

Oil Sands Mining Reclamation Challenge Dialogue – Report

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Oil Sands Research and Information Network

OSRIN is a university-based, independent organization that compiles, interprets and analyses available knowledge about returning landscapes and water impacted by oil sands mining to a natural state and gets that knowledge into the hands of those who can use it to drive breakthrough improvements in reclamation regulations and practices. OSRIN is a project of the University of Alberta's School of Energy and the Environment (SEE). OSRIN was launched with a start-up grant of \$4.5 million from Alberta Environment and a \$250,000 grant from the Canada School of Energy and Environment Ltd.

OSRIN provides:

- **Governments** with the independent, objective, credible information and analysis required to put appropriate regulatory and policy frameworks in place
- **Media, opinion leaders and the general public** with the facts about oil sands development, its environmental and social impacts, and landscape/water reclamation activities – so that public dialogue and policy is informed by solid evidence
- **Industry** with ready access to an integrated view of research that will help them make and execute reclamation plans – a view that crosses disciplines and organizational boundaries

OSRIN recognizes that much research has been done in these areas by a variety of players over 40 years of oil sands development. OSRIN synthesizes this collective knowledge and presents it in a form that allows others to use it to solve pressing problems. Where we identify knowledge gaps, we seek research partners to help fill them.

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REPORT SUMMARY

This report provides a high level summary of the conversations and discoveries that emerged over the course of the Reclamation Challenge Dialogue. During the first two months of 2010, OSRIN explored the idea of the dialogue with a number of key stakeholders who were either directly involved in or affected by the oil sands reclamation challenge. These discussions confirmed its value in having such a dialogue and provided guidance on what particular challenges were most important to focus on.

Over 100 participants across the oil sands reclamation community of interest and practice were invited to respond to the Challenge Paper. Feedback was received from 43 individuals, including responses from governments, individuals working with First Nations in the oil sands area, academia, consulting firms, oil sands companies, research/technology agencies and nongovernment organizations. Many responded in considerable detail; over 100 pages of feedback were compiled unattributed into a Consolidated Feedback Document. This material was then synthesized into a Progress Report supplemented by a detailed Progress Report Appendix. Both the original feedback and the Progress Report material contain a wealth of information that can and should be capitalized on further.

While the Challenge Paper intended to focus on a few key aspects of the reclamation challenge for mining in the oil sands area, it ended up provoking a wide range of reactions across almost the full spectrum of the “oil sands reclamation system.” The nature and depth of the responses underscored the complexity, diversity and interconnectivity of the numerous reclamation issues and opportunities presented. The responses also indicated how much people wanted to express their views on these challenges. It was obvious that the respondents put considerable effort into articulating thoughtful feedback. These were not just subjects of professional interest but were matters that evoked strong, passionate feelings. Clearly there are some strongly held but also widely divergent beliefs on certain topics.

All of this feedback and its synthesis informed the design of the June 17th Workshop, which was held at the University of Alberta in Edmonton and attended by 38 people. The workshop was supported by a Workshop Workbook. The results of the workshop were summarized in a Workshop Synopsis document that was distributed in early September.

Based on the feedback to the Challenge Paper the Workshop scope was narrowed to create a systems view of oil sands reclamation with a particular focus on key components: (1) challenges related to the rationale and application of the equivalent land capability concept; (2) challenges related to end land use selection; and (3) challenges related to how to respond to and inform the public’s expectation of reclamation success.

Two different approaches to developing a reclamation system “map” were tested with Workshop participants.

Eleven recommendations were developed from the ideas generated by the Challenge Dialogue process.

ACKNOWLEDGEMENTS

The Oil Sands Research and Information Network (OSRIN), School of Energy and the Environment, University of Alberta provided funding for this project.

The Dialogue was assisted by the Advisory Members of the Organizing Team comprised of Satya Das, Cambridge Strategies Inc.; Calvin Duane, Canadian Natural Resources Ltd.; Simon Dyer, Pembina Institute; Fred Kuzmic, Shell Albian Sands; Albert Poulette, Alberta Environment; and Lisa Schaldemose, Fort McKay Industrial Relations Corporation.

The Dialogue was facilitated by Keith Jones and David Forrest, Innovation Expedition Consulting Ltd.

OSRIN, the Organizing Team and the consultants are grateful for all of the constructive input received from people who participated in one or more parts of the Challenge Dialogue process.

1 INTRODUCTION

This report provides a high level summary of the conversations and discoveries that emerged over the course of this Reclamation Challenge Dialogue. During the first two months of 2010, OSRIN explored the idea of the dialogue with a number of key stakeholders who were either directly involved in or affected by the oil sands reclamation challenge. These discussions confirmed its value in having such a dialogue and provided guidance on what particular challenges were most important to focus on. Many of these ideas, challenges and opportunities, guided by an advisory group (listed on the front cover), were brought together in the form of a Challenge Paper, the first in an incremental series of Dialogue products.

Over 100 participants across the oil sands reclamation community of interest and practice were invited to respond to the Challenge Paper. Feedback was received from 43 individuals, including responses from governments, individuals working with First Nations in the oil sands area, academia, consulting firms, oil sands companies, research/technology agencies and nongovernment organizations. Many responded in considerable detail; over 100 pages of feedback was compiled unattributed into a Consolidated Feedback Document. This material was then synthesized into a Progress Report supplemented by a detailed Progress Report Appendix. Both the original feedback and the Progress Report material contain a wealth of information that can and should be capitalized on further.

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Each of the reports noted above are provided in the Appendices in the separate extended version of this report¹.

Stemming from this Challenge Dialogue, and subsequent activities being planned, OSRIN intends to develop some specialized knowledge products focused on a few key discussion topics that emerged.

