

# ENERGY EAST: WHERE OIL MEETS WATER

Loyalist Creek, Ribstone Creek and Monitor Creek, Battle  
Gooseberry Lake, Sounding Lake and Sounding Creek, Red Deer River, South Saskatchewan River and Lake  
Efenbaker, Swift Current Creek, Pelican Lake, Moose Jaw River, Qu'appelle River, Buffalo Pound Lake, South River, Assiniboine River, Wasagamet Creek, Pinestone Creek,  
ottonwood Creek, Miry Creek, Antelope Creek, Thunder Creek, Manybone Creek and Bremond Creek, , Little Saskatchewan River, Falcon Lake, Shoal Lake, Lake  
e Woods, Winnipeg River, Rabbit Lake, Black Sturgeon Lakes, Kenora and Treaty 3 area waterways, Dog River, Dog Lake, Nipigon River, Black Sturgeon River  
ake Superior, Missinaibi River, Trout Lake, Lake Nipissing and Treaty 3, North Bay area waterways, Madawaska River, Rideau River, Mississippi River and  
he Ottawa River, Oxford Aquifer, Mattawa River (a Canadian heritage river), Kenogami River and key tributaries, Mattagami River and tributaries, Ama  
du-Ford River, Boom Creek, Chippewa Creek, Dushesnay Creek, Kaibuskong River, Pautois Creek,  
Sharpes Creek, Turtle Lake, Winnipeg River, Kabinakagami River, Kapuskasing River, Frederick  
House River, Blanche River, South Nation River, Wabigoon River, Dog River, Black Sturgeon  
River, Pagwachuan River, Nagagamet River, Opasatika River, Montreal River, Nipigon River,  
Missinaibi River, Groundhog River, Mattawa River, Petawawa River and Bonnechere River,  
Rivière des Mille Îles, La Rivière des Prairies, Fleuve Saint-Laurent (the St. Lawrence River),  
Rivière Saint-Maurice, La Rivière Madawaska and Lac Témiscouata, Saint John River,  
Edmundston and Grand Falls, Ground Water, Grand Lake, Miramachi River (ma  
southwest branch), Tobique River, Bay of Fundy

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# Energy East: Where Oil Meets Water

If approved, TransCanada's proposed Energy East pipeline would be the largest oil pipeline in North America.

The project would ship 1.1 million barrels of oil every day through a converted natural gas pipeline from Saskatchewan to Ontario, adding new pipe to Saint John, New Brunswick. The pipeline is first and foremost for export. Up to 1 million barrels per day are expected to be shipped – unrefined – from ports in Cacouna, Quebec and Saint John, New Brunswick.<sup>1</sup>

Energy East is part of a bigger push to export tar sands bitumen from Alberta. Other projects include TransCanada's Keystone XL, Enbridge's Northern Gateway and Alberta Clipper, and Kinder Morgan's TransMountain expansion pipeline projects.

There are clear reasons to oppose the Energy East pipeline. It threatens to spur a 40 per cent increase in tar sands production that would result in even more pollution exposure for downstream communities.<sup>2</sup> First Nations communities have called for an end to further tar sands expansion and respect of their treaty rights and the UN

Declaration of the Rights of Indigenous Peoples.<sup>3</sup> Energy East would unleash enough climate change pollution to undo the progress made by Ontario's phase out of coal.<sup>4</sup> It would result in more carbon emissions than any single Atlantic province. It puts Ontarians at risk of becoming more reliant on fracked gas imports. TransCanada has a questionable pipeline safety record and Canada's regulations are weak.<sup>5</sup> When the Energy East pipeline spills, the threat posed to groundwater, aquifers, lakes and rivers would be devastating.

This report focuses on the spill risks Energy East poses to waterways along the pipeline path.



*A tar sands tailings pond.*

## TAR SANDS: WATER IMPACTS

Due to its toxicity, much of the water used in tar sands mining is stored in tailings lakes large enough to be seen from space. In-situ mining wastewater is re-injected deep underground.

In 2011, tar sands production used approximately 170 million cubic metres of water, equivalent to the residential use of water by 1.7 million Canadians. The Athabasca River is the primary source for water used, putting one of the world's largest freshwater deltas at risk.

Studies confirm the Athabasca River continues to be polluted because of airborne contaminants from nearby tar sands production. A majority of fish in the Athabasca River spawn during spring

seasonal snowmelts when the concentration of contaminants is highest. Communities downstream from production have even documented deformities in fish.

By 2050, the downstream flow is projected to decrease by 30 per cent due to climate change and the withdrawal of water by industry. *Sources: Pembina Oil Sands 101; Ecojustice Oilsands Pollution and the Athabasca River*



## Diluted bitumen spills

The Energy East pipeline would transport diluted bitumen, or “dilbit,” from the tar sands.<sup>6</sup> Dilbit is created by diluting the thick bitumen from the tar sands with various toxic and explosive chemicals to make it thin enough to flow through a pipeline.<sup>7</sup>

In July 2010, an Enbridge pipeline ruptured in Michigan, spilling 3.8 million litres of dilbit, which then entered the Kalamazoo River. Unlike conventional crude which floats on top of the water, much of the dilbit sank to the bottom of the river, making cleanup efforts far more difficult.<sup>8</sup> The dilbit contaminated close to 60 kilometres of the Kalamazoo River.<sup>9</sup> Nearly four years and \$1 billion later, approximately 20 per cent of the dilbit remains at the bottom of the river.<sup>10</sup>

This was the first major spill of dilbit into a waterway. Another spill from Exxon’s Pegasus pipeline in 2012 sent 1.59 million litres of dilbit

flowing through the yards and streets of a suburb in Mayflower, Arkansas. The Pegasus pipeline was originally built to carry conventional light crude and was then converted to carry dilbit. Here again, clean up has proven extremely challenging. While Exxon denies the dilbit entered Lake Conway, a popular destination for fishing and recreation, dilbit has been found in a cove of the lake and independent water testing has confirmed its presence.<sup>11</sup>

There is a significant lack of independent scientific data on the consequences of dilbit spills in water.<sup>12</sup> Much of the limited information we have about how dilbit reacts in waterways, and the challenges in cleaning it up, comes from the experiences of the Kalamazoo and Mayflower spills. A recent Canadian federal report did confirm that when dilbit is mixed with sediment in salt water it forms “tar balls” and sinks.<sup>13</sup>



## Energy East path and waterways

The Energy East pipeline would cross some of Canada's most precious waterways. From drinking water sources, to valued fishing, tourist and recreational waters, to a beluga habitat and the home of the world's largest tides in the Bay of Fundy, these unique waterways would all be in danger from a pipeline or tanker spill.

