



THE

Issue XXIII • December 2014

INSIDER

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IN THIS ISSUE: Working group updates • Aboriginal portal unveiled • TK Framework progresses

Wetlands reclamation guide completed



The release of the third edition of *Guidelines for Wetlands Establishment on Reclaimed Oil Sands Leases* was a milestone for CEMA this year.

Since 2012, CEMA's Reclamation Working Group (RWG) has allocated nearly \$1 million to this tremendous endeavour, which involved a multi-disciplinary team of more than 20 experts from Canada and the United States.

After extensive manuscript reviews, the final document, also known as "the Wetland Guide," was approved by the RWG in July and subsequently by CEMA's Board of Directors in September.

"This guide is a definitive resource for planners, landform design teams, regulators, stakeholders and Aboriginal peoples with respect to the creation of wetlands through reclamation activities in the oil sands region," says Stephen Tuttle, RWG co-chair. "Following mining, wetlands development forms a very important part of each oil sands mine operation's reclamation and closure plans."

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Traditional Knowledge framework making headway

The TKF project will deliver a recommendation to the Government of Alberta for a framework for Aboriginal organizations in the administrative, policy and regulatory processes relating to land use management in the region. The framework defines indicators for the successful inclusion of traditional knowledge into administrative, policy and regulatory processes, and defines clear mechanisms for how that success is defined and measured.

The TK Framework is being developed over

2014-2015 through work with 14 First Nation and Métis communities and organizations as well as government, industry and non-governmental organization participation. The work is supported through CEMA and includes gathering information from all four of CEMA's member caucuses. The TK Framework process is being conducted with expertise from The Firelight Group Research Cooperative, a consultancy that specializes in community-based projects.

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From the President's desk

Thank you for your efforts and continuing dedication to CEMA. We can be proud of our accomplishments and successes this past year. As 2014 draws to a close, I want to reflect on CEMA's role, its successes, and our opportunities for the future.

Alberta's approach to environmental management continues to evolve to meet emerging challenges, and much has changed since the establishment of CEMA in 1999. Over the years, CEMA has played an important role in helping the province address land use planning, resource development, and environmental management issues. Some notable accomplishments in the past year include key recommendations on linear footprint management, as well as guidelines for wetland establishment in reclaimed oil sands areas. These recommendations and guidelines have helped government and our partners in planning, operating, and managing development in the oil sands region.

You may be aware that the Government of Alberta has been reviewing how multi-stakeholder organizations like CEMA participate in the Integrated Resource Management System. A review of CEMA was also undertaken over the past summer and a copy of the report was provided to CEMA.

Early next year the government will meet with the CEMA board to discuss the report and next steps.

In the meantime, CEMA has funding confirmed for 2015 and plans to complete key projects currently underway.

I wish you the very best for the holiday season and a happy new year.



Shannon Flint





Arrivals and departures

The CEMA membership list continued to grow in 2014 with the addition of four new members from our Aboriginal communities and one new representative of the oil sands industry.

Joining are the **Athabasca Chipewyan First Nation**, **Athabasca Minerals Inc.**, the **Elizabeth Métis Settlement** and the **Fishing Lake Métis Settlement**.

In the CEMA office, congratulations and well wishes to **Melanie Dubois**, CEMA's Land Working Group Program Administrator, on the



birth of her son. Weighing in at 8 lbs, 4 oz, little Oliver Wayne Parsons was born at 4:59am on December 5. **Katherine Duffett**, the Air Working Group Program Administrator, will be looking after the Water Working Group during Melanie's maternity leave.

Carol Christian has joined the team to look after communications and is the interim Land Working Group Program Administrator.

CEMA Members

Alberta Aboriginal Relations
 Alberta Energy Regulator
 Alberta Environment and Sustainable Resource Development
 Alberta Fish and Game Association
 Alberta Fish and Game Zone 5
 Alberta Health
 Alberta Innovates – Energy and Environment Solutions
 Alberta Pacific Forest Industries Inc.
 AltaLink Management Ltd.
 Athabasca Chipewyan First Nation
 Athabasca Minerals Inc.
 Athabasca Oil Corporation
 Brion Energy Corporation
 Canadian Environmental Assessment Agency
 Canadian Natural Resources Ltd.
 Cenovus Energy Inc.
 Conklin Métis Local #193
 ConocoPhillips Canada
 Department of Fisheries and Oceans
 Devon Canada
 Ducks Unlimited Canada
 Elizabeth Métis Settlement
 Environment Canada
 Fishing Lake Métis Settlement
 Fort Chipewyan Métis Local #125
 Fort McKay Métis Local #63
 Fort McKay First Nation

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Fort McMurray Fish & Game Association
 Fort McMurray Field Naturalists
 Fort McMurray Métis Local #1935
 Fort McMurray Métis Local #2020
 Fort McMurray Environmental Association
 Health Canada
 Husky Energy Ltd.
 Imperial Oil Resources
 Ivanhoe Energy Inc.
 Japan Canada Oilsands Ltd.
 Keyano College
 MEG Energy
 Métis Nation of Alberta Region One
 Mikisew Cree First Nation
 MNAA Lakeland Local Council 1909
 Natural Resources Canada
 Nexen Inc.
 Nistawayou Association Friendship Centre
 Northern Alberta Institute of Technology
 Oil Sands Research and Information Network
 Regional Municipality of Wood Buffalo
 Shell Canada
 Statoil Canada Ltd.
 Suncor Energy Inc.
 Syncrude Canada Ltd.
 Total E&P Canada Ltd.
 Willow Lake Metis Local #780
 Wood Buffalo National Park

A message from the Executive Director

Needless to say, 2014 was a very interesting year.

It started off with uncertainty, given we did not receive confirmation of funding for a 2014 program until mid-January. Then the \$5 million that we did receive came with the condition that “no new projects” were to be funded. This required us having to define what constituted a “new project” and prioritizing the \$8 million of projects put forth by the working groups.

