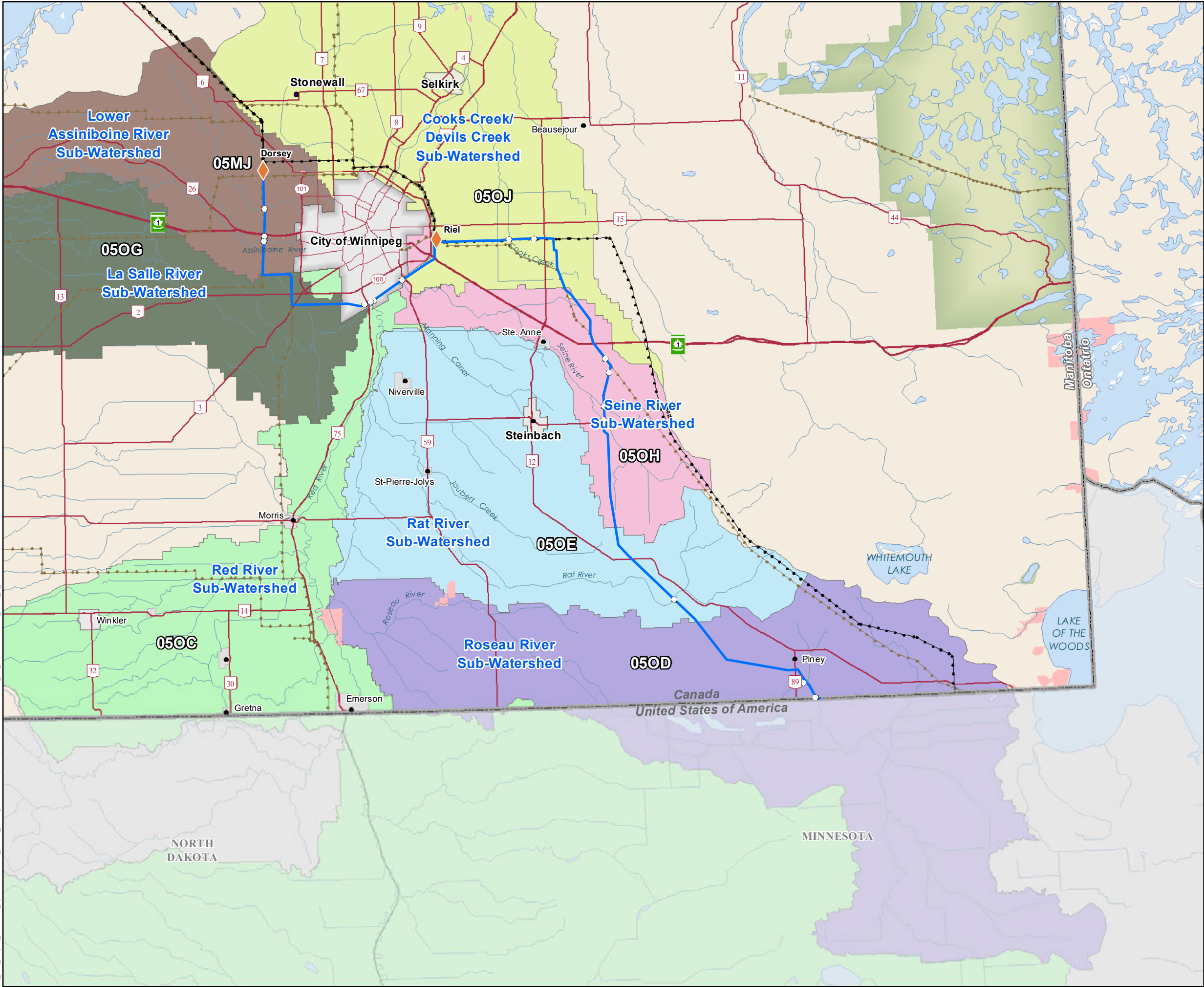


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Manitoba-Minnesota Transmission Project

Project Infrastructure

- Converter Station (Existing)
- Final Preferred Route (FPR)

Infrastructure

- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

Aquatics Survey Sites

- Survey Site

Sub-Watersheds¹

- Cooks Creek/Devils Creek Sub-Watershed
- La Salle River Sub-Watershed
- Lower Assiniboine River Sub-Watershed
- Rat River Sub-Watershed
- Red River Sub-Watershed
- Roseau River Sub-Watershed
- Seine River Sub-Watershed

Landbase

- Community
- Trans Canada Highway
- Provincial Highway
- City / Town
- First Nation Lands
- Provincial Park

Source:
1. Sub-Basins, 2013, Agriculture and Agri-Food Canada.

