PIPELINE PERIL

Tar Sands Expansion and the Threat to Wildlife in the Great Lakes Region

NATIONAL WILDLIFE FEDERATION

prairie rivers network
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AUTHORS
Shelley Kath
Paul Blackburn
Jim Murphy

REVIEWERS/EDITORS
Andy Buchsbaum
Lena Moffitt
Neil Kagan
Hope Lemieux

COVER PHOTOS
top background: Emily Stark; inset: National Transportation Safety Board
bottom from left: Gary Lackie/NWF photo contest, U.S. Fish and Wildlife Service,
          David Kenyon, Michael Thomasson

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EXECUTIVE SUMMARY

From the skyscrapers of bustling Chicago to the remote, rocky shores of Lake Superior, the Great Lakes region is one of America’s most precious resources for people and wildlife. The Great Lakes directly provide one in ten Americans with water for drinking and agriculture, and offer countless opportunities to connect with the outdoors. Few places on earth grant as many opportunities to enjoy wildlife from fishing to bird watching to hiking. The Great Lakes region also provides a multitude of sporting opportunities including sailing, kayaking, running, biking and skiing along the gorgeous shores of these immense fresh water seas. The Great Lakes are the largest unfrozen freshwater source in the world and the region provides valuable habitat for iconic species like Moose, Lynx, Wolves and Loons, as well as endangered species like the beautiful Karner Blue Butterfly, Cerulean Warbler and prehistoric Lake Sturgeon.

Yet, a growing threat looms, putting the health and future of the Great Lakes region at grave risk.

The region is encircled by a vast array of pipelines sending toxic, spill-prone, and impossible-to-clean-up tar sands oil through the Great Lakes region. Tar sands oil is a carbon-intensive, sticky substance that is mined and drilled from deposits in the evergreen forests and rich wetlands of Northern Alberta. This substance is eventually refined into gasoline, jet fuel, and other transportation fuels.

Tar sands oil poses several direct threats to the Great Lakes region:

➤ TOXIC TAR SANDS OIL SPILLS AND OIL TRAIN EXPLOSIONS. With pipelines throughout the Great Lakes region, the threat of catastrophic tar sands oil spills imperils extensive habitat...
and water supply areas. The Great Lakes region has already suffered a horrific spill in 2010, when nearly a million gallons of tar sands oil spilled into the Kalamazoo River. Thousands of birds, turtles, and small mammals, such as Beavers, were affected by the spill, and many died. Portions of a 40-mile stretch of the Kalamazoo River are still polluted and will likely be affected for decades. Tar sands oil pipelines currently threaten areas where wildlife thrive such as the Chippewa National Forest, Saint Louis River Estuary, and Necedah National Wildlife Refuge. Plans are currently being drawn up to allow tar sands oil to enter the Great Lakes region via tanker and some is already starting to come in by rail. Such threats pose further spill risks to the Great Lakes region. The tragic explosion in Lac Mégantic, Quebec last summer resulted in the deaths of 47 people and destruction of the town. While it was not tar sands oil, this example shows the extreme threats that increased oil transportation by rail and other modes pose to the Great Lakes region and the surrounding communities.

**CLIMATE IMPACTS.** Tar sands oil is far more carbon polluting than conventional fossil fuels, with up to a 37% higher life-cycle basis than regular oil. The tar sands oil industry currently plans a massive expansion of the mining and export of tar sands oil provided they are able to transport their product to market. These tar sands oil transportation projects and the development they will trigger will serve to lock in run-away climate change. The Great Lakes region has already begun seeing the harsh impacts of climate change, such as reduced water levels (due in particular to decreased winter ice cover allowing more evaporation), increased frequency of intense storm events (altering the timing of inflows), and warmer water temperatures, all of which feed massive toxic algae blooms. Toxic algal blooms make recreation in the Great Lakes dangerous, smelly and unpleasant, and can also cause fish and wildlife dead zones in the usually productive Great Lakes. These harms will plague the Great Lakes region and harm the wildlife that depends on it if climate change is not curbed.
**DIRTY REFINERIES.** More tar sands will mean more pollution from the oil refineries processing tar sands oil throughout the region. Unrefined tar sands oil is heavier and contains substantially more toxins than conventional oil, resulting in a more intensive and polluting refining process. These pollutants may be released into the communities surrounding the refineries, harming wildlife and jeopardizing the health of people living nearby. Refining tar sands oil also creates a harmful, coal-like solid byproduct called petroleum coke, or petcoke. This byproduct is often stored in massive, uncovered piles outside of refineries, frequently along rivers, allowing dust from the piles to contaminate neighboring rivers and communities. Petcoke can also be burned to create electricity, releasing more carbon pollution into the atmosphere and further exacerbating all the negative impacts of climate change.\(^\text{10}\)

These threats will grow if the tar sands oil industry is allowed to expand. The tar sands oil industry is seeking to send even more tar sands oil through the Great Lakes region in an attempt to move its product abroad and receive top market prices. Chiefly, the industry is seeking to approximately double the amount of tar sands oil that crosses the border along a pipeline called the Alberta Clipper.\(^\text{11}\) The Alberta Clipper pipeline is the aorta of Enbridge’s pipeline system, which winds through the Great Lakes region. This expansion would allow the industry to push forward plans to transport tar sands oil to key export points on the Gulf Coast and East Coast.

