

2018-19 Work Plan Template

All fields with an * are mandatory

Project Description Summary			Co-Chair Decision
Date *	Project/Work Plan Identifier (if applicable)	Program Type and Strategic Alignment *	<p>* Decision Pool A: Workplan approved. * Approved at \$1,197,990</p> <p>* It is a requirement of funding that the project produce the transition plan for this monitoring station in the community of Fort McKay and identify the role of this station in the regional monitoring network. This includes consideration of this station in the network optimization exercise (project A-PD-3-1819).</p> <p>*Funding expectations: as a minimum an annual progress report is required by February 28, 2019. All publications or products resulting from this work requires acknowledgement of funding from the Oil Sands Monitoring Program and are to be provided to the Oil Sands Monitoring Secretariat for tracking and any programmatic communications purposes. Work funded through the Oil Sands Program will be available for public dissemination.</p>
6/15/2018	A-PD-5-1819	OSM - Focus Study	
Program Category *	Status *	Dept. ID	
Air/Atmosphere/Climate	Existing Project		
Project Leadership / Contact information			
Project Title *	Key Words (max 10) *		
Atmospheric Process Research – Enhanced Ground-Based Monitoring – Oski-ötin monitoring site	Total reduced Sulphur (TRS), Total Sulphur (TS) Volatile Organic Compounds (VOCs), vertical profiles, satellite remote sensing, particle chemistry, odour, Fort McKay community, numerical air quality prediction modelling, atmospheric processes, source apportionment		
Surname *	Given Name *	Title *	
Cober	Stewart	Section Manager	
Organization *	Department	Division	
ECCC			
Branch *	Section/Unit (if applicable)	Phone *	
ASTD		(416) 739-4618	
Email *	Mailing Address	City	
Stewart.Cober@canada.ca	4905 Dufferin Street	Toronto	
Postal Code	EMSD Executive Owner (If Applicable)		
M3H 5T4			
Project Information			
Project Objective(s) (Bullet Form) *	<p>The project can be divided into two main objectives:</p> <ul style="list-style-type: none"> * Monitoring Design and Method Improvement * Investigation of Cause or Potential Ecological Impact 		
Plain Language Overview (100 words) *	<p>Enhanced ground-based monitoring was initiated in partnership with Fort McKay First Nation in August 2013 after joint planning for the year prior. A key part of this project has been the ongoing ability for both ECCC-AQRD and Fort McKay Sustainability Department to observe the levels a wide range of air pollutants in near real-time. This allows for a quick diagnosis of what pollutants are contributing to odour events and other episodes, what their levels are and the meteorological conditions. This monitoring is a core component of the Oil Sands Monitoring program in that it is the only long-term set of comprehensive measurements of air pollutants and meteorology in close proximity to the main oil sands operations and is critical to maintain to allow sufficient data for robust statistics of air quality and to uphold agreements with the Fort McKay. The Oski-ötin site, which is the name given by Fort McKay, also provides a base for expansion of measurements either to explore specific research questions through short-term measurements or to introduce improved monitoring technologies.</p>		
Project Duration *	Project Original Start Date *	Estimated Completion Date *	
Multi-Year	7/1/2013	3/31/2021	
Specify Objectives This Project Will Address in 2018/2019. *	<p>Monitoring Design and Method Improvement:</p> <ol style="list-style-type: none"> 1) Delivery of a fast resolution, comprehensive long-term dataset; 2) Provide broad access to our stakeholders and the public by a weekly upload of the level 1 data to the oil sands (OS) portal; 3) Completed evaluation of new measurement methods for long term monitoring and potential technology transfer for the following species: total sulphur (TS) and total reduced sulphur (TRS) and VOC and PM semi continuous speciation; 4) Evaluation of new continuous methods for non-methane hydrocarbons (NMHC), VOC species and total peroxy radicals; 5) Completed evaluation of a new method for observing vertical ozone profiles 		
Specify Objectives This Project Will Address Beyond 2018/19 (if multi-year). *	<p>Monitoring Design and Method Improvement:</p> <ol style="list-style-type: none"> 1) Improved understanding of the vertical structure and column NO2 and SO2 on local and regional scales; 2) Improve our understanding of processes on a local scale through data interpretation and GEM-MACH model predictions; 3) Improve local and regional understanding of transport and transformation of air pollutants from source to ambient; <p>Investigation of Cause or Potential Ecological Impact:</p> <ol style="list-style-type: none"> 4) Detailed characterization of acute air quality events through integration of measurement data and high resolution air quality model output; 5) Assess the impact of pollutants by acquiring long term trends on key chemical species combined with modelling efforts to improve our understanding of the fate of the emissions in the oil sands (OS) region. 		

