



Cumulative Impacts of Pipeline Construction in the 1836, 1837, 1842, and 1854 Ceded Territories

by
Esteban Chiriboga
Environmental Specialist

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**GREAT LAKES INDIAN FISH
& WILDLIFE COMMISSION**
P.O. Box 9
Odanah, WI 54861

Cumulative Impacts of Pipeline Construction

The construction of 1,277 miles of crude oil pipelines and 5,607 miles of natural gas transmission pipelines across the Ceded Territories has undoubtedly impacted habitats and tribal cultural features in the Ceded Territories (Figure 1.5.1). Unfortunately, the network of pipelines has not been assessed for the combined, or cumulative, environmental impacts. Because of a lack of baseline data that characterizes the pre-construction condition of the right-of-way (ROW), it is not possible to quantify the effects of pipeline construction on the environment. However, it is reasonable to assume that excavation activities for pipeline placement coupled with ongoing clearing and maintenance activities along the pipeline have impacted the environment within the ROW. For the purposes of this analysis, all areas within the ROW are considered impacted by pipeline construction and maintenance activities (Figure 1.5.2).

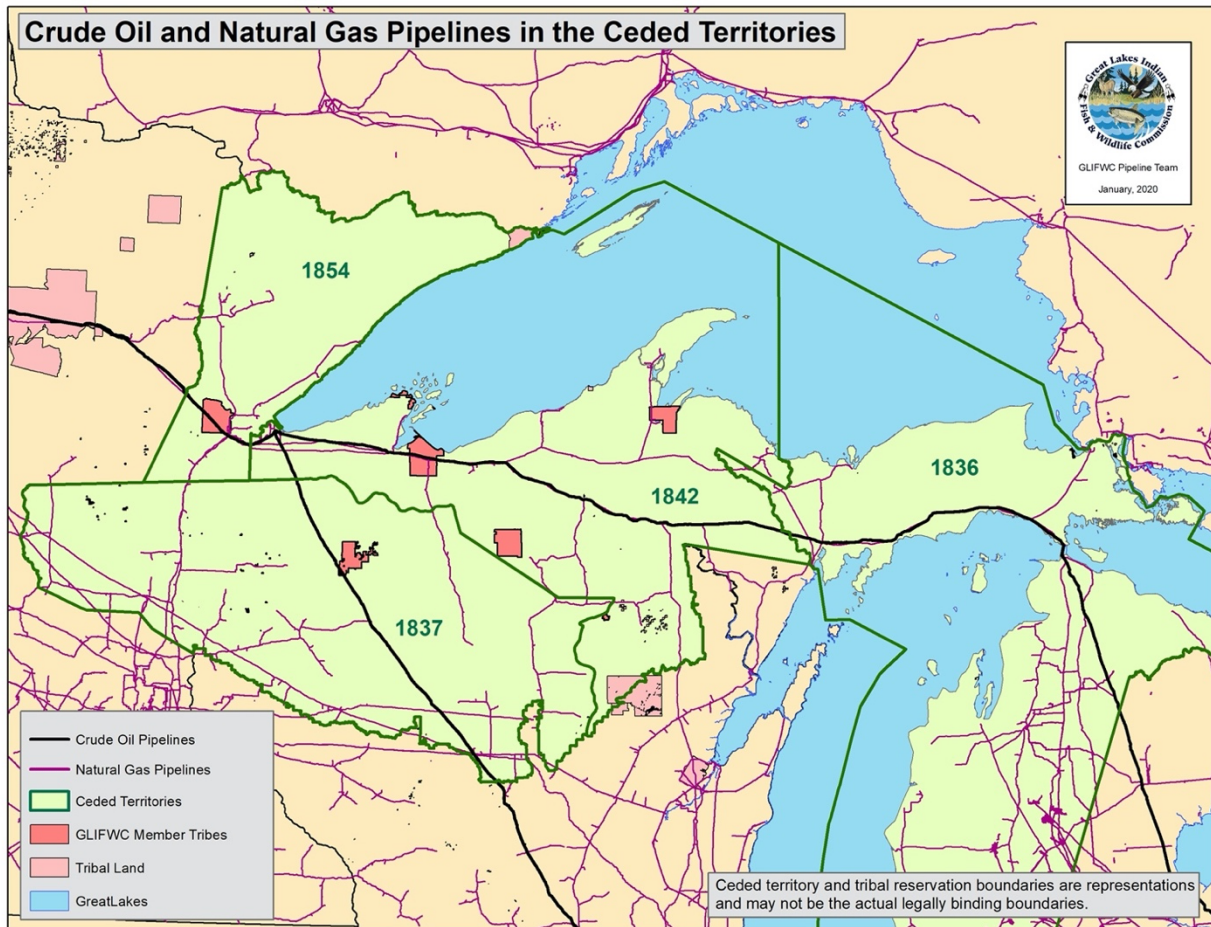


Figure 1.5.1 - Crude oil and natural gas pipelines in the 1836, 1837, 1842, and 1854 ceded territories.



Figure 1.5.2 - Pipeline ROW under construction (Goodale, 2018). Impacts in this construction zone are extensive.

