CANADIAN ENVIRONMENTAL ASSESSMENT AGENCY
PROJECT DESCRIPTION
Baudette / Rainy River International Bridge Replacement

Prepared for:
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Executive Summary

The purpose of the Baudette/Rainy River International Bridge Replacement Project (the Project) is to replace the existing bridge across the Rainy River and the United States of America (U.S.)/Canadian border with a new bridge to maintain access between the Town of Rainy River, Ontario and the City of Baudette, Minnesota.

As an International Bridge, the Project is following Canadian and U.S. regulations, including environmental assessments required by the *Canadian Environmental Assessment Act* (CEAA), *Ontario Environmental Assessment Act* (OEAA), the U.S. *National Environmental Policy Act* (NEPA) and the *Minnesota Environmental Policy Act* (MEPA).

The Project is generally bounded by the U.S. Port of Entry (POE) facility (approximately 292 m from the centre of the bridge to the POE) in the City of Baudette, Minnesota to the west and the Canadian Port of Entry facility (approximately 300 m from the centre of the bridge to the POE) in the Town of Rainy River, Ontario to the east. The north boundary of the Project includes the northern limit of the existing bridge and the southern limit of the Project is approximately 16 m from the southern edge of the existing bridge. The Project is located approximate 65 km southeast from the border of the Province of Manitoba. This study was initiated to address the structurally deficient condition of the existing bridge to maintain the international exchange of vehicular, freight, and pedestrian traffic across the Rainy River at this location.

The Project consists of the construction and operation of a new bridge to replace the existing Baudette/Rainy River International Bridge and the decommissioning and removal of the existing bridge. The new bridge will be located approximately one metre south (upstream) of the existing bridge and will connect to the existing U.S. and Canadian Port of Entry facilities. The recommended bridge is a five-span structure, approximately 408 m long. Two lanes of traffic, one in each direction, will be maintained, although the new structure will be able to accommodate both wider and taller vehicles than the existing structure.

Potential adverse effects to fish and fish habitat, terrestrial ecosystems, migratory birds, Indigenous communities, archaeological and cultural heritage resources, and socio-economic resources have been considered in the design of the Project, with appropriate mitigation measures recommended during the construction, operation and decommissioning phases.

The Project lands are owned by the Minnesota Department of Transportation and the Ontario Ministry of Transportation. In addition, the use of federally-owned land in Canada (land owned by the Canada Border Services Agency) will be required for temporary staging and construction lay-down areas.

The Rainy River is used by the Rainy River First Nations, Anishnaabeg of Naongashiing, Big Grassy River First Nation, Northwest Angle # 37, Northwest Angle # 33 and the Sunset County Métis Community for fishing, gathering, cultural/spiritual/archaeological activities. However, the Project will not change access to the river for these activities and navigation will be maintained

during construction in both Canadian and U.S. water. Further consultation will continue with all the stakeholders as the Project progresses through Detail Design and construction.

Abbreviations

AA	Archaeological Assessment
AADT	Annual Average Daily Traffic
ANSI	Area of Natural and Scientific Interest
CBP	U.S. Customs and Border Patrol
CBSA	Canada Border Services Agency
CEA	Canadian Environmental Assessment
CEAA	Canadian Environmental Assessment Act
CN	Canadian National Railway Company
DFO	Fisheries and Oceans Canada
EA	Environmental Assessment
EAA	Environmental Assessment Act (Ontario)
ECCC	Environment and Climate Change Canada
ELC	Ecological Land Classification
ESA	Endangered Species Act
Ft	Feet
FWCA	Fish and Wildlife Conservation Act
km	Kilometres
kph	Kilometres per Hour
m	Metres
masl	Metres Above Sea Level
MBCA	Migratory Birds Convention Act
MEPA	Minnesota Environmental Policy Act
MOECC	Ontario Ministry of the Environment and Climate Change
mph	Miles per Hour
MNDM	Ontario Ministry of Northern Development and Mines
MnDNR	Minnesota Department of Natural Resources
MnDOT	Minnesota Department of Transportation

MNRF	Ontario Ministry of Natural Resources and Forestry
MTO	Ontario Ministry of Transportation
MTCS	Ministry of Tourism, Culture and Sport
NEPA	National Environmental Policy Act
NHIC	Natural Heritage Information Centre
OFSC	Ontario Federation of Snowmobile Clubs
OPP	Ontario Provincial Police
POE	Port of Entry
PSW	Provincially Significant Wetland
SAR	Species at Risk
SARA	Species at Risk Act
SWH	Significant Wildlife Habitat
SWM	Stormwater Management
TC	Transport Canada
TH	Trunk Highway

CEAA Project Description Concordance Table

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8. Summary of the Project Description (English and French)	See separate Summary document

*SOURCE: *Guide to Preparing a Description of a Designated Project under the Canadian Environmental Assessment Act (2012)* (Canadian Environmental Assessment Agency, as modified November 28, 2014)

1.0 GENERAL INFORMATION AND CONTACT(S)

This Project Description has been prepared in accordance with the Prescribed Information for the Description of a Designated Project Regulations and the Guide to Preparing a Description of a Designated Project under the *Canadian Environmental Assessment Act* ("CEAA"), 2012 ("the Guide"). The numbers and titles used as main headings in this document align with the Guide for ease of reference.

The Baudette/Rainy River International Bridge spans the Rainy River from the Town of Rainy River, Ontario, Canada to Baudette, Minnesota, U.S.A. The bridge was originally built in 1959, and has served as an international border crossing since that time. As part of a joint ownership agreement, the Ontario Ministry of Transportation (MTO) and the Minnesota Department of Transportation (MnDOT) maintain and operate the bridge. Ontario Highway 11 and Minnesota Trunk Highway (TH) 72 carry traffic over the bridge between the U.S. and Canada. Full service Ports of Entry (Customs) facilities are located immediately after exiting on either end of the bridge and are operated by the Canada Border Services Agency (CBSA) and the U.S. Customs and Border Patrol (CBP).

1.1 NATURE AND PROPOSED LOCATION OF PROJECT

The purpose of the Baudette/Rainy River International Bridge Replacement Project (the Project) is to replace the existing bridge with a new bridge as the existing bridge is structurally deficient and can no longer be rehabilitated.

The new bridge will include four in-water piers and two abutments on land. The four in-water piers will have an approximate footprint of 136 m² each which includes the surrounding coffer dam/concrete slab that forms the footing of each pier. The total footprint area of the in-water footings is approximately 546 m². The two abutments on land have an approximate footprint of 136.5 m² each. The total surface area of the concrete bridge deck will be approximately 7,668 m² (area includes the bridge, U.S. and Canadian approaches and the sidewalk). As part of the construction planned for the new bridge structure, a construction access road and a temporary dock will be required for access to the site and transportation of materials. Two construction methods are proposed and will be carried forward for further evaluation during Detail Design. The conventional erection method will require staging/laydown areas that are approximately 3300 m² (located on CBSA-owned land) and an approximate area of 868 m² required for a temporary access road (located on MTO and CBSA-owned land). The launching the superstructure method will require staging/laydown areas of approximately 1330 m² (on CBSA-owned land) and 4761 m² for the temporary launching platform and temporary access road (on MTO, Town of Rainy River and CBSA-owned land). Building of a temporary dock on the Canadian side of the Rainy River will also be required for the launching construction method. The temporary dock will be approximately 130 m². Cofferdams will be required for the

construction of the four new piers and each cofferdam is expected to have a footprint of approximately 136.5 m². Cofferdams will be removed following the construction of the piers. The total cleared area required for construction and decommissioning will be confirmed during Detail Design once the construction method is selected. Decommissioning activities of the existing bridge will utilize the same staging/laydown areas as required for the construction of the bridge. The preferred stormwater management approach identified for the bridge includes a filtration swale north of the bridge on the Canadian side. Stormwater treatments (including erosion control measures on the south side of the bridge on the Canadian side) including dimensions and footprints will be confirmed during Detail Design.

At the conclusion of construction/decommissioning, all temporary staging areas/laydown areas will be removed and the areas will be returned to their previous states and revegetated. Additional information regarding project components is included in Section 2.3.

The construction of a new bridge, connecting to the existing U.S. and Canadian Port of Entry facilities, and the decommissioning of the existing bridge constitute the Project for the purposes of this Project Description.

The Project is generally bounded by the U.S. Port of Entry (POE) facility (approximately 292 m from the centre of the bridge to the POE) in the City of Baudette, Minnesota to the west and the Canadian Port of Entry facility (approximately 300 m from the centre of the bridge to the POE) in the Town of Rainy River, Ontario to the east. The north boundary of the Project includes the northern limit of the existing bridge and the southern limit of the Project is approximately 16 m from the southern edge of the existing bridge. The Project is located approximate 65 km southeast from the border of the Province of Manitoba. The Project will likely also temporarily require additional land to facilitate construction. Two preliminary construction laydown and staging areas have been identified as part of the construction methodology assessment. These areas are located approximately 40 m southeast and approximately 52 m east of the existing bridge on the Canadian side of the crossing.

The existing bridge is approximately 391 m long. The Project is located on property owned by the MTO on the Canadian side. On the U.S. side the Project is located on property owned by MnDOT and property owned by the General Services Administration and maintained by the U.S. Customs Border Protection.

Exhibit 1 shows the regional setting for the Project.

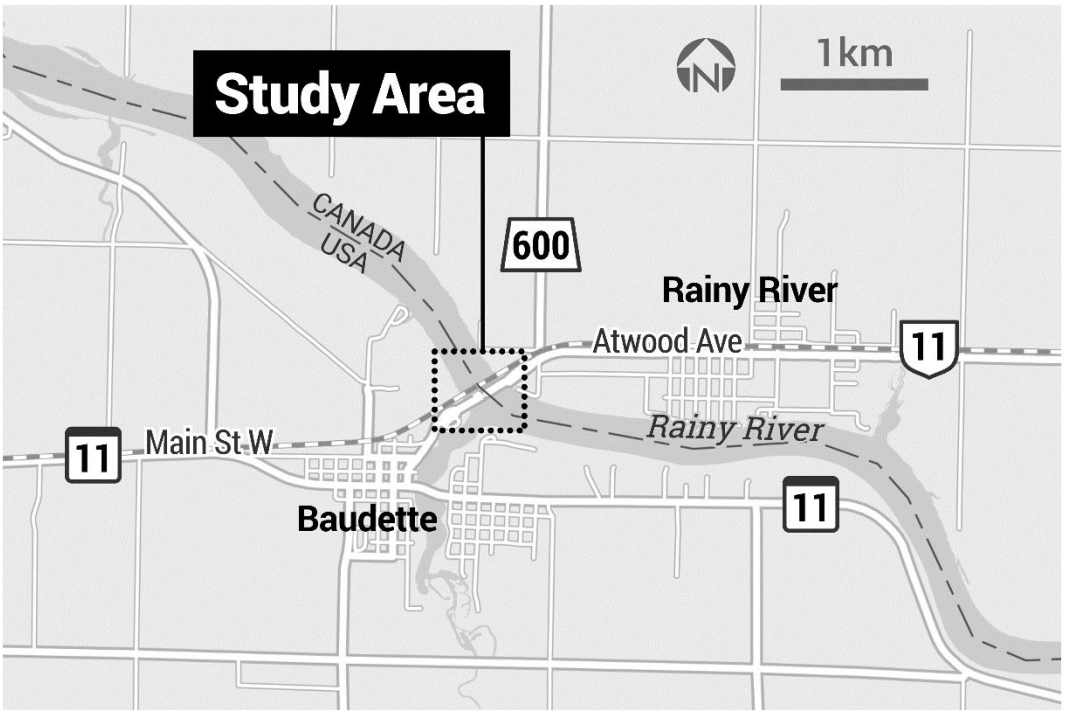

Exhibit 1: Project Study Area

Further information regarding project components and activities is provided in Section 2.3.

The coordinates of the Project area are as follows:

- West limit: Latitude: 48° 43' 4.7856" N, Longitude: 94° 35' 35.6172" W
- East limit: Latitude: 48° 43' 12.7488" N, Longitude: 94° 35' 16.2096" W

The Project is located in the Town of Rainy River, Ontario, Canada, and in the City of Baudette, Minnesota, U.S.A. The towns are located to the east and west, respectively, from the bridge. The Project is approximately 65 km southeast from the border of Manitoba. The Baudette Regional Airport is also located approximately 980 m northwest of the existing bridge. The existing City of Baudette wastewater facility is located approximately 550 m northwest of the existing bridge and directly south of the Baudette Airport. The Town of Rainy River is located approximately one km east from the existing bridge. Figure 1 in Appendix A shows the Project area in a regional context. Figure 2 shows the Project area, existing land use, facilities, and other relevant features.

1.2 PROPONENT CONTACT INFORMATION

Name of the Project: Baudette/Rainy River International Bridge Replacement

Name of the Proponent: Minnesota Department of Transportation and the Ontario Ministry of Transportation

Address of the Proponent: Minnesota Department of Transportation
3920 Highway 2 West, Bemidji MN 56601

Ontario Ministry of Transportation
Northwestern Region
615 James Street South, Thunder Bay ON P7E 6P6

Chief Executive Officer: The Ontario Minister of Transportation, Hon. Steven Del Duca

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1.3 LIST OF JURISDICTIONS AND OTHER PARTIES CONSULTED

The study process for this Project, including the consultation program, has been developed with coordinated efforts from the MTO and MnDOT to effectively complete the U.S. and Canadian study processes and abide by all regulatory requirements.

On August 14, 2013 the Minnesota Department of Transportation hosted a stakeholder and agency kick-off meeting in advance of initiating the Project to better understand the international process that would be followed for the replacement of an international bridge. The meeting was attended by international, federal and provincial agencies and included an overview of the Project, costs, schedules and preliminary and feasible alternatives for the proposed bridge. The following agencies were in attendance at the meeting: Canada Border Services Agency, Transport Canada, The Ontario Ministry of Transportation, CN Rail, the U.S. Department of Transportation, General Services Administration, Lake of the Woods County, U.S. Army Corp of Engineers, U.S. Coast Guard, U.S. Department of Homeland Security, and the U.S. Federal Aviation Administration.

A joint U.S. and Canadian Public Involvement Plan (PIP) was developed for this Project that includes details of planned public meetings, agency meetings, online resources including a project website, a dedicated online project interface called MindMixer, and a Project Advisory Committee (PAC). Local, municipal, provincial, federal and international agencies and stakeholders were engaged throughout the duration of the Project through various consultation methods (i.e., correspondence, conference calls, and meetings). The public meetings for this Project were scheduled concurrently to make sure the same information is shared with the public and local stakeholders on both sides of the border at the same time throughout the duration of the Project. In addition to the PIP, a separate International Agency Involvement Plan was developed that included quarterly international stakeholder webinars and targeted agency meetings.

Consultation with area stakeholders, including the public, formally began on April 29, 2015. Consultation activities will continue over the course of the Project's development.

Local municipalities, including the Town of Rainy River and Township of Dawson in Ontario, and the City of Baudette in Minnesota, residents and adjacent land owners, were also consulted regarding the Project. The Town of Rainy River and the City of Baudette were invited and participated on the Project PAC. Various agencies including The Ontario Ministry of Natural Resources and Forestry (MNRF) and the Minnesota Department of Natural Resources (MnDNR) were contacted to request existing background information to supplement publicly available documents. Information and comments received from these agencies has been considered during the development and evaluation of alternatives and the selection of the Preferred Plan.

A list of the stakeholders that were consulted with for this Project is provided in Table 1. Stakeholders who may be potentially affected and/or interested in the Project are identified in Section 7.0 (Table 17).

Table 1: Stakeholder List

International Agencies	International Joint Commission International Border Commission
Federal Government	Canadian Environmental Assessment Agency Fisheries and Oceans Canada Transport Canada Environment and Climate Change Canada Global Affairs Canada Canada Border Services Agency Citizenship and Immigration Canada Canadian Transportation Agency Royal Canadian Mounted Police Canada Revenue Agency Health Canada Infrastructure Canada

Provincial Government	Ministry of Tourism, Culture and Sports Ministry of Natural Resources and Forestry Ministry of Northern Development and Mines Ministry of Municipal Affairs and Housing Ministry of Aboriginal Affairs – Consultation Unit Ministry of the Environment and Climate Change Ontario Provincial Police Member of Provincial Parliament – Kenora Rainy River
Municipal Government	Town of Rainy River Township of Dawson Rainy River Chamber of Commerce Rainy River District Social Services Administration Board (including EMS) Rainy River Health Centre
Indigenous Groups	Big Grassy River First Nation Rainy River First Nations Ojibways of Onigaming First Nation Anishnaabeg of Naongashiing Naicatchewenin First Nation Mitaanjigamiing First Nation Couchiching First Nation Northwest Angle No. 33 Grand Council Treaty # 3 Anishinabe of Wauzhushk Onigum Northwest Angle No. 37 MNO Sunset County Métis Council Métis Nation of Ontario – Métis Consultation Unit Pwi-Di-Goo-Zing-Ne-Yaa-Shing Advisory Services
Local Watershed Board	Rainy Lake of the Woods Watershed Board
Local Landowners, Occupants and Residents	Residents of the Town of Rainy River and the City of Baudette, local businesses, and other stakeholder (Federation of Anglers and Hunters, Trans Canada Trails, Rainy River Future Development Corporation)
U.S. Agencies	U.S. Army Corps of Engineers Federal Highway Administration U.S. Customs and Border Protection U.S. Coast Guard U.S. State Department City of Baudette Federal Aviation Administration State of Minnesota Historic Preservation Office Minnesota Department of Natural Resources

The Project was announced through a formal Notice of Study Commencement notification process that included newspaper notices in the *Rainy River Record* and the *Fort Frances Times* on May 12, 2015 and May 13, 2015 and individual notification letters and notices forwarded to individuals representing the agencies, Indigenous groups, community representatives and the public listed in Table 17 in Section 7.0. Consultation will continue with these stakeholders during Detail Design.

The MTO and MnDOT are committed to a well-rounded consultation plan that includes dissemination of project information throughout the entire duration of the Project and building positive relationships with all stakeholders and regulatory agencies. Further details on the consultation program are provided in Section 6.0 and Section 7.0.

1.4 OTHER RELEVANT INFORMATION

1.4.1 Environmental Assessment Processes

The Project is following environmental assessment requirements for both Canada and the U.S. as described in the sections below and in Figure 3 in Appendix A.

1.4.1.1 Canada

Provincial

The Ministry of Transportation's (MTO) *Class Environmental Assessment (EA) for Provincial Transportation Facilities* (2000), approved under the Ontario *Environmental Assessment Act* (EAA) in the fall of 1997 and amended in 2000, applies to this Project.

The Project is following the MTO Class EA Process as a Group 'B' project. A *Transportation Environmental Study Report* (TESR) will be prepared and will be made available for a 30-day public review period that will be timed to coincide with the public review for the CEAA Project Description (see TESR in Appendix C-C.5).

Federal

The *Canadian Environmental Assessment Act* (2012) applies to projects described in the *Regulations Designating Physical Activities* and to projects designated by the Minister of the Environment and Climate Change.

Section 28 of the *Regulations Designating Physical Activities* includes construction, operation, decommissioning and abandonment of a new international bridge (April 2015). Accordingly, this Project Description is being submitted to fulfill the initial requirement for a designated project to enable the CEA Agency to conduct a screening to determine if the designated project requires an environmental assessment under CEAA 2012.

1.4.1.2 United States

The Minnesota Department of Transportation's (MnDOT's) environmental assessment process follows Minnesota's environmental review process set by the *National Environmental Policy Act* (NEPA), and *Minnesota Environmental Policy Act* (MEPA), to fulfill requirements at both the state and federal level. A combined Environmental Assessment/Environmental Assessment Worksheet (EA/EAW) was prepared. The EA/EAW uses public input and technical analysis to determine the needs, deficiencies, impacts, mitigation, and design of the proposed project. The Draft EA/EAW is distributed for public comment over a 45-day public review period. At the federal level, the EA is used to provide sufficient environmental documentation to determine the need for an Environmental Impact Statement (EIS) or that a Finding of No Significant Impact (FONSI) is appropriate. At the state level, the EAW is used to provide sufficient environmental documentation to determine the need for an EIS or that a Negative Declaration is appropriate. The U.S. Environmental Assessment documentation will provide information on the U.S. process.

1.4.2 Regulatory Requirements of Other Jurisdictions

The following sections provide a summary of international, provincial, and federal approvals required for the Project.

1.4.2.1 International and Federal Approvals

The Minnesota Department of Transportation and Ontario Ministry of Transportation are subject to applicable federal and international legislation. The relevant Canadian Federal and International legislation that applies to the project includes: *CEAA, Fisheries Act, Navigation Protection Act, International Bridges and Tunnels Act, International Boundary Waters Treaty Act,* and the *International Boundary Commission Act*.

Table 2 provides a summary of all applicable international and federal permits/approvals for this Project.

Table 2: International and Federal Permits and Approvals

U.S./CAN	Agency	Permit / Act	Project Activities	Project Phase when Permit/ Approval will be Obtained	Permit or Approval required or expected?	Potential Effects of Associated Permit/Approval
U.S./CAN	International Joint Commission	*International Boundary Waters Treaty Act*	Work that takes place on an international waterway.	Detail Design	Yes – it is expected that a Special Agreement will be prepared to address the IBWTA requirements.	Specific requirements for agreements between the State of Minnesota and the Province of Ontario for maintenance, decommissioning and construction may potentially result in socio-economic effects (i.e., temporary job creation, indirect economic effects to City of Baudette/Town of Rainy River). This will be confirmed during Detail Design.
U.S./CAN	International Boundary Commission	*International Boundary Commission Act*	Any work that takes place within 3 m (10 feet) of the U.S./Canadian border.	Detail Design/in advance of Construction	Yes – Duplicate of U.S. Letter of Request for work within 10 feet of a border.	No anticipated effects.

U.S./CAN	Agency	Permit / Act	Project Activities	Project Phase when Permit/ Approval will be Obtained	Permit or Approval required or expected?	Potential Effects of Associated Permit/Approval
CAN (Federal)	Transport Canada	*Navigation Protection Act*	Work on a waterway that is listed on the List of Scheduled Waters.	Detail Design	Yes – application for works in Scheduled waterway – Submit NPP Notice of Work Form to Transport Canada.	Navigation (a navigation channel) will be maintained throughout all Project phases. There may be some minor delays for boaters due to barge activity during construction but these delays (e.g. waiting for a barge to cross the river before passing) are expected to be minor and will not result in significant socio-economic effects or effects to Indigenous activities on the Rainy River.
CAN (Federal)	Transport Canada	*International Bridges and Tunnels Act* - Permit	Work on any international bridge/tunnel.	Detail Design	Yes	No anticipated effects.

U.S./CAN	Agency	Permit / Act	Project Activities	Project Phase when Permit/ Approval will be Obtained	Permit or Approval required or expected?	Potential Effects of Associated Permit/Approval
CAN (Federal)	Fisheries and Oceans Canada	*Fisheries Act*	Work that may result in serious harm to fish that are part of a commercial, recreational or Aboriginal fishery, or to fish that support such a fishery.	Detail Design	Not Anticipated.	Minimal potential effects to fish and fish habitat - See Section 5.1.3 for additional information and proposed protection and mitigation measures. No anticipated effects to recreational and Indigenous community fishing (no anticipated impact to fish populations).

The Project involves work on a waterway (Rainy River) that is listed on the *List of Scheduled Waters*, governed by the Navigation *Protection Act,* which is administered by Transport Canada. Through consultation with Transport Canada it was determined that an application for the Project will be required to be submitted to the Navigation Protection Program for approval. Since the Project is also an international bridge, a permit is required under the *International Bridges and Tunnels Act*, which is also administered by Transport Canada.

The Project is located on an international waterway. The use and management of waterways between the United States and Canada is governed by the *International Boundary Waters Treaty Act*. The Act is administered by the International Joint Commission (IJC), Global Affairs Canada, and the U.S. State Department. Global Affairs Canada and the U.S. State Department will prepare a Special Agreement between governments in lieu of the Order of Approval typically required by the Act. The Special Agreement will address potential changes to levels and flow of the Rainy River as a result of the Project and construction. Details regarding the Special Agreement (or if an Order of Approval will be required instead) will be confirmed during Detail Design.

The International Boundary Commission (IBC) has also advised that a Letter of Request for work within 3 m (10 feet) of the border will be required.

A Fish and Fish Habitat Preliminary Impact Assessment (Stantec 2016) was completed for the Preferred Plan following the 2013 *MTO/DFO/OMNR Protocol for the Protection of Fish Habitat on Provincial Undertakings* (the Protocol). The 2013 Protocol is a streamlined method of the regulatory review process for highway activities. The 2013 Protocol includes the DFO Self-Assessment process and DFO's Risk Management Framework (RMF). The RMF was used to determine the risk of the project to fish and fish habitat. Using the RMF, the impact assessment determined that the Project was Low Risk and therefore will not cause serious harm to fish. As per the Protocol and the RMF, DFO review and *Fisheries Act* Authorizations are not necessary for Low Risk projects; therefore, an Authorization is not anticipated for the project. The Protocol and associated decision tools are updated from time to time and the assessment will be confirmed during Detail Design using the Protocol version that is current at the time. Additional information regarding potential adverse effects to fish and fish habitat are discussed in Section 5.1.3.

Authorization under the *Species at Risk Act* and the *Migratory Birds Convention Act* are not anticipated and will be confirmed during Detail Design.

1.4.2.2 Provincial Approvals

Table 3 is a summary of provincial permitting requirements that apply to the Project.

Table 3: Provincial Permits and Approvals

U.S./CAN	Agency	Permit / Act	Project Activities	Project Phase when Permit/Approval will be Obtained	Permit or Approval required or expected?
CAN (Provincial)	Ontario Ministry of Natural Resources and Forestry	*Endangered Species Act* (ESA 2007)	Work that has the potential to affect a species listed on the Species at Risk in Ontario List and/or its habitat.	Detail Design	Not Expected.
CAN (Provincial)	Ontario Ministry of the Environment and Climate Change	*Ontario Water Resources Act, Ontario Regulation 387/04-Permit to Take Water (PTTW)*	Take more than 400,000 litres of water per day for construction activities (Environmental Activity and Sector Registry does not apply for PTTW for more than	Detail Design	Anticipated that a PTTW will be required but will be confirmed during Detail Design.

U.S./CAN	Agency	Permit / Act	Project Activities	Project Phase when Permit/Approval will be Obtained	Permit or Approval required or expected?
			400,000 litres of water per day).		

Based on the project activities and mitigation measures identified and documented in this report, permitting under the ESA 2007 is not anticipated and will be confirmed once details of the design are finalized. Specific protection and mitigation measures regarding the ESA are outlined in Section 5.0.

The nature and extent of dewatering activities for this project are not yet known, though temporary dewatering may reasonably be anticipated during construction of bridge piers or stormwater management facilities. It is anticipated that a Permit to Take Water (PTTW) will be required for construction activities. It is expected that an Environmental Activity and Sector Registry will not apply for this project as it is likely that more than 400,000 litres of water will need to be taken as part of the construction of the Project.

There is the potential that additional provincial approvals will be required for construction activities or more specifically, waste management. The need for a Ministry of the Environment and Climate Change Compliance Approval for Waste Management to process excess materials (i.e., dredged materials from river) and for the use of a licenced waste hauler to transport waste to a landfill may be required. The need for these approvals will be determined and confirmed during Detail Design. No other provincial approvals are anticipated for the Project but this will be confirmed during Detail Design. No impacts to air quality, water quality are anticipated and therefore, permits are not anticipated. The Town of Rainy River does not currently have a noise bylaw listed and therefore a noise bylaw permit for construction activities is not anticipated. Permit and approval requirements will be confirmed during Detail Design.

1.4.2.3 U.S. Approvals

In addition to the Canadian federal and provincial approval requirements, the following U.S. federal and state permits and approvals will be required for this Project.

Table 4: U.S. Permits and Approvals

US/CAN	Agency	Permit / Act	Project Phase when Permit/Approval will be Obtained	Permit or Approval required or expected?
U.S.	Federal Highway Administration	4(f) Approval	Preliminary Design	Yes

US/CAN	Agency	Permit / Act	Project Phase when Permit/Approval will be Obtained	Permit or Approval required or expected?
U.S.	General Services Administration	Revocable License for Non-Federal Use of Federal Property		Yes
U.S.	U.S. Coast Guard	Section 9 Permit and Section 10 Permit (with USACE)	Detail Design	Yes
U.S.	Army Corps of Engineers	Section 404 Authorization	Detail Design	Yes
U.S.	Federal Aviation Administration	FAA 7460-1	Detail Design	Yes
U.S.	Department of State	Secretary of State Approval		Yes
U.S.	Minnesota Department of Natural Resources	Work in Public Waters Permit	Detail Design	Yes
U.S.	Minnesota State Historic Preservation Office	106 Process Completion	Preliminary Design	Yes
U.S.	Minnesota Pollution Control Agency	National Pollutant Discharge System (NPDES)	Detail Design	Yes
U.S.	U.S. Fish and Wildlife	Section 7 Consultation	Preliminary Design	No
U.S.	City of Baudette	Municipal Consent	Preliminary Design	Yes
U.S.	LGU (Lake of the Woods County and/or MnDOT)	*Wetland Conservation Act* Permit (WCA)	Detail Design	Yes
U.S.	Lake of the Woods County	Floodplain Permit	Detail Design	Yes

1.4.3 Regional Environmental Studies

At this time, there are no regional environmental studies, as defined by the CEA Agency, being conducted for this area. As described in Section 1.1, the regional context of the Project includes consideration for the international border, areas downstream of the Rainy River, including the Lake of the Woods area and Manitoba, and any adjacent projects that may result in cumulative effects. Additional information regarding regional components is provided in Section 5.3.

A number of environmental studies have been completed by other parties in the past several years for the region surrounding the Project location. These studies are not 'regional studies' in the *CEAA* 2012 definition, but include the following:

- International Rainy-Lake of the Woods Watershed Board – Rainy- Lake of the Woods State of the Basin Report (2014)
- International Rainy-Lake of the Woods Watershed Board – Report on High Water Levels in the Rainy River Watershed (2014)
- International Rainy-Lake of the Woods Watershed Board – Rainy River 2D Hydrodynamic Modelling Study (2011)
- Rainy River Future Development Corporation – Annual Report (2014-2015)
- Northwestern Ontario Tourism Association – The Economic Impact of Tourism in Lake of Woods, Ontario (2003)
- New Gold – Rainy River Gold Project Environmental Assessment Report– Environmental Impact Statement (2014)
- CN Rainy River Bridge Span Replacement Environmental Review and Assessment (November 2002)

The Minnesota Department of Natural Resources has developed a rehabilitation program for Lake Sturgeon populations in the Lake of the Woods/Rainy River, which are recovering from over exploitation, and poor water quality that negatively impacted spawning and nursery habitats. Their program includes ongoing research which indicates that the Lake Sturgeon population has been in a state of recovery since the mid to late 1960s, and short-term and long-term rehabilitation goals for subsistence and recreational harvests. At present there are no lake sturgeon hatchery programs in the Lake of the Woods/Rainy River.

The environmental studies and documents noted above have been considered in the design and consideration of potential impacts of the Project, where applicable.

1.5 PROJECT DESCRIPTION ORGANIZATION AND CONTENT

This document is intended to fulfill the requirements of a Project Description under the *Prescribed Information for the Description of a Designated Project Regulations* of the CEAA, 2012 for the Project. This Project Description Report was also prepared in accordance with the "*Guide to Preparing a Description of a Designated Project under the Canadian Environmental Assessment Act, 2012*" (CEA Agency, 2012). The organization of this document follows the required structure as per CEAA, 2012 and the "*Guide to Preparing a Description of a Designated Project under the Canadian Environmental Assessment Act, 2012*", as shown in the Table of Concordance.

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2.0 PROJECT INFORMATION

2.1 PROPOSED DEVELOPMENT

2.1.1 General Description, Context and Objectives

The Project consists of the construction and operation of a new bridge to replace the existing Baudette/Rainy River International Bridge and provide access across the Rainy River and the U.S./Canadian border and between the Town of Rainy River, Ontario and the City of Baudette, Minnesota. The Project also includes the decommissioning and removal of the existing bridge and consideration for rehabilitation, replacement and decommissioning of the Project.

The existing Baudette/Rainy River International Bridge carries approximately 2,500 vehicles per day and provides access between the U.S. and Canadian full-service, 24-hour Ports of Entry for the movement of international traffic and commerce. The existing bridge is a six-span truss structure with six steel beam approach spans that carry two lanes of traffic over the Rainy River. It is approximately 391 m long and has a 7.3 m two-lane roadway with an open steel grate deck. There is also a 1.8 m sidewalk cantilevered on the south side of the bridge.

The existing bridge was the first bridge at this location and was part of transportation initiatives by local proponents to connect Minnesota and Ontario with a permanent transportation link (to replace the ferry service that existed at the time) and to provide an additional point of entry and border crossing connecting important industrial and commerce routes in Ontario and Minnesota.

In 2008, the Minnesota Department of Transportation completed a structural evaluation of the Baudette/Rainy River International Bridge to confirm that the bridge is structurally deficient and that it is not economically feasible to rehabilitate the existing bridge to meet current design and maintenance requirements. Following this determination, the Project was initiated and a range of bridge replacement alternatives were developed and evaluated. The evaluation of alternatives is discussed in Section 2.1.2.

The proposed Project will address the structural deficiencies of the bridge structure in order to maintain the international exchange of vehicular, freight and pedestrian traffic across the Rainy River at this location and will:

- Provide a level of service that is consistent with the transportation needs of area residents, businesses/industries and farms
- Improve public safety by providing a roadway that conforms to the current minimum standards for geometry and width
- Make sure that there is the continued serviceability of the route

The following deficiencies will be addressed as part of this proposed Project:

- Vertical clearance restrictions (limited existing vertical clearance of 4.5 m)
- Pedestrian facilities deficiencies (current sidewalk is timber plank decking in need of repair)
- Superstructure deficiencies (corrosion and pack rust, broken grid bars)
- Substructure deficiencies (surface corrosion, concrete scaling, timber debris, scour depressions)
- Load capacity deficiency (current legal load of 80,000 lbs.)
- Non-redundant design features

2.1.2 Evaluation of Alternatives

The development of alternatives and the evaluation process encompassed the entire bridge on both sides of the border and included consideration of identified features and constraints on the Canadian and the U.S. sides of the border and bridge.

A range of bridge replacement alignment and bridge type alternatives were assessed including:

- Alignment Alternatives:
  - Alignment Alternative 1 – Downstream of existing alignment
  - Alignment Alternative 2 – Upstream of existing alignment
  - Alignment Alternative 3A – Replacement on existing alignment with temporary modular bridge located downstream of existing alignment
  - Alignment Alternative 3B – Replacement on existing alignment with temporary modular bridge located upstream of existing alignment
  - Alignment Alternative 4 – Replacement downstream of existing alignment-staged construction
  - Alignment Alternative 5 – Replacement upstream of existing alignment – staged construction
- Bridge Alternatives:
  - Bridge Alternative A – Continuous Steel I-Girder Superstructure
  - Bridge Alternative B – Simple – Span Precast/Prestressed I- Girder Superstructure
  - Bridge Alternative B1 – Spliced Prestressed Precast Concrete I-Girder Bridge
  - Bridge Alternative C – Continuous Steel Box Girder Superstructure
  - Bridge Alternative D – Segmental Concrete Box Girder Bridge

- Bridge Alternative E – Tied Arch Main Span with Precast/Prestressed I-Girder Approaches
- Bridge Alternative E1 – Through Arch Bridge
- Bridge Alternative F – Concrete Slab Span Bridge
- Bridge Alternative G – Spliced Steel Girder Bridge
- Bridge Alternative H – Truss Bridge
- Bridge Alternative I – Cable-Stayed Bridge
- Bridge Alternative J – Suspension Bridge

The alignment alternatives (shown in Figure 4 in Appendix A) were developed to be compatible with all of the bridge type alternatives but were evaluated independently from the bridge type alternatives (shown in Figure 5 in Appendix A) with the following factors considered:

- Transportation Engineering
  - Geometrics (safety, navigation channel, alignment, sightlines, impacts to Port Operations)
  - Constructability (construction staging and feasibility, traffic delays, impacts to Port Operations)
  - Cost (capital cost, future maintenance costs)
  - Pedestrian/Cyclist Access (AODA, accessibility, safety)
- Social and Cultural Environment
  - Property (private property and public lands requires)
  - Archaeology and Cultural Heritage (culturally significant features, areas of high archaeological potential)
  - Impacts to Park Land (Designated parkland on U.S. side)
  - Aesthetics/Visual Impacts (aesthetics of bridge structure, proximity to residential properties)
  - Environmental Justice/Business Impacts/Access (access restrictions for residents and travellers, temporary impacts to businesses that rely on traffic)
- Natural Environment
  - Fish and Aquatic Habitat (alterations to existing watercourse, number and location of piers, sensitive aquatic habitat)
  - Wildlife and Terrestrial Habitat and Vegetation (Species-at-Risk, environmentally significant areas, removal of vegetation, impact to wildlife habitat)

- Noise/Vibration (noise sensitive receptors)
- Wetlands/Floodplains/Protected Waters (areas of wetlands impacted, impact to floodplain)

A preliminary screening was completed for the alignment alternatives listed above and it was determined that Alternatives 4 and 5 would not be carried forward for the evaluation of alternatives due to increased cost and construction duration for the project. Ultimately, Alternative 2 was selected as the preferred alignment.

Several stages of preliminary screenings of bridge type alternatives were also completed by the Project team and it was determined that Alternatives B1, E1, F, G, H, I, and J would not be carried forward for the detailed evaluation of alternatives. These bridge type concepts were eliminated for the following reasons:

- Alternative B1 – Prestressed Precast Concrete Girder Bridge (Spliced): There is limited construction experience in both Minnesota and Ontario and existing alternatives could be refined later to capture this configuration
- Alternative E1 – Through Arch: This alternative is not cost effective for the span lengths considered
- Alternative F – Concrete Slab Span: The span lengths are too small for this crossing which would increase the number of piers in the channel and minimize the navigation channel
- Alternative G – Spliced Steel Girder: There is limited construction experience in both Minnesota and Ontario and existing alternatives could be refined later to capture this configuration
- Alternative H – Truss: The industry is moving away from truss bridges because they require higher maintenance costs, long-term maintenance challenges, and are generally more labour intensive
- Alternative I – Cable-Stayed: This alternative is not cost effective for the span lengths considered. The short span lengths would increase the number of piers in the channel. Additionally, the structure height would likely exceed the aviation clearance envelope
- Alternative J – Suspension: This alternative is more appropriate for spans that are longer than this crossing. For this crossing, this option is not cost effective and would require higher maintenance costs. Additionally, the structure height would likely exceed the aviation clearance envelope

The following four-phase evaluation approach was used to evaluate the remaining five Bridge Type Alternatives and three configurations of Alternative A that were added later in the evaluation process as refinements to Alternative A:

1. Evaluation Criteria Development
2. High-Level Evaluation Screening
3. Alternative Refinement, and
4. Preferred Alternative Determination

Additional refinements were made to the bridge alternatives following the selection of Alternative A as the preferred bridge type. These refinements included a 5-span (configuration A1) vs. 4-span (configuration A2) bridge, and haunched vs. prismatic girders. The Project Team evaluated both four-span and five-span configurations, as well as haunched and prismatic (constant depth) superstructures.

The final evaluation eliminated the refined Configuration A2 (4-span) for the following reasons:

- Refined Configuration A2 – Continuous Steel I-Girder Bridge, 4 spans, Haunched:
  - This configuration involved the most construction complexity and risk
  - A preliminary erection plan showed that this configuration would likely require eight temporary structures to support bridge segments during construction, compared to four segments with a five-span configuration
  - The likely location of these temporary structures would decrease the navigational opening by about half the allowable width during construction

The five-span prismatic configuration (A1.1) and the five-span haunched configuration (A1.2) were carried forward and evaluated from an aesthetic perspective and ultimately, the five-span haunched continuous steel I-girder (Alternative A Configuration A1.2) was selected as the Preferred Bridge Type Alternative based on the results of the evaluation.

A high-level overview of the bridge type evaluation is provided in Figure 6 in Appendix A.

2.2 DESIGNATED PHYSICAL ACTIVITY

The *Regulations Designating Physical Activities* for a new international bridge prescribed in Section 28 (a) of the Schedule of Physical Activities state that the construction, operation, decommissioning and abandonment of a new *(a) international or interprovincial bridge or tunnel* is subject to review of a Project Description under the *CEAA*.

The Project includes the construction and operation of a new 408 m bridge; and decommissioning of the existing bridge, and as such, this Project Description must be submitted to enable the CEA Agency to conduct a screening to determine if the designated project requires an environmental assessment under CEAA 2012.

2.3 COMPONENTS AND ACTIVITIES

2.3.1 General Approach and Environmental Protection Measures

The preferred alignment (Alignment Alternative 2) and the preferred bridge type (Bridge Alternative A-five-span haunched continuous steel I-girder) were selected as part of the Preliminary Design process and are shown in Figure 7 in Appendix A. The Preferred Plan was selected in order to meet transportation needs and provide safe operations, while minimizing the effects on the natural, social, and cultural environments including footprint impacts. Additional details of the Preferred Plan such as refined construction methodology will be determined through further studies during Detail Design.

A variety of environmental protection and mitigation measures will be adopted to guide the planning, design, construction, operation, and decommissioning of the Project. These include:

- Avoid sensitive areas such as wetlands, sensitive fish habitat, where possible and where unavoidable, reduce the size and number of natural features that may be affected
- Regulated standards for air and water emissions, for storage and disposal of solid wastes, and for handling and disposal of hazardous materials during construction
- Implement protection and mitigation measures for erosion and sediment control including:
  - Minimize the duration of soil exposure
  - Retain existing vegetation, where feasible
  - Encourage re-vegetation
  - Divert runoff away from exposed soils
  - Keep runoff velocities low
  - Trap sediment as close to the source as possible
- To the extent possible, reduce the "footprint" of the Project (including associated construction activities) to reduce disturbance to land, wetlands, fish habitat and watercourses
- Implement in-water construction timing restrictions for the Project (i.e., in-water work permitted from July 16 to March 14)
- Maintain the consultation program that was initiated during the planning and preliminary design phases through to Detail Design and construction

As stated above, the Preferred Plan was selected in part, to reduce impacts to the natural, social and cultural environments. To the extent possible, Project facilities and components will be sited to avoid and minimize interactions with fish and fish habitat and high sensitivity habitats; where avoidance is not possible, mitigation or compensation measures will be developed in

consultation with the applicable regulatory authorities. Details of potential adverse effects and proposed protection and mitigation measures are discussed further in Section 5.0.

2.3.2 Physical Works Associated with the Designated Project

The physical works for the Project are identified in Table 5. These physical works will be constructed and owned and operated jointly by MnDOT and MTO.

New facilities required for the Project are identified in Section A of Table 5. Existing infrastructure that will be used in development and then decommissioned is identified in Section B of Table 5. Information on third party infrastructure is provided in Section C of Table 5. All activities and work associated with the decommissioning of existing infrastructure and construction of the replacement bridge will be contracted out by MTO and MnDOT. This includes any truck and barge activity used for the delivery of construction materials to the project site and waste removal activities by truck and barge, as required.The assigned contractor will be responsible for implementing all appropriate protection and mitigation measures during those activities include care and control of all vehicles under their contract.

Table 5: Components of Proposed Development

Project Component	Description
A. New Baudette/Rainy River International Bridge	
Superstructure including bridge deck	The recommended bridge plan is a five span structure, approximately 408 m long (difference is due to rounding). The proposed replacement structure will have an approximate span arrangement of 67 m – 91 m – 91 m – 91 m – 67 m. The bridge will have no skew. The roadway width across the bridge is 11.9 m with two 3.5 m lanes and two 2.4 m shoulders. Beyond the shoulder, the south side of the bridge also provides a 1.8 m sidewalk. The total bridge deck width is approximately 13.7 m without barriers and 14.7 m with barriers. The bridge deck driving surface and sidewalks will be comprised of concrete that may be overlain with deck protection material, providing for a more durable structure. The total surface area of the concrete bridge deck will be 7,668 m² (includes bridge, U.S. and Canadian approaches and sidewalk).
Substructure (abutments, piers, footings)	The bridge will be comprised of six substructures: concrete abutments at each bridge end and four interior concrete piers. Each pier will be 19.4 m in height including the pier cap and in-water pier foundation. The width of each pier will be approximately 2.13 m (slight variation between pier cape and column). The footprint of each pier will have an approximate area of 136 m². Each abutment will have an approximate footprint of 136.5 m² (15m length and 9.1 m width), The abutments will be located on land directly under the new alignment of the bridge and directly after the Port of Entry check-point facilities on both sides. Details of the abutments will be confirmed during Detail Design.

Project Component	Description
Stormwater management	The bridge will replace the existing open grate bridge with a paved bridge. The new bridge deck will add approximately 0.61 hectares of impervious surface to the project area. Preliminary analysis of water quality treatment indicates that the project meets or exceeds the applicable standards. The preferred stormwater management approach identified for the bridge on the Canadian side includes a grass swale on the north side of the bridge. It is recommended that a grass swale be maintained on the south side of the bridge or that other options be considered and confirmed during detail design including additional erosion and sediment control measures. As the project goes into Detail Design, a more detailed analysis of stormwater treatment features will be carried out. The stormwater treatment method will be determined in the Detail Design phase of the project.
Grading	Area grading is required to accommodate work pads and construction laydown and staging areas, for access to water and abutment locations, and for the potential access road and potential temporary support wall as needed, and other project components. Temporary construction barrier along road frontage.
B. Existing Bridge Infrastructure	
Removal of existing bridge	The existing bridge and substructure will be removed following the completion of the replacement Baudette/Rainy River Bridge. The concrete abutments will be removed using air tools such as pneumatic hammers and blunted chisel tools. The abutments will be removed to an elevation at least two feet below the final ground surface. All debris will be removed from the site. The seven concrete piers supporting the six truss spans are located in the Rainy River, three of which are located in the deepest part of the channel where navigation will occur. The piers will be removed to the elevation of the stream bed, at a minimum, unless required to be removed deeper in accordance with regulatory agencies. The method of removal is expected to include either the use of cofferdams, removal from barges, and will be confirmed during Detail Design. Pile bent piers will be removed to an elevation at least two feet below the final ground surface unless located in the Rainy River. For pile bents located in the Rainy River, the piers will be removed to the elevation of the stream bed, at a minimum. The structural steel components of the existing bridge will be removed from site and will be transported to a waste and recycling facility where the steel will be melted down for raw materials to be re-used or will be disposed of as non-hazardous solid industrial or commercial waste. The location of the potential waste and recycling facilities will be identified during later study stages (i.e. Detail Design and Construction). The concrete elements of the existing bridge will be removed from site and will be transported to a waste and recycling facility where they will either be disposed of as non-hazardous solid industrial or commercial waste or the concrete will be crushed and used for new granular/asphalt material. Specific conditions for the re-use or disposal of materials including the storage and management which are outlined in the MTO

Project Component	Description
	General Specification for the Management of Excess Materials- OPSS 180 will be adhered to. Excess material management distance separation requirements (as set out in the OPSS 180) will be adhered to for adjacent features, particularly the Rainy River.
Temporary Construction Features	Temporary construction features include the following: temporary access road approximate area of 868 m² (located on MTO and CBSA-owned land); temporary launching platform and temporary access road (on MTO, Town of Rainy River and CBSA-owned land); temporary dock for the launching construction method of 130 m². Installation of cofferdams prior to the construction of four new piers. Removal of cofferdams once the new piers are constructed. Each cofferdam is expected to be approximately 15 m by 9.1 m. Access via barge to the first pier on the U.S. side will either be provided by dredging of the shallow U.S. side of the Rainy River near the shoreline or will require construction of a temporary causeway from the U.S. shore upstream or just south of the existing bridge. The causeway structure is expected to be approximately 73 m by 15.4 m. If dredging is selected as the access method, clearing and grubbing sufficient for crane placement on the U.S. shore would still be required. Temporary stabilizing towers may also be required (conventional construction method) at piers to provide girder stability. Falsework towers would likely be required as part of the conventional construction method (a minimum of five) and each tower would require 8-10 driven piles that would be removed following the removal of the falsework towers and the completion of construction. If required, each stabilizing tower would be placed directly adjacent to the location of each proposed pier. If required, each falsework tower would be placed in between piers as shown in Figures 9-11 in Appendix A.
C. New Third Party Infrastructure	
Remove fiber cable	Bell Canada owns and operates a 25 pair single-mode fiber (SMF) cable on the south side of the bridge on the Canadian side to the U.S./Canada border. This facility will need to be removed with the decommissioning and demolition of the existing bridge and will need to be replaced on the new bridge.
Remove power line	The City of Baudette owns and operates a power line that runs from the Baudette City Park to the U.S. POE and provides power for the lighting on the U.S. side of the bridge. This facility will be removed during the decommissioning and replaced on the new bridge.
Port of Entry Facility and Plaza Improvements	Minor alterations will be required to the U.S. Port of Entry Plaza including shoulder, barrier and road alterations in front of the existing POE building.

2.3.2.1 New Baudette/Rainy River International Bridge

The new Baudette/Rainy River International Bridge will be located approximately one metre south/upstream of the existing bridge and will be a steel I-girder structure. The new bridge will tie into the existing U.S. and Canadian Port of Entry facilities. The recommended bridge plan is a five span structure, approximately 408 m long (length measurement rounded). The spans adjacent

to the American and Canadian shores are approximately 67 m long, and the three interior spans are approximately 91 m, each. The roadway width across the bridge is 11.9 m with two 3.5 m lanes and two 2.4 m shoulders. Beyond the shoulder, the south side of the bridge also provides a 1.8 m sidewalk. Traffic barriers are placed on the outside of the bridge, making a total bridge deck width of approximately 13.7 m without barriers and 14.7 m with barriers. The new bridge will be supported by four in-water piers. The footprint of each pier will have an approximate area of 136 m² which includes the surrounding coffer dam/concrete slab that form the footing for each pier. The total footprint area of the in-water footings (four piers and footings) will be approximately 546 m².

The Project will include the following new features/structural elements:

Table 6: Project Features/Structural Elements

Structural Elements	Quantity
Structural Steel Girders	1638069 kg
Concrete Bridge Deck (including approaches and sidewalk)	7,668 square meters
Concrete Piers	4 piers
Concrete Abutments	2 abutments

Access

Access to the U.S. and Canadian Port of Entry facilities and buildings will be available throughout the entire construction duration of the replacement bridge. Access across the U.S./Canada border and to the Port of Entry facilities will be provided via the existing bridge during construction and traffic delays as a result of the construction are not anticipated. Navigation will be maintained throughout all Project phases. There may be some minor delays for boaters due to barge activity and movement but these delays are expected to be minor. Once the replacement bridge is built, the bridge will be connected to the Port of Entry facilities and access will then be provided via the new bridge. Conceptual renderings of the proposed bridge are shown in Exhibit 2 to Exhibit 5.

Exhibit 2: **View from Peace Park on U.S. side and Baudette River – Looking North * one concrete pier not shown**

Exhibit 3: **View from U.S. side sidewalk on bridge – Looking Northeast towards Canadian Port of Entry**

Exhibit 4: **Birds-eye view of bridge showing both U.S. and Canadian Ports of Entry * first concrete pier on U.S. side not shown**

Exhibit 5: **Birds-eye view of bridge, looking north from U.S. side towards Canadian Port of Entry * first concrete pier on U.S. side not shown**

2.3.3 Percentage Increase in Capacity

This Project will not provide an increase in capacity and is not an expansion of the existing Baudette/Rainy River Bridge. The new bridge will be a two-lane bridge (each lane will be 3.5 m) with 2.4 m shoulders and a 1.83 m sidewalk to be located on the south side of the bridge. The Project will be designed and built to accommodate future traffic projections (MnDOT's AADT for 2018 and 2038 were projected to be 1,350 and 1,450 vehicles per day, and MTO's projected estimate for 2038 were 1,250 and 1,400 vehicles per day, respectively). The new bridge will maintain two lanes of traffic, one in each direction. The new bridge will provide access to wider and taller vehicles. The roadway width of the existing bridge is only 7.3 m, compared to 11.9 m for the replacement bridge, which allows for wider vehicles to cross without affecting oncoming traffic.

Additionally, while the existing bridge only allows for a maximum vertical clearance of 4.5 m, vertical clearance would not be limited as there are no structural elements above the deck of the proposed structure. The new bridge will be built to current design standards in U.S. and Canada, eliminating all loading restrictions that currently exist.

2.3.4 Description of Project Activities

The activities to be performed in relation to the Project include:

- Construction of the components of the Project (including decommissioning of existing bridge)
- Operation for the life of the Project
- Decommissioning of the Project

2.3.4.1 Construction

As part of this Project, several construction methodology and superstructure erection and construction options were assessed as part of the bridge type study to determine the feasibility, advantages and disadvantages of each construction method. The methods considered and evaluated were:

- Conventional erection method using heavy duty cranes and erection towers
- Launching the superstructure steel framework from the Canadian side of the Rainy River into the U.S.
- Using winter ice and the frozen river as an erection platform

All three construction method alternatives will require additional access components on the U.S. side to allow barge/equipment access closer to the U.S. shore for the proposed Pier 1. The U.S. side of the Rainy River has a shallow bank/shelf near the shoreline that impedes barge access to the Pier 1 location on the U.S. side. Access via barge will either be provided by dredging of the

shallow U.S. side of the Rainy River near the shoreline or will require construction of a temporary causeway from the U.S. shore upstream or just south of the existing bridge. The causeway structure is expected to be approximately 73 m by 15.4 m. If dredging is selected as the access method, clearing and grubbing sufficient for crane placement on the U.S. shore would still be required. Following the assessment it was determined that the conventional erection method is the least costly method, has lower risks from in-water construction, increased worker safety and decreased schedule duration. The winter ice construction method was eliminated from further consideration due to insufficient ice thickness (400-450mm) that forms on the Rainy River (a minimum ice thickness of 1,270 mm is required for the construction and erection methods). The conventional erection method and the launching superstructure method will be carried forward for further consideration during the Detail Design Study when the final construction method will be confirmed. Additional potential impacts and environmental considerations for the temporary causeway and dredging access method alternatives for the U.S. side will be determined and evaluated during Detail Design.

Construction of the Project and decommissioning of the existing bridge is expected to last approximately 22 months. Construction laydown areas will be required for materials storage, and two potential sites have been identified and are shown in Figures 8 and 12 in Appendix A. In addition to the potential construction laydown areas, a construction access road and a temporary dock will be required for access to the site and transportation of materials for both construction methods. The construction materials will be delivered to the staging area via truck on the construction access road, where materials will be offloaded onto barges for in-water work. The barges will consist of crane barges and material barges. All trucks to be used for the delivery of construction materials will be sprayed down to control for dust that may result from driving on the temporary roadway. It is anticipated that on average three trucks will be on-site daily during construction but this number may vary from day-to-day and will be confirmed prior to construction. The trucks on-site would typically be large trucks carrying granulars, asphalt, concrete or long trucks supplying materials to site such as girders. It is anticipated that trucks would travel west on Highway 11 from Ontario or travel east on Trunk Highway 72 from Minnesota to transport construction materials. All barge and truck activity will be confirmed during Detail Design. The conventional erection method will require staging/laydown areas that are approximately 3300 m² (located on CBSA-owned land) and an approximate area of 868 m² required for a temporary access road (located on MTO and CBSA-owned land). The launching the superstructure method will require staging/laydown areas of approximately 1330 m² (on CBSA-owned land) and 4761 m² for the temporary launching platform and temporary access road (on MTO, Town of Rainy River and CBSA-owned land). Building of a temporary dock on the Canadian side of the Rainy River will also be required for the launching construction method. The temporary dock will be approximately 130 m². The potential location and area of impact for the construction access road and temporary dock is also identified in Figures 8 and 12 in Appendix A. The final location of the construction laydown area, access road and temporary dock will be confirmed during Detail Design once the construction method has been confirmed. Materials will be transported to the site by truck or barge and construction will begin with the

substructures. Access to the proposed Pier 1 location on the U.S. shore will be created utilizing dredging or a temporary causeway alternative. It is assumed that construction would begin with the two abutments before shifting to the piers. Once substructure construction has been substantially advanced, construction of the superstructure can begin. Superstructure construction will begin with steel girder erection, and will then be followed by deck construction. Once barriers are placed and lanes are striped, the bridge may be opened to traffic. Figures 9-11 and Figures 13-19 in Appendix A show construction stages for both the conventional and launching construction methods.

Potential adverse effects of construction will vary, dependent on the construction method. The conventional erection method requires the construction and removal of falsework towers (and possibly stability towers) on the bed of the river. The in-water work necessary for these towers has the potential to affect fish and fish habitat due to the temporary footprint of the towers, noise and vibrations, and potential effects on water quality (turbidity, spills). Additional information regarding potential impacts to fish and fish habitat are discussed in Section 5.1.3. Mitigation measures such as in-water timing windows and measures to reduce turbidity and the risk of spills to the extent possible will be confirmed during Detail Design. Potential impacts and environmental considerations for the construction method of Pier 1 on the U.S. side (i.e., temporary causeway vs. dredging for barge access) will be determined and evaluated during Detail Design. In-water work necessary for the causeway will directly affect habitat in the river for the duration it is in place. The extent of the disturbance will be dependent on the design of the causeway. The in-water work necessary for construction of the causeway has the potential to affect fish and fish habitat due to the temporary footprint, noise and vibrations during construction and use, and potential effects on water quality (turbidity, spills). Dredging to access Pier 1 by barge may affect fish habitat by altering the river bottom on the U.S. side and has the potential to affect downstream water quality (increased turbidity) during the dredging operation. Appropriate protection and mitigation measures will be applied to eliminate/ significantly reduce the above-mentioned effects. Mitigation measures will be confirmed during Detail Design.

Equipment will operate in different areas of the construction site at different times during the construction period. As per typical construction timing regulations, construction will take place between 7:00 AM and 9:00 PM, but the majority of the activities will likely occur between 7:00 AM and 7:00 PM. There are no current municipal noise bylaws for the Town of Rainy River in Ontario. The U.S. construction activity noise restrictions (allow construction from 7:00 AM to 10:00 PM); however, since there are no existing municipal noise regulations in the Town of Rainy River and noise impacts for the Project are considered a potential transboundary effect, the U.S. construction time periods should be adhered to. Major construction activities will be planned for daytime hours.

Activities associated with the construction of the replacement bridge will include activities common to construction projects, such as:

- Mobilize to site
- Clearing and removal of trees and brush
- Stripping of all surficial organics and topsoil
- Site grading, including cut and fill earthworks, to accommodate the proposed equipment and laydown areas and to create a level working area
- Construct access road to site (if required)
- Construct temporary causeway on U.S. side (if required) or complete dredging to allow access to Pier 1 location
- Construct abutments
- Install cofferdams
- Construct piers
- Remove cofferdams
- Erect structural steel spans
- Place bridge deck
- Decommissioning of existing bridge including cutting and removal of steel and removal of piers
- Installation of utilities
- Site restoration, stabilization of disturbed soils and restoration and enhancement activities

Table 7: Summary of Construction and Operation Activities

Project Component	Construction Activities	Operation Activities	Potential Adverse Effects/ Mitigation Measures
A. New Baudette/Rainy River International Bridge			
Superstructure including bridge deck	Erection of steel girders is expected to be carried out by cranes placed on barges. The barges would likely be located on the upstream side of the bridge. The girder erection would also make use of temporary bents or shoring towers to support girder	Border crossing for vehicles and pedestrians. Access to U.S. and Canadian Port of Entry facilities. Maintenance on bridge deck as-needed.	Potential temporary bents and movement of materials on barges may have potential to affect fish and fish habitat, noise and vibrations, and potential effects on water quality (turbidity, spills). Additional information regarding potential impacts to fish and fish

Project Component	Construction Activities	Operation Activities	Potential Adverse Effects/ Mitigation Measures
	segments during construction. A piled foundation may be needed for the temporary bents, which would be installed by pile driving equipment on barges. Material delivery and placement for the deck construction will occur via barges and cranes. Barge access would be on the upstream side of the bridge. Deck construction will consist of installation and subsequent removal of formwork, placement of reinforcing steel and placement of concrete. Miscellaneous items, such as bridge railings, will be installed after the concrete deck has cured via trucks.		habitat and mitigation measures are discussed in Section 5.1.3. Mitigation measures such as in-water timing windows and measures to reduce turbidity and the risk of spills to the extent possible will be confirmed during Detail Design. Proposed construction noise mitigation measures are discussed in Section 2.4.1.3. Temporary structures such as cofferdams will be constructed to allow the pier footing and stem construction. The cofferdams will be removed when the pier structures have been completed. In-water BMPs will be provided as part of the Project stormwater management plan. Clearing and excavation of the river bank will be kept to a minimum. Regular inspection of erosion control practices at bridge abutments and slopes will be provided. Water pumped out of cofferdams may contain high concentrations of suspended solids. Adequate sediment control and, if necessary, treatment of water affected by construction activity must be provided before the pumped water is discharged. Dewatering system must be inspected frequently and repaired or replaced if sediment

Project Component	Construction Activities	Operation Activities	Potential Adverse Effects/ Mitigation Measures
			buildup recurs or if the structure does not function as designed. The accumulated sediment that is removed from a dewatering device must be spread onsite and stabilized, used as fill, or disposed of at an approved disposal site. Dewatering discharge may be pumped directly to a settling basin or other treatment pond.
Substructure (abutments, piers, footings)	Foundation installation for piers, including cofferdam installation, is assumed to require pile driving equipment placed on barges. Removal of cofferdams will be carried out once the new piers are constructed. Pile driving equipment for the abutment foundation construction will be situated on land in the immediate vicinity of the abutments. Pier construction is expected to occur inside the cofferdams. Material delivery would occur via barge on the upstream side of the bridge. For the construction of the short abutments, sheet piling will likely be necessary between the existing bridge and the construction site for the new bridge. Sheet piling installation may need to be performed with live	Infrastructure required for the proper functioning of the bridge as transportation facility for vehicular and pedestrian access across the U.S./Canada border.	The in-water work necessary for these towers has the potential to affect fish and fish habitat due to the temporary footprint of the towers, noise and vibrations, and potential effects on water quality (turbidity, spills). Additional information regarding potential impacts to fish and fish habitat and mitigation measures are discussed in Section 5.1.3. Mitigation measures such as in-water timing windows and measures to reduce turbidity and the risk of spills to the extent possible will be confirmed during Detail Design.

Project Component	Construction Activities	Operation Activities	Potential Adverse Effects/ Mitigation Measures
	traffic adjacent to the operation. Pier and abutment construction will consist of installation and subsequent removal of formwork, placement of reinforcing steel and placement of concrete.		
Bridge Approaches	Construction of the bridge approaches and embankments will consist of placement/compaction of granular material and installation of asphalt pavement.	Infrastructure required for the proper functioning of the bridge as transportation facility for vehicular and pedestrian access across the U.S./Canada border.	Potential minor temporary effects on land use, CBSA activities, and existing vegetation and terrestrial habitat. Staging area, including temporary access road, will be restored to pre-construction condition.
Staging Area	For a staging area near the Canadian end of the bridge, it is assumed that a bulkhead or dock area will be constructed, allowing material delivery and placement onto a barge via crane to occur. A temporary access road will need to be constructed (site leveling and granular placement/compaction) from the existing plaza to the staging area.	Area for Contractor to store material for construction and load barges.	Potential temporary effects on land use, CBSA activities, and existing vegetation and terrestrial habitat. Potential temporary construction noise, dust and vibration impacts to the natural environment and local residents. Appropriate noise and vibration mitigation measures will be adhered to during construction. Staging area, including temporary access road, will be restored to pre-construction condition.

Project Component	Construction Activities	Operation Activities	Potential Adverse Effects/ Mitigation Measures
B. Existing Bridge Infrastructure			
Removal of existing bridge	The trusses would either be removed in place or picked off the piers and transported to a staging area for demolition. However, transportation of large trusses to a staging area may not be feasible. Alternatively, the trusses could be temporary supported on the downstream side of the existing bridge to allow for easier demolition.	The existing bridge will maintain access across the border during the construction of the replacement bridge and will carry vehicular and truck traffic across the border and through the 24-hour port of entry facilities on either end of the existing bridge.	Potential adverse effects of the decommissioning of the existing bridge such as potential for wastes and contaminants to enter the Rainy River or be disposed of inappropriately will be mitigated through the management principles listed in Section 2.3.4. Decommissioning details will be further developed and finalized during Detail Design.
	The concrete abutments will be removed using air tools such as pneumatic hammers and blunted chisel tools.		Contractor will be required to prepare removal plan.
	The method of pier removal is expected to include either the use of cofferdams, removal from barges and will be confirmed during Detail Design.		

The approach will be to reduce the amount of in-water construction and to time such activities during periods when flows are low and that consider species timing windows. Works that take place in water and are adjacent to aquatic resources that provide fish habitat, or have the potential to support fish habitat, are often restricted to certain periods of time to avoid construction-related impacts to fish species during their most sensitive/vulnerable life cycles (i.e., during reproduction and early development stages of off-spring). The thermal regime of the Rainy River is coolwater as per information provided by the MNRF and the Minnesota Department of Natural Resources (Ontario- no in-water work from April 1 to July 15, Minnesota – no in-water work from March 15-June 15); therefore, in-water construction for the Project is permitted from July 16 to March 14 (no in-water work from March 15 to July 15).

In addition to in-water work timing restrictions there are potential impacts to the watercourse and temporary wetland impacts on the U.S. side of the Project. There are no permanent wetland impacts resulting from existing bridge demolition and construction of the proposed

bridge (including associated roadway approaches, construction staging activities, heavy equipment access, and tree clearing).

Temporary impacts to wetlands within the watercourse are approximately 0.71 acres (U.S. side only). Wetland impacts and mitigation measures are discussed in Section 5.1.7.

Prior to construction a detailed survey will be conducted to confirm existing topography within the wetland and watercourse. Vegetation within the wetlands will also be restored to pre-construction conditions as feasible using native seed mixes.

Permanent impacts to the watercourse are required for the placement of piers within the watercourse. There are also temporary impacts to the watercourse on the U.S. side that will result from the proposed bridge in addition to the temporary causeway necessary to construct the proposed bridge. The construction of the causeway results in 1.23 acres of temporary watercourse impacts on the U.S. side of the Project.

Project Delivery Method

The Project is being led by MnDOT, with equal funding being provided by the MTO. At present, it is expected that MnDOT will also lead the construction phase. A Risk Assessment was completed as part of the Preliminary Design Study for this Project in order to determine and make a recommendation on the project delivery method. Based on the assessment of identified risks, it was determined that Design-Bid-Build was the most appropriate project delivery method for this Project. Design-Bid-Build is considered the traditional project delivery method; under this delivery method the design and construction phases of the Project are under separate contracts. This delivery method allows the owner to retain a designer, then advertise and award a separate construction contract based on the completed design and construction documents. Because the design is completed prior to the construction contract award, the owner retains ownership and responsibility for the design and quality of the design.

Construction Staging and Traffic Management

Two potential conceptual construction staging plans have been developed and will be refined and confirmed during Detail Design. The conceptual plans are provided in Figures 8 and 12 in Appendix A, and include potential work zone areas, construction laydown / staging areas, and the potential for temporary traffic management on the Canadian Border Plaza during construction. It is expected that the primary construction staging and laydown areas will be in Canada since the U.S. side of the border and Project area is highly constrained. Construction staging will also require a temporary access road to the river. In order to provide access to the proposed location for Pier 1 on the U.S. side, either dredging or a temporary causeway located directly south of the existing bridge will be required to allow access for barges/other machinery.

During construction, access across the bridge will be maintained on the existing bridge. Once the new bridge is complete, there will be short-term single-laning in order to build the tie-ins to the U.S. and Canadian ports of entry. Once the tie-ins are complete then access will be provided on the new bridge via both lanes while the existing bridge is decommissioned.

Decommissioning of Existing Baudette/Rainy River International Bridge

Following the completion of the new replacement Baudette/Rainy River International Bridge, the existing bridge will be decommissioned and removed from the site. The existing bridge is comprised of three different types of substructures. The bridge rests on concrete abutments and each of the six truss spans are supported by concrete piers founded on timber piles. Leading to the truss spans are six metres approach spans which rest on pile bent piers. The pile bents consist of steel columns, beams, and bracing. The trusses will be removed in-place or picked off of the piers and transported to a staging area for demolition. The concrete abutments will be removed using air tools such as pneumatic hammers and blunted chisel tools. The abutments will be removed to an elevation at least two feet below the final ground surface. The seven concrete piers supporting the six truss spans are located in the Rainy River, three of which are located in the deepest part of the channel where navigation will occur. The piers will be removed to the elevation of the stream bed, at a minimum, unless required to be removed deeper in accordance with regulatory agencies such as Transport Canada. These requirements will be confirmed with regulatory agencies during Detail Design. The pile bent piers will be disassembled using cutting tools, such that the members are a manageable size. Once severed, the members will be removed from the site. Pile bent piers will be removed to an elevation at least two feet below the final ground surface unless located in the Rainy River. For pile bents located in the Rainy River, the piers will be removed to the elevation of the stream bed, at a minimum. The structural steel components of the existing bridge will be removed from site and will be transported to a waste and recycling facility where the steel will be melted down for raw materials to be re-used or will be disposed of as non-hazardous solid industrial or commercial waste. The location of the potential waste and recycling facilities will be identified during later study stages (i.e. Detail Design and Construction).

The concrete elements of the existing bridge will be removed from site and will be transported to a waste and recycling facility where they will either be disposed of as non-hazardous solid industrial or commercial waste or the concrete will be crushed and used for new granular/asphalt material.

Specific conditions for the re-use or disposal of materials including the storage and management of excess/waste materials which are outlined in the MTO General Specification for the Management of Excess Materials- OPSS 180 will be adhered to. Excess material management distance separation requirements (as set out in the OPSS 180) will be adhered to for adjacent features, particularly the Rainy River. Proposed mitigation measures for the management of excess materials and materials from the existing bridge decommissioning will also include:

- Materials must be disposed of in accordance with standard MTO and MnDOT specifications including storing construction material, excess material, construction debris and empty containers away from water flow

- Contract documents to include OPSS 180 – General Specification for the Management of Excess Material and Minnesota and U.S. equivalent excess materials management protocols

Potential adverse effects of the decommissioning of the existing bridge such as potential for wastes and contaminants to enter the Rainy River or be disposed of inappropriately will be mitigated through the management principles listed above. Decommissioning details will be further developed and finalized during Detail Design.

Operations

The Baudette/Rainy River International Bridge will be open 24 hours a day, seven days a week.

The Project will be designed and built to accommodate future traffic projections (MnDOT's AADT for 2018 and 2038 were projected to be 1,350 and 1,450 vehicles per day, and MTO's projected estimate for 2038 were1, 250 and 1,400 vehicles per day, respectively). There will be no adverse effects or changes to operations as a result of the Project operations and no indirect effects to local communities or the socio-economic setting.

Maintenance

The new bridge will be designed with a minimum design life of 75 years. Over this 75-year period, inspections are expected to occur on a 24-month schedule, with additional underwater inspections every 5 years. These inspections may result in some general repairs to concrete and steel elements, such as sealing of concrete deck cracking and sidewalk/curb repair, which will occur on an as-needed basis. General bridge cleaning is also recommended on an annual basis to maximize the structure's life. It is expected that MTO and MnDOT will enter into an agreement for ongoing maintenance of the bridge, with each agency completing inspections and undertaking work on their respective sides of the border.

Larger maintenance needs are expected to occur approximately every 25 years, which is typical for most bridges. Elements that may require maintenance on a 25-year basis include joint repair/replacement and deck protection systems. Bearings may also need to be replaced around year 50 while being maintained over the bridge's life. Significant bridge maintenance needs will be jointly undertaken by MnDOT and MTO.

Maintenance activities can include snow removal, salt application, and painting. These activities have the potential for accidental release of products or materials such as paint into the environment. Appropriate protection and mitigation measures such as proper storage of such products, proper labeling of products, containment of any spilled product, and clean-up of spilled product will be implemented in accordance with contaminated site and materials regulations.

Decommissioning of the Project

The bridge will be designed to current design standards which provides for a 75-year minimum service life. It is expected that the Project will be scheduled for rehabilitation or replacement

following the 75-year minimum service life. If it is decided that the bridge will be replaced, standard bridge decommissioning as described above is anticipated.

2.4 EMISSIONS, DISCHARGES AND WASTES

2.4.1 Atmospheric Contaminant Emissions

2.4.1.1 Greenhouse Gases

The operation of the Project will result in air emissions from vehicular traffic on the bridge. The bridge will remain open 24 hours a day, 7 days a week. Based on existing and projected future traffic patterns, it is anticipated that most of the truck movements will occur during the daytime. Outside of the Project, both the CBSA and the CBP border crossing agencies have been implementing programs to minimize delays in border processing, which has the potential to minimize the time vehicles spend idling at the border.

A Greenhouse Gas Assessment (see Appendix C-C.4) was completed for the Recommended Plan to identify emissions that are directly attributable to the Project, including:

- GHG emissions during construction of the new bridge. Construction includes decommissioning of the existing bridge. Emissions are expected to originate from the combustion of fuels by equipment and vehicles used onsite during construction
- GHG emissions during operation of the bridge. Emissions are expected to be transportation emissions as a result of combustion of fuels by vehicles travelling across the bridge and on the approach roads within the Project boundaries

A copy of the Greenhouse Gas Assessment (*Greenhouse Gas Assessment for Canadian Environmental Assessment Act Project Description – Baudette/Rainy River International Bridge Replacement Project*, September 28, 2016) is on file with the MTO. The boundaries for the assessment included the decommissioning of the existing bridge and the construction and operation of the new bridge, the area immediately surrounding the bridges, and the approaches on both sides of the border leading from the bridge to the ports of entry facilities.

GHGs included in this assessment are CO2, CH4 and N2O, evaluated as total carbon dioxide equivalents (CO2e). Carbon dioxide equivalent (CO2e) is a measure used to compare and collate different greenhouse gases together with one metric based on the global warming potential of the individual greenhouse gases. All other GHG sources and emissions during construction and operation are expected to be negligible.

Global GHG emissions act cumulatively in the atmosphere, over an extended period of time. Global GHG emissions are reported by industry and regulators as annual emissions. Annual estimated construction and operation emissions are compared to provincial/state (Ontario/Minnesota), national (Canada/United States) and global annual emissions. Operation

emissions were also compared separately to emissions from the transportation sector of the individual provinces/states and countries.

Construction emissions are predicted to be 21.2 kt CO2e per year, to occur for a maximum of two years, which is 0.01% of the 170,000 kt CO2e emitted in 2014 from all sectors across Ontario. Operation emissions from the Project due to vehicles travelling across the new bridge are predicted to be 0.09 kt CO2e per year, to occur for the lifetime of the bridge, assuming no changes in traffic patterns unrelated to the Project. When compared to the most recent (2014) emissions totals, this is 0.0002% of the 60,200 kt CO2e emitted annually from the transportation sector in Ontario. Additionally, since the traffic pattern associated with the new bridge is not expected to be different from the traffic pattern associated with the existing bridge, operation of the Project is not expected to result in GHG emissions that would not otherwise exist.

The assessment concluded that the construction emissions as a result of this project is 0.01% of the overall CO2 emitted in 2014 from all sectors across Ontario and the operation of the Project is not expected to result in a net increase in GHG emissions when compared to the GHG emissions from the existing bridge. Table 8 provides a comparison of the GHG emissions from construction and operation to the existing GHG emissions in the relevant province/state, country and globally.

Table 8: Comparison to Existing GHG Emissions – Total

Emission Source	Global	Canada	Ontario	United States	Minnesota
Construction	0.00005%	0.003%	0.01%	0.0003%	0.02%
Operation	0.0000002%	0.00001%	0.00006%	0.000001%	0.00007%

In addition to GHG emissions there is potential for dust pollutants as a result of the construction of the Project. Typical dust pollutants from construction include:

- Particulate matter (PM)
- Particulate matter with diameter less than 10 micrometers (PM10)
- Particulate matter with diameter less than 2.5 micrometers (PM2.5)

Dust mitigation measures will be applied and adhered to during construction and are discussed below in Section 2.4.1.2.

With a no-net increase in GHG emissions or changes in air quality (i.e. particulate matter, carbon monoxide) as a result of the Project, it is anticipated that there will be no health impacts to local residents and communities due to air emissions and therefore, mitigation measures are not required.

2.4.1.2 Construction Emissions Mitigation Measures

Intermittent air emissions as a result of the Project construction will consist of products of combustion and will be limited to the following sources:

- Bridge Construction (including decommissioning of existing bridge): on-road mobile equipment (trucks), construction equipment (e.g., excavators, loaders, graders), and construction dust from construction equipment traffic on unpaved roads
- Construction emissions are expected to occur intermittently during the hours of construction over the duration of the construction period, depending on the level of construction activities
- Construction activities associated with the Project will have the potential to generate dust. These emissions will be of relatively short duration and are unlikely to have any long-lasting effects on the surrounding area
- Dust and air quality mitigation measures may include:
  - Implementation of protection and mitigation measures for dust control, such as stabilizing disturbed areas through the use of water, chemical stabilization methods or use of vegetation
  - Implementation of a policy to minimize idling in order to control mobile equipment and other use vehicle emissions
  - Maintain all emission systems, provide proper maintenance of equipment and vehicles operating in work areas; minimizing operation and idling of gas powered equipment and vehicles
  - Minimizing vehicular traffic on exposed soils and stabilizing high traffic areas with suitable cover material
  - Avoiding excavation and other construction activities during windy and prolonged dry periods
  - Stabilizing stockpiled excavated soil in areas upwind of sensitive receptors
  - Restoring disturbed areas as soon as possible to minimize the duration of soil exposure

2.4.1.3 Noise

An *Environmental Noise Assessment* was carried out for the Recommended Plan in accordance with the MTO Environmental Guide for *Noise (2006)*. A copy of the *Environmental Noise Assessment* is on file with the MTO and is in Appendix C-C.1.

The study analysed existing noise conditions and compared them to future noise levels expected from the proposed improvements under a future 'do-nothing' and the future 'Recommended Plan' scenarios. In the Project area eight Noise Sensitive Receptors were

identified, all single-family homes. The future bridge will be located approximately 55 m from the nearest Noise Sensitive Receptor.

The Noise Assessment confirmed that there will not be significant noise impacts as a result of the operation of the Project. The main noise sources from operations would be vehicles travelling across the bridge. The Noise Assessment identified that existing noise levels from the existing bridge are generally low and future noise levels with the undertaking are less than 45 dBA for all NSAs.

Construction noise is expected from initial site preparation (i.e., during site leveling and grading) to completion of construction (i.e., access roads, project-related infrastructure and facilities constructions). Construction related sound levels might vary as construction activities change in location and intensity (i.e., types and numbers of construction equipment operating). Typical construction equipment expected to operate during the construction phase of the Project include cranes, man-lifts, barges, tug boat and other boats, excavators, dozers, graders, loaders, dump trucks, compactors, rollers, water pumps, scrapers, and augers/drill rigs.

Typically, construction noise impacts are temporary in nature and largely unavoidable. Construction noise impacts will be calculated for the Project following the Detail Design study once specific details of construction of the Project are determined. Given the close proximity of several homes to the Project, a detailed construction noise evaluation is recommended to be completed during Detail Design. Construction activities associated with implementation of the Recommended Plan may result in increased noise levels relative to existing conditions. These impacts will primarily be associated with construction equipment and pile driving. Table 9 shows peak noise levels monitored approximately 15 m from typical construction equipment utilized for site grading, site preparation, and roadway construction.

Table 9: Typical Construction Equipment Noise Levels (at 15 m)

Equipment Type	Peak Noise Level (dBA)	
	Range	Average
Backhoes	74-92	83
Front Loaders	75-96	85
Dozers	65-95	85
Graders	72-92	84
Scrapers	76-98	87
Pile Drivers	95-105	101

It is recommended that the detailed construction noise evaluation include construction of the new bridge and decommissioning of the existing bridge. Major construction activities, scheduled where possible to take place during daytime hours of 07:00 to 21:00 (including consideration for U.S. construction activity noise restrictions for transboundary effects) include:

- Noise mitigation measures (e.g., muffler systems) installed on construction equipment will be properly maintained

- In case of a valid complaint during construction, the Contractor will respond expeditiously and take action to ensure that the issue is managed responsibly
- As most construction activities will occur between the daytime hours of 07:00 and 21:00, construction activity is expected to have little effect on night-time sound levels. Any noise effects resulting from construction are considered reversible and are expected to cease once construction activities are completed. The frequency of individual noise-generating activities (e.g., grading) is expected to be sporadic in nature
- Once the bridge becomes operational, the noise will be typically from vehicles travelling on the bridge
- Noise associated with decommissioning of the bridge could include the use of pneumatic hammers and blunted chisel tools will be confirmed during Detail Design

With the implementation of the above mentioned mitigation measures, the Project is not expected to have a significant effect on the nearby noise sensitive receptors. Additional information regarding noise mitigation and protection measures during construction and decommissioning will be determined and confirmed during Detail Design.

2.4.2 Sources and Location of Liquid Discharges

Freshwater systems are susceptible to negative impacts due to common forms of pollution created by human activity. The water quality of the Rainy River is particularly sensitive to the types of pollution described in this section. For any type of pollution there are proven Best Management Practices (BMPs) that can be incorporated into the design of a drainage system. This section will describe proposed BMPs to counter the adverse effects of potential pollutant loading from stormwater runoff on and near the Baudette/Rainy River Bridge.

2.4.3 Heavy Metals

The Rainy River at the project location is impaired for mercury in fish tissue The state of Minnesota has a state-wide Total Maximum Daily Load (TMDL) for mercury. The applicable water quality standards are described in the TMDL document dated March, 2007:

- 6.9 ng/L. chronic standard, Minn. R. pt. 7050.0222
- 1.3 ng/L. chronic standard, Minn. R. pt. 7052.0100

The pollutant present in the Rainy River involves concentrations of mercury in fish tissue that exceeded the water quality standard, therefore a fish consumption advisory for this river was recommended by the Minnesota Department of Health (MDH). A Total Maximum Daily Load (TMDL) study has been approved by the Environmental Protection Agency (EPA) for mercury in fish impairments, however the MPCA does not require additional design or construction mitigation measures to be taken since mercury is not generally associated with stormwater discharges on roadway construction projects.

2.4.4 Suspended Solids

Suspended solids are measured as Total Suspended Solids, or TSS, a number generally expressed in mg/L. Ontario water quality standards state that "suspended matter should not be added to surface water in concentrations that will change the natural Secchi disc reading by more than 10 percent." The Project is not expected to contribute excessively to TSS loading, but the construction phase may result in some disturbance in soils. Appropriate protection and mitigation measures, as described later in this section, will be employed to prevent changes in suspended solids as a result of construction and decommissioning.

2.4.5 Phosphorus

Ontario's water quality guidelines (MOE 1994) call for a phosphorus concentration limit of 0.03 mg/L. Phosphorus can be managed using typical stormwater protection and mitigation measures. Approximately 50% of bioavailable phosphorus conveyed in stormwater is dissolved, and the rest is particulate. Thus, BMPs designed for TSS removal double as BMPs for phosphorus reduction, including infiltration, filtration, and water quality ponds.

2.4.6 Stormwater Runoff and Management

Under existing conditions, stormwater runoff from the bridge is discharged directly to the river through the open-grate bridge deck. The volume of runoff is expected to increase as a result of adding approximately 0.9 acres of impervious area to the proposed U.S. approach. The portion of existing and new impervious areas in Minnesota and Ontario is summarized in Table 10.

Table 10: Project Impervious Areas Summary (in acres)

	Existing Impervious (ac)	Proposed Impervious (ac)	Impervious Increase (ac)
U.S.	0.18	1.08	0.90
Canada	0.22	0.82	0.60
Total	0.40	1.90	1.50

A preliminary Stormwater Management Plan is being developed to address the preliminary design for drainage and water resources management for the proposed bridge. The Rainy River is one body of water handled by the International Joint Commission (IJC), a binational organization dedicated to managing boundary waters. The International Rainy-Lake of the Woods Watershed Board (IRLCB) is a subsidiary group within the IJC. The IRLCB does not have additional water resources standards.

Permanent stormwater management is required for U.S. projects where one or more acres of new impervious surface are added. As shown above, this Project is adding approximately 0.90

acres of new impervious surface on the U.S. portion. The Project may also mimic the existing conditions at the site and discharge bridge runoff directly to the Rainy River at the bridge abutment through overland flow. The stormwater treatment method and inclusion of permanent Stormwater Best Management Practices will be determined in the Detail Design phase of the Project.

A series of preliminary stormwater management and drainage designs were evaluated in accordance with the requirements of the following U.S. and Canadian agencies and their respective stormwater and drainage regulations and design criteria:

- Minnesota Pollution Control Agency – water quality, volume control, rate control, and general stormwater permits for construction activity
- Ontario Ministry of the Environment and Climate Change – water quality standards, rate control and peak flow standards, catch basin spacing
- MTO – stormwater management facility design standards, bridge freeboard and clearance requirements, volume control, water quality, catch basin spacing
- MnDOT – stormwater management facility design standards, catch basin spacing, volume control, water quality
- Minnesota Department of Natural Resources – erosion and sediment control requirements, stormwater management infrastructure in public waters
- U.S. Army Corps of Engineers – water quality in navigable waters
- International Rainy-Lake of the Woods Watershed Board and International Joint Commission – administration of the International Boundary Waters Treaty Act, and water quality, water levels, flows, watershed management

The new bridge deck and bridge approach will add approximately 1.5 acres (0.61 hectares) of impervious surface to the Project area. Stormwater runoff for the Project will be captured at the bridge approach panels by catch basins and directed via storm sewer away from the roadway low points. Drainage system improvements on the Canadian side of the bridge will be designed to tie in to the existing drainage system for the parking lot at the Canadian border crossing facility. The drainage system improvements are designed to provide a net reduction in peak runoff rates. The proposed drainage system consists of two major drainage areas divided at the high point of the bridge roadway profile. Contributing drainage areas to the proposed drainage system include roadway areas at either side of the bridge approach. Both the Minnesota and Canadian side of the bridge will ultimately drain to the Rainy River.

The increase in impervious surface within the Project area will impact peak discharge rates. However, the proposed stormwater management system has been designed to meet or exceed the Project rate control requirements. In addition, the system does not increase discharge rates from the Project area for storms with return periods ranging from 2 to 100 years.

The preliminary Stormwater Management Plan identified and evaluated several options for treating stormwater for both the U.S. and Canadian side of the bridge. The preferred stormwater management approach identified for the bridge includes a filtration swale north of the bridge on the Canadian side. Stormwater treatments (including erosion control measures on the south side of the bridge on the Canadian side) including dimensions and footprints will be confirmed during Detail Design.

In addition to the potential impacts changes to stormwater and drainage as a result of the Project, potential sources of liquid discharges during construction include runoff arising from precipitation events.

Standard erosion and sedimentation measures and controls will be implemented to minimize potential suspended solids in runoff and other related environmental effects. These measures will include a requirement that waste oils, fuels, and hazardous wastes (if any) shall be handled in a safe manner. Contractors will be required to transport, store and handle all such substances as recommended by the suppliers/manufacturers and in compliance with all applicable international, federal, provincial or municipal regulations. In addition, the following erosion and sediment control measures will be applied during construction:

- No equipment should be permitted to enter any natural areas beyond the sediment fencing (site boundaries) during construction
- All materials requiring stockpiling (fill, topsoil, etc.) should be stabilized and kept a safe distance from any sensitive natural features
- All exposed soil areas should be stabilized and re-vegetated. Seed and mulching, or seed and an erosion control blanket should be applied to disturbed sites promptly upon completion of construction activities
- Refuelling of equipment should be carried out away from any sensitive natural features to avoid potential impacts, in the event that an accidental spill occurs
- In addition to any specified requirements, additional sediment fence should be available on site, prior to grading operations, to provide a contingency supply in the event of an emergency
- Potential impacts on groundwater resulting from the construction, decommissioning and operation of the bridge will be minimized through the implementation of mitigation measures such as fuelling vehicles, and other construction equipment in designated areas

Erosion and sediment control measures will also be implanted as part of the protection and mitigation measures for effects to groundwater.

2.4.7 Types of Wastes and Plans for Their Disposal

Solid wastes will be generated during construction activities. Wastes are identified in Table 11 and will be disposed of in accordance with provincial regulations.

Solid wastes will be either recycled or disposed of through licensed waste disposal companies at licensed facilities.

The construction of the Project may involve dredging activities on the U.S. side. The removal and management of dredged material from the U.S. side may take place on the Ontario side and may potentially include the following management options:

- Dredge and dispose of as liquid waste (if it does not meet the slump test requirements for solid waste)
- Dredge and dispose of as solid waste (if it meets the slump test requirements for solid waste). This may require additional approvals for on-site dewatering
- Dredge, test for quality, and dispose of on/offsite that can take the material of the appropriate soil quality (if it meets slump requirements to be classified as 'solid'). This option will need to follow MOECC's Excess Soil Management Framework
- Dredge, test for quality, and if it does not meet the quality standard for on/offsite reuse, treat onsite (additional approvals may be required) to meet the offsite use standards

Details regarding the removal and management of dredged materials will be confirmed during Detail Design.

Table 11: Wastes and Waste Management Methods for the Project

Waste Stream	Management Method
Domestic and Shop	Contracted waste disposal
Recyclables (wood, paper, metal)	Contracted recycling
Hazardous waste	Licensed disposal facility
Waste oil	Licensed recycler

The decommissioning of the existing bridge may also result in designated substances or regulated wastes from the existing bridge. An Asbestos and Regulated Waste Assessment Report was completed for the U.S. portion of the study area and identified the following wastes associated with the existing bridge:

- 202.7 m of 10.16 cm asbestos-containing transite pipe on the east side of the bridge, under the wooden pedestrian walkway (non-friable and in good condition);
- two Mercury-containing HID lights near the south approach of the bridge;
- two PCB-containing light ballasts near the south approach of the bridge; and,
- approximately 3352.8 m of treated lumber associated with the existing pedestrian walkway and south abutment under the bridge.

The U.S. report does not cover the Ontario portion of the bridge and a separate Designated Substances Assessment may be required for the Ontario portion to meet the requirements of the following Ontario Regulations, as required prior to a renovation or demolition project:

- Ontario Regulation 278/05, *Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations*, under the Occupational Health and Safety Act; and,
- Ontario Regulation 490/09, *Designated Substances,* made under the Occupational Health and Safety Act.

The need for a Designated Substances Assessment in Ontario will be confirmed during Detail Design. If a Designated Substances Assessment is recommended and completed, appropriate protection and mitigation measures including appropriate disposal measures, will be identified and documented in the Designated Substances Assessment Report. Protection and mitigation measures will adhere to both Minnesota and Ontario regulations.

All regulated solid wastes generated by construction of the proposed project will be disposed of properly in a permitted, licensed solid waste facility or a similarly regulated facility elsewhere. Project demolition of concrete, asphalt and other potentially recyclable construction materials will be directed to the appropriate storage, crushing or renovation facility for recycling or reuse.

2.4.8 Accidents and Malfunctions

Accidents and malfunctions may result in adverse environmental effects. Potential oil and other lubricant spills and releases could occur during the operation and refueling of heavy equipment during construction or during operations as a result of vehicle collisions during the bridge's operation. Any accidental release of deleterious substances into the Rainy River following a spill may degrade water quality and fish habitat, and result in direct or indirect mortality of fish. Mitigation measures to avoid or minimize effects from spills include implementation of a spill prevention protocol including a spill response plan, and fueling vehicles and other construction equipment in designated areas will be developed during Detail Design. Additional protection measures for accidents and staff safety training during construction and operations will be completed during later Project stages.

2.5 CONSTRUCTION, OPERATION, DECOMMISSIONING AND ABANDONNEMENT PHASES AND SCHEDULING

A high-level Project schedule is provided in Table 12. Additional details regarding the activities within each phase of the Project are provided in Section 2.3.4.

Table 12: Project Construction and Decommissioning Schedule

Activity	2018				2019			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Prepare site (site clearing and grading, deliver piles, deliver barges, mobilize to site, construct access roads, construct temporary causeway-if required)								
Construct abutments								
Install Cofferdams								
Construct Piers								
Remove Cofferdams								
Erect Structural steel spans								
Place Bridge Deck								
Begin commercial operations end of Q4 2019								
Remove/decommission previously existing bridge, site restoration								

In addition to the Project construction and decommissioning schedule, the anticipated operation of the Project is expected to be from approximately 2019 to 2094 (75-year life span for replacement bridge. The new bridge will be designed with a minimum design life of 75 years. Over this 75-year period, inspections are expected to occur on a 24-month schedule, with additional underwater inspections every 5 years. It is expected that the Project will be scheduled for rehabilitation or replacement following the 75-year minimum service life.

3.0 PROJECT LOCATION

The Project site is located within the Town of Rainy River, District of Kenora, Ontario and the City of Baudette, Minnesota. The Project site is located directly on the U.S./Canada international boundary and crosses into the U.S. The approximate mid-point of the Project site is approximately at the U.S./Canada border. The Project is generally bounded by the U.S. Port of Entry facility in the City of Baudette, Minnesota to the west and the Canadian Port of Entry facility in the Town of Rainy River, Ontario to the east. The Project will be located approximately one metre south of the existing Baudette/Rainy River International Bridge and will be bounded by the existing bridge to the north.

The City of Baudette is located directly to the west of the U.S. Port of Entry facilities. The Baudette Regional Airport is also located approximately 980 m northwest of the existing bridge. The existing City of Baudette wastewater facility is located approximately 550 m northwest of the existing bridge and directly south of the Baudette Airport. The Town of Rainy River is located approximately one km east from the existing bridge.

The Rainy River watershed is utilized for various purposes including recreational, irrigation and potable water uses and activities. Local communities along the Rainy River, including the City of Baudette and the Town of Rainy River utilize the river for recreational boating and fishing purposes, irrigation for agricultural activities, and surface water as drinking water sources. Potential effects and protection and mitigation measures on surface water are discussed in Section 2.4.2 and 5.3.

All permanent project components on the Canadian side will be located on lands that are owned by the MTO. There is potential for private property requirements for Temporary Limited Interest (TLI) and laydown/staging areas during construction but those impacts would be temporary and will be confirmed during the Detail Design stage of the Project (see Section 2.3.4). The lands where the Project is to be developed on the U.S. side are located on MnDOT property, City of Baudette property and U.S. Customs and Border Protection and General Services Administration property.

3.1 PROJECT COORDINATES

The coordinates of the Project area are as follows:

- West limit: Latitude: 48° 43' 4.7856" N, Longitude: 94° 35' 35.6172" W
- East limit: Latitude: 48° 43' 12.7488" N, Longitude: 94° 35' 16.2096" W

3.2 SITE PLAN

The site location of the Project is provided in Figure 2 in Appendix A. A summary of the proximity of designated Project components to specific features as outlined in the "*Guide to Preparing a Description of a Designated Project under the Canadian Environmental Assessment Act*, 2012" (CEA Agency 2012) is provided in Table 13.

Table 13: Summary of Project Components and Specific Features

Key Environmental Feature	Figure/Exhibit No.	Additional Information
Rainy River, Baudette River	Figure 1 in Appendix A Figure 2 in Appendix A	The Project is located on the Rainy River and the Baudette River is located approximately 165 m south of the Project site.
Linear and other transportation components (i.e., Baudette Airport)	Figure 2 in Appendix A	The CN Rail bridge is located directly north or downstream of the existing bridge. The Baudette Airport is located on the U.S. side of the Project site and is approximately 980 m northwest of the Project site.
Other features of existing or past land use (e.g., waterborne structures)	Figure 2 in Appendix A	Directly south of the U.S. Port of Entry facility is a municipal park called Peace Park. This is a day-use park with washroom facilities. The existing City of Baudette wastewater facility is located approximately 550 m northwest of the existing bridge and directly south of the Baudette Airport. There is an existing dock on the Canadian side of the Rainy River 95 m south of the existing bridge that is owned and operated by the Canada Border Services Agency. There are no formal Canadian trails (e.g. walking, biking) within the study area. There is one official snowmobile trail in the vicinity of the study area (approximately 2 km east of the study area), Club Trail L201 that runs along Highway 11 from the east and crosses Highway 11 at Government Road in the Town of Rainy River. Snowmobilers also informally cross the Rainy River when the river is frozen over. There are no campground facilities within the Canadian side of the study area or in close proximity to the study area.
Federal Lands, Institutional Buildings, and Municipal Facilities (i.e., CBSA POE)	Figure 2 in Appendix A	The east limits of the Project area are bordered by the Canada Border Services Agency Port of Entry facility and associated property. The west limits of the Project area are bounded by the U.S. Border Patrol Port of Entry facility which is owned by the GSA.

Key Environmental Feature	Figure/Exhibit No.	Additional Information
		Baudette City Park or Peace Park is located directly south of the U.S. POE and the existing bridge. The park is owned and maintained by the City of Baudette.
Nearby communities	Exhibit 1 from Pg. 1.2 Figure 1 in Appendix A	The Town of Emo is located approximately 57 km east of the Project Site. The Town of Fort Frances is located approximately 100 km east of the Project site and provides the only other closest border crossing site/facility in the area.
Permanent or temporary residences	Figure 2 in Appendix A	There are four private residences located on Water Street south of the existing bridge on the Canadian side of the Rainy River and the closest residence (building) is located approximately 55 m south of the existing bridge and roadway.
Environmentally sensitive areas (i.e., wetlands)	Figure 2 and Figure 22 in Appendix A	On the U.S. side directly underneath and south of the existing bridge wetlands have been identified. A provincially –listed species at risk has been identified in the Rainy River. There is an existing wetland (not provincially significant) located in the study area directly south of the existing bridge along the shores of the Rainy River. The wetland portion located directly within the study area and the proposed Project is approximately 0.01 ha on the Canadian side.
Cultural Heritage features	Figure 2 in Appendix A	On the U.S. side in Peace Park, located directly south of the U.S. Port of Entry facility there are two marked graves located in the east portion of the park with a high potential for unmarked graves (to be confirmed in subsequent U.S. cultural heritage survey) to be located in the park.
Fisheries and fishing areas (Aboriginal, commercial and recreational)	Figure 2 in Appendix A	The Rainy River is used by the Rainy River First Nations, Anishnaabeg of Naongashiing, Big Grassy River First Nation, Northwest Angle # 37, Northwest Angle # 33 and the Sunset County Métis Community for fishing, gathering, cultural/spiritual/archaeological activities. The Rainy River is also a popular location for recreational fishing and tourism.
International Boundary	Figure 2 in Appendix A	The Project site is located directly on the U.S./Canada international boundary and crosses into the U.S. The mid-point of the Project site is approximately at the U.S./Canada border.