<p>List Key Questions/Hypotheses Related to Each Objective Stated Above. *</p>	<p>H1) Multi-year comprehensive air quality measurements provide seasonality and detailed information on air pollutant mixtures associated with a wide range of oil sands related activities. H2) Multi-dimensional, particle, gas-phase chemistry, meteorological, and vertical structure measurements provide critical information to evaluate the performance of the Global Environmental Multiscale – Modelling Air-quality and Chemistry (GEM-MACH) numerical air quality prediction model. H3) Remote sensing technology provides useful tools to understand local to regional scale three-dimensional (3D) atmospheric transport processes (e.g. LIDAR (Light Detection and Ranging), satellite, Wind RASS (Radio Acoustic Sounding System)). H4) Source apportionment of volatile organic compounds (VOC), reduced sulphur and fine particulate matter (PM2.5) can be refined through concurrent comprehensive multi-pollutant (gas and particle) and meteorological measurements at Oski-ötin. H5) The cause of acute air quality (AQ) events, including odour events, in the local oil sands area can be better understood through concurrent measurements of surface and vertical chemistry and meteorology and integrated sampling.</p>	
<p>Main Assumptions, Constraints, Dependencies. *</p>	<p>* We assume that the constraints limiting the frequent posting of data to the portal can be overcome so that a mechanism for posting regular data at weekly or more frequent intervals will be possible. Widely accessible near real-time Oski-ötin data also depends upon very regular staffing availability to produce the dataset. * Related to data accessibility, is the capacity to quality assure/quality control (QA/QC) new data. The total number of compounds MSC is now measuring has increased and this will add to the amount of time needed to QA/QC the new data. To address this MSC has been developing new software and collection of new field data will be suspended for FY 2018-19 so that the available staff can focus on completing the AMS01 and Oski-ötin dataset. * Sufficient time is required to gather a minimum of five years of quality data from each of the monitoring instrument platforms in order to draw firm conclusions about seasonal patterns and the relationship between local meteorology and movement of air pollutants. 2018 represents the fifth year and thus the proposed research is on track to deliver a unique multi-dimensional database for a wide range of data analyses and model evaluation work.</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 checked="" type="checkbox"/> Federal Government <input checked="" type="checkbox"/> Another AEP Division <input type="checkbox"/> Another GoA Department <input type="checkbox"/> University/Academic Institution <input type="checkbox"/> Solely delivered by GoA <input type="checkbox"/> Citizen Science <input type="checkbox"/> Indigenous Community or Organization <input type="checkbox"/> ENGO <input type="checkbox"/> Other</p>	<p>Classical Science</p>	<p><input checked="" type="checkbox"/> Office or Laboratory <input type="checkbox"/> Sub-regional <input type="checkbox"/> Transboundary (provincial/territorial) <input 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) Choose one Choose one</p>		
<p>AEP ONLY: Strategic Alignment to AEP Departmental Outcomes</p>		
<p>AEP ONLY: Environmental and Ecosystem Health and Integrity Choose one</p>	<p>AEP ONLY: Sustainable Economic Diversity Choose one</p>	<p>AEP ONLY: Social Well-Being Choose one</p>
<p>AEP ONLY: Protected Public Health and Safety from Environmental Choose one</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>AEP ONLY: How This Project Will Address Each Strategic Theme Selected Above.</p>		
<p>Project Methodology</p>		

