

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 A: Workplan approved. * Approved at \$238,067</p> <p>* It is a requirement of funding that this project be included within the network rationalization project (AP-D-3-1819; Ambient Air Monitoring Network Optimization).</p> <p>* Deliverables for this level of funding are to be clarified and an amended workplan submitted before March 23, 2018 to the Oil Sands Monitoring Secretariat.</p> <p>* It is a requirement of funding that key members of the project team participate in a Deposition Monitoring Integration Workshop to be informed by the Oil Sands Monitoring Secretariat.</p> <p>*Funding beyond 2018/19 is dependent upon the findings of the Deposition Monitoring Integration Review and Workshop.</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>
21/12/2017	A-LTM-S-4-1819	OSM - Long Term Monitoring	
Program Category *	Status *	Dept. ID	
Air/Atmosphere/Climate	Existing Project	1104 - 03418	
Project Leadership / Contact information			
Project Title *	Key Words (max 10) *		
Meteorological Network	Atmospheric Deposition, Forest Health, Meteorological Monitoring, Meteorological		
Surname *	Given Name *	Title *	
Myrick	Bob	Director, Airshed Sciences	
Organization *	Department	Division	
Alberta Provincial	Alberta Environment and Parks	Environmental Monitoring and Science	
Branch *	Section/Unit (if applicable)	Phone *	
Science	Airshed Sciences	7802297290	
Email *	Mailing Address	City	
Bob.Myrick@gov.ab.ca	9888 Jasper Avenue	Edmonton	
Postal Code	EMSD Executive Owner (if Applicable)		
T5J 5C6	Bill Donahue		
Project Information			
Project Objective(s) (Bullet Form) *	<p>The primary monitoring objectives for the meteorological monitoring network in the oil sands region are to:</p> <ol style="list-style-type: none"> 1) Provide meteorological data at 6 paired forest health monitoring sites to improve meteorology fields in air dispersion models; and 2) Calculate NO₂, SO₂, O₃, HNO₃ and NH₃ dry deposition at each site using data collected by co-located samplers. For passive gas sampler sites that are not co-located with a meteorological tower, the nearest tower will be used to calculate dry deposition. 		
Plain Language Overview (100 words) *	<p>The WBEA network of instrumented meteorological stations is comprised of six 30 m tall instrumented towers ("met towers") and six 3 m tall instrumented tripods ("met tripods") that provide continuous, hourly measurements of meteorological conditions throughout the Wood Buffalo region. Each met tower is located at a Forest Health Monitoring (FHM) interior stand site and monitors air temperature, relative humidity, wind speed, wind direction, and solar radiation at four levels within and above the jack pine canopy, precipitation and barometric pressure at ground level, and temperature and volumetric water content within the forest soil. Each met tripod is located on the open wetland adjacent to a FHM edge site and monitors air temperature, relative humidity, wind speed, wind direction, solar radiation, and barometric pressure. Data from these stations is manually downloaded during bi-monthly site visits.</p>		
Project Duration *	Project Original Start Date *	Estimated Completion Date *	
Multi-Year	Ongoing	Ongoing	
Specify Objectives This Project Will Address in 2018/2019. *	<p>The specific objective of the WBEA meteorological monitoring network is to provide high-quality meteorological data, co-located with passive gas samplers, which will be used to drive dispersion models (e.g. CALPUFF) and calculate gaseous dry deposition of both N-containing and acidifying compounds at six forest health monitoring (FHM) sites.</p>		
Specify Objectives This Project Will Address Beyond 2018/19 (if multi-year). *	<p>This is a long-term monitoring program and the above-mentioned monitoring objectives will apply to subsequent years.</p>		
List Key Questions/Hypotheses Related to Each Objective Stated Above. *	<p>What is the cumulative impact of air emissions from oil sands sources on air quality and dry deposition in the oil sands region?</p>		
Main Assumptions, Constraints, Dependencies. *	<p>- Contracts with airshed organizations can be executed by April 1, 2018 - WBEA will have the expertise, resources and ability to deliver the monitoring program in 2018-19</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.	Knowledge System *	Location (select all that apply) *	