We arrived at an approved work plan of just over \$5 million and swung into action. The dedication of staff and working group volunteers resulted in a successful year in meeting the objectives of the plan. Recommendations and guidance documents were submitted to the Government of Alberta, projects were completed on time and within budget and, most telling, new organizations applied for CEMA membership.

Another condition put on our 2014 budget was that Alberta Environment and Sustainable Resource Development (AESRD) was to review CEMA relative to the department’s activities. At the 2014 Annual General Meeting, department representatives outlined the government-adopted Integrated Resource Management Strategy (IRMS), which they defined as “all about ensuring we understand the impact our growth has on our communities, our environment and each other as a whole.”

The review of CEMA was based on our role as a multi-stakeholder organization in northeastern Alberta and how we would contribute to the IRMS functions. It went even further, producing a transition plan with options as to how CEMA could inform and contribute to the IRMS in the future.

The third-party review resulted in a report presented to the CEMA Board in early December. At that time, the Board was informed that \$5 million was approved for 2015, but again, no new projects were to be part of our work plan.

The review report has been circulated to member organizations and to working groups to solicit comments by mid-January. The Board will finalize its response to the report by the end of January and meet with the Deputy Minister of AESRD in mid-February to discuss a path forward for CEMA.

As the review report advocates merging CEMA with other multi-stakeholders in the region, it results in some significant departures from how CEMA currently operates. These serious ramifications include the fact CEMA will no longer be able to continue conducting its much-needed research to inform Government policy. It would also jeopardize CEMA’s recognized ability to bring diverse groups to the table for a truly collaborative sharing of knowledge.

I encourage all members to review the report and submit comments to me by mid-January (glen.semenchuk@cemaonline.ca). This is very significant to the future role CEMA will play in the Lower Athabasca Region. As it currently stands, we will leave 2014 with the same, if not more, uncertainty with which we greeted it.

I want to thank everyone who contributed to the success of CEMA in 2014 and hope that we are all there to continue through 2015.



Glen Semenchuk



THE INSIDER is a publication of the
Cumulative Environmental Management Association

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Edited and designed by West Hawk Associates

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Wetlands Guide draws on 30 years of history

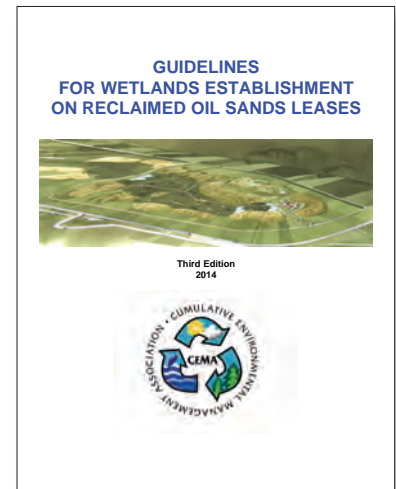
Continued from page 1

The Wetland Guide has been provided to the Government of Alberta for review and consideration. CEMA is recommending that the Government of Alberta encourage all oil sands mine operators to refer to the guide when developing closure and reclamation plans as well as wetland research and monitoring plans and programs.

The Wetland Guide and its appendices are now available on the CEMA website, cemaonline.ca.

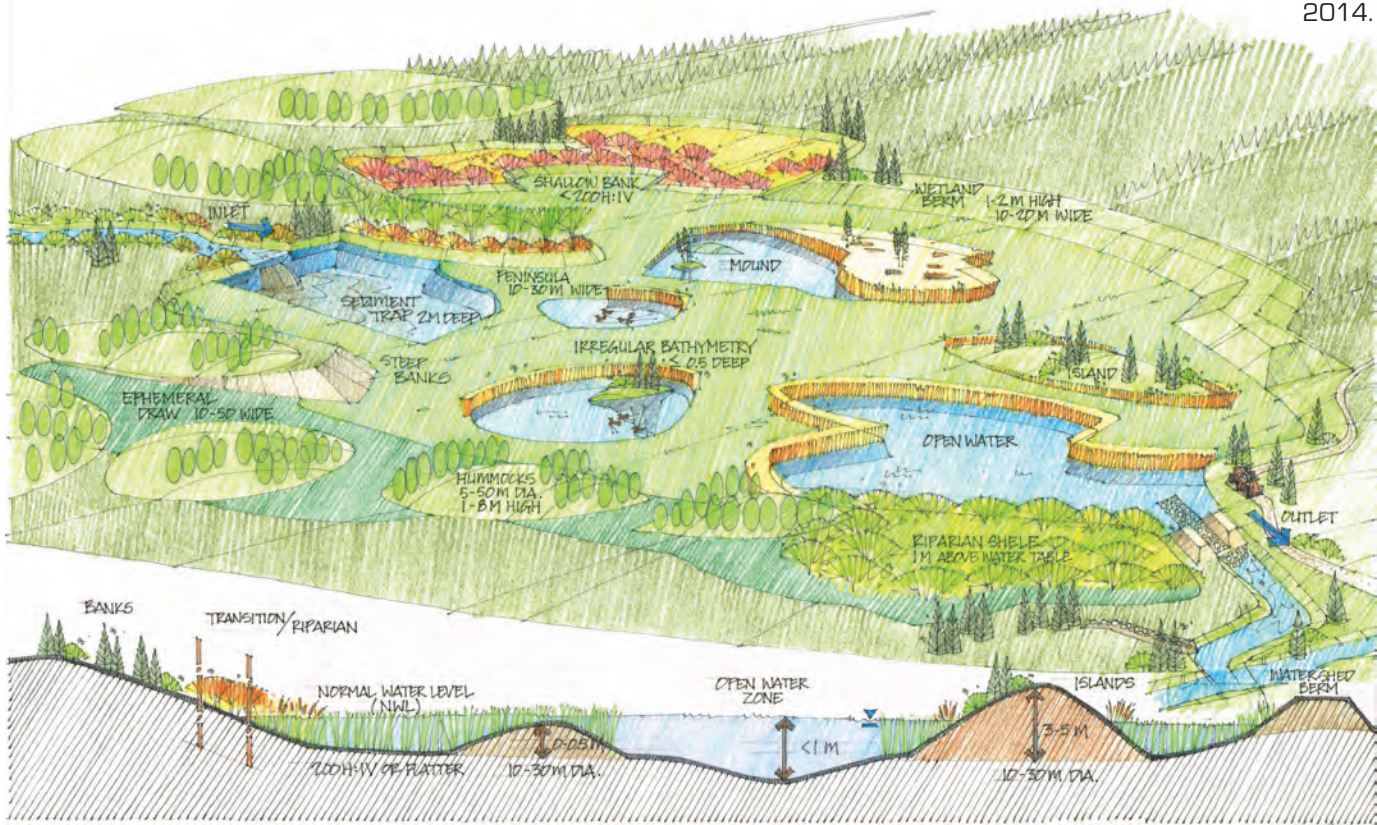
The guide describes significant advancements in the science of wetland reclamation since the previous edition, including a watershed-scale approach to wetland design to ensure reclaimed wetlands are hydrologically sustainable; significant knowledge on the suitability of various substrates and water quality, including information on the impacts of oil sands process-affected waters on reclaimed wetlands; advances on how to establish various vegetation communities; and how to monitor and assess wetland reclamation performance. It also includes wetland research needs.

