

2018-19 Work Plan Template

All fields with an * are mandatory

Project Description Summary			Co-Chair Decision (March 8, 2018)
Date *	Project/Work Plan Identifier (if applicable)	Program Type and Strategic Alignment *	<p>*Decision Pool C: Activity paused.</p> <p>* Activity paused pending outcomes of the Biological Monitoring Integration Workshop</p> <p>* It is a requirement of funding that key members of the project team participate in a Biological Monitoring Integration Workshop to be informed by the Oil Sands Monitoring Secretariat.</p> <p>*Funding in 2018/19 and beyond is dependent upon the findings of the Biological Monitoring Integration Workshop</p>
12-Feb-18		OSM - Long Term Monitoring	
Program Category *	Status *	Dept. ID	
Biodiversity, Land, Ecosystem Health Sciences	New Project	1104	
Project Leadership / Contact information			
Project Title *	Key Words (max 10) *		
Response of large mammals to oil sands development: Development and application of a	Indigenous knowledge, classical science, large mammals, geospatial, population, behaviour,		
Surname *	Given Name *	Title *	
Farr	Dan	Director, Biodiversity and Ecosystem Health Sciences	
Organization *	Department	Division	
Alberta Provincial	Environment and Parks	Environmental Monitoring and Science	
Branch *	Section/Unit (if applicable)	Phone *	
Science	Biodiversity and Ecosystem Health Sciences	780-229-7251	
Email *	Mailing Address	City	
dan.farr@gov.ab.ca	9888 Jasper Avenue	Edmonton	
Postal Code	EMSD Executive Owner (if Applicable)		
T5J 5C6	Dr. Monique Dube		
Project Information			
Project Objective(s) (Bullet Form) *	<p>Objectives</p> <ol style="list-style-type: none"> 1. Design a long-term monitoring system to understand how large mammals may be affected by oil sands development, based on both Indigenous knowledge and classical science. 2. Collate, summarize, and critically evaluate available knowledge of large mammals in the oil sands region, drawing from both Indigenous knowledge and classical science sources. (Note that both knowledge systems are acknowledged to have their own internal validation systems. This is not about validating classical scientific knowledge with Indigenous knowledge or vice versa.) 3. Collate, summarize and critically evaluate available knowledge of environmental factors, including oil sands development, that may influence large mammals in the oil sands region. 4. Augment historical and ongoing large mammal monitoring that incorporates, and builds on, Indigenous knowledge and classical science. 		
Plain Language Overview (100 words) *	<p>Large mammals are valued in the oil sands region as sources of food, fur, and ceremony. While industrial-caused changes to large mammal habitat are well known, the impacts of development on populations, behaviour, and health, are poorly understood for most large mammal species (except woodland caribou). Furthermore, there has been little meaningful involvement of Indigenous community members in the design or implementation of past and current mammal monitoring activities. This project will design and implement a long-term monitoring project to understand how large mammals may be affected by oil sands development, based on both Indigenous knowledge and classical science.</p>		
Project Duration *	Project Original Start Date *	Estimated Completion Date *	
Multi-Year		1-Apr-18	31-Mar-23
Specify Objectives This Project Will Address in 2018/2019. *	<p>Objectives</p> <ol style="list-style-type: none"> 1. Design a long-term monitoring system to understand how large mammals may be affected by oil sands development, based on both Indigenous knowledge and classical science. 2. Collate, summarize, and critically evaluate available knowledge of large mammals in the oil sands region, drawing from both Indigenous knowledge and classical science sources. (Note that both knowledge systems are acknowledged to have their own internal validation systems. This is not about validating classical scientific knowledge with Indigenous knowledge or vice versa.) 3. Collate, summarize and critically evaluate available knowledge of environmental factors, including oil sands development, that may influence large mammals in the oil sands region. 4. Augment historical and ongoing large mammal monitoring that incorporates, and builds on, Indigenous knowledge and classical science. 		
Specify Objectives This Project Will Address Beyond 2018/19 (if multi-year). *	<p>Continue to augment historical and ongoing large mammal monitoring activities to address knowledge gaps.</p>		

