

Cleaning Up After Ourselves:

Oil Sands Mine Liability Program Needs Major Reform

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In April 2013, Alberta Premier Alison Redford reassured her Washington DC audience about Alberta's oil sands mining industry impacts, while she promoted the contentious Keystone XL pipeline. Among other points, Premier Redford claimed that: "Tailings ponds disappear from Alberta's landscape in the very near future."

While Premier Redford's remarks may have persuaded the ill-informed they were truly far-fetched, unless the premier was talking about geological time. In fact, oil sands mine tailings are nowhere near disappearing. These tailings reservoirs sprawled across 234 square kilometres and contained 1.1 trillion litres at the end of 2014. They have been growing since then. Massive volumes will continue to be

produced and stored behind huge earthen berms for many decades. The Alberta Energy Regulator (AER) re-confirmed this regrettable reality as recently as October 2017: AER approved Suncor's plan to gradually reduce tailings in its Millennium Mine waste ponds from today's level of over 300 billion litres of tailings, to 147 billion litres by 2033, the year the mine is scheduled to close. Those pond tailings are not required to hit 'zero' until 2043, ten years after mine closure.

The province's *Environmental Protection and Enhancement Act* (EPEA) acknowledges the 'polluter pay' principle. In practice, however, our liability management system is very weak. Three problems with the current system are: serious unresolved bitumen mine

reclamation problems; a lack of disclosure of liability assumptions, and therefore likely significant under-estimation of liabilities; and very small upfront financial security requirements. In AWA's view, these shortcomings represent a potential multi-billion-dollar liability to taxpayers and to government. This lax regime risks saddling future generations of Albertans with significant, unfair clean-up costs. Major reforms are needed.

Ecological and cultural significance

The 'mineable' oil sands region covers a land surface area of about 4,700 km². This represents three percent of Alberta's official oil sands region area and one percent of Alberta's boreal forest region. That may sound relatively small, but as part of the traditional territories of the indigenous communities living in the region, those boreal forests, wetlands, and wildlife are central to their livelihood and culture. The government and mine operators have made commitments to return a functioning boreal ecosystem of 'equivalent land capability' to disturbed mine sites, as required by EPEA.

The mines are situated in an area of outstanding ecological importance. North of Fort McMurray, mining leases extend about 100 kilometres along both sides of the Lower Athabasca River, where major North American migratory bird flyways meet. The only wild whooping crane population and hundreds of other bird species migrate twice a year over the mineable oilsands region. Not far downstream from the mines is the Peace Athabasca Delta, one of the world's largest freshwater deltas. The delta



A Syncrude tailings pond. Under the current liability management approach, there's an unacceptably high risk that the public will be stuck with multi-billion dollar costs of bitumen mine clean up. PHOTO: © J. HILDEBRAND

provides breeding and stopover habitat for extraordinary concentrations of waterfowl and other wildlife.

Major reclamation problems remain

One reason why oil sands mines' liabilities are so worrisome is the difficulties of replacing boreal ecosystems in this globally significant area. Those who attended Dr. Lee Foote's December 6th AWA talk in Edmonton heard first-hand how challenging restoration and reclamation is in the boreal forest. Peat-forming wetlands once made up half the natural landscape on the mine leases. They are significant carbon stores and are essential for habitat, water storage and for buffering drought and wildfire impacts to the adjacent forest. The mines destroy them. It is unlikely that equivalent constructed wetlands can persist in the salty soils of the subsiding, re-contoured reclaimed mine landscape. Climate change only adds to the challenge.

Water that has come into contact with bitumen, called process-affected water, must also be dealt with. Much of this water remains after suspended tailings materials finally settle. The Alberta government is still in the early stages of determining how to safely treat and release this water from mine sites.

The mines' toxic tailings also have many unresolved clean-up issues. There are persistent reports of tailings reservoirs leaking into shallow groundwater. This poses a daunting reclamation challenge. Tailings berms can also fail catastrophically. As a reminder, the breached dam at Alberta's Obed coal mine site released over 600 million litres of coal wastewater into the upper Athabasca River in 2013. The March 2017 report of the joint UNESCO/International Union for Conservation of Nature (IUCN) Reactive Monitoring mission to Wood Buffalo National Park noted that "[t]he multiple risks from tailings ponds, including leakages and dam failures, constitute a concrete threat to the PAD [Peace Athabasca Delta], which should receive systematic analysis considering the World Heritage values of the PAD."