An examination of the Ministry of Northern Development and Mines CLAIMaps (2016) database revealed that the Town of Rainy River, under the Mining Act (1990) has withdrawn its surface and mining rights. Simply put, the Town of Rainy River has requested the Minister of Northern Development and Mines to withdrawn the mining rights from prospecting, staking, sale and lease of land for mining purposes. In addition, under the Mining Act, land for public purpose owned by the Ministry of Transportation cannot have a mining claim staked out or recorded. Lands where mineral rights are not reserved by the Crown cannot have a mining claim staked out or recorded. Lands adjacent to the new international crossing are owned by both the Ministry of Transportation and the Crown, and therefore cannot have mining claim staked out or recorded.

The Project site is jointly owned by the MTO and MnDOT, and the direct Project site is not used for traditional purposes by Indigenous groups. The Rainy River is used by the Rainy River First Nations, Anishnaabeg of Naongashiing, Big Grassy River First Nation, Northwest Angle # 37, Northwest Angle # 33, and the Sunset County Métis Community for hunting, fishing, gathering, trapping, cultural/spiritual/ archaeological activities. The Project is located within Treaty 3, signed with Ojibway and Cree communities in Northern Ontario. Additional information regarding Indigenous communities and the Project is provided in Sections 5.5 and 6.0.

3.3 PHOTOGRAPHS OF WORK LOCATIONS

A log showing representative photographs of the Project site and general surroundings is provided in Appendix B.

3.4 LAND AND WATER USE

The lands where the Project is to be developed on the Canadian side are located on MTO-owned land and right-of-way. The lands where the Project is to be developed on the U.S. side are located on MnDOT property, City of Baudette property and U.S. Customs and Border Protection and General Services Administration property. The Rainy River is an international navigable waterway mostly used for recreational purposes (i.e., fishing). In addition to the recreational uses of the Rainy River, the Rainy River also provides a source for drinking water to local communities situated along the river. The U.S. side of the study area is also directly adjacent to a wastewater treatment facility. During the wintertime when the Rainy River freezes, snowmobiles cross or travel along the river. No impacts to existing wastewater treatment or conveyance systems are anticipated. Additional information regarding potential effects to surface water are discussed in Section 2.4.2.

The Project will be constructed and operated on lands legally owned by the MTO.

The MTO property information includes:

- PIN 56056-0664 - PCL 24109 SEC RAINY RIVER; PT A ST PL M66 ATWOOD CLOSED BY S263 BTN BROADWAY & WATER ST; RAINY RIVER
- The Project will not involve the use of groundwater
- The Project will not involve the construction, decommissioning or abandonment of a marine hub
- The Project will not take place within waters or lands administered by a Canada Port Authority under the Canada Marine Act and its regulations
- The Project will require access to the Rainy River, which is used for traditional purposes by several Indigenous Groups (see Section 5.5)

3.4.1 Current Land Description and Ownership

The Canada Border Services Agency owns and operates the Port of Entry facility located on the east end of the bridge and owns lands located south of the Port of Entry building. The U.S. Port of Entry (POE) facility is located approximately 292 m from the centre of the bridge to the POE in the City of Baudette, Minnesota to the west and the Canadian Port of Entry facility is approximately 300 m from the centre of the bridge to the POE in the Town of Rainy River, Ontario to the east. On the U.S. side of the Project, the lands located directly west of the bridge that house the U.S. Port of Entry facilities are owned by the General Services Administration (GSA) and operated by the Customs and Border Protection (CBP) and the lands located directly south of the existing bridge are owned by the City of Baudette (Peace Park). The CBSA, City of Baudette and the GSA were actively consulted from the start of the Project. The CBSA and the CBP are key members of the Technical Advisory Committee for the Project.

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4.0 FEDERAL INVOLVEMENT

4.1 FEDERAL FINANCIAL SUPPORT

In addition to MTO's and MnDOT's financial contribution to the Project, MTO will be seeking Federal funding through the New Building Canada Fund: National Infrastructure Component. The Minnesota Department of Transportation will be obtaining state funding from Chapter 152 of the Minnesota Legislature 2008 Session funding program.

4.2 FEDERAL LANDS

The location of the new Baudette/Rainy River International Bridge will be entirely on MTO-owned land. There is the potential that CBSA-owned land may be required for temporary work areas during construction, including laydown and construction staging areas. The property identified for construction and laydown and staging areas that is owned by the CBSA is a manicured lawn/grass area where vegetation is cleared and there are landscaped shrubs and bushes. The area is currently not in use for any CBSA operations of the Port of Entry and is a maintained grass/vegetated area and landscape feature without any structures on it (see Appendix A Figures 8 and 12). There are no environmentally sensitive areas or significant environmental features located within the CBSA-owned land. A temporary limited interest would be required for these areas for the duration of construction. Construction laydown and staging areas utilizing the conventional erection method, will be approximately 3300 m^2 (located on CBSA-owned land) and an approximate area of 868 m^2 required for a temporary access road (located on MTO and CBSA-owned land). The 'launching the superstructure' method will require staging/laydown areas of approximately 1330 m^2 (on CBSA-owned land) and 4761 m^2 for the temporary launching platform and temporary access road (on MTO and CBSA-owned land). Building a temporary dock on the Canadian side of the Rainy River will also be required for the launching construction method. The temporary dock will be approximately 130 m^2. The exact size of the construction laydown and staging areas will be confirmed during Detail Design. It is anticipated that these areas will be required for the entire duration off construction and decomissioning (22 months). Permission for temporary land use and future discussions with the CBSA will take place during Detail Design.

Construction laydown and staging areas will be confirmed during Detail Design.

4.3 FEDERAL PERMITS, LICENSES OR OTHER AUTHORIZATIONS

In addition to federal EA requirements, other federal approvals are required for the development of the Project; the list of anticipated federal approvals required is provided in Section 1.4.2.1 and includes approvals administered by:

- International Joint Commission and Global Affairs Canada
- Transport Canada
- International Boundary Commission

A *Fish and Fish Habitat Preliminary Impact Assessment* (Stantec 2016) was completed for the Preferred Plan following the 2013 *MTO/DFO/OMNR Protocol for the Protection of Fish Habitat on Provincial Undertakings.* The assessment determined that the Project will not cause serious harm to fish and that an Authorization under the *Fisheries Act* is not anticipated. Additional details regarding the MTO/DFO/OMNR Protocol are provided in Sections 1.4.2.1 and 5.2.1. The assessment will be confirmed during Detail Design.

5.0 EXISTING CONDITIONS AND POTENTIAL ENVIRONMENTAL EFFECTS

Desktop reviews, site visits and discipline specific field surveys and studies have been conducted to identify potential environmental considerations relevant to the Project. These included:

- A field investigation to identify and characterize the vegetation communities within the Project area using Ecological Land Classification ("ELC"), supplemented with air photo interpretation was completed in August 2015
- A desktop review and aquatic and terrestrial ecosystems surveys to determine the state of local wildlife and wildlife habitat and to identify sensitive species and habitats that may occur within the vicinity of the Project. Wildlife observations were collected during field surveys in August 2015
- Terrestrial ecosystems existing conditions and impact assessment reports (see Appendix C-C.9 & C.10) that identified terrestrial ecosystem components including existing vegetation communities, wildlife, and wildlife habitat conditions; documented sensitivities of vegetation communities, wildlife species and habitats; and identified required permits and/or other approvals related to terrestrial ecosystems
- Fish and fish habitat existing conditions and impact assessment reports (see Appendix C-C.2 & C.3) that identified existing fish communities and fish habitat conditions and sensitivities of, and constraints to, fish communities and fish habitat; and identified potential permits and/or other approvals related to fish and fish habitat
- A desktop review and field survey for geotechnical investigation was completed in July 2016 to confirm the subsurface conditions in the Project area and provide necessary geotechnical parameters and recommendations for the design and construction of the Project
- A noise assessment was conducted for the Project in the spring of 2016. This assessment was conducted to determine the change in noise as a result of the Project, predict future levels in the local community and identify mitigation measures
- A field level Stage 1 Archaeological Assessment ("AA") was completed in August 2015 and a Stage 2 AA was completed in December 2015
- A Greenhouse Gas Assessment was completed in September 2016 to determine the greenhouse gas (GHG) emissions resulting from the construction and the operation of the Project and compare the emissions of the Project with existing GHG emissions inventories
- A Hydraulics Assessment and Floodplain Impact Analysis were completed in September 2016 to compare the existing bridge to the new bridge

- A Preliminary Stormwater Management Plan was completed in September 2016 in order to compare preliminary drainage and stormwater design alternatives and to recommend preliminary drainage and stormwater management design

The Project team also reviewed available information in the form of reports, maps and publicly available databases. Applicable information is provided throughout Section 5.0. Potential adverse environmental effects of the Project were evaluated through consideration of the interaction between the Project and the natural, social and cultural environments. Mitigation measures that could prevent/limit potential adverse environmental effects are also identified in Section 5.0.

5.1 PHYSICAL AND BIOLOGICAL SETTING

The Project area includes the existing Baudette/Rainy River Bridge, the Rainy River, the existing U.S. and Canadian Port of Entry facilities, the areas surrounding and directly adjacent to the Port of Entry facilities which include some forested and wetland areas, and the residential communities of Rainy River, Ontario and Baudette, Minnesota.

The main ecological characteristics of the region are:

- Relatively flat and poorly drained landscape, with wet ecosystems occurring throughout, including open water, peatlands and swamps
- A mix of flora and fauna characteristic of Great Lakes mixed forest (southern species), boreal (northern species) and prairie ecosystems (western species)
- Dominant vegetation of typical boreal species including white spruce, black spruce, tamarack, eastern white cedar, balsam fir, willow, trembling aspen, speckled alder and white birch. Typical prairie species are associated with dry clay and rock outcrops including bur oak, northern pin oak and American elm
- Some western fauna are at their eastern range limit and have limited occurrences elsewhere in Ontario, including Sharp-tail Grouse, Black-billed Magpie, Western Meadowlark and Franklin's Ground Squirrel (Crins et al. 2009); and a diverse fish community supported by the Rainy River (e.g., walleye, northern pike, white sucker, lake sturgeon)

5.1.1 Soils and Terrain

The Project area is located in the southern portion of the Canadian Shield. The bedrock is comprised primarily of Noearchian gneiss, amphibolite, undifferentiated granite, and metamorphosed mafic, and is covered with over 30 m of glacial overburden (HZU 2016). The Project area is dominated by extensive post-glacial Lake Agassiz clay deposits, and is part of a clay plain that extends into Minnesota and Manitoba (Crins et al. 2009). Soils surrounding the Project area are classified as Class 4 soils-soils in this class have severe limitations that restrict the

range of crops or require special conservation practices or both. The soils are low to fair in productivity for a fair range of crops (Canada Land Inventory 1998).

5.1.2 Groundwater, Drainage and Surface Water

The Baudette Bridge is located within the Lower Rainy subbasin (shown in Exhibit 6, HZU 2016) of the Lake of the Woods drainage tributary basin. Rainy River at the Project area flows northward from Rainy Lake to Lake of the Woods, forming the border of the international divide between the United States and Canada.

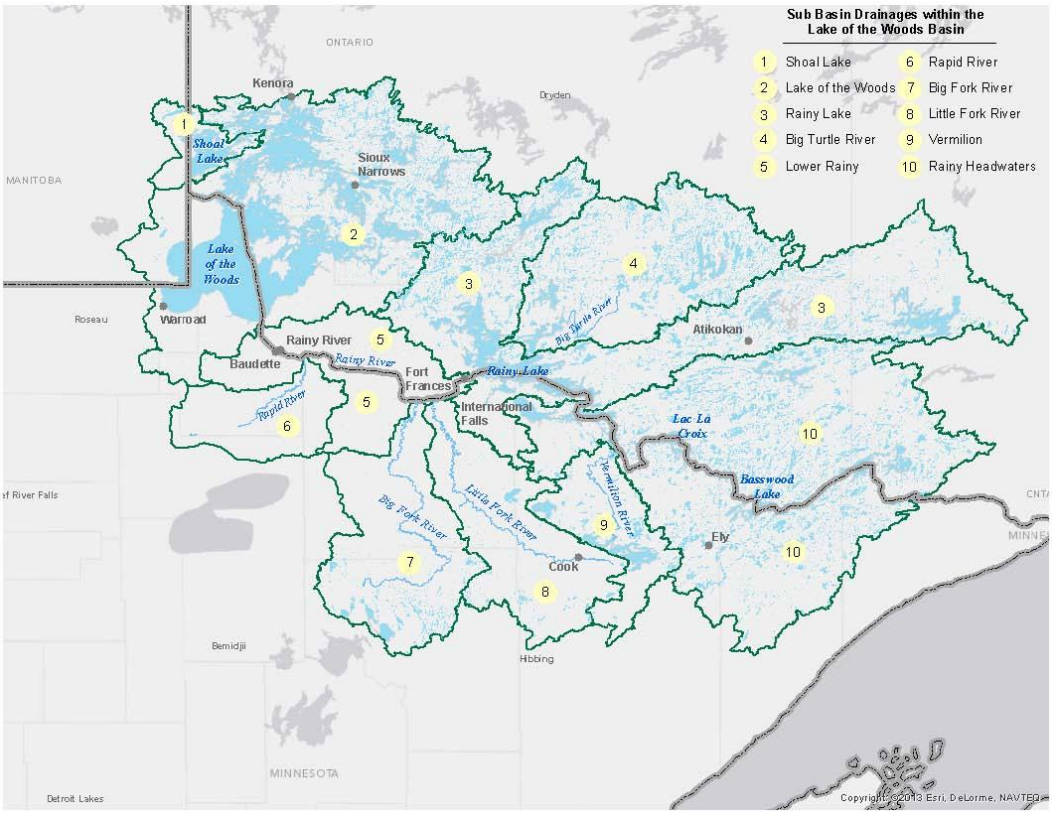

Exhibit 6: Lake of the Woods Drainage Basin

Under present conditions, the existing Baudette/Rainy River bridge discharges directly into the Rainy River. The existing bridge deck is an open-grate deck and precipitation passes through the bridge deck unmanaged and untreated. Currently, runoff from the Project area discharges at two points at the Canadian side of the bridge and three points on the U.S. side, all of which ultimately discharge into the Rainy River. Surface drainage at the Canadian border crossing approaches from drainage ditches on either side of Highway 11. These channels continue along the north and south of the bridge and outlet at the Rainy River. Stormwater at the bridge approach is divided at the crown of the roadway.

Due to the Project's proximity to the Rainy and Baudette Rivers, it is presumed that the groundwater level within the Project area is consistent with the rivers' water elevation. Depth to groundwater is approximately between 4.7 m and 6 m near the Project area. There are no wellhead protection areas in and near the Project area in Rainy River, Ontario or in Lake of the Woods County in Minnesota. Potential impacts on groundwater resulting from the construction, decommissioning and operation of the bridge are not anticipated but if required, will be minimized through the implementation of mitigation measures such as fueling vehicles, and other construction equipment in designated areas. Erosion and sediment control measures will also be implemented as part of the protection and mitigation measures for potential effects to groundwater.

The proposed replacement bridge will provide a paved bridge deck which, although it will increase the amount of impervious surface area when compared to the existing bridge, will not result in salt and any other potential contaminants that result from operations to enter into the Rainy River directly from the deck. The proposed replacement bridge with a paved bridge deck and proposed stormwater management features (includes a filtration swale north of the bridge on the Canadian side) will assist in minimizing direct input of salt and other potential contaminants when compared to the existing bridge. There is the potential for a minor increase in salt input because of maintenance of a paved bridge deck but it is not anticipated to result in any significant increases in salt input or negative effects to the Rainy River when compared to existing conditions. The maintenance requirements and salt input will be confirmed during Detail Design once appropriate maintenance activities and a maintenance agreement is developed between the MTO and MnDOT.

The Rainy River is a freshwater river that is susceptible to negative impacts due to common forms of pollution created by human activity. Ontario's guidelines for phosphorus call for a concentration limit of 0.03 mg/L (MOE 1994). Phosphorus can be managed using stormwater Best Management Practices. Approximately 50% of bioavailable phosphorus conveyed in stormwater is dissolved, and the rest is particulate.

The Rainy River contains concentrations of mercury in fish tissue that exceeded the water quality standard (Minnesota Department of Health), therefore a fish consumption advisory for this river was recommended by the MDH. A Total Maximum Daily Load (TMDL) study has been approved by the Environmental Protection Agency (EPA) for mercury in fish impairments, however the MPCA does not require additional design or construction mitigation measures to be taken since mercury is not generally associated with stormwater discharges on roadway construction projects.

Suspended solids are measured as Total Suspended Solids, or TSS, a number generally expressed in mg/L. The final Baudette Bridge project is not expected to contribute excessively to TSS loading, but the construction phase may result in disturbance in soils. Appropriate protection and mitigation measures listed above including erosion and sediment controls will be implemented during construction. Stormwater discharged from urban developments has the potential to release pollutants in the form of suspended solids and nutrients (e.g. phosphorus).

Erosion and sediment control measures will be implemented throughout construction activities to protect receiving waters. Potential effects on groundwater during construction will be confirmed during Detail Design. Best Management Practices designed for Total Suspended Solids will be determined and confirmed during Detail Design.

5.1.3 Fisheries and Aquatic Resources

Fisheries resources in the Project area were identified through field investigations (see Figure 20 in Appendix A) and data provided by the Ministry of Natural Resources and Forestry (MNRF), Minnesota Department of Natural Resources (MnDNR) and DFO.

The Rainy River is a large watercourse, which drains northerly into Lake of the Woods and has a coolwater thermal regime (MNRF 2015b). Fifty-five fish species have been documented in Lake of the Woods, including Northern Pike (*Esox lucius*), Walleye (*Sander vitrius)*, Sauger (*Sander canadensis*), Yellow Perch (*Perca flavescens*), White Sucker (*Catostomus commersoni*) and Smallmouth Bass (*Micropterus dolomieu*) (MnDNR 2015; MNRF 2015b). Many species that inhabit Lake of the Woods are also likely to occur in the Rainy River (MNRF 2015b). Lake Sturgeon (*Acipenser fulvescens*) and Shortjaw Cisco (*Coregonus zenithicus*), which are Threatened species protected by Ontario's *Endangered Species Act*, are also present in Lake of the Woods and Rainy River (MNRF 2015a); however, it is unlikely that Shortjaw Cisco utilize the Project area (Stantec 2016).

Within the Project area, nearshore areas provide potential rearing habitat for a variety of species and potential spawning habitat for Northern Pike. Beyond the shallow nearshore areas, sand is the predominant substrate in the Rainy River. There are some coarse substrates in the nearshore areas and around bridge abutments and piers within the Project area. Although limited coarse substrates associated with rock protection around bridge abutments and piers exist within the Project area, fish habitat in the Project area is not specialized, and functions primarily as a migratory corridor for a range of species including: Walleye, Northern Pike and Lake Sturgeon (Stantec 2016). While overwintering likely occurs in the Project area, Lake of the Woods is 18 km downstream and likely provides more suitable overwintering habitat than the Rainy River or Baudette River. At the time of preparation of the preliminary impact assessment, DFO's Risk Management Framework (RMF) was used to assess the risk of the Project on fish habitat (MTO 2009). As per the RMF, mitigation measures were used in the Pathways of Effects (POEs) and residual effects of the Project were determined. The Preferred Plan was designed to reduce the area of disturbance to the extent possible and to be compatible with local fish habitat objectives. The following sections outline protection and mitigation measures for fish and fish habitat.

5.1.4 Timing of In-Water Work

Works adjacent to aquatic resources that provide fish habitat, or have the potential to support fish habitat, are often restricted to certain periods to avoid construction-related impacts to fish

species during their most sensitive / vulnerable life cycles (i.e., during reproduction and early development stages of off-spring). Therefore, construction activities are often not permitted close to, or within fish habitat during these periods.

The thermal regime of the Rainy River is 'coolwater' as per information provided by the MNRF (2015c); therefore, in-water construction for the Project is permitted from July 16 to March 14 (Ontario- no in-water work from April 1 to July 15, Minnesota – no in-water work from March 15-June 15). The timing window protects the sensitive life stages of resident fish species including Lake Sturgeon migration.

5.1.5 Flow Diversion/Dewatering

If required, the following mitigation measures will be applied to isolate construction activities from the Rainy River during construction:

- Design and implement isolation plan to isolate temporary in-water work zones
- Fish rescue plan - Transfer fish in the work area away from the construction area using capture, handling, and release techniques to minimize harm and stress. Ensure the intakes of pumping hoses are equipped with an appropriate device to avoid entraining and impinging fish (see DFO's *Freshwater Intake End-of-Pipe Fish Screen Guideline* (1995))
- Manage water from dewatering operations to prevent erosion and/or release of sediment laden or contaminated water to the waterbody (e.g., settling basin, filter bag, energy dispersion measures)
- As a contingency, materials (e.g. pump, hoses, silt fencing, sand bags) shall be on site at all times in the event that water re-enters the work area once construction begins

Various mitigation techniques will be employed during construction to reduce the risk of impacts to natural environment features. Mitigation measures for sediment, erosion and dust control will be implemented to prevent sediment and dust from entering the Rainy River. Erosion and sediment control measures are discussed in Section 2.4.2.

Mitigation measures that include in-water timing windows are provided in the *Fish and Fish Habitat Impact Assessment Report in* Appendix C-C.3 (Stantec 2016a). Mitigation measures are consistent with DFO's *Measures to Avoid Causing Harm to Fish and Fish Habitat*.

5.1.6 Aquatic Species at Risk

Background data and habitat assessments indicated that the Rainy River is a migratory corridor for Lake Sturgeon (Stantec 2016). The Lake Sturgeon population in Northwestern Ontario is Threatened and as such, the species and its habitats are protected by Ontario's *Endangered Species Act, 2007* (ESA 2007). The bridge design has considered Lake Sturgeon and their habitat and the project will avoid negative effects to the species. Permitting under the ESA 2007 is not anticipated and will be confirmed once details of the design are finalized. There are no

anticipated permitting requirements under the Minnesota *Threatened and Endangered Species Statute*.

5.1.7 Terrestrial Ecosystems

A Terrestrial Ecosystem Study (Stantec 2016b) has been completed for this Project and included identifying vegetation units and wildlife habitat, based on available background data and field investigations carried out for the study on August 28, 2015. The report can be found in Appendix C-C.9.

The Project area is located in Ecoregion 5S. Ecoregion 5S is approximately 58% sparse forest, including deciduous forest, mixed, and coniferous forests. Remaining lands include pasture and major river segments, including the Rainy River.

Eleven distinct vegetation communities were identified in the Project area, including forest, wetland and open water communities that are typical of the Rainy River Forest Section of the Great Lakes-St. Lawrence Forest Region. Constructed communities included infrastructure associated with the United States and Canadian Port of Entry facilities, and constructed parklands. All vegetation communities are summarized in Table 14 and mapped on Figure 21 in Appendix A.

Table 14: Summary of Vegetation Communities

Code	Description	Vegetation Characteristics
Terrestrial System		
FOD7	Fresh-Moist Lowland Deciduous Forest Ecosite	Deciduous tree species > 75% of canopy cover Dominant species: balsam poplar (*Populus balsamifera*), Manitoba maple (*Acer negundo*), black ash (*Fraxinus nigra*), Tartarian honeysuckle (*Lonicera tatarica*)
Cultural System		
CUW1	Mineral Cultural Woodland Ecosite	Tree cover 35-60%; community maintained by anthropogenic-based disturbance Trembling aspen (*Populus tremuloides*), Manitoba maple, peach-leaved willow (*Salix amygdaloides*), willow (*Salix sp.*), red raspberry (*Rubus idaeus ssp. strigosus*), prickly rose (*Rosa acicularis*), and cool season graminoids
CUM1-1	Dry-Moist Old Field Meadow Type	Tree cover < 25% and shrub cover < 25%; community maintained by anthropogenic-based disturbance
CGL_2	Constructed Parkland	Manicured lawn and gardens associated with developed lands
CV	Constructed	Port of Entry facilities

Code	Description	Vegetation Characteristics
Wetland System		
CUM1-1/MAM2	Dry-Moist Old Field Meadow / Mineral Meadow Marsh Complex	Tree and shrub cover < 25%; seasonal flooding in low lying areas with herbaceous wetland species
MAM2	Mineral Meadow Marsh Ecosite	Tree and shrub cover < 25%; graminoids dominate; seasonal flooding along shorelines and inland, dry at time of field investigations
MAS2	Mineral Shallow Marsh Ecosite	Hydrophytic emergent macrophytes cover > 25%; shoreline communities with prolonged flooding Dominant species: Cattails (*Typha sp.*)
SWT2	Mineral Swamp Thicket Ecosite	Hydrophytic shrubs > 25% cover; shoreline communities with prolonged flooding Dominant species: Missouri willow (*Salix eriocephala*), willow (*Salix sp.*), red-osier dogwood (*Cornus stolonifera*), and groundnut (*Apios americana*)
Aquatic System		
SA	Shallow Water Community Class	Submergent vegetation in near-shore areas; permanent water < 2m deep
OAO	Open Aquatic Community Series	No tree, shrub or macrophyte vegetation; water > 2m deep

The Project requires the removal of 0.10 ha of Cultural Woodland (CUW1) and 0.01 ha of Shallow Marsh (MAS2) vegetation communities (Figure 22 in Appendix A). The CUW1 and MAS2 units at this location occur along the existing Highway 11 and the Baudette/Rainy River International Bridge, and include a high proportion of cool season graminoids (non-native grasses) and other common roadside plants. Given these factors, habitat quality where the replacement bridge is set to be located is relatively low compared to natural areas occurring elsewhere in the Project area.

Wetlands

Mapped wetlands include wetlands identified by the MNRF, and Ecological Land Classification (ELC) wetland communities as determined through field investigations and air photo interpretation. There are no records of Provincially Significant Wetlands in the Project area. Unevaluated wetland communities were identified in the Project area during the terrestrial field investigations and are located north of the existing bridge and directly south of the existing bridge along the shore of the Rainy River. As noted above, the Project requires the removal of 0.01 ha of Wetland (Shallow Marsh: MAS2). This is considered a negligible amount of permanent loss, and long-term implications to wetland function are not anticipated.

During construction adjacent to natural features, including wetlands and other vegetated areas, heavy equipment could damage peripheral vegetation from contact, excavation and/or soil compaction. Where natural features occur adjacent to construction activities, barrier

fencing should be erected to protect vegetation that is to be retained. Areas to be cleared of existing vegetation should be clearly marked to prevent unnecessary clearing. Barrier fencing may coincide with sediment fencing where used to control erosion and sediment transport at the site.

The following mitigation measures are proposed to reduce potential impacts on vegetation and wetlands and other vegetation communities within the Project area:

- Reducing work areas to the extent possible
- Delineating vegetation clearing limits prior to construction
- Barrier fencing should be erected to protect vegetation that is to be retained (barrier fencing may coincide with sediment fencing for erosion and sediment control, where applicable)
- Installation and maintenance of appropriate erosion and sediment controls during construction

Assuming the above noted measures are implemented, negligible impacts to vegetation are anticipated during construction.

Rare Vegetation

One provincially rare plant (S3) was observed in the Project area, wild licorice. This species was observed along the edge of the Cultural Woodland (CUW) and manicured lawn and gardens (CGL_2), south of the Canadian Port of Entry. No other rare or highly sensitive plant species were encountered during field surveys. Mitigation is available to protect wild licorice, including transplanting individual plants that may be affected by construction.

Significant Wildlife Habitat

The following confirmed SWH feature was documented in the Project area:

- Habitat for Species of Conservation Concern – Habitat with provincially rare species (wild licorice)

The potential for specialized wildlife habitat for additional species, such as bat maternity colonies, deer wintering areas and moose late winter cover areas, and specialized wildlife habitat for birds, such as raptor wintering areas, may occur in the Project area. However, no records pertaining to these habitats were provided by the MNRF and the habitats were not encountered during field work.

Wildlife habitat, including candidate SWH will be protected during construction using measures that are proposed to reduce potential impacts on wetlands and other vegetation communities (described above). Assuming the above noted measures are implemented, negligible impacts to SWH are anticipated during construction. Generally, sediment and construction fencing will serve the dual purpose of preventing access of wildlife; however there is some potential that

individuals will enter the limits of construction; therefore, contractors should be aware of the potential to encounter other wildlife and avoid them to the extent possible.

Habitat for Other Sensitive Species

Suitable habitat for milkweed plants and larval Monarch butterflies was documented in the Project area. Monarch is provincially and federally listed as special concern; however, it is not protected by the *Endangered Species Act, 2007* (ESA) or *Species At Risk Act, 2002* (SARA). Larval habitat for Monarch is not is considered SWH. The Project will remove suitable habitat for milkweed and Monarch larvae. Suitable habitat for milkweed is well-represented in the Project area and adjacent lands, and negligible long-term implications to milkweed populations are anticipated. Mitigation is available to protect milkweed plants, including transplanting individual plants that may be affected by constructions.

Avian Species and Migratory Birds

A comprehensive background review of avian species potentially within the Project area was completed and field investigations to identify migratory birds and their nests were conducted on August 28, 2015. The majority of bird species expected to be present within the Project area are protected under the *Migratory Bird Convention Act, 1994 (MBCA)*, which protects the birds and active nests during the breeding season. Potential impacts and protection measures for migratory birds are discussed in Section 5.2.4.

5.1.8 Species at Risk and Critical Habitat

Species that are listed on Schedule 1 of the federal *Species at Risk Act,* 2002 (SARA) as endangered or threatened are afforded protection of critical habitat on federal lands. On private or provincially-owned lands, only aquatic species listed as endangered, threatened, or extirpated and migratory birds are protected under the SARA, unless ordered by the Governor in Council. No federally listed species at risk were identified in the Project area.

The provincial *Endangered Species Act* 2007 (ESA, 2007) protects endangered, threatened and extirpated species listed on the Species at Risk in Ontario (SARO) list and their habitats in Ontario.

A review of the NHIC database (NHIC, 2015) and correspondence with the Ministry of Natural Resources and Forestry (MNRF) did not identify any records of species at risk within one km of the Project area. The entire Baudette/Rainy River International Bridge was searched by canoe during field investigations for the presence of Barn Swallow nests and nests of other species protected by the *Migratory Bird Convention Act*. Although no nests were seen, one Barn Swallow was observed near the bridge during the field investigations. Barn Swallow was not observed to be nesting on the Baudette/Rainy River International Bridge or nesting elsewhere in the Project area; therefore, mitigation or authorization under the ESA is not anticipated for this species.

No other species or their habitat (including Critical Habitat) that are protected by the SAR or the ESA acts were identified in the Project area, and authorization is not required under either act.

5.1.9 Land Use

The Project area is located within the Town of Rainy River and the Township of Dawson in the District of Kenora, Ontario and the City of Baudette, Lake of Woods County, Minnesota.

The Project area includes the Canada Border Services Agency Port of Entry Facility at the east end of the bridge and the U.S. Port of Entry Facility at the west end of the bridge. The area surrounding the Project area includes residential homes, rural and vacant land, a local business, and forested areas.

The Town of Rainy River *Official Plan* (2014) provides guidance for land use and development within the town limits. Similarly, the City of Baudette's City Code provides guidance for land use and zoning within the City. The Town of Rainy River's *Official Plan* (2014) has designated the land surrounding the Project area as residential, institutional/municipal, and rural land. Outside of the settlement areas of Rainy River, the majority of the land is designated as rural. Permitted land uses include residential, rural, or vacant land. Rural properties within the Project area are generally large lots with single family residences. On the U.S. side lands surrounding the Project area includes municipal land, industrial and commercial land, and residential properties.

5.1.9.1 Communities

The Project area is in the Town of Rainy River, Ontario and the City of Baudette, Minnesota. The Town of Rainy River is situated on the Ontario-Minnesota border and has a population of approximately 800 residents. The Town of Rainy River has an elementary school (Riverview Elementary School) and a high school (Rainy River High School), a health centre (Rainy River Health Centre), a curling club (Rainy River Curling Club) and a recreation centre (Rainy River Recreation Centre). The main employment and economic sectors for the Town of Rainy River include agriculture, forestry, education, and tourism.

The City of Baudette, Minnesota is the county seat of Lake of Woods County and has a population of approximately 1,100 residents. The main economic drivers for the City of Baudette include services and education, pharmaceuticals, and forestry.

The City of Baudette and the Town of Rainy River are closely-linked communities with joint social and recreational activities (i.e., joint sports teams) and commercial and business ties. The Baudette/Rainy River Bridge provides direct access and easy flow between the two communities.

Future Development

The Town of Rainy River *Official Plan* does not have any areas designated for Future Development within the Project area.

5.1.9.2 Commercial

Highway 11 is used as a commercial and goods transportation corridor for cross-border and for Trans-Canada transport of commercial goods.

5.1.10 Emergency Services

In the Town of Rainy River, ambulance services are provided by the Rainy River District Social Services Administration Board. Police services are provided by the Ontario Provincial Police (OPP) – Rainy River Detachment. The OPP office is located in Fort Frances. Fire services are provided by the Town of Rainy River Fire Department.

There are no hospitals in the Town of Rainy River. The Rainy River Health Centre is located at 115 Fourth Street in the Town of Rainy River. Baudette, Minnesota and Rainy River, Ontario do not have a reciprocity agreement relative to emergency services. Despite this, the Rainy River ambulance often transports critically ill/injured patients to the Baudette Regional Airport for medical airlift as the Rainy River community does not have an airport facility.

5.1.11 Navigation

The Rainy River is utilized as a recreational navigation channel within the Project area and provides numerous recreational opportunities for local residents and tourists. Due to the international nature of the river, navigational channels must be maintained on both the Canadian and U.S. sides of the border.

The CN Rail Bridge is a fixed bridge and was confirmed during the study as the structure limiting navigation on this section of the Rainy River. During the Project, Transport Canada confirmed that the vertical and horizontal clearance should at a minimum, meet the clearances provided by the CN Rail Bridge, which would be 4.3 m in height with a horizontal clearance of 30.5 m. It was also requested that the navigation envelope and bridge piers match, where possible, the adjacent CN Rail Bridge. The Project includes the recommended navigational clearances on both sides of the border.

A navigation channel will be maintained during construction. Additional requirements for demarcation of the navigation channel during construction will be confirmed during Detail Design.

5.1.12 Trails and Active Transportation

There are no existing trails located in the Project area. The Town of Rainy River *Official Plan* (2014) identifies walking trails outside of the Project area but within the Town along Mill Avenue, River Avenue, Fourth Street, and Tower Road. As per the *Official Plan* (2014) there are no plans for future trail development in the Town of Rainy River. The existing Baudette/Rainy River International Bridge has a sidewalk located on the south side of the bridge to provide pedestrian

access. The existing bridge currently has shoulders which cannot safely accommodate cyclists across the bridge. The proposed Project will be designed and built to provide a 2.4 m shoulder that will allow cyclists to travel across the Baudette/Rainy River Bridge. In addition, the south side of the bridge will also provide a 1.8 m sidewalk which will accommodate pedestrian traffic on the bridge.

5.1.13 Recreation

There are many recreational activities that take place within the Project area including year-round fishing, snowmobiling, canoeing, snowshoeing, boating, and golfing. The City of Baudette is known as the "Walleye Capital of the World" and recreational fishing and associated tourism is a significant contributor to the local economy. There are several fishing resorts located in the vicinity of the Project area. The Rainy River Walleye Tournament takes places annually in late September and utilizes the Rainy River directly including the area near the existing bridge. Construction activities of the Project that include barge activity may result in minor and temporary effects to the above-mentioned activities. Navigation will be maintained throughout the construction and operation of the Project and appropriate mitigation measures to reduce impacts to recreational activities will be appropriated during construction.

5.1.14 Snowmobile Trails

The Project site is located within District 17 of the Ontario Federation of Snowmobile Clubs (OFSC), and the Emo Borderland Snowmobile Club Association maintains the snowmobile trails within the Project area. There is one official snowmobile trail near the Project area, Club Trail L201 that runs along Highway 11 from the east and crosses Highway 11 at Government Road in the Town of Rainy River. In the wintertime the Rainy River is used as an informal crossing by snowmobilers once the river freezes. There will be no impacts to official OFSC trails as a result of this Project.

5.1.15 Archaeology

A Stage 1 Archaeological Assessment was carried out as part of this study in accordance with the provisions of the *Ontario Heritage Act* (1990) and the *Standards and Guidelines for Archaeological Assessments* (2006) provided by the Ministry of Tourism and Culture (MTC). The report is on file with the MTO and is in Appendix C-C.7. The Stage 1 Archaeological Assessment identified high potential for archaeological resources.

The Stage 1 Archaeological Assessment (AA) included a review of aerial imagery, archaeological potential mapping, and information regarding registered archaeological sites in the vicinity, local physiography and topography, and Census returns and mapping from the 19th century. No registered archaeological sites have been identified within a one km radius (in Ontario) of the Project site and therefore, no registered archaeological sites will be impacted by the Project. According to the Stage 1 AA, given the location of the Project area in close

proximity to water bodies; the high pre-contact Aboriginal archaeological potential; documented evidence of fur trading activity and campsites downstream of the area; the moderate-to-high post-contact Aboriginal archaeological potential; and the high Euro-Canadian archaeological potential, the potential for archaeological resources is high. The Stage 1 Archaeological Assessment resulted in the determination that a Stage 2 Archaeological Assessment will be required.

A Stage 2 Archaeological Assessment was carried out for the Recommended Plan as part of this study in accordance with the provisions of the *Ontario Heritage Act* (1990) and the *Standards and Guidelines for Archaeological Assessments* (2006) provided by the Ministry of Tourism, Culture and Sport (MTCS). The report is on file with the MTO and in Appendix C-C.8.

The Stage 2 AA was conducted in the fall of 2015 and included the on-site documentation of all areas of no archaeological potential, test pit survey in all areas of archaeological potential, a combination of property inspection and test pitting to confirm the extent of any disturbed areas identified during the test pit survey, and visual inspection of all other lands. No archaeological resources were documented during the Stage 2 AA of the proposed replacement for the Baudette/Rainy River International Bridge and no further archaeological assessments of the property are required.

If cultural heritage values (archaeological or historical materials or features or human remains) are identified during operations, all activity in the vicinity of the recovery will be suspended and the Ministry of Tourism, Culture, and Sport archaeologist will be contacted (807-475-1551). Other appropriate authorities (i.e., Ontario Provincial Police, Registrar of Cemeteries, Ministry of Government Services) should also be notified, as needed. This condition provides for the potential for deeply buried or enigmatic local site areas not typically identified in evaluations of archaeological or heritage potential.

5.1.16 Built Heritage and Cultural Landscape

There are no identified built heritage or cultural landscape sites located directly within or in close proximity to the Project area. The existing bridge is not listed and is not eligible for inclusion on the Ontario Heritage Bridge List, however, the bridge is eligible for listing in the U.S. *National Register of Historic Places* under Criterion A: Transportation and Criterion C: Engineering. Under these respective criteria, the bridge was found to be a significant example of major river crossings in Minnesota and an uncommon bridge type (Pennsylvania through-truss). Since U.S. federal funds will be used to complete this Project, effects to the NRHP-eligible bridge must be evaluated through Section 106 of the *National Historic Preservation Act* process. The Section 106 process involves assessing effects of project activities to identified historic resources and avoiding, reducing, or mitigating adverse effects, if necessary. The proposed action of removing the existing bridge and replacing it with the Preferred Alternative would result in an "adverse effect" under Section 106. The parties with jurisdiction over this resource has agreed that adequate measures were taken to minimize harm to the resource (to the extent possible, and

that the mitigation measures are acceptable compensation for impacts). Mitigation measures for impacting the existing bridge are documented in a Section 106 Memorandum of Agreement (MOA) among the MnHPO, FHWA, MTO, and MnDOT. The MOA has been submitted and accepted by all signing parties and is in the process of being executed.

5.2 POTENTIAL PROJECT CHANGES RELATED TO FEDERAL LEGISLATION

5.2.1 Fish and Fish Habitat, as Defined in the Fisheries Act

As discussed in Section 5.1.3, the Project area provides general habitat and a migration route for a diverse coolwater community that includes a provincial Species at Risk. As per Step 3 of the 2013 Protocol, a project can proceed without further assessment if criteria of the MTO Best Management Practices (BMPs) or DFO Self-Assessment can be met. The project did not meet the criteria; therefore, an Aquatic Effects Assessment was conducted using DFO's RMF to determine the risk of serious harm to fish. Using the Risk Matrix within DFO's RMF, the sensitivity of fish and fish habitat was ranked as Moderate. Although the footprint area of the bridge piers will occupy a relatively small area of the Rainy River that will be unavailable for use by fish, the area around the piers will remain unchanged and the area occupied by existing bridge piers will provide habitat once the existing bridge is removed. The scale of negative effects of Residual Effects of the new bridge was ranked as Medium. Using the rankings from the Risk Matrix, the preliminary Aquatic Effects Assessment and Risk Assessment determined that the Project will result in Low Risk of serious harm to fish and fish habitat. As per the RMF, Low Risk projects do not require a *Fisheries Act* authorization.

Based on the information available from the Preliminary Design, the following potential effects to aquatic habitat were identified:

- Approximately 546 m² of natural substrate on the river bottom will be overprinted by the new bridge piers
- Aquatic vegetation and bottom substrate may be disturbed during construction; however, the disturbance would be temporary
- Other areas of the river bottom will be disturbed due to temporary work areas for construction

The footprint area of the bridge piers will occupy a relatively small area of the Rainy River. Although the area overprinted by the piers will not be available for use by fish, the areas around the piers will remain unchanged and the area currently occupied by piers of the existing bridge will provide habitat once the existing bridge is removed. Temporary work areas and shoreline areas will be rehabilitated following construction.

Mitigation measures that include in-water timing windows are provided in the *Fish and Fish Habitat Impact Assessment Report.* Mitigation measures are consistent with DFO's *Measures to Avoid Causing Harm to Fish and Fish Habitat*.

Design

The Preferred Plan was designed to reduce the area of disturbance to the extent possible. Design considerations included as part of this study that may minimize potential impacts to fish and fish habitat include:

- Reduced number of in-water piers, when compared to the existing bridge
- Construction method options consider temporary structures such as false towers required for construction
- The preferred alignment alternative for the Recommended Plan (Alignment Alternative 2) does not require the use of a temporary modular bridge, which would result in a higher number of in-water piers (although temporary in nature)
- Wherever possible, the footprint of in-water piers was minimized

During Detail Design, potential effects on fish and fish habitat will be confirmed following the *MTO/DFO/OMNRF Protocol for Protecting Fish and Fish Habitat on Provincial Transportation Undertakings*, once construction methodology, POEs, and residual effects are confirmed. The Protocol is updated every few years, as are the tools and criteria to determine if DFO review of a project is required. The Protocol is a decision-based framework with criteria that determine subsequent steps. The version of the Protocol that is current at the time of the Detail Design phase of the Project will be used to determine whether or not a Request for Review form must be submitted to DFO.

Potential effects to fish and fish habitat as a result of construction and decommissioning activities are not anticipated and will be determined during Detail Design once construction methods and staging is determined. Once potential effects to fish and fish habitat as a result of construction activities such as dredging or the use of barges are confirmed during Detail Design, appropriate protection and mitigation measures will be developed.

MnDNR correspondence also indicated that the Rainy River is designated as infested with aquatic invasive species due to the known presence of the spiny water flea. Zebra mussels may also be present in the watershed. Protection measures to prevent the spread of invasive aquatic species may include draining water from all equipment where water may be trapped such as tanks, pumps, hoses and water-retaining components of boats or barges and other on-site treatments, if required. Appropriate protection and mitigation measures to prevent the spread of invasive aquatic species such as the Spiny Water Flea will be developed during Detail Design.

5.2.2 Aquatic Species, as Defined in the Species at Risk Act

Available background data review and agency information did not identify federally protected aquatic Species at Risk in the Project area (i.e., no species on Schedule 1 of the *Species at Risk Act*).

5.2.3 Navigation as Defined in the Navigation Protection Act

Currently, there is no defined navigational channel in the Rainy River. The Project will not result in permanent impacts to navigation on the Rainy River. As per Transport Canada's requirements and direction, navigation channels will be maintained on both the Canadian and U.S. sides of the border during all Project phases. Vertical and horizontal clearance of the replacement bridge will be 4.3 m in height with a horizontal clearance of 30.5 m on each side of the border. The permanent navigational channel under the proposed bridge will likely not match the navigational channel of the existing bridge, however, an appropriate navigational channel will be provided (and appropriately identified and marked) during all Project phases including construction, as prescribed by Transport Canada. Additional requirements for demarcation of the navigation channel (i.e., demarcation buoys) during construction will be confirmed with Transport Canada during Detail Design.

Construction of the Project has the potential to result in temporary delays or access for recreational and commercial boaters (e.g., waiting for construction barges to cross the river before passing, travelling around the construction barges on the river) but these effects are expected to be very minor and won't result in any significant loss of revenue from recreational boating. These minor temporary delays are also not expected to have adverse effects on any Indigenous community activities on the Rainy River.

5.2.4 Migratory Birds, as Defined in the Migratory Birds Convention Act

Field investigations determined that there are no bird nests on the existing Baudette/Rainy River Bridge. The configuration of the bridge is such that it is not expected to provide the necessary protection to attract birds such as Barn Swallows. The bridge is a metal grate structure that does not offer protection from the elements, and the piers do not provide sufficient overhang to protect a bird nesting underneath. No bird nests were observed on the existing bridge structure. Vegetation in the Project area is expected to support nests of common bird species that are protected under the MBCA. The Project requires the removal of 0.10 ha of Cultural Woodland (CUW1) and 0.01 ha of Shallow Marsh (MAS2) vegetation communities. This is considered a negligible amount of permanent loss, and long-term implications to vegetation that supports nests of common bird species is expected to be minimal. Potential effects of construction noise on migratory birds is also not anticipated due to the temporary nature of construction noise.

5.2.4.1 Protection Measures for Bird Nests

Through the implementation of mitigation measures, the Project is not expected to adversely affect migratory birds, as defined under the *Migratory Birds Convention Act*.

The Primary Nesting Period (PNP; the period when the percent of total nesting species is greater than 10%) is between April 21 and August 14 for this Project site, although nesting also infrequently occurs outside of this period (Environment Canada, 2014).

Vegetation clearing is not recommended between April 21 and August 14. If vegetation clearing is required during this period, an avian biologist will be retained to search suitable areas prior to work. The biologist will search for nests to manage risks to active nests protected by the MBCA and FWCA. Nest searches must be completed within 7 days of the proposed works. If work is not completed within 7 days following the nest search, the search will be repeated to make sure that no birds have established new nests during that period.

5.3 TRANS-BOUNDARY EFFECTS

The Project is partially located on U.S. land and on the Rainy River, which is an international waterway, and there is potential for environmental effects to occur on lands and water outside of Canada. The Project is located approximately 65 km southeast from the Manitoba border. Protection and mitigation measures for potential impacts to the Rainy River on the U.S. side will be addressed through the Preliminary and Environmental Assessment study process and will be documented in the U.S. EA/EAW (see Appendix C-C.6). The potential transboundary effects include:

- Potential impacts to transboundary surface water and stormwater have been addressed through a joint preliminary stormwater management plan that identifies stormwater design features on the U.S. and the Canadian side of the Project. The stormwater management plan is discussed in Section 2.4.2 and details of the plan will be confirmed during Detail Design
- A hydraulic assessment was completed for the Project that identified backwater and scour effects for each bridge alternative and pier configuration and determined that the Preferred Plan will produce a decreased backwater WSE (water surface elevation) for the 100-year storm event from that of the existing conditions. Temporary conditions, with the causeway included, will produce an increased backwater effect over existing conditions. Additional analysis shows an isolated backwater WSE increase at both the Baudette and Rainy River cross-section locations as a result of constructing the causeway for temporary conditions. The 100-year water surface elevation comparison for the proposed bridge alternative is shown in the following table:

Alternative (Piers Normal to the Bridge)	100-yr Water Surface El. (m)	100-yr Water Surface El. For Temp. Condition(1) [m] (w/causeway)	100-yr Water Surface El. For Temp. Condition1 [m] (w/o Causeway)
Existing Condition, 7-Piers	325.064 (1) 325.121(2)	N/A	N/A
Proposed Bridge Type: Continuous Steel 1-Girder, 4-Pier	325.060 (1) 325.117 (2)	325.076 (1) 325.132 (2)	325.074 (1) 325.131 (2)

(1) Water surface elevations evaluated at Rainy River, STA 7

(2) Water surface elevations elevated at Baudette River STA 1

- Navigational requirements of the U.S. Coast Guard and Transport Canada have been confirmed and adhered to for the Project. Construction and design navigation requirements are discussed in Section 5.1.11
- Potential greenhouse gas emissions of the construction and operation of the Project as a whole have been addressed through a Greenhouse Gas Assessment Report discussed in Section 2.4.1.1
- Potential downstream effects to the Rainy River and the Lake of the Woods watershed as a result of Project construction and decommissioning activities and potential emissions and release of effluents are not anticipated and appropriate protection and mitigation measures are discussed in Section 2.4
- Potential impacts to fish and fish habitat in the Rainy River have been addressed through fish assessments and appropriate protection and mitigation measures discussed in Section 5.1.3
- There are no anticipated changes to noise levels as a result of operations of the Project (see results of environmental noise assessment in Section 2.4.1.3. Potential transboundary effects of construction and decommissioning noise are expected to be minor and will be addressed through appropriate construction noise mitigation measures as discussed in Section 2.4.1.3
- Potential transboundary effects of noise and vibration on fish and fish habitat are not anticipated but a vibrations assessment study will be completed during Detail Design to confirm potential effects of vibrations to fish and fish habitat and identify protection and mitigation measures, if required
- Potential transboundary effects of noise and vibration on migratory birds are not anticipated and are discussed in Section 5.2.4
- Potential transboundary effects are anticipated to be minimal and/or will be appropriated addressed and mitigated as part of this Project

5.4 CHANGES THAT MAY BE CAUSED BY THE PROJECT TO FEDERAL LANDS OR LANDS OUTSIDE OF CANADA

5.4.1 Federal Lands

The Project area includes the Canada Border Services Agency Port of Entry facility. The Project does not directly require construction on federal lands. However, there is the potential that CBSA-owned land may be required for temporary work areas, including laydown and construction staging areas. The property identified for construction and laydown and staging areas that is owned by the CBSA is a manicured lawn/grass area where vegetation is cleared and there are landscaped shrubs and bushes. The area is currently not in use for any CBSA operations of the Port and is a maintained grass/vegetated area and landscape feature without any structures on it (see Appendix A Figures 8 and 12). A temporary limited interest would be required for these areas for the duration of construction. Although a temporary limited interest would be required for these areas for the duration of construction, since this Project is a designated project under CEAA 2012, it does not fall under Section 67 and only Responsible Authorities such as the CEA Agency are required to perform environmental assessments on designated projects.

Construction laydown and staging areas for the conventional erection method are estimated to be approximately 3300 m^2 (located on CBSA-owned land) and an approximate area of 868 m^2 for a temporary access road (located on MTO and CBSA-owned land). The launching of the superstructure method will require staging/laydown areas of approximately 1330 m^2 (on CBSA-owned land) and 4761 m^2 for the temporary launching platform and temporary access road (on MTO and CBSA-owned land). Building of a temporary dock on the Canadian side of Rainy River will also be required for the launching construction method. The temporary dock will be approximately 130 m^2. It is anticipated that these areas will be required for the entire duration of construction (22 months). Permission for temporary land use and future discussions with the CBSA will take place during Detail Design. The exact size of the construction laydown areas, staging areas, and temporary dock will be confirmed during Detail Design and all required environmental studies and permitting for the identified lands will be completed at that time. There are no anticipated permanent effects on CBSA-owned land as a result of the operations of the Project. Potential temporary effects on CBSA-owned land as a result of construction and decommissioning of the Project may include vegetation removal and soil disturbance. These minor potential effects will be addressed through appropriate protection and mitigation measures during construction (i.e., appropriate sediment and erosion control measures, replanting of vegetation), as discussed in Section 2.4.2. Vegetation impacted on CBSA-owned land will be restored to pre-construction conditions.

5.4.2 Lands Outside of Canada

The Project is partially located within the United States and there are environmental impacts on lands outside of Canada. Potential environmental impacts to U.S. lands are addressed in the U.S. Environmental Documents for the Project. The following sections provide a brief summary of changes to lands outside of Canada.

5.4.2.1 Baudette City Park (Peace Park)

Peace Park is located in Baudette, Minnesota on City-owned land adjacent to the existing bridge. A small area of Peace Park will require temporary construction impacts (0.73 acres) and minor tree removal. The amenities of Peace Park (i.e. public rest area facilities, parking lots, and a boat launch area/dock) will remain open throughout construction.

A portion of Peace Park may also be required during construction for staging purposes, including storage of materials or equipment in the parking lot and use of the boat launch to provide access to Rainy River through the Baudette River. No changes within Peace Park would result from the use of the parking lot, dock and boat landing and the amenities would be fully restored to its prior use upon construction completion. These amenities would generally remain open to the public during construction, however limited closures may be needed to address safety concerns.

5.4.2.2 Cultural Heritage

The Project area contains a portion of the Old Town Cemetery, created in 1894. In 1909, the City of Baudette relocated the burials to Elm Park Cemetery, located south of Baudette. However, two burials remain. A potential grave field study was completed in October 2016 under license from the Office of the State Archaeologist. No graves were identified within the Project's area of potential effects.

Although the existing bridge is not identified as a heritage bridge by the Ontario Ministry of Transportation, the existing bridge is listed as a Historic Bridge under Section 106 of the *National Historic Preservation Act* (NHPA). Since U.S. federal funds will be used to complete this project, it must be evaluated through Section 106 of the *National Historic Preservation Act* process. The Section 106 process involves assessing effects of project activities to identified historic resources and avoiding, reducing, or mitigating adverse effects, if necessary. The decommissioning of the existing structure is considered to be an adverse effect to Bridge 9412 under Section 106. Although the Preferred Alternative results in an adverse effect to Bridge 9412 under Section 106 and results in a Section 4(f) use, the parties with jurisdiction over this resource have agreed that adequate measures were taken to minimize harm to the resources (to the extent possible), and that the mitigation measures are acceptable compensation for impacts.

5.4.2.3 Wetlands

There are no permanent wetland impacts resulting from existing bridge demolition and construction of the proposed bridge (including associated roadway approaches, construction staging activities, heavy equipment access, and tree clearing).

Temporary impacts to wetlands within the watercourse are approximately 0.71 acres. Wetland impacts and mitigation measures are discussed in Section 5.1.7.

5.5 CHANGES THAT MAY BE CAUSED BY THE PROJECT TO INDIGENOUS GROUPS RESULTING FROM CHANGES TO THE ENVIRONMENT

The Project is located within Treaty 3, signed with Ojibway and Cree communities in Northern Ontario. The Project area is situated within the Rainy River District, which was not subject to surrender or treaty until Manitoba Treaty Number 3 of October 1873. The majority of lands within the treaty area are part of Ontario. Overall, the treaty allowed for the development of natural resources under both the Canadian federal and provincial government's supervision, with limited rights provided to the original Aboriginal inhabitants (Morrison 1986). At the time of the early settlement of the area around the Rainy River the Ojibwa and Chippewa camped at a place known as "the Pines", approximately 1.6 km downstream of the Town of Rainy River (RRR 1994). The Project site is also located in the vicinity (approximately 90 km west) of an identified historic Métis community-Fort Frances. Depending on the season, wild rice harvesting, smelt fishing, blueberry picking, sturgeon spawning, gathering medicinal plants and hunting takes place throughout the 55,000 square miles of the Treaty #3 area by its members.

All communities through the Grand Council Treaty 3 follow Manito Aki Inaakonigawin (the Great Earth Law) and UNDRIP (United Nations Declaration on the Rights of Indigenous Peoples). The Indigenous Communities of Rainy River First Nations, Anishnaabeg of Naongashiing, Big Grassy River First Nation, and Northwest Angle # 37 and Northwest Angle # 33 have been identified as the immediate right bearing communities. The Grand Council Treaty 3 organization and the Treaty 3 associated Indigenous Communities (as listed in Section 6.0) have been identified for lower intensity consultation (based upon anticipated project disturbance, area and Indigenous Community use of Project area per UNDRIP) for notification of any potential impacts to traditional land use activities including hunting, fishing, gathering, trapping, cultural / spiritual / archaeological.

The Rainy River is used by the Rainy River First Nations, Anishnaabeg of Naongashiing, Big Grassy River First Nation, Northwest Angle # 37, Northwest Angle # 33, and the Sunset County Métis Community for hunting, fishing, gathering, trapping, cultural/spiritual/archaeological activities.

However, the Project will not impede or impact the above-mentioned activities for the Rainy River First Nations, Anishnaabeg of Naongashiing, Big Grassy River First Nation, Northwest Angle

37, Northwest Angle # 33, and the Sunset County Métis Community. As stated in Section 5.3, there is a temporary minor increase in backwater WSE for the 100-year storm as a result of the potential causeway but this is considered an insignificant increase that will not impact hunting, fishing, gathering, trapping, cultural/spiritual/archaeological activities. No permanent impacts to these activities are expected as a result of the Project, as described in Table 15.

Table 15 Potential Project Effects to Identified Indigenous Community Activities

Indigenous Community Activity	Indigenous Community	Potential Effects to Identified Activities	Proposed Protection/Mitigation Measures
Hunting	Rainy River First Nations, Anishnaabeg of Naongashiing, Big Grassy, Northwest Angle # 37, Northwest Angle # 33, and the Sunset County Métis Community	No impacts to hunting activities are anticipated. Footprint of replacement bridge on land (including abutment and roadway and terrestrial habitat is minimal (Project requires the removal of 0.10 ha of Cultural Woodland and 0.01 ha of Shallow Marsh vegetation communities- see Section 5.1.7) and habitat quality in this area is relatively low compared to other natural areas near the direct Project area.	Not anticipated
Gathering	Rainy River First Nations, Anishnaabeg of Naongashiing, Big Grassy, Northwest Angle # 37 Northwest Angle # 33, and the Sunset County Métis Community	Impacts to gathering activities are not anticipated. Footprint of replacement bridge on land results in very minor impacts to vegetation (Project requires the removal of 0.10 ha of Cultural Woodland (CUW1) and 0.01 ha of Shallow Marsh (MAS2) vegetation communities) - see Section 5.1.7) and habitat quality in this area is relatively low compared to other natural areas near the direct Project area.	Not anticipated
Wild rice harvesting	Rainy River First Nations, Anishnaabeg of Naongashiing, Big Grassy, Northwest Angle # 37 Northwest Angle # 33, and the Sunset County Métis Community	Impacts to wild rice harvesting activities are not anticipated. Footprint of replacement bridge on land results in very minor impacts to vegetation (Project requires the removal of 0.01 ha of Shallow Marsh (MAS2) - see Section 5.1.7) and habitat quality in this area is relatively low compared to other natural areas near the direct Project area. As stated in Section 5.3, there is a temporary slight increase in backwater WSE for the 100-year storm as a result of the potential causeway but this is considered an insignificant increase that will not impact wild rice harvesting.	Not anticipated

Indigenous Community Activity	Indigenous Community	Potential Effects to Identified Activities	Proposed Protection/Mitigation Measures
Fishing	Rainy River First Nations, Anishnaabeg of Naongashiing, Big Grassy, Northwest Angle # 37 Northwest Angle # 33, and the Sunset County Métis Community	Effects on fishing activities and fish populations are not anticipated as a result of the Project. Construction, operation and decommissioning activities that have the potential to affect fishing and fish populations will be addressed through appropriate protection and mitigation measures (see Section 5.1.3). Navigation on the Rainy River will be maintained during all Project phases-temporary delays as a result of barge activity during construction and decommissioning may occur but is expected to be minimal.	Proposed fish and fish habitat protection and mitigation measures discussed in Section 5.1.3. Navigation will be maintained through Transport Canada's requirements and are discussed in Section 5.1.11.
Cultural/Spiritual/ Archaeological	Rainy River First Nations, Anishnaabeg of Naongashiing, Big Grassy, Northwest Angle # 37 Northwest Angle # 33, and the Sunset County Métis Community	No effects on identified and registered cultural and archaeological sites. No anticipated effects on other cultural/spiritual/archaeological sites-Project footprint on land is approximate 0.11 ha, located within MTO RoW and previously disturbed land.	If a cultural/spiritual/ archaeological site is identified/ discovered during construction, appropriate protection and mitigation measures (as described in Section 5.1.15) will be applied.
Health and Socio-Economic Factors (i.e., access to active transportation, navigation, recreation and snowmobile trails, changes in noise, air quality and water quality)	Rainy River First Nations, Anishnaabeg of Naongashiing, Big Grassy, Northwest Angle # 37 Northwest Angle # 33, and the Sunset County Métis Community	Potential effects to health (i.e., loss of food source due to hunting interruptions) are not anticipated as a result of Project activities. The Project will not result in effects to access to recreational and active transportation infrastructure for Indigenous Communities. The Project will not result in permanent effects to air quality and noise. There may be potential minor and temporary noise and dust effects as a result of construction and decommissioning activities. There are no anticipated effects to water quality and indirect and direct effects to Indigenous Communities. Navigation on the Rainy River will be maintained during all Project phases-temporary delays as a result of barge activity during	Potential temporary and minor noise and dust effects as a result of construction and decommissioning will be addressed through appropriate protection and mitigation measures discussed in Section 2.4. Navigation will be maintained through Transport Canada's requirements and are discussed in Section 5.1.11.

Indigenous Community Activity	Indigenous Community	Potential Effects to Identified Activities	Proposed Protection/Mitigation Measures
		construction and decommissioning may occur but is expected to be minimal.	

The Project will also not require access to, use of, or the exploration, development, and production of lands currently used for traditional purposes by Indigenous groups. As such, the Project is not expected to adversely affect Indigenous groups.

Archaeological research (Reid 1977) has documented the long and widespread use of Lake of the Woods including identified pre and post contact archaeological sites in the eastern and northern portions of Lake of the Woods. The Lake of the Woods region is located approximately 30-35 km northwest of the Project site. It is anticipated that activities associated with the Project including construction, operation and decommissioning will not have an impact on the Lake of the Woods region and any associated activities that take place in the Lake of the Woods. Any potential activities that may result in indirect effects downstream of the Project site in the Rainy River will be avoided and/or mitigated with protection and mitigation measures described in Section 2.4.

Refer to Section 6.0 for details relating to notification and consultation with the Indigenous communities in proximity to the Project.

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6.0 ENGAGEMENT AND CONSULTATION WITH INDIGENOUS GROUPS RESULTING FROM THE CHANGES TO THE ENVIRONMENT

6.1 POTENTIALLY AFFECTED AND INTERESTED INDIGENOUS GROUPS

Where used in the Project Description, "Indigenous groups" is inclusive of both First Nations and Métis groups.

The MTO has identified the Indigenous groups listed in Table 16 (and shown in Figure 23 in Appendix A) as potentially interested in the Project.

Table 16: Indigenous Groups with Potential Interest in the Project

Indigenous Group	Reserve / Settlement / Village Detail	Distance from Project Site	Address	Contact Information (Email, Fax, Telephone)
Anishinabe of Wauzhushk Onigum	**Agency No. 30**	Approx. 70 km	PO Box 1850 Kenora ON P9N 3X8	Email: ken@wonation.ca Telephone: 807-548-5868 Fax: 807-548-4877
	Kenora No. 38B	Approx. 110 km		
Anishnaabeg of Naongashiing	**Big Island Mainland No. 93**	Approx. 45.5 km	PO Box 335 Morson ON P0W 1J0	Email: lilgoldeneagle@tbaytel.net Telephone: 807-488-5602 Fax: 807-488-5942
	Saug-a-gaw-sing No. 1	Approx. 49 km		
	Big Island No. 31D	Approx. 42.5 km		
	Big Island No. 31E	Approx. 45 km		
	Big Island No. 31F	Approx. 48 km		
	Lake of the Woods No. 31B	Approx. 88 km		
	Lake of the Woods No. 31G	Approx. 77.5 km		
	Lake of the Woods No. 31H	Approx. 41.5 km		

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Indigenous Group	Reserve / Settlement / Village Detail	Distance from Project Site	Address	Contact Information (Email, Fax, Telephone)
	Shoal Lake No. 31J	Approx. 86.5 km		
	Agency No. 30	Approx. 70 km		
Big Grassy River First Nation	**Assabaska Indian Reserve**	Approx. 30 km	PO Box 414 Morson ON P0W 1J0	Email: zigtuesday@hotmail.com Telephone: 807-488-5457 Fax: 807-488-5533
	Big Grassy River No. 35G	Approx. 40 km		
	Lake of the Woods No. 35J	Approx. 55 km		
	Obabikong No. 35B	Approx. 61.5 km		
	Naongashing No. 31A **Naongashing No. 35A**	Approx. 58 km		
	Agency No. 30	Approx. 70 km		
Couchiching First Nation	**Couchiching No. 16A**	Approx. 81.5 km	RR 2 RMB 2027 Fort Frances ON P9A 3M3	Email: chuckmcp@vianet.ca Telephone: 807-274-3228 Fax: 807-274-6458
	Agency No. 1	Approx. 91 km		
Grand Council Treaty # 3	**N/A (organization)**	N/A	PO Box 1720 Kenora ON P9N 3X7	
Mitaanjigamiing First Nation	**Rainy Lake No. 18C**	Approx. 88 km	PO Box 609 Fort Frances ON P9A 3M9	Email: Janice@mitaanjigamiing.ca Telephone: 807-274-2188 Fax: N/A
	Agency No. 1	Approx. 91 km		
Naicatchewenin First Nation	**Rainy Lake 17A**	Approx. 73 km	PO Box 15 RR 1 Devlin ON P0W 1C0	Email: wayne.smith@bellnet.ca Telephone: 807-486-3407 Fax: 807-486-3704
	Rainy Lake 17B	Approx. 62.5 km		
	Agency No. 1	Approx. 91 km		

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Indigenous Group	Reserve / Settlement / Village Detail	Distance from Project Site	Address	Contact Information (Email, Fax, Telephone)
Nigigoonsiminikaaning First Nation	**Agency No. 1**	Approx. 91 km	PO Box Fort Frances ON P9A 3M5	Email: zhaawwinigaabo@vianet.ca Telephone: 807-481-2536 Fax: 807-481-2511
	Rainy Lake No. 26A	Approx. 119.5 km		
	Rainy Lake No. 26B	Approx. 133.5 km		
	Rainy Lake No. 26C	Approx. 133.5 km		
Northwest Angle No. 33	**Agency No. 30**	Approx. 70 km	PO Box 1490 Kenora ON P9N 3X7	Email: moosey@mts.net Telephone: 807-733-2200 Fax: 807-733-3148
	Northwest Angle No. 33B	Approx. 82.5 km		
	Whitefish Bay No. 33A	Approx. 87 km		
Northwest Angle No. 37	**Agency No. 30**	Approx. 78 km	PO Box 1490 Kenora ON P9N 3X7	Email: chief@nwa37.ca Telephone: 807-226-5353 Fax: 807-226-1164
Ojibways of Onigaming First Nation	**Assabaska Indian Reserve**	Approx. 30 km	PO Box 160 Nestor Falls ON P0X 1K0	Email: angie.copenace@onigaming.ca Telephone: 807-484-2162 Fax: 807-484-2737
	Sabaskong Bay No. 35C	Approx. 62.5 km		
	Sabaskong Bay No. 35D	Approx. 69 km		
	Sabaskong Bay No. 35F	Approx. 58 km		
	Sabaskong Bay No. 35H	Approx. 58 km		
	Agency No. 30	Approx. 70 km		
Pwi-Di-Goo-Zing-Ne-Yaa-Shing Advisory Services	**N/A (organization)**	N/A	Pwi-Di-Goo-Zing Ne-Yaa-Zhing Advisory Services 1455 Idylwild Drive PO Box 522 Fort Frances ON P9A 3M8	

Indigenous Group	Reserve / Settlement / Village Detail	Distance from Project Site	Address	Contact Information (Email, Fax, Telephone)
Rainy River First Nations	**Long Sault No. 12**	Approx. 39.5 km	PO Box 450 Emo ON P0W 1E0	Email: j.leonard@bellnet.ca Telephone: 807-482-2479 Fax: 807-482-2603
	Manitou Rapids No. 11	Approx. 48.5 km		

All communities through the Grand Council Treaty 3 follow Manito Aki Inaakonigawin (the Great Earth Law) and UNDRIP (United Nations Declaration on the Rights of Indigenous Peoples). The Indigenous Communities of Rainy River First Nations, Anishnaabeg of Naongashiing, Big Grassy River First Nation, Northwest Angle # 33, and Northwest Angle # 37 have been identified as the immediate rights-bearing communities (based upon proximity and Indigenous Community use of the Project area for traditional activities and intensity of land use for these activities as per UNDRIP). The Grand Council Treaty 3 organization and the remaining Treaty 3 associated Indigenous Communities (as listed in Section 6.0) have been identified for reduced intensity consultation (based upon anticipated project disturbance, proximity to Project area and Indigenous Community use of Project area as per UNDRIP) for notification of any potential impacts to traditional land use activities including hunting, fishing, gathering, trapping, and cultural / spiritual / archaeological.

The Rainy River is used by the Rainy River First Nations, Anishnaabeg of Naongashiing, Big Grassy River First Nation, Northwest Angle # 37, Northwest Angle # 33, and the Sunset County Métis Community for hunting, fishing, gathering, trapping, and cultural/spiritual/archaeological activities.

The Indigenous Community in closest geographic proximity to the Project is the Rainy River First Nations. The Rainy River First Nations (RRFN) is an Anishinaabe (Ojibwe) community located in northwestern Ontario, Canada approximately 40 km west of the town of Fort Frances, directly north of the state of Minnesota. The closest communities are Emo, three (3) km to the east, and Barwick, five (5) km to the west. The closest major cities are Thunder Bay to the east and Winnipeg to the west, each about 400 km from the Project area. The Rainy River First Nations name originates from the Rainy River, which is located at the southern edge of the reserve and the United States/Canada border. The main part of the reserve is called Manitou Rapids, which is also part of the Rainy River and is spiritually and culturally significant to the Rainy River First Nations. In 1873, seven separate First Nations: Hungry Hall #1 and #2; Little Fork; Long Sault #1 and #2; and Manitou Rapids #1 and #2 (now known as Rainy River First Nations) signed Treaty #3 with the Canadian Government. The Rainy River First Nations has nearly 1000 members, with approximately 350 residing on the reserve.

The following U.S. First Nation Tribes or Indian Tribes were contacted as part of the Project notification process:

- Bad River Band of Lake Superior Chippewa
- Fort Peck Tribes
- Flandreau Santee Sioux Tribe
- Keweenaw Bay Indian Community
- Lac Courte Oreilles Band of Lake Superior Chippewa
- Lac du Flambeau Band of Lake Superior Chippewa
- Lac Vieux Desert Band of Lake Superior Chippewa
- Red Cliff Band of Lake Superior Chippewa
- Red Lake Band of Chippewa
- St. Croix Chippewa Indians of Wisconsin
- Santee Sioux Tribe
- Shakopee Mdewakanton Sioux Community
- Sokaogon Chippewa Community
- Spirit Lake Trike
- Standing Rock Sioux Tribe
- Turtle Mountain Band of Chippewa

6.2 DESCRIPTION OF ENGAGEMENT OR CONSULTATION ACTIVITIES CARRIED OUT TO DATE WITH INDIGENOUS GROUPS

There are a number of Indigenous groups either located within and in the vicinity of the Project area, or who may have an interest in the study. The consultation program included written communications with the Indigenous groups identified in Table 16.

The Indigenous communities listed above were notified at various stages of the Project including:

- Notice of Study Commencement letter and copy of the OGN on April 29, 2015
- Notice of Public Meeting 1 letter and a copy of the OGN on June 5, 2015
- Notice of Public Meeting 2 letter and a copy of the OGN on October 1, 2015
- Notice of Public Meeting 3 letter and a copy of the OGN on May 4, 2016
- Notice of Transportation Environmental Study Report (TESR) Public Review Period on February 9, 2017

The notification letters invited the Indigenous communities to participate in the study through several avenues including attending the planned External Agency meetings that occur prior to the Public Meetings and an option to request individual meetings and presentations with the MTO.

Further consultation with the Indigenous communities will continue in cooperation with the MTO and the CEA Agency, as necessary and during Detail Design. Consultation will occur at the initiation of the Detail Design stage and throughout the project via notification letters and if requested, meetings and presentations with individual Indigenous communities will be arranged.

6.3 KEY COMMENTS AND CONCERNS BY INDIGENOUS GROUPS

Following Public Meeting 1, on October 15, 2016, the Métis Nation of Ontario (MNO) expressed an interest in the Project, additional project information and a potential informal information session with the MTO. Following this request, the MTO continued to consult with the MNO and offered a separate presentation and information session in Rainy River/Baudette for the MNO Community Councils. To-date the MNO has not confirmed a date for the potential information session. The MTO will continue to follow-up and provide project information to the MNO. To date, no specific concerns have been raised by any of the Indigenous communities consulted regarding the Project. The MTO will continue to consult with all potentially interested Indigenous communities during Detail Design.

6.4 INDIGENOUS CONSULTATION AND INFORMATION GATHERING PLAN

The MTO's Indigenous consultation process follows the Government of Canada's Aboriginal Consultation and Accommodation guidelines in order to fulfill the Crown's Duty to Consult and is based on the following principles:

- Consultation and accommodation will be carried out in a manner that seeks to balance Indigenous interests with other societal interests, relationships and positive outcomes for all partners
- Consultation carried out in a timely, efficient and responsive manner
- Consultation that is transparent, predictable, accessible, reasonable, flexible and fair
- Consultation founded in the principles of good faith, respect and reciprocal responsibility
- Consultation that is respectful of the uniqueness of First Nations, Métis, and Inuit communities
- Includes accommodation (e.g., changing of timelines, project parameters), where appropriate

MTO's Indigenous consultation process includes the following consultation steps:

- Phase 1: Pre-Consultation Analysis and Planning
  - Describe and document the proposed Crown conduct/the Project
  - Identify potential adverse impacts of the Project
  - Identify which Aboriginal groups are in the area of the Project and ascertain their respective potential or established Aboriginal or Treaty rights and related interests
  - Make initial determination as to whether there is a duty to consult
  - Assess the scope of the duty to consult and, where appropriate, accommodate
  - Design the form and content of the consultation process
- Phase 2: Crown Consultation Process
  - Implement the consultation process (notify Aboriginal groups of the Project, provide contact information, offer to meet to discuss the Project)
  - Document consultation and correspondence
  - Develop and maintain an issues tracking table
  - Adjust the consultation and accommodation process, as necessary
- Phase 3: Accommodation
  - Identify possible accommodation measures and options
  - Select appropriate accommodation options
  - Communicate and document selected accommodation measures
- Phase 4: Implementation, Monitoring and Follow-Up
  - Communicate and implement the decision(s)
  - Monitor and follow-up
  - Evaluate the consultation process

This study has included Phases 1 and 2 as described above, and the Indigenous People's consultation program will continue to follow this process as the Project proceeds through Detail Design and construction.

6.4.1 Key Communication Tools

The following communication tools have been and will continue to be utilized as appropriate throughout the Project:

- Project notices published in local newspapers
- Direct mailings to communities
- Public Meetings and comment forms
- A project website
- Targeted e-mails
- Meetings, presentations, webinar, e-mails and phone conversations
- Frequently asked questions

6.5 CURRENT INDIGENOUS TRADITIONAL LAND USE

The Rainy River is used by the Rainy River First Nations and the Sunset County Métis Community for hunting, fishing, gathering, trapping, cultural/spiritual/archaeological activities.

Outside of the direct Project area, the main community site for Rainy River First Nations is located along Rainy River adjacent to Highway 11, offering a wide variety of recreational opportunities, especially for those interested in the outdoors. The area is well known for its outdoor sports opportunities. The Kay-Nah-Chi-Wah-Nung Historical Centre offers cross country skiing, and snowshoe trails during the winter months. The community of Rainy River utilizes Highway 11 and Highway 17 for access to and from the community and to other areas, towns and resources and the international border. The Project will maintain access on Highway 11 and across the U.S./Canada border and will not impede access on Highway 11 for the Rainy River First Nations.

7.0 CONSULTATION WITH THE PUBLIC AND OTHER PARTIES

The consultation plan for this Project has been developed in conjunction with the Canadian and U.S. Environmental Assessment and consultation processes. A joint U.S. and Canadian Public Involvement Plan (PIP) was developed for this Project that includes details of planned public meetings, agency meetings, online resources including a project website, a dedicated online project interface called MindMixer, and a Project Advisory Committee (PAC). The PIP also included detailed engagement plans for local, municipal, provincial, federal and international agencies and stakeholders throughout the duration of the Project through various consultation methods (i.e., correspondence, conference calls, and meetings). The public meetings for this Project were scheduled concurrently to make sure the same information is shared with the public and local stakeholders on both sides of the border at the same time throughout the duration of the Project. In addition to the PIP, a separate Inter Agency Involvement Plan was developed that included an updated agency engagement consultation plan in order to increase international agency participation and coordination. The plan includes quarterly webinars and targeted agency meetings.

Informal and formal consultations have occurred with senior agency officials, elected federal, provincial and municipal officials, their key political staff, and key community members and organizations to inform them about MTO's and MnDOT's Preliminary Design and Environmental Assessment Study to replace the existing Baudette/Rainy River International Bridge.

7.1 STAKEHOLDERS AND RELATED CONSULTATION ACTIVITIES

7.1.1 Potentially Affected and Interested Stakeholders

Non-Indigenous stakeholders identified by the MTO who may be potentially affected and/or have an interest in the Project are listed in Table 17.

Table 17: Stakeholders Potentially Affected by or Interested in the Project

Federal Government	Canadian Environmental Assessment Agency
	Fisheries and Oceans Canada
	Transport Canada
	Environment and Climate Change Canada
	Global Affairs Canada
	International Joint Commission
	Canada Border Services Agency
	Citizenship and Immigration Canada
	Canadian Transportation Agency
	Royal Canadian Mounted Police

	Canada Revenue Agency Health Canada
Provincial Government	Ministry of Tourism, Culture and Sports Ministry of Natural Resources and Forestry Ministry of Northern Development and Mines Ministry of Municipal Affairs and Housing Ministry of Aboriginal Affairs – Consultation Unit Ministry of the Environment and Climate Change Ontario Provincial Police Member of Provincial Parliament – Kenora Rainy River
Municipal Government	Town of Rainy River Township of Dawson Rainy River Chamber of Commerce Rainy River District Social Services Administration Board (including EMS) Rainy River Health Centre
Conservation Authorities	Rainy Lake of the Woods Watershed Board
Local Landowners, Occupants and Residents	Residents of the Town of Rainy River and the City of Baudette, local businesses, and other stakeholder (Federation of Anglers and Hunters, Trans Canada Trails, Rainy River Future Development Corporation)
U.S. Agencies	U.S. Army Corps of Engineers Federal Highway Administration U.S. Customs and Border Protection U.S. Coast Guard U.S. State Department City of Baudette Federal Aviation Administration State of Minnesota Historic Preservation Office Minnesota Department of Natural Resources

Those stakeholders who may be potentially affected and/or interested in the Project have been or will be included in discussions relating to the Project. For a list of those stakeholders that were consulted to date, refer to Table 1. Correspondence with U.S. agencies is documented in the U.S. EA, on file with MnDOT and in Appendix C-C.6.

7.1.2 Overview of Stakeholder Consultation Activities to Date

Consultation activities undertaken to date with respect to the Project are described in Section 7.1.2.1 to Section 7.1.2.6.

The consultation process provided an opportunity for the Project Team and representatives from the MTO to discuss the study process with the public, property owners, external agencies, and stakeholders.

The process aims to notify all interested parties of the Project and to provide an opportunity for input to the study and decision-making process. This was accomplished by presenting the findings of each stage of work to the public, and through ongoing discussions with the various agencies and ministries, non-government interest groups and property owners.

To make sure that all interested members of the public, agencies and stakeholders were contacted, a consultation plan was followed that included:

- Newspaper notices in the Rainy River Record and Fort Francis Times
- Direct mailings to external agencies, stakeholders, and property owners in the Project area as well as members of the public who indicated an interest in the study
- Direct mailings to Indigenous Groups
- A project website and a dedicated online forum (MindMixer)
- Three Public Meetings
- Targeted meetings with agencies
- International Stakeholder webinar series

Throughout the consultation process for this Project few comments were received although there was general support for the Project from the local communities and for the selected Preferred Plan that was presented at Public Meeting 3.

7.1.2.1 Project Notification

The purpose of the Notice of Study Commencement was to inform the public and external agencies about the study and to seek input from agencies, property owners, and users of the highway.

Individual notification letters were sent to federal, provincial, and municipal agencies, property owners and stakeholder groups, including Indigenous groups, expected to have an interest in the study. Letters to agencies requested information on the environmental (i.e., natural, social, or cultural) features of the Project area and to seek their input on the Project.

In general, comments received included requests to be added to the project mailing list, importance of daily access for both Rainy River and Baudette communities, potential property impact concerns for Water Street, importance of bridge aesthetics, no vertical clearance limits for the replacement bridge, permitting processes required, impacts to emergency services utilizing the existing bridge, and pedestrian safety concerns.

7.1.2.2 Public Meeting 1

The first Public Meeting was held on Wednesday, June 24, 2015 at the Rainy River Recreation Centre in Rainy River, Ontario. The purpose of the meeting was to introduce the study; display

and seek input on the existing conditions in the Project area (i.e., natural, social, economic and cultural); provide study background information; and answer questions about the study.

A total of seven comments were submitted at and following the first Public Meeting and overall there was support for the Project from the public. The comments included potential impacts to private property, access provided by the bridge, new bridge aesthetics, construction timing, construction noise and disruption, EMS access and public water (dock) access. Preservation of the natural environment, property impacts, and impacts to local businesses, were identified as important evaluation criteria.

7.1.2.3 Public Meeting 2

The second Public Meeting was held on Wednesday, October 28, 2015 at the Rainy River Recreation Centre. The purpose of the meeting was to: display and seek input on the evaluation criteria and evaluation process; present and seek input on the preliminary alignment and structural bridge replacement alternatives; and answer questions about the study.

External agencies and stakeholders that were represented at the meeting included the Township of Dawson, the Ontario Ministry of Natural Resources and Forestry, and the Ontario Provincial Police.

A total of four comments were submitted at and following the second Public Meeting. The comments included preference for Alignment Alternatives 1 and 2, detailed cost analysis of each bridge type should be conducted, consider realignment of Baudette Airport to allow for cantilever bridge design, existing bridge with open grate deck is noisy, preference for flatter bridge with no vertical clearance requirements, maintain access across the bridge during construction, and consideration for cultural features on U.S. side.

7.1.2.4 Public Meeting 3

The third Public Meeting was held on Wednesday, May 25, 2016 at the Rainy River Recreation Centre. The purpose of the meeting was to: present and seek input on the Recommended Plan; present and seek input on the results of the evaluation of alternatives; and answer questions about the study.

External agencies and stakeholders that were represented at the third Public Meeting included the Town of Rainy River, the Ontario Ministry of Natural Resources and Forestry, and the Ontario Ministry of Northern Development and Mines. A total of four comments were submitted at and following the third Public Meeting. The comments included support for the Preferred Plan, concern for noise from big trucks braking, signage to deter engine braking by large trucks, and support that the proposed bridge does not have height restrictions.

7.1.2.5 Municipal Input

The Town of Rainy River Council members, Mayor and other staff were invited to participate in various consultation events throughout the study including invitations to attend all public meetings in addition to participation in the Project Advisory Committee. Local municipalities and adjacent land owners were also consulted regarding the Project. The Town of Rainy River and the Township of Dawson Council and staff members have been notified at every consultation stage of the Project. In Addition, the Town of Rainy River was invited to participate in the Project Advisory Committee and the Chief Administration Officer attended the PAC meetings and provided input into the Project. At the first Public Meeting and during the PAC meetings, Council and staff members identified support for the Project, and the need to replace the existing bridge, the importance of bridge aesthetics, and the strong ties between the Town of Rainy River and the City of Baudette.

7.1.2.6 Consultation with CEA Agency

Consultation with the CEA Agency began in April 2015 to introduce the Project, and to gain guidance on the *CEAA* process for the Project. A first meeting was held with the CEA Agency officials on January 26, 2016 to provide a general overview of the Project as it then stood and to determine the need for the preparation and submission of a Project Description. The CEA Agency requested project updates, further details regarding the design, components and impacts of the Project and also noted that they would provide an informal review of the draft Project Description prior to the formal submission to the CEA Agency. Subsequent meetings were held with the CEA Agency to discuss Project Description requirements. Consultation with the CEA Agency will continue as the Project progresses and throughout later project stages (i.e., Detail Design).

7.1.3 Key Comments and Concerns by Stakeholders

Table 18 provides a summary of consultation with agencies and preliminary key comments and concerns expressed by agencies and key stakeholders to-date.

Table 18: Summary of Consultation with Agencies

Agency	Key Comments and Concerns	Response / Additional Information Provided
Environment and Climate Change Canada	• Stormwater management concerns and U.S. and Canadian standards for stormwater treatment • ECCC will conduct review of preliminary hydraulics assessment	• The preliminary hydraulics assessment will be provided to ECCC for review
Transport Canada	• Permits under the authority of Transport Canada cannot be issued until the completion of the CEAA process	• The replacement bridge will match or provide greater horizontal and vertical

Agency	Key Comments and Concerns	Response / Additional Information Provided
	• Confirmed that the navigational opening for the Project must match the existing CN Rail Bridge (structure that limits navigation) located north of the existing Baudette/Rainy River Bridge • Navigational channel must be maintained during construction of the Project • Application for the Project will be required to be submitted to the Navigation Protection Program for approval • Permit is required under the *International Bridges and Tunnels Act*, which is administered by Transport Canada	clearance than the existing CN Rail Bridge • A 30.5 m horizontal clearance will be provided on each side of the border • The navigational channel will be maintained during construction of the Project
Fisheries and Oceans Canada	• DFO authorization is issued following the completion of the CEAA process • Impacts to fish habitat are possible due to proposed piers or infill at bridge abutments and construction impacts including potential for infill, causeways or coffer dams • Impacts to fish habitat can be offset with appropriate mitigation measures • The Project may have residual effects on fish and fish habitat and determination of no serious harm to fish and fish habitat should be determined once final design and construction details are confirmed	• Using Preliminary Design plans, MTO/DFO/OMNR Fisheries Protocol determined the project is Low Risk for serious harm to fish and fish habitat • Project risk to fish and fish habitat will be confirmed once details of the design are finalized • Authorization under the *Fisheries Act* is not anticipated and will be confirmed during Detail Design

Consultation with the Public and Other Parties
March 2017

Agency	Key Comments and Concerns	Response / Additional Information Provided
Global Affairs Canada	• The use and management of waterways between the United States and Canada is governed by the *International Boundary Waters Treaty Act* • The Act is administered by the International Joint Commission (IJC), Global Affairs Canada, and the U.S. State Department • The Act requires a hydraulics analysis be submitted and reviewed by ECCC • International Rainy-Lake of the Woods Watershed Board can provide expertise regarding drainage and stormwater management issues • Certain types of piers are more hydraulically efficient than others • Global Affairs Canada and the U.S. State Department will prepare a Special Agreement between governments in lieu of the Order of Approval typically required by the Act-unless otherwise confirmed by the respective agencies during Detail Design • Special Agreement will address potential changes to levels and flow of the Rainy River as a result of the Project	• The preliminary hydraulics assessment will be provided to Global Affairs Canada and U.S. State Department as part of the IJC process
International Boundary Commission	• Authorization from the IBC is required for work within 3 m of the border • Letter of Request for work within 3 m (10 feet) of the border will be required prior to construction	
Ontario Ministry of Natural Resources and Forestry	• The Project area is a migratory corridor for Walleye, Northern Pike and Lake Sturgeon • Sensitivity of fish habitat is moderate-low on the Canadian side of the Rainy River • Lake Sturgeon and other fish with similar spawning requirements do not spawn in the Project area • MNRF requested habitat assessment and impact assessment information on the Project	• The need for an ESA permit for Lake Sturgeon is not anticipated and will be confirmed once details of the design are finalized. • Provided the *Fish and Fish Habitat Existing Conditions and Impact Assessment Report* for reference.

The Project Team will continue to address comments and concerns during Detail Design and construction. Key U.S. agencies including the U.S. Army Corps of Engineers, Minnesota Department of Natural Resources, City of Baudette, and Federal Highway Administration were consulted as part of this project and as part of U.S. regulatory requirements and permits. U.S. agency correspondence is documented in the U.S. EA, which is on file with MnDOT and in Appendix C-C.6.

7.1.4 Overview of Ongoing and Proposed Stakeholder Consultation

All key stakeholders, agencies, Indigenous groups, and members of the public will continue to be consulted as the Project proceeds into the Detail Design phase. Consultation during Detail Design will likely include a Public Meeting, targeted meetings with agencies, and international agency coordination meetings.

7.1.5 Consultations with Other Jurisdictions

Beyond consultation with the CEA Agency, discussions and meetings were held with officials from Global Affairs Canada, DFO, Transport Canada and Environment and Climate Change Canada in late 2015 and early 2016 to discuss the Project, environmental assessment implications and applicability of the Project to agencies.

Consultation with provincial regulators, including among others, the Ministry of the Environment and Climate Change; the Ministry of Natural Resources and Forestry; the Ministry of Northern Development and Mines; the Ministry of Tourism, Culture and Sport; Ontario Provincial Police; and the local Member of Provincial Parliament (MPP), began in 2015 to provide an introduction of the Project, and to obtain information on existing conditions and baseline data, regulatory processes that were required to be followed.

Further consultation will continue with all the agencies identified above as the Project progresses.

A complete list of stakeholders that were consulted to date is included in Table 1 and Section 1.3.

8.0 SUMMARY OF THE PROJECT DESCRIPTION

See separate Project Description Summary document – under separate cover/ Sommaire – sous pli séparé.

