



## RECLAMATION ILLUSIONS IN OIL SANDS COUNTRY

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After more than 40 years of scraping away swathes of trees, muskeg, and soil in northeastern Alberta to get at the tarry black gold underneath, Alberta's first oil sands reclamation certificate was finally issued in March to great applause. Roughly one km<sup>2</sup> of land (104 ha), Syncrude's Gateway Hill, was declared "reclaimed" by the Government of Alberta.

But there are many reasons to mute the trumpets. First, this certificate represents a miniscule 0.2 percent of the land disturbed for oil sands mining – almost 480 km<sup>2</sup> as of 2006. Second, the reclaimed area was a dumping ground for "overburden," earth removed to get at the ore beneath; reclaiming tailings ponds will present a much greater – and perhaps insurmountable – challenge (see sidebar).

And third, *reclamation* does not mean *restoration*. Syncrude's reclaimed site bears little resemblance to the original boreal forest ecosystem. A complex of forests and low-lying wetlands has been transformed into a dry, hilly upland with new trails for human use. Syncrude spokesperson Alain Moore's statement about the site, given after the certificate was granted, speaks volumes: "If people aren't looking closely, it blends into the natural landscape" (Canadian Press, March 19, 2008). Is that enough? Or do we expect those who have exploited the land to restore it to its pre-disturbance state?

### What Does Reclamation Mean?

In the interest of "looking closely," let's start with the legal meaning of *reclamation* – what exactly do oil sands companies have to do to qualify for a reclamation certificate?

According to Alberta's *Environmental Protection and Enhancement Act* (EPEA) regulations, the objective of land reclamation is to return the land to "an equivalent land capability," which means that "the ability of the land to support various land uses after conservation



There is evidence that tailings ponds such as this one next to the Athabasca River are leaching toxins into the area's groundwater. PHOTO: J. HILDEBRAND

and reclamation *is similar* to the ability that existed prior to an activity being conducted on the land, but that the individual land uses will not necessarily be identical" (emphasis added). The vagueness of the language here is troubling, as is the absence of binding reclamation timelines in *EPEA* approvals.

"It won't be identical to what was there before," says Kem Singh, Alberta Environment's regional approvals manager for the Northern Region. In fact, knowledge of "what was there before" is in many cases fragmentary and is largely industry-based. "We rely on companies themselves for the benchmark data."

According to Singh, Alberta Environment's reclamation goal is "a kind of capability that allows for various land uses, determined on a regional basis." One of the documents guiding the reclamation process, *Guidelines for Reclamation to Forest Vegetation in the Athabasca Oil Sands Region*, identifies the two primary land use objectives for reclamation as "the establishment of stands of commercial forest and the

establishment of wildlife habitat."

Another primary guiding document, *Land Capability Classification for Forest Ecosystems in the Oil Sands (LCCS)*, clarifies which of these objectives takes priority. According to the May 2008 Pembina Institute report *Fact or Fiction: Oil Sands Reclamation*, "The LCCS indirectly implies that economic or productivity factors dictate the reclaimed target landscape – a forested ecosystem. Using the LCCS land and soil categories diminishes the value of wetlands and leads to a perverse situation where oil sands proponents claim there will be an improvement in land capability after reclamation."

In the case of wetlands such as the McClelland Lake patterned fen, approved in 2002 for oil sands mining by Petro-Canada's Fort Hills Oil Sands Project, the phrase "equivalent land capability" may have to be stretched to the point of near meaninglessness. Virtually everyone agrees that no one knows how to reclaim this ecosystem to anything resembling what it is now – a rare peatland 8,000

years in the making and hydrologically connected to a number of other wetland types through both surface and groundwater.

### Faith-Based Approvals

In a 2004 report, the National Energy Board stated, “Re-establishment of self-sustaining ecosystems is a major challenge in the reclamation of land disturbed by oil sands mining operations.” For us to assume that those in charge know how to reclaim natural landscapes even to an “equivalent capability” is naïve in the extreme, especially with respect to peat-based wetlands. In Alberta, we seem to be turning the precautionary principle on its head. The government-industry post-cautionary principle appears to be “Lack of full scientific certainty shall not get in the way of profit” or “Dig now, worry about environmental consequences later.”

