



Public Advisory Committee (PAC) Meeting

Wednesday, May 25th, 2016 - 5:00 to 8:00 p.m. (includes catered light supper)
Peace River Provincial Building (9621-96 Avenue) – Main floor Meeting Room

Meeting Notes

Terry Kosabeck (Facilitator) Sharon Tiggelers (Recorder)

5:00 p.m.

Attendance

DMI Staff Team: Amber Armstrong, Lee Rueb, Jim Witiw, Stefan Szabo, Steve Krahn, Trina Tosh, Wayne Wasiliew, Bailey Robinson, Aaron Deslauriers

PAC: Arie Loogman, Al Benson, Doug Dallyn, Harry Krawchuck, Laval Bergeron, Mark Ladd, Paul Hvenegaard, Peter Frixel, Rick Keillor, Kirk Hawthorn

Guests: Dr. Ellen Macdonald, Dr. Colin Bergeron, Tormaigh Van Slyke (*MoveUp* magazine)

Regrets: Francois Allard, Ashley Zavisha, Norm Duval, Rod Burr, Gordon Whitmore, Frazer Butt, Andre Knight-Lira, Ken Buchinski, Carolyn Kolebaba, Derek Bakker, Jason Parker, Bernie Morin, Dwight Weeks, Melonie Zaichkowsky, Gareth Davies, Colin Needham, Kris Kennedy, KayeDon Wilcox (F&W), Tolko High Level, West Fraser, Judy Weiler, Sherri Larsen, Charlie Johnson, Cheryl Anderson

Dinner service

A) Welcome and introductions Terry Kosabeck, Facilitator

- Review of agenda

5:17pm Terry called meeting to order. Welcome group. Introduced some guest observers; Bailey/Aaron – DMI summer students, Kirk Hawthorn-new government forester.

Amber introduced a guest from Move-up magazine attending tonight to capture information for an article on EMEND research and in future will do article on forest management -Tormaigh Van Slyke. Jim will introduce our 2 guest speakers from University of Alberta and EMEND forest research station.

Before starting Stefan began by thanking Sharon –BRI-NAIT for service to PAC, she is retiring following this meeting. Also acknowledged;

- Jake Klassen, Deputy Reeve, Clear Hills County (Peter Frixel's Alternate PAC delegate) who passed away recently.
- Hugh Seaton's wife Margaret, who passed away very recently. Hugh is Director of Boreal Research Institute –NAIT Peace River, and has provided PAC support and collaboration in EMEND initiatives for many years.
- Al Benson's father who passed away, and was instrumental in senior Alberta government forestry leadership with a 35 year career serving as an instructor in Fire Control at the Forestry Training School; regional manager in Edson and Bow Crow Forests, Director of Forest Land Use, and Director of Forest Protection.

Terry also noted Vicky Zavisha passed away a few months ago, Ashley's mother, matriarch in the family, a respected teacher, and a huge loss for local community.

5:22pm Terry asked for additions to agenda. None. Adopt Agenda as presented: Mark made motion to accept, seconded Harry – show of hands in favour – carried

B) Business carried over & new Terry Kosabeck, Facilitator

- March 2, 2016 Meeting notes (errors/edits, and adoption)

Terry asked for any errors or edits to meeting notes. None. Motion offered to accept, seconded – all hands in favor – carried

- PAC 2015 Satisfaction Survey – Amber (Status/responses to 2015 survey of process quality anchored to PAC Terms-of-Reference, VOIT Indicator #47)

Terry asked Amber for an up-date on the 2015 survey open to capture PACs interests and get feedback. Amber advised survey is yet open, and intend to report back to PAC in September. Have about 9 to 10 responses so far. PAC members to let Amber know if they do not have a copy still, please see her after the meeting.

ACTION: PAC members who have not responded to the survey should do so by middle of August.

C) Area sawmills update (current initiatives info share)

Westside mills & Eastside mills -no representatives were available, nor reports or news to share, nor Business Arising.

D) Alberta Gov update (current initiatives info-share)

Al Benson, Alberta Gov

5:30pm Al – introduced Kirk Hawthorn, who will be lead liaison for DMI operations. Al offered an organizational update from A & F. Business as usual, no substantial organizational changes this period. Peace region is area advertising for one more technician or forester position to assist capacity, likely a timber technician lead role.

An brief overview of May fires activity and status was provided, including 2 maps on active fire locations and fire weather hazard, that are available on Alberta website¹. Al spoke about fire sizes, number of fires and total hectares burned so far. Fire danger current conditions and forecasts provide a color-coded picture of the dryness and burning conditions possible in fine fuels like grass and needles, and drought code measurement deep into organic soil or large-diameter wood fuels. Updated daily on website.

Fire in Fort McMurray, significant resources are going to assist Fort McMurray fire operations, including Mark's son. Fires impacting on risk to people and property always create a higher priority and different situation that remote fires. Helicopters stationed at local airport are part of Alberta readiness, under contract to have equipment available in advance of fire occurrence. A BC/Alberta fire started on April 30th is currently at 85,000 hectares, 22,000 inside Alberta boundary. We have 80 percent containment, BC side of fire is at 40%. Not sure of status.

Q/A -Various general interest questions from PAC, including Area actually burned? And how much area inside the fire perimeter is actually burned? Permafrost ? Cured vegetation ? Fort McMurray – was there good timber burned ?