1.1 The Challenge Dialogue System

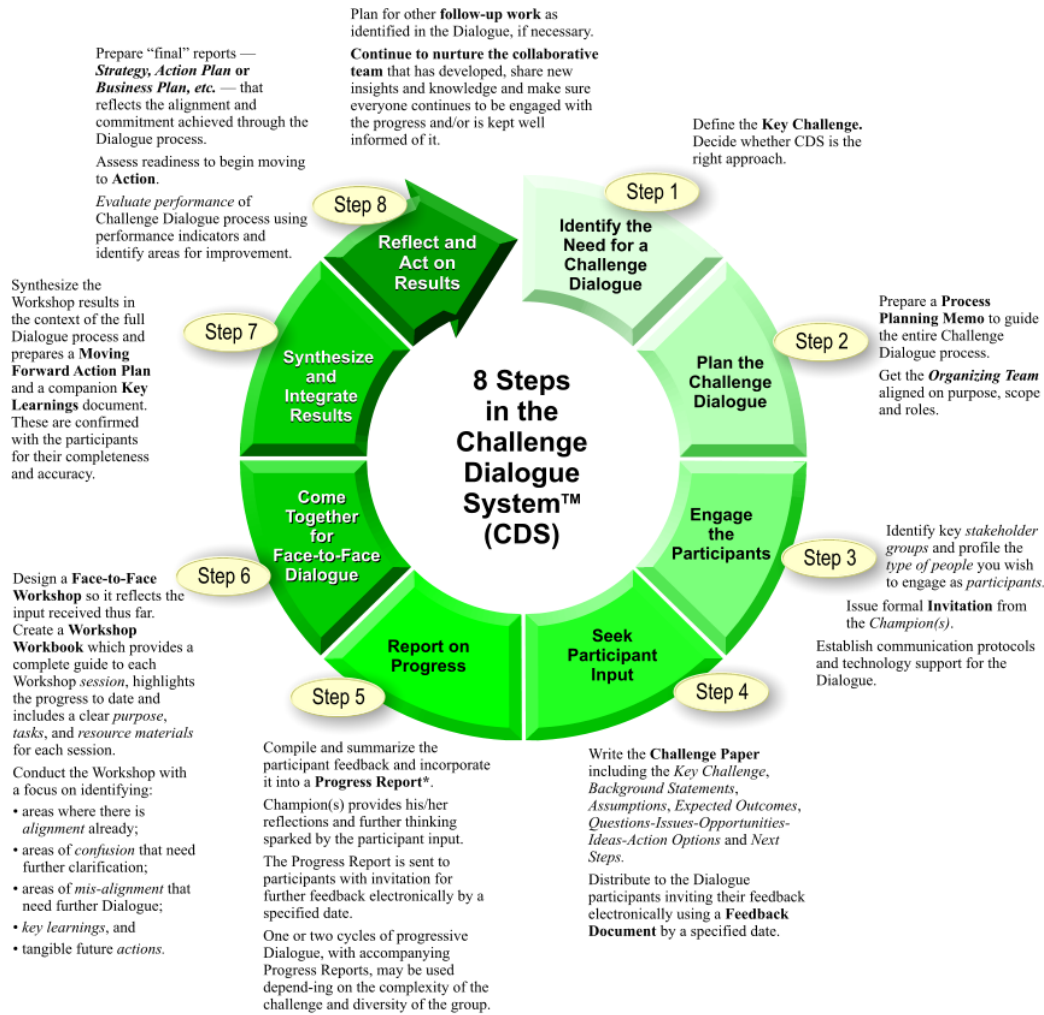
We used the Challenge Dialogue SystemTM (CDS)² developed by Innovation Expedition to guide our Dialogue – prior to and during and the face-to-face Workshop on June 17, 2010.

CDS is an efficient and effective vehicle for engaging diverse stakeholders and assisting them to collaborate and innovate in order to accomplish a complex task. CDS is a structured but flexible

¹ Jones, R.K. and D. Forrest, 2010. *Oil Sands Mining Reclamation Challenge Dialogue – Report and Appendices*. Oil Sands Research and Information Network, University of Alberta, School of Energy and the Environment, Edmonton, Alberta. OSRIN Report No. TR-4. 258 pp.

² www.innovation.expedition.com

methodology for moving a team from ideas to action quickly and effectively (see diagram below).



* Note in *Mini-Challenge Dialogues* the process may be truncated whereby elements of the Progress Report are integrated directly into the Workshop Workbook session materials. See Step 6.



1.2 Organization of This Report

This report summarizes the key findings and recommendations arising from the Challenge Dialogue process. The Challenge Dialogue process is a disciplined process that engages diverse groups on discovering collaborative and innovative solutions to complex challenges. A Challenge Dialogue typically operates over several months, with the bulk of the work being done electronically with the participants via the issuance of an initial Challenge Paper which is then commented on. The synthesized comments are used to create one or more Progress Reports, the process being repeated iteratively as the Challenge evolves. Finally, a face-to-face Workshop is

held to work in a focused way on the remaining outstanding issues.

The output documents from this Challenge Dialogue are provided in the extended version of the report, and include:

- the original Challenge Paper that was sent to over 100 knowledgeable people
- the feedback received from 43 respondents
- the Progress Report that summarized the feedback and revised the Dialogue components as required
- the Workshop Workbook that was provided to the Workshop participants
- the Workshop Summary Report

2 KEY CHALLENGE AND EXPECTED OUTCOMES

The Key Challenge for the Dialogue started out somewhat broad and ambitious:

To engage a diverse set of reclamation-related domain experts and stakeholders in a purposeful conversation that is focused on: (1) identifying challenges and required timelines in managing and containing contaminants, and reclaiming to equivalent capability; and (2) exploring the feasibility of creating alternative desirable end land uses.

Reflecting on the feedback received, the OSRIN team changed the Key Challenge to be:

To engage a diverse set of domain experts and stakeholders in a purposeful dialogue to create a systems view of oil sands reclamation with a particular focus on key components: (1) challenges related to the rationale and application of the equivalent land capability concept; (2) challenges related to end land use selection; and (3) challenges related to how to respond to and inform the public's expectation of reclamation success.

The workshop and this report have focused on the reclamation system perspective and these three particular challenge areas in a systems context.

