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Chair

Mr. Lee Richardson

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● (1540)

[*English*]

The Chair (Mr. Lee Richardson (Calgary Centre, CPC)): The meeting will come to order.

For those of you who have just arrived, I've left for your interest—I think everybody has one—a DVD with some photos taken up at Fort McMurray. I wish we had more, but if anybody else had any others they wanted to distribute, I'd welcome those too. I don't know who else had a camera up there, but we would be happy to share any others.

Now, today's witnesses are going to talk to us about land reclamation and the boreal forest. We have, from the Canadian Association of Petroleum Producers, Bruce Friesen, the manager of reclamation at Syncrude. Mary Granskou from the Canadian Boreal Initiative could not make it today, so in her stead we have Alan Young, program manager, and Matt Carlson, science coordinator, on her and the Canadian Boreal Initiative's behalf.

I have suggested to both of them that they might begin with about a 10-minute opening statement to provide some background for the committee, and then I'll open it up to questions when they have concluded.

I think we'll start with Mr. Young. If you'd like, could you first give us some background very quickly on the Canadian Boreal Initiative and what it is, and then perhaps paint a broader picture for the committee.

Prof. Alan Young (Program Manager, Canadian Boreal Initiative): The Canadian Boreal Initiative was founded in 2003 as an integrated vision for promoting sustainable development in the Canadian boreal forest. It is an unusual set of bedfellows, the signatories to what we call the "Boreal Forest Conservation Framework".

From its inception it's been pan-Canadian as a solution, integrated in terms of protection and development, and working across sectors to find solutions. We have corporate members as core signatories and founders, including Suncor, Alberta-Pacific, Tembec, and Domtar. We have first nations, from the Innu to the Kaska, the Deh Cho, Poplar River, and other first nations. We also have an interesting spectrum within the NGO community, with Ducks Unlimited, the World Wildlife Fund, ForestEthics, and the Canadian Parks and Wilderness Society.

My organization serves as a convenor and a secretariat for that group, which has been promoting together this vision of both large-scale protection to allow for long-term ecosystem integrity across the boreal forest, and world-leading sustainable development practices in industrial sectors.

The Chair: I want to take a moment to ensure that all members have a copy of the brief you kindly provided us. If not, the clerk has additional copies. If anyone needs one, just give me an indication and I'll be happy to have it distributed to you.

I'm sorry to have interrupted.

Prof. Alan Young: My role within the Boreal Initiative is largely around the corporate sector outreach, and I've spent a good part of the last number of months back and forth to Calgary, working with energy sector companies, trying to work out some areas of common interest and address areas of common concern. So we look forward to this committee and its work as an important contribution to what sustainability means and how Canadians can benefit most broadly through the work of the oil sands—and to address the risks that they pose.

We try to get behind real integrated solutions in the work that we do. The forest companies we work with have over 42 million acres under Forest Stewardship Council certification, which is a world-leading factor for responsible forest management. Our first nations partners are shaping land use plans and balancing protection with the opportunity for sustainable resource development. We work with a pretty broad range of environment groups that are focused on ensuring that we have some long-term sustainability within today's economic development opportunities. We have MOUs with governments, and our partnerships tend to span the whole spectrum, in true Canadian fashion.

We want to talk about the boreal today in a bit more of a global context, to take a step back from the regional impacts and really look at this. The inception of the Boreal Initiative came from a realization that there are only three countries on earth today that are home to over 70% of the remaining tracks of intact forest.

Brazil, Russia, and Canada are fortunate enough to be home to that forest, and Canada is clearly the country that stands out in the best position to take a real, stable, sustainable approach to the management of that forest and that landscape. In fact, we have a global responsibility with the boreal, and the oil sands play a big role in the shaping of the future of that boreal region.

Over a billion acres spanning 58% of our land mass, the boreal stretches from Newfoundland to the Yukon. It's not only of fundamental importance ecologically, but as you know, 600 aboriginal communities also make their home and make their living there. We understand and appreciate that it's an economic engine for communities and for the larger nation, and we want to balance development with land protection.

Scientists are calling for large-scale land protection to maintain wildlife and other ecological values across the landscape. There are some areas in the boreal where there's a need for such protection at a very critical and urgent level. Woodland caribou, for example, are very sensitive to these current disturbances that are occurring across the boreal, and they are clearly a population that is in decline, particularly in Alberta. Unless critical habitat is protected and closed to industrial development in some parts of this range, this already threatened species may be extirpated from much of its former range.

Clearly, the oil sands extraction will transform a significant portion of the boreal region. Estimates are in the order of 150,000 square kilometres in total. Given that we are on the cusp of new expansions, we're supporting a growing chorus of interests that are calling for a more comprehensive, integrated review of the pace and the scale of oil sands development. It is time for a sober second thought to look at the situation as it has developed to date, to make some significant changes to better balance and integrate the environmental concerns with development and aboriginal interests as we move ahead.

As I mentioned, we'd like to note here that Suncor is a member of the Boreal Leadership Council and a signatory to the "Boreal Forest Conservation Framework". We work closely with them on several issues. We want to underscore that we will not be speaking for them today. They presented here earlier. We are in constant contact and discussion with them, but these will be the views of the Boreal Initiative.

Another point of context for the oil sands is clearly the Mackenzie watershed in which it is situated. The watershed itself spans most of the Northwest Territories, the northern half of Alberta, and portions of British Columbia, Saskatchewan, and the Yukon.

● (1545)

Our recommendations to you focus on remedies within this larger watershed context, as the impacts of oil sands development are and will be felt there. I don't know if you've seen the papers today, but the Deninu K'ue from Fort Resolution, 600 kilometres north of some of the oil sands development, have just formally put notice of their concerns as to where water will come from and how it may affect their interests in the long term.

Due to the size and intensity of oil sands extraction, the success of actions to mitigate the impact will have a huge impact on the larger integrity of the larger watershed. It also has impacts on our ability to fulfill international agreements and how we will be perceived internationally. Already, the oil sands region is recognized by the United Nations environment program as one of the 100 top world hot spots of environmental change.

There's no question that the oil sands development will dramatically reduce the natural capital—that is, the habitat, wildlife, and water integrity—of the region. Our boreal ecosystems have taken thousands of years to develop, and their removal through this type of mining is essentially irreversible. It may be mitigable, but it will be a different landscape, an altered landscape, and the ecological processes such as hydrology and carbon storage will be fundamentally changed and need to be carefully considered, both in terms of their implementation and their mitigation.

The SAGD will also transform the regional landscape. It will create much larger footprint impact than the mining, as you well know. The infrastructure of roads, pipelines, well pads, and processing facilities will have an impact on ecological integrity, which we need to account for, and of particular concern for us is the impact it will have on woodland caribou.

Given these intense and large-scale impacts, conservation offsets are a primary opportunity and necessity that will be required to maintain the ecological integrity in the broader Mackenzie region. A key component of the conservation offsets will be protected areas. Protected areas are needed for a variety of reasons, but to sustain regional ecological processes, to protect representative examples of native ecological communities, and to maintain native biodiversity. If properly selected, protected areas can act as benchmarks for sustainable development and sustainable management strategies. Protected areas have been identified by conservation organizations, first nations, and industry.

The Canadian Parks and Wilderness Society has identified potential sites within the oil sands region that have high ecological value and minimal conflict with petroleum resources. The largest forest company in the region, Al-Pac, is exploring how they can move forward on this within their licensed area. We see this as being fundamentally important to the overall development project. Protected areas proposed by the Deh Cho First Nations within their land use plan and by local communities up and down the valley under the NWT protected areas strategy present other opportunities that we see as integrally linked with the conservation offsets for oil sands development.