In general, it is reasonable to assume the following set of impacts has occurred within the ROW acreage:

- Soil compaction, loss of organic material, and alteration of soil horizons.
- Increased erosion potential due to clearing of vegetation.
- Altered vegetation from natural conditions. Woody vegetation must be cleared to discourage root damage and provide sight lines for aerial inspections of the ROW.
- Increased populations of invasive plants along the ROW.
- Altered hydrology for surface and groundwater and increased sedimentation at water crossings.
- Degradation of water quality in lakes, streams and wetlands within the construction area.
- Altered and fragmented habitat for animal species.
- Destruction of cultural sites.

The list of impacts for past pipeline construction impacts is necessarily general, and the magnitude of these impacts will vary on a site-specific basis. However, it is possible to provide additional detail for some resources where data exist.

Defining the Right-Of-Way

Enbridge Energy has the following definition for the crude oil pipeline ROW:

A right-of-way is a strip of land usually about 60 to 125 feet wide (depending on location) containing one or more pipelines. Many rights-of-way contain more than one underground pipeline. Rights-of-way exist in various locations, from river crossings to fields to urban areas. Pipeline rights-of-way are acquired from landowners, other utilities or government entities by obtaining an easement.

(<https://www.enbridgepartners.com/In-Your-Community/Pipelines-In-Your-Community/Understanding-the-ROW.aspx>)

Enbridge typically uses construction areas of 110 to 120 feet wide for crude oil pipelines (WDNR, 2016). This area is cleared and graded and used as temporary storage of excavated materials, pipe, and as temporary road access for vehicles. It is reasonable to assume that the ROW is impacted by this activity. The width of the construction area can also increase over time because multiple pipelines can be installed in the same ROW.

Based on the above definition, this cumulative impact analysis uses a 125-foot-wide ROW for oil pipelines within the Ceded Territories. This distance reasonably captures the worst-case scenario for environmental impacts resulting from pipeline construction (Figure 1.5.3).

The width of natural gas transmission line right of way can vary widely from pipeline to pipeline. Typically, a 60-foot-wide ROW is maintained for this type of pipeline (<https://www.northernnaturalgas.com/safety/safety/Pages/row.aspx>) and that is the area used in this analysis.

The 1,277 miles of crude oil pipeline in the ceded territories have 12,668 acres of ROW around them. The 5,607 miles of natural gas transmission pipeline in the ceded territories have 36,674 acres of ROW around them. For tribes, these are 49,147 combined acres that may be lost to tribal access for exercise of treaty rights as well as 49,147 combined acres of potentially impacted ecosystems. Line 5 alone has 6,886 acres of ROW which is 54% of the crude oil pipeline ROW in the ceded territories.