¹ Wildfires status: <http://www.wildfire.alberta.ca/wildfire-status/default.aspx>

Fire hazard and weather: <http://www.wildfire.alberta.ca/fire-danger-forecasts/default.aspx>

Comment -Jim In 35 years have never previously recalled seeing forest fuel hazard mapping events of this level for the province, where entire map is extreme hazard, cannot remember that happening before.

Comment –Kirk Otter fire – Kirk flew with some quota holder sawmills to view fire. Most of burn was in unproductive timber or wetland areas, 20 was not. High Prairie forest products planning a salvage operation this winter of burned timber.

Terry thanked Al

5:37pm –Jim People might be wondering what the forest industry companies do in these times of high fire hazard or when many fires are active. We have a number of layered contributions in-place since the outset of DMI forest tenures in 1989. Examples of these are:

- Every FMA-holder signs a Fire Control Agreement with Alberta government laying out roles and responsibilities of industry and governmentall FMA's in Alberta
- We pay a rather large annual Holding & Protection fee to the Province to contribute to government cost of pre-suppression readiness and fire suppression services on DMI FMA, about \$1.8million each year
- DMI planning staff submits an annual Fire Control Plan laying out the year's specifics of DMI crew preparedness, preventative practices, staff and contractor training, summer fire equipment requirements and key Woodlands contacts for after-hours contacts
- DMI Woodlands staff either maintain prior Forest Service wildfire credentials or take basic wildfire incident orientation training, usually also some specialty wildfire courses e.g. cat boss, plans/intelligence, supply logistics support
- DMI contractors also receive annual refresher training in frontline aspects e.g. water pump operations, wildfire operations safety, and preventative practices
- Company staff monitor and inspect for required contractor fire equipment regularly
- Every fire season we have a daily communication with regional fire officer
- We also monitor the Alberta website postings of Fire Weather Indices on current and next-day's hazard or fire-behavior conditions

Fire bans or more restrictive forest closures can be initiated by government. DMI voluntarily elected this spring to halt its field activities for part of May during period of extreme risk of fire starts. In events of an extremely large number of fires, DMI staff periodically will get called-upon to assist wildfire suppression operations locally, but only in pre-determined roles of competency and training, different for each staff member here.

Comment -Steve Two DMI staff went for 4 days a couple of weeks ago, one to Manning area assistance. Lots of collaboration in cessation of all operations, shut down in May including the university team at EMEND forest research station

F) Presentation - PAC Education Plan interest topic: *Natural disturbance-inspired "ecosystem-based management" and EMEND Forest Research Station (science guiding forest practices & government policy)*

5:40pm Guests & Topic Introduction – Jim Witiw, DMI

Theme for the night – Jim offered an introduction and information on noteworthy influence of Peace River region in science and Canadian forest practices advancements gaining global attention.

A powerpoint presented a look back in history on the evolution and discussion of sustainability, biodiversity conservation and public interaction in forestry. Ecosystem-based approaches to forest management –“EBM” and tree retention in harvest blocks began as an innovative shift in forestry 25-years ago in the pacific northwest (USA & BC). These notable changes in thinking and knowledge from the science community internationally have influenced changes in forest stewardship approaches in Canada and Alberta. Peace River region and DMI practices are being showcased to many audiences.

Jim provided a background history from 1988 on the dialogue leading to a global convention on biodiversity which led to a 1992 United Nations Rio Earth Summit, with 168 countries signing an agreement on biodiversity and sustainable development. This influenced a new definition of sustainable forest management or “SFM” at a meeting called “Montreal Process” in 1994. Around the same time Canada’s forest ministers signed an accord describing SFM for Canada in meeting its obligations to international community. SFM is a significant shift from earlier timber-centered forestry management, with more balance focus on ecological, social and economic consideration. 6 criteria define forest management in Canada now, the basis for Alberta’s VOITs approach.

In the early 1990’s a new concept emerged out of the northwest USA, science observations about wildfire history on the landscape in both the Rockies and Boreal forests –forests remain healthy and resilient despite and because of recurring natural fires. The idea surfaced that we could manage better for ecological risk to biodiversity and other important aspects if we studied this agent of change in the boreal forest. So DMI invited and began a discussion about this in northwest Alberta in the mid-1990’s. We consulted a local group of government staff, biologist experts and academic scientists, as well as a public advisory group called ECO-PAC. Mark and Rick participated in that. The result was a pilot new forest management approach called “ecosystem based management” that would try to emulate some of the patterns that natural fires leave behind.

Some experimental new cutblock designs were trialed in Sulphur Lake area along with safety discussions with government officials about safety protocols for leaving trees and patches standing in cutblocks. In 1996 DMI and Canfor invited a discussion with University of Alberta and Canadian Forest Service scientists about the idea of a new long-range experiment to test the theories behind this ecosystem-based approach. That experiment; EMEND –Ecosystem-based Management Emulating Natural Disturbance would study the response of plants, insects, birds and other wildlife comparing fires to new styles of cutblocks. It began in 1999 after 2-years of design and set up, as a first in northwest Alberta.

DMI and Canfor submitted the first ecosystem-based SFM management plan for northwest Alberta in 1999, which greatly advanced local forest practices from former clearcut approaches. It took 2 years for government to approve it in 2001, accepted partly because the EMEND experiment was a partnership commitment to test and guide this experimental new type of forestry. After some years of preparation and training its workforce, in 2002-03 DMI abandoned former practices to adopt this new approach FMA-wide. Nationally, this new ecosystem-based approach began to see wider adoption between 2003 and 2008, and became prominent in Canada’s forest strategy.