<input type="checkbox"/> Federal Government <input 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 checked="" type="checkbox"/> Other	Classical Science	<input 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 type="checkbox"/> Upper Athabasca Region
AEP ONLY: Strategic Alignment to EMSD Outcomes		
AEP ONLY: Strategic Alignment to EMSD Science Plan, select 1-2 areas that apply (if Applicable)		
Ecosystems and Predicting Change		
Choose one		
AEP ONLY: Strategic Alignment to AEP Departmental Outcomes		
AEP ONLY: Environmental and Ecosystem Health and Integrity	AEP ONLY: Sustainable Economic Diversity	AEP ONLY: Social Well-Being
Air/Climate Change	Choose one	Choose one
AEP ONLY: Protected Public Health and Safety from Environmental		
Choose one		
AEP ONLY: IMAG/IMSC Information Needs, Please Specify Which Need(s) is Being Addressed. File location M:\EMSD\Common\Portfolio Mgmt System Shared Docs	•Info Need #12 (Ecosystem Services) and Info Need #37 (Long-term Soil Acidification Monitoring Program): Meteorological data from this network is used in the calculation of dry deposition of acidifying and eutrophying substances. These data are subsequently used to determine the atmospheric inputs to the forest ecosystem.	
AEP ONLY: How This Project Will Address Each Strategic Theme Selected Above.	•Environmental and Ecosystem Health and Integrity - Meteorological tower data is used with atmospheric deposition data (A-LTM-3-1819) to assess input of acidifying substances to the forest ecosystem (see B-PD-12-1819). This is part of the TEEM (Terrestrial Environmental Effects Monitoring) program which has the purpose of determining if oil sands activities are having an impact on terrestrial ecosystems.	
Project Methodology		
List the Key Project Phases and Provide Bullets for Each Major Task Under Each Project Phase. *	<ul style="list-style-type: none"> - Operate and maintain meteorological monitoring stations and supporting infrastructure at 6 paired monitoring sites. - Maintain collection, processing, validation of meteorological data and meta-data into WBEA's data management system. - Provide public access to meteorological data via the WBEA website. 	
Describe How Changes in Environmental Condition Will Be Assessed. *	The data used from the meteorological monitoring network is used by industry to conduct dispersion modelling for new oil sands facilities and to calculate dry deposition rates. Environmental condition is assessed through the use of dispersion models and deposition to the environment.	
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". *	There are no specific benchmarks directly associated with meteorological monitoring.	
Provide a Brief Description of the Methods By Project Phase. *	Meteorological towers conform to those used by the U.S. EPA's CASTNet to monitor dry deposition in the United States. Operate and maintain meteorological monitoring stations by: - assuring satellite communications with all stations - assuring operation of all meteorological sensors. - conducting field tower maintenance Maintain, collect and validate meteorological data by: - conducting data quality control - assuring quality controlled data is uploaded to WBEA's database Provide public availability of quality controlled data from meteorological tower data on WBEA's website.	
List the Key Indicators Measured. *	Key indicators on meteorological towers include wind speed, wind direction, air temperature, RH, dewpoint each at 2m, 6m, 21m, 29m; photosynthetically active radiation (PAR) at 2m, 6m, 21m; solar radiation at 29m; barometric pressure and precipitation at 1m; soil temperature and moisture at 10cm and 50cm below ground level. These data are included in air dispersion models to predict air pollutant concentrations, and to calculate dry deposition of pollutants to the environment.	
Describe Sample Handling Procedures, If Not Applicable, State N/A. *	Sample handling procedures are provided in standard operating procedure documents located at http://www.wbea.org/resources/quality-assurance/standard-operating-procedures . SOPs for meteorological instruments are available on request.	