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9.0 REFERENCES

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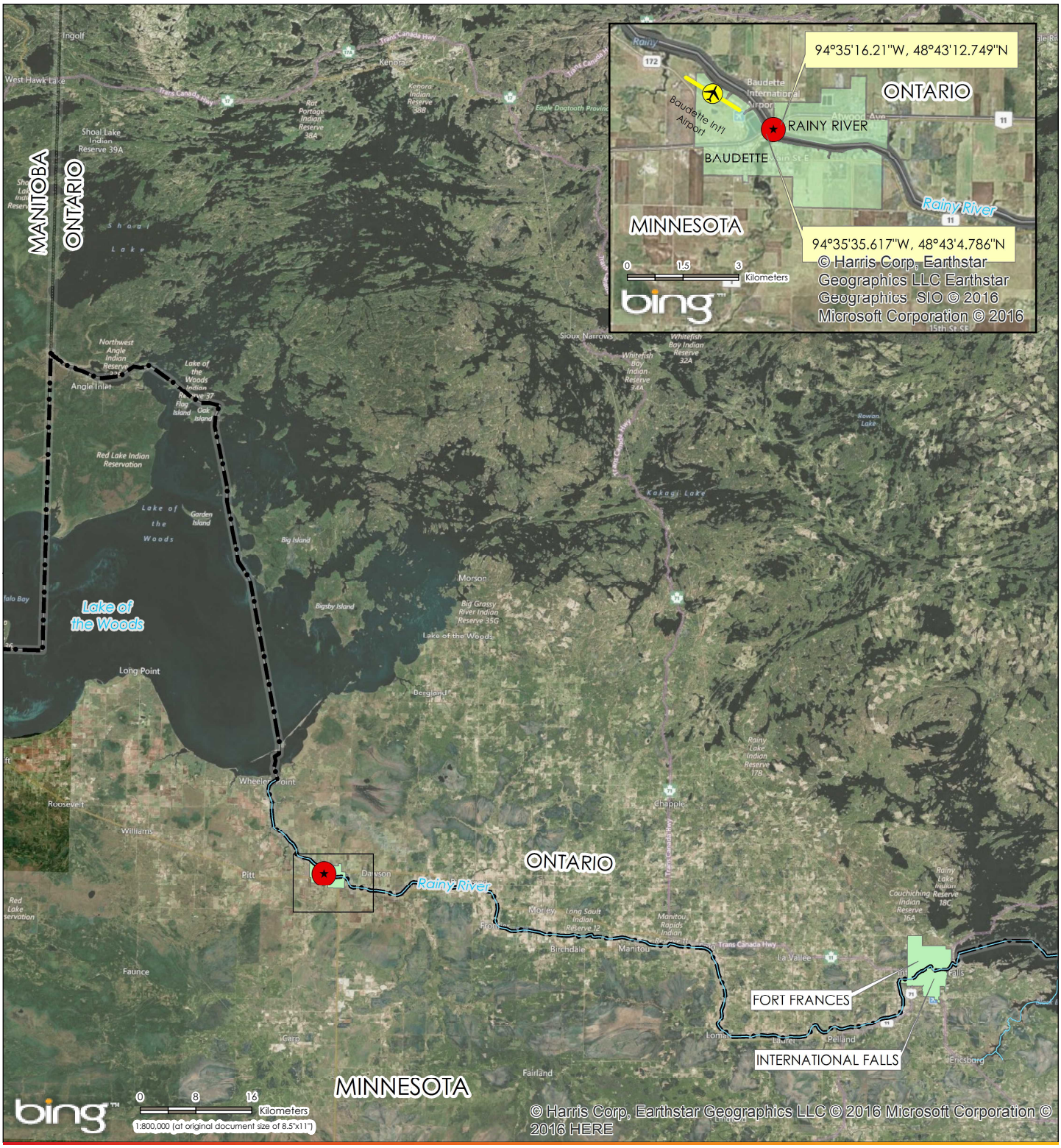
APPENDIX A
FIGURES

\\US1291-F01\workgroup\1938\active\193802870\GIS\Projects\Canadian Exhibits\AR Canadian Maps_metric_2016-12-22_overview.mxd Revised: 2016-12-22 By: aribachonek



Legend

- Project Area
- Rainy River
- International Boundary
- Provincial Boundaries
- Municipal Boundaries

Notes

1. Coordinate System: NAD 1983 UTM Zone 15N

2. Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation

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Stantec

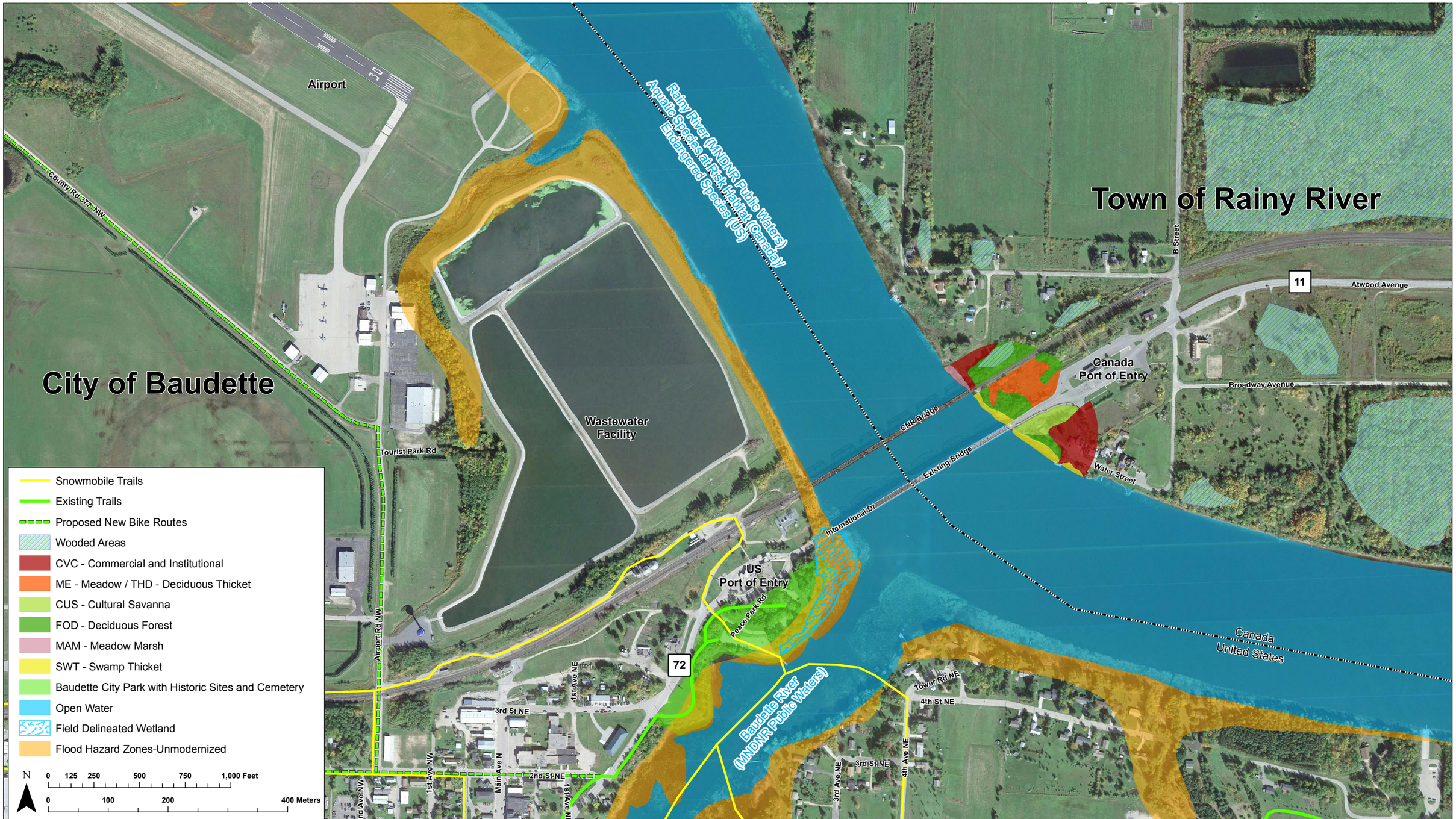
Project Location 193802870
T161N, R31W, S35
City of Baudette, MN

Prepared by aribachonek on 2016-12-20

Client/Project SP 3905-09
MnDOT / MTO
Baudette/Rainy River International Bridge Replacement

Figure No.
1

Title
PROJECT SITE AND REGIONAL CONTEXT



EXISTING CONDITIONS

MINISTRY OF TRANSPORTATION ONTARIO

BAUDETTE/RAINY RIVER INTERNATIONAL BRIDGE

FIGURE 2

DATE: OCTOBER 2016 PROJ. NO.: 193802870

Stantec
2335 Highway 36 W
St. Paul, MN 55113
www.stantec.com

Plot Date: 09/30/2016 - 12:44pm
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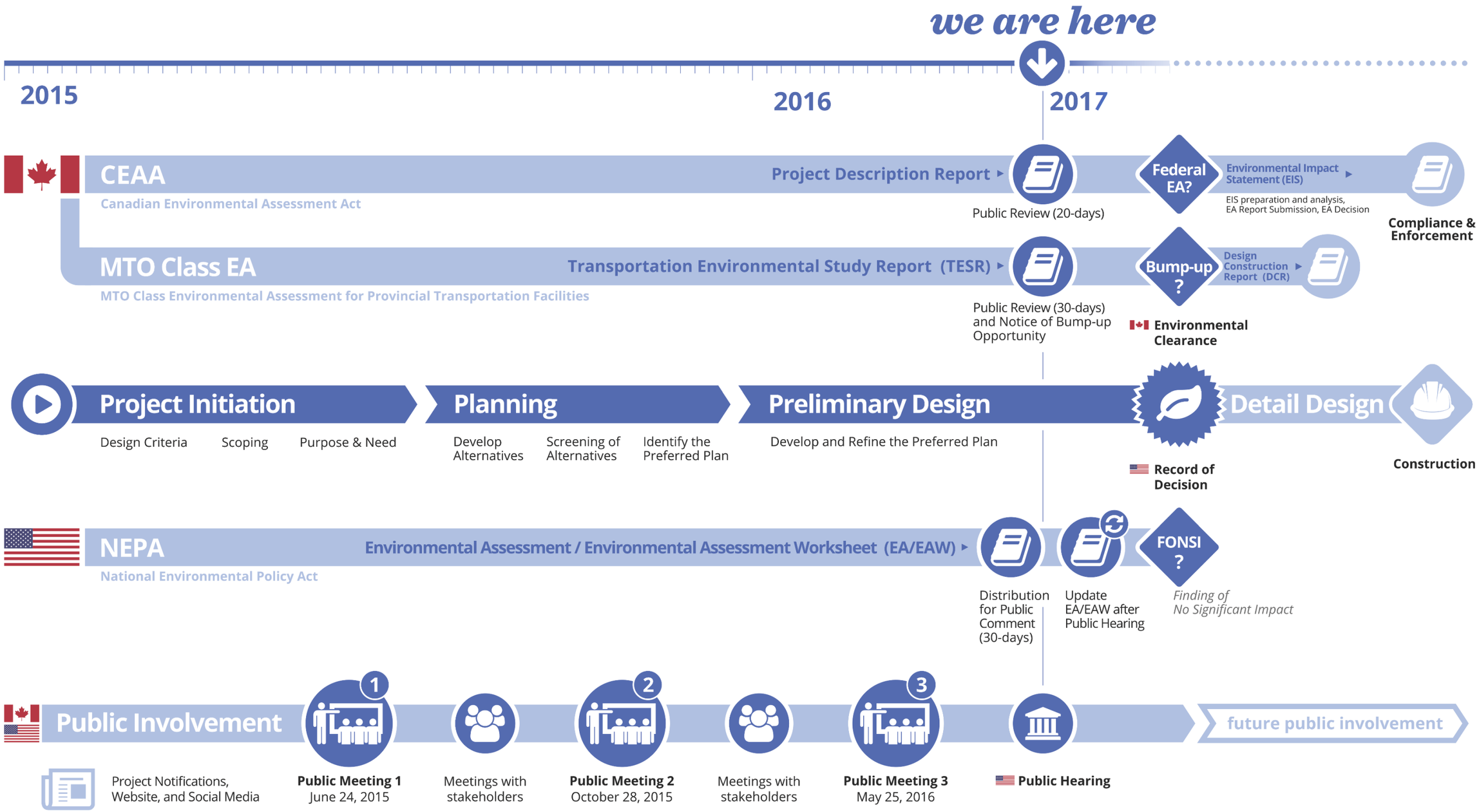
Xrefs:



STUDY PROCESS

MINISTRY OF TRANSPORTATION ONTARIO
BAUDETTE/RAINY RIVER INTERNATIONAL BRIDGE

FIGURE 3

DATE: FEBRUARY 2017 PROJ. NO.: 193802870

Stantec
2335 Highway 36 W
St. Paul, MN 55113
www.stantec.com

EXISTING CNR BRIDGE

TH 72

HIGHWAY 11

RAINY RIVER

CANADA - ONTARIO
INTERNATIONAL BORDER
UNITED STATES - MINNESOTA

LEGEND

ALIGNMENT ALTERNATIVE 1 (DOWNSTREAM OF EXISTING ALIGNMENT)

ALIGNMENT ALTERNATIVE 2 (UPSTREAM OF EXISTING ALIGNMENT)

ALIGNMENT ALTERNATIVE 3 (SAME LOCATION AS EXISTING ALIGNMENT)***

***NOTE: WILL REQUIRE A TEMPORARY STRUCTURE ON EITHER THE UPSTREAM OR DOWNSTREAM SIDE

150
SCALE IN FEET

45.72
SCALE IN METERS

MINNESOTA DEPARTMENT OF TRANSPORTATION AND ONTARIO MINISTRY OF TRANSPORTATION
BAUDETTE/RAINY RIVER INTERNATIONAL BRIDGE REPLACEMENT
ALIGNMENT ALTERNATIVES OVERVIEW

FIGURE 4

DATE: 09/12/2016

PROJ. NO. 193802870

Stantec

Plot Date: 09/30/2016 - 12:42pm
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Xrefs:

A Continuous Steel I-Girder Superstructure

Camden Bridge, Minneapolis, MN

Characteristics:

a. Structural elements below deck require a higher roadway elevation
b. Structure type is common in Minnesota and Ontario
c. Construction can be performed using common techniques

B Simple-Span Precast/Prestressed I-Girder Superstructure

Belleair Beach Causeway Bridge, Belleair Beach, FL

Characteristics:

a. Structural elements below deck require a higher roadway elevation
b. Structure type is common in Minnesota and Ontario and standardized shapes exist
c. Construction can be performed using common techniques

C Continuous Steel Box Girder Superstructure

Brigittenauer Bridge in Vienna Austria built 1982

Characteristics:

a. Structural elements below deck require a higher roadway elevation
b. Shape allows for construction of longer spans
c. Construction can be performed using common techniques

D Segmental Concrete Box Girder

I-35W Saint Anthony Falls Bridge, Minneapolis, MN

Characteristics:

a. Structural elements below deck require a higher roadway elevation
b. Shape allows for construction of longer spans
c. May require a specialty contractor to construct and/or inspect

E Tied Arch Main Span with Precast/Prestressed I-Girder Approaches

Blennerhassett Bridge, Belpre, OH & Parkersburg, WV

Characteristics:

a. Structural elements above deck allow for a lower roadway elevation
b. May result in the most piers in the river
c. May require a specialty contractor to construct and/or inspect

BRIDGE ALTERNATIVES

MINISTRY OF TRANSPORTATION ONTARIO
BAUDETTE/RAINY RIVER INTERNATIONAL BRIDGE

FIGURE 5

DATE: OCTOBER 2016 PROJ. NO.: 193802870

Stantec
2335 Highway 36 W
St. Paul, MN 55113
www.stantec.com

Plot Date: 09/30/2016 - 12:46pm
Drawing name: V:\1938\active\193802870\Environmental\MnDOT\PIM3\Displays\Baudette Ministry of Transportation Ontario TB-17x11-L.dwg
Xrefs:

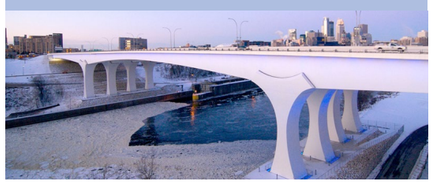
A wide range of initial bridge structure types were selected for review.
A preliminary analysis determined 5 alternatives to carry forward.

A Continuous Steel I-Girder Superstructure

B Simple-Span Precast/Prestressed Concrete I-Girder Superstructure

C Continuous Steel Box Girder Superstructure

D Continuous Concrete Box Girder



E Tied Arch Main Span with Precast/Pre-stressed Concrete I-Girder Approaches

ALTERNATIVE A1 - Steel I-Girder, 5 Span

ALTERNATIVE A2 - Steel I-Girder, 4 Span

ALTERNATIVE B - Concrete I-Girder

Reasons Not Carried Forward:

a. Has minimal advantages over the continuous steel I-girder alternative
b. Higher design complexity
c. Increased construction risk

Reasons Not Carried Forward:

a. Deepest structure depth, resulting in increased grades and reduced sight distance on bridge compared to other alternatives
b. Higher design complexity
c. Specialized construction/increased construction risk

Reasons Not Carried Forward:

a. Reduced sight distance compared to other alternatives
b. Requires the most piers in the water compared to other structures, increasing risk in construction and environmental impacts
c. Increased complexity in design and maintenance

Steel I-Girder, 5 Span

Reasons Not Carried Forward:

a. Increased construction complexity and risk compared to 5 span alternative
b. Would likely require eight temporary structures to support bridge segments during construction, compared to four segments with the 5 span alternative
c. The location of temporary structures would greatly reduce the navigational opening below the bridge during construction

Reasons Not Carried Forward:

a. Required the most substructures of remaining alternatives
b. Could limit the number of potential fabricators because of long beams required for structure

BRIDGE TYPE ALTERNATIVE EXAMPLES

MINISTRY OF TRANSPORTATION ONTARIO
BAUDETTE/RAINY RIVER INTERNATIONAL BRIDGE

FIGURE 6

DATE: OCTOBER 2016 PROJ. NO.: 193802870

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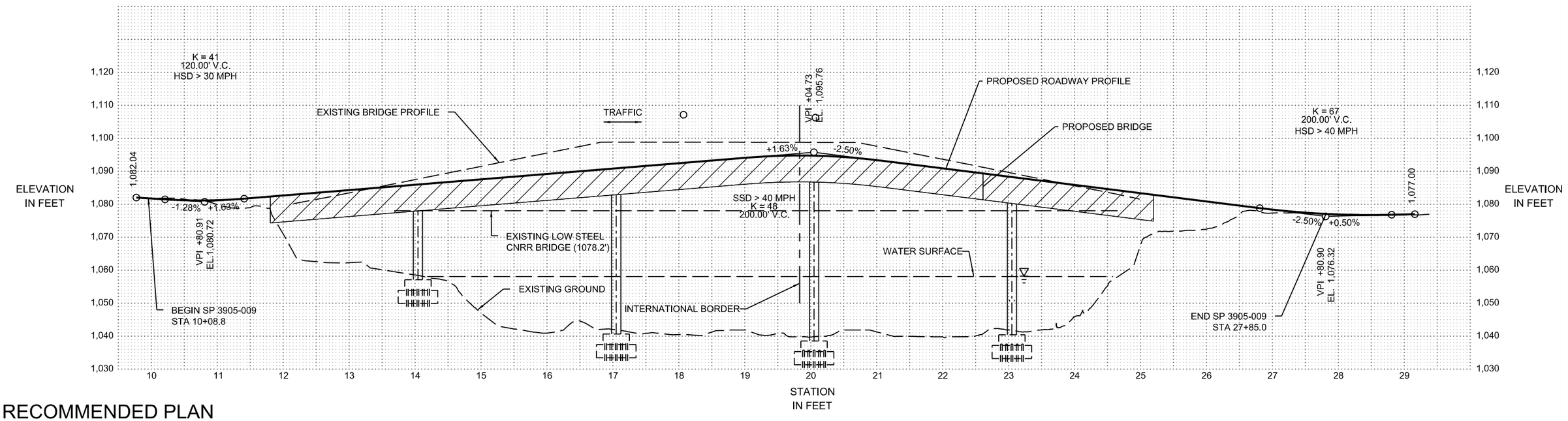


RECOMMENDED PLAN

MINNESOTA DEPARTMENT OF TRANSPORTATION AND MINISTRY OF TRANSPORTATION ONTARIO

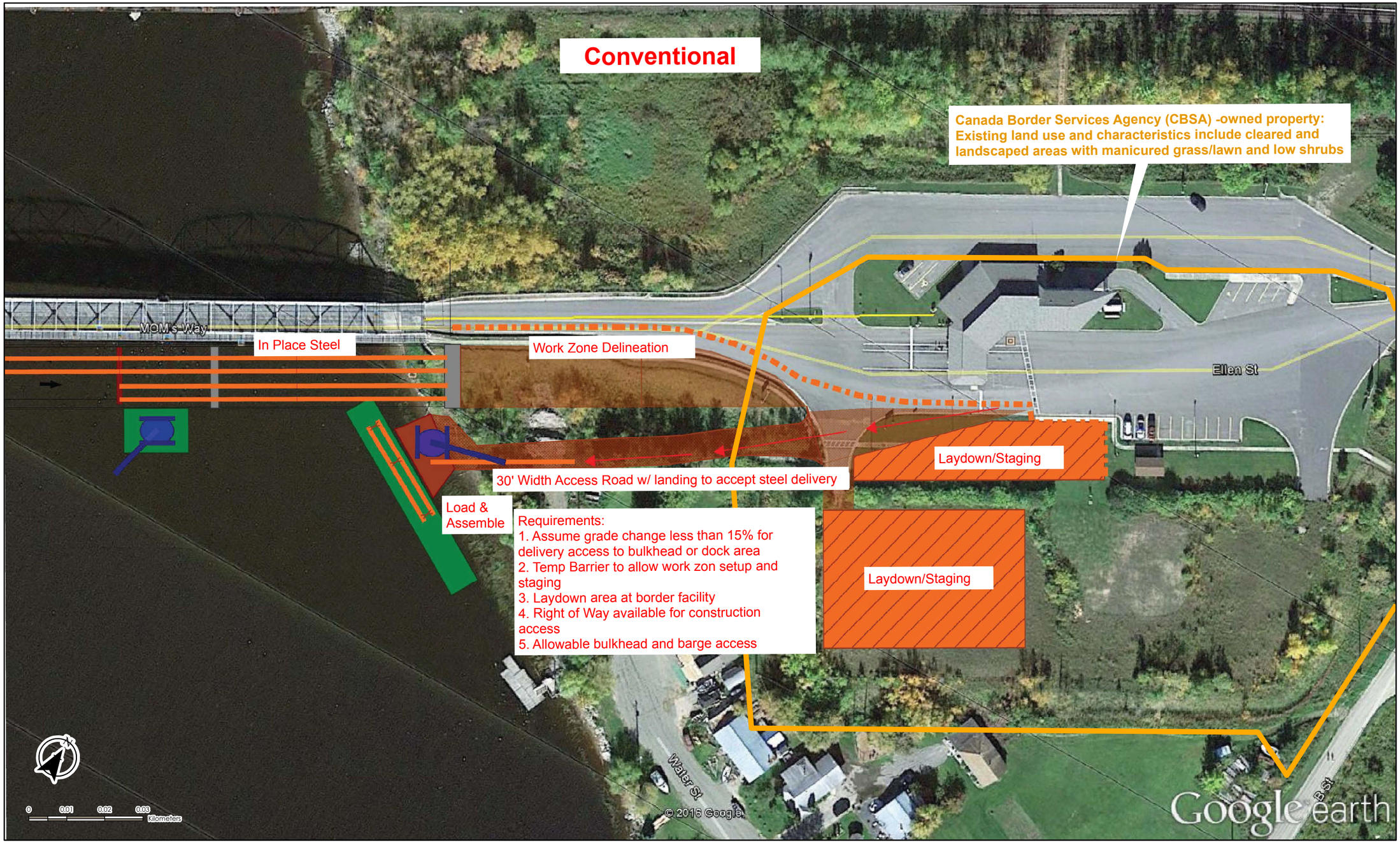
BAUDETTE/RAINY RIVER INTERNATIONAL BRIDGE REPLACEMENT

FIGURE 7

DATE: 09/14/2016

PROJ. NO. 193802870

Plot Date: 2017-03-01
Drawing name: \\IS1291-f01\workgroup\1938\active\193802870\GIS Project\CEAA Staging\Staging8_mxd\fc: 2017-03-01.mxd



CONCEPTUAL STAGING FOR CONVENTIONAL ERECTION METHOD

MINISTRY OF TRANSPORTATION ONTARIO
BAUDETTE/RAINY RIVER INTERNATIONAL BRIDGE

FIGURE 8

DATE: OCTOBER 2016 PROJ. NO.: 193802870

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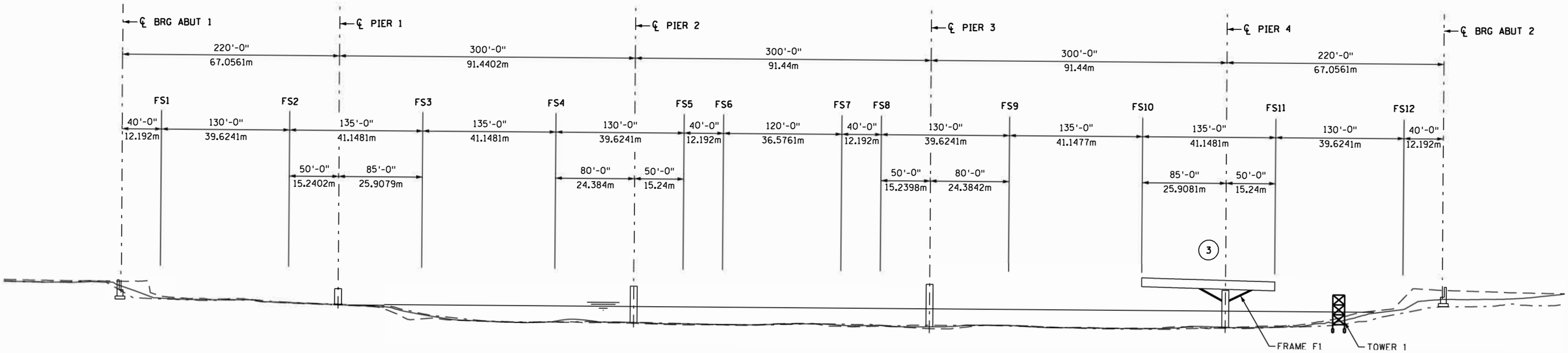
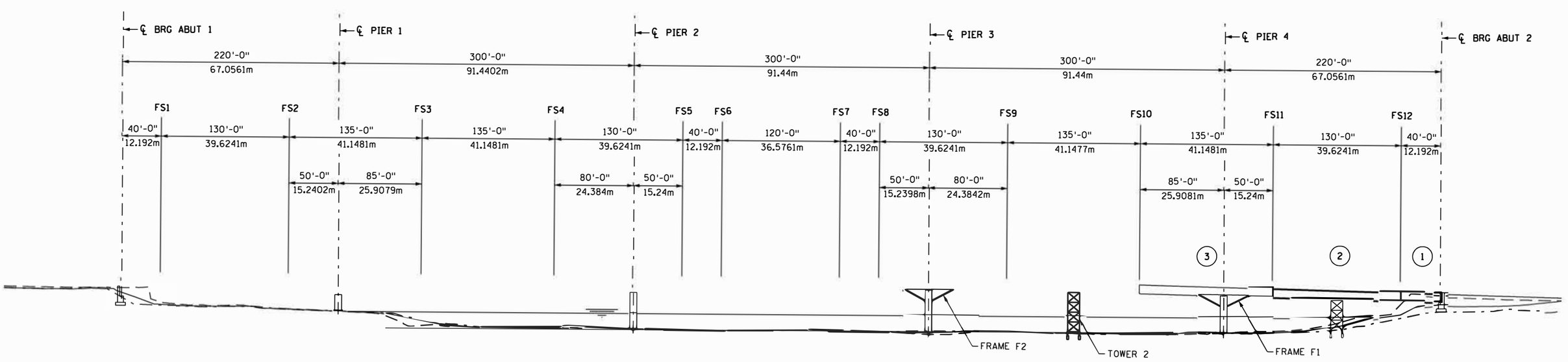


INSTALLATION ACTIVITIES PRECEDE
REMOVAL ACTIVITIES FOR EACH STAGE

STAGE 1

INSTALL:

- STABILIZING FRAME (ANGLES WINGS) F1
- SEGMENT 3
- STABILIZING TOWER 1



STAGE 2

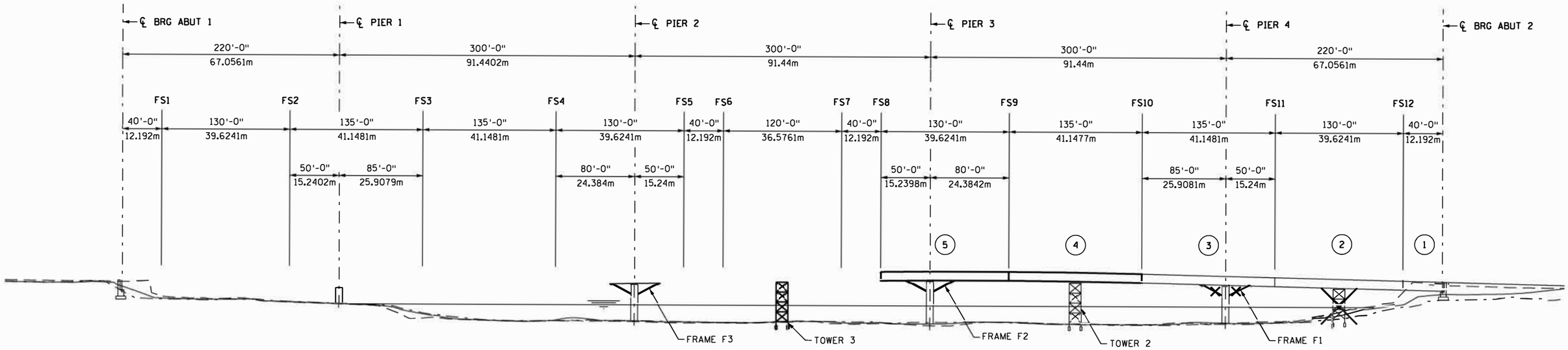
INSTALL:

- STABILIZING FRAME (ANGLES WINGS) F2
- STABILIZING TOWER 2
- SEGMENT 2
- SEGMENT 1

Figure 9 - Conventional Construction Method - Preliminary Sequence of Construction

S-02

Plotted by:lkalita Plotted Date:4/25/2016 Model:SHEET1 File: \\chiw00\project.data\49799\CADD\cds\SHEET_001.dgn



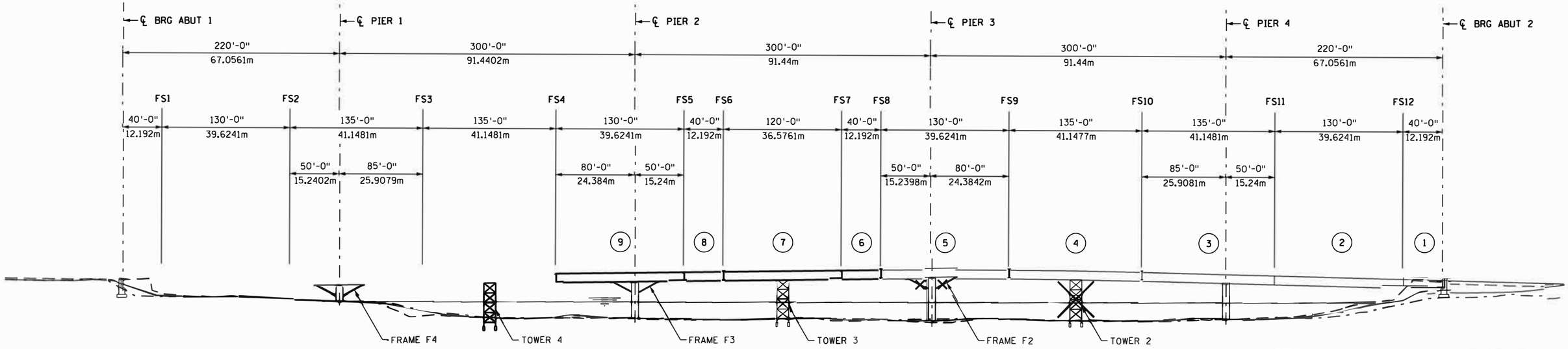
STAGE 3

INSTALL:

- SEGMENT 4
- SEGMENT 5
- STABILIZING FRAME (ANGLES WINGS) F3
- STABILIZING TOWER 3

REMOVE:

- TOWER T1
- STABILIZING FRAME (ANGLES WINGS) F1



STAGE 4

INSTALL:

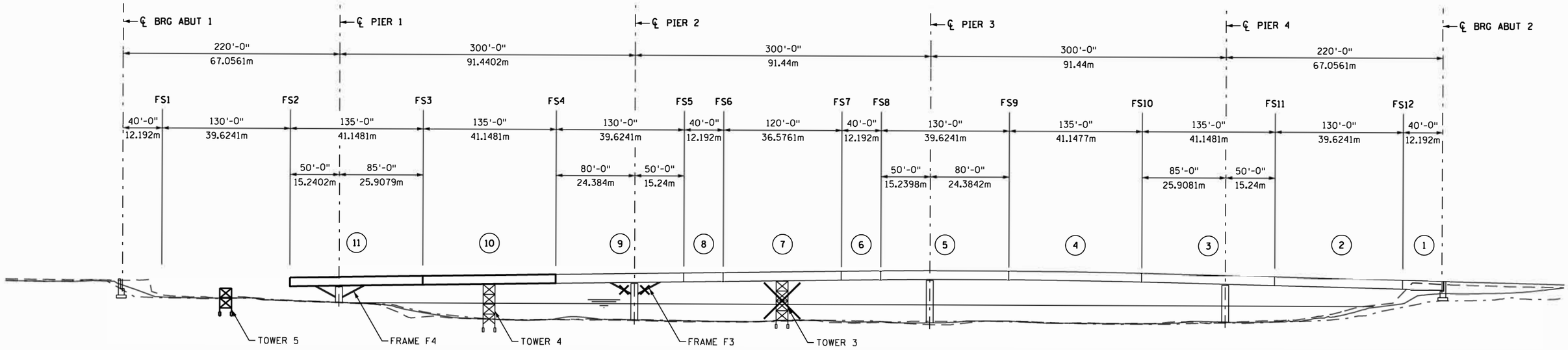
- SEGMENT 9
- SPLICE 6 & 7 TOGETHER
- SEGMENTS 6 & 7
- SEGMENT 8
- STABILIZING TOWER T4
- STABILIZING FRAME (ANGLES WINGS) F4

REMOVE:

- TOWER T2
- STABILIZING FRAME (ANGLES WINGS) F2

Figure 10 - Conventional Construction Method - Preliminary Sequence of Construction

Plotted by:lkalita Plotted Date:4/25/2016 Models:SHEET2 Files: \\chiw00\project_data\49799\CADD\cds\SHEET_001.dgn



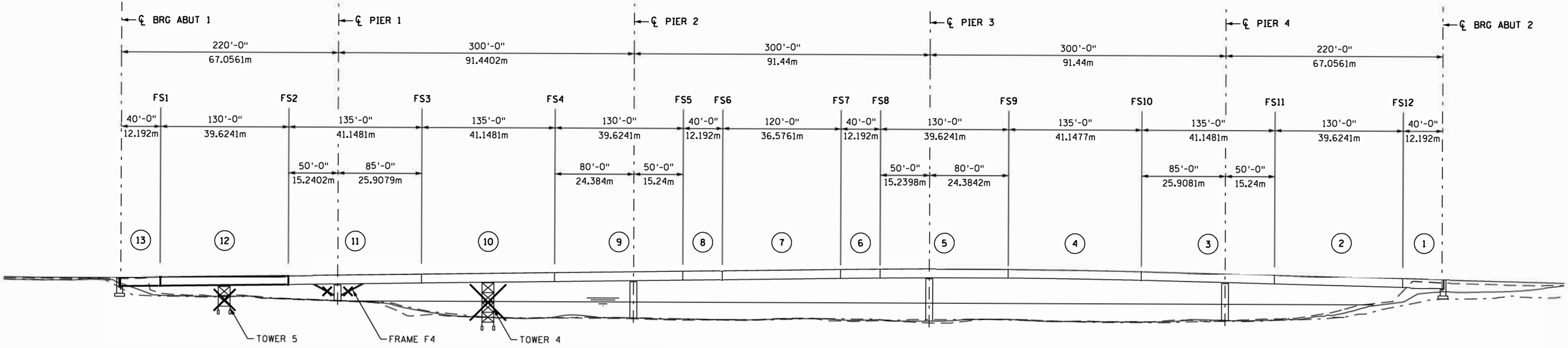
STAGE 5

INSTALL:

- SEGMENT 11
- SEGMENT 10
- STABILIZING TOWER 5

REMOVE:

- TOWER T3
- STABILIZING FRAME (ANGLES WINGS) F3



STAGE 6

INSTALL:

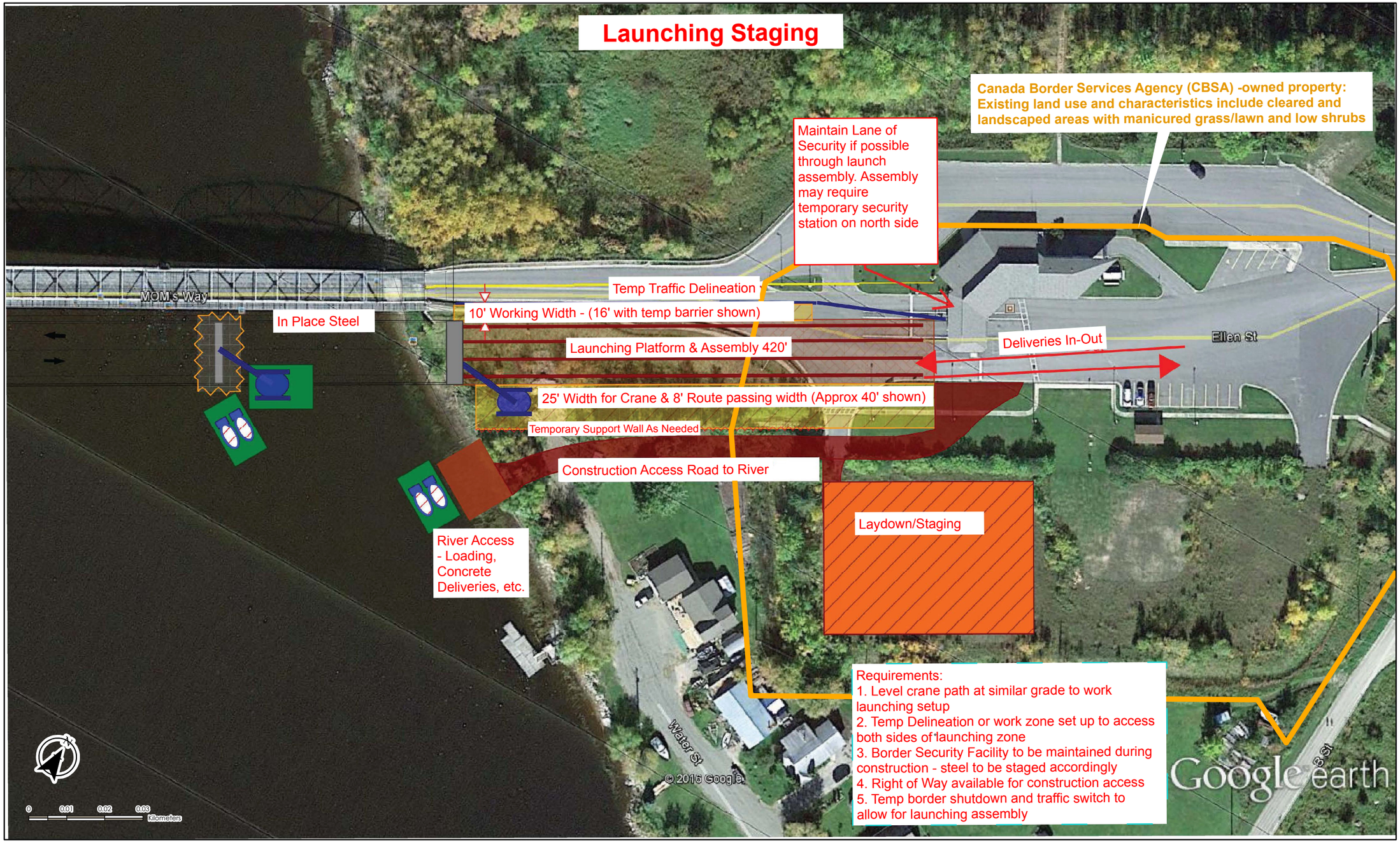
- SEGMENT 12
- SEGMENT 13

REMOVE:

- TOWER T4
- STABILIZING FRAME (ANGLES WINGS) F4
- TOWER T5

Figure 11 - Conventional Construction Method - Preliminary Sequence of Construction

Plotted by:lkalita Plotted Date:4/25/2016 Model:SHEET3 Files: \\chi-00\project_data\49799\CADD\cds\SHEET_001.dgn



CONCEPTUAL STAGING FOR LAUNCHING OPERATION METHOD

MINISTRY OF TRANSPORTATION ONTARIO
BAUDETTE/RAINY RIVER INTERNATIONAL BRIDGE

FIGURE 12

DATE: OCTOBER 2016 PROJ. NO.: 193802870

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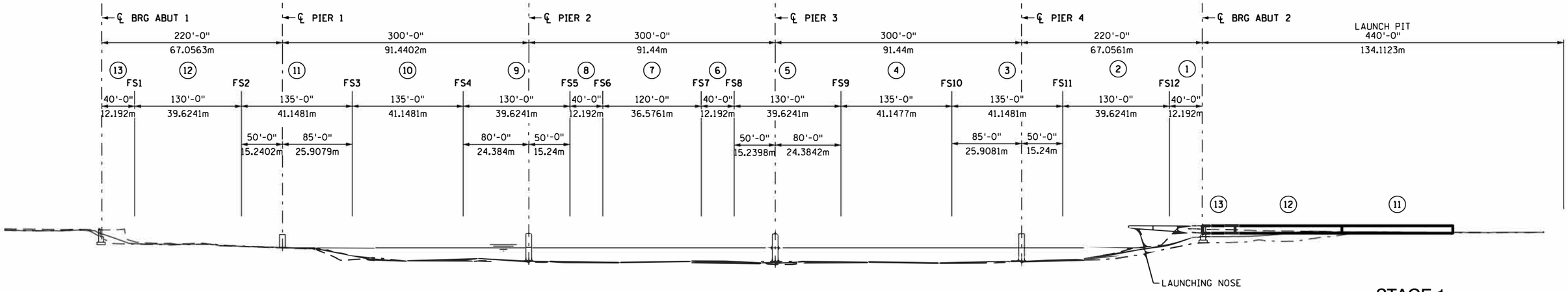
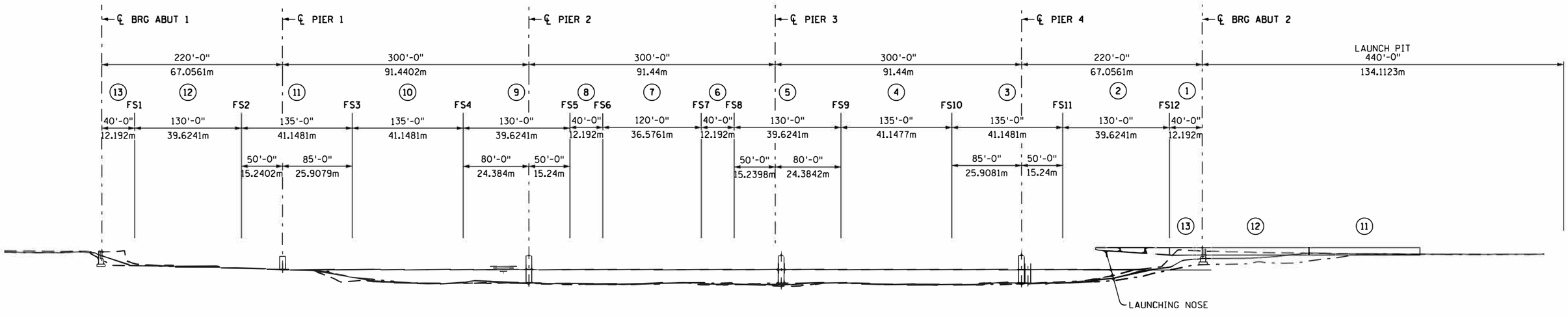
CONCEPTUAL LAUNCHING OF THE BAUDETTE RAINY RIVER INTERNATIONAL CROSSING IN MINNESOTA STEEL BRIDGE



STAGE 1:

INSTALL SEGMENTS 13, 12, & 11 IN LAUNCH PIT

INSTALL LAUNCH NOSE



STAGE 2:

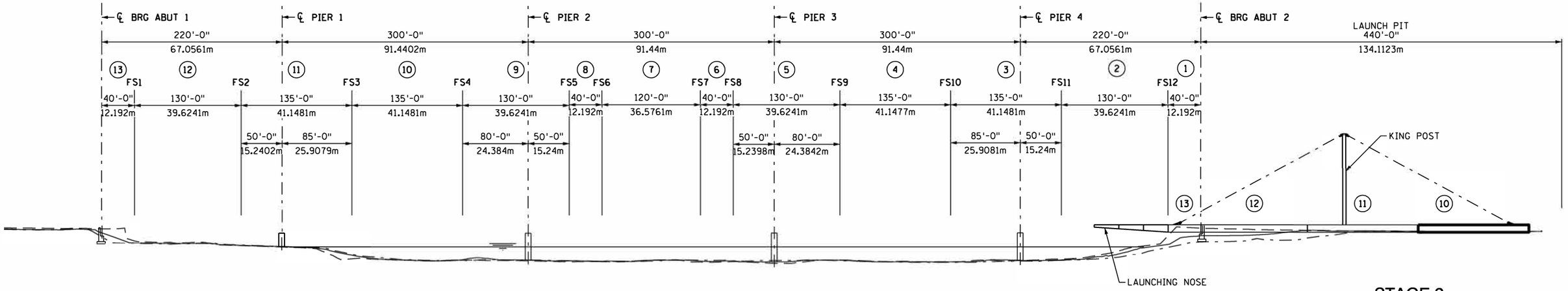
LAUNCH GIRDERS ABOUT 40'

Figure 13 - Conceptual Launching Operation Method - Preliminary Sequence of Construction

S-01

Plotted by:lkalita Plotted Date:4/25/2016 Model:SHEET1 File: \\chi08\project_data\49799\CADD\cds\SHEET_002.dgn

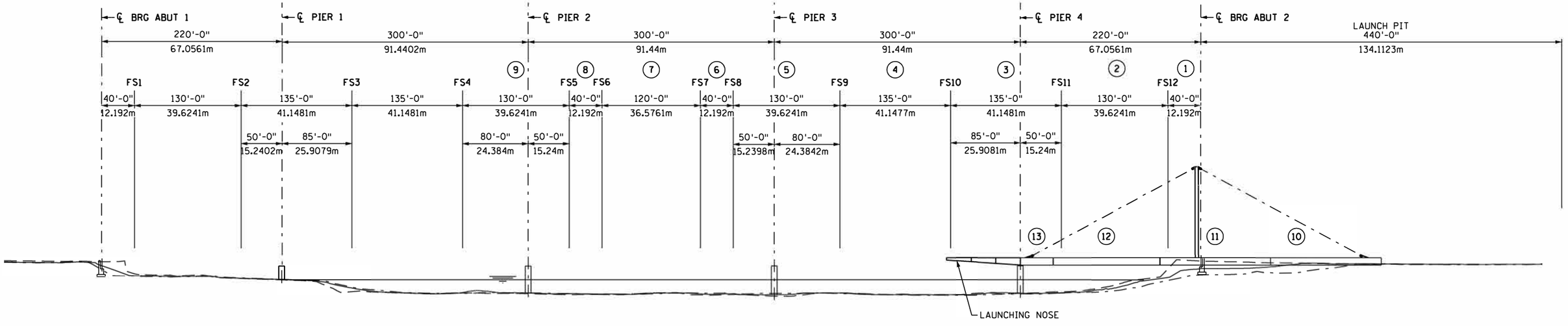
CONCEPTUAL LAUNCHING OF THE BAUDETTE RAINY RIVER INTERNATIONAL CROSSING IN MINNESOTA STEEL BRIDGE



STAGE 3:

INSTALL SEGMENT 10

INSTALL KING POST AS SHOWN



STAGE 4:

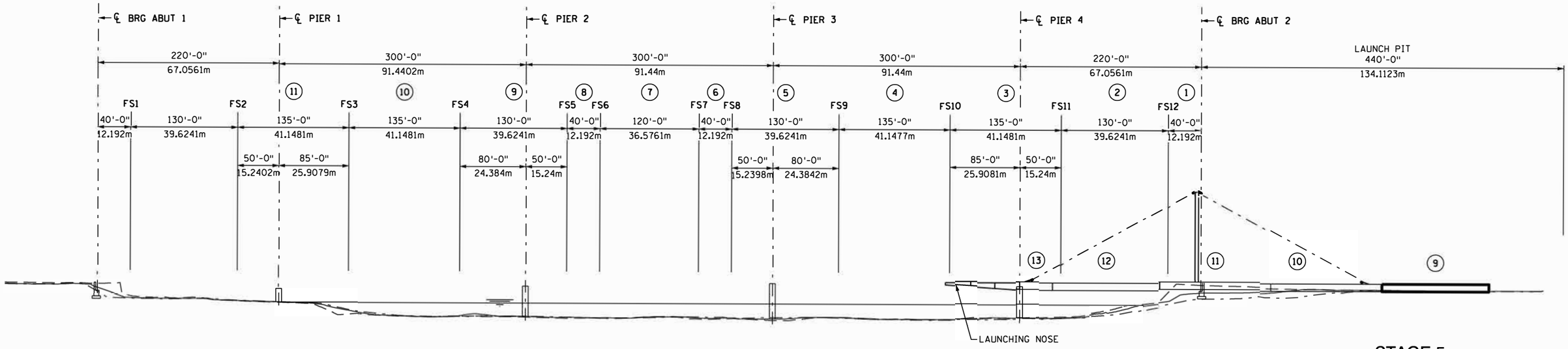
LAUNCH SYSTEM ABOUT 180' TILL FRONT BEARING STIFFENER OF SEGMENT 13 IS OVER PIER

Figure 14 - Conceptual Launching Operation Method - Preliminary Sequence of Construction

S-02

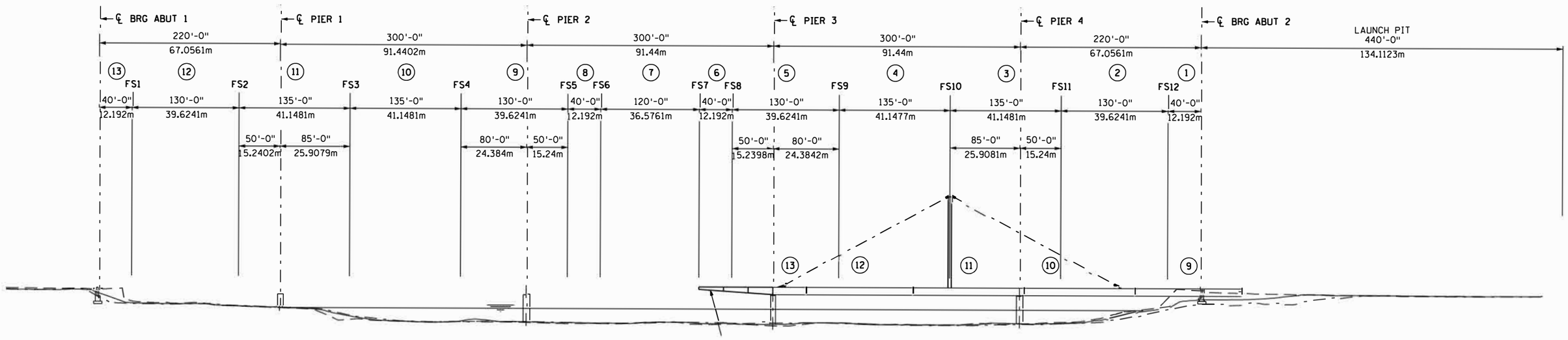
Plotted by:lkalita Plotted Date:4/25/2016 Model:SHEET2 File: \\chiw08\project_data\49799\CADD\cds\SHEET_002.dgn

CONCEPTUAL LAUNCHING OF THE BAUDETTE RAINY RIVER INTERNATIONAL CROSSING IN MINNESOTA STEEL BRIDGE



STAGE 5:

INSTALL SEGMENT 9



STAGE 6:

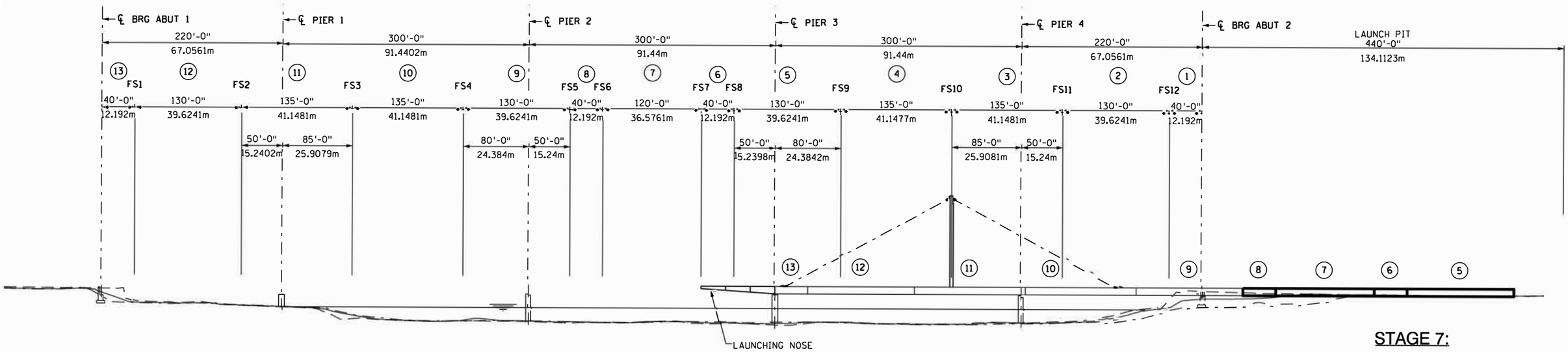
LAUNCH SYSTEM 300' TILL FRONT BEARING STIFFENER OF SEGMENT 13 IS OVER PIER 3

Figure 15 - Conceptual Launching Operation Method - Preliminary Sequence of Construction

S-03

Plotted by:lkalita Plotted Date:4/25/2016 Model:SHEET3 File: \\chiw00\project_data\49799\CADD\cds\SHEET_002.dgn

CONCEPTUAL LAUNCHING OF THE BAUDETTE RAINY RIVER INTERNATIONAL CROSSING IN MINNESOTA STEEL BRIDGE



STAGE 7:

INSTALL SEGMENTS 8, 7, 6, & 5

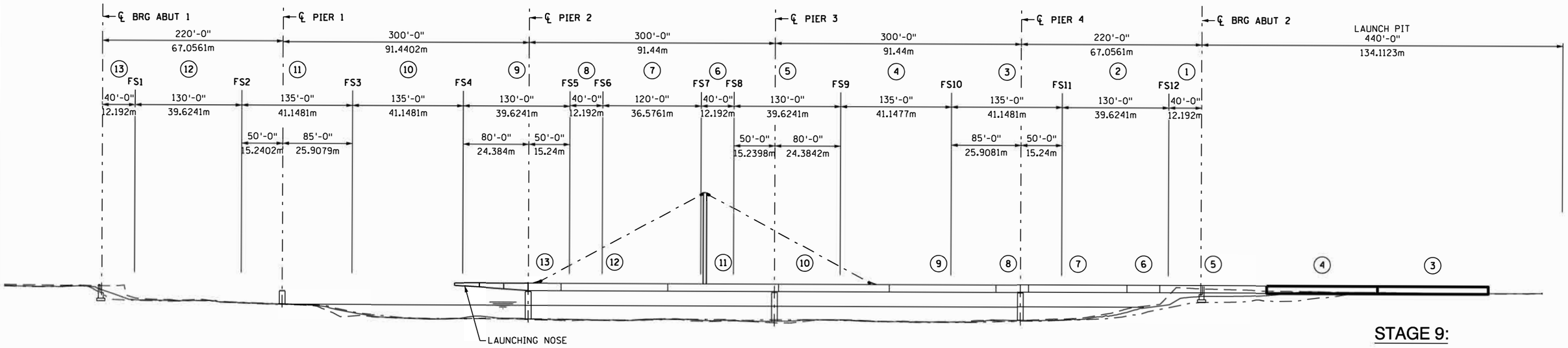
STAGE 8:

LAUNCH SYSTEM 300' TILL FRONT BEARING STIFFENER OF SEGMENT 13 IS OVER PIER 2

Figure 16 - Conceptual Launching Operation Method - Preliminary Sequence of Construction

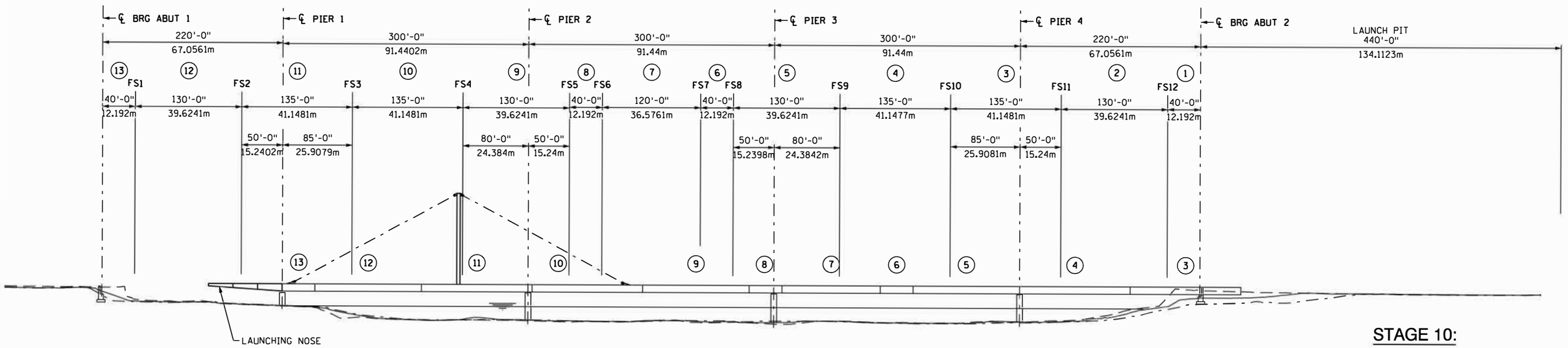
Plotted by:Ikalita Plotted Date:4/25/2016 Model:SHEET4 File: \\chi-00\project_data\49799\CADD\cds\SHEET_002.dgn

CONCEPTUAL LAUNCHING OF THE BAUDETTE RAINY RIVER INTERNATIONAL CROSSING IN MINNESOTA STEEL BRIDGE



STAGE 9:

INSTALL SEGMENTS 4 & 3



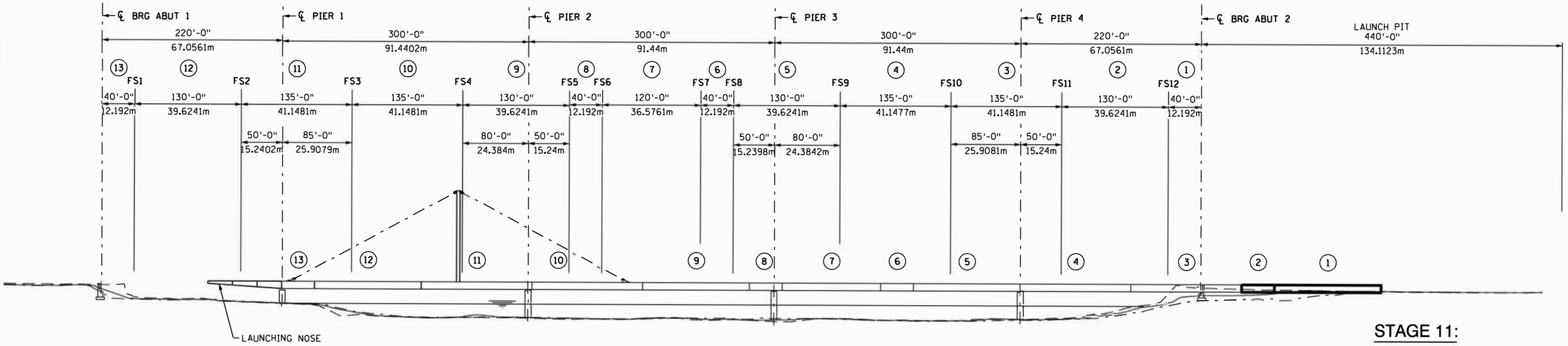
STAGE 10:

ADVANCE LAUNCHING SYSTEM ANOTHER 300' TILL FRONT BEARING STIFFENER OF SEGMENT 13 IS OVER PIER 1

Figure 17 - Conceptual Launching Operation Method - Preliminary Sequence of Construction

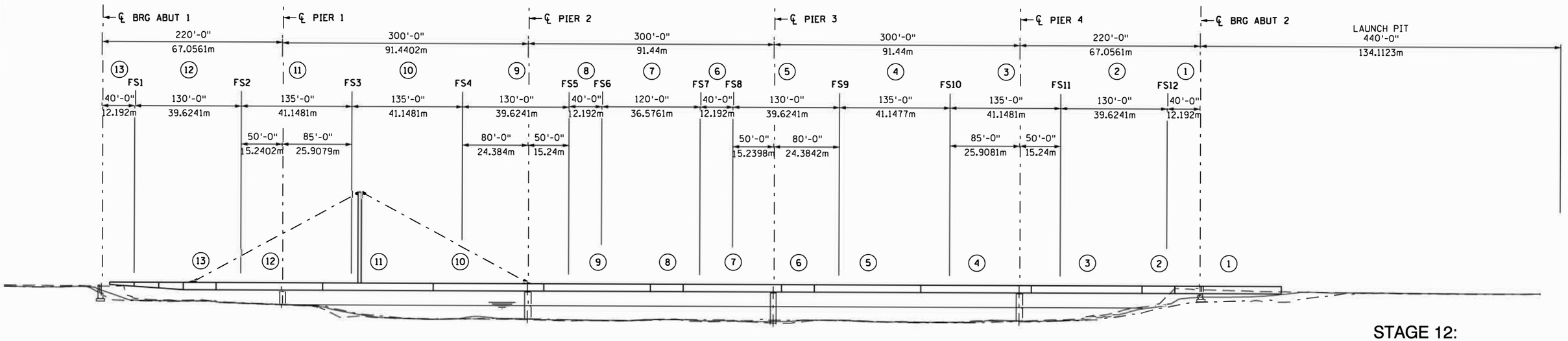
Plotted by:lkalita Plotted Date:4/25/2016 Model:SHEET5 Files: \\chw00\project_data\49799\CADD\cds\SHEET_002.dgn

CONCEPTUAL LAUNCHING OF THE BAUDETTE RAINY RIVER INTERNATIONAL CROSSING IN MINNESOTA STEEL BRIDGE



STAGE 11:

INSTALL LAST TWO SEGMENTS 1 & 2



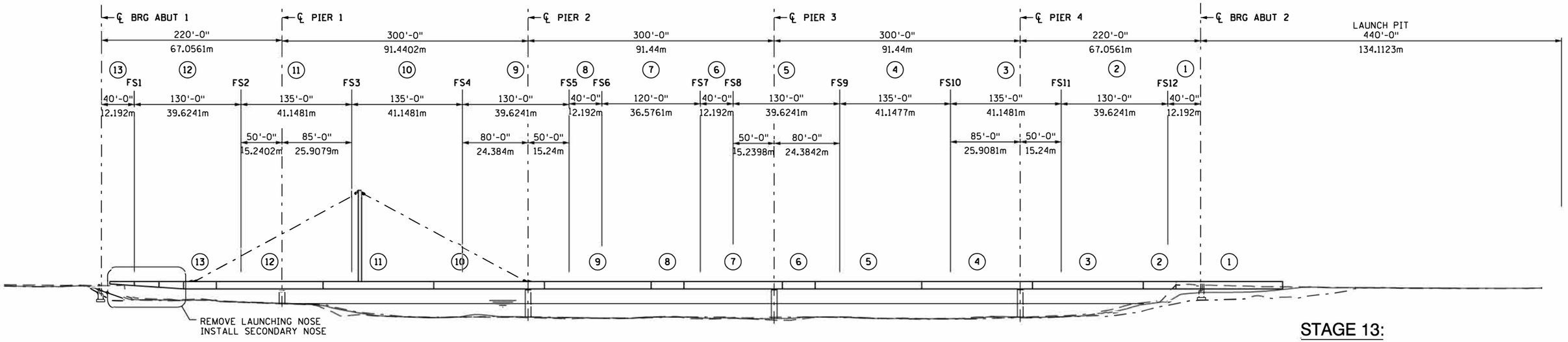
STAGE 12:

ADVANCE LAUNCHING SYSTEM ABOUT 120' UNTIL LAUNCH NOSE IS RESTING OVER ABUTMENT

Figure 18 - Conceptual Launching Operation Method - Preliminary Sequence of Construction

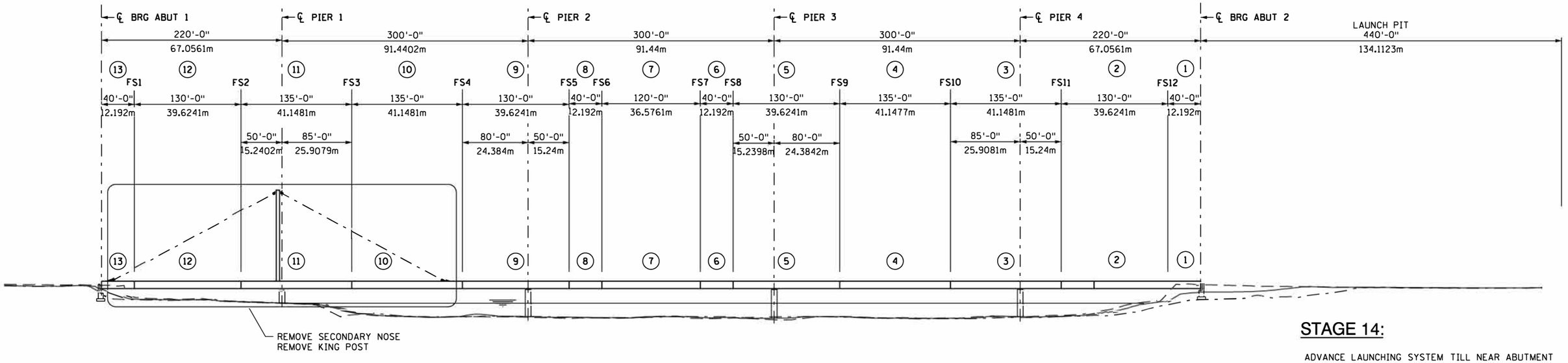
Plotted by:lkalita Plotted Date:4/25/2016 Model:SHEET6 File: \\chiw00\project.data\49799\CADD\cds\SHEET_002.dgn

CONCEPTUAL LAUNCHING OF THE BAUDETTE RAINY RIVER INTERNATIONAL CROSSING IN MINNESOTA STEEL BRIDGE



STAGE 13:

REMOVE LAUNCH NOSE
INSTALL SECONDARY NOSE



STAGE 14:

ADVANCE LAUNCHING SYSTEM TILL NEAR ABUTMENT

USING SECONDARY NOSE LIFT SEGMENT 1 AND
ADVANCE THE LAUNCH TILL BEARING STIFFENER OF SEGMENT 1
IS RESTING DIRECTLY OVER ABUTMENT ℄ BRG.

REMOVE SECONDARY NOSE

REMOVE KING POST

NOTE:

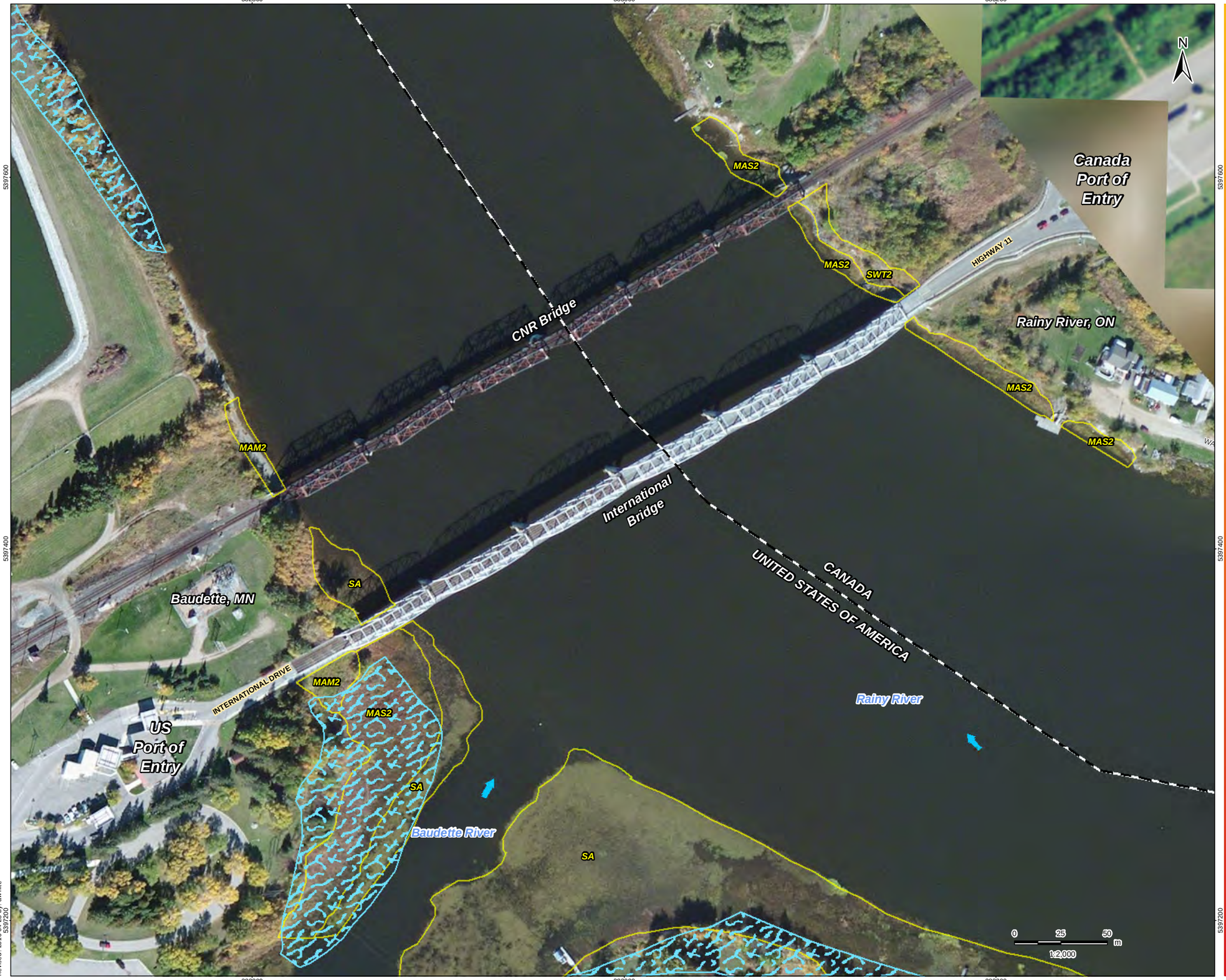
AS AN ALTERNATIVE, AT LEAST THE LAST GIRDER SEGMENT 1, BUT POSSIBLY
BOTH SEGMENTS 1 & 2 COULD BE INSTALLED WITH TRADITIONAL/CONVENTIONAL METHODS OVER LAND.
IN THAT CASE THE ASSEMBLY OF GIRDER SEGMENTS TO BE LAUNCHED WOULD START
FROM GIRDER SEGMENT 3 AND THE PROCEDURE WOULD HAVE TO BE ADJUSTED ACCORDINGLY.

Figure 19 - Conceptual Launching Operation Method - Preliminary Sequence of Construction

Plotted by:lkalita Plotted Date:4/25/2016 Model:SHEET7 File: \\chi-00\project_data\49799\CADD\cds\SHEET_002.dgn

382800 383000 383200

5397600 5397400 5397200



Stantec

Legend

- Canada/US Border
- Flow Direction
- Wetland (USFWS)
- Ecological Land Classification (Stantec)

MAM2	Mineral Meadow Marsh Ecosite
MAS2	Mineral Shallow Marsh Ecosite
SA	Shallow Water Community Class
SWT2	Mineral Swamp Thicket Ecosite

Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2015.
3. Flood Hazard Zones produced by FEMA © 2006, FEMA Digital Flood Rate Insurance Maps (DFIRM), Minnesota, and Minnesota Department of Natural Resources (MNDNR)
4. Park Boundary provided by Lake of the Woods County
5. United States Fish and Wildlife Service (USFWS)
6. Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

April 2016
193802870

Client/Project

Baudette/Rainy River
International Bridge Replacement
GWP 6046-10-00

Figure No.

20

Title

Existing Conditions - Fish and Fish Habitat

\\ Cd1220-f02\01609\active_Other_PCs_Active\938 - Minnesota\938028701\drawing\MXD\Aquatic\ReportFigures\Fish and Fish Habitat Report\193802780_Fig_2_FishandFishHabitat_20151023.mxd
Revised: 2016-04-28 By: awhite

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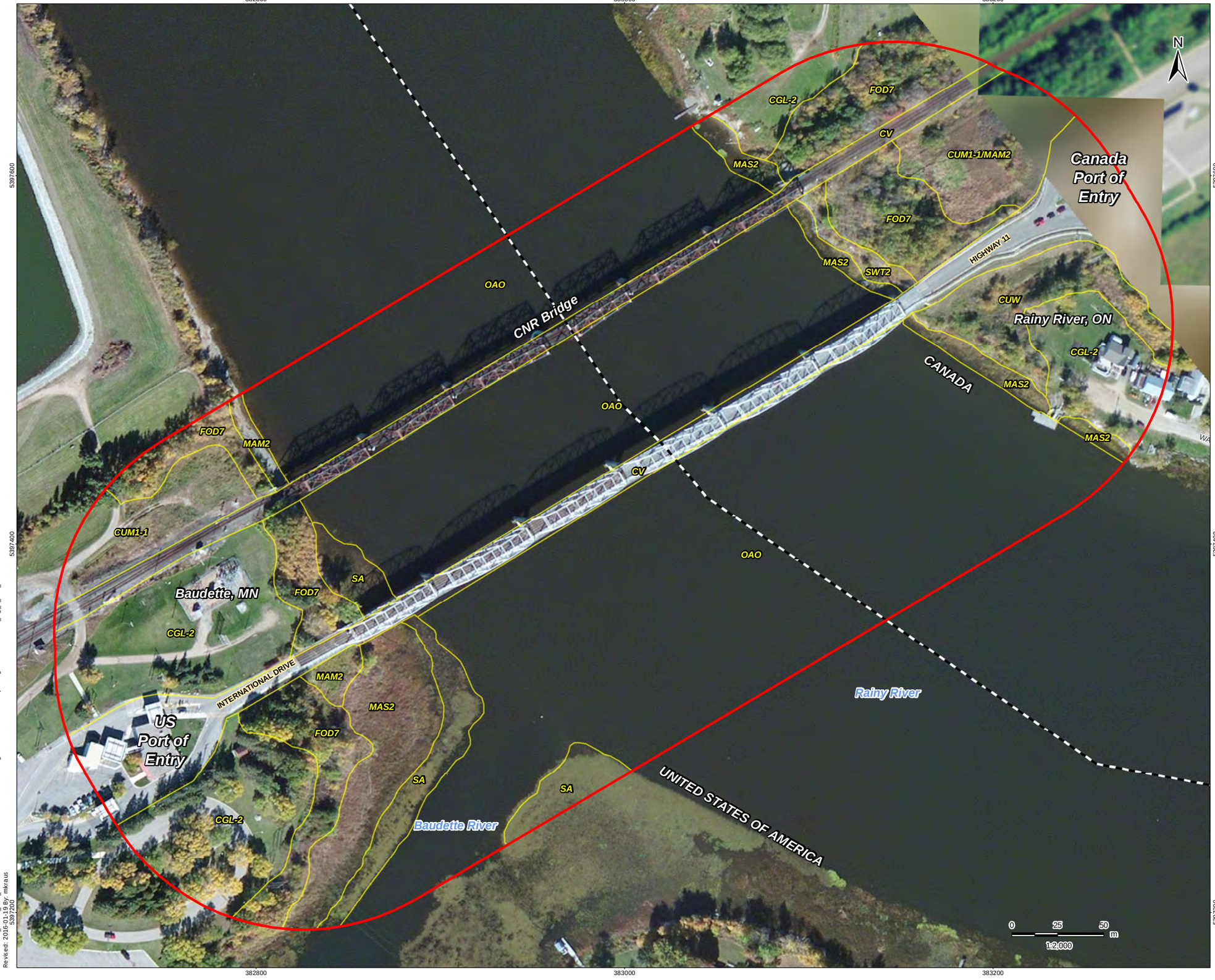

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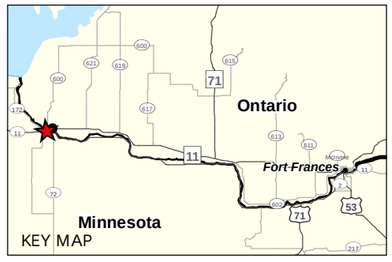
Revised: 2016-01-19 By: mkraus

Stantec

Legend

- Canada/US Border
- Ecological Land Classification
- StudyArea

CODE	DESCRIPTION
Terrestrial System	
FOD7	Fresh-Moist Lowland Deciduous Forest Ecosite
Cultural System	
CUW	Cultural Woodland Community Series
CUM1-1	Dry-Moist Old Field Meadow Type
CGL-2	Constructed Parkland
CV	Constructed
Wetland System	
CUM1-1/ MAM2	Dry-Moist Old Field Meadow/ Mineral Meadow Marsh Complex
MAM2	Mineral Meadow Marsh Ecosite
MAS2	Mineral Shallow Marsh Ecosite
SWT2	Mineral Swamp Thicket Ecosite
Aquatic System	
SA	Shallow Water Community Class
OAO	Open Aquatic Community Series



Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
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3. Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

January 2016
193802870

Client/Project

Baudette/Rainy River
International Bridge Replacement
GWP-6046-10-00

Figure No.

21

Title

Ecological Land Classification

383200

5397600

CV

CUM1-1/MAM2

FOD7

CV

Canada
Port of
Entry

N

HIGHWAY 11

SWT2

MAS2

0.10 Ha

CUW1

OAO

0.01 Ha

Rainy River, ON

CGL-2

MAS2

OAO

CANADA

0 6 12 m

1:500

383200

5397600

W:\active_Other_PCs_Active\938 - Minnesota\193802870\drawing\MXD\Terrestrial\ReportFigures\193802780_Fig_4_ImpactAssessment_20160419.mxd
Revised: 2016-05-02 By: mkraus

Stantec

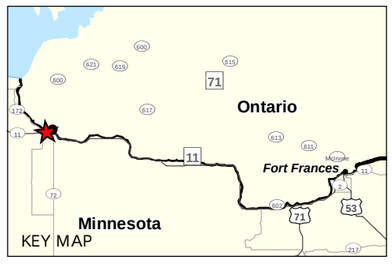
Legend

- Study Area
- Limit of Preferred Route
- Ecological Land Classification (Stantec)

ELC within Preferred Route Disturbance Footprint

- CUW1
- MAS2

CODE	DESCRIPTION
Terrestrial System	
FOD7	Fresh-Moist Lowland Deciduous Forest Ecosite
Cultural System	
CUW1	Mineral Cultural Woodland Ecosite
CUM1-1	Dry-Moist Old Field Meadow Type
CGL-2	Constructed Parkland
CV	Constructed
Wetland System	
CUM1-1/ MAM2	Dry-Moist Old Field Meadow/ Mineral Meadow Marsh Complex
MAS2	Mineral Shallow Marsh Ecosite
SWT2	Mineral Swamp Thicket Ecosite
Aquatic System	
OAO	Open Aquatic Community Series



Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
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3. Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

May 2016
193802870

Client/Project

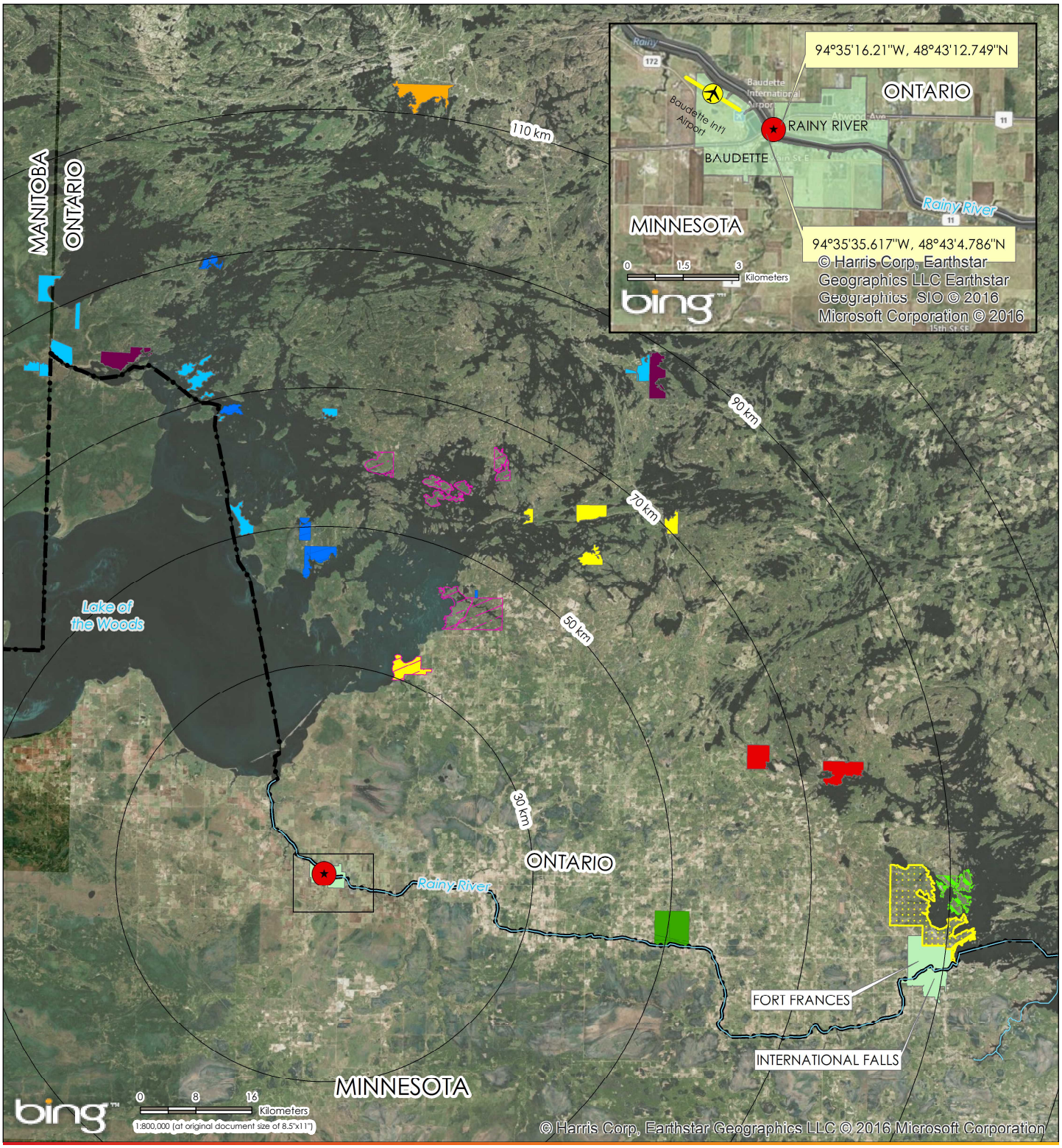
Baudette/Rainy River
International Bridge Replacement
GWP-6046-10-00

Figure No.

22

Title

Terrestrial Impact Assessment



\\US1291-F01\workgroup\1938\active\193802870\GIS\Projects\Canadian Exhibits\AR Canadian Maps_metric_2016-12-22_alt_final.mxd Revised: 2016-12-22 By: aribachonek

Legend

- Project Area
- Rainy River
- International Boundary
- Provincial Boundaries
- Municipal Boundaries
- Anishinabe of Wauzhushk Onigum
- Anishnaabeg of Naongashiing
- Big Grassy River First Nation
- Couchiching First Nation
- Mitaanjigamiing First Nation
- Naicatchewenin First Nation
- Northwest Angle No. 33
- Northwest Angle No. 37
- Ojibways of Onigaming First Nation
- Rainy River First Nation

Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation

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Stantec

Project Location 193802870
T161N, R31W, S35
City of Baudette, MN

Prepared by aribachonek on 2016-12-20

Client/Project SP 3905-09
MnDOT / MTO
Baudette/Rainy River International Bridge Replacement

Figure No.
23

Title
INDIGENOUS COMMUNITIES IN PROXIMITY TO PROJECT

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Environmental Noise Assessment
Replacement of the Baudette/Rainy River International Bridge on Highway 11, Town of Rainy River (GWP 6046-10-00)

Novus Reference No. 14-0080 May 3, 2016

NOVUS PROJECT TEAM:

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1.0 Introduction

Novus Environmental Inc. (Novus) was retained by Stantec Consulting Ltd. (Stantec) to conduct an environmental noise impact assessment for the Preliminary Design and Class Environmental Assessment (Class EA) Study for the replacement of the Baudette/Rainy River International Bridge on Highway 11 in the Town of Rainy River (the Project). This noise assessment only addresses the Canadian side of the project. It has been conducted in accordance with the terms of reference.

The objectives of this study are as follows:

- to predict future "build" and future "no-build" sound levels from road traffic noise sources in the area (i.e., noise levels with and without the proposed project taking place);
- to use these predictions to assess potential impacts according to the applicable guidelines;
- to specify mitigation measures where required; and
- to assess the potential for construction noise and provide a Code of Practice to minimize potential impacts.

A glossary of common terms and a description of transportation sound basics can be found in **Appendix A**.

1.1 Project Description (Nature of the Undertaking)

The Ontario Ministry of Transportation (MTO), in cooperation with the Minnesota Department of Transportation, has retained Stantec to undertake the Preliminary Design and Class Environmental Assessment (Class EA) Study for the replacement of the Baudette/Rainy River International Bridge on Highway 11 in the Town of Rainy River (the Project). The bridge provides access between the United States and Canada with 24-hour, full-service Port of Entry facilities in the City of Baudette, Minnesota and the Town of Rainy River, Ontario. The study will follow the *Class EA for Provincial Transportation Facilities* (MTO, 2000) process for a Group 'B' project. It includes the development and evaluation of a range of reasonable bridge replacement alternatives; construction staging and traffic management options; and the selection of a Preferred Plan. **Figure 1** illustrates the project limits while **Figure 2** highlights the shift in alignment which will occur with the proposed bridge structure replacement.

1.2 Study Area (Area of Investigation)

In keeping with MTO and Ministry of the Environment and Climate Change (MOECC) practices, the area of investigation for the project has been determined by assessing noise levels at all of the nearby noise sensitive areas (NSA). A very conservative distance of 250 metres

from the edge of pavement on either side of the roadway was selected, which is the maximum as per MTO *Environmental Guide for Noise*. The study area is illustrated in **Figure 1**.

2.0 Road Traffic Noise Impacts (Operational Noise)

For roadway projects, operation noise is of primary importance. This section of the report provides an analysis of operational noise impacts from road traffic noise related to this undertaking.

2.1 Applicable Guidelines

The MTO *Environmental Guide for Noise* (MTO 2008) applies to projects following the *Class EA process for Provincial Transportation Facilities* (MTO 2000). The *Environmental Guide for Noise* updates, improves and supersedes both the MOE/MTO "Joint Protocol" (MTO & MOE, 1986) and the MTO Quality and Standards Directive QST-A1 (MTO 1992a).

Under the *Environmental Guide for Noise* the importance of changes from a noise impact perspective is based upon the preconstruction sound level and change from existing conditions. The evaluation of noise impacts is related to the change in sound levels between future "no-build" and future "build" conditions. Assessments are based on a minimum 10-year future horizon year (i.e, on traffic volumes 10 years after the completion of the project). Accordingly, a design year of 2038 was applied to this project.

Noise mitigation is warranted when increases in sound level over the "no-build" ambient are greater than 5 decibel (dB) or the overall future "build" sound level is greater than 65 decibels, A-weighted (dBA). Mitigation measures can include changes in vertical profiles and horizontal alignments, noise barriers, and alternate pavement surfaces. Noise mitigation, where applied, must be administratively, economically, and technically feasible, and must provide at least 5 dB of reduction averaged over the first row of noise-sensitive receivers. Mitigation measures are restricted to within the transportation corridor right-of-way. Off right-of-way noise mitigation, such as window upgrades and air conditioning are not considered. Noise mitigation requirements are summarized in **Table 1** below:

Table 1: Summary of Mitigation Efforts from the Environmental Guide for Noise

Change in Noise Level Above Ambient / Projected Noise Levels with Proposed Improvements	Mitigation Effort Required
< 5 dBA change & < 65 dBA	- None
≥ 5 dBA change OR ≥ 65 dBA	- Investigate noise control measures on right-of-way - Introduce noise control measures within right-of-way and mitigate to ambient if technically, economically and administratively feasible. - Noise control measures, where introduced, should achieve a minimum of 5 dBA attenuation, over first row receivers

Notes: Values are L_{eq} (16h) levels for municipal roads and provincial highways, and L_{eq} (24h) for freeways

2.2 Location of Noise Sensitive Areas Within the Area of Investigation

2.2.1 Definition of Noise Sensitive Areas

Noise Sensitive Areas (NSAs) are defined to include the following land uses, provided there is an Outdoor Living Area (OLA) associated with them:

- private homes such as single family residences
- townhouses
- multiple unit buildings, such as apartments with OLAs for use by all occupants
- hospitals, nursing homes for the aged, where there are OLAs for the patients

Where a new freeway/highway corridor or route is planned, the following land uses would qualify as NSAs in addition to the land uses noted above, provided there is an OLA associated with them:

- educational facilities and day care centres, where there are OLAs for the students
- campgrounds that provide overnight accommodation
- hotels / motels where there are OLA's (i.e. swimming pool area, etc.) for visitors

Land uses listed below, by themselves do not qualify as NSAs:

- apartment balconies
- churches
- cemeteries
- parks and picnic areas
- all commercial
- all industrial

2.2.2 Location and Number of NSAs within the Area of Investigation

Locations of NSAs within the Area of Investigation are shown in **Figure 1**. There are approximately 8 NSAs within the Area of Investigation that consist entirely of 8 existing single family homes.

2.2.3 Representative NSAs for Analysis

A number of NSAs have been used in the analysis to represent worst-case potential noise impacts at all surrounding noise sensitive land uses within the Area of Investigation. NSAs were grouped into areas with similar overall noise levels and similar changes in noise ("build" versus "no-build"). All of the homes close to the existing and preferred alignment alternative were modelled. Where multiple home are located at a similar distance from the highway a respective home was modelled. These NSA's and modelled receptor locations are shown in **Figure 1** and **Figure 2** with descriptions in **Table 2**.

Table 2: Representative NSAs Considered in Analysis

Receptor Location	Description	Distance to Closest Edge of Existing Pavement (m)	Approximate Number of NSAs Represented
R-1	Main Street	250	1
R-2	Main Street	230	2
R-3	Main Street	120	1
R-4	Main Street	120	1
R-5	Main Street	100	1
R-6	Water Street	60	1
R-7	Water Street	90	1
R-8	Water Street	115	1

The OLA may be situated on any side of the receptor, but is generally taken to be in the back yard. For assessment purposes, the OLA is taken as a point 3 m from the façade of the receptor, and 1.2 m (approximate average head-height for both sitting and standing) above the ground surface. Where the actual position of the OLA is unknown, the side with worst-case (minimum) "build" versus "no-build" screening effects has been assumed. The locations of the points of reception used in the analysis are shown in **Figure 1** and **Figure 2**.

2.3 Road Traffic Data

Projected future traffic volumes for the 2038 design year were provided by Stantec for the proposed improvements. Traffic data was provided in the form of Average Annual Daily Traffic (AADT) and Summer Average Daily Traffic (SADT) as required under MTO policy. Traffic was considered over a 16 hour period for the daytime and 8 hour for the nighttime. The percentage of commercial vehicles was provided as between 3% to 4% at the border crossing, with a 40/60% split of commercial vehicles into heavy and medium duty trucks respectively. Traffic volumes for the 2038 design year were applied to both the "build" and "no build" scenarios as the realignment is not expected to affect traffic volumes. The SADT was calculated from bridge crossing data and a historical AADT to SADT conversion factor of SADT equaling 125% of AADT.

The traffic data used in the assessment is summarized in **Table 3**. Background traffic data can be found in **Appendix B**.

Table 3: 2038 Future Traffic Data

Road	SADT	Day Volume[1]	Overall % Commercial Vehicles	Heavy / Medium Truck Split[2]	Posted Speed Limit (km/h)
Hwy 11, E. of Hwy 600	1,980	1,782	2.8	60/40	70
Hwy 11, WB to USA	891	802	3.6	40/60	50
Hwy 11, EB to Canada	891	802	2.6	40/60	50
On Bridge	1,782	1,604	3.1	40/60	50
Hwy 600	253	228	14.0	60/40	60

Notes: [1] 16 hour Day volume is based upon 90% of the traffic in that time period.
[2] Percentage of heavy trucks and medium trucks used in the analysis, respectively.

2.4 Noise Model Used

The highway noise prediction model used is the United States Federal Highway Administration Method. The STAMINA 2.0 highway noise prediction model is a computerized version of this method. This is the model jointly approved by the MTO and the MOECC.

The noise prediction model relies on the use of vehicle noise emission levels to generate a noise source that can then be assessed at the noise receptors based on the following factors:

- posted speeds for the roadways in the area used in the noise analysis;
- pavement surface used for construction of the highway (i.e. hot mix asphaltic pavement);
- elevations, contours and locations of all of the NSA's near the right-of-way;
- highway grades;
- intervening rows of homes and barriers;

- type of ground cover, soft or hard ground;
- percentage of commercial traffic; and
- distance from the roadway.

The model uses the following vehicle classifications:

Automobiles - Two axles and four wheels designed primarily for the transportation of nine or fewer passengers, or transportation of cargo (light trucks). This classification includes motorcycles. Generally, the gross vehicle weight is less than 4,500 kilograms.

Medium trucks - Two axles and six wheels designed for the transportation of cargo. Generally, the gross vehicle weight is greater than 4,500 kilograms but less than 12,000 kilograms.

Heavy trucks - Three or more axles and designed for the transportation of cargo. Generally, the gross vehicle weight is greater than 12,000 kilograms.

Distances, roadway heights and receptor locations were obtained from plan drawings and aerial photographs.

2.5 Screening Level Modelling

In addition to evaluating impacts at the OLA for representative NSAs, the Environmental Guide for Noise introduces an additional requirement whereby the "most exposed side" of the dwelling unit of the NSA is to be assessed as part of an initial screening. The most exposed side refers to the closest side of the dwelling unit or NSA, even if there is no OLA associated with the most exposed side. Accordingly, the most exposed side includes all sides of the dwelling unit, not just the back of the building, whether or not there is an OLA. This rationale is to determine the noise level at the side of the dwelling unit most exposed to the highway without the benefit of shielding from the dwelling unit. The determination of the provision of mitigation, however, is based on the analysis of the predicted noise level at the OLA, which is typically the rear yard, and may include shielding from the building, where applicable.

Under the Environmental Guide for Noise, the assessment of impact is conducted by comparing future "build" sound levels (with the project in place) versus future "no-build" sound levels as well as evaluating overall future "build" sound levels. **Table 4** presents a comparison of future "build" versus future "no-build" sound levels. STAMINA 2.0 data input files can be found in **Appendix C**.

Table 4: Future Noise Levels With and Without the Undertaking – Most Exposed Side

Receptor Location	Number of NSAs Represented	Future "No Build" L_{eq} (16h)	Future "Build" L_{eq} (16h)	Change ("Build" minus "No-Build")
R 1	1	38.4	38.7	0.3
R 2	2	38.6	38.9	0.3
R 3	1	38.8	38.7	-0.1
R 4	1	41.1	41.0	-0.1
R 5	1	44.3	44.3	0.0
R 6	1	44.5	45.8	1.3
R 7	1	42.0	43.1	1.1
R 8	1	40.7	41.6	0.9

Notes: All sound levels are in dBA

Impacts are ranked in terms of increasing future "build" sound level (in **Table 5**), and increasing change in sound level (in **Table 6**).

Table 5: Ranking of Absolute Future Noise Levels - Most Exposed Side

Future "Build" L_{eq} (24h)	Number of Receptors in this Category	Number of NSAs Represented
30 to < 35 dBA	0	0
35 to < 40 dBA	3	4
40 to < 45 dBA	4	4
45 to < 50 dBA	1	1
50 dBA or greater	0	0

Table 6: Ranking of Change in Sound Levels - Most Exposed Side

Future "Build" L_{eq} (24h)		Number of Receptors in this Category	Number of NSAs Represented
Increase in Sound Level	> 15 dBA	0	0
	> 10 to 15 dBA	0	0
	> 5 to 10 dBA	0	0
	0 to 5 dBA	6	7
Decrease in Sound Level	-5 to < 0 dBA	2	2
	-10 to < -5 dBA	0	0
	-15 to < -10 dBA	0	0
	< -15 dBA	0	0

The homes on Main Street will see little or no change in the sound levels with and without the undertaking while the homes on Water Street will experience an approximate 1 decibel increase due to the new bridge being slightly closer to them. The sound levels shown in **Table 4** are relatively low. Naturally occurring noise created by wind passing through trees for example and non-highway related noise would generally cause ambient sound levels of 40 to

45 dBA in rural areas. Noise created by road traffic would be at or below this level and therefore would be less noticeable. In addition, the noise analysis resulted in a noise level increase of less than 5 dBA for all receptors. No receivers have overall noise levels greater than 65 dBA. As a result, under the Environmental Guide for Noise, detailed modelling of noise impacts in the outdoor living areas and noise mitigation is not required.

3.0 Construction Noise Impacts

Construction noise impacts are temporary in nature, and largely unavoidable. Although for some periods and types of work, construction noise will be noticeable, with adequate controls, impacts can be minimized.

Construction noise impacts should be calculated for this project following the detail design of the project once construction details for the project are determined. Given the close proximity of several homes to this project, a detailed construction noise evaluation for this undertaking should be completed. The results of this evaluation should be documented in a separate report which evaluates noise impacts from construction, and makes recommendations for a Code of Practice to minimize impacts.

4.0 Conclusions and Recommendations

The potential environmental noise impacts of the proposed replacement of the Baudette/Rainy River International Bridge have been assessed. Operational noise impacts have been considered in this analysis. Construction noise impacts should be addressed during detail design prior to construction taking place.

Changes greater than 5 dB and absolute sound levels greater than 65 dBA are not predicted for residences within the study area. Therefore, noise mitigation is not required according to the MTO Environmental Guide for Noise requirements.

5.0 References

Barry, T.M. and Reagan, J.A., "FHWA Highway Noise Prediction Model", U.S. Federal Highway Administration, Report FHWA-RD-77-108, December 1978

Ontario Ministry of Transportation (MTO), 2006, *Environmental Guide for Noise*

Ontario Ministry of the Environment (MOE), 1977b, *Model Municipal Noise Control Bylaw,* which includes Publication NPC-115 – Construction Equipment

Ontario Ministry of the Environment (MOE), 1977c, *Model Municipal Noise Control Bylaw,* which includes Publication NPC-119 – Noise From Blasting

Figure No. **1**

Project Extents / Area of Investigation
Location of Noise Sensitive Receptors

Baudette/Rainy River International Bridge Replacement on Hwy. 11
Town of Rainy River

True North

Scale:	1: 3,000
Date:	27/04/14
File No.:	14-0080
Drawn By:	CTB

novus ENVIRONMENTAL

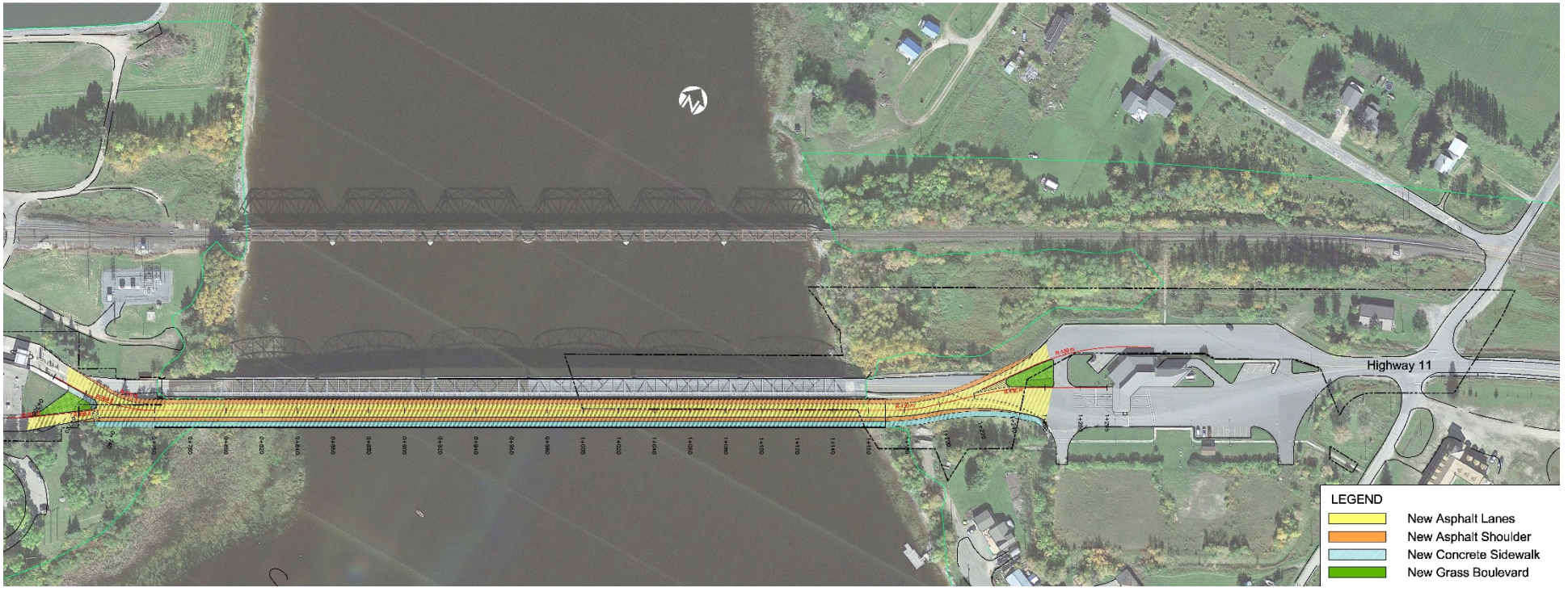

Figure No. **2**

Preferred Alignment Alternative (Alternative 2)

Baudette/ Rainy River International Bridge Replacement on Hwy. 11
Town of Rainy River

True North

Scale:	NTS
Date:	27/04/14
File No.:	14-0080
Drawn By:	CTB

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Appendix A

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Glossary of Commonly Used Noise Terminology

Airborne Sound*: Sound that reaches the point of interest by propagation through air.

Ambient or Background Noise: The ambient noise from all sources other than the sound of interest (i.e. sound other than that being measured). Under most MOE guidelines, aircraft overflights and train noise, due to their transient nature, are normally excluded from measurements of background noise.

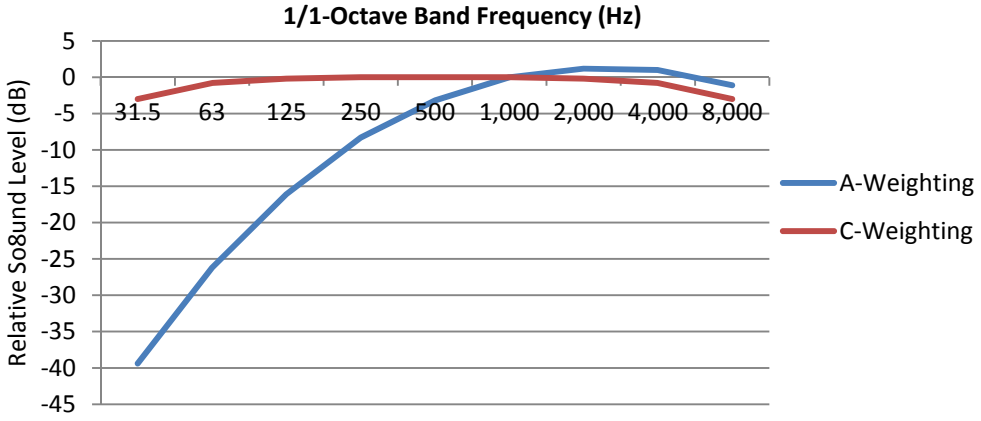
Articulation Index (AI)*: A numerically calculated measure of the intelligibility of transmitted or processed speech. It takes into account the limitations of the transmission path and the background noise. The articulation index can range in magnitude between 0 and 1.0. If the AI is less than 0.1, speech intelligibility is generally low. If it is above 0.6, speech intelligibility is generally high.