And what does the 'zero' fluid tailings re-

quirement ten years after end-of-mine life demand? Zero really means 'covered somewhere.' Most operators propose to cover thickened tailings with water in end-pit 'lakes.' These have not been demonstrated to transform into functioning aquatic communities in the cold northern environment. For example, there are concerns about wind action and freeze-thaw water circulation destabilizing the buried toxic tailings. Some alternative plans would cover thickened tailings with sand and soil. However, these areas are projected to slump by many metres while they compact and settle over the years. As with the constructed wetlands, the tailings experiments should require operators to provide many decades, if not centuries, of monitoring and maintenance.

With hindsight, the best way to manage these risks would have been not to issue or renew the approvals of so many mines until reclamation was less of a gamble. Without that option we must shore up today's weak liability management system.

Details of mine reclamation liability calculations must be made public

Earlier in 2017, the AER began to publish the combined reclamation liabilities submitted by all Alberta oil sands and coal mines under the Mine Financial Security Program: that total was a staggering \$27.79 billion as of June 2017. AER also began to publish what each approval holder has paid to the AER as financial security against those liabilities. These payments are either in cash deposits or letter of credit guarantees and the AER holds them in trust against those liabilities. Granted, this is a step forward in transparency.

Because Alberta's coal mine industry chose to pay full financial security for clean-up liabilities, their liabilities should equal their \$452 million security (for June 2017). That leaves oil sands mine reclamation liabilities of \$27.4 billion. In sharp contrast to the situation in coal mining, oil sands companies only have supplied a minuscule fraction of their liabilities. They have submitted \$939 million in security deposits to the AER, a mere 3.4 percent of the sector's liabilities. We

What about orphaned oil, gas, and 'in situ' oil sands wells?

AER's Licensee Liability Rating (LLR) Program and Orphan Fund rules apply to wells and most other infrastructure (excluding the biggest processing facilities) for upstream oil, gas, and 'in situ' drilled oilsands projects. Orphan sites are officially assessed as having no legally responsible or financially able party to deal with abandonment and reclamation responsibilities. For good reason, orphan sites have been in the news lately. Their numbers are increasing - as of September 2017, there were over 1,700 orphaned sites - and there are some high profile legal disputes about reclamation obligations after bankruptcy. Alberta also has a lenient system allowing wells to remain 'inactive' indefinitely prior to reclamation; there are now over 80,000 inactive wells. Tens of thousands of other wells are abandoned but not fully reclaimed. So there are likely many other wells that are orphaned in all but name. To its credit, in spring 2017 Alberta Energy included environmental groups in a multi-stakeholder advisory group to review these regulations. We do not yet know what changes will result. This article focuses on oil sands mine liability management, which also requires government reform.

will discuss below why this security amount is inadequate.

But first, let's consider how liabilities are determined. Here there isn't sufficient transparency. The AER doesn't publish important details of operators' self-reported reclamation liabilities. The public should know what areas of different land covers and volumes of groundwater, process-affected water, and tailings are addressed. This is crucial to evaluate if 'equivalent land capability' will be achieved or not. We also need to see the unit cost assumptions for different land covers and water treatments. We should also be able to see the provisions made for long-term adaptive

monitoring, maintenance, and contingency to address the enormous reclamation uncertainties discussed above. There should also be some provision for catastrophic insurance against tailings pond berm failures. Because these deemed cost elements are secret, AWA is very concerned they are likely far too low, or missing.

The AER's current (February 2017) Guide to the Mine Financial Security Program states: "Individual asset and liability numbers will not be disclosed as these numbers reflect confidential financial information." This is difficult to believe for end land uses and third party unit costs for public lands reclamation (these third-party costs are estimates the approval holders give the AER to calculate what, in the event the miner defaults, third-party contractors would need to be paid in order to address the liability). The secrecy is especially dubious given the technology-sharing these same mine operators practice in Canada's Oil Sands Innovation Alliance (COSIA). COSIA's website stated as of mid-November 2017: "**To date, COSIA member companies have shared 936 distinct technologies and innovations that cost almost \$1.33 billion to develop [emphasis in original].** These numbers are increasing as the alliance matures and expands. Through this sharing of innovation and application of new technologies, members can accelerate the pace of environmental performance improvements."