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: July 21, 2015

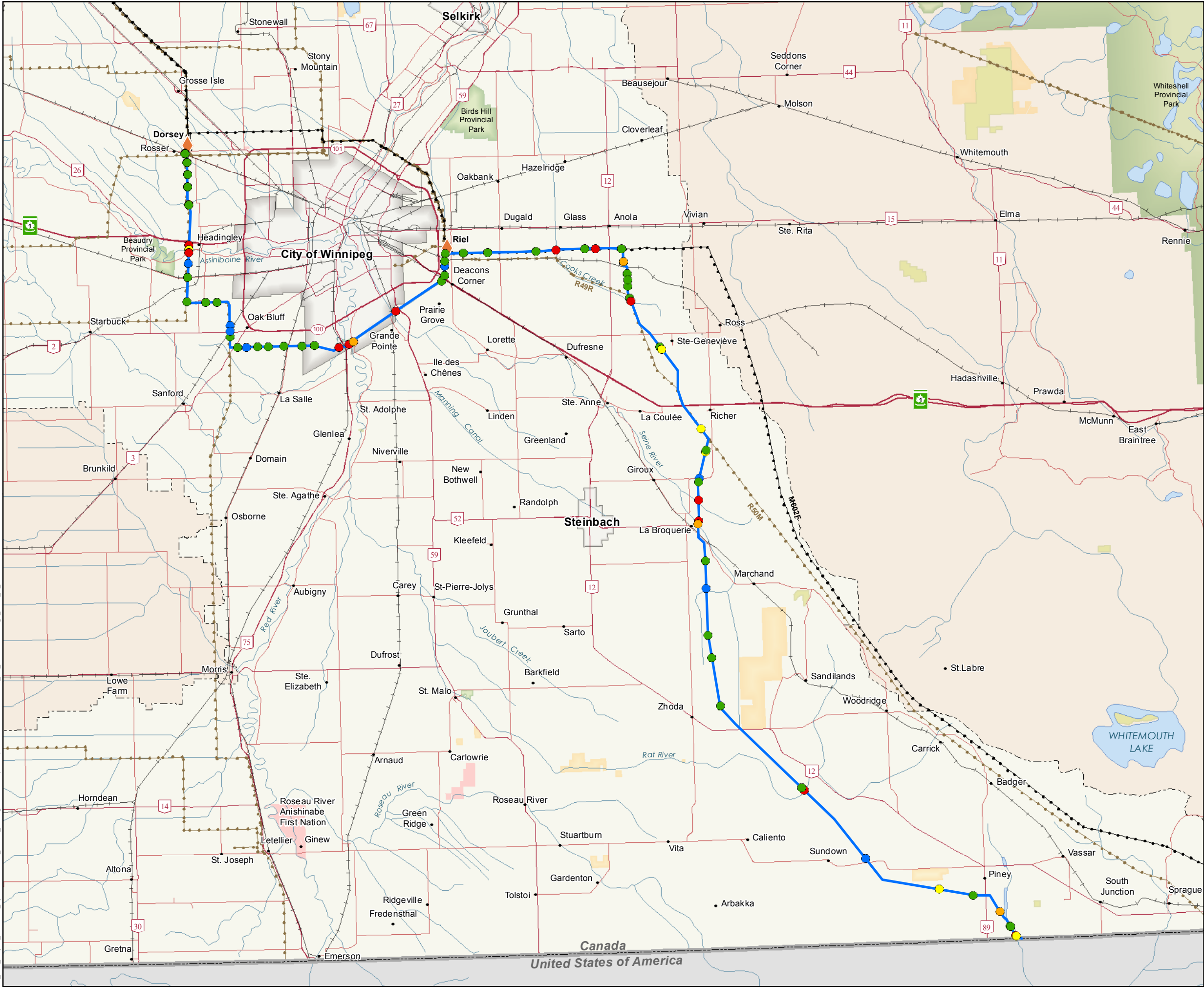


0 10 Kilometres
0 5 10 Miles

1:750,000

Sub-Watersheds

G:\GIS_Projects\Folder00-Hydro\11420000_MMTP_EA\Figures\EAChapterAquaticEnvironment\MMTP_EA_StreamCrossings_500K_B_20150713.mxd



Manitoba-Minnesota Transmission Project

Project Infrastructure

- ◆ Converter Station (Existing)
- Final Preferred Route (FPR)

Infrastructure

- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

Assessment Area

- Fish and Fish Habitat Regional Assessment Area

DFO Fish Habitat Classification ¹

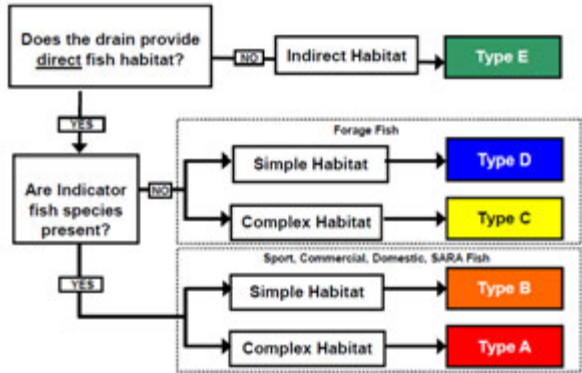
* Refer to chart below for more detail

- Type A
- Type B
- Type C
- Type D
- Type E

Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- City
- First Nation Lands
- Ecological Reserve
- Wildlife Management Area
- Provincial Park