In its application for the Horizon project, Canadian Natural Resources made this statement: “Mitigation paired with reclamation assumes a postproject success rate of 100%.... Uncertainty with reclamation methods is assumed to be resolved with ongoing reclamation monitoring and research.” This faith-based “winging it” approach to reclamation appears to satisfy the government departments responsible for project approvals.

“Amazingly, the EUB and the departments of Environment and Sustainable Resource Development accept this approach to addressing uncertainty,” said Dan Woynillowicz, a senior policy analyst with the Pembina Institute, in his September 2006 presentation to the Oil Sands Multi-stakeholder Committee in Fort McMurray. “This uncertainty also has potential economic ramifications for Albertans.”

### Who Foots the Bill?

It took Syncrude 10 years to reclaim the 104-ha overburden plot that was certified in March. Considering the much greater challenges of tailings pond and minepit reclamation, certification of current projects is many decades down the road. Given the increasing public concern about environmental issues related to fossil fuel production and consumption, it’s difficult to predict just what will be happening in oil sands country 40 or

### The Toxic Legacy of Tailings Ponds\*

The acute toxicity of Alberta’s tailings ponds is now a well-known fact. The migration of tailings toxins such as naphthenic acids through the groundwater system presents serious risks to the boreal landscape and beyond.

The two primary reclamation possibilities that regulatory authorities accept for the acutely toxic tailings waste are the creation of end pit lakes (EPLs) and integrating consolidated (that is, dewatered) tailings into the reclaimed landscape. While both are fraught with uncertainties, EPLs is the least expensive option and the one that most reclamation fantasies are based on.

The EPL narrative, set in some distant future, goes like this. When a mining project comes to a close, the last mine pit will become the permanent storage pit for mining wastes, including the contents of the notorious temporary storage lakes known as tailings ponds. This toxic deposit will be topped up to a depth of 65 to 100 m with fresh water, largely drawn from the Athabasca River. Water will drain from the reclaimed surrounding landscape into the EPL and will discharge back into the Athabasca River. Since the lake’s upper layers will presumably not mix with the lower toxic layers, the hope is that the EPL will eventually become a viable self-sustaining healthy aquatic ecosystem. EPLs will remain a permanent feature of the boreal: within the next 60 years, at least 25 EPLs are planned for the Athabasca region.

The main problem with EPLs is that they are “an unproven concept,” in the words of Pembina Institute’s May 2008 report on oil sands reclamation. “In spite of both the uncertainties and the risks, large oil sands mines that rely on end pit lakes as reclamation tools are being approved by regulators” (p. 41).

### Tailings Facts

- Water surface of Syncrude’s largest tailings pond, the Mildred Lake Settling Basin: 13 km<sup>2</sup>
- Contents of the Mildred Lake Settling Basin: 400 million m<sup>3</sup> of fine tailings, or 160,000 Olympic-sized swimming pools
- Volume of impounded tailings now on Alberta’s landscape: 5.5 billion m<sup>3</sup>, or 2,200,000 Olympic swimming pools
- Current rate of production of oil sands tailings waste per day: 1.8 billion litres a day
- Amount of total tailings produced per barrel (0.159 m<sup>3</sup>) of bitumen: 12.5 to 15.5 barrels (2 to 2.5 m<sup>3</sup>)
- Total area of potential tailings ponds, including new approvals and planned projects: more than 220 km<sup>2</sup>, or five times the size of Sylvan Lake
- Volume of fine tailings produced by Suncor and Syncrude alone by 2020: 1 billion m<sup>3</sup>
- Approximate volume of toxic tailings produced daily by 2015 if current extraction and tailings management remain unchanged: 7.5 million m<sup>3</sup>
- Total expected volume of tailings ponds for existing and planned mines in the Athabasca region (excluding Syncrude’s Mildred Lake Mine and North and South Aurora Mines): 11.6 billion m<sup>3</sup>

*\*The information in this box was gleaned from Fact or Fiction, Pembina Institute’s May 2008 report on oil sands reclamation. The full report is available at [www.pembina.org](http://www.pembina.org).*

50 years from now. Scientists predict that settling out the toxins from tailings ponds could take at least 150 years. Who will be left with the bill? And who will be politically accountable? Certainly not those who are now signing lease agreements and approving projects.