Jim showed examples of how since 2010 a number of international science events and publications, Canada-wide forest policies and new standards are surfacing, including in Alberta to further adopt and provide positive comment on this new style of forestry. EMEND research and DMI harvest block examples are appearing in many of these articles and websites. This is something we can all be proud of. In response to these international and national discussions, and the EMEND experiment which governments are a partner, the Alberta government this spring released a draft new requirement on forest retention practices. The Canadian Boreal Forest Agreement signatories, some forest companies and

environmentalist groups have collaborated to publish new national standards of practice. The new requirements responded to the emerging science knowledge about the positive merits of ecosystem-based approaches.

Jim noted that in a comparison across Canada, DMI forest management practices and Alberta policies are considered reasonably mature, relative to other industries and provinces because we have moved increasingly toward ecosystem-based approaches. There are still some opportunities for improvement in areas like wetland management inclusion, landscape study, energy sector activities planning, restoration, and better interaction with parks management plans.

Jim also noted that the PAC Education Plan highlighted 2 topics of interest and 7 related VOIT targets that will be addressed tonight; how and why does science theory connect forest management design to natural-disturbance?, and how these experimental ecosystem-based management approaches are monitored to check if they are working as hoped?. Jim showed the list of root interests PAC identified in these 2 topics. Jim offered a thought that the world today mostly focuses much effort and funding on curative fixes to things like threatened species and damaged watersheds. This is a local good news story about science that is guiding precautionary preventative-based approaches to such problems, while also maintaining northern economy ...with many people noticing across Canada and globally. Jim's slides will be posted to the website.

Jim – introduced 2 invited guest speakers from the University of Alberta ALES Faculty, Department of Renewable Resources, a sample among many researchers working at EMEND. Thank you to Amber for preparing the excellent Bio's on our guest speaker series, now appearing within PAC meeting agenda's.

- Dr. Ellen Macdonald, professor, senior researcher leading a diverse lab focus on Forest Ecology & Plant Biodiversity, national Scientific Achievement Award recipient for contributions to sustainable forest management in Canada, received numerous teaching awards at the U of A for her talents as teacher and mentor. She is a supervising researcher of many Masters and Doctorate students at EMEND. Served as an Associate Dean for research and graduate studies.
- Dr. Collin Bergeron, originally introduced to EMEND project as an under-grad student many years ago, who then pursued Masters and PhD research at the site, eventually becoming a Post-Doc Fellow at UofA and now a staff Research Associate continuing work at that site. Is also on a team co-authoring a textbook summarizing the first 10-years of studies at the EMEND boreal forest research station. He knows EMEND very well, having grid walked much of this 7000 hectare site.

6:05pm Break for 10 minutes to set-up presentations

6:16pm Resume Presentations – *Natural disturbance-inspired “ecosystem-based management” and EMEND Forest Research Station (science guiding forest practices & government policy)*

Jim thank you Ellen and Colin for departing very busy university work schedules, your preparations for tonight and travelling 5-hours north just to attend our PAC meeting, before returning to Edmonton. Ellen and Colin, welcome.

Ellen and Colin provided a 90-minute alternating tag-team presentation to PAC across 2 distinct but connected topic areas:

- Theory & science rationale for linking forest management to natural disturbance**
- EMEND Research Program – A study of boreal ecosystem response & resiliency**

Biological and physical legacies (live & dead trees are called “structure” legacies) that survive natural disturbances are essential to forest health, various habitat and forest recovery processes in upland & riparian forests. Attempting to emulate that by leaving such things during logging as a coarse-filter tool is gaining popularity elsewhere in North America and around the globe (Europe, Scandinavia, Australia). Research

continues to test its effectiveness in addressing sustainability and conservation of ecological processes.

Among different things that bring about change and renewal in healthy forests, wildfires, insects and beavers have roles in northern Alberta. It is important to point out that wildfire and our attempts to design logging harvest are quite different types of disturbance, so it is important to test whether emulation is doing the things we hypothesize will happen in the response of forest plants and other wildlife. Even fires alone have different types of influence, from intense forest-replacing burns to lighter stand-altering fires. Northern Alberta fire history offers interesting messages from the shapes and sizes and severity of those fires and within the tree-ring evidence of past fires.

The EMEND project is interested in studying how the natural system responds to this disturbance over a very long timeframe, 80 to 100 years. EMEND is an internationally respected project from investment of many partners in its northwest Alberta location. It has a reputation for research excellence and is influencing adaptation of on-the-ground practices. DMI was one of its co-founders. It is a partner driven research program looking at multiple questions of interest.

Ellen introduced a brief history of natural disturbance (ND) based management. What forestry used to be, and the issues with that former approach. The concept of ND-based forest management as an 'experimental' form of risk-management. There are distinctions between harvesting emulation, a mechanical agent of change, and wildfire, a chemical and physical agent. She introduced PAC to some terminology; "structure" in undisturbed or disturbed forest, "remnant or legacy" as surviving or remaining forest structure after fire, "retention" as forestry designed version of that structure left after a natural fire, "dispersed" remnants/retention as those scattered throughout a fire or cutblock, and "aggregated" or patches of that structure left after a natural fire. Forests are always changing, they are dynamic, there is a natural range and variation in forests, they are not static unchanging systems. Forest species need that diversity, though some species require certain elements of forests whether at the small site-level or at broader landscape level.