In total, the pipeline would cross at least 90 watersheds and 961 waterways along its route. However, the information given by TransCanada in its pre-application regarding affected waterways is incomplete.<sup>14</sup> There are numerous waterways mentioned in the text of its second volume, but not included in the maps, or specific river crossing coordinates given. The list of these coordinates focuses on navigable waters with certain fish presence and requiring site-specific designs in lieu of federal regulation.<sup>15</sup> Examples, like the creek crossing that quickly flows into North Bay's Trout Lake, are not mentioned at all.

Many of the waterways along the Energy East route examined in this paper are on First Nations' treaty, traditional and unceded land. Waterways continue to play a critical role in subsistence cultures and beyond. These waterways and land are subject to unique rights enshrined under the Canadian Charter of Rights and Freedoms, Treaty Rights and the UN Declaration on the Rights of Indigenous Peoples that must be respected by TransCanada and the federal government. In its pre-application to the National Energy Board (NEB), TransCanada presents an initial list of 155 Aboriginal communities that may be affected by this project.

This paper provides a snapshot of notable characteristics and attributes of some of the waterways Energy East crosses near, over, or under.

The threat of a dilbit spill is certainly pronounced in the case of the crude leaking directly into a waterway from a pipeline crossing. A land-based spill can also contaminate water. Dilbit can seep into groundwater, contaminating aquifers and flowing into streams, rivers and lakes.

In ascertaining risk, this preliminary analysis considers the distance dilbit spread in the Kalamazoo spill, which was close to 56 kilometres.<sup>16</sup> This provides a conservative estimate of the spill risk for the Energy East pipeline given the sheer volume proposed for transport.

Based on conversations at TransCanada's Energy East open houses, TransCanada is aiming for a 10 minute pipeline spill response time. With the pipeline's total capacity of 1.1 million barrels of crude per day, Energy East would transport 1,893 litres of dilbit every second. This means more than 1 million litres could be lost in 10 minutes during a spill. A huge amount of oil remaining in the pipeline between valves could also leak. For example, at the Ontario Nipigon River crossing of the current natural gas pipeline, there are 11.8 kilometres between valve stations. This means as much as 11 million litres of additional crude could leak.<sup>17</sup>

The Kalamazoo spill – which was the largest inland spill in the U.S. – dumped 3.8 million litres of dilbit. The potential damage from a major Energy East spill is massive.

Municipalities and provincial governments along the pipeline path should commission independent scientific analysis to best evaluate the threat of a dilbit spill in their area.

Event-based modeling can evaluate factors such as size, spread pattern, outdoor temperature, direction of water flows and prevailing winds in order to assess the risks of a dilbit spill.

It is a mistake to rely on TransCanada and federal government legislation to protect waterways from a spill, or ensure timely and thorough cleanup (if this is even possible). TransCanada denies that dilbit sinks in water, referring to this statement as a "myth" in promotional material.<sup>18</sup> The Harper government's omnibus budget bills, Bill C-38 and Bill C-45, gutted important environmental protections that leave waterways vulnerable.

### **The National Energy Board and the Navigable Waters Protection Act**

The NEB regulates pipeline systems that cross provincial or international boundaries. The arm's length agency oversees pipeline construction and operation, environmental protection, public safety and traffic, tolls and tariffs.

Bill C-45 removed protections from 99 per cent of lakes and rivers under the former Navigable Waters Protections Act. Bill C-38 exempted pipelines from the act and the protection of navigable waters was transferred to the National Energy Board. Ecojustice has warned, "[The new processes] are not environmental assessments, and the degree to which the NEB is competent to assess the navigation impacts of pipelines is open to serious debate."<sup>19</sup>

The NEB very rarely rejects pipeline project proposals and has been widely criticized for favouring industry interests over community and environmental interests. The NEB also does not have separate and specific regulations for transporting dilbit.

### **The Canadian Environmental Assessment Act**

The omnibus budget bill C-38 replaced the Canadian Environmental Assessment Act with a new act that no longer automatically requires an environmental assessment for projects under federal jurisdiction unless the Environment Minister calls for an assessment. The changes allow federal assessments to be replaced by provincial assessments, which can be narrower in scope and limit opportunities for public consultation.<sup>20</sup>

Of the 3,000 assessments that were cancelled as a result of Bill C-38, several included pipeline project reviews where communities raised concerns about drinking water. Notably, the environmental assessment for TransCanada's Keystone XL project to construct and operate a crude oil terminal and pipeline infrastructure near Hardisty, Alberta was cancelled. There were two assessments in the cue related to Enbridge's plans to reverse the flow of Line 9 – one in Sarnia and one in Hamilton – that were approved by the NEB without a proper environmental assessment.

*The Red River passes through Winnipeg, MB. Photo by Robert Linsdell, CC by 2.0*



The changes also narrowed the definition of environmental effects, limited public participation, allowed for expedited pipeline approvals, and removed protections for fish habitat.

### **The Fisheries Act**

The Fisheries Act, heralded by many as one of the strongest pieces of federal environmental legislation, was significantly clawed back by Bill C-38. While the act used to provide broad protections for all fish habitat, its powers were cut down to only preventing “serious harm” to commercial, recreational and Aboriginal fisheries.

An Access to Information request made by the *Globe and Mail* revealed that these changes were made following the advice of associations representing industry associations.<sup>21</sup>

A set of new regulations passed in 2014 also allow the Minister of the Environment to authorize “deposits of deleterious substances” if the “whole of the deposit is not acutely lethal to fish.” The regulations define “acutely lethal” as a deposit that kills more than 50 per cent of fish at 100 per cent concentration over a 96 hour period. Anything below that is now permitted by the Fisheries Act. This threshold does not take into account cumulative contamination of fish – and subsequently waterways.

### **The Human Right to Water and Sanitation**

In July 2010, the United Nations General Assembly passed a resolution recognizing the human right to water and sanitation. The UN Human Rights Council has also passed resolutions outlining governments’ obligations concerning the right to water and sanitation.<sup>22</sup> This right is now enshrined in international law and all countries must ensure its implementation.

