

The Strains of Development: The Athabasca and the Oil Sands



By Matt Dow

With the exception of a few well-oiled ducks, the Athabasca River is one of the most notable and symbolic features of the continuous debate surrounding the development of Alberta's oil sands and its impact on the environment.

The headwaters of the scenic Athabasca melt from the Athabasca Glacier in Jasper National Park flowing north and eastward towards Fort McMurray. From the Fort McMurray area the river continues its journey northward and finally empties into Lake Athabasca roughly three hundred kilometres from Fort McMurray. Lake Athabasca empties into the Great Slave Lake via the Slave River, which then empties into the mighty Mackenzie River and out to the Beaufort Sea and Arctic Ocean.

While the Athabasca is known for its beauty and power, the relatively small 70-kilometre stretch downstream of Fort McMurray has attracted significant provincial, national, and international attention in the past decade. While the oil sands have proven to be the economic powerhouse of Alberta, if not Canada, the ecological sacrifice for this distinction increasingly is being recognized and the Athabasca River has not escaped the scars left by the oil sands footprint.

Quality: What's in the Water?

The quality of water in the Athabasca River has been a hotly contested issue for the last decade. Environmentalists and Aboriginal communities downstream from oil sands operations, including the now famous Fort Chipewyan, have attempted to raise the alarm about contaminants from the bitumen-soaked sands. The Alberta Government and oil sands producers, until August 2010, consistently denied that there was any noticeable impact on the health of the Athabasca from production; they maintained that any contamination in the river was naturally occurring as the river eroded its banks to allow raw bitumen to seep into its waters.

Contaminants in the Athabasca could result from a variety of different sources in the production process. First, airborne emissions from processing may fall to the ground and weave their way through the land into groundwater and tributaries that make their way into the river. Second, the infamous tailings lakes that are lined with sand and clay have been known to leak into groundwater or almost directly into the river, as was the case with Suncor's Pond One that sat on a hill less than 400 metres from the Athabasca before it was "reclaimed" in the fall of 2010. A third and less likely method of contamination could be from direct discharge back into the river as producers return water from the production process (this water should be free of toxins).

The Regional Aquatics Monitoring Program "is not producing world-class scientific output in a transparent, peer-reviewed format and it is not adequately communicating its results to the scientific community or the public." - Federal Oilsands Advisory Panel, December 2010

Following the research of Dr. David Schindler from the University of Alberta, it appears that the tide of this debate has shifted; government and industry now acknowledge that people are introducing contaminants into the Athabasca. Controlling for natural contamination, Schindler's research studied water, snow and ice samples near industry and found that thirteen of what the United States Environmental Protection Agency describe as "priority pollutants" were exposed to the Athabasca. These pollutants included mercury and lead. Seven of the "priority pollutants" exceeded Canada and Alberta guidelines for the protection of aquatic life. The research also found that Polycyclic Aromatic Hydrocarbons (PAH), well-known carcinogens, are being released into the atmosphere and eco-systems at a much higher rate than previously thought.

Dr. Schindler's research was also

highly critical of the government and industry funded Regional Aquatics Monitoring Program (RAMP) that was delegated responsibility for monitoring the health of the river. Despite multiple peer-reviewed studies in the last seven years (2004 and 2007) that determined that RAMP did not have the capacity to monitor the impact of development on the Athabasca, government and industry continued to use RAMP to support the following claims: the Athabasca was subject to a "world class monitoring system" and non-natural contamination from oil sands did not exist. The federally appointed Oilsands Advisory Panel put in charge of determining whether the "world class" title was worthy, concluded once again that RAMP did not have the capacity to test or recognize impacts from development on the Athabasca River.

The panel's December 2010 report to the federal Minister of Environment is quite scathing in its assessment of RAMP. RAMP "is not producing world-class scientific output in a transparent, peer-reviewed format and it is not adequately communicating its results to the scientific community or the public."

Given RAMP's glaring deficiencies, the federal and Alberta governments, in collaboration with academics in the scientific community have been developing a new monitoring system that hopefully deserves the "world class" label. Environment Canada released Phase One of the Lower Athabasca Water Quality Plan in March of this year. This phase focused solely on the surface water quality of the Athabasca and its major tributaries downstream of Fort McMurray to Wood Buffalo National Park. It is, as its authors pointed out, "a first step towards a comprehensive, integrated monitoring program for the oil sands region." Environmental actors including the Pembina Institute greeted this report warmly calling it a "good step toward providing a credible foundation for the monitoring of the Athabasca River downstream from the oil sands." It also is encouraging that the plan's authors



Drying northern pike at Fort Chipewyan.

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Sunset on Lake Athabasca at Fort Chipewyan.

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see that their approach may be improved by incorporating aboriginal traditional knowledge into the plan.

Early summer saw two more potentially significant developments. First, on June 30th, the Alberta Environmental Monitoring Panel (appointed in January 2011 by Environment Minister Rob Renner) released its report on environmental monitoring in the oil sands. While proposing a new monitoring program the panel also re-affirmed what other reports had concluded in that “monitoring organizations suffer from inadequate funding, weak scientific direction and a general lack of resources to take on the enormous challenge of monitoring.” The report also acknowledged that “the overall state of the environment is not well known.” Environment Minister Renner commented on the report saying that Albertans should not expect to see this report left on the shelf; but he also has not committed to a timeline for implementing the report’s findings - an omission he has been criticized for.