The Expected Outcomes for the Dialogue also started out ambitiously as:

1. To identify challenges in reclaiming oil sands developments to functional boreal ecosystems and landscape;
2. Define the attributes by which functional boreal ecosystems and landscapes can be recognized (these could include visual, biophysical and spatial attributes; ecosystem functions; indicative successional trajectories;
3. Identify and characterize potential end land uses in the reclaimed area; and
4. Identify related challenges in landscape design and in institutional, economic, and social and cultural acceptance for these alternative end land uses.

While much of the feedback touched on all of these points to some degree, the Expected Outcomes were also revised so they were more focused and realistic. They became:

1. Achieve alignment on the key elements, linkages and dependencies within the oil sands reclamation system and how a lack of shared understanding and alignment is hindering its effectiveness.

The key elements OSRIN has chosen to focus on are: the equivalent land capability concept and its application; end land use selection and response to and informing the public's expectation of reclamation success.

2. Achieve alignment on and commitment to specific follow-up initiatives to be undertaken by OSRIN and others to increase shared understanding and help increase the effectiveness of the oil sands reclamation system.

Drawing on these revised outcomes, the June workshop zeroed-in on five specific outcomes:

1. The benefits of taking a Systems Perspective to the overall oil sands reclamation challenge are better appreciated and have begun to be applied to the challenges and opportunities identified in this dialogue.
2. Challenges related to the rationale and application of the Equivalent Land Capability concept have been framed and key questions to address this challenge and to guide future work have been identified.
3. Challenges related to End Land Use Selection have been framed and key questions to address this challenge and to guide future work have been identified.
4. Challenges related to How to Respond to and Inform the Public's Expectation of Reclamation Success have been framed and key questions to address this challenge and to guide future work have been identified.
5. Preliminary outlining of Action-Recommendations as input to a post-workshop Action Plan.

At the end of the workshop we asked the participants to how well these five outcomes were met. On average (median value) they rated outcomes 1, 2 and 3 as being "met." Outcomes 4 and 5 were rated as "partially met." These ratings confirmed OSRIN's sense that the workshop had been a success.

3 NATURE AND EXTENT OF THE CHALLENGE PAPER FEEDBACK

In total the feedback was comprehensive, broad ranging, insightful and constructive. While the Challenge Paper intended to focus on a few key aspects of the reclamation challenge for mining in the oil sands area, it ended up provoking a wide range of reactions across almost the full spectrum of the "oil sands reclamation system." The nature and depth of the responses underscored the complexity, diversity and interconnectivity of the numerous reclamation issues and opportunities presented. The responses also indicated how much people wanted to express their views on these challenges.

It was obvious that the respondents put considerable effort into articulating thoughtful feedback. These were not just subjects of professional interest but were matters that evoked strong, passionate feelings. Clearly there are some strongly held but also widely divergent beliefs on certain topics. It soon became evident that OSRIN tried to include too many topics into the Challenge Paper.

At first blush it appeared like there were significant differences of opinion with the statements in the Challenge Paper. Indeed, there are some topics where some said “all is well”, while others said “this is a significant area of concern” or, on the other end of the spectrum – “we have absolutely no idea.”

But, in many cases upon closer examination, it often became evident that these differences in views were more of an indication of people simply not knowing or not being able to know because they don’t have access to the necessary information to offer an opinion. Most often what was brought forward in the comments was not so much counter arguments but rather new information and deeper insights on a subject.

In many cases we noted that a systems perspective overall and around a particular challenge was missing, being called for, not understood or not understood universally among the many active players and stakeholders. We discuss this observation further in [section 4](#) below.

In the Challenge Paper people were asked to share their expectations for the workshop. While the responses apply to the workshop they also illustrate the broader needs and expectations of the oil sands reclamation community. Four general themes are evident in this feedback:

1. Common understanding of the state of our knowledge – the need for this community of practice (and interest – i.e., stakeholders) to have a common, shared understanding and exchange of what is known, what is not known, what is not known but being researched.
2. Reclamation outcomes – the need to have clearly defined, agreed upon, high-level reclamation outcomes. Tied closely to this is the need for a deeper understanding of some foundational concepts (e.g., equivalent land capability) with their supporting explicit definitions of key terms (e.g., functional, landscape, boreal, etc.).
3. Collaboration – an explicit or underlying desire to more effectively on our knowledge and expertise through better collaboration.
4. Collective action – a desire to share and build on what we know and to move forward with some collective action.

As a result of the feedback OSRIN adjusted the key challenge and expected outcomes for the Dialogue (see above). A more in-depth examination of other topics identified in the feedback will be considered for discussion in subsequent venues.

3.1 Critical Questions Feedback

The Challenge Paper asked six critical questions. Following is a summary of the results.

What are the top four challenges in reclaiming oil sands developments to functioning boreal ecosystems and landscapes?

Ninety-four priority challenges were advanced by the participants. They broke out into seven (7) categories:

1. Strategic Goals and Desired Outcomes for the Reclamation of the Oil Sands Area
2. Understanding of the Nature and Magnitude of Oil Sands Development and Implications to the Reclamation Task
3. Misalignment of Legislation, Regulations, Policies, Expectations, Requirements, Enforcement
4. Communicating with the Public, Transparency
5. Reclamation Success – Criteria, Uncertainty, Demonstrating It
6. Knowledge Gaps, Knowledge Transfer / Sharing, Tools. The sub-categories apart from general comments in this area included: landforms-hydrology-water-soils; plant ecology, succession; salts, contaminants; wetlands; and, tailings
7. Timelines
8. Miscellaneous – determining end land use, disruptive use of reclaimed land, provision of reclamation costs, liability management practices and climate change

Do we have the required capability to manage and contain contaminants to create a healthy biosphere?

There were 19 respondents to this question: ‘Yes’ – 9 most with caveats; ‘No’ – 4 only one without a comment; ‘Don’t Know’ – 6 did not know or implied they did not know for sure.