In June 2012, former federal Environment Minister Peter Kent finally conceded that the human right to water not only exists, but that it is integral to the right to an adequate standard of living under the International Covenant on Economic, Social, and Cultural Rights. Every government must now come up with a plan of action based on the “obligation to protect, respect, and fulfill” this right. Maude Barlow, National Chairperson of the Council of Canadians, points out that the obligation to protect means that a government is obliged to prevent third parties from interfering with the enjoyment of the human right. This would mean, for instance, protecting local communities from pollution and inequitable extraction of water by corporations or governments. Potential pipeline spills threaten the human right to safe drinking water.

## **Waterways At Risk**

The subsequent sections of this report contain a province-by-province review of major waterways the Energy East pipeline crosses or comes near. All of these waterways would be severely damaged and polluted in the event of a pipeline spill.

Unless otherwise indicated, pipeline path coordinates – including river crossings – noted here are drawn from TransCanada’s Energy East Pipeline Project description filed as a pre-application with the National Energy Board.<sup>23</sup> This includes specific river crossing coordinates provided in volume two, and the more general maps provided. Population statistics noted are rounded, and are drawn from Statistics Canada.



# ALBERTA

The pipeline falls within the Saskatchewan River Basin and crosses four watersheds: Battle River, Sounding Creek, Red Deer River and the South Saskatchewan River, in addition to a number of small watercourses and streams.<sup>24</sup>



# ALBERTA



## Battle River

Battle is a Prairie-fed river, meaning its water comes from surface run-off of rain, snow and groundwater flows. This makes it unique as most of Alberta's waterways are glacier-fed.<sup>25</sup> Battle River is important to First Nations as a site of territorial mapping and historical events. It is a major tributary of the North Saskatchewan River. It is an important water supply through its watershed. Many municipalities rely on it for drinking water and household, business and industrial uses as well as for agriculture.<sup>26</sup> It also supports the most important fishery in east-central Alberta with northern pike, walleye, mooneye and goldeye. TransCanada's pre-application notes the pipeline traverses the Battle River watershed and maps provided highlight the location of the pump station and start of the pipeline very near Battle River, and Hardisty Alberta. The town, located close to the shores of Battle River, draws its drinking water from four wells.<sup>27</sup>

## Sounding Lake and Sounding Creek

Energy East will also traverse Sounding Creek, likely near Consort, Alberta. Sounding Lake is the original site of the Treaty 6 signing with the Thunderchild First Nation.<sup>28</sup> The lake is known as an important bird area, hosting globally significant congregations of shore birds.<sup>29</sup> A dilbit spill here could coat tens of thousands of protected bird species in crude. The lake is in a remote area with limited lake access by road. The lake is already under threat by drought, farming and grazing, groundwater extraction, urban and industrial development.

## Gooseberry Lake

The pipeline path crosses the eastern boundary of Gooseberry Lake near the town of Consort. The lake is the highlight of Gooseberry Provincial Park, a popular camping and fishing area. It is also considered an important location for migrating shorebirds, including red-necked phalaropes, ducks, geese and swans.

## Red Deer River

The Red Deer River, originally called the "River Wapiti," or "Elk River" by Cree, is a major tributary of the South Saskatchewan River. It flows from the Rockies through Alberta, to Saskatchewan. The Red Deer River supplies drinking water for the city of Red Deer (100,000 residents), as well as many other cities and towns. In 2013 there was severe flooding of the southern half of Alberta, including the Red Deer River, which has a history of overflowing. Twenty-four municipalities declared local states of emergency and issued evacuation orders. This raises the question of how emergency responders can address a dilbit spill during a flood – what additional challenges would be presented?

The pipeline crosses the Red Deer River close to the Saskatchewan border, near where the flow enters the South Saskatchewan River.

### The pipeline also crosses or runs near:

Loyalist Creek, Ribstone Creek and Monitor Creek



*Pipeline materials stored near Hardisty, AB. Photo by Flickr user taylorandayumi, CC by 2.0*

# SASKATCHEWAN

The Energy East pipeline crosses four watersheds in Saskatchewan: South Saskatchewan, Qu'Appelle, Souris and Assiniboine rivers as well as nine watercourses.<sup>30</sup>





# SASKATCHEWAN



## **Red Deer River, South Saskatchewan River and Lake Diefenbaker**

The pipeline crosses the Red Deer River, which flows into the South Saskatchewan River. It also crosses the South Saskatchewan River directly in Alberta close to the Saskatchewan border. The pipeline path near the Great Sandhills area towards Saskatchewan Landing Provincial Park is likely where the pipeline crosses the river in Saskatchewan.<sup>31</sup> Lake Diefenbaker is the largest body of water in southern Saskatchewan. The lake is actually a reservoir that was formed by damming the South Saskatchewan River. It is a popular summer and fishing destination.<sup>32</sup> The Southern shore of Lake Diefenbaker lies approximately 20 kilometres north of the pipeline path.

Close to 45 per cent of Saskatchewan's population depends on the South Saskatchewan River sub-basin, including Lake Diefenbaker, for their daily water needs. It is also an important source of water for industry, agriculture and hydro power.<sup>33</sup> Seventy to 80 per cent of the river's natural flow is already allocated under provincial water licences.<sup>34</sup> A spill in or near this important waterway would require extensive monitoring and assessment of how it may affect the river's uses.

## **Swift Current Creek Watershed**

The Energy East pipeline crosses the Swift Current Creek, but no exact coordinates are given. It is the largest tributary of the South Saskatchewan River. A spill here would add to the risks posed to the South Saskatchewan River.

The Swift Current Creek watershed supplies drinking and irrigation water to farms and ranches in the area, and supplies drinking water for the city of Swift Current (15,000 residents) and the town of Herbert (800 residents).<sup>35</sup> Depending on the location of the spill, this drinking water source could be polluted. The watershed is also an important recreational source for locals, cottagers and tourists for swimming, boating and fishing.

## **Pelican Lake**

Located near the city of Moose Jaw, Pelican Lake is home to significant numbers of shorebirds and waterfowl during spring and fall migration.<sup>36</sup> The Energy East pipeline path comes within half a kilometre of the lake, making a spill a very real threat of contamination to this important bird area.

