

## ATTACHMENT 2

### APPROVAL OF THE 2017 – 2018 AMBIENT ENVIRONMENT MONITORING PLAN for OIL SANDS DEVELOPMENT

George Enei, representing the Environment and Climate Change Canada (ECCC), and

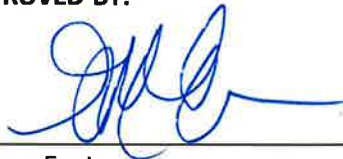
Fred Wrona, representing the Alberta Environment and Parks (AEP),

Hereby approve the attached 2017/2018 Ambient Environment Monitoring Plan for Oil Sands Development.

#### CONDITIONS

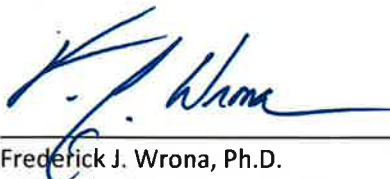
1. Approved funding envelopes will be fully released upon receipt and final co-Chair approval of the updated work plans.
2. Budgets are to be managed to ensure approved activities are delivered efficiently without unnecessary spending or exceeding allocated amounts.
3. Any potential major change requests to approved activities and budgets are to be identified as early as possible and communicated to co-Chairs for approval.
4. Final total expenditures will not exceed \$ \$53,207,757M.
5. All data and information generated will be made publicly available and accessible as soon as possible following its collection and verification through quality assurance and quality control procedures, and will be accompanied by the appropriate context about the significance of the results.
6. Any data or information that has immediate and significant impact on human or ecosystem health will be provided to the responsible agencies and potentially affected groups.
7. AEP and ECCC will work collaboratively on any communication arising from this work.

#### APPROVED BY:



George Enei  
Assistant Deputy Minister  
Science and Technology,  
Environment and Climate Change Canada (ECCC)  
Government of Canada

  
Date



Frederick J. Wrona, Ph.D.  
Chief Scientist, Alberta Environment and Parks,  
Assistant Deputy Minister  
Environmental Monitoring and Science Division,  
Alberta Environment and Parks (AEP)  
Government of Alberta

August 18, 2017  
Date

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**2017/18 AMBIENT ENVIRONMENT MONITORING PLAN for OIL SANDS DEVELOPMENT**

	<u>NEW Activity Identifier</u>	<u>Activity Name</u>	<u>ECCC</u>	<u>AEP</u>	<u>WBEA</u>	<u>LICA</u>	<u>PRAMP</u>	<u>ABMI</u>	<u>University of Alberta</u>	<u>University of Calgary</u>	<u>Ducks Unlimited</u>	<u>2017-18 Approved Budget</u>
	<b>Long Term Monitoring - Surveillance</b>											
Air	A-LTM-S-1-1718	Atmospheric Pollutant Active Monitoring Network		\$55,000	\$8,324,377	\$932,921	\$781,440					\$10,093,738
	A-LTM-S-2-1718	Atmospheric Pollutant Passive Monitoring Network		\$15,000		\$119,000	\$48,000					\$182,000
	A-LTM-S-3-1718	Atmospheric Pollutant Deposition Monitoring Network – to Forest Ecosystems			\$1,634,050							\$1,634,050
	A-LTM-S-4-1718	Meteorological Network		\$5,000	\$204,000							\$209,000
	A-LTM-S-9-1718	Atmospheric Pollutant Deposition Monitoring - Lakes and Snowpack	\$546,000									\$546,000
Water	W-LTM-S-1-1718	Surface Water Quantity Monitoring - Water Levels and Flows	\$2,063,104	\$751,896								\$2,815,000
	W-LTM-S-2-1718	Surface Water Quality Monitoring	\$2,156,771	\$3,593,917								\$5,750,688
	GW-LTM-S-3-1718	Groundwater Monitoring		\$600,000								\$600,000
Biotic	B-LTM-S-1-1718	Regional Terrestrial/Aquatic Monitoring - Status and Trends						\$5,000,000				\$5,000,000
	B-LTM-S-2-1718	Regional Habitat Disruption Monitoring - Status and Trends of Footprint						\$310,000				\$310,000
	B-LTM-S-4-1718	Focal Plants Monitoring						\$155,000				\$155,000
<b>Sub-Total for Long Term Monitoring - Surveillance</b>			<b>\$4,765,875</b>	<b>\$5,020,813</b>	<b>\$10,162,427</b>	<b>\$1,051,921</b>	<b>\$829,440</b>	<b>\$5,465,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$27,295,476</b>