Data for the Wetland Guide were taken from current wetland reclamation efforts on reclaimed oil sands leases, including lessons learned from fen and marsh reclamation projects currently underway as well as other marsh reclamation projects that have occurred over the past 30 years. Information from wetland reclamation and restoration projects in other jurisdictions and landscapes was also used.



Download the Wetland Guide from the CEMA website.

Illustration by
Derrill Shuttleworth, from
*Guidelines for Wetlands
Establishment on Reclaimed
Oil Sands Leases*,
2014.



Online Aboriginal Portal now complete

After months of hard work and gathering information, the TK Working Group is happy to announce the CEMA-Aboriginal Portal is 100 percent complete.

The portal allows users to access a wealth of information about the Traditional Knowledge Working Group (TKWG) and Aboriginal Coordinating Committee (ACC) and ongoing projects such as the TK Framework.

Links to download a new membership application form, TK Research Guideline report and TEK Bibliography website can also be found through the portal. In addition, the portal contains photographs of the TKWG, ACC, Co-Chairs, Elders Workshop and CEMA staff.

All 14 CEMA Aboriginal community names

and access to community website links are available at the portal as well. The CEMA Events Calendar and TKWG Photo Gallery completes the Portal web layout.

A link to the Aboriginal Portal can be found on the homepage of CEMA's website, cemaonline.ca.



Valued CEMA team member bids farewell

After five years of creating and sharing knowledge of oil sands environmental management, the Oil Sands Research and Information Network (OSRIN) is winding down at the end of December.

We were fortunate to develop a strong working relationship with CEMA, in particular the Reclamation and Land working groups. Together we produced the best-in-class *Oil Sands Environmental Management*

Bibliography, with citations for over 3,100 oil sands references at your finger tips. We also partnered on research projects and a workshop. We appreciate the efforts of the CEMA program coordinators in disseminating OSRIN research report notices to working group members, demonstrating a shared philosophy of keeping stakeholders current.

To date, OSRIN researchers have produced 64 research reports and a glossary, drew more than 600 people to 11 workshops, sponsored 17 conferences, and supported nine student-focused research and learning opportunities. We also recognized that while there is a vast amount of new knowledge being generated, there is an



equally important storehouse of knowledge of which many people are not aware, in large part because it isn't digitally accessible. Therefore, we worked with government and university libraries to digitize historical research reports and policy documents. We recently received permission from Syncrude Canada Ltd. to digitize more than 60 of its historical research reports. In total, we digitized and made accessible 439 of these valuable documents.

We would like to thank CEMA for giving OSRIN the opportunity to be a member of the team. CEMA provides an excellent forum for individuals and organizations to develop a better understanding of oil sands issues and the broad range of creative solutions that are being developed to maintain Alberta's position as a leader in environmental management.

CEMA's working groups also serve as community gathering places where information and concerns can be openly and safely shared. This atmosphere leads to better understanding and the opportunity to develop creative solutions.

— Chris Powter, Executive Director, OSRIN,
and Co-chair, CEMA Land Working Group



TK framework enters round 2 of discussions

Continued from page 1

The schedule for the TK Framework process is outlined on the TK Framework website (tkframework.ca), and includes four rounds of meetings and additional input. The first round, including introductions and initial discussion of options, was completed in the summer of 2014.

The second round, currently underway, focuses on the review of a discussion paper, *Draft Options for the Inclusion of Traditional Knowledge in Decision-Making for Northeast Alberta*. This document provides draft options identified to the end of November 2014 by caucus member participants and the project team. The subsequent rounds will refine the ideas further and move the draft TK Framework toward finalization.

This discussion paper will be available for download at tkframework.ca.

As the TK Framework project proceeds, the project team will continue to seek input on these draft options, as well as new ideas for options and identification of problems or challenges related to the inclusion of TK in decision-making.

Input can be provided in writing at any time,

or at any of the following meetings:

- » Aboriginal community face-to-face meetings are scheduled the weeks of Jan. 26 and Feb. 9, 2015.
- » A regional workshop for Aboriginal community representatives will be hosted in Fort McMurray on Feb. 13 (details TBA).
- » Government caucus representatives are invited to participate in a conference call from 10 a.m. to noon on Tuesday, Jan. 13.
- » Industry caucus representatives are encouraged to participate in a conference call from 2 p.m. to 4 p.m. on Tuesday, Jan. 13. Organizers have received little industry participation in this project and say they would like to see more to create a truly collaborative session for comprehensive input.
- » NGO caucus representatives are invited to participate in a conference call from 10 a.m. to noon on Wednesday, Jan. 14.