Habitat Type Decision Flowchart ¹



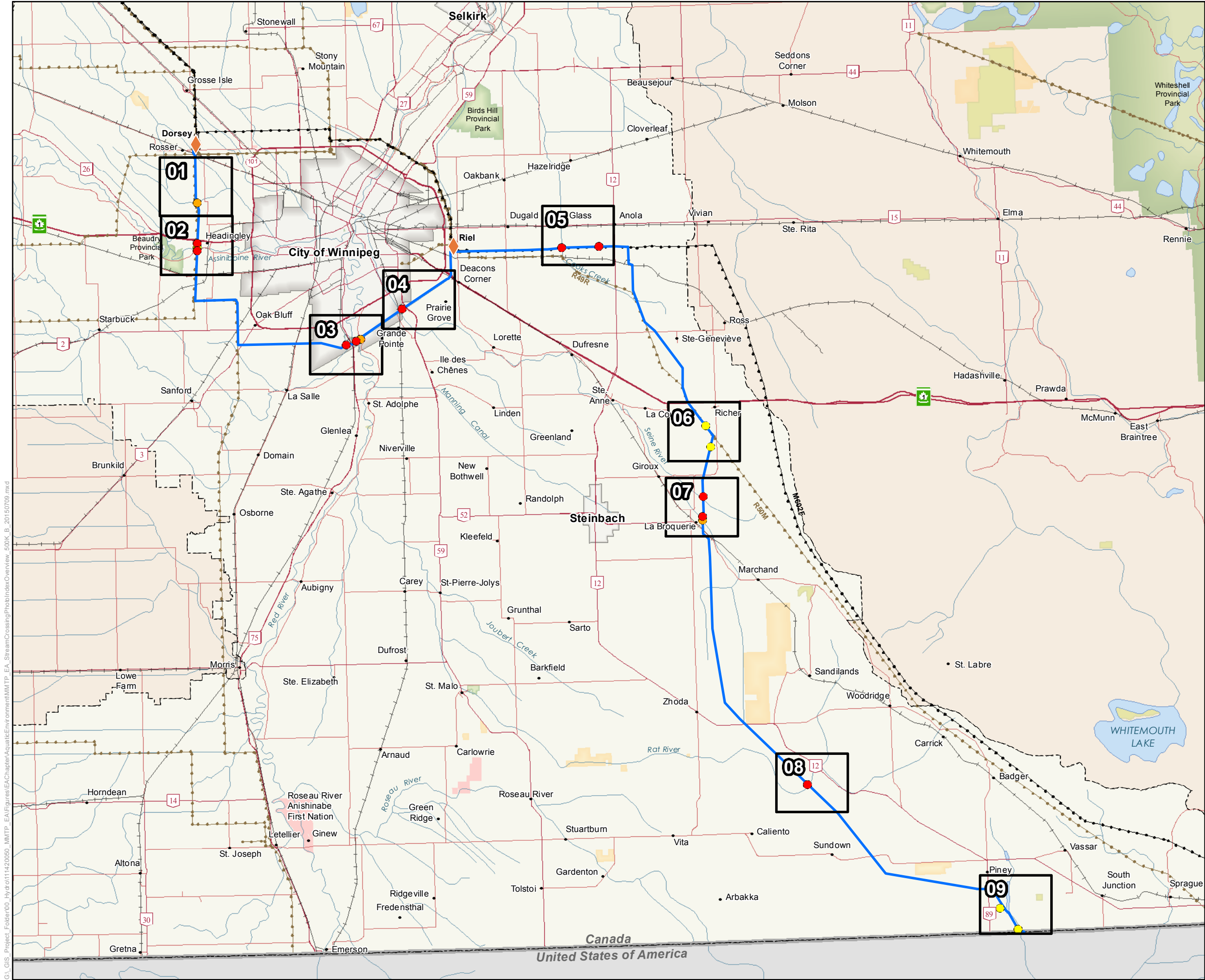
Source:
1. Designation of Drains, 2013. Department of Fisheries and Oceans Canada.

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: July 13, 2015

0 5 10 Kilometres
0 5 10 Miles
1:500,000

Stream Crossings

This map displays the City of Winnipeg and its surrounding regions, including the East Interlake, Cooks Creek, La Salle-Redboine, and Seine-Rat River Conservation Districts. The Red River and Assiniboine River are prominent features. The map shows a network of roads and highways, with a blue line indicating a specific route. Key locations include Selkirk, Riel, Steinbach, Morris, and various smaller towns and villages. The map also shows the border between Canada and the United States of America.



**Manitoba-Minnesota
Transmission Project**

Project Infrastructure

- ◆ Converter Station (Existing)
- Final Preferred Route (FPR)

Infrastructure

- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

DFO Fish Habitat Classification

- Type A
- Type B
- Type C

Map Tile Index - 1:30,000

- Map Series Tile

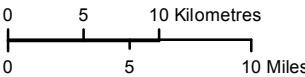
Assessment Area

- Fish and Fish Habitat Regional Assessment Area

Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- First Nation Lands
- Ecological Reserve
- Wildlife Management Area
- Provincial Park
- City

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: July 15, 2015



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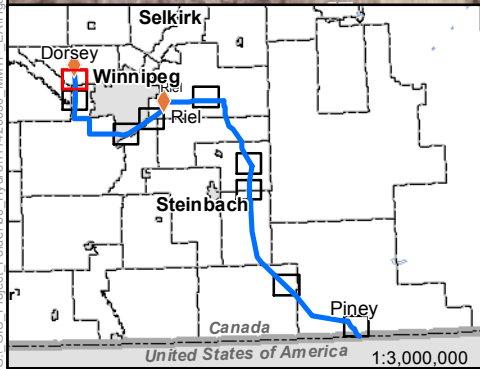
**Index of Map Series
Stream Crossings**

Map Series 8-100

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Site 1 – Sturgeon Creek: Looking west, upstream from RoW centerline of the Sturgeon Creek crossing. Habitat is uniform with silt substrate and grassy riparian cover. Surrounding area is predominantly agriculture.