<p>List Key Questions/Hypotheses Related to Each Objective Stated Above. *</p>	<p>Key questions – Objective 1: How is a long-term monitoring system founded in the combination of both traditional knowledge and classical science (e.g., camera trap networks, and non-invasive genetic sampling) structured in order to foster a greater understanding of large mammal distribution and abundance in the oil sands region of northern Alberta?</p> <p>Key questions – Objective 2: What traditional knowledge is available on large mammals in northern Alberta? What is the best approach to incorporate both traditional knowledge and short-term/long-term technology-based measurements of large mammal populations? What are the existing sources of scientific data and information on large mammal distribution in oil sand region of Alberta and surrounding areas? Can the data and information from various sources be combined and how? What is the density and spatial distribution of large mammals in oil sand regions?</p> <p>Key questions – Objective 3: What is the spatial distribution of vegetation cover in the vicinity of oil sands developments based on existing sources (e.g., ABMI and other sources)? How could traditional knowledge could be used to improve already mapped vegetation cover and to determine change over time? How the abundance and distribution of large mammal populations vary over spatial vegetation cover gradients (by dominant vegetation species and density)? How do large mammal species respond to anthropogenic landscape changes t (i.e., seismic lines, mines, roads) and natural disturbance (i.e., wildfire)?</p> <p>Hypothesis 1 – Objective 3: Long-term resilience of large mammal populations in the oil sand region is related to limited habitat and food resources affected by existing and planned oil sand development, combined with natural drivers such as climate and vegetation cover change.</p> <p>Hypothesis 2 – Objective 3: Local/regional deposition of atmospheric contaminants affect vegetation diversity, abundance, and distribution.</p> <p>Hypothesis 3 – Objective 3: The abundance and distribution of large mammal populations is affected by spatial vegetation gradients and species diversity across the oil sands region of northern Alberta.</p> <p>Key questions – Objective 4: What are the knowledge gaps in understanding the distribution of large mammals in oil sand region? How could on-going and future projects could be more effectively built on past projects and knowledge?</p>	
<p>Main Assumptions, Constraints, Dependencies. *</p>	<p>– This project is heavily dependent on fieldwork, data collection, data sharing agreements and satellite and aerial imagery.</p> <p>– We assume that existing GIS data and satellite imagery are from reliable sources such as GENESIS, ABMI, etc. and are at appropriate spatial and temporal resolution.</p> <p>– Traditional knowledge is available from Indigenous community members.</p> <p>– Existing devices are reliable sources of data.</p> <p>– Data gaps could be robustly filled.</p> <p>– Various level of ArcGIS and image analysis software licenses will be available for analysis plus additional software and packages, as required.</p>	
<p>Partner Categories (select all that apply) * A partner is an individual, group, agency, community etc. that is an active participant in the project and in achieving the project deliverables.</p>	<p>Knowledge System *</p>	<p>Location (select all that apply) *</p>
<p><input type="checkbox"/> Federal Government <input type="checkbox"/> Another AEP Division <input checked="" type="checkbox"/> Another GoA Department <input checked="" type="checkbox"/> University/Academic Institution <input type="checkbox"/> Solely delivered by GoA <input type="checkbox"/> Citizen Science <input checked="" type="checkbox"/> Indigenous Community or Organization <input type="checkbox"/> ENGO <input type="checkbox"/> Other</p>	<p>Both</p>	<p><input type="checkbox"/> Office or Laboratory <input checked="" type="checkbox"/> Sub-regional <input type="checkbox"/> Transboundary (provincial/territorial) <input checked="" type="checkbox"/> Lower Peace Region <input type="checkbox"/> Upper Peace Region <input type="checkbox"/> North Saskatchewan Region <input type="checkbox"/> Red Deer Region <input checked="" type="checkbox"/> Lower Athabasca Region <input checked="" type="checkbox"/> Upper Athabasca Region</p>
<p>AEP ONLY: Strategic Alignment to EMSD Outcomes</p>		
<p>AEP ONLY: Strategic Alignment to EMSD Science Plan, select 1-2 areas that apply (if Applicable)</p> <p>Ecosystems and Predicting Change Human Relationship with the Environment</p>		
<p>AEP ONLY: Strategic Alignment to AEP Departmental Outcomes</p>		
<p>AEP ONLY: Environmental and Ecosystem Health and Integrity</p>	<p>AEP ONLY: Sustainable Economic Diversity</p>	<p>AEP ONLY: Social Well-Being</p>
<p>Biodiversity</p>	<p>No</p>	<p>No</p>
<p>AEP ONLY: Protected Public Health and Safety from Environmental</p>		
<p>No</p>		

<p>AEP ONLY: IMAG/IMSC Information Needs, Please Specify Which Need(s) is Being Addressed. File location M:\EMSD\Common\Portfolio Mgmt System Shared Docs</p>	<p>Biodiversity # 14. Biodiversity Monitoring: Long-term monitoring of key attributes of biodiversity (terrestrial, lentic, lotic) to assess changes due to various stressors is needed to assess management activities within parks and protected areas. This includes an assessment of sites pre- and post-establishment and will include air, soil, water quality and quantity and lotic connectivity.</p> <p>Biodiversity # 14.2. How do these attributes respond to various stressors and management activities?</p> <p>Biodiversity # 24. Monitoring to Support Moose Lake Management Plan Implementation: To ensure traditional use values related to air, water and biodiversity are maintained in the context of managed development within this zone.</p> <p>Biodiversity # 24.1. What are the traditional intended uses and values related to air, water and biodiversity in the Moose Lake area? Question: What are the threats to traditional intended uses and values related to biodiversity etc.? (e.g., land use footprint in the region) Link to human health, e.g., Deb Hopkins This seems to be a prerequisite to monitoring.</p> <p>Biodiversity # 34. Community Based Monitoring in Support of the Implementation of BMFs: Development of a program that enables the capture and recording of traditional and local ecological knowledge such as types and locations of valued plants or animals (e.g. moose), preferred hunting and harvesting areas, hunting success and meat quality, and changes over time.</p> <p>Biodiversity # 34.1. What is the abundance and distribution of species that are valued by Indigenous community members? Contingent upon identifying the valued ecosystem components.</p> <p>Air # 12. Ecosystem Services: Monitoring attributes of ecosystem services parks and protected areas context. What role do parks and protected areas have in the delivery of ecosystem services in Alberta? What are the key attributes to monitor? How do we monitor and assess those over the long term?</p> <p>Air # 12.1. How does atmospheric deposition impact Ecosystem Services?</p>
<p>AEP ONLY: How This Project Will Address Each Strategic Theme Selected Above.</p>	<p>This project addresses the theme "Environmental and Ecosystem Health and Integrity" by generating knowledge that is relevant to communities, stakeholders, and decision makers.</p>