Please get in touch with Sarah Reid by email, sarah.reid@thefirelightgroup.com, or call (toll-free) 1-844-874-0022, to RSVP to any of these events or with questions, comments or feedback on the TK Framework project.

WORKING GROUP UPDATES

Air Working Group

Co-Chairs: John Dennis (Fort McKay First Nation) and Sunny Cho (AESRD)

Program Administrator: Katherine Duffett

The AWG's mandate is to develop recommendations for regional air quality and air-related deposition management. The focus is on emissions associated with regional development that have the potential to significantly contribute to cumulative effects on air quality, health, and/or regional ecosystems, including vegetation and wildlife. The AWG is made up of several task groups which focus on different areas.

Emissions Inventory Task Group

Implementation of the frameworks and plans that had been developed by the previous air-related working groups (NOxSOx Management Working Group and Trace Metals and Air Contaminants Working Group) rely, to varying degrees, on air quality and deposition modeling to assess environmental exposure to airborne and deposited substances emitted from the oil sands industry and other sources in and around the Regional Municipality of Wood Buffalo (RMWB). This requires representative regional emissions inventory profiles over time from pre-industrial to a future date specific to the frameworks/plans.

The final task of the Group was deposition modeling to support a revision of the Ozone Management Framework (OMF) and Acid Deposition Management Framework (ADMF). This task was initiated in 2012 and completed in the third quarter of 2014.

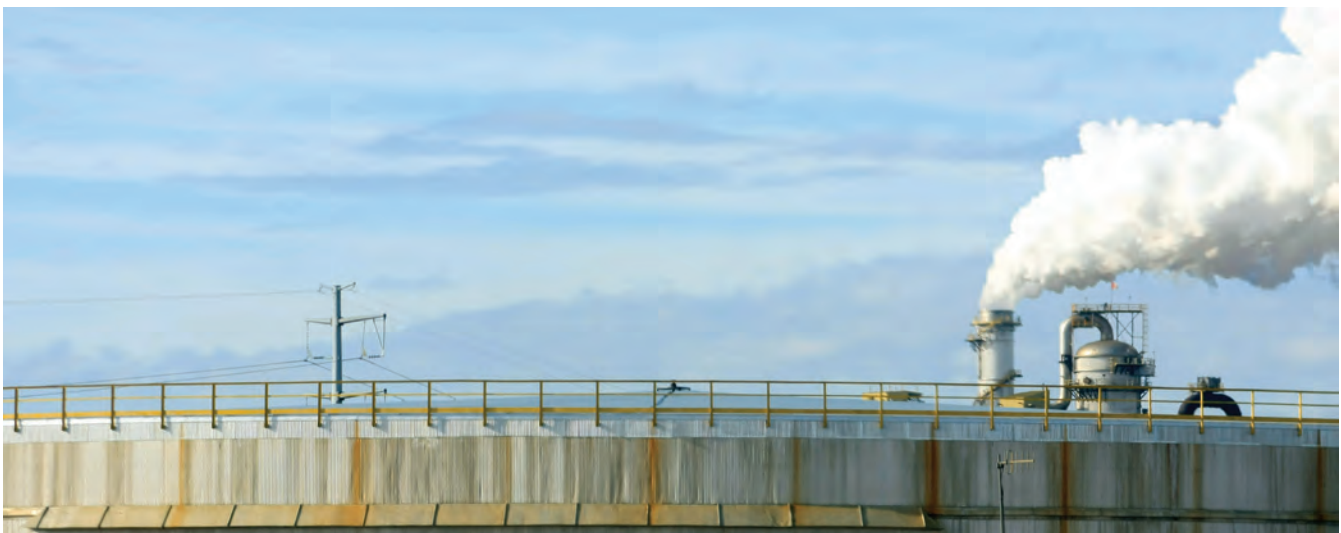
Ozone Task Group

The Ozone Task Group's focus in 2013 and 2014 was a review of the OMF and inclusion of particulate matter in the framework. As the task group received no funding in 2013, work progressed primarily through group members taking on tasks that could be completed without a contract.

Not all work can be completed solely through the task group, however, and in 2014 the AWG received a budget to fund the project.

A contract is underway to assess ozone precursor emissions, ambient monitoring data, and current and planned emission management requirements in support of the OMF. It will be completed by the end of 2014.

The results from the task group's work and that of the consultant will be used to revise the framework document in 2015.



WORKING GROUP UPDATES



Nitrogen Eutrophication Task Group

The work of this task group is based on recommendations put forward in the Proposed Interim Nitrogen (Eutrophication) Management Recommendations and Work Plan for the Regional Municipality of Wood Buffalo Area. The group is involved in a five-year effort to engage Canadian and American experts to determine nitrogen critical loads in the RMWB. A detailed work plan was developed and study sites selected in 2010 and the controlled nitrogen addition began in mid-2011. The fourth year of field work was completed in October 2014.

Nitrogen applications and sampling will occur several times per year until 2015, and a final report is expected in mid-2016. The results of this work will help determine whether or not a nitrogen eutrophication management framework is needed for the RMWB.

Workshops are scheduled annually to provide an opportunity for the AWG to meet with the researchers, receive results, and provide feedback on the study design and progress. Following the workshop an annual report detailing the year's progress and the workshop outcomes is provided to the AWG. The last workshop was held in April 2014. The annual report and details on the workshop are available from the AWG Program Administrator.

The next workshop is scheduled for February 2015 in Calgary and will include the AWG as well as the consultants, researchers, and any students involved in the project.

Acid Task Group

The Acid Task Group is involved in the staged implementation of the ADMF. The final Stage 3 implementation began in 2009 and involves the application of a time-to-effect model for soil and surface water acidification that will be

used to determine the status of the region in terms of the soils and surface water criteria in the framework. The final phase of the work is ongoing and will utilize the deposition modeling results from projects completed in mid-2014. It is scheduled for completion at the end of 2014. In 2015, it will undergo a review as recommended in the framework document.