Despite committing to a public process of review and permitting before any tar sands oil expansion in the Great Lakes region involving the Alberta Clipper would be decided upon, the State Department recently approved a behind-the-scenes scheme by Enbridge to almost double the amount of tar sands oil

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*Enbridge has hatched an illegal scheme to try and avoid review of the impacts of tar sands expansion to wildlife and natural places in the Great Lakes region by manipulating border flows on parallel pipelines. However, this scheme clearly violates the need for public review and is being challenged in court.*
moving into the Great Lakes region. This scheme would temporarily divert the flow of tar sands oil from the Alberta Clipper to a new pipe segment that would replace the border crossing of an older parallel line, which had been used for moving conventional oil. This approval occurred with no public process or input, undermining the public review process and the legal permitting process the State Department had committed to follow. A diverse coalition of indigenous and conservation groups are challenging this illegal approval in court.

**Something can be done.** The State Department must reverse this decision, prohibit Enbridge from moving forward with any capacity increase until the current public review process is completed and ensure the President's climate test is applied to any plan to increase the amount of toxic tar sands entering the Great Lakes region.

This report details the threat of tar sands oil expansion to the wildlife and people of the Great Lakes region and explains why tar sands oil expansion presents too high a risk. Fortunately, concern over the threat of tar sands is rising, and communities are speaking up against risky tar sands oil projects and in favor of responsible, wildlife friendly clean energy solutions.
To protect wildlife, resources, and communities, we recommend:

➤ The State Department should conduct a thorough public environmental review of the proposed Alberta Clipper expansion that accounts for all of the risks posed to the Great Lakes region and beyond from increased tar sands oil transport across the border.

➤ The State Department should consider the comprehensive impact of the multiple tar sands oil pipelines with permit applications before them, including the Alberta Clipper and Keystone XL. Taken together, these two lines will have a substantial impact on the industry’s ability to expand and create more pollution and spill risks.

➤ President Obama should consistently apply his “climate test” to all tar sands oil pipelines, and reject them if they are found to significantly exacerbate the problem of carbon pollution, as he has committed to doing with Keystone XL.

➤ President Obama should deny the Alberta Clipper expansion because it poses too high a risk to the people and wildlife of the Great Lakes region, fails his climate test, and is therefore not in the nation’s best interest.

➤ President Obama should direct his Administration to utilize existing regulatory authority to require the best technology and safest methods for transporting tar sands oil. The Administration must update old, industry-friendly pipeline safety and rail regulations that unnecessarily place wildlife and communities at risk.

➤ States in the Great Lakes region should put in place policies, like Clean Fuel Standards, that will reduce reliance on dirty fossil fuels and speed the transition to clean, renewable sources of energy that protect wildlife and people.
The Great Lakes are among the world’s most valuable resources. At 95,000 square miles of surface area, the Great Lakes hold approximately 22% of the planet’s fresh water, and constitute the world’s largest source of available fresh water. The Great Lakes are a mecca for outdoor recreation and wildlife enjoyment. From remote shores where Loons call, Wolves howl, and the Milky Way paints the night sky, to the busy metropolises of Chicago, Detroit, and Cleveland where waterfront parks and beaches serve as oases for outdoor enjoyment, the region provides millions of Americans with the opportunity to experience wildlife and nature.

Together, the massive Great Lakes basin makes up “one of the world’s most remarkable ecosystems” containing globally significant biological diversity that has been described as “unique in the world.” It provides habitat for species from Bald Eagles to Moose, serves as an immense fishery, and gives home to a great many threatened and endangered species, including Lake Sturgeon, the Canada Lynx, the Kirtland’s Warbler, the Karner Blue Butterfly, and the Indiana Bat.

The Great Lakes basin “supports more than one-tenth of the U.S. population and more than one-fourth of the population of Canada.” Approximately 7% of the total U.S. agricultural production occurs in the basin (nearly 25% for Canada) as well. A critical source of drinking water in the middle of the continent, the Great Lakes provide drinking water to approximately 40 million people.
However, this highly important region is under immense threat. The multiple risks associated with the extraction, transport and combustion of tar sands oil—one of the dirtiest, high-carbon fuels on the planet—jeopardizes the Great Lakes region and the millions of people and countless wildlife species that depend on the treasured resources of this area.

Tar sands oil is a dirty, carbon-intensive form of crude oil transported from vast extraction sites in northern Alberta to the Great Lakes region. Today, tar sands oil is transported to and through the Great Lakes region via pipeline, rail, and barge, and could come across the lakes on tankers if tar sands expansion continues. Ruptures, accidents and spills happen on all transport options.

Most tar sands oil shipments, however, occur via pipeline. Enbridge, a major pipeline company, owns the system of pipelines that carry tar sands oil from Alberta to and then through the Great Lakes region. Of these, a line called the Alberta Clipper functions as the “aorta,” pumping tar sands across the border into North Dakota to a byzantine array of pipelines that then carry tar sands through the region and beyond, increasingly bound for export terminals.

Most tar sands oil is transported as a heavy grade oil known as diluted bitumen, or “dilbit.” Dilbit is heavy, toxic, and nearly impossible to clean up. Tar sands oil spills could cause irreparable harm in the Great Lakes region and to the bountiful wildlife of this wonderful area. Pipelines and rail routes cut across huge swaths of forested land, rivers, wetlands, lakes and other bodies of water that wildlife depend upon. At-risk wildlife includes the majestic Moose in Minnesota’s north woods, the tiny endangered Illinois Chorus Frog near the Mississippi River in Illinois, the Trumpeter Swans in Michigan’s Upper Peninsula and the Whooping Cranes in Wisconsin. The Great Lakes region cannot afford the risks of tar sands oil.
Tar sands oil is found in the ground as a mix of tar-like bitumen and sand. The largest deposit exists in Northern Alberta. Similar to hardened tar in consistency, tar sands oil is a mixture of sand, clay, water and a semi-solid form of petroleum formally known as “bitumen” that has little resemblance to conventional crude oil.