List SOPs that Will Be Used, If Not Applicable, State N/A.*	Sample handling procedures are provided in standard operating procedure documents located at http://www.wbea.org/resources/quality-assurance/standard-operating-procedures .	
Describe the QA/QC Plan, If Not Applicable, State N/A. *	Quality assurance and quality control needs to be conducted in accordance with the Air Monitoring Directive and SOPs for data QA/QC developed by AEP and each airshed. Specific quality assurance plans are available from AEP and each airshed.	
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 are involved through inclusion in WBEA.	
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. *	All monitoring in this project plan is delivered by the Wood Buffalo Environmental Association (WBEA).	
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. *	All monitoring in this project plan is delivered by WBEA through a contract with AEP.	
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.	A map showing the location of meteorological monitoring stations is located in the "Meteorological Monitoring Sites" tab.	
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.	Monitoring is ongoing. Monitoring sites are indicated in the tab called "WBEA Stations".	
FOR OIL SANDS MONITORING PROJECTS ONLY: Have You Coordinated With Other Project Leads On Field Logistics? If So, Please Specify. *	Monitoring field logistics are coordinated by WBEA.	
Other		
Additional Details.	<p>Dry deposition is difficult to measure on a long-term basis so it must be inferred from a combination of gas-phase measurements and empirical calculations. High quality meteorological data (wind speed, wind direction, RH, air temperature, leaf area index (LAI), and solar radiation) along with measurements of the pollutant(s) of interest are required to calculate dry deposition. Clair and Percy (2015) estimated that >70% of S and N deposition in the AOSR is from dry deposition. The same report (in Chapter 11) studied 10 boreal forest sites and found that all 10 sites receive N deposition in excess of the critical load for nutrient N.</p> <p>Despite dry deposition being the dominant pathway of S and N deposition to forests surrounding the AOSR, robust dry deposition estimates are hindered by a lack of forest sites with co-located measurements of meteorology and pollutants. Dry deposition is calculated using meteorological data from instrumented towers and tripods and ambient concentration data collected at remote forest health monitoring sites, hence the data provided by these meteorological towers are useful for assessing the effects of pollutant deposition to forest ecosystems.</p> <p>This project is fully integrated with A-LTM-S-3-1819 (Atmospheric Deposition to Forest Ecosystems) and B-PD-12-1819 (Forest Health Monitoring Program) to provide a source-to-sink approach for evaluating the effects of atmospheric pollutant deposition to forest ecosystems.</p>	
Will Capacity Building and Training be a Component of the Project and If So, Explain How. If Not, State N/A.*	N/A	
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	Continuous	Real time
Data Collection Period: Start Date - End Date	Timeline For Upload Period: Start Date - End Date	
Ongoing	Ongoing	
Is There a Data Sharing Agreement? (Yes or No).	No	
Will the Data Include Traditional Knowledge as Defined by and Provided by an Indigenous Representative, Community or Organization (Yes / No).	No	
Platform/Location of Data Storage.	http://www.wbea.org/network-and-data/historical-monitoring-data	
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
Meteorological tower data will be used to calculate atmospheric deposition that will be included in several of the manuscripts described in project plan B-PD-12-1819 Forest Health Monitoring Program.		
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 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.
<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
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) A full list of WBEA technical reports is available in an Excel spreadsheet or at http://www.wbea.org/resources/reports-and-publications .	
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)	