Project Methodology

<p>List the Key Project Phases and Provide Bullets for Each Major Task Under Each Project Phase.</p>	<p>Phase 1 2018-19 Major Task 1. Co-design Activities A1.1 Identify candidate Indigenous communities interested in collaborating and establish dialogue with Indigenous community collaborators. A1.2 Workshop #1: Large Mammal Monitoring Workshop. Participants include Indigenous community members and scientists. A1.2 Workshop #2: Large Mammal Monitoring Workshop. Participants include Indigenous community members and scientists. Deliverables D1.1 Workshop #1 Report D1.2 Workshop #2 Report D1.3 Draft monitoring plan (Q3 2019-20) Major Task 2. Large mammal knowledge review Activities A2.1 Identify sources of Indigenous knowledge of large mammals in the oil sands region. A2.2 Identify sources of western scientific knowledge of large mammals in the oil sands region. A2.3 Summarize knowledge of large mammals in the region from both of the above sources. (Note that both knowledge systems are acknowledged to have their own internal validation systems. This is not about validating classical scientific knowledge with Indigenous knowledge or vice versa.) Deliverables D2.1 Knowledge Report Major Task 3. Environmental knowledge review Activities A3.1 Identify sources of Indigenous knowledge of environmental factors in the oil sands region. A3.2 Identify sources of western scientific knowledge of environmental factors in the oil sands region. A3.3 Summarize knowledge of large mammals in the region from both of the above sources. (Note</p>
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	<p>that both knowledge systems are acknowledged to have their own internal validation systems. This is not about validating classical scientific knowledge with Indigenous knowledge or vice versa.)</p> <p>Deliverables</p> <p>D3.1 Braided Knowledge Report</p> <p>D3.2 Peer-reviewed article(s) presenting results that identify various oil sand land use footprints and vegetation cover change before and after wildfire and determine their effects on large mammal populations (2 yr. deliverable, 2018-19 and 2019-20).</p> <p>Deliverables</p> <p>Major Task 4. Large mammal monitoring</p> <p>Activities</p> <p>A4.1 Initiate a co-designed (Indigenous community members and scientists) monitoring initiative (2019-20).</p> <p>A4.2 Initiate Moose Health Monitoring Pilot Project</p> <p>A4.3 Initiate Moose Population Monitoring Pilot Project</p> <p>Deliverables</p> <p>D4.1 Co-designed Monitoring Progress Report 2018-19</p> <p>D4.2 Moose Health Progress Report 2018-19</p> <p>D4.3 Moose Population Progress Report 2018-19</p> <p>D4.4 Peer-reviewed article on braiding of traditional knowledge and classical science (camera trap networks, and non-invasive genetic sampling) in understanding of large mammal distribution and abundance in oil sand region of Northern Alberta.</p>
<p>Describe How Changes in Environmental Condition Will Be Assessed. *</p>	<p>Changes in environmental condition will be assessed by repeated measures of selected parameters at multiple times, and comparing values among measurement events.</p>
<p>Are There Benchmarks (e.g., objectives, tiers, triggers, limits, reference conditions, thresholds, etc.) Being Used to Assess Changes in Environmental Condition? If So, Please Describe, If Not, State "NONE". *</p>	<p>None</p>
<p>Provide a Brief Description of the Methods By Project Phase.</p>	<p>Phase 1 2018-19</p> <p>Major Task 1. Co-design</p> <p>Activities</p> <p>A1.1 Identify candidate Indigenous communities interested in collaborating and establish dialogue with Indigenous community collaborators.</p> <p>– 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 Biotic Response of Ungulates to Oil Sands Activity Focus Study (MSDBMD1) and Long-term Monitoring Study (MSDBLTM6) occurring on or near traditional indigenous land and territory.</p> <p>A1.2 Workshop #1: Large Mammal Monitoring Workshop. Participants include Indigenous community members and scientists.</p> <p>A1.2 Workshop #2: Large Mammal Monitoring Workshop. Participants include Indigenous community members and scientists.</p> <p>Deliverables</p> <p>D1.1 Workshop #1 Report</p> <p>D1.2 Workshop #2 Report</p> <p>D1.3 Draft monitoring plan (Q3 2019-20)</p> <p>Major Task 2. Large mammal knowledge review</p> <p>Activities</p> <p>A2.1 Identify sources of Indigenous knowledge of large mammals in the oil sands region.</p> <p>– Concerns related to large mammal populations (e.g., declines in moose populations) by traditional land users (including youth, hunters, trappers, and elders) from Fort McKay First Nation, Fort McMurray Metis, Mikisew Cree First Nation, Athabasca Chipewyan First Nation, Metis local 125, and downstream Indigenous communities in the Slave River Delta.</p> <p>– Reported cases of health of moose (i.e., body condition, disease, quality of meat).</p> <p>A2.2 Identify sources of western scientific knowledge of large mammals in the oil sands region,</p>

including the following sources:

- Biotic Response of Ungulates to Oil Sands Activity (Simon Slater – EMSD Biodiversity and Ecosystem Health Sciences – OSM Focus Study (MSDBMD1))
- Biotic Response of Ungulates to Oil Sands Activity (Simon Slater – EMSD Biodiversity and Ecosystem Health Sciences – OSM Long-term monitoring study (MSDBLTM6))
- Biotic response of focal wildlife species to oil sands activity (Dr. Erin Bayne (UofA, ABMI), OSM Focal Wildlife Project (B-LTM-E-3-1718))
- Species Monitoring via. Camera Traps (Mammals/Birds/Amphibians) in NE AB (Paul Knaga – OPS Fort McMurray – proposed project 2018/19)
- Wildlife CAMERA: Camera Arrays for measuring effects of management responses in Alberta (Dr. Joanna Bugar (UVic/UBC), Dr. Cole Burton (UBC), Dr. Jason Fisher (UVic, InnoTech Alberta))

A2.3 Summarize knowledge of large mammals in the region from both of the above sources. (Note that both knowledge systems are acknowledged to have their own internal validation systems. This is not about validating classical scientific knowledge with Indigenous knowledge or vice versa.)

Deliverables

D2.1 Knowledge Report

Major Task 3. Environmental knowledge review

Activities

A3.1 Identify sources of Indigenous knowledge of environmental factors in the oil sands region.

- Concerns and observations of the impacts of habitat loss and/or degradation, water as a major ecosystem driver (quality/quantity), and prey/predator interactions (i.e., feeding ecology) on large mammal population health.
- Concerns and observations of the impacts of increased industrial contaminants on the health of the animals (both at the individual and population levels), and the quality of the meat most often consumed by Indigenous communities (e.g., moose and muskrat being two of the most common species/country foods discussed).

A3.2 Identify sources of western scientific knowledge of environmental factors in the oil sands region, including the following sources:

- Alberta Biodiversity Monitoring Institute (ABMI): land cover, vegetation cover, human footprint, and mammal distribution inventories
- Alberta Environment and Parks – Genesis: Based data including oil sands region boundaries and developments, roads, seismic lines, water features, wetlands, and imagery
- Alberta Environment and Parks – Geodiscover Alberta: Additional base data
- Forest Health Monitoring Program (Dan Farr – EMSD Biodiversity and Ecosystem Health Sciences – OSM Long-term monitoring study (B-PD-12-1819)): Forest health related to atmospheric depositions and loads of contaminants
- Satellite and orthophoto imagery mosaics: Landsat imagery (NASA Landstat Image Gallery), SPOT (Alberta Environment and Parks – Genesis and Oil Sands and Clean Energy Policy), Air Photos (Alberta Environment and Parks - Clean Energy Policy). The sources of these data are not limited to the above.
- Remote Sensing Wetland Ecosystem Change Detection Method Development (Danielle Cobbaert – EMSD Biodiversity and Ecosystem Health Sciences – OSM Long-term monitoring study (WL-MD-6-1718)): Wetlands boundary delineations using advanced remote sensing techniques
- Wood Buffalo Environmental Association (WBEA): Assessing forest health in the Athabasca oil sands region related to atmospheric depositions and loads of contaminants

