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## LEAK AT OIL SANDS PROJECT IN ALBERTA HEIGHTENS CONSERVATIONISTS' CONCERNS

The oil company calls it "seepage." Environmentalists describe it as a "blow out."

Either way, the leak at the oil sands project in Northern Alberta — which has spilled 280,022 gallons of oil across 51 acres since June — is stoking the controversy over the energy source.

"This mess is a symptom of the problems with the reckless expansion of the tar sands," said Anthony Swift, a lawyer in the international programs division of the Natural Resources Defense Council in Washington. "Environmental regulations have just not caught up."

The oil sands industry is booming in Canada, pumping billions of dollars into the economy and providing thousands of jobs. But critics contend that the processes for recovering the low-grade petroleum called bitumen are particularly harmful to the environment. President Obama is weighing climate concerns in his decision to approve — or not approve — the Keystone XL pipeline, which would link Canada's oil sands with the American Gulf Coast.

The cause of the oil spill at the Royal Canadian Air Force base in Cold Lake, Alberta, remains unclear. The company that owns the project, Canadian Natural Resources, blames abandoned wells in the area. Environmentalists point to fundamental flaws with the company's process.

Until they find the source of the problem, oil continues to leak at four locations. The spill, modest by historical standards, is manageable for the company, which says it expects to spend \$60 million on cleanup and investigation. But already the leak is spoiling the landscape and hurting wildlife. It has killed 71 frogs, 27 birds and 23 mammals, including two beavers, according to the company.

At the site, Canadian Natural Resources uses an approach that is increasingly common



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for oil sands ventures.

In a process similar to hydraulic fracturing, or fracking, Canadian Natural injects hot steam at high pressures into underground oil sands deposits. The heat liquefies the bitumen and the pressure separates it from the surrounding sand. The process allows the bitumen to flow to the surface through wells.

Canadian Natural has been reluctant to acknowledge the spill, going public only after The Toronto Star published an article based on photographs and documents from a government scientist who was not identified by name. But in a conference call with analysts last week, Steve W. Laut, the company's president, repeatedly defended its process, saying it had not caused the spill.

Mr. Laut said that the amount of pressure needed to force bitumen through the protective rock layer "is significantly higher" than that used by the company. Instead, he argued that the oil was seeping up through inadequately sealed, abandoned oil wells in the area.

"You cannot have these failures without a well bore failure," he told the analysts.

Canadian Natural did not respond to requests for comment on Thursday. But the Alberta Energy Regulator has swiftly disputed Mr. Laut's statement.

"We do not currently have the evidence or data to support any conclusions as to the cause of the incident and look forward to reviewing C.N.R.L.'s information supporting their conclusions on the root cause of the releases," Jim Ellis, the chief executive of the newly formed regulatory body, said in a statement.

The regulator has ordered some of Canadian National's operations near Cold Lake suspended and others reduced until the cleanup is complete and a cause for the spill is determined.

A study released in January by Alberta's previous regulator about a 2009 spill at the same site also appears to undermine the company's contention that old wells are the source of the problem.

While that study did not determine a cause for the 2009 spill, its authors said that they believed that the protective layer of rock "was likely breached by high-pressure steam injection not related to a well bore issue."

The study added that the high pressure of the steam that Canadian Natural used probably contributed to the 2009 spill and that the steam and pressure may have created weaknesses in the protective rock layer and provided an escape route for bitumen.

"There's a pretty strong incentive for the company to portray this

as a technical issue because technical issues can be fixed, unlike fundamental issues," said Chris Severson-Baker, the managing director of the Pembina Institute, an environmental group based in Calgary, Alberta.

But, Mr. Severson-Baker said, this leak, "calls into question how much knowledge the industry and the government have about the integrity of the cap rock before they allow these projects to proceed."

This article has been revised to reflect the following correction:

## DECADES-OLD OIL SPILL RE-EMERGES ON BANKS OF WEST RIVER

Nearly forgotten spill happened in the late 1970s

A nearly forgotten, decades old oil spill in Bonshaw, P.E.I. has prompted a call for the cleanup of the West River.

Exactly how the oil and how much of it got into the river is not clear.

But Sheldon McNevin said he remembers what happened, steps from his home, one night in 1978.