## **Moose Jaw River, Qu'appelle River**

The Energy East pipeline crosses the Moose Jaw River just prior to flowing into the Qu'Appelle River, which then flows through the communities of Lumsden and Craven. It flows through a river valley that "supports a wealth of native plant species, many of which are rare or endangered."<sup>37</sup>

## **Buffalo Pound Lake**

The Buffalo Pound Lake is the source water supply for the city of Moose Jaw (33,000 residents), Regina (180,000 residents) and several smaller communities. The pipeline passes approximately five kilometres north of Moose Jaw, which places it about 15 kilometres away from Buffalo Pound Lake, a water source that provides drinking water to 25 per cent of Saskatchewan.<sup>38</sup> Buffalo Pound Provincial Park is located beside the lake.<sup>38</sup> Near Moose Jaw, the pipeline path traverses areas where the water drains from the land into surface and groundwater of the Moose Jaw watershed, an area that supplies a number of local wells.<sup>40</sup>

### **The pipeline also crosses, or runs near:**

Souris River, Assiniboine River, Wascana Creek, Pipestone Creek, Cottonwood Creek, Miry Creek, Antelope Creek, Thunder Creek, Manybone Creek and Brennand Creek



# MANITOBA

The pipeline crosses the Assiniboine River west of Miniota and south of Portage la Prairie, and also crosses the Red River south of Winnipeg.<sup>41</sup>



# MANITOBA



## Assiniboine River

The Assiniboine River, a tributary of the Red River, takes its name from the Assiniboine First Nation and is Manitoba's largest river. It runs through the province's largest cities – Winnipeg, Brandon and Portage la Prairie – which are all located along Energy East's path. The pipeline crosses the Assiniboine west of Miniota near the Saskatchewan border and south of Portage la Prairie (20,000 residents). People from Portage la Prairie rely on the Assiniboine River for their drinking water, so a spill near this crossing could contaminate their drinking water source.<sup>42</sup> The Assiniboine Valley is known to flood regularly. The river caused serious damage in when it flooded in 2011.<sup>43</sup> A pipeline spill in a flooded area has the potential to complicate cleanup efforts.

## Little Saskatchewan River

Little Saskatchewan River is a major tributary of the Assiniboine River, winding its way through Keeseekoowenin First Nation territory and the communities of Minnedosa, Rapid City and Rivers in southwest Manitoba. The pipeline appears to cross the Little Saskatchewan River near Rapid City.<sup>44</sup> The town of Rapid City (70,000 residents) gets their drinking water from wells supplied by groundwater that is affected by the Little Saskatchewan River.<sup>45</sup> It is also an important source of water for nearby agriculture, industrial and recreational uses. Rapid City is very familiar with the risks of a pipeline rupture. The very pipeline TransCanada intends to convert in this area – segment 100-4 – exploded near Rapid City on July 29, 1995. The explosion, caused by external stress corrosion cracking,<sup>46</sup> resulted in a massive fire, which then caused intense heat, leading to a second rupture on a nearby pipeline. Gas pumping to the first pipeline was cut off within 45 minutes, well beyond the goal (according to conversations at TransCanada Energy East open houses) of a 10 minute response time for the Energy East pipeline. The second rupture was isolated after a total of two hours.

## Red River

The pipeline would cross the Red River south of Winnipeg, where it could then flow through downtown Winnipeg, passing numerous city riverside parks. The Red River is known for flooding.<sup>47</sup> A spill in a flooded area has the potential to seriously complicate cleanup efforts.

## Falcon Lake, Shoal Lake

The pipeline path runs alongside Falcon Lake and near High Lake, which straddles the Manitoba-Ontario border. Both small lakes drain into Shoal Lake, which supplies Winnipeg's residents (600,000 residents) with their drinking water.<sup>48</sup> A spill in this area would further compound the water issues being faced by Shoal Lake #40 First Nation. The aquaduct from Shoal Lake to Winnipeg required a canal, which effectively severs the community's access to nearby land, creating human-made water isolated conditions. This was imposed on the reserve by the Canadian government 100 years ago. Despite being a short distance south of the busy Trans Canada Highway at the Manitoba/Ontario border, Shoal Lake #40 First Nation remains without secure road access, is denied normal economic opportunities, and has been on a boil-water order for more than 17 years.<sup>49</sup>



*Falcon Lake Manitoba. Photo by Flickr user donnieslarue, CC by-nc-nd 2.0*

# ONTARIO

The project crosses two primary watersheds: the Nelson River and the Great Lakes-St. Lawrence watershed. It also has 41 named river crossings.<sup>50</sup>





# ONTARIO



## **Lake Of The Woods, Winnipeg River, Rabbit Lake, Black Sturgeon Lakes, Kenora and Treaty 3 area waterways**

Northern Ontario is rich in freshwater. Lake of the Woods is located primarily in Ontario, and has more than 14,000 islands that provide important bird nesting habitats. Lake of the Woods provides drinking water and is vital to the way of life of First Nations of Treaty 3. It is also vital to the local economy of Kenora (15,000 residents), drawing many tourists, campers and fishing enthusiasts. It is also Kenora's drinking water source. The Energy East pipeline roughly follows the path of Highway 17, coming close to Lake of the Woods. A pipeline spill could enter Lake of the Woods from contaminated land or groundwater.

The pipeline also runs alongside Darlington Bay and parallel to Rabbit Lake. A spill near, or in Rabbit Lake could flood backyards, Kenora's Rowing Club and pollute a popular swimming and recreational destination. The pipeline's path also crosses swamp and wetlands that flow directly into the Black Sturgeon Lakes. Close to 2,000 residents not connected to local municipal water services draw water directly from Black Sturgeon Lakes. The pipeline runs very near – separated by the distance of a road – the north tip of Island Lake. This is also a cottage lake and popular fishing spot that drains into Black Sturgeon Lakes.

Lake of the Woods, Black Sturgeon Lakes and a number of other waterways flow north into the Winnipeg River, which continues to Lake Winnipeg. This area falls under Treaty 3, the 142,450 square kilometres of territory agreed to be shared between the Anishinaabe and the British in 1873.

### **Dog River, Dog Lake**

The pipeline crosses Dog River, which leads to Dog Lake, one of the major lakes in the Thunder Bay area. The outflow from Dog Lake is the Silver River, which turns into the Forbes River, then the Kaministiquia River, which flows into Lake Superior in Thunder Bay. This system of rivers

hosts a number of hydro dams. The impacts of a dilbit spill near a hydro dam are not known.