	<u>NEW Activity Identifier</u>	<u>Activity Name</u>	<u>ECCC</u>	<u>AEP</u>	<u>WBEA</u>	<u>LICA</u>	<u>PRAMP</u>	<u>ABMI</u>	<u>University of Alberta</u>	<u>University of Calgary</u>	<u>Ducks Unlimited</u>	<u>2017-18 Approved Budget</u>
	<b>Focused Study: Program Design [includes Method Development (MD) and Program Design(PD)]</b>											
Air	A-MD-1-1718	Method Comparison of Wet Precipitation (NADP vs AB)		\$1,000	\$24,000							\$25,000
	A-MD-2-1718	Atmospheric Process Study - Deposition and Effects	\$1,388,100	\$187,800								\$1,575,900
	A-PD-3-1718	Ambient Air Monitoring Network Optimization	\$62,993	\$60,007								\$123,000
	A-PD-4-1719	Atmospheric Process Study - OS Air Pollution, Emissions, Transformation and Fate	\$2,000,000									\$2,000,000
	A-PD-5-1718	Atmospheric Process Study - Enhanced Ground-Based Monitoring - Oski-otin Monitoring site	\$995,000	\$115,000								\$1,110,000
	A-PD-6-1718	Integrated Deposition Monitoring Design	\$37,750	\$89,250								\$127,000
	A-MD-7-1718	Develop Methods to Measure Tailings Ponds Emissions	\$175,000	\$175,000								\$350,000
Biotic	B-MD-1-1718	Boreal Caribou Census Through DNA Estimates		\$380,000								\$380,000
	B-MD-7-1718	Biotic Health and Biodiversity Monitoring (method development to establish a long-term monitoring design)		\$50,000								\$50,000
	B-PD-12-1718	Forest Health Monitoring Program Design Review			\$532,000							\$532,000
Water	W-MD-1-1718	Develop an Accredited Standard Method for Quantitative Analysis of Naphthenic Acids Concentrations	\$390,000									\$390,000
	W-MD-2-1718	Develop Quantitative Methods to Monitor Tailing Pond Seepage	\$250,000									\$250,000
	W-MD-7-1718	Representative Sub-Basin Studies - Ells and Steepbank Rivers (REPs)								\$278,000		\$278,000
	GW-MD-3-1718	Assessment of GW Monitoring - Towards a Comprehensive GW Monitoring Strategy/Design	\$30,607	\$169,393								\$200,000
Wetlands	WL-PD-5-1718	Design of Deltaic Wetland Ecosystem Health Monitoring Program	\$402,000									\$402,000
	WL-MD-6-1718	Remote sensing wetland ecosystem change detection method development		\$198,970								\$198,970
	WL-PD-10-1718	NEW Wetland Ecosystem Monitoring		\$1,229,583								\$1,229,583
<b>Sub-Total for Focus Study - Program Design</b>			<b>\$5,731,450</b>	<b>\$2,656,003</b>	<b>\$556,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$278,000</b>	<b>\$0</b>	<b>\$9,221,453</b>





	Summary of Allocations by Thematic Areas	Amount
Core OSM Activities	Total for Long Term Monitoring - Surveillance	\$27,295,476
	Total for Long Term Monitoring - Effects	\$4,629,828
	Total for Community Monitoring	\$1,750,000
	Total for Focus Study - Program Design	\$9,221,453
	Total for Focus Study - Investigation of Cause	\$1,950,000
	Total for Focus Study - Establishing Reference Conditions	\$1,004,000
	Total for Data Management, Evaluation, Reporting	\$3,372,000
	<b>Sub Total</b>	<b>\$49,222,757</b>
Program Coordination	Total for Oil Sands Program Office	\$3,985,000
	<b>Grand Total</b>	<b>\$53,207,757</b>