Therefore, we recommend that the committee support the advancement of conservation offsets through protected areas in the region around the oil sands themselves and in the broader Mackenzie watershed.

The second area we want to touch on is the issue of ecosystem services currently provided by the area and how these will be affected. We worked with the Pembina Institute to do a report on ecosystem valuation in the area of the oil sands. For those of you who may want it, I have a report called *Counting Canada's Natural Capital*. It has an interesting piece done by Mark Anielski from the Pembina Institute.

They estimated the non-market value of boreal ecosystem services at about $93 billion a year. Highest values among those are largely water filtering, flood regulation, carbon sequestration and storage, and pest control. The forest lands and peat lands contain an estimated 67 billion tonnes of carbon, worth an estimated $3.7 trillion.

Due to the energy intensity of oil sands production, they are expected to be the largest single contributor of greenhouse gas emissions growth and could be responsible for half the projected growth of Canada's emissions between 2003 and 2010. Managing these emissions is therefore an essential component of our greenhouse gas emissions strategy nationally.

● (1550)

Improved use of existing technology is certainly part of what is needed to achieve the goal, but we need to understand that Canada's forests are the world's largest terrestrial storehouse of carbon. They are vital to the world's response to climate change. To mitigate the overall impacts on the boreal forest, we need to put incentives in place to allow companies to invest in forest conservation that stores carbon to offset emissions.

There's a fundamental role for the federal government to play, along with provincial governments, in making this incentive real for companies. These types of incentives range from both market-based carbon trading systems to an incentive fund for carbon-intensive conservation. We recommend that the committee support the Pembina Institute's proposal that the oil sands become carbon neutral by 2020 and that the government support incentives to preserve forest carbon as part of the strategy.

Finally, oil sands extraction is very water-intensive, as you all know. There has been much discussion throughout your hearings on the amount of water required and the water quality issues that have been related there, so I won't belabour that point. We know that anywhere from two to five barrels of water are required for every barrel of oil produced, and that the oil sands account for some 65% of the total amount of water diverted from the Athabasca River. This volume is expected to increase over coming years. The impacts on fish habitat and the integrity of the Peace–Athabasca Delta are significant.

Given that the water is not returned to the watershed but is instead stored in tailings ponds that require decades to reclaim—and we'll be hearing more about the reclamation efforts there—it is understood that there are a number of uncertainties and a long-term risk of water contamination unless we manage those lands and that water very carefully. It's clear that we don't understand as much as we need to understand on the water removal and the impact of that on the ecosystem, nor do we understand the risks presented by such toxins as the polyaromatic hydrocarbons.

Local communities downstream are currently very concerned and may be dramatically affected by changes in both the quality and quantity of water. They are calling for a better understanding of the impacts of the development on the water. This is a critical component of a lasting and just solution to this element of development.

The understanding is needed by all components of the region's natural capital. The development of this knowledge would allow governments to consider ecological and socio-economic costs when making regional land use decisions.

The Treaty 8 First Nations of Alberta are calling for a strategic-level environmental assessment of the full range of direct impacts and cumulative effects from present and future oil sands and heavy oil projects. Such an approach would provide an opportunity for the first comprehensive review of the current and projected footprint of these developments, and would allow decision-makers to consider a full range of impacts on a regional scale, rather than on a more limited project-by-project basis, which is inefficient for companies in many respects and often misses some of the core issues that could benefit all parties involved. Assessment and planning in this context should take into account both the pace and scale of proposed developments, and critical thresholds to the limits to growth, such as ensuring that the quantity of water used in oil extraction does not exceed a level that would impair ecosystem function or put communities at risk.

Other priorities for consideration within the strategic environmental assessment could include evaluations of impacts of oil sands development on fish habitat in the Athabasca River; impacts of road development in the oil sands region on both fish and wildlife; threats to the ecological integrity of the Peace–Athabasca Delta in Wood Buffalo National Park; and threats to wildlife, including caribou, which are already suffering a precipitous decline, and moose, which is a key species and the basis of livelihood for local first nations.

We recommend that the committee support the initiation of a strategic environmental impact assessment of the full range of direct and cumulative effects on the present and proposed oil sands and heavy oil projects within the Mackenzie Delta.

● (1555)

The time is ripe for new approaches that protect ecosystems and cultures and promote sustainable economies, which can even create a global competitive edge for Canadian companies and communities. The Canadian boreal region gives us a chance to think differently, partner differently, and do business differently. The Boreal Initiative is committed to working in this exact way and believes that solutions are at hand if we take the right approach and take the time now to get it right.

Thank you very much.

The Chair: Thank you, Mr. Young.

We will get to questions on that brief and other matters after we hear from Mr. Friesen.

Mr. Bruce Friesen (Manager, Land and Environment (Syncrude), Canadian Association of Petroleum Producers): Good afternoon. Thank you.

Mr. Chairman, members of the committee, it's a real pleasure to speak with you today on the topic of reclamation of site closure for oil sands mines.

My perspective is that of a land reclamation practitioner. As the manager, land and environment, at Syncrude, I work with a team of technical specialists who are actively rebuilding the landscape at Syncrude's oil sands mining operations. This year to date, our team has completed shaping and placement of the final reclamation material cover on something over 300 hectares of land—that's a little over one square mile—and has planted over half a million tree and shrub seedlings. Equally important, we've invested over $1.5 million in reclamation research.

From that perspective of active field execution of progressive reclamation, I will comment on some of our key challenges and on where our reclamation program is headed. I'm hoping these comments will be helpful to the committee in its deliberations.

The very first comment I must make—the third page in the handout—is to recognize the obvious, that oil sand mining disturbs the land, that it requires clearing of the previous existing boreal forest, stripping off of the overburden, which is that layer of material that overlies the oil sand, and then excavating the oil sands for processing. Given recognition that we do disturb the land, my industry works to minimize the footprint of our operations and to minimize the area affected at each point in time, which we accomplish through progressive reclamation. However, having disturbed the land, we have indeed assumed clear legal obligations and, I may say, equally clear social obligations to reclaim the land to acceptable standards.

On page 5 of the handout, I have included the Alberta law that applies the concept of capability and requires post-closure landscape to have equivalent capability to pre-disturbance landscape. We also, of course, must satisfy other provincial statutes and federal statutes, the most prominent of which would be the Fisheries Act, provisions around fish habitat and the health of fisheries.

Page 6 of the handout is our closure vision. To help us focus on our challenge, as land reclamation practitioners we have crafted a vision for the post-closure landscape for the landscape we will leave behind for the people who will be living in the Wood Buffalo region after we're finished our work and gone. We recognize that there will be people, particularly aboriginal communities, who will be looking for that landscape to continue to support their existence in the region. In our vision, we speak of a mosaic of landscape elements yielding a landscape that will be useful, a landscape that will be robust and resilient enough to mature into harmony with the surrounding boreal forest.

Page 7 is a pictorial display of that vision. But perhaps most important, page 8 of the handout is a block of reclaimed land that we can point to and say that this is our vision. It's almost a shame the committee was visiting Fort McMurray in a winter season; we love to show the reclaimed land when it's green and thriving.

The photograph on page 8 shows a portion of the Syncrude Mildred Lake base mine, now a reclaimed mosaic of forest, grasslands, and wetlands. Everything to the right of the road in this photo was a mine pit about 60 metres deep, now back-filled with the overburden material and reclaimed.