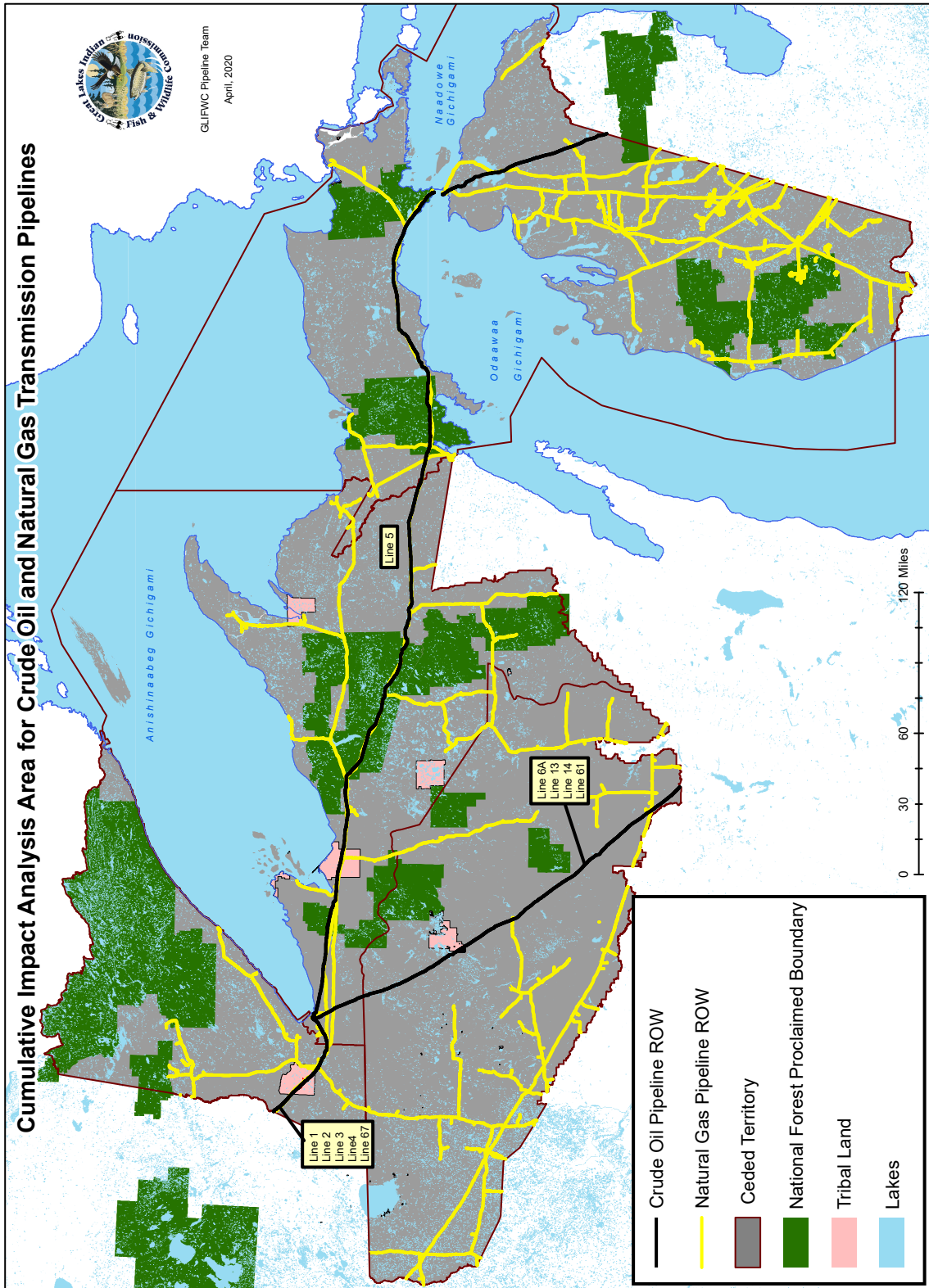


Figure 1.5.3 - Cumulative impact analysis areas for crude oil and natural gas pipelines in the ceded territories.

Regulatory Framework Affects the Impact of Pipelines.

It is important to note that pipeline regulations and permit requirements vary depending on the state and landowner. For example, the Forest Service only has regulatory authority over sections of pipeline that cross lands it has title to. Therefore, the Forest Service cannot regulate sections of pipeline that cross private inholdings within the proclaimed boundary of each Forest. State regulations also influence the impact of a pipeline in the Ceded Territories. For example, Wisconsin has a “Felony Trespass Law” (Wisconsin bill SB 386/AB 426) that specifies that setting foot in a marked or unmarked pipeline ROW is subject to prosecution as a state felony. This not only removes the ROW itself from use for hunting, fishing, or gathering, but also creates a barrier, reducing access to many thousands of adjacent acres.

Pipeline Impacts to Historic Cultural Resources of the Tribes.

This section outlines known impacts of pipeline construction on the trail system that Native peoples developed prior to the arrival of European people. It is important to note that Tribes make no distinction between natural resources and cultural resources. Traditionally in western science, the term “cultural resource” is used for this type of feature. For continuity, that same term is used here.

Prior to European settlement, Native Americans maintained a complex system of trails for overland travel between communities and to access other significant sites. The Native American trail system was mapped in the Trygg historical maps. These maps were developed from the Original Land Surveyors plat maps and field notes to depict pre-European settlement features. The features include trails, villages, portages, sugar camps, and other significant places like wetlands, sloughs, springs, etc. GIS data of this information was digitized by GLIFWC and used in this analysis. GIS data is not available for the lower peninsula of Michigan therefore the numbers of impacted trail segments are an underestimate for the ceded territories.

The 125-foot crude oil pipeline right of way intersects 44 trail segments in the ceded territories. Fifteen of those intersections are located within National Forests, with 7 in the Hiawatha National Forest, 6 in the Ottawa National Forest, and 2 in the Chequamegon-Nicolet National Forest. All crude oil pipeline intersections are with Line 5. The 60-foot natural gas pipeline ROW intersects 157 trail segments in the ceded territories. Twenty-four of those intersections are located within National Forests, with 9 in the Hiawatha National Forest, 13 in the Ottawa National Forest, and 2 in the Chequamegon-Nicolet National Forest. The pipeline intersections with the trail system are depicted in figure 1.5.4 and 1.5.5. Detailed mapping of trail segments impacted by pipeline ROW is available through a web mapping application [here](#).

The trail system has been severely degraded over time. Many trails have been replaced or crossed by roads, power lines and pipelines, tilled by agricultural activities, or are located on private land. Future pipeline and road construction threaten to further degrade these features. A network analysis of the trail system is needed to adequately characterize the damage to the trail system as a whole.