Manitoba-Minnesota Transmission Project

Project Infrastructure

Final Preferred Route (FPR)

DFO Fish Habitat Classification¹

- Type A
- Type B
- Type C

Infrastructure

Existing 230kV Transmission Line

Soil Water Erosion Risk Class²

tons/hectare/year

- Not available in dataset
- N - Negligible (<6 t/h/y)
- L - Low (6-11 t/h/y)
- M - Moderate (11-22 t/h/y)
- H - High (22-33 t/h/y)
- S - Severe (>33 t/h/y)

Assessment Area

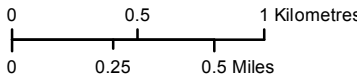
- Project Development Area (PDA)
- Fish and Fish Habitat Local Assessment Area

Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- Rural Municipality

Source:
1. Designation of Drains, 2013. Department of Fisheries and Oceans Canada.
2. Soil Resource Inventory, 2015. Stantec

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: July 15, 2015



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Stream Crossings

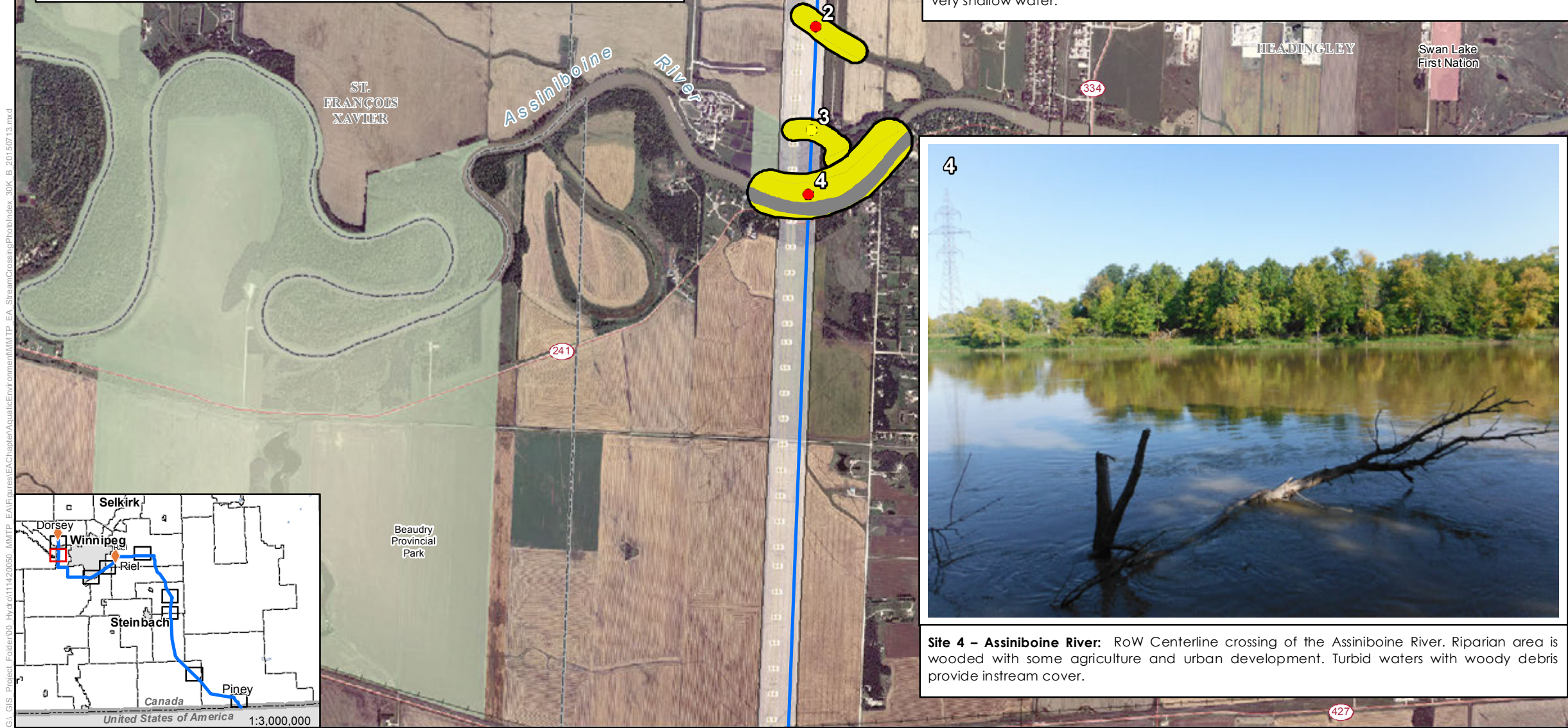
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Site 2 – Third Creek: At RoW centerline facing the left downstream bank of Third Creek. There is very little open water with dense cattails at this crossing.



Site 3 – Unnamed Tributary of the Assiniboine: Looking upstream at RoW centerline of crossing. This intermittent watercourse is characterized by high instream algal growth, dense cattails and very shallow water.