Odour Task Group

The Odour Task Group completed an information review/gap analysis study. The objectives of the project were as follows:

1. Better understand programs and activities related to odour management in the RMWB and other jurisdictions on a regional scale involving multiple odour sources and types.
2. Understand the reporting and monitoring needs that would be necessary to support odour management strategies.
3. Supply recommendations on how these information needs can be met.

This project was completed in mid-2013 and was used as a basis for a contract initiated in mid-2014. The most recent project will provide recommendations for development of an odour management strategy/framework for oil sands development and will be completed in the second quarter of 2015. The report will include recommendations on odour management approaches and options for a robust and meaningful complaints response protocol, as well as a review of odour impact assessments at existing facilities and best odour management practices relevant to oil sands operations.

Community engagement options/strategies and recommendations for effective communication will also be an important component of the project.

WORKING GROUP UPDATES

Land Working Group

Co-Chairs: : Chris Powter (OSRIN), Tim Vinge (AESRD)

Program Administrator: Melanie Dubois; **Technical Program Manager:** Ron Pauls

The University of Alberta received a two-year grant for the study “Modelling the Distribution and Quality of Fruiting Shrubs in the Lower Athabasca Region.” The objectives are to develop spatially explicit and predictive abundance models of fruiting shrubs, including blueberry (*Vaccinium myrtilloides*), lingonberry (*Vaccinium vitis-idaea*), saskatoon (*Amelanchier alnifolia*), bearberry (*Arctostaphylos uva-ursi*), pin cherry (*Prunus pennsylvanica*), choke cherry (*P. virginiana*), and buffaloberry (*Shepherdia canadensis*).

Information will be shared with CEMA's Traditional Knowledge Working Group to provide feedback during the review process. Maps will be developed showing fruiting shrub abundance for the Lower Athabasca Region. These maps can be used for potential management enhancements that could improve berry production and quality. Project completion is scheduled for December 2015.

The Foothills Research Institute (fRI) was awarded a contract to undertake the Natural Pattern Landscape Restoration study. It assesses how large-scale disturbance that mimics fire patterns (using harvesting and linear feature restoration) could be used to try to reduce “edge effect” in the landscape. The ultimate goal of the study is to develop and test a planning process for creating more ecologically sustainable landscape conditions on landscapes modified by industrial activities. The fRI will present its process and findings at a workshop with the LWG members in December. A draft report is due in December and contract completion is scheduled for the end of the year.

The deliverable to CEMA will be a report detailing the opportunities and issues associated with using a natural disturbance approach to managing landscapes.

Linear Footprint Management Subgroup

Co-Chairs: David Anderson (Cenovus Energy Inc.), Shanti Berryman (Fort McKay First Nation) and Tim Vinge (AESRD)

At the request of the Government of Alberta (GoA), the LFMSG completed a linear footprint management plan for the Stony Mountain 800 study area, a 325,000-hectare landscape located to the southwest of Fort McMurray in the Regional Municipality of Wood Buffalo.

Like many parts of the Region, in situ bitumen resource development is common in SM800 and likely to expand. The area is also important to Aboriginal and recreation land users. A planning process initiated in November 2011 to address current and future management of linear features and public access in the area included numerous workshops, project team meetings, information gathering and analyses.

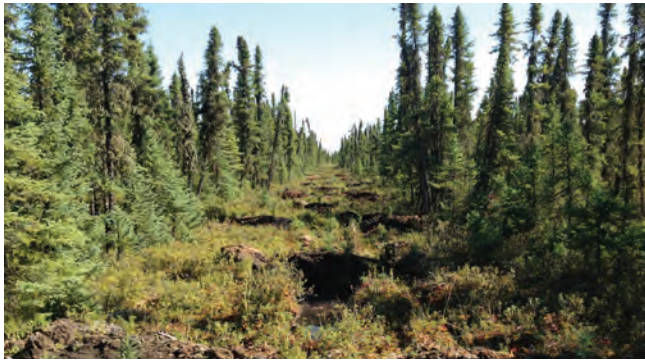
A report by Compass Resource Management Ltd. described the process, the management actions and strategies considered, and the recommendations made by the LFMSG. This process was meant to serve as a pilot to demonstrate an approach to coordinated multi-stakeholder planning for linear footprint and access in the Wood Buffalo and Lower Athabasca regions, as well as identify appropriate tools and approaches for managing linear footprint and public access to these features in the region.

Included in the study were representatives of local Aboriginal communities, recreation groups, resource development industries, government representatives, trappers and guide outfitters.

This area was chosen as it offered the best representative set of competing management objectives for linear footprint and access management planning purposes in a mixed land-use zone, including:

» Bitumen, timber and other resource values;

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- » Environmental values, including caribou range and wetland areas;
- » Human-use values requiring access for recreation and traditional use activities; and
- » High levels of current linear disturbance, with more expected as a result of significant projected industrial development.

Although *Stony Mountain 800 Linear Footprint and Access Management* provided excellent documentation of the planning process and management recommendations, the LFMSG agreed that the document was too lengthy and detailed for submission to the GoA and the executive summary was lacking in detail in some important areas.

West Hawk Associates was contracted to create a summary document of the recommendations and the structured decision-making process in the full report.

A summary of CEMA's recommendations from the report are as follows:

1. **Delineate management subzones** early within a sub-regional planning process if deemed appropriate after considering factors such as the scale and area under review and the homogeneity of resource values across the landscape;
2. Require **progressive timely revegetation** of oil sands extraction and other industrial developments on a widespread basis;
3. A **strategic approach to revegetation** should be adopted across the LARP;
4. Include **access management plans** in

industrial development project planning for both new mechanized public access where it otherwise would not yet exist, and existing mechanized public access where it is not necessary for maintaining sub-regional Aboriginal or recreation objectives;

5. **Standardize linear footprint and access management best practices** through a regulatory requirement or by offering significant incentives for their use;
6. **License access**; encourage the cancellation of dispositions that are no longer in active use so that they can be restored;
7. The Government of Alberta should **streamline the approval of revegetation plans** for linear features; and
8. The Government of Alberta should **support a multi-stakeholder planning** approach for the development of sub-regional plans.