With that as a reference of our vision, turning to the process of land reclamation, page 9 displays the core concepts behind land reclamation. As already noted, the first thing we do, at time zero, is disturb the land, reducing the land capability for other uses to effectively zero. From that point through time, we re-establish equivalent but not identical capability. The graph illustrates the concept of multiple possible paths to equivalent capability, comparatively rapidly or comparatively slowly.

● (1600)

The graph also illustrates the three steps in land reclamation. First, we establish the final shape to each land form, each hill and valley. Second, we place the top layer of material selected for its suitability to evolve into future soil horizons. Third, we give the development of the future community of plants and animals a start through planting a few species of trees and shrubs.

I must stress that behind each of these activities there resides considerable science and experience, but at the end of the day, these are the things we do when we speak of land reclamation. These are the physical activities available to us.

On page 10, I've included a block flow diagram of the same concept, really only to emphasize the first block on the top-left corner. It is our responsibility to plan for closure of our site to ensure that there is a viable path through from where we are today to final closure of the site. Today could be at any point. At any point there must be a viable path through to the end from where we are today. If there is no such path, we have no right to disturb the land.

Syncrude and other oil sands operators have defined a path, a plan for reclamation and closure of each of our sites. We've documented a sequence of activities we're going to undertake and the standard practices and the technologies we will apply. In defining those standard practices and those sequences of activities, we are certainly cognizant of the many challenges inherent in land reclamation in general and reclamation of oil sands mines in particular.

On page 11, I've listed a few of the most important considerations driving our work. We are developing a landscape and indeed individual land forms large enough that we must anticipate surface runoff and hence provide a dendritic pattern of valleys and creeks, returning to natural areas surrounding our operation to learn what nature requires in the way of drainage systems and drainage patterns. Second, we must cope with salts naturally present in both the overburdened layer and in the oil sands ore itself, all of which will be present in the new landscape. We must ensure that soil and water quality remain acceptable. Third, we must anticipate and accommodate the initial toxicity of organic compounds occurring naturally in the oil sands ore and washed out of the ore during processing. Fortunately, as these are natural compounds, they are readily broken down by sunlight and by bacteria, and we're confident we can meet the challenge presented by this initial toxicity.

Page 12 illustrates the first stage of the reclamation process: shaping of the land, mainly to accommodate surface runoff with acceptable rates of long-term erosion. As an aside, the upper-right third of this image is also reclaimed land—tailings sand reclaimed to pasture and forest.

The next step is selection of the best materials available in the landscape, ahead of mining, to form the future soil. Ideally, the very surface materials, the forest floor layer containing seeds and roots, would be transferred directly to the reclamation site to maximize rapid establishment and diversity of plant communities.

On page 13, the left-hand photo shows an area where, in advance of mining, the very surface layer has been scraped up into piles for loading into trucks. The right-hand photo shows the placement of the first lift of reclamation material. In this case, it's an 80-centimetre lift of clay loam material. The final lift will be the forest floor material from the windows on the left photo.

Page 14 shows in the foreground an overburdened land form soon after placement of the two lifts of reclamation material, but I actually wanted to draw your attention to the centre of the photo to illustrate this water management challenge, where on top of an emerging hill of constructive overburden there's a patch of green, a patch of reclaimed land. That's right in the middle of the photo. Heading off to the left from the side of that hill is a drainage feature, a future valley. By natural analog, by our design tools for surface drainage, the size and slope of this land form would in nature have a network of valleys, so we've anticipated that and provided that. Page 15 shows two close-up views of that particular drainage feature.

In summary then, Syncrude has the tools and practices to successfully reshape and revegetate land forms built up from overburden. Shown on page 16 is an example of a forest stand and an example of a grassland and wetland complex. On page 17 there is a land form built of tailings sand.

● (1605)

So with that as groundwork on what reclamation is and how we execute it, on page 18 we turn to perhaps the most challenging and least understood aspect of our work, and that is the soft character of some of our tailings materials. The water is slow to drain, and the material stays soft for a period of time. I've included a photo of a geotechnical engineer demonstrating the soft nature of the material we call composite tailings.

Given that challenge, Syncrude plans to apply two approaches to management of these soft materials. On page 19, I have included a very busy display of one of those technologies. I apologize for that. I did it with the intention of emphasizing that there is a lot of technology and content applied to our final landscape. It's the product of a lot of research and development. I'm not going to lead you through every component of that drawing.

In essence, the figure at the bottom shows a slice through a deposit of composite tailings. On top of that is a layer of stronger material, which is tailing sand. In turn, on top of that is a layer of select reclamation material supporting a vegetation community. In the upper right is a cross-section through the same piece of landscape in the other direction, which shows that we actually have a series of hummocks and swales in mind—high spots and low spots. The purpose of that is to ensure adequate drainage of the precipitation and a water table far enough below the surface of the ground that we'll have a rooting zone for trees. It all comes together in the upper left of the drawing. It's a landscape with a series of ridges that is supporting stands of trees. Between the ridges is a series of comparatively wet swales with vegetation such as willows and cattails. At the low parts of the landscape are larger wetlands communities.

Page 20 speaks to some of the considerations around the water balance in a landscape: balance between precipitation, evaporation, and interflow through the land to a wetland in the low part of the landscape. It's very important that we understand all components of that water balance.

Many people wonder whether it's realistic to expect wetlands to establish themselves in the reclaimed landscape. On page 21 is an example of a wetland that evolved to an impressive level of diversity over a period of only four years. One critique of our land reclamation program—about the concept of land reclamation—is the observation that we, as a practitioner company, cannot dictate the exact type of wetland, or indeed the exact species composition of an upland stand of trees, over the long term. We agree with that critique. We strive to establish conditions that are sufficient to support diverse communities of plants and animals. We believe we succeed in that effort. However, as one of my colleagues observes, nature bats last. We provide a start, and then nature will evolve the community of vegetation that best suits each site.

Now, I mentioned two technologies for incorporating soft tailings in the final landscape. The second technology is a lake overlying, or capping, a deposit of soft tailings. That approach is displayed in simple terms on page 22.

Page 23 provides an aerial photograph of research facilities. Syncrude has completed over 20 years of research and demonstration of the lake-capping technology, reaching the stage of field skill test ponds in 1988—almost 20 years ago—and then the stage of a four-hectare demonstration pond in 1993. On the strength of that, we believe we have a good understanding of the issues involved with this technology and the behaviour of a lake system over a deposit of soft tailings. We are confident the full-scale commercial implementation of this approach, which is scheduled for 2012, will prove successful.

And in that vein—page 24—we cannot overemphasize the contribution of quality research in enhancing our reclamation standard practices.

● (1610)

Our preferred research execution strategy is to collaborate with the leading principal investigators from faculties at universities across Canada, thereby attracting top-quality graduate students, who then publish into the public domain work done to academic standards. In summer 2006, we hosted on our site over 30 research teams, teams of students from across Canada.

On slide 25, I've included some numbers. I won't take you through them. If you have questions, by all means please ask.

To summarize, at the Syncrude Mildred Lake site we are already reclaiming land more rapidly than we're disturbing land. We are drawing down the footprint of that site. At the pace we're currently reclaiming land, 260 hectares, about one square mile last year, we have about 50 years of work ahead of us. We have about 30 years of mining at that site, and after mining is finished, the reclamation has to be completed, perhaps another five or ten years' work. So it's a 35 or 40-year project. Working at the current pace, we'd get it done in 50 years. We really should pick up the pace a bit, but only a bit. We're pretty well where we ought to be.