The possibility of abandoned oil

sands mines a generation or two from now would not be without precedent. According to MiningWatch Canada’s May 2008 report, 2,100 abandoned coal mines have been identified in Alberta and are on file with the provincial government. “Very few of the mines have been evaluated for physical or chemical



*Oil sands mining north of Fort McMurray.* PHOTO: J. HILDEBRAND

stability, and fewer than 1% of all mines have undergone remedial work,” says the report. “A conservative estimate in the mid 1990s placed the price to clean up all abandoned mines in Canada at \$6 billion or higher.”

To try to ensure that Albertans won't be left with the clean-up bill, the Government of Alberta has established an Environmental Protection Security Fund to which oil sands companies are required to contribute. The security, which can take the form of cash, bonds or letters of credit, is returned to the operator when the land is certified reclaimed.

Although “the amount of security must cover the cost of reclamation in case the operator is unable to complete reclamation on the site” (Alberta Environment website), a number of problems with the Security Fund have emerged. First, oil sands reclamation research is still in its infancy – with so many unknowns about how to reclaim certain ecosystems, even to “equivalent capability,” how can the cost of reclamation be predicted with any accuracy?

Furthermore, based on our limited current knowledge, the fund appears to be woefully inadequate. Syncrude has not provided a breakdown for the cost of Gateway Hill, but in 2006 the company spent \$30.5 million on reclaiming 267 hectares, or about \$114,000 per hectare. According to the government's latest *Environmental Protection Security Fund*

*Annual Report*, as of March 31, a total of approximately \$469 million (including cash deposits plus interest, bonds and guarantees) had been set aside for oil sands mining reclamation. With close to 48,000 ha disturbed and not certified reclaimed as of 2006, that's less than \$10,000 per hectare, not even one-tenth of Syncrude's approximate costs to reclaim perhaps the easiest of disturbed oil sands landscapes.

Tailings ponds now cover more than 50 km<sup>2</sup> of Alberta's boreal forest. According to Randy Mikula, head of tailings research at Natural Resources Canada, “There is enough suspended clay floating in the ponds to fill a ditch 20 metres wide and 10 metres deep from Fort McMurray to Edmonton to Ottawa” (*Globe and Mail*, February 1, 2008). Even if it's possible to reclaim oil sands tailings ponds – and at this point, it has never been tried – what will the price tag be?

A lot, if the Sydney Tar Sands Ponds are anything to go by. In 2004, the Governments of Canada and Nova Scotia announced a 10-year, \$400 million plan to clean up the ponds and coke ovens, which cover a combined area of 68 ha. That's almost \$6 million per hectare for clean-up – or 600 times as much as is currently in Alberta's reclamation piggy bank.

Long-term accountability for the mess left behind, in terms of both political leadership and industry, is simply non-

existent. Once a reclamation certificate has been granted, the government cannot issue an Environmental Protection Order (EPO) regarding conservation and reclamation for that mining site. (An EPO is an order that the administering authority may impose to prevent or minimize environmental harm; it usually requires a person or company to undertake certain actions within a specified timeframe.)

Liability for contamination is currently forever, but generations from now, as tailings ponds toxins continue to settle out, who will be monitoring and enforcing regulations regarding oil sands contamination? Who will ensure that the propane cannons used to keep wildlife away from these toxic lakes (which research has shown to be an ineffective long-term solution) are still functioning? Will the current practice of industry self-monitoring continue?

At present, a paltry 11 Alberta Environment inspectors working out of field offices across the province (not just in the oil sands sector) are responsible to ensure that operators comply with their approvals, Codes of Practice, or accepted conservation and reclamation practices. The work of these few inspectors includes responding to public complaints; inspecting sites during construction, operation and reclamation phases; and reviewing *EPEA* approval applications (Alberta Environment website).

The recent deaths of hundreds of migrating ducks seeking rest in a Syncrude tailings pond provided a stark picture of the devastating effects of tar sands mining on wildlife. Even before this sad event, 91 percent of Albertans agreed in a 2007 poll conducted by Probe Research that new oil sands approvals should be suspended until infrastructure and environmental management concerns have been addressed. Eighty-eight percent felt that only if companies can demonstrate that they can return mined areas to the way they were before mining began should new oil sands mining projects be approved. It seems that Albertans are ready to step out from behind the word *reclamation* and demand legislation and policy that will deal more effectively with the realities of cleaning up the mess left behind by tar sands development. What we now need is political leaders with the courage and foresight to get in front of the parade. 🐻