Attenuation*: The reduction of sound intensity by various means (e.g., air, humidity, porous materials, etc.).

dB -Decibel: The logarithmic units associated with sound pressure level, sound power level, or acceleration level. See sound pressure level, for example.

dBA -Decibel, A-Weighted: The logarithmic units associated with a sound pressure level, where the sound pressure signal has been filtered using a frequency weighting that mimics the response of the human ear to quiet sound levels. The resultant sound pressure level is therefore representative of the subjective response of the human ear. A-weighted sound pressure levels are denoted by the suffix 'A' (ie. dBA), and the term pressure is normally omitted from the description (i.e., sound level or noise level).

dBC -Decibel, C-Weighted: The logarithmic units associated with a sound pressure level, where the sound pressure signal has been filtered using a frequency weighting that mimics the response of the human ear to loud sound levels. C-weighted sound pressure levels are denoted by the suffix 'C' (ie dBC). C-weighted levels are often used in low-frequency noise analysis, as the filtering effect is nearly flat at lower frequencies.



dBL or dBLin -Decibel, Linear: The logarithmic units associated with a sound pressure level, where the sound pressure signal is unfiltered, and represents the full spectrum of incoming noise.

Calibrator (Acoustical)*: A device which produces a known sound pressure on the microphone of a sound level measurement system, and is used to adjust the system to standard specifications.

Definitions with a "*" marker originally from "Noise Control Terms Made Somewhat Easier", by David Kelso (Minnesota Pollution Control Agency), and Al Perez (Northern Sound), Minneapolis, Minnesota May, 1983, as modified on the Noise Pollution Clearinghouse website www.nonoise.org.

Directivity Factor (Q) (also, **Directional** or **Directionality Factor):** A factor mathematically related to Directivity Index, used in calculating propagated sound levels to account for the effect of reflecting surfaces near to the source. For example, for a source in free space where the sound is radiating spherically, Q = 1. For a source located on or very near to a surface (such as the ground, a wall, rooftop, etc.), where the sound is radiating hemispherically, Q = 2. This accounts for the additional sound energy reflecting off the surface, and translates into a +3 dB add.

Directivity Index*: In a given direction from a sound source, the difference in decibels between (a) the sound pressure level produced by the source in that direction, and (b) the space-average sound pressure level of that source, measured at the same distance.

Energy Equivalent Sound Level (L_{eq}): An energy-average sound level taken over a specified period of time. It represents the average sound pressure encountered for the period. The time period is often added as a suffix to the label (i.e., Leq(24) for the 24-hour equivalent sound level). Leq is usually A-weighted. An Leq value expressed in dBA is a good, single value descriptor of the annoyance of noise.

Exceedance Noise Level (L_N): The noise level exceeded N% of the time. It is a statistical measure of the noise level. For highly varying sounds, the L90 represents the background noise level, L50 represents the median or typical noise level, and L10 represents the short term peak noise levels, such as those due to occasional traffic or a barking dog.

Far Field*: Describes a region in free space where the sound pressure level from a source obeys the inverse-square law (the sound pressure level decreases 6 dB with each doubling of distance from the source). Also, in this region the sound particle velocity is in phase with the sound pressure. Closer to the source where these two conditions do not hold constitutes the "near field" region.

Free Sound Field (Free Field)*: A sound field in which the effects of obstacles or boundaries on sound propagated in that field are negligible.

Frequency*: The number of times per second that the sine wave of sound or of a vibrating object repeats itself. Now expressed in hertz (Hz), formerly in cycles per second (cps).

Hertz (Hz)*: Unit of measurement of frequency, numerically equal to cycles per second.

Human Perception of Sound: The human perception of noise impact is an important consideration in qualifying the noise effects caused by projects. The following table presents a general guideline.

Subjective Human Perception of Changes in Sound Levels

Change in Broadband Sound Level (dB)	Human Perception of Change
<3	Imperceptible change
3	Just-perceptible change
4 to 5	Clearly noticeable change
6 to 9	Substantial change
>10 and more	Very substantial change (half or twice as loud)
>20 and more	Very substantial change (much quieter or louder)

Notes:
Adapted from Bies and Hansen, p53, and MOE Noise Guidelines for Landfill Sites, 1998. Applies to changes in broadband noise sources only (i.e., increases or decreases in the same noise or same type of noise only). Changes in frequency content or the addition of tonal or temporal changes would affect the perception of the change.

Impact Insulation Class (IC)*: A single-figure rating that compares the impact sound insulating capabilities of floor-ceiling assemblies to a reference contour.

Impact Sound*: The sound produced by the collision of two solid objects, e.g., footsteps, dropped objects, etc., on an interior surface (wall, floor, or ceiling) of a building. Typical industrial sources include punch presses, forging hammers, etc.

Impulsive Noise*: a) Single or multiple sound pressure peak(s) (with either a rise time less than 200 milliseconds or total duration less than 200 milliseconds) spaced at least by 500 millisecond pauses, b) A sharp sound pressure peak occurring in a short interval of time.

Infrasonic*: Sounds of a frequency lower than 20 hertz.

Insertion Loss (IL): The arithmetic difference between the sound level from a source before and after the installation of a noise mitigation measure, at the same location. Insertion loss is typically presented as a positive number, i.e., the post-mitigation sound level is lower than the pre-mitigation level. Insertion loss is expressed in dB and is usually specified per 1/1 octave band, per 1/3 octave band, or overall.

Intensity*: The sound energy flow through a unit area in a unit time.

Low Frequency Noise (LFN): Noise in the low frequency range, from infrasonic sounds (<20 Hz) up to 100 Hz.

Masking*: a) The process by which the threshold of audibility for a sound is raised by the presence of another (masking) sound, or b) The amount by which the threshold of audibility of a sound is raised by the presence of another (masking) sound.

Near Field*: The sound field very near to a source, where sound pressure does not obey the inverse-square law and the particle velocity is not in phase with the sound pressure.

Noise: Unwanted sound.

Noise Criteria (NC) Curves: A single number rating for noise in 1/1-octave frequency bands which is sensitive to the relative loudness and speech interference properties of a given sound spectrum. The method consists of a family of criteria curves extending from 63 Hz to 8000 Hz, and a tangency rating procedure. Oringinally proposed by Bernanek in 1957. While other more modern criteria curve rating schemes exist (NCB, RC, RC Mark II, RNC, etc.), NC curves are still widely used in determining acceptability of noise levels within spaces. Level of NC 25 to NC 35 are usually considered acceptable for residences, private offices, and schools.

Noise Isolation Class (NIC)*: A single number rating derived in a prescribed manner from the measured values of noise reduction between two areas or rooms. It provides an evaluation of the sound isolation between two enclosed spaces that are acoustically connected by one or more paths.

Noise Reduction (NR)*: The numerical difference, in decibels, of the average sound pressure levels in two areas or rooms. A measurement of "noise reduction" combines the effect of the sound transmission loss performance of structures separating the two areas or rooms, plus the effect of acoustic absorption present in the receiving room.

Noise Reduction Coefficient (NRC)*: A measure of the acoustical absorption performance of a material, calculated by averaging its sound absorption coefficients at 250, 500, 1000 and 2000 Hz, expressed to the nearest multiple of 0.05.

Noise Level: Same as Sound Level, except applied to unwanted sounds.

Noise Exposure Forecast (NEF): A calculated measure of aircraft noise based on the type of aircraft in use, the take-off and landing patterns of the aircraft, and times of operation. It represents the noise exposure over a typical 24 hour period. A penalty is applied to nighttime operation.

Peak Sound Pressure Level: Same as Sound Pressure Level except that peak (not peak-to-peak) sound pressure values are used in place of RMS pressures.

Quasi-Steady Impulsive Noise: Noise composed of a series of short, discrete events, characterized by rapid rise times, but with less than 0.5 seconds elapsing between events.

RMS Sound Pressure: The square-root of the mean-squared pressure of a sound (usually the result of an RMS detector on a microphone signal).

Reverberant Field*: The region in a room where the reflected sound dominates, as opposed to the region close to the noise source where the direct sound dominates.

Reverberation*: The persistence of sound in an enclosed space, as a result of multiple reflections, after the sound source has stopped.

Reverberation Time (RT)*: The reverberation time of a room is the time taken for the sound pressure level to decrease 60 dB from its steady-state value when the source of sound energy is suddenly interrupted. It is a measure of the persistence of an impulsive sound in a room as well as of the amount of acoustical absorption present inside the room. Rooms with long reverberation times are called live rooms.

Sabin*: A measure of the sound absorption of a surface; it is the equivalent of one square metre of a perfectly absorptive surface (or one square foot in imperial units).

Sound: a dynamic (fluctuating) pressure.

Sound Exposure Level (SEL): An L_{eq} referenced to a one second duration. Also known as the Single Event Level. It is a measure of the cumulative noise exposure for a single event. It provides a measure of the accumulation of sound energy over the duration of the event.

Sound Level (SL): The A-weighted Sound Pressure Level expressed in dBA.

Sound Level Meter*: An instrument comprised of a microphone, amplifier, output meter, and frequency-weighting networks which is used for the measurement of noise and sound levels.

Sound Pressure Level (SPL): The logarithmic ratio of the RMS sound pressure to the sound pressure at the threshold of hearing. The sound pressure level is defined by equation (1) where P is the RMS pressure due to a sound and P0 is the reference pressure. P0 is usually taken as 2.0×10^{-6} Pascals.

$$\textbf{(1)}\ \text{SPL (dB)} = 20 \log(P_{RMS}/P_0)$$

Sound Power Level (PWL): The logarithmic ratio of the instantaneous sound power (energy) of a noise source to that of an international standard reference power. The sound power level is defined by equation (2) where W is the sound power of the source in watts, and W0 is the reference power of 10^{-12} watts.

$$\textbf{(2)}\ \text{PWL (dB)} = 10 \log(W/W_0)$$

Interrelationships between sound pressure level (SPL) and sound power level (PWL) depend on the location and type of source.

Sound Transmission Class (STC)*: The preferred single figure rating system designed to give an estimate of the sound insulation properties of a structure or a rank ordering of a series of structures.

Sound Transmission Loss (STL)*: A measure of sound insulation provided by a structural configuration. Expressed in decibels, it is 10 times the logarithm to the base 10 of the reciprocal of the sound transmission coefficient of the configuration.

Spectrum*: The description of a sound wave's resolution into its components of frequency and amplitude.

Speech Interference Level (SIL)*: A calculated quantity providing a guide to the interference of a noise with the reception of speech. The speech-interference level is the arithmetic average of the octave band levels of the interfering noise in the most important part of the speech frequency range. The levels in octave bands centered at 500, 1000, and 2000 Hz are commonly averaged to determine the speech-interference level.

Speed (Velocity) of Sound in Air*: 344 m/s (1128 ft/s) at 70°F (21°C) in air at sea level.

Threshold of Audibility (Threshold of Detectability)*: The minimum sound pressure level at which a person can hear a specified frequency of sound over a specified number of trials.

Transmission Loss: A measure of the reduction in sound energy resulting from incident sound waves striking a wall, partition or enclosure, and radiating through to the other side. Mathematically, the transmission coefficient t is the ratio of transmitted acoustic power to the incident acoustic power, and in decibels, the Transmission Loss (TL) of the wall is:

$$\textbf{(3)}\ TL = 10\log(1 / t)$$

The TL of a wall varies by frequency. The associated noise reduction (NR) due to the TL of the wall is a function of the TL and the acoustical parameters of the receiving space. For noise radiating from an enclosure into the outdoors, NR = (TL + 6).

TRANSPORTATION SOUND BASICS

Sound Levels

Sound is, in its simplest form, a dynamic, fluctuating pressure, in a fluid medium. That medium can be air, other gases, or liquids such as water. These fluctuations are transmitted by pressure waves through the medium from the source to the receiver. For the majority of transportation engineering purposes, the primary interest is with sound waves in air, with human beings as the receptor. Noise is defined as unwanted sound. The standard practice within the acoustical industry is to use these two terms interchangeably.

Decibels

A decibel (dB) is a logarithmic ratio of a value to a reference level. The general mathematical format is:

$$\text{Level in dB} = 10 \log (\text{Value} / \text{Reference})$$

Any value can be expressed in decibels. Decibels are very, very useful in performing comparisons where there are huge ranges in levels. For example, an acoustical engineer can expect to deal with acoustical energy values ranging from 0.00001 W to 100 W (sound power), and pressures ranging from 0.002 Pa to 200 Pa (sound pressure).1[1] For completeness, decibels should always be stated with their reference level (e.g., 20 dB re: 20 µPa). However, in practice the reference level is often left out.

Sound Pressure Level

Sound pressure level is what humans experience as sound. Sound waves create small fluctuations around the normal atmospheric pressure. These pressure fluctuations come into contact with eardrums and create the sensation of sound. Sound pressure is measured in decibels, according to the following equation:

$$\text{Sound Pressure Level, dB} = 10 \log (p^2/p_0^2))$$

Where: p = root mean square (r.m.s.) sound pressure, in Pa po = reference sound pressure, 20 µPa

The reference pressure represents the faintest sound that a "typical" human being can hear. The typical abbreviation for sound pressure level is SPL, although Lp is also often used in equations. "Sound level" or "noise level" are also sometimes used.

Octave Bands

Sounds are composed of varying frequencies or pitches. Human sensitivity to noise varies by frequency, with a greater sensitivity to higher frequency sounds. The propagation of sound also varies by frequency. The unit of frequency is Hertz (Hz), which refers the number of cycles per second (number of wave peaks per second of the propagating sound wave). The typical human hearing response runs from 20 Hz to 20,000 Hz. Frequencies below 20 Hz are generally inaudible, although response is variable, and some individuals may be able to hear or perceive them.

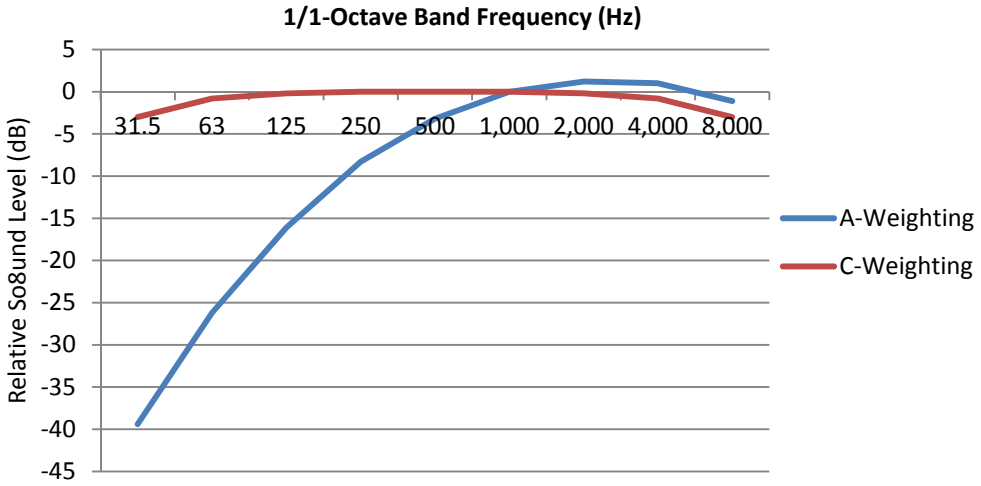
[1] Equivalent to Sound Power Levels ranging from 70 to 140 dB and Sound Pressure Levels ranging from 20 dB to 140 dB

Sound is typically analysed in octave bands or 1/3-octave bands. An octave band is defined as a band or range of sound frequencies where the frequency range doubles for succeeding octave (alternately, the highest frequency in the range is twice the value of the lowest frequency).

A-Weighting

When the overall sound pressure level is expressed as a single value (i.e., not expressed in frequency band levels) the variation in human frequency response must be accounted for. People do not hear low frequency noise as well as noise in mid or high frequencies. To account for this, frequency-weighting networks have been developed to better account for human hearing response. The most frequently used networks are the A-Weighting and C-Weighting.

The A-Weighting network was developed to correspond to how humans hear low to medium levels of noise. The A-Weighting is the most frequently used scheme, and the majority of noise guidelines are expressed in A-Weighted decibel values, denoted as "dBA" levels. C-Weighted "dBC" values are sometimes used in assessing low-frequency noise impacts, which are generally not of concern in transportation noise impact assessment. The A-Weighting and C-Weighting values are shown in the following figure.



A-Weighting and C-Weighting Networks

Ranges of Sound Levels

People experience a wide range of sound levels in their daily activities. The table below presents a graphical comparison of "typical" noise levels which might be encountered, and the general human perception of the level. Sound levels from 40 to 65 dBA are in the faint to moderate range. The vast majority of the outdoor noise environment, even within the busiest city cores, will lie within this area. Sound levels from 65 to 90 are perceived as loud. This area includes very noisy commercial and industrial spaces. Sound levels greater than 90 dB are very loud to deafening, and may result in hearing damage.

Ranges of Sound Levels

Sound Levels		Sources of Noise
Human Perception	**SPL in dBA**	
Deafening	125	Sonic booms
	120	Threshold of Feeling / Pain
	115	Maximum level, hard rock band concert
	110	Accelerating Motorcycle at a few feet away
Very Loud	105	Loud auto horn at 3 m (10 ft) away
	100	Dance club / maximum human vocal output at 1 m (3 ft) distance
	95	Jack hammer at 15 m (50 ft) distance
	90	Indoors in a noisy factory
Loud	85	Heavy truck pass-by at 15 m (50 ft) distance
	80	School cafeteria / noisy bar; Vacuum cleaner at 1.5 m (5 ft)
	75	Near edge of major highway
	70	Inside automobile at 60 km/h
	65	Normal human speech (unraised voice) at 1 m (3 ft) distance
Moderate	60	Typical background noise levels in a large department store
	55	General objective for outdoor sound levels; typical urban sound level (24h)
	50	Typical suburban / semi-rural sound level (24h)
	45	Typical noise levels in an office due to HVAC; typical rural levels (24h)
Faint	40	Typical background noise levels in a library
	35	
	30	Broadcast Studio
	25	Average whisper
Very Faint	20	Deep woods on a very calm day
	15	
	10	
	5	Human breathing
	0	Quietest sound that can be heard

Transportation noise events, which vary with time, can also be considered in terms of their maximum noise level (L_{max}) during a vehicle pass-by, as shown in the following table:

Typical Pass-By Noise Level at 15 m from Noise Source

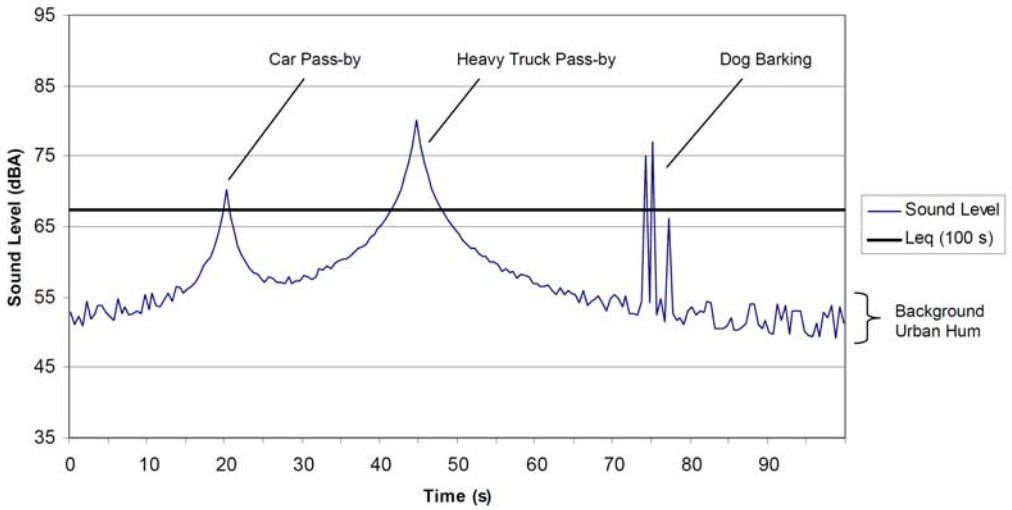
Event	Range of Noise Levels (dBA) at 15 m
Semi-Trailer Trucks	75 - 85
Aircraft	69 - 85 [1]
Conventional Light Rapid Transit (Streetcars)	72 - 80 [2]
Large Trucks	71 - 78
Street Motorcycle	76
Diesel or Natural Gas Bus	70 - 78
Trolley Bus	69 - 73
Small Motorcycle	67
General Busy Auto Traffic	66 – 70
Individual Automobiles	63 - 69

Notes: Source: BKL Consultants Ltd.
[1] Aircraft flyover not at 15 m distance
[2] Based on data provided for the Calgary, Edmonton and Portland LRT systems.

Noise Descriptors – L_{eq} Values

At this time, the best available research indicates that long-term human responses to noise are best evaluated using energy equivalent sound exposure levels (Leq values), in A-Weighted decibels (L_{eq} values in dBA)[2,3] including adjustments to account for particularly annoying characteristics of the sounds being analyzed.

Sound levels in the ambient environment vary each instant. In a downtown urban environment, the background noise is formed by an "urban hum", composed of noise from distant road traffic and from commercial sources. As traffic passes near a noise receptor, the instantaneous sound level may increase as a vehicle approaches, and then decrease as it passes and travels farther away. The energy equivalent sound exposure level L_{eq} is the average sound level over the same period of time with same acoustical energy as the actual environment (i.e., it is the average of the sound energy measured over a time period T). As a time-average, all L_{eq} values must have a time period associated with them. This is typically placed in brackets beside the L_{eq} tag. For example, a thirty-minute Leq measurement would be reported as an L_{eq} (30 min) value. The L_{eq} concept is illustrated in Figure 3, showing noise levels beside a small roadway, over a 100 second time period, with two vehicle pass-bys:



The L_{eq} Concept

In this example, the background "urban hum" is between 47 and 53 dBA. A car passes by at 20 seconds. As it approaches, the noise level increases to a maximum, and then decreases as it speeds away. At 45 seconds, a heavy truck passes by. Near 75 seconds, a dog barks three times. The maximum sound level (Lmax) over the period is 80 dBA and the minimum is 47 dBA. For almost 50 % of the time, the sound level is lower than 55 dBA.

The L_{eq} (100s) for the example is 67 dBA, which is much higher than the statistical mean sound level of 55 dBA. This illustrates that the Leq value is very sensitive to loud noise events, which contain much more sound energy (as sound is ranked on a logarithmic scale) than the normal background. It is also sensitive to the number of events during the time period, and the duration of those events. If only the truck had passed by during the measurement (no car and no dog barks), the L_{eq} (100s) would be 66 dBA. If only the car and dog barks had occurred, the L_{eq} (100s) would be 61 dBA. This shows that the truck pass-by is the dominant event in our example, due to its level and duration.

[2] Berglund and Lindvall, Community Noise, 1995.

[3] ISO 1996:2003(E), Acoustics – Description, measurement and assessment of environmental noise – Part 1: Basic quantities and assessment procedures.

The ability of the L_{eq} metric to account for the three factors of level, duration and frequency of events makes it a robust predictor of human response to noise. It is for this reason that the vast majority of noise standards are based on L_{eq} values.

Typical Durations for L_{eq} Analyses

For transportation noise impact analyses, the following durations are typically used:

L_{eq} (24h)	–	The sound exposure level over then entire 24-hour day
L_{eq} Day	–	Either: Leq (15h), from 7am to 10 pm; or Leq (16h), from 7am to 11 am
L_{eq} Night	–	Either: Leq (9h), from 10 pm to 7 am; or Leq (8h), from 11 pm to 7 am
L_{dn}	–	A special Leq (24h) value with a 10 dB night-time penalty applied to overnight sound levels (10pm to 7am)
L_{eq} (1-h)	–	The sound exposure over a 1-hour time period

L_{eq} (24h) values are appropriate for examining impacts of transportation noise sources with small changes in sound exposure levels over the 24-hour day. For example, freeway noise levels are generally consistent over the 24-hour day. Therefore, for freeways, there is little difference between L_{eq} (24h) values and the corresponding L_{eq} Day and L_{eq} Night values.

L_{eq} Day values, covering off the AM-peak and PM-peak travel periods, are generally appropriate for examining the impacts of non-freeway highways and municipal arterial roadways. The vast majority of noise associated with these sources is concentrated in the daytime hours, where typically, 85% to 90% of the daily road traffic will occur.[4] Thus, if reasonable sound levels occur during the daytime (and appropriate guideline limits are met), they will also occur (and be met) at night.

To account for increased annoyance with noise overnight in a single value, the U.S. Environmental Protection Agency (U.S. EPA) developed the L_{dn} metric (also known as DNL). It is a special form of the L_{eq} (24h) with a +10 dB night-time penalty. L_{dn} values and a related metric, the day-evening-night level (Lden) are also used in some European guidelines. L_{dn} values are not used in Canadian Provincial jurisdictions in evaluating transportation noise. Instead, guideline limits for separate Leq Day and Leq Night periods are generally used.

L_{eq} (1-h) values are the average sound levels over a one-hour time period. These tend to fluctuate more over the day, as traffic levels can fluctuate significantly hour to hour. L_{eq} (1-h) values are useful in assessing the impact of transportation sources which also vary hourly, and which may vary in a different manner than the background traffic. These values are often used to assess haul route noise impacts, for example.

[4] Based on research conducted by Ontario Ministry of Transportation, and provided in the *MTO Environmental Office Manual Technical Areas – Noise.* Daytime refers to a 16 hour day from 7am to 11 pm.

Some transportation noise sources may have significant traffic levels occurring overnight. For example, freight rail traffic in heavily used corridors can be shifted to over-night periods, with daytime track use being reserved for freight switcher traffic and passenger traffic. In situations such as this, an assessment of both daytime and night-time noise impacts may be appropriate.

Decibel Addition

Decibels are logarithmic numbers, and therefore have special properties of addition. Decibel values must be added logarithmically. If two sources, each emitting the same amount of sound energy, are placed side-by-side, then the total increase in sound level will only be 3 dB. If the difference in sound energy emitted is greater than 10 dB, then effectively the sound level will be the same as for the loudest unit (i.e., the increase in noise will be less than a decibel).

Decibel Addition Chart

dB Difference Of	dB Value to Add to Highest Number
0	3.0
1	2.5
2	2.1
3	1.8
4	1.5
5	1.2
6	1.0
7	0.8
8	0.6
9	0.5
10	0.4

This affects transportation noise from projects, as noise emission is logarithmically related to traffic volume. Doubling the traffic volume (essentially the same as adding a source with the same sound emission) will only result in a 3 dB increase over the original levels. The decibel increase in noise due to the increase in traffic volume, assuming all other factors remain the same, can be estimated by:

$$\text{dB increase} = 10 \log (\text{new volume} / \text{original volume}).$$

Human Response to Changes in Sound Levels

The human ear does not interpret changes in sound level in a linear manner. The general subjective human perception of changes in sound level is shown in the following table.

Subjective Human Perception of Changes in Sound Levels[5,6]

Change in Broadband Sound Level (dB)	Human Perception of Change
<3	Imperceptible change
3	Just-perceptible change
4 to 5	Clearly noticeable change
6 to 9	Substantial change
>10 and more	Very substantial change (half or twice as loud)
>20 and more	Very substantial change (much quieter or louder)

Notes:

Adapted from Bies and Hansen, p53, and MOE Noise Guidelines for Landfill Sites, 1998. Applies to changes in broadband noise sources only (i.e., increases or decreases in the same noise or same type of noise only). Changes in frequency content or the addition of tonal or temporal changes would affect the perception of the change.

The above table is directly applicable to changes in sound level where the noise sources are of the same general character. For example, existing road traffic noise levels can be directly compared to future road traffic noise levels, using the above relationships. In comparing road traffic noise to road plus rail traffic noise, the different frequency and temporal nature of the noise means that the rail noise may be more noticeable. Adjustments for the nature of the new sound can be applied to better account for temporal and frequency differences.

For transportation noise sources, research conducted by the U.S. Environmental Protection Agency indicates that a 5 dB change in sound levels is required to trigger a change in large-scale community response to noise. This correlates to a clearly noticeable increase in noise levels.

Decay of Noise with Distance

Noise levels decrease with increasing distance from a source of noise. The rate of decay is partially dependent on the nature of the ground between the source: whether it is hard (acoustically reflective) or soft (acoustically absorptive). Transportation noise sources in general act as *line sources* of sound. For line sources, the rate of decay is approximately:

- Hard ground: 3 dB for each doubling of distance from the source
- Soft ground: 5 dB for each doubling of distance from the source

[5] Bies, D.A., and C.H Hansen 1988. Engineering Noise – Theory and Practice, 2nd Ed. E & E & FN Spon, London, p 53.

[6] Ontario Ministry of the Environment 1998. Noise Guidelines for Landfill Sites. Queen's Printer for Ontario.

Appendix B

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Traffic Count Data, Projection and Summary Report

Baudette Bridge
Preliminary Engineering

Trunk Highway (TH) 72, S.P. 3905-09

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HNTB

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OVERVIEW

This technical memorandum outlines traffic data that was collected from various agencies and a traffic forecast that was developed as part of on-going environmental study for the US/Canadian Border crossing between the City of Baudette, Minnesota and the Town of Rainy River, Ontario. The bridge is numbered 9412 by Minnesota Department of Transportation (MnDOT) and carries MN 72. On the Canadian side, the bridge is numbered 45-110 by the Ministry of Transportation Ontario (MTO) and carries Ontario Provincial Highway 11. The bridge connects the City of Baudette in Lake of the Woods county with the Town of Rainy River in Ontario, Canada.

Traffic counts were provided by the United States Customs and Border Protection (CBP), MnDOT, MTO and Canadian Border Service Agency (CBSA). Each data set was collected using different techniques. DHS and CBS data pertain to vehicles entering their respective facility and are collected continuously. MnDOT data is collected for a short period and extrapolated to represent an average annual value.

HNTB and Stantec coordinated with MnDOT in development of the traffic forecasts, design hour volumes (DHV) and equivalent single axle loads (ESAL) for the bridge. As discussed on page ii, the traffic counts provided by the three agencies differ, but show a consistent pattern of between 1000 and 1300 vehicles per day using the bridge. The traffic forecasts were developed using MnDOT counts, which are the highest value, providing a more conservative traffic and ESAL forecast.

US Customs and Border Protection Data

Five years of traffic count data was provided by the US Customs and Border Protection (CBP) for the Baudette bridge, as shown in Table 1 below. The data was provided by fiscal year (October to September) and is for traffic inbound to the United States. Table 2 shows the monthly breakdown of trucks, buses and private vehicles for calendar year 2013 (2013 data was used for consistency with other data sources); years 2010 through 2014 are available in the Appendix A. Note that trucks and buses comprise about 4 percent of the traffic crossing the Baudette bridge according to the CBP data.

Table 1 DHS 5 Year Traffic Count History for Baudette Bridge

Fiscal Year	Trucks	Buses	Private Vehicles	Total
FY10	9,672	111	190,485	200,268
FY11	8,072	86	177,729	185,887
FY12	7,304	71	169,536	176,911
FY13	6,955	49	169,474	176,478
FY14	6,486	43	171,552	178,081

Source: CBP

Table 2 DHS Monthly Traffic Counts in 2013 for Baudette Bridge

Month	Truck	Bus	Private Vehicle	Total
January	632	1	11,899	12,532
February	705	14	11,059	11,778
March	512	3	12,575	13,090
April	513	8	12,341	12,862
May	582	8	14,970	15,560
June	511	3	16,972	17,486
July	652	0	18,254	18,906
August	700	1	17,509	18,210
September	714	4	15,338	16,056
October	794	2	14,157	14,953
November	463	8	13,547	14,018
December	334	2	13,090	13,426
Total	7112	54	171,711	178,877

Source: CBP

Canadian Border Service Agency Data

Canadian Border Service Agency (CBSA) provided four years of crossing data in the form of passengers and conveyance, or vehicles crossing the border. The data is for inbound to Canada and was provided by month within a fiscal year running from April

to March as shown in Table 3 and Appendix B. Pedestrian and truck data was also provided for 2013/2014 and 2014/2015 as shown in Table 4 and Appendix B. The CBSA data indicates trucks are approximately 3 percent of the vehicle mix across the bridge.

Table 3 CBSA Passage Data at Baudette Bridge by Fiscal Year

Month	2011/2012	2012/2013	2013/2014	2014/2015
April	12,656	12,688	13,068	13,201
May	15,254	15,549	16,056	16,019
June	16,637	17,161	17,798	17,894
July	18,075	17,787	18,769	18,232
August	16,610	17,012	18,184	17,620
September	14,916	14,658	15,826	15,107
October	13,930	13,709	15,131	14,695
November	12,400	12,237	13,733	12,977
December	13,117	13,123	13,831	13,701
January	11,771	11,918	12,236	11,974
February	11,125	11,125	11,176	11,022
March	12,308	12,638	12,549	11,879
Total	168,799	169,605	178,357	174,321

Source: CBSA

Table 4 CBSA Pedestrian and Truck Data at Baudette Bridge by Fiscal Year

	Pedestrians		Trucks	
Month	2013/2014	2014/2015	2013/2014	2014/2015
April	35	18	579	434
May	50	24	570	434
June	82	33	585	423
July	244	114	486	419
August	60	76	493	305
September	54	49	532	390
October	36	37	503	402
November	73	9	447	435
December	4	7	389	346
January	10	3	365	346
February	1	13	453	340
March	14	11	468	294
Total	663	394	5,870	4,568

Source: CBSA

Ontario Ministry of Transportation Data

MOT provided unofficial traffic volumes for the Baudette bridge as part of the Scope and Cost Report Characteristics Inventory, provided in Appendix C. 2013 unofficial AADT is 1250 vehicles

per day, with a truck percentage of 2.8 percent and a design hour volume (DHV) percentage of 14.2.

Minnesota Department of Transportation Data

Minnesota Department of Transportation (MnDOT) provides on-line mapping services that include average annual daily traffic (AADT) values for the Baudette bridge. Table 5 shows the AADT history for the Baudette bridge provided by MnDOT, along with available truck percentages. MnDOT also provided the hourly traffic counts for the several years, typically for 48 hours in summer, as shown in the Appendix D.

The CBP and CBSA data collected throughout the year show an average annual one-way volume of approximately 500 vehicles per day for 2013. This is calculated by dividing the total entering vehicles by 365. This results in approximately 1000 vehicles per day for total bridge crossings.

MnDOT's 2013 AADT of 1300 vehicles per day is higher than the average values from CBP and CBSA. Using July data, which is the highest month of data observed by both CBP and CBSA, the average crossings would be approximately 1200 per day. This indicates the MnDOT AADT values are conservatively high. MnDOT's data is also collected prior to the US Customs facility, so some activity associated with the Customs and Duty Free facilities may be increasing the MnDOT count. The MnDOT AADT values are typically used by MnDOT for developing traffic forecasts and ESAL. Using the higher MnDOT AADT values provides a more conservative dataset for estimating traffic volumes and ESAL.

Table 5 MnDOT AADT's for Baudette Bridge

Year	AADT	Truck %
1992	1300	
1994	1550	
1995	1700	5.4%
1996	1850	
1998	1800	
2000	1450	
2001	1700	6.7%
2002	1950	
2004	2100	3.7%
2006	1950	
2009	1650	
2011	1400	
2013	1300	14.8%

Source: MnDOT

The historic patterns displayed by the MnDOT AADT values also indicate declining volumes across the Baudette bridge. Estimates for 2004 topped 2100 vehicles per day, over 50 percent higher than volumes observed in 2013.

REGIONAL LAND USE

HNTB conducted a review of the land use plans contained in the Lake of the Woods County Comprehensive Plan[1]. The plan, developed by Headwaters Regional Development Commission in 2000, provides potential areas for future development (see Figure 12 of the plan). There is no indication of planned increased economic activities that would drive increased traffic patterns in the Baudette area.

[1] http://www.co.lake-of-the-woods.mn.us/PDF/Plans/Comp%20Land%20Use%20Plan.pdf

TRAFFIC FORECASTS

Ontario Traffic Forecasts

MOT provided an estimated traffic volume only for year 2023 at a value of 1313 vehicles per day. This represents a one percent per year growth rate of 0.5 percent annually. Extrapolated to year 2038, this growth would be estimated at 1400 vehicles per day.

Minnesota Department of Transportation Traffic Forecasts

MnDOT District 2 staff utilized the traffic count and truck percentage data shown in Table 5, along with data for the segment south of the Baudette bridge, to estimate future year AADT and ESAL. As discussed previously, four traffic count data sets are available for the Baudette bridge. All four count sets show relatively consistent values, with MnDOT's counts being the highest value in 2013. Utilizing these higher counts provides a more conservative forecast of future traffic activity. The declining AADT history from MnDOT suggests lower traffic volumes in the future compared to existing values, however, MnDOT policy is to project minimal increases in traffic into the future, providing a conservative estimate of future traffic demands. For Lake of the Woods County, MnDOT's minimum growth rate is 0.5 percent annually. This produces a 2018 AADT estimate of 1350 vehicles per day and a 2038 estimate of 1450 vehicles per day as shown in Table 6. These forecasts developed by MnDOT are recommended for further use in the Baudette bridge project. Note that these projections are still lower than value previously observed on the Baudette bridge in the mid-2000's.

Table 6 AADT Forecasts

Year	AADT/Estimate
2013	1300
2018	1350
2038	1450

Source: MnDOT

Design hour volume (DHV) was also estimated by MnDOT. The K-factor for the existing condition is 19.8 percent. This value applied to the 2038 forecasted AADT of 1450 results in a DHV of 287 vehicles per hour. A 70/30 split is applied to provide a directional peak of 201 vehicles per hour.

MnDOT also calculates ESAL using the projected growth rate of 0.5 percent and the truck data; results shown in Table 7. The truck percentage used to calculate ESAL is approximately 7.5 percent, as shown in Appendix D. This is a conservatively high value compared to the 3 to 4 percent observed by the CBSA, CBP and MOT data.

Table 7 ESAL's for Baudette bridge for 20 and 35 Year design periods

Base Year	Design Year	Years	Design-Lane Tractor Semi-trailers	Flex ESAL	Rigid ESAL
2018	2038	20	22	292,000	426,000
2018	2053	35	23	519,000	758,000

Source: MnDOT

APPENDIX A BAUDETTE BRIDGE CROSSING DATA

DEPARTMENT OF HOMELAND SECURITY

YEARS 2010 THROUGH 2014

2010

Month	Port/Port Code	Trucks	Buses	POVs	Truck Pax	Bus pax	POV pax	Peds
Jan	**Bau/3424**	**1095**	**3**	**12467**	**1151**	**121**	**21013**	**0**
Feb	**Bau/3424**	**1335**	**31**	**11095**	**1385**	**54**	**19594**	**2**
Mar	**Bau/3424**	**712**	**22**	**13013**	**754**	**421**	**22194**	**11**
April	**Bau/3424**	**738**	**11**	**14300**	**775**	**222**	**22554**	**20**
May	**Bau/3424**	**669**	**9**	**16110**	**720**	**164**	**26510**	**29**
June	**Bau/3424**	**745**	**11**	**18632**	**795**	**265**	**31217**	**44**
July	**Bau/3424**	**614**	**4**	**23123**	**640**	**70**	**36055**	**93**
Aug	**Bau/3424**	**739**	**2**	**22769**	**763**	**17**	**34855**	**42**
Sept	**Bau/3424**	**710**	**9**	**18992**	**749**	**275**	**26909**	**11**
Oct	**Bau/3424**	**551**	**6**	**17374**	**589**	**186**	**24858**	**17**
Nov	**Bau/3424**	**573**	**2**	**14580**	**604**	**70**	**20831**	**5**
Dec	**Bau/3424**	**628**	**7**	**14181**	**660**	**160**	**23109**	**2**
		9109	**117**	**196636**	**9585**	**2025**	**309699**	**276**

2011

Month	Port/Port Code	Trucks	Buses	POVs	Truck Pax	Bus pax	POV pax	Peds
Jan	**Bau/3424**	**769**	**7**	**11525**	**802**	**165**	**20361**	**0**
Feb	**Bau/3424**	**865**	**9**	**11233**	**907**	**132**	**19155**	**0**
Mar	**Bau/3424**	**809**	**24**	**12210**	**836**	**447**	**21626**	**2**
April	**Bau/3424**	**685**	**13**	**12829**	**725**	**313**	**22639**	**9**
May	**Bau/3424**	**713**	**10**	**16747**	**749**	**233**	**26185**	**12**
June	**Bau/3424**	**812**	**6**	**17473**	**842**	**162**	**30903**	**41**
July	**Bau/3424**	**590**	**1**	**17860**	**613**	**22**	**35120**	**52**
Aug	**Bau/3424**	**507**	**0**	**16927**	**534**	**0**	**32279**	**47**
Sept	**Bau/3424**	**603**	**1**	**15239**	**628**	**22**	**26757**	**48**
Oct	**Bau/3424**	**580**	**5**	**14067**	**613**	**84**	**24309**	**14**
Nov	**Bau/3424**	**484**	**3**	**12450**	**512**	**81**	**21392**	**5**
Dec	**Bau/3424**	**470**	**7**	**13097**	**493**	**99**	**23059**	**3**
		7887	**86**	**171657**	**8254**	**1760**	**303785**	**233**

2012

Month	Port/Code	Trucks	Buses	POVs	Truck Pax	Bus pax	POV pax	Peds
Jan	**Bau/3424**	**511**	**4**	**11873**	**529**	**96**	**20968**	**0**
Feb	**Bau/3424**	**646**	**10**	**11255**	**676**	**172**	**19534**	**1**
Mar	**Bau/3424**	**692**	**14**	**12589**	**715**	**298**	**12589**	**12**
April	**Bau/3424**	**701**	**10**	**12732**	**735**	**218**	**21755**	**8**
May	**Bau/3424**	**779**	**9**	**15056**	**815**	**253**	**26824**	**31**
June	**Bau/3424**	**475**	**5**	**16638**	**499**	**176**	**31241**	**27**
July	**Bau/3424**	**616**	**2**	**17871**	**649**	**45**	**35176**	**59**
Aug	**Bau/3424**	**910**	**0**	**16878**	**934**	**0**	**32365**	**52**
Sept	**Bau/3424**	**466**	**2**	**15030**	**476**	**51**	**26619**	**37**
Oct	**Bau/3424**	**524**	**2**	**13369**	**522**	**59**	**23420**	**14**
Nov	**Bau/3424**	**541**	**4**	**12273**	**555**	**92**	**21020**	**16**
Dec	**Bau/3424**	**397**	**2**	**13041**	**400**	**55**	**22931**	**5**
		7258	**64**	**168605**	**7505**	**1515**	**294442**	**262**

2013

Month	Port/Code	Trucks	Buses	POVs	Truck Pax	Bus pax	POVpax	Peds
Jan	**Bau/3424**	**632**	**1**	**11899**	**634**	**24**	**20787**	**13**
Feb	**Bau/3424**	**705**	**14**	**11059**	**706**	**255**	**19256**	**0**
Mar	**Bau/3424**	**512**	**3**	**12575**	**525**	**105**	**22227**	**3**
April	**Bau/3424**	**513**	**8**	**12341**	**523**	**104**	**20531**	**19**
May	**Bau/3424**	**582**	**8**	**14970**	**584**	**243**	**25452**	**14**
June	**Bau/3424**	**511**	**3**	**16972**	**515**	**88**	**31293**	**35**
July	**Bau/3424**	**652**	**0**	**18254**	**637**	**0**	**35290**	**44**
Aug	**Bau/3424**	**700**	**1**	**17509**	**701**	**5**	**33607**	**28**
Sept	**Bau/3424**	**714**	**4**	**15338**	**732**	**108**	**27331**	**29**
Oct	**Bau/3424**	**794**	**2**	**14157**	**808**	**47**	**23892**	**10**
Nov	**Bau/3424**	**463**	**8**	**13547**	**469**	**198**	**23201**	**0**
Dec	**Bau/3424**	**334**	**2**	**13090**	**338**	**61**	**22267**	**0**
		7112	**54**	**171711**	**7172**	**1238**	**305134**	**195**

2014

Month	Port/Port Code	Trucks	Buses	POVs	Truck Pax	Bus pax	POV pax	Peds
Jan	**Bau/3424**	**504**	**6**	**12172**	**507**	**140**	**20668**	**8**
Feb	**Bau/3424**	**563**	**2**	**10475**	**569**	**59**	**18089**	**0**
Mar	**Bau/3424**	**525**	**1**	**11823**	**528**	**20**	**20400**	**0**
April	**Bau/3424**	**522**	**10**	**12590**	**529**	**197**	**21699**	**13**
May	**Bau/3424**	**571**	**2**	**15198**	**579**	**39**	**25728**	**34**
June	**Bau/3424**	**548**	**8**	**17420**	**550**	**214**	**32218**	**38**
July	**Bau/3424**	**608**	**0**	**18302**	**624**	**0**	**36604**	**55**
Aug	**Bau/3424**	**456**	**0**	**18495**	**475**	**0**	**32881**	**49**
Sept	**Bau/3424**	**600**	**5**	**15252**	**611**	**137**	**26245**	**25**
Oct	**Bau/3424**	**478**	**3**	**14548**	**480**	**104**	**24221**	**19**
Nov	**Bau/3424**	**504**	**6**	**12172**	**507**	**140**	**20668**	**8**
Dec	**Bau/3424**	**411**	**4**	**13709**	**412**	**142**	**22753**	**1**
		5682	**47**	**153854**	**5747**	**1192**	**265570**	**195**

2015

Month	Port/Port Code	Trucks	Buses	POVs	Truck Pax	Bus pax	POV pax	Peds
Jan	**Bau/3424**	**422**	**5**	**12231**	**423**	**104**	**19921**	**0**
Feb	**Bau/3424**	**371**	**7**	**10594**	**373**	**193**	**18378**	**1**
Mar	**Bau/3424**	**387**	**2**	**11741**	**393**	**53**	**19979**	**10**
		1180	**14**	**34566**	**1189**	**350**	**58278**	**11**

APPENDIX B BAUDETTE BRIDGE CROSSING DATA

CANADIAN BORDER SERVICES

YEARS 2011 THROUGH 2015

Refreshed: Friday, May 1, 2015 / # of Passages

Conveyance **FY 2011-12** Day of Week By Hour **1288 - Fort Frances District** Program Canada Kiosk Mode of Travel Lane # Referral Decision Document Type Citizenship Residency **# of Passages**

# of Passages as values		2011/Apr	2011/May	2011/Jun	2011/Jul	2011/Aug	2011/Sep	2011/Oct	2011/Nov	2011/Dec	2012/Jan	2012/Feb	2012/Mar
4880 - Rainy River	Referral Decision	12,656	15,254	16,637	18,075	16,610	14,916	13,930	12,400	13,117	11,771	11,125	12,308

Zero suppression rows and columns. Suppression options applied: zero values, division by zero, missing values, overflow values.

Refreshed: Friday, May 1, 2015 / # of Passages

Conveyance **FY 2012-13** Day of Week By Hour **1288 - Fort Frances District** Program Canada Kiosk Mode of Travel Lane # Referral Decision Document Type Citizenship Residency **# of Passages**

# of Passages as values		2012/Apr	2012/May	2012/Jun	2012/Jul	2012/Aug	2012/Sep	2012/Oct	2012/Nov	2012/Dec	2013/Jan	2013/Feb	2013/Mar
4880 - Rainy River	Referral Decision	12,688	15,549	17,161	17,787	17,012	14,658	13,709	12,237	13,123	11,918	11,125	12,638

Zero suppression rows and columns. Suppression options applied: zero values, division by zero, missing values, overflow values.

Refreshed: Friday, May 1, 2015 / # of Passages

Conveyance **FY 2013-14** Day of Week By Hour **1288 - Fort Frances District** Program Canada Kiosk Mode of Travel Lane # Referral Decision Document Type Citizenship Residency **# of Passages**

# of Passages as values		2013/Apr	2013/May	2013/Jun	2013/Jul	2013/Aug	2013/Sep	2013/Oct	2013/Nov	2013/Dec	2014/Jan	2014/Feb	2014/Mar
4880 - Rainy River	Referral Decision	13,068	16,056	17,798	18,769	18,184	15,826	15,131	13,733	13,831	12,236	11,176	12,549

Zero suppression rows and columns. Suppression options applied: zero values, division by zero, missing values, overflow values.

Refreshed: Friday, May 1, 2015 / # of Passages

Conveyance **FY 2014-15** Day of Week By Hour **1288 - Fort Frances District** Program Canada Kiosk Mode of Travel Lane # Referral Decision Document Type Citizenship Residency **# of Passages**

# of Passages as values		2014/Apr	2014/May	2014/Jun	2014/Jul	2014/Aug	2014/Sep	2014/Oct	2014/Nov	2014/Dec	2015/Jan	2015/Feb	2015/Mar
4880 - Rainy River	Referral Decision	13,201	16,019	17,894	18,232	17,620	15,107	14,695	12,977	13,701	11,974	11,022	11,879

Zero suppression rows and columns. Suppression options applied: zero values, division by zero, missing values, overflow values.

RAINY RIVER STATS - Pedestrian & Commercial Trucks			
		PEDESTRIANS	COMMERCIAL TRUCKS
2013/14	April	35	579
	May	50	570
	June	82	585
	July	244	486
	August	60	493
	September	54	532
	October	36	503
	November	73	447
	December	4	389
	January	10	365
	February	1	453
	March	14	468
	TOTAL:	663	5870
2014/15	April	18	434
	May	24	434
	June	33	423
	July	114	419
	August	76	305
	September	49	390
	October	37	402
	November	9	435
	December	7	346
	January	3	346
	February	13	340
	March	11	294
	TOTAL:	394	4568

APPENDIX C BAUDETTE BRIDGE CROSSING DATA

Ontario Ministry of Transportation Data

Scope and Cost Report Characteristics Inventory

GWP 6046-10-00, Hwy 11, Rainy River/Baudettee International Bridge
LHRS O/S: 18430 0.0

Sect.-1 Project Location		LOCATION	Rainy River/Baudette Br (11 843)		
		LHRS O/S	Start LHRS O/S 18430 0.0		End LHRS O/S 18430 0.3
		Traffic Characteristics			
Section 2.5 & 2.6 Traffic Volumes	2.5	AADT Unofficial (2013)	1250		
	2.5	SADT Unofficial (2013)	1500		
	2.5	DHV % Unofficial (2013)	14.2		
	2.5	DHV # Unofficial (2013)	178		
	2.6	% Commercial Unofficial (2013)	2.8		
		% Long Trucks Unofficial (2013)	N/A		
		Future Yr Projections			
	2.6	AADT (2023)	1313		
	2.6	SADT (2023)	1575		
	2.6	DHV % (2023)	14.2		
	2.6	DHV # (2023)	186		
	2.7	% Commercial (2020)	N/A		
Section 2.7, 2.8 Traffic Characteristics	2.7	Traffic Patterns	Intermediate Tourist		
	2.7	Directional Split	N/A		
	2.7	HCS Level of Service (2010)	A		
	2.7	HCS Future Level of Service (Yr)	N/A		
	2.8	5 Yr Ave Collision Rate (c/MVkm '06-'10)	0.0		
	2.8	Prov. Collision Rate (c/MVkm)/(2010)	0.6		
		Section Length (km)	0.3		
	2.8	5 Yr Avg Fatal Count ('06-'10)	0		
	2.8	5 Yr Avg Injury Count ('06-'10)	0		
	2.8	5 Yr Avg PDO Count ('06-'10)	0		
	2.8	#/Type Inventory Count Stations	N/A		
	2.9	Electrical	N/A		
	2.9	85th Percentile Speed (km/h)	N/A		
	2.9	Posted Speed (kmh)	N/A		

APPENDIX D BAUDETTE BRIDGE CROSSING DATA

MnDOT Traffic Forecast Report

MINNESOTA DEPARTMENT OF TRANSPORTATION

MEMO

Transportation Data and Analysis
395 John Ireland Boulevard - MS 450
St. Paul, Minnesota 55155

Phone: (651) 366-3856
Fax: (651) 366-3886

April 22, 2015

To: Tony Collyard
Traffic Forecaster
District 2 Bemidji, MS 020

From: Gene Hicks
Section Director
Traffic Forecasting and Analysis, MS 450

Subject: TRAFFIC FORECAST

Route Type: MN TRUNK
Route Num 72
Letting Date: November 17, 2017
Program Category: BR
Project Manager: JOE MCKINNON

Beg Pt 76+00.864
End Pt 76+00.864
SP# 3905-09
Forecast # F2-1506
County: Lake of the Woods
District: 2
Miles:

Project Limits: REPLACE OLD BRIDGE #9412 AT MN/CANADIAN BORDER

Enclosures (check those that apply):

- [X] Project map
- [X] Least squares analysis
- [X] Cumulative ESAL worksheet, Segment A
- [X] Cumulative ESAL worksheet, Segment B
- [X] AADT and/or DHV traffic schematic diagram
- [X] VCL expansion worksheet
- [ ] Cumulative ESAL Report
- [ ] Other (describe)
- [ ] Other (describe)

REMARKS:

The Western Hemisphere Travel Initiative, changing the documentation requirements for border crossing, went into effect in 2009. This could account for the drop in AADT since 2009.

VC site 2011 data used for heavy splits. VC site 2011 is on TH 11 west of TH 72.

FILE

CUMULATIVE ESAL REPORT - A

DATE: 04/22/15

ROUTE #: MN TRUNK 72 **DISTRICT:** 2 **SP#:** 3905-09

FORECAST #: F2-1506 **COUNTY:** Lake of the Woods **MILES:** _____

DESCRIPTION: From 3rd ST NE to Canadian Broder

AUTHOR'S DISTRICT: ---> _____ **AUTHOR:** _____

TRAFFIC SUMMARY

BASE YEAR NUMBER OF LANES (two way): 2

	BASE YEAR --->	2018	DESIGN YEAR ---->	2038	GROWTH / YR (SIMPLE %)
AADT: two-way		1350		1450	0.4%
design-lane		680		730	0.4%
HCADT: two-way		100		110	0.5%
SINGLE UNITS:two-way		60		60	0.0%
TST'S: two-way		41		44	0.4%
5 Ax +: two-way		30		33	0.5%

ESAL SUMMARY

ANNUAL DESIGN LANE ESAL

FLEXIBLE:	11828	13034	+
RIGID:	17232	19024	+

CUMULATIVE DESIGN-LANE ESALS (10 TON)
FOR VARIABLE TIME PERIODS

Design-lane factor: **0.5**

BASE YEAR	DESIGN YEAR	TIME PERIOD	DESIGN-LANE TST'S	ESALS FLEXIBLE	ESALS RIGID
2018	2028	10 Year	21	149,000	218,000
2018	2033	15 Year	22	220,000	321,000
2018	**2038**	**20 Year**	**22**	**292,000**	**426,000**
2018	2043	25 Year	22	366,000	534,000
2018	2048	30 Year	23	442,000	645,000
2018	**2053**	**35 Year**	**23**	**519,000**	**758,000**

APPROVED BY: _____ **DATE:** _____

CUMULATIVE ESALS WORKSHEET **SEGMENT A**

SP#: 3905-09
ROUTE: MN TRUNK 72 **# LANES:** 2 **DATE:** 04/22/15
LOCATION: From 3rd ST NE to Canadian Broder
VCL SITE #: 7069

	YEAR	AADT	INIT CALC HCADT	CONSTRN HCADT	INIT CALC 5AX TST	CONSTRAIN 5AX TST
VEH.CLASS YR.:			0	0.0%	---	---
BASE YEAR:	2018	1350	100		31	
FORECAST YEAR:	2038	1450	110		33	

BASE YEAR PROPORTIONS		BASE YR. VOLUME	% TREND	FORECAST %	FUTURE VOL.
2AX-6TIRE SU	3.9%	51	1	3.9%	56
3AX+ SU	0.4%	5	1	0.4%	6
3AX TST	0.3%	4	1	0.3%	4
4AX TST	0.5%	7	1	0.5%	7
5AX+ TST	0	0	1	0.0%	0
(5AX+ TST MAX)	0.8%	10	1	0.8%	11
(5AX+ TST OTH)	1.5%	20	1	1.5%	22
TR TR, BUSES	0.3%	3	1	0.3%	4
TWIN TRAILERS	0.0%	0	1	0.0%	0

SUMMARIES:		AADT	HCADT	HCADT %	20 YR DESIGN LANE CUMULATIVE ESAL	
0	COUNT:	0	0	#DIV/0!		
2018	FORECAST:	1350	100	7.4%	|	|
2038	FORECAST:	1450	110	7.6%	**********	**********
					FLEXIBLE	RIGID
DESIGN LANE FACTOR:		0.5			292,000	426,000
					**********	**********

ADDITIONAL OUTPUTS:

	BASE %	FORECAST %	ESAL FACTORS FLEXIBLE	RIGID
2AX-6TIRE SU	3.8%	3.9%	0.25	0.24
3AX+ SU	0.4%	0.4%	0.58	0.85
3AX TST	0.3%	0.3%	0.39	0.37
4AX TST	0.5%	0.5%	0.51	0.53
5AX+ TST	0.0%	0.0%	1.13	1.89
(5AX+ TST MAX)	0.7%	0.8%	2.40	4.07
(5AX+ TST OTH)	1.5%	1.5%	0.87	1.44
TR TR, BUSES	0.2%	0.3%	0.57	0.74
TWIN TRAILERS	0.0%	0.0%	2.40	2.33

Notes:

CUMULATIVE ESAL REPORT - B

DATE: 04/22/15

ROUTE #: MN TRUNK 72 **DISTRICT:** 2 **SP#:** 3905-09

FORECAST #: F2-1506 **COUNTY:** Lake of the Woods **MILES:** _____

DESCRIPTION: From TH 11 to 3rd ST NE

AUTHOR'S DISTRICT: ---> 0 **AUTHOR:** 0

TRAFFIC SUMMARY

BASE YEAR NUMBER OF LANES (two way): 2

	BASE YEAR --->	2018	DESIGN YEAR ---->	2038	GROWTH / YR (SIMPLE %)
AADT: two-way		1600		1650	0.2%
design-lane		800		830	0.2%
HCADT: two-way		120		130	0.4%
SINGLE UNITS:two-way		70		70	0.0%
TST'S: two-way		51		53	0.2%
5 Ax +: two-way		38		40	0.3%
ESAL SUMMARY					
ANNUAL DESIGN LANE ESAL					
FLEXIBLE:		14,356		15,258	+
RIGID:		20,987		22,340	+

CUMULATIVE DESIGN-LANE ESALS (10 TON)
FOR VARIABLE TIME PERIODS

Design-lane factor: 0.5

BASE YEAR	DESIGN YEAR	TIME PERIOD	DESIGN-LANE TST'S	ESALS FLEXIBLE	ESALS RIGID
2018	2028	10 YEAR	26	180,000	263,000
2018	2033	15 YEAR	26	263,000	385,000
2018	**2038**	**20 YEAR**	**27**	**348,000**	**510,000**
2018	2043	25 YEAR	27	434,000	636,000
2018	2048	30 YEAR	27	522,000	764,000
2018	**2053**	**35 YEAR**	**27**	**611,000**	**894,000**

APPROVED BY: _____ **DATE:** _____

CUMULATIVE ESAL WORKSHEET **SEGMENT B**

SP#: 3905-09

ROUTE: MN TRUNK 72 **# LANES:** 2 **DATE:** 04/22/15

LOCATION: From TH 11 to 3rd ST NE

	YEAR	AADT			CALCULATED HCADT	CONSTRAIN HCADT
BASE YEAR:	2018	1600	250	**DIFFERENCE**	120	0
FORECAST YEAR:	2038	1650	200	**DIFFERENCE**	130	0

INCREMENTAL HCADT ON SEGMENT B (2000-2004 Local Road Studies)

BASE YEAR PROPORTIONS		**BASE YR. VOLUME**	**% TREND**	**FORECAST %**	**FUTURE VOL.**
2AX-6TIRE SU	3.2%	8	1	3.2%	6
3AX+ SU	0.8%	2	1	0.8%	2
3AX TST	0.3%	1	1	0.3%	1
4AX TST	0.5%	1	1	0.5%	1
5AX+ TST	3.3%	8	1	3.3%	7
(5AX+ TST MAX)	0.0%	0	1	0.0%	0
(5AX+ TST OTH)	0.0%	0	1	0.0%	0
TR TR, BUSES	0.4%	1	1	0.4%	1
TWIN TRAILERS	0.0%	0	1	0.0%	0

SUMMARIES: *rural* 0 **ADDED** **COMBINED** **20 YR DESIGN**

		AADT	HCADT %	COMBINED HCADT %	LANE CUMULATIVE ESAL	
BASE YEAR:	2018	250	8.4%	7.6%	|	|
FORECAST YEAR:	2038	200	9.0%	7.8%	**********	**********
DESIGN LANE FACTOR:		0.5			**FLEXIBLE**	**RIGID**
			SEGMENT B INCREMENT ONLY:		56,000	83,000
			SEGMENT A + SEGMENT B:		**348,000**	**509,000**
					**********	**********

ADDITIONAL OUTPUTS:

	BASE %	**FORECAST %**	**ESAL FACTORS FLEXIBLE**	**RIGID**
2AX-6TIRE SU	3.2%	3.0%	0.25	0.24
3AX+ SU	0.8%	1.0%	0.58	0.85
3AX TST	0.4%	0.5%	0.39	0.37
4AX TST	0.4%	0.5%	0.51	0.53
5AX+ TST	3.2%	3.5%	1.13	1.89
(5AX+ TST MAX)	0.0%	0.0%	2.40	4.07
(5AX+ TST OTH)	0.0%	0.0%	0.87	1.44
TR TR, BUSES	0.4%	0.5%	0.57	0.74
TWIN TRAILERS	0.0%	0.0%	2.40	2.33

BSEGment

BASE YEAR		**FORECAST YEAR**
OK	**Subtraction** **of Trucks**	**OK**
OK	**Addition** **of Trucks**	**OK**

16 HR. OR 24 HR. VEHICLE CLASS COUNT EXPANSION WORKSHEET 1

SITE NUMBER: 7069 **COUNTY:** Lake of the Woods

SITE DESCRIPTION: South of Canadian Border

PROJECT SP#: 3905-09 **YEAR OF COUNT ->:** 2013

MONTH NUMBER OF COUNT: 8 - August **CONSTRAIN AADT ->:** 1300

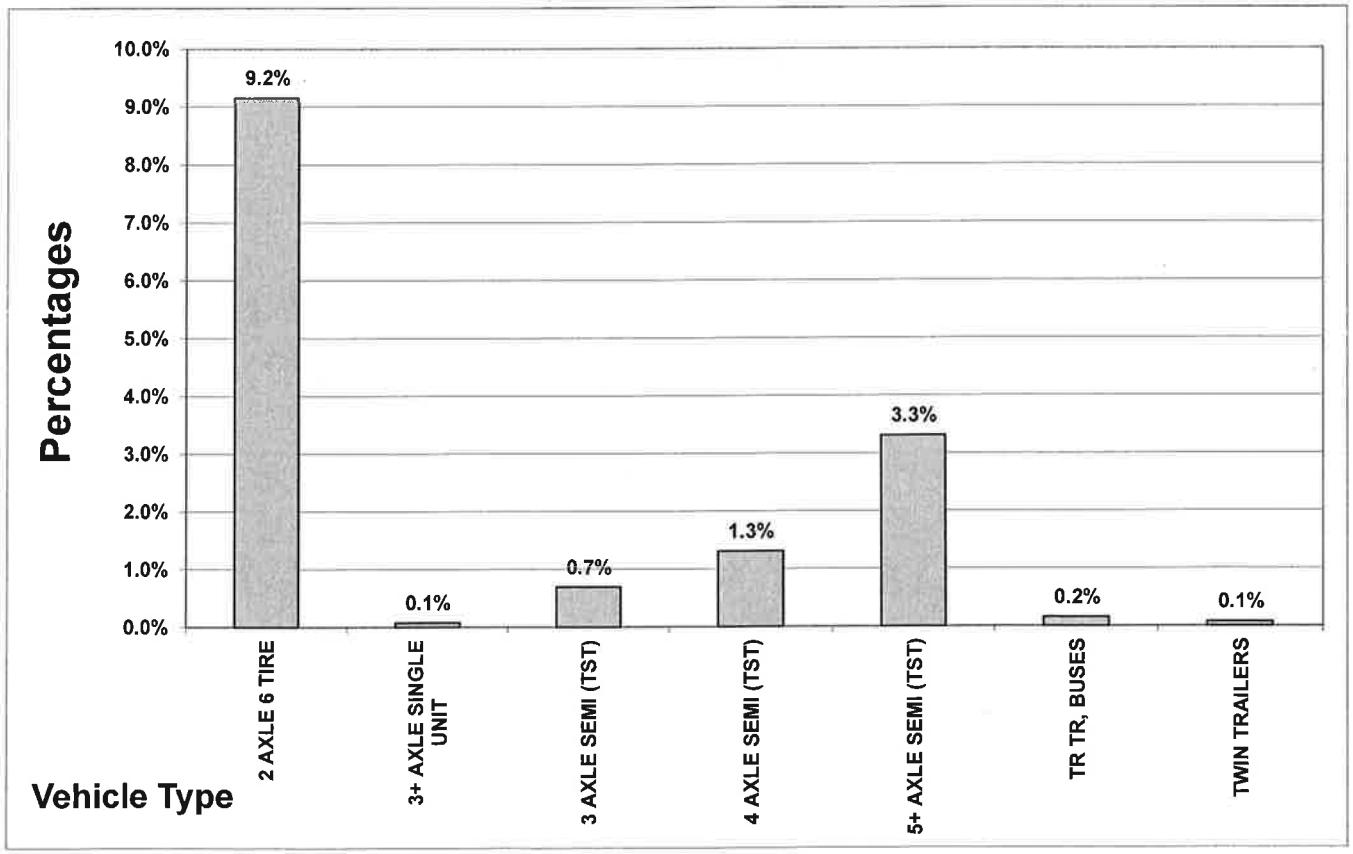
16 or 24 HR 24

VEHICLE TYPE	RAW COUNT	AADT ADJ FACTOR		ADJUSTED RAW	VEH. TYPE PERCENTS	A.C.F.
CARS AND PICKUPS	1125	#N/A		1108		0.92
2 AXLE 6 TIRE	143	0.83		119	9.2%	
3+ AXLE SINGLE UNIT	2	0.66		1	0.1%	
3 AXLE SEMI (TST)	12	0.72		9	0.7%	
4 AXLE SEMI (TST)	23	0.72		17	1.3%	
5+ AXLE SEMI (TST)	55	0.78		43	3.3%	
TR TR, BUSES	3	0.68		2	0.2%	
TWIN TRAILERS	1	0.76		1	0.1%	
TOTALS ---------->	1364	-------->	1.0	1300	14.8%	(%HC)

DO YOU HAVE THE CORRECT RURAL OR URBAN FACTOR?

7069

South of Canadian Border



You Have Selected the Rural Factor

16 HR. OR 24 HR. VEHICLE CLASS COUNT EXPANSION WORKSHEET 2

SITE NUMBER: 7069 **COUNTY:** Lake of the Woods

SITE DESCRIPTION: South of Canadian Border

PROJECT SP#: 3905-09 **YEAR OF COUNT ->:** 2009

MONTH NUMBER OF COUNT: 5 - May **CONSTRAIN AADT ->:** 1650

16 or 24 HR 24

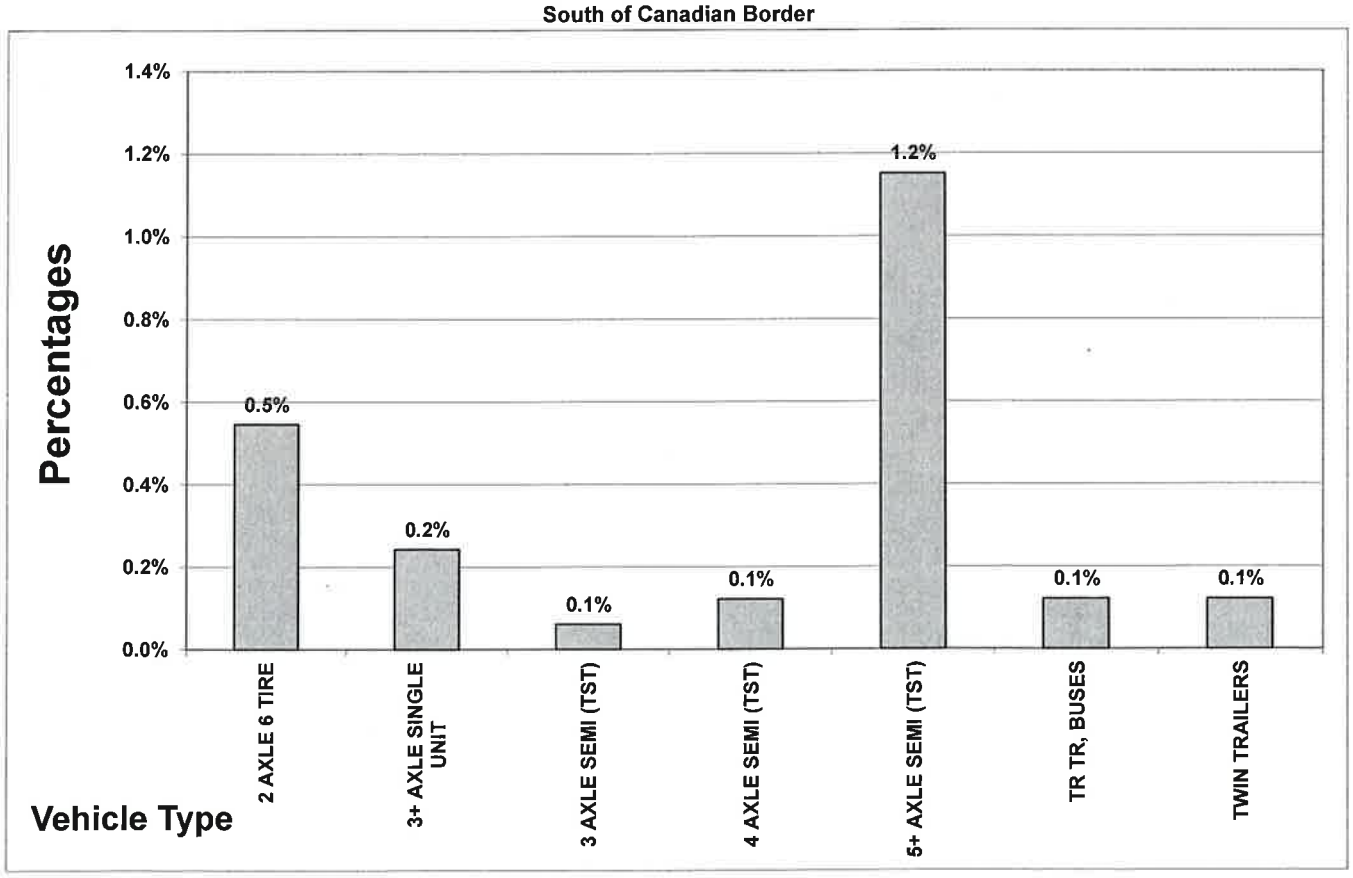
VEHICLE TYPE	RAW COUNT	AADT ADJ FACTOR		ADJUSTED RAW	VEH. TYPE PERCENTS	A.C.F.
CARS AND PICKUPS	848	#N/A		1611		0.95
2 AXLE 6 TIRE	10	0.85		9	0.5%	
3+ AXLE SINGLE UNIT	5	0.76		4	0.2%	
3 AXLE SEMI (TST)	1	0.84		1	0.1%	
4 AXLE SEMI (TST)	2	0.84		2	0.1%	
5+ AXLE SEMI (TST)	24	0.79		19	1.2%	
TR TR, BUSES	3	0.81		2	0.1%	
TWIN TRAILERS	2	0.86		2	0.1%	
TOTALS ---------->	895	-------->	1.8	1650	2.4%	(%HC)

NOT USED

DO YOU HAVE THE CORRECT RURAL OR URBAN FACTOR?

7069

South of Canadian Border



You Have Selected the Rural Factor

16 HR. OR 24 HR. VEHICLE CLASS COUNT EXPANSION WORKSHEET 2

SITE NUMBER: 7069 **COUNTY:** Lake of the Woods

SITE DESCRIPTION: South of Canadian Border

PROJECT SP#: 3905-09 **YEAR OF COUNT ->:** 2004

MONTH NUMBER OF COUNT: 6 - June **CONSTRAIN AADT ->:** 2100

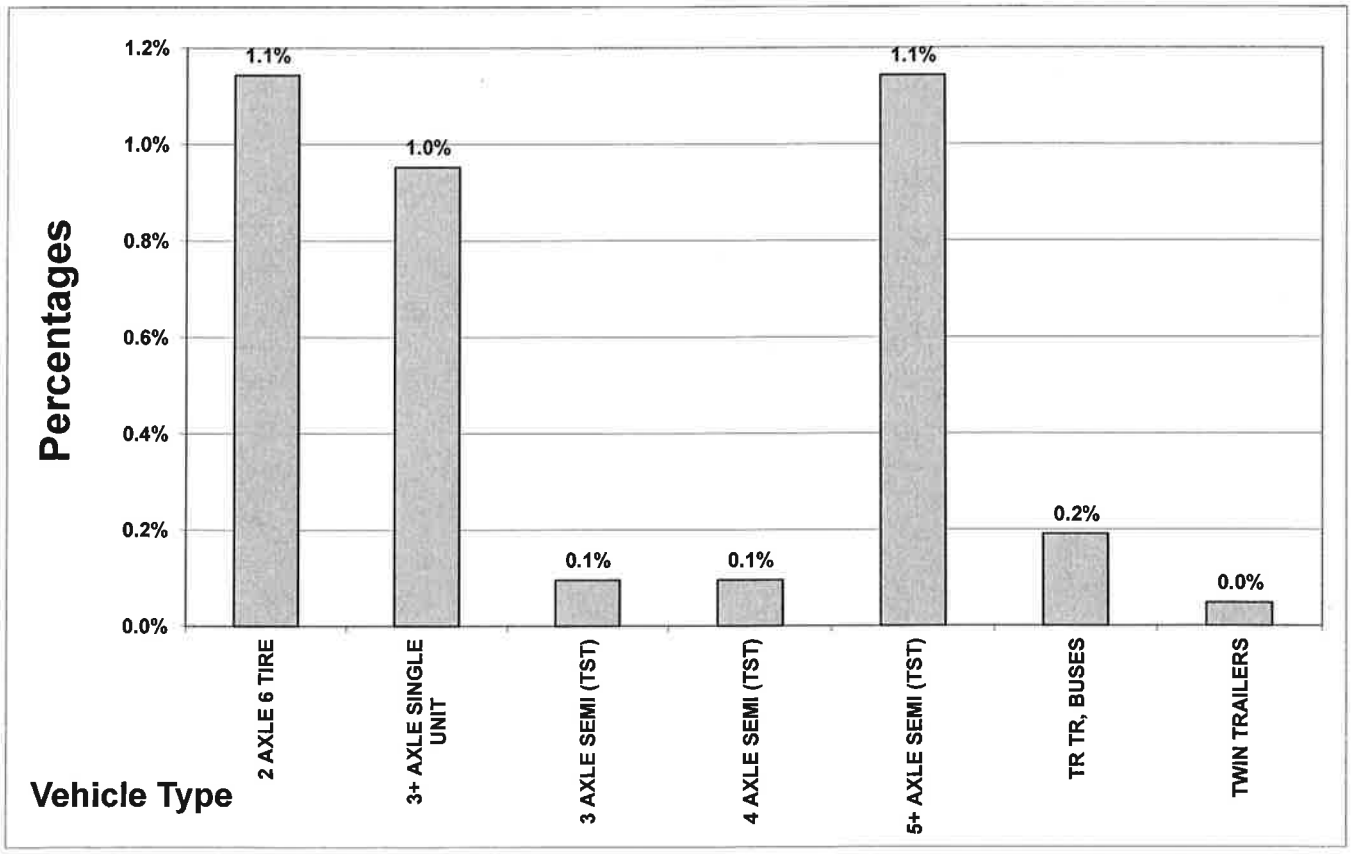
16 or 24 HR 24

VEHICLE TYPE	RAW COUNT	AADT ADJ FACTOR		ADJUSTED RAW	VEH. TYPE PERCENTS	A.C.F.
CARS AND PICKUPS	1434	#N/A		2023		0.96
2 AXLE 6 TIRE	28	0.87		24	1.1%	
3+ AXLE SINGLE UNIT	28	0.71		20	1.0%	
3 AXLE SEMI (TST)	2	0.77		2	0.1%	
4 AXLE SEMI (TST)	3	0.77		2	0.1%	
5+ AXLE SEMI (TST)	30	0.79		24	1.1%	
TR TR, BUSES	5	0.75		4	0.2%	
TWIN TRAILERS	1	0.75		1	0.0%	
TOTALS ---------->	1531	-------->	1.4	2100	3.7%	(%HC)

DO YOU HAVE THE CORRECT RURAL OR URBAN FACTOR?

7069

South of Canadian Border



You Have Selected the Rural Factor

16 HR. OR 24 HR. VEHICLE CLASS COUNT EXPANSION WORKSHEET 3

SITE NUMBER: 7069 **COUNTY:** Lake of the Woods

SITE DESCRIPTION: South of Canadian Border

PROJECT SP#: 3905-09 **YEAR OF COUNT ->:** 2001

MONTH NUMBER OF COUNT: 6 - June **CONSTRAIN AADT ->:** 1700

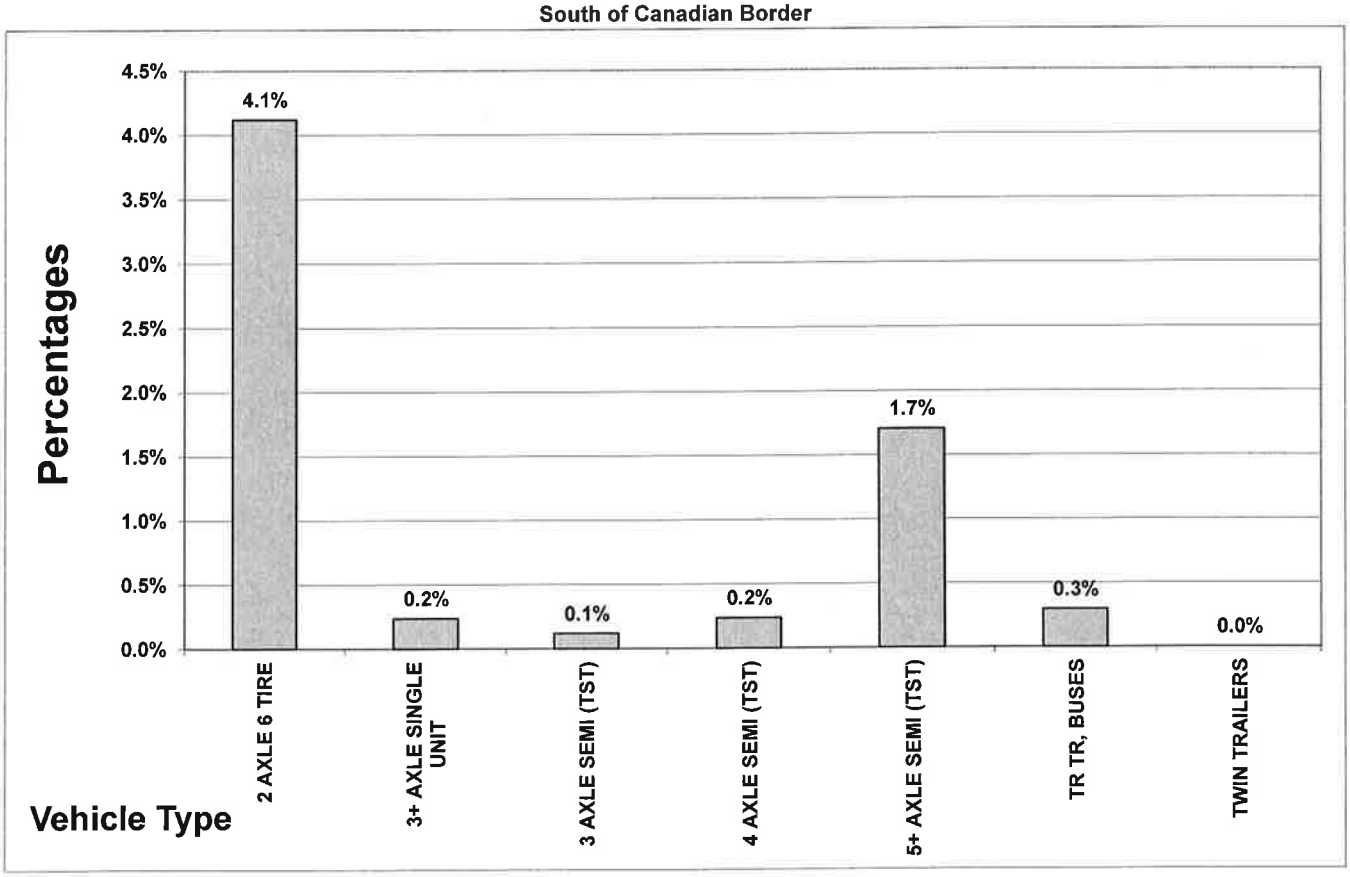
16 or 24 HR 24

VEHICLE TYPE	RAW COUNT	AADT ADJ FACTOR		ADJUSTED RAW	VEH. TYPE PERCENTS	A.C.F.
CARS AND PICKUPS	1414	#N/A		1586		0.96
2 AXLE 6 TIRE	80	0.87		70	4.1%	
3+ AXLE SINGLE UNIT	6	0.71		4	0.2%	
3 AXLE SEMI (TST)	2	0.77		2	0.1%	
4 AXLE SEMI (TST)	5	0.77		4	0.2%	
5+ AXLE SEMI (TST)	37	0.79		29	1.7%	
TR TR, BUSES	6	0.75		5	0.3%	
TWIN TRAILERS	0	0.75		0	0.0%	
TOTALS ---------->	1550	-------->	1.1	1700	6.7%	(%HC)

DO YOU HAVE THE CORRECT RURAL OR URBAN FACTOR?

7069

South of Canadian Border



You Have Selected the Rural Factor

16 HR. OR 24 HR. VEHICLE CLASS COUNT EXPANSION WORKSHEET 4

SITE NUMBER: 7069 **COUNTY:** Lake of the Woods

SITE DESCRIPTION: South of Canadian Border

PROJECT SP#: 3905-09 **YEAR OF COUNT ->:** 1995

MONTH NUMBER OF COUNT: 8 - August **CONSTRAIN AADT ->:** 1700

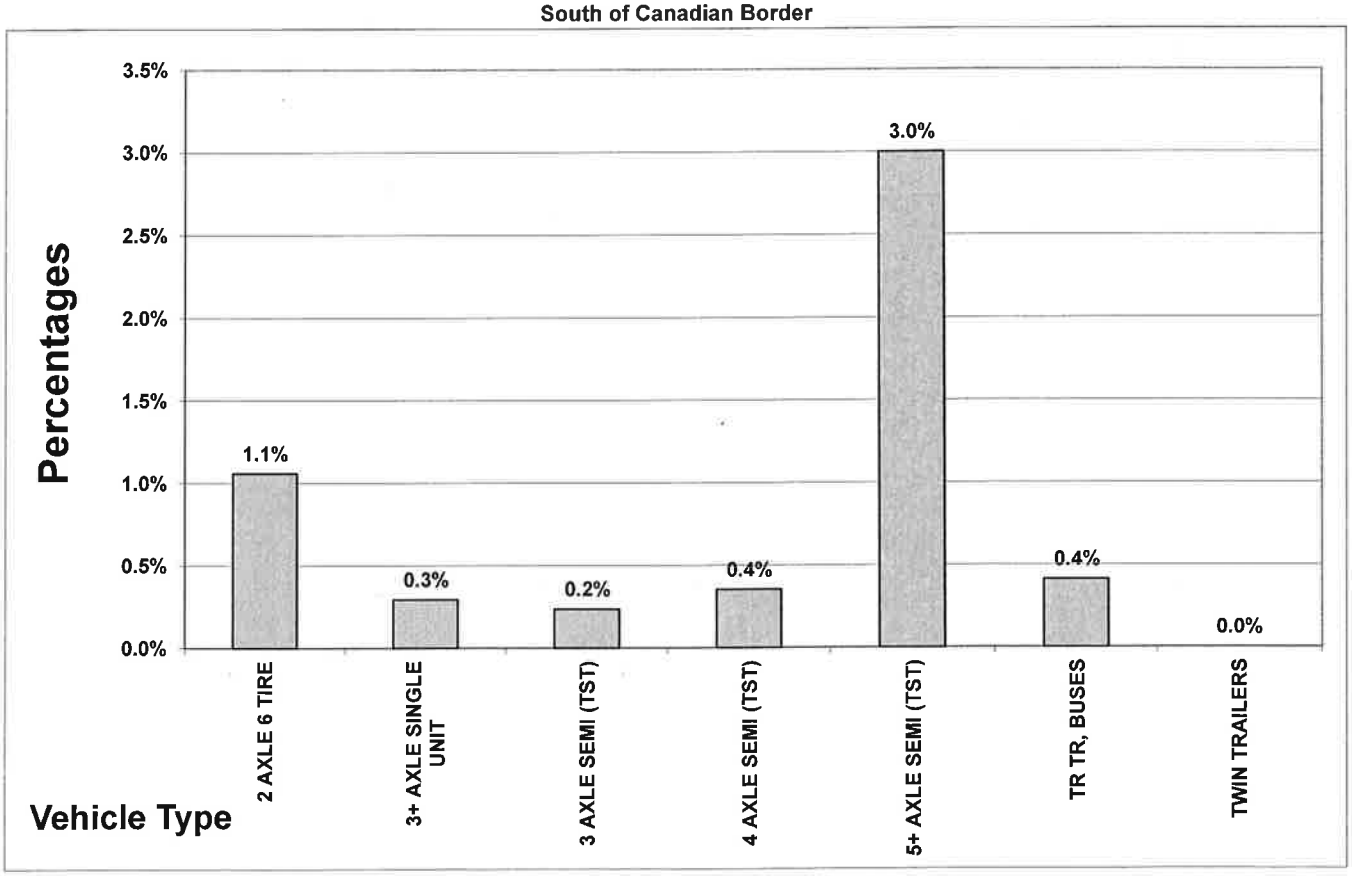
16 or 24 HR 24

VEHICLE TYPE	RAW COUNT	AADT ADJ FACTOR		ADJUSTED RAW	VEH. TYPE PERCENTS	A.C.F.
CARS AND PICKUPS	1543	#N/A		1609		0.93
2 AXLE 6 TIRE	22	0.83		18	1.1%	
3+ AXLE SINGLE UNIT	7	0.66		5	0.3%	
3 AXLE SEMI (TST)	5	0.72		4	0.2%	
4 AXLE SEMI (TST)	9	0.72		6	0.4%	
5+ AXLE SEMI (TST)	66	0.78		51	3.0%	
TR TR, BUSES	11	0.68		7	0.4%	
TWIN TRAILERS	0	0.76		0	0.0%	
TOTALS ---------->	1663	-------->	1.0	1700	5.4%	(%HC)

DO YOU HAVE THE CORRECT RURAL OR URBAN FACTOR?

7069

South of Canadian Border



You Have Selected the Rural Factor

Vehicle Class Count Averages Worksheet

VCC Site Num. 7069
MN TRUNK 72
Description South of Canadian Border

		16-24 Vehicle C.C.1		16-24 Vehicle C.C.2		16-24 Vehicle C.C.3		16-24 Vehicle C.C.4			
	Type	**Year**	**Pct**	**Year**	**Pct**	**Year**	**Pct**	**Year**	**Pct**	**Avg Truck Volumes**	**Avg Vehicle Pctages**
		2013		2004		2001		1995			
	Man/Tube	tube		tube		tube		tube			
1	**Cars**	1108	*85.23%*	2023	*96.33%*	1586	*93.29%*	1609	*94.65%*	*1582*	*92.38%*
2	**2 ASU**	119	*9.15%*	24	*1.14%*	70	*4.12%*	18	*1.06%*	*58*	*3.87%*
3	**3+ASU**	1	*0.08%*	20	*0.95%*	4	*0.24%*	5	*0.29%*	*8*	*0.39%*
4	**3ASemi**	9	*0.69%*	2	*0.10%*	2	*0.12%*	4	*0.24%*	*4*	*0.29%*
5	**4ASemi**	17	*1.31%*	2	*0.10%*	4	*0.24%*	6	*0.35%*	*7*	*0.50%*
6	**5+Asemi**	43	*3.31%*	24	*1.14%*	29	*1.71%*	51	*3.00%*	*37*	*2.29%*
7	**TT/BUS**	2	*0.15%*	4	*0.19%*	5	*0.29%*	7	*0.41%*	*5*	*0.26%*
8	**Twins**	1	*0.08%*	1	*0.05%*	0	*0.00%*	0	*0.00%*	*1*	*0.03%*
Total		*1300*	*14.77%*	*2100*	*3.67%*	*1700*	*6.71%*	*1700*	*5.35%*		*7.62%*
Total Heavy Comm		*192*		*77*		*114*		*91*		*119*	*100.00%*
Heavy 5+ Ax Semi*									34.4%		34.40%
Axle Corr Factor			0.92		0.96		0.96		0.93		0.94

* Heavy 5+ Ax Semi = Tank, Dump, Grain,and Stake Loaded
When the Tank, Dumps, & Grains and loaded stakes are 30% or more of the 5 axle semis, then split into max and other categories (AUTOMATICALLY DONE) ---------->
Check out tube counts prior to 1996 carefully, body types are N/A prior to 1982, don't use tube collected previous to 1990.

Heavy 5 Axle Semi Split	
0.79%	Max
1.50%	Others
SPLIT	

NOTE: IF LESS THAN 4 ENTRIES, BE SURE
TO DELETE YEAR AND PCT COLUMN
DO NOT USE 0, LEAVE BLANK.
USER MUST THEN COPY THE FORMULA IN THE
PCT COLUMNS BACK TO THE APPROPRIATE COLUMN

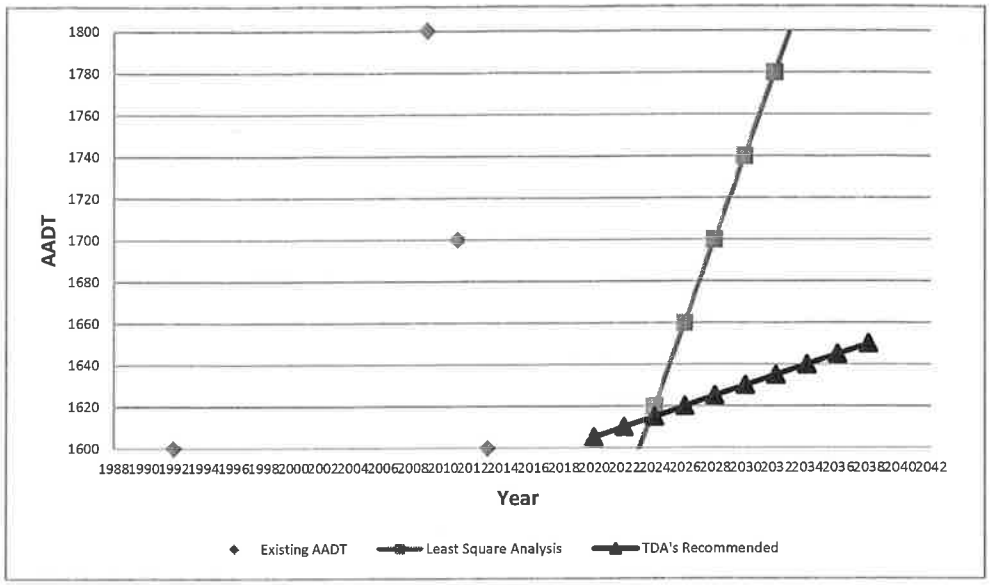
LEAST SQUARES WORKSHEET

ROUTE: MN TRUNK 72 **SP#:** 3905-09 **DATE** 04/21/15

LOCATION: From TH 11 to 3rd ST NE

BASE YEAR: 2018 **FORECAST YEAR:** 2038

YEAR	FLOW MAP AADT (SEG A)
1992	1600
1994	2300
1996	2300
1998	2200
2000	2400
2002	2050
2004	2050
2006	1850
2009	1800
2011	1700
2013	1600



LEAST SQUARES BASED FORECASTS:

Year	AADT (Seg. A)	Calc	ADT Calc
2013	1750	-150	1600
2018	1640		1490
2038	1200		1050

Statistics	AADT (Seg. A)
R 2	0.28
SLOPE	-21.95
INTERCEPT	45935
N	11

LEAST SQUARE REGRESSION BASED

YEAR	AADT
2013	1600
2018	1500
2038	1900

Slope Over Base Year
-1.5%

NOTE

Based on 1992-2007 VMT, Population, Labor Force, Household, and Employment Data, We Have Developed a County Adjustment Factor to Apply to Historic and Projected AADT. See Documentation Tab For More Detail.

This Projection Based on County Adjustment

YEAR	AADT
2013	1600
2018	1600
2038	1650

Slope Over Base Year
0.5%

COUNTY	COUNTY FACTOR	GROWTH PROFILE
LAKE OF THE WOODS	0.91	LOW GROWTH AREA

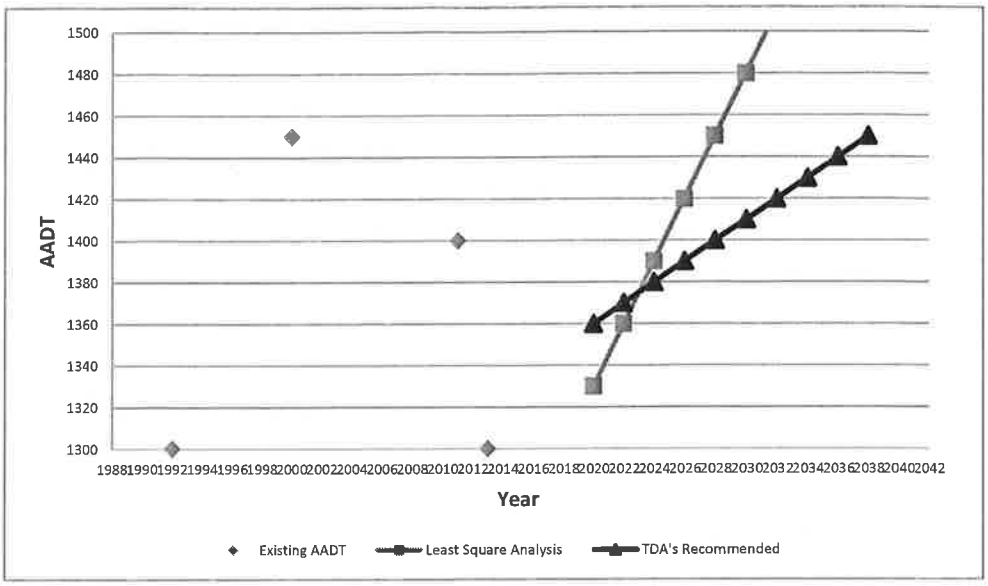
LEAST SQUARES WORKSHEET

ROUTE: MN TRUNK 72 **SP#:** 3905-09 **DATE** 04/21/15

LOCATION: From 3rd ST NE to Canadian Border

BASE YEAR: 2018 **FORECAST YEAR:** 2038

YEAR	FLOW MAP AADT (SEG A)
1992	1300
1994	1550
1996	1850
1998	1800
2000	1450
2002	1950
2004	2100
2006	1950
2009	1650
2011	1400
2013	1300



LEAST SQUARES BASED FORECASTS:

Year	AADT (Seg. A)	Calc	ADT Calc
2013	1640	-340	1300
2018	1630		1290
2038	1580		1240

Statistics	AADT (Seg. A)
R 2	0.00
SLOPE	-2.33
INTERCEPT	6324
N	11

LEAST SQUARE REGRESSION BASED

YEAR	AADT
2013	1300
2018	1300
2038	1600
Slope Over Base Year	
-0.2%	

NOTE

Based on 1992-2007 VMT, Population, Labor Force, Household, and Employment Data, We Have Developed a County Adjustment Factor to Apply to Historic and Projected AADT. See Documentation Tab For More Detail.