## **Nipigon River, Black Sturgeon River and Lake Superior**

The Great Lakes of North America form the largest group of freshwater lakes in the world, holding more than 20 per cent of the world's surface freshwater and 95 per cent of North America's. Energy East would traverse the northern tip of Lake Superior, the largest freshwater lake in the world, and the cleanest and clearest of the Great Lakes. The pipeline runs alongside the Black Sturgeon River and crosses under it about 15 kilometres away from Black Bay, a large bay on the edge of Lake Superior. The existing natural gas pipeline to be converted for Energy East directly crosses the Nipigon River just north of the community of Nipigon (1,600 residents).<sup>51</sup>

In 1990, a large section of the Nipigon River's bank failed at the point where the pipeline crosses the river, leaving a 75 metre stretch of pipeline hanging in mid-air with no support. If the pipeline had been full of oil at the time instead of natural gas, it would have ruptured from the sheer weight of the crude. If the Energy East pipeline is approved to carry tar sands crude, a rupture at this location could produce the largest oil spill in Canada's history and flood Lake Superior with millions of litres of oil even after the pumping has stopped.<sup>52</sup> Oil that remains in the pipeline between shut off valves (approximately 10 million litres) will continue to leak out of the ruptured pipeline until it is repaired.<sup>53</sup> Lake Superior supplies drinking water for millions of people, including the nearby city of Thunder Bay (109,000 residents).

The Nipigon River is also the drinking water source for Nipigon (1,600 residents).<sup>54</sup> The area near the Nipigon River crossing is one of the most remote areas the pipeline traverses, some 75 kilometres of rugged forest without roads. A spill in this area could go undetected for quite a while and result in millions of litres of diluted



bitumen flowing down the Nipigon River into Lake Superior, which is approximately 10 kilometres away from the crossing.

### **Missinaibi River**

The Missinaibi River is a Canadian heritage river that flows towards Moose River, emptying into James Bay. It is known as one of the last free-flowing, undeveloped rivers in Ontario and is a popular spot for canoeing, camping and fishing. The Missinaibi River is the drinking water source for the municipality of Mattice-Val Côte<sup>55</sup> (700 residents). According to a schematic for the existing TransCanada Mainline natural gas pipeline, the path crosses the Missinaibi River between the community of Hearst (5,000 residents) and the Mattice pump station.<sup>56</sup>

### **Trout Lake, Lake Nipissing and Treaty 3, North Bay area waterways**

The pipeline directly crosses a number of waterways in the North Bay area (56,000 residents) including Duchesnay Creek, Chippewa Creek, Mattawa River, Doren's Creek, Kaibuskong River, Sharpes Creek, Amable du Fond River, Pautois Creek, Four Mile Creek and Boom Creek and their tributaries. The Doren Creek crossing is of particular concern to residents. It is about 10 kilometres away from Trout Lake, the sole source of drinking water for North Bay and its surrounding municipal areas.<sup>57</sup> A major spill in this area could enter the creek and flow into Trout Lake, very close to municipal water plant's water intake location. Residents have expressed serious concerns about the threat of a dilbit spill. The Mayor of North Bay has referred to a spill in Trout Lake as "non-negotiable." Local opposition has been strong and North Bay city council agreed unanimously to represent the city's interests in protecting Trout Lake and area waterways in the National Energy Board's Energy East proceedings.

The pipeline crosses Four Mile Creek a few kilometres<sup>58</sup> from Trout Lake's Four Mile Bay, a salmon spawning bed and fish sanctuary.<sup>59</sup> It also crosses the headwaters of Chippewa Creek, an important waterway that flows through the city of North Bay and into Lake Nipissing. The Duchesnay Creek crossing also leads to Lake Nipissing, the

third largest lake in Ontario and home to more than 40 different species of fish. Lake Nipissing is described as being "vital to the environmental, social, and economic health of [the] region."<sup>60</sup> The pipeline also crosses a significant groundwater recharge area where a spill poses heightened risks of contaminating groundwater that feeds a number of private water wells. An elder of the Nipissing First Nation attended a Council of Canadians supported event in North Bay on Energy East and spoke publicly about how vital Lake Nipissing is to their culture. Jim Sinclair, a concerned citizen, environmentalist and former General Secretary for The United Church of Canada, captures local opposition well: *"When a Nobel Prize-winning scientist declares Trout Lake water among the best in the world, it startles you. Any threat of such a beautiful lake being ruined by a toxic disaster is like a punch in the stomach. So many people over so many generations have worked hard to keep our drinking water safe, and the lake that holds it beautiful. I want my grandson in future years to know that I was one of them."*

### **Madawaska River**

The Madawaska River flows from Source Lake in Algonquin Park, some 230 kilometres before joining with the Ottawa River in Arnprior. It continues to be an important waterway for First Nations, and is a well-loved whitewater rafting destination.<sup>61</sup> Much of the river is now dam-controlled to generate hydro-electricity.

The pipeline crosses the Madawaska River, less than 30 kilometres from Arnprior (9,000 residents) who use the river as their drinking water source.<sup>62</sup>

### **Rideau River**

The Energy East Pipeline would cross the Rideau River just south of Ottawa near Kemptville in the Baxter Conservation Area, which is known for its beaches and hiking trails.<sup>63</sup> The Rideau River is an important inflow to the Rideau Canal, a UNESCO World Heritage site. The canal flows to the Ottawa River at the Rideau Falls, behind the Prime Minister's residence. The Rideau Falls are approximately 40 kilometres away from the

crossing. A major rupture at this crossing could see oil flow into the canal, through Ottawa, towards the Ottawa River.

### Mississippi and Ottawa rivers

The Mississippi River is a key tributary of the Ottawa River, the source of water for more than 1 million people.<sup>64</sup> Ottawa's main water treatment plants – Britannia and Lemieux Island – are located in the heart of the city. A major spill in the Mississippi River, while a distance away, could pose a threat. If a major spill did occur, water quality would need to be monitored very closely.