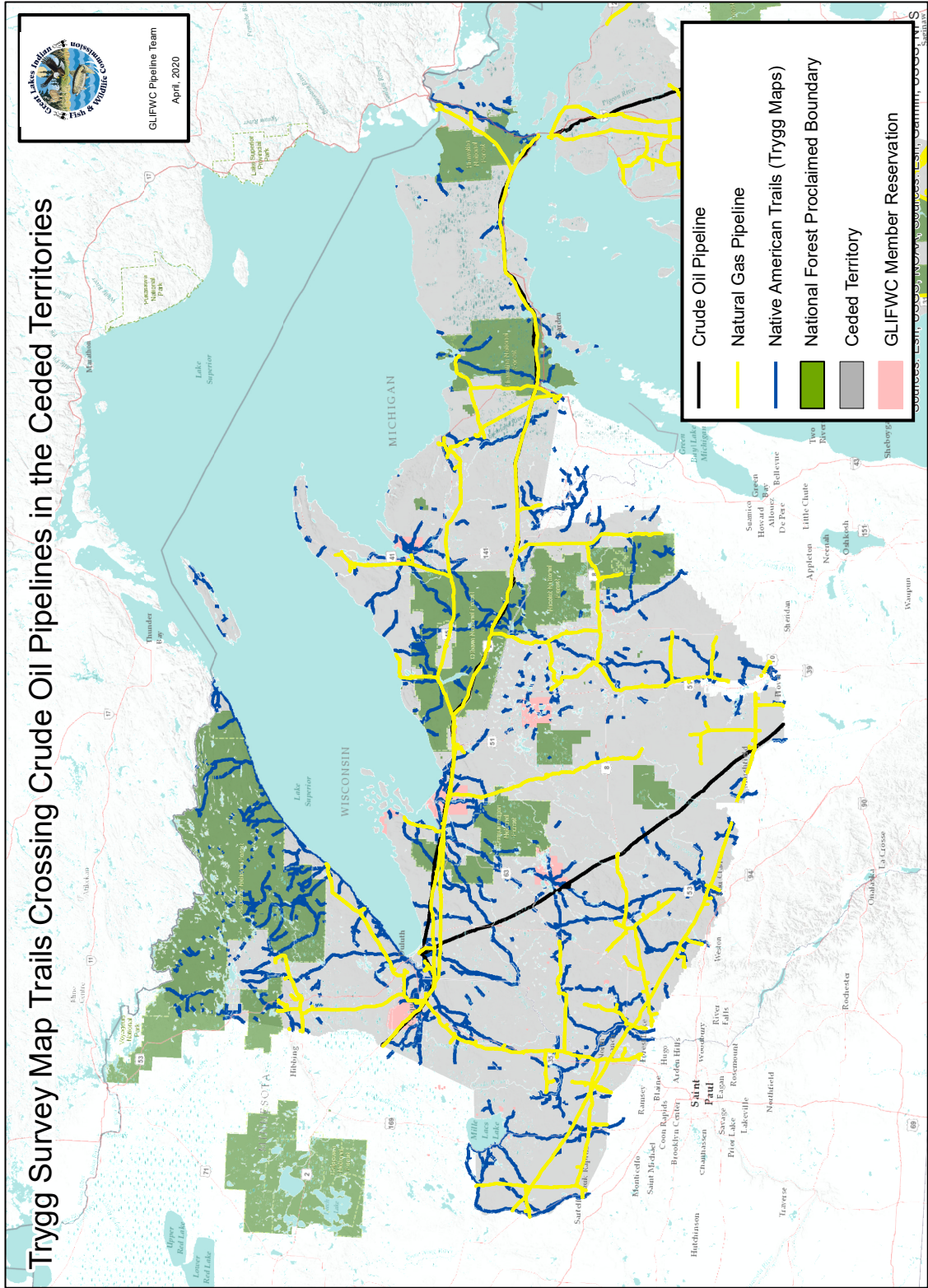


Figure 1.5.4 - Native American trail segments in the ceded territories in relation to existing crude oil and natural gas pipeline ROWs.