Other data and information from:

- Boreal Ecosystem Recovery and Assessment (BERA) Project (<http://www.bera-project.org/>)
- Earth Observation for Oil and Gas (EO4OG) Project (<https://ears-portal.eu>)
- Open Data Area Alberta (opendataareas.ca) of oil sand region (2011 – 2015)

A3.3 Summarize knowledge of large mammals in the region from both of the above sources. (Note that both knowledge systems are acknowledged to have their own internal validation systems. This is not about validating classical scientific knowledge with Indigenous knowledge or vice versa.)

- Identify, acquire, and summarize and evaluate geospatial and image data, and characterize each source in terms of resolution and suitability. Identify data gaps and inaccuracies related to boundaries and overlaps among data from various sources, and provide recommendations to properly fill missing data gaps and address inaccuracies.

Deliverables

D3.1 Braided Knowledge Report

D3.2 Peer-reviewed article(s) presenting results that identify various oil sand land use footprints and vegetation cover change before and after wildfire and determine their effects on large mammal populations (2 yr. deliverable, 2018-19 and 2019-20).

- includes health, behavior, distribution and abundance

Major Task 4. Large mammal monitoring

Activities

A4.1 Initiate a co-designed (Indigenous community members and scientists) monitoring initiative (2019-20).

- Led by Community + EMSD/ECCC

A4.2 Initiate Moose Health Monitoring Pilot Project

- Led by Community + ECCC/EMSD
- Non-invasive population genetics via. moose scat at sites of traditional/cultural importance to determine fecal hormone metabolite levels and contaminants (including Hg). Drawing on in-kind support and capacity from the Alberta Trappers Association and the Alberta Conservation Association, Indigenous and non-Indigenous land users will be recruited and supplied moose scat collection kits.
- Tissue samples from harvested moose in local community will be collected and genotyped against the scat collection to link tissue level information to non-invasively generated health metrics.
- Indigenous knowledge will be documented by linking to a Peace Athabasca Delta Knowledge Keepers App (developed by Mikisew Cree First Nation), and analyzed alongside classical science.

A4.3 Initiate Moose Population Monitoring Pilot Project

- Led by Community + EMSD/ECCC/UBC/UoFA
- Collation of data from population dynamic studies (long term monitoring of ungulates in AB and non-invasive genetic sampling of caribou).
- Effects-based (stressor-response) monitoring design utilizing Automatic Recording Units (ARUs) and Camera Traps.

	<p>Deliverables</p> <p>D4.1 Co-designed Monitoring Progress Report 2018-19</p> <p>D4.2 Moose Health Progress Report 2018-19</p> <p>D4.3 Moose Population Progress Report 2018-19</p> <p>D4.4 Peer-reviewed article on braiding of traditional knowledge and classical science (camera trap networks, and non-invasive genetic sampling) in understanding of large mammal distribution and abundance in oil sand region of Northern Alberta.</p>
List the Key Indicators Measured. *	Key indicators include large mammal population size and trends, behaviour, and health. Further details to be developed.
Describe Sample Handling Procedures, if Not Applicable, State N/A. *	N/A
List SOPs that Will Be Used, if Not Applicable, State N/A.*	To be developed
Describe the QA/QC Plan, if Not Applicable, State N/A. *	To be developed
Describe How Indigenous Communities are Involved in the Project Design, Data Collection, and Analysis (Knowledge Co-creation) and How is their Consent Sought. If Not Applicable, State N/A.*	Indigenous communities that participate in this project will be invited to be involved at every stage (design, data collection, analysis). Consent will be acquired prior to the commencement of a given stage.
Components Delivered by Others	
List by Project or Project Phase Each Component That Will Be Delivered by An External Party (including analytical laboratories) and Name the Party. State None if Not Required. *	<p>Shared via. data sharing agreement:</p> <p>Wildlife CAMERA: Camera Arrays for measuring effects of management responses in Alberta (Dr. Joanna Burgar (UVic/UBC), Dr. Cole Burton (UBC), Dr. Jason Fisher (UVic, InnoTech Alberta))</p> <p>Biotic response of focal wildlife species to oil sands activity (Dr. Erin Bayne (UofA, ABMI), OSM Focal Wildlife Project (B-LTM-E-3-1718))</p>
Will These Components be Delivered Under Grant or Contract or Both? Please Describe and Name the Associate Work Plan/Grant/Contract for These Services if Not Included Within This Work Plan. *	Grants to support projects: (1) Wildlife CAMERA: Camera Arrays for measuring effects of management responses in Alberta lead by Dr. Joanna Burgar (UVic/UBC), Dr. Cole Burton (UBC), Dr. Jason Fisher (UVic, InnoTech Alberta), and (2), Moose Health Monitoring Pilot Project led by community and jointly by EMSD and ECCC (Philippe Thomas).
Monitoring Site Locations and Coordinates (for all sites, please add them to the Monitoring Site Location tab - a separate excel sheet)	
Attach Map of Locations. Distinguish Indicators by Station if Necessary. Distinguish Sampling Frequency by Station if Necessary.	Stations to be identified in 2018-19
Project Schedule	
FOR OIL SANDS MONITORING PROJECTS ONLY: A coordinated field monitoring schedule for the OSM Program is required. Please complete the attached document named "OSM Program Field Monitoring Schedule" in addition to this work plan. Fill as much as you can recognizing that scheduling changes will occur and the scheduling document will be updated regularly. Please note the scheduling document will be shared with stakeholders.	See Phase 1 - To be determined
FOR OIL SANDS MONITORING PROJECTS ONLY: Have You Coordinated With Other Project Leads On Field Logistics? If So, Please Specify. *	