Stony Mountain 800 Linear Footprint and Access Management Summary: A Multi-Stakeholder Planning Pilot Project was approved by the CEMA Board on September 24, 2014, and forwarded as a recommendation from CEMA to the GoA in late October to inform regional and sub-regional planning in northeastern Alberta.

The goal of CEMA and the subgroup is that these recommendations be incorporated into government planning and management processes for the oil sands region.

A copy of the summary document is available in CEMA's new data library.

WORKING GROUP UPDATES

Reclamation Working Group

Co-Chairs: Stephen Tuttle (CNRL) and Taras Pojasok (ESRD)

Program Administrator: Kim Dacyk



The Reclamation Working Group (RWG) has welcomed a new co-chair, Taras Pojasok (ESRD). John Begg (ESRD), RWG's former co-chair, has accepted a new position within the Government of Alberta that has taken him away from reclamation. Congratulations, John, on your new position. Your knowledge and insight will be missed.

RWG would also like to thank Fred Beall (NRCan) for his many years of service with the group. By the beginning of December Fred was to have "Gone Fishing" as he enters into retirement. Best wishes, Fred, on the next phase of your life.

The Terrestrial Sub-group (TSG) of RWG will also be seeking a new chair, as Lelaynia Wells (née Cox) will be stepping down on December 31, 2014. RWG would like to thank Lelaynia for her service to TSG as chair and to wish her congratulations on her recent marriage.

The working group would also like to offer its congratulations to RWG member Ainslie Campbell on the birth of her new baby.

Investigation of chemical REDOX gradient and their contributions to SOD associated with fresh MFT capping

A research team from the University of Windsor led by Chris Weisener in close cooperation with CEMA and environmental research scientists from Syncrude Canada Ltd. and Suncor Energy Inc. carried out this research.

The first and second stage of research on the Syncrude and Suncor fluid fine tailings (FFT) in the field and laboratory (Chi Fru et al., 2012; Chen et al., 2012; Reid et al., in preparation), has been completed. The research characterized the oxygen and sulphur flux and chemical gradients from three different tailings ponds and monitored the chemistry and microbiology from three FFT materials. These included an active FFT storage site (Base Mine Lake ~14 years old) and inactive FFT storage (Suncor ponds STP ~seven years and Pond 1A ~35 years).

The primary goal was to establish the "driving force" or chemical flux responsible for dissolved gas expression pore water release and sediment

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(DO) demand. Investigating flux in and flux out potential for three different FFT materials was used to determine chemical diffusive flux. This information is critical for defining settling behaviour stability and the role of microbial influences for transport of gas and pore water expression to the water cap.

In addition, a molecular community analysis was performed in parallel to identify bacterial protagonists contributing to the SOD behaviour.

Objective 1: Investigate the underlying protagonists (chemical or biological) and the development of chemical redox gradients from processed FFT in either biologically active or inactive FFT.

Outcomes:

- » The key drivers affecting the chemical flux in and out of the FFT material linked to the existing microbiology.
- » A defined redox gradient develops at the mudline controlling SOD behaviour.
- » From field observations this redox environment extends below the first two metres from the mud line and represents a biologically active zone for oxygen consumption and potential organic degradation activity. Similar stratified zones were observed in laboratory microcosms but on a smaller scale (e.g., 1.5 to 2.0 cm below the mud line).
- » Laboratory biotic microcosms show that the FFT can reach equilibrium within four weeks; the subsequent chemical processes are controlled by diffusion and mineralization at the sediment-water interface.
- » In the absence of a biological component, the FFT showed enhanced oxygen diffusion within 2-3 months dependent on available chemical reductants.
- » Based on the FFT simulation experiments, the Syncrude and Suncor FFT reaches chemical equilibrium within the first two months.

Objective 2: Investigate the chemistry and microbial community structure from deep cores collected from within two settling basins from Suncor Energy and Syncrude Canada lease sites.

Outcome: This objective was completed and is summarized in Chi Fru et al., 2013 and Statsik et al., 2014.

- » Suncor and Syncrude leases: Three Suncor ponds were sampled in June 2011 in cooperation with Suncor's Xiaoping Fan and one pond from Syncrude lease pond WIP. During that period, one undergraduate student and a PDF collected and compiled field-based chemical parameters collected from the three ponds. In parallel, molecular studies to investigate the microbial community within the respective samples were undertaken. Nadine Loick led this study investigating the genomic community structure associated with the collected sediment cores for Suncor and Syncrude samples. This work has now been published in Stasik et al., 2014.
- » Syncrude leases: The microbial community analyses of the preliminary sediment core collected from WIP in the summer of 2010 and 2011 by Syncrude's Tara Penner has been completed.

To view the full report, visit the CEMA Library.



WORKING GROUP UPDATES

Traditional Knowledge Working Group

Co-Chairs: Peter Fortna (Fort McKay Métis 63), Samantha Tremblay (Fort McMurray Métis 2020) and Tracy Howlett (AESRD).

Program Administrator: Nestor Manalo; **Aboriginal Liaison:** Bryan Fayant

The TKWG welcomed Tracy Howlett as its third co-chair starting in 2014. Tracy represents Alberta Environmental and Sustainable Resource Development. The TKWG also welcomes some new members:



Tracy Howlett

- » Janice Elliot – MNA Region 1
- » Carmen Wells – Fort McMurray ML 1935
- » Shelley Larose – Imperial Oil

Traditional Knowledge Framework

This project marks the final phase of a three-phase approach to building a Traditional Knowledge Framework, which was previously known as the Traditional Knowledge Management Framework (TKMF). Phase 1 conducted a gap analysis of traditional knowledge in the region and Phase 2 developed a scope of work and work plan for the third and final phase.