Ellen described EMEND as an experiment to test natural disturbance based management approaches. She provided an overview of the general concept in designing EMEND approach to forest research, what EMEND actually is, the 'core' experimental monitoring, and the many individual student-research projects answering specific questions over the years. She showed some numbers on the students history of participating in EMEND. Overall it is testing ND-based approaches for their value to biodiversity conservation, carbon dynamics as a part of the climate-change challenges, and sustainability of ecosystem processes.

Partners have similar and different interests in EMEND. It guides government forest policy discussions and industry forest management practices design. It is also open to public, government and research visitors who provide some indication of the social acceptability and importance of new innovations tested, many presentations and tours to local, provincial, national & international audiences.

Colin provided an overview of fire history of the local EMEND area, that he helped to discover, through many plots setup to cover the research site in a grid pattern. He talked about his summers walking to all of these plots, cutting "cookie" slices from trees to read the history of fire in the tree rings. Colin introduced PAC to some terminology; "Forest succession", what the four common broad forest types are locally, what their fire history is, the general diversity in Alberta forests, forest "resilience" in responding recovering, remaining healthy.

He spoke about emerging new understanding on the distinctions between "stand-replacing" fires -high intensity, high mortality, a 're-set' of age-class and "stand altering" fires -light intensity, light to moderate mortality, uneven-age forest, complexity in forest structure size and arrangement. The fire types evident within EMEND landscape history. Different forest types support different biodiversity. There is variation in how different species respond to disturbance.

PAC Question Session 1

Q. When you showed original design map of distribution of research plots, some were near edges of forest types adjoining each other. How do you account for adjoining plots, to avoid edge effect of response, yet not too excess in distance between plots?

A. Ellen –yes, we are accounting for that – some plots naturally would be next to each other by deliberate design.

The next part of the presentations continued. Ellen introduced PAC to some of the responses that have been measured at 10-15 years after the experimental harvesting treatments occurring in 1999. She overviewed what we hope or hypothesize will be the ecosystem response to structure retention left after fire or logging. She covered what the ecological value of ‘structure’ is supposed to accomplish. She offered definitions of terminology; “Coarse filter”, “Fine filter” as approaches to manage for species and ecosystem resilience, and risk. We need both approaches.

Ellen introduced PAC to a review of EMEND biodiversity –diversity of species at EMEND. Overall what we have learned about biodiversity at EMEND in our first 10 to 15 years. Plants were highlighted as a particular example of her area of research on how the forest regenerates, as only one of many areas scientists are investigating at the EMEND research site. She described the signal in the initial 10-years of research that point to retention rates around 10% as having meaningful difference and similarity compared to response of species communities to other retention amounts, but species to species the preferred amounts and preferred types of retention change.

Colin added an overview of invertebrates diversity at EMEND –beetles, parasitic wasps, moths, pollinators, spiders, soil mites, snails including some new insect species discovered at EMEND that are new discoveries for the world, or previously undocumented records for Alberta. EMEND has a large focus on plants and insects, because these are the important base or foundation in the network of biodiversity, sometimes represented as a triangle with plants and insects at bottom, and higher order species like carnivores at the top. By far the largest number of forest species are plants and insects, 10’s of thousands of species. EMEND is however also studying vertebrates – songbirds, bats, amphibians, owls, small fur species.

Colin briefly also discussed the interaction of species, and the interaction of fire and harvesting as “ecological memory” of the forest’s natural response or function to disturbance.

PAC Question Session 2

Q. Are there some economic studies done at EMEND on this approach to harvesting?

A. Yes some study was done at the front end initial years at the experiment looking at the volume of wood realized across the different levels of retention, time-and-motion study on the logging equipment, and the profits lost or operational cost compared to traditional harvesting

A. DMI –We qualify that though. It is important to remember that our logging and staff workforce at the time was used to clear cutting, so productivity economics was only in infancy, at front of learning curve then. There has been a distinct maturity in development of skill sets and technique refinement since then. Operational production cost implications back then and today would be very different, considering the competency of our contractors that has evolved over time.

A. DMI –Also, EMEND logging retention treatments were laid out in strips, and we normally only use that technique operationally while logging aspen overstory to protect young conifer understory. Our approach to EBM harvest design otherwise is more randomized and variable, easier than the retention patterning at EMEND.

A. DMI –Our initial pilot trials of retention harvest in 2-3 pre-EMEND cutblocks in 1995-96 signaled back then that this was an economically viable type of operation to expand on. We might have abandoned that if it had signaled otherwise.

A. DMI –Today our economic experience is that it is definitely viable to deliver ecosystem-based retention harvests with the operational technology and planning technology we have at hand. With portable chipping giving us higher utilization, wood fibre recovery, we are able to balance the loss of AAC supply that results when retention leaves merchantable timber in the forest. This is a cost recovery balance. Layout costs are improving now with GPS on-board logging equipment. We are also able to use retention “variably”, so can balance our retention amounts toward a 5-year average, affording great block to block flexibility. Blocks that are very small and forest stands that are too small to log, can be managed within this without hurting the 5-year target.