This Projection Based on County Adjustment

YEAR	AADT
2013	1300
2018	1350
2038	1450
Slope Over Base Year	
0.5%	

COUNTY	COUNTY FACTOR	GROWTH PROFILE
LAKE OF THE WOODS	0.91	LOW GROWTH AREA

Portable Vehicle Classification Data *11/1/2013* **Count Type: TUBE**

Site 7069 **Route** TH 72 **Description** S OF CANADIAN BORDER, N OF JCT **County** LAKE OF THE **DIST** 2

	DATE	TIME	M-CYCLE	CAR	P/U	BUS/HTWT	2AXSU	3AXSU	4+AXSU	3 +4SEMI	5AXSEMI	6+AXSEMI	TWINS	TWINS	TWINS	OTHERS
North	08/13/13	10:00	0	20	13	0	4	0	0	0	0	1	0	0	0	
	08/13/13	11:00	1	19	15	1	4	0	0	3	0	3	0	0	0	
	08/13/13	12:00	0	27	12	0	6	0	0	1	0	1	0	0	0	
	08/13/13	13:00	0	25	22	0	6	0	0	3	0	3	0	0	0	
	08/13/13	14:00	0	19	16	0	11	1	0	0	1	0	0	0	0	
	08/13/13	15:00	0	22	20	1	6	0	0	2	0	1	0	0	0	
	08/13/13	16:00	0	26	28	0	12	0	0	1	0	0	0	0	0	
	08/13/13	17:00	0	20	16	0	7	0	0	2	1	2	0	0	0	
	08/13/13	18:00	0	16	14	0	4	0	0	0	1	1	0	0	0	
	08/13/13	19:00	0	17	12	0	5	0	0	0	0	1	0	0	0	
	08/13/13	20:00	0	16	7	0	7	0	0	1	0	0	0	0	0	
	08/13/13	21:00	0	12	12	0	4	0	0	0	1	0	0	0	0	
	08/13/13	22:00	0	11	6	0	3	0	0	0	0	0	0	0	0	
	08/13/13	23:00	0	4	4	0	2	0	0	0	0	0	0	0	0	
	08/14/13	0:00	0	1	2	0	0	0	0	0	1	0	0	0	0	
	08/14/13	1:00	0	1	1	0	1	0	0	0	0	0	0	0	0	
	08/14/13	2:00	0	1	2	0	0	0	0	0	0	1	0	0	0	
	08/14/13	3:00	0	0	2	0	0	0	0	0	0	1	0	0	0	
	08/14/13	4:00	0	0	1	0	0	0	0	0	0	1	0	0	0	
	08/14/13	5:00	0	3	0	0	1	0	0	0	0	3	0	0	0	
	08/14/13	6:00	0	3	2	0	2	0	0	0	1	0	0	0	0	
	08/14/13	7:00	1	7	7	0	1	1	0	1	0	0	0	0	0	
	08/14/13	8:00	0	7	9	0	2	0	0	0	0	3	0	0	0	
	08/14/13	9:00	0	9	11	0	6	0	0	1	0	3	0	0	0	
	08/14/13	10:00	1	12	13	2	7	0	0	1	2	1	0	0	0	
	08/14/13	11:00	1	18	15	0	8	0	0	6	0	2	0	0	0	
	08/14/13	12:00	0	24	11	0	7	0	0	2	1	3	0	0	0	
	08/14/13	13:00	0	30	20	0	12	0	0	3	0	0	0	0	0	
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	08/14/13	21:00	0	11	7	0	2	0	0	0	0	0	0	0	0	
	08/14/13	22:00	0	4	5	0	2	0	0	0	0	0	0	0	0	
	08/14/13	23:00	0	1	3	0	3	0	0	0	0	0	0	0	0	
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	08/15/13	1:00	0	1	3	0	0	0	0	0	0	1	0	0	0	
	08/15/13	2:00	0	0	2	0	0	0	0	0	0	1	0	0	0	
	08/15/13	3:00	0	1	2	0	0	0	0	0	0	1	0	0	0	
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	08/15/13	5:00	0	1	1	0	1	0	0	0	0	0	0	0	0	
	08/15/13	6:00	0	3	4	0	1	0	0	0	0	1	0	0	0	
	08/15/13	7:00	0	7	4	0	2	0	0	0	0	2	0	0	0	
	08/15/13	8:00	0	6	11	0	3	0	0	2	1	2	0	0	0	
	08/15/13	9:00	0	9	11	0	6	0	0	1	0	3	0	0	0	
	DIRECTION TOTALS		5	548	441	4	201	3	0	38	13	48	0	0	0	
	% of Total Vehicles		63%	41%	48%	80%	71%	100%		54%	59%	55%	0%			

Site	7069	Route	TH 72	Description	S OF CANADIAN BORDER, N OF JCT	County	LAKE OF THE	DIST	2

	DATE	TIME	M-CYCLE	CAR	P/U	BUS/HTWT	2AXSU	3AXSU	4+AXSU	3 +4SEMI	5AXSEMI	6+AXSEMI	TWINS	TWINS	TWINS	OTHERS
South	08/13/13	10:00	1	27	17	0	2	0	0	1	2	0	0	0	0	
	08/13/13	11:00	1	36	17	0	1	0	0	2	0	2	0	0	0	
	08/13/13	12:00	0	28	21	0	3	0	0	1	2	2	0	0	0	
	08/13/13	13:00	0	32	14	0	3	0	0	2	0	3	0	0	0	
	08/13/13	14:00	0	32	24	0	7	0	0	0	0	1	1	0	0	
	08/13/13	15:00	0	29	19	0	2	0	0	4	0	1	0	0	0	
	08/13/13	16:00	0	30	22	0	2	0	0	0	0	0	0	0	0	
	08/13/13	17:00	0	23	9	0	4	0	0	0	0	0	0	0	0	
	08/13/13	18:00	0	21	8	0	0	0	0	0	0	0	0	0	0	
	08/13/13	19:00	0	19	8	0	2	0	0	0	0	0	0	0	0	
	08/13/13	20:00	0	12	9	0	0	0	0	1	0	1	0	0	0	
	08/13/13	21:00	0	5	7	0	2	0	0	0	0	1	0	0	0	
	08/13/13	22:00	0	3	1	0	1	0	0	0	0	0	0	0	0	
	08/13/13	23:00	0	4	2	0	0	0	0	0	0	0	0	0	0	
	08/14/13	0:00	0	1	1	0	0	0	0	0	0	0	0	0	0	
	08/14/13	1:00	0	0	0	0	0	0	0	0	0	1	0	0	0	
	08/14/13	2:00	0	1	1	0	0	0	0	0	0	0	0	0	0	
	08/14/13	3:00	0	1	0	0	0	0	0	0	0	1	0	0	0	
	08/14/13	4:00	0	7	0	0	0	0	0	0	0	1	0	0	0	
	08/14/13	5:00	0	5	5	0	1	0	0	0	0	2	0	0	0	
	08/14/13	6:00	0	6	3	0	2	0	0	0	0	2	0	0	0	
	08/14/13	7:00	0	16	10	0	1	0	0	0	1	2	0	0	0	
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	08/14/13	11:00	0	28	17	0	2	0	0	0	0	3	0	0	0	
	08/14/13	12:00	1	45	24	1	3	0	0	2	1	0	0	0	0	
	08/14/13	13:00	0	30	22	0	5	0	0	0	1	0	0	0	0	
	08/14/13	14:00	0	21	15	0	4	0	0	3	0	2	0	0	0	
	08/14/13	15:00	0	45	13	0	7	0	0	1	0	1	0	0	0	
	08/14/13	16:00	0	22	16	0	3	0	0	2	0	0	0	0	0	
	08/14/13	17:00	0	33	12	0	2	0	0	0	0	0	0	0	0	
	08/14/13	18:00	0	18	17	0	2	0	0	0	0	2	0	0	0	
	08/14/13	19:00	0	12	9	0	1	0	0	1	0	0	0	0	0	
	08/14/13	20:00	0	5	4	0	1	0	0	0	0	1	0	0	0	
	08/14/13	21:00	0	9	4	0	0	0	0	0	0	0	0	0	0	
	08/14/13	22:00	0	0	1	0	0	0	0	1	0	0	0	0	0	
	08/14/13	23:00	0	1	1	0	0	0	0	0	0	0	0	0	0	
	08/15/13	0:00	0	0	0	0	0	0	0	0	0	1	0	0	0	
	08/15/13	1:00	0	0	1	0	0	0	0	0	0	0	0	0	0	
	08/15/13	2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	
	08/15/13	3:00	0	0	0	0	0	0	0	0	0	1	0	0	0	
	08/15/13	4:00	0	5	1	0	0	0	0	1	0	3	0	0	0	
	08/15/13	5:00	0	7	2	0	1	0	0	0	1	1	0	0	0	
	08/15/13	6:00	0	6	6	0	1	0	0	1	0	0	0	0	0	
	08/15/13	7:00	0	15	5	0	5	0	0	2	0	1	0	0	0	
	08/15/13	8:00	0	28	15	0	2	0	0	0	1	1	0	0	0	
	08/15/13	9:00	0	35	26	0	2	0	0	3	0	1	0	0	0	
	DIRECTION TOTALS		3	783	470	1	84	0	0	32	9	40	1	0	0	
	% of Total Vehicles		38%	59%	52%	20%	29%	0%		46%	41%	45%	100%			
	SITE TOTALS		8	1331	911	5	285	3	0	70	22	88	1	0	0	2724

Veh. Type Breakdown for ESAL Calc	MotoCycl	PASS VEH	2 AX SU	3+ AX SU	3 AX SEMI	4 AX SEMI	5+ AX SEMI	TRKTLR/BUS	TWINS	TOTAL	%HC
	4	1,121	143	2	12	23	55	3	1	1,364	17.5%

Site 7069 **Route** TH 72 **Description** S OF CANADIAN BORDER, N OF JCT **County** LAKE OF THE **DIST** 2

	DATE	TIME	M-CYCLE	CAR	P/U	BUS/HTWT	2AXSU	3AXSU	4+AXSU	3 +4SEMI	5AXSEMI	6+AXSEMI	TWINS	TWINS	TWINS	OTHERS
North	05/18/09	17:00	0	20	13	0	0	0	0	0	0	0	0	0	0	
	05/18/09	18:00	0	20	17	0	0	0	0	0	0	1	0	0	0	
	05/18/09	19:00	1	17	4	0	2	1	0	0	1	0	0	0	0	
	05/18/09	20:00	0	7	3	0	0	0	0	0	0	0	0	0	0	
	05/18/09	21:00	1	6	2	0	0	0	0	0	0	0	0	0	0	
	05/18/09	22:00	0	2	0	0	1	0	0	0	0	0	0	0	0	
	05/18/09	23:00	0	2	4	0	0	0	0	0	0	0	0	0	0	
	05/19/09	0:00	0	1	0	0	0	0	0	0	0	0	0	0	0	
	05/19/09	1:00	0	2	0	0	0	0	0	0	0	0	0	0	0	
	05/19/09	2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	
	05/19/09	3:00	0	0	0	0	0	0	0	0	0	0	0	1	0	
	05/19/09	4:00	0	2	1	0	0	1	0	0	0	0	0	0	0	
	05/19/09	5:00	0	2	1	0	0	0	0	0	0	0	0	0	0	
	05/19/09	6:00	0	6	4	0	0	0	0	0	0	0	0	0	0	
	05/19/09	7:00	1	12	8	0	1	0	0	0	0	1	0	0	0	
	05/19/09	8:00	1	18	18	0	0	0	0	0	0	2	0	0	0	
	05/19/09	9:00	1	16	15	0	0	0	0	0	3	1	0	0	0	
	05/19/09	10:00	0	22	14	0	2	0	0	0	1	0	0	0	0	
	05/19/09	11:00	4	30	16	0	0	0	0	0	0	4	0	0	0	
	05/19/09	12:00	0	25	14	1	0	0	0	0	0	1	0	0	0	
	05/19/09	13:00	0	20	16	0	0	0	0	0	0	3	0	0	0	
	05/19/09	14:00	1	21	5	0	0	0	0	0	0	1	0	0	0	
	05/19/09	15:00	0	29	21	0	0	0	0	0	0	0	0	0	0	
	05/19/09	16:00	0	16	10	0	0	0	0	1	1	0	0	0	0	
	DIRECTION TOTALS		10	296	186	1	6	2	0	1	6	14	0	1	0	
	% of Total Vehicles		36%	55%	65%	33%	60%	40%	#Num!	33%	67%	93%	#Num!	100%	0%	0
S.	05/18/09	17:00	0	20	9	0	0	0	0	0	0	0	0	0	0	
	05/18/09	18:00	0	19	2	0	0	0	0	0	0	0	0	0	0	
	05/18/09	19:00	0	21	8	0	1	0	0	0	2	0	0	0	0	
	05/18/09	20:00	0	13	7	0	0	0	0	0	0	0	0	0	0	
	05/18/09	21:00	1	12	3	0	0	1	0	0	0	0	0	0	0	
	05/18/09	22:00	0	5	1	0	0	0	0	0	0	0	0	0	0	
	05/18/09	23:00	0	6	1	0	0	0	0	0	0	0	0	0	0	
	05/19/09	0:00	0	1	1	0	0	0	0	0	0	0	0	0	0	
	05/19/09	1:00	0	2	0	0	0	0	0	0	0	0	0	0	0	
	05/19/09	2:00	0	1	1	0	0	0	0	0	0	0	0	0	0	
	05/19/09	3:00	0	0	1	0	0	0	0	0	0	0	0	0	0	
	05/19/09	4:00	1	2	0	0	0	0	0	0	0	0	0	0	1	
	05/19/09	5:00	1	3	1	0	0	0	0	0	0	0	0	0	0	
	05/19/09	6:00	1	1	1	0	0	1	0	0	0	0	0	0	0	
	05/19/09	7:00	1	9	5	0	0	0	0	0	0	0	0	0	0	
	05/19/09	8:00	3	8	7	1	1	0	0	0	0	0	0	0	0	
	05/19/09	9:00	0	16	11	0	0	0	0	0	0	0	0	0	0	
	05/19/09	10:00	1	12	6	0	0	0	0	0	0	0	0	0	0	
	05/19/09	11:00	1	22	5	0	0	0	0	1	0	1	0	0	0	
	05/19/09	12:00	2	14	5	0	1	1	0	0	1	0	0	0	0	
	05/19/09	13:00	0	14	9	0	0	0	0	0	0	0	0	0	0	
	05/19/09	14:00	2	20	2	0	0	0	0	0	0	0	0	0	0	
	05/19/09	15:00	3	11	10	0	0	0	0	1	0	0	0	0	0	
	05/19/09	16:00	1	8	2	1	1	0	0	0	0	0	0	0	0	
	DIRECTION TOTALS		18	240	98	2	4	3	0	2	3	1	0	0	1	
	% of Total Vehicles		64%	45%	35%	67%	40%	60%	#Num!	67%	33%	7%	#Num!	0%	100%	0
	SITE TOTALS		28	536	284	3	10	5	0	3	9	15	0	1	1	895

Veh. Type Breakdown for ESAL Calc	M-Cycle	PASS VEH	2 AX SU	3+ AX SU	3 AX SEMI	4 AX SEMI	5+ AX SEMI	TRKTLR/BUS	TWINS	TOTAL	%HC
	28	820	10	5	1	2	24	3	2	895	5.3%

Portable Vehicle Classification Data *8/13/2004* 2710

Site 7069 **Route** TH 72 **Description** S OF CANADIAN BORDER, N OF JCT **County** LAKE OF THE **DIST** 2

	DATE	TIME	M-CYCLE	CAR	PICKUP	BUS/HTWT	2AXSU	3AXSU	4+AXSU	3+4SEMI	5AXSEMI	6+AXSEMI	TWINS	TWINS	TWINS	OTHER
East	06/08/04	6:00	2	6	4	0	0	1	0	0	0	0	0	0	0	0
	06/08/04	7:00	2	9	10	0	0	0	0	0	0	0	0	0	0	0
	06/08/04	8:00	5	30	14	0	1	1	2	0	0	0	0	0	0	0
	06/08/04	9:00	9	27	15	0	1	0	0	0	0	0	0	0	0	0
	06/08/04	10:00	2	35	20	0	1	0	1	0	1	0	0	0	0	0
	06/08/04	11:00	11	33	19	0	2	1	1	0	0	0	0	0	0	0
	06/08/04	12:00	4	43	18	0	1	2	1	0	0	0	0	0	0	0
	06/08/04	13:00	4	33	16	0	3	1	0	0	0	0	0	0	0	0
	06/08/04	14:00	9	38	16	1	1	1	1	0	1	0	0	0	0	0
	06/08/04	15:00	6	33	9	0	0	0	1	0	0	0	0	0	0	0
	06/08/04	16:00	5	29	8	0	1	0	0	0	1	0	0	0	0	0
	06/08/04	17:00	4	24	13	0	1	3	0	0	0	0	0	0	0	0
	06/08/04	18:00	2	29	7	0	1	1	0	0	0	0	0	0	0	0
	06/08/04	19:00	3	15	8	1	0	0	0	0	0	0	0	0	0	0
	06/08/04	20:00	4	11	5	0	0	0	0	0	0	0	0	0	0	0
	06/08/04	21:00	2	9	3	0	0	0	0	0	0	0	0	0	0	0
	06/08/04	22:00	0	3	1	0	0	0	1	0	0	0	0	0	0	0
	06/08/04	23:00	1	4	0	0	0	0	0	0	0	0	0	0	0	0
	06/09/04	0:00	2	2	0	0	0	1	0	0	0	0	0	0	0	0
	06/09/04	1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	06/09/04	2:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	06/09/04	3:00	1	0	0	0	0	1	0	0	0	0	0	0	0	0
	06/09/04	4:00	0	11	0	0	0	0	0	0	0	0	0	0	0	0
	06/09/04	5:00	3	5	2	0	0	0	0	0	0	0	0	0	0	0
	06/09/04	6:00	1	13	1	1	1	0	0	0	0	0	0	0	0	0
	06/09/04	7:00	3	10	8	0	0	0	0	0	1	0	0	0	0	0
	06/09/04	8:00	7	25	8	0	3	2	2	0	0	0	0	0	0	0
	06/09/04	9:00	4	21	12	0	0	0	1	0	0	0	0	1	0	0
	06/09/04	10:00	4	34	11	0	1	1	1	0	0	0	0	0	0	0
	06/09/04	11:00	3	39	11	0	2	1	0	0	0	0	0	0	0	0
	06/09/04	12:00	7	27	14	0	1	1	0	0	0	0	0	0	0	0
	06/09/04	13:00	4	36	13	0	1	1	0	0	0	0	0	0	0	0
	06/09/04	14:00	3	28	9	0	0	0	1	0	2	0	0	0	0	0
	06/09/04	15:00	5	41	11	0	1	1	0	0	1	0	0	0	0	0
	06/09/04	16:00	4	21	11	0	0	0	1	0	0	0	0	1	0	0
	06/09/04	17:00	3	37	12	0	0	0	1	1	1	0	0	0	0	0
	06/09/04	18:00	6	21	7	0	1	0	0	0	0	0	0	0	0	0
	06/09/04	19:00	4	15	7	0	0	0	0	0	0	0	0	0	0	0
	06/09/04	20:00	4	9	5	0	0	0	0	0	0	0	0	0	0	0
	06/09/04	21:00	1	10	1	0	0	0	0	0	0	0	0	0	0	0
	06/09/04	22:00	3	13	1	0	0	0	0	0	0	0	0	0	0	0
	06/09/04	23:00	0	6	1	0	0	0	2	0	0	0	0	0	0	0
	06/10/04	0:00	0	4	0	0	0	0	0	0	0	0	0	0	0	0
	06/10/04	1:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	06/10/04	2:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	06/10/04	3:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	06/10/04	4:00	1	5	3	0	0	2	0	0	0	0	0	0	0	0
	06/10/04	5:00	0	9	3	0	0	1	0	0	0	0	0	0	0	0
	DIRECTION TOTALS		148	856	337	3	24	23	17	1	9	0	0	2	0	0
	% of Total Vehicles		88%	50%	35%	30%	44%	61%	100%	10%	15%	#Num!	#Num!	100%	#Num!	#Nu

Site	7069	Route	TH 72	Description	S OF CANADIAN BORDER, N OF JCT	County	LAKE OF THE	DIST	2

	DATE	TIME	M-CYCLE	CAR	PICKUP	BUS/HTWT	2AXSU	3AXSU	4+AXSU	3 +4SEMI	5AXSEMI	6+AXSEMI	TWINS	TWINS	TWINS	OTHER
West	06/08/04	6:00	0	11	16	0	1	0	0	0	0	0	0	0	0	0
	06/08/04	7:00	0	7	11	0	3	0	0	0	3	0	0	0	0	0
	06/08/04	8:00	3	11	11	0	2	1	0	0	1	0	0	0	0	0
	06/08/04	9:00	1	25	21	0	1	2	0	0	2	0	0	0	0	0
	06/08/04	10:00	2	21	19	0	1	1	0	1	1	0	0	0	0	0
	06/08/04	11:00	1	29	32	1	1	0	0	0	0	0	0	0	0	0
	06/08/04	12:00	0	31	31	0	3	0	0	0	6	0	0	0	0	0
	06/08/04	13:00	0	31	34	2	3	2	0	1	1	0	0	0	0	0
	06/08/04	14:00	1	30	17	0	2	1	0	1	0	0	0	0	0	0
	06/08/04	15:00	1	31	31	0	1	0	0	0	1	0	0	0	0	0
	06/08/04	16:00	2	41	22	0	0	2	0	0	1	0	0	0	0	0
	06/08/04	17:00	1	23	18	0	0	0	0	0	1	0	0	0	0	0
	06/08/04	18:00	2	21	12	0	0	0	0	0	0	0	0	0	0	0
	06/08/04	19:00	0	15	17	1	0	1	0	0	1	0	0	0	0	0
	06/08/04	20:00	1	19	8	0	0	0	0	0	0	0	0	0	0	0
	06/08/04	21:00	0	20	9	0	0	0	0	1	1	0	0	0	0	0
	06/08/04	22:00	0	8	9	0	0	0	0	0	2	0	0	0	0	0
	06/08/04	23:00	0	8	2	0	0	1	0	0	2	0	0	0	0	0
	06/09/04	0:00	0	4	2	0	0	0	0	0	1	0	0	0	0	0
	06/09/04	1:00	0	4	3	0	0	0	0	0	0	0	0	0	0	0
	06/09/04	2:00	0	1	1	0	0	0	0	0	0	0	0	0	0	0
	06/09/04	3:00	0	1	0	0	0	0	0	0	1	0	0	0	0	0
	06/09/04	4:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	06/09/04	5:00	0	2	1	0	0	0	0	0	0	0	0	0	0	0
	06/09/04	6:00	0	9	14	0	2	0	0	0	0	0	0	0	0	0
	06/09/04	7:00	0	12	13	0	3	0	0	0	0	0	0	0	0	0
	06/09/04	8:00	0	12	19	0	2	0	0	1	0	0	0	0	0	0
	06/09/04	9:00	0	18	19	0	1	1	0	1	5	0	0	0	0	0
	06/09/04	10:00	1	25	19	0	1	0	0	0	1	0	0	0	0	0
	06/09/04	11:00	0	31	25	0	2	0	0	0	0	0	0	0	0	0
	06/09/04	12:00	0	34	28	0	0	1	0	0	3	0	0	0	0	0
	06/09/04	13:00	1	39	20	1	2	0	0	1	0	0	0	0	0	0
	06/09/04	14:00	1	33	22	0	0	0	0	2	2	0	0	0	0	0
	06/09/04	15:00	0	48	24	0	0	0	0	0	0	0	0	0	0	0
	06/09/04	16:00	0	35	27	1	0	0	0	0	2	0	0	0	0	0
	06/09/04	17:00	1	40	18	0	0	0	0	0	1	0	0	0	0	0
	06/09/04	18:00	1	30	13	0	0	1	0	0	0	0	0	0	0	0
	06/09/04	19:00	0	19	15	0	0	0	0	0	2	0	0	0	0	0
	06/09/04	20:00	0	22	14	0	0	0	0	0	2	0	0	0	0	0
	06/09/04	21:00	0	31	7	1	0	0	0	0	1	0	0	0	0	0
	06/09/04	22:00	0	14	7	0	0	0	0	0	1	0	0	0	0	0
	06/09/04	23:00	0	9	5	0	0	0	0	0	1	0	0	0	0	0
	06/10/04	0:00	0	4	1	0	0	0	0	0	1	0	0	0	0	0
	06/10/04	1:00	0	5	0	0	0	0	0	0	1	0	0	0	0	0
	06/10/04	2:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	06/10/04	3:00	0	1	0	0	0	0	0	0	1	0	0	0	0	0
	06/10/04	4:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	06/10/04	5:00	0	2	1	0	0	1	0	0	0	0	0	0	0	0
	DIRECTION TOTALS		20	869	638	7	31	15	0	9	50	0	0	0	0	0
	% of Total Vehicles		12%	50%	65%	70%	56%	39%	0%	90%	85%	#Num!	#Num!	0%	#Num!	#Nu
	SITE TOTALS		168	1725	975	10	55	38	17	10	59	0	0	2	0	0

Veh. Type Breakdown for ESAL Calc	PASS VEH	2 AX SU	3+ AX SU	3 AX SEMI	4 AX SEMI	5+ AX SEMI	TRKTRLR/BUS	TWINS	TOTAL	% HC
	1,434	28	28	2	3	30	5	1	1531	6.3%

Site 7069 **Route** TH 72 **Description** S OF CANADIAN BORDER, N OF JC **County** LAKE OF THE **DIST** 2

	DATE	TIME	M-CYCLE	CAR	PICKUP	BUS	2AXSU	3AXSU	4+AXSU	3+4SEMI	5AXSEMI	HTWT	TWINS	TWINS	TWINS	OTHERS
North	6/19/01	9:00	0	14	10	0	2	0	0	0	1	0	0	0	0	0
	6/19/01	10:00	0	18	21	0	2	0	0	1	1	0	0	0	0	0
	6/19/01	11:00	1	27	23	1	2	1	0	0	0	0	0	0	0	0
	6/19/01	12:00	1	37	27	0	1	1	0	0	0	0	0	0	0	0
	6/19/01	13:00	0	22	23	0	5	1	0	0	1	0	0	0	0	0
	6/19/01	14:00	1	29	19	1	3	0	0	0	0	0	0	0	0	0
	6/19/01	15:00	2	29	16	0	1	0	0	0	0	0	0	0	0	0
	6/19/01	16:00	2	36	16	0	2	0	0	0	1	0	0	0	0	0
	6/19/01	17:00	0	42	17	0	2	0	0	0	0	1	0	0	0	0
	6/19/01	18:00	0	24	14	0	2	0	0	0	0	0	0	0	0	0
	6/19/01	19:00	0	18	9	0	0	0	0	0	1	0	0	0	0	0
	6/19/01	20:00	0	29	9	0	1	0	0	0	1	0	0	0	0	0
	6/19/01	21:00	0	23	10	0	1	0	0	1	2	0	0	0	0	0
	6/19/01	22:00	0	17	6	0	0	0	0	0	0	0	0	0	0	0
	6/19/01	23:00	0	9	3	0	0	0	0	0	1	0	0	0	0	0
	6/20/01	0:00	0	7	5	0	0	0	0	0	0	0	0	0	0	0
	6/20/01	1:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0
	6/20/01	2:00	0	1	1	0	0	0	0	0	1	0	0	0	0	0
	6/20/01	3:00	0	2	1	0	0	0	0	0	0	0	0	0	0	0
	6/20/01	4:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0
	6/20/01	5:00	0	4	4	0	0	0	0	0	0	0	0	0	0	0
	6/20/01	6:00	0	4	3	0	0	0	0	0	1	0	0	0	0	0
	6/20/01	7:00	0	5	5	0	2	1	0	0	1	0	0	0	0	0
	6/20/01	8:00	1	11	10	0	0	0	0	0	1	1	0	0	0	0
	6/20/01	9:00	0	11	14	0	3	0	0	0	1	0	0	0	0	0
	6/20/01	10:00	1	24	15	0	1	0	0	2	1	0	0	0	0	0
	6/20/01	11:00	0	32	15	0	1	0	0	0	0	0	0	0	0	0
	6/20/01	12:00	1	35	30	2	2	0	0	0	1	1	0	0	0	0
	6/20/01	13:00	1	30	24	0	6	0	0	0	1	0	0	0	0	0
	6/20/01	14:00	0	38	23	1	2	0	0	0	1	0	0	0	0	0
	6/20/01	15:00	0	36	21	1	3	0	0	0	2	0	0	0	0	0
	6/20/01	16:00	0	26	17	0	3	0	0	0	0	0	0	0	0	0
	6/20/01	17:00	0	29	23	0	1	0	0	0	2	0	0	0	0	0
	6/20/01	18:00	1	41	8	0	2	0	0	0	0	0	0	0	0	0
	6/20/01	19:00	0	40	8	0	2	0	0	1	1	0	0	0	0	0
	6/20/01	20:00	1	22	17	0	1	0	0	1	2	1	0	0	0	0
	6/20/01	21:00	1	27	16	0	1	0	0	0	0	0	0	0	0	0
	6/20/01	22:00	0	16	7	0	0	0	0	0	1	0	0	0	0	0
	6/20/01	23:00	1	11	3	0	0	0	0	0	0	0	0	0	0	0
	6/21/01	0:00	0	4	2	0	0	0	0	0	0	0	0	0	0	0
	6/21/01	1:00	0	4	2	0	0	0	0	0	0	0	0	0	0	0
	6/21/01	2:00	0	4	1	0	0	0	0	0	1	0	0	0	0	0
	6/21/01	3:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0
	6/21/01	4:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	6/21/01	5:00	0	1	1	0	0	1	0	0	1	0	0	0	0	0
	6/21/01	6:00	0	2	2	0	1	0	0	0	1	0	0	0	0	0
	6/21/01	7:00	0	2	12	0	1	0	0	0	0	0	0	0	0	0
	6/21/01	8:00	0	12	15	0	3	0	0	0	0	1	0	0	0	0
	DIRECTION TOTALS		15	862	528	6	59	5	0	6	29	5	0	0	0	0
	% of Total Vehicles		68%	48%	51%	60%	37%	45%	#Num!	43%	44%	45%	#Num!	#Num!	#Num!	#Nu

Site 7069	Route TH 72	Description S OF CANADIAN BORDER, N OF JC	County LAKE OF THE	DIST 2

	DATE	TIME	M-CYCLE	CAR	PICKUP	BUS	2AXSU	3AXSU	4+AXSU	3+4SEMI	5AXSEMI	HTWT	TWINS	TWINS	TWINS	OTHERS
South	6/19/01	9:00	0	22	13	0	4	0	0	0	2	0	0	0	0	0
	6/19/01	10:00	1	33	22	0	5	0	0	0	1	1	0	0	0	0
	6/19/01	11:00	0	31	23	0	4	0	0	0	2	0	0	0	0	0
	6/19/01	12:00	0	41	22	0	9	1	0	0	0	1	0	0	0	0
	6/19/01	13:00	1	27	21	0	3	1	0	1	1	0	0	0	0	0
	6/19/01	14:00	0	35	18	0	4	1	0	0	2	0	0	0	0	0
	6/19/01	15:00	0	35	21	0	6	0	0	1	1	0	0	0	0	0
	6/19/01	16:00	0	30	13	1	3	0	0	0	0	0	0	0	0	0
	6/19/01	17:00	0	45	22	0	2	0	0	0	0	0	0	0	0	0
	6/19/01	18:00	0	26	17	1	2	0	0	1	1	0	0	0	0	0
	6/19/01	19:00	0	20	9	0	0	0	0	0	0	1	0	0	0	0
	6/19/01	20:00	0	14	6	0	1	0	0	0	0	0	0	0	0	0
	6/19/01	21:00	0	16	6	0	1	0	0	0	2	0	0	0	0	0
	6/19/01	22:00	0	14	2	0	0	0	0	0	0	0	0	0	0	0
	6/19/01	23:00	0	9	3	0	0	0	0	0	2	0	0	0	0	0
	6/20/01	0:00	0	4	2	0	0	0	0	0	0	0	0	0	0	0
	6/20/01	1:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	6/20/01	2:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	6/20/01	3:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6/20/01	4:00	0	4	1	0	0	0	0	0	0	0	0	0	0	0
	6/20/01	5:00	0	3	3	0	0	0	0	0	1	0	0	0	0	0
	6/20/01	6:00	0	7	3	0	1	0	0	0	0	0	0	0	0	0
	6/20/01	7:00	0	11	7	0	4	0	0	0	1	0	0	0	0	0
	6/20/01	8:00	1	20	12	0	2	0	0	1	2	0	0	0	0	0
	6/20/01	9:00	1	24	19	0	1	0	0	0	2	0	0	0	0	0
	6/20/01	10:00	0	31	22	0	7	0	0	0	1	0	0	0	0	0
	6/20/01	11:00	1	40	23	0	3	2	0	0	1	0	0	0	0	0
	6/20/01	12:00	0	35	17	1	5	0	0	0	2	0	0	0	0	0
	6/20/01	13:00	0	33	27	0	6	0	0	0	1	0	0	0	0	0
	6/20/01	14:00	0	52	20	1	5	0	0	0	1	2	0	0	0	0
	6/20/01	15:00	0	29	18	0	4	0	0	1	2	0	0	0	0	0
	6/20/01	16:00	0	26	15	0	1	0	0	0	0	0	0	0	0	0
	6/20/01	17:00	0	23	16	0	5	1	0	0	2	0	0	0	0	0
	6/20/01	18:00	1	28	7	0	4	0	0	0	1	0	0	0	0	0
	6/20/01	19:00	0	32	8	0	0	0	0	1	0	0	0	0	0	0
	6/20/01	20:00	0	15	12	0	1	0	0	1	0	0	0	0	0	0
	6/20/01	21:00	1	31	11	0	2	0	0	0	0	0	0	0	0	0
	6/20/01	22:00	0	11	2	0	2	0	0	0	0	0	0	0	0	0
	6/20/01	23:00	0	11	4	0	0	0	0	0	0	1	0	0	0	0
	6/21/01	0:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0
	6/21/01	1:00	0	2	1	0	0	0	0	0	0	0	0	0	0	0
	6/21/01	2:00	0	4	0	0	0	0	0	0	0	0	0	0	0	0
	6/21/01	3:00	0	0	0	0	0	0	0	1	0	0	0	0	0	0
	6/21/01	4:00	0	3	0	0	0	0	0	0	1	0	0	0	0	0
	6/21/01	5:00	0	2	1	0	0	0	0	0	0	0	0	0	0	0
	6/21/01	6:00	0	7	4	0	1	0	0	0	1	0	0	0	0	0
	6/21/01	7:00	0	15	7	0	2	0	0	0	1	0	0	0	0	0
	6/21/01	8:00	0	15	18	0	0	0	0	0	3	0	0	0	0	0
	DIRECTION TOTALS		7	918	499	4	100	6	0	8	37	6	0	0	0	0
	% of Total Vehicles		32%	52%	49%	40%	63%	55%	#Num!	57%	56%	55%	#Num!	#Num!	#Num!	#Nu
	SITE TOTALS		22	1780	1027	10	159	11	0	14	66	11	0	0	0	0

24 hr. Vehicle Type Breakdown for ESAL Calculations	PASS VEH	2 AX SU	3+ AX SU	3 AX SEMI	4 AX SEMI	5+ AX SEMI	TRKTRLR/BUS	TWINS	TOTAL	ACF
	1,414	80	6	2	5	37	6	0	1550	0.956

LOCATION DESCRIPTION S OF CANADIAN BORDER

Dir	Date	Time	M-CYCLE	CARS	PICKUP	BUSES	2AXSU	3AXSU	4+AXSU	3&4SEMI	5AXSEMI	HTWT	TWINS	TWINS	TWINS	OTHERS	INVALID	LANE
N	01/95	1600		1	1													1
N	8/01/95	1700																1
N	8/01/95	1800		2														1
N	8/01/95	1900		3	2													1
N	8/01/95	2000		3	1					1	2							1
N	8/01/95	2100		6	8							1						1
N	8/01/95	2200		6	7		2			1	1	2						1
N	8/01/95	2300		23	7					1		2						1
N	8/02/95	0		21	10						1							1
N	8/02/95	100	1	35	17					1	1	1						1
N	8/02/95	200		36	15		1	1		1		1						1
N	8/02/95	300	1	46	20	1	1											1
N	8/02/95	400		48	13						1	1						1
N	8/02/95	500		43	19						1							1
N	8/02/95	600		47	17		1			1	3							1
N	8/02/95	700	1	36	16		1	2			2	1						1
N	8/02/95	800		37	10													1
N	8/02/95	900		26	9					1	1							1
N	8/02/95	1000	1	26	7						2	1						1
N	8/02/95	1100		18	9	1						1						1
N	8/02/95	1200	1	18	7													1
N	8/02/95	1300		12	1							1						1
N	8/02/95	1400		9	3						1	1						1
N	8/02/95	1500		1	1							1						1
N	8/02/95	1600		6	1							1						1
N	02/95	1700		6	3							1						1
N	8/02/95	1800		2														1
N	8/02/95	1900		4	3					1								1
N	8/02/95	2000		3	3						1	1						1
N	8/02/95	2100		3	10		1				2							1
N	8/02/95	2200		7	9						4							1
N	8/02/95	2300	1	20	15		2					1						1
N	8/03/95	0		28	24		1			2	2	1						1
N	8/03/95	100		60	18				1		3							1
N	8/03/95	200		47	12		1	1		1	2	1						1
N	8/03/95	300	1	28	20	1	2				2	1						1
N	8/03/95	400		58	21		1			1	1	2						1
N	8/03/95	500		46	15						4	1						1
N	8/03/95	600		47	17		1			1	3							1
N	8/03/95	700	1	36	16		1	2			2	1						1
N	8/03/95	800		37	10													1
N	8/03/95	900		26	9					1	1							1
N	8/03/95	1000	1	26	7						2	1						1
N	8/03/95	1100		18	9	1						1						1
N	8/03/95	1200	1	18	7													1
N	8/03/95	1300		12	1							1						1
N	8/03/95	1400		9	3						1	1						1
N	8/03/95	1500		1	1							1						1
DIRECTION TOTALS			10	1051	434	4	16	6	1	14	46	30	0	0	0	0	0	

LOCATION DESCRIPTION S OF CANADIAN BORDER

Dir	Date	Time	M-CYCLE	CARS	PICKUP	BUSES	2AXSU	3AXSU	4+AXSU	3&4SEMI	5AXSEMI	HTWT	TWINS	TWINS	TWINS	OTHERS	INVALID	LANE
S	8/01/95	1600	1	50	12					1	2							1
S	8/01/95	1700	1	33	6					2	1							1
S	8/01/95	1800		34	10						2	1				1		1
S	8/01/95	1900		33	10						2	1						1
S	8/01/95	2000		28	8			1	1		1	2						1
S	8/01/95	2100	1	20	5					1		2						1
S	8/01/95	2200		12								2						1
S	8/01/95	2300		8	4													1
S	8/02/95	0	1	3														1
S	8/02/95	100		2	1													1
S	8/02/95	200		1						1		1						1
S	8/02/95	300		2							1							1
S	8/02/95	400		1	1													1
S	8/02/95	500		5	1													1
S	8/02/95	600		3	1							1						1
S	8/02/95	700	1	18	5			1										1
S	8/02/95	800		22	11		1	2				1						1
S	8/02/95	900	3	39	11			2			2	2						1
S	8/02/95	1000		35	30					4								1
S	8/02/95	1100		38	17		1		1		1	1						1
S	8/02/95	1200		37	20			1	1		2	2						1
S	8/02/95	1300		53	16			1		1								1
S	8/02/95	1400		48	5						1							1
S	8/02/95	1500	1	38	18			1										1
S	8/02/95	1600		38	17		1				2	2						1
S	8/02/95	1700	1	36	14			1		1	1							1
S	8/02/95	1800		29	7				1		1	1						1
S	8/02/95	1900		20	13						1							1
S	8/02/95	2000	1	24	7													1
S	8/02/95	2100		18	5						1	1						1
S	8/02/95	2200	1	6	5						1	1						1
S	8/02/95	2300	1	7	3						1	1						1
S	8/03/95	0		4							2							1
S	8/03/95	100		2								1						1
S	8/03/95	200		3								1						1
S	8/03/95	300		3	1							1						1
S	8/03/95	400									1	2						1
S	8/03/95	500		5	1			1										1
S	8/03/95	600		5	1													1
S	8/03/95	700		19	5						3							1
S	8/03/95	800		30	14			2		1								1
S	8/03/95	900	2	38	24		1				1	1						1
S	8/03/95	1000	1	48	24			2		1	1	1						1
S	8/03/95	1100		58	22			3		3		1						1
S	8/03/95	1200	1	43	24			2	1	1								1
S	8/03/95	1300	1	39	20			4			1	1						1
S	8/03/95	1400		50	20			2			2	2						1
S	8/03/95	1500		46	20		1	1			1							1
DIRECTION TOTALS			18	1134	439		5	27	5	2	15	35	33	0	0	0	1	0	
LOCATION TOTALS			28	2185	873		9	43	11	3	29	81	63	0	0	0	1	0	

VEHICLE TYPE	PASSENGER VEHICLES	2AXSU	3+AXSU	3AXSEMI	4AXSEMI	5+AXSEMI	TRKTRLR/BUSES	TWINS
BREAKDOWN FOR ESAL CALCULATIONS	1543	22	7	5	9	66	11	0

22 SPN: *3905-09* **DIST** 02 **AREA** **RTE:** 72 **COUNTY:** Lake of the Woods,39 **STATUS:** Programmed **ORG. LET:** 11/17/17 **LET DATE:** 11/17/17

DESCRIPTION: **AC**PoDI**BP08** MN 72, MN/CANADA BORDER IN BAUDETTE, REPLACE OLD BR 9412, BAUDETTE BR & APPROACHES (CHP 152) (TOTAL $40.0M, MN SHARE $20.0M, CANADA SHARE $20.0M) (AC PROJECT, PAYBACK IN FY 2019)

PROGRAM:	BR	**COST EST CHANGE:**	10/09/14	**ORG COST:**	$42,300,000.00
MILES:	0.00	**PARCELS:**	4	**CONST COST:**	$15,500,000.00
FUND DESIGNATORS:	SF,SM,NHPP	**RELLOC:**		**ORIG R/W EST:**	$3,100,000.00
PRE DSN PRJ MGR:	Joe McKinnon	**STIP YR:**	2018	**REVISED R/W:**	$3,100,000.00
FIN DSN PRJ MGR:	Joe McKinnon	**BEG RF PNT:**	076+00.864	**ENCUMBER R/W:**	$0.00
DESIGN ENGINEER:	Consultant	**END RF PT:**	076+00.864	**AGREEMENT:**	$0.00
CONST RES ENG:		**PROCESS:**	FFO	**EST. CONST START:**	12/29/17
BUSINESS LIAISON:		**PLANS READY DATE:**		**EST. CONST FINISH:**	12/29/18
WORK TYP:	Bridge Replace or Construction	**PROJECT SEQUENCE:**	38591	**TRAFFIC IMPACT:**	Low
		ELEMENT ID:	80422		

JOB #S: 3905-(9412A): BP=T25586, 3905-09: P=T20005, R=TRWSP390509

ASSOC. SPs: 3905-(9412A), 3905-09RW,

COMMENT: Tier 1 Bridge, Project will have Full Federal Oversight. Acceptable Plan turn in 8/10/17.,

TH 72 S.P. 3905-09 REPLACE BR# 9412 @ MN/CANADIAN BORDER LET DATE: 11/17/17

PROGRAM: BR R.P. 76+00.864 JOB # T20005

PROJECT MGR: JOE MCKINNON

BASE YEAR: 2018

FORECAST YR: 2038

SEG 2710

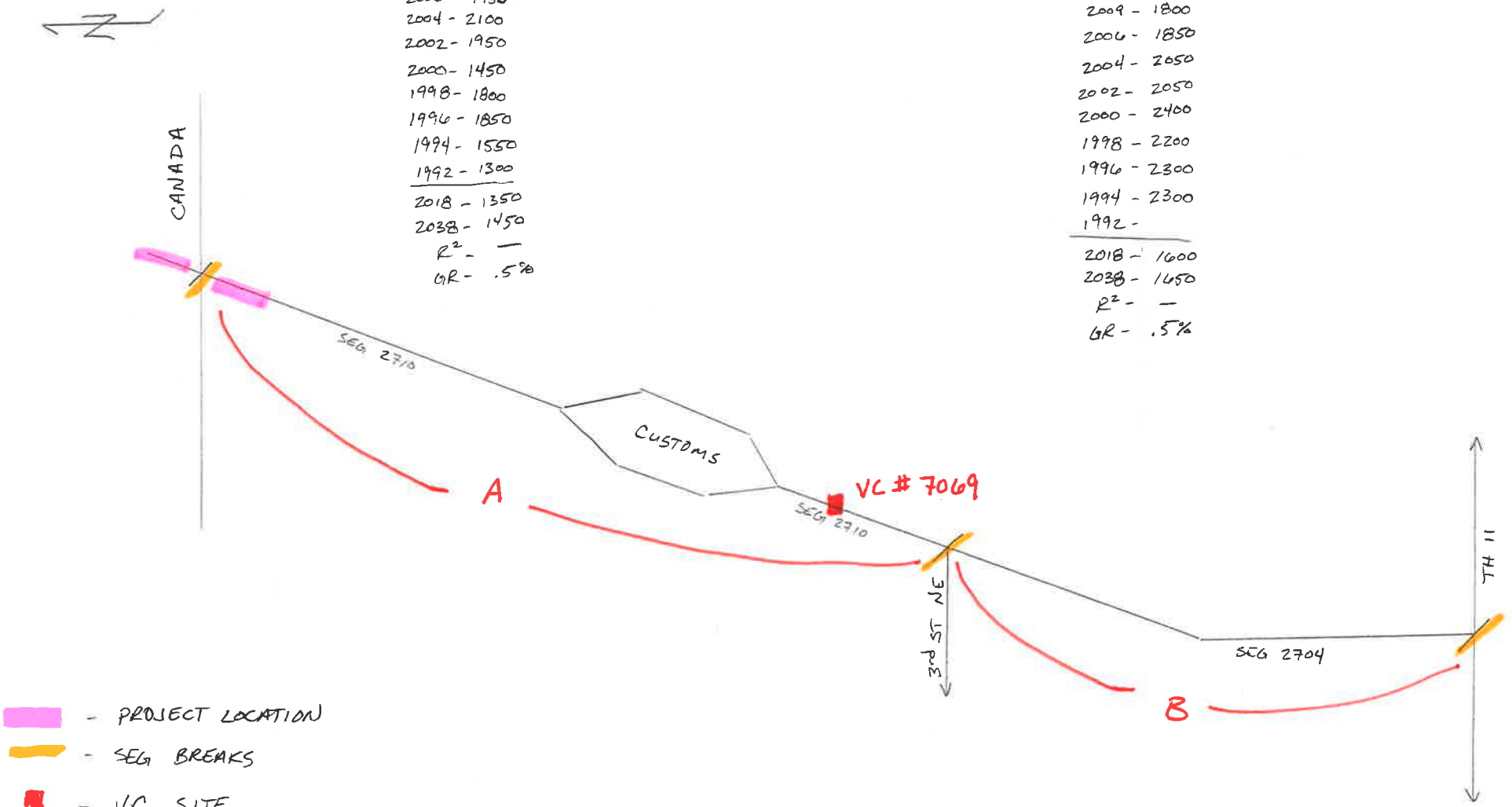
2013 - 1300
2011 - 1400
2009 - 1650
2006 - 1950
2004 - 2100
2002 - 1950
2000 - 1450
1998 - 1800
1996 - 1850
1994 - 1550
1992 - 1300

2018 - 1350
2038 - 1450
R^2 - —
GR - .5%

SEG 2704

2013 - 1600
2011 - 1700
2009 - 1800
2006 - 1850
2004 - 2050
2002 - 2050
2000 - 2400
1998 - 2200
1996 - 2300
1994 - 2300
1992 -

2018 - 1600
2038 - 1650
R^2 - —
GR - .5%



- PROJECT LOCATION
- SEG BREAKS
- V.C. SITE

Appendix C

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*YYN
Baudette-Rainy River Int. Br., April 14, 2016, Alternative 2 2038 Traffic
1,3
2,10
Road 1, Hwy 11 East and Westbound East of Hwy 600 East End
'CARS'     108        70
'MT'         1        70
'HT'         2        70
'L' /
'RD1     '  4282.55  7758.69  330.25  0
'RD2     '  4168.78  7760.62  330.00  0
'RD3     '  4032.67  7762.39  330.00  0
'RD4     '  3949.09  7764.75  330.00  0
'RD5     '  3917.23  7765.59  330.00  0
'RD6     '  3890.77  7766.29  329.88  0
'RD7     '  3810.47  7768.28  329.74  0
'RD8     '  3746.75  7768.28  329.72  0
'RD9     '  3661.16  7770.06  329.69  0
'RD10    '  3643.28  7770.32  329.64  0
'RD11    '  3623.68  7770.61  329.60  0
'RD12    '  3595.08  7768.62  329.53  0
'RD13    '  3564.14  7764.63  329.45  0
'RD14    '  3533.54  7758.31  329.37  0
'L' /
Road 2, Hwy 11 East and Westbound East of Hwy 600 West End
'CARS'     108        70
'MT'         1        70
'HT'         2        70
'L' /
'RD1     '  3533.54  7758.31  329.37  0
'RD2     '  3506.27  7748.99  329.29  0
'RD3     '  3480.03  7737.18  329.20  0
'RD4     '  3466.27  7730.49  329.16  0
'RD5     '  3454.53  7724.18  329.12  0
'RD6     '  3451.94  7722.80  329.11  0
'RD7     '  3450.95  7722.26  329.11  0
'RD8     '  3420.01  7705.50  328.92  0
'L' /
Road 3, Hwy 11 WB Through Plaza, East End
'CARS'      48        50
'MT'         1        50
'HT'         1        50
'L' /
'RD1     '  3420.01  7705.50  328.92  0
'RD2     '  3417.26  7704.02  328.91  0
'RD3     '  3403.26  7696.72  329.10  0
'RD4     '  3384.53  7686.21  329.35  0
'RD5     '  3381.88  7684.72  329.38  0
'RD6     '  3372.19  7680.83  329.48  0
'RD7     '  3364.09  7677.57  329.55  0
'RD8     '  3340.91  7669.59  329.73  0
'RD9     '  3321.18  7660.54  329.90  0
'RD10    '  3311.13  7655.13  330.00  0
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'RD11    '  3310.58  7654.84  330.00  0
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'RD13    '  3300.45  7649.39  330.00  0
'RD14    '  3272.51  7634.14  330.00  0
'L' /
Road 4, WB Hwy 11 West of Customs Plaza - New Alignment
'CARS'      48        50
'MT'         1        50
'HT'         1        50
'L' /
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'RD3     '  3245.83  7617.33  330.00  0
'RD4     '  3241.51  7613.30  330.09  0
'RD5     '  3236.60  7606.23  330.42  0
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'RD7     '  3224.46  7587.10  330.49  0
'RD8     '  3219.83  7578.74  330.00  0
'RD9     '  3211.08  7560.93  328.89  0
'L' /
Road 5, EB Hwy 11 East of Customs Plaza
'CARS'      49        50
'MT'         1        50
'HT'         1        50
'L' /
'RD1     '  3420.01  7705.50  328.92  0
'RD2     '  3392.60  7686.15  329.24  0
'RD3     '  3373.82  7670.78  329.49  0
'RD4     '  3353.58  7654.43  329.76  0
'RD5     '  3333.79  7638.45  330.00  0
'RD6     '  3332.45  7637.38  330.00  0
'RD7     '  3328.98  7635.28  330.00  0
'RD8     '  3322.11  7631.12  330.00  0
'RD9     '  3306.78  7621.84  330.00  0
'RD10    '  3295.91  7615.27  330.00  0
'RD11    '  3279.32  7605.27  330.00  0
'L' /
Road 6, Hwy 11 EB West of Customs, New Alignment
'CARS'      49        50
'MT'         1        50
'HT'         1        50
'L' /
'RD1     '  3211.08  7560.93  328.89  0
'RD2     '  3226.51  7573.52  330.03  0
'RD3     '  3238.02  7580.28  330.70  0
'RD4     '  3251.90  7588.52  330.64  0
'RD5     '  3261.03  7593.98  330.44  0
'RD6     '  3272.53  7601.08  330.00  0
'RD7     '  3279.32  7605.27  330.00  0
'L' /
Road 7, Hwy 600 both Directions, South End
'CARS'      12        50
'MT'         1        50
```