### Oxford Aquifer

In the municipality of North Grenville, 70 per cent of its 15,000 residents have private wells that draw their drinking water from the Oxford Aquifer.<sup>65</sup> This aquifer lies directly beneath the proposed pipeline route<sup>66</sup> and was classified as “highly vulnerable to pollution” (the worst rating) by the Ontario government in the wake of the Walkerton water crisis. This is because the soil is very thin and cannot absorb much. The rock underneath the soil is also riddled with holes and fractures, meaning liquids on the surface – like

spilled crude oil or dilbit – can leach into this important drinking water source.<sup>67</sup>

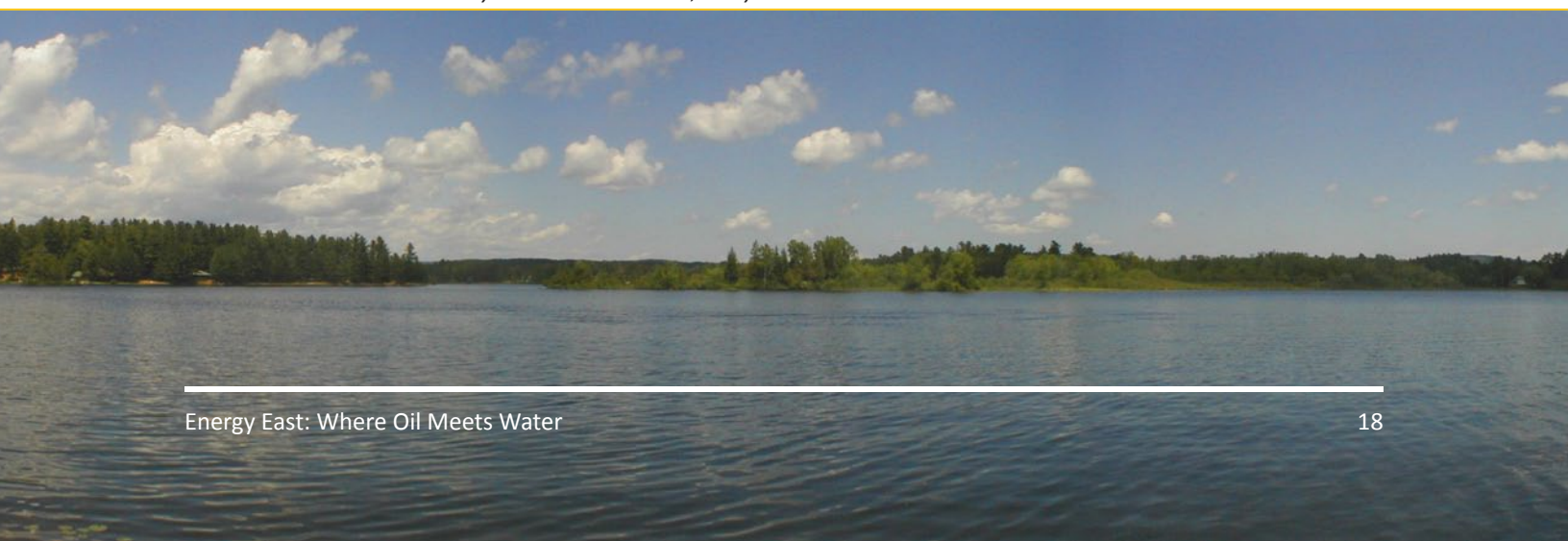
The pipeline route also crosses a significant groundwater recharge area in North Grenville. These areas are naturally formed; they allow rain and melted snow to flow down into the aquifer easily. A spill in this area would be devastating to this highly vulnerable aquifer.

Close to 450 residents from Richmond, Ontario source water from the Oxford aquifer as well as the deeper Nepean aquifer below Oxford.<sup>68</sup> If the Oxford aquifer was contaminated, the Nepean aquifer would also be threatened.

#### The pipeline also crosses or runs near:

Mattawa River (a Canadian heritage river), Kenogami River and key tributaries, Mattagami River and tributaries, Amable du Fond River, Boom Creek, Chippewa Creek, Dushesnay Creek, Kaibuskong River, Pautois Creek, Sharpes Creek, Turtle Lake, Winnipeg River, Kabinakagami River, Kapuskasing River, Frederick House River, Blanche River, South Nation River, Wabigoon River, Dog River, Black Sturgeon River, Pagwachuan River, Nagagami River, Opasatika River, Montreal River, Nipigon River, Missinaibi River, Groundhog River, Mattawa River, Petawawa River and Bonnechere River.

*The Madawaska River. Photo by Flickr user Mecandes, CC by-nc-sa 2.0*



# QUEBEC

The pipeline crosses over 80 watersheds and 600 watercourses, including Rivière des Outaouais, Rivière des Mille îles, Rivière Saint-Maurice, Fleuve Saint-Laurent (St. Lawrence River), and Rivière des Prairies. The largest crossing would be at the St. Lawrence River.





# QUEBEC



## La Rivière des Outaouais

Also known as the Ottawa River and Kitchissippi River, this river is more than 1,200 kilometres long and runs through Ontario, Quebec and Algonquin Territory. As the eighth longest river in Canada,<sup>69</sup> it runs from Lake Timiskaming with much of the river defining the Ontario-Quebec border, and feeds into the St. Lawrence River at Montreal.<sup>70</sup> It is one of the main tributaries to the St. Lawrence River. The pipeline crosses the Mississippi and Madawaska rivers in Ontario, which are both tributaries of La Rivière des Outaouais. Any spill happening upstream in Ontario could potentially affect downstream communities in Quebec including Gatineau (260,000 people). The pipeline also directly crosses La Rivière des Outaouais east of Voyageur Provincial Park before flowing around the Carillon Island Migratory Bird Sanctuary and near Pointe-Fortune (500 residents).<sup>71</sup>

## La Rivière des Mille Îles, La Rivière des Prairies

La Rivière des Mille Îles is a channel of the Ottawa River that joins with la Rivière des Prairies. The 42 kilometre-long river and its many islands – known as Hochelaga Archipelago or the Montreal Islands – border nine municipalities. Parc de la Rivière-des-Mille-Îles in Laval was founded in 1987. It is the largest nature park in the region and has a recognized wildlife sanctuary as well as a kilometre-long skating rink.<sup>72</sup> The

pipeline crosses La Rivière des Mille Îles slightly east of Terrebonne, which sits on the northern shore. The river supplies the drinking water for Terrebonne (106,000 residents) and neighbouring municipalities. Approximately 400,000 residents of Montreal's northern tier rely on it for their drinking water.