"It was a friend of mine that lost his life there. We don't know what happened. It looks as if he dozed off and left the road," he said.

McNevin said the tanker

dumped hundreds of gallons of crude along the river.

The spill was largely forgotten but more and more of the thick, black, nearly-solid oil has been emerging along the West River's banks.

At least twice a week, Megan Harris, coordinator for the West River Watershed, goes down to the river with bucket in hand.

She collects the thick heavy oil that oozes out of the bank. She said it's a slow, seemingly never-ending task.

"In order to fully resolve the problem, they would need to dig it all up," she said.

The Department of Environment, Labour and Justice was finally alerted last month.

"Any kind of petroleum product in an aquatic environment represents some form of risk. But, what we've seen from our testing is that this is a weathered crude oil product, which has a lower toxicity," said Greg Wilson, a manager with the environmental land management section of the department.

Wilson said cleaning up the wetland area is still a high priority, but that can't happen until they find the spill's exact location.

"The first part of that is to get the consultant out there. They're going to do some testing," he said.

Until there is a final plan to clean the oil up, Harris said she'll continue to do what she can with gloves and a bucket.

The environment department said there's no sign that the oil has had any effect on wildlife.

### EYE IN THE SKY DETECTS EVEN SMALLEST PIPELINE LEAK

Edmonton-based Synodon Inc., which has used its helicopter-mounted detection system to check natural gas pipelines for 15 companies over the past three years, is starting to add oil pipelines to its repertoire.

The realSens device was built to detect vapour plumes, which are tiny emissions of gases. Earlier this year, the firm completed field trials in Alberta and Arizona to perfect the detection of pentanes, gasoline and condensates used in bitumen. And Synodon just signed a contract with Suncor Energy to survey the oilsands pipeline that was built in 1966 to carry synthetic oil from Fort McMurray to Edmonton.

"This is a whole new parallel business to our natural gas pipeline

business, and there is no competition for us on the oil side with realSens," said chief executive Adrian Banica.

Natural gas firms are content with annual line inspections, but Banica said oil firms are now very sensitive about any spill.

"No spill is acceptable, so there is the impetus for oil pipeline firms to buy our service more frequently, to fly over their line once a month or perhaps once every three months at the most," he said, adding that this will change the business outlook for his firm.

Synodon has one \$800,000 detector, and has the material to construct a second. Its helicopter will fly between 500 and 600 kilometres per day, at 100 km/h and an altitude of 300 metres. Their helicopter is inspecting pipelines all over Canada and the U.S.

"We are getting really good traction in the U.S. with this technology, and that is a big market. They also have an older network, have a bit more aggressive regulations on pipelines, and they do seem to have more issues than we do."

Banica said realSens can detect a spill of just 10 barrels per day, even underground, as the vapours disperse to the surface. That is more than 100 times more sensitive than the current detection practices.

"Companies now do mass balancing, measuring pressure (and) flow past a point and temperature. And from that they calculate the volume," he said.

The points may be 100 kilometres apart, so they will know they have a significant leak somewhere in that stretch, but that is really rupture detection because the changes have to be large enough — at least one per cent of change — to be measured.

"They also fly over their lines looking for big black spots, but only five per cent of leaks are detected this way," said Banica.

The vast majority of spills are reported by landowners or residents, which is "the worst kind of situation for the company," he added.

The realSens system works by measuring 55,000 wavelengths of light reflected from the ground. Methane, for example, absorbs invisible long-wave red light, and the system measures that.

Other firms offer a system using laser beams to accomplish a similar end, but targeting the narrow beams which cover only a few metres is more difficult than the realSens method, which relies on sunlight and covers a 64-metre width, said Banica.

The science behind the realSens gas detection system is found in

NASA's terra satellite, which is a key piece of the Earth Observation System. Canada's Space Agency spent \$40 million on it, and Synodon spent a further \$10 million.

The sensor carried under the helicopter is kept chilled to -200 C with liquid nitrogen, which must be added before each flight. The cold prevents heat from the sensor altering the readings.

Banica and his firm have been working on this technology for more than a decade, and have managed to raise several million dollars from "angel" investors in Edmonton.

"We got very little from Calgary, where they are centred on their own deals. But surprisingly there is a ton of money in this city available for local stories, and we have

been very successful attracting local angel investors," he said.

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