```
'HT'         1        50
'L' /
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'RD2     '  3419.87  7715.55  329.02  0
'RD3     '  3419.87  7715.71  329.02  0
'RD4     '  3419.87  7729.10  329.05  0
'RD5     '  3422.18  7748.17  329.11  0
'RD6     '  3424.27  7764.30  329.16  0
'RD7     '  3424.90  7781.90  329.21  0
'RD8     '  3425.95  7803.90  329.27  0
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'RD10    '  3427.21  7854.40  329.41  0
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'RD12    '  3428.88  7932.55  329.60  0
'RD13    '  3429.93  7967.12  329.68  0
'RD14    '  3430.35  8018.04  329.81  0
'L' /
Road 8, Hwy 600 both Directions, North End
'CARS'       12        50
'MT'         1         50
'HT'         1         50
'L' /
'RD1     '  3430.35  8018.04  329.81  0
'RD2     '  3430.94  8057.52  330.00  0
'RD3     '  3431.17  8072.96  330.00  0
'RD4     '  3433.06  8175.22  330.07  0
'L' /
Road 9, Bridge East Side Bridge Alternative 2 - New Alignment
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'MT'         2         50
'HT'         1         50
'L' /
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'RD3     '  2854.36  7340.35  330.62  0
'RD4     '  2871.50  7350.50  330.95  0
'RD5     '  2888.96  7360.48  331.27  0
'RD6     '  2906.10  7370.96  331.60  0
'RD7     '  2923.23  7380.94  331.93  0
'RD8     '  2940.70  7391.26  332.25  0
'RD9     '  2957.66  7401.40  332.58  0
'RD10    '  2975.20  7411.51  332.90  0
'RD11    '  2992.29  7421.81  333.23  0
'RD12    '  3009.48  7432.08  333.56  0
'RD13    '  3026.77  7442.35  333.78  0
'RD14    '  3043.85  7452.09  333.78  0
'L' /
Road 10,Bridge West Side Bridge Alternative 2 - New Alignment Continued
'CARS'       97        50
'MT'         2         50
'HT'         1         50
'L' /
'RD1     '  3043.85  7452.09  333.78  0
```

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'RD2     '  3061.14  7462.47  333.34  0
'RD3     '  3078.43  7472.74  332.84  0
'RD4     '  3095.30  7482.80  332.34  0
'RD5     '  3112.55  7493.16  331.84  0
'RD6     '  3129.68  7503.48  331.34  0
'RD7     '  3146.98  7513.29  330.84  0
'RD8     '  3164.28  7523.60  330.34  0
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'RD10    '  3196.61  7546.96  329.34  0
'RD11    '  3211.08  7560.93  328.89  0
'L' /
5,8
RECEIVERS
'R 1'  3031.42  7752.60  329.20
'R 2'  3068.71  7758.89  330.71
'R 3'  3210.20  7743.94  331.04
'R 4'  3321.14  7800.85  330.54
'R 5'  3370.91  7799.14  330.22
'R 6'  3262.63  7512.35  328.60
'R 7'  3302.83  7492.95  326.23
'R 8'  3339.37  7484.57  325.25
6,1
ALPHA FACTORS
0.66 0.66 0.66 0.66 0.66 0.66 0.66 0.66
0.66 0.66 0.66 0.66 0.66 0.66 0.66 0.66
0.66 0.66 0.66 0.66 0.66 0.66 0.66 0.66
0.66 0.66 0.66 0.66 0.66 0.66 0.66 0.66
0.66 0.66 0.66 0.66 0.66 0.66 0.66 0.66
0.66 0.66 0.66 0.66 0.66 0.66 0.66 0.66
0.66 0.66 0.66 0.66 0.66 0.66 0.66 0.66
0.66 0.66 0.66 0.66 0.66 0.66 0.66 0.66
0.00 0.00 0.66 0.66 0.66 0.00 0.00 0.00
0.00 0.00 0.66 0.66 0.66 0.00 0.00 0.00
7/
```

```
*YYN
Baudette-Rainy River Int. Br., April 14, 2016, Ext.Cond.2038 Traffic
1,3
2,10
Road 1, Hwy 11 East and Westbound East of Hwy 600 East End
'CARS'     108        70
'MT'         1        70
'HT'         2        70
'L' /
'RD1     '  4282.55  7758.69  330.25  0
'RD2     '  4168.78  7760.62  330.00  0
'RD3     '  4032.67  7762.39  330.00  0
'RD4     '  3949.09  7764.75  330.00  0
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'RD6     '  3890.77  7766.29  329.88  0
'RD7     '  3810.47  7768.28  329.74  0
'RD8     '  3746.75  7768.28  329.72  0
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'RD10    '  3643.28  7770.32  329.64  0
'RD11    '  3623.68  7770.61  329.60  0
'RD12    '  3595.08  7768.62  329.53  0
'RD13    '  3564.14  7764.63  329.45  0
'RD14    '  3533.54  7758.31  329.37  0
'L' /
Road 2, Hwy 11 East and Westbound East of Hwy 600 West End
'CARS'     108        70
'MT'         1        70
'HT'         2        70
'L' /
'RD1     '  3533.54  7758.31  329.37  0
'RD2     '  3506.27  7748.99  329.29  0
'RD3     '  3480.03  7737.18  329.20  0
'RD4     '  3466.27  7730.49  329.16  0
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'RD6     '  3451.94  7722.80  329.11  0
'RD7     '  3450.95  7722.26  329.11  0
'RD8     '  3420.01  7705.50  328.92  0
'L' /
Road 3, Hwy 11 WB Through Plaza, East End
'CARS'      48        50
'MT'         1        50
'HT'         1        50
'L' /
'RD1     '  3420.01  7705.50  328.92  0
'RD2     '  3417.26  7704.02  328.91  0
'RD3     '  3403.26  7696.72  329.10  0
'RD4     '  3384.53  7686.21  329.35  0
'RD5     '  3381.88  7684.72  329.38  0
'RD6     '  3372.19  7680.83  329.48  0
'RD7     '  3364.09  7677.57  329.55  0
'RD8     '  3340.91  7669.59  329.73  0
'RD9     '  3321.18  7660.54  329.90  0
'RD10    '  3311.13  7655.13  330.00  0
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'RD11    '  3310.58  7654.84  330.00  0
'RD12    '  3309.80  7654.42  330.00  0
'RD13    '  3300.45  7649.39  330.00  0
'RD14    '  3272.51  7634.14  330.00  0
'L' /
Road 4, Hwy 11 WB West of Customs Station, Existing
'CARS'      48        50
'MT'         1        50
'HT'         1        50
'L' /
'RD1     '  3272.51  7634.14  330.00  0
'RD2     '  3255.48  7623.59  330.00  0
'RD3     '  3246.79  7617.97  330.00  0
'RD4     '  3240.93  7611.59  330.16  0
'RD5     '  3237.77  7604.83  330.45  0
'RD6     '  3234.11  7594.89  330.84  0
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'RD8     '  3223.32  7578.86  330.13  0
'RD9     '  3214.83  7573.09  330.00  0
'RD10    '  3205.09  7567.01  330.00  0
'RD11    '  3188.01  7556.64  330.00  0
'RD12    '  3172.39  7547.00  330.00  0
'RD13    '  3164.59  7541.67  330.00  0
'RD14    '  3157.11  7536.25  329.60  0
'L' /
Road 5, Hwy 11 EB East of Customs
'CARS'      49        50
'MT'         1        50
'HT'         1        50
'L' /
'RD1     '  3420.01  7705.50  328.92  0
'RD2     '  3392.60  7686.15  329.24  0
'RD3     '  3373.82  7670.78  329.49  0
'RD4     '  3353.58  7654.43  329.76  0
'RD5     '  3333.79  7638.45  330.00  0
'RD6     '  3332.45  7637.38  330.00  0
'RD7     '  3328.98  7635.28  330.00  0
'RD8     '  3322.11  7631.12  330.00  0
'RD9     '  3306.78  7621.84  330.00  0
'RD10    '  3295.91  7615.27  330.00  0
'RD11    '  3279.41  7605.29  330.00  0
'L' /
Road 6, Hwy 11 EB West of Customs, Existing
'CARS'      49        50
'MT'         1        50
'HT'         1        50
'L' /
'RD1     '  3279.41  7605.29  330.00  0
'RD2     '  3272.46  7601.12  330.00  0
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'RD4     '  3251.31  7588.07  330.64  0
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'RD6     '  3226.49  7573.30  330.02  0
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'RD7     '  3214.34  7566.64  330.00  0
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'RD9     '  3173.05  7543.90  330.00  0
'RD10    '  3164.49  7539.76  330.00  0
'RD11    '  3157.11  7536.25  329.60  0
'L' /
Road 7, Hwy 600 both Directions, South End
'CARS'      12        50
'MT'         1        50
'HT'         1        50
'L' /
'RD1     '  3419.79  7705.27  328.92  0
'RD2     '  3419.87  7715.55  329.02  0
'RD3     '  3419.87  7715.71  329.02  0
'RD4     '  3419.87  7729.10  329.05  0
'RD5     '  3422.18  7748.17  329.11  0
'RD6     '  3424.27  7764.30  329.16  0
'RD7     '  3424.90  7781.90  329.21  0
'RD8     '  3425.95  7803.90  329.27  0
'RD9     '  3426.29  7817.53  329.31  0
'RD10    '  3427.21  7854.40  329.41  0
'RD11    '  3427.84  7899.66  329.52  0
'RD12    '  3428.88  7932.55  329.60  0
'RD13    '  3429.93  7967.12  329.68  0
'RD14    '  3430.35  8018.04  329.81  0
'L' /
Road 8, Hwy 600 both Directions, North End
'CARS'      12        50
'MT'         1        50
'HT'         1        50
'L' /
'RD1     '  3430.35  8018.04  329.81  0
'RD2     '  3430.94  8057.52  330.00  0
'RD3     '  3431.17  8072.96  330.00  0
'RD4     '  3433.06  8175.22  330.07  0
'L' /
Road 9, Bridge East Side
'CARS'      97        50
'MT'         2        50
'HT'         1        50
'L' /
'RD1     '  3157.11  7536.25  329.59  0
'RD2     '  3139.83  7525.77  330.20  0
'RD3     '  3122.54  7515.61  331.00  0
'RD4     '  3105.25  7505.55  331.80  0
'RD5     '  3088.17  7494.86  332.60  0
'RD6     '  3071.30  7485.22  332.60  0
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'RD10    '  3002.35  7443.93  334.60  0
'RD11    '  2993.44  7438.80  334.60  0
'L' /
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Road 10, Bridge West Side
'CARS'      97        50
'MT'         2        50
'HT'         1        50
'L' /
'RD1     '  2993.44  7438.80  334.60  0
'RD2     '  2985.15  7433.99  334.60  0
'RD3     '  2967.92  7423.57  334.60  0
'RD4     '  2950.63  7413.34  334.60  0
'RD5     '  2933.54  7403.37  334.20  0
'RD6     '  2916.31  7393.01  333.30  0
'RD7     '  2899.35  7382.72  332.50  0
'RD8     '  2882.20  7372.56  331.70  0
'RD9     '  2864.84  7362.26  331.00  0
'RD10    '  2847.81  7352.03  330.00  0
'RD11    '  2830.59  7341.27  329.80  0
'RD12    '  2813.43  7331.18  329.40  0
'L' /
5,8
RECEIVERS
'R 1'  3031.42  7752.60  329.20
'R 2'  3068.71  7758.89  330.71
'R 3'  3210.20  7743.94  331.04
'R 4'  3321.14  7800.85  330.54
'R 5'  3370.91  7799.14  330.22
'R 6'  3262.63  7512.35  328.60
'R 7'  3302.83  7492.95  326.23
'R 8'  3339.37  7484.57  325.25
6,1
ALPHA FACTORS
0.66 0.66 0.66 0.66 0.66 0.66 0.66 0.66
0.66 0.66 0.66 0.66 0.66 0.66 0.66 0.66
0.66 0.66 0.66 0.66 0.66 0.66 0.66 0.66
0.66 0.66 0.66 0.66 0.66 0.66 0.66 0.66
0.66 0.66 0.66 0.66 0.66 0.66 0.66 0.66
0.66 0.66 0.66 0.66 0.66 0.66 0.66 0.66
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0.66 0.66 0.66 0.66 0.66 0.66 0.66 0.66
0.00 0.00 0.66 0.66 0.66 0.00 0.00 0.00
0.00 0.00 0.66 0.66 0.66 0.00 0.00 0.00
7/
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C2: Fish Existing Conditions Report

Fish and Fish Habitat Existing Conditions Report: Preliminary Design and Class Environmental Assessment - Baudette/Rainy River International Bridge Replacement on Highway 11, Town of Rainy River (GWP 6046-10-00)

FINAL REPORT

Prepared for:
Ministry of Transportation, Ontario
Northwestern Region

Prepared by:
Stantec Consulting Ltd.
Suite 1 – 70 Southgate Drive
Guelph, Ontario N1G 4P5

File No. 193802870
April 29, 2016

Sign-off Sheet

This document entitled Fish and Fish Habitat Existing Conditions Report: Preliminary Design and Class Environmental Assessment - Baudette/Rainy River International Bridge Replacement on Highway 11, Town of Rainy River (GWP 6046-10-00) was prepared by Stantec Consulting Ltd. ("Stantec") for the account of the Ontario Ministry of Transportation (the "Client"). Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

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(signature)

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Reviewed by
(signature)

Kathleen Todd, M.Sc.
Fisheries Specialist / Senior Aquatic Ecologist

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1.0 INTRODUCTION

1.1 BACKGROUND

The Ontario Ministry of Transportation (MTO), in cooperation with the Minnesota Department of Transportation (MnDOT), has retained Stantec Consulting Ltd. (Stantec) to undertake the Preliminary Design and Class Environmental Assessment Study for the replacement of the Baudette/Rainy River International Bridge on Highway 11. The bridge provides access between the United States and Canada with 24-hour, full-service Port of Entry facilities in the City of Baudette, Minnesota and the Town of Rainy River, Ontario (**Figure 1**). The study includes the development and evaluation of a range of reasonable bridge replacement alternatives, construction staging and traffic management options, and the selection of a Preferred Plan.

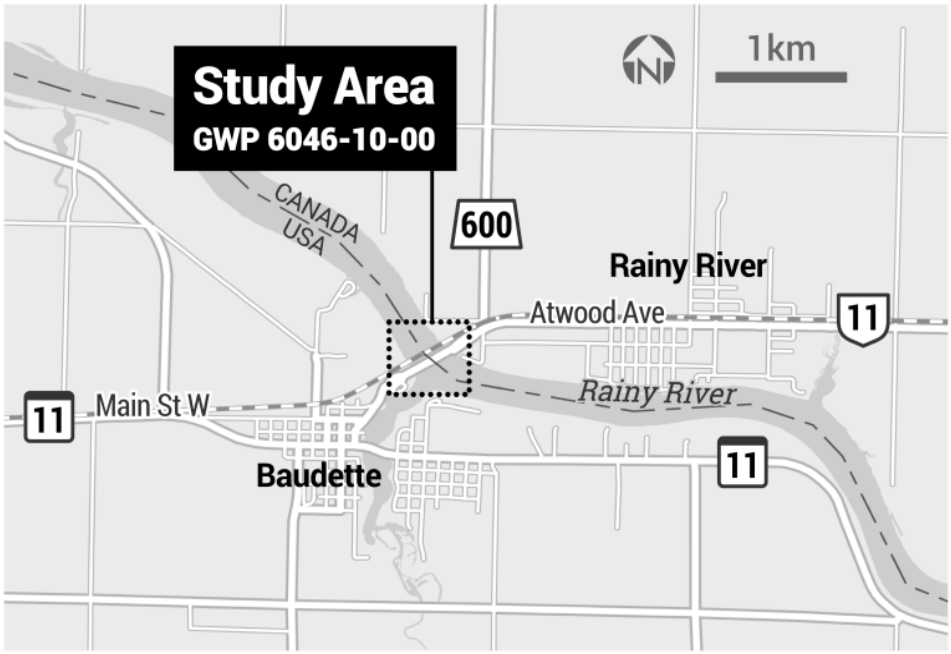


Figure 1 Study Area Location

1.2 PURPOSE

The purpose of this *Fish and Fish Habitat Existing Conditions Report* is to document the:

- Existing fish communities and fish habitat conditions; and
- Sensitivities of, and constraints to, fish communities and fish habitat.

This *Fish and Fish Habitat Existing Conditions Report* provides supporting documentation for the project and describes fish communities and fish habitat in the Study Area. This report was completed in accordance with the *Environmental Reference for Highway Design* (MTO 2013) and the *Environmental Guide for Fish and Fish Habitat* (MTO 2009). Terrestrial environment features for this project are described in a separate report (Stantec 2016).

2.0 METHODS

2.1 BACKGROUND DATA

2.1.1 Agency Consultation

The Study Area is located within the jurisdiction of the Fort Frances District of the Ministry of Natural Resources and Forestry (MNRF) and the Minnesota Department of Natural Resources (MnDNR). These agencies were contacted to obtain available natural sciences information for the Study Area.

Key agency contacts were:

- Rachel Hill, MNRF District Planner;
- John Van den Broeck, MNRF Management Biologist;
- Peter Leete, MnDNR-MnDOT Liaison and Transportation Hydrologist; and
- Phil Talmage, MnDNR Area Fisheries Supervisor.

Agency correspondence and background data are provided in **Appendix A**.

2.1.2 Secondary Source Data Collection

Additional information was obtained from the following sources:

- MNRF's Land Information Ontario (LIO) database – to identify mapped watercourses and natural heritage features in the Study Area (MNRF 2015a).
- MNRF's Natural Heritage Information Centre's (NHIC) Biodiversity Explorer database – to determine if there are documented significant natural features or significant species in the Study Area (MNRF 2015b).
- MnDNR's Natural Heritage Information System (NHIS) – to identify documented rare species (MnDNR 2015a).
- MnDNR's website – to describe the status of species at risk populations and invasive aquatic species in the Study Area (MnDNR 2015b; MnDNR 2015c; MnDNR 2015e).
- Minnesota Pollution Control Agency's (MPCA) website – to characterize aquatic conditions in the Baudette River (MPCA 2015).
- United States Fish and Wildlife Service National Wetlands Inventory – to identify mapped freshwater and riverine communities (USFWS 2013).

2.2 FIELD INVESTIGATIONS

2.2.1 Fish and Fish Habitat Assessment

Field investigations were conducted on August 24, 2015 as per the *Environmental Reference for Highway Design* (MTO 2013) and the *Environmental Guide for Fish and Fish Habitat* (MTO 2009). Field investigations were completed over a 400 m reach of the Rainy River at the Rainy River International Bridge between the City of Baudette, Minnesota and the Town of Rainy River, Ontario. As part of the habitat assessment, an MTO Watercourse Field Record Form, and MTO Fish Habitat Mapping Form were completed. *In situ* water quality parameters (dissolved oxygen, conductivity, pH and temperature) were measured at the time of the field survey and site photographs were taken.

The fish community was not sampled due to the availability of background information for the area and the potential presence of aquatic species at risk.

2.2.2 Aquatic Species at Risk

The potential for aquatic species at risk to occur in the Study Area was evaluated based on a review of background information and agency consultation. These data were reviewed prior to the commencement of the field program to identify whether any rare fish and/or freshwater mussel species had been recorded in the Study Area. This information was used to assist in the assessment of habitats during field surveys and to determine the habitat potential for species at risk in the Study Area.

3.0 EXISTING CONDITIONS

3.1 BACKGROUND DATA

The Rainy River is a large watercourse, with a coolwater thermal regime (MNRF 2015c). The Study Area is located approximately 18 km upstream from Lake of the Woods, which supports a diverse fish community. A list of fish species captured in the Rainy River during the MnDNR's 2007 and 2008 population surveys is provided in **Appendix A**.

The MNRF provided background information as per Stantec's correspondence in May and October of 2015 (**Appendix A**). According to the MNRF, it is highly likely that many species that inhabit Lake of the Woods are present in the Rainy River (MNRF 2015c). Fifty-five fish species have been documented in Lake of the Woods, including Northern Pike (*Esox lucius*), Walleye (*Sander vitrius)*, Sauger (*Sander canadensis*), Yellow Perch (*Perca flavescens*), White Sucker (*Catostomus commersoni*) and Smallmouth Bass (*Micropterus dolomieu*) (MnDNR 2015b; MNRF 2015c). Lake Sturgeon (*Acipenser fulvescens*) and Shortjaw Cisco (*Coregonus zenithicus*), which are Threatened species protected by Ontario's *Endangered Species Act*, are also present in Lake of the Woods and Rainy River (MNRF 2015b). The MNRF identified the areas around the abutments of the adjacent Canadian National Railway (CNR) bridge as potential spawning habitat for Walleye, White Sucker and Lake Sturgeon (MNRF 2015c); however, the MNRF has not surveyed the river in the vicinity of the border crossing (**Appendix A**) and the basis for identifying the area as potential spawning habitat was not provided. The MNRF considers the Rainy River as a migratory route for many fish species, including Lake Sturgeon.

Within the Study Area, the Baudette River flows into the Rainy River. The lower 3.2 km (2 miles) of the Baudette River are known to support a healthy, warmwater aquatic community (Minnesota Pollution Control Agency (MPCA) 2015). The main channel of the Baudette River near the confluence with the Rainy River is a fourth order stream. As the Baudette River nears the City of Baudette, the channel widens to form Baudette Bay, which is a popular area for sport fishing. A list of fish species captured in the Baudette River during the MnDNR's 2005 electrofishing surveys is provided in **Appendix A**. The abundance of cover for larger fishes is low at most sites in the Baudette River. During late winter, the waters of Baudette Bay often become anoxic (MnDNR 2013).

Baudette Bay and the Rainy River, including the area under the existing bridge, provide habitat for the following species during spawning migrations (**Appendix A**). The habitat under the bridge is not specialized but part of the migratory corridor used to access upstream spawning areas.

- Walleye – move through the Study Area in late March to April to spawn in the Rainy River at rapids located farther upstream (at River Mile 40);

- Northern Pike – spawn before ice out (late March to early April) in Rainy River tributaries, including Baudette Bay; and
- Lake Sturgeon – spawn in the Rapid River (located upstream of the Baudette River confluence) and migrate through the Study Area in April to May.

Within a 1.6 km (1 mile) radius of the bridge, Lake Sturgeon was the only aquatic species at risk identified by the MnDNR (MnDNR 2015d). In Minnesota, Lake Sturgeon is listed as a Species of Special Concern under Minnesota's *Threatened and Endangered Species Statute*. Additionally, Creek Heelsplitter (*Lasmigona compressa*), a Species of Special Concern mussel, was identified within an 8 km (5 mile) radius of the bridge (MnDNR 2015d). Species of Special Concern, and their habitats, are not protected by the *Threatened and Endangered Species Statute*.

Lake Sturgeon populations in Lake of the Woods/Rainy River are recovering from over exploitation and poor water quality that negatively impacted spawning and nursery habitats (MnDNR 2015c). Ongoing research on the status of Lake Sturgeon in Lake of the Woods and Rainy River indicates that the Lake Sturgeon population has been in a state of recovery since the mid to late 1960s, and that there are few individuals in the population that are older than about 60 years. Since Lake Sturgeon can live to be over 100 years old, the number of "large" Lake Sturgeon is expected to continue to increase over the next several decades (MnDNR 2015b).

As of March 2003, the MnDNR had identified the following goals for Lake Sturgeon in Minnesota-Canada Border Waters (i.e. Rainy River) (MnDNR 2015c):

- Short Range Goals (5-10 years) – Rehabilitate self-sustaining stocks of Lake Sturgeon that will provide limited subsistence and recreational harvests.
- Long Range Goals (20-30 years) – Rehabilitate and maintain healthy, self-sustaining stocks of Lake Sturgeon that will provide subsistence and recreational harvests.

MnDNR correspondence also indicated that the Rainy River is designated as infested with aquatic invasive species due to the known presence of the spiny water flea. Zebra mussels may also be present in the watershed (MnDNR 2015d).

3.2 FIELD INVESTIGATIONS

Existing fish and fish habitat information is summarized below. The Rainy River Study Area is illustrated in **Figure 2**. Field data sheets and a photographic record are included in **Appendix B** and **Appendix C**, respectively. Water quality conditions recorded during the field survey are provided in **Table 3.1**.

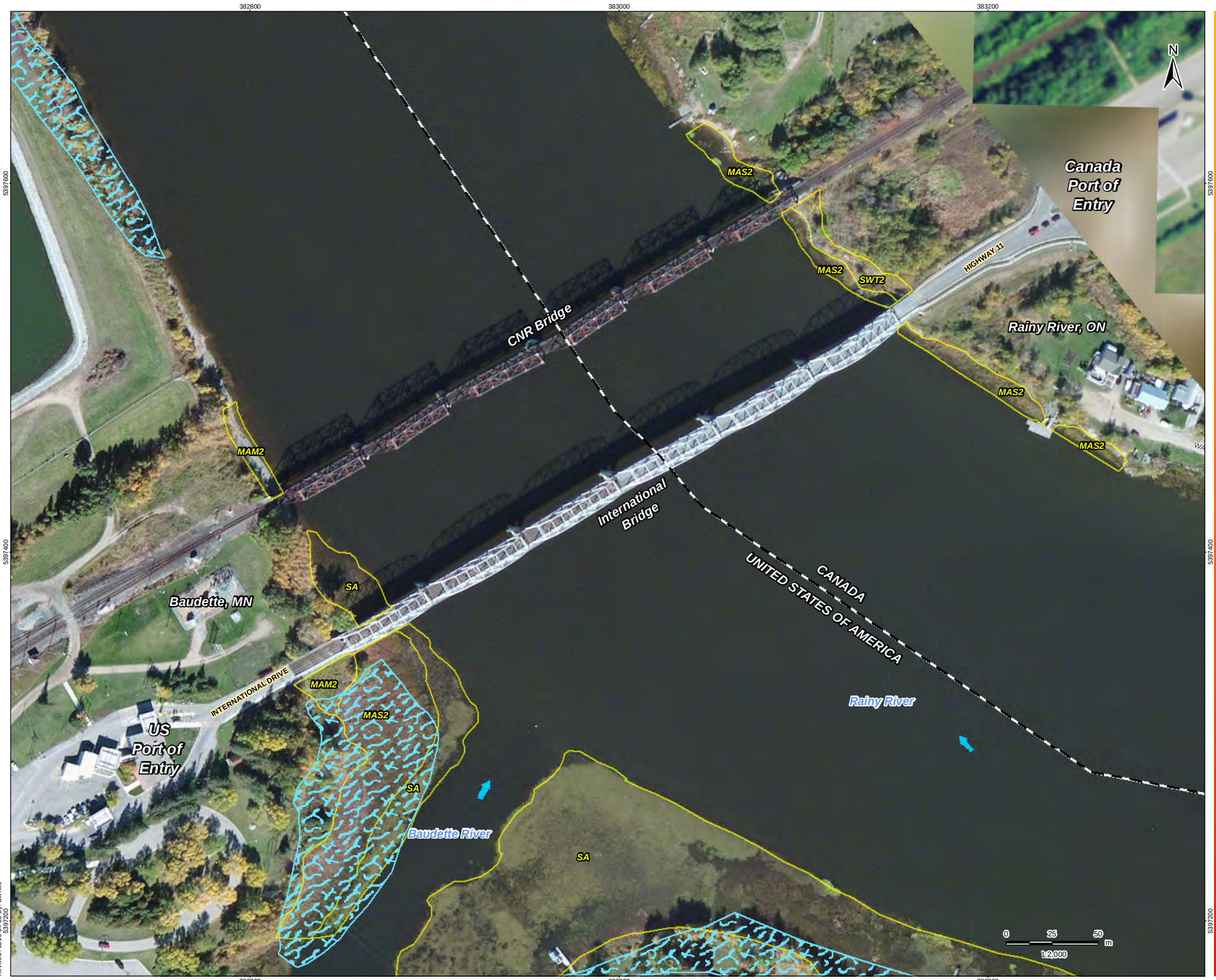
Within the Study Area, the Rainy River is a uniform run with an average width of approximately 315 m. Water depth was similar throughout the 400 m survey length at an average of 6 m in the middle of the channel and 2.5 m in the nearshore areas. Beyond the shallow nearshore areas,

sand is the predominant bottom substrate in the Rainy River. On both sides of the river, nearshore substrate was dominated by sand with some coarse material. The coarse substrate (on both shorelines) consisted of cobble and gravel between the existing international bridge crossing and the CNR bridge. Upstream from the bridge on the east shore, there were boulders and concrete debris, likely from decommissioned docks at that location. Emergent vegetation (predominantly sedges and grasses) was prevalent along both shorelines. The average width of aquatic vegetation was 15 m on the east bank and 50 m on the west bank.

The Baudette River enters the Rainy River from the southwest, immediately upstream from the bridge. Maximum water depth in the middle of the channel at the mouth of the Baudette River was 2.5 m. The mouth of the Baudette River was approximately 130 m wide. However, the area was characterized by dense aquatic vegetation such that the open water area was limited to a 35 m wide area. The emergent vegetation extended to 80 m from shore on the southeast side of the Baudette River and 15 m from shore on the northwest bank. Some of the vegetated areas along the Baudette River shoreline are within areas identified as wetlands in background data obtained from the National Wetland Inventory (USFWS 2013).

Table 3.1 Water Quality Conditions Observed in the Rainy River on August 24, 2015

Parameter	Value
Dissolved Oxygen (mg/L)	10.4
Conductivity (µS/cm)	61
pH	7.07
Water Temperature (°C)	18.2



Stantec

Legend

- Canada/US Border
- Flow Direction
- Wetland (USFWS)
- Ecological Land Classification (Stantec)

MAM2	Mineral Meadow Marsh Ecosite
MAS2	Mineral Shallow Marsh Ecosite
SA	Shallow Water Community Class
SWT2	Mineral Swamp Thicket Ecosite

Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2015.
3. Flood Hazard Zones produced by FEMA © 2006, FEMA Digital Flood Rate Insurance Maps (DFIRM), Minnesota, and Minnesota Department of Natural Resources (MNDNR)
4. Park Boundary provided by Lake of the Woods County
5. United States Fish and Wildlife Service (USFWS)
6. Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

April 2016
193802870

Client/Project

Baudette/Rainy River
International Bridge Replacement
GWP 6046-10-00

Figure No.

2

Title

Existing Conditions -
Fish and Fish Habitat

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Revised: 2016-04-28 By: awhite

4.0 CONSTRAINTS

4.1 FISH AND FISH HABITAT ASSESSMENT

The Rainy River provides a migratory corridor to many resident fish species. Within the Study Area, nearshore areas provide potential rearing habitat for a variety of species and potential spawning habitat for Northern Pike. Coarse substrates provide potential spawning areas for Walleye, White Sucker and Lake Sturgeon; however, spawning surveys have not been conducted in the area. The identification of these areas as potential spawning habitat is based on the presence of suitable substrates. The suitability of these areas as spawning habitat is dependent on other factors, including water depth and velocity, during the specific spawning period for each species and these parameters are not known. In recent correspondence regarding habitat sensitivity, the MNRF (2016) indicated that it is unlikely that the Study Area provides spawning habitat for Walleye, White Sucker and Lake Sturgeon (**Appendix A**). While overwintering likely occurs in the Study Area, Lake of the Woods is 18 km downstream and likely provides more suitable overwintering habitat than the Rainy River or Baudette River. Within the Study Area, the Baudette River provides a diversity of habitats with shallow water, slower velocity, and abundant emergent vegetation to support a variety of fish species.

On the east side of the Rainy River, nearshore habitat is similar on both sides of the existing bridge. On the west side of the river, there is a wider band of aquatic vegetation on the south side relative to the north side; therefore, a smaller area of wetland and in-water aquatic vegetation would be disturbed by the placement of a new bridge to the north of the existing structure.

Using the guidance provided in Chapter 6 of the MTO Fish Guide (and the Assessment of Sensitivity of Fish and Fish Habitat from Template 10.4 in the Fish Guide) (MTO 2009), the sensitivity of fish and fish habitat was ranked by Stantec as Moderate, as per the following rationale:

Species Sensitivity – **Moderate**

> Species present are moderately sensitive to change and perturbation (diverse coolwater community that includes Walleye, Northern Pike, Lake Sturgeon, Yellow Perch, Smallmouth Bass, White Sucker).

Species' Dependence on Habitat – **Moderate**

> Habitat has the potential to support multiple life-cycle functions as there is a diversity of substrates, depths and areas of vegetation; there is no documented specialized or critical habitat.

Rarity – **High**

This attribute was ranked as High due to the presence and documented recovery of a provincially Endangered species at risk (Lake Sturgeon). Lake Sturgeon migrate through the Study Area but are unlikely to spawn there.

Habitat Resiliency – **Moderate**

Permanently flowing coolwater system; no specialized habitat. The aquatic ecosystem in the area could recover from changes in environmental conditions.

The MNRF provided a habitat sensitivity ranking of Moderate-Low with respect to habitat on the Canadian side of the Rainy River. The ranking was based on the MNRF's understanding of the physical habitat conditions and that Lake Sturgeon do not spawn in the area nor is spawning likely for fish with similar spawning requirements (MNRF 2016).

Using the sensitivity ranking provided by the MNRF and Stantec's ranking presented above, the overall sensitivity of fish and fish habitat in the Study Area is ranked as **Moderate,** as the Study Area provides general habitat and a migration route for a diverse coolwater community that includes a provincial species at risk.

4.2 AQUATIC SPECIES AT RISK

Background data indicated the potential presence of three aquatic species at risk, including Lake Sturgeon, Shortjaw Cisco, and Creek Heelsplitter.

Lake Sturgeon spawn in large rivers with high velocities over a variety of substrates including sand, gravel, cobble, and boulder (DFO 2010) as well as at the confluence of a tributary to a main river channel (COSEWIC 2006). Suitable depths, high velocities, and lack of barriers to movement seem to be the primary factors in habitat determination (DFO 2010). Habitat requirements for Lake Sturgeon include diverse habitats, such as shallow sand bars with low velocity and deep water with moderate velocity over a variety of substrates (DFO 2010; COSEWIC 2006). Substrate preference for general habitat is also variable and may vary between systems and populations.

Based on the diversity of habitats (substrates, vegetation, water depths) and the documented presence and recovery of Lake Sturgeon in the area, bridge design and construction will need to consider Lake Sturgeon and their habitat. The Lake Sturgeon population in Northwestern Ontario is Threatened; therefore, the MNRF should be consulted with respect to the potential need for a permit under Ontario's *Endangered Species Act*. There are no anticipated permitting requirements under the Minnesota *Threatened and Endangered Species Statute*.

Shortjaw Cisco prefer water that is deep (between 18 m and 183 m), cold, and well oxygenated (DFO 2013). The species is typically found in lakes, but occasionally inhabit flowing water (DFO 2013). Spawning occurs in lakes at depths between 10 m and 60 m (DFO 2013). With

suitable deep water habitat available nearby in Lake of the Woods, it is unlikely that Shortjaw Cisco would utilize the Rainy River as habitat.

Creek Heelsplitter typically occurs in creeks, small rivers and the upstream portions of large rivers, often in small pools downstream of riffles (MnDNR 2015e). Water depths usually range from 0.3 m to 0.9 m. Based on the habitat requirements of this species, available habitat in the Study Area is not suitable for Creek Heelsplitter. This mussel species is not listed under the Ontario *Endangered Species Act* and there are no records of mussel species in the Study Area that are protected by the Ontario *Endangered Species Act* or the federal *Species at Risk Act* (**Appendix A**).

The new bridge will be located either adjacent to the existing structure (i.e., immediately upstream or downstream) or on the existing alignment. The need for permitting under the federal *Fisheries Act* and the Ontario *Endangered Species Act* must be determined once details of the bridge location and design are finalized. It should be designed and constructed to reduce the risk of effects on Lake Sturgeon and their habitat and the risk of serious harm to fish and fish habitat.

5.0 SUMMARY

MTO in cooperation with MnDOT has retained Stantec to undertake the Preliminary Design and Class Environmental Assessment Study for the replacement of the Baudette/Rainy River International Bridge on Highway 11. The bridge provides access between the United States and Canada with 24-hour, full-service Port of Entry facilities in the City of Baudette, Minnesota and the Town of Rainy River, Ontario. The study includes the development and evaluation of a range of reasonable bridge replacement alternatives, construction staging and traffic management options, and the selection of a Preferred Plan.

This *Fish and Fish Habitat Existing Conditions Report* provides supporting documentation for the project and describes fish communities and fish habitat in the Study Area.

The Study Area provides habitat for a diverse fish community. The Rainy River is a large watercourse, with a coolwater thermal regime (MNRF 2015c). Within the Study Area, the Baudette River flows into the Rainy River. The lower two miles of the Baudette River are known to support a healthy, warmwater aquatic community (MPCA 2015). Baudette Bay and the Rainy River support a variety of fish species including more sensitive species such as Walleye, Northern Pike and Lake Sturgeon. Habitat within the Study Area is not specialized, and functions primarily as a migration corridor (for these species).

The Study Area is located approximately 18 km upstream from Lake of the Woods, which supports fifty-five fish species including Northern Pike, Walleye, Sauger, Yellow Perch, White Sucker and Smallmouth Bass (MnDNR 2015b; MNRF 2015c). Lake Sturgeon and Shortjaw Cisco are present in Lake of the Woods and Rainy River (MNRF 2015b), which are Threatened species protected by Ontario's *Endangered Species Act*. The use of the areas around the abutments of the adjacent CNR bridge by spawning Walleye, White Sucker and Lake Sturgeon has not been documented or confirmed. In Minnesota, Lake Sturgeon is listed as a Species of Special Concern under Minnesota's *Threatened and Endangered Species Statute*. With suitable deep water habitat available nearby in Lake of the Woods, it is unlikely that Shortjaw Cisco would utilize the Rainy River as habitat.

The **Moderate** sensitivity ranking of fish and fish habitat in the Study Area was determined through MNRF correspondence and templates and guidance available in the MTO Fish Guide.

The new bridge will be located either adjacent to the existing structure (i.e., immediately upstream or downstream) or on the existing alignment. The need for permitting under the federal *Fisheries Act* and the Ontario *Endangered Species Act* must be determined once details of the bridge location and design are finalized. It should be designed and constructed to

reduce the risk of effects on Lake Sturgeon and their habitat and the risk of serious harm to fish and fish habitat.

The information provided in this *Fish and Fish Habitat Existing Conditions Report* will be used in conjunction with information from other disciplines and with information provided by agencies and key stakeholders to aid in the selection of the Preferred Plan.

6.0 REFERENCES

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Appendix A AGENCY CORRESPONDENCE AND BACKGROUND DATA

Stantec Consulting Ltd.
49 Frederick Street, Kitchener ON N2H 6M7

May 22, 2015
File: 193802870

Attention: Rachel Hill
Fort Frances District Planner
Ministry of Natural Resources and Forestry
922 Scott Street
Fort Frances ON P9A1J4

Dear Ms. Hill,

Reference: Baudette/Rainy River International Bridge Replacement, Highway 11, Rainy River, Preliminary Design and Class EA Study

Stantec was retained by the Ministry of Transportation, Ontario, in cooperation with the Minnesota Department of Transportation, to undertake the Preliminary Design and Class EA Study for the replacement of the Baudette/Rainy River International Bridge on Highway 11 in the Town of Rainy River (as shown on the Key Plan on the attached Notice of Study Commencement). The bridge provides access between the United States and Canada with Port of Entry facilities in the City of Baudette, Minnesota and the Town of Rainy River, Ontario. The study will include the development and evaluation of a range of reasonable bridge replacement alternatives, construction staging and traffic management options, and the selection of a Preferred Plan.

We would like to request the following natural heritage information. This information is required to complete our natural heritage review for this proposed transportation study, and to inform 2015 field investigations associated with the project.

AQUATIC RESOURCES

Based on a preliminary screening of the MNRF's NHIC database, the Rainy River supports Lake Sturgeon (*Acipenser fulvescens*), a threatened species under the *Endangered Species Act*. Any input regarding Lake Sturgeon habitat within the Baudette/Rainy River International Bridge study area is appreciated.

Additionally, we are requesting information regarding:

- Species/community information including any additional aquatic species at risk and input regarding potential permit requirements;
- Watercourse thermal regime;
- Special habitat features;
- Construction timing window;
- MNRF assignment of habitat sensitivity (as per Step 5 of the MTO/DFO/OMNR Protocol).

Reference: Baudette/Rainy River International Bridge Replacement, Highway 11, Rainy River, Preliminary Design and Class EA Study

TERRESTRIAL RESOURCES

Based on a search of data available on the NHIC website and in the Land Information Ontario digital dataset, no Natural Areas were identified within 1 km of the bridge crossing.

The NHIC database identifies terrestrial species at risk and provincially rare species within 1 km of the Baudette/Rainy River International Bridge (1990+), as listed below:

- Barn Swallow (*Hirundo rustica*)
- Gray Copper (*Lycaena dione*)
- Rigid Sedge (*Carex tetanica*)
- White-tailed Jack Rabbit (*Lepus townsendii*)
- Elusive Clubtail (*Stylurus notatus*)

We would like to confirm all of the above-listed aquatic and terrestrial habitat information and data records and to request any additional natural heritage information that may be pertinent to the Baudette/Rainy River International Bridge study area.

If you require additional information regarding this project or have any questions, please contact the undersigned.

Regards,

STANTEC CONSULTING LTD.

Katie Easterling, Tech. Dip., B.Sc,
Aquatic Ecologist
Phone: (519) 575-4111
Fax: (519) 579-4239
katie.easterling@stantec.com

Attachment: MTO Notice of Study Commencement

c. Kathleen Todd, Stantec
Sean Spisani, Stantec
Nevena Gazibara, Stantec

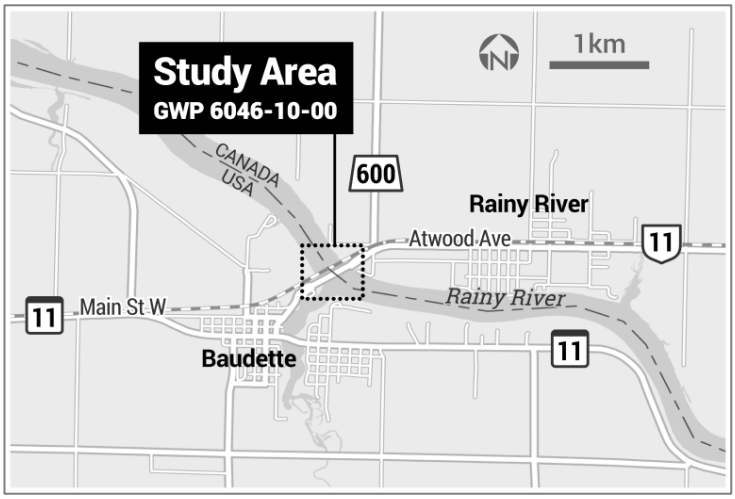
BAUDETTE/RAINY RIVER INTERNATIONAL BRIDGE REPLACEMENT
Highway 11, Town of Rainy River
Notice of Study Commencement

THE STUDY

The Ontario Ministry of Transportation (MTO), in cooperation with the Minnesota Department of Transportation, has retained Stantec Consulting Ltd. to undertake the Preliminary Design and Class Environmental Assessment (Class EA) Study for the replacement of the Baudette/Rainy River International Bridge on Highway 11 in the Town of Rainy River. The bridge provides access between the United States and Canada with 24-hour, full-service Port of Entry facilities in the City of Baudette and the Town of Rainy River. The study will include the development and evaluation of a range of reasonable bridge replacement alternatives; construction staging and traffic management options; and the selection of a Preferred Plan.

THE PROCESS

The study will follow the *Class Environmental Assessment* (Class EA) *for Provincial Transportation Facilities* (2000) process for a Group 'B' project. It includes carrying out environmental field investigations and undertaking consultation throughout the duration of the study. As part of the consultation process, three Public Information Centres (PICs) will be held. The first PIC is currently scheduled for summer 2015 to provide an opportunity to review the existing conditions in the study area (i.e., natural, social, economic and cultural) and to answer questions about the study.



Upon completion of Preliminary Design, a *Transportation Environmental Study Report* (TESR) will be prepared and made available for a 30-day public review period. Notices regarding the availability of the TESR and the times and location of the PICs will be published in local newspapers and sent to persons on the mailing list.

COMMENTS

If you wish to comment on this project, have your name added to the project mailing list, or have any questions about this project, please contact one of the individuals identified below.

Gregg Cooke, P.Eng.
Consultant Project Manager (Canada)
Stantec Consulting Ltd.
200-835 Paramount Drive
Stoney Creek ON L8J 0B4
Tel: 905-381-3227
Call Collect: 905-385-3234
Fax: 905-385-3534
Email: gregg.cooke@stantec.com

Rick DeCal
MTO Senior Project Manager
Ministry of Transportation
Northwestern Region
615 James Street South
Thunder Bay ON P7E 6P6
Tel: 807-473-2187
Toll free: 1-800-465-5034
Fax: 807-473-2168
Email: rick.decal@ontario.ca

If you have any accessibility requirements in order to participate in the project, please contact one of the Project Team members listed above.

Comments and information are being collected to assist MTO in meeting the requirements of the *Ontario Environmental Assessment Act*. Information will be collected in accordance with the *Freedom of Information and Protection of Privacy Act*. All comments will be maintained on file for use during the study and, with the exception of personal information, may be included in study documentation and become part of the public record.

From: Hill, Rachel (MNRF) <rachel.hill@ontario.ca>
Sent: Thursday, June 11, 2015 6:03 PM
To: Cooke, Gregg; DeCal, Rick (MTO); Easterling, Katie
Cc: nevena.gazibara@stantech.com; Myers, Matt (MNRF); Hyatt, Alex (MNRF); Vandenbroeck, John (MNRF)
Subject: Notice of Commencement - Rainy River-Baudette International Bridge

Attention: Gregg Cooke and Rick DeCal

Thank you for the Notice of Study Commencement that was received May 7, 2015. If possible, MNRF would like to request that further notification and/or information be sent to this office electronically.

The notice identifies a request for information on existing conditions within the study area and identification of any issues, concerns or approval requirements that our organisation may have. Unfortunately our Ministry is limited in providing this information to you based on the lack of details about the project that have not yet been established.

Here is some information on local and site specific natural heritage values that we can provide at this time:

- The thermal regime of Rainy River is coolwater.

- The Baudette/Rainy River International Bridge is directly upstream of Lake of the Woods, therefore it is highly likely that many species that inhabit Lake of the Woods are present in the Rainy River.

- A total of 55 fish species have been documented in Lake of the Woods, including lake sturgeon and shortjaw cisco.

  These species are listed as threatened on the Species at Risk in Ontario (SARO) List, Ontario Regulation 230/08 of the *Endangered Species Act*.

- There is potential for spawning habitat of walleye, white sucker, and lake sturgeon in the immediate area of the bridge replacement site: on the abutments of the adjacent rail bridge.

  Timing of construction work should consider these species, as well as northern pike and smallmouth bass. No in-water work is recommended from April 1- July 15.

- There are <u>currently</u> no known provincially significant wetlands, areas of natural or scientific interest, or other special habitat features located in the vicinity (120 m) of the site.

- Bridge replacement has the potential to harm or harass barn swallows and/or damage/destroy their protected habitat. Surveys to determine barn swallow use of the bridge should be completed.

  If barn swallows are observed using (nesting in) this structure at any time, please contact John Van den Broeck, Management Biologist (807 274-8631) immediately.

- There are currently no records indicating that the other Species at Risk on the list provided, inhabit the bridge site.

However this office should be contacted soon as possible should any Species at Risk in the immediate vicinity of the bridge be observed. The *Endangered Species Act, 2007* prohibits harm and harassment of individuals, and in many cases, damage and destruction of their habitat for species that are listed under the *Act*.

We will be able to provide assessment of fisheries resources and habitat sensitivity information once we have been provided the appropriate form (Appendix 3A) as per the MTO/DFO/OMNR Fisheries Habitat Protocol.

Our Ministry will also be able to provide further information regarding potential permits and approvals or other issues once we have more information about the project plans and designs.

If you have any questions or need clarification regarding this e-mail, please feel free to contact me.

Thank you.

Rachel Hill
District Planner
Fort Frances District
Phone (807) 274-8605
Fax (807) 274-4438

Stantec Consulting Ltd.
1-70 Southgate Drive, Guelph ON N1G 4P5

October 13, 2015
File: 193802870

Attention: Ms. Rachel Hill, District Planner
Ontario Ministry of Natural Resources and Forestry
Fort Frances District
922 Scott Street
Fort Frances, ON P9A 1J4

Dear Ms. Hill,

Reference: Preliminary Design and Class Environmental Assessment for the Baudette/Rainy River International Bridge Replacement on Highway 11, Town of Rainy River (GWP 6046-10-00)

As per our letter dated May 22, 2015 the Ontario Ministry of Transportation (MTO), in cooperation with the Minnesota Department of Transportation (MnDOT), has retained Stantec Consulting Ltd. to undertake the Preliminary Design and Class Environmental Assessment (Class EA) Study for the replacement of the Baudette/Rainy River International Bridge on Highway 11 in the Town of Rainy River. The bridge provides access between the United States and Canada with 24-hour, full-service Port of Entry facilities.

The purpose of this letter is to request additional fisheries information for the MTO and MnDOT project identified above In accordance with the MTO/DFO/MNR Protocol for Protecting Fish and Fish Habitat on Provincial Highway Undertakings (2013).

The project includes the development and evaluation of a range of reasonable bridge replacement alternatives; construction staging and traffic management options; and the selection of a Preferred Plan. The new bridge will be located in close proximity to the existing bridge as it must tie in to the existing Canadian and U.S. Port of Entry facilities on both sides of the river. Details of the bridge design and location will be determined during the project and are not available at this time.

As per Step 3 of the MTO/DFO/MNR Fisheries Protocol, and your email to Gregg Cooke and Rick DeCal dated June 11, 2015, we request that the MNRF complete the attached table that includes information regarding available date regarding fish communities and habitat.

Reference: Preliminary Design and Class Environmental Assessment for the Baudette/Rainy River International Bridge Replacement on Highway 11, Town of Rainy River (GWP 6046-10-00)

We look forward to MNRF's response to our request within 20 working days, as specified in the Protocol.

Regards,

STANTEC CONSULTING LTD.

Katie Easterling
Aquatic Biologist
Phone: (519) 575-4111
Fax: (519) 579-4239
Katie.Easterling@stantec.com

Attachment: Background Information Table Template
Study Area Location Map

c. Nevena Gazibara, Stantec
Kathleen Todd, Stantec

nah g:\01609\active_other_pcs_active\938 - minnesota\93802870\correspondence\mnrf\let_to mnrf_fish guide app 3a oct13_15.docx

Reference: Preliminary Design and Class Environmental Assessment for the Baudette/Rainy River International Bridge Replacement on Highway 11, Town of Rainy River (GWP 6046-10-00)

Baudette/Rainy River International Bridge Replacement – GWP 6046-10-00

Waterbody Name and location	Watercourse classification (i.e. warmwater, coldwater)	Habitat information/ locations (fish passage barriers, known spawning habitats etc.)	Historical data on fish species present, including whether the Rainy River supports any vulnerable, threatened or endangered aquatic species	MNRF fisheries management objectives, if applicable	MNRF interpretation of fish and fish habitat sensitivity (scale of high, moderate, low or unknown as per DFO's Risk Management Framework	In-water timing windows for construction
Rainy River at the Baudette/Rainy River International Bridge UTM Zone 15 383031.56 Easting, 5397457.80 Northing (see attached map)						

NOTE:

- The applicant shall complete the waterbody name and location (column 1) and attach a Google Earth map or MTO project map identifying each waterbody and submit to MNRF.
- MNRF is required as per Step 3 of the Fisheries Protocol to provide the applicant with the information outlined in the table above (columns 2-7) within **20 working days**.

382800 383000 383200

5397600 5397400 5397200

CNR Bridge

HIGHWAY 11

Rainy River, ON

CANADA

Baudette, MN

INTERNATIONAL DRIVE

Rainy River

Baudette River

UNITED STATES OF AMERICA

DRAFT

0 25 50 m

1:2,000

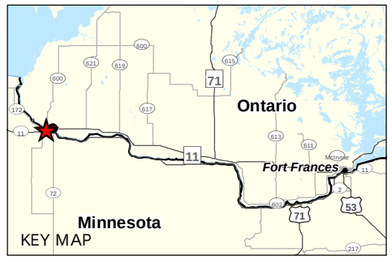
N

Stantec

Legend

Study Area

Canada/US Border



Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2013.
3. Additional USA Data provided by ESRI
4. Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

October 2015
193802870

Client/Project

Baudette International Bridge
Rainy River, ON

Figure No.

1

DRAFT

Title

Study Area

W:\active_Other_PCs_Active\938 - Minnesota\193802870\drawing\MXD\Terrestrial\InternalMaps\193802780_Fig_1_StudyArea_20151008.mxd
Revised: 2015-10-08 By: mkraus

From: Easterling, Katie
Sent: Wednesday, March 30, 2016 9:08 AM
To: Harttrup, Nancy
Subject: FW: Habitat Sensitvity - Rainy River-Baudette International Bridge

Katie Easterling, B.Sc. (Hon)
Aquatic Ecologist
Stantec
100-300 Hagey Boulevard Waterloo ON N2L 0A4
Phone: (519) 575-4111
Cell: (519) 859-8391
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katie.easterling@stantec.com

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Please consider the environment before printing this email.

From: Vandenbroeck, John (MNRF) [mailto:john.vandenbroeck@ontario.ca]
Sent: Thursday, March 24, 2016 5:02 PM
To: Easterling, Katie
Cc: Todd, Kathleen; Gazibara, Nevena; 'Talmage, Phil J (DNR)'
Subject: RE: Habitat Sensitvity - Rainy River-Baudette International Bridge

Hi Katie

Sorry for the confusion on this one. Based of Phil's description of the site and my understanding of Rainy River as a whole I am going to suggest that habitat sensitivity is moderate-low on the Canadian side of the river. As outlined previously Lake Sturgeon do not spawn here nor is spawning likely for fish with similar spawning requirements. With respect to Lake Sturgeon the depth information provided addresses my question of potential suitability for juvenile habitat, which consists of deeper pools that in some cases have been associated with river confluences. This does not appear to the case here. However, the presence of the aquatic vegetation, although not necessarily descriptive in terms of wetland type, does suggest potential habitat and consequently a classification of moderate-low sensitivity.

J

John Van den Broeck
Management Biologist

From: Easterling, Katie [mailto:Katie.Easterling@stantec.com]
Sent: March 18, 2016 10:00 AM
To: Vandenbroeck, John (MNRF)
Cc: Todd, Kathleen; Gazibara, Nevena
Subject: Habitat Sensitvity - Rainy River-Baudette International Bridge

Hi John,

As per your voicemail request for some additional data, below is a summary of the habitat assessment that was conducted by Stantec on August 24, 2015 over a 400 m reach of the Rainy River at the Rainy River International Bridge between the City of Baudette, Minnesota and the Town of Rainy River, Ontario. Hopefully this information will provide enough detail to aid in your determination of habitat sensitivity. I've also included the contact information for the Area Fisheries Supervisor from the Minnesota Department of Natural Resources as he has additional resources for the Rainy River that may be useful, if required.

Cheers,
Katie

Habitat Assessment

Within the Study Area, the Rainy River is a uniform run with an average width of approximately 315 m. Water depth was similar throughout the 400 m survey length at an average of 6 m in the middle of the channel and 2.5 m in the nearshore areas. Beyond the shallow nearshore areas, sand is the predominant bottom substrate in the Rainy River. On both sides of the river, nearshore substrate was dominated by sand with some coarse material. The coarse substrate (on both shorelines) consisted of cobble and gravel between the existing international bridge crossing and the CNR bridge. Upstream from the bridge on the east shore, there were boulders and concrete debris, likely from decommissioned docks at that location. Emergent vegetation (predominantly sedges and grasses) was prevalent along both shorelines. The average width of aquatic vegetation was 15 m on the east bank and 50 m on the west bank.

The Baudette River enters the Rainy River from the southwest, immediately upstream from the bridge. Maximum water depth in the middle of the channel at the mouth of the Baudette River was 2.5 m. The mouth of the Baudette River was approximately 130 m wide. However, the area was characterized by dense aquatic vegetation such that the open water area was limited to a 35 m wide area. The emergent vegetation extended to 80 m from shore on the southeast side of the Baudette River and 15 m from shore on the northwest bank.

Phil Talmage | Area Fisheries Supervisor
Minnesota Department of Natural Resources
204 Main Street East
Baudette, MN 56623
phone: (218) 634-2522 ext 230
fax: (218) 634-2563
website: http://www.mndnr.gov/areas/fisheries/baudette

Katie Easterling, B.Sc. (Hon)
Aquatic Ecologist
Stantec
100-300 Hagey Boulevard Waterloo ON N2L 0A4
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From: Riley, Jake
Sent: Friday, December 04, 2015 3:18 PM
To: Todd, Kathleen; Maahs-Henderson, Theresa
Subject: Phil Talmage correspdence FW: #2 - baudette reports
Attachments: 39000200_LL_20140401_Lake_of_the_Woods.pdf

Talked to Phil Talmage at MnDNR this afternoon. Very nice and helpful. Please see the 2014 MnDNR fisheries report attached for the Baudette and Rainy River (I haven't gone through it yet). He also sent me some follow up emails/reports I will pass along. Haven't looked at these yet either.

Please see my notes from his call below bulleted. Would you like me to fill in Kathleen's report with details from Phil's report and notes below? If so, please send me the most up to date word draft. Have a good weekend, jake

- Fisheries Exclusion Dates for construction on the Rainy for spawning March 15h-June 15th
- Baudette Bay at confluence and Rainy River are both popular for fisherman and hold fish really well at certain times of the year during spawning migrations, esp. under the bridge
- Walleye
  - Moving through project area late late March – April to spawn in Rainy at Rapids at RM 40
- Pike
  - Spawn pre-ice out in tributaries of Rainy, including Baudette Bay in late March/early April
- Lake Sturgeon
  - Species of Concern in MN, Not fully recovered, some recreational angling but little mortality and minimal harvest
  - Use Rapid river just US of Baudette confluence,
  - Migrate up to spawn, April – May

Stantec

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Please consider the environment before printing this email.

From: Talmage, Phil J (DNR) [mailto:phil.talmage@state.mn.us]
Sent: Friday, December 04, 2015 3:05 PM
To: Riley, Jake
Subject: #2 - baudette reports

Phil Talmage | Area Fisheries Supervisor
Minnesota Department of Natural Resources
204 Main Street East
Baudette, MN 56623
phone: (218) 634-2522 ext 230
fax: (218) 634-2563
website: http://www.mndnr.gov/areas/fisheries/baudette

From: Todd, Kathleen
Sent: Tuesday, October 13, 2015 5:45 PM
To: Harttrup, Nancy
Subject: Fwd: DNR Comments on MnDOT Early Notification Memo, TH72 Rainy River Bridge Replacement (SP3905-09), LOTW Co

Kathleen Todd
Stantec
Ph: 519.780.8149
Fx: 519.836.2493
www.stantec.com
kathleen.todd@stantec.com

Begin forwarded message:

From: "Maahs-Henderson, Theresa" <Theresa.Maahs-Henderson@stantec.com>
Date: October 13, 2015 at 5:44:33 PM EDT
To: "Todd, Kathleen" <kathleen.todd@stantec.com>
Cc: "Gazibara, Nevena" <Nevena.Gazibara@stantec.com>
Subject: FW: DNR Comments on MnDOT Early Notification Memo, TH72 Rainy River Bridge Replacement (SP3905-09), LOTW Co

Hi Kathleen,
Please see below from our Department of Natural Resources. It appears that the Lake Sturgeon is the only species that we would be concerned about.
I think you mentioned that the Sturgeon are already accounted for in your report.

Let me know if you need anything else.

Thank you.

Theresa Maahs, PE, LEED AP
Project Manager

Phone: 651-604-4786
Cell: 612-749-9177
theresa.maahs@stantec.com

From: Leete, Peter (DOT) [mailto:peter.leete@state.mn.us]
Sent: Monday, October 12, 2015 9:38 AM
To: Maahs-Henderson, Theresa
Subject: RE: DNR Comments on MnDOT Early Notification Memo, TH72 Rainy River Bridge Replacement (SP3905-09), LOTW Co

Within a mile of the bridge, the lake sturgeon is all that shows up on the NHIS….. It's when I zoom back out further (5 miles) that other species show up. None of which are threatened or endangered. They

are ‘watch list’ or ‘special concern’. IE Bald Eagle (watchlist), Creek Heelsplitter, a native mussel (SPC), and Short-eared Owl (SPC). I can’t give you location info if you intend to share it with the public.

Contact me if you have questions

Peter Leete
Transportation Hydrologist (DNR-MnDOT Liaison)
DNR Ecological & Water Resources
Ph: 651-366-3634

From: Maahs-Henderson, Theresa [mailto:Theresa.Maahs-Henderson@stantec.com]
Sent: Friday, October 02, 2015 3:06 PM
To: Leete, Peter (DOT)
Subject: RE: DNR Comments on MnDOT Early Notification Memo, TH72 Rainy River Bridge Replacement (SP3905-09), LOTW Co

Hi Peter,
In your email below sent in June for the Baudette Bridge project you mention several rare species within the project area. Is it possible to get a copy of this list for our documentation. Our Canadian staff is also preparing an EA and need to show information for both sides of the border. Is it possible to get the version of the list that is able to be shared with the public?

Please let me know if you have any questions.

Thank you -

Theresa Maahs, PE, LEED AP
Project Manager

Phone: 651-604-4786
Cell: 612-749-9177
theresa.maahs@stantec.com

From: Leete, Peter (DOT) [mailto:peter.leete@state.mn.us]
Sent: Friday, June 19, 2015 10:01 AM
To: Cann, Staci (DOT)
Cc: Maahs-Henderson, Theresa; Wingard, John (DOT); Wingert, Sarah E MVP (Sarah.E.Wingert@usace.army.mil); Straumanis, Sarma (DOT); Joyal, Lisa (DNR); Bump, Samantha (DNR); Kestner, Nathan (DNR); Talmage, Phil J (DNR); Alcott, Jason (DOT); Dahlin, Greg (DNR); Thul, Dan C (DNR); Laudenslager, Scott L (DNR); Tom.Kleinboeck@dfo-mpo.gc.ca
Subject: DNR Comments on MnDOT Early Notification Memo, TH72 Rainy River Bridge Replacement (SP3905-09), LOTW Co

Staci,
This email is the DNR response for your project records. The DNR has had input on this project at several opportunities over the past four years, though I find no record of a single summary of concerns/issues. I am now getting calls for such a letter now that the project is moving into the next phase. With a new set of consultants and project managers, I agree that one is needed. Most concerns are in regards to temporary impacts during construction/demolition. Though staging for these concerns could impact project development and final design. Please consider the following comments as final designs and special provisions are developed:

1. The Rainy River is a Public Waters. A Public Waters Work Permit will be required. Though, as you know there is a General Permit to MnDOT for replacement of bridges and culverts to aid in streamlining of the permit process. A copy of the DNR's General Permit to MnDOT (GP2004-0001) is attached, please review all the conditions of this permit and integrate their requirements into project design. Please contact me if you have questions on any of its requirements. Authorization for the project will require final review at a later date. When the project is further along, please enter the project into the DNR online permitting system (MPARS) when there is enough information to do so: www.dnr.state.mn.us/mpars. Specific items to incorporate into design and construction are:

    A. As the project moves forward, design of the crossing should meet the conditions listed in GP 2004-0001: http://files.dnr.state.mn.us/waters/watermgmt_section/pwpermits/General_Permit_2004-0001.pdf. Additional information, including options on how to meet the conditions of the GP are presented in the collection of ' Best Practices for Meeting GP 2004-0001', at http://www.dnr.state.mn.us/waters/watermgmt_section/pwpermits/gp_2004_0001_manual.html

    B. We typically limit work in the water (Work Exclusion dates) to allow for undisturbed fish migration and spawning. These dates are March 15 through June 15. While we may revise these dates for a particular project, there may still be limitations on the types of work during this time. The Rainy river is an important fisheries resource. As such, the waiving of these dates is not likely – see 'C' below.

       Please be aware that the MPCA NPDES general permit for authorization to discharge stormwater associated with construction activities (permit MN R10001) recognizes the DNR "work in water restrictions" during specified fish migration and spawning time frames for areas adjacent to water. During the restriction period, all exposed soil areas that are within 200 feet of the water's edge and drain to these waters, must have erosion prevention stabilization activities initiated immediately after construction activity has ceased (and be completed within 24 hours).

    C. Approval of construction and demolition methods will need to occur at a later date, though be aware that due to the work exclusion dates, in-water work will be limited or prohibited from March 15 through June 15. Typical movement of barges and tugs for above water construction will not be an issue during these dates. However, seismic activities could frighten or harm migrating or spawning fish. As such, pile driving, sheet pile installation/removal, or implosions for span or pier removal of the existing bridge we would not be allowed. Please design the projects staging to avoid these types of activities during the dates given. IE: stage pier construction to begin after June 15 and be up and out of the water prior to March 15. Ditto for bridge pier demolition.

    D. Revegetation of disturbed soils should include native mixes in areas that are not proposed for mowed turf grass. Please utilize the native recommendations developed by BWSR (http://www.bwsr.state.mn.us/native_vegetation/) or MnDOT' in the 'Turf

Establishment Recommendations – dated April 14, 2014 (http://www.dot.state.mn.us/environment/erosion/seedmixes.html). In addition, for meeting DNR concerns, revegetation may include woody vegetation (trees and shrubs) in addition to grasses and/or forbs.

E. Water appropriation is not included in the GP. Please remind contractors that a separate water use permit is required for withdrawal of more than 10,000 gallons of water per day or 1 million gallons per year from surface water or ground water. GP1997-0005 (temporary water appropriations) covers a variety of activities associated with road construction and should be applied of if applicable. An individual appropriations permit may be required for projects lasting longer than one year or exceeding 50 million gallons. Information is located at: http://www.dnr.state.mn.us/waters/watermgmt_section/appropriations/permits.html

2. The Rainy River has been designated as infested with aquatic invasive species due to the known presence of the spiny water flea. There are also reports of zebra mussels having been introduced into the watershed. By the time of bridge construction, precautions for the zebra mussel may also be in place. Attached are best practices that have been developed for construction equipment to prevent the spread of these species. This information is also online at http://files.dnr.state.mn.us/publications/ewr/invasives/ais/best_practices_for_prevention_ais.pdf
It is likely that a permit will be required for transporting construction equipment. More information is also at: http://www.dnr.state.mn.us/invasives/ais_transport.html

3. Aesthetic bridge lighting has not been in any discussions to date that I am aware of. However these large 'signature bridges' tend to have such a discussion at some point. Attached is what has been developed by the DNR, Audubon Society, and USFWS in regards to aesthetic lighting. This was developed primarily due potential conflicts with bird migrations in the Mississippi river flyway. I attach this as an FYI in case the question comes up.

4. The project shall allow for recreational navigation through the work area. Coordination with local authorities (including the DNR conservation officer) for providing passage is will need to occur as the project nears construction. Parameters to consider are a temporary no-wake zone and channel through the worksite delineated with a buoy system and be maintained throughout the project for the safest passage through the work site. This channel shall continue above and below the work site. Buoys must meet US Coast Guard regulations and DNR standards for channel navigation. Activities that would necessitate a temporary closure of all recreational navigation through the work site would require advance notification to local authorities. Being that this is an international boundary, such coordination will involve many authorities.

5. The Minnesota Natural Heritage Information System (NHIS) has been queried to determine if any rare plant or animal species, native plant communities, or other significant natural features are known to occur within an approximate one-mile radius of the project area. Based on this query, several rare features have been documented within the search area (If details are needed for documentation, please contact me). Please note that the following rare features *may* be impacted by the proposed project:

A. Lake Sturgeon (Acipenser fulvescens), a state listed 'Species of Concern' is known to exist in the Rainy River. Stringent prevention and control measures for debris and construction material containment should be in place to prevent adverse material from entering the river. Also see item 1.C for preventing adverse impacts during the spring migration and spawning period.

The NHIS is not an exhaustive inventory and thus does not represent all of the occurrences of rare features within the state. If information becomes available indicating additional listed species or other rare features, further review may be necessary.

DNR folks, if I've missed anything, or have any suggestions for MnDOT to consider, please respond ASAP to Staci, and myself.

Contact me if you have questions

Peter Leete
Transportation Hydrologist (DNR-MnDOT Liaison)
DNR Ecological & Water Resources
Ph: 651-366-3634

Rainy River

Fisheries Population Assessment
Final Report
August 6 – August 17, 2007
September 29 – October 8, 2008

By

Dennis Topp

Minnesota Department of Natural Resources
Division of Fish and Wildlife

Approved by: _____ Date: _____
Area Fisheries Supervisor

Approved by: _____ Date: _____
Regional Fisheries Supervisor

Funded under Federal Aid by the Sport Fish Restoration Act, F-29-R(P)-28

Table 1. Species list of fish sampled from the Rainy River (RM 0 – 40) between August 6, 2007 and October 8, 2008.

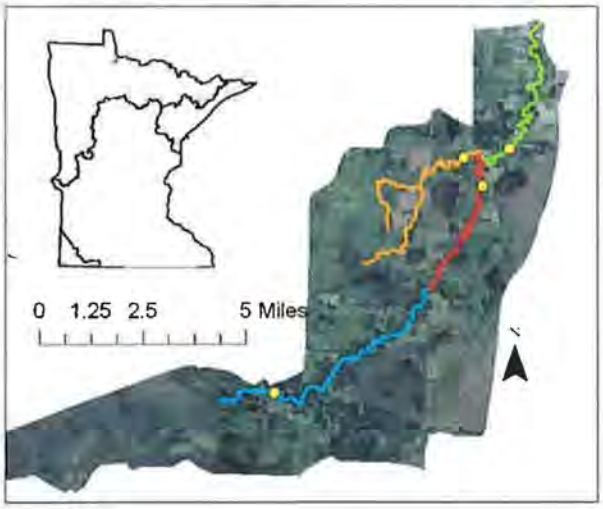
Scientific name	Common name
Ameiurus melas	Black bullhead
Pomoxis nigromaculatus	Black crappie
Ameiurus nebulosus	Brown bullhead
Lota lota	Burbot
Coregonus artedii	Cisco
Notropis atherinoides	Emerald shiner
Moxostoma erythrurum	Golden redhorse
Notemigonus crysoleucas	Golden shiner
Acipenser fulvescens	Lake sturgeon
Percina caprodes	Logperch
Esox lucius	Northern pike
Lepomis gibbosus	Pumpkinseed
Carpiodes cyprinus	Quillback
Percina shumardi	River darter
Ambloplites rupestris	Rock bass
Stizostedion canadense	Sauger
Moxostoma macrolepidotum	Shorthead redhorse
Moxostoma anisurum	Silver redhorse
Micropterus dolomieui	Smallmouth bass
Notropis hudsonius	Spottail shiner
Noturus gyrinus	Tadpole madtom
Sander vitreus	Walleye
Catostomus commersoni	White sucker
Perca flavescens	Yellow perch

Minnesota
F11AF00174
March 26, 2013

Minnesota Department of Natural Resources
Division of Fish and Wildlife
Section of Fisheries

Baudette River
(H-001-006)
Initial Fisheries Stream Survey

by
Dennis Topp



Submitted by: Dennis Topp Date: 3/26/13

Approved by: Phil Talg Date: 3/26/2013
Area Fisheries Supervisor

Approved by: [signature] Date: 5/9/2013
Regional Fisheries Supervisor

Funded under Federal Aid by the Sport Fish Restoration Act

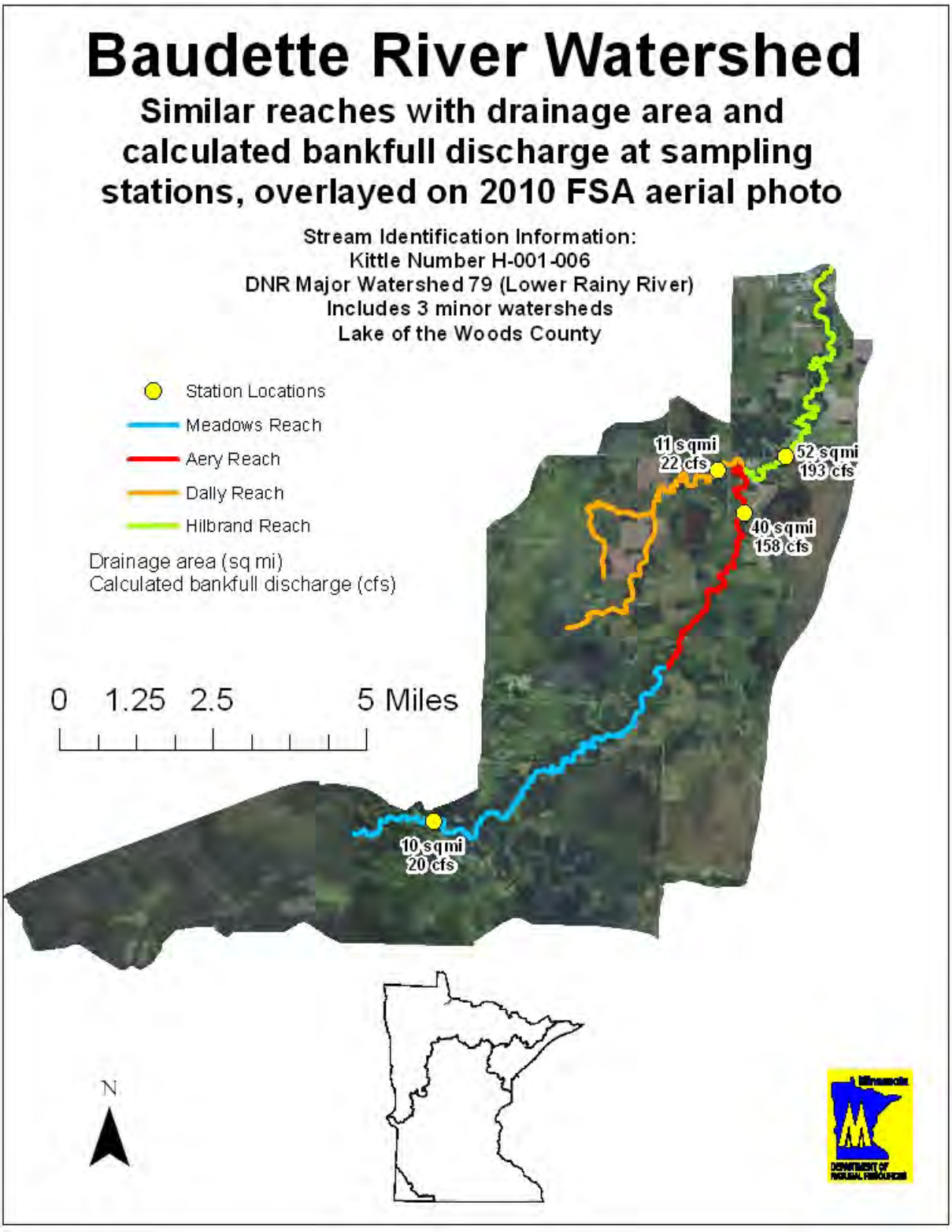


Figure 3. Similar reach and sampling station locations used during the Baudette River stream survey, 2012.

Table 4. Baudette River fisheries station boundaries (H-001-006).

Station name	River branch	Upstream UTM	Downstream UTM
Hilbrand	Main Branch	381617 5392249	381821 5392346
Aery	Main Branch	380582 5390731	380607 5390862
Meadows	Main Branch	372372 5382732	372462 5382727
Dally	West Branch	380022 5391968	380054 5392063

Table 5. Water temperature (°F) logger data collected in 2012 from the Baudette River (H-001-006)[2].

Station name	River branch	Temp logger location (UTM)	Date range	Minimum temperature	Mean temperature	Maximum temperature
Hilbrand	Main	382948 5395381	July 13 – October 2	51.1	63.1	70.2

Table 6. Water quality results from lab-analyzed grab samples collected from the Baudette River (H-001-006) on July 31, 2012.

Branch	Reach	Total phosphorus (ppm)	Chlorophyll a (ppb)		Total alkalinity (ppm)	pH	Total dissolved solids (ppm)	Conductivity (µmho/cm)	Chloride (ppm)
			Trichromatic method	Pheophyton corrected					
Main	Aery	0.093	15.1	10.0	212	7.80	268	409.0	0.98
Main	Meadows	0.055	4.2	2.1	189	7.49	252	353.3	0.63
West	Dally	0.080	3.9	1.9	186	7.74	272	365.0	3.00

[2] We are only able to report data from one temperature logger. One of the other three units was moved out of the water by a beaver. The other sites dried up during the summer when flow stopped.

Table 7. Riffle characteristics at bankfull elevation for the Baudette River (H-001-006).

Station name	River branch	Mean depth (ft)	Maximum depth (ft)	Area (ft^2)	Width (ft)	Width / depth	Floodprone width (ft)	Entrench-ment ratio	Rosgen stream type
Hilbrand	Main	2.1	2.6	58.9	28.2	13.6	35.3	1.25	F4
Aery	Main	3.0	3.4	41.8	13.9	4.6	89.3	6.5	E5
Meadows	Main	0.3	1.7	7.9	23.0	67.7	50.3	2.2	B6c
Dally	West	1.0	1.1	6.5	6.4	6.3	7.2	1.1	E4

Table 8. Longitudinal profile characteristics for the Baudette River (H-001-006).

Station name	River branch	Length (ft)	Water surface slope	Valley slope	Sinuosity
Hilbrand	Main	850	0.0017	0.0019	1.1
Aery	Main	663	0.0015	0.0021	1.4
Meadows	Main	339	0.0018	0.0023	1.3
Dally	West	468	0.0007	0.0011	1.5

Table 9. Channel substrate composition of (longitudinal) stations in the Baudette River (H-001-006) watershed.

Station name	River branch	% silt/clay	% sand	% gravel	% cobble	% boulder	% bedrock	D50 (mm)	D84 (mm)
Hilbrand	Main Branch	16	22	61	2	0	0	6.6	31.7
Aery	Main Branch	17	34	42	7	0	0	1.6	17.7
Meadows	Main Branch	69	32	0	0	0	0	0.1	0.2
Dally	West Branch	4	22	73	0	0	0	13.3	24.0

Table 10. Calculated bankfull discharge[3] and mean flow velocity at bankfull elevation for sampling stations on the Baudette River (H-001-006).

Station name	River branch	Drainage area (mi^2)	Bankfull discharge (cfs)	Mean flow velocity at bankfull (fps)
Hilbrand	Main	52.1	192.5	3.3
Aery	Main	39.9	157.7	3.8
Meadows	Main	9.5	19.9	2.5
Dally	West	11.0	22.0	1.7

Table 11. Minnesota Stream Habitat Assessment (MSHA) results for the Baudette River (H-001-006).

Station name	River branch	Surrounding land use	Riparian Zone	Instream Zones A-D	Instream Zones E-F	Channel morphology	MSHA score
		max=5	max=12	max=27	max=17	max=36	max=100
Hilbrand	Main	4	12	19	14	27	76
Aery	Main	4	12	12	13	25	66
Meadows	Main	5	15	4	13	25	62
Dally	West	5	13	19	12	25	74

[3] Discharge calculated using RIVERMorph 5.1.0 software (citation), with formula: $U = \frac{Cm}{n} R^{2/3} S^{1/2}$

Table 14. Cover for larger fishes, calculated as a percentage of total water surface[4], by sampling station and habitat type, for the Baudette River (H-001-006).

Station name	River branch	Woody debris	Undercut bank	Other Debris	Boulder	Total %
Hilbrand	Main	0.02	0.99	0	1.42	2.43
Aery	Main	0.27	0.09	0	1.27	1.63
Meadows	Main	0	0	0	0	0
Dally	West	0	0.14	0.71	1.21	2.07

Table 15. Cover for larger fishes, calculated as a percentage of total water surface, by sampling station and bed feature for the Baudette River (H-001-006).

Station name	River branch	Riffle	Pool	Run	Total %
Hilbrand	Main	0.29	1.15	0.99	2.43
Aery	Main	0	0	1.62	1.62
Meadows	Main	0	0	0	0
Dally	West	0.57	0.32	1.18	2.07

Table 16. Aquatic plant presence and abundance by sampling station for the Baudette River (H-001-006). (A=abundant, C=common, O=occasional, R=rare)

Station name	Plant names and relative abundance									
	Canada waterweed	Wild celery	Arrowhead spp	Sedge spp	Buttercup spp	Marestail	Sweet flag	Bulrush spp	Cattail spp	Waterlily spp
	Elodea Canadensis	*Vallisneria Americana*	*Sagittaria spp.*	*NA*	*Ranunculus spp.*	*Hippuris Vulgaris*	*Acorus Calamus*	*Schoeno-plectus spp*	*Typha spp*	--
Hilbrand	A	O	--	A	C	O	--	--	--	--
Aery	--	--	--	--	--	--	--	--	--	--
Meadows	--	--	R	A	--	--	A	R	R	O
Dally	--	--	--	--	--	--	--	--	--	--

[4] Cover was based on a bankfull flow scenario. There was no flow at the time of the survey.

Table A2. Fish species collected by MNDNR crews using electrofishing gear in 2005, at stations on Baudette River (H-001-006).

Species		Hilbrand Reach Main Branch UTM 382884 5395082 9/22/2005	Dally Reach West Branch UTM 378563 5391399 7/26/2005
Common name	**Scientific name**	**Number of fish sampled**	
Central mudminnow	*Umbra limi*	9	33
Northern pike	*Esox lucius*	6	6
Golden shiner	*Notemigonus crysoleucas*	3	--
Common shiner	*Notropis cornutus*	3	3
Blacknose shiner	*Notropis heterolepis*	8	--
Creek chub	*Semotilus atromaculatus*	--	3
White sucker	*Catostomus commersoni*	2	8
Brown bullhead	*Ictaluris nebulosus*	1	--
Tadpole madtom	*Noturus gyrinus*	2	--
Trout-perch	*Percopsis omiscomaycus*	11	--
Rock bass	*Ambloplites rupestris*	3	--
Iowa darter	*Etheostoma exile*	1	--
Yellow perch	*Perca flavescens*	11	--

Table A3. Length for each of the similar reach segments established for the Baudette River (H-001-006).

Reach name	River branch	Reach length (miles)
Hilbrand	Main Branch	9
Aery	Main Branch	5
Meadows	Main Branch	7
Dally	West Branch	6

From: Mosley, Melissa (MNRF) <melissa.mosley@ontario.ca>
Sent: Thursday, August 01, 2013 12:34 PM
To: Wall, Steven (MTO)
Cc: Mcleod, Darryl (MNRF); Vandenbroeck, John (MNRF)
Subject: RE: Fish and Fish habitat at Rainy River/Baudette Bridge

Hi Steven,

I just want to clarify that we consider the entire river necessary for sturgeon (and other species) migration (fish habitat).

Melissa

From: Mosley, Melissa (MNR)
Sent: July 31, 2013 11:54 AM
To: Wall, Steven (MTO)
Cc: Mcleod, Darryl (MNR); Vandenbroeck, John (MNR)
Subject: RE: Fish and Fish habitat at Rainy River/Baudette Bridge

Hi Steven,

As far as we know there is no critical fish habitat in the Rainy River in the vicinity of the border crossing, however MNR has never surveyed that area of the river.

Melissa

Melissa Mosley
Management Biologist
Fort Frances Area
Ontario Ministry of Natural Resources
807.274.8610

From: Wall, Steven (MTO)
Sent: July 11, 2013 3:12 PM
To: Mcleod, Darryl (MNR)
Subject: Fish and Fish habitat at Rainy River/Baudette Bridge

Hi Darryl,

MTO is in the early stages of an environmental assessment at the water crossing where the Rainy River/Baudette Bridge crosses the Rainy River.

For planning purposes, do you know of any critical fish habitat within the vicinity of the bridge?

Anything critical for lake sturgeon near the bridge?

Thanks
Steve

Steve Wall
Environmental Planner - Fisheries
Ministry of Transportation - Northwest Region
615 James Street South
Thunder Bay, Ontario P7E 6P6
Phone:(807) 473-2126

From: Wall, Steven (MTO) <Steven.Wall@ontario.ca>
Sent: Thursday, August 22, 2013 4:01 PM
To: DeCal, Rick (MTO)
Cc: DeCal, Patricia (MTO)
Subject: RE: Fish and Fish habitat at Rainy River/Baudette Bridge

Hi Rick,

I contacted both MNR and Minnesota Department of Natural Resources (MnDNR) regarding lake sturgeon in the vicinity of the Rainy River/Baudette Bridge.

There is no critical habitat for fish, including lake sturgeon, within the vicinity of the bridge (i.e., low sensitivity habitat).

Maintaining fish migration is important, which I do not anticipate will be a problem.

In-water work timing restriction is April 1 to June 30 for sturgeon.

I am inquiring from MnDNR about the possibility of threatened mussel species in the area and will let you know what I find out.

Steve

From: Wall, Steven (MTO)
Sent: August 1, 2013 12:42 PM
To: Mosley, Melissa (MNR)
Subject: RE: Fish and Fish habitat at Rainy River/Baudette Bridge

Thanks Melissa.

The project should not affect migration or general habitat, although the design may include new piers.

I was hoping to get some preliminary info to determine whether the work would be on any critical habitat (i.e., spawning habitat).

I have emailed a former South Dakota State University graduate student who did his masters on lake sturgeon in the Rainy River to see what information he may have.

I have not been to the bridge location, but photos suggest that it is not likely a spawning habitat and perhaps is typical of much of the river habitat and not unique.

Thanks again for your help.

Steve

From: Mosley, Melissa (MNR)
Sent: August 1, 2013 12:34 PM
To: Wall, Steven (MTO)
Cc: Mcleod, Darryl (MNR); Vandenbroeck, John (MNR)
Subject: RE: Fish and Fish habitat at Rainy River/Baudette Bridge

Hi Steven,

I just want to clarify that we consider the entire river necessary for sturgeon (and other species) migration (fish habitat).

Melissa

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Sent: July 31, 2013 11:54 AM
To: Wall, Steven (MTO)
Cc: Mcleod, Darryl (MNR); Vandenbroeck, John (MNR)
Subject: RE: Fish and Fish habitat at Rainy River/Baudette Bridge

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Melissa

Melissa Mosley
Management Biologist
Fort Frances Area
Ontario Ministry of Natural Resources
807.274.8610

From: Wall, Steven (MTO)
Sent: July 11, 2013 3:12 PM
To: Mcleod, Darryl (MNR)
Subject: Fish and Fish habitat at Rainy River/Baudette Bridge

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For planning purposes, do you know of any critical fish habitat within the vicinity of the bridge?

Anything critical for lake sturgeon near the bridge?

Thanks
Steve

Steve Wall
Environmental Planner - Fisheries
Ministry of Transportation - Northwest Region
615 James Street South
Thunder Bay, Ontario P7E 6P6
Phone:(807) 473-2126

From: Davis, Mike J (DNR) <Mike.Davis@state.mn.us>
Sent: Friday, August 23, 2013 3:49 PM
To: Wall, Steven (MTO)
Cc: Chisholm, Ian M (DNR); Talmage, Phil J (DNR); Baker, Richard (DNR); Sietman, Bernard (DNR)
Subject: RE: Mussels in Rainy River at Baudette Bridge

Steve,

during our surveys in 2007 we did not find any of the species listed in your table, they have never been found in the Rainy River so far as we know. Although Quadrula Quadrula is found in the Red River drainage (part of Hudson Bay drainage) is does not occur in the Rainy River or its tributaries.

Mike

From: Wall, Steven (MTO) [mailto:Steven.Wall@ontario.ca]
Sent: Friday, August 23, 2013 1:36 PM
To: Davis, Mike J (DNR)
Cc: Chisholm, Ian M (DNR); Talmage, Phil J (DNR); Baker, Richard (DNR); Sietman, Bernard (DNR)
Subject: RE: Mussels in Rainy River at Baudette Bridge

Hi Mike,

Thanks for the quick turnaround regarding my questions about mussels in the Rainy River.

Below is a list of mussel species listed under the Ontario *Endangered Species Act.*

Thanks again for your interest and the information.

Steve

Eastern Pondmussel	*Ligumia nasuta*
Fawnsfoot	*Truncilla donaciformis*
Hickorynut	*Obovaria olivaria*
Kidneyshell	*Ptychobranchus fasciolaris*
Northern Riffleshell	*Epioblasma torulosa rangiana*
Rayed Bean	*Villosa fabalis*
Round Hickorynut	*Obovaria subrotunda*
Round Pigtoe	*Pleurobema sintoxia*
Salamander Mussel	*Simpsonaias ambigua*
Snuffbox	*Epioblasma triquetra*
Mapleleaf Mussel	*Quadrula quadrula*
Rainbow Mussel	*Villosa iris*
Wavy-rayed Lampmussel	*Lampsilis fasciola*

From: Davis, Mike J (DNR) [mailto:Mike.Davis@state.mn.us]
Sent: August 23, 2013 1:32 PM
To: Wall, Steven (MTO)
Cc: Chisholm, Ian M (DNR); Talmage, Phil J (DNR); Baker, Richard (DNR); Sietman, Bernard (DNR)
Subject: Mussels in Rainy River at Baudette Bridge

Steve,

Minnesota does not have any state endangered or threatened mussel species present in the Rainy River, there are two species of Special Concern potentially present, but they are not specifically protected by our state endangered species laws. If you could provide me with a list of the species that are protected in Ontario I could better answer your questions regarding the river near Baudette.

Mike

Mike Davis – Aquatic Ecologist
1801 South Oak St
Lake City, MN 55041

Office: 651 345-3332 x 227
Cell: 507 696-5072

From: Wall, Steven (MTO) [mailto:Steven.Wall@ontario.ca]
Sent: Thursday, August 22, 2013 2:14 PM
To: Chisholm, Ian M (DNR)
Subject: Mussels in Rainy River at Baudette Bridge

Hi Ian,

I am an Environmental Planner for the Ministry of Transportation (MTO), Northwest Region.

MTO is currently working with MnDOT on the early stages of an environmental assessment at the water crossing where the Rainy River/Baudette Bridge crosses the Rainy River.

I heard from one of our Project Engineers that attended a recent MTO/MnDOT meeting in Duluth that there is possibility of mussel species at risk in the vicinity of the bridge.

Ontario does not have much data concerning SAR at the bridge location.

I contacted Phil Talmage at MnDNR, Baudette about lake sturgeon and habitat near the bridge.

Phil informed me that you were the one in Mn to ask about mussels.

Could you verify if MnDNR is conducting a mussel survey within the vicinity of the bridge?

What SAR are being looked for?

Is there a high probability that mussel SAR may be present at the bridge, and/or affected by in-water work around the bridge?

Presence of mussel species listed as endangered or threatened in Ontario's *Endangered Species Act* (I assume similar to SAR listed by Mn) has great impact on project scheduling, including preliminary borehole drilling for foundation work, which is part of the early stage of assessment.

Any information regarding this matter will be greatly appreciated.

I hope to hear from you soon.

Thanks for your time and consideration.

Steve
Steve Wall
Environmental Planner - Fisheries
Ministry of Transportation - Northwest Region
615 James Street South
Thunder Bay, Ontario P7E 6P6
Phone:(807) 473-2126

Appendix B FIELD DATA SHEETS

Watercourse Field Record Form

GENERAL INFORMATION

PROJECT #:	PROJECT DESCRIPTION:	DAY:	MONTH:	YEAR:
1938028 70	Rainy River Bridge	25	08	2015

Is STREAM REALIGNMENT required for this section:

Ø Yes O No O Unknown

COLLECTORS:	WEATHER CONDITIONS:	TIME STARTED:	TIME FINISHED:
JL/MS (Winnipeg)	12°C, rain	10:30 am	1:00 pm

AIR TEMP:	WATER TEMP:	CONDUCTIVITY (µS/cm):
12°C	18.16°C	61 µS/cm

PHOTO NUMBERS AND DESCRIPTIONS: See field notes (Pg 56)

LOCATION

NAME OF WATERBODY:	DRAINAGE SYSTEM:	CROSSING #:	STATION #:
Rainy River	into Lake of the Woods	N/A	N/A

LOCATION OF CROSSING: Rainy River International Bridge between Rainy River ON & Baudette MN.

UTM ZONE, EASTING & NORTHING:	MTO CHAINAGE:
TOWNSHIP:	**MNR DISTRICT:**

LAND USE AND POLLUTION

SURROUNDING LAND USE:	SOURCES OF POLLUTION:
manicured lawn, pavement and riparian areas consisting of deciduous trees.	Bridge traffic

EXISTING STRUCTURE TYPE

Bridge Ø	Box Culvert O	Open Foot Culvert O	CSP O	N/A O

Other O Describe: Size (w x h) m^2

SECTION TYPE AND MORPHOLOGY

SECTION IDENTIFIER:	SECTION LOCATION: (include on habitat map)
Existing Bridge	Existing Bridge Location

TYPE:	Stream / river	Channelized	Permanent	Intermittent	Ephemeral	ASSOCIATED WETLAND:
	Ø	O	O	O	O	

TOTAL ~~SECTION~~ LENGTH (m): 400m	CURRENT VELOCITY (m/s): ~0.15m/s according to USGS water data.

SUB-SECTION(S)	Run ?	Pool O	Riffle O	Flats O	Inside culvert O	Other
Percentage of area	100%					
Mean depth wetted (m)	Depth was very uniform throughout the reach. close to shore $\bar{x}$ depth = 2.5m, center $\bar{x}$ depth = 6m					
Mean width wetted (m)	Wetted width was very close to bank-full width. < 1m of shoreline.					
Mean bankfull width (m)	very uniform throughout reach @ 315m. 130m wide with ~95m vegetated.					inlet was
Mean bankfull depth(m)						
Substrate	Dominated by fines - mostly sand with some coarse substrate along the shoreline					

Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	Muck Mu	Detritus D
				D				

Sub Sub

Watercourse Field Record Form

BANK STABILITY	Stable	Slightly Unstable	Moderately Unstable	Unstable
Left Upstream Bank	0	0	0	0
Right Upstream Bank	0	0	0	0

HABITAT

IN-STREAM COVER (% surface area):	Undercut banks	Boulders	Cobble	Woody Debris	Organic debris	Vascular Macrophytes	None
Depth/clarity/Dominant cover				Instream Overhanging		Instream ~5%. Overhanging	

SHORE COVER (% stream shaded):	100 – 90 %	90 – 60%	60- 30%	30 – 1%	None
	0	0	0	0	0

VEGETATION TYPE (%): 5% of total reach	Submergent	Floating	Emergent	None
	5% (of total)	5% (of total)	90% (of total)	
Predominant Species	Sedge/grass?			

MIGRATORY OBSTRUCTIONS:	None	Seasonal	Permanent

POTENTIAL CRITICAL HABITAT LIMITING:	Spawning	Evidence of Groundwater	Other

POTENTIAL ENHANCEMENT OPPORTUNITIES:

Short Jaw Cisco habitat not very likely. Depths were too shallow (max 6m) and usually found between 18 and 183m deep. They typically spawn in lakes and deep, cold, well oxygenated waters.

Lake Sturgeon very likely. Velocity is good, depth is good, substrate likely good. Confluence to Baudette creek great habitat and shoreline provide ideal rearing & holding/staging habitat.

COMMENTS:

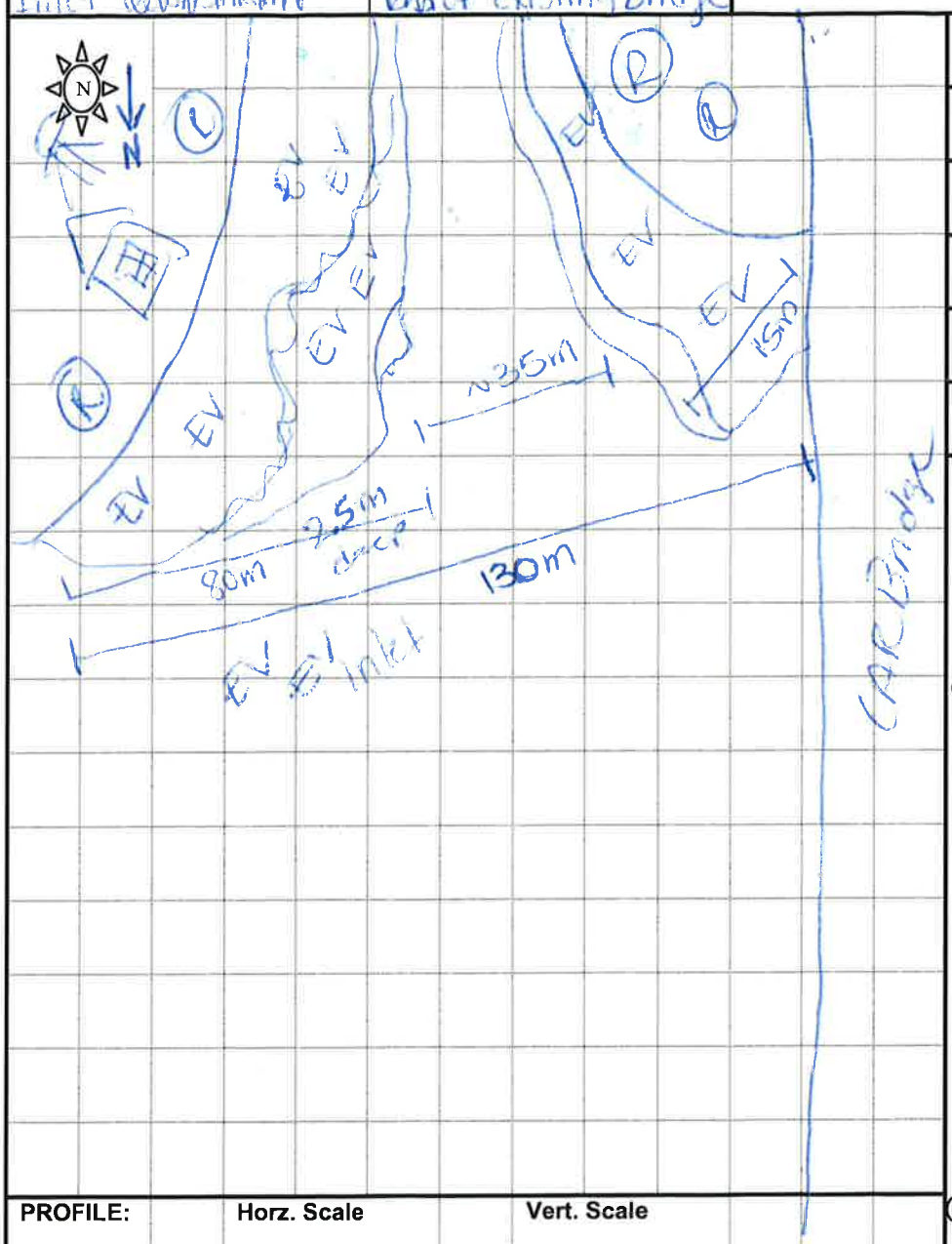
Alternative 1 would likely be the recommended option. This decision is based on the inlet of Baudette Creek into Rainy River on the upstream side of the bridge. This habitat would provide good spawning & rearing habitat for fish as it is highly vegetated and a bit shallower. This is preffered by fish such as white sucker and walleye. Avoiding construction in this area would be recommended. Also there are less houses on the Downstream side. Rail bridge has coarse substrate and emergent vegetation along both shorelines. This is potential spawning habitat for walleye & white sucker as well as Lake Sturgeon. The habitat observed is very uniform throughout the 400m assessed. Run unit throughout with a uniform bottom dominated by sand. width is consistant excluding the inlet directly US of the existing car bridge. vegetation is dominated by emergents and is ~15m wide on the RDB and ~50m wide on LDB. Vegetation in inlet ~95m (80m RDB, 15m LDB). No barriers for migration and overwintering habitat is moderate - likely more into Lake of the Woods

and lower velocity preferred by Lake Sturgeon

Additional Notes Appended? O No O Yes number of pages _____

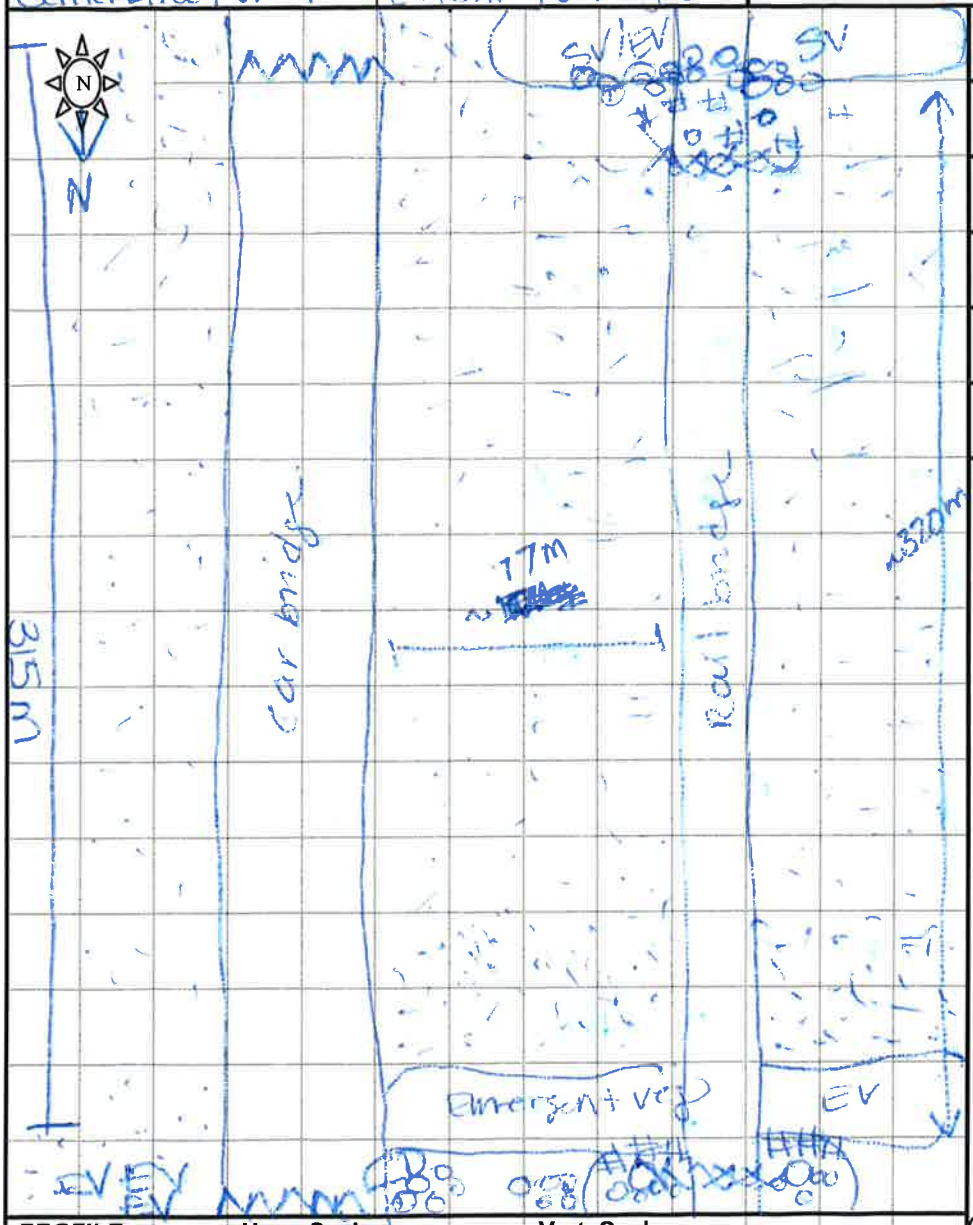
JL
Aug 25/15
3/3

SECTION IDENTIFIER:	SECTION LOCATION:	SECTION LENGTH (m):	SCALE (cm / m):
Inlet Wiarmann	upstream of existing bridge		


N
N
L
R
EV
EV
EV

JL
Aug 25/15
1/3

SECTION IDENTIFIER:	SECTION LOCATION:	SECTION LENGTH (m):	SCALE (cm / m):
Centreline downstream	Existing bridge	~125m	



PROFILE: **Horz. Scale** **Vert. Scale**

emergent veg along both shorelines
some cobble & gravel under rail bridge on both shorelines
cement pilings on existing car bridge.

PROJECT #: 193802870

MAPPER: JL

NAME OF WATERBODY: Rainy River

CROSSING #:

STATION #:

DATE: DD-MMM-YY 25-08-2015

LEGEND

10d depth (cm)
6w width

➡ Riffle
⇨ Run/Glide
⬭ Pool
▮ Island/Bar

⁘ Fine Substrate
Gravel Substrate
oOooO Cobble /Boulder
*** * *** Debris

CT Cattail
SV/FV Submerg/Float Veg

EV Emergent Vegetation
W Watercress

Fe Iron Staining
/////// Eroded Bank

XXX Riprap / Other Stabilization

⊂⊃ Instream Log/Tree
^^^ Dam/Weir/Obstruction

® Riparian Tree

├► Seep/Spring
-------- Undercut Bank

— Barrier to Fish Movement
-S- Seasonal Barrier

-x--x- Fence line
⌴ Culvert

250+77+73 = 400

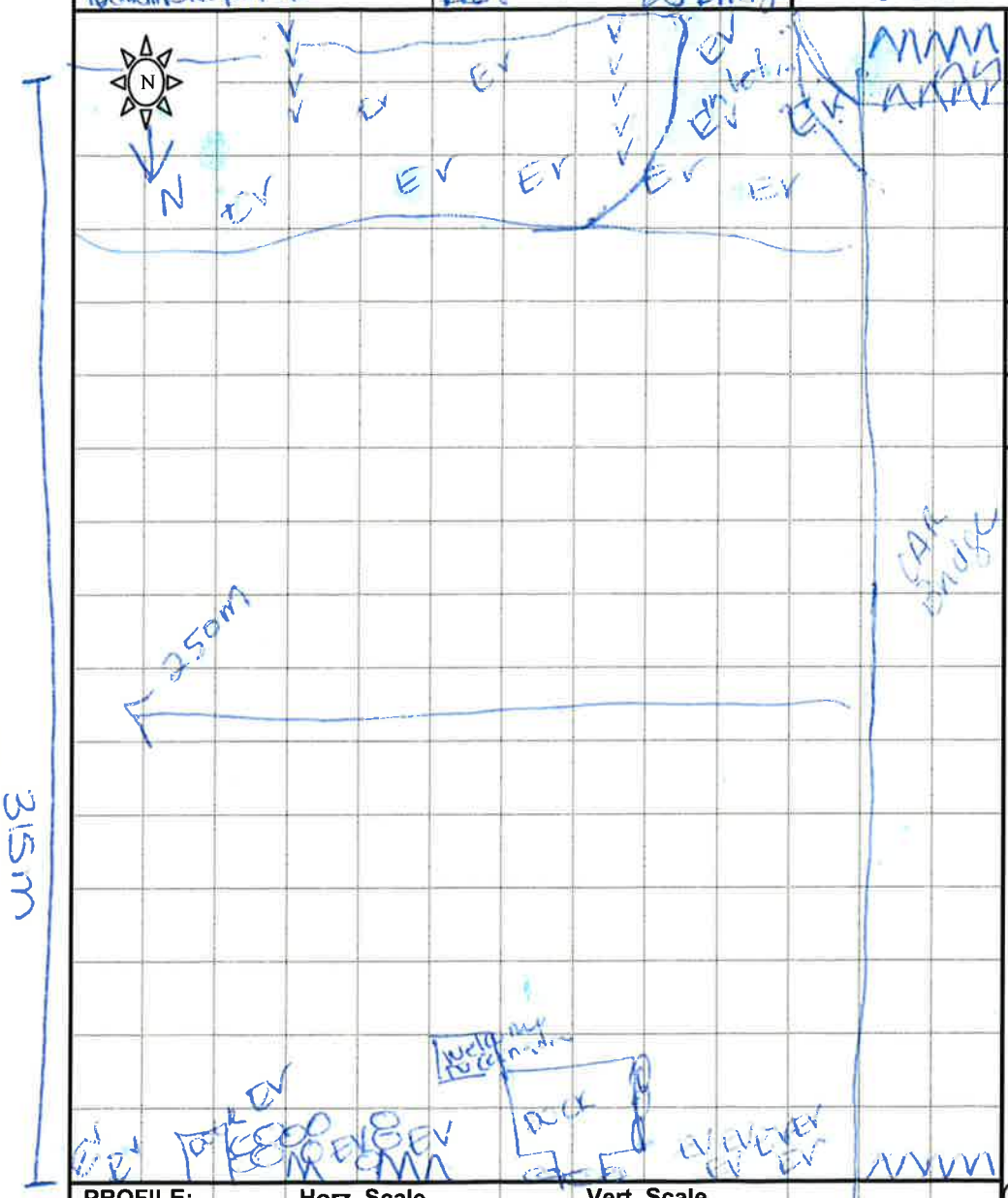
0.48 ft/s · USGS water data

~0.15 m/s

JL
Aug 25/15
2/3

upstream

SECTION IDENTIFIER:	SECTION LOCATION:	SECTION LENGTH (m):	SCALE (cm / m):
RDB docks	LDB docks, existing bridge	~230m	


N
EV
N
EV
EV
EV

Appendix C PHOTOGRAPHIC RECORD

Photo 1: East side of Rainy River, upstream side of the Baudette/Rainy River International Bridge

Photo 2: East side of Rainy River, bridge pier and abutment

Photo 3: East side of Rainy River, immediately downstream from the bridge

Photo 4: Facing downstream from near east end of bridge

Photo 5: Facing east from the west side of Rainy River (upstream side of bridge)

Photo 6: Facing west from east half of Rainy River (upstream side of bridge)

Photo 7: East side of Rainy River, immediately downstream from the CNR bridge

Photo 8: East side of Rainy River, at the CNR bridge

Photo 9: Downstream from the CNR bridge, facing east

Photo 10: West side of the Rainy River, beneath bridge

Photo 11: West side of the Rainy River

Photo 12: West side of the Rainy River, upstream from the bridge

Photo 13: West side of the Rainy River, between bridge and CNR bridge

Photo 14: West Side of the Rainy River, between bridge and CNR bridge

Photo 15: West Side of the Rainy River, between bridge and CNR bridge

Photo 16: West side of the Rainy River, beneath CNR bridge

Photo 17: Facing upstream, downstream from the CNR bridge

Photo 18: Facing west, downstream from the CNR bridge

C3: Fish Impact Assessment Report

Fish and Fish Habitat Existing Conditions and Preliminary Impact Assessment Report: Preliminary Design and Class Environmental Assessment - Baudette/Rainy River International Bridge Replacement on Highway 11, Town of Rainy River (GWP 6046-10-00)

FINAL REPORT

Prepared for:
Ministry of Transportation, Ontario
Northwestern Region

Prepared by:
Stantec Consulting Ltd.
Suite 1 – 70 Southgate Drive
Guelph, Ontario N1G 4P5

File No. 193802870
September 12, 2016

Sign-off Sheet

This document entitled Fish and Fish Habitat Existing Conditions and Preliminary Impact Assessment Report: Preliminary Design and Class Environmental Assessment - Baudette/Rainy River International Bridge Replacement on Highway 11, Town of Rainy River (GWP 6046-10-00) was prepared by Stantec Consulting Ltd. ("Stantec") for the account of the Ontario Ministry of Transportation (the "Client"). Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