Other		
Additional Details.	N/A	
Will Capacity Building and Training be a Component of the Project and If So, Explain How. If Not, State N/A.*	Appropriate training opportunities will be provided to all project participants, including Indigenous community members involved in project design and delivery.	
Environmental Impact and Considerations.	N/A	
Data Management and Digital Assets		
Will Data be Produced as a Result Of This Project? *	Type of Quantitative Data Variables	Frequency Of Collection
Yes	Other	Other
Data Collection Period: Start Date - End Date	Timeline For Upload Period: Start Date - End Date	
01/05/18 - 31/03/21	01/05/19 - 31/03/22	
Is There a Data Sharing Agreement? (Yes or No).	Yes	
Will the Data Include Traditional Knowledge as Defined by and Provided by an Indigenous Representative, Community or Organization (Yes / No).	Yes	
Platform/Location of Data Storage.	EMSD M Drive	
Project Deliverables		
Proposed 2018-19 Deliverable Type (for each deliverable outline document, presentation, meeting, etc.)		
<input type="checkbox"/> Peer-reviewed Journal Publication	<input checked="" type="checkbox"/> Peer-reviewed Conference Proceeding	<input type="checkbox"/> Non-peer reviewed Conference Proceeding
Q1 - Deliverable, Comments	Q1 - Deliverable, Comments	Q1 - Deliverable, Comments
Q2 - Deliverable, Comments	Q2 - Deliverable, Comments	Q2 - Deliverable, Comments
Q3 - Deliverable, Comments	Q3 - Deliverable, Comments	Q3 - Deliverable, Comments
Q4 - Deliverable, Comments	Q4 - Deliverable, Comments	Q4 - Deliverable, Comments
Application of a Multiple Evidence Based approach to monitoring the response of large mammals to development: Case Study in Alberta's Oil Sands Region (methods/design paper for submission to a journal TBA)		
<input type="checkbox"/> Technical Report	<input type="checkbox"/> Book Chapter	<input type="checkbox"/> Public Dissemination Document
Q1 - Deliverable, Comments	Q1 - Deliverable, Comments	Q1 - Deliverable, Comments

Q2 - Deliverable, Comments	Q2 - Deliverable, Comments	Q2 - Deliverable, Comments
Q3 - Deliverable, Comments	Q3 - Deliverable, Comments	Q3 - Deliverable, Comments
Summary of spatial data available to characterize stressors that may impact large mammals in the oil sands region		
Q4 - Deliverable, Comments	Q4 - Deliverable, Comments	Q4 - Deliverable, Comments
Summary of mammal monitoring and research activities in the oil sands region relevant to understanding the response of large mammals to oil sands development		
<input type="checkbox"/> Conference Presentation(s)	<input type="checkbox"/> Stakeholder Presentation	<input type="checkbox"/> Key Engagement/Participation Meeting *
Q1 - Deliverable, Comments	Q1 - Deliverable, Comments	Q1 - Deliverable, Comments
Choose one	Choose one	Name of Meeting, Year, Location, Dates, Participant Groups and Number of Participants.
Q2 - Deliverable, Comments	Q2 - Deliverable, Comments	Q2 - Deliverable, Comments
Choose one	Choose one	Name of Meeting, Year, Location, Dates, Participant Groups and Number of Participants.
Q3 - Deliverable, Comments	Q3 - Deliverable, Comments	Q3 - Deliverable, Comments
Choose one	Choose one	Name of Meeting, Year, Location, Dates, Participant Groups and Number of Participants.
Q4 - Deliverable, Comments	Q4 - Deliverable, Comments	Q4 - Deliverable, Comments
Choose one	Choose one	Name of Meeting, Year, Location, Dates, Participant Groups and Number of Participants.
		Large Mammal Monitoring Workshop, 2018, Dates TBA, Participants including Indigenous community members and scientists (estimate 70 participants total)
<input type="checkbox"/> EMSD Strategic & Operational Publication	<input type="checkbox"/> Other Documents	
Q1 - Deliverable, Comments	Q1 - Deliverable, Comments	
Q2 - Deliverable, Comments	Q2 - Deliverable, Comments	
Q3 - Deliverable, Comments	Q3 - Deliverable, Comments	
Q4 - Deliverable, Comments	Q4 - Deliverable, Comments	

Proposed Deliverables After 2018/2019 for the project funds received in 2018/2019		
<input type="checkbox"/> Peer-reviewed Journal Publication	<input type="checkbox"/> Peer-reviewed Conference Proceeding	<input type="checkbox"/> Non-peer reviewed Conference Proceeding
Q1 - Deliverable, Comments	Q1 - Deliverable, Comments	Q1 - Deliverable, Comments
Q2 - Deliverable, Comments	Q2 - Deliverable, Comments	Q2 - Deliverable, Comments
Q3 - Deliverable, Comments	Q3 - Deliverable, Comments	Q3 - Deliverable, Comments
Q4 - Deliverable, Comments	Q4 - Deliverable, Comments	Q4 - Deliverable, Comments
<input type="checkbox"/> Technical Report	<input type="checkbox"/> Book Chapter	<input type="checkbox"/> Public Dissemination Document
Q1 - Deliverable, Comments	Q1 - Deliverable, Comments	Q1 - Deliverable, Comments
Q2 - Deliverable, Comments	Q2 - Deliverable, Comments	Q2 - Deliverable, Comments
Q3 - Deliverable, Comments	Q3 - Deliverable, Comments	Q3 - Deliverable, Comments
Q4 - Deliverable, Comments	Q4 - Deliverable, Comments	Q4 - Deliverable, Comments
<input type="checkbox"/> Conference Presentation(s)	<input type="checkbox"/> Stakeholder Presentation	<input type="checkbox"/> Key Engagement/Participation Meeting *
Q1 - Deliverable, Comments	Q1 - Deliverable, Comments	Q1 - Deliverable, Comments
Choose one	Choose one	Name of Meeting, Year, Location, Dates, Participant Groups and Number of Participants.
Q2 - Deliverable, Comments	Q2 - Deliverable, Comments	Q2 - Deliverable, Comments
Choose one	Choose one	Name of Meeting, Year, Location, Dates, Participant Groups and Number of Participants.