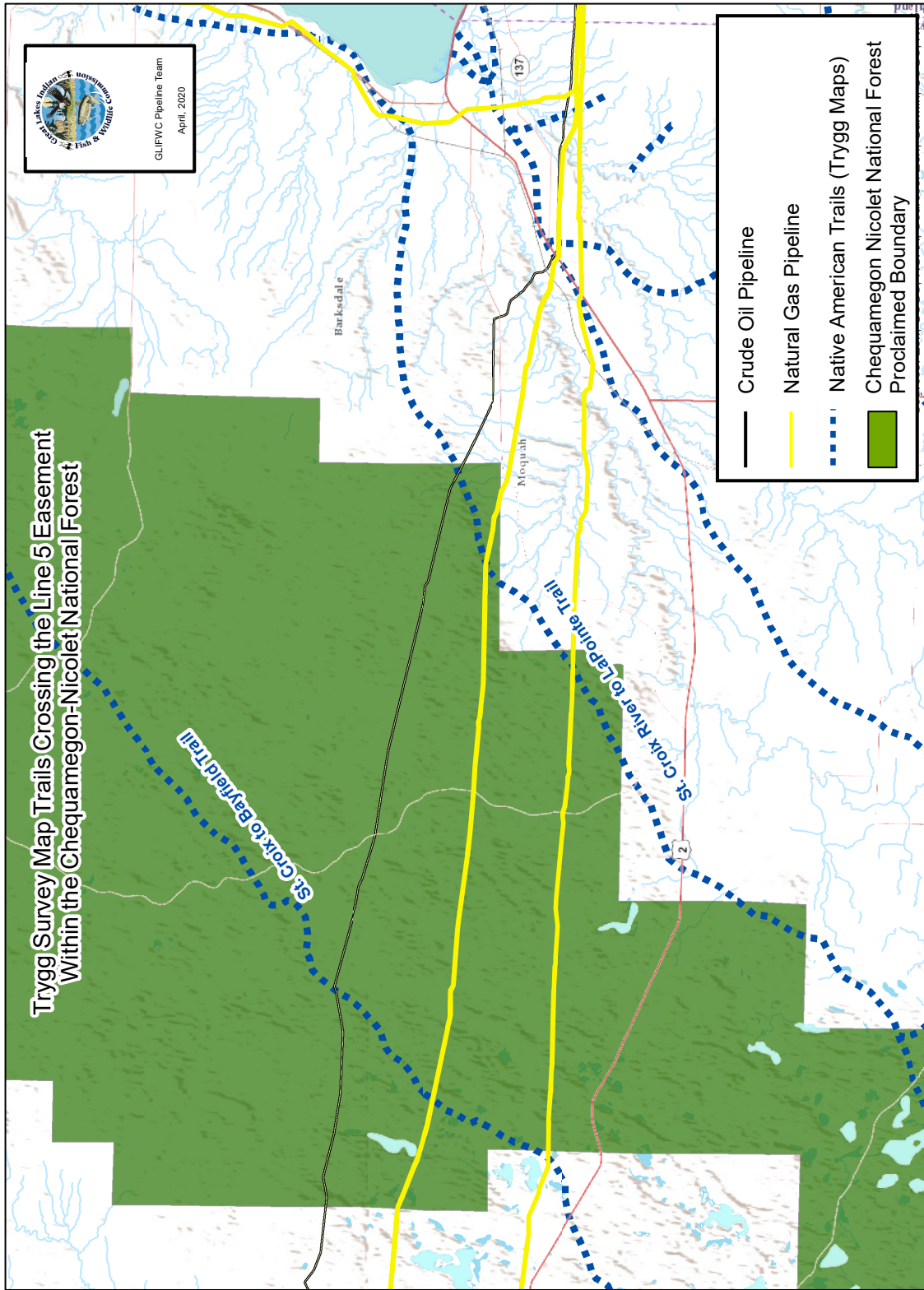


Figure 1.5.5 - Native American trail segments in Bayfield County, Wisconsin that have been impacted by the construction of the Line 5 pipeline.

Pipeline Impacts to Wetlands

Construction of a pipeline through a wetland constitutes a wetland fill. In addition, the functions and values of wetland areas within the ROW change because the natural hydrologic regime within the wetland has changed and sedimentation from pipeline trenching occurs. When constructing a pipeline, much of the ROW is impacted by temporary road construction, vehicle traffic and staging, temporary storage of pipe, topsoil and other materials, construction of valves, pump stations, cathodic protection systems, etc. Therefore, it is reasonable to use the entire ROW as an area impacted by pipeline construction. In the Ceded Territories there are 2,018 wetlands within the crude oil pipeline ROW. The area of these wetlands totals 2,881 acres which is 22% of the ceded territories crude oil pipeline ROW. In addition, there are 7,758 identified wetlands in the natural gas pipeline ROW which total 5,065 acres. This is approximately 13% of the ceded territories natural gas pipeline ROW. While there are also many acres of public state and county land crossed by pipeline, here we present a breakdown for the portions of natural gas ROW located within the National Forest and Tribal reservations in table 1.5.1.

Table 1.5.1 - Wetlands potentially impacted by crude oil and natural gas pipeline construction located within the National Forest proclaimed boundary and Tribal reservations.

National Forest	Number of Wetlands	ROW Wetland Acres	Data Source
Chequamegon - Nicolet	84	49	National Wetland Inventory
Ottawa	249	300	Wisconsin Wetland Inventory
Hiawatha	194	574	National Wetland Inventory
Huron - Manistee	125	651	National Wetland Inventory
Superior	5	1	National Wetland Inventory
Reservation			
Fond du Lac	201	378	National Wetland Inventory
Bad River	212	128	Wisconsin Wetland Inventory
KBIC	4	8	National Wetland Inventory

There are 857 identified wetlands in Line 5's ROW totaling 1,473 acres which is approximately 51% of the crude oil ROW in the ceded territories. A breakdown for the portions of the Line 5 ROW located within the National Forest proclaimed boundary is provided in table 1.5.2.

Table 1.5.2 - Wetlands impacted by the Line 5 pipeline located within the National Forest proclaimed boundary.

National Forest	Number of Wetlands	ROW Wetland Acres	Data Source
Chequamegon - Nicolet	1	0.7	National Wetland Inventory
Ottawa	92	143	Wisconsin Wetland Inventory
Hiawatha	64	257	National Wetland Inventory

Because of a lack of pre-construction wetland data, this analysis can only make broad assumptions about direct impacts. In addition to direct wetland fill, pipeline construction also has indirect impacts to wetlands. For example, clearing of a forested wetland can result in a conversion to an emergent wetland through a change in vegetation and hydrology (Goodale, 2018). While this is not a direct fill, it is a change in the functions and values of that wetland. This type of impact cannot be characterized with available data. Location of wetlands within the ROW is available through a web mapping application [here](#).

Pipeline Impacts to Streams

Construction of pipelines in the ceded territories required a large number of stream crossings. In the ceded territories, crude oil pipelines cross no fewer than 460 rivers and streams and natural gas pipelines cross no fewer than 2,870 rivers and streams. This number is a minimum estimate as it relies on the 24,000-scale hydrography coverage that does not include all small streams. Information on stream crossings within the proclaimed boundaries of National Forests and Tribal reservations is provided in table 1.5.3 as an example.

Table 1.5.3 - Stream crossings by oil and natural gas pipelines located within the National Forest proclaimed boundary and Tribal reservations.

National Forest	Number of Stream Crossings	Data Source
Chequamegon - Nicolet	22	Wisconsin 24k Hydrography Data
Ottawa	263	Michigan 24k Hydrography Data
Hiawatha	115	Michigan 24k Hydrography Data
Huron - Manistee	155	Michigan 24k Hydrography Data
Superior	3	Minnesota 24k Hydrography Data
Reservation		
Fond du Lac	7	Minnesota 24k Hydrography Data
Bad River	14	Wisconsin 24k Hydrography Data
Lac Courte Oreilles	3	Wisconsin 24k Hydrography Data

Line 5 crosses at least 290 rivers and streams which is 63% of all crude oil pipeline crossings in the ceded territories. This includes the 14 crossings within the Bad River reservation. A breakdown for the stream crossings located within the proclaimed boundaries of National Forests is provided in table 1.5.4 as an example.