The TKF will be based on engagement with the TKWG member organizations representing stakeholders groups through a series of workshops and in close consultation with the TKWG. Stakeholders in the TKF development project

include four CEMA caucuses (Aboriginal, Industry, Government, and Non-Government Organizations) as well as members of those same sectors in northeastern Alberta who are not CEMA members. Project updates:

- » RFP Workshop: March 5, 2014
- » TKF-RFP: Approved and released March 14
- » Project Contractor: The Firelight Group
- » Project Initiation and presentation to TKWG: May 8
- » TKF Press Release: May 21
- » TKF Communications and Engagement plan: June
- » TK Framework website: June (tkframework.ca)
- » Round 1 face to face meeting with Aboriginal Communities: July – August
- » TKF Round 1 Workshop @ Nistawoyou Friendship Centre: August 13
- » TK Framework community engagement @ CEMA – August 14 Elders Workshop
- » TK Framework workshop with government – October 1
- » TK Framework workshop with industry and NGO – October 2



2014 Elders Workshop participants

WORKING GROUP UPDATES

Elders Workshop

This annual community outreach tool is vital to communication and relationship-building with Aboriginal member and regional communities. The workshop allows a forum for project vetting, feedback, and real-time work with a large number and wide range of Elders and youth.

The 2014 Elders' Workshop was one of the venues for face-to-face engagement on the ongoing Traditional Knowledge Framework (TKF) project. This year's Workshop Committee (volunteer) members were: Samantha Tremblay, Harvey Sykes, Carmen Wells, Darrin Bourque, Alice Martin and Elena Jacob. The workshop was held August 14 at Fort McMurray ML 1935.

TEK Bibliography Update

The intent of this project was to expand on the existing bibliography of the CEMA TEK research database. The bibliography provides the foundation for further research as well as a general information source for the general public. The bibliography is intended to identify and help locate information on Traditional Environmental Knowledge in the CEMA Study Area, which aligns with the Lower Athabasca Regional Planning Area.

A Research Grant Agreement was signed by CEMA and the Governors of University of Athabasca in May. CEMA will provide funds in the form of grant to permit the university to conduct this project. The database for TKWG is available online in its entirety on the BARB page at: [barbau.ca/tek_browse]

TK Task Group and Aboriginal Liaison Collaborative Meeting Program

This program was designed to ensure that TKWG members work collaboratively with other CEMA working groups to support their TK project scoping, design, and RFP development.



TKWG and Firelight TKF Project Initiation

The group also supports the CEMA Aboriginal Liaison and helps to ensure meaningful aboriginal community engagement.

CEMA's geographical membership is expanding from the Regional Municipality of Wood Buffalo to the entirety of Lower Athabasca Region Planning area. Due to this change, more new Aboriginal communities, as well as industries, government and NGOs, are entitled to join CEMA. Athabasca Chipewyan First Nation (ACFN), Elizabeth Métis Settlement and Fishing Lake Métis Settlement were the new Aboriginal communities who joined this year.

The CEMA Aboriginal Liaison and TKWG program administrator has undertaken an "Information Tour" to share information about CEMA's work with the following Aboriginal communities: Owl River Métis, Kehewin FN, Beaver Lake FN, Cold Lake FN and Fishing Lake Métis and MNA Region 2.

Aboriginal Coordinating Committee (ACC)

The ACC this year has welcomed six new members from our Aboriginal communities. They are:

- » Ron Quintal – Fort McKay Métis #63
- » Darrin Bourque – Willow Lake Métis #780
- » Arsene Bernaille – Athabasca Chipewyan First Nation (ACFN)
- » Samantha Tremblay – Fort McMurray Métis #2020
- » Mavis Desjarlais – Elizabeth Métis Settlement
- » Shirley Calliou – Fishing Lake Métis Settlement

WORKING GROUP UPDATES

Water Working Group

Co-Chairs: Chris Fordham (Suncor Energy), Doug Geller (Fort McKay FN), and Julie Self (AESRD)

Program Administrator: Melanie Dubois

Technical Program Manager: Rick Courtney

Groundwater Technical Group

This summer, the GWTG followed through with a commitment made in the first phase of the Surface Water-Groundwater Interactions in the Lower Athabasca Region study to communicate the results to participants and participant communities. In late August, SNC-Lavalin Inc. was retained to conduct an interim phase that will seek direction for future work on the surface water-groundwater interaction sites in light of initiatives by other agencies to conduct groundwater monitoring programs. The scope of work includes the following:

- » Review and validate the study findings for both Phase 1 and 2.
- » Communicate and discuss the methodology developed for collecting Traditional Knowledge (TK) following CEMA's TK research guidelines and the potential contributions of this methodology to further studies in the region.
- » Seek community input as to whether the program should continue and if so, how it should proceed.
- » Communicate that while CEMA may or may not be involved in continued research on this project, community recommendations are important for setting the direction of future work and for helping to shape the environmental protection policies for the region.

The SNC-Lavalin team will meet with the eight communities who participated in the first two phases during October and November. A final report will be submitted to CEMA at the end of the year.

A consultant team led by Earthfx Inc. was awarded a contract in late July to undertake the

Phase 2 Review of Potential Cumulative Impacts to Surface Water and Groundwater from In-situ Oil Sands Operations, focusing on the MacKay River watershed.

The main objective of Phase 2 is to assess, based on current understanding and projected groundwater use scenarios, the following fundamental question: Is there enough water in the watershed to sustain a responsible level of development? This study will assess the potential cumulative impacts on the MacKay River, its tributaries and local aquifers during low-flow periods, and determine whether the proposed level of development could adversely affect the frequency, duration, and severity of low-flow conditions on the MacKay River, selected tributaries and associated aquatic ecosystems including wetlands. Contract completion is scheduled for early July 2015.

The GWTG has also been working on drafting scopes of work for additional groundwater-related initiatives. These include updated aquifer mapping and groundwater model improvements for both the north and south Athabasca oil sands regions; and a possible follow-up phase to the Aquifer Reclamation Concept Review completed by GWTG in 2013.