Q3 - Deliverable, Comments	Q3 - Deliverable, Comments	Q3 - Deliverable, Comments
Choose one	Choose one	Name of Meeting, Year, Location, Dates, Participant Groups and Number of Participants.
Q4 - Deliverable, Comments	Q4 - Deliverable, Comments	Q4 - Deliverable, Comments
Choose one	Choose one	Name of Meeting, Year, Location, Dates, Participant Groups and Number of Participants.
<input type="checkbox"/> EMSD Strategic & Operational Publication	<input type="checkbox"/> Other Documents	
Q1 - Deliverable, Comments	Q1 - Deliverable, Comments	
Q2 - Deliverable, Comments	Q2 - Deliverable, Comments	
Q3 - Deliverable, Comments	Q3 - Deliverable, Comments	
Q4 - Deliverable, Comments	Q4 - Deliverable, Comments	
OSM Large Mammal Monitoring program Annual Progress Report		
All Completed Products if a		
multi-year project, specify all completed products to date (consistent format for the fields below). Add rows as required.		
Journal Paper		
Required Format: Author (follow APA citation format), Year, Title, Journal, Volume, Page Numbers, Open or Closed and Document Location		
Example: Jacoby, W. G. (1994). Public Attitudes Toward Government Spending. American Journal of Political Science, 38(2), 336-361.		
Fearon, J. D., & Laitin, D. D. (2003). Ethnicity, Insurgency, and Civil War. American Political Science Review, 97(01), 75. doi: 10.1017/S0003055403000534		
1)		
2)		
3)		
4)		
5)		
Technical Report		
Required Format: Author, Year, Title, Publisher Location, Name of Publisher, Publisher, Document Location		
Example: Author, F.M. (Publication Year). Title of Report (Report No. XXX). Publisher City, State: Publisher		
1)		
2)		
3)		
4)		
5)		
Book Chapter		
Required Format: Author, Year, Title of Paper, Editors, Title of Book, Page Numbers, Location of Publisher, Name of Publisher, Document Location		
Example: Hemingway, E. (1999). The Killers. In J. Updike & K. Kenison (Eds.), The Best American Short Stories of the Century (pp.78-80). Boston, MA: Houghton Mifflin)		
1)		
2)		
3)		
4)		

5)
Conference Proceeding
Required Format: Author, Year, Title of Paper, Editors, Title of Proceedings, Name of Conference Location of Conference, Publisher Location, Name of
Example: Author of Paper, A., & Author of Paper, B. (Year, Month date). Title of Paper. In A. Editor, B. Editor, & C. Editor. Title of Published Proceedings. Paper Presented at Title of Conference: Subtitle of Conference, Location (inclusive page numbers). Place of Publication: Publisher.)
1)
2)
3)
4)
5)
Public Dissemination Document
Required Format: Author, Year, Title, Journal / Report, Volume, Publisher, Page Number, Number of Pages, Document Location
1)
2)
3)
4)
5)
AEP ONLY: EMSD Strategic and Operational Publication
Required Format: Author, Year, Title, Publisher Location, Name of Publisher, Publisher, Document Location
1)
2)
3)
4)
5)
Other Documents
Detailed Information of Other Documents
1)
2)
3)
4)
5)
Conference Presentation
Required Format: Presenter, Date, Location, Title, Platform or Poster, Conference Name
1)
2)
3)
4)
5)
Stakeholder Presentation
Required Format: Presenter, Date, Location, Title, Platform or Poster, Name of Meeting
1)
2)
3)
4)
5)
Key Engagement/Participation Meeting
Required Format: Meeting Host, Date, Location
1)
2)
3)
4)
5)

Human Resources / Staffing Plan (roles and responsibilities)		
Name & Role	Organization	Responsibilities
Dan Farr (Lead)	AEP-EMSD	Provide project oversight and guidance.
Agnieszka Sztaba	AEP-EMSD	Project coordination, support for development of biodiversity components of project and deliverable

Mina Nasr	AEP-EMSD	Geospatial analysis and information needs assessment.
Simon Slater	AEP-EMSD	Co-ordinate project.
Brett Sarchuk	AEP-EMSD	Assist with project field work.
Andrew Braid	AEP-EMSD	Assist with project field work.
Tracy Howlett	AEP-EMSD	Facilitate and maintain effective relationships between EMSD staff and Indigenous community members
Krista Tremblett	AEP-EMSD	Facilitate and maintain effective relationships between EMSD staff and Indigenous community members
Indigenous Relations Advisor	AEP-EMSD	Assist with establishment of effective relationships between EMSD staff and Indigenous community members
George Sutherland	AEP-EMSD	Assist with project reporting.
Jason Fisher	UVic and Innotech	Co-lead on Wildlife CAMERA project - provide advise on mammal datasets obtained from Wildlife CAMERA
Cole Burton	UBC	Co-lead on Wildlife CAMERA project - provide advise on mammal datasets obtained from Wildlife
Joanna Burgar	UVic and UBC	Field and Technical Lead on Wildlife CAMERA project - provide technical assistance and advise on mammal
Phillippe Thomas	ECCC	Field and Technical Lead on Moose Health Monitoring Pilot Project - provide technical assistance and advise on
Erin Bayne	UofA/ABMI	Lead OSM Focal Wildlife Project - Provide and advise on mammal datasets obtained from OSM Focal Wildlife
Paul Knaga	AEP-OPS	Provide camera trap (CT) data from NE Alberta (Lower Athabasca Region)

AEP ONLY: Additional Human Resources Required from EMSD

Name & Role	Branch - Section	Estimated time (% of annual FTE)	Estimated Salary Range
New Hire (Temporary Salary) - Biodiversity Scientist	EMSD - Biodiversity Ecosystem	50	\$90,000 - \$110,000 (including 25 to cover benefits)
Agnieszka Sztaba – Terrestrial Biologist	EMSD - Biodiversity Ecosystem	15	\$90,000 - \$110,000 (including 25 to cover benefits)
Mina Nasr – GeoSpatial Scientist	EMSD - Biodiversity Ecosystem	30	\$90,000 - \$110,000 (including 25 to cover benefits)
Simon Slater – Terrestrial Ecologist	EMSD - Biodiversity Ecosystem	10	\$90,000 - \$110,000 (including 25 to cover benefits)
Brett Sarchuk – Terrestrial Biologist	EMSD - Biodiversity Ecosystem	15	\$90,000 - \$110,000 (including 25 to cover benefits)
Andrew Braid – Terrestrial Biologist	EMSD - Biodiversity Ecosystem	15	\$90,000 - \$110,000 (including 25 to cover benefits)
			Choose one
			Choose one
New Hire (Temporary Salary) - Indigenous Relations Advisor	EMSD-ICBMCS	50	\$90,000 - \$110,000 (including 25 to cover benefits)
			Choose one