- YES – The caveats included – lack of will to apply the capability; R&D of past 20 years has proven this but we need time for this to be applied; greater investment of effort is needed than the present approach, needs to become integral component of closure plans; need risk assessment as part of the review process; it’s expensive; and, understanding of acceptable impacts over time.
- NO – the comments included – ability to measure naphthenic acids very recent, what fractions are causing NAs; more research needed before we can manage them; data isn’t publicly available; need research on the potential of wetlands to act as wastewater treatment areas.
- DON’T KNOW – the concerns included – no success stories; unresolved differences of opinion; each contaminant has to be considered separately.

Does the current requirement to create equivalent capability, including the use of the Land Capability Classification System, achieve the expectation of a having functional boreal ecosystems and landscapes?

There were 18 respondents to this question: ‘No’ – 10, all but two with comments; ‘Yes’ – 6, all but one with comments or caveats; ‘Maybe’ – 1, with a comment.

- NO – the comments included – knowledge and experience not at a point where we can claim this; need data over time to validate our predictions; bias against wetlands, a separate system is needed to assess wetlands; does not clearly translate into setting clear, consistent and measurable goals for achieving reclamation success; originally and agriculture tool; forestry-focused – sends a confusing message for defining desirable wetland outcomes; far from achieving this goal; ‘equivalent’ as a statement is useful to set very high level direction but stops short as no one knows what it means.
- YES – The caveats included – overall the tools and systems are OK, adequate; LCCS probably close to achieving the expectation; will lead to functional ecosystems give the time to do so; capabilities of wetlands need to be addressed, biased against wetlands.

How would you recognize that a site / landscape has achieved equivalent capability?

There were 19 respondents to this question. The feedback ranged from a general acknowledgement of this measurement challenge to clear and detailed ideas on what equivalent capability meant and implied more deeply and this concept and intention could be enhanced and measured.

The informative feedback was organized into six categories: landscapes including spatial-temporal considerations, landforms, soil, vegetation, lakes and water bodies, time, and stakeholders and human use. Two respondents shared specific ideas about how the intentions of equivalent capability approach could be augmented and enhanced more explicitly in terms of the concept, and criteria and measures.

What are possible and desirable end land uses for reclaimed land?

There were 22 respondents to this question. The comments included:

- suggested lists of customary regional uses including traditional use by Aboriginals
- suggested lists of non-conventional uses
- thoughts on who should make this evaluation and decision
- timeframe considerations with respect to the longevity of today’s values 100 years from now
- the relatively small size of the land areas that actually might entertain different end land uses relative to more customary uses

- land use trade-off considerations including multiple uses of the same piece of land (i.e., compatible uses), which escalates the reclamation discussion into a broader land use planning (LARP) conversation
- the feasibility of some end land uses regarding compliance with legislation and regulation (e.g., endangered species, Aboriginal constitutional and Treaty rights), economic, equitable cost sharing, institutional alignment and technical factors

What are some of the key challenges in landscape design and in institutional, economic, and social and cultural acceptance for these alternative end land uses?

There were 19 respondents to this question. The feedback was wide ranging but tended to matching in many cases the different aspects of the feasibility end land uses outlined in the Challenge Paper (assumption #3). The key challenges advanced were grouped into 4 categories: public and aboriginal values and expectations, communications and related stakeholder processes to ascertain these values and communicate them; landscape design and other technical challenges and constraints; and, institutional factors.

4 THE RECLAMATION SYSTEM PERSPECTIVE

As noted above, the lack of clear systems perspective soon became evident as we worked through the feedback material. This observation was noted in the Progress Report and respondents to that report affirmed its absence and the importance of including it in further discussions. At the workshop the importance of taking more of a systems approach to oil sands reclamation was a prevailing theme. We have summarized this overarching theme from the Dialogue by outlining our observation, mapping-out a quasi-systems figure based on the Dialogue discussion points, examining the unintended consequences of not taking a systems view, and examining the implications of taking more of a systems approach to oil sands reclamation in the future.

The term “reclamation system” is intended here to include all of the elements involved in planning, managing, conducting and measuring / monitoring reclamation. This includes, but is not limited to a policy system, a regulatory system, an operational reclamation system, and others. Thus the “reclamation system” can be thought of as a system of systems.

4.1 Oil Sands Reclamation Seldom Recognized and Managed as a System

What was evident in the feedback to the Challenge Paper is that first, the reclamation of the oil sands is very complex but is seldom recognized as reclamation system per se. Different people – planners, practitioners, experts, policy-makers, regulators, etc. – engage with the reclamation system at different places. In so doing, they observe different things and focus on different things. The feedback underscored the complexity of this system and demonstrated how different people related to different parts of it and therefore had significantly different priorities and issues with that part of the system in which they engaged.

A second observation was that the feedback indicated directly and through inference that a system perspective is often either missing or, for those that have a systems view, that a common systems view is not understood or shared universally among the reclamation planners and practitioners.

4.2 Mapping Themes

Recurring discussion points and themes emerged from the feedback. They were organized into 10 themes with the key discussion points represented within each theme. Figure 1 attempt to provide an integrated picture of these themes and their key discussion points on a single page. This conceptual representation is only one of a number of possible representations of the “oil sands reclamation system.” At the workshop it was suggested that the sand grains in the figure be turned into cog wheels to illustrate their interconnectedness (see the inset within Figure 1).

In the Progress Report we also portrayed some the key elements of the reclamation system in the form of a process map (see Figure 2). This representation starts with the development of the mine plan which in turn, triggers the development of a reclamation plan and a tailing plan and so on. The process steps are further highlighted showing what steps are supported with guidance information, which ones have uncertainty and which ones represent gaps in the system.

Figure 3 shows yet another portrayal of the oil sands reclamation system – in this case as a series of four layers. There may even be a fifth layer which would be for “society’s values and expectations”. People working in the system go back and forth between at least two of the layers depending on what level you operate at in an organization.