Manitoba-Minnesota
Transmission Project

Project Infrastructure

Final Preferred Route (FPR)

DFO Fish Habitat Classification¹

- Type A
- Type B
- Type C

Infrastructure

Existing 230kV Transmission Line

Soil Water Erosion Risk Class²
tons/hectare/year

- Not available in dataset
- N - Negligible (<6 t/h/y)
- L - Low (6-11 t/h/y)
- M - Moderate (11-22 t/h/y)
- H - High (22-33 t/h/y)
- S - Severe (>33 t/h/y)

Assessment Area

- Project Development Area (PDA)
- Fish and Fish Habitat Local Assessment Area

Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- First Nation Lands
- National/Provincial Park
- Rural Municipality

Source:
1. Designation of Drains, 2013. Department of Fisheries and Oceans Canada.
2. Soil Resource Inventory, 2015. Stantec

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: July 15, 2015

0 0.5 1 Kilometres
0 0.25 0.5 Miles



1:30,000

Stream Crossings

Manitoba-Minnesota
Transmission Project

Project Infrastructure

Final Preferred Route (FPR)

DFO Fish Habitat Classification¹

- Type A
- Type B
- Type C

Infrastructure

St. Vital Transmission Complex (Proposed)

Soil Water Erosion Risk Class²
tons/hectare/year

- Not available in dataset
- N - Negligible (<6 t/h/y)
- L - Low (6-11 t/h/y)
- M - Moderate (11-22 t/h/y)
- H - High (22-33 t/h/y)
- S - Severe (>33 t/h/y)

Assessment Area

- Project Development Area (PDA)
- Fish and Fish Habitat Local Assessment Area

Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- City / Town
- National/Provincial Park
- Rural Municipality

Source:
1. Designation of Drains, 2013, Department of Fisheries and Oceans Canada.
2. Soil Resource Inventory, 2015, Stantec

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: July 15, 2015

0 0.5 1 Kilometres
0 0.25 0.5 Miles



1:30,000

Stream Crossings



Site 5 – La Salle River: Looking south-west upstream from RoW centerline. Substrate consists of fines and organic matter. Banks and riparian areas are stabilized with deciduous trees and grasses.



Site 6 – Red River: At RoW centerline, looking south-east upstream. Water is turbid water with fine substrate and little in-stream vegetation. Riparian area is covered in grasses with some trees.



Site 7 – Red River Floodway: Facing north-east from RoW centerline. Conditions dry at the time of the survey.



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Site 9 – Cooks Creek: At RoW centerline, looking north downstream. Highly channelized with banks and riparian areas covered in thick grasses.



Site 10 – Edie Creek: Looking upstream, facing east at RoW centerline. Water is shallow with high instream vegetation.



**Manitoba-Minnesota
Transmission Project**

Project Infrastructure

- Final Preferred Route (FPR)
- M602F Modification (New)
- Existing 500 kV Transmission Line
- Existing 230kV Transmission Line
- Bipole III Transmission Line (Approved)
- Existing 115-230kV Transmission Line

DFO Fish Habitat Classification¹

- Type A
- Type B
- Type C

Soil Water Erosion Risk Class²
tons/hectare/year

- Not available in dataset
- N - Negligible (<6 t/h/y)
- L - Low (6-11 t/h/y)
- M - Moderate (11-22 t/h/y)
- H - High (22-33 t/h/y)
- S - Severe (>33 t/h/y)

Assessment Area

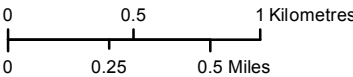
- Project Development Area (PDA)
- Fish and Fish Habitat Local Assessment Area

Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- Rural Municipality

Source:
1. Designation of Drains, 2013, Department of Fisheries and Oceans Canada.
2. Soil Resource Inventory, 2015, Stantec