La Rivière des Prairies originates in the Lake of Two Mountains and flows east, cutting through the Montreal Islands. It bisects Montreal Island with Laval on its north shores and Montreal on its south shores. There are many large islands in this river including Parc Nature de la Point aux Prairies, a large park of marshes, fields and forests that are popular for cycling, hiking, snowshoeing and skiing. The pipeline crosses Rivière des Prairies beside the Parc Nature and Ile du Mitau.

## Fleuve Saint-Laurent (the St. Lawrence River)

The largest crossing of Energy East is over the Fleuve Saint-Laurent, or St. Lawrence River in English, which is surrounded by 80 per cent of Quebec's population and is the source of 50 per cent of Quebec's drinking water.<sup>73</sup> The pipeline follows the northwest side of the river, crossing it directly upstream of Quebec City. It crosses numerous tributaries, posing a contamination threat almost the entire length of the river in Quebec. The Rivière-du-Loup pipeline crossing quickly flows into the St. Lawrence at Lac-Saint-

*Quebec City, just downstream from the proposed Energy East crossing. Photo by Flickr user Roamin' Catholic, CC by-nc-sa 2.0*





Pierre, presenting a very close threat. It directly crosses the river near the community of Saint-Augustine-de-Desmaures, whose Mayor has expressed opposition to the pipeline passing a few metres from residents' homes.<sup>74</sup> The Rivière Batiscan and Sainte-Anne crossings also quickly flow into the St. Lawrence.

The second longest river in Canada, the St. Lawrence River consists of lakes and freshwater reaches, one of the largest and deepest estuaries in the world, and a gulf with oceanic characteristics.<sup>75</sup> There are four Ramsar sites<sup>76</sup> designated under a UN Convention of Wetlands of International Importance along the river. The largest site is located in Lake Saint-Pierre, which was also designated a World Biosphere Reserve in 2001.<sup>77</sup>

The Saguenay-St. Lawrence Marine Park, flowing from Saguenay into St. Lawrence, is part of the global network of marine conservation areas.<sup>78</sup> This precious, protected area is across the St. Lawrence River from Cacouna where TransCanada is proposing a new deepwater port. The survival

of a beluga whale habitat would be put at increased risk with the construction of this port in the middle of its nursing area. A port in Cacouna would be constructed to allow oil exports to international eastern markets.<sup>79</sup>

The Group for Research and Education on Marine Mammals (GREMM) is concerned that the increased port traffic would disrupt the whales' ability to communicate, navigate, and find food.<sup>80</sup> Additionally, the already threatened population of whales would be threatened by the increased risk of oil spills in the St. Lawrence River.<sup>81</sup>

A diluted bitumen spill in any of these tributaries, or directly in the St. Lawrence from the pipeline crossing or tankers, could have dire consequences for drinking water sources and already fragile ecosystems that fish, migratory birds and marine animals depend on. A spill threatens to have cascading impacts, including economic losses for farmers, the robust tourist industry, and fishers that depend on the waters.

*Rivière Saint-Maurice enters the St. Lawrence River at Trois-Rivières. Photo by Flickr user abdallahh, CC by 2.0*



### **Rivière Saint-Maurice**

From the Gouin Reservoir, la Rivière Saint-Maurice flows south into the St. Lawrence at Trois-Rivières. At 563 kilometres in length, it is one of the main tributaries to the St. Lawrence River. The river itself has over two-dozen tributaries, and several municipalities are located on its shores including La Tuque (11,000 residents), Shawinigan (55,000 residents) and Trois-Rivières (130,000 residents).

The pipeline would cross la Rivière Saint-Maurice about 20 kilometres upstream from where it flows into the St. Lawrence River beside Trois-Rivières, whose residents rely on it as their drinking water source.

### **La Rivière Madawaska and Lac Témiscouata**

La Rivière Madawaska runs from Lac Témiscouata and the National Park of Lac Témiscouata in Quebec and joins the St. John River at Edmundston, New Brunswick. Energy East crosses La Rivière Madawaska in Quebec near Degelis (3,000 residents), south-east of Lac Témiscouata, which provides the community with drinking water. The pipeline also crosses a number of tributaries for Lac Témiscouata, raising concerns of a spill in the area contaminating drinking water. La Rivière Madawaska then flows through Saint-Jacques, New Brunswick (1,500 residents) and the New Brunswick Botanical Garden.

# NEW BRUNSWICK

The Energy East pipeline crosses the Restigouche River Basin and the St. John River Basin, including a number of sub-basins. It would cross more than 300 waterways, including streams and rivers.





# NEW BRUNSWICK



## Madawaska River

The Madawaska River runs from Lac Témiscouata and the National Park of Lac Témiscouata in Quebec, and joins the St. John River at Edmundston, New Brunswick. While Energy East crosses the Madawaska River in Quebec, it is about 20 kilometres away from Edmundston (16,000 residents) where it cuts through the centre of the community. The pipeline also flows through Saint-Jacques (1,500 residents) before reaching Edmundston. A spill in this area threatens to have a dramatic impact on these communities. The Madawaska River also runs along a portion of the Trans Canada Trail and passes the New Brunswick Botanical Gardens.

## St. John River

The St. John River, also known as “Wolastoq,” which means “Beautiful River” in Maliseet, is approximately 700 kilometres long. It runs for 400 kilometres in New Brunswick and is the longest river in the province. The river forms the border between Canada and the U.S. before heading across the province to the Bay of Fundy. It has a large tidal estuary and significant tributaries. Its high degree of biodiversity can be attributed to the diverse landscapes it travels through.

More than half a million people live in the river basin, most of whom are in New Brunswick. Some of the towns and cities along the river include Edmundston, Grand Falls, Fredericton and Saint John. The St. John River provides life and livelihood to more than 100 communities situated along its shores and sustains some of the most fertile farmland in Canada.<sup>82</sup> The river has a rich cultural history and was the 38th waterway designated in the Canadian Heritage Rivers System.<sup>83</sup>

Based on the information available, the risk to the St. John River is great because the pipeline will also cross at least six of the river’s major tributaries including the Madawaska, the Green River (Rivière Verte), the Tobique, the Salmon, and the massive Canaan and Kennebecasis rivers.