In the workshop it was suggested that feedback loops be incorporated so the system is adaptive, a learning system and is continuous improved. As important, there is a need to convey the system as a regional, multi-operator scheme, not a single mine site. When polled, none of the participants at the workshop were aware of other existing system diagrams apart from some that may show the regulatory process.

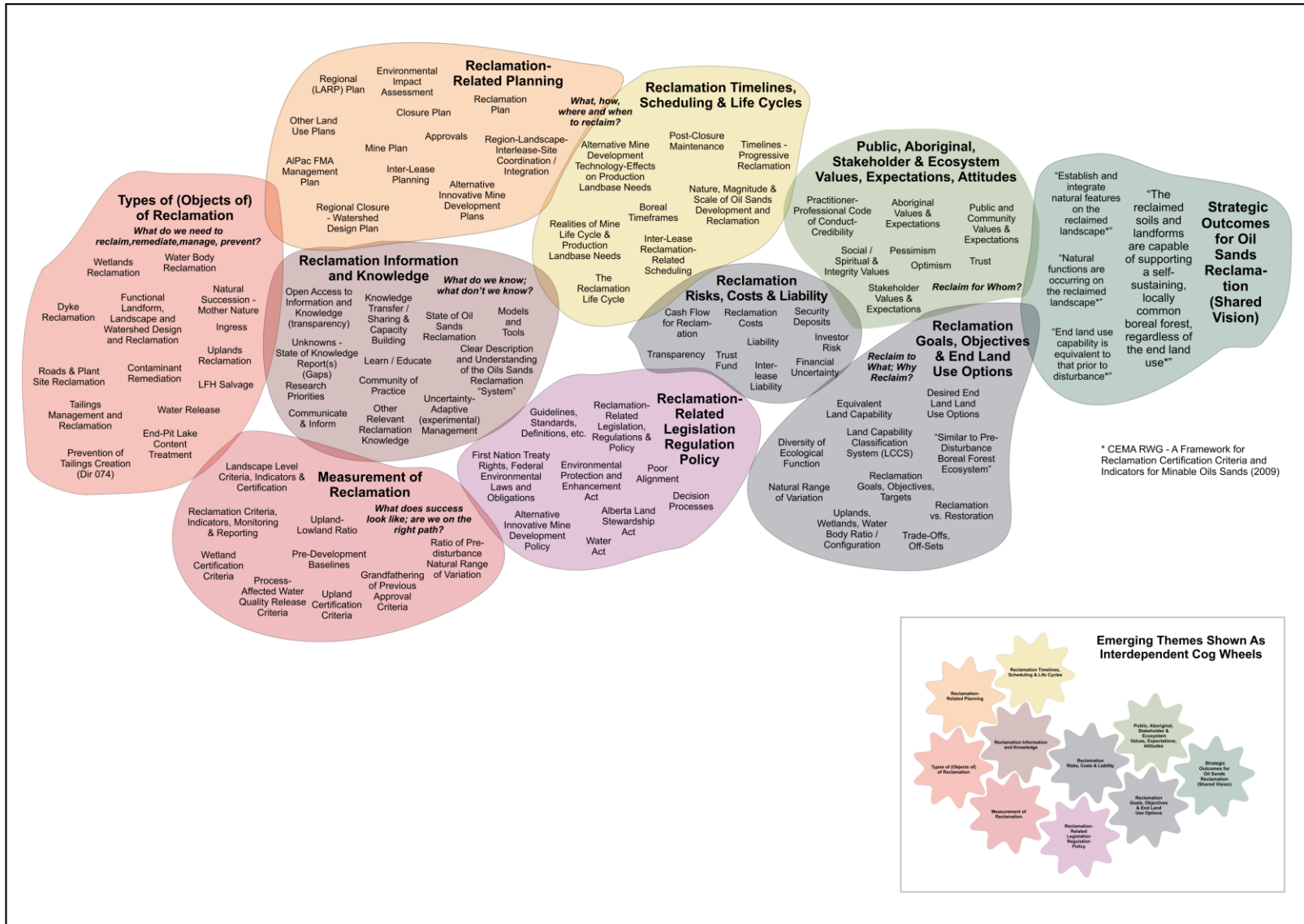


Figure 1. Emerging discussion themes and key discussion points – the ‘oil sands reclamation system’. The inset shows the themes as interdependent cog wheels.