Financial Details and Budget Request

Source of Funding Requested Year 1 - 2018/19		
	AEP ONLY: EMSD	OSM
Salaries and Benefits - AEP Chargeback		89250
Salaries and Benefits - New OSM Staff		105000
Operations and Maintenance		8000
Consumable materials and supplies		2000
Conferences and meetings travel		20000
Field work travel		13000
Project-related travel		5000
Engagement		8000
Reporting		2000
External Contracts - Organization/Vendor/Suppliers		146000
Overhead		0
Grants		70000
Capital		0
Total budget request for the year	0	468250
Total budget approved		
Source of Funding Requested Year 2 - 2019/20		
	AEP ONLY: EMSD	OSM
Salaries and Benefits - AEP Chargeback		203500
Salaries and Benefits - New OSM Staff		TBD
Operations and Maintenance		8000
Consumable materials and supplies		2000
Conferences and meetings travel		20000
Field work travel		13000
Project-related travel		5000
Engagement		8000
Reporting		2000
External Contracts - Organization/Vendor/Suppliers		146000
Overhead		0
Grants		70000
Capital		0
Total budget request for the year	0	477500
Total budget approved		
Source of Funding Requested Year 3 - 2020/21		
	AEP ONLY: EMSD	OSM
Salaries and Benefits - AEP Chargeback		203500
Salaries and Benefits - New OSM Staff		TBD
Operations and Maintenance		8000
Consumable materials and supplies		2000
Conferences and meetings travel		20000
Field work travel		13000
Project-related travel		5000
Engagement		8000
Reporting		2000
External Contracts - Organization/Vendor/Suppliers		146000
Overhead		0
Grants		70000
Capital		0
Total budget request for the year	0	477500
Total budget approved		
Source of Funding Requested Year 4 - 2021/22		
	AEP ONLY: EMSD	OSM
Salaries and Benefits - AEP Chargeback		203500
Salaries and Benefits - New OSM Staff		TBD

Operations and Maintenance		8000
Consumable materials and supplies		2000
Conferences and meetings travel		20000
Field work travel		13000
Project-related travel		5000
Engagement		8000
Reporting		2000
External Contracts - Organization/Vendor/Suppliers		146000
Overhead		0
Grants		70000
Capital		0
Total budget request for the year	0	477500
Total budget approved		
Budget Request for the Entire Project	0	1,900,750

Project Approval(s)

Proposal Submitted by

Surname	Given Name	Organization
Farr	Dan	EMSD
	Date	
	12/2/2018	

X

Dan Farr
Director, Biodiversity and Ecosystem Health ...

Proposal for OSM Reviewed by

EMSD Executive Director	Signature	Date
Bill Donahue		12/2/2018
AEP Administrator/Coordinator - Review	Signature	Date
	X Dan Farr, for Bill Donahue Director, Biodiversity and Ecosystem Health ...	
ECCC Administrator/Coordinator - Review	Signature	Date

OSM Project Approved by

AEP Co-Lead for OSM	Signature	Date
ECCC Co-Lead for OSM	Signature	Date

AEP ONLY: Proposal for EMSD Reviewed by

EMSD Director	Signature	Date
Dan Farr		19/01/18

AEP ONLY: EMSD Project Approved by

EMSD Executive Director	Signature	Date
EMSD Chief Scientist	Signature	Date

OSM / EMSD Project Has Not Been Approved

Project Status	Date Notified	Date Required
The project is conditionally approved. The following conditions are required before approval is granted.		
List the Condition(s)		
Condition(s) Addressed / Approval Granted		
Choose one		

OSM / EMSD Approval Post Removal of Condition(s)

Name & Title	Signature	Date

Financial Details and Budget Request**Source of Grant Requested Year 1 - 2018/19**

	AEP ONLY: EMSD	OSM
Salaries and Benefits		0
Operations and Maintenance		0
Consumable materials and supplies		0
Conferences and meetings travel		0
Field work travel		0
Project-related travel		0
Engagement		0
Reporting		0
Organization/Vendor/Suppliers - Rotary Wing Services		20000
Overhead		0
Grants		0
Capital		0
Total budget request for the year	0	20000

*Wildlife CAMERA: Camera Arrays for measuring effects of management responses in Alberta lead by Dr. Joanna Burgar (UVic/UBC), Dr. Cole Burton (UBC), Dr. Jason Fisher (UVic, InnoTech Alberta)

Financial Details and Budget Request**Source of Grant Requested Year 2 - 2019/20**

	AEP ONLY: EMSD	OSM
Salaries and Benefits		0
Operations and Maintenance		0
Consumable materials and supplies		0
Conferences and meetings travel		0
Field work travel		0
Project-related travel		0
Engagement		0
Reporting		0
External Contracts - Organization/Vendor/Suppliers - Rotary Wing Services		20000
Overhead		0
Grants		0
Capital		0
Total budget request for the year	0	20000

*Wildlife CAMERA: Camera Arrays for measuring effects of management responses in Alberta lead by Dr. Joanna Burgar (UVic/UBC), Dr. Cole Burton (UBC), Dr. Jason Fisher (UVic, InnoTech Alberta)

Financial Details and Budget Request**Source of Grant Requested Year 3 - 2020/21**

	AEP ONLY: EMSD	OSM
Salaries and Benefits		0
Operations and Maintenance		0
Consumable materials and supplies		0
Conferences and meetings travel		0
Field work travel		0
Project-related travel		0
Engagement		0
Reporting		0
External Contracts - Organization/Vendor/Suppliers - Rotary Wing Services		20000
Overhead		0
Grants		0
Capital		0
Total budget request for the year	0	20000