Financial Details and Budget Request		
Source of Funding Requested Year 1 - 2018/19		
	AEP ONLY: EMSD	OSM
Salaries and Benefits - AEP Chargeback		\$12,000
Salaries and Benefits - New OSM Staff		\$0
Operations and Maintenance		
Consumable materials and supplies		
Conferences and meetings travel		
Field work travel		
Project-related travel		
Engagement		
Reporting		
External Contracts - Organization/Vendor/Suppliers (WBEA)		\$226,067
Overhead		
Grants		
Capital		
Total budget request for the year		\$238,067
Total budget approved		
Source of Funding Requested Year 2 - 2019/20		
	AEP ONLY: EMSD	OSM
Salaries and Benefits - AEP Chargeback		\$12,000
Salaries and Benefits - New OSM Staff		\$0
Operations and Maintenance		
Consumable materials and supplies		
Conferences and meetings travel		
Field work travel		
Project-related travel		
Engagement		
Reporting		
External Contracts - Organization/Vendor/Suppliers (WBEA)		\$226,067
Overhead		
Grants		
Capital		
Total budget request for the year		\$238,067
Total budget approved		
Source of Funding Requested Year 3 - 2020/21		
	AEP ONLY: EMSD	OSM
Salaries and Benefits - AEP Chargeback		\$12,000
Salaries and Benefits - New OSM Staff		\$0
Operations and Maintenance		
Consumable materials and supplies		
Conferences and meetings travel		
Field work travel		
Project-related travel		
Engagement		
Reporting		
External Contracts - Organization/Vendor/Suppliers (WBEA)		\$230,000
Overhead		
Grants		
Capital		
Total budget request for the year		\$242,000
Total budget approved		
Source of Funding Requested Year 4 - 2021/22		
	AEP ONLY: EMSD	OSM
Salaries and Benefits - AEP Chargeback		\$12,000
Salaries and Benefits - New OSM Staff		\$0
Operations and Maintenance		
Consumable materials and supplies		
Conferences and meetings travel		
Field work travel		
Project-related travel		
Engagement		
Reporting		
External Contracts - Organization/Vendor/Suppliers (WBEA)		\$230,000
Overhead		
Grants		
Capital		
Total budget request for the year		\$242,000
Total budget approved		
Budget Request for the Entire Project	0	\$960,134
Project Approval(s)		
Proposal Submitted by		
Surname	Given Name	Organization
Myrick	Bob	AEP
Signature	Date	
	12-Feb-18	