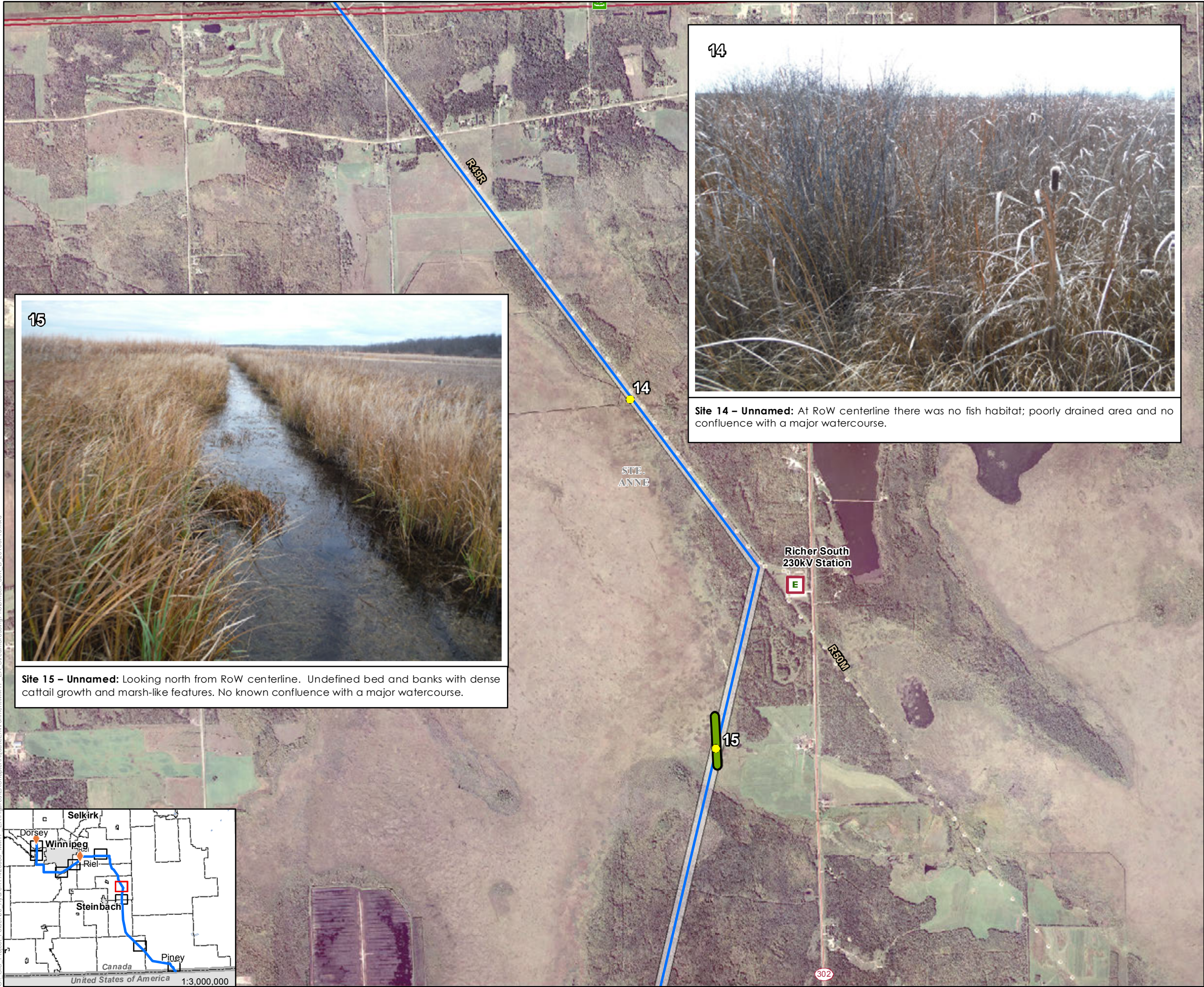
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Data Source: MBHydro, ProvMB, NRCAN
Date Created: July 13, 2015



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Stream Crossing

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15



Site 15 – Unnamed: Looking north from RoW centerline. Undefined bed and banks with dense cattail growth and marsh-like features. No known confluence with a major watercourse.

14



Site 14 – Unnamed: At RoW centerline there was no fish habitat; poorly drained area and no confluence with a major watercourse.

Manitoba-Minnesota Transmission Project

Project Infrastructure

Final Preferred Route (FPR)

DFO Fish Habitat Classification¹

- Type A
- Type B
- Type C

Infrastructure

- Electrical Station
- Existing 230kV Transmission Line

Soil Water Erosion Risk Class² tons/hectare/year

- Not available in dataset
- N - Negligible (<6 t/h/y)
- L - Low (6-11 t/h/y)
- M - Moderate (11-22 t/h/y)
- H - High (22-33 t/h/y)
- S - Severe (>33 t/h/y)

