinished, original IK data or research, nor other IK-related information without consent of the relevant IK experts and Indigenous community.

The priority of the Project is to provide data that is accessible, credible, and useful to the participating Indigenous communities to help address their concern for, and add to the understanding of, the quality and quantity of their local berries.

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.

There are opportunities for this community-based project to integrate with both the Air & Deposition theme and the Terrestrial Biological Monitoring theme. Deposition maps for compounds of interest under development by the Air & Deposition theme should be used by this Project to inform the locations of monitoring sites (berry patches), to sharpen the list of indicators of concern, and to better understand the findings from this Project. In addition, this Project will engage the Terrestrial Biological Monitoring theme researchers that are working with similar species and/or in similar locations to identify overlap and to leverage monitoring programs and variables for covariate analysis.

10.0 Work Plan Approach/Methods

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

Phase 1: Planning (this is planned to occur late in the 2021-22 FY)
-Project participants gather early in the field season to share previous learnings and plan for summer activities.

Phase 2: Site visit and sample collection
-Collect qualitative data including life stories, oral traditions, in situ observations, participant observation.
-Collect berry samples for analysis.
-Collect berries for participants, as desired by each community.
-No soil samples proposed for 2022-23.

Phase 3: Sample analysis (samples collected in 2022)
-Submit collected samples to laboratory.
-Retrieve results from each laboratory.

Phase 4: Results analysis and reporting (for 2022 collection year results)
-Assemble qualitative data and develop summary report.
-Catalogue laboratory reports into useable format.
-Complete statistical analysis of laboratory data and develop summary report.

Phase 5: Results communication (this is often combined with Phase 1: Planning)
-Present summary reports to each participating community to verify and approve.
-Present Program Framework and SOPs for community consideration and feedback.
-Sharing of knowledge and lived experiences.
-Distribute results to broader audience at the discretion of each community.

Phase 7: Berry Program Workshop
-Participation from all participating communities as well as other stakeholders associated with the Project.
-Community members and western researchers share Project learnings and knowledge.
-Improve Project effectiveness and efficiency for the benefit of the participating communities.

10.2 Describe how changes in environmental Condition will be assessed *

Changes in environmental condition will be assessed with long-term monitoring as follows (not all indicators are proposed in 2022-23, see objectives):

1) Assess changes in environmental conditions compared to baseline or reference:
- Monitor berries, soil, and air quality at patches close to and far from development and over several years to assess changes in both spatial and temporal scales.
- Indigenous community members rely on their historical and Traditional Knowledge of the area and plant condition to determine changes in environmental condition and impacts to traditional land use.
2) Report uncertainty in estimates and monitoring is of sufficient power to detect change due to oil sands development on reasonable temporal or spatial scales:
- Contaminants of potential concern and health data is analyzed using an appropriate statistical test to assess change over time and space, as well as correlations between contaminants and health components. Multiple statistical tests have been required due to the variability in environmental monitoring data sets. These include; non-parametric and parametric single and multivariate analysis, Principle Component Analysis (PCA) and regression analysis depending on the distribution and sample size available.
3) Include indicators along the spectrum of response (e.g., individual, population, community):

-Berries (health promoting compounds, PAHs, trace elements, and community-level quantity observations), soil (trace elements and PAHs), and air (nitrogen dioxide and sulphur dioxide) response indicators are measured.
4) 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)):
-Analysis of washed and unwashed berry samples and monitoring for PAHs are focused in areas of highest risk (i.e. area closest to mining or dust deposition).
- Monitoring is conducted in communities and in locations that are not in close proximity or directly impacted by development, however, since the area has potential to be developed these locations can provide baseline data.
5) Measure change along a stressor gradient or a stressor/reference comparison:
-Each community will aim to monitor a reference location (far from development, patch considered safe) and a patch closer to development (deemed unsafe) for a stressor/reference comparison.
-Each community will aim to monitor a reference location (far from development, patch considered safe) and a patch closer to development (deemed unsafe) for a stressor/reference comparison.