Because it is so heavy and sticky, tar sands oil cannot be pumped out of the ground in liquid form like conventional oil, so producers must extract it using energy-intensive processes. Originally, most tar sands oil extraction was accomplished through open pit mining. While surface mining continues, an even more energy-intensive method called “in-situ” extraction is now largely employed. This involves drilling a series of horizontal pipelines some 600-700 feet into the ground and injecting steam to heat up and soften the bitumen for extraction. In addition to using enormous amounts of energy, this form of drilling fragments and destroys large tracts of evergreen boreal forest—habitat for countless North American migratory birds and other wildlife. Overall, an area the size of Florida is potentially threatened by tar sands oil development, and many species of birds, mammals and endangered wildlife like Whooping Crane and Woodland Caribou are threatened by habitat destruction and the massive toxic tailings ponds that birds often mistake for safe landing sites.

A Carbon Bomb

Tar sands oil is one of the most carbon-intensive forms of oil on the planet. Average greenhouse gas (GHG) emissions from tar sands oil extraction and upgrading (a pre-refining process) are an estimated three to five times as intensive per barrel as emissions from conventional oil. Over its full cycle (from production to transport to refining to transport), tar sands oil is between 8% and 37% more carbon polluting than regular crude oil due to higher emissions caused by mining, drilling and separating the bitumen from the sand and clay in which it is found. Estimates by groups evaluating numbers from the International Energy Agency show that tar sands expansion plans, if allowed, would greatly exceed carbon pollution levels scientists have agreed would avert catastrophic climate change impacts.

Extreme Spill and Transport Risk

Since it is landlocked in a remote region, getting tar sands oil to market means transporting it over long distances by pipeline, rail, ship or barge. This transport creates risks for wildlife and communities along those routes. Nowhere has this
been more tragically illustrated than with the disastrous July 2010 spill of roughly one million gallons of tar sands oil into the Kalamazoo River, the largest inland oil spill in U.S. history. After pouring into the river, much of the tar sands oil sank to the bottom, causing widespread contamination, which has proved nearly impossible to remediate.35

While spills, leaks and ruptures are becoming almost commonplace in the world of crude oil transport, the risks of moving tar sands are greater than those associated with the transport of conventional crude oil. Tar sands oil is so heavy it must be mixed with toxic diluents to be moved through pipelines or onto barges,36 and the increased friction from thick tar sands oil pushing through a pipeline makes it hotter.37 The heat may increase the chances of a pipeline rupture, and once spilled, the weight of the tar sands oil causes it to sink when released into bodies of water.38

In addition to pipelines, the tar sands oil industry has also begun to use other modes of transport. “Crude-by-rail” for example, while not serving as an economic or scalable replacement for tar sands oil pipelines, is expanding with derailments, explosions and spills as the sad result.39 Since 2005, there has been a 70-fold increase in oil rail shipments in the United States, with approximately 800,000 bpd currently being shipped.40 Rail is used mainly to move oil from the Bakken fields in the Dakotas and Montana, but tar sands oil shipments by rail from Canada to U.S. refineries are on the rise. Tar sands oil is now also being transported long distances across inland waterways by barge. While thus far companies have only transported tar sands oil by barge via rivers, such as the Mississippi,41 signs suggest the Great Lakes are next.42 That could mean ships as well as barges. A barge spill on the Great Lakes would be catastrophic, with oil potentially coating habitat and shorelines for miles.

Pollution and “Petcoke” at Refineries

Refining tar sands oil to produce fuels like gasoline and diesel causes serious air pollution problems for local communities and wildlife. In addition to producing toxic air emissions, refineries located on rivers and lakes pose spill risks to fresh water, which is what happened at the BP Whiting, Indiana refinery. This refinery spilled roughly 1,200 gallons of crude oil, likely tar sands, into Lake Michigan in March 2014.43 Fortunately, this spill was relatively small and appears to have been contained, but it serves as a warning of the dangers of refining tar sands on the banks of the Great Lakes.

Refining heavy grade tar sands oil also creates a solid byproduct similar to coal but with even higher carbon emissions, known as petroleum coke or “petcoke.”44 Heaps of this dusty, polluting substance are now piling up near refineries in places like Chicago and Detroit. These piles often sit adjacent to communities, whose residents are often no longer able to keep their windows open given the high level of dust in the air.
What's at Risk for People and Wildlife in the Great Lakes Region if a Tar Sands Pipeline Spills?