AWA believes the assumptions and details behind liability estimates need public scrutiny. This scrutiny is needed given the globally significant ecological values at stake on these public lands and the high uncertainty of reclamation success. Such scrutiny in itself should accelerate progressive, timely, and effective reclamation.

Need to collect the full financial security for reclamation liability

Alberta Energy's web page on Oil Sands Facts and Statistics in November 2017 states reassuringly: "Mine operators are required to supply reclamation security bonds to ensure requirements are met."

As we noted above, less than five percent of incurred reclamation liabilities are actually "in the bank" now. Fairly small 'base' securities amounts between \$30 to \$360 million per mine are now held in trust by the AER. If tailings profiles are meeting targets set by the companies themselves, little else is required in the first decades of operations. Miners must start ramping up financial security payments only in the final fifteen years before a weakly defined 'end-of-mine life' date. In all the years prior, they will have been distributing their cash flows to investors or investing them in projects, projects that may well be outside of Alberta.

What is the government's logic when it comes to the Mine Financial Security Program's lax approach? Low upfront financial security is premised on the belief that if the company's assets are at least three times above its estimated reclamation liabilities, all will be well. In July 2015, Alberta's Auditor General found that assets are inflated, development costs are not recognized, and mine life estimates are over-extended. Yes, these are calculation problems, but fixing them doesn't begin to address the real issue.

Added to these calculation problems is a much larger potential oil sands developers dismissed 20-years ago: a carbon-constrained world. If the world reduces its thirst for petroleum there may be little incentive for oil sands producers to offer up tens of billions of dollars in reclamation payments after nearly all of a mine's high-earning years are over. In the event a company is unable or unwilling to fulfill its end of life obligations, the remaining bitumen reserves may be very unlikely to pay for accumulated clean-up costs. This leaves Albertans highly exposed to the risk of corporate defaults.

Recent examples of mine failures should alert Albertans to this default risk:

- **Yukon's Faro open pit lead-zinc mine:** once the largest mine in the world, the last owner declared bankruptcy in 1998, after 30 years of mining. According to the *Globe and Mail* Canadians likely will pay over \$1 billion to remediate hundreds of millions of tonnes of tailings and waste rock.
- **Yellowknife's Giant gold mine:** when

the owner went bankrupt in 1997, the mine was sold on condition that its billion-dollar arsenic waste liabilities, built up during 50 years of operations, would be assumed by the federal government.

- **Smoky River Coal, Grand Cache, Alberta:** in 2000, before Alberta coal mines agreed to pay full security for their reclamation liabilities, the owners of Smoky River Coal declared bankruptcy after 30 years of operations. This bankruptcy left Albertans with \$6 million in unfunded cleanup costs.

The AER should require oil sands miners to transition to full financial security for closure liability to remove the significant default risk we have created. Don't let the likely howls of indignation from the operators fool you, this is financially feasible for mine operators. For example, Teck Resources Ltd. has stated that, if required, they could provide full financial security for reclaiming their proposed Frontier Mine. Existing mines also have the capacity to pay. Cash flows reported by Suncor, CNRL and Imperial are also healthy, with mine operating costs for Suncor and CNRL in the low \$20s per barrel.

In summer 2017, AWA and ENGO colleagues joined in a government-led multi-sector review of a small piece of the cleanup liability picture. One outcome of that review was to suggest financial penalties if miners missed their own planned volumes of tailings. We appreciated being part of this process. We took the opportunity to propose the broad reforms to the overall financial security program, as outlined above. In September and October 2017, we briefed AEP and AER about these broader reforms. To date, there has been no commitment to the kind of major reforms needed to reduce public financial risks.

AWA will continue to seek reforms to liability management to require oil sands mine operators to post full security now, while their incentives are still high to do so. Requiring detailed liability disclosure and full financial security would spur timely, progressive reclamation and significantly reduce the unfair mine clean-up burdens we are passing to future generations. 📌