*Wildlife CAMERA: Camera Arrays for measuring effects of management responses in Alberta lead by Dr. Joanna Burgar (UVic/UBC), Dr. Cole Burton (UBC), Dr. Jason Fisher (UVic, InnoTech Alberta)

Financial Details and Budget Request**Source of Grant Requested Year 4 - 2021/22**

	AEP ONLY: EMSD	OSM
Salaries and Benefits		0
Operations and Maintenance		0

Consumable materials and supplies		0
Conferences and meetings travel		0
Field work travel		0
Project-related travel		0
Engagement		0
Reporting		0
External Contracts - Organization/Vendor/Suppliers - Rotary Wing Services		20000
Overhead		0
Grants		0
Capital		0
Total budget request for the year	0	20000

*Wildlife CAMERA: Camera Arrays for measuring effects of management responses in Alberta lead by Dr. Joanna Bugar (UVic/UBC), Dr. Cole Burton (UBC), Dr. Jason Fisher (UVic, InnoTech Alberta)

Financial Details and Budget Request**Source of Grant Requested Year 1 - 2018/19**

	AEP ONLY: EMSD	OSM
Salaries and Benefits		0
Operations and Maintenance		0
Consumable materials and supplies (collection kits, reagents, etc)		8000
Conferences and meetings travel		0
Field work travel		0
Project-related travel		0
Engagement		0
Reporting		0
External Contracts - Organization/Vendor/Suppliers (for genetic analyses and analyses to produce health measures)		42000
Overhead		0
Grants		0
Capital		0
Total budget request for the year	0	50000

*Moose Health Monitoring Pilot Project led by community and jointly by EMSD and ECCC (Philippe Thomas).

Financial Details and Budget Request**Source of Grant Requested Year 2 - 2019/20**

	AEP ONLY: EMSD	OSM
Salaries and Benefits		0
Operations and Maintenance		0
Consumable materials and supplies (collection kits, reagents, etc)		8000
Conferences and meetings travel		0
Field work travel		0
Project-related travel		0
Engagement		0
Reporting		0
External Contracts - Organization/Vendor/Suppliers (for genetic analyses and analyses to produce health measures)		42000
Overhead		0
Grants		0
Capital		0
Total budget request for the year	0	50000

*Moose Health Monitoring Pilot Project led by community and jointly by EMSD and ECCC (Philippe Thomas).

Financial Details and Budget Request**Source of Grant Requested Year 3 - 2020/21**

	AEP ONLY: EMSD	OSM
Salaries and Benefits		0
Operations and Maintenance		0
Consumable materials and supplies (collection kits, reagents, etc)		8000
Conferences and meetings travel		0
Field work travel		0
Project-related travel		0
Engagement		0
Reporting		0
External Contracts - Organization/Vendor/Suppliers (for genetic analyses and analyses to produce health measures)		42000
Overhead		0
Grants		0
Capital		0
Total budget request for the year	0	50000

*Moose Health Monitoring Pilot Project led by community and jointly by EMSD and ECCC (Philippe Thomas).

Financial Details and Budget Request

Source of Grant Requested Year 4 - 2021/22		
	AEP ONLY: EMSD	OSM
Salaries and Benefits		0
Operations and Maintenance		0
Consumable materials and supplies (collection kits, reagents, etc)		8000
Conferences and meetings travel		0
Field work travel		0
Project-related travel		0
Engagement		0
Reporting		0
External Contracts - Organization/Vendor/Suppliers (for genetic analyses and analyses to produce health measures)		42000
Overhead		0
Grants		0
Capital		0
Total budget request for the year	0	50000

*Moose Health Monitoring Pilot Project led by community and jointly by EMSD and ECCC (Philippe Thomas).

Financial Details and Budget Request**Source of Contract Requested Year 1 - 2018/19**

	AEP ONLY: EMSD	OSM
Salaries and Benefits		0
Operations and Maintenance		146000
Consumable materials and supplies		0
Conferences and meetings travel		0
Field work travel		0
Project-related travel		0
Engagement		0
Reporting		0
External Contracts -		0
Overhead		0
Grants		0
Capital		0
Total budget request for the year	0	146000

*Contract for the use of aircraft complete with aircrew to provide transportation for the program. Contract will be tendered using Alberta Purchasing Connection.

Financial Details and Budget Request**Source of Contract Requested Year 2 - 2019/20**

	AEP ONLY: EMSD	OSM
Salaries and Benefits		0
Operations and Maintenance		146000
Consumable materials and supplies		0
Conferences and meetings travel		0
Field work travel		0
Project-related travel		0
Engagement		0
Reporting		0
External Contracts -		
Organization/Vendor/Suppliers		0
Overhead		0
Grants		0
Capital		0
Total budget request for the year	0	146000

*Contract for the use of aircraft complete with aircrew to provide transportation for the program. Contract will be tendered using Alberta Purchasing Connection.

Financial Details and Budget Request**Source of Contract Requested Year 3 - 2020/21**

	AEP ONLY: EMSD	OSM
Salaries and Benefits		0
Operations and Maintenance		146000
Consumable materials and supplies		0
Conferences and meetings travel		0
Field work travel		0
Project-related travel		0
Engagement		0
Reporting		0
External Contracts -		
Organization/Vendor/Suppliers		0
Overhead		0
Grants		0
Capital		0
Total budget request for the year	0	146000

*Contract for the use of aircraft complete with aircrew to provide transportation for the program. Contract will be tendered using Alberta Purchasing Connection.

Financial Details and Budget Request**Source of Contract Requested Year 4 - 2021/22**

	AEP ONLY: EMSD	OSM
Salaries and Benefits		0
Operations and Maintenance		146000
Consumable materials and supplies		0
Conferences and meetings travel		0
Field work travel		0

Project-related travel		0
Engagement		0
Reporting		0
External Contracts - Organization/Vendor/Suppliers		0
Overhead		0
Grants		0
Capital		0
Total budget request for the year	0	146000

*Contract for the use of aircraft complete with aircrew to provide transportation for the program. Contract will be tendered using Alberta Purchasing Connection.