**IN MINNESOTA...**

**PIPELINES**
- Alberta Clipper, Line 3

**SPECIAL PLACES**
1. Chippewa National Forest
2. Agassiz National Wildlife Refuge
3. Itasca State Park (headwaters of the Mississippi River)
4. Saint Louis River Estuary
5. Lake Superior

**SPECIES THREATENED OR AT RISK**
- Moose, Canada Lynx, Wood Turtle, Hooded Warbler, Horned Grebe, Trumpeter Swan, Burrowing Owl, Peregrine Falcon, Red-shouldered Hawk, American White Pelican, Sprague’s Pipit, Henslow’s Sparrow, Baird’s Sparrow, Lake Sturgeon

**IN WISCONSIN...**

**PIPELINES**
- Southern Access Pipeline (Line 61)
- Line 6A (feeds Line 6B)
- new Wisconsin-Illinois pipeline (not yet announced)

**SPECIAL PLACES**
6. Chequamegon-Nicolet National Forest
7. Necedah National Wildlife Refuge
8. St. Louis River Estuary
9. Lake Superior

**SPECIES THREATENED OR AT RISK**
- Karner Blue Butterfly, Whooping Crane, Piping Plover, Kirtland’s Warbler, Red-Necked Grebe, Common Goldeneye, Black Tern, Rufa Red Knot, Long-eared Owl, Blanding’s Turtle, Canada Lynx

**IN ILLINOIS...**

**PIPELINES**
- Southern Access Pipeline (Line 61)
- Southern Access Extension
- Line 6A (feeds Line 6B)
- Flanagan South, Line 62
- Line 78
  - Eastern Gulf Crude Access Pipeline
  - new Wisconsin-Illinois pipeline (not yet announced)

**SPECIAL PLACES**
8. Lake Michigan
10. Coastal gems in the Chicago area such as Lincoln Park/Montrose Bird Sanctuary and Chicago’s 26 miles of beaches

**SPECIES THREATENED OR AT RISK**
- Spotted Turtle, Ornate Box Turtle, Illinois Chorus Frog, Cerulean Warbler, Wood Duck, Barn Owl, Loggerhead Shrike, Least Bittern, Upland Sandpiper, Wilson’s Phalarope, Osprey, rare Freshwater Mussels, Lake Sturgeon
DRINKING WATER SUPPLIES

➤ Duluth, Minnesota depends on Lake Superior for its drinking water, and is located next door to Superior, WI, where the Alberta Clipper pipeline pumps tar sands oil to connecting pipelines and supplies the refinery on Lake Superior’s shores.

➤ Chicago, Illinois and suburbs rely on Lake Michigan to supply drinking water to some 7 million people, living at the edge of a complex tangle of tar sands oil pipelines and feeding area refineries like the BP refinery at Whiting, IN. Lake Michigan is the largest public drinking water supply in the State of Illinois, serving nearly 8.5 million people (of a total of over 10 million lake-wide).

➤ Gary, Indiana, the state’s ninth largest city, also taps Lake Michigan. A spill at or near BP’s Whiting refinery could devastate Gary’s water supply.

➤ Milwaukee, Wisconsin’s largest city, also relies on Lake Michigan and is at risk of spills from Line 61 and other tar sands pipelines passing between it and Madison en route to Chicago area refineries and beyond.

➤ Toledo, Ohio relies on Lake Erie for its drinking water, but is also home to the BP-Husky Toledo Refinery, fed by Enbridge’s Line 17 tar sands oil pipeline.

TREASURED HABITAT AREAS

➤ Chippewa National Forest, northern Minnesota: The Alberta Clipper and other Enbridge pipelines cross parts of this 1.6 million-acre forest, home to the highest breeding population of Bald Eagles in the lower 48 United States. The forest also provides habitat for Osprey, Eagles, Pileated Woodpeckers, Hawks, Red Foxes and White Tail Deer, and contains eight different types of wetlands, each with distinct plant and animal life.

➤ Saint Louis River Estuary, at the Duluth-Superior port on Lake Superior: This highly prized 12,000-acre freshwater estuary is representative of the unique biodiversity of the Great Lakes region. The Alberta Clipper’s expansion would put the estuary at great risk given its close proximity. The estuary “is critical to the life-cycle of millions of fish, waterfowl, raptors and song birds in the Lake Superior region” and is part of the National Estuarine Research Reserve System.

➤ Brule River State Forest, Wisconsin: This forest, adjacent to Line 61, encompasses all 44 miles of the Bois Brule River, a renowned trout stream for over one hundred years, containing native brook, brown and rainbow trout. Lake Brown and Rainbow (Steelhead) Trout and Coho and Chinook Salmon make their annual migration up the Brule from Lake Superior.

➤ Necedah National Wildlife Refuge, Wisconsin: This refuge takes the lead in the recovery and restoration of the Whooping Crane and is located next to Line 61 and the other Enbridge pipelines running diagonally across the state. The Whooping Crane was brought back from the brink of extinction and is currently on the trail of recovery, representing a true symbol of hope for endangered species. Tar sands oil expansion would put this phenomenal progress in jeopardy by destroying breeding habitat in Alberta, creating hazardous tailing ponds near extraction sites, and posing risks such as pipeline spills along migration routes.
Given its high life cycle carbon emissions, tar sands oil exacerbates climate change. As was just seen in the Toledo, Ohio drinking water crisis, the Great Lakes region has much to lose if climate change goes unchecked under a “business as usual” scenario with planned tar sands oil expansion. The 2014 National Climate Assessment paints a disturbing picture of such impacts. The special and irreplaceable ecosystems of the Great Lakes region are likely to suffer greatly if we do not stem the tide of climate change. Many impacts have already arrived and will only worsen if we do not take action to reduce climate-changing carbon pollution.

➤ Toxic Algal Blooms. Toxic algal blooms are on the rise as waters warm and storms...
worsen, providing conditions ripe for blue-green algae to flourish, choking and poisoning the lakes. This creates massive dead zones for fish and wildlife, turning water into a toxic, smelly, pea soup that is not only perilous to wildlife, but also unpleasant and even dangerous for outdoor recreation. It can also be devastating to drinking water supplies.