Note: Core OSM Activities to be funded by Industry under the *Oil Sands Environmental Monitoring Regulation*, Alberta Regulation 226/2013

2017-18 OSM Funding Allocation by Organization	Government		Monitoring Organizations					Academic Institutions	
	ECCC	AEP	WBEA	LICA	PRAMP	Ducks Unlimited	ABMI	University of Calgary	University of Alberta
Total for Long Term Monitoring - Surveillance	\$4,765,875	\$5,020,813	\$10,162,427	\$1,051,921	\$829,440	\$0	\$5,465,000	\$0	\$0
Total for Long Term Monitoring - Effects	\$3,342,956	\$849,000	\$0	\$0	\$0		\$0	\$0	\$437,872
Total for Community Monitoring	\$0	\$518,000	\$1,232,000	\$0	\$0	\$0	\$0	\$0	\$0
Total for Focus Study - Program Design	\$5,731,450	\$2,656,003	\$556,000	\$0	\$0	\$0	\$0	\$278,000	\$0
Total for Focus Study - Investigation of Cause	\$1,762,000	\$0	\$0	\$68,000	\$0	\$120,000	\$0	\$0	\$0
Total for Focus Study - Establishing Reference Conditions	\$214,000	\$790,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total for Data Management, Evaluation, Reporting	\$698,954	\$2,673,046	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total for Oil Sands Program Office	\$500,000	\$3,485,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total by Organization</b>	<b>\$17,015,235</b>	<b>\$15,991,862</b>	<b>\$11,950,427</b>	<b>\$1,119,921</b>	<b>\$829,440</b>	<b>\$120,000</b>	<b>\$5,465,000</b>	<b>\$278,000</b>	<b>\$437,872</b>



## Glossary

- **Long-term Monitoring - Surveillance (LTM-S):** refers to the routine monitoring of status and trends of physical/chemical/biological parameters related to oils sands development activities to detect and evaluate changes in the environment over a period of time, typically >5 years.
- **Long-term Monitoring - Effects (LTM-E):** refers to the monitoring and assessment of the effects of oils sands development activities on biological endpoints (individual, population and community). This monitoring is implemented over a period of time, typically >5 years.
- **Focused Study (FS):** A class of purposeful, requested projects with definite start- and end-dates (typically 3 years), according to the characteristics described below.
  - **Method Development (MD):** refers to a study carried out to address limitation or deficiency identified in current monitoring design and/or protocols that may impair the effective monitoring of residual risk. This study requires a statement describing how the deficiency will be mitigated.
  - **Effects Confirmation (EC):** refers to a study carried out to confirm or quantify an initial observation of significant effect.
  - **Investigation of Cause (IC):** refers to hypothesis-driven studies designed to characterize the potential cause of an observed adverse effect. This study is launched only when a specific observation or monitoring result warrants mitigation.
  - **Establishing Reference Conditions (RC):** refers to the monitoring and assessment of existing conditions to characterize an anthropogenically undisturbed or minimally disturbed environmental state as distinct from a disturbed state relative a particular stressor. This study requires a statement of the expected outcome.
- **Community Monitoring (CM):** refers to collaboration between concerned citizens, government agencies, industry, academia, community groups, and local institutions to monitor issues of common concern.

## ACRONYMS

- **ECCC:** Environment and Climate Change Canada
- **AEP:** Alberta Environment and Parks
- **WBEA:** Wood Buffalo Environmental Association
- **LICA:** Lakeland Industry & Community Association
- **PRAMP:** Peace River Area Monitoring Program
- **DU:** Ducks Unlimited Canada
- **U of A:** University of Alberta
- **U of C:** University of Calgary
- **ABMI:** Alberta Biodiversity Monitoring Institute