List the Key Project Phases and Provide Bullets for Each Major Task Under Each Project Phase. *	<p>Phase 1: Testing H1 (Multi-year comprehensive air quality measurements provide seasonality and detailed information on air pollutant mixtures associated with a wide range of oil sands related activities.)</p> <p>Phase 2: Testing H2 (Multi-dimensional, particle, gas-phase chemistry, meteorological, and vertical structure measurements provide critical information to evaluate the performance of the Global Environmental Multiscale – Modelling Air-quality and Chemistry (GEM-MACH) numerical air quality prediction model.)</p> <p>Phase 3: Testing H3 (Remote sensing technology provides useful tools to understand local to regional scale 3D atmospheric transport processes (e.g., LIDAR, satellite, WIND RASS))</p> <p>Phase 4: Testing H4 (Source apportionment of VOC, reduced sulphur and PM2.5 can be refined through concurrent comprehensive multi-pollutant (gas and particle) and meteorological measurements at Oski-ötin.)</p> <p>Phase 5: Testing H5 (The cause of acute AQ events, including odour events, in the local oil sands area can be better understood through concurrent measurements of surface and vertical chemistry and meteorology and integrated sampling.)</p>
Describe How Changes in Environmental Condition Will Be Assessed. *	Multi-year comprehensive air quality measurements provide seasonality and detailed information on air pollutant mixtures associated with a wide range of oil sands related activities.
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". *	NONE
Provide a Brief Description of the Methods By Project Phase. *	<p>Phase 1: * The core component of the work is the continued operation of a comprehensive suite of measurements at the Oski-ötin site in Fort McKay, AB.</p> <p>* Four methodological advances will be pursued in 2018-19 including: 1) ECCC-AQRD will develop a more sensitive and precise approach for measuring the sum of all non-methane hydrocarbons (NMHC). 2) ECCC-AQRD will develop a new method to measure total peroxy radicals. 3) ECCC-MSC will develop a more-portable system, based upon GC/PID, for measurement of VOC species. 4) AEP will also explore some potential new methods for both short-term (VOC Study) and long-term deployment, involving the use of low cost sensors.</p> <p>Phase 2: Local scale model runs will be undertaken to evaluate the model's capability in predicting the atmospheric fate of emissions, using the Oski-ötin data to validate and constrain the model output.</p> <p>Phase 3: ECCC has deployed a new ozone (O3) LIDAR system to the site. These new data are being used to explore O3 and PM2.5 transport patterns from the hemispheric scale (e.g., upper troposphere) to the local scale (plume mixing from oil sands stacks). An addition to the LIDAR measurements, column derived SO2 and NO2 from the PANDORA instrument and column aerosol optical depth from a CIMEL sunphotometer provide measurements that can be used to ground-truth the satellite observations.</p> <p>Phase 4: ECCC's development of an improved method for total reduced Sulphur compound (RSC) measurement is now complete with the collection of over one year of high quality data through winter 2018. In addition, it was deployed successfully in the summer 2017 Tailing Pond study, revealing significant emissions of RSCs from the tailings pond studied.</p> <p>Phase 5: Integrated data analyses focusing on events, their pollutant mixture signatures, their meteorological conditions and 3D structure (vertically profiled information from the ECCC LIDAR unit, CIMEL, Pandora and WIND RASS), is the core activity for this component of the research.</p>
List the Key Indicators Measured. *	VOC and particulate matter (PM) speciation, total Sulphur, black carbon, CO (carbon monoxide), CH4 (methane), CO2 (carbon dioxide) (from Picarro), LIDAR (aerosol backscatter, ozone), O3 (ozone), NO (nitrogen oxide), NO2 (nitrogen dioxide), SO2 (sulfur dioxide), PM2.5, H2S (hydrogen sulfide), surface-bound PACs, particle size distributions, NO2 and SO2 vertical column densities.
Describe Sample Handling Procedures, If Not Applicable, State N/A. *	Sample handling procedures are provided in standard operating procedure documents available internally and by request.
List SOPs that Will Be Used, If Not Applicable, State N/A. *	Standard operating procedure documents available internally and by request. Further Standards and Protocols are available on the EMSD website: http://environmentalmonitoring.alberta.ca/resources/standards-and-protocols/
Describe the QA/QC Plan, If Not Applicable, State N/A. *	Quality assurance and quality control are conducted in accordance with the Quality Assurance Plans developed by ECCC, available internally and by request.
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. *	Enhanced ground-based monitoring was initiated in partnership with Fort McKay First Nation in August 2013 after joint planning for the year prior.
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. *	None