In conclusion, I would like to emphasize three points. First, we at Syncrude fully recognize that successful land reclamation is a precondition to our activities. If we cannot reclaim land, we have no right to disturb it. If we do not have a path through to finishing the job, we have no right to start. Second, land reclamation and site closure is a serious matter. It involves serious technology and experience—at Syncrude, over 40 years of research and 30 years of field execution. It involves serious money, serious effort, and commitment. Third, given those ingredients, we believe land reclamation works. We believe land reclamation site closure can be done, and we fully intend to do it.

I appreciate your attention and I look forward to answering your questions to the best of my ability. Thank you.

The Chair: Thank you, Mr. Friesen.

We'll begin questioning with Mr. Tonks.

Mr. Alan Tonks (York South—Weston, Lib.): Thank you very much, Mr. Chairman.

Thank you, Mr. Friesen, Mr. Young, and Mr. Carlson, for being here.

You'll have to appreciate that those two presentations are a little overwhelming, even to this committee, which has had an opportunity—I'm speaking on my own behalf—to go up and see the scale of the development.

If I were to try to capture the essence of what has been presented today, it would be that from an environmentally determinist position, there are many questions with respect to the rate of development, the erosion of the capacity of the boreal forest to serve in its natural cycle as a potential for sequestration of carbon, and the potential of the ecosystems and the ground and surface waters to rejuvenate themselves. All of this is related to the rate of extraction and development, either by mining it or in situ. Both are intrusive and invasive to the extent that the rate of development appears to be out of sync, out of rhythm, with the capacity to rejuvenate.

Mr. Friesen, you have concentrated on the reclamation aspect of it, and I certainly respect very much what you have said in terms of your company's commitment. I have a related question. You said twice that if we have no such path, we have no right to start the development. That's the first thing, and you used that with respect to your closure and reclamation model. You also said that successful reclamation is a precondition, that we have no right to start if we can't satisfy the capacity to rejuvenate in the manner that you describe is there.

I guess the question is one of scale. We have a graph that shows the extent to which development has occurred. The amount of reclamation is in the lightly shaded part of the graph. You can see, Mr. Friesen, while you have testified...you admit that you've been a little slow at the beginning, that you could accelerate the reclamation issue.

That said, I have a question. I'd like Mr. Young, Mr. Carlson, and Mr. Friesen to reply, and I think the committee would be interested. We are concerned with respect to the individual development applications that you, Mr. Friesen, have indicated you wouldn't start if you didn't think that you could recoup, and we're also concerned about the cumulative effect.

Are those questions considered when an application under environmental assessment is made for the initial development of a site? Is it mandated that there's a test, Mr. Friesen, with respect to what you have said, that you wouldn't start a development if you didn't think you could place that back into the natural environment? Is that part of the environmental assessment process such that the public good could be protected in terms of both the development of that site and all of the implications with respect to reclamation, water, hydrology, and toxic impacts, and so on?

● (1615)

Mr. Bruce Friesen: I believe so, yes. Now, in a purely mechanical sense, a developer is required, as part of an environmental impact assessment, to include a cumulative effects assessment. I know there are people who have a degree of skepticism around the quality of that, but I have been a regulatory affairs practitioner in the past and I actually believe that the cumulative effects assessment prepared by each company is a genuine effort to reflect the situation as of that point. Each time a new project comes forward, it is added on top of existing lists of approved projects, and the new aggregate is placed in front of the public for deliberation.

I believe so, yes.

● (1620)

Mr. Alan Tonks: Mr. Young, would you like to comment?

Prof. Alan Young: I think the scale and the diversity and complexity of the challenge of rebuilding a forest after a level of development of this size is something that certainly calls for a degree of humility. I think you would agree that when we start reclamation, typically they are almost conceptual plans, because it's a learning as you go. Certainly there's a lot about the boreal forest soils and hydrology that we simply don't know now, and that we will learn in the process of the reclamation. As much as we can project, we need to very much factor in the fact that we simply don't know a lot about what will work and what won't work, and we will be surprised by both what will work and what won't work. I would say that we have to be very humble in how we go about this and use a precautionary approach, because of the people on the land, because of the scale of the land that's going to be affected.

In some cases, a concern may simply be that what Syncrude may do well, their next-door neighbour may not do well. And all the good work that they do may be undermined because of a lack of consistency across that application.

This is why we're calling, and supporting the call, for a bit of a higher-level assessment of the key issues, the data that's required to inform decision-making. And frankly, I think that there's a lot of opportunity to gain efficiencies and assessments by doing that. I've talked to some of the companies that are saying that they're replicating material for environmental assessments that isn't necessary, and they could be looking at these issues much more strategically in a much more integrated way. I think there's an opportunity at this point in time to seriously look at cumulative effects at a higher level, at a strategic level, and use some of the research that we could do there to make each of the projects better.

Mr. Matt Carlson (Science Coordinator, Canadian Boreal Initiative): I would just add that an advantage of having a regional perspective when looking at applications together is that it can identify a solution such as opportunities for implementing conservation offsets. Right now, because of the uncertainty involved with whether we're going to be able to replace or reclaim these ecosystems in the full natural capital that was there, we need to hedge against that uncertainty and ensure that we have maintained intact ecosystems in other places in the region.

Mr. Alan Tonks: Mr. Friesen, on the concept of conservation offsets, if you had a development opportunity in a particular area and your analysis indicated that because of the soil conditions or whatever you couldn't follow the critical path that your closure and reclamation model contains, would that be the kind of site—I think the committee would like to understand the concept here, and perhaps, Mr. Carlson, you could comment—that would qualify as a conservation offset? There would be an application; it's analyzed in a preliminary fashion; a decision is made with the precautionary principle that this is too sensitive an area. Would you support that being included in the inventory of conservation offsets, Mr. Friesen, from both a scientific perspective and an economic perspective?

Mr. Bruce Friesen: On the concept of balance, the concept of a thoughtful public interest determination around the rate and location of expansion of the oil sands industry, industry fully supports a balanced approach, and there are lots of tools that we can include in our tool chest. As a regional issue management challenge, I think we should use all the tools available to us. We have established in our region—and I was talking to Alan before the session started, and we certainly welcome broader participation—multi-party consensus-based regional environmental management mechanisms. We consider it important that those mechanisms be applied. A key outcome of that is an overall balance, absolutely.

I feel obliged to agree with the need for humility with land reclamation, while stressing that we have been conducting reclamation research for 40 years now, and have 30 years of actually implementing it. Everything we've done in that 40 years of research is in the public domain and available, both to other companies and to the scrutiny of any other interested party that would like to work with us, again in the interest of a balanced outcome.

● (1625)

Mr. Alan Tonks: Thank you.

The Chair: Thank you, Mr. Tonks.

Mr. Ouellet.

[*Translation*]

Mr. Christian Ouellet (Brome—Missisquoi, BQ): Mr. Young, you stated that oil sands must become carbon neutral by 2020. If we were to stop emitting greenhouses gases immediately, by the year 2050, we would begin to feel the effects of previous GHG emissions. Some effects would certainly be felt.

However, that's not what we're doing. We're continuing to emit greenhouses gases. We continuing just as if it's

[*English*]

business as usual.

[*Translation*]

How did you come to select the year 2020 as a target? Did companies torture you and force you into setting this date?

[*English*]

Prof. Alan Young: Well, there are a variety of types of torture, and some of them involve hotel rooms and meeting rooms that are windowless, that carry on for days at a time, but that's probably not in the Geneva Convention.