Assessment Area

- Project Development Area (PDA)
- Fish and Fish Habitat Local Assessment Area

Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- Rural Municipality

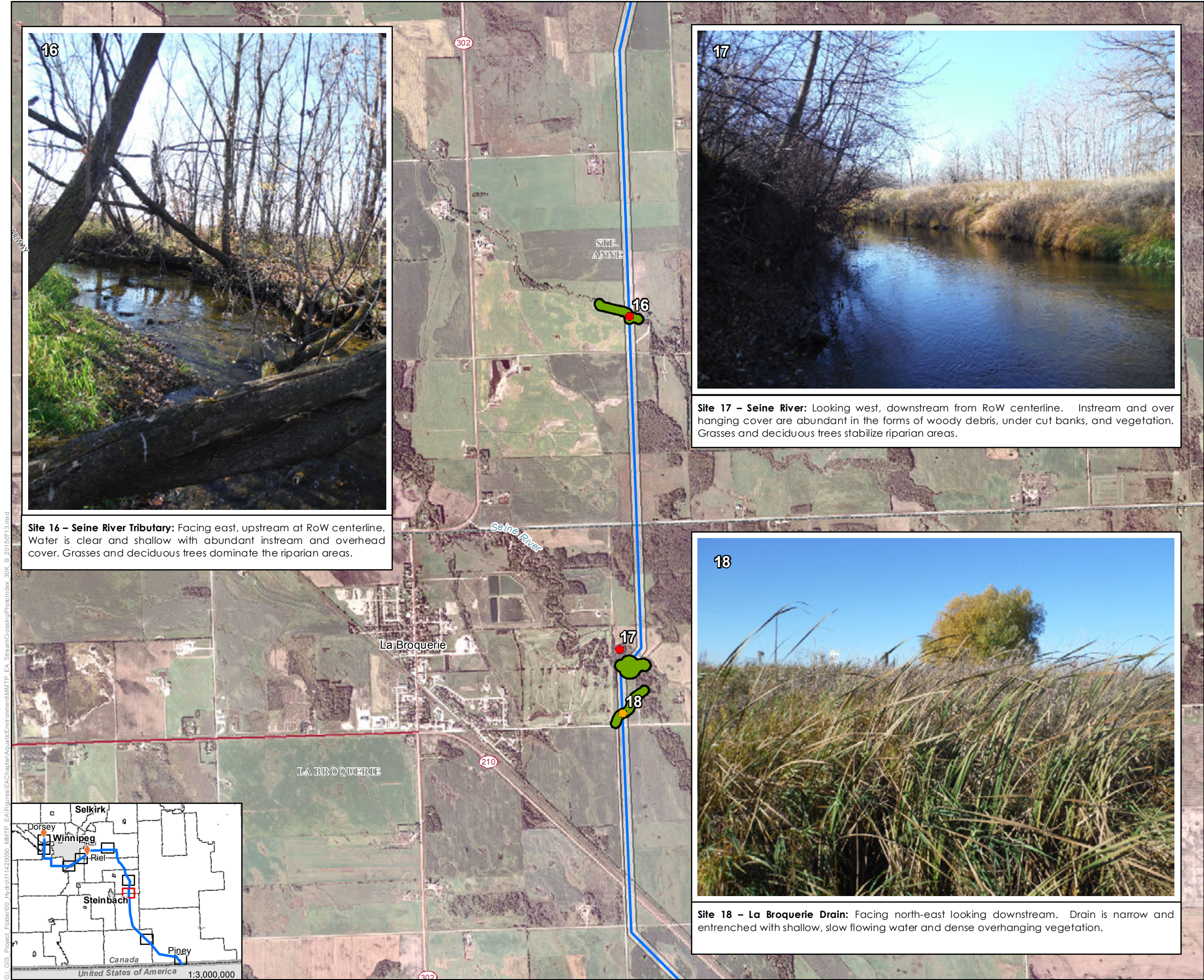
Source:
1. Designation of Drains, 2013. Department of Fisheries and Oceans Canada.
2. Soil Resource Inventory, 2015. Stantec

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: July 15, 2015

0 0.5 1 Kilometres
0 0.25 0.5 Miles

1:30,000

Stream Crossings



Site 16 – Seine River Tributary: Facing east, upstream at RoW centerline. Water is clear and shallow with abundant instream and overhead cover. Grasses and deciduous trees dominate the riparian areas.



Site 17 – Seine River: Looking west, downstream from RoW centerline. Instream and overhanging cover are abundant in the forms of woody debris, under cut banks, and vegetation. Grasses and deciduous trees stabilize riparian areas.



Site 18 – La Broquerie Drain: Facing north-east looking downstream. Drain is narrow and entrenched with shallow, slow flowing water and dense overhanging vegetation.

Manitoba-Minnesota Transmission Project

Project Infrastructure

Final Preferred Route (FPR)

DFO Fish Habitat Classification¹

- Type A
- Type B
- Type C

Soil Water Erosion Risk Class²
tons/hectare/year

- Not available in dataset
- N - Negligible (<6 t/h/y)
- L - Low (6-11 t/h/y)
- M - Moderate (11-22 t/h/y)
- H - High (22-33 t/h/y)
- S - Severe (>33 t/h/y)

Assessment Area

- Project Development Area (PDA)
- Fish and Fish Habitat Local Assessment Area

Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- Rural Municipality

Source:
1. Designation of Drains, 2013. Department of Fisheries and Oceans Canada.
2. Soil Resource Inventory, 2015. Stantec

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: July 15, 2015

0 0.5 1 Kilometres
0 0.25 0.5 Miles



1:30,000

Stream Crossings



Site 19 – Rat River: Looking west, downstream from RoW centerline. Slumped banks are stabilized with grasses. Mixed coarse substrate with fines, good instream cover with vegetation, woody debris and undercut banks.

**Manitoba-Minnesota
Transmission Project**

Project Infrastructure

 Final Preferred Route (FPR)

DFO Fish Habitat Classification¹

-  Type A
-  Type B
-  Type C

Soil Water Erosion Risk Class²
tons/hectare/year

-  Not available in dataset
-  N - Negligible (<6 t/h/y)
-  L - Low (6-11 t/h/y)
-  M - Moderate (11-22 t/h/y)
-  H - High (22-33 t/h/y)
-  S - Severe (>33 t/h/y)

Assessment Area

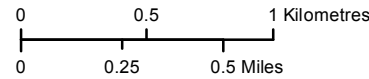
-  Project Development Area (PDA)
-  Fish and Fish Habitat Local Assessment Area

Landbase

-  Community
-  Railway
-  Trans Canada
-  Provincial Highway
-  Provincial Road
-  Rural Municipality

Source:
1. Designation of Drains, 2013. Department of Fisheries and Oceans Canada.
2. Soil Resource Inventory, 2015. Stantec