On July 21st, the federal government unveiled phase two of its monitoring design. This phase expands the water monitoring component and adds air quality and biodiversity monitoring components. This initiative was welcomed by the organization Environmental Defence. But the group pointed out that additional regulations should accompany these changes to the monitoring regime.

While strong movement on water monitoring should be acknowledged and applauded, it is quite possible that

these gestures are too late as any hope of attaining a true baseline study of the Athabasca has been lost in the previous forty years of oil sands development along its shores.

Quantity: Is There Enough Water?

Water allocation from the oil sands region of the Athabasca continues to be another concern among environmentalists and Aboriginal groups. The intensive nature of oil sands extraction requires large quantities of water to separate the useable petroleum products from the earth that surrounds them.

The concerns expressed by environmentalists and Aboriginal groups relate to the amount of water that is withdrawn from the river. How much water can be removed from the river before fundamental and potentially irreversible changes to the ecosystem take place? This minimum amount of water flow needed to maintain the functioning of that ecosystem is called the Ecological Base Flow (EBF). A policy developed with an EBF would halt water withdrawals if they fell below a pre-determined level.

The Alberta government and industry have consistently denied that oil sands production constitutes a significant risk to the Athabasca’s EBF but critics argue that that this denial is misguided because it focuses on annual flows instead of seasonal flows. The eight major oil sands operations including Total’s recently approved Joslyn Mine hold the rights to divert 16 m³/sec from the Athabasca. During high flows, this allocation represents less than two percent of the

flow (average 859 m³/sec). However, during low flow periods between November and April the allocation can reach nine percent of the river’s flow (average 177 m³/sec).

During these low periods the level of oxygen in the river is a significant concern as the majority of the river is covered in snow and ice. A report by Debra Davidson and Adele Hurley concluded that intensive water diversion in low flows could be detrimental to the eggs and fry of fall spawning species; it also could hinder the ability of “fall spawning fish to reach spawning sites or to allow fry to occupy key nursery sites in the river during winter.” The expected impact on the surrounding organisms is troubling as declining aquatic populations impact both humans and wildlife that rely on the fish and the river for nutrients and sustenance.

There may also be concern during high-flow periods since these periods and the flooding they produce are vital to the survival of many unique habitats in the Peace-Athabasca Delta. If withdrawal amounts are too high the water table may be too low to create these habitats; this would have obvious impacts on wildlife in the region. While this may not currently be a threat this consideration should remain on the radar of decision makers in the future.

The impacts of water withdrawals will be exacerbated by the expected decrease in overall flow in the Athabasca due to the effects of climate change. A report on the implications of a two-degree celsius rise in average temperature on Canada’s water resources concluded that such an

increase would decrease the overall flow of the Athabasca in the Fort McMurray area by 30 percent by the middle of the 21st century. The disruption would result from decreased snow pack and precipitation as well as the increased evaporation of surface water and longer summers.

The current government regulations that govern water diversions in the Athabasca are found in phase one of the *Athabasca Water Management Framework*. This was developed as a temporary framework in 2008 and does not establish EBF and this has been a significant concern for environmental and Aboriginal groups. Phase two of the framework is in the development process currently and while the scientific evidence, including that from the federal Department of Fisheries and Oceans, supports recognizing and enforcing EBF, it is uncertain whether or not EBF will find a place in the new water management framework.

What of the Lower Athabasca Regional Plan and the Future of the Athabasca?

In addition to phase two of the *Athabasca Water Management Framework* and the new environmental monitoring program, there are other policy changes that will affect the Athabasca. Alberta's *Land-Use Framework*, released in 2008, was the Alberta government's recognition that the way decisions were made with regards to Alberta's air, land, and water were increasingly out of date. The framework established a commitment to social and environmental sustainability while managing growth and development. Implementation of the framework requires the development of seven separate regional plans to be constructed in the next several years and the *Lower Athabasca Regional Plan* (LARP), which involves the majority of Alberta's oil sands, was the first of the regional plans to be developed. It is currently

in a late draft phase awaiting final public input.

The Land-Use Framework and the subsequent LARP may have much for environmentalists, conservationists and First Nations to look forward to such as a commitment to increased monitoring, cumulative effects management, and a greater recognition of the ecological goods and services that provide value in our economy. But there are still many concerns about the plan.

Among these concerns is that LARP does not establish regional land disturbance limits, establish EBF, or identify limits of pollution in the Athabasca. An additional concern is that with the exception of a small number of oil sands leases, the area set aside for conservation in the plan appears to do little for ecologically sensitive areas; choices seem to have more to do with where the oil is available for extraction. Environmental and aboriginal groups have demanded an independent review of

the current draft of the plan.

Overall, the projected growth in oil sands development is not restricted by the LARP and the Alberta government's desire to extract up to four million barrels of oil per day from northern Alberta seems unchanged. This desire for continued growth will remain the greatest threat to the health of the Athabasca River in the foreseeable future.

Technological developments in the industry that have reduced the amount of water required to produce a barrel of oil from the oil sands would assist in reducing water intake and tailings if the pace of production was maintained at current levels. However, the overall expansion of development eclipses these improvements and will only put greater strains on the Athabasca and the ecosystems that rely on the river for survival. ▲

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Kerkeslin winter's evening
24" x 30" acrylic on canvas

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