Q. Are there big areas of swamp in EMEND? Is that an area of interest or is it more of a practice to avoid them?

A. Yes, there are large areas of wetland at the EMEND site. EMEND has largely been an upland focused research project to this point in its life. However, large landscape scale response to ecosystem-based practice is of interest, and is being investigated by EMEND using new Wet Areas Mapping LiDAR products. But wetlands are also being studied by others in Alberta. Ducks Unlimited Canada is exploring a possible interest in study of wetlands at EMEND.

A. Forest practices and wood supplies in DMI FMA tenure generally avoid including wetlands. We do not operate in those, although we may cross them, but do not use them since we essentially harvest on ‘upland’. So EMEND in its initial design was set as an experiment only to guide the portion of the landscape on which we operate.

Q. Did Colin’s fire research sample both the upland and the wetland?

A. Yes, the grid of those EMEND research plots sampled for the fuller picture of burn history, since natural fires do not necessarily distinguish between upland and wetland.

Q. When you show a picture of EMEND you show only the collection of treatment cutblocks being studied, but the area is much bigger ?

A. Yes, when we talk about EMEND’s research messages, we are talking about the whole area, about 7000 hectares. Similar to what Collin did in walking much of that whole area for his fire study, other EMEND researchers are working on areas that have not been harvested. There is research in the uncut forest stands, called “controls” and in the burned forest stands, and some research connected to EMEND is occurring in the wider landscape outside EMEND’s perimeter.

Q. Financial impacts of this style of harvesting, ecosystem-based, retention?

A. When you asked if there was a financial impact in the beginning, yes there was but hurdles have been met with new techniques and technology through DMI’s planning processes and logging processes – in bush chipping increased about 20% volume of what we would normally recover from traditional log processing. Utilizing more of each tree harvested, offsets some of the variables allowing us to overcome supply losses to retention-volume through process or techniques. Just considering the harvesting process, we do not have exact numbers here, about 10 to 20% retention is viable but anything over that at the time was not economical

Q When you set out a forest plan, the landscape seems to be variable ? Is that accounted in forest planning?

A. Yes, when we initially define our Landbase that is available inside DMI FMA or an individual cutblock plan for timber supply, some areas have to be removed under government rules, for example because of lakes. Some of the forest areas are upland, also some are lowland, wetland. Retention locations are planned to blend a cross-section of those things.

A. The first 2-3 pilot trial cutblocks in 1995-96 and the EMEND studies were drivers for us to do what we do today (harvest). We use different variations of retention, clumps, patches, retention single trees and we work with contractors through training to get us where we are today. Our entry into portable chipping created some new challenges to work through to get to where they are today.

Q Is DMI using science on landscape variations?

A. Yes, we call that the “Natural Range of Variation” –NRV. DMI is participating in research led by foothills Research Institute, studying the patterns, shape, remnants, frequency and size of past history fires. The study of what landscape patterns would normally look like. We hope this project will guide us further in forest

management design, to more closely emulate landscape history, while also attempting to account for how climate change might influence the future. This work is important to the Canadian Boreal Forest Agreement.

Q. Since DMI has increased the amount of structure being left in cutblocks to emulate the natural, is there any thought at looking at the amount you harvest based on fire area burned?

A. Part of the foothills Research Institute study does look at the variability in the amount of forest naturally burning over long time periods, and the fire return interval, repeat rate. We are attempting to start to introduce that by looking at that variation in the natural state of disturbance amounts, looking backwards to what was on the landscape to try and consider that variable too. But predicting fire amounts is challenging because they occur sporadically, a complex mix of factors, and year-to-year can be extremely variable. The size of fire events is of definite interest, because we think we can emulate to some extent a limited range of fire sizes from small to large complex shapes encompassing multiple individual pieces.

The next part of the presentations continued. Ellen introduced PAC to some evolving new research at EMEND. The University of Alberta and UBC are collaborating using the Alberta government Wet Areas Mapping LiDAR information. She overviewed the research interest in the importance of topography and soil moisture in defining the types of biodiversity found on a site. Wet Areas Mapping, previously presented to PAC by Dr Barry White, is a predictive tool that reveals information on probable depth-to-water and water flow pathways. So, EMEND research is currently investigating plants, invertebrates-insects, soils carbon, and forest productivity distinctions along a gradient of wetter to drier sites. She illustrated what that might mean to improving our ability to plan and account for biodiversity, carbon issues and rare species that might rely on some riparian sites. The project is still active.

PAC Question Session 3

Q. With biodiversity, is there a species response distance relationship for distance from retention patches?

A. Yes, species show different responses in relation to distance from patches or edge of forest. Islanded patches inside cutblocks do show an immediate effect visible for some invertebrates, 40 meters, beetles. Different species have different degrees of mobility to adapt to changes and forest openings.

Q. What are the key questions?

A. The EMEND partner organizations together identified some primary questions around whether ecosystem-based approaches work in maintaining healthy forests;

- How do boreal forest ecosystems function? What are the key pieces? What species exist in which forest types in northern boreal plains forests?
- How do forest species & processes respond to wildfire, to harvesting? How resilient are boreal forests to disturbance? How quick do they recover? When? Can we “predict” outcomes accurately?
- How can we manage boreal forests to preserve biodiversity, ecological integrity & ecosystem productivity? To also address business economic factors, reforestation obligations & societal expectations? viability of practices
- Can harvesting be designed to be similar to natural disturbance?

A. And then as the project evolves new management challenges and completed research projects both lead to new questions that the science coordinators seek to answer as funding becomes available.