Table 1.5.4 - Stream crossings by the Line 5 pipeline located within the National Forest proclaimed boundary

Chequamegon - Nicolet	2	Wisconsin 24k Hydrography Data
Ottawa	54	Michigan 24k Hydrography Data
Hiawatha	18	Michigan 24k Hydrography Data

Impacts to stream morphology, stream flows, and stream water quality from the construction of the pipeline cannot be quantified because of a lack of pre-construction baseline data. Impacts to fish and mussel habitat in the crossing areas cannot be assessed. However, additional field data collection could determine if ongoing operations of the pipeline have permanently degraded the sections of stream where the crossing was constructed. Location of stream crossings within the ROW is available through a web mapping application [here](#).

Pipeline Impacts to Lakes

Based on available GIS data there are three inland lakes that are intersected by the 125-foot crude oil pipeline ROW in the ceded territories. All of them are impacted by Line 5 and all of them are in National Forests. Two lakes are located in the Ottawa National Forest and one in the Chequamegon – Nicolet National Forest. In addition, there are 167 inland lakes that are

intersected by the 60-foot natural gas pipeline ROW in the ceded territories. A breakdown for lakes located within the proclaimed boundaries of National Forests and Tribal reservations is provided in table 1.5.5

Table 1.5.5 - Lakes located in the 125-foot ROW of natural gas pipeline within the National Forest proclaimed boundary and Tribal reservations.

National Forest	Number of Lakes	Data Source
Chequamegon - Nicolet	2	Wisconsin 24k Hydrography Data
Ottawa	8	Michigan 24k Hydrography Data
Hiawatha	5	Michigan 24k Hydrography Data
Huron - Manistee	5	Michigan 24k Hydrography Data
Superior	3	Minnesota 24k Hydrography Data

Impacts to lakes from the construction of the pipeline cannot be quantified because of a lack of pre-construction baseline data. Location of lakes within the ROW is available through a web mapping application [here](#).

It is important to note that Line 5 crosses the Straits of Mackinac. The Straits connect Great Lakes Michigan and Huron and are a sensitive ecological area. The north shoreline where Line 5 diverges into two sections and enters the Straits lies within the Hiawatha National Forest. The pipeline is located on the lake bottom at depths of 100 to 270 feet. Impacts to the lake bottom resulting from installation and maintenance of the pipeline are unknown. However, there are potential impacts to the lake bed associated with the recent construction of support anchors for the underwater section of the pipeline. Impacts include sedimentation from the drilling necessary to install the supports and potential damage to lakebed morphology. This damage is of particular importance because there have been archeological sites found on the lakebed in the vicinity of the pipeline. Impacts to the lakebed may also damage these archeological features.

Pipeline Impacts on Public Lands

In addition to National Forests, there are other protected areas that are crossed by pipelines. It is not clear if the management plans for these protected areas were developed with existing pipelines as a consideration or if pipeline maintenance activities require advance notice, permits, etc. Lands outside of National Forests that are potentially impacted by the construction of crude oil and natural gas pipelines are listed in table 1.5.6. Locations of protected areas crossed by crude oil and natural gas pipeline ROWs is available through a web mapping application [here](#).

Table 1.5.6 - Protected lands impacted by crude oil and natural gas pipeline construction.