## Edmundston and Grand Falls, Ground Water

Following a public outcry about the pipeline’s risks to communities and surrounding waterways,<sup>84</sup> TransCanada has relocated the proposed route of the pipeline 20 kilometres north of Edmundston and 16 kilometres from the watershed area.<sup>85</sup> The 14,000 residents of Edmundston rely on wells that lie downstream from the proposed Energy East pipeline route.<sup>86</sup> The 6,000 residents of Grand Falls also rely on well fields as a water source,

*Grand Lake, New Brunswick. Photo by Flickr user JMacPherson, CC by 2.0*





which are located downstream of the proposed pipeline route.<sup>87</sup>

### **Grand Lake**

The Energy East pipeline path would cross the Salmon River and Coal Creek. Both waterways are tributaries to the province's largest lake. Salmon River is the largest inflow to Grand Lake, which is enjoyed for its canoeing, swimming, fishing, boating, water skiing and beaches. The Salmon River crossing is less than 10 kilometres from the lake, near Chipman (1,200 residents). A spill here would be disastrous for those who enjoy the lake.

### **Miramichi River (main southwest branch)**

The Miramichi River, 250 kilometres in length, drains into nearly one-quarter of New Brunswick and is the province's second largest river. It is famous for salmon and trout fishing, and is the largest producer of Atlantic salmon in North America. Miramichi has more than 1,000 kilometres of spawning habitat, spanning 60,000,000 square metres. The river system's incredible diversity meets the habitat needs of every stage of salmon spawning and development. The river system also consists of more than two dozen tributaries and hundreds of streams and brooks. Each section of the river system has genetically distinct salmon runs.

Unlike the St. John River, it is a free flowing river unobstructed by dams.<sup>88</sup>

The pipeline path crosses the southwest branch of the Miramichi River near the small hamlet of Juniper (500 residents).

### **Tobique River**

The headwaters for this 150-kilometre river begin in Mount Carleton Provincial Park. The Tobique River is one of the largest tributaries to the St. John River.<sup>89</sup> The Tobique weaves through the community of Plaster Rock (1,000 residents). The river joins the St. John River at Tobique First Nation reserve (one of the Wolastoqiyik or "Maliseet" nations) near Perth Andover.

The Tobique River is known for its annual "Fiddlers on the Tobique" event where people in canoes travel down the river accompanied by fiddlers. TransCanada's pre-application notes the pipeline path crosses the St. John River Basin, including the Tobique River sub-basin.

### **Bay of Fundy**

The Bay of Fundy is a 270 kilometre-long ocean bay. It hosts a diverse mix of national and provincial parks and national historical sites, and attracts an average of 1 million tourists each year.

*Low tide on the Bay of Fundy. Photo by Dennis Jarvis, CC by 2.0*



The Joggins Fossil Cliffs of the Bay of Fundy is a UNESCO World Heritage Site.

The Bay of Fundy has the highest tides in the world. It's unique and exceptionally strong tides would cause oil spills to spread at a faster rate, harming its ecosystems as well as those of the bay's spawning rivers.[ix] A recent federal study demonstrates that when diluted bitumen is mixed with the sediment in salt water it forms "tar balls" and sinks.<sup>90</sup>

Up to 11 species of whales can be found during the summer in the Bay of Fundy, including the North Atlantic right whale, of which there are only 500 left.<sup>91</sup> The bay is used as a feeding ground, nursery and play area.

The Bay of Fundy is already considered Canada's busiest port for oil traffic. The Energy East pipeline would significantly increase the traffic in the waterway. According to Matt Abbott of the Conservation Council of New Brunswick, "Shipment of tar sands bitumen through the proposed Energy East pipeline to the marine export terminal in Saint John would significantly increase oil tanker traffic in the Bay of Fundy. The risk of spills would increase and a spill of bitumen would be particularly devastating as it has been shown to sink and form tar balls in marine conditions like the Bay of Fundy. (...) Increased marine tanker traffic would increase industrial noise, which has been shown to already be harming large whales like the endangered North Atlantic right whale. Other animals are susceptible to noise as well, though the impacts are just beginning to be understood."



# CONCLUSION

“We are living on a planet running out of clean, accessible water. There is an urgent need to adopt a new ‘water ethic’ that puts protecting water and restoring watersheds at the centre of our lives if we, and the planet, are to survive.”

- Maude Barlow, in *Liquid Pipeline: Extreme energy’s threat to the Great Lakes and the St. Lawrence River*



## Conclusion

There is no doubt that the world is facing a growing water crisis and running out of freshwater. It is now accepted that with the unexpected growth in both population and new consumer classes in almost every country, global demand for water in 2030 will outstrip supply by 40 per cent.<sup>92</sup>

Canadian and Indigenous communities are not immune to this crisis. Statistics Canada released a report in recent years that found southern Canada lost 8.5 per cent of its renewable water sources over a 34 year period. In her report, *Liquid Pipelines*, Maude Barlow sounds the alarm over the push to see the Great Lakes – home to 95 per cent of North America’s freshwater – being turned into a carbon corridor to move tar sands oil and other substances. This push, led by the energy industry, is similar to the rush for pipelines like Energy East.

It is within this context that we must come to embrace our role as water stewards. We must recognize how precious our freshwater sources are and treat them as a Commons, to be shared, protected, carefully managed and enjoyed by all who live around them.<sup>93</sup>

TransCanada’s proposed Energy East pipeline would traverse at least 90 watersheds and 961 waterways between Hardisty, Alberta and Saint

John, New Brunswick. These waters are drinking water sources for millions of Canadians. Many of these waterways play a critical role in First Nation’s subsistence cultures and are protected by Indigenous Treaty rights. They include lakes and rivers with protected fish and wildlife habitat and waterways that play a critical role for local economies that depend on clean water for fishing, whale watching, recreation and tourism. These waterways are already under threat from pollution, over-extraction, invasive species, wetland loss and climate change.

The sheer volume of substance proposed to be pushed through the Energy East pipeline would mean that when the pipeline spills (and it will spill), it would seriously endanger our water sources. Tar sands dilbit poses an even greater threat. What little we know of dilbit spills is enough to show that we can – and must – say no to this pipeline to protect the waterways along its path. Add to this the role Energy East would play in further expanding tar sands production in violation of First Nations rights, the unleashing of significant climate change emissions, and few long-term benefits for Canadians – the choice could not be clearer.

For the future of our waterways we must say “No Energy East pipeline.”

For more information on the Energy East pipeline, and what you can do to help stop it, visit [www.canadians.org/energyeast](http://www.canadians.org/energyeast)





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