Prepared by (signature)

Nancy Harttrup, B.Sc.
Fisheries Specialist / Senior Fisheries Biologist

Reviewed by (signature)

Kathleen Todd, M.Sc.
Fisheries Specialist / Senior Aquatic Ecologist

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1.0 INTRODUCTION

1.1 BACKGROUND

The Ontario Ministry of Transportation (MTO), in cooperation with the Minnesota Department of Transportation (MnDOT), has retained Stantec Consulting Ltd. (Stantec) to undertake the Preliminary Design and Class Environmental Assessment Study for the replacement of the Baudette/Rainy River International Bridge on Highway 11. The bridge provides access between the United States and Canada with 24-hour, full-service Port of Entry facilities in the City of Baudette, Minnesota and the Town of Rainy River, Ontario (**Figure 1**). The study includes the development and evaluation of a range of reasonable bridge replacement alternatives, construction staging and traffic management options, and the selection of a Preferred Plan.

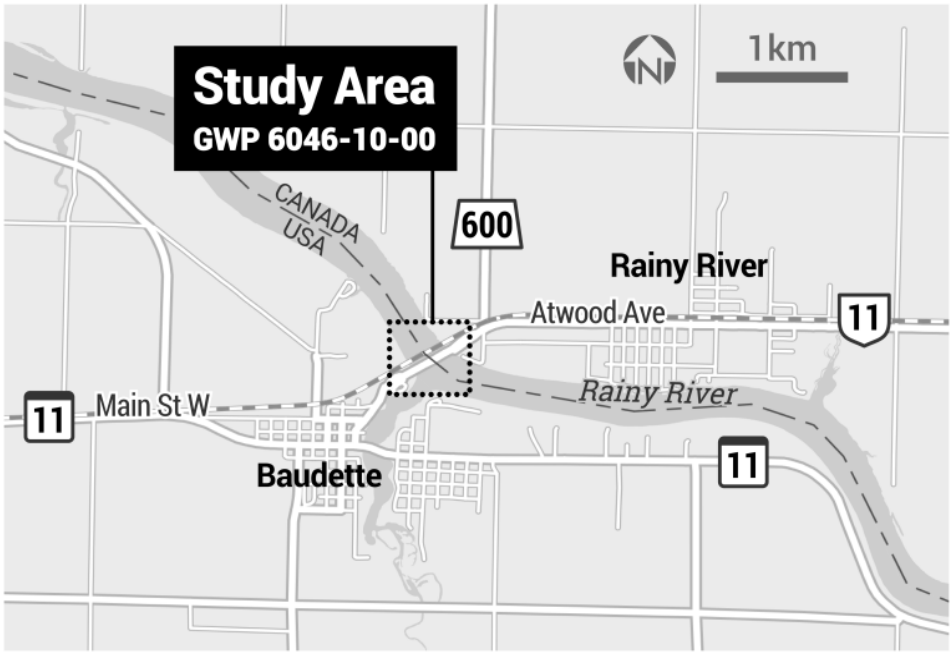

Figure 1 Study Area Location

1.2 PURPOSE

The purpose of this *Fish and Fish Habitat Existing Conditions and Preliminary Impact Assessment Report* is to document the:

- existing fish communities and fish habitat conditions
- sensitivities of, and constraints to, fish communities and fish habitat
- potential impacts of the project on fish and fish habitat
- recommended mitigation measures

This report provides supporting documentation for the project and describes fish communities and fish habitat in the Study Area. It was completed in accordance with the *Environmental Reference for Highway Design* (MTO 2013) and the *Environmental Guide for Fish and Fish Habitat* (MTO 2009). Terrestrial environment features for this project are described in a separate report (Stantec 2016).

2.0 METHODS

2.1 BACKGROUND DATA

2.1.1 Agency Consultation

The Study Area is located within the jurisdiction of the Fort Frances District of the Ministry of Natural Resources and Forestry (MNRF) and the Minnesota Department of Natural Resources (MnDNR). These agencies were contacted to obtain available natural sciences information for the Study Area.

Key agency contacts were:

- Rachel Hill, MNRF District Planner
- John Van den Broeck, MNRF Management Biologist
- Peter Leete, MnDNR-MnDOT Liaison and Transportation Hydrologist
- Phil Talmage, MnDNR Area Fisheries Supervisor

Agency correspondence and background data are provided in **Appendix A**.

2.1.2 Secondary Source Data Collection

Additional information was obtained from the following sources:

- MNRF's Land Information Ontario (LIO) database – to identify mapped watercourses and natural heritage features in the Study Area (MNRF 2015a).
- MNRF's Natural Heritage Information Centre's (NHIC) Biodiversity Explorer database – to determine if there are documented significant natural features or significant species in the Study Area (MNRF 2015b).
- MnDNR's Natural Heritage Information System (NHIS) – to identify documented rare species (MnDNR 2015a).
- MnDNR's website – to describe the status of species at risk populations and invasive aquatic species in the Study Area (MnDNR 2015b; MnDNR 2015c; MnDNR 2015e).
- Minnesota Pollution Control Agency's (MPCA) website – to characterize aquatic conditions in the Baudette River (MPCA 2015).
- United States Fish and Wildlife Service National Wetlands Inventory – to identify mapped freshwater and riverine communities (USFWS 2013).

2.2 FIELD INVESTIGATIONS

2.2.1 Fish and Fish Habitat Assessment

Field investigations were conducted on August 24, 2015 as per the *Environmental Reference for Highway Design* (MTO 2013) and the *Environmental Guide for Fish and Fish Habitat* (MTO 2009). Field investigations were completed over a 400 m reach of the Rainy River at the Rainy River International Bridge between the City of Baudette, Minnesota and the Town of Rainy River, Ontario. As part of the habitat assessment, an MTO Watercourse Field Record Form, and MTO Fish Habitat Mapping Form were completed. *In situ* water quality parameters (dissolved oxygen, conductivity, pH and temperature) were measured at the time of the field survey and site photographs were taken.

The fish community was not sampled due to the availability of background information for the area and the potential presence of aquatic species at risk.

2.2.2 Aquatic Species at Risk

The potential for aquatic species at risk to occur in the Study Area was evaluated based on a review of background information and agency consultation. This data was reviewed prior to the commencement of the field program to identify whether any rare fish and/or freshwater mussel species had been recorded in the Study Area. This information was used to assist in the assessment of habitats during field surveys and to determine the habitat potential for species at risk in the Study Area.

3.0 EXISTING CONDITIONS

3.1 BACKGROUND DATA

The Rainy River is a large watercourse, with a coolwater thermal regime (MNRF 2015c). The Study Area is located approximately 18 km upstream from Lake of the Woods, which supports a diverse fish community. A list of fish species captured in the Rainy River during the MnDNR's 2007 and 2008 population surveys is provided in **Appendix A**.

The MNRF provided background information as per Stantec's correspondence in May and October of 2015 (**Appendix A**). According to the MNRF, it is highly likely that many species that inhabit Lake of the Woods are present in the Rainy River (MNRF 2015c). Fifty-five fish species have been documented in Lake of the Woods, including Northern Pike (*Esox lucius*), Walleye (*Sander vitrius)*, Sauger (*Sander canadensis*), Yellow Perch (*Perca flavescens*), White Sucker (*Catostomus commersoni*) and Smallmouth Bass (*Micropterus dolomieu*) (MnDNR 2015b; MNRF 2015c). Lake Sturgeon (*Acipenser fulvescens*) and Shortjaw Cisco (*Coregonus zenithicus*), which are Threatened species protected by Ontario's *Endangered Species Act*, are also present in Lake of the Woods and Rainy River (MNRF 2015b). The MNRF identified the areas around the abutments of the adjacent Canadian National Railway (CNR) bridge as potential spawning habitat for Walleye, White Sucker and Lake Sturgeon (MNRF 2015c); however, the MNRF has not surveyed the river in the vicinity of the border crossing (**Appendix A**) and the basis for identifying the area as potential spawning habitat was not provided. Subsequent correspondence with the MNRF (MNRF 2016) indicated that it is unlikely that the study area provides spawning habitat for Walleye, White Sucker and Lake Sturgeon (**Appendix A**). The MNRF considers the Rainy River as a migratory route for many fish species, including Lake Sturgeon.

Within the Study Area, the Baudette River flows into the Rainy River. The lower 3.2 km (2 miles) of the Baudette River are known to support a healthy, warmwater aquatic community (Minnesota Pollution Control Agency (MPCA) 2015). The main channel of the Baudette River near the confluence with the Rainy River is a fourth order stream. As the Baudette River nears the City of Baudette, the channel widens to form Baudette Bay, which is a popular area for sport fishing. A list of fish species captured in the Baudette River during the MnDNR's 2005 electrofishing surveys is provided in **Appendix A**. The abundance of cover for larger fishes is low at most sites in the Baudette River. During late winter, the waters of Baudette Bay often become anoxic (MnDNR 2013).

Baudette Bay and the Rainy River, including the area under the existing bridge, provide habitat for the following species during spawning migrations (**Appendix A**). The habitat under the bridge is not specialized but part of the migratory corridor used to access upstream spawning areas.

- Walleye – move through the Study Area in late March to April to spawn in the Rainy River at rapids located farther upstream (at River Mile 40)
- Northern Pike – spawn before ice out (late March to early April) in Rainy River tributaries, including Baudette Bay
- Lake Sturgeon – spawn in the Rapid River (located upstream of the Baudette River confluence) and migrate through the Study Area in April to May.

Within a 1.6 km (1 mile) radius of the bridge, Lake Sturgeon was the only aquatic species at risk identified by the MnDNR (MnDNR 2015d). In Minnesota, Lake Sturgeon is listed as a Species of Special Concern under Minnesota's *Threatened and Endangered Species Statute*. Additionally, Creek Heelsplitter (*Lasmigona compressa*), a Species of Special Concern mussel, was identified within an 8 km (5 mile) radius of the bridge (MnDNR 2015d). Species of Special Concern, and their habitats, are not protected by Minnesota's *Threatened and Endangered Species Statute*.

Lake Sturgeon populations in Lake of the Woods/Rainy River are recovering from over exploitation and poor water quality that negatively impacted spawning and nursery habitats (MnDNR 2015c). Ongoing research on the status of Lake Sturgeon in Lake of the Woods and Rainy River indicates that the Lake Sturgeon population has been in a state of recovery since the mid to late 1960s, and that there are few individuals in the population that are older than about 60 years. Since Lake Sturgeon can live to be over 100 years old, the number of "large" Lake Sturgeon is expected to continue to increase over the next several decades (MnDNR 2015b).

As of March 2003, the MnDNR had identified the following goals for Lake Sturgeon in Minnesota-Canada Border Waters (i.e. Rainy River) (MnDNR 2015c):

- Short Range Goals (5-10 years) – Rehabilitate self-sustaining stocks of Lake Sturgeon that will provide limited subsistence and recreational harvests.
- Long Range Goals (20-30 years) – Rehabilitate and maintain healthy, self-sustaining stocks of Lake Sturgeon that will provide subsistence and recreational harvests.

MnDNR correspondence also indicated that the Rainy River is designated as infested with aquatic invasive species due to the known presence of the spiny water flea. Zebra mussels may also be present in the watershed (MnDNR 2015d).

3.2 FIELD INVESTIGATIONS

Existing fish and fish habitat information is summarized below. The Rainy River Study Area is illustrated in **Figure 2**. Field data sheets and a photographic record are included in **Appendix B** and **Appendix C**, respectively. Water quality conditions recorded during the field survey are provided in **Table 3-1**.

Within the Study Area, the Rainy River is a uniform run with an average width of approximately 315 m. Water depth was similar throughout the 400 m survey length at an average of 6 m in the middle of the channel and 2.5 m in the nearshore areas. Beyond the shallow nearshore areas, sand is the predominant bottom substrate in the Rainy River. On both sides of the river, nearshore substrate was dominated by sand with some coarse material. The coarse substrate (on both shorelines) consisted of cobble and gravel between the existing international bridge crossing and the CNR bridge. Upstream from the bridge on the east shore, there were boulders and concrete debris, likely from decommissioned docks at that location. Emergent vegetation (predominantly sedges and grasses) was prevalent along both shorelines. The average width of aquatic vegetation was 15 m on the east bank and 50 m on the west bank.

The Baudette River enters the Rainy River from the southwest, immediately upstream from the bridge. Maximum water depth in the middle of the channel at the mouth of the Baudette River was 2.5 m. The mouth of the Baudette River was approximately 130 m wide. However, the area was characterized by dense aquatic vegetation such that the open water area was limited to a 35 m wide area. The emergent vegetation extended to 80 m from shore on the southeast side of the Baudette River and 15 m from shore on the northwest bank. Some of the vegetated areas along the Baudette River shoreline are within areas identified as wetlands in background data obtained from the National Wetland Inventory (USFWS 2013).

Table 3-1 Water Quality Conditions Observed in the Rainy River on August 24, 2015

Parameter	Value
Dissolved Oxygen (mg/L)	10.4
Conductivity (µS/cm)	61
pH	7.07
Water Temperature (°C)	18.2

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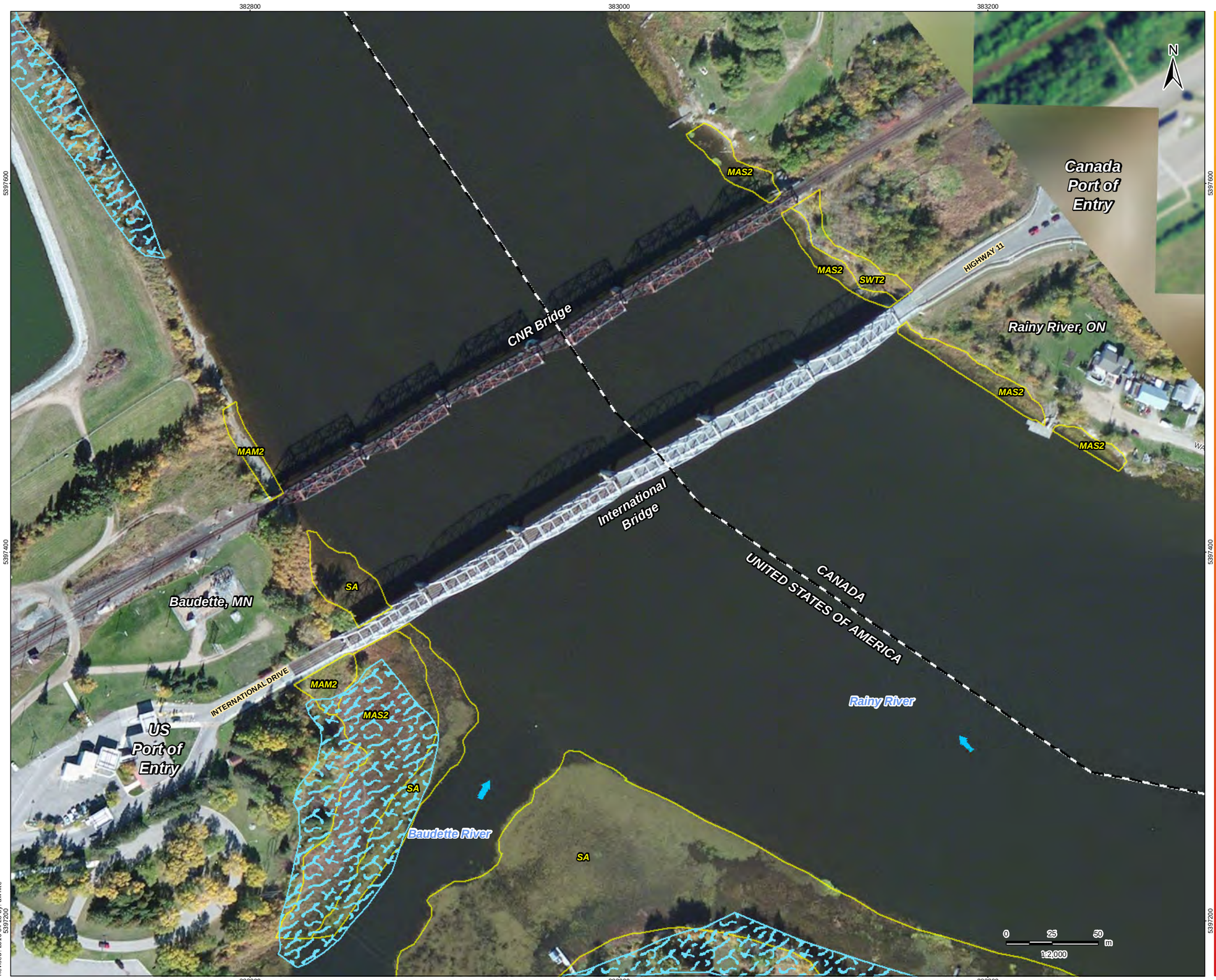

Stantec

Legend

- Canada/US Border
- Flow Direction
- Wetland (USFWS)
- Ecological Land Classification (Stantec)

MAM2	Mineral Meadow Marsh Ecosite
MAS2	Mineral Shallow Marsh Ecosite
SA	Shallow Water Community Class
SWT2	Mineral Swamp Thicket Ecosite

Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2015.
3. Flood Hazard Zones produced by FEMA © 2006, FEMA Digital Flood Rate Insurance Maps (DFIRM), Minnesota, and Minnesota Department of Natural Resources (MNDNR)
4. Park Boundary provided by Lake of the Woods County
5. United States Fish and Wildlife Service (USFWS)
6. Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

April 2016
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Client/Project

Baudette/Rainy River
International Bridge Replacement
GWP 6046-10-00

Figure No.

2

Title

Existing Conditions -
Fish and Fish Habitat

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Revised: 2016-04-28 By: awhite

4.0 CONSTRAINTS

4.1 FISH AND FISH HABITAT ASSESSMENT

The Rainy River provides a migratory corridor to many resident fish species. Within the Study Area, nearshore areas provide potential rearing habitat for a variety of species and potential spawning habitat for Northern Pike. Coarse substrates provide potential spawning areas for Walleye, White Sucker and Lake Sturgeon; however, spawning surveys have not been conducted in the area. The identification of these areas as potential spawning habitat is based on the presence of suitable substrates. The suitability of these areas as spawning habitat is dependent on other factors, including water depth and velocity, during the specific spawning period for each species and these parameters are not known. In recent correspondence regarding habitat sensitivity, the MNRF (2016) indicated that it is unlikely that the Study Area provides spawning habitat for Walleye, White Sucker and Lake Sturgeon (**Appendix A**). While overwintering likely occurs in the Study Area, Lake of the Woods is 18 km downstream and likely provides more suitable overwintering habitat than the Rainy River and/or the Baudette River. Within the Study Area, the Baudette River provides a diversity of habitats with shallow water, slower velocity, and abundant emergent vegetation to support a variety of fish species.

On the east side of the Rainy River, nearshore habitat is similar on both sides of the existing bridge. On the west side of the river, there is a wider band of aquatic vegetation on the south side relative to the north side; therefore, a smaller area of wetland and in-water aquatic vegetation would be disturbed by the placement of a new bridge to the north of the existing structure.

Using the guidance provided in Chapter 6 of the MTO Fish Guide (and the Assessment of Sensitivity of Fish and Fish Habitat from Template 10.4 in the Fish Guide) (MTO 2009), the sensitivity of fish and fish habitat was ranked by Stantec as Moderate, as per the following rationale:

Species Sensitivity – **Moderate**

> Species present are moderately sensitive to change and perturbation (diverse coolwater community that includes Walleye, Northern Pike, Lake Sturgeon, Yellow Perch, Smallmouth Bass, and White Sucker).

Species' Dependence on Habitat – **Moderate**

> Habitat has the potential to support multiple life-cycle functions as there is a diversity of substrates, depths and areas of vegetation; there is no documented specialized or critical habitat.

Rarity – **High**

This attribute was ranked as High due to the presence and documented recovery of a provincially Endangered species at risk (Lake Sturgeon). Lake Sturgeon migrate through the Study Area but are unlikely to spawn there.

Habitat Resiliency – **Moderate**

Permanently flowing coolwater system; no specialized habitat. The aquatic ecosystem in the area could recover from changes in environmental conditions.

The MNRF provided a habitat sensitivity ranking of Moderate-Low with respect to habitat on the Canadian side of the Rainy River. The ranking was based on the MNRF's understanding of the physical habitat conditions and that Lake Sturgeon do not spawn in the area nor is spawning likely for fish with similar spawning requirements (MNRF 2016).

Using the sensitivity ranking provided by the MNRF and Stantec's ranking presented above, the overall sensitivity of fish and fish habitat in the Study Area is ranked as **Moderate,** as the Study Area provides general habitat and a migration route for a diverse coolwater community that includes a provincial species at risk.

4.2 AQUATIC SPECIES AT RISK

Background data indicated the potential presence of the following aquatic species at risk: Lake Sturgeon, Shortjaw Cisco, and Creek Heelsplitter.

Lake Sturgeon spawn in large rivers with high velocities over a variety of substrates including sand, gravel, cobble, and boulder (DFO 2010) as well as at the confluence of a tributary to a main river channel (COSEWIC 2006). Suitable depths, high velocities, and lack of barriers to movement seem to be the primary factors in habitat determination (DFO 2010). Habitat requirements for Lake Sturgeon include diverse habitats, such as shallow sand bars with low velocity and deep water with moderate velocity over a variety of substrates (DFO 2010; COSEWIC 2006). Substrate preference for general habitat is also variable and may vary between systems and populations.

The Lake Sturgeon population in Northwestern Ontario is Threatened and as such the species and its habitats are protected by Ontario's *Endangered Species Act, 2007* (ESA 2007). Based on the diversity of habitats (substrates, vegetation, water depths) and the documented presence and recovery of Lake Sturgeon in the area, the final bridge design and construction will need to consider Lake Sturgeon and the migratory corridor through the Study Area.

Shortjaw Cisco prefer water that is deep (between 18 m and 183 m), cold, and well oxygenated (DFO 2013). The species is typically found in lakes, but occasionally inhabit flowing water (DFO 2013). Spawning occurs in lakes at depths between 10 m and 60 m (DFO 2013). With suitable deep water habitat available nearby in Lake of the Woods, it is unlikely that Shortjaw

Cisco would utilize the Rainy River as habitat. Shortjaw Cisco is a provincially Threatened species protected by the ESA 2007.

Creek Heelsplitter typically occurs in creeks, small rivers and the upstream portions of large rivers, often in small pools downstream of riffles (MnDNR 2015e). Water depths usually range from 0.3 m to 0.9 m. Based on the habitat requirements of this species, available habitat in the Study Area is not suitable for Creek Heelsplitter. This mussel species is not listed under the ESA 2007, and there are no records of mussel species in the Study Area that are protected by the ESA 2007 or the federal *Species at Risk Act* (**Appendix A**).

The review process with respect to the ESA 2007 is discussed in Section 5.4 following the description of the Preferred Plan and Construction Options for the project.

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5.0 PRELIMINARY IMPACT ASSESSMENT

5.1 BEST MANAGEMENT PRACTICES AND SELF-ASSESSMENT CRITERIA

In consultation with DFO, MTO has developed several Best Management Practices (BMPs) for routine activities in or near water with a low risk of harm to fish and fish habitat (MTO 2015). The BMPs streamline the regulatory review process for routine highway activities and provide mitigation measures to avoid serious harm to fish. As per the DFO's Self-Assessment process (DFO 2014) a project may be considered low risk if it can meet specific criteria with respect to the type of water body or proposed activity. A project can proceed without DFO review if the conditions and mitigation measures outlined in a BMP, or criteria as per the Self-Assessment process can be met. A Project Notification Form 1 (Low Risk) must be completed and kept on file by MTO.

If a project cannot meet the conditions of a BMP or Self-Assessment criteria at Step 3 of the MTO/DFO/OMNR Fisheries Protocol (the Protocol) (MTO, 2013b), a Fisheries Assessment is required (Step 7 of the Protocol). An Aquatic Effects Assessment is often required to determine if there are residual effects of the undertaking (i.e. effects that cannot be avoided or fully mitigated). If the residual effects will not result in Serious Harm, a Project Notification Form 1 (Low Risk) is completed at Step 8 of the Protocol and kept on file by MTO.

If residual effects will result in Serious Harm, DFO must be contacted for further review. Projects that will result in Serious Harm are deemed Moderate or High Risk and must be reviewed by DFO through the Request for Review process and may require additional mitigation and/or the preparation of an Offset plan.

5.2 DESCRIPTION OF WORK

5.2.1 Preferred Plan

The following is a description of the preferred alternative for the new bridge:

- the bridge will be located approximately 1 m south (upstream) of the existing bridge
- the design is a 5-span steel haunched bridge
- the bridge will be supported by four in-water piers; the footprint of each pier has an approximate area of 136 m^2 which includes the surrounding coffer dam/concrete slab that form the footing for each pier. The total footprint area of the in-water footings (piers and footings) is approximately 546 m^2

- the bridge abutments will be located on shore and will not directly affect fish and fish habitat.

A summary of the footprint area of the proposed bridge is included in **Table 5-1**, and a General Arrangement Drawing of the proposed bridge is provided in **Appendix D**. The existing bridge and associated piers and abutments will be removed as part of the project.

5.2.2 Construction Options

An evaluation of three methods was completed for construction of the bridge superstructure. The following construction options were documented in a report entitled "Crossing Study of Different Construction Options" (Stantec/HNTB 2016), which includes recommendations on the feasibility, advantages, and disadvantages of each method.

Conventional Erection Method

This method uses high capacity cranes with long boom capabilities and heavy duty temporary falsework towers that will be 'leapfrogged' between spans as steel erection progresses. It is assumed that falsework towers will require temporary pile foundations. The evaluation of environmental considerations included factors such as impacts of a minimum of five temporary falsework towers (four located over water), the possible need for stability towers in the river during construction, potential impacts of tower construction and removal, and the need for a shoreline staging area (girder laydown site).

Launching the Bridge from Canada into the United States

Launching consists of incrementally assembling the steel framework on the Canadian side of the Rainy River and pushing or pulling it across the river and on top of the piers. The report concluded that this method has several advantages, including environmental, since temporary falsework and stability towers would not be required. As a result, the risk of effects to the river and surrounding environment are reduced in comparison to conventional methods.

Constructing on Winter Ice

Available data for ice thickness on the Rainy River indicate that the thickness is not adequate to perform bridge construction using ice as a construction platform. This construction method was not carried forward.

The construction method alternatives will be further evaluated and a preferred construction method will be selected during Detail Design.

5.2.3 Area Calculations

The area of river bottom directly affected by the proposed bridge piers as part of the Preferred Plan is provided in **Table 5-1**. Some additional areas of river bottom and shoreline may be disturbed during construction; however, the extent of these disturbances is not known at this time and will be addressed during the Detail Design phase of the project. The areal extent of the following temporary work areas will be determined during Detail Design:

- work area adjacent to piers and abutments
- Falsework Towers
- Stability Towers
- Shoreline Landing/Loading Areas

Table 5-1 Footprint Area of the Proposed Baudette/Rainy River International Bridge

	Size/Area (m^2)	Quantity	Total Area (m^2)
Component			
Bridge (Permanent)			
Pier + Coffer Dam/ concrete slab	136.5	4	546
Abutment (shore)	Not Applicable (above the high water level)		
Construction (Temporary)*			
Work area adjacent to piers and abutments*	tbd	tbd	tbd
Falsework Towers	tbd	5	tbd
Stability Towers	tbd	tbd	tbd
Shore (Landing/Loading Area)	tbd	1	tbd

tbd = to be determined during Detail Design
Pier Area (excluding coffer dam/concrete slab) = 11.4 m x 6.1 m = 69.7 m^2
Coffer Dam and Concrete Slab Area (includes pier): 15 m x 9.1 m = 136.5 m^2
* Temporary work areas will likely be required for construction; the area, duration and impact on fish habitat must be determined during Detail Design

Construction of the new bridge does not meet the criteria of MTO BMPs or Self-Assessment Criteria; therefore, an Aquatic Effects Assessment was completed as per Step 7 of the Protocol.

5.3 FISH HABITAT - AQUATIC EFFECTS AND RISK ASSESSMENT

Mitigation measures are provided in Section 6 and were applied to the Pathways of Effects to determine the Residual Negative Effects of the work described above (permanent in-water piers only). The following Pathways of Effects and Residual Effects are included in the Risk Assessment Worksheet (**Appendix D**):

- Placement of Material of Structures in Water (new piers)
- Fish Passage (new piers)
- Dredging (pier construction)
- Use of Industrial Equipment (land-based and in-water)
- Addition of Removal of Aquatic Vegetation (removal likely to occur along shoreline near abutments)
- Structure Removal (old bridge and piers)

The following pathways and additional pathways may be applicable once Detail Design plans and construction methods are available; however, they are not addressed by this impact assessment:

- Grading (shoreline work areas)
- Vegetation Clearing (construction staging, shoreline)

Potential effects of vibrations that may result from pile driving during the construction of bridge piers and abutments will be assessed during Detail Design and a separate Vibrations Report will be completed to document the results of this assessment. For example, the Vibrations Report will provide information to assess possible effects of pile driving on the ability of Lake Sturgeon to migrate through the area during the spawning season. Results of the Vibrations Report shall be incorporated into an updated Aquatic Effects Assessment during Detail Design.

Residual Effects

Based on the information available from the Preliminary Design (i.e. excluding additional area that may be affected or other effects due to construction methods or design changes), the following Residual Negative Effects were identified:

Change in Habitat Structure and Cover

- The changes are due to the physical footprint of the new bridge piers. Approximately 546 m^2 of natural substrate on the river bottom will be overprinted by the new bridge piers.

- Although the new abutments are not in water, they are near the river bank. Aquatic vegetation and bottom substrate may be disturbed during construction; however, the disturbance would be temporary.
- Other areas of the river bottom will be disturbed due to temporary work areas for construction.

Change in Food Supply

- The changes are due to the physical footprint of the new bridge piers. Approximately 546 m^2 of natural substrate on the river bottom will be beneath the new bridge piers.
- Although the new abutments are not in water, they are near the river bank. Aquatic vegetation and bottom substrates may be disturbed during construction however the disturbance would be temporary.
- Other areas of the river bottom will be disturbed due to temporary work areas for construction.

Change in Nutrient Concentrations

- Aquatic vegetation and bottom substrate will be disturbed during construction; however, the disturbance would be temporary.

Scale of Negative Effects

The scale of negative effects listed above was ranked as **Medium**. The footprint area of the bridge piers will occupy a relatively small area of the Rainy River. Although the area overprinted by the piers will not be available for use by fish, the areas around the piers will remain unchanged and the area currently occupied by piers of the existing bridge will provide habitat once the existing bridge is removed. Temporary work areas and shoreline areas will be rehabilitated following construction.

Sensitivity

As discussed in Section 4.1, the sensitivity of fish and fish habitat in the Study Area is **Moderate**. The Study Area provides general habitat and a migration route for a diverse coolwater fish community that includes Lake Sturgeon, a provincial species at risk.

Risk Management Decision

Based on information available from Preliminary Design, the preliminary assessment concluded that the project will result in **Low Risk** of impacts to fish and fish habitat**.** This decision was made from Step 7 of the Protocol as part of the Fisheries Assessment Process. Project risk will be confirmed during Detail Design once additional details of the project are known (e.g., extent of temporary work areas, grading, vegetation removals, potential vibration effects).

5.4 SPECIES AT RISK

Ontario's *Endangered Species Act, 2007* (ESA 2007) was created to protect species at risk and their habitats in Ontario. Endangered, Threatened and Extirpated species on the Species at Risk in Ontario List automatically receive legal protection from killing, harming or harassment under Section 9 of the ESA 2007. In addition to species protection, Section 10 of the ESA 2007 prohibits damage or destruction of habitat of Endangered or Threatened species, unless authorized by the Minister of Natural Resources and Forestry under Section 17 (2) of the ESA.

Based on the mitigation measures (design and construction) presented in Section 6, permitting under the ESA 2007 is not anticipated for Lake Sturgeon and Lake Sturgeon migratory habitat.

6.0 MITIGATION MEASURES

The following mitigation measures are applicable to protect fish and fish habitat in the Study Area and are consistent with DFO's Measures to Avoid Causing Harm to Fish and Fish Habitat (http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/measures-mesures-eng.html). The following measures will also protect Lake Sturgeon and their habitat.

6.1 DESIGN

The Preferred Plan was designed to reduce the area of disturbance to the extent possible and to be compatible with local fish habitat objectives.

6.2 CONSTRUCTION

6.2.1 Timing of In-water Work

Works adjacent to aquatic resources that provide fish habitat, or have the potential to support fish habitat, are often restricted to certain periods to avoid construction-related impacts to fish species during their most sensitive / vulnerable life cycles (i.e., during reproduction and early development stages of off-spring). Therefore, construction activities are often not permitted close to, or within fish habitat during these periods.

The thermal regime of the Rainy River is 'coolwater' as per information provided by the MNRF (2015c); therefore, in-water construction is permitted from July 16 to March 31 (no in-water work from April 1 to July 15). The timing window protects the sensitive life stages of resident fish species including Lake Sturgeon migration.

6.2.2 Flow Diversion/Dewatering

If required, the following mitigation measures will be applied to isolate construction activities from the Rainy River during construction:

- Design and implement isolation plan to isolate temporary in-water work zones.
- Fish rescue plan (as per OPSS 182) - Transfer fish in the work area away from the construction area using capture, handling, and release techniques to minimize harm and stress. Ensure the intakes of pumping hoses are equipped with an appropriate device to avoid entraining and impinging fish (see DFO's *Freshwater Intake End-of-Pipe Fish Screen Guideline* (1995)).
- Manage water from dewatering operations to prevent erosion and/or release of sediment laden or contaminated water to the waterbody (e.g., settling basin, filter bag, energy dispersion measures) (as per OPSS 518).

- As a contingency, materials (e.g. pump, hoses, silt fencing, sand bags) shall be on site at all times in the event that water re-enters the work area once construction begins.

6.2.3 Sediment and Erosion Control

Various mitigation techniques will be employed during construction to reduce the risk of impacts to natural environment features. Mitigation measures for sediment erosion and dust control will be implemented to prevent sediment and dust from entering the Rainy River. Erosion and sediment control measures and site restoration will be in accordance with OPSSs listed herein.

The primary principles associated with sedimentation and erosion protection measures are to: (1) minimize the duration of soil exposure; (2) retain existing vegetation, where feasible; (3) encourage re-vegetation; (4) divert runoff away from exposed soils; (5) keep runoff velocities low; and (6) trap sediment as close to the source as possible. To address these principles, the following mitigation measures are proposed:

- Sediment fencing will be used adjacent to sensitive receptors, including the Rainy River, when exposed soil slopes are at risk of eroding.
- All materials requiring stockpiling (fill, topsoil, etc.) will be stabilized and kept a safe distance (> 15 m) from the Rainy River, drainage features and top of steep slopes.
- If there is insufficient time remaining in the growing season, sites shall be stabilized with temporary erosion control measures such as erosion control blankets and seeded the following spring. Erosion and sediment control measures shall be maintained until vegetation has been established in disturbed areas.
- Refueling of equipment will be carried out away from the Rainy River with the largest buffer possible (minimum 30 m) to avoid potential impacts, in the event that an accidental spill occurs.
- In addition to any specified requirements, additional sediment fence shall be available on site, prior to grading operations, to provide a contingency supply in the event of an emergency.
- Sediment and erosion controls shall be monitored regularly and properly maintained, as required. Controls are to be removed only after the soils of the construction area have been stabilized and adequately protected until cover is re-established.
- The limits of construction adjacent to natural features to be retained will be fenced prior to construction, and monitored during construction (along with sediment and erosion control measures) to ensure the limits are maintained with respect to vehicular traffic and soil or equipment stockpiling.
- Banks of the Rainy River disturbed during construction shall be restored to pre-construction configuration and condition (or better) using native species, where possible.

6.2.4 Monitoring

The preliminary Aquatic Effects Assessment and Risk Assessment (Section 5.3) determined that the project will result in **Low Risk** of impacts to fish and fish habitat. Low Risk projects do not require DFO review or *Fisheries Act* authorization); therefore, a Fisheries Contracts Specialist would not be required for construction monitoring.

Potential effects on fish and fish habitat will be reassessed during Detail Design. If it is determined that a *Fisheries Act* authorization is required for the project, construction monitoring by a Fisheries Contracts Specialist will be required. The Fisheries Contracts Specialist will be responsible for reporting on the suitability of the erosion and sediment control measures; i.e., that they are functioning effectively and being maintained, and that the other general mitigation measures are implemented as intended. The Fisheries Contracts Specialist will notify the contractor in the event that modifications and/or repairs are required.

6.2.5 Ontario Provincial Standard Specifications

The following OPSSs are applicable to the Baudette/Rainy River bridge construction:

OPSS 180 - General Specification for the Management of Excess Materials.

OPSS 182 - General Specification for Environmental Protection for Construction in Waterbodies and on Waterbody banks.

OPSS 185 - General Specification for Temporary Flow Control for Construction in Waterbodies.

OPSS 518 – Construction Specification for Control of Water from Dewatering Operations.

OPSS 804 - Construction Specification for Seed and Cover.

OPSS 805 - Construction Specification for Temporary Erosion and Sediment Control Measures.

The OPSSs are applicable to the following general activities:

Equipment Use
Use of equipment shall be in accordance with **OPSS 182**.

Fish Salvage
Fish salvage operations shall be conducted in accordance with **OPSS 182.**

Dewatering and the Use of Pumps
Dewatering activities and the use of pumps shall be conducted in accordance with **OPSS 518**.

Preservation of Riparian Vegetation
Removal of riparian vegetation shall be in accordance with **OPSS 182 and OPSS 804.**

Erosion and Sediment Control

The installation, monitoring, maintenance, and removal of temporary erosion and sediment control measures shall be according to **OPSS 182 and OPSS 805.**

Restoration of Disturbed Areas

Vegetation protection and rehabilitation shall be in accordance with **OPSS 182 and OPSS 804.**

Management of Excess Materials

All excess material shall be managed in accordance with **OPSS 180**.

7.0 SUMMARY

MTO in cooperation with MnDOT has retained Stantec to undertake the Preliminary Design and Class Environmental Assessment Study for the replacement of the Baudette/Rainy River International Bridge on Highway 11. The bridge provides access between the United States and Canada with 24-hour, full-service Port of Entry facilities in the City of Baudette, Minnesota and the Town of Rainy River, Ontario. The study includes the development and evaluation of a range of reasonable bridge replacement alternatives, construction staging and traffic management options, and the selection of a Preferred Plan.

This *Fish and Fish Habitat Existing Conditions and Preliminary Impact Assessment Report* provides supporting documentation for the project, describes fish communities and fish habitat in the Study Area, and provides an impact assessment based on the bridge design as available at the time of reporting.

The Study Area provides habitat for a diverse fish community. The Rainy River is a large watercourse, with a coolwater thermal regime (MNRF 2015c). Within the Study Area, the Baudette River flows into the Rainy River. The lower two miles of the Baudette River are known to support a healthy, warmwater aquatic community (MPCA 2015). Baudette Bay and the Rainy River support a variety of fish species including more sensitive species such as Walleye, Northern Pike and Lake Sturgeon. Habitat within the Study Area is not specialized, and functions primarily as a migration corridor for these species.

The Study Area is located approximately 18 km upstream from Lake of the Woods, which supports fifty-five fish species including Northern Pike, Walleye, Sauger, Yellow Perch, White Sucker and Smallmouth Bass (MnDNR 2015b; MNRF 2015c). Lake Sturgeon and Shortjaw Cisco are present in Lake of the Woods and Rainy River (MNRF 2015b), and are provincially Threatened species protected by the ESA 2007. The use of the areas around the abutments of the adjacent CNR bridge by spawning Walleye, White Sucker and Lake Sturgeon has not been documented or confirmed. In Minnesota, Lake Sturgeon is listed as a Species of Special Concern under Minnesota's *Threatened and Endangered Species Statute*. With suitable deep water habitat available nearby in Lake of the Woods, it is unlikely that Shortjaw Cisco would utilize the Rainy River as habitat.

The new bridge will be located immediately upstream of the existing alignment. The 5-span steel haunched bridge will be supported by four in-water piers, with a total footprint area for in-water footings (piers and footings) of approximately 546 m^2. The bridge abutments will be located on shore and will not directly affect fish and fish habitat. The existing bridge and associated piers and abutments will be removed as part of the project.

FISH AND FISH HABITAT EXISTING CONDITIONS AND PRELIMINARY IMPACT ASSESSMENT REPORT: PRELIMINARY DESIGN AND CLASS ENVIRONMENTAL ASSESSMENT - BAUDETTE/RAINY RIVER INTERNATIONAL BRIDGE REPLACEMENT ON HIGHWAY 11, TOWN OF RAINY RIVER (GWP 6046-10-00)

Summary
September 12, 2016

Based on information available from Preliminary Design, it was determined that the project will pose a **Low Risk** of impacts to fish and fish habitat**.** This decision was made from Step 7 of the Protocol and was based on a fish and fish habitat sensitivity ranking of **Moderate** and scale of negative effects of **Medium**. Project risk will be confirmed during Detail Design once details of temporary work areas and all construction activities are known.

Authorization under the federal *Fisheries Act* and permitting under the ESA 2007 are not anticipated and will be confirmed once details of the design are finalized.

The information provided in this *Fish and Fish Habitat Existing Conditions and Preliminary Impact Assessment Report* will be used in conjunction with information from other disciplines and with information provided by agencies and key stakeholders to aid in the final impact assessment of the project.

8.0 REFERENCES

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APPENDIX A: AGENCY CORRESPONDENCE AND BACKGROUND DATA

Stantec Consulting Ltd.
49 Frederick Street, Kitchener ON N2H 6M7

May 22, 2015
File: 193802870

Attention: Rachel Hill
Fort Frances District Planner
Ministry of Natural Resources and Forestry
922 Scott Street
Fort Frances ON P9A1J4

Dear Ms. Hill,

Reference: Baudette/Rainy River International Bridge Replacement, Highway 11, Rainy River, Preliminary Design and Class EA Study

Stantec was retained by the Ministry of Transportation, Ontario, in cooperation with the Minnesota Department of Transportation, to undertake the Preliminary Design and Class EA Study for the replacement of the Baudette/Rainy River International Bridge on Highway 11 in the Town of Rainy River (as shown on the Key Plan on the attached Notice of Study Commencement). The bridge provides access between the United States and Canada with Port of Entry facilities in the City of Baudette, Minnesota and the Town of Rainy River, Ontario. The study will include the development and evaluation of a range of reasonable bridge replacement alternatives, construction staging and traffic management options, and the selection of a Preferred Plan.

We would like to request the following natural heritage information. This information is required to complete our natural heritage review for this proposed transportation study, and to inform 2015 field investigations associated with the project.

AQUATIC RESOURCES

Based on a preliminary screening of the MNRF's NHIC database, the Rainy River supports Lake Sturgeon (*Acipenser fulvescens*), a threatened species under the *Endangered Species Act*. Any input regarding Lake Sturgeon habitat within the Baudette/Rainy River International Bridge study area is appreciated.

Additionally, we are requesting information regarding:

- Species/community information including any additional aquatic species at risk and input regarding potential permit requirements;
- Watercourse thermal regime;
- Special habitat features;
- Construction timing window;
- MNRF assignment of habitat sensitivity (as per Step 5 of the MTO/DFO/OMNR Protocol).

Reference: Baudette/Rainy River International Bridge Replacement, Highway 11, Rainy River, Preliminary Design and Class EA Study

TERRESTRIAL RESOURCES

Based on a search of data available on the NHIC website and in the Land Information Ontario digital dataset, no Natural Areas were identified within 1 km of the bridge crossing.

The NHIC database identifies terrestrial species at risk and provincially rare species within 1 km of the Baudette/Rainy River International Bridge (1990+), as listed below:

- Barn Swallow (*Hirundo rustica*)
- Gray Copper (*Lycaena dione*)
- Rigid Sedge (*Carex tetanica*)
- White-tailed Jack Rabbit (*Lepus townsendii*)
- Elusive Clubtail (*Stylurus notatus*)

We would like to confirm all of the above-listed aquatic and terrestrial habitat information and data records and to request any additional natural heritage information that may be pertinent to the Baudette/Rainy River International Bridge study area.

If you require additional information regarding this project or have any questions, please contact the undersigned.

Regards,

STANTEC CONSULTING LTD.

Katie Easterling, Tech. Dip., B.Sc,
Aquatic Ecologist
Phone: (519) 575-4111
Fax: (519) 579-4239
katie.easterling@stantec.com

Attachment: MTO Notice of Study Commencement

c. Kathleen Todd, Stantec
Sean Spisani, Stantec
Nevena Gazibara, Stantec

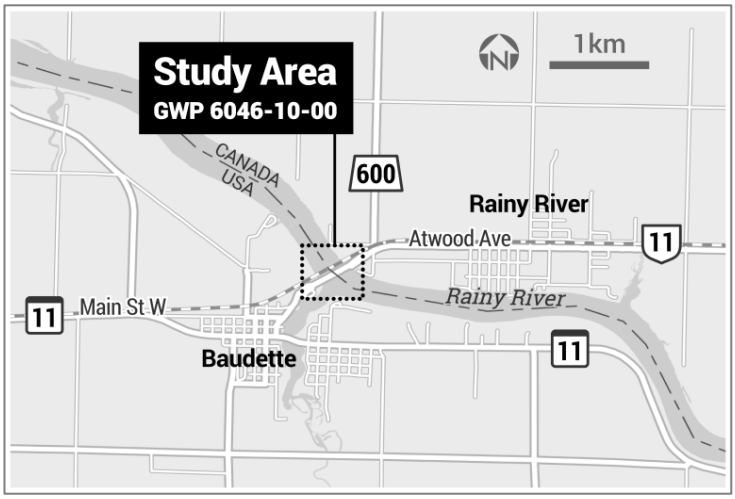
BAUDETTE/RAINY RIVER INTERNATIONAL BRIDGE REPLACEMENT
Highway 11, Town of Rainy River
Notice of Study Commencement

THE STUDY

The Ontario Ministry of Transportation (MTO), in cooperation with the Minnesota Department of Transportation, has retained Stantec Consulting Ltd. to undertake the Preliminary Design and Class Environmental Assessment (Class EA) Study for the replacement of the Baudette/Rainy River International Bridge on Highway 11 in the Town of Rainy River. The bridge provides access between the United States and Canada with 24-hour, full-service Port of Entry facilities in the City of Baudette and the Town of Rainy River. The study will include the development and evaluation of a range of reasonable bridge replacement alternatives; construction staging and traffic management options; and the selection of a Preferred Plan.

THE PROCESS

The study will follow the *Class Environmental Assessment* (Class EA) *for Provincial Transportation Facilities* (2000) process for a Group 'B' project. It includes carrying out environmental field investigations and undertaking consultation throughout the duration of the study. As part of the consultation process, three Public Information Centres (PICs) will be held. The first PIC is currently scheduled for summer 2015 to provide an opportunity to review the existing conditions in the study area (i.e., natural, social, economic and cultural) and to answer questions about the study.



Upon completion of Preliminary Design, a *Transportation Environmental Study Report* (TESR) will be prepared and made available for a 30-day public review period. Notices regarding the availability of the TESR and the times and location of the PICs will be published in local newspapers and sent to persons on the mailing list.

COMMENTS

If you wish to comment on this project, have your name added to the project mailing list, or have any questions about this project, please contact one of the individuals identified below.

Gregg Cooke, P.Eng.
Consultant Project Manager (Canada)
Stantec Consulting Ltd.
200-835 Paramount Drive
Stoney Creek ON L8J 0B4
Tel: 905-381-3227
Call Collect: 905-385-3234
Fax: 905-385-3534
Email: gregg.cooke@stantec.com

Rick DeCal
MTO Senior Project Manager
Ministry of Transportation
Northwestern Region
615 James Street South
Thunder Bay ON P7E 6P6
Tel: 807-473-2187
Toll free: 1-800-465-5034
Fax: 807-473-2168
Email: rick.decal@ontario.ca

If you have any accessibility requirements in order to participate in the project, please contact one of the Project Team members listed above.

Comments and information are being collected to assist MTO in meeting the requirements of the *Ontario Environmental Assessment Act*. Information will be collected in accordance with the *Freedom of Information and Protection of Privacy Act*. All comments will be maintained on file for use during the study and, with the exception of personal information, may be included in study documentation and become part of the public record.

From: Hill, Rachel (MNRF) <rachel.hill@ontario.ca>
Sent: Thursday, June 11, 2015 6:03 PM
To: Cooke, Gregg; DeCal, Rick (MTO); Easterling, Katie
Cc: nevena.gazibara@stantech.com; Myers, Matt (MNRF); Hyatt, Alex (MNRF); Vandenbroeck, John (MNRF)
Subject: Notice of Commencement - Rainy River-Baudette International Bridge

Attention: Gregg Cooke and Rick DeCal

Thank you for the Notice of Study Commencement that was received May 7, 2015. If possible, MNRF would like to request that further notification and/or information be sent to this office electronically.

The notice identifies a request for information on existing conditions within the study area and identification of any issues, concerns or approval requirements that our organisation may have. Unfortunately our Ministry is limited in providing this information to you based on the lack of details about the project that have not yet been established.

Here is some information on local and site specific natural heritage values that we can provide at this time:

- The thermal regime of Rainy River is coolwater.

- The Baudette/Rainy River International Bridge is directly upstream of Lake of the Woods, therefore it is highly likely that many species that inhabit Lake of the Woods are present in the Rainy River.

- A total of 55 fish species have been documented in Lake of the Woods, including lake sturgeon and shortjaw cisco.

  These species are listed as threatened on the Species at Risk in Ontario (SARO) List, Ontario Regulation 230/08 of the *Endangered Species Act*.

- There is potential for spawning habitat of walleye, white sucker, and lake sturgeon in the immediate area of the bridge replacement site: on the abutments of the adjacent rail bridge.

  Timing of construction work should consider these species, as well as northern pike and smallmouth bass. No in-water work is recommended from April 1- July 15.

- There are <u>currently</u> no known provincially significant wetlands, areas of natural or scientific interest, or other special habitat features located in the vicinity (120 m) of the site.

- Bridge replacement has the potential to harm or harass barn swallows and/or damage/destroy their protected habitat. Surveys to determine barn swallow use of the bridge should be completed.

  If barn swallows are observed using (nesting in) this structure at any time, please contact John Van den Broeck, Management Biologist (807 274-8631) immediately.

- There are currently no records indicating that the other Species at Risk on the list provided, inhabit the bridge site.

However this office should be contacted soon as possible should any Species at Risk in the immediate vicinity of the bridge be observed. The *Endangered Species Act, 2007* prohibits harm and harassment of individuals, and in many cases, damage and destruction of their habitat for species that are listed under the *Act*.

We will be able to provide assessment of fisheries resources and habitat sensitivity information once we have been provided the appropriate form (Appendix 3A) as per the MTO/DFO/OMNR Fisheries Habitat Protocol.

Our Ministry will also be able to provide further information regarding potential permits and approvals or other issues once we have more information about the project plans and designs.

If you have any questions or need clarification regarding this e-mail, please feel free to contact me.

Thank you.

Rachel Hill
District Planner
Fort Frances District
Phone (807) 274-8605
Fax (807) 274-4438

Stantec Consulting Ltd.
1-70 Southgate Drive, Guelph ON N1G 4P5

October 13, 2015
File: 193802870

Attention: Ms. Rachel Hill, District Planner
Ontario Ministry of Natural Resources and Forestry
Fort Frances District
922 Scott Street
Fort Frances, ON P9A 1J4

Dear Ms. Hill,

Reference: Preliminary Design and Class Environmental Assessment for the Baudette/Rainy River International Bridge Replacement on Highway 11, Town of Rainy River (GWP 6046-10-00)

As per our letter dated May 22, 2015 the Ontario Ministry of Transportation (MTO), in cooperation with the Minnesota Department of Transportation (MnDOT), has retained Stantec Consulting Ltd. to undertake the Preliminary Design and Class Environmental Assessment (Class EA) Study for the replacement of the Baudette/Rainy River International Bridge on Highway 11 in the Town of Rainy River. The bridge provides access between the United States and Canada with 24-hour, full-service Port of Entry facilities.

The purpose of this letter is to request additional fisheries information for the MTO and MnDOT project identified above In accordance with the MTO/DFO/MNR Protocol for Protecting Fish and Fish Habitat on Provincial Highway Undertakings (2013).

The project includes the development and evaluation of a range of reasonable bridge replacement alternatives; construction staging and traffic management options; and the selection of a Preferred Plan. The new bridge will be located in close proximity to the existing bridge as it must tie in to the existing Canadian and U.S. Port of Entry facilities on both sides of the river. Details of the bridge design and location will be determined during the project and are not available at this time.

As per Step 3 of the MTO/DFO/MNR Fisheries Protocol, and your email to Gregg Cooke and Rick DeCal dated June 11, 2015, we request that the MNRF complete the attached table that includes information regarding available date regarding fish communities and habitat.

Reference: Preliminary Design and Class Environmental Assessment for the Baudette/Rainy River International Bridge Replacement on Highway 11, Town of Rainy River (GWP 6046-10-00)

We look forward to MNRF's response to our request within 20 working days, as specified in the Protocol.

Regards,

STANTEC CONSULTING LTD.

Katie Easterling
Aquatic Biologist
Phone: (519) 575-4111
Fax: (519) 579-4239
Katie.Easterling@stantec.com

Attachment: Background Information Table Template
Study Area Location Map

c. Nevena Gazibara, Stantec
Kathleen Todd, Stantec

nah g:\01609\active_other_pcs_active\938 - minnesota\93802870\correspondence\mnrf\let_to mnrf_fish guide app 3a oct13_15.docx

Reference: Preliminary Design and Class Environmental Assessment for the Baudette/Rainy River International Bridge Replacement on Highway 11, Town of Rainy River (GWP 6046-10-00)

Baudette/Rainy River International Bridge Replacement – GWP 6046-10-00

Waterbody Name and location	Watercourse classification (i.e. warmwater, coldwater)	Habitat information/ locations (fish passage barriers, known spawning habitats etc.)	Historical data on fish species present, including whether the Rainy River supports any vulnerable, threatened or endangered aquatic species	MNRF fisheries management objectives, if applicable	MNRF interpretation of fish and fish habitat sensitivity (scale of high, moderate, low or unknown as per DFO's Risk Management Framework	In-water timing windows for construction
Rainy River at the Baudette/Rainy River International Bridge UTM Zone 15 383031.56 Easting, 5397457.80 Northing (see attached map)						

NOTE:

- The applicant shall complete the waterbody name and location (column 1) and attach a Google Earth map or MTO project map identifying each waterbody and submit to MNRF.
- MNRF is required as per Step 3 of the Fisheries Protocol to provide the applicant with the information outlined in the table above (columns 2-7) within **20 working days**.

382800 383000 383200

5397600 5397400 5397200

CNR Bridge

HIGHWAY 11

Rainy River, ON

CANADA

Baudette, MN

INTERNATIONAL DRIVE

Rainy River

Baudette River

UNITED STATES OF AMERICA

DRAFT

0 25 50 m

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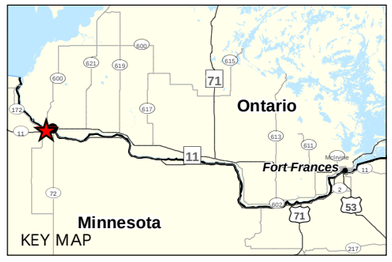
N

Stantec

Legend

Study Area

Canada/US Border



Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2013.
3. Additional USA Data provided by ESRI
4. Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

October 2015
193802870

Client/Project

Baudette International Bridge
Rainy River, ON

Figure No.

1

DRAFT

Title

Study Area

W:\active_Other_PCs_Active\938 - Minnesota\193802870\drawing\MXD\Terrestrial\InternalMaps\193802780_Fig_1_StudyArea_20151008.mxd
Revised: 2015-10-08 By: mkraus

From: Easterling, Katie
Sent: Wednesday, March 30, 2016 9:08 AM
To: Harttrup, Nancy
Subject: FW: Habitat Sensitvity - Rainy River-Baudette International Bridge

Katie Easterling, B.Sc. (Hon)
Aquatic Ecologist
Stantec
100-300 Hagey Boulevard Waterloo ON N2L 0A4
Phone: (519) 575-4111
Cell: (519) 859-8391
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katie.easterling@stantec.com

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Please consider the environment before printing this email.

From: Vandenbroeck, John (MNRF) [mailto:john.vandenbroeck@ontario.ca]
Sent: Thursday, March 24, 2016 5:02 PM
To: Easterling, Katie
Cc: Todd, Kathleen; Gazibara, Nevena; 'Talmage, Phil J (DNR)'
Subject: RE: Habitat Sensitvity - Rainy River-Baudette International Bridge

Hi Katie

Sorry for the confusion on this one. Based of Phil's description of the site and my understanding of Rainy River as a whole I am going to suggest that habitat sensitivity is moderate-low on the Canadian side of the river. As outlined previously Lake Sturgeon do not spawn here nor is spawning likely for fish with similar spawning requirements. With respect to Lake Sturgeon the depth information provided addresses my question of potential suitability for juvenile habitat, which consists of deeper pools that in some cases have been associated with river confluences. This does not appear to the case here. However, the presence of the aquatic vegetation, although not necessarily descriptive in terms of wetland type, does suggest potential habitat and consequently a classification of moderate-low sensitivity.

J

John Van den Broeck
Management Biologist

From: Easterling, Katie [mailto:Katie.Easterling@stantec.com]
Sent: March 18, 2016 10:00 AM
To: Vandenbroeck, John (MNRF)
Cc: Todd, Kathleen; Gazibara, Nevena
Subject: Habitat Sensitvity - Rainy River-Baudette International Bridge

Hi John,

As per your voicemail request for some additional data, below is a summary of the habitat assessment that was conducted by Stantec on August 24, 2015 over a 400 m reach of the Rainy River at the Rainy River International Bridge between the City of Baudette, Minnesota and the Town of Rainy River, Ontario. Hopefully this information will provide enough detail to aid in your determination of habitat sensitivity. I've also included the contact information for the Area Fisheries Supervisor from the Minnesota Department of Natural Resources as he has additional resources for the Rainy River that may be useful, if required.

Cheers,
Katie

Habitat Assessment

Within the Study Area, the Rainy River is a uniform run with an average width of approximately 315 m. Water depth was similar throughout the 400 m survey length at an average of 6 m in the middle of the channel and 2.5 m in the nearshore areas. Beyond the shallow nearshore areas, sand is the predominant bottom substrate in the Rainy River. On both sides of the river, nearshore substrate was dominated by sand with some coarse material. The coarse substrate (on both shorelines) consisted of cobble and gravel between the existing international bridge crossing and the CNR bridge. Upstream from the bridge on the east shore, there were boulders and concrete debris, likely from decommissioned docks at that location. Emergent vegetation (predominantly sedges and grasses) was prevalent along both shorelines. The average width of aquatic vegetation was 15 m on the east bank and 50 m on the west bank.

The Baudette River enters the Rainy River from the southwest, immediately upstream from the bridge. Maximum water depth in the middle of the channel at the mouth of the Baudette River was 2.5 m. The mouth of the Baudette River was approximately 130 m wide. However, the area was characterized by dense aquatic vegetation such that the open water area was limited to a 35 m wide area. The emergent vegetation extended to 80 m from shore on the southeast side of the Baudette River and 15 m from shore on the northwest bank.

Phil Talmage | Area Fisheries Supervisor
Minnesota Department of Natural Resources
204 Main Street East
Baudette, MN 56623
phone: (218) 634-2522 ext 230
fax: (218) 634-2563
website: http://www.mndnr.gov/areas/fisheries/baudette

Katie Easterling, B.Sc. (Hon)
Aquatic Ecologist
Stantec
100-300 Hagey Boulevard Waterloo ON N2L 0A4
Phone: (519) 575-4111
Cell: (519) 859-8391
Fax: (519) 579-4239
katie.easterling@stantec.com

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From: Riley, Jake
Sent: Friday, December 04, 2015 3:18 PM
To: Todd, Kathleen; Maahs-Henderson, Theresa
Subject: Phil Talmage correspdence FW: #2 - baudette reports
Attachments: 39000200_LL_20140401_Lake_of_the_Woods.pdf

Talked to Phil Talmage at MnDNR this afternoon. Very nice and helpful. Please see the 2014 MnDNR fisheries report attached for the Baudette and Rainy River (I haven't gone through it yet). He also sent me some follow up emails/reports I will pass along. Haven't looked at these yet either.

Please see my notes from his call below bulleted. Would you like me to fill in Kathleen's report with details from Phil's report and notes below? If so, please send me the most up to date word draft. Have a good weekend, jake

- Fisheries Exclusion Dates for construction on the Rainy for spawning March 15h-June 15th
- Baudette Bay at confluence and Rainy River are both popular for fisherman and hold fish really well at certain times of the year during spawning migrations, esp. under the bridge
- Walleye
  - Moving through project area late late March – April to spawn in Rainy at Rapids at RM 40
- Pike
  - Spawn pre-ice out in tributaries of Rainy, including Baudette Bay in late March/early April
- Lake Sturgeon
  - Species of Concern in MN, Not fully recovered, some recreational angling but little mortality and minimal harvest
  - Use Rapid river just US of Baudette confluence,
  - Migrate up to spawn, April – May

Stantec

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Please consider the environment before printing this email.

From: Talmage, Phil J (DNR) [mailto:phil.talmage@state.mn.us]
Sent: Friday, December 04, 2015 3:05 PM
To: Riley, Jake
Subject: #2 - baudette reports

Phil Talmage | Area Fisheries Supervisor
Minnesota Department of Natural Resources
204 Main Street East
Baudette, MN 56623
phone: (218) 634-2522 ext 230
fax: (218) 634-2563
website: http://www.mndnr.gov/areas/fisheries/baudette

From: Todd, Kathleen
Sent: Tuesday, October 13, 2015 5:45 PM
To: Harttrup, Nancy
Subject: Fwd: DNR Comments on MnDOT Early Notification Memo, TH72 Rainy River Bridge Replacement (SP3905-09), LOTW Co

Kathleen Todd
Stantec
Ph: 519.780.8149
Fx: 519.836.2493
www.stantec.com
kathleen.todd@stantec.com

Begin forwarded message:

From: "Maahs-Henderson, Theresa" <Theresa.Maahs-Henderson@stantec.com>
Date: October 13, 2015 at 5:44:33 PM EDT
To: "Todd, Kathleen" <kathleen.todd@stantec.com>
Cc: "Gazibara, Nevena" <Nevena.Gazibara@stantec.com>
Subject: FW: DNR Comments on MnDOT Early Notification Memo, TH72 Rainy River Bridge Replacement (SP3905-09), LOTW Co

Hi Kathleen,
Please see below from our Department of Natural Resources. It appears that the Lake Sturgeon is the only species that we would be concerned about.
I think you mentioned that the Sturgeon are already accounted for in your report.

Let me know if you need anything else.

Thank you.

Theresa Maahs, PE, LEED AP
Project Manager

Phone: 651-604-4786
Cell: 612-749-9177
theresa.maahs@stantec.com

From: Leete, Peter (DOT) [mailto:peter.leete@state.mn.us]
Sent: Monday, October 12, 2015 9:38 AM
To: Maahs-Henderson, Theresa
Subject: RE: DNR Comments on MnDOT Early Notification Memo, TH72 Rainy River Bridge Replacement (SP3905-09), LOTW Co

Within a mile of the bridge, the lake sturgeon is all that shows up on the NHIS….. It's when I zoom back out further (5 miles) that other species show up. None of which are threatened or endangered. They

are ‘watch list’ or ‘special concern’. IE Bald Eagle (watchlist), Creek Heelsplitter, a native mussel (SPC), and Short-eared Owl (SPC). I can’t give you location info if you intend to share it with the public.

Contact me if you have questions

Peter Leete
Transportation Hydrologist (DNR-MnDOT Liaison)
DNR Ecological & Water Resources
Ph: 651-366-3634

From: Maahs-Henderson, Theresa [mailto:Theresa.Maahs-Henderson@stantec.com]
Sent: Friday, October 02, 2015 3:06 PM
To: Leete, Peter (DOT)
Subject: RE: DNR Comments on MnDOT Early Notification Memo, TH72 Rainy River Bridge Replacement (SP3905-09), LOTW Co

Hi Peter,
In your email below sent in June for the Baudette Bridge project you mention several rare species within the project area. Is it possible to get a copy of this list for our documentation. Our Canadian staff is also preparing an EA and need to show information for both sides of the border. Is it possible to get the version of the list that is able to be shared with the public?

Please let me know if you have any questions.

Thank you -

Theresa Maahs, PE, LEED AP
Project Manager

Phone: 651-604-4786
Cell: 612-749-9177
theresa.maahs@stantec.com

From: Leete, Peter (DOT) [mailto:peter.leete@state.mn.us]
Sent: Friday, June 19, 2015 10:01 AM
To: Cann, Staci (DOT)
Cc: Maahs-Henderson, Theresa; Wingard, John (DOT); Wingert, Sarah E MVP (Sarah.E.Wingert@usace.army.mil); Straumanis, Sarma (DOT); Joyal, Lisa (DNR); Bump, Samantha (DNR); Kestner, Nathan (DNR); Talmage, Phil J (DNR); Alcott, Jason (DOT); Dahlin, Greg (DNR); Thul, Dan C (DNR); Laudenslager, Scott L (DNR); Tom.Kleinboeck@dfo-mpo.gc.ca
Subject: DNR Comments on MnDOT Early Notification Memo, TH72 Rainy River Bridge Replacement (SP3905-09), LOTW Co

Staci,
This email is the DNR response for your project records. The DNR has had input on this project at several opportunities over the past four years, though I find no record of a single summary of concerns/issues. I am now getting calls for such a letter now that the project is moving into the next phase. With a new set of consultants and project managers, I agree that one is needed. Most concerns are in regards to temporary impacts during construction/demolition. Though staging for these concerns could impact project development and final design. Please consider the following comments as final designs and special provisions are developed:

1. The Rainy River is a Public Waters. A Public Waters Work Permit will be required. Though, as you know there is a General Permit to MnDOT for replacement of bridges and culverts to aid in streamlining of the permit process. A copy of the DNR's General Permit to MnDOT (GP2004-0001) is attached, please review all the conditions of this permit and integrate their requirements into project design. Please contact me if you have questions on any of its requirements. Authorization for the project will require final review at a later date. When the project is further along, please enter the project into the DNR online permitting system (MPARS) when there is enough information to do so: www.dnr.state.mn.us/mpars. Specific items to incorporate into design and construction are:

    A. As the project moves forward, design of the crossing should meet the conditions listed in GP 2004-0001: http://files.dnr.state.mn.us/waters/watermgmt_section/pwpermits/General_Permit_2004-0001.pdf. Additional information, including options on how to meet the conditions of the GP are presented in the collection of ' Best Practices for Meeting GP 2004-0001', at http://www.dnr.state.mn.us/waters/watermgmt_section/pwpermits/gp_2004_0001_manual.html

    B. We typically limit work in the water (Work Exclusion dates) to allow for undisturbed fish migration and spawning. These dates are March 15 through June 15. While we may revise these dates for a particular project, there may still be limitations on the types of work during this time. The Rainy river is an important fisheries resource. As such, the waiving of these dates is not likely – see 'C' below.

       Please be aware that the MPCA NPDES general permit for authorization to discharge stormwater associated with construction activities (permit MN R10001) recognizes the DNR "work in water restrictions" during specified fish migration and spawning time frames for areas adjacent to water. During the restriction period, all exposed soil areas that are within 200 feet of the water's edge and drain to these waters, must have erosion prevention stabilization activities initiated immediately after construction activity has ceased (and be completed within 24 hours).

    C. Approval of construction and demolition methods will need to occur at a later date, though be aware that due to the work exclusion dates, in-water work will be limited or prohibited from March 15 through June 15. Typical movement of barges and tugs for above water construction will not be an issue during these dates. However, seismic activities could frighten or harm migrating or spawning fish. As such, pile driving, sheet pile installation/removal, or implosions for span or pier removal of the existing bridge we would not be allowed. Please design the projects staging to avoid these types of activities during the dates given. IE: stage pier construction to begin after June 15 and be up and out of the water prior to March 15. Ditto for bridge pier demolition.

    D. Revegetation of disturbed soils should include native mixes in areas that are not proposed for mowed turf grass. Please utilize the native recommendations developed by BWSR (http://www.bwsr.state.mn.us/native_vegetation/) or MnDOT' in the 'Turf

Establishment Recommendations – dated April 14, 2014 (http://www.dot.state.mn.us/environment/erosion/seedmixes.html). In addition, for meeting DNR concerns, revegetation may include woody vegetation (trees and shrubs) in addition to grasses and/or forbs.

E. Water appropriation is not included in the GP. Please remind contractors that a separate water use permit is required for withdrawal of more than 10,000 gallons of water per day or 1 million gallons per year from surface water or ground water. GP1997-0005 (temporary water appropriations) covers a variety of activities associated with road construction and should be applied of if applicable. An individual appropriations permit may be required for projects lasting longer than one year or exceeding 50 million gallons. Information is located at: http://www.dnr.state.mn.us/waters/watermgmt_section/appropriations/permits.html

2. The Rainy River has been designated as infested with aquatic invasive species due to the known presence of the spiny water flea. There are also reports of zebra mussels having been introduced into the watershed. By the time of bridge construction, precautions for the zebra mussel may also be in place. Attached are best practices that have been developed for construction equipment to prevent the spread of these species. This information is also online at http://files.dnr.state.mn.us/publications/ewr/invasives/ais/best_practices_for_prevention_ais.pdf
It is likely that a permit will be required for transporting construction equipment. More information is also at: http://www.dnr.state.mn.us/invasives/ais_transport.html

3. Aesthetic bridge lighting has not been in any discussions to date that I am aware of. However these large 'signature bridges' tend to have such a discussion at some point. Attached is what has been developed by the DNR, Audubon Society, and USFWS in regards to aesthetic lighting. This was developed primarily due potential conflicts with bird migrations in the Mississippi river flyway. I attach this as an FYI in case the question comes up.

4. The project shall allow for recreational navigation through the work area. Coordination with local authorities (including the DNR conservation officer) for providing passage is will need to occur as the project nears construction. Parameters to consider are a temporary no-wake zone and channel through the worksite delineated with a buoy system and be maintained throughout the project for the safest passage through the work site. This channel shall continue above and below the work site. Buoys must meet US Coast Guard regulations and DNR standards for channel navigation. Activities that would necessitate a temporary closure of all recreational navigation through the work site would require advance notification to local authorities. Being that this is an international boundary, such coordination will involve many authorities.

5. The Minnesota Natural Heritage Information System (NHIS) has been queried to determine if any rare plant or animal species, native plant communities, or other significant natural features are known to occur within an approximate one-mile radius of the project area. Based on this query, several rare features have been documented within the search area (If details are needed for documentation, please contact me). Please note that the following rare features *may* be impacted by the proposed project:

A. Lake Sturgeon (Acipenser fulvescens), a state listed 'Species of Concern' is known to exist in the Rainy River. Stringent prevention and control measures for debris and construction material containment should be in place to prevent adverse material from entering the river. Also see item 1.C for preventing adverse impacts during the spring migration and spawning period.

The NHIS is not an exhaustive inventory and thus does not represent all of the occurrences of rare features within the state. If information becomes available indicating additional listed species or other rare features, further review may be necessary.

DNR folks, if I've missed anything, or have any suggestions for MnDOT to consider, please respond ASAP to Staci, and myself.

Contact me if you have questions

Peter Leete
Transportation Hydrologist (DNR-MnDOT Liaison)
DNR Ecological & Water Resources
Ph: 651-366-3634

Rainy River

Fisheries Population Assessment
Final Report
August 6 – August 17, 2007
September 29 – October 8, 2008

By

Dennis Topp

Minnesota Department of Natural Resources
Division of Fish and Wildlife

Approved by: _____ Date: _____
Area Fisheries Supervisor

Approved by: _____ Date: _____
Regional Fisheries Supervisor

Funded under Federal Aid by the Sport Fish Restoration Act, F-29-R(P)-28

Table 1. Species list of fish sampled from the Rainy River (RM 0 – 40) between August 6, 2007 and October 8, 2008.

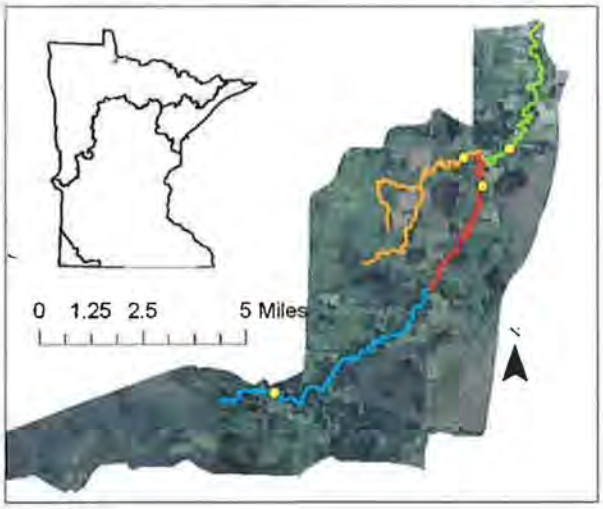
Scientific name	Common name
Ameiurus melas	Black bullhead
Pomoxis nigromaculatus	Black crappie
Ameiurus nebulosus	Brown bullhead
Lota lota	Burbot
Coregonus artedii	Cisco
Notropis atherinoides	Emerald shiner
Moxostoma erythrurum	Golden redhorse
Notemigonus crysoleucas	Golden shiner
Acipenser fulvescens	Lake sturgeon
Percina caprodes	Logperch
Esox lucius	Northern pike
Lepomis gibbosus	Pumpkinseed
Carpiodes cyprinus	Quillback
Percina shumardi	River darter
Ambloplites rupestris	Rock bass
Stizostedion canadense	Sauger
Moxostoma macrolepidotum	Shorthead redhorse
Moxostoma anisurum	Silver redhorse
Micropterus dolomieui	Smallmouth bass
Notropis hudsonius	Spottail shiner
Noturus gyrinus	Tadpole madtom
Sander vitreus	Walleye
Catostomus commersoni	White sucker
Perca flavescens	Yellow perch

Minnesota
F11AF00174
March 26, 2013

Minnesota Department of Natural Resources
Division of Fish and Wildlife
Section of Fisheries

Baudette River
(H-001-006)
Initial Fisheries Stream Survey

by
Dennis Topp



Submitted by: Dennis Topp Date: 3/26/13

Approved by: Phil Talg Date: 3/26/2013
Area Fisheries Supervisor

Approved by: [signature] Date: 5/9/2013
Regional Fisheries Supervisor

Funded under Federal Aid by the Sport Fish Restoration Act

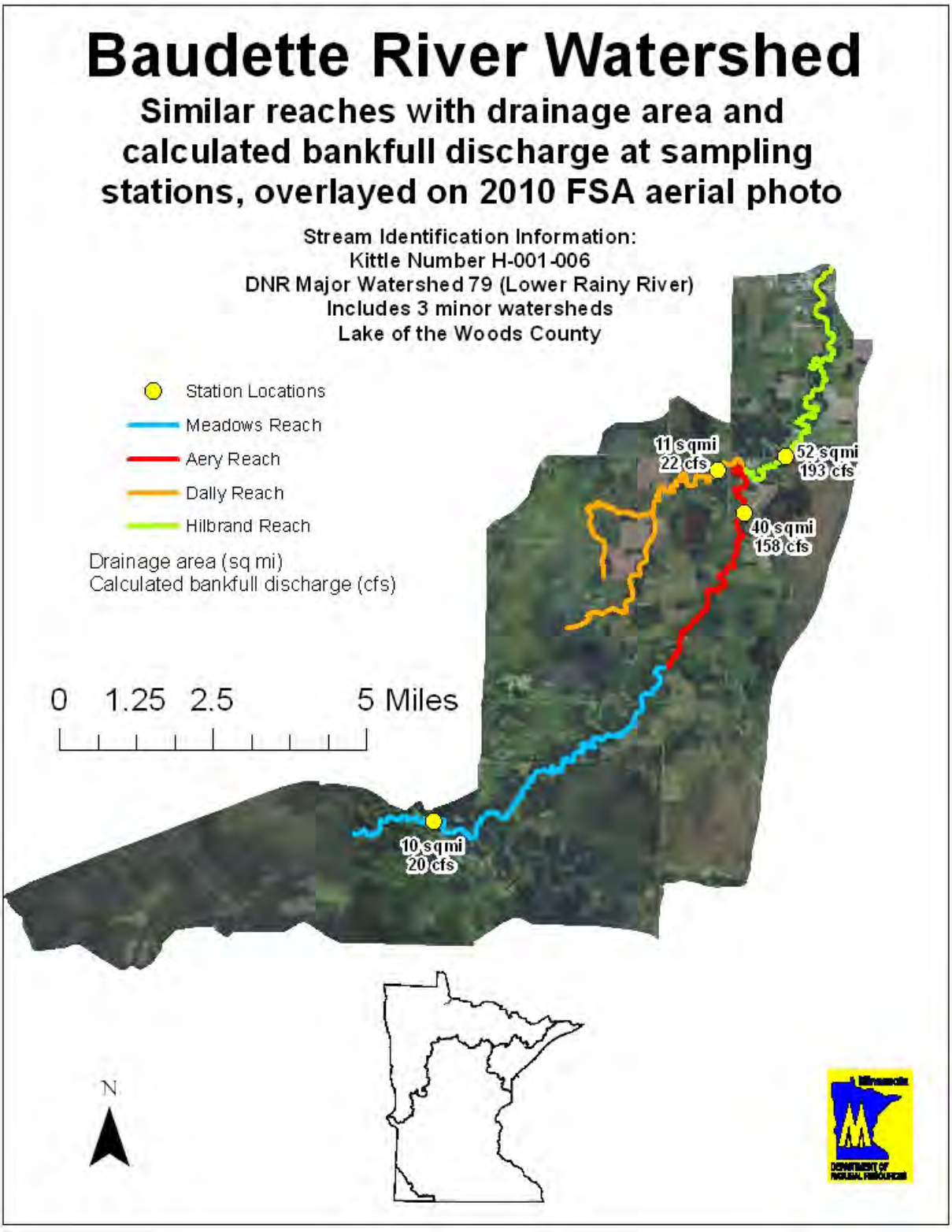


Figure 3. Similar reach and sampling station locations used during the Baudette River stream survey, 2012.

Table 4. Baudette River fisheries station boundaries (H-001-006).

Station name	River branch	Upstream UTM	Downstream UTM
Hilbrand	Main Branch	381617 5392249	381821 5392346
Aery	Main Branch	380582 5390731	380607 5390862
Meadows	Main Branch	372372 5382732	372462 5382727
Dally	West Branch	380022 5391968	380054 5392063

Table 5. Water temperature (°F) logger data collected in 2012 from the Baudette River (H-001-006)[2].

Station name	River branch	Temp logger location (UTM)	Date range	Minimum temperature	Mean temperature	Maximum temperature
Hilbrand	Main	382948 5395381	July 13 – October 2	51.1	63.1	70.2

Table 6. Water quality results from lab-analyzed grab samples collected from the Baudette River (H-001-006) on July 31, 2012.

Branch	Reach	Total phosphorus (ppm)	Chlorophyll a (ppb)		Total alkalinity (ppm)	pH	Total dissolved solids (ppm)	Conductivity (µmho/cm)	Chloride (ppm)
			Trichromatic method	Pheophyton corrected					
Main	Aery	0.093	15.1	10.0	212	7.80	268	409.0	0.98
Main	Meadows	0.055	4.2	2.1	189	7.49	252	353.3	0.63
West	Dally	0.080	3.9	1.9	186	7.74	272	365.0	3.00

[2] We are only able to report data from one temperature logger. One of the other three units was moved out of the water by a beaver. The other sites dried up during the summer when flow stopped.

Table 7. Riffle characteristics at bankfull elevation for the Baudette River (H-001-006).

Station name	River branch	Mean depth (ft)	Maximum depth (ft)	Area (ft^2)	Width (ft)	Width / depth	Floodprone width (ft)	Entrench-ment ratio	Rosgen stream type
Hilbrand	Main	2.1	2.6	58.9	28.2	13.6	35.3	1.25	F4
Aery	Main	3.0	3.4	41.8	13.9	4.6	89.3	6.5	E5
Meadows	Main	0.3	1.7	7.9	23.0	67.7	50.3	2.2	B6c
Dally	West	1.0	1.1	6.5	6.4	6.3	7.2	1.1	E4

Table 8. Longitudinal profile characteristics for the Baudette River (H-001-006).

Station name	River branch	Length (ft)	Water surface slope	Valley slope	Sinuosity
Hilbrand	Main	850	0.0017	0.0019	1.1
Aery	Main	663	0.0015	0.0021	1.4
Meadows	Main	339	0.0018	0.0023	1.3
Dally	West	468	0.0007	0.0011	1.5

Table 9. Channel substrate composition of (longitudinal) stations in the Baudette River (H-001-006) watershed.

Station name	River branch	% silt/clay	% sand	% gravel	% cobble	% boulder	% bedrock	D50 (mm)	D84 (mm)
Hilbrand	Main Branch	16	22	61	2	0	0	6.6	31.7
Aery	Main Branch	17	34	42	7	0	0	1.6	17.7
Meadows	Main Branch	69	32	0	0	0	0	0.1	0.2
Dally	West Branch	4	22	73	0	0	0	13.3	24.0

Table 10. Calculated bankfull discharge[3] and mean flow velocity at bankfull elevation for sampling stations on the Baudette River (H-001-006).

Station name	River branch	Drainage area (mi^2)	Bankfull discharge (cfs)	Mean flow velocity at bankfull (fps)
Hilbrand	Main	52.1	192.5	3.3
Aery	Main	39.9	157.7	3.8
Meadows	Main	9.5	19.9	2.5
Dally	West	11.0	22.0	1.7

Table 11. Minnesota Stream Habitat Assessment (MSHA) results for the Baudette River (H-001-006).

Station name	River branch	Surrounding land use	Riparian Zone	Instream Zones A-D	Instream Zones E-F	Channel morphology	MSHA score
		max=5	max=12	max=27	max=17	max=36	max=100
Hilbrand	Main	4	12	19	14	27	76
Aery	Main	4	12	12	13	25	66
Meadows	Main	5	15	4	13	25	62
Dally	West	5	13	19	12	25	74

[3] Discharge calculated using RIVERMorph 5.1.0 software (citation), with formula: $U = \frac{Cm}{n} R^{2/3} S^{1/2}$

Table 14. Cover for larger fishes, calculated as a percentage of total water surface[4], by sampling station and habitat type, for the Baudette River (H-001-006).

Station name	River branch	Woody debris	Undercut bank	Other Debris	Boulder	Total %
Hilbrand	Main	0.02	0.99	0	1.42	2.43
Aery	Main	0.27	0.09	0	1.27	1.63
Meadows	Main	0	0	0	0	0
Dally	West	0	0.14	0.71	1.21	2.07

Table 15. Cover for larger fishes, calculated as a percentage of total water surface, by sampling station and bed feature for the Baudette River (H-001-006).

Station name	River branch	Riffle	Pool	Run	Total %
Hilbrand	Main	0.29	1.15	0.99	2.43
Aery	Main	0	0	1.62	1.62
Meadows	Main	0	0	0	0
Dally	West	0.57	0.32	1.18	2.07

Table 16. Aquatic plant presence and abundance by sampling station for the Baudette River (H-001-006). (A=abundant, C=common, O=occasional, R=rare)

Station name	Plant names and relative abundance									
	Canada waterweed	Wild celery	Arrowhead spp	Sedge spp	Buttercup spp	Marestail	Sweet flag	Bulrush spp	Cattail spp	Waterlily spp
	Elodea Canadensis	*Vallisneria Americana*	*Sagittaria spp.*	*NA*	*Ranunculus spp.*	*Hippuris Vulgaris*	*Acorus Calamus*	*Schoeno-plectus spp*	*Typha spp*	--
Hilbrand	A	O	--	A	C	O	--	--	--	--
Aery	--	--	--	--	--	--	--	--	--	--
Meadows	--	--	R	A	--	--	A	R	R	O
Dally	--	--	--	--	--	--	--	--	--	--

[4] Cover was based on a bankfull flow scenario. There was no flow at the time of the survey.

Table A2. Fish species collected by MNDNR crews using electrofishing gear in 2005, at stations on Baudette River (H-001-006).

Species		Hilbrand Reach Main Branch UTM 382884 5395082 9/22/2005	Dally Reach West Branch UTM 378563 5391399 7/26/2005
Common name	**Scientific name**	**Number of fish sampled**	
Central mudminnow	*Umbra limi*	9	33
Northern pike	*Esox lucius*	6	6
Golden shiner	*Notemigonus crysoleucas*	3	--
Common shiner	*Notropis cornutus*	3	3
Blacknose shiner	*Notropis heterolepis*	8	--
Creek chub	*Semotilus atromaculatus*	--	3
White sucker	*Catostomus commersoni*	2	8
Brown bullhead	*Ictaluris nebulosus*	1	--
Tadpole madtom	*Noturus gyrinus*	2	--
Trout-perch	*Percopsis omiscomaycus*	11	--
Rock bass	*Ambloplites rupestris*	3	--
Iowa darter	*Etheostoma exile*	1	--
Yellow perch	*Perca flavescens*	11	--

Table A3. Length for each of the similar reach segments established for the Baudette River (H-001-006).

Reach name	River branch	Reach length (miles)
Hilbrand	Main Branch	9
Aery	Main Branch	5
Meadows	Main Branch	7
Dally	West Branch	6

From: Mosley, Melissa (MNRF) <melissa.mosley@ontario.ca>
Sent: Thursday, August 01, 2013 12:34 PM
To: Wall, Steven (MTO)
Cc: Mcleod, Darryl (MNRF); Vandenbroeck, John (MNRF)
Subject: RE: Fish and Fish habitat at Rainy River/Baudette Bridge

Hi Steven,

I just want to clarify that we consider the entire river necessary for sturgeon (and other species) migration (fish habitat).

Melissa

From: Mosley, Melissa (MNR)
Sent: July 31, 2013 11:54 AM
To: Wall, Steven (MTO)
Cc: Mcleod, Darryl (MNR); Vandenbroeck, John (MNR)
Subject: RE: Fish and Fish habitat at Rainy River/Baudette Bridge

Hi Steven,

As far as we know there is no critical fish habitat in the Rainy River in the vicinity of the border crossing, however MNR has never surveyed that area of the river.

Melissa

Melissa Mosley
Management Biologist
Fort Frances Area
Ontario Ministry of Natural Resources
807.274.8610

From: Wall, Steven (MTO)
Sent: July 11, 2013 3:12 PM
To: Mcleod, Darryl (MNR)
Subject: Fish and Fish habitat at Rainy River/Baudette Bridge

Hi Darryl,

MTO is in the early stages of an environmental assessment at the water crossing where the Rainy River/Baudette Bridge crosses the Rainy River.

For planning purposes, do you know of any critical fish habitat within the vicinity of the bridge?

Anything critical for lake sturgeon near the bridge?

Thanks
Steve

Steve Wall
Environmental Planner - Fisheries
Ministry of Transportation - Northwest Region
615 James Street South
Thunder Bay, Ontario P7E 6P6
Phone:(807) 473-2126

From: Wall, Steven (MTO) <Steven.Wall@ontario.ca>
Sent: Thursday, August 22, 2013 4:01 PM
To: DeCal, Rick (MTO)
Cc: DeCal, Patricia (MTO)
Subject: RE: Fish and Fish habitat at Rainy River/Baudette Bridge

Hi Rick,

I contacted both MNR and Minnesota Department of Natural Resources (MnDNR) regarding lake sturgeon in the vicinity of the Rainy River/Baudette Bridge.

There is no critical habitat for fish, including lake sturgeon, within the vicinity of the bridge (i.e., low sensitivity habitat).

Maintaining fish migration is important, which I do not anticipate will be a problem.

In-water work timing restriction is April 1 to June 30 for sturgeon.

I am inquiring from MnDNR about the possibility of threatened mussel species in the area and will let you know what I find out.

Steve

From: Wall, Steven (MTO)
Sent: August 1, 2013 12:42 PM
To: Mosley, Melissa (MNR)
Subject: RE: Fish and Fish habitat at Rainy River/Baudette Bridge

Thanks Melissa.

The project should not affect migration or general habitat, although the design may include new piers.

I was hoping to get some preliminary info to determine whether the work would be on any critical habitat (i.e., spawning habitat).

I have emailed a former South Dakota State University graduate student who did his masters on lake sturgeon in the Rainy River to see what information he may have.

I have not been to the bridge location, but photos suggest that it is not likely a spawning habitat and perhaps is typical of much of the river habitat and not unique.

Thanks again for your help.

Steve

From: Mosley, Melissa (MNR)
Sent: August 1, 2013 12:34 PM
To: Wall, Steven (MTO)
Cc: Mcleod, Darryl (MNR); Vandenbroeck, John (MNR)
Subject: RE: Fish and Fish habitat at Rainy River/Baudette Bridge

Hi Steven,

I just want to clarify that we consider the entire river necessary for sturgeon (and other species) migration (fish habitat).

Melissa

From: Mosley, Melissa (MNR)
Sent: July 31, 2013 11:54 AM
To: Wall, Steven (MTO)
Cc: Mcleod, Darryl (MNR); Vandenbroeck, John (MNR)
Subject: RE: Fish and Fish habitat at Rainy River/Baudette Bridge

Hi Steven,

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Melissa

Melissa Mosley
Management Biologist
Fort Frances Area
Ontario Ministry of Natural Resources
807.274.8610

From: Wall, Steven (MTO)
Sent: July 11, 2013 3:12 PM
To: Mcleod, Darryl (MNR)
Subject: Fish and Fish habitat at Rainy River/Baudette Bridge

Hi Darryl,

MTO is in the early stages of an environmental assessment at the water crossing where the Rainy River/Baudette Bridge crosses the Rainy River.

For planning purposes, do you know of any critical fish habitat within the vicinity of the bridge?

Anything critical for lake sturgeon near the bridge?

Thanks
Steve

Steve Wall
Environmental Planner - Fisheries
Ministry of Transportation - Northwest Region
615 James Street South
Thunder Bay, Ontario P7E 6P6
Phone:(807) 473-2126

From: Davis, Mike J (DNR) <Mike.Davis@state.mn.us>
Sent: Friday, August 23, 2013 3:49 PM
To: Wall, Steven (MTO)
Cc: Chisholm, Ian M (DNR); Talmage, Phil J (DNR); Baker, Richard (DNR); Sietman, Bernard (DNR)
Subject: RE: Mussels in Rainy River at Baudette Bridge

Steve,

during our surveys in 2007 we did not find any of the species listed in your table, they have never been found in the Rainy River so far as we know. Although Quadrula Quadrula is found in the Red River drainage (part of Hudson Bay drainage) is does not occur in the Rainy River or its tributaries.

Mike

From: Wall, Steven (MTO) [mailto:Steven.Wall@ontario.ca]
Sent: Friday, August 23, 2013 1:36 PM
To: Davis, Mike J (DNR)
Cc: Chisholm, Ian M (DNR); Talmage, Phil J (DNR); Baker, Richard (DNR); Sietman, Bernard (DNR)
Subject: RE: Mussels in Rainy River at Baudette Bridge

Hi Mike,

Thanks for the quick turnaround regarding my questions about mussels in the Rainy River.

Below is a list of mussel species listed under the Ontario *Endangered Species Act.*

Thanks again for your interest and the information.

Steve

Eastern Pondmussel	*Ligumia nasuta*
Fawnsfoot	*Truncilla donaciformis*
Hickorynut	*Obovaria olivaria*
Kidneyshell	*Ptychobranchus fasciolaris*
Northern Riffleshell	*Epioblasma torulosa rangiana*
Rayed Bean	*Villosa fabalis*
Round Hickorynut	*Obovaria subrotunda*
Round Pigtoe	*Pleurobema sintoxia*
Salamander Mussel	*Simpsonaias ambigua*
Snuffbox	*Epioblasma triquetra*
Mapleleaf Mussel	*Quadrula quadrula*
Rainbow Mussel	*Villosa iris*
Wavy-rayed Lampmussel	*Lampsilis fasciola*

From: Davis, Mike J (DNR) [mailto:Mike.Davis@state.mn.us]
Sent: August 23, 2013 1:32 PM
To: Wall, Steven (MTO)
Cc: Chisholm, Ian M (DNR); Talmage, Phil J (DNR); Baker, Richard (DNR); Sietman, Bernard (DNR)
Subject: Mussels in Rainy River at Baudette Bridge

Steve,

Minnesota does not have any state endangered or threatened mussel species present in the Rainy River, there are two species of Special Concern potentially present, but they are not specifically protected by our state endangered species laws. If you could provide me with a list of the species that are protected in Ontario I could better answer your questions regarding the river near Baudette.

Mike

Mike Davis – Aquatic Ecologist
1801 South Oak St
Lake City, MN 55041

Office: 651 345-3332 x 227
Cell: 507 696-5072

From: Wall, Steven (MTO) [mailto:Steven.Wall@ontario.ca]
Sent: Thursday, August 22, 2013 2:14 PM
To: Chisholm, Ian M (DNR)
Subject: Mussels in Rainy River at Baudette Bridge

Hi Ian,

I am an Environmental Planner for the Ministry of Transportation (MTO), Northwest Region.

MTO is currently working with MnDOT on the early stages of an environmental assessment at the water crossing where the Rainy River/Baudette Bridge crosses the Rainy River.

I heard from one of our Project Engineers that attended a recent MTO/MnDOT meeting in Duluth that there is possibility of mussel species at risk in the vicinity of the bridge.