➤ **Reduced Ice Coverage.** Despite last winter’s high ice coverage, ice coverage on the Great Lakes is trending down substantially from historical levels, making shorelines more vulnerable to floods and erosion, which in turn causes nutrient pollution that feeds algal blooms.66

➤ **Heavier Rains.** Midwest precipitation has increased 37% since 1958, with more increases expected.67 There has been more flooding in the region due to the sudden and heavy downpour variety of precipitation associated with climate change. This has increased sediment and nutrient loading, feeding toxic algal blooms and destroying fish and wildlife habitat areas.

➤ **Drought in dry regions.** While the plains region of the Midwest is not nearly as dry as the drought-stricken Southwest, it too is at risk to become dryer as climate change accelerates. The heavier rains mentioned above will not, unfortunately, reach the dry regions on a regular basis, and when they do, they will be too intense to be helpful when parched ground is unable to absorb massive amounts of sudden rainfall.

➤ **There has been more flooding in the region, and lower crop yields as warming increases.** Despite the possibility of longer growing seasons for some crops, unstable weather will cause things like unpredictable frosts and thaws at the wrong time, wreaking havoc on agricultural cycles. Droughts like the record-breaker in the Midwest in 201268 may also become more frequent.

➤ **Extreme heat in summer.** While the polar vortex made this year relatively cool in the Great Lakes region, the clear trend towards higher air temperatures will trigger a whole set of serious problems involving increased air pollution and ozone problems aggravated by heat waves. Worsened air quality means less healthy air for wildlife and people who seek to enjoy the outdoors.

All of these impacts of climate change will be exacerbated by a shift to higher-carbon sources of fuel, like tar sands oil.
The Kalamazoo River Calamity

Sadly, the Great Lakes region has already suffered a horrific example of what can happen when tar sands oil pipelines fail. The tar sands oil pipeline spill into Michigan’s Kalamazoo River in July 2010 showed what happens when heavy tar sands oil spills in a marsh, stream or river: an environmental catastrophe occurs that cannot be reversed.69 Now well-known by citizens and environmentalists around the country, the spill happened when Enbridge Line 6B (operated by Enbridge Energy Partners) split open near Marshall, Michigan and more than one million gallons of tar sands oil gushed out through a six-and-a-half-foot gash in the pipeline. The spill ultimately contaminated roughly 40 miles of the Kalamazoo River. It also caused families and businesses to evacuate, and many of those who evacuated reported a host of medical problems, from headaches to vomiting to rashes.70

The Enbridge tar sands oil spill at Kalamazoo was the largest inland oil pipeline spill in U.S. history.71 Cleanup has cost Enbridge an estimated $1 billion72 and a key reason for the incident’s high cost is that the substance spilled was tar sands oil. It coated marsh grasses, Great Blue Herons, turtles and other wildlife. About one-quarter of the birds died and the fate of small mammals, like Beavers, was even worse: nearly 63.5% died.73 What didn’t coat flora and fauna above the water, sank to the bottom. Officials evaluating impacts one year after the spill worried that the spill had harmed fish eggs and the main diet for fish, tiny midges and flies.74

The National Transportation Safety Board (NTSB) investigation75 concluded that the rupture was most likely caused by “corrosion fatigue cracks that grew and coalesced from crack and corrosion defects,”
which in turn produced a spill “that went undetected by the control center for over 17 hours.” In evaluating Enbridge’s handling of the spill, the NTSB found that the rupture and prolonged release were made possible by “pervasive organizational failures at Enbridge Incorporated.” When it announced the result of the investigation, the NTSB blamed Enbridge for a “complete breakdown of safety” in relation to the response to the spill. Human error, combined with hard-to-detect leaks, makes tar sands pipeline spills a question of when, not if.

Enbridge’s overall track record on spills is consistent with the NTSB’s assessment of their failure during the Kalamazoo spill. According to Enbridge’s own reports, the company has been responsible for 1,100 pipeline spills over the last 15 years (1999-2013). Together, these Enbridge spills amounted to approximately 7.5 million gallons of oil-related products, over two-thirds of the amount of oil spilled by the Exxon Valdez (11 million).

Kalamazoo is not the only major tar sands oil spill in the industry’s relative short history of bringing tar sands oil through pipelines in the United States. In March of 2013, the ExxonMobil-owned Pegasus Pipeline burst, sending tar sands oil gushing through the streets of a quiet, residential neighborhood not far from the Arkansas capital of Little Rock. Before it burst, the 65-year-old pipeline carried 95,000 barrels per day of tar sands crude from Patoka, Illinois to Nederland, Texas crossing a large piece of southwestern Illinois. Like many pipelines, it traversed numerous neighborhoods, farms and waterways. As in Marshall, Michigan, people living near the tar sands spill site experienced multiple health issues, and increased levels of benzene were found in the air following the spill.

A controlled burn to limit the spread of a crude oil spill from an Enbridge pipeline in Cohasset, MN in 2002. The spill, which originated in a nearby marsh, shows how complicated responding to remote area spills can be. Enbridge had to build a 1/4-mile-long road of wood mats, just to access the site. Responders feared that if it rained, booms placed in a nearby creek might not prevent contamination of the upper Mississippi River, and so opted for a controlled burn (photo above, left). The resulting smoke plume one mile high and five miles long (photo above, right).