The 2020 figure that we've picked up on is based on the work of the Pembina Institute and others that have said they feel that on a project-by-project basis, by using a combination of on-site GHG reductions, energy efficiency, fuel-switching measures, carbon capture and storage, and purchasing offsets, it will be possible for these oil sands projects to economically, physically, feasibly become carbon neutral.

It's by no means an ideal scenario, but we believe it's a real scenario and it's an aggressive target. I wish it were 2010, but I just don't see that being a reality in the current thing. If we're anything less than carbon neutral by 2020, it is simply an unacceptable impact at a global level. So we've taken this look at what we know of technology, what we know of the basket of tools that we have out there, and we feel that's doable. We wouldn't want to stop at neutrality by 2020, but we would want to hit that and then work beyond that into efficiencies. We believe we share the view that both the markets for carbon and the gains in technologies, and the efficiencies that we believe can come out of those technologies will make this a feasible target.

The idealist in me wishes it were sooner; the pragmatist in me feels that we need to start there. We need a clear goal set, and the government has a very important role in helping us meet that goal by creating the policy framework that can give companies the certainty that they need to invest to that point.

[*Translation*]

Mr. Christian Ouellet: The boreal forest is already starting to efficiently compensate for carbon dioxide emissions that companies emit into the atmosphere. How much carbon dioxide can the boreal forest absorb? How much carbon dioxide should be absorbed into the soil by carbon sinks?

In your opinion, how many carbon credits would need to be bought? When do you think we need to start buying credits? You propose a date, but do you think we should have started to do this last year? Should we start the process next year, or in five years' time?

● (1630)

[*English*]

Prof. Alan Young: To start with, carbon accounting is not my personal level of expertise. We could certainly point to the particular accountings on sink source and percentages and get back to you on those from a technical point of view.

One of the areas I would focus on is ensuring that we don't lose existing storage capacity in the forest wherever possible, and that we invest heavily in the existing intact forest through a variety of protected areas and conservation areas so that we first and foremost reserve our option. Clearly that won't always be possible in the direct footprint of the oil sands, but because we know this will be an ongoing issue, we're going to need to have that investment in protection as part of our overall strategy.

One of the things we've talked about with the different oil companies and different groups like Pembina is also making an investment in the carbon accounting in a way that will allow us to have more precise answers to that. I myself don't have those precise answers. My colleague may want to talk a little bit more to that.

Again, taking a precautionary approach and looking at maintaining forest cover as a fundamental part of our development strategy is essential.

Mr. Matt Carlson: All I'd add is that I don't have the numbers right at hand here, but we have the national capital report that Mark Anielski completed for us. He did estimate the total carbon stored in the boreal forest at 67 million tonnes, so there is enormous carbon storage. It would account for multiple years of Canada's GHG emissions. It just emphasizes the fact that the boreal forest does store an enormous amount of carbon. Ensuring that we don't lose the carbon stored in these forests will help to offset the greenhouse gas emissions emitted by the oil sands, but I don't have a precise number about the proportions.

[*Translation*]

Mr. Christian Ouellet: By not giving us exact figures, I find you're allowing yourself a bit of poetic license where this issue is concerned.

What's unique about the boreal forest is that growth occurs very slowly. Trees already store a certain amount to carbon. New carbon emitted by the oil sands extraction process is absorbed by new tree growth, which only occurs three months of the year. If a tree grows "x" number of centimetres, it will absorb "x" amount of carbon, compared to a 20-foot high tree. Consequently, a boreal forest is almost incapable of absorbing new carbon emissions.

[*English*]

Mr. Matt Carlson: There are two elements. One is the amount that the forest is sequestering currently, and there's also the amount that the ecosystem is storing. These boreal ecosystems have accumulated carbon over thousands of years, especially the peatland systems. A big part of what carbon trading will hopefully achieve is ensuring that these natural ecosystems, these sinks, aren't lost; if we can have carbon trading to provide incentive to conserve these areas, it will maintain this carbon. It's not just the carbon that's been sequestered on an annual basis; it's also to ensure that the carbon that has been stored over thousands of years isn't lost through land use.

[*Translation*]

Mr. Christian Ouellet: Do I have any time remaining?

[*English*]

The Chair: You have one minute.

[*Translation*]

Mr. Christian Ouellet: In your paper, you mention some incentives, including a carbon emission rights trading system. Aside from tradable emission rights, what other types of incentives should the federal government be offering?

● (1635)

[*English*]

Prof. Alan Young: Partly it's work that can be done in recognizing the need for research and making it something that is recognized within the taxation or the granting system—the joint ventures that can be done to ensure that when one company takes on work, it is work that is enjoyed across the whole sector. There is work that can be done on technologies and particular technological innovations, and the respect that can be given to recognizing the costs involved in these things.

A lot of the incentives we have now are currently based on increasing the volume and speed of capital expenditures. We can be looking more at tying those sorts of tax breaks and royalty granting to the kind of investments that are going to lower the overall footprint and look at natural capital retention. I would look at research and technological innovation as things that need to be recognized within the system as core values and that really need to be supported as investments for the public good.

Additionally, I think the key thing is really clarifying what a trading system could look like, clarifying opportunities for specific offsets, and giving something that people can actually invest in.

The final bit, and this is something I'm more familiar with than the hard rock reclamation issues, might be that the amount of money involved in reclamation is huge, and there's a lot of that money that stays quite static while reclamation is ongoing. Recognizing the investments required for reclamation as a public good is going to be an important part in allowing companies to make additional investments and get the recognition they need within our fiscal system to ensure they are done right.

The quid pro quo is that it has to be performance-based, and ultimately we need to see that the reclamation outcomes are appropriately rewarded.

[*Translation*]

Mr. Christian Ouellet: Thank you, Mr. Chairman.

[*English*]

The Chair: Thank you.

Ms. Bell.

Ms. Catherine Bell (Vancouver Island North, NDP): Thank you.

Thank you all for your presentations and for coming to the committee.

I want to follow up on the vein that was started. Mr. Friesen, you said that land reclamation was a precondition of development and that you shouldn't start if you can't put it back the way it was. I'm happy to hear that. When we visited the oil sands project, we flew over and drove by a reclaimed area. Even with snow on it, it looks pretty good. It's hard to tell it from the rest of the land.

I have some questions about what's in the soil, because it's tailing ponds, it's material that's been injected with detergents and chemicals, things to get the oil out, and then it's put back into the ground. I know it's settled out, but I want to know how much.

You say you do research and you spend about $500,000—you said half a million dollars—on research. Is that enough? What timeframe is that? How long a period of time is that money spent over? Is that $500,000 a year or in the whole project? What's left in the soil? I'm worried about what's in the plants, in the vegetation growing in the soil.

The other question I want to ask is to Mr. Young. You used the word “extirpated”. That means to destroy totally. So if something is destroyed totally, if vegetation or animals can't or will not come back to that area because it's changed drastically, it may look the same, but if there's something that won't grow there because of the change in the soil—it used to be a peat bog or it used to be a wetland, now because of the change in the soil, it no longer is—is that full reclamation? As I say, it looks good on the surface, but is there something down the road?

My other question—because I never get enough time to get them all in—is who's responsible in the end? I know the land is turned back to the government after you've satisfied your requirements to reclaim and you've monitored for a period of time. If we find after several years of growth that the animals and the vegetation aren't returning, aren't staying, or if things don't grow as they ought to, who is responsible for that?