A. Some of EMEND’s current research projects originated out of questions DMI received from PAC interaction and Aboriginal consultation, like fur species response to ecosystem-based forestry retention harvest, and amphibian response to retention. Other species like songbirds were part of the original interest of the partners, and continues today because of nation-wide interest in migratory birds.

Q. As you get into more variable retention harvesting, do you need more land base?

A. When you are leaving something behind that is merchantable, it is counted against the allowable cut rate. DMI’s portable chipping improves our utilization, so the loss is accounted in chipper gain.

A. You are saving the resource, stewardship by changing practices and you are using more of the wood that is harvested. That does compensate for retention left in a block.

Q. Compared to the older practices using a 2 or 3 pass clearcut harvest, and now following the natural patterns, I'm not sure about how you know when to come back to a harvested area? Those rules were clear with old harvest patterns on knowing when they can come back to harvest what was left?

A. With this new ecosystem-based approach, we no longer have those "green-up" rules. Wildfires do not follow any such rules in natural fire return rates. Freeing that constraint has been helpful in wood supply, and improves ability to return the landscape to a more natural range of forest age distribution.

Comment. I am aligned with the EMEND or ecosystem-based approach, maybe partially. Seems the way to go.

Q. Are there opportunities at the wider landscape level for alternative retention approaches that could offset the cost of leaving higher retention amounts?

A. Yes, some locations of forest that is sensitive are pre-identified during the FMP planning stage and left unharvested within the FMA-tenure. They are removed from timber supply Landbase, so effectively still contribute ecological benefits. In DMI' FMA's, these amount to over 43% of land area, that is above and beyond the retention left in blocks.

A. This type of partial harvesting may actually be closer to fire driven system than full clearcuts to gain forest renewal.

Q. The chip debris piles that are left, is there a value in those for species? Those that we saw on an earlier field tour left scattered in the blocks, is that being studied?

A. Yes, those piles of bark, small limbs, "hogfuel", we contracted Canadian Forest Service scientists, Natural Resources Canada associated with EMEND to do a 3-year study on those small piles. They proved low to no risk, and in fact found them occupied by a number of insect, plant and young amphibians. They were not detrimental to reforestation recovery, and some mammals and birds were using them for various reasons. Those piles have no natural connection to anything fires create, but they proved of possible merit.

Q. The retention signals from EMEND so far, is that hard, solid evidence or ambiguous data? What about leaving more than 10% retention

A. The early evidence from EMEND research is well-supported, peer-reviewed, but it is important to remember it is only a signal from the first 10-15 years after-disturbance. We don't know what messages we'll get later down the road, 30 years or more. But in this initial timeframe, "generally" across the species communities studied, 2 and 10% retention show similar outcomes, but more than 10% looks better in outcomes, say 10-20% retention you get much more, offers much better value.

Q, I understand that the project is comparing fire to harvest. I get a sense you did not get what you intended or setout to achieve in setting up the burned forest controls? With this EMEND burns challenge, are there opportunities to study other fires in proximity?

A. The idea in designing EMEND was that we had 2 controls, unharvested forest and burned forest. We did not fully get the fires accomplished. Too many years the hazards proved too high to safely complete all planned burns, and some of the burns did not burn as much as we hoped in intensity. We have addressed this by creating another type of burn, slash burns within a 10% retention compared to 10% retention without slash burns. So, yes there are opportunities here locally and elsewhere to also look at studying existing natural burns. Fires have been studied well by researchers at EMEND and other researchers in Alberta.

A. At EMEND we were able to complete 50%, 7 of 14 planned standing timber burns, with roughly 3 burns per forest type. We were hoping for 80% severity footprint, but for the 7 completed, they widely ranged in intensity or area effectively burned. We know now, that this was perhaps normal. Boreal forests do not kill everything, and their burn severity is highly variable. We were however able to complete all 14 of the alternative slash burns.

Q. What about natural burns where they occurred near EMEND? Are there opportunities to study those?

A. Yes we have considered going outside EMEND to the fire that occurred near recently

A. The older burns that occurred many years ago are less value for study of initial recovery, but they tell you

something about later stages of forest recovery.

A. 2 challenges to researching these is the quick response needed, organizing the study design to get there before salvaging timber starts, and getting the money to do the research.

Q. If we cover more forest space with retention, is that excluded from the harvest quota ? removed from the working forest supply calculation?

A. Yes, if you leave 10% for retention that is removed from the Landbase supply of timber, the fibre is considered gone from the annual allowable cut.

Q. The 10% retention signal from EMEND, does that change as cut block size changes? Is it important or advisable to leave more retention on larger cut blocks?

A. That is a very good question. Regarding the EMEND study, that is unknown. EMEND was designed as a “stand scale” experiment, 10-hectare sized study areas. We are looking at the roll-up to larger landscape scale messages.

A. Larger cutovers might need larger retention, or close attention to planning the arrangement and distribution. The edge or treatment edge dependent species show that you might need more. It is not a simple linear relationship. A combination between aggregated patches and disbursed or scattered retention for example, would be good, as opposed to large cutblocks harvested with low retention or only one patch.

A. We try to encourage DMI planners to consider the objectives at root here, how to set a retention prescription that will meet connectivity for animal movement across the block, line-of-sight cover, future deadwood distribution, high edge, good core interior forest patches. Arranging that retention well can mean everything.