Land Ownership	Primary Name
State Wildlife Management Area	Ackley Wildlife Area
State Forest	American Legion State Forest
State Park	Amnicon Falls State Park
State Wildlife Management Area	Amsterdam Sloughs Wildlife Area
Other State Land	Arland Tower Site
State Fishing or Hunting Unit	Arthur A. Oehmcke Fish Hatchery
State Wildlife Management Area	Athens Wildlife Management Area
State Forest	Atlanta State Forest Area
Other State Land	Auburndale Transmitter Site
State Wildlife Management Area	Backus Creek State Game Area
State Park	Banning State Park
State Wildlife Management Area	Baraga Plains State Wildlife Management Area
State Wildlife Management Area	Baraga Plains Waterfowl Management Area
State Forest	Baraga State Forest Area
State Park	Baraga State Park
State Fishing or Hunting Unit	Bean Brook Fishery Area
State Wildlife Management Area	Becklin Homestead Wildlife Management Area
State Wildlife Management Area	Benlacs Wildlife Management Area
Other State Land	Bennett Communication Tower
State Fishing or Hunting Unit	Benson Creek Fishery Area
State Wildlife Management Area	Benton Wildlife Management Area
State Park	Bewabic State Park
State Wildlife Management Area	Bibles Slough Wildlife Management Area
Public Land (BLM)	Bim Land
State Fishing or Hunting Unit	Bolen Creek Fishery Area
State Forest	Brule River State Forest
State Wildlife Management Area	Bullock Ranch Flooding State Wildlife Management Area
State Park	Burt Lake State Park
State Forest	Cadillac State Forest Area
Other State Land	Camp Grayling
Other State Land	Camp Grayling Military Reservation
State Wildlife Management Area	Cannon Creek Floodings State Wildlife Management Area
State Wildlife Management Area	Carlos Avery Wildlife Management Area
Wild, Scenic & Recreation River (USFS)	Carp River National Wild And Scenic River
State Recreation Area	Cattail State Trail
State Wildlife Management Area	Central Wisconsin Grassland Conservation Area
State Park	Charles A. Lindbergh State Park
National River & Wild & Scenic Riverway (NPS)	Chengwatana State Forest
Water	Chengwatana State Forest
Wild, Scenic & Recreation River (USFS)	Cisco Branch Ontonagon National Wild And Scenic River
State Fishing or Hunting Unit	Conover Rearing Station
State Park	Copper Falls State Park
State Fishing or Hunting Unit	Cranberry Lake Fishery Area
National Wildlife Refuge (FWS)	Crane Meadows
State Habitat Area	Critical Dune Barrier Dunes
State Forest	Crystal Falls State Forest Area
Other State Land	Cumberland Headquarters
Other State Land	Cut River Bridge
State Wildlife Management Area	Cylon Marsh Wildlife Area
State Natural Area	Dead Stream Swamp Natural Area
State Fishing or Hunting Unit	Devils Creek Fishery Area
State Wildlife Management Area	Deward Tract
State Wildlife Management Area	Dewey Marsh Wildlife Area
State Wildlife Management Area	Dingman Marsh Flooding State Wildlife Management Area
State Wildlife Management Area	Dobe Wildlife Management Area
State Wildlife Management Area	Douglas County Wildlife Area
State Fishing or Hunting Unit	Duncan Creek Fishery Area
Other State Land	Eagle River Ranger Station
State Managed Conservation Easements	Easement
Wild, Scenic & Recreation River (USFS)	East Branch Ontonagon River National Wild And Scenic River
State Wildlife Management Area	Edmore State Game Area
State Fishing or Hunting Unit	Elk Creek Fishery Area
State Wildlife Management Area	Ereux Wildlife Management Area
State Forest	Escanaba State Forest Area
State Habitat Area	Extensive WI Habitat
State Historic Site	Father Marquette National Memorial
Federal Forest Reserve (USGS)	Federal Forest Reserve (usgs)
State Wildlife Management Area	Fermoy Wildlife Management Area
State Forest	Flambeau River State Forest

Table 1.5.6 - Continued

Land Ownership	Primary Name
State Wildlife Management Area	Flat River State Game Area
State Forest	Fond Du Lac
State Forest	Fond Du Lac
State Wild or Scenic River	Forest Legacy Program
State Wild or Scenic River	Forest Legacy Program
State Wild or Scenic River	Forest Legacy Program
State Wild or Scenic River	Forest Legacy Program
State Wild or Scenic River	Forest Legacy Program
State Park	Fort Michilimackinac State Park
State Wildlife Management Area	French Farm Flooding State Wildlife Management Area
State Recreation Area	Gandy Dancer State Trail
State Forest	Gaylord State Forest Area
State Forest	General C.c. Andrews
State Wildlife Management Area	Genes Pond Flooding State Wildlife Management Area
State Forest	Gladwin State Forest Area
State Managed Conservation Easements	Glidden Tower Site
State Wildlife Management Area	Goose Creek Impoundment State Wildlife Management Area
State Forest	Governor Knowles State Forest
Other State Land	Grantsburg Station
State Forest	Grayling State Forest Area
State Wildlife Management Area	Groveland Mine Flooding State Wildlife Management Area
State Forest	Gwinn State Forest Area
State Park	Hart-montague Bicycle Trail Park
State Park	Hartwick Pines State Park
State Wildlife Management Area	Haymarsh Lake State Game Area
Waterfowl Production Area (FWS)	Houghdahl - Waterfowl Production Area - Saint Croix Wetland Management District
State Wildlife Management Area	Houghton Lake State Wildlife Research Area
State Wildlife Management Area	Houghton Lake Flats Flooding State Wildlife Management Area
State Park	Interstate Park
State Wildlife Management Area	Jordan Valley
State Fishing or Hunting Unit	Jump River Fishery Area
National Historical Park (NPS)	Keweenaw National Historical Park
Wildlife Management Area (FWS)	Kirtlands Warbler Wildlife Management Area
Waterfowl Production Area (FWS)	Kobernick Waterfowl Production Area - Saint Croix Wetland Management District
State Managed Conservation Easements	Ladysmith Station
State Wildlife Management Area	Langston State Game Area
State Natural Area	Little Brevort Lake Scenic Site
State Fishing or Hunting Unit	Little Haymeadow Creek Fish Area
State Wildlife Management Area	Little Rice Wildlife Area
National River & Wild & Scenic Riverway (NPS)	Lower Saint Croix National Scenic Riverway
Wilderness Area (USFS)	Mackinac Wilderness National Wilderness Area
Wild, Scenic & Recreation River (USFS)	Mackinac Wilderness National Wilderness Area - Carp River National Wild And Scenic River
Wild, Scenic & Recreation River (USFS)	Manistee River National Wild And Scenic River
State Wildlife Management Area	Manistee State Game Area
State Managed Conservation Easements	Marginal Cropland
State Wildlife Management Area	Martiny Lake State Game Area
State Wildlife Management Area	Mead Wildlife Area
State Wild or Scenic River	Menard Island Resource Area
Other State Land	Merrill Station
Wild, Scenic & Recreation River (USFS)	Middle Branch Ontonagon River
Recreation Trail	Mountain-bay State Trail
State Wildlife Management Area	Muskegon State Game Area
Recreation Trail	Nicolet State Trail
Recreation Trail	North Country Nat'l Scenic Trail
State Fishing or Hunting Unit	North Fish Creek Stream Imp
State Forest	Northern Highland State Forest
State Wildlife Management Area	Old Fur Farm Flooding State Wildlife Management Area
State Park	Old Mill Historic Park
State Fishing or Hunting Unit	Osceola Hatchery
State Managed Conservation Easements	Other - Perpetual
State Park	Otsego Lake State Park
State Wildlife Management Area	Otter Point Wildlife Management Area
Other State Land	Park Falls Headquarters
State Fishing or Hunting Unit	Parker Creek Fishery Area
State Wildlife Management Area	Paul Olson Wildlife Area
Wild, Scenic & Recreation River (USFS)	Pere Marquette River National Wild And Scenic River
State Wildlife Management Area	Pere Marquette State Forest, State Wildlife Area
State Wildlife Management Area	Pere Marquette State Game Area
State Wildlife Management Area	Pershing Wildlife Area
State Forest	Peshtigo River State Forest