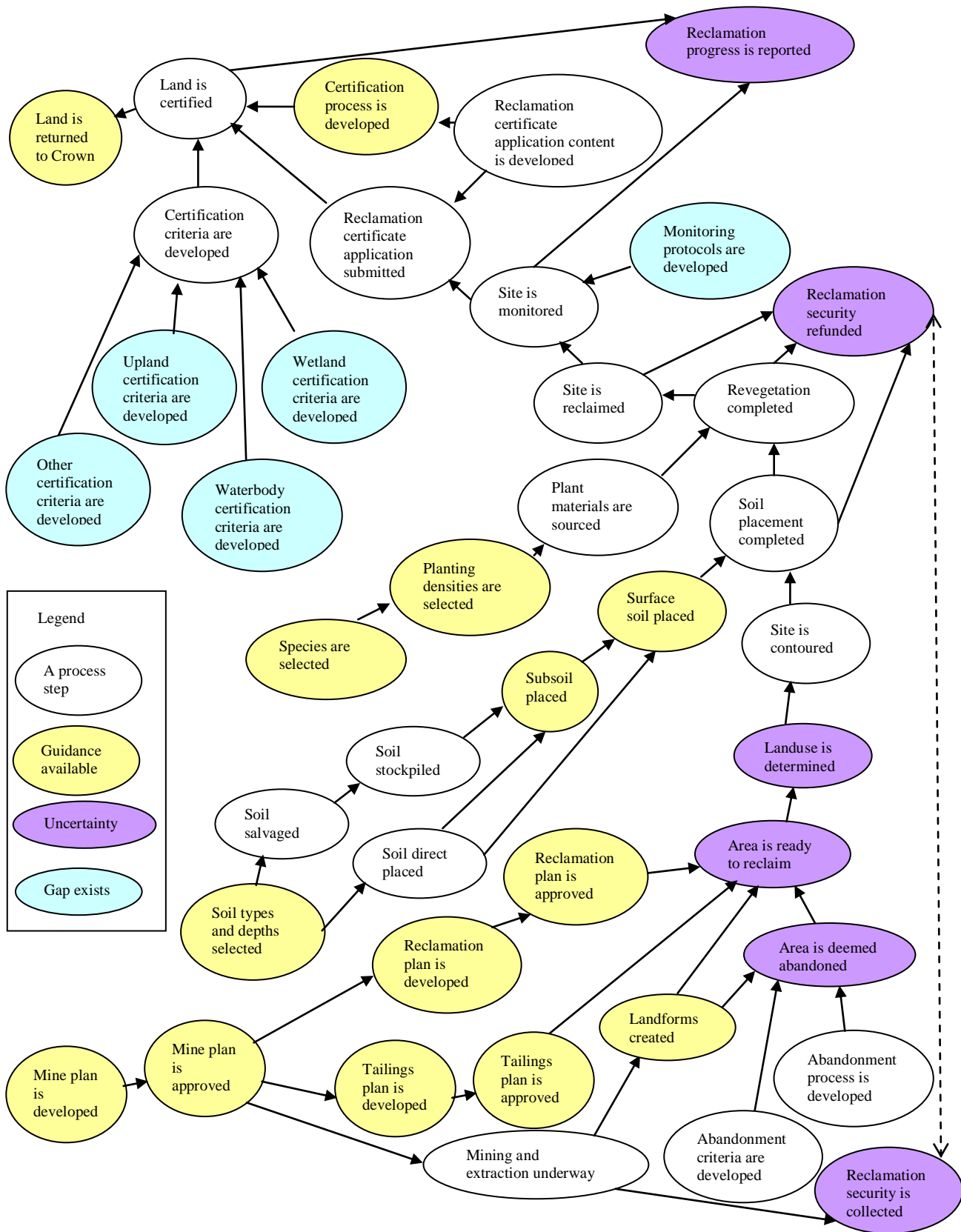


Figure 2. Simplified process-oriented view of the “reclamation system.”

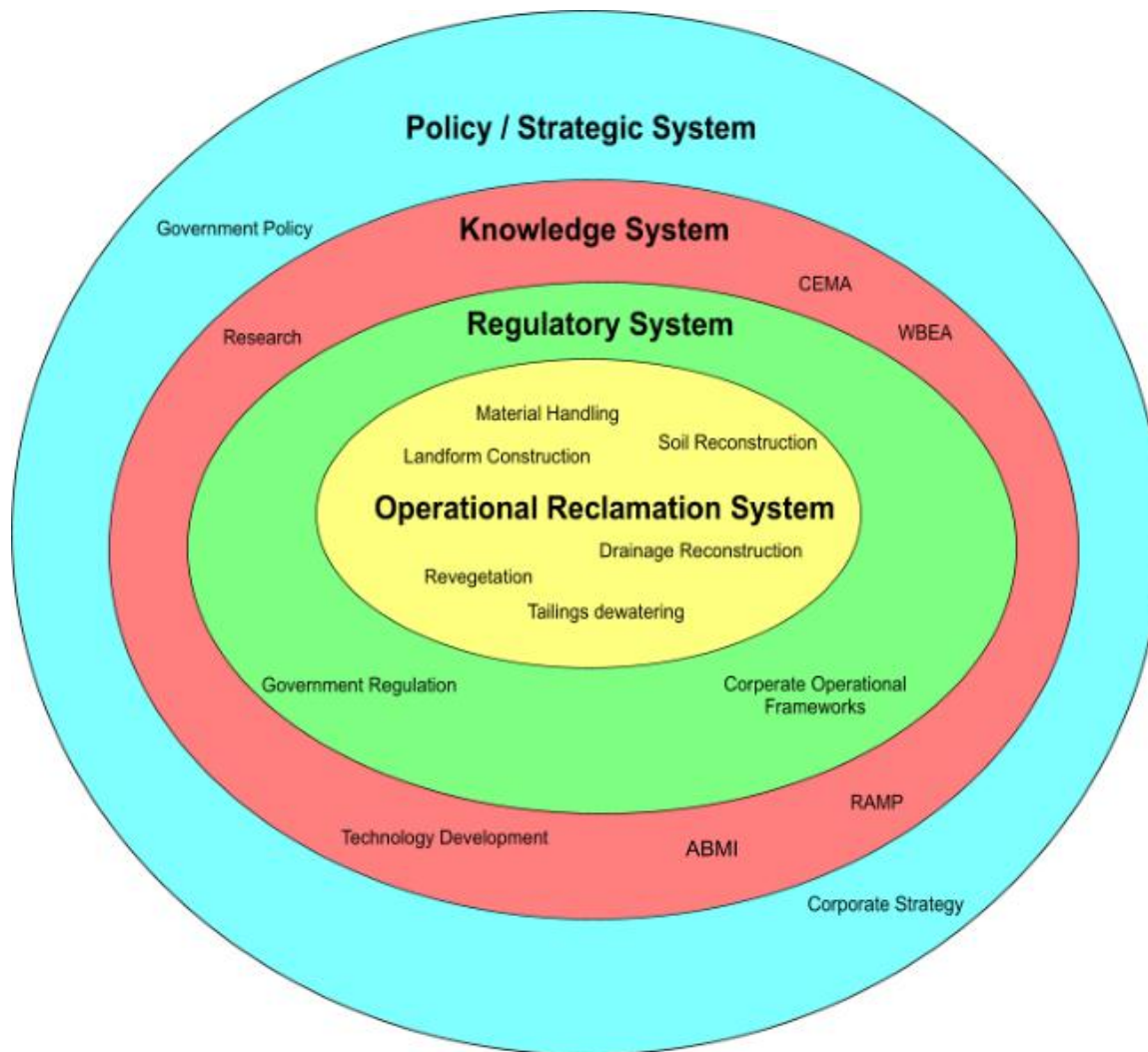


Figure 3. A layered approach to representing the oil sands reclamation system. Note – the labels are incomplete but provided simply for illustration.