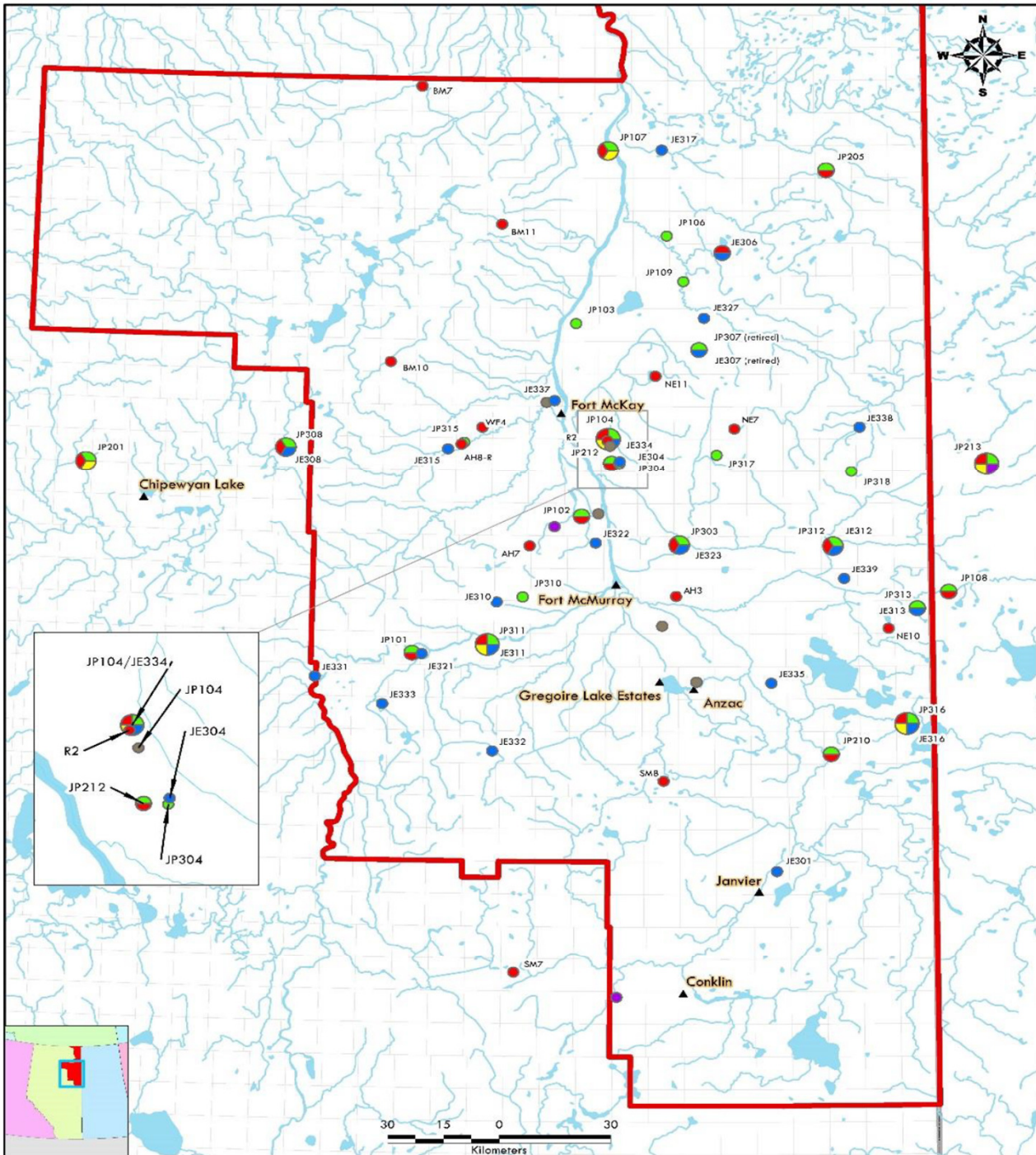
✓

Proposal for OSM Reviewed by		
Bob Myrick Director, Airshed Sciences	Signature	Date
AEP Administrator/Coordinator - Review		
	X for Bill Donahue Executive Director, Science	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

Budget Item	Description	Total Cost
CORE Subtotal		\$226,067
1. Instrumented Meteorological Stations		\$130,200
Technical Specialist	Based on 192 field hours per year. Includes vehicle, equipment, per diem and hotel for one crew.	\$31,600
Maintenance and Repair	General maintenance, sensor calibration and repair, and battery replacement. Tower inspections is covered in the Deposition Monitoring Workplan.	\$25,000
Helicopter	Based on 32 field hours over 16 days per year.	\$70,000
Telemetry	Monthly data, modem costs.	\$3,600
CORE Operating Costs		\$95,867
Met Station Field Costs	Field Staff/Benefits. Includes daily system checks, data QA, sensor calibration, maintenance, tower and solar panels maintenance, data logger programming, etc.	\$76,367
	Deposition Vehicle	\$3,000
	Safety (Mandatory)	\$3,000
	Deposition Training	\$3,000
	Materials and Consumables	\$2,250
	Information Technology (cell phone/data plan)	\$2,250
	Site Maintenance	\$750
	Stakeholder Engagement	\$1,500
	Professional fees for Science Advice	\$3,750