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. *	None	
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.	An interactive map of all sampling locations is available on the ECCC OSM portal at: http://environmental-maps.canada.ca/osm/App/index?GOCTemplateCulture=en-CA	
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 Attached	
FOR OIL SANDS MONITORING PROJECTS ONLY: Have You Coordinated With Other Project Leads On Field Logistics? If So, Please Specify. *	N/A	
Other		
Additional Details.	<p><u>Linkages:</u> There are a series of linkages between this project and other air component focus studies and long-term monitoring, including as follows: * H1, H2 and H3, detailed above, link with the ECCC/AEP led focus study, Ambient Air Monitoring Network Optimization (A-MD-3-1718), with the ECCC led focus study, OS Air Pollution Emissions, Transformation and Fate (A-MD-4-1718), and links with the ECCC/AEP led focus study, Develop Methods to Measure Tailings Ponds Emissions (A-MD-7-1718). The ground-based activities associated with H1, H2 and H3 will be enhanced in FY2018-19, particularly in relation to vertical profiles and VOC measurements, to complement the aircraft intensive campaigns in 2018. These activities are detailed in the ECCC led focus study, OS Air Pollution Emissions, Transformation and Fate (A-MD-4-1718). * H4 and H5, detailed above, links with the AEP led focus study, Strengthen Community Reporting of Odours - Ambient Air Odour Study (A-LM-1-1718). * H4, detailed above, links with the ECCC/AEP led focus study, Develop Methods to Measure Tailings Ponds Emissions (A-MD-7-1718). * Outcomes of this focus study will be integrated in several of the proposed synthesis reports, under Air Evaluation Integration Synthesis and Reporting - Technical Audience (R-1-1718) including Synthesis report #3 - 2019/2020: Remote Sensing - ground- and satellite-based, and Synthesis report #7 - 2020/2021: Analysis of trends of criteria air contaminants from long-term and focused studies.</p>	
Will Capacity Building and Training be a Component of the Project and If So, Explain How. If Not, State N/A. *	N/A for this fiscal year. It may change if ECCC will transfer the technology to another partner.	
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	Discrete	Other
Data Collection Period: Start Date - End Date	Timeline For Upload Period: Start Date - End Date	
01/04/2018 - 31/03/2021	31/12/2015 - 31/12/2022	
Is There a Data Sharing Agreement? (Yes or No).	Yes, an agreement to share data in real time with Fort McKay community and weekly data with all the other stakeholders is in effect.	
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.	The full set of measurements to data will all be made available in final form (i.e., complete QA/QC and metadata) via the OSM Portal	

Project Deliverables		
Proposed 2018-19 Deliverable Type (for each deliverable outline document, presentation, meeting, etc.)		
<input checked="" 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 6 papers expected in 2018/2019, to be confirmed	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 Choose one	Q1 - Deliverable, Comments Choose one	Q1 - Deliverable, Comments Name of Meeting, Year, Location, Dates, Participant Groups and Number of Participants.
Q2 - Deliverable, Comments Choose one	Q2 - Deliverable, Comments Choose one	Q2 - Deliverable, Comments Name of Meeting, Year, Location, Dates, Participant Groups and Number of Participants.
Q3 - Deliverable, Comments Choose one	Q3 - Deliverable, Comments Choose one	Q3 - Deliverable, Comments Name of Meeting, Year, Location, Dates, Participant Groups and Number of Participants.
Q4 - Deliverable, Comments Choose one	Q4 - Deliverable, Comments Choose one	Q4 - Deliverable, Comments Name of Meeting, Year, Location, Dates, Participant Groups and Number of Participants.
Proposed Deliverables After 2018/2019 for the project funds received in 2018/2019		
<input checked="" type="checkbox"/> Peer-reviewed Journal Publication	<input type="checkbox"/> Peer-reviewed Conference Proceeding	<input type="checkbox"/> Non-peer reviewed Conference Proceeding
Q1 - Deliverable, Comments At least one publication expected in 2020	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.
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)
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3)
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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
Project Management	ECCC	ECCC OS Air Component Manager
Project Lead	ECCC	Project coordination, reporting
Project Investigators	ECCC/AEP	1) Data IM/IT 2) Site Technical support 3) Site Program support 4) Project Coordination

Project Approval(s)		
Proposal Submitted by		
Surname	Given Name	Organization
Cober	Stewart	ECCC
Signature	Date	
Proposal for OSM Reviewed by		
EMSD Executive Director	Signature	Date
AEP Administrator/Coordinator - Review	Signature	Date
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
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

Add All Monitoring Site Locations and Coordinates (insert more rows if required)

Site Identifier *	Location Name *	Long/Lat *
Site 1		
Oski-ôtin	Oski-ôtin	-111.63953 / 57.18366
Site 2		