

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 \$46,845</p> <p>* It is a requirement of funding that key members of the project team participate in a Groundwater Integration Workshop to be informed by the Oil Sands Monitoring Secretariat.</p> <p>* It is a requirement of funding that this project be integrated within the wetland program (project WL-PD-10-1819). This project will not be funded as a stand alone project beyond 18/19.</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>
6/21/2018	GW-MD-1-1819	OSM - Focus Study	
Program Category *	Status *	Dept. ID	
Watershed Sciences (Surface Water and Groundwater)	New Project		
Project Leadership / Contact information			
Project Title *	Key Words (max 10) *		
Selected Themes Regarding Groundwater Surface-Water (GW-SW) Interactions	groundwater, groundwater surface-water interaction, groundwater modeling, method development, groundwater discharge, groundwater assessment, water resources, tributaries, watershed, wetlands		
Surname *	Given Name *	Title *	
Bickerton	Greg	Senior Hydrogeologist	
Organization *	Department	Division	
ECCC			
Branch *	Section/Unit (if applicable)	Phone *	
WSTD		9053364597.00	
Email *	Mailing Address	City	
greg.bickerton@canada.ca	867 Lakeshore Rd	Burlington	
Postal Code	EMSD Executive Owner (if Applicable)		
L7S 1A1			
Project Information			
Project Objective(s) (Bullet Form) *	To evaluate and update standard operating procedures and to identify locations that may be vulnerable to both contaminant and non-contaminant related ecological impacts associated with groundwater discharge (e.g. water quantity issues: instream flow needs, wetland sustainability, potential contaminant pathways, etc.).		
Plain Language Overview (100 words) *	The themes proposed in this focused study follow directly from the recommendations and discussions provided in past OSM field studies on GW-SW interactions, gaps identified in the active OSM focused study on groundwater monitoring design, positive industry feedback on the OSM-developed GW-SW assessment approach and the expressed groundwater needs of the OSM wetland program. The themes proposed in this focused study are interconnected and can be leveraged for mutual enhancement and integration into other OSM components; however the themes can also be addressed in isolation (albeit with limitations). The themes have various tiered sequencing options for implementation and generally can be scaled in scope to meet timing and resource issues. Consequently, the exact deliverables beyond Year 1 will depend on which theme or combination of themes that are pursued, the extent that the individual themes are developed (i.e. scope and duration) and the respective findings for the various themes.		
Project Duration *	Project Original Start Date *	Estimated Completion Date *	
Single Year	4/1/2018	3/31/2019	
Specify Objectives This Project Will Address in 2018/2019. *	<ul style="list-style-type: none"> • Compare existing output from coupled GW-SW model (CEMA 2016) for the Mackay River and tributaries to reach-scale groundwater discharge field data collected by ECCC data under JOSM (2012-2015) • Recalibrate the existing coupled GW-SW model with the new OSM data included and identify changes to model interpretations and implications for understanding the groundwater system in the Mackay watershed • Compare similarities and differences between coupled GW-SW model and the previous groundwater only models from EIAs in Mackay watershed • Use the coupled GW-SW model in conjunction with wetland and other geospatial data to identify potential wetlands that are particularly vulnerable to changes in groundwater input (Optional: in conjunction with OSM Wetland Component) 		
Specify Objectives This Project Will Address Beyond 2018/19 (if multi-year). *	N/A		
List Key Questions/Hypotheses Related to Each Objective Stated Above. *	<ul style="list-style-type: none"> • Fully coupled GW-SW water models provide: a valuable, adaptive and necessary interpretive framework for developing/designing groundwater & surface water monitoring plans; interpreting groundwater & GW-SW interaction related field data; and identifying & evaluating actual/potential impacts from anthropogenic and natural changes in the watershed. 		

Main Assumptions, Constraints, Dependencies. *	<ul style="list-style-type: none"> Deliverables rely on a sole source contract with Earth Fx (proprietary holders of existing GW-SW model for the MacKay River watershed) to run selected simulations. Earth Fx is interested in this role and also receptive to ultimately transferring the model to AEP when in-house capacity becomes available. ECCC and AEP do not currently have sufficient groundwater modeling capacity or capacity available in Year 1. Geospatial support from AEP will be required for aspects of this work AEP/ECCC cannot provide ADCP capacity for Theme B/C in Year 1 (note that previous ADCP operator and contributor for OSM work has moved to McGill University and is not directly available) Integration with OSM Wetland component will require further discussions and planning 	
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 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	Choose one	<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 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) Choose one 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
Choose one	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		
AEP ONLY: How This Project Will Address Each Strategic Theme Selected Above.		
Project Methodology		
List the Key Project Phases and Provide Bullets for Each Major Task Under Each Project Phase. *	Theme A: Fully-Coupled GW-SW Model Integration – A Watershed-Scale Test Application to Evaluate the Role of Coupled Models as an Interpretive Framework for GW-SW Field Data and the Preliminary Groundwater Monitoring Framework for Oil Sand Monitoring (OSM) [MacKay Watershed]	
Describe How Changes in Environmental Condition Will Be Assessed. *	The study will provide information to identify locations that may be vulnerable to both contaminant and non-contaminant related ecological impacts associated with groundwater discharge (e.g. water quantity issues: instream flow needs, wetland sustainability, potential contaminant pathways, etc.)	
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. *	<ul style="list-style-type: none"> Provide an additional model analysis section in an upcoming peer-reviewed publication Report on the findings of new simulations and/or recalibration of the existing MacKay River watershed model. This preliminary examination of integrating coupled GW-SW modeling into the groundwater monitoring and research components of OSM will provide the basis for: <ol style="list-style-type: none"> Demonstrating the utility and enhanced interpretation capabilities of using coupled models and field data iteratively for interpreting GW-SW interactions Aiding study design for a more complete and rigorous multi-year focused study Designing the temporal and geographic scope of Theme B Report on preliminary GW-SW modeling results to identify critical wetlands that are vulnerable to changes in groundwater discharge Peer-reviewed publication related to the MacKay River/Watershed case study Peer-reviewed publication regarding a critical review and expanded testing of the JOSM-developed methods for identifying critical groundwater discharge areas. 	