4.3 Unexpected or Unintended Consequences of Not Taking a Systems Approach

Fourteen examples of unintended consequences due to not taking a systems approach were described at the workshop. This list is for illustration purposes only and is not meant to be exhaustive. Details for these are available in the Workshop Synopsis.

1. Selection and optimization of bitumen separation technology
2. ERCB draft directive for fresh water use
3. Zero discharge of process affected water
4. Conflicting management objectives; making decisions that precludes alternatives

5. Poor communication between mining operations and reclamation limits coordination and cooperation
6. Reclamation liability misconceptions, fear of failure and disincentives hinder more timely reclamation certification
7. Conflicting regulatory and policy requirements
8. Changing reclamation objectives and outcome-based performance means yesterday's reclamation doesn't meet today's certification criteria
9. Consolidated tailings (CT) presented more challenges for reclamation (and water quality, extraction and mine closure)
10. Change in overburden depth requirements for saline-sodic lack scientific rationale
11. Land Capability Classification System's forestry bias causes wetlands to be undervalued and under considered
12. Oil sands promotion and government incentives for development
13. Rigid application of rules reduces situation-specific flexibility jeopardizing reclamation outcomes
14. Access control and management need to be a part of reclamation planning
15. Accounting rules for the disclosure of liabilities may affect a company's 'reclamation attitude'
16. Reclaiming uplands affects the wetland system hydrology

The above unintended consequences illustrate that when we examine how to best increase the efficiency and effectiveness of current reclamation plans and practices, we must take the whole system into account. Ultimately everything is connected to everything – “the detailed elements are important and need to be worked on, but we need to focus also on the ‘system’ and how these elements have to work together.”

4.4 Implications of Taking a Systems Approach to Oil Sands Reclamation

At the workshop there was considerable interest in exploring the meaning and implications of taking more of a systems approach to reclamation of the oil sands area. Some felt this approach would help address the increasing need to align site-level plans and actions with landscape-level planning objectives such as those in the Lower Athabasca Regional Plan (LARP). Expanding on this, is the need to more explicitly link EIAs to mine plans, mine plans to closure plans, and closure plans to regional plans. A systems approach means that all reclamation efforts need to be better coordinated so that one organizational unit's objectives are not creating unintended consequences for others and that they together are aligned with regional outcomes.

The reclamation system tends to be partitioned among various organizations and sub-units of organizations. Local optimization or maximization may lead to overall (system-wide) sub-optimization. This situation is typical of any large complicated system and not unique to the oil

sands develop or reclamation. What is important to ask here is – how we can develop strategies for overcoming these sources of ineffectiveness and of inefficiency?

At the end of the day, all of the various planning components need to work in an integrated manner and not be at cross-purposes so that the ultimate reclamation outcomes can be achieved effectively and efficiently. One key to this greater integration is the need for everyone to understand better the “natural life cycle of mining and how the current reclamation matters relate to that.”

As shown in Figures 1 and 2, systems can be represented using various types of diagrams that show relationships among the different elements of the system or process connections. These types of diagrammatic representation can be a useful tool for understanding and describing linkages and dependencies and for testing the potential impacts of decisions, plans and actions in one element to decisions, plans and actions in other elements of the reclamation system.

5 EQUIVALENT LAND CAPABILITY

Alberta legislation is absolutely clear in stating that the end objective of reclamation of lands disturbed by mining is “equivalent land capability”. What is far from unambiguous, and less clear, is what “equivalent land capability” means. It was clear from both the feedback to the initial Challenge Paper and Progress Report, and from the discussion at the workshop, that there are many interpretations of what “equivalent land capability” does mean and what it “should” mean. There is confusion about the origins and application of the concept and many people equate the concept of capability with the measurement of capability. It is critical that regulators, planners and practitioners thoroughly understand what it means and what it implies.

The concept of capability was used in the Canadian Land Inventory (CLI) series of reports as a way of describing the potential of landscape/soil units to support agriculture, forestry, recreation, or wildlife. Capability was assessed using 7 classes. Class 1 denoted the highest suitability for the intended use with essentially no limitations. Class 7 denoted landscapes on which the intended use was not possible. Subclasses are used to describe the nature of the limitation that causes the land to be downgraded from the maximum value that the climate and soil would allow.

Capability is not an intrinsic property; rather capability is an attempt to describe potential or suitability for a particular intended use. For example, a site with characteristics that would make it Class 1 land for alpine skiing recreation would make it Class 7 for an airport to service commercial jet aircraft, and vice versa. In oil sands Land Capability Classification System (LCCS)(CEMA 2006) terms, Class 5 may be poor forest land but could be Class 1 for wetlands.

Capability is also not about productivity; rather it focuses on potential for the land to produce, given appropriate management. The historic language “capability equal to or better than” is not about capability; rather it is about a focus on a particular land use. For example, if an undisturbed site was originally Class 5 (wetness) for forestry, it might be made better for forestry by reclaiming it to avoid ponding. Thus, the site would have a higher capability for forestry.

But that same site might have been Class 1 for moose habitat prior to disturbance and be reduced to a much lower class through removal of the ponds.

In attempting to provide guidance for practitioners with respect to reclaiming to and determining whether a site had been reclaimed to “equivalent land capability”, the Reclamation Working Group of CEMA developed the LCCS. This system, which focuses on capability for forestry, seeks to establish objective, quantifiable criteria for classifying the capability of land for a specific purpose.

Discussion at the workshop highlighted numerous issues and concerns with the effectiveness of the LCCS as a predictor of performance of forests built on reclaimed landscapes. Considerable discussion focused on modifications to the existing framework that would strengthen it. Others suggested alternative approaches that would replace the LCCS altogether. Still others clearly equated the concept of Equivalent Land Capability with the practice of the LCCS and on that basis rejected outright the concept of capability as having any relevance to managing reclamation.