Table 1.5.6 - Continued

Land Ownership	Primary Name
State Forest	Pigeon River Country State Forest Area
State Wild or Scenic River	Pine-popple Wild Rivers
State Wildlife Management Area	Popple Lake Wildlife Management Area
State Park	Porcupine Mountains Wilderness State Park
Other State Land	Prentice Station
Wild, Scenic & Recreation River (USFS)	Presque Isle River National Wild And Scenic River
State Managed Conservation Easements	Reinvest In Minnesota Wetlands Reserve Program
Other State Land	Rhineland Station
State Managed Conservation Easements	Riparian Lands
State Wildlife Management Area	Robinson Creek Flooding State Wildlife Management Area
State Wildlife Management Area	Rogue River State Game Area
State Forest Research or Demonstration Area	Roscommon Forest Fire Experiment Station
State Forest	Roscommon State Forest Area
Waterfowl Production Area (FWS)	Rose Lee Waterfowl Production Area - Saint Croix Wetland Management District
National River & Wild & Scenic Riverway (NPS)	Saint Croix National Scenic Riverway
State Fishing or Hunting Unit	Saint Louis River Stream Bank Area
State Fishing or Hunting Unit	Sand Creek Fishery Area
State Fishing or Hunting Unit	Sand Lake Rearing Station
State Managed Conservation Easements	Sand Lake Tower Site
State Forest	Sault Ste. Marie State Forest Area
State Recreation Area	Saunders State Trail
State Wildlife Management Area	Sax Wildlife Management Area
State Wildlife Management Area	Scattered Wildlife
State Forest	Shingleton State Forest Area
State Fishing or Hunting Unit	Shore Lake Superior Fish And Wildlife Area
Wild, Scenic & Recreation River (USFS)	South Branch Paint River National Wild And Scenic River
State Fishing or Hunting Unit	Spring Creek Fishery Area
State Forest	State Forest
State Forest	State Owned Islands
State Habitat Area	Statewide Habitat Areas
State Managed Conservation Easements	Statewide Non-point Easement Program
State Fishing or Hunting Unit	Statewide Public Access
State Fishing or Hunting Unit	Statewide Spring Ponds
State Fishing or Hunting Unit	Stream Bank Easement Program
State Wildlife Management Area	Sturgeon Lake Wildlife Management Area
Wild, Scenic & Recreation River (USFS)	Sturgeon River Gorge National Wild And Scenic River
Wild, Scenic & Recreation River (USFS)	Sturgeon River National Wild And Scenic River
State Wildlife Management Area	Sturgeon River Sloughs State Wildlife Area
State Wildlife Management Area	Thunder Lake Wildlife Area
State Managed Conservation Easements	Thunder Mountain Tower Site
State Forest	Traverse City State Forest Area
State Fishing or Hunting Unit	Turtle Creek Fishery Area
State Recreation Area	Tuscobia State Trail
State Managed Conservation Easements	Unnamed - Private Lands Managed By DNR
State Park	Wagner Falls Scenic Site Park
State Habitat Area	Western Prairie Habitat Restoration
Wild, Scenic & Recreation River (USFS)	Whitefish River National Wild And Scenic River
National Wildlife Refuge (FWS)	Whittlesey Creek National Wildlife Refuge
State Recreation Area	Wild Rivers State Trail
State Managed Conservation Easements	Wilson Tower Site
State Wildlife Management Area	Wisneski Wildlife Management Area
State Wildlife Management Area	Wittiker Wildlife Management Area
State Forest Nursery	Wyman Nursery
State Wildlife Management Area	Zim Wildlife Management Area

Conclusion

The impacts of pipeline construction cannot be fully characterized because of a lack of data. This report attempts to describe the types of impacts that are expected along the existing pipeline right-of-ways in the ceded territory. Despite these shortcomings, qualitative information can provide valuable insight on past impacts and can provide context for the types of data that are needed when new pipelines are proposed.

Sources Cited

Goodale, Wing, 2018, The Cumulative Adverse Effects of Gas Pipeline Development on Wetlands, Association of State Wetland Managers Pipeline Permitting Project.

Wisconsin Department of Natural Resources (WDNR), 2016, Final Environmental Impact Statement: Enbridge Sandpiper Pipeline and Line 3 Replacement Projects, Douglas County, Wisconsin.