List the Key Indicators Measured. *	N/A	
Describe Sample Handling Procedures, If Not Applicable, State N/A. *	N/A	
List SOPs that Will Be Used, If Not Applicable, State N/A.*	N/A	
Describe the QA/QC Plan, If Not Applicable, State N/A. *	N/A	
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.*	N/A	
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. *	Not Required	
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.	Not Required	
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.	Not Required	
FOR OIL SANDS MONITORING PROJECTS ONLY: Have You Coordinated With Other Project Leads On Field Logistics? If So, Please Specify. *	Not Required	
Other		
Additional Details.		
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
No	Other	Other
Data Collection Period: Start Date - End Date	Timeline For Upload Period: Start Date - End Date	
N/A	N/A	

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.	N/A	
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/Technical Report
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
"Analytical methodologies to identify industrially influenced groundwater in the Athabasca oil sands region of northern Alberta, Canada (working title)" by Hewitt et al.. In final preparation Q2 and expected submission in Q3		
Q4 - Deliverable, Comments	Q4 - Deliverable, Comments	Q4 - Deliverable, Comments
Expected submission of manuscript by Bickerton et al. in Q4		
<input checked="" type="checkbox"/> Conference Presentation(s)	<input type="checkbox"/> Stakeholder Presentation	<input checked="" type="checkbox"/> Key Engagement/Participation Meeting *
Q1 - Deliverable, Comments	Q1 - Deliverable, Comments	Q1 - Deliverable, Comments
	Choose one	Name of Meeting, Year, Location, Dates, Participant Groups and Number of Participants.
Q2 - Deliverable, Comments	Q2 - Deliverable, Comments	Q2 - Deliverable, Comments
Platform	Choose one	Name of Meeting, Year, Location, Dates, Participant Groups and Number of Participants.
"Locating and quantifying direct groundwater discharge at the reach scale: MacKay River", Alberta. Presented by G. Bickerton at GeoEdmonton 2018, Edmonton AB, Sep. 23-26, 2018.		
Chemical and toxicological differentiation of groundwaters in the Alberta oil sands region". Presented by J. Roy at GeoEdmonton 2018, Edmonton AB, Sep. 23-26, 2018.		
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.
		Groundwater Integration Workshop (Proposal submitted in Jun 2018 by C. MacClain & G. Bickerton at the request of OSM Co-chairs on Jun 7 May 20). Details, timing and scope of involvement TBD pending approval
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.
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 checked="" type="checkbox"/> Non-peer reviewed Conference Proceeding/Technical Reports
Q1 - Deliverable, Comments	Q1 - Deliverable, Comments	Q1 - Deliverable, Comments
		Report on new simulations and recalibration of the existing MacKay River watershed model (CEMA, 2016) to includes new reach specific GW-SW data - Tentatively planned for 2020
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)	
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
Principal Investigator	ECCC	Conduct work described in the detailed study plan and deliverables sections
Co-Principal Investigator	AEP	<ul style="list-style-type: none"> • Provide advice • Coauthor reports/publications as appropriate • Coordinated AEP integration and support
Science contributors/coauthors	ECCC	Science support and manuscript preparation
Science contributors/coauthors	AEP	Geospatial, data & wetland support
Specialist staff	ECCC/AEP/McGill U	Specialist science and technical support
Additional Analytical and Technical Support	ECCC/AEP	Specialist science and technical support

AEP ONLY: Additional Human Resources Required from EMSD

Name & Role	Branch - Section	Estimated time (% of annual FTE)	Salary Estimate Range

Financial Details and Budget Request

Source of Funding Requested Year 1 - 2018/19

	AEP ONLY: EMSD	OSM
Salaries and Benefits		0
Operations and Maintenance		46845
Consumable materials and supplies		
Conferences and meetings travel		
Field work travel		
Project-related travel		
Engagement		
Reporting		
External Contracts - Organization/Vendor/Suppliers		
Overhead		
Grants		
Capital		
Total budget request for the year	0	46845
Total budget approved		

Approved at:
46,845

Source of Funding Requested Year 2 - 2019/20

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

Source of Funding Requested Year 3 - 2020/21

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

Source of Funding Requested Year 4 - 2021/22

	AEP ONLY: EMSD	OSM
Salaries and Benefits		
Operations and Maintenance		

Consumable materials and supplies		
Conferences and meetings travel		
Field work travel		
Project-related travel		
Engagement		
Reporting		
External Contracts		
Organization/Vendor/Suppliers		
Overhead		
Grants		
Capital		
Total budget request for the year	0	0
Total budget approved		
Budget Request for the Entire Project	0	46,845

Project Approval(s)

Proposal Submitted by		
Surname	Given Name	Organization
Bickerton	Greg	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