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: July 15, 2015



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Stream Crossings

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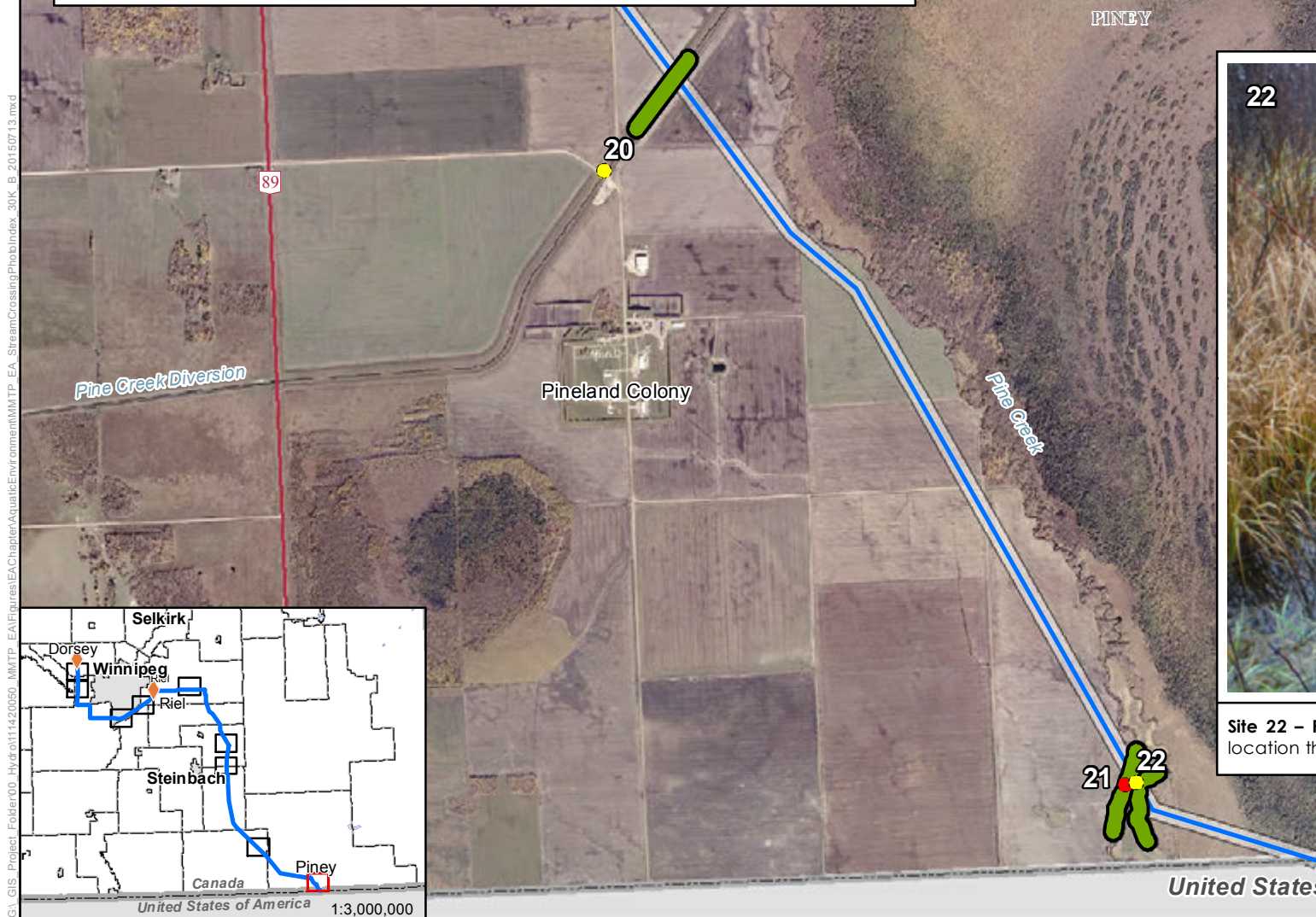
Site 20 – Pine Creek Diversion: Facing north-east, looking upstream from RoW centerline. Channel is uniform with extensive agriculture on both sides. Streambed substrate is predominantly fines and organics. Instream submergent plant species and grasses on the bank provide the only cover.



Site 21 – Pine Creek: Facing north, looking upstream from RoW centerline. Instream cover is good with dense vegetation, woody debris and undercut banks. Good grass and tree riparian vegetation.



Site 22 – Pine Creek Arm: Looking south, downstream from RoW centerline. At the crossing location this watercourse is marsh-like with dense instream vegetation and low water levels.



Manitoba-Minnesota
Transmission Project

Project Infrastructure

Final Preferred Route (FPR)

DFO Fish Habitat Classification¹

- Type A
- Type B
- Type C

Soil Water Erosion Risk Class²
tons/hectare/year

- Not available in dataset
- N - Negligible (<6 t/h/y)
- L - Low (6-11 t/h/y)
- M - Moderate (11-22 t/h/y)
- H - High (22-33 t/h/y)
- S - Severe (>33 t/h/y)

Assessment Area

- Project Development Area (PDA)
- Fish and Fish Habitat Local Assessment Area

Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- Ecological Reserve
- Rural Municipality

Source:
1. Designation of Drains, 2013, Department of Fisheries and Oceans Canada.
2. Soil Resource Inventory, 2015, Stantec

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: July 15, 2015

0 0.5 1 Kilometres
0 0.25 0.5 Miles



1:30,000

Stream Crossings