Finally, with carbon sequestration—I recently read an article and I can't remember where it was now. They found the carbon that was pumped back into the ground made the vegetation grow faster, which I suppose is a good thing, but at the same time they found it increased the level of poison in the poison ivy. What are the effects on the vegetation?

Is the research money enough? Is there ongoing and...? That's a lot of questions. Thanks.

● (1640)

Mr. Bruce Friesen: These are excellent questions, and very well expressed. I appreciate it; I'll try to do them justice.

First, with respect to the magnitude or quantum of research, Syncrude spent $1.5 million this year. Collectively, with other companies plus matching funding from NSERC, the scale of reclamation research in the oil sands today is about $5 million per year.

The nature of the research very much speaks to the concerns you've expressed. Is the soil quality sustainable, and in particular, is the land surface safe? Are there going to be things happening that result in a landscape that is not satisfactory in the sense of being safe for people and animals?

The way we approach that is through the concept of an instrumented watershed. The reclamation material—the top layer—when we first place it is natural. We harvest it from in front of mining and place it in the reclaimed areas. Then the question is, is it at risk of change? On day one it is in fact safe; that is known.

The concept of an instrumented watershed is a large enough patch of reclaimed land that we can understand the flows of water—surface water, subsurface water—and therefore the movement through the landscape of other things such as salts, or perhaps any contaminant that might be there. The intent is to confirm that our standard practices protect the soil layer. It all hinges on—you expressed it very well—the soil starting off satisfactory, and if the processes in the landscape are acceptable, then the long-term outcome will be acceptable.

Yes, it is a very long-term matter, so the question of custodial transfer back to the Crown and the timing of it and its completeness are important. We believe it will be a long time. We believe we will be documenting the behaviours of landscapes for many decades—for argument's sake, 50 to 100 years—before it's evident that the situation is acceptable.

Even there, it may not be a full custodial transfer; it may a custodial transfer supported with some ongoing funding or ongoing monitoring. As I say, we have about 30 years behind us. When I talk about 50 to 100 years, what I'm saying is that it could take another 20 years, or another 50 to 70 years, for us to fully demonstrate to the people of Alberta and the people of Canada that a custodial transfer back to the Crown is an acceptable risk for the public, for the people of Canada.

● (1645)

Prof. Alan Young: The question you raise around extirpation is, I think, if we're uncertain that we can get things back, then is it reclamation? In some cases I think we have to accept that this is a transformed landscape that, as you said, may not be in its original shape but should be in a safe and functioning state.

This really highlights the need for planning in advance to avoid those areas where there simply isn't a substitute for certain habitats. We draw attention to woodland caribou because it's in sharp decline in many parts of the country, and because all the science I've seen—and Matt can speak to this with more authority—suggests that they simply do not repopulate disturbed land, whether it's forestry or oil sands land. In those cases, we have to be very careful about where we expand and how we expand, because some things are simply irreplaceable.

This calls for needing to step back a little and look strategically at the ecosystem's services and the habitat level values that are still there, now while we have a choice, and to make choices that are for the social good in the long term. While we may be able to re-engineer some elements of the landscape to a safe place, there are some for which we simply have to agree that we cannot and will not. If we choose to make that sacrifice, we should do so with all the information and all the public debate that goes along with it.

Again, I call for a broader view on the values, and some humility in knowing that some values will not be replaceable.

Mr. Matt Carlson: You commented about the poison ivy. I hadn't heard that, but in some ways it doesn't surprise me. These bizarre results always appear out of ecological science. We just don't understand ecosystems well enough to know how they're going to respond to human activities, especially human activities that are as dramatic as oil sands development.

That uncertainty, to me anyway, just underscores the need to take a really precautionary approach and to admit that we don't know what the end result will be, and therefore we have to ensure that we have conservation offsets. So we have areas set aside that will remain intact to ensure that we maintain the natural capital of the region.

Ms. Catherine Bell: Thank you.

The Chair: Thanks, Ms. Bell.

Monsieur Paradis.

[*Translation*]

Mr. Christian Paradis (Mégantic—L'Érable, CPC): First of all, you'll have to excuse my ignorance, but I'd never heard about the Canadian Boreal Initiative until today.

I'd like to learn more about your organization's history, about who you are, where you get your funding from, and so forth.

[*English*]

Prof. Alan Young: The initiative was formally launched in 2003 but was backed on a number of years of research that went back looking at a global assessment of intact forest ecosystems. So it was a number of years in the making.

The funding is a combination of U.S. and Canadian foundations. There's no government or corporate dollars in funding what we do. It's all charitable foundations. Again, we have an advisory committee that's based on NGO, corporate, and first nations...but we've tried to keep a balanced approach across those. We have a staff of about 14 people based here in Ottawa and partnerships in pretty much every region across the country, where we're funding research, we're funding traditional land use studies, we're funding community development work across the way, we're funding science through the University of Alberta. We're trying to take a holistic approach at understanding the solutions and bringing people together on better policy, better technology, better science.

I don't know if that answers your questions, but we're—

● (1650)

[*Translation*]

Mr. Christian Paradis: I'm simply trying to figure out where you fit into the big picture.

Are you backed by organizations such as as Sierra Club, the Word Wildlife Fund and others of a similar ilk?

[*English*]

Prof. Alan Young: Yes. On our advisory committee there is the World Wildlife Fund, represented by Monte Hummel; there's Ducks Unlimited Canada, which is represented by Gary Stewart, who has recently retired—I don't know if you knew that; we have the Canadian Parks and Wilderness Society, national; we have Forest-Ethics, which is more of a market-based organization; we have the Nature Conservancy; and we will be adding a couple more NGOs. What we've done very deliberately in our approach is not just to take some of the more conservative groups like Ducks and WWF, but we've gone the full spectrum, because what we really want to try to do, as we bring forward solutions, is to bring forward the best breadth of solution that we can.

It's an odd group of bedfellows, but I think it's an effective and very Canadian approach.

[*Translation*]

Mr. Christian Paradis: Thank you.

My next question is directed more to you, Mr. Young.

You stated that projects could become carbon neutral by the year 2020, that you are optimistic, albeit realistic, about reaching this target. Can you tell me what technical challenges will need to be overcome in order to achieve this goal?

Furthermore, as I understand—and you can correct me if I'm wrong—you believe that internationally, it will be difficult to meet this goal before 2020.

[*English*]

Prof. Alan Young: As I understand the goal—and again, this is an area in which we're supporting the good work of folks like Pembina, the World Wildlife Fund, and others who have thought this through at a much more technical level—we're relying on the analysis that they have done at that technical level to suggest that it is possible. It's not going to be any one thing. It's going to be energy efficiencies on-site. It's going to be fuel-switching measures to lower carbon fuels. It's going to be a combination of capture and storage technologies, which are a long way from being perfect.

A lot of work needs to be done to understand how this work is going to go forward. As some of you have probably been following in the news, the carbon dioxide pipeline discussions are getting a little more public airing these days. Things like that will certainly be part of a solution, but so will offsets. It's that combination of things, with a solid commitment to be neutral by 2020, that we think is possible.

Again, I'm relying on a level of expert analysis that goes well beyond my personal level of expertise, but our confidence in working with these partners is that they're well grounded. It's ambitious, but it's absolutely necessary.

So I'm sorry if I misspoke, but I think it is possible. Both from an economic and technologically feasible perspective, it will be possible to achieve that. People just need to make that commitment and work toward it.

[*Translation*]

Mr. Christian Paradis: Mention was made of soil alterations, whether as a result of mining or other types of operations. We also heard about in situ steam-assisted gravity drainage. You stated that this process impacts the soil.