Tar sands crude gushes between homes following a tar sands spill in Mayflower, Arkansas in 2013. The pipeline originates in Illinois.
The primary reason the tar sands oil industry needs these pipelines is to export their product overseas. To date, the Canadian tar sands oil industry’s biggest customer has been the United States. However, thanks in part to effective policies from the Obama Administration that have helped improve vehicle efficiency and reduce oil consumption, U.S. demand is dropping. This, along with increased oil production within the U.S., leaves the tar sands oil industry looking for new markets for their product. This is why tar sands oil producers are interested in moving their product to coastal, export-oriented markets where demand, crude prices, and profits are higher, so they can sell to oil-hungry countries abroad that will pay top dollar.

As a result, where most tar sands previously traveled from Canada to the Great Lakes region, it may also soon travel towards the U.S. border on a large trunk of Enbridge pipelines known in Canada as the “Mainline” and in the U.S. as the “Lakehead system.” Enbridge boasts that it owns and operates the largest system of crude oil pipelines in the world, with over 15,000 miles of pipeline already transporting crude oil to or through the U.S. At the town of Neche, North Dakota, just a few miles from Minnesota’s northwest corner, Enbridge’s main pipelines cross the U.S./Canadian border. From there, the bundle of pipelines that make up the Lakehead system head southeast through the wildlife rich forests of Northern Minnesota toward the Great Lakes region. The primary arterial lines run southeast in parallel to Superior, Wisconsin, where they then broadly branch out to supply crude oil to U.S. refineries and coastal ports.

**Alberta Clipper: Linchpin of Enbridge Expansion Plans**

Of the various Enbridge pipelines that carry tar sands from Alberta to the U.S., the Alberta Clipper is the largest dedicated trans-boundary tar sands oil line, and the key to expanding the tar sands oil industry’s export potential out of Canada. Also referred to as Line 67, the Alberta Clipper takes tar sands oil over 1000 miles from Hardisty, Alberta to Superior, Wisconsin near the shores of the largest of the Great Lakes, Lake Superior, not far from Duluth, Minnesota.

Tar sands oil is delivered to Superior, Wisconsin, for refining at the Calumet Specialty Products Partners Refinery, which,
### Existing and Proposed Lines

#### Enbridge Pipelines

- **Chicago Area Refineries**
  - BP: 413 kbdp
  - Exxon Mobil: 250 kbdp
  - PVD: 180 kbdp

- **Superior Refinery**
  - Line 5: 491 kbdp

- **Sarnia Refineries**
  - Imperial: 321 kbdp
  - Shell: 71 kbdp
  - Sunoco: 85 kbdp
  - Nova: 80 kbdp

- **Nanticoke Refinery**
  - Sunoco: 190 kbdp

- **Montreal Refinery**
  - Suncor: 137 kbdp

- **Quebec City Refinery**
  - Valero: 235 kbdp

#### Tanker Shipments

- **Line 6a**
  - 667 kbdp

- **Line 14/64**
  - 318 kbdp

- **Line 62**
  - 150 kbdp

- **Line 17**
  - 101 kbdp

- **Line 79**
  - 80 kbdp

- **Line 11**
  - 117 kbdp

- **Line 10**
  - 74 kbdp

- **New Sandpiper**
  - 365 kbdp

- **Chicago Area Refineries**
  - BP: 413 kbdp
  - Exxon Mobil: 250 kbdp
  - PVD: 180 kbdp

- **Montreal Refinery**
  - Suncor: 137 kbdp

- **Quebec City Refinery**
  - Valero: 235 kbdp

- **MI & OH Refineries**
  - Marathon: 102 kbdp
  - BP Husky: 160 kbdp
  - PBF: 140 kbdp

#### KEY

- **Possible Expansions**
- **Public Expansions**
- **No Change**
- **Oil Refinery**
- **Oil Terminal**

#### KBPD

- Thousand barrels per day
Chicago Area Refineries
- BP: 413 bpd
- Exxon Mobil: 250 bpd
- PVD: 180 bpd

Sarnia Refineries
- Imperial: 321 bpd
- Shell: 71 bpd
- Sunoco: 85 bpd
- Nova: 80 bpd

Nanticoke Refinery: 112 bpd

Montreal Refinery: 137 bpd

Quebec City Refinery: Valero 235 bpd

Tanker Shipments
- New Sandpiper: 365 bpd
- Alberta Clipper (Line 67): 450 bpd expanded to 800 bpd
- Line 61: 400 bpd expanded to 1,200 bpd
- New Line 66: Est. 800 bpd
- Flanagan South/Seaway to Gulf: 800 bpd
- New Southern Access Extension: 365 bpd

Line 1, 2, 4, 6, & 65 Combined: 1,660 bpd

Line 5: 491 bpd

Line 6a: 667 bpd

Line 6: 318 bpd

Line 7: 150 bpd

Line 9: 300 bpd reversal and expansion

Line 10: 74 bpd

PMPL 18": PMPL 18" 190 bpd (reversal)

PMPL 24": PMPL 24" 410 bpd (reversal)

Kiantone: 70 bpd

Line 7: 80 bpd

Line 79: 80 bpd

Line 17: 101 bpd

Line 10: 190 bpd

United Refinery: 70 bpd

NEW Line 6b: Expanded to 800 bpd

Possible Capline Reversal: 1,200 bpd

Line 14/64: 318 bpd

线 17: 101 bpd

Sunoco: 190 bpd

Line 11: 117 bpd

Possible Expansions
Public Expansions
No Change
Oil Refinery
Oil Terminal
kbpd Thousand barrels per day
like 90% of the refineries in the Great Lakes bi-national region, processes tar sands oil. Tar sands oil flowing on the Alberta Clipper is also transferred to other pipelines headed for the Gulf Coast and Central-Eastern Canada. These pipelines run throughout the region, cutting across streams, wetlands and rivers that flow into the Great Lakes. These lines include Line 6B—the line whose rupture caused the horrific Kalamazoo River disaster in July of 2010. The vast pipeline network feeds multiple refineries throughout the region, primarily in larger urban areas like Chicago and Detroit. Industry is increasingly seeking new routes south and east to access export markets available from the Gulf Coast and East Coast.