The final part of the presentation continued. Colin and Jim introduced PAC to a video fly-over. It demonstrated an ecosystem-based cutblock from a helicopter that was filmed with a CBC French-Alberta crew that came to do an interview about EMEND and Colin’s research some years ago. They were also interested in seeing how DMI does forestry today, guided by EMEND science. The cutblock is in DMI’s east river FMA, harvested in 2005. The camera man was hanging on the outside of the helicopter.

Q. What is the retention amount?

A. This block had about 16% retention

Q. Includes aggregated and dispersed types of retention?

A. Yes. And note that the regeneration at the time of filming is two to three years old. You can see regeneration, new forest coming up.

A. As you get lower to the ground in these scenes, you cannot see long distances anymore. The line-of-sight is blocked by the mix of retention types. From higher altitude you can see it is a big block, well over 100 hectares.

Q. Is that your East Haul Road near that cutblock?

A. Yes, the block is about 120 kms north from the intersection with highway to Cadotte Lake.

Q. How long do you expect the small clumps to remain standing?

A. EMEND and others at UofA have studied that. At the 5-year and 10-year periods, they documented deadwood recruitment rates from mortality of live tree retention. We looked at 10, 20, 50 and 75% retention trials to compare the retention falldown rate, comparing aspen to spruce. Studies note increased mortality rates with reduced retention level, taller trees, and aspen more likely to stay standing as snags, whereas spruce falls over quickly after dying. At 10-20% retention, aspen mortality occurs to 30% at 5 years, with spruce at about 20%. By year-10, aspen mortality is at near 50% with spruce at 30% by year-10. The spruce falling over occurs because they have shallow roots.

A. Recall one of our very goals for live tree retention as an ecosystem-based approach, is its eventual conversion to deadwood habitat as snags and downed deadwood. Ideally we want this to occur gradually, not all at once.

Comment -Jim noted that this particular cutblock in the video is a good example of the mid-point in DMI's retention, which is left in some blocks up to 30%, average is 15%. This block has become a bit of a "poster child" for the ecosystem-based harvest technique in Alberta and appears in national discussions, and some international conferences.

Terry thanked Ellen and Colin for the very informative presentations and discussions. Jim presented speaker gifts.

F) Next Meetings

8:07pm Terry – Jim has some ideas to offer.

Jim -the next logical thing would be a summer field visit to EMEND forest research station, if PAC is interested in seeing that project, while university graduates student researchers are on the ground. We have about 10 or 15 students at various stages in their work, and a tour trail. There is some interesting stuff to show. DMI proposes July timing.

Terry –Can PAC members suggest some July dates? Someone had asked if it could be done on a Saturday?

A. Jim - we are open to that, and bringing Canfor PAC to come to the same meeting if they would like to accompany. Weekends ...a good or bad idea for PAC?

A. Mark asked to see who is available in July? Show of hands. July is reasonable, consensus prefers weekday. Looks positive, When in the month ?

Terry noted that **Wednesday July 13th** was proposed, though because of vacations PAC turnout will be variable.

ACTION: Jim will follow up with University EMEND staff and DMI staff to coordinate. PAC to watch for RSVP invitations from Connie/Amber.

8:14pm Terry polled for a fall date as a follow-up meeting after the field tour.

Jim – DMI proposes a couple of topics: General interest theme; *"Hines Creek Trail" initiative* (Peace Valley Snow Riders - Dwayne Buchholtz), and a re-visit to VOIT target performance -*Forest Stewardship Reporting update* (DMI-Wayne Wasiliew). We have the information on our Action Plans for missed targets during the 2009-13 reporting period, and Wayne is working on the 2014 performance results.

Terry –After PAC discussion, proposed **Wednesday September 21st**.

ACTION: Jim -Details to follow. PAC to watch for RSVP invitations from Connie/Amber.

8:16pm Mark motioned to adjourn, Rick 2nd , carried.

Attachment:

DMI Public Advisory Committee –Education Plan & discussion interests (September 2016)

Focus: “Operational scope” on-the-ground practices and activities, that generally have roots in science, government natural resource policy, and strategic long-range forest plans

This list was compiled through feedback from PAC members to the PAC co-chair & DMI, and is not presented in any particular order of sequential priority.

General area of interest -topical theme	Perceived root values at interest (as revealed within the request)	Related DMI VOITs + Commitments of interest to PAC members (DMI DFMPs)	Potential speakers, presentors, expertise
LiDAR mapping technology Delivery March 2nd, 2016	Understanding the technology for protection of water values (aquatic biota, hydrology conservation)	Indicator 33, 37 (+ also related to C6)	DMI staff, Dr. Barry White (Ab Gov WAM LiDAR program development)
Local operational uses of LiDAR mapping technology	Understanding connections of new technology <u>to DMI practices</u> in protection of water values (aquatic biota, hydrology conservation)		DMI staff
Ecosystem-based management (effectiveness, monitoring forest practices & cumulative effects) Delivery May 25th, 2016 Field tour TBD (pending)	<ul style="list-style-type: none"> How DMI ecosystem based management approach is measured for efficacy & success at the biotic or species-response level (e.g. biodiversity indices?) Are long-term changes monitored for comparisons to undisturbed biodiversity nearby? The roles of variable-retention legacies 	Indicators 6, 7, 9, 10, 12, 13, 37	DMI staff, UofA (EMEND science program leads) Dr Ellen Macdonald, Dr Colin Bergeron Field tour: DMI staff, UofA Dr. John Spence or NRCan Dr Dave Langor (EMEND science program leads) + ...
Mountain Pine Beetle (local context) Delivered Nov 26, 2014	<ul style="list-style-type: none"> Species biology Eastward infestation migration status Up-date on current policy and regional strategy. Clarify fire risk management strategy for dead stands on the landscape 	Indicators 22 + 7 Commitment C8	Conifer mills staff, ESRD Forest Health staff