Even though Equivalent Land Capability doesn’t mean “the same as before” many people believe it should. Growing expectations that are shifting “reclamation” to “restoration” may also affect the concept and the practice. We need to manage expectations by speaking of trajectories, expected end points and key measurement and certification points in time. Regarding spatial scales, it is easier to define and measure Equivalent Land Capability on a smaller scale than at the landscape level or higher.

In short, the conclusion of the dialogue was that there is a high need for more conversation on this topic/issue before we can achieve alignment on the use of “equivalent capability” as an effective tool.

6 LAND USE SELECTION

The 1998 report *Oil Sands Mining End Land Use Committee Report and Recommendations*, which resurfaced through the Dialogue, was still seen as a useful explanation of the processes to identify and propose alternative land uses. However, few people are aware of its existence. The reclamation community needs to know that these land use selection challenges have been addressed already through this earlier work. However, people also need to know that these recommendations need to be re-evaluated in context with the Lower Athabasca Regional Plan and other present day considerations. Further, no one in industry has tried to use the process outlined in this report to propose an alternative land use. This lack of use may have led people to assume that these alternatives are not really an option.

One of the key questions raised in the Dialogue was whether there are more productive uses than boreal forest that might be appropriate particularly in consideration of changing values and uses of land over time – e.g., greater recreational demands. It was also recognized that areas that are receiving high land use pressure in NE Alberta could be moved to a simpler, quicker decision system.

Alternative uses likely will require different reclamation practice. Reclamation standards will need to be based on end land use. However there is still the question of which approach is “best.” Do we reclaim the site for the specific end use, or reclaim the site so it can support the full range of uses and then superimpose the selected use?

7 RESPONSE TO AND INFORMING PUBLIC EXPECTATIONS OF RECLAMATION SUCCESS

The challenge here is less about targeted “measures” of success or performance as an intellectual pursuit and more about directly engaging a broad range of stakeholders at an emotional level. Further, there should be less focus on public relations initiatives and more focus on improving reclamation performance. Some important ideas for addressing this challenge were brought forward including:

1. Learning from experiences in the BC forest sector over the last two decades.
2. In a competition for hearts and minds, you can’t compete with facts and knowledge.
3. Visualization tools offer one of the most effective approaches to communicating alternatives and your intentions.
4. Authentic stakeholder engagement at a very deep level is critical.
5. Developing a Sustainable Oil Sands Code of Practice that establishes the underlying principles for “sustainable oil sands development operations”.
6. Practicing open, transparent, confident leadership based on the strength of what we know, what we don’t know, what we are doing that is right and what we are doing to fill gaps.

8 RECOMMENDATIONS

Over the course of the workshop in June the participants were asked to identify recommendations. The OSRIN team reviewed and then organized them into four categories with a total of 11 recommendations which constitute the next steps to follow from the conclusion of this Challenge Dialogue overall.

8.1 The Oil Sands Reclamation System

Recommendation 1: Strike a small, informal “oil sands reclamation system” subgroup (ideally including at least some people that attended the workshop) to explore options for designing, developing and implementing a systems- and outcome-based approach (constructs, tools, etc.) to oil sands reclamation that would span all or most elements of the reclamation system (e.g., Figures 1 to 3) and that span reclamation objectives from individual mines to multiple operators (landscapes) and to the region (LARP). OSRIN could facilitate this process and help create some straw dog options, some concrete examples and other supporting discussion materials to help seed the conversation.

Recommendation 2: Linked to Recommendation 1 – analyze the pros and cons of moving towards an outcome-based regulatory approach to reclamation of the oil sands area.

8.2 Equivalent Land Capability

Recommendation 3: Develop a “capability manual” to better define what Equivalent Land Capability means and relate that to certification criteria.

Recommendation 4: Conduct a dialogue and workshop focused solely on Equivalent Land Capability in the fall to flesh out ideas for developing policy, practice and communication options.

8.3 Land Use Selection

Recommendation 5: Advertise the *Oil Sands Mining End Land Use Committee Report and Recommendations* and explain its purpose.

Recommendation 6: Evaluate the need to update the *Oil Sands Mining End Land Use Committee Report and Recommendations* once the Lower Athabasca Regional Plan is released.

Recommendation 7: There was uncertainty around the need for, or appetite for, alternative uses. There may be some value in exploring this further – if there is no appetite then this is not an issue; if however there is an appetite then an identification of acceptable uses and the locations/landforms they could be applied to, would be helpful.

8.4 Response to and Informing Public Expectations of Reclamation Success

Recommendation 8: If the Oil Sands Information Portal shows that cross-lease coordination is ineffective, explore real and perceived institutional impediments to better effectiveness.

Recommendation 9: Engage executives from forest companies to learn both what failed and how the industry is learning to perform in new, much more sustainable ways.

Recommendation 10: Explore the feasibility of developing dynamic visualization tools along the line of the McGregor Model Forest scenario tool. Although the pending Alberta Environment Oil Sands Information Portal would be helpful, it may not be sufficient to provide the kind of visualization of future conditions that is needed.

Recommendations 11: Explore developing a code of practice for Sustainable Oil Sands Development.

9 REFERENCES

Alberta Environment, 1998. *Oil Sands Mining End Land Use Committee Report and Recommendations*. 16 pp. plus appendices. Alberta Environment, Edmonton, Alberta. <http://environment.gov.ab.ca/info/library/6856.pdf> Last accessed September 28, 2010.

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10 GLOSSARY OF ACRONYMS IN THIS REPORT

10.1 Acronyms

BC	British Columbia
CDS	Challenge Dialog System
CEMA	Cumulative Environmental Management Association
CLI	Canada Land Inventory
CT	Consolidated/Composite Tailings
EIA	Environmental Impact Assessment
ERCB	Energy Resources Conservation Board
LARP	Lower Athabasca Regional Plan
LCCS	Land Capability Classification System
NE	Northeast
OSRIN	Oil Sands Research and Information Network