I'd like to hear your views on this matter, Mr. Friesen. Can you elaborate on this process and the implications of its use?

[*English*]

Mr. Bruce Friesen: As you note, the oil sands industry has two main approaches to recovery of the bitumen. One is mining, which is the very large-scale, open pit land disturbance, and the other is the in situ process.

There are numerous in situ processes, but as far as land disturbance and forest disruption are concerned, they are similar. They require corridors for the installation of pipelines and power lines to a distributed network of recovery sites. There will be several wells installed from one site and several from another, and several from another beyond that. The overall effect is that linking all those sites to a central collection point causes clearing and construction activity in numerous corridors. My friends in the conservation business would therefore emphasize the forest fragmentation associated with the in situ activity.

Those corridors also require reclamation and restoration as a starting point to the re-establishment of forest diversity.The land area affected by the in situ activity is lower as a percentage, but is probably equivalent in total. In a particular area, only a percentage of the land is affected, but the biggest implication is the fragmentation of the habitat from a wildlife perspective.

● (1655)

Mr. Matt Carlson: I'd reiterate Mr. Friesen's comment that oil sands mining is expected to affect 3,000 square kilometres, whereas the SAGD, the steam-assisted gravity drainages, could affect almost 140,000 square kilometres. There is a large area that could be affected by this type of development. The intensity of seismic lines, pipelines, roads, and well sites is much denser in SAGD development than in conventional oil extraction, so there certainly is concern that it will be a large change to the ecosystem.

There are best practices available to help reduce the intensity of disturbance. For example, there's a need for a lot of seismic lines for this type of development. If the lines are made quite narrow, such as 1.5 metres in width, then it's much more likely that they'll reclaim back to forest in due fashion. There's a need for oil companies to use these best practices that are available to help minimize the development.

[*Translation*]

Mr. Christian Paradis: Mr. Friesen, based on what I understood why I visited the Syncrude Canada Limited site, a company that decides to operate a new site is required to secure provincial certification and to pledge to restore the site to its original state. I would imagine that clear guidelines are in place. Mr. Young's presentation gave the impression that operating procedures could vary from one company to another.

Have partnerships been forged in the research field? What can you tell me about this?

[*English*]

Mr. Bruce Friesen: Yes, our research is collaborative. We have a lot of dialogue between companies, and perhaps individual companies would have their own areas of emphasis. Through dialogue, we work to ensure that the overall program makes sense and is sufficiently comprehensive. As I stressed a couple of times, by corporate policy, all the work we do of an environmental nature and particularly of a reclamation nature is in the public domain, both by the way we execute the work, working with universities, and through efforts to make the information available.

The increase in the number of participants in the industry has been leading us to a greater degree of formalization of this process of dialogue, and that is going quite well. So we have entered into an agreement now with seven companies agreeing to execute and fund research in an integrated fashion.

● (1700)

[*Translation*]

Mr. Christian Paradis: Thank you.

Thank you, Mr. Chairman.

[*English*]

The Chair: Mr. St. Amand.

Mr. Lloyd St. Amand (Brant, Lib.): Thank you, Mr. Chair.

I have a brief comment and a question.

As you know, we had the opportunity to attend at Fort McMurray. The operation there is mammoth, and I don't use that word lightly. It's mammoth. I dare say it's virtually unprecedented.

As a lay person, of course, my impression was that the operations are pretty invasive of the environment. The topography, however many metres down, is pretty invasive. I was struck by the thought that the efforts to reclaim the land are diligent, are noble, are purposeful, etc., but at the end of the day, aren't we really left wondering what the long-term effects or consequences on the environment will actually be? Is that what we're left with, that there's no realistic way to discern what the long-term impacts are going to be?

Mr. Bruce Friesen: I think it's fair for me to note that both I as an industry person and the Canadian Boreal Initiative as a collaborative of various perspectives have come today and stressed the importance of good science.

We've heard a couple of views of the current status, the current quality of understanding, the consensus that science is useful, and we believe, speaking for the industry, that we have a lot of knowledge through serious effort over many years.

It is still a challenge to forecast, to predict the future. And I'll just stress, on the aspects raised by Ms. Bell, that the biggest challenge and the thing we must emphasize most in land reclamation is protecting the surface layers from significant change. The surface materials that we place are selected through a lot of science, a lot of care, and placed as the top layer. Our emphasis must be on ensuring that those materials, which contain all the biological capability and history, are protected. We do that through monitoring the behaviours of landscapes, particularly flows of water.

In summary, I believe it is possible to have an adequate understanding of what is going on in a landscape and to have confidence that the outcome will be acceptable. I've spoken for my company, that if we didn't feel we could do it, we would have no right starting.

Prof. Alan Young: I take Syncrude's commitment at their word and I think they're doing their honest best, but your point about the fact that the scale is really without precedent is an important one. There are many players operating simultaneously in an environment that none of us know. The hydrology itself is an extraordinarily complex thing.

By the way, Ducks Unlimited has just recently done some pretty intensive work on hydrology that is bringing up a lot of very interesting, very surprising results that will be critical for long-term ecosystem viability. This is an experiment of global scale, and we need to treat it as such.

When you look at that through a compound of complexity with accelerating climate changes, as we've seen it, you're getting the ability to experiment with plants, and sometimes animals, over a very changing climatic environment as well, which is really a critical question when you're trying to establish new plant communities. What are the climatic parameters you're going to be working with in 50 years? We don't know. The assumptions will be constantly challenged, constantly overturned, and that's why I would say that the real answer to your question, from my perspective, is no, we don't know.

Can we manage it? The only way we can do that is by being very cautious and humble up front. So it means we have accountability built into the system that means that if something goes wrong, somebody has the feedback at a timely measure to know when it's going wrong, we know who is responsible for setting it right, and we know when we've hit thresholds, whether it's toxics, or habitat loss related to species, or whatever.

We need very critical, very firm lines of accountability. We need very clear feedback mechanisms, coming back from communities on health issues, coming in from fieldwork on ecological issues. And we need to have real thresholds driven by financial penalties and rewards and by regulatory mechanisms, because if we don't take it that seriously, we will be in deep trouble at the end of the day.

I think we have an experiment. We need to treat it as a vital and very dangerous experiment at some level, but it's a huge opportunity if we use the huge financial resources available to us to try to do the right thing.

● (1705)

Mr. Matt Carlson: I'm going to sound like a broken record here, but I'll again emphasize that due to the uncertainty.... I do hope Mr. Friesen is correct and that the reclamation is successful, but I think that at this current time it does have to be seen as an experiment.

When it comes to tinkering with things, the first rule is don't tinker with all the parts. We need to maintain some areas that are left intact. If we're going to be heavily disturbing the oil sands region, let's make sure we leave areas that are ecologically similar in an intact state to ensure that we provide a reserve of natural capital. I think that's the precautionary approach that is needed.

Mr. Lloyd St. Amand: Thank you, Mr. Chairman.

The Chair: Thank you, and thank you for the answer.

[*Translation*]

Do you have a question, Ms. DeBellefeuille?

Mr. Christian Ouellet: It's a shame that Mr. Paradis isn't here, because the question he asked you earlier brings to mind something we heard previously.

When committee members toured an oil sands project site in Fort McMurray, a woman from Shell Canada informed us that her company was ready and that CO2 capture technology was available. The following day, another Shell representative by the name of Mr. Seeley told this committee that it was a question of money, not innovation, and that his company was ready to use this technology.