General area of interest -topical theme	Perceived root values at interest (as revealed within the request)	Related DMI VOITs + Commitments of interest to PAC members (DMI DFMPs)	Potential speakers, presentors, expertise
<p>Watercourse spatial buffers (logging proximity constraints)</p> <p>Delivery (3 meetings, 2015) starting April 29, June 17, Sept 23 field tour</p>	<ul style="list-style-type: none"> • How fisheries science (stream flow/volume, temperature, habitat state) informs the definition of current regulatory policy on watercourse buffer sizes (Alberta). • Understanding the intersection of science, fisheries management, forest management strategy targets, and operational ground rules (field distancing practices) • Landscape strategies in retention for watershed values consideration • Cumulative effect of natural disturbance and MPBeetle surge harvest on water values? 	<p>Indicator 7, 12, 30, 33, 34, 37</p>	<p>Alberta ESRD staff (Al Benson, Darren Fearon), Ab Innovates Dr. Brian Eaton, Alberta ESRD Senior Fisheries Biologist, DMI + sawmill woodlands staff</p>
<p>Forest sustainability evidence reflected in:</p> <ul style="list-style-type: none"> • the characteristics of local 2nd-generation forests • perceptions of excessive logging of mature forest in proximity of the mills • recent clear-cutting in the region 	<ul style="list-style-type: none"> • Understanding reforestation policy and practices • Growth performance evidence in local regenerating trees. • Transferring genetic properties from mature forests to new regeneration • Clear-cutting vs ecosystem-based design (MPBeetle?) • Cumulative effect of natural disturbance and MPBeetle surge harvest on ecosystem? • Disproportionate spatial allocation of footprint impacts (near access or communities) 	<p>Indicator 6, 13, 17, 23, 44</p>	<p>DMI staff (silviculture, AAC development), Conifer mills staff, ESRD Reforestation staff, UofA -Dr. Philip Comeau (WESBOGY science lead)</p>

General area of interest -topical theme	Perceived root values at interest (as revealed within the request)	Related DMI VOITs + Commitments of interest to PAC members (DMI DFMPs)	Potential speakers, presentors, expertise
<p>Natural disturbance-based harvest design Delivery May 25th, 2016</p>	<p>Science rationale for connecting forest management to natural disturbance:</p> <ul style="list-style-type: none"> wildfire as a destructive source of renewal distinctions between human harvest-design and wildfire (patterns, ecosystem response, resiliency) distinctions between stand-replacing fires, stand-altering fires (light burns) NW Alberta fire patterns & tree-ring evidence 	<p>Indicators 6, 7</p>	<p>UofA (EMEND science program leads) Dr Ellen Macdonald, Dr Colin Bergeron (EMEND fire history)</p>
<p>Reforestation strategies (soils, regeneration properties)</p>	<p>Alberta forest policy requirements & ecology considerations in new policy, Forest science connections:</p> <ul style="list-style-type: none"> Forest soils properties & soils biodiversity Soil ecosystems resiliency Understory plant communities (competition and interactive dependencies) Rationale for scarification treatments & options in conifer Mixedwood forest regeneration strategies Herbicide (a tool for mixedwood forests?) 	<p>Indicator 17, 23, 24, 37, 44</p>	<p>DMI staff, Conifer mills staff, ESRD Reforestation staff, Dr. Sylvie Quideau (EMEND forest soils & soil biology scientist, others?) Dr. Vic Lieffers, Derek Sidders (EMEND reforestation scientists) Dr. Ellen Macdonald (EMEND mixedwood forest plant scientist)</p>
<p>Local fisheries; Arctic Grayling</p>	<ul style="list-style-type: none"> Local inventories on status Historic trends on presence absence in northern Alberta Accounting for effects of seasonality (Drought : Precipitation years) Climate change impact assessments on fisheries? 		<p>UofA Dr. Mark Poesch ESRD Fisheries staff, Alberta Conservation Association staff, Rich McCleary –fRI</p>



General area of interest -topical theme	Perceived root values at interest (as revealed within the request)	Related DMI VOITs + Commitments of interest to PAC members (DMI DFMPs)	Potential speakers, presentors, expertise
Community sustainability Delivered Dec 2 nd , 2015 <i>(Land Use Rationalization model overview –a tool of opportunity for northwest Alberta use / Silvacom- DMI-Tolko project)</i>	<ul style="list-style-type: none"> • Benefits or returns to resource dependent communities • Alberta policy considerations • Mill business considerations 	Indicators 24, 25, 43, 44, 45	Silvacom + DMI woodlands staff (LU Rationalization Tool –social + economic + environmental layers)
Performance Delivered Feb 4 th , 2015 Delivered Sept 21 st , 2016	<ul style="list-style-type: none"> • Industry performance in various pre-defined management plan target areas (VOITs, commitments) 	All VOITs and Commitments (sample set)	DMI staff sharing Stewardship Report outcomes