Surface Water Technical Group

In support of CEMA's over-arching goals, the SWTG is assessing outstanding knowledge gaps identified at the end of the Phase 2 Framework Committee's conclusion, including environmental concerns related to the incremental effects of the recommended withdrawal scenarios. A key knowledge gap for the Phase 2 assessment is related to the Peace-Athabasca Delta (PAD) region and understanding the effects of the proposed Phase 2 withdrawals

WORKING GROUP UPDATES

on navigation, fish habitat, wildlife habitat and associated productivity in the PAD region. There are also knowledge gaps related to the mainstem Athabasca River, including changes to navigation, fish access to tributaries, and side channel dissolved oxygen levels that were identified by CEMA.

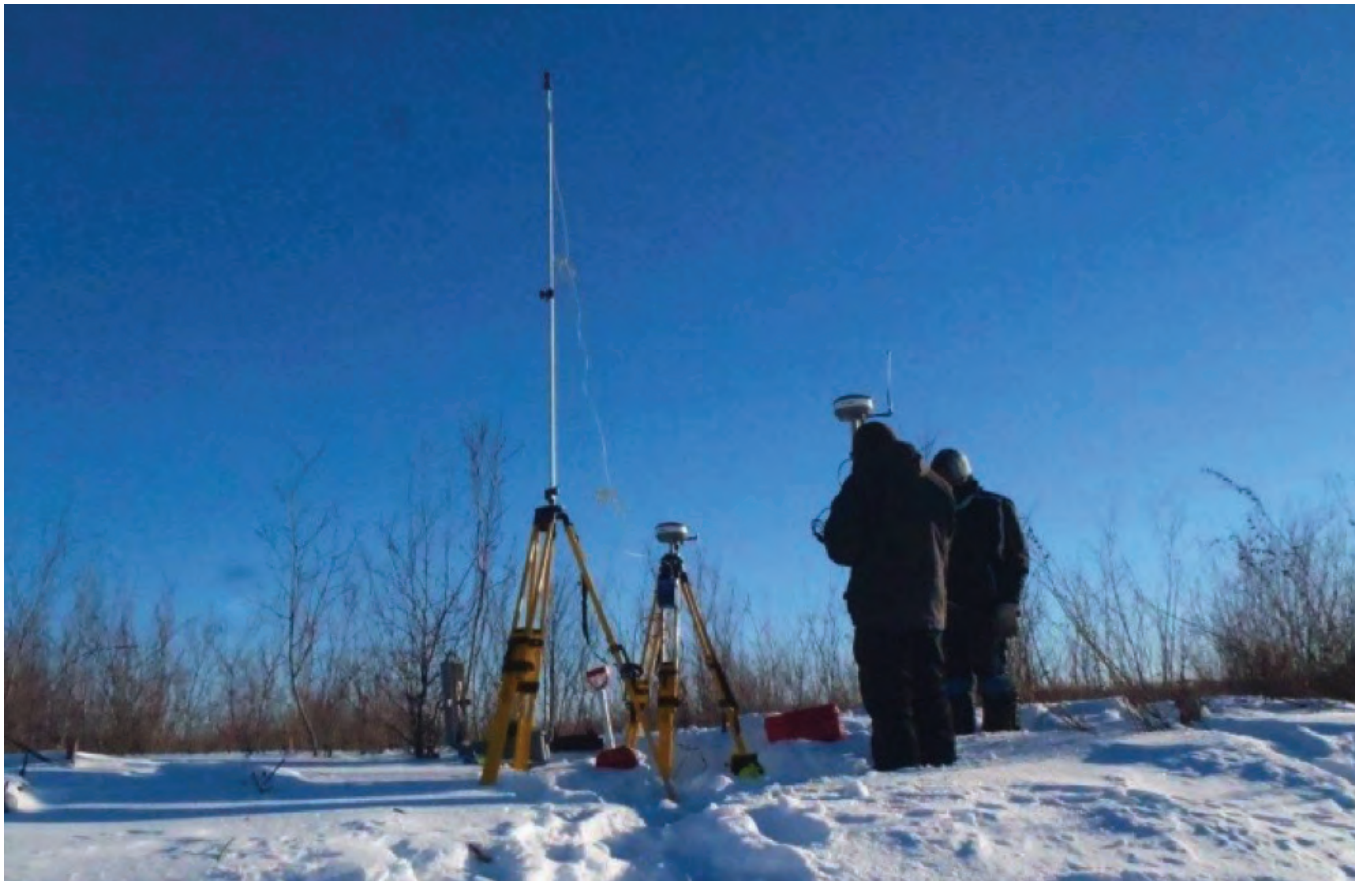
As part of the investigations into knowledge gaps, bathymetric and hydrometric sampling were conducted at four sites, including:


- » Site 1: Embarrass Divergence with the Athabasca River;
- » Site 2: Fletcher Divergence with the Athabasca River;
- » Site 3: Jackfish Creek/Richardson Lake Outlet; and
- » Site 4: Athabasca River divergence into Goose Island and Big Point Channels.

Hatfield Consultants, in collaboration with

the ACFN/MCFN Community Based Monitoring program, completed the Winter Ecology in the Delta – Hydrology and Hydraulics Winter Survey and Modelling study in 2014; AMEC completed the open-water field program in 2012. The winter program was conducted over two periods in February and March to improve both the River 1D Routing model and the River 2D hydraulic and habitat models that assess effects of Phase 2 water withdrawals on fish, wildlife, and water quality in the PAD. The 2014 work was able to improve the understanding of the river, including under-ice hydraulics and flow splitting between PAD channels, and improve both the River 1D routing model and River 2D hydraulic model for application in the PAD.

A final report was approved by CEMA in late September and the 2014 document will be available in CEMA's new data library.





*All of us at CEMA
wish everyone a very
Merry Christmas and
a Happy and Prosperous
New Year.*