The Alberta Clipper feeds this entire network and its expansion is sought for increasing tar sands oil into the Great Lakes region. Enbridge is currently seeking to expand the Alberta Clipper’s capacity from 450,000 bpd to as much as 800,000 bpd by constructing new pumping stations and making other modifications. The proposed expansion is to take place in two phases. The Minnesota Public Utilities Commission has already approved the upgrades.

This expansion needs to be considered under a public environmental review process and national interest determination by the President, a process started last year by the Department of State, which has primary permitting authority. However, the State Department has acquiesced to a scheme from Enbridge that would allow this expansion to occur via a supposedly temporary diversion of tar sands oil from the Alberta Clipper to parallel Line 3 at the border crossing. Line 3 is an aging pipeline that sits next to the Alberta Clipper and has historically carried conventional oil. While Line 3 has not been used for heavy tar sands oil at a high capacity, Enbridge is arguing that the lack of an express limit on that Line’s capacity makes the scheme permissible.

However, the scheme is contrary to the permit Enbridge currently holds that limits tar sands oil capacity to 450,000 bpd on the Alberta Clipper, violates Federal Law requirements of an environmental review and a national interest determination, and undermines the ongoing public review process. It is critical that the State Department reverse this decision and ensures that no tar sands oil expansion of the Alberta Clipper will proceed without the proper legal process.
The list below shows the primary pipeline expansions Enbridge could use to carry tar sands through the Great Lakes region and to distant export markets if the Alberta Clipper is expanded along with other pipelines in Enbridge’s Lakehead system crossing from Canada into the U.S.

**EXPANSION Southern Access Pipeline (Line 61):** This Enbridge pipeline from Superior, WI to Flanagan, IL is one of the widest pipelines in the system, 42-inches in diameter. It can carry large volumes of tar sands and would function as a critical link between the Alberta Clipper and a new pipeline Enbridge would like to build in its rush to the Gulf Coast, Flanagan South (described below). Line 61’s expansion is slated to happen in two phases, which together would boost pipeline capacity from 400,000 to 1.2 million bpd. Only an initial part of the project has gone forward, involving a capacity increase to 560,000 bpd expected to be in operation by Fall 2014.99

**NEW Southern Access Extension (aka SAX):** This new 300,000 bpd Enbridge pipeline proposed to run from Flanagan, IL to Patoka, IL would extend the reach of Line 61.100 Its relatively small length and size relative to other components in Enbridge’s expansion plans is deceiving: SAX provides a key link that is enabling yet another massive north-to-south pipeline (See “Eastern Gulf Crude Access Pipeline,” below). It has yet to receive regulatory and other approvals.

**NEW Flanagan South:** Also entirely new, this Enbridge project will run a 36-inch pipeline from Flanagan IL to Cushing OK, closely paralleling the existing Enbridge Spearhead pipeline. While it’s starting capacity would be 585,000 bpd that could be increased to 800,000 bpd—nearly the capacity of Keystone XL.101 The National Wildlife Federation and the Sierra Club have taken legal action to stop further progress of the pipeline, but received a decision that no comprehensive review is needed.102 This decision has been appealed. Yet, construction is nearing completion, and the pipeline is slated to be in service by the end of 2014.103

**EXPANSION Eastern Gulf Crude Access Pipeline (EGCAP or “Trunkline Conversion”):** While not an Enbridge project per se, the EGCAP project is closely tied to Enbridge’s plan to push more Canadian tar sands to the Gulf. Proposed by Energy Transfer Partners (ETP), the pipeline would convert a natural gas pipeline to crude oil, and reverse its direction104 to run south from Patoka IL to Boyce LA.105 If completed, the 420,000 bpd EGCAP project would create the first “express route” from the Midwest (Patoka, IL) to the refineries of Louisiana.106

The Alberta Clipper and other Enbridge expansions to the north would make it possible: EGCAP would connect in the north, at Pakota, with the Southern Access Extension (SAX), linking EGCAP directly to Line 61 in Enbridge’s massive Lakehead system.107

Ultimately, the Presidential Permit should be denied because this proposed expansion places the Great Lakes region at unneeded and unacceptable risk.
EXPANSION Line 6B: In 2013 and early 2014, Enbridge replaced some 75 miles of Line 6B, the pipeline that caused the Kalamazoo tar sands spill of 2010. Additional replacements are planned in both Indiana and Michigan, and in conjunction with new pumps and other upgrades, capacity will be increased from 240,000 to 500,000 bpd. Enbridge is also planning an additional capacity boost from 500,000 to 570,000 bpd. The expansion of Line 6B is especially concerning in light of the Line’s recent history, Enbridge’s publicly denigrated safety record, and the huge harms already suffered by people and wildlife along the line.