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

Indigenous community members rely on their lived experience, Traditional Knowledge, and Indigenous Knowledge of the area and plant condition to determine changes in environmental condition and impacts to traditional land use.

Western science parameters that are tested are measured against:

Trace Elements:
CCME Tier 1 guidelines

Polycyclic Aromatic Hydrocarbons (PAHs):
CCME Canadian Soil Quality Guidelines (Carcinogenic and other PAHs)

Air Contaminants:
Alberta Ambient Air Quality Guidelines
Canadian Ambient Air Quality Standards (CAAQS)

Human Health:
Health Canada prescribed methods to assess human health:
-Guidance on Human Health Risk Assessment
-Part I: Guidance on Human Health Preliminary Quantitative Risk Assessment (PQRA)
-Part II: Health Canada Toxicological Reference Values (TRVs) and Chemical-Specific Factors
-Supplemental Guidance on Human Health Risk Assessment for Country Foods (HHRA Foods)

(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 *

Phase 1: Planning
This is a crucial phase in community-based and Indigenous methodologies. The group needs to decide the best timing and the participants' schedules for the fieldwork. Everyone needs to be informed and in agreement about project plans. This is achieved through early season convenings between the Indigenous community participants and scientists.

Phase 2: Site visits and sample collection
Indigenous participants gather in the field to harvest berries for sample collection. Berry harvest is an important cultural practice and non-Indigenous partners should follow the lead of Indigenous group

members to understand respectful behaviors in the bush which might include offerings, demonstrating gratitude, or keeping a positive mood. Harvest visits should not be rushed by western science participation. The participants typically use harvest visits as an opportunity to share life stories, oral traditions, in situ observations, and participant observations which would be documented by the social scientist or designated community member. Site visit logistics for sample collection require coordination by a dedicated person to arrange food, transportation, field supplies, and in previous years, to demonstrate soil sampling methodologies to the participants. Berries are harvested by Indigenous participants using the methodology they would for their own collection. The scientist may help the group collect berries and should let the group know what quantity is sufficient for analysis. Berry samples are packed into zip lock bags and are stored on ice until same-day delivery to the WBEA offices in Fort McMurray.

Phase 3: Sample analysis
Samples are processed by the WBEA at the Fort McMurray office. Processing may include:
-dividing berry samples into two groups, where applicable: washed and unwashed.
-washing a subset of the berry samples with deionized water according to washing protocol.
-dividing berry samples into triplicates, properly labeling, and documenting the samples.
-compositing soil samples and dividing into triplicates, properly labeling, and documenting the samples.
-submitting samples to laboratory and retrieve analytical results (contract execution required).

Phase 5: Results analysis and reporting
Laboratory reports are catalogued into a useable format and provided to the supporting science advisor for analysis and development of an annual science report. The supporting social scientist or designated community member produces a report of the qualitative information recorded during the year. Report drafts are reviewed and verified by Indigenous participants before finalization during an annual verification meeting.

Phase 6: Results communication
Draft reports produced by science advisors are presented to Indigenous members that participated in the Project to verify and approve during an annual verification meeting at each participating community. This meeting may occur late in the fiscal year or be combined with the following year's planning meeting, depending on availability of results. Any materials meant to be distributed to a broader audience must be verified by the community and consent received. Participants may identify other opportunities to share this information such as community meetings, newsletters, radio, etc.

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

Traditional Knowledge Indicators:
Berry colour, size, plumpness, timing of flower and fruit, taste, sheen.
Plant leafiness, height, production, moisture.
General concerns - dust on berries, odour in air, season regularity, heat, rain, major events from industry, disruption of berry habitat, systems of respect in place - ceremonial offerings, respectful language and behaviour in presence of berries, reciprocal distribution of berries in community.

Western Science Key Indicators:
Trace elements in berries and soil(mg/kg): Ag,Al,Be,Cd,Co,Cr,Cu,Fe,Mn,Mo,Ni,Pb,Re,Sb,Sr,Tl,V,Y,Zn
Health compounds in berries: total phenolics (umol GAE/100g), oxygen radical absorbance activity (umol TE/100g), total anthocyanin (ug of C-3-G Equiv. per 100g), chlorogenic acid (ug/100g), total proanthocyanidin (mg of A2/g)
Polycyclic Aromatic Hydrocarbons in berries and soil: Alkylated and Parent
Average monthly temperature (Deg C)
Rainfall (mm)
Sulphur dioxide (ppb) (SO_2)
Nitrogen dioxide (ppb) (NO_2)
Leaf wetness (% time wet)

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.*

The priority of the Project is to provide data and learnings that are accessible, credible, and useful to the participating Indigenous communities to help address their concern for, and add to the understanding of, the quality and quantity of their local berries. Draft reports are produced by supporting consultants and presented to Indigenous members that participated in the Project to verify and approve during an annual verification meeting at each participating community. Any materials meant to be distributed to a broader audience must be verified by the community and consent received prior to distribtion. Participants may identify other opportunities to share this information such as community meetings, newsletters, radio, etc.

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

Associated work plan/grant/contract for the following services: contracts are executed upon funding approval on a fiscal year term.

Phase 4: Sample analysis
-SWAMP lab with UofA provides laboratory analysis of the berry and soil samples (trace elements).
-National Research Council provides laboratory analysis of the berry samples (health compounds).
-AirZone one provides laboratory analysis of berry and soil samples (PAHs)
-WBEA provides in-kind support with laboratory contracts and sample shipment

*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:

Annually

13.4 Estimated Data Collection Start Date:

2022-07-01

13.5 Estimated Data Collection End Date:

2022-09-30

13.6 Estimated Timeline For Upload Start Date:

Click or tap to enter a date.

13.7 Estimated Timeline For Upload End Date:

Click or tap to enter a date.

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, xlsx, etc.)	Security Classification
Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.	Choose an item.

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
Key Engagement/Participation Meeting	Q2	Berry harvest/sample collection
Other (Describe in Description Section)	Q3	Laboratory analysis of 2022 samples
Other (Describe in Description Section)	Q4	Laboratory analysis of 2022 samples
Technical Report	Q4	Assessment of summary report of laboratory analytical data and qualitative field observation from 2022 collection year
Key Engagement/Participation Meeting	Q4	Berry group results sharing meeting

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.*

-Indigenous community-based research team members – Direct program design by sharing their lived experiences, cultural values, and Indigenous and Traditional Knowledge, as well as identifying their concerns and the changing environmental conditions. Participants in the Project have interacted with their local berry patches well before and during oil sands development and are experts on land stewardship, the changes observed due to development, and the impact of these changes.

-Toxicologist and/or western scientist (TBD) – Provide scientific expertise to help participating communities better understand the potential risks to health from ingesting local berries and how the health of local berry patches may be affected by oil sands development. Provide guidance on Project design and implementation to ensure that quantitative elements of the Project adequately address the key objectives of the Oil Sands Monitoring Program and remain driven by and respectful of the community members. The Project will require input from the community regarding their choice of toxicologist/western scientists going forward before they can be named in this work plan.

-Project management and social science support (Peter Fortna, Willow Springs Strategic Solutions) – Project facilitation and coordination, field-level logistic support, and technical expertise. Provide guidance on program design, community-based research methodology, and ensure that ethnographic elements are properly and adequately recorded and addressed in program planning, execution and report writing and remain respectful of the community members. Peter has extensive experience working in partnership with a diverse range of Indigenous organizations on community-driven initiatives in both the Athabasca region and elsewhere, which has led to refined skills related to coordinating, managing, and evaluating community-based projects.

-Government Representative (AEP) – Provide contract and/or grant management support.

-Wood Buffalo Environmental Association (Project Lead on behalf of Conklin Metis) – Provide in-kind administration support, as required. The WBEA has been supporting Project delivery since its inception and in 2022-23 will focus on supporting the transition of the Project execution directly to Conklin in future years. The WBEA is accountable for managing the project and executing the deliverables to meet both OSM and community expectations.

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
Nora Abercrombie	Contract/Grant management support	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 *(Calculated from Table 16.1.1 above)*	**0.00%**	**$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
Total All Grants *(Calculated from Table 16.4 below)*		**$0.00**
Total All Contracts *(Calculated from Table 16.5 below)*		**$45,078.00**
Sub- TOTAL *(Calculated)*		**$45,078.00**
Capital*		$0.00
AEP TOTAL *(Calculated)*		**$45,078.00**

* 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 *(Please manually provide the number in the space below)*		
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 *(Calculated)*		**$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	Click or tap here to enter text.
GRANT 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
GRANT TOTAL *(Calculated)*	**$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	Kim Desjarles
CONTRACT RECIPIENT - ONLY: Organization	Conklin Resource Development Advisory Committee
Category	**Total Funding Requested from OSM**
Salaries and Benefits	$0.00
Operations and Maintenance	
Consumable materials and supplies	$2,150.00
Conferences and meetings travel	$0.00
Project-related travel	$108.00
Engagement	$20,500.00
Reporting	$22,320.00
Overhead	$0.00
CONTRACT TOTAL *(Calculated)*	**$45,078.00**

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 ***Sums totals for salaries and benefits from AEP and ECCC ONLY***	$0.00
Operations and Maintenance	
Consumable materials and supplies *Sums totals for AEP and ECCC ONLY*	$0.00
Conferences and meetings travel *Sums totals for AEP and ECCC ONLY*	$0.00
Project-related travel *Sums totals for AEP and ECCC ONLY*	$0.00
Engagement *Sums totals for AEP and ECCC ONLY*	$0.00
Reporting *Sums totals for AEP and ECCC ONLY*	$0.00
Overhead *Sums totals for AEP and ECCC ONLY*	$0.00
Total All Grants (from table 16.2.1 above) *Sums totals for AEP Tables ONLY*	$0.00
Total All Contracts (from table 16.2.1 above) *Sums totals for AEP Tables ONLY*	$45,078.00
Sub- TOTAL	$45,078.00
Capital* *Sums total for AEP*	$0.00
GRAND PROJECT TOTAL	$45,078.00

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.*

Potential cost overruns and underruns will be managed by monthly tracking of Project spending and projections. This information will be regularly communicated to the AEP coordinator and Community project manager so that necessary adjustments or mitigations can be made prior to Project completion.

This Project is projected to come in on budget in 2021-22.

The primary risk to this Project is late or inadequate funding approvals which impacts participants ability to plan and execute field visits and sample collection, contract execution for laboratories, and timely or adequate delivery of all associated deliverables. Impacts to deliverable execution due to the funding approval process deteriorates the trust and relationship built between Project participants and, ultimately, the Project's value to the community. Second, the capacity of the laboratory to complete the analytical work is difficult to anticipate, presenting a risk. There are limited laboratories available capable of analyzing the volume and type of sample in the timelines required while still providing useful and credible data for the purposes of this Project. This has caused a carryover of costs and a delay in deliverable completion in the past. Third, unaccounted costs due to outstanding invoices from communities or contractors puts the Project at risk for overruns. Last, the assumptions required to budget for this Project, mostly related to project activities and participation, present a risk of cost under or overruns.

Please see "sup_01" for Project cost details.

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)
Click or tap here to enter text.	Click or tap here to enter text.	$0.00
	TOTAL	**$0.00**

19.0 Consent & Declaration of Completion

Lead Applicant Name

Dianne McIsaac (on behalf of Kim Desjarles with Conklin Resource Development Advisory Committee)

Title/Organization

Wood Buffalo Environmental Association

Signature

Dianne McIsaac

Date

2021-10-05

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

Nora Abercrombie

Title/Organization

Director, Governance and Corporate Services

Signature

Nora Abercrombie

Date

2021-10-05

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.