I just wanted to set the record straight because we were given the impression that there was still some research to be done because the technology was not quite there yet. At least one company is ready to go.

My question is for Mr. Friesen.

As company director, surely you're familiar with the report entitled Canadian Upstream Oil and Gas Industry Financial Performance —Outlook 2006-2008, prepared for the Canadian Association of Petroleum Producers.

Are you the director of the company, or merely the person in charge of land reclamation?

● (1710)

[*English*]

Mr. Bruce Friesen: I am the latter, and so I offer my apologies. I am not familiar with the document you are displaying. I believe that when you were in Fort McMurray, you met my supervisor, Mr. Don Thompson. That would be part of his portfolio, but not part of mine.

[*Translation*]

Mr. Christian Ouellet: I see.

Thank you, Mr. Chairman.

[*English*]

The Chair: Yes, and I could remind M. Ouellet that on December 12 we will be devoting the entire meeting to witnesses speaking specifically on the question of sequestration.

Mr. Harris is next.

Mr. Richard Harris (Cariboo—Prince George, CPC): Thank you, Mr. Chairman.

Thank you, gentlemen, for your presentation. There have been some tough questions. I appreciate your responses to them.

The boreal forest is something that we, as Canadians, see as a national treasure. Although there are a couple of other instances of forests as large as that in other countries, we of course like ours the best.

I'm curious to know just what percentage of the boreal forest will be affected by the oil sands project. What percentage of the forest would be disturbed by the development?

Also, will there be any permanent irrecoverable or unreclaimable damage to that forest? How about the moose and the caribou—will we see a dying off, in some respects, or will we see a migration for a while?

Finally, is the sight of buffalo grazing on reclaimed land a realistic example of the future outcome of reclamation, or is that just a temporary dream that looks and sounds good? Is it something realistic that we can expect?

Mr. Matt Carlson: I apologize, but I don't know the exact percentage of the oil sands development in comparison to the boreal region. It is a large region. The oil sands area will disturb a large area, but thankfully other areas could remain intact if we plan ahead. That's really the opportunity presented by the boreal forest, because much of the area is not yet developed. If we take a large-scale perspective we can make decisions such as, let's use this area for development, and let's use this area to maintain ecological integrity, natural capital.

So I think that's the approach needed. The boreal framework that we support suggests that to maintain the ecological, cultural, and socio-economic integrity of the region we should set aside at least half the region for conservation and implement sustainable management practices in the remaining half. The boreal forest is one of the last places where we can actually do something like that.

On the effect on species such as the caribou and whether they will come back, we don't know. If it does happen it's going to take a long time. There's no evidence to date that woodland caribou will come back to an area that has been disturbed. That again underscores the need to set aside equivalent large-scale areas where caribou can be maintained if we're going to be developing an area like the oil sands, and there are good reasons for doing that due to the economic value.

Mr. Richard Harris: Does anyone have an idea how much of the boreal forest would be disturbed by oil sands development, looking 20 years into the future?

● (1715)

Prof. Alan Young: From the figures I've seen, the mines themselves will eventually cover around 3,000 square kilometres. That's the current projection. Then I believe there will be an additional 149,000 square kilometres.

Is that right?

Mr. Matt Carlson: I think 149,000 total is the extent of the oil sands deposits. I just don't know what the percentage of that is when you compare it to the total size of the boreal region.

Prof. Alan Young: I'll certainly track down those figures and get them back to you.

I think it's important at one level to look at the boreal forest as a whole resource nationally and use that broader vision to benchmark areas of non-disturbance. But it's also important to look in situ at the planning that's going to happen to the communities. We're planning for the potential impacts on the communities and the irreplaceable ecological values, such as woodland caribou habitat and others.

What we don't want to see is an unnecessary loss of in situ values in trading those off. Some part of that is going to be a fact. But we also need to look at its footprint there and the strategic value to community health from an ecological perspective and an economic perspective, and really take a close look at how best to develop that resource. Then look beyond that resource as well for how we can include offsets. But I think it's a both/and situation that's very important to keep in mind.

Mr. Richard Harris: Thank you.

Thank you, Mr. Chairman.

The Chair: Mr. Friesen.

Mr. Bruce Friesen: I felt I could respond to a couple of other elements of your question, Mr. Harris. I certainly agree with the concept of large-scale perspective and everything in balance, and I agree with the concept of recognizing a natural treasure in the boreal forest and a national economic treasure in the oil sands, and with a large-scale perspective getting the right balance.

But regarding your question with respect to bison, is it realistic to anticipate herds of large ungulates grazing on reclaimed land, certainly from everything we've seen the answer is yes. The bison initiative at Syncrude had two very different elements to it. One was research, and again, coming back to this question of the safety of a reclaimed landscape, so we grazed animals on the pasture and tracked the health of those animals to a very sophisticated level—accumulation of anything, or whatever. So there was definitely a research element, but in addition to that with the bison, we are working collaboratively with the community of Fort McKay, the Fort McKay First Nation, to help them explore, without any sort of preconception as to what the right answer is, potential benefits, potential value from reclaimed land to that community. And the herd of bison could well lead to a commercial ranching activity, but we have no preconceptions. It could lead to an ecotourism opportunity or it could lead to a supply of country food that is perhaps particularly abundant.

So without preconceptions, we're working with the community on a range of possible opportunities. I am out wearing a bison pin today.

Mr. Richard Harris: Thanks, Mr. Chairman.

The Chair: Thank you, Mr. Harris.

With that, we will conclude for today. Thank you again for those presentations and for the answers to the questions. This is becoming more interesting all the time, as the committee gains more information and tries to weigh off various testimony, one against the other and combined.

Do you have a question for the witnesses, Madame DeBellefeuille?

[*Translation*]

Mrs. Claude DeBellefeuille (Beauharnois—Salaberry, BQ): No, my question is directed more to you, Mr. Chairman.

[*English*]

The Chair: Perhaps I'll excuse the witnesses first, then. Thank you.

I will again thank you very much for your attendance and allow you to leave, and then we'll perhaps have a moment on committee business. Thank you.

Madame DeBellefeuille.

● (1720)

[*Translation*]

Mrs. Claude DeBellefeuille: Earlier, Mr. Ouellet showed you a document in which various scenarios were presented. Revenues, taxes and a number of other related subjects were discussed.

I'm having trouble understanding some of the tables. I've spoken with the committee analyst. I'm wondering if I could possibly obtain this document in French. Perhaps we could ask the Canadian Association of Petroleum Producers to oblige us. Maybe our clerk could take care of this. It's a rather interesting document. Among other things, it reports that over the next three years, taxes will decrease, along with royalties. I've managed to get some explanations, but I'd like a copy of the document, to further my understanding of the facts and in order to ask questions of our analyst.

[*English*]

The Chair: I'm sure we could assist with it. I don't think it is a document that was tabled with the committee, so it wouldn't be our responsibility to do that, but I'm sure from the cooperation we've had thus far from, is it CAPP, the Canadian Association of Petroleum Producers...? Yes, they've been pretty helpful thus far. So would you bring that up so the clerk can make a note, and I'll have him contact CAPP and see if we can't get a version for you, or if we can have it translated for you.

[*Translation*]

Mrs. Claude DeBellefeuille: Thank you very much.

[*English*]

The Chair: Okay. I know this one. This is from one of the companies that belongs to the association, so it's an individual presentation of one of the companies, but we know this company. I think they would probably oblige you.

So we'll see if we can get that done. Thanks for the request.

If there's nothing further, I think we'll call it a day. Thank you very much again.

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