Ontario does not have much data concerning SAR at the bridge location.

I contacted Phil Talmage at MnDNR, Baudette about lake sturgeon and habitat near the bridge.

Phil informed me that you were the one in Mn to ask about mussels.

Could you verify if MnDNR is conducting a mussel survey within the vicinity of the bridge?

What SAR are being looked for?

Is there a high probability that mussel SAR may be present at the bridge, and/or affected by in-water work around the bridge?

Presence of mussel species listed as endangered or threatened in Ontario's *Endangered Species Act* (I assume similar to SAR listed by Mn) has great impact on project scheduling, including preliminary borehole drilling for foundation work, which is part of the early stage of assessment.

Any information regarding this matter will be greatly appreciated.

I hope to hear from you soon.

Thanks for your time and consideration.

Steve
Steve Wall
Environmental Planner - Fisheries
Ministry of Transportation - Northwest Region
615 James Street South
Thunder Bay, Ontario P7E 6P6
Phone:(807) 473-2126

Pages from the MNR's Draft Fisheries Management Plan

Draft Fisheries Management Plan for Fisheries Management Zone 5

October, 2012

Ontario Ministry of Natural Resources

Ontario

Titles and Approval
(to be completed for the Final Plan)

FISHERIES MANAGEMENT PLAN

For

FISHERIES MANAGEMENT ZONE 5

Encompassing Portions of the Ontario Ministry of Natural Resources Administrative Districts of Fort Frances, Dryden and Kenora.

I certify that this plan has been prepared using the best available science and is consistent with accepted fisheries management principles. I further certify that this plan is consistent with the Ontario Ministry of Natural Resources strategic direction, the Ontario Ministry of Natural Resources Statement of Environmental Values and direction from other sources. Thus, I recommend this fisheries management plan be approved for implementation.

Recommended by:

(Lead District Manager, Fort Frances District) (Date)

Recommended by:

(District Manager, Dryden District) (Date)

Recommended by:

(District Manager – Kenora District) (Date)

Approved by:

(Regional Director, Northwest Region) (Date)

1.0 Introduction

This plan provides direction for the management of fisheries resources within Fisheries Management Zone 5 (FMZ 5). Management objectives and actions are presented to address specific fisheries management issues and challenges identified by the FMZ 5 Fisheries Advisory Council and Ontario Ministry of Natural Resources (OMNR) staff during the preparation of the background information document for FMZ 5 (OMNR 2012). The FMZ 5 Fisheries Advisory Council provided invaluable advice to the OMNR during the development of management options and selection of proposed management actions for the management plan.

This Plan will apply to all waterbodies across FMZ 5, with the exception of six Specially Designated Waterbodies (SDWs) (Figure 1) that are expected to have their own plans with specific objectives and monitoring strategies developed separately from this exercise. These SDW lakes or lake systems include Lake of the Woods-Rainy River, Rainy Lake, Shoal Lake, Eagle Lake, Wabigoon-Dinorwic Lake and the Winnipeg River.

Quetico Provincial Park, a wilderness class park with a total area of 4,750 km^2, is located entirely within FMZ 5. The daily entry quotas and a motor ban affect the amount and effectiveness of angling effort compared to the remainder of the zone. As a park, Quetico PP must meet requirement of the Provincial Parks and Conservation Reserves Act which includes the principle of Ecological Integrity. Currently, angling regulations in the park are the same as the rest of the zone with two exceptions, that only artificial baits and barbless hooks may be used. A background information document which includes analysis of 2010 Broadscale Monitoring data has been drafted for Quetico PP which has concluded that the principle ecological integrity is being met at the park scale under current zone management regulations. Quetico Park managers have reviewed the proposed management actions and concluded that they will continue to meet or enhance Ecological Integrity. Because of this, general FMZ 5 angling regulations will continue to be applied to the park except for the two previously mentioned exceptions. Fisheries assessment data will be continued to be analyzed separately for the park in the future to determined whether it continue to meet the principles of Ecological Integrity.

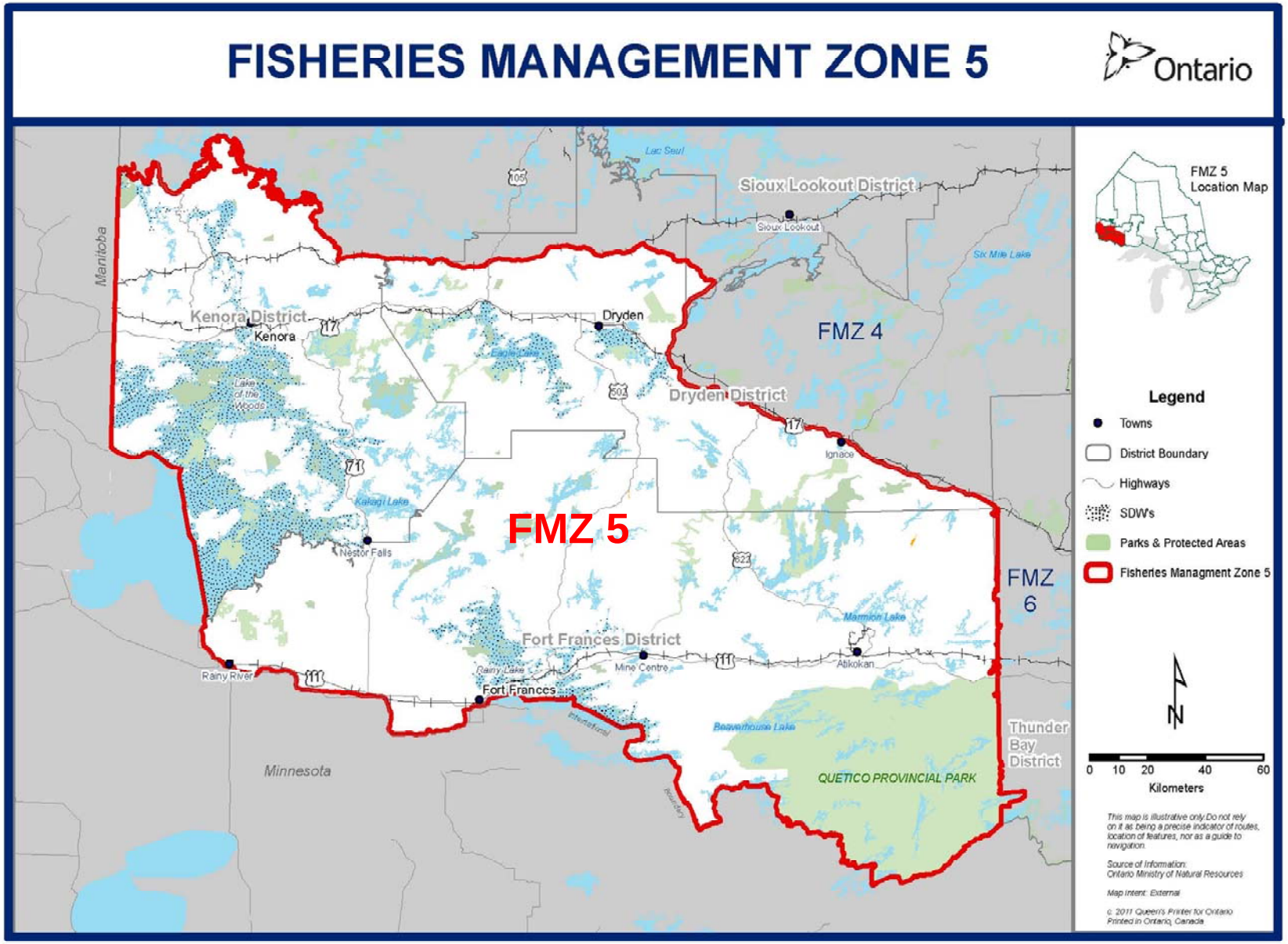


Figure 1. Fisheries Management Zone (FMZ) 5 boundaries with Specially Designated Waterbodies (SDW's) identified.

5.2 Fish Habitat and Ecosystem Health

5.2.1 Habitat and Development

Description

Suitable habitat to support healthy fish populations is a necessary requirement to ensure that fish populations can be managed to provide social and economic benefits to the public in a sustainable manner. Development projects such as mining, hydroelectric development, roads and water crossings have the potential to impact habitat and affect the ability to support fish populations at acceptable levels. Other developments such as cottage subdivisions or boat caches around lakes and streams can impact level of harvest from lakes and impact the sustainability of fish populations and the ability to maintain quality angling opportunities into the future.

Protection of fish habitat is a responsibility of the federal government under the Fisheries Act administered by the Department of Fisheries and Oceans (DFO) to protect fish and fish habitat, ensure passage of fish and prevention of pollution that can have detrimental impacts on fish populations. An important concept of DFO's fish habitat policy is the principle of "no net loss" which requires that projects either avoid impacts to fish habitat or provide compensation to maintain the amount of fish habitat.

To meet DFO's fish habitat policy of "no net loss" of fish habitat, any project which has the potential of affecting fish habitat must undergo an assessment to determine whether fish habitat will be altered or destroyed and cause serious impacts to fish habitat. If it is determined this will occur, the proponent must modify their project to either avoid impacts to fish habitat or provide compensation to maintain the amount of fish habitat. Ontario currently works with DFO to help achieve the requirements of the Fisheries Act through the "Fish Habitat Referral Protocol for Ontario" although this agreement is currently being modified given recent changes in the Fisheries Act.

In addition to the federal Fisheries Act, Ontario has a number of acts and regulations that require protection of fish habitat including Fish and Wildlife Conservation Act, Public Lands Act, Lakes and Rivers Improvement Act, Planning Act and Endangered Species Act. MNR has a number of guidelines (e.g. Forest Management Guide for Conserving Biodiversity at the Stand and Site Scales) and tools such as work permits, water management and forest management planning, LRIA approvals, ESA permits and agreements and lakeshore capacity assessment handbook to assist in habitat protection. In addition to managing impacts to fish habitat, these tools also allow MNR to consider the impact of development on the exploitation of fish populations

Current Management Direction

At the provincial level, fish habitat protection is identified as a goal under the Strategic Plan for Ontario's Fisheries SPOF II (OMNR, 1992) which provides strategic level direction for the management of Ontario's fisheries resources. The following goal was established for the management of the fisheries resources in Ontario:

-To promote healthy aquatic ecosystems that provide sustainable benefits, contributing to society's present and future environment, wholesome food, employment and income, recreational activity, and cultural heritage.

The specific fisheries management objectives are described to meet this goal:

-To protect healthy aquatic ecosystems;
-To rehabilitate degraded aquatic ecosystems; and
-To improve cultural, social and economic benefits from Ontario's fisheries resources.

Specifically for lake sturgeon, which is considered a threatened species in FMZ 5 under Ontario's Endangered Species Act, Ontario's Lake Sturgeon Recovery Strategy (Golder Associates Ltd. 2011) identified an objective *to maintain, enhance and, where feasible, restore habitat in order to support lake sturgeon.*

Previous District Fisheries Management Plans (DFMP's) in FMZ 5 contain the following general fisheries management objective which addresses fish habitat protection:

- to protect, rehabilitate, enhance and maintain fish communities and their environment, to provide an optimum contribution of fish, fish opportunities and associated benefits to society.

***Proposed* Objectives for Fish Habitat and Development Management in FMZ 5**

In applying this provincial level direction to FMZ 5 fish habitat and development management, the MNR has proposed the following objectives.

Maintain or enhance healthy aquatic ecosystem structure, function and diversity *that support a* ***healthy, sustainable, naturally-reproducing native*** *fish community in FMZ 5, thereby providing for optimum contribution of fish, fishing opportunities and associated cultural, social, and economic benefits to society.*

Anticipate, prevent or, where feasible, adapt to large scale environmental changes *that affect aquatic ecosystems and the fish communities that rely on them.*

Minimize cumulative environmental effects *that could negatively impact fish communities and their supporting ecosystems.*

Maintain, enhance or restore habitat in FMZ 5 in order to ***support species at risk*** *including lake sturgeon where they currently or formerly existed.*

Ensure that developments that have the potential to affect exploitation levels of fisheries ***consider the impact of increased harvest*** *on ability to meet species objectives and maintain sustainable, healthy fish populations.*

APPENDIX B:
FIELD DATA SHEETS

Watercourse Field Record Form

GENERAL INFORMATION

PROJECT #:	PROJECT DESCRIPTION:	DAY:	MONTH:	YEAR:
1938028 70	Rainy River Bridge	25	08	2015

Is STREAM REALIGNMENT required for this section:

Ø Yes O No O Unknown

COLLECTORS:	WEATHER CONDITIONS:	TIME STARTED:	TIME FINISHED:
JL/MS (Winnipeg)	12°C, rain	10:30 am	1:00 pm

AIR TEMP:	WATER TEMP:	CONDUCTIVITY (µS/cm):
12°C	18.16°C	61 µS/cm

PHOTO NUMBERS AND DESCRIPTIONS: See field notes (Pg 56)

LOCATION

NAME OF WATERBODY:	DRAINAGE SYSTEM:	CROSSING #:	STATION #:
Rainy River	into Lake of the Woods	N/A	N/A

LOCATION OF CROSSING: Rainy River International Bridge between Rainy River ON & Baudette MN.

UTM ZONE, EASTING & NORTHING:	MTO CHAINAGE:
TOWNSHIP:	**MNR DISTRICT:**

LAND USE AND POLLUTION

SURROUNDING LAND USE:	SOURCES OF POLLUTION:
manicured lawn, pavement and riparian areas consisting of deciduous trees.	Bridge traffic

EXISTING STRUCTURE TYPE

Bridge Ø	Box Culvert O	Open Foot Culvert O	CSP O	N/A O

Other O Describe: Size (w x h) m^2

SECTION TYPE AND MORPHOLOGY

SECTION IDENTIFIER:	SECTION LOCATION: (include on habitat map)
Existing Bridge	Existing Bridge Location

TYPE:	Stream / river	Channelized	Permanent	Intermittent	Ephemeral	ASSOCIATED WETLAND:
	Ø	O	O	O	O	

TOTAL ~~SECTION~~ LENGTH (m): 400m	CURRENT VELOCITY (m/s): ~0.15m/s according to USGS water data.

SUB-SECTION(S)	Run ?	Pool O	Riffle O	Flats O	Inside culvert O	Other
Percentage of area	100%					
Mean depth wetted (m)	Depth was very uniform throughout the reach. close to shore $\bar{x}$ depth = 2.5m, center $\bar{x}$ depth = 6m					
Mean width wetted (m)	Wetted width was very close to bank-full width. < 1m of shoreline.					
Mean bankfull width (m)	very uniform throughout reach @ 315m. 130m wide with ~95m vegetated.					inlet was
Mean bankfull depth(m)						
Substrate	Dominated by fines - mostly sand with some coarse substrate along the shoreline					

Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	Muck Mu	Detritus D
				D				

Sub Sub

Watercourse Field Record Form

BANK STABILITY	Stable	Slightly Unstable	Moderately Unstable	Unstable
Left Upstream Bank	0	0	0	0
Right Upstream Bank	0	0	0	0

HABITAT

IN-STREAM COVER (% surface area):	Undercut banks	Boulders	Cobble	Woody Debris	Organic debris	Vascular Macrophytes	None
Depth/clarity/Dominant cover				Instream Overhanging		Instream ~5%. Overhanging	

SHORE COVER (% stream shaded):	100 – 90 %	90 – 60%	60- 30%	30 – 1%	None
	0	0	0	0	0

VEGETATION TYPE (%): 5% of total reach	Submergent	Floating	Emergent	None
	5% (of total)	5% (of total)	90% (of total)	
Predominant Species	Sedge/grass?			

MIGRATORY OBSTRUCTIONS:	None	Seasonal	Permanent

POTENTIAL CRITICAL HABITAT LIMITING:	Spawning	Evidence of Groundwater	Other

POTENTIAL ENHANCEMENT OPPORTUNITIES:

Short Jaw Cisco habitat not very likely. Depths were too shallow (max 6m) and usually found between 18 and 183m deep. They typically spawn in lakes and deep, cold, well oxygenated waters.

Lake Sturgeon very likely. Velocity is good, depth is good, substrate likely good. Confluence to Baudette creek great habitat and shoreline provide ideal rearing & holding/staging habitat.

COMMENTS:

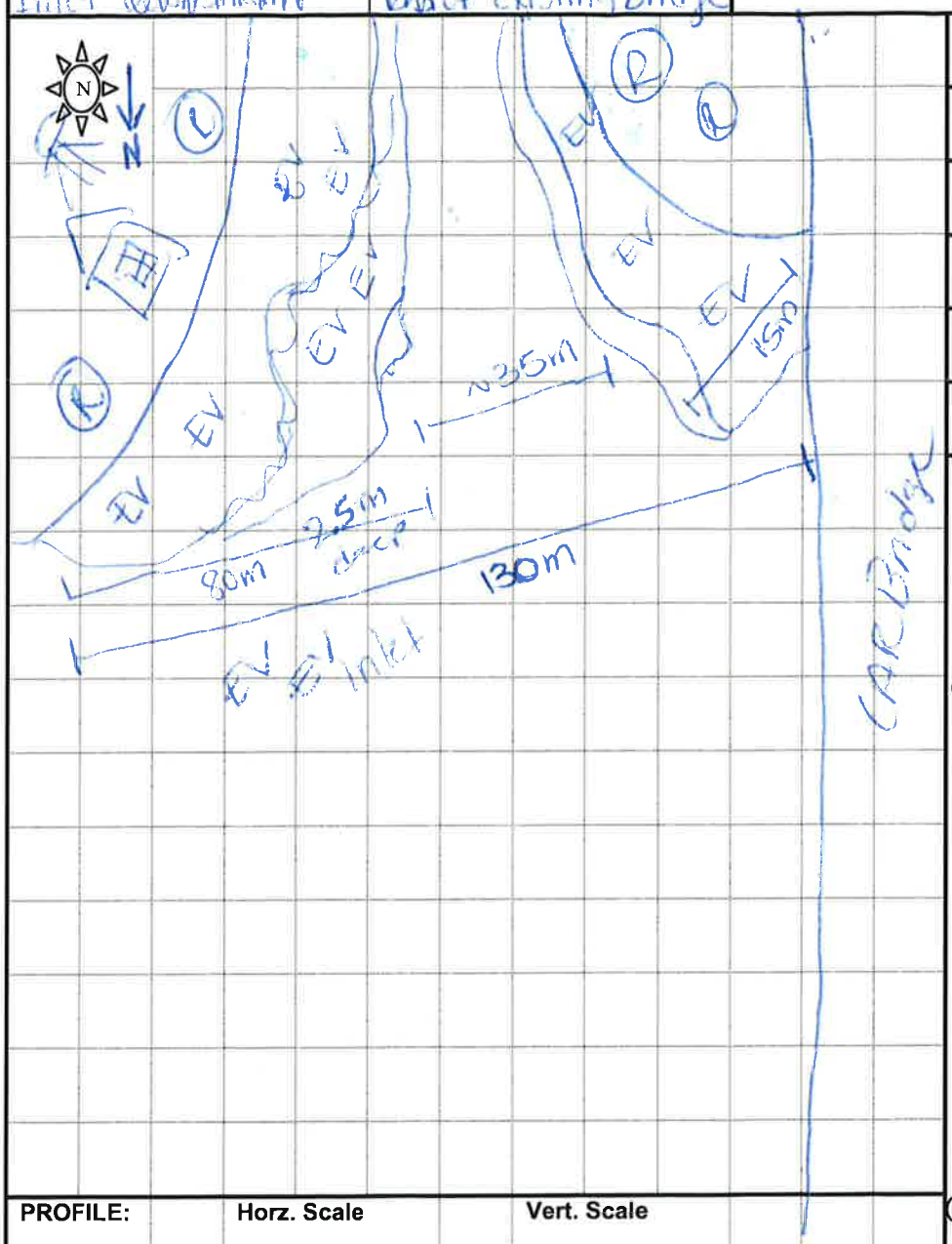
Alternative 1 would likely be the recommended option. This decision is based on the inlet of Baudette Creek into Rainy River on the upstream side of the bridge. This habitat would provide good spawning & rearing habitat for fish as it is highly vegetated and a bit shallower. This is preffered by fish such as white sucker and walleye. Avoiding construction in this area would be recommended. Also there are less houses on the Downstream side. Rail bridge has coarse substrate and emergent vegetation along both shorelines. This is potential spawning habitat for walleye & white sucker as well as Lake Sturgeon. The habitat observed is very uniform throughout the 400m assessed. Run unit throughout with a uniform bottom dominated by sand. width is consistant excluding the inlet directly US of the existing car bridge. vegetation is dominated by emergents and is ~15m wide on the RDB and ~50m wide on LDB. Vegetation in inlet ~95m (80m RDB, 15m LDB). No barriers for migration and overwintering habitat is moderate - likely more into Lake of the Woods

and lower velocity preferred by Lake Sturgeon

Additional Notes Appended? O No O Yes number of pages _____

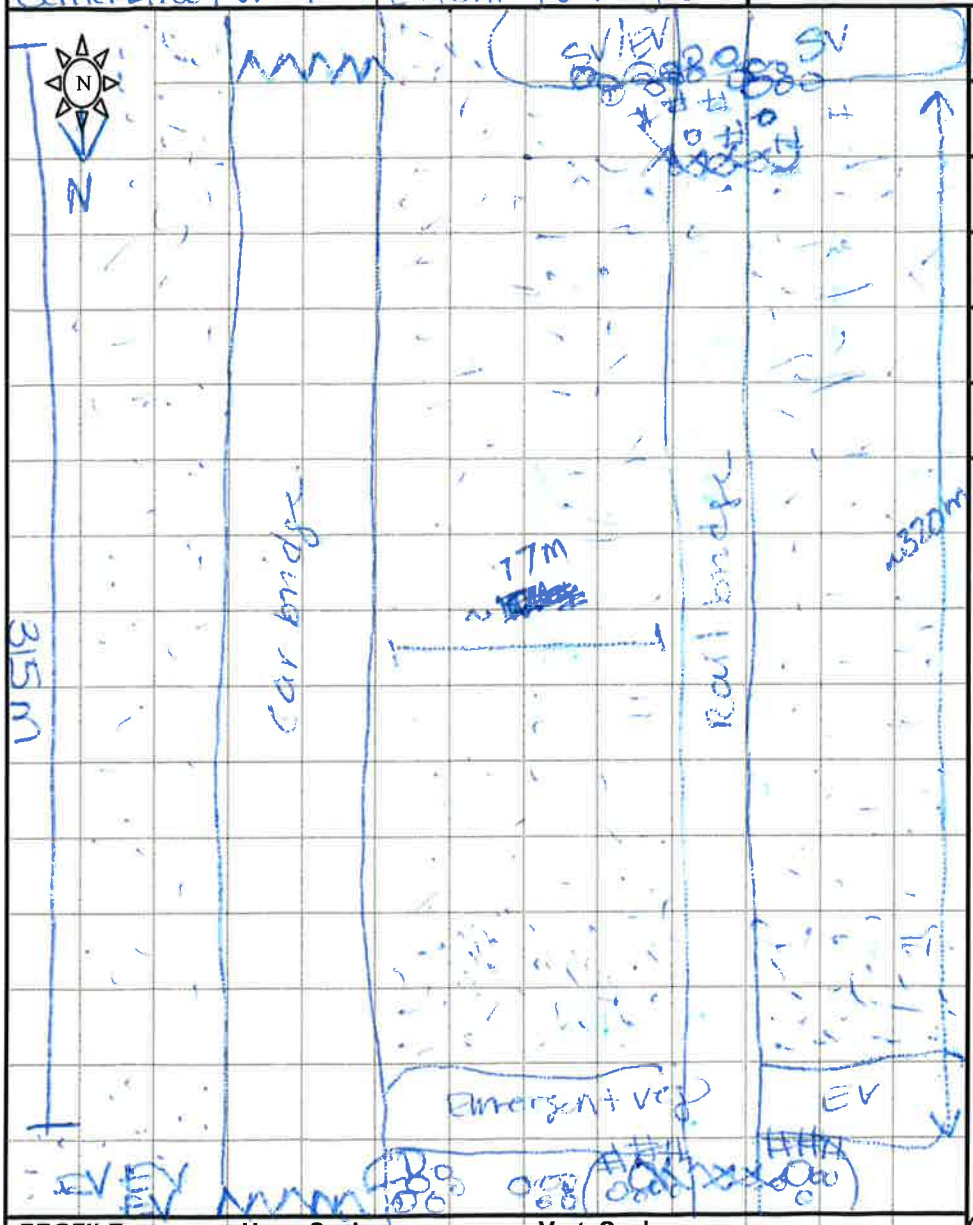
JL
Aug 25/15
3/3

SECTION IDENTIFIER:	SECTION LOCATION:	SECTION LENGTH (m):	SCALE (cm / m):
Inlet Wiarmann	upstream of existing bridge		


N
N
L
R
EV
EV
EV

JL
Aug 25/15
1/3

SECTION IDENTIFIER:	SECTION LOCATION:	SECTION LENGTH (m):	SCALE (cm / m):
Centreline downstream	Existing bridge	~125m	



PROFILE: **Horz. Scale** **Vert. Scale**

emergent veg along both shorelines
some cobble & gravel under rail bridge on both shorelines
cement pilings on existing car bridge.

PROJECT #: 193802870

MAPPER: JL

NAME OF WATERBODY: Rainy River

CROSSING #:

STATION #:

DATE: DD-MMM-YY 25-08-2015

LEGEND

10d depth (cm)
6w width

➡ Riffle
⇨ Run/Glide
⬭ Pool
▮ Island/Bar

⁘ Fine Substrate
Gravel Substrate
oOooO Cobble /Boulder
*** * *** Debris

CT Cattail
SV/FV Submerg/Float Veg

EV Emergent Vegetation
W Watercress

Fe Iron Staining
/////// Eroded Bank

XXX Riprap / Other Stabilization

⊂⊃ Instream Log/Tree
^^^ Dam/Weir/Obstruction

® Riparian Tree

├► Seep/Spring
-------- Undercut Bank

— Barrier to Fish Movement
-S- Seasonal Barrier

-x--x- Fence line
⌴ Culvert

250+77+73 = 400

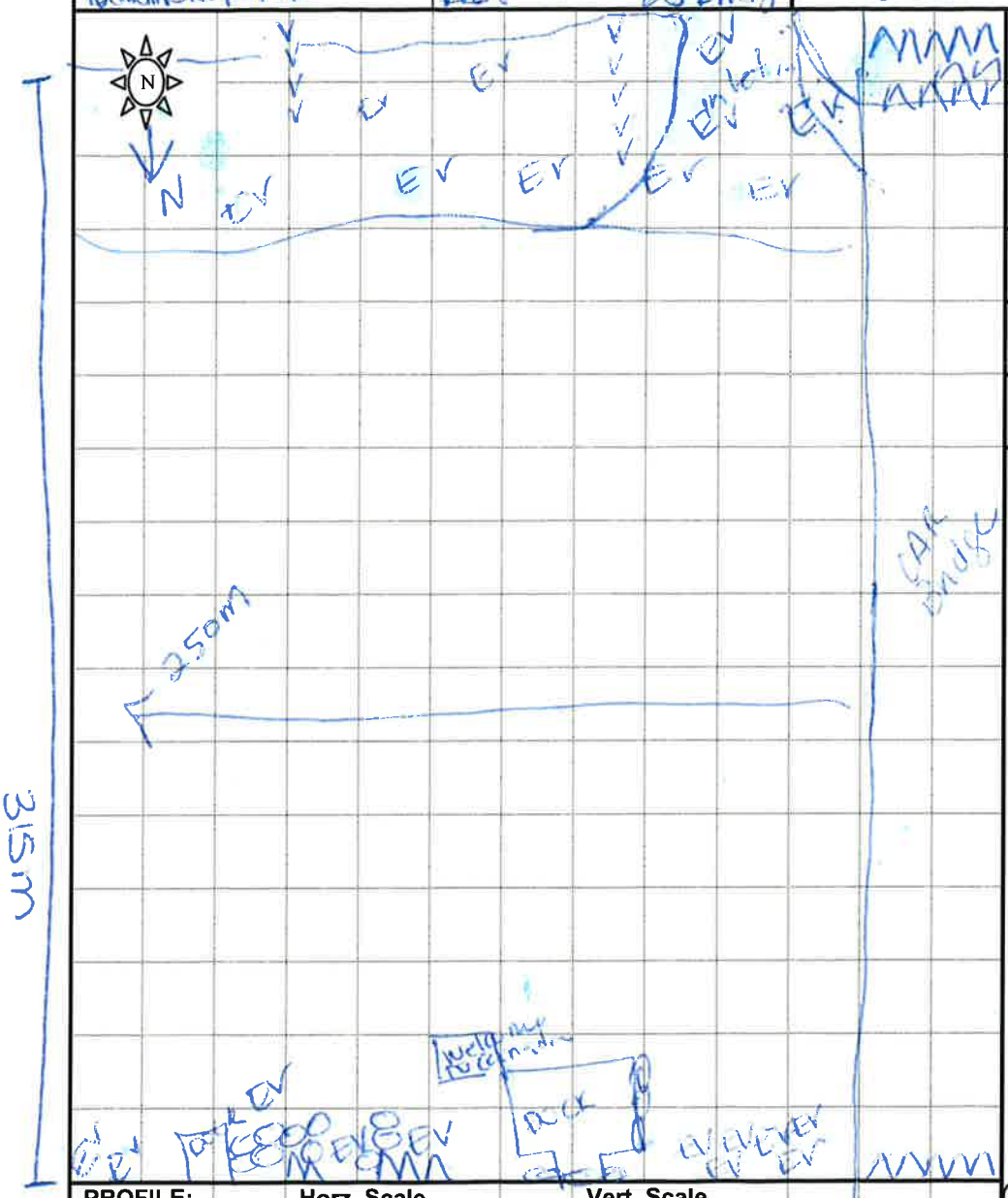
0.48 ft/s · USGS water data

~0.15 m/s

JL
Aug 25/15
2/3

upstream

SECTION IDENTIFIER:	SECTION LOCATION:	SECTION LENGTH (m):	SCALE (cm / m):
RDB docks	LDB docks, existing bridge	~230m	


N
EV
N
EV
EV
EV

APPENDIX C:
PHOTOGRAPHIC RECORD

Photo 1: East side of Rainy River, upstream side of the Baudette/Rainy River International Bridge

Photo 2: East side of Rainy River, bridge pier and abutment

Photo 3: East side of Rainy River, immediately downstream from the bridge

Photo 4: Facing downstream from near east end of bridge

Photo 5: Facing east from the west side of Rainy River (upstream side of bridge)

Photo 6: Facing west from east half of Rainy River (upstream side of bridge)

Photo 7: East side of Rainy River, immediately downstream from the CNR bridge

Photo 8: East side of Rainy River, at the CNR bridge

Photo 9: Downstream from the CNR bridge, facing east

Photo 10: West side of the Rainy River, beneath bridge

Photo 11: West side of the Rainy River

Photo 12: West side of the Rainy River, upstream from the bridge

Photo 13: West side of the Rainy River, between bridge and CNR bridge

Photo 14: West Side of the Rainy River, between bridge and CNR bridge

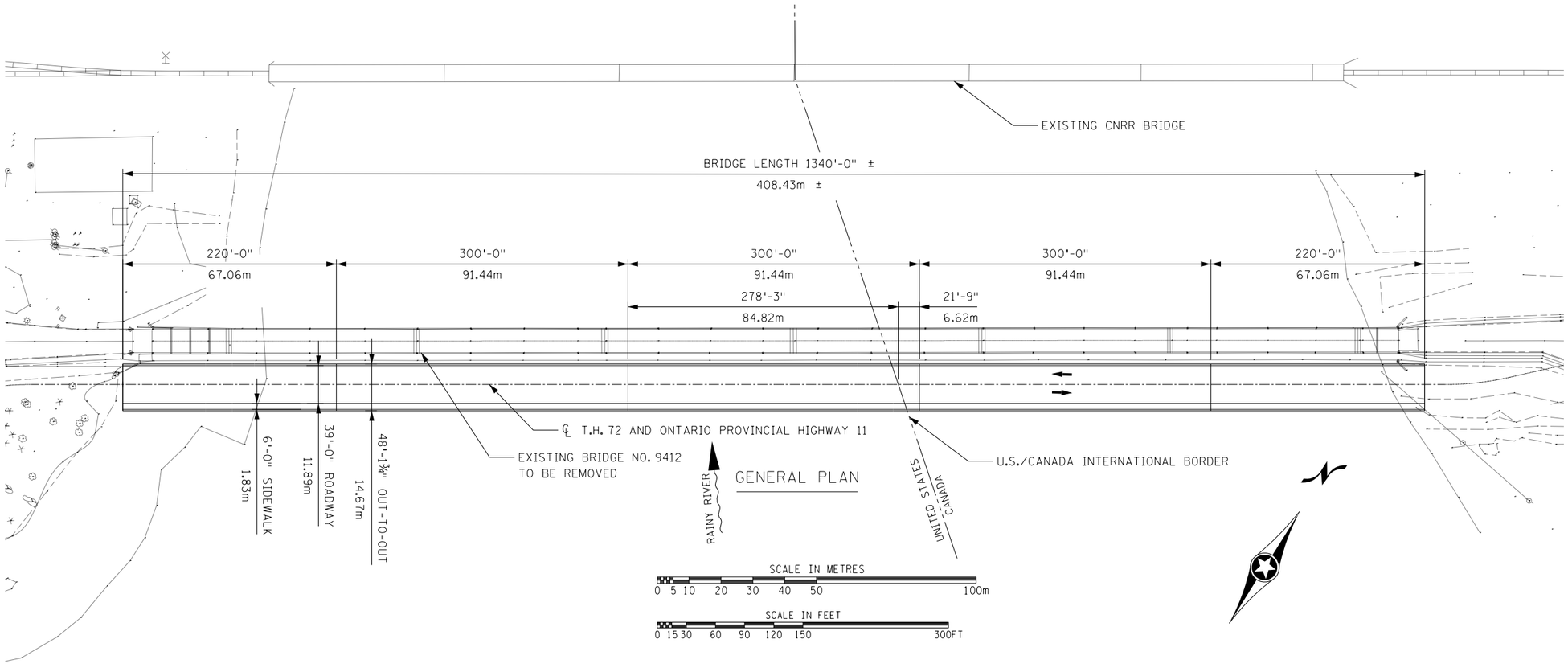
Photo 15: West Side of the Rainy River, between bridge and CNR bridge

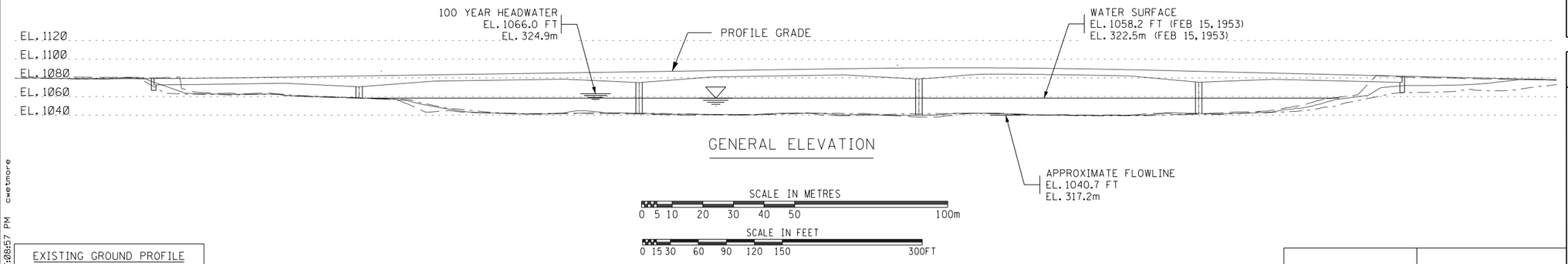
Photo 16: West side of the Rainy River, beneath CNR bridge

Photo 17: Facing upstream, downstream from the CNR bridge

Photo 18: Facing west, downstream from the CNR bridge

APPENDIX D: DRAWINGS AND RISK ASSESSMENT WORKSHEET





DESIGN DATA

2014 AND CURRENT INTERIM AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS
CHBDC 2006 (CAN/CSA S6-06)

LOAD AND RESISTANCE FACTOR DESIGN METHOD
HL93 LIVE LOAD (CL-625-ONT LIVE LOAD)

DEAD LOAD INCLUDES 20 PSF (1.0 kN PER SQ. METRE) ALLOWANCE FOR FUTURE WEARING COURSE MODIFICATIONS

MATERIAL DESIGN PROPERTIES*:
REINFORCED CONCRETE:
f'c = 4 KSI OR 30 MPA n = 8
fy = 60 KSI OR 400 MPA REINFORCEMENT

PRESTRESSED CONCRETE:
f'c = 9 KSI OR 60 MPA n = 1
fpu = 270 KSI OR 1,860 MPA LOW RELAXATION STRANDS 0.75 fpu FOR INITIAL PRESTRESS

STRUCTURAL STEEL:
fy = 50 KSI OR 350 MPA SPEC 3309 (PAINTED)

DESIGN SPEED:
OVER = 35 MPH (56 KPH)

APPROXIMATE DECK AREA 64,515 SQ FT (5,994 SQ METRES)

2038 PROJECTED TRAFFIC VOLUMES

ROADWAY OVER	
1,450	A.D.T.
287	D.H.V.
109	A.D.T.T.

LIST OF SHEETS

SHEET NO.	DESCRIPTION
1	GENERAL PLAN AND ELEVATION
2	TYPICAL BRIDGE CROSS SECTION
3	BEAM ELEVATION
4	NAVIGATION SPAN - U.S.
5	NAVIGATION SPAN - CANADA
6	PIER DETAILS

* U.S. CUSTOMARY AND METRIC MATERIAL PROPERTIES PROVIDED. DESIGN SHALL ALLOW FOR EITHER MATERIAL.

PROPOSED TYPE OF STRUCTURE

DECK:
VARIABLE DEPTH STEEL PLATE GIRDER
10¼" (260mm) CONCRETE DECK

SUBSTRUCTURE:
PARAPET ABUTMENTS SUPPORTED ON XXX CONCRETE PIERS SUPPORTED ON XXX

NOTES:
VERTICAL DATUM FOR ALL SHEETS:
N.A.V.D. 88 ADJ.
HORIZONTAL DATUM FOR ALL SHEETS:
NAD 83 ADJUSTED

EXISTING GROUND PROFILE
20' LT. – – – – –
℄ T.H. 72 ————
20' RT. — — —

DEPTH OF STRUCTURE:
13'-1¼" (3.99m) GUTTER TO LOW BRIDGE
80" (2.03m) TO 140" (3.56m) VARIABLE DEPTH WELDED STEEL PLATE GIRDER 4 LINES

MINNESOTA DEPARTMENT OF TRANSPORTATION
MINISTRY OF TRANSPORTATION - ONTARIO

NEW RAINY RIVER INTERNATIONAL CROSSING

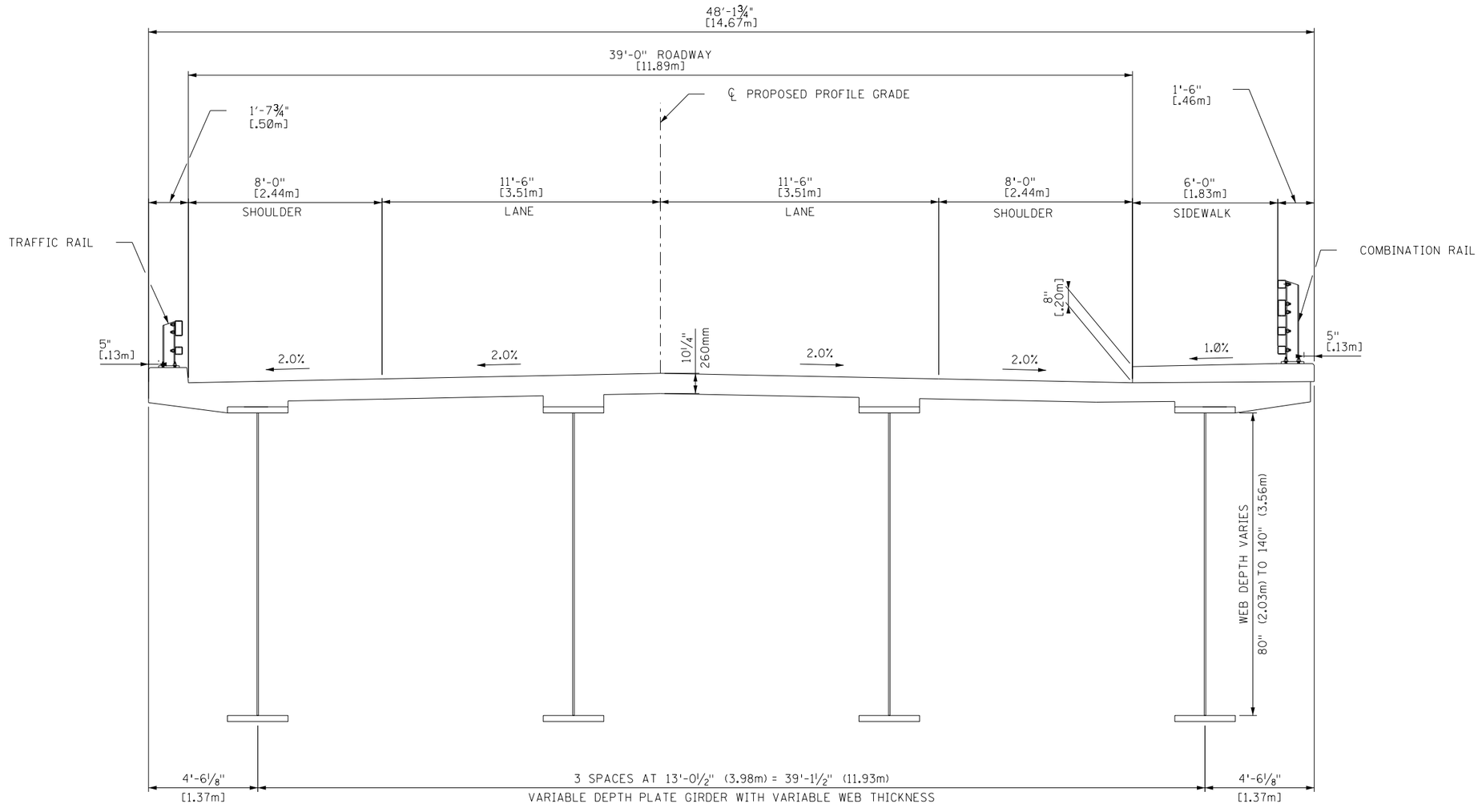
RAINY RIVER UNDER T.H. 72/ ONTARIO PROVINCIAL HIGHWAY 11
MTO SITE 45-110
STATE PROJECT NO. 3905-09

ALTERNATE 1B
CONTINUOUS STEEL I-GIRDER
5 SPANS HAUNCHED

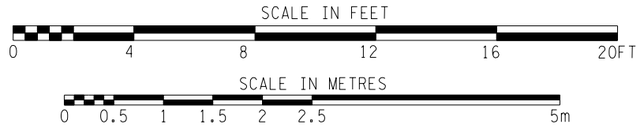
HNTB Stantec

MX	CTW
TFK	KAF

3/21/2016 7:08:57 PM cwetmore

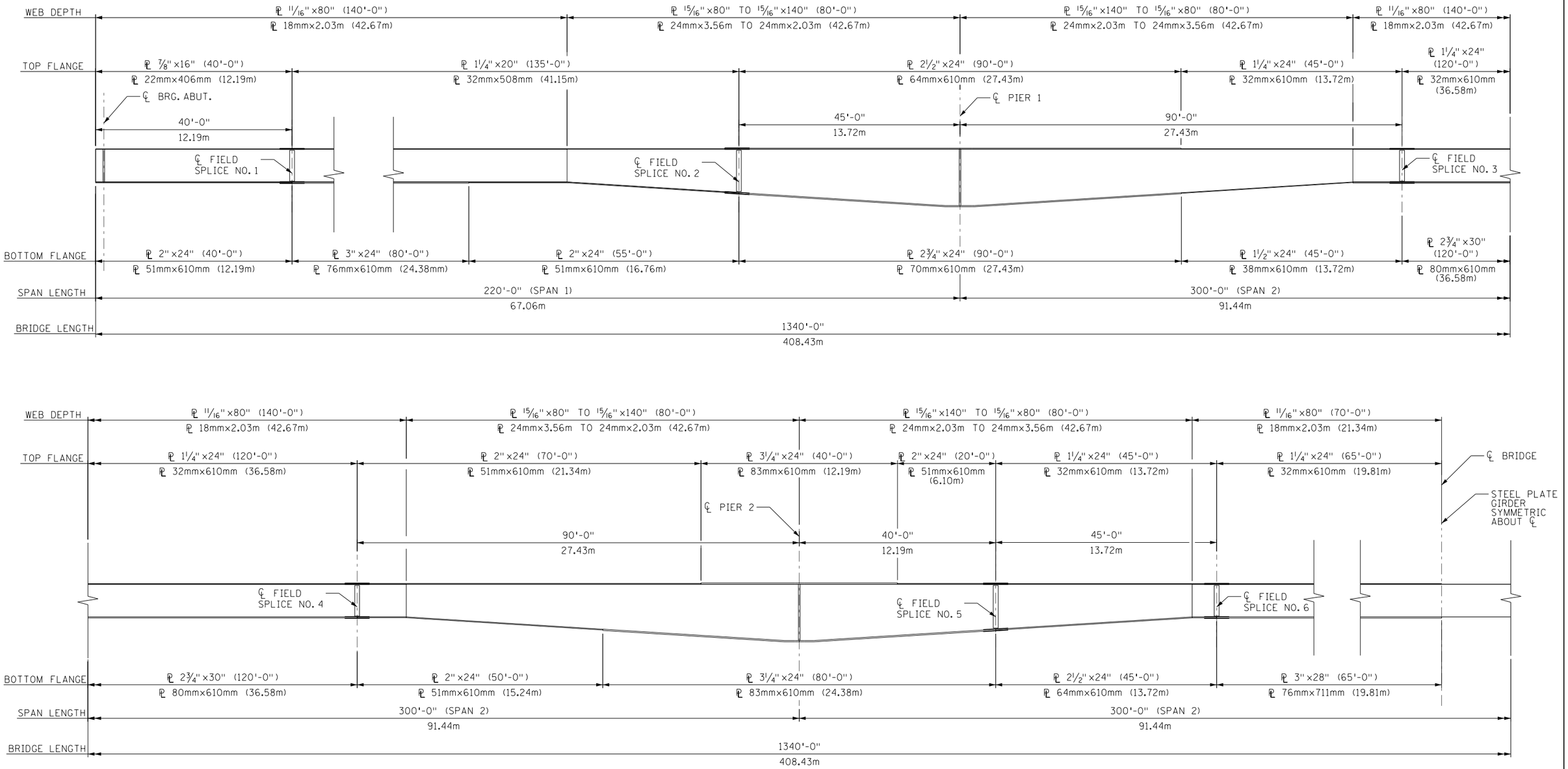


TRANSVERSE SECTION



TYPICAL BRIDGE CROSS SECTION	DR: CTW	CHK: KAF	NEW RAINY RIVER INTERNATIONAL CROSSING
	SHEET NO. 2 OF 6 SHEETS		

3/21/2016 7:09:11 PM cwetmore



BEAM ELEVATION

SCALE IN FEET

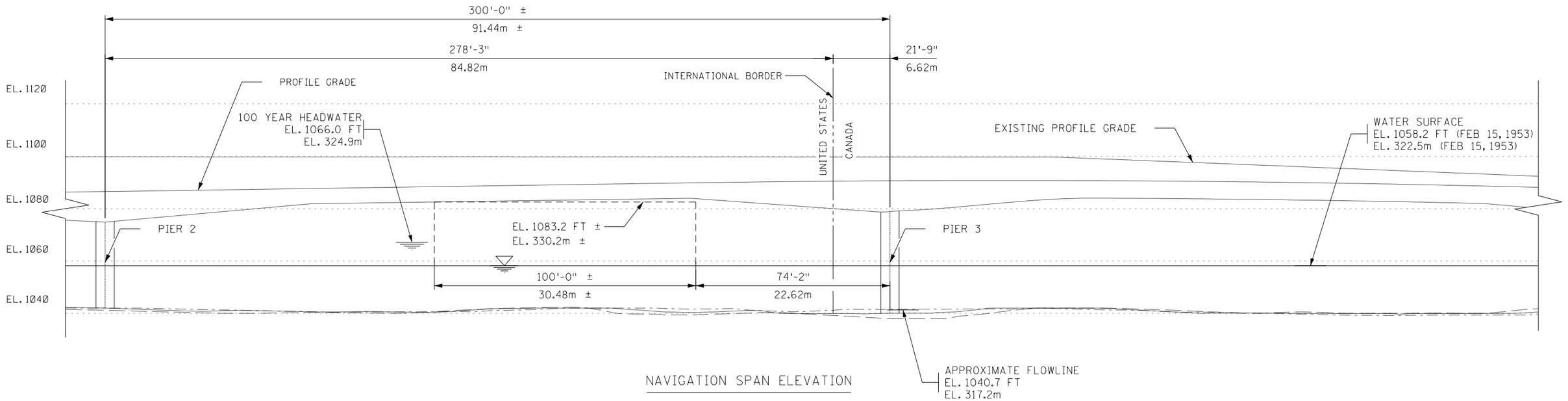
0 16 32 48 64 80FT

SCALE IN METRES

0 2 4 6 8 10 20m

3/21/2016 7:09:20 PM cwetmore

BEAM ELEVATION		DR: CTW	CHK: KAF
	SHEET NO. 3 OF 6 SHEETS		NEW RAINY RIVER INTERNATIONAL CROSSING



NAVIGATION SPAN ELEVATION

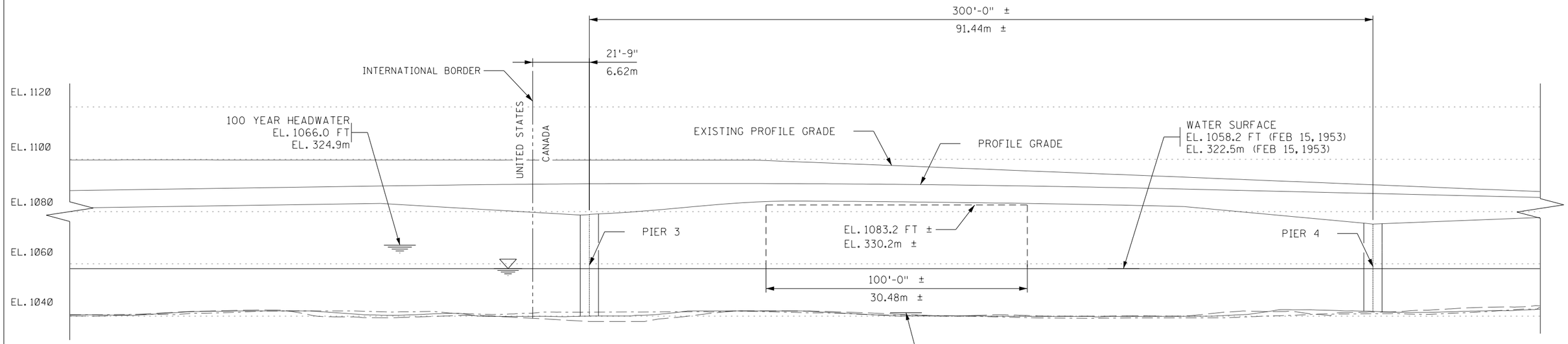
SCALE IN METRES

0 1 2.5 5 7.5 10 20 25m

SCALE IN FEET

0 10 20 40 60 80 100FT

NAVIGATION SPAN - UNITED STATES	DR: CTW	CHK: KAF	NEW RAINY RIVER INTERNATIONAL CROSSING
SHEET NO. 4 OF 6 SHEETS			



NAVIGATION SPAN ELEVATION

SCALE IN METRES

0 1 2.5 5 7.5 10 20 25m

SCALE IN FEET

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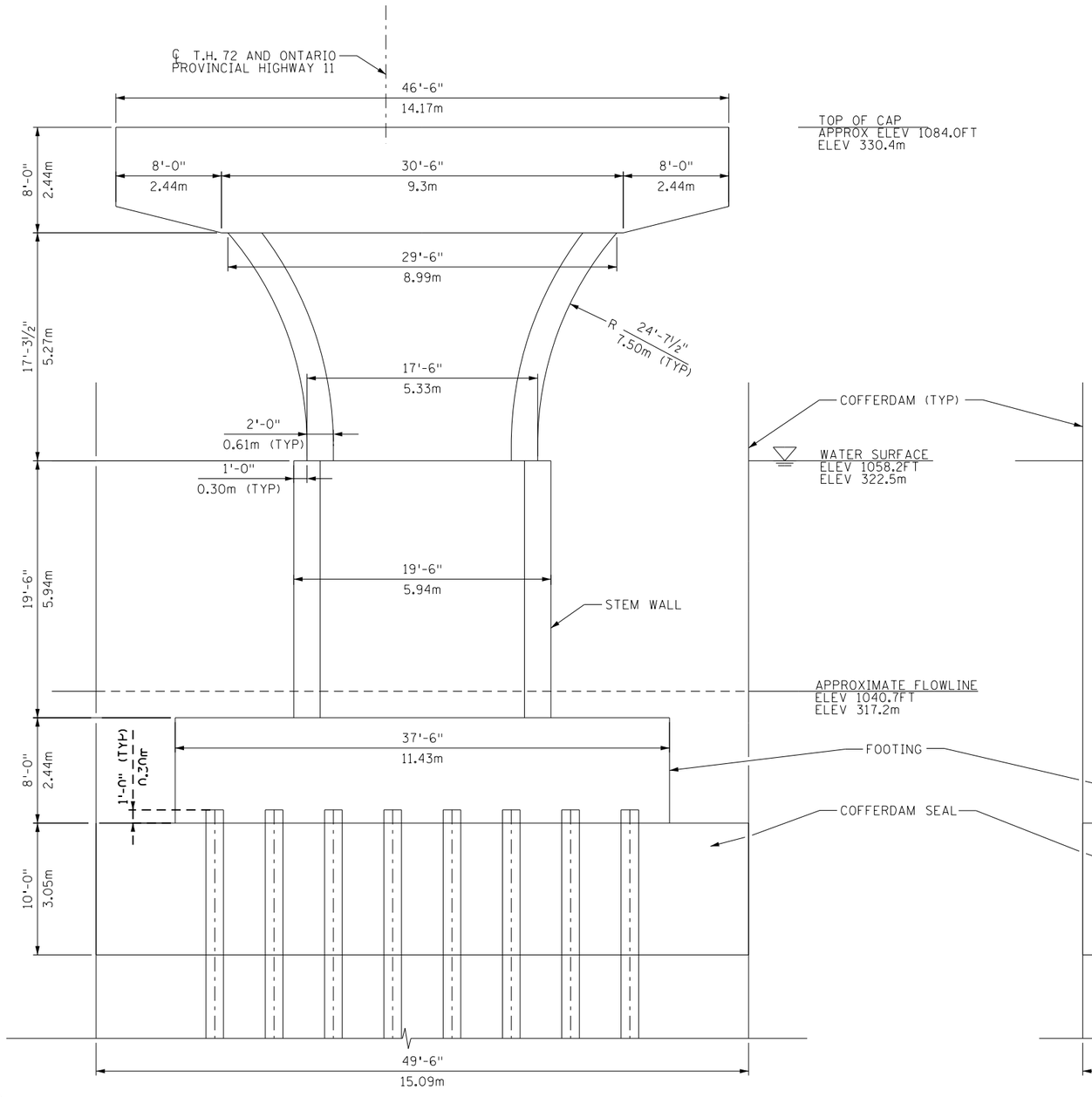
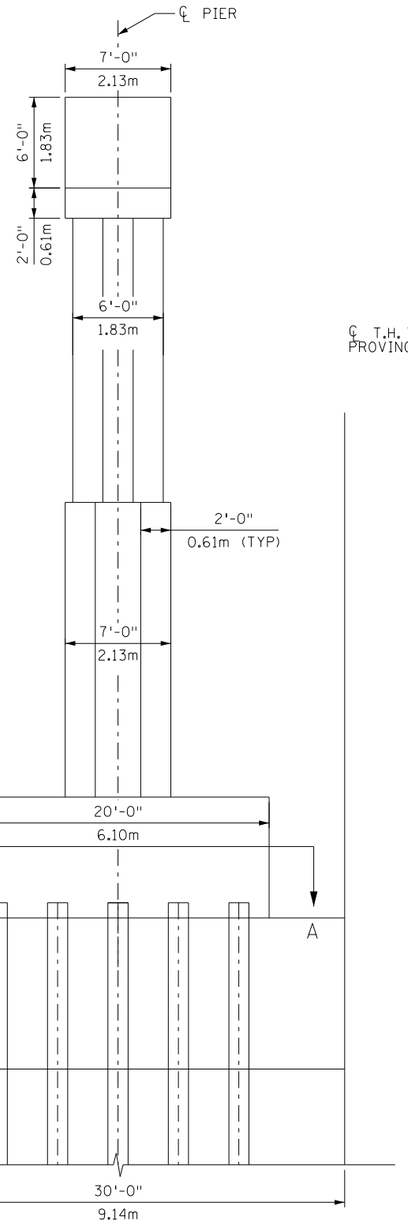
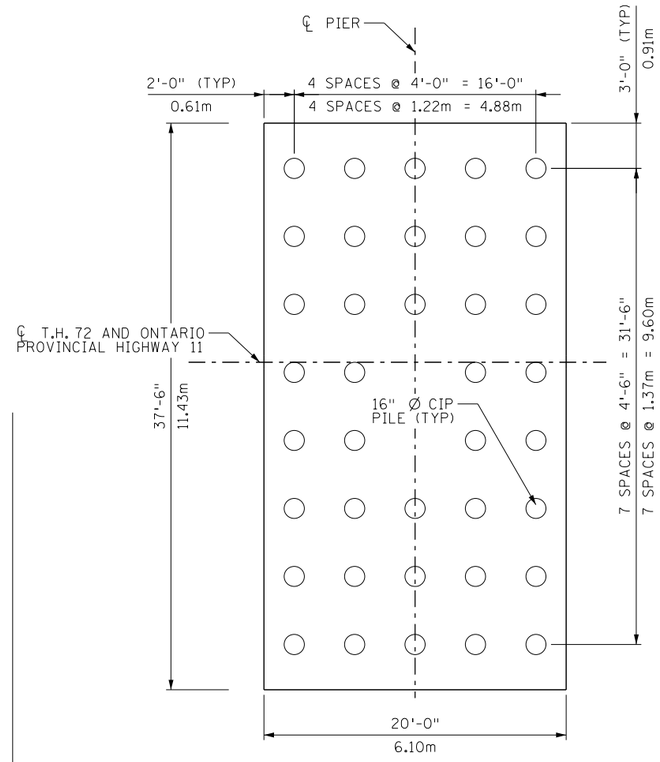
NAVIGATION SPAN - CANADA	DR: CTW	CHK: KAF	NEW RAINY RIVER INTERNATIONAL CROSSING
SHEET NO. 5 OF 6 SHEETS			



PIER ELEVATION



PIER END ELEVATION



SECTION A-A

FOOTING PLAN

COFFERDAM SEAL NOT SHOWN FOR CLARITY

NOTES:

PIER DETAILS PREPARED TO ASCERTAIN FEASIBILITY AND TO IDENTIFY DETAILS FOR COST ESTIMATING PURPOSES

3/21/2016 7:10:00 PM cwetmore

PIER DETAILS	DR: CTW	CHK: AJN	NEW RAINY RIVER INTERNATIONAL CROSSING
	SHEET NO. 6 OF 6 SHEETS		

TEMPLATE 10.4 Risk Assessment Worksheet

Risk Management Framework Worksheet

Impact Description (describe project impacts to fish & fish habitat):	**MTO Assessor: Nancy Harttrup** **Waterbody: Rainy River** **MTO Project Title: Baudette/Rainy River International Bridge Replacement on Highway 11, Town of Rainy River** **MTO WP#: 6046-10-00**	**For DFO Use Only** **Date:** **Reviewed By:** **Approved By:** **File No:**
Piers of the new bridge over the Rainy River will overprint 546 m^2 of river bottom adjacent to the existing bridge. Bridge abutments are above the high water mark of the Rainy River. Temporary work areas (for construction) must be determined and assessed during Detail Design.		

Applicable Pathways of Effects (PoE)*: (www.dfo-mpo.gc.ca/habitat/what-quoi/pathways-sequences/index-eng.asp)

Use PoE Diagrams and attach if necessary

Land-based Activities

- ☒ Vegetation Clearing
- ☐ Excavation
- ☒ Use of Industrial Equipment
- ☐ Riparian Planting
- ☒ Grading
- ☐ Use of Explosives
- ☐ Cleaning or Maintenance of Bridges or Other Structures
- ☐ Streamside Livestock Grazing

☐ **No Residual Effects – Effects Fully Mitigated**

In-water Activities

- ☒ Industrial Equipment
- ☐ Water Extraction
- ☒ Addition or Removal of Aquatic Vegetation
- ☐ Change in Timing, Duration and Frequency of Flow
- ☒ Structure Removal
- ☐ Explosives
- ☒ Placement of Material or Structures in Water
- ☒ Dredging
- ☐ Organic Debris Management
- ☐ Wastewater Management
- ☒ Fish Passage Issues

Residual Negative Effects from Aquatic Effects Assessment*:

☒ **Residual Negative Effects:** The changes identified below are due to the construction of new in-water piers. The footprint area of the piers cannot be mitigated.

- ☒ Change in habitat structure and cover
- ☐ Change in sediment concentrations
- ☐ Change in water temperature
- ☒ Change in food supply
- ☒ Change in nutrient concentration
- ☐ Change in baseflow
- ☐ Change in dissolved oxygen concentrations
- ☐ Change in migration / access to habitat
- ☐ Chemical barriers to fish passage

- ☐ Direct or indirect mortality of fish
- ☐ Displacement or stranding of fish
- ☐ Incidental entrainment, impingement or mortality of resident species
- ☐ Lethal or sublethal effects on fish
- ☐ Potential mortality of fish/eggs/ova
- ☐ Other:_____

Addressed by other government bodies in Ontario

- ☐ Change in contaminant concentrations
- ☐ Change in organic inputs/nutrient concentrations
- ☐ Interbasin transfer of species
- ☐ Change in pathogens/bacterial levels
- ☐ Pathogens, disease, vectors, exotics
- ☐ Changes in thermal cues or temperature barriers

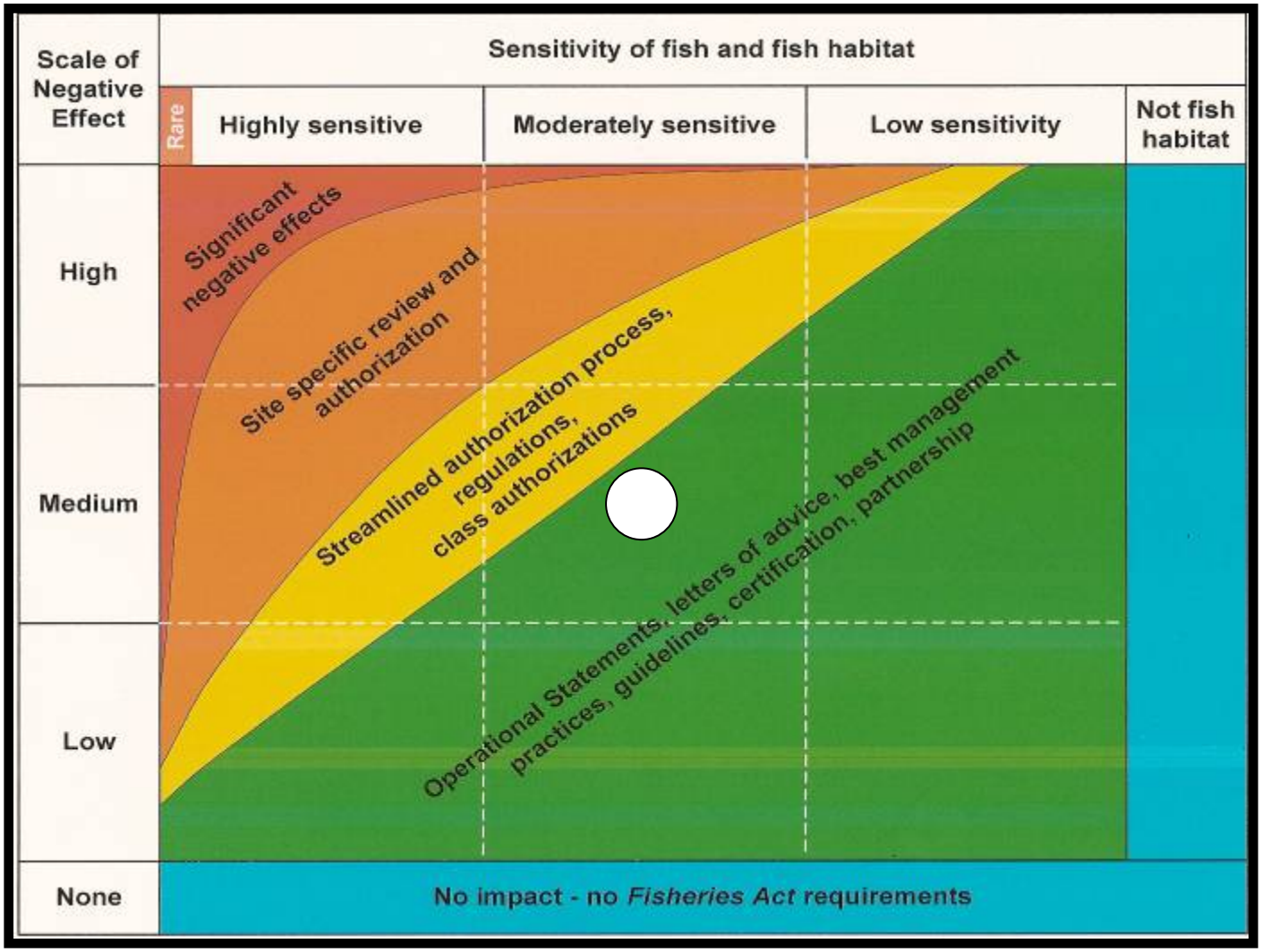
Assessment of Sensitivity of Fish and Fish Habitat			
Attribute	**Sensitivity**	**Examples/Measure**	**Rationale for Scale Ranking**
Species Sensitivity Sensitivity of species to short term change (alteration or disruption) in environmental conditions, such as suspended sediments, bottom substrate, aquatic or riparian vegetation, or water temperature.	Low ☐	No use by fish or species present are resilient to change and perturbation (e.g. most cyprinid species);	Species present are moderately sensitive to change and perturbation (diverse coolwater community that includes Walleye, Northern Pike, Lake Sturgeon, Yellow Perch, Smallmouth Bass, White Sucker).
	Moderate ☒	Species present are moderately resilient to change and perturbation (e.g. bass, pike, walleye and some cyprinids)	
	High ☐	Species present are highly sensitive to perturbations, temperature, etc (e.g. many salmonidae, COSEWIC species, END / THR ESA species)	
Species' Dependence on Habitat Use of habitat by fish species. Some species may be able to spawn in a wide range of habitats, while others may have very specific habitat requirements (e.g. over- wintering habitat, nursery, rearing habitat).	Low ☐	No direct use by fish; habitat has the potential to support only single-use life-cycle function (e.g. marginal spawning, migration, rearing, feeding, or over-wintering) non-specialized habitat; or Indirect / contributing habitat	Habitat has the potential to support multiple life-cycle functions as there is a diversity of substrates, depths and areas of vegetation; there is no documented specialized or critical habitat.
	Moderate ☒	Habitat has the potential to support multiple life-cycle functions (e.g. spawning, migration, rearing, feeding, and over-wintering)	
	High ☐	Important (e.g., site specific spawning such as upwellings) or specialized habitat (e.g., over-wintering) that is essential to the survival of species or populations. Critical Habitat for END/ THR Schedule 1 SAR. Habitat for Schedule 1 Special Concern Species	
Rarity The relative strength of a fish species or population, or prevalence of a particular type of habitat. Consideration should be given to cumulative effects of all existing developments in a water body. *** Where the scale for species or habitat is different select the most appropriate scale**	Low ☐	Habitat/species is/are prevalent and are widely distributed in the province/territory or water body where the work is being undertaken (e.g. rock bass, white sucker)	This attribute was assigned due to the presence and documented recovery of a provincially Endangered species at risk (Lake Sturgeon).
	Moderate ☐	Habitat/species has/have moderate distribution confined to small areas in the province/territory or water body where the work is being undertaken	
	High ☒	Species/habitat is rare/limiting (e.g., SC, THR and END SARA Schedule 1 species, and critical habitat under SARA COSEWIC listed species, END/THR ESA, other fish/habitat identified in Fish Management Plans);	
Habitat Resiliency Habitat resiliency refers to the ability of an aquatic ecosystem to recover from changes in environmental conditions. Consideration of the physical characteristics of the stabilization design is important in predicting the resiliency of the affected freshwater ecosystem (i.e. preserving its function). Consider residual impacts such as the stability of the immediate and adjacent fish habitats as a result of the stabilization design.	Low ☐	Thermal regime, physical characteristics, unsuitable for fish species or warmwater baitfish systems that are stable and resilient to change – typically ephemeral and some intermittent systems where habitat is non-specialized	Permanently flowing coolwater system; no specialized habitat. The aquatic ecosystem in the area could recover from changes in environmental conditions.
	Moderate ☒	Warmwater (more sensitive fish species) and coolwater systems; system is unstable, but resilient to change and perturbation. Intermittent systems with habitat that is specialized, permanent flowing warmwater systems and coldwater systems without specialized habitat	
	High ☐	Coldwater systems that cannot buffer temperature changes with specialized habitat (e.g., spawning and nursery).	

Assessment of Scale of Negative Effects			
Attribute	**Scale**	**Examples/Measure**	**Rationale for Scale Ranking**
Extent (size) Refers to the direct "footprint" of the proposal in fish habitat, including riparian areas, as well as adjacent areas that may be indirectly affected. The ecological unit where the work is being completed should be considered when assessing the extent of the project and determining the footprint size.	Low ☒	Site or segment, localized effect (e.g. no greater than one meander wavelength); or small portion of ecological unit.	<u>Change in Habitat Structure and Cover/ Change in Food Supply</u> - Footprint area of four in-water piers: 546 m^2 - The extent of temporary work areas (shoreline, temporary in-water towers) is not known at this time but Low extent is expected, given the size of the river. <u>Change in Nutrient Concentrations:</u> - Nearshore area of aquatic vegetation in the vicinity of proposed abutments The project includes the removal of the existing bridge; therefore areas of river bottom formerly occupied by the five piers can be used by fish.
	Medium ☐	Ecological unit moderately reduced in size, length of watercourse impacted – greater then one meander wavelength (e.g. channel reach or lake region)	
	High ☐	Majority of ecological unit impacted,(e.g. stream channel length reduced more then one meander wavelength) would include impacts to an entire watershed or lake	
Duration The amount of time that a residual effect will persist. Includes construction, re-stabilization and long term impacts (use of natural stabilization approaches will often reduce duration).	Low ☐	Short term (days – a few weeks).	<u>Change in Habitat Structure and Cover/ Change in Food Supply</u> - The piers of the new bridge will be permanent. - The duration of temporary work areas will be determined during Detail Design. <u>Change in Nutrient Concentrations:</u> - The duration of the change in nutrient concentrations is 'medium' as the nearshore vegetation will re-establish following construction. New habitat areas available by removal of the old bridge will be permanently available for use by fish.
	Medium ☐	Medium term (months - year).	
	High ☒	Long term (multiple years – permanent).	
Intensity The expected amount of change from the baseline condition. Intensity is a way of describing the degree of change, such as changes in shoreline processes, groundwater flow, suspended sediment, bottom substrate, aquatic and riparian vegetation, etc.	Low ☐	Altered habitat still suitable but not as productive; or Changes to habitat productivity are acceptable as per FMP	<u>Change in Habitat Structure and Cover/ Change in Food Supply</u> - Habitat overprinted by the piers will not be available for use by fish. <u>Change in Nutrient Concentrations:</u> - the intensity of the change in nutrient concentrations is 'Low' The above changes are consistent with "Objectives for Fish Habitat and Development Management" as described in the Draft Zone 5 Fisheries Management Plan (Appendix A)
	Medium ☒	Habitat quality significantly reduced; or Changes to habitat productivity are acceptable as per FMP	
	High ☐	Altered habitat not suitable; significant change to habitat productivity that may compromise MP; no value compared to existing, or has been permanently removed (e.g. infilled)	

* Actual conditions of proposal may not exactly match the measures described. Where differences exist, choose the best fit for scale and provide rationale.

<u>LEGEND</u>

MP	Management Plan (could also include other plans such as Remedial Action Plans, Watershed Plan, Fisheries Management Plans or Objectives)
END	Endangered Species
THR	Threatened Species
SAR	Species at Risk under the *Species at Risk Act*
SC	Special Concern Species
ESA	Ontario *Endangered Species Act*



Categorize risk by plotting a point/ circle/oval on the Risk Assessment Matrix.

Use a Point, circle or oval depending on uncertainty.

A red box labeled "Rare" is located at the most highly sensitive end of the axis and is meant to represent fish and fish habitats that are particularly rare and/or afford special protection under the Species at Risk Act

Risk Management Decision	Risk	Rationale for Risk Decision
Provide rationale for *Scale of Negative Effect*, *Sensitivity of Fish and Fish Habitat* Rankings as well as Risk Decision	**Low Risk** ☒ **Medium Risk** ☐ **High Risk** ☐ **Significant Effects** ☐	**Sensitivity of Fish and Fish Habitat: Moderate;** the Study Area provides general habitat and a migration route for a diverse coolwater community that includes a provincial species at risk (see report **Section 4.1**) **Scale of Negative Effect: Medium;** the footprint area of the bridge piers will occupy a relatively small area of the Rainy River. Although the area beneath the piers will not be available for use by fish, the areas around the piers will remain unchanged and the area currently occupied by piers of the existing bridge will provide habitat. Temporary work areas and shoreline areas will be rehabilitated following construction. .

C4: Greenhouse Gas Emissions Assessment Memo

Stantec

Memo

To:	K. Saunders, S. Wall Ontario Ministry of Transportation 615 James Street South Thunder Bay ON P7E 6P6	From:	Gizem Gunal-Akgol Stantec Consulting Ltd. 100-300 Hagey Boulevard Waterloo ON N2L 0A4
File:	193802870	Date:	September 28, 2016

Reference: Greenhouse Gas Assessment for Canadian Environmental Assessment Act Project Description - Baudette/Rainy River International Bridge Replacement Project (GWP 6046-10-00)

The Minnesota Department of Transportation (MnDOT), in cooperation with the Ontario Ministry of Transportation (MTO), has retained Stantec Consulting Ltd. (Stantec) to undertake the Preliminary Design and Class Environmental Assessment (Class EA) Study for the replacement of the Baudette/Rainy River International bridge (the Project), which includes a requirement to complete a Project Description in accordance with the requirements of the *Canadian Environmental Assessment Act* (2012).

The Project consists of the construction and operation of a new bridge to replace the existing Baudette/Rainy River International Bridge and the decommissioning and removal of the existing bridge. This memo provides the scope, methods and results of this GHG emissions assessment.

INTRODUCTION

The Baudette/Rainy River International Bridge spans the Rainy River from Baudette, Minnesota to Rainy River, Ontario, Canada. The bridge was originally built in 1959, and has served as an international border crossing since that time. As part of a joint ownership agreement, the MnDOT and the MTO maintain and operate the bridge. Full service Ports of Entry (Customs) are located immediately after exiting on either end of the bridge. The MTO and MnDOT are now proposing to decommission the existing bridge and build a new replacement bridge on a new alignment immediately upstream (south) of the existing bridge.

The Baudette/Rainy River International Bridge Replacement project (the Project) involves three components: the decommissioning and removal of the existing Bridge, construction of the replacement bridge on a new alignment, and construction of the U.S. and Canadian approaches to be tied in with the existing roads.

SCOPE OF WORK

This GHG assessment encompasses direct emissions that are directly attributable to the Project, including:

- GHG emissions during construction of the new bridge and decommissioning of the existing bridge. Emissions are expected to originate from the combustion of fuels by equipment and vehicles used onsite during construction.
- GHG emissions during operation of the bridge. Emissions are expected to be transportation emissions as a result of combustion of fuels by vehicles travelling across the bridge and on the approach roads within the Project boundaries.

Reference: Greenhouse Gas Assessment for Canadian Environmental Assessment Act Project Description - Baudette/Rainy River International Bridge Replacement

The Project boundaries for this assessment include the existing bridge and new bridge, the area immediately surrounding them and the approaches on both sides of the border leading from the bridge to the ports of entry facilities. Figure 1 shows the study area.

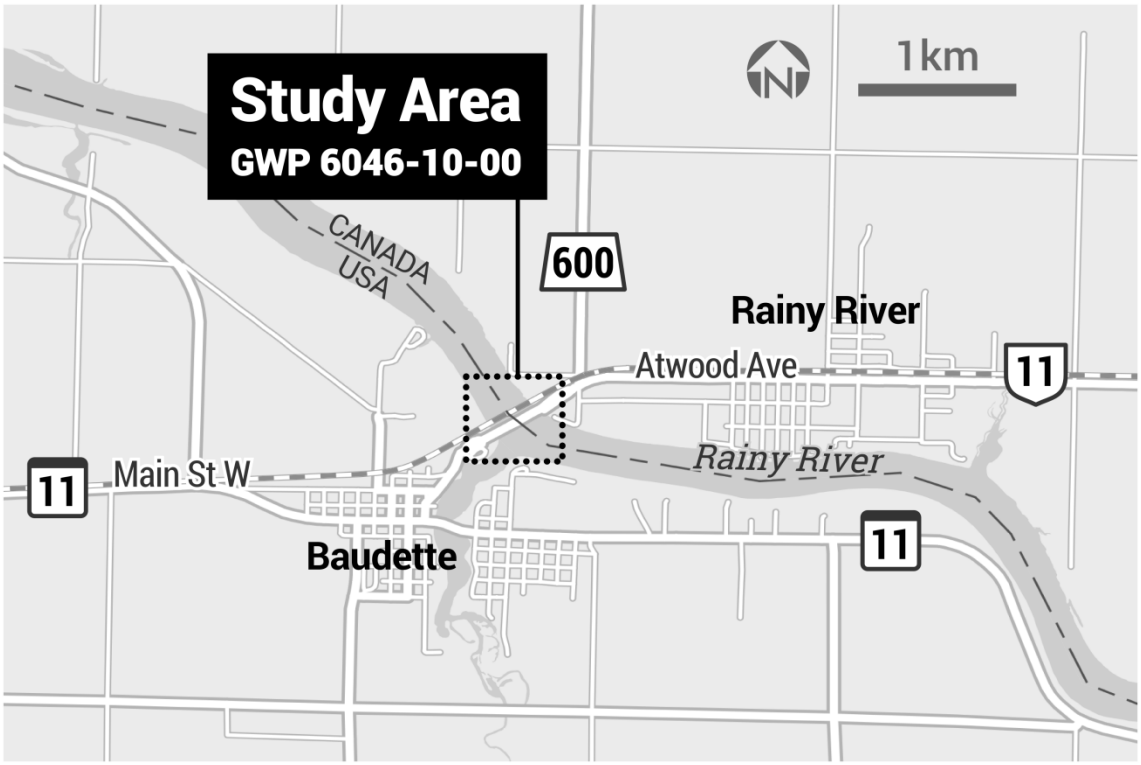


Figure 1: Study Area for GHG Assessment

GHGs included in this assessment are CO_2, CH_4 and N_2O, evaluated as total carbon dioxide equivalents (CO_2e)[1]. All other GHG sources and emissions during construction and operation are expected to be negligible.

Global GHG emissions act cumulatively in the atmosphere, over an extended period of time. Global GHG emissions are reported by industry and regulators as annual emissions. GHG emissions associated with construction are estimated for the total construction period and are presented on a maximum annual basis. For the operation of the bridge, the emissions are estimated on an annual basis as well. These annual estimated construction and operation emissions are compared to provincial/state (Ontario/Minnesota), national (Canada/United States) and global annual emissions.

[1] Carbon dioxide equivalent (CO_2e) is a measure used to compare and collate different greenhouse gases together with one metric based on the global warming potential of the individual greenhouse gases.

Operation emissions are also compared separately to emissions from the transportation sector of the individual provinces/states and countries.

BASELINE

Emissions from the different Project phases (construction and operation) are compared against existing annual GHG emissions inventories in order to provide context and a baseline for comparison. The most recent provincial, state, federal and global annual GHG emission inventories are used to establish the baseline emissions. These inventories are based on published data from Environment and Climate Change Canada (ECCC 2016), the United States Environmental Protection Agency (US EPA 2016), the Minnesota Pollution Control Agency (Minnesota Pollution Control Agency 2016) and the CAIT climate data explorer from the World Resource Institute (WRI 2012).

Table 1 lists total GHG emissions from the different inventories, while Table 2 lists emissions from the transportation subsector only.

Table 1 Existing GHG Emissions – Total

Year	Ontario[1]	Canada[1]	Minnesota[2]	United States[3]	Global[4]
	kt CO_2e				
2014	170,000	732,000	Not currently available[5]	6,870,500	Not currently available[6]
2013	171,000	731,000	Not currently available[5]	6,800,000	Not currently available[6]
2012	171,000	718,000	140,160	6,643,000	44,816,000
2011	175,000	710,000	144,061	6,865,400	44,191,000
2010	179,000	706,000	141,158	6,985,500	42,968,000

SOURCES:

1. National Inventory Report 1990 to 2014: Greenhouse Gas Sources and Sinks in Canada (ECCC 2016)

2. Greenhouse Gas Emissions Data. Minnesota Pollution Control Agency (Minnesota Pollution Control Agency 2016)

3. Inventory of United States Greenhouse Gas Emissions and Sinks 1990-2014 (US EPA 2016)

4. CAIT Climate Data Explorer. World Resource Institute (WRI 2012)

5.United States inventory report is not broken down at the state level, therefore emissions data for Minnesota is not available for 2013 and 2014.

6. Global emissions inventory of 2013 onwards is not currently available.

Table 2 Existing GHG Emissions – Transportation Sector[1]

Year	Ontario[2]	Canada[2]	Minnesota[3]	United States[4]	Global[5]
	kt of CO_2e				
2014	60,200	203,000	Not currently available[6]	1,814,500	Not currently available[7]
2013	61,200	204,000	Not currently available[6]	1,794,000	Not currently available[7]
2012	58,400	198,000	35,108	1,784,300	7,187,000
2011	61,000	199,000	34,201	1,803,900	7,107,000
2010	61,300	199,000	33,929	1,832,000	6,987,000

SOURCES and NOTES:

1. Transportation emissions include both on-road sources such as cars and trucks; and non-road sources, such as trains and other transportation sources.

2. National Inventory Report 1990 to 2014: Greenhouse Gas Sources and Sinks in Canada (ECCC 2016)

3. Greenhouse Gas Emissions Data. Minnesota Pollution Control Agency (Minnesota Pollution Control Agency 2016)

4. Inventory of United States Greenhouse Gas Emissions and Sinks 1990-2014 (US EPA 2016)

5. CAIT Climate Data Explorer. World Resource Institute (WRI 2012)

6.United States inventory report is not broken down at the state level, therefore emissions data for Minnesota is not available for 2013 and 2014.

7. Global emissions inventory of 2013 onwards is not currently available.

METHODS

This section summarizes the methods used for the assessment. Detailed assumptions on emission factors, road lengths, construction equipment lists, and traffic pattern data, are provided in Appendix A.

CONSTRUCTION

Construction is anticipated to begin in 2018, with substantial completion by the end of 2019. Total construction duration is expected to be 540 days over two years (i.e. 270 days/year). Table 3 presents the anticipated construction schedule.

Reference: Greenhouse Gas Assessment for Canadian Environmental Assessment Act Project Description - Baudette/Rainy River International Bridge Replacement

Table 3 Anticipated Construction Schedule

Activity	2018				2019			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Prepare site (deliver piles, deliver barges, mobilize to site, construct access roads)	■							
Construct abutments	■	■						
Install Cofferdams	■	■	■					
Construct Piers			■	■				
Remove Cofferdams						■		
Erect Structural steel spans						■	■	
Place Bridge Deck							■	■
Begin commercial operations end of Q4 2019								■

Decommissioning of the existing bridge is expected to last for 210 days. Construction emissions were calculated using a worst case scenario, which means that decommissioning of the existing bridge and construction of the new bridge, would be occurring during the same year.

Construction emissions are based on the most recent on-road, off-road and boat emission factors for mobile combustion sources, published in Canada's latest National GHG Inventory Report (NIR) (ECCC 2016). Equipment information such as equipment type (i.e. on-road, off-road or boats), horse power and operating load as well as operating times were provided by Howard, Needles, Tammen & Bergendoff (HNTB).

OPERATION

Operation emissions only include transportation emissions from vehicles crossing the bridge and the approaching roads on either side of the bridge. To estimate these emissions, measured vehicle numbers and types from the HNTB Traffic Count Data, Projection and Summary Report (HNTB 2015) for the year 2013 for the existing bridge are used in conjunction with the on-road emission factors from the NIR (ECCC 2016) and average fuel consumption rates per vehicle type from the latest Canadian Vehicle Survey from Natural Resources Canada (NRCAN 2009).

The emissions assessed for the operation of the Project represent the emissions expected at the time of the opening of the bridge to the public. Since no new traffic lanes are planned to be added in with the new bridge, the traffic pattern associated with the new bridge is not expected to be different than the traffic pattern associated with the existing bridge. Future traffic patterns are also

considered to not be affected by the construction of the new bridge and therefore no traffic forecasting was conducted as part of the assessment.

RESULTS

CONSTRUCTION

Total construction emissions including on-road and off-road equipment (including boats/barges) during the building of the new bridge and the decommissioning of the existing bridge are predicted to be 21.2 kt CO_2e per year, as shown in Table 3.

Table 4 Estimated GHG Emissions from New Bridge Construction and Existing Bridge Decommissioning

Emission Source	Maximum estimated GHG Emissions (kt /year)			
	CO_2	CH_4	N_2O	Total CO_2e
Off-Road Equipment *	12.6	0.0007	0.0046	14.0
On-Road Equipment	7.2	0.0006	0.0002	7.3
Construction Total	**19.8**	**0.0013**	**0.0048**	**21.2**

Note: *Off-Road Equipment includes emissions from boats

OPERATION

Total operation emissions including on-road vehicles (light vehicles and heavy duty trucks) are predicted to be 0.09 kt CO_2e per year, as shown in Table 4.

Table 5 Estimated GHG Emissions from Operation

Emission Source	Maximum estimated GHG Emissions (kt /year)			
	CO_2	CH_4	N_2O	Total CO_2e
On-Road Traffic (light-vehicle – gasoline)	0.05	0.000008	0.00002	0.06
On-Road Traffic (heavy duty trucks – diesel)	0.03	0.000002	0.00000	0.04
Operation Total	**0.09**	**0.00001**	**0.00002**	**0.09**

COMPARISON TO BASELINE

Table 5 presents a comparison of the GHG emissions from construction and operation to the existing GHG emissions in the relevant province/state, country and globe.

Reference: Greenhouse Gas Assessment for Canadian Environmental Assessment Act Project Description - Baudette/Rainy River International Bridge Replacement

Table 6 Comparison to Existing GHG Emissions – Total

Emission Source	Global	Canada	Ontario	United States	Minnesota
Construction	0.00005%	0.003%	0.01%	0.0003%	0.02%
Operation	0.0000002%	0.00001%	0.00006%	0.000001%	0.00007%

Since the emissions from operation of the Project are expected to be from transportation sources, the relevant provincial/state, country and global transportation sector emissions are used as a comparison to the Project operation emissions, as shown in Table 6.

Table 7 Comparison to Existing GHG Emissions – Transportation Sector

Emission Source	Global	Canada	Ontario	United States	Minnesota
Operation	0.000001%	0.00005%	0.0002%	0.000005%	0.0003%

CONCLUSION

This GHG assessment has considered the potential emissions occurring during construction and operation of the Project based on best data available at the preliminary Project design and planning state. Construction emissions are predicted to be 21.2 kt CO_2e per year, to occur for a maximum of two years, which is 0.01% of the 170,000 kt CO_2e emitted in 2014 from all sectors across Ontario. Operation emissions from the Project due to vehicles travelling across the new bridge are predicted to be 0.09 kt CO_2e per year, to occur for the lifetime of the bridge, assuming no changes in traffic patterns unrelated to the Project. When compared to the most recent (2014) emissions totals, this is 0.0002% of the 60,200 kt CO_2e emitted annually from the transportation sector in Ontario. Additionally, since the traffic pattern associated with the new bridge is not expected to be different from the traffic pattern associated with the existing bridge, operation of the Project is not expected to result in GHG emissions that would not otherwise exist. Therefore, the operation of the Project is not expected to result in a net increase in GHG emissions when compared to the GHG emissions from the existing bridge.

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Reference: Greenhouse Gas Assessment for Canadian Environmental Assessment Act Project Description - Baudette/Rainy River International Bridge Replacement

CLOSURE

This assessment represents the known conditions in the subject area at the time of the assessment. Stantec did not conduct direct GHG emissions monitoring or other environmental sampling and analysis in conjunction with this memo. Stantec disclaims liability for use by any other party and for any other purpose. This memo, entitled, "Greenhouse Gas Assessment for Canadian Environmental Assessment Act Project Description - Baudette/Rainy River International Bridge Replacement Project (GWP 6046-10-00)" was produced by Sandra Banholzer, M.Sc. This report was technical quality reviewed by Gizem Gunal-Akgol, P.Eng. and independently reviewed and approved for release by Sana Talebi, P.Eng.

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Attachment: Appendix A: GHG Calculations

c. M. Caron, N. Gazibara (Stantec Consulting Ltd.)

C5: Transportation
Environmental Study Report

Baudette/Rainy River International Bridge Replacement

Town of Rainy River, Ontario and City of Baudette, Minnesota

GWP 6046-10-00

February 2017

Northwestern Region
Planning & Design Section
Ministry of Transportation Ontario

Transportation Environmental Study Report

TRANSPORTATION ENVIRONMENTAL STUDY REPORT

Baudette/Rainy River International Bridge Replacement

February 2017

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THE PUBLIC RECORD
ONTARIO MINISTRY OF TRANSPORTATION
BAUDETTE/RAINY RIVER INTERNATIONAL BRIDGE REPLACEMENT
NOTICE OF FILING - TRANSPORTATION ENVIRONMENTAL STUDY REPORT

This *Transportation Environmental Study Report* (TESR) is available for review from **February 21, 2017 to March 23, 2017** at the following locations and business hours:

Ministry of the Environment and Climate Change
Thunder Bay District Office
435 James Street South
Suite 331B
Thunder Bay ON
Monday to Friday: 8:30 AM to 4:30 PM

Town of Rainy River
Clerk's Office
201 Atwood Ave
Rainy River ON
Monday to Friday: 9:00 AM to 4:30 PM

Rainy River Public Library
334 4th Street
Rainy River ON
Tuesday and Thursday: 2 PM to 7 PM
Wednesday: 11 AM to 4 PM
Friday: 11 AM to 4 PM
Saturday: 11 AM to 4 PM

The TESR is also available on the project website (http://www.dot.state.mn.us/d2/projects/baudette-bridge) in the Resources Section.

CLASS EA PROCESS AND ENVIRONMENTAL DOCUMENTATION

This project is being carried out in accordance with the requirements of the *Class Environmental Assessment for Provincial Transportation Facilities (2000)*, a process that has been accepted and approved under Ontario's *Environmental Assessment Act*.

Other required aspects of the Class EA process and environmental documentation are contained in the *Class Environmental Assessment for Provincial Transportation Facilities* (2000). Readers interested in these matters are encouraged to refer to that document. Interested persons are encouraged to review the TESR and provide comments by **March 23, 2017**. If after consulting with ministry staff and consultants, you have serious unresolved concerns, you have the right to request a Part II Order (bump-up) from the Minister of the Environment and Climate Change (77 Wellesley Street West, 11th Floor, Ferguson Block, Toronto ON M7A 2T5). A 'bump-up' may lead to the preparation of an Individual Environmental Assessment. A copy of your request should also be forwarded to the Ministry of Transportation at the address below.

The following individuals are available to discuss the TESR and U.S. Environmental Documents and may be contacted as follows:

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Cette publication hautement spécialisée n'est disponible qu'en anglais en vertu du règlement 671/92, qui en exempte l'application de la Loi sur les services en français. Pour obtenir de l'aide en français, veuillez communiquer avec le ministère des Transports au 905-704-2045 ou 905-704-2046

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Executive Summary

GENERAL DESCRIPTION OF PROJECT

The Baudette/Rainy River International Bridge spans the Rainy River from Baudette, Minnesota to Rainy River, Ontario. As part of a joint ownership agreement, the Minnesota Department of Transportation (MnDOT) and the Ontario Ministry of Transportation (MTO) maintain and operate the bridge. Minnesota Trunk Highway (TH) 72 and Highway 11 carry traffic over the bridge between the U.S. and Canada. Full service Port of Entry (Customs) facilities are located on both sides of the bridge and are operated by the Canada Border Services Agency (CBSA) and the U.S. Customs and Border Patrol (CBP).

The Ontario Ministry of Transportation (MTO), in cooperation with the Minnesota Department of Transportation (MnDOT), retained Stantec to undertake the Preliminary Design and Class Environmental Assessment (Class EA) Study for the replacement of the Baudette/Rainy River International Bridge on Highway 11 in the Town of Rainy River. The MTO and MnDOT initiated this Preliminary Design and Environmental Assessment Study for the replacement of the Baudette/Rainy River International Bridge in the spring of 2015.

PURPOSE OF PROJECT AND TRANSPORTATION ENVIRONMENTAL STUDY REPORT

The purpose of the Baudette/Rainy River International Bridge Replacement study was to address the ongoing maintenance and repair issues of the existing bridge structure in order to maintain the international exchange of vehicular, freight and pedestrian traffic across the Rainy River and provide a safe roadway as follows:

- To provide a level of service that is consistent with the transportation needs of area residents, businesses/industries and farms
- To improve public safety by providing a safe roadway that conforms to the current safety and geometric standards
- To ensure the continued serviceability of the route

This *Transportation Environmental Study Report* documents the existing conditions, alternatives considered, impacts and protection measures, and the details of the proposed Recommended Plan.

ENVIRONMENTAL ASSESSMENT PROCESS

This project was carried out in accordance with the requirements of the *Class Environmental Assessment (EA) for Provincial Transportation Facilities* (2000). Environmental documentation within the Class EA process is required to describe the environmentally significant aspects of planning, design, construction, and operation of specific types of projects. This project is being carried out following the requirements of the Class EA as a Group 'B' project, which include major improvements to existing transportation facilities including highway improvements over land or water that provide a significant increase in traffic capacity or cause a significant widening of the "footprint" beyond the roadbed of an existing highway. Other aspects of the Class EA process and environmental documentation required by the process are contained in the Class EA document.

This project was also carried out in accordance with the Minnesota *Environmental Protection Act* and the U.S. *National Environmental Protection Act,* as described in Section 2.0.

PUBLIC CONSULTATION

Public input was sought throughout the study process. Details of the consultation program including the Public Involvement Plan, international agency consultation, and input received and responses provided during each stage of the process, are described in Section 6.0.

A Public Involvement Plan was developed as part of this project and outlines the various public consultation opportunities, the purpose of public meetings, as well as a schedule of all public meetings and review opportunities. The plan for this project was developed in conjunction with the U.S. Environmental Assessment and consultation process. The public meetings for this project were scheduled concurrently in Rainy River, Ontario and Baudette, Minnesota to make sure the same information was shared with the public and local stakeholders on both sides of the border at the same time throughout the duration of the project.

The consultation program included five formal points of contact with property owners, the general public, businesses, municipalities, agencies, and interest groups. They were:

- Initial Notification—May 2015
- Public Meeting 1—June 24, 2015
- Public Meeting 2—October 28, 2015
- Public Meeting 3—May 25, 2016
- *Transportation Environmental Study Report* Public Review Period—February 21, 2017 to March 23, 2017

A project website (http://www.dot.state.mn.us/d2/projects/baudette-bridge) was also made available to the public during the study.

EVALUATION OF ALTERNATIVES

The study included identifying alignment and bridge type alternatives, evaluating alternatives and selecting a Recommended Plan that provides safe operations and minimizes impacts to the existing ports of entry while also minimizing impacts to the natural, social and cultural environment. The study is consistent with the provincial mandate to provide a transportation system that supports Ontario's economic, social and environmental objectives.

RECOMMENDED PLAN

The Recommended Plan was selected through an iterative and multi-stage evaluation process, as documented in Section 5.0.

The Recommended Plan for the replacement of the Baudette/Rainy River International Bridge includes a new bridge on a new alignment approximately 1 m south and directly adjacent to the existing bridge and also includes the decommissioning of the existing bridge once the replacement bridge is complete. The Recommended Plan includes tying into the Canadian and U.S. Port of Entry facilities located on either end of the existing bridge. The Recommended Plan evolved through the development and evaluation of alternatives process, with additional design details developed as the study progressed. The Recommended Plan is illustrated on Exhibit 1.

The Recommended Plan was selected based on the results of the analysis and evaluation, and with consideration of comments and input received from the public, stakeholders and external agencies.

A new alignment approximately 1 m south or upstream of the existing bridge was selected because:

- Access will be maintained across the border on the existing bridge until construction of the replacement bridge is complete
- It provides a desirable alignment and connections to existing U.S. and Canadian Port of Entry facilities
- U.S. Port of Entry detection equipment can remain in place
- Truck entry at the U.S. Port of Entry can be accommodated in both lanes
- The cost is consistent with other similar bridge replacement projects with minimal throw-away costs

The Steel I-Girder structure was selected as the preferred bridge type because it:

- Reduces future maintenance concerns since the bridge is not built in stages
- Requires the lowest number of piers in the river
- Has no apparent traffic impacts
- There is an opportunity to launch the bridge structure from the Canadian side, which may aide construction
- Reduces construction complexity and construction risks
- Increases sight distance across the bridge because the girders are shallower

ENVIRONMENTAL PROTECTION AND MITIGATION MEASURES

Environmental protection principles including: avoiding or minimizing environmental impacts through consideration of alternatives, balancing environmental protection considerations with transportation considerations, and providing mitigation efforts were utilized throughout the study.

Impacts to the natural environment have been minimized in part, by minimizing footprint impacts to undisturbed natural environments. The Recommended Plan minimizes impacts to terrestrial ecosystems by its close proximity (1 metre) to the existing bridge, and minimizes impacts to fish and sensitive fish habitat through bridge design and minimizing number of in-water piers and area of impact to the river bed.

Transportation Environmental Study Report

This *Transportation Environmental Study Report* (TESR) documents environmentally significant aspects of the planning, design, construction and operation of specific types of projects that fall within the definition of the *Class Environmental Assessment (EA) for Provincial Transportation Facilities* (2000).

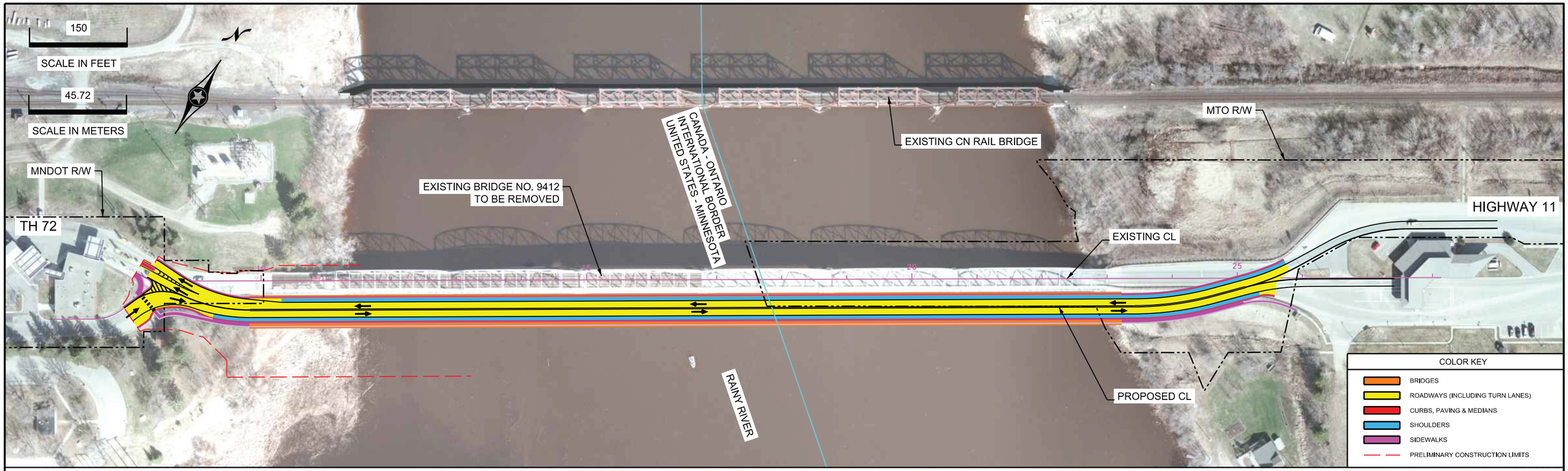
This TESR fulfills the documentation requirements of the *Class EA for Provincial Transportation Facilities* (2000) for Group B projects. A minimum 30-day Public Review Period is required by the Class EA. This report is being submitted for a 30-day Public Review Period from February 21, 2017 to March 23, 2017.

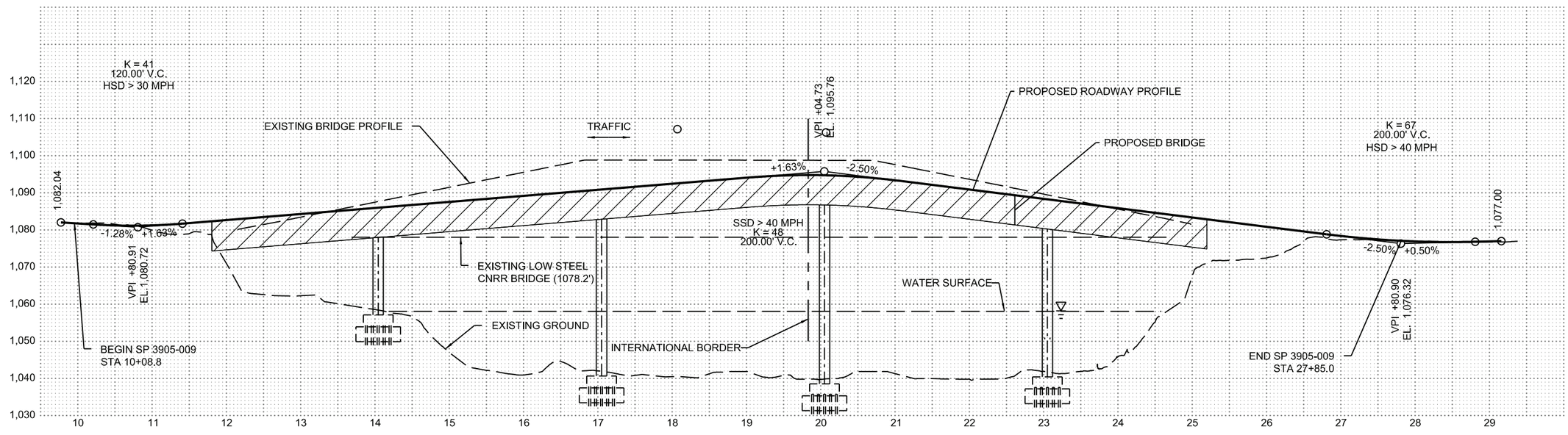
You are encouraged to contact Stantec or the MTO if you have questions or concerns about this study. If you feel, after consultation with Stantec or MTO staff, that serious environmental concerns remain unresolved, and that the study did not follow the MTO Class EA process, it is your right to request a Part II Order to revise this study to an individual Environment Assessment by writing to the Minister of the Environment and Climate Change.

If a 'Bump-Up' request or Part II Order for an Individual Environmental Assessment is received during the public review period for this report, the Minister of the Environment and Climate Change will determine the need for an Individual Environmental Assessment.

NEXT STEPS

Following the public review period for the TESR, and if no serious unresolved concerns or Part II Orders (bump-ups) are received, the project will be considered to have met the requirements of the Class EA and will proceed to Detail Design.





RECOMMENDED PLAN

MINNESOTA DEPARTMENT OF TRANSPORTATION AND MINISTRY OF TRANSPORTATION ONTARIO

BAUDETTE/RAINY RIVER INTERNATIONAL BRIDGE REPLACEMENT

DATE: 09/14/2016

PROJ. NO. 193802870

EXHIBIT 1

1.0 Overview of the Undertaking

1.1 GENERAL DESCRIPTION OF PROJECT

The Baudette/Rainy River International Bridge spans the Rainy River from Baudette, Minnesota to Rainy River, Ontario. The bridge was originally built in 1959, and has served as an international border crossing since that time. As part of a joint ownership agreement, the Minnesota Department of Transportation (MnDOT) and the Ontario Ministry of Transportation (MTO) maintain and operate the bridge. Minnesota Trunk Highway (TH) 72 and Highway 11 carry traffic over the bridge between the U.S. and Canada. Full service Port of Entry (Customs) facilities are located immediately after exiting on either end of the bridge and are operated by the Canada Border Services Agency (CBSA) and the U.S. Customs and Border Patrol (CBP).

The existing Baudette/Rainy River International Bridge carries approximately 1,300 vehicles per day and provides access between the U.S. and Canadian full-service, 24-hour Ports of Entry (POE) for the movement of international traffic and commerce. The existing bridge is a six-span truss structure with six steel beam approach spans that carry two lanes of traffic over the Rainy River. It is approximately 391 m long and has a 7.3 m two-lane roadway with an open steel grate deck. There is also a 1.8 m sidewalk cantilevered on the south side of the bridge.

The existing bridge was the first bridge at this location and was part of transportation initiatives by local proponents to connect Minnesota and Ontario with a permanent transportation link (to replace the ferry service that existed at the time) and to provide an additional point of entry and border crossing connecting important industrial and commerce routes in Ontario and Minnesota. Regional and local traffic rely on Highway 11 and the Baudette/Rainy River Bridge for travel and for the movement of people and goods between the communities of Baudette and Rainy River and across the U.S. and Canadian border. Highway 11 is also the primary connection linking the communities of North Bay, Cochrane, Nipigon, Thunder Bay, and Fort Frances, and forms a strategic east-west link in the Trans-Canada Highway system.

The Ontario Ministry of Transportation (MTO), in cooperation with the Minnesota Department of Transportation (MnDOT), retained Stantec to undertake the Preliminary Design and Class Environmental Assessment (Class EA) Study for the replacement of the Baudette/Rainy River International Bridge on Highway 11 in the Town of Rainy River. In 2008, the Minnesota Department of Transportation completed a structural evaluation of the Baudette/Rainy River International Bridge to confirm that the bridge is structurally deficient and that it is not economically feasible to rehabilitate the existing bridge to meet current design and maintenance requirements. Following this determination, the Project was initiated and a range of bridge replacement alternatives were developed and evaluated. The MTO and MnDOT initiated this Preliminary Design and Environmental Assessment Study for the replacement of the Baudette/ Rainy River International Bridge in the spring of 2015.

The purpose of the Baudette/Rainy River International Bridge Replacement Project is to replace the existing bridge across the Rainy River and the United States of America (U.S.)/Canadian border with a new bridge to maintain access between the Town of Rainy River, Ontario and the City of Baudette, Minnesota. The project will address the deteriorating condition of the existing bridge structure in order to maintain the international exchange of vehicular, freight and pedestrian traffic across the Rainy River at this location as follows:

- To provide a level of service that is consistent with the transportation needs of area residents, businesses/industries and farms
- To improve public safety by providing a safe roadway that conforms to the current safety and geometric standards
- To ensure the continued serviceability of the route

The study included identifying alignment and bridge type alternatives, evaluating alternatives, and selecting a Preferred Plan that provides safe operations and minimizes impacts to the existing ports of entry while also minimizing impacts to the natural, social and cultural environment. The study is consistent with the provincial mandate to provide a transportation system that supports Ontario's economic, social, and environmental objectives.

The project consists of the construction and operation of a new bridge to replace the existing Baudette/Rainy River International Bridge and provide access across the Rainy River and the U.S./Canadian border and between the Town of Rainy River, Ontario and the City of Baudette, Minnesota. The project also includes the decommissioning and removal of the existing bridge.

This study was carried out in accordance with the MTO Class Environmental Assessment for Provincial Transportation Facilities (2000) process for a Group 'B' project.

In addition to the MTO environmental assessment process, a *Project Description* has been submitted to the Canadian Environmental Assessment Agency to determine whether a federal environmental assessment will be required in accordance with the *Canadian Environmental Assessment Act* (2012). The *Project Description* will be made available for public review at the same time as this report.

The Minnesota Department of Transportation's (MnDOT's) environmental assessment process will follow Minnesota's environmental review process set by the *National Environmental Policy Act* (NEPA), and *Minnesota Environmental Policy* Act (MEPA), to fulfill requirements at both the state and federal level. The U.S. Environmental Assessment documentation will provide information on the U.S. process and will be made available for public review at the same time as this report.

The environmental assessment processes are discussed in Section 2.0.

1.1.1 Study Area

The study area is generally bounded by the U.S. POE facility (approximately 292 m from the centre of the bridge to the POE) in the City of Baudette, Minnesota to the west and the Canadian POE facility (approximately 300 m from the centre of the bridge to the POE) in the Town of Rainy River, Ontario to the east. The north boundary of the project includes the northern limit of the existing bridge and the southern limit of the project is approximately 16 m from the

southern edge of the existing bridge. The project is located approximate 65 km southeast from the border of the Province of Manitoba.

The coordinates of the study area are as follows:

- West limit: Latitude: 48° 43' 4.7856" N, Longitude: 94° 35' 35.6172" W
- East limit: Latitude: 48° 43' 12.7488" N, Longitude: 94° 35' 16.2096" W

The Town of Rainy River is located approximately one km east from the existing bridge. Figure 1 in Appendix A shows the study area in a regional context. Figure 2 in Appendix A / Exhibit 5 in Section 4.1.3.2 shows the study area, existing land use, facilities, and other relevant features.

The study area is shown on Exhibit 2.

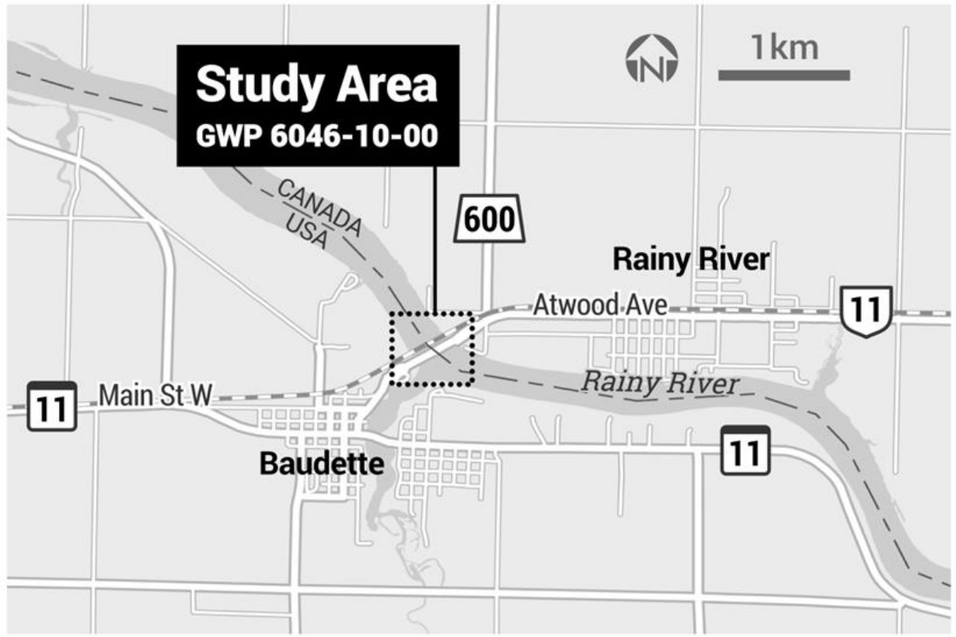


Exhibit 2: Study Area

2.0 The Environmental Assessment Process

A Preliminary Design and Environmental Assessment Study of this type must be carried out in accordance with applicable environmental legislation and current government policies and procedures. The policies and legislation that apply to this study are described below.

2.1 ONTARIO ENVIRONMENTAL ASSESSMENT ACT

The Ministry of Transportation's (MTO) *Class Environmental Assessment (EA) for Provincial Transportation Facilities* (2000) was approved under the Ontario *Environmental Assessment Act* (EAA) in the fall of 1997 and amended in 2000. The Class EA planning document defines groups of projects and activities, and the environmental assessment processes that the MTO has committed to follow for these projects. Provided that this process is followed and its requirements are met for a project, the requirements of the Ontario *Environmental Assessment Act* are considered to be met.

The project is being carried out following the requirements of the Class EA as a Group 'B' project, which include major improvements to existing transportation facilities including highway improvements over land or water that provide a significant increase in traffic capacity or cause a significant widening of the "footprint" beyond the roadbed of an existing highway.

2.2 CANADIAN ENVIRONMENTAL ASSESSMENT ACT

The *Canadian Environmental Assessment Act* (CEAA, 2012) is legislation that identifies which projects will be subject to federal environmental assessments (EAs). The *Canadian Environmental Assessment Act* (2012) applies to projects described in the Regulations Designating Physical Activities and to projects designated by the Minister of the Environment and Climate Change. The proposed bridge replacement is considered a 'new' bridge that crosses an international boundary and therefore is classified as a Designated Project under CEAA (2012). Section 28 of the Regulations Designating Physical Activities includes construction, operation, decommissioning and abandonment of a new international bridge (April 2015).

Accordingly, the *Project Description* has been submitted to fulfill the initial requirement for a designated project to enable the CEA Agency to conduct a screening to determine if the designated project requires an environmental assessment under CEAA 2012.The Project Description CEAA review process is a 45 – day period during which the CEA Agency reviews the document and also makes it available for public review for 20 days. Following the 45-day review period the CEA Agency makes a determination as to whether a Federal EA is required for the project.

2.3 U.S. ENVIRONMENTAL ASSESSMENT PROCESS

The Minnesota Department of Transportation's (MnDOT's) environmental assessment process will follow Minnesota's environmental review process set by the *National Environmental Policy Act* (NEPA), and *Minnesota Environmental Policy Act* (MEPA), to fulfill requirements at both the state and federal level. A combined Environmental Assessment/Environmental Assessment Worksheet (EA/EAW) will be prepared. The Draft EA/EAW will be distributed for public comment over a 45-day public review period. At the federal level, the EA is used to provide sufficient environmental documentation to determine the need for an Environmental Impact Statement (EIS) or that a Finding of No Significant Impact (FONSI) is appropriate. At the state level, the EAW is used to provide sufficient environmental documentation to determine the need for an EIS or that a Negative Declaration is appropriate. The U.S. Environmental Assessment documentation will provide information on the U.S. process.

2.4 COORDINATED U.S AND CANADIAN ENVIRONMENTAL ASSESSMENT PROCESS

The study process for this project, including the consultation program, has been developed with coordinated efforts from the Minnesota Department of Transportation (MnDOT) and the MTO to effectively coordinate the U.S. and Canadian study processes. The public review process for the *Project Description* will coincide with the public review period for this *Transportation Environmental Study Report*. The U.S. public comment period for the EA/EAW will also coincide with the public review period of the Canadian EA documents.

The coordinated U.S. and Canadian EA processes for this project are shown in Exhibit 3.

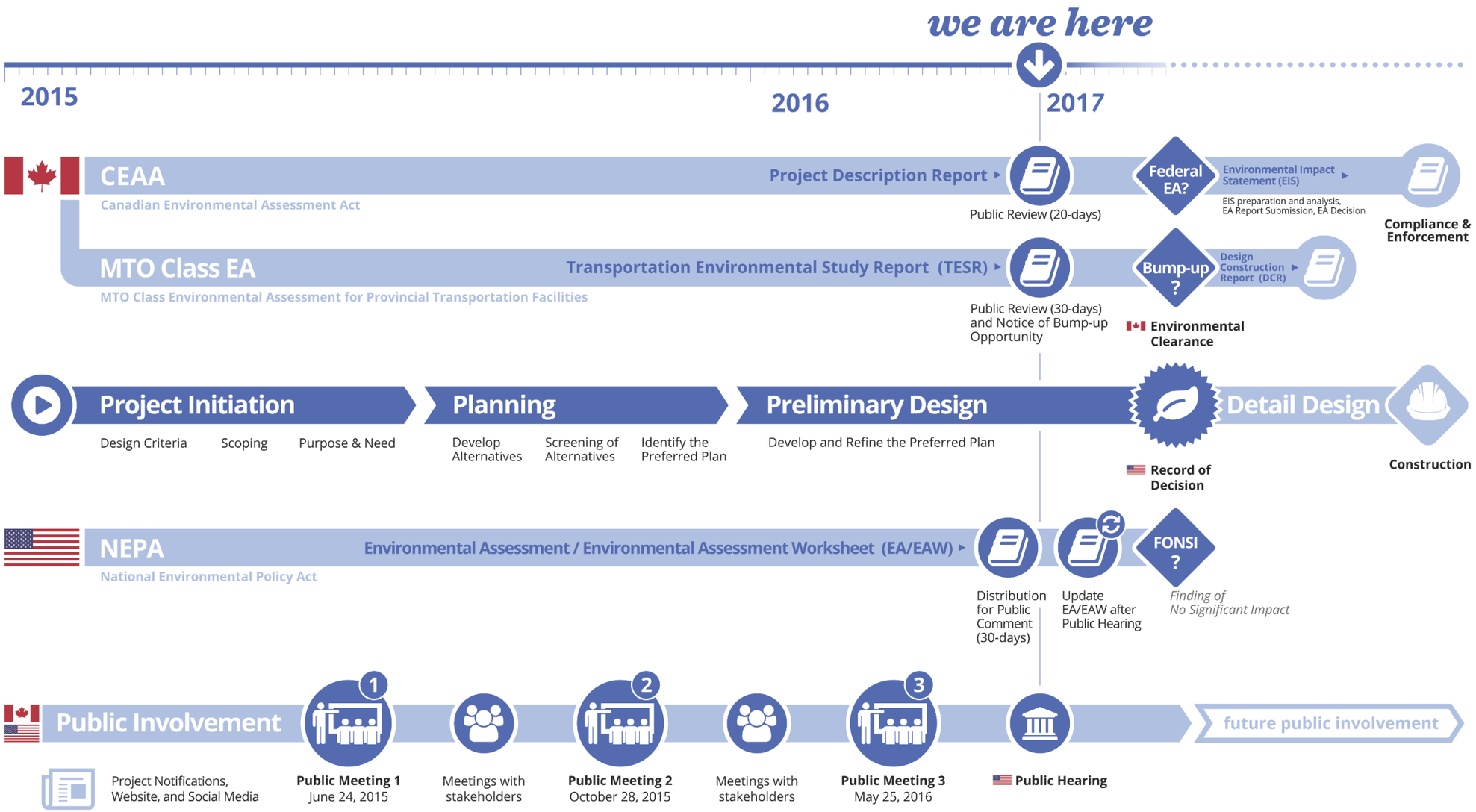


Exhibit 3: Coordinated U.S. and Canadian EA Processes

2.5 STUDY PROCESS

The Class EA process is a comprehensive planning process that involves identifying and evaluating project alternatives, identifying associated environmental impacts and developing a plan for a solution that minimizes impacts, while addressing the identified transportation problem.

The development and evaluation of alternatives was initiated in two parts (alignment and bridge type), as described in Section 5.0, and included the following steps:

- Development of Alignment Alternatives for the replacement bridge (independent of bridge types alternatives but compatible with all bridge types)
- Development of Bridge Type Alternatives for the replacement bridge
- Independent evaluation of Alignment Alternatives
- Independent evaluation of Bridge Type Alternatives
- Selection of Preferred Alignment Alternative and Preferred Bridge Type

The development and evaluation of alternatives was conducted separately for the Alignment Alternatives and the Bridge Type Alternatives since all alternatives were compatible with each other. The Alignment and Bridge Type Alternatives were presented to the public at the second Public Meeting and the Preferred Plan (preferred Alignment Alternative and preferred Bridge Type) was presented to the public at the third Public Meeting.

The study approach also included consideration of potential impacts to connected wetlands, fish habitat and floodplains. All potential impacts (U.S. and Canadian) were considered and U.S. impacts, permit requirements and protection measures are documented in the U.S. EA documents that are on file with MnDOT and available on the project website.

2.5.1 Project Initiation

This stage of the study included providing notice of the Study Commencement to the public, local municipalities, stakeholders, property owners, and external agencies; reviewing input received; initiating a review of background information available for the study area; reviewing and documenting the existing conditions at and adjacent to the existing Baudette/Rainy River International Bridge; and identifying and documenting key design, constructability and environmental constraints.

2.5.2 Alternative Review and Evaluation

During this stage, the Project Team confirmed existing natural, social, cultural, and transportation conditions and constraints in the study area, and developed a range of alignment and bridge type alternatives.

The Alignment Alternatives were evaluated with consideration for the evaluation criteria developed during the study and based on input received at and following the Public Meetings and the results of engineering and environmental field investigations. Each Alignment Alternative was evaluated and given a score based on how well they satisfied the evaluation criteria. The sum of the weighted scores provided a total score for each alternative.

The Bridge Type Alternatives were evaluated through a four-phase evaluation approach. During the first phase, existing site conditions were confirmed to determine potential bridge types and to develop site-specific evaluation criteria. The second phase of the evaluation included an initial screening and high-level evaluation of the five bridge type alternatives developed utilizing the preliminary bridge evaluation matrix. Following this preliminary screening, two alternatives were selected for further and more detailed evaluation. These two bridge type alternatives were evaluated utilizing a detailed evaluation matrix and one bridge type was selected following this evaluation. The final phase of the bridge type selection included determining the optimal span configuration as well as refinements to the selected bridge type (i.e., haunched/prismatic).

The Preferred Plan (preferred alignment and preferred bridge type) was subsequently selected based on the results of both evaluations and comments from the public, stakeholder and external agencies.

2.5.3 Preferred Plan

The concluding step in the analysis and evaluation process was the confirmation of a Preferred Plan. This process included:

- Reviewing the results of the analysis and evaluation based on specialist work and input received during the study
- Determining which criteria had the most influence on the outcome of the evaluation process
- Considering the sensitivity of the weightings (i.e., testing other weightings to determine if the results change substantially)
- Confirming the ranking of the alternatives
- Considering public/stakeholder response to the evaluation process

2.5.4 Confirmation of the Recommended Plan - Preliminary Design

During this stage the Preferred Plan was developed to a greater level of design detail including additional engineering and environmental studies specific to the Preferred Plan, and associated mitigation measures to minimize environmental impacts.

2.5.4.1 Transportation Environmental Study Report

This *Transportation Environmental Study Report* (TESR) documents environmentally significant aspects of the planning, design, construction and operation of specific types of projects that fall within the definition of the *Class Environmental Assessment (EA) for Provincial Transportation Facilities* (2000).

The purpose of the TESR is to describe the project; document input received from the public, external ministries, relevant stakeholders, agencies and municipalities; provide an overview of the alternatives considered during the study; document the evaluation of the alternatives; document the Recommended Plan; and document impacts and mitigation measures.

This TESR fulfills the documentation requirements of the *Class EA for Provincial Transportation Facilities* (2000) for Group B projects.

2.5.4.2 U.S. Environmental Assessment Public Review and Public Hearing

The U.S. EA process and EA/EAW report includes a public review and comment period. A combined public information meeting/public hearing will be held after the U.S. Environmental Assessment has been distributed to the public and to the required and interested federal, Native American Tribes, state, and local agencies for their review.

Following the comment period, MnDOT and the FHWA will make a determination as to the adequacy of the environmental documentation. When the environmental documentation is determined adequate, MnDOT will choose a project alternative, either the No Build or one of the alternatives under consideration. If an EIS is not necessary, MnDOT will prepare a “Negative Declaration” for the state environmental requirements. MnDOT will also prepare a request for a "Finding of No Significant Impacts" (FONSI) that will be submitted to the FHWA. If the FHWA agrees that this finding is appropriate, it will issue a FONSI. Additional information regarding the U.S. EA process can be found in the U.S. EA document, which is on file with MnDOT and made available on the project website.

2.5.5 Consultation Program

Public input was sought throughout the study process. Details of the consultation program including the Public Involvement Plan, international agency consultation, and input received and responses provided during each stage of the process, are described in Section 6.0.

The public consultation process provided an opportunity for the Project Team and representatives from the MTO and MnDOT to discuss the study process or any other issues relating to the project with the public including property owners, external agencies, and stakeholders.

The process aimed to notify all interested parties of the project (on the Canadian and U.S. sides) and to provide an opportunity for input to the study and decision-making processes. This process was accomplished by presenting the findings of each stage of work to the public, and through ongoing discussions with the various government agencies and ministries, non-government interest groups, and property owners.

2.5.6 Environmental Clearance Ontario

If there are no significant concerns following the Public Review Period, or once the Minister of the Environment and Climate Change has reviewed any submitted ‘Bump-up’ Requests and provided permission to move forward, Environmental Clearance for utility relocation and construction start will be provided for the study in accordance with the Class EA.

Environmental Clearance obtained at the conclusion of this study will also permit the Ministry of Transportation to:

- Initiate subsequent study stages (i.e., Detail Design and contract preparation) for the Recommended Plan when warranted

3.0 Transportation Needs Assessment

The transportation needs assessment process includes the following key tasks:

- Identifying transportation problems and opportunities
- Evaluating and selecting reasonable alternatives, including 'do nothing'
- Developing potential transportation study objectives
- Initiating the study process

This section of the report provides an overview of the transportation *problem* and *opportunity* and assessment of Alternatives to the Undertaking that led to the initiation of this study.

3.1 TRANSPORTATION PROBLEM AND OPPORTUNITY

The primary transportation problem is that the existing 56-year old Baudette/Rainy River Bridge is classified as structurally deficient and is in need of improvements to address identified deficiencies. Currently, the Baudette/ Rainy River Bridge can support normal weight loads, but is not permitted to carry overweight loads or oversized loads. The following deficiencies were identified:

- Vertical clearance restrictions (limited existing vertical clearance of 4.5 m)
- Pedestrian facility deficiencies (current sidewalk is timber plank decking in need of repair)
- Superstructure deficiencies (corrosion and pack rust, broken grid bars)
- Substructure deficiencies (surface corrosion, concrete scaling, timber debris, scour depressions)
- Load capacity deficiency (current legal load of 80,000 lbs)
- Non-redundant design features

The identified opportunity is to consider alternatives for rehabilitating or replacing the Baudette/Rainy River Bridge such that it would improve the safety and operation of the facility while minimizing impacts to the natural environment, local community and cultural environment during construction.

3.2 ALTERNATIVES TO THE UNDERTAKING

The Ontario *Environmental Assessment Act* requires that 'reasonable alternatives' be considered in addressing the identified deficiency. This involves two levels of analysis. The *Alternatives to the Undertaking* considers a broad range of alternatives that could address the project needs. Once the best alternative is selected, the *Alternative Methods of Carrying out the Undertaking* is studied. For this project, three alternatives to the undertaking were identified: do nothing, rehabilitation and replacement.

3.2.1 Preliminary Screening of Alternatives to the Undertaking

A screening process has been developed to evaluate these options and select only the most reasonable alternatives for more detailed study. This process allows unreasonable alternatives or alternatives that do not meet provincial policy requirements or U.S./MnDOT requirements to be eliminated from consideration in advance of the detailed development of alternatives and evaluation stage.

'Do Nothing'

The 'do nothing' alternative involves making no improvements to the bridge. Under this planning alternative, the existing bridge would be retained in its present form. This would not address the structural and operational concerns associated with the existing Baudette/Rainy River Bridge. Therefore, the 'do nothing' alternative is not considered a reasonable option and was not carried forward for further analysis.

Rehabilitation of Existing Structure

Rehabilitating a structure can be considered to extend its service life. Rehabilitation of the Baudette/Rainy River Bridge would require extensive and costly repairs to strengthen the structure. In addition, the requirement to maintain access across the existing bridge across the U.S./Canada border and to the Port of Entry facilities during construction makes staged repairs difficult.

The U.S./MnDOT transportation needs assessment included a similar preliminary screening of alternatives to the undertaking. MnDOT reviewed two build options for alternative development including (1) building a new structure at a different location without affecting the historic integrity of the old bridge, and (2) rehabilitating the historic bridge without affecting the historic integrity of the structure. MnDOT's mitigation and rehabilitation options were constrained by MTO's current practices. Based on MTO's investigation, the Ontario Heritage Bridge Guidelines application for Bridge 45-110 resulted in the determination of moderate heritage value. This determination disqualifies the bridge from the Ontario Heritage Bridge List; therefore, MTO concluded that rehabilitation of the existing bridge is not a viable option and recommended replacement. MTO supported their recommendation by indicating that the bridge is experiencing serious ongoing maintenance issues (i.e. scour) and operational deficiencies, as supported by its fracture critical classification. Rehabilitation of the bridge is, therefore, not considered to be a viable alternative.

Replacement of Existing Structure

Replacement of the Baudette/Rainy River Bridge would address the identified structural and operational concerns with the existing structure, while maintaining the integrity of the highway by reducing the risk of future closures of the highway due to bridge closures or load restrictions.

The replacement of the existing structure was carried forward for further analysis. Replacement of the Baudette/ Rainy River Bridge on a new alignment was constrained to locations directly adjacent to the existing bridge in order to accommodate and tie-into the existing U.S. and Canadian Port of Entry facilities. Alignments further away from the existing bridge were not considered feasible due to the above-mentioned constraints and were not assessed.

4.0 Description of Study Area Constraints

This section of the report provides an overview of the existing natural, social, cultural, and transportation conditions in the study area.

Background studies and site specific field investigations were carried out for archaeology, fisheries and aquatic resources, noise, terrestrial resources, hydraulics/drainage, foundations, and land use. All work in Ontario was carried out in accordance with the requirements of the *Environmental Reference for Highway Design* (ERHD, 2006), which provides standards for scope of work, evaluation of potential impacts and proposed mitigation measures for Ministry of Transportation (MTO) undertakings.

The background reviews to identify existing conditions were initiated in the spring of 2015 and continued throughout the study. Significant environmental features identified as a result of the background studies were identified as constraints that were considered during the development and evaluation of alternatives.

Existing conditions in the study area are described in the following sections and are depicted on Exhibit 5.

4.1 NATURAL ENVIRONMENT

The study area is generally bounded by the U.S. Port of Entry (POE) facility (approximately 292 m from the centre of the bridge to the POE) in the City of Baudette, Minnesota to the west and the Canadian Port of Entry facility (approximately 300 m from the centre of the bridge to the POE) in the Town of Rainy River, Ontario to the east. The areas surrounding and directly adjacent to the POE facilities include some forested and wetland areas, and the residential communities of Rainy River, Ontario and Baudette, Minnesota.

4.1.1 Groundwater and Surface Water

The Baudette/Rainy River Bridge is located within the Lower Rainy sub basin of the Lake of the Woods drainage tributary basin (see Exhibit 4). Rainy River at the study area flows northward from Rainy Lake to Lake of the Woods, forming the border of the international divide between the United States and Canada.

The study area spans the Rainy River and is located adjacent to the confluence of the Rainy and Baudette Rivers.

Under present conditions, the existing Baudette/Rainy River Bridge site discharges runoff directly into the Rainy River. The Rainy River flows north and west to the Lake of the Woods (approximately 18 km downstream). There are several small wetland areas at the edge of the river on the U.S. side in the direct study area. The existing bridge deck is an open-grate deck and such, precipitation passes through the bridge deck unmanaged and untreated. Currently, runoff from the study area discharges at two points at the Canadian side of the bridge and three points on the U.S. side, all of which ultimately discharge into the Rainy River. Surface drainage at the Canadian border crossing approaches from drainage ditches on either side of Highway 11. These channels continue along the north and south of the bridge and outlet at the Rainy River. Stormwater at the bridge approach is divided at the crown of the roadway.

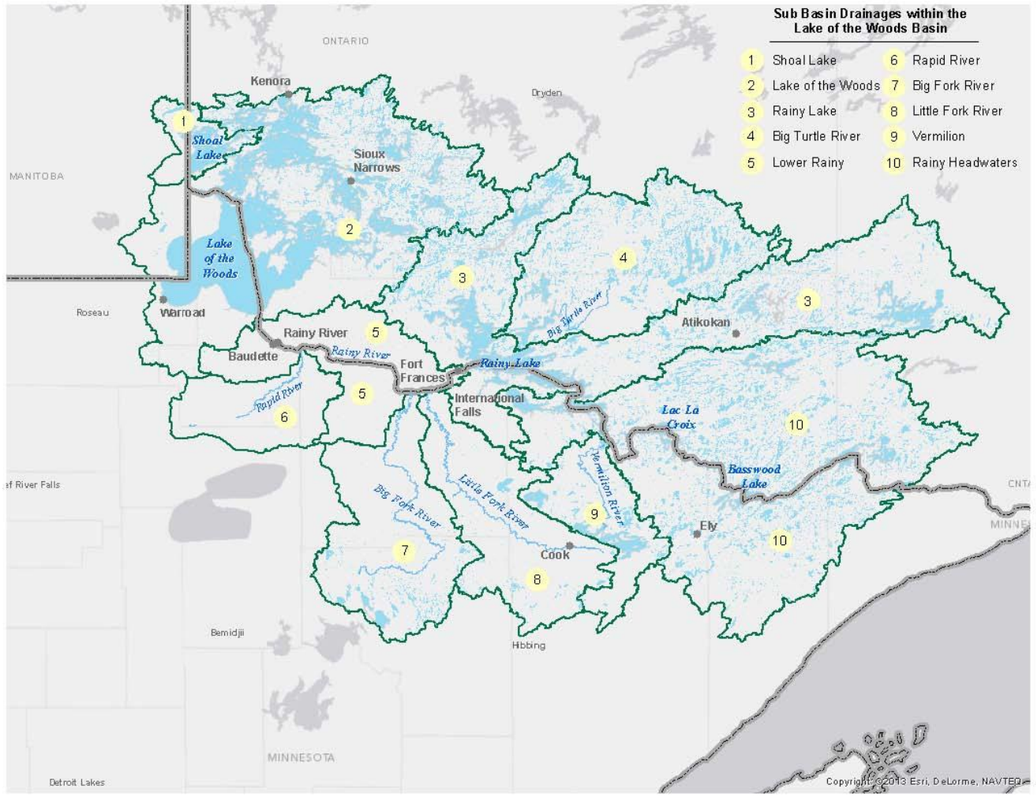


Exhibit 4: Lake of the Woods Drainage Basin

Depth to groundwater is approximately between 4.5 and 6.1 m near the study area. Due to the project's proximity to the Rainy and Baudette Rivers, it is presumed that the groundwater level within the study area is consistent with the rivers' water elevation.

There are no wellhead protection area records for the study area in Ontario.

4.1.2 Designated Areas

Designated Areas are defined by resource agencies, municipalities, the government and/or the public that may have a variety of ecological, recreational, or aesthetic features and functions that are highly valued. Designated Areas include,

but are not limited to: Provincial Land Use and Environmental Plans, the Trans Canada Trail, provincially significant Areas of Natural and Scientific Interest (ANSI), heritage rivers and national and provincial parks.

There are no ANSIs, Provincially Significant Wetlands (PSW