SamplingLocations/Sites	Sampling Schedule (<i>timing/frequency</i>)	Compounds to be Analyzed	Latitude	Longitude	Airshed
JP104	Continuous (reported as 1-hour averages)	wind speed, wind direction, air temperature, RH, dewpoint each at 2m, 6m, 21m, 29m; photosynthetically active radiation (PAR) at 2m, 6m, 21m; solar radiation at 29m; barometric pressure and precipitation at 1m; soil temperature and moisture at 10cm and 50cm below ground level	57.1180°	-111.4249°	WBEA
JP107	Continuous (reported as 1-hour averages)	wind speed, wind direction, air temperature, RH, dewpoint each at 2m, 6m, 21m, 29m; photosynthetically active radiation (PAR) at 2m, 6m, 21m; solar radiation at 29m; barometric pressure and precipitation at 1m; soil temperature and moisture at 10cm and 50cm below ground level	57.8911°	-111.4348°	WBEA
JP201	Continuous (reported as 1-hour averages)	wind speed, wind direction, air temperature, RH, dewpoint each at 2m, 6m, 21m, 29m; photosynthetically active radiation (PAR) at 2m, 6m, 21m; solar radiation at 29m; barometric pressure and precipitation at 1m; soil temperature and moisture at 10cm and 50cm below ground level	57.0328°	-113.7345°	WBEA
JP213	Continuous (reported as 1-hour averages)	wind speed, wind direction, air temperature, RH, dewpoint each at 2m, 6m, 21m, 29m; photosynthetically active radiation (PAR) at 2m, 6m, 21m; solar radiation at 29m; barometric pressure and precipitation at 1m; soil temperature and moisture at 10cm and 50cm below ground level	57.0470°	-109.7494°	WBEA
JP311	Continuous (reported as 1-hour averages)	wind speed, wind direction, air temperature, RH, dewpoint each at 2m, 6m, 21m, 29m; photosynthetically active radiation (PAR) at 2m, 6m, 21m; solar radiation at 29m; barometric pressure and precipitation at 1m; soil temperature and moisture at 10cm and 50cm below ground level	56.5655°	-111.9485°	WBEA

JP316	Continuous (reported as 1-hour averages)	wind speed, wind direction, air temperature, RH, dewpoint each at 2m, 6m, 21m, 29m; photosynthetically active radiation (PAR) at 2m, 6m, 21m; solar radiation at 29m; barometric pressure and precipitation at 1m; soil temperature and moisture at 10cm and 50cm below ground level	56.3484°	-110.1213°	WBEA
JE306	Continuous (reported as 1-hour averages)	wind speed, wind direction, air temperature, RH, dewpoint, solar radiation, photosynthetically active radiation each at 2m, barometric pressure at 1m	57.6218°	-110.9184°	WBEA
JE308	Continuous (reported as 1-hour averages)	wind speed, wind direction, air temperature, RH, dewpoint, solar radiation, photosynthetically active radiation each at 2m, barometric pressure at 1m	57.0847°	-112.8507°	WBEA
JE312	Continuous (reported as 1-hour averages)	wind speed, wind direction, air temperature, RH, dewpoint, solar radiation, photosynthetically active radiation each at 2m, barometric pressure at 1m	56.8299°	-110.4345°	WBEA
JE316	Continuous (reported as 1-hour averages)	wind speed, wind direction, air temperature, RH, dewpoint, solar radiation, photosynthetically active radiation each at 2m, barometric pressure at 1m	56.3528°	-110.1182°	WBEA
JE323	Continuous (reported as 1-hour averages)	wind speed, wind direction, air temperature, RH, dewpoint, solar radiation, photosynthetically active radiation each at 2m, barometric pressure at 1m	56.8358°	-111.1131°	WBEA
R2	Continuous (reported as 1-hour averages)	wind speed, wind direction, air temperature, RH, dewpoint, solar radiation, photosynthetically active radiation each at 2m, barometric pressure at 1m	57.1144°	-111.4289°	WBEA



Wood Buffalo Environmental Association
Terrestrial Monitoring Network 2017



- Legend
- Community
 - Regional Municipality of Wood Buffalo
 - Forest Health Interior Plot
 - Passive Monitor
 - Meteorological Tower
 - Forest Health Edge Plot
 - Bog Site
 - Portable Ozone Monitor