EXPANSION Line 62/NEW Line 78: Line 62, also called Spearhead North, is a short pipeline connecting Flanagan IL to Griffith IN. Line 61 feeds it from the north. The expansion of Line 62 was completed in 2013 and increased the line’s capacity from 130,000 to 235,000 bpd. Enbridge plans to also build a new line, Line 78, which would parallel Line 62 for most of its route and run north from Enbridge’s Flanagan terminal near Pontiac, IL to Griffith, IN. This new pipeline, also known as the Spearhead North Twin, would have an initial capacity of 570,000 bpd.

EXPANSION Line 3: The modifications planned for Line 3, which runs from Hardisty, AB to Superior, WI, are some of the largest Enbridge expansions planned for the Great Lakes region. Billed by Enbridge as a pipe replacement project, this is an expansion in disguise. According to Enbridge, the project will let Line 3 reach an “equivalent capacity of 760,000 bpd” compared to its current capacity of 390,000 bpd. The U.S. segment would be replaced with new, larger pipe in most areas. To carry tar sands on Line 3 would constitute change from previous use, and thus a Presidential Permit and new environmental and safety reviews should be required. As described above, Enbridge has already signaled its intentions to push tar sands through a segment of Line 3 that crosses the U.S.-Canada border.

NEW Wisconsin-Illinois Pipeline: While not yet formally announced or given a project name, there are signs that Enbridge is planning to build yet another pipeline in the region. Landowners along current Enbridge Line 61, which cuts across Wisconsin into northern Illinois, received notices in early 2014 indicating that the company would be conducting survey activities in relation to a “potential expansion of its pipeline.
Tar sands oil poses unacceptable risks to the Great Lakes region’s treasures of wildlife, communities and outdoor enjoyment. We do not have to accept those risks. Rather than building dangerous infrastructure that places our largest freshwater resources at risk, we need to invest in clean, wildlife-friendly energy sources and expand clean transportation solutions. The climate crisis requires serious efforts in the reduction of carbon pollution and further transition from dirty fossil fuels to clean energy resources such as, geothermal, on and offshore wind, solar, sustainable bioenergy, and efficient transportation technologies. We can make changes to reduce our energy use and simultaneously lower our energy bills. We can make changes that connect us to one another and our communities. We can create more open space for wildlife and recreation to be enjoyed for generations to come. We can build an energy future that promotes and protects wildlife, communities and the many treasures of the Great Lakes, rather than continuing to put these resources in harm’s way.

To protect wildlife, resources, and communities, we recommend:

➤ The State Department should conduct a thorough public environmental review of the proposed Alberta Clipper expansion that accounts for all of the risks posed to the Great Lakes region and beyond from increased tar sands oil transport across the border.

➤ The State Department should consider the comprehensive impact of the multiple tar sands oil pipelines with permit applications before them, including the Alberta Clipper and Keystone XL. Taken together, these two lines will have a substantial impact on the industry’s ability to expand and create more pollution and spill risks.

➤ President Obama should consistently apply his “climate test”114 to all tar sands oil pipelines, and reject them if they are found to significantly exacerbate the problem of carbon pollution, as he has committed to doing with Keystone XL.

➤ President Obama should deny the Alberta Clipper expansion because it poses too high a risk to the people and wildlife of the Great Lakes, fails his climate test, and is therefore not in the nation’s best interest.

➤ President Obama should direct his Administration to utilize existing regulatory authority to require the best technology and safest methods for transporting tar sands oil. The Administration must update old, industry-friendly pipeline safety and rail regulations that unnecessarily place wildlife and communities at risk.

➤ States in the Great Lakes region should put in place policies, like Clean Fuels Standards, that will reduce reliance on dirty systems in Wisconsin and Illinois.”
fossil fuels and speed the transition to clean, renewable sources of energy that protect wildlife and people.

Endnotes


13. Ibid.


18. Ibid.

19. Ibid.

20. Ibid.

21. Ibid.


25. The oil industry currently uses the term “oil sands”, but as even a well-read industry blog admits, this was a marketing move employed after the original term, “tar sands” was found to have negative connotations. Brazil, R. March 9 2012. It’s a Bitumen Oil….REB Energy. URL: https://rbenergy.com/its-a-bitumen-oil-Does-it-go-too-far-Canadian-oil-sands-crude (accessed September 9, 2014).


27. The eight tar sands mines currently operating and under active development are: CNRL Horizon, Suncor Fort Hills, Imperial/Exxon Kearl, Shell Muskeg River, Shell Jackpine, Suncor, Syncrude, and Total Joslyn North, Mike Priaro. March 5, 2014. We Are The Champions—Could Alberta’s Oil Sands Reserves Be the Largest on Earth?. REB Energy. URL: https://rbenergy.com/we-are-the-champions-could-alberta-s-oil-sands-reserves-be-the-largest-on-earth (accessed September 8, 2014).


107. According to a key energy blog, EGCAP was “pitched at exactly the same time as a complimentary project operated by Enbridge that would link the latter’s huge Lakehead system running from Western Canada to Flanagan, IL with EGCAP in Patoka.” Fiedlen, S. June 11, 2013. The Enbridge SAX and East Gulf Pipeline Band–Music to Canadian Crude Producer’s Ears! RB Energy. URL: https://rbenergy.com/the-enbridge-sax-and-east-gulf-pipeline-band (accessed August 10, 2014).


112. Ibid.

113. Enbridge. February 11, 2014. Letter to Wisconsin Conservation Club argue that federal agencies erred in approving the project via a grievous misapplication of an obscure Army Corp of Engineers permitting process, resulting in a shamelessly flawed, piecemeal approval process.

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