FOCUSED STUDY ACTIVITY WORK PLAN

General Information

Work Plan Unique Identifier:	*B-CM-1-1718*	
Focused Study Activity Title:	Community-Based Fish Monitoring Pilot Project	
Focused Study Category:	Study to Establish the Current Environmental State	
Geographic Location:	Athabasca Oil Sands Region	**And:** Cold Lake Oil Sands Region Peace River Oil Sands Region
Monitoring Site(s) Coordinates *(latitude and longitude)*		
Project Leader:	Krista Tremblett	
Organization and contact information:	**Indigenous Knowledge, Community Monitoring and Citizen Science Branch, EMSD** Email: krista.tremblett@gov.ab.ca	
Date Study initiated:	January 2017	
Monitoring Category: *(From OSM long-term plan; choose from drop-down menu)*	Indigenous Monitoring Program	
Strategic Objective of Focused Study: *(From OSM long-term plan; choose from drop-down menu)*	Objective F1: Potential Impacts on Ecosystem Components Valued by Indigenous communities	
Hypotheses: *(Briefly outline the specific hypotheses that your focused study is aiming to address)*	*To be determined based on discussions with Indigenous communities participating in the pilot project.*	
Deliverables: *What tangible goal (s) and/or product(s) will the monitoring produce and when?*	Project goal: To pilot collaborative community-based approaches to monitoring fish health in the Athabasca, Peace and Cold Lake Oil Sands regions that address local Indigenous community concerns and interests. Project Deliverables: • Synopsis of past and current fish monitoring in the three regions. • Study design(s) to address key questions identified by	

	Indigenous communities in Athabasca, Peace River and Cold Lake oil sands regions (study design will be complement and leverage information produced by existing OSM fish monitoring) • Collection and analysis of samples (to begin in 2017, if possible) • Technical report – *describe design, site locations, techniques, equipment, standards etc.* • Technical report – *describe participatory design methodology, participants etc.* • Data report • Community report(s) – *reporting results in a variety of formats appropriate for communities (e.g., posters, meetings, videos)* • Pilot evaluation report • Fish health monitoring program Continuity Proposal • Peer-reviewed publication(s) - *likely after year 2 or 3, once implementation is complete and dataset is generated for 1-2 years*.

Detailed Study Plan

(Please provide detailed information on the specifics of your focused study including – (**keywords, hypothesis and the assumptions and constraints behind your hypothesis**)

Provide a maximum of 10 key words that describe this project. Use commas to separate them:

Community, Indigenous, monitoring, fish, Traditional Knowledge, pilot.

Describe how you will test your hypothesis:

Background

Fish Health and Contaminant Concerns held by Indigenous Communities in the Oil Sands Region

Fish health is a key concern for Indigenous communities in the oil sands region. This has been detailed in a variety of documents including the 2015 Review Panel Report for the Lower Athabasca Regional Plan where several First Nations expressed concerns regarding health of traditional food resources and the ability to continue to practice traditional uses along the Athabasca river mainstem. In its response to the 2014/15 JOSM technical results report (March 2016), Mikisew Cree First Nation highlighted that deformed or dying minnows in snow melted around oil sands development and deformities in fish exposed to sediment from near oil sands development is a serious concern to the First Nations who consume fish downstream of oil sands operations.

Indigenous communities in the oil sands region have expressed the desire to be able to meaningfully guide environmental monitoring from study design, to interpretation and reporting.[1] Furthermore, communities expect that Traditional Knowledge be equally considered in defining programs, complementing science-based programs, and validating results against what is being seen/encountered on the land. This project will pilot approaches whereby indigenous local and traditional knowledge informs the development of project design for the monitoring and assessment of the fish health in the oil sands region. The project may involve fish health assessments, fish assemblage monitoring, and contaminants levels.

This project will model an interdisciplinary approach whereby content experts from social science (e.g. cultural anthropologists) and natural science (e.g., aquatic scientists, fisheries biologists) disciplines will collaborate as a resource team to support the project with interested communities. The resource team will engage with communities to pilot a research and design approach towards the implementation of a community led environmental monitoring program that will gather information to address the needs, relevant questions and issues of priority for indigenous communities in the oil sands region. Where possible, where there is interest and as directed by First Nation and Metis technicians actively engaged in this project, Indigenous Leadership may also participate in project design and will be kept informed of project progress and outcomes.

Goal:
To pilot collaborative community-based approaches to monitoring fish health in the Athabasca, Peace and Cold Lake Oil Sands regions that addresses local Indigenous community concerns and interests.

Project outcomes are:
- Use of best practice methodologies that appropriately bridge Indigenous and Western knowledge systems;
- Improved understanding of status and health of fish in the Athabasca, Peace and Cold Lake oil sands region;
- Stronger, trusted relationships between involved Indigenous communities and scientists.

Project objectives are:
- To involve indigenous communities directly in fish monitoring study design, field collection, analysis/interpretation and reporting;
- To develop a methodology whereby western and indigenous knowledge systems are applied to monitoring design and evaluation; and
- To establish local indigenous indicators of fish health.

This project will work closely with Environment and Climate Change Canada and Alberta Environment and Parks to identify areas of alignment with the existing Long-term Monitoring Work Plan for Fish Health Monitoring (B-LTM-E-8-1718).

Key Research Questions:

•What are the keys to successful collaboration between indigenous knowledge holders and western scientists in designing a fish monitoring program?

[1] Stratos Inc. 2015. Governance Review Oil Sands Monitoring, Evaluation and Reporting Final Report.pp.59.

•How can scientists (biological and social sciences) collaborate more effectively in research and practices to be more respectful of indigenous knowledge?

•What are the most appropriate processes and institutions to act on the complementary knowledge systems for more informed environmental monitoring programs?

•How can western scientists and indigenous/traditional knowledge holders build a meaningful and sustained fish monitoring program that addresses community concerns?

•What methodologies and tools might be most useful in addressing fish health resource management priorities identified by communities?

Methodology

The methodology applied in each region will differ. In Athabasca, we are designing a study that is driven by community questions and interests, which will be complementary to the existing Long-term Monitoring Work Plan for Fish Health and Biodiversity. In Peace River, community interests and questions will be reflected in the existing baseline monitoring study design on the Peace River mainstem and tributaries. In the Cold Lake region we will be building on an existing fish health study led by the Cold Lake First Nation.

Phase 1 – Scoping and Design **(2017/2018)***

***Scoping activities were initiated in the 2016/2017 fiscal year and will be completed in Quarter 1 of 2017/2018.**

- Early communication (conference calls, meetings) with communities in Athabasca, Peace River and Cold Lake oil sands regions to confirm interest in participating. Communities will be identified based on the geographic scope of the Long-term Monitoring Work Plan for Fish Health Monitoring (B-LTM-E-8-1718) occurring on or near traditional indigenous land and territory.
- Identify locally relevant questions and explore stressors through the perspectives of indigenous knowledge and indicators.
    - What are the fish-related concerns, interests, and questions of the community?
    - What are the potential stressors or impacts of concern?
    - Why do these stressors or impacts matter to communities?
    - How could the health of fish be adversely affected by these stressors?
- Identify past and current fish monitoring and science initiatives in the Oil Sands region.
    - What monitoring and research has been done?
    - What is being done now?
    - Who is doing what?
- Determine level of community participation
    - How do communities want to be involved?
- Identify researchers (social and natural sciences) and technical experts (e.g., field collection, data management, analytics) to support study design, field collection, analysis/interpretation.
    - What monitoring do communities want to do?
    - What would communities measure (indicators)?
- Initiate develop of study design with communities:
    - Locally relevant questions, concerns, information needs
    - Parameters to be measured/analyzed (e.g., fish presence, length, weight, tissue etc.)

    - Sampling sites
    - Collection methods
- Identify areas of alignment between community-led design and the five-year long term fish health and fish community monitoring program including questions, parameters, SOPs, monitoring schedule, sampling sites, analysis, reporting (products, schedule).
- Determine capacity needs
    - How will communities be involved in data collection?
    - What training and equipment is required for communities to collect, store and ship samples?

Phase 2 – Implementation **(2017/2019)**

- Train participating community monitors.
- Evaluate whether existing standard operating protocols for fish collection, supporting water sample collection and contaminant sampling can applied to the community-led monitoring pilot.
- Sample collection on sites identified by communities, in collaboration with ECCC and AEP science staff in the Athabasca, Peace and Cold Lake regions.

Phase 3 – Analysis, Interpretation and Reporting **(2019/2020)**

- Laboratory and data analysis.
- Share and review results with communities.
- Develop reporting products for target audiences (e.g., government agencies, community members, academic community).

Assumptions and Constraints behind the hypothesis and the testing method:

Assumptions

- Project scoping will be completed in Quarter 1 of 2017-2018.
- Fish health is a key concern for communities in the Athabasca, Peace and Cold Lake Oil Sands regions.
- Communities will be interested in and available to participate in a three year pilot project.
- Where practical the design, data collection, analysis and reporting of this pilot will be aligned with the existing Long-term Monitoring Work Plan for Fish Health Monitoring (B-LTM-E-8-1718).

Constraints

- ECCC and AEP may not have the scientific capacity required to participate in this project as well as the Long-term Monitoring Work Plan for Fish Health Monitoring (B-LTM-E-8-1718).

References:

Review Panel Report 2015: Lower Athabasca Regional Plan. Retrieved from https://landuse.alberta.ca/LandUse%20Documents/Lower%20Athabasca%20Regional%20Plan%20Review%20Panel%20Recommendations_2016-06-22.pdf

Stratos Inc. 2015. Governance Review Oil Sands Monitoring, Evaluation and Reporting Final Report.pp.59.

Data Management

If this work generates data please summarize your project-level data management plan.

Deliverables	**Timeframe**	
Data Collection Period: *Field work – To be determined based on the scoping and design work completed with participating communities.*	Start : Spring/summer 2017	End: Spring/summer 2019
Data Analysis Period: *Laboratory analysis and QA/QC of data – to be determined*	Start : TBD	End: TBD
Data Release Date: • *Reporting and evaluation processes to be determined by project team and communities.* • *Metadata and data consistent, complete and meet basic standard format for publication in Open Data; on or linked to JOSM portal*	TBD	

Reporting and Publications

Provide information on the anticipated reports / publications. (Insert additional rows if needed)

Expected Subject/Titles of Publications or Reports	**Short Description of Publication or Report**	**Expected Year of Publication**
Synopsis of past and current fish monitoring in the oil sands region	Overview of fish monitoring surveys, monitoring studies and programs in the oil sands region (past and current).	2018
Community based fish health and biodiversity monitoring approaches in the Treaty Areas of Canada - Literature	Comprehensive report of literature, activity scan outlining existing community-based methodologies, best practices relevant to the	2018

Review	pilot project and lessons learned.	
Technical report	Description of study design, site locations, techniques, equipment, standards etc.	2019
Technical report	*Description of participatory design methodology, participants etc.*	2019
Data report	Data analysis and findings from three study areas	2020
Evaluation report	Evaluation of the pilot project – including recommendations for transitioning to a long-term community based monitoring program	2020
Community report(s)	*Monitoring results in a variety of formats to be determined with communities (e.g., posters, meetings)*	2018/2020

Technical / Professional Roles and Responsibilities

Identify members of the monitoring team/organization, their roles and responsibilities. Identify monitoring organization leads if different from overall monitoring activity lead. (Insert additional rows if needed)

Role	Responsibilities	Resource Name/Organization
Program oversight	- Oversight on portfolio of JOSM Indigenous Monitoring and Science projects. - Identify and facilitate coordination/alignment between projects.	Krista Tremblett, Alberta Environment and Parks, EMSD
Principle investigator	- Coordinate Indigenous community involvement. - Coordinate involvement of scientific and technical experts. - Coordinate information product development (e.g., community reports).	Karin Smith-Fargey, Alberta Environment and Parks, EMSD
Project advisor (science)	- Work with communities in the Peace River region to identify locally relevant questions and concerns; adapt existing monitoring program to address local questions. - Work with project manager to identify areas of alignment between existing long term monitoring in the Athabasca pilot region and community information needs.	Mark McMaster, ECCC
Aquatic scientist	- Lead development of monitoring design in Athabasca and Cold Lake pilot regions	Dr. Paul Drevnick, Alberta Environment and Parks
Research associate(s)	Support the development of monitoring design in Athabasca and Cold Lake pilot regions. Provide research support.	University of Saskatchewan (Dr. David Natcher, Dr. Nicholas Brunet, Dr. Paul Jones and Dr. Tim Jardine)
Graduate students	Provide research support	University of Saskatchewan (TBD)
Technical field staff	Sample collection, handling, shipping	University of Saskatchewan (TBD)

Community coordinator	- Bridge between communities and field staff. - Facilitate information gathering to inform project design.	Alberta Environment and Parks, EMSD (TBD)
Community/organization liaison	- Strategic bridge into community/organization. - Advise on protocols related to Traditional Knowledge. - Prioritize community involvement.	Fin McDermid (Cold Lake region) Jim Webb (Peace region) Peter Fortna (Athabasca region)

Deliverables (Year 1)

If your Focus Study is longer than 1 year then complete **Appendix 3** for multi-year deliverables breakdown
Provide a summary of tangible quarterly deliverables. Identify major project areas (deliverables) and results that can be identified as a tangible goal. This could include: field work, lab work/ analysis, evaluation, data, reports, publications, SOPs etc. Do not define process as your Deliverable e.g. 'fly to Ft. McMurray to conduct fieldwork' or 'seek Director approval for report'.

Deliverable(s) (please provide enough information to support status reporting)
Q1 – April to June
Project scoping • Established working groups in the 3 regions – Athabasca, Cold Lake and Peace River regions • Establish work plans, study design and sampling schedule • Targeted training required for fish monitoring • Traditional fish harvest community survey assessments
Field collection
Q2 – July to September
Field collection
Q3 – October to December
Field collection
Analysis of data collected during spring/summer/fall 2017
Development of analytical model that combines qualitative and quantitative results that "bridges" Indigenous and western knowledge systems.
Video documentation editing and packaging of 3 to 5 minute video
Q4 – January to March
Reporting back to communities on year 1 activities • Community meetings • Plain language documents

Detailed Financial Breakdown – Year 1 of 3 (2017-2018)

Also complete **Appendix 2** for the multi-year financial breakdown

Budget requirements – List areas that require budget expenditures:	**OS Funding**	**External Funding (*outside JOSM*)**
O&M - Operations and Maintenance:		
Equipment (purchase or rental)	**$11,000**	**$**
Lab analysis	**$31,500**	**$**
Training	**$3,000**	**$**
Data management		**$**
Field consumables	**$1,233**	
Sub-Total	**$46,733**	**$**
O&M - Travel		
Conferences	**$1,500**	**$**
Community meetings	**$13,500**	
Fuel and vehicle/boat rental	**$6,000**	**$**
Meals	**$5,000**	
Accommodation	**$6,000**	
Sub-Total	**$32,000**	**$**
O&M: Dissemination & Engagement		
Publications/Reports	**$10,000**	
Translation (if required)	**$5,000**	
Community engagement	**$45,500**	
Sub-Total	**$60,500**	
O&M - External Contracts :		
Graduate students (2)	**$37,000**	**$**
Lab technician	**$20,000**	**$**
Sub-Total	**$57,000**	**$**
TOTAL COSTS	**$134,913**	
Salaries:		
Principal Investigator (Karin Smith-Fargey, 24 wks)	**$55,000**	
Co-Investigator + Project Oversight (Krista Tremblett, 5 wks)	**$13,541.67**	

Budget requirements – List areas that require budget expenditures:	**OS Funding**	**External Funding (*outside JOSM*)**
Co-Investigator (Paul Drevnick, 10 wks)	**$27,083.33**	
Community coordinator	**$35,000**	
Community-based monitors	**$12,180**	
Traditional knowledge holders	**$15,372**	
Sub-Total	**$158,177**	**$**
Total Salaries	**$158,177**	**$**
Total O&M	**$196,233**	**$**
2017-2018 GRAND TOTAL*	**$354,000**	**$**

Appendix 1 - Approvals

Project Submitted by:		
Name: Krista Tremblett		
Organization: Alberta Environment and Parks	Signature:	Date:

Project Approved by:		
Dr. Monique Dubé (AEP)		**Dr. Kevin Cash (ECCC)**
Signature 		Signature 
Date		Date

APPENDIX 2 – Detailed Multi-year Financial Breakdown (Complete the following detailed financial breakdown; add or delete categories as required)

Budget requirements	Year 1 (2017- 2018)		Year 2 (2018- 2019)		Year 3 (2019- 2020)	
	Cash	In-kind	Cash	In-kind	Cash	In-kind
1) Salaries and benefits						
a) Investigators	$95,625		$95,625		$95,625	
b) Technical/professional assistants						
c) Field Staff	$12,180		$12,180			
d) Traditional Knowledge holders	$15,372		$15,372			
e) Community coordinator	$35,000		$35,000			
2) Operations and maintenance						
a) Equipment	$11,000		$1,500			
b) Lab analysis	$31,500		$31,500		$31,500	
c) Training	$3,000		$1,500			
d) Data management						
3) Consumable Materials and supplies						
a) Field consumables	$823		$413			
4) Travel						
a) Conferences	$1,500		$1,500		$1,500	
b) Community meetings	$13,500		$13,500		$13,500	
c) Fuel and vehicle/boat rental	$6,000		$6,000			
d) Meals	$5,000		$5,000			

e) Accommodation	$6,000		$6,000			
5) Dissemination & Engagement						
a) Publications/Reports	$10,000		$10,000		$10,000	
b) Translation (if required)	$5,000		$5,000		$5,000	
c) Community Engagement	$45,500		$45,500		$45,500	
6) External Contracts						
a) Graduate Students (2)	$37,000		$37,000		$37,000	
b) Lab technician	$20,000		$20,000		$20,000	
Grand Total	$354,000		$342,590		$259,625	

APPENDIX 3 –Years 2 and 3 Deliverables (Complete the following detailed breakdown. Provide a summary of tangible quarterly deliverables. Identify major project areas (deliverables) and results that can be identified as a tangible goal.)

Year 2 (2018- 2019)
Deliverable(s) (please provide enough information to support status reporting)
Q1 – April to June
Field collection
Q2 – July to September
Field collection
Q3 – October to December
Lab analysis and evaluation Reporting (fish health data, analysis)
Q4 – January to March
Report back to communities • Community meetings • Plain language documents • 5 minute Video product

Year 3 (2019- 2020)
Deliverable(s) (please provide enough information to support status reporting)
Q1 – April to June
Lab analysis
Q2 – July to September
Data and project evaluation initiated
Q3 – October to December
Data and project evaluation continued
Q4 – January to March
Report back to communities • Community meetings • Plain language documents • 5 minute Video product
Pilot Evaluation Report
Fish Health Program Continuity Proposal • Design of collaborative and appropriate institutional structure (i.e. Regional Monitoring Table)to maintain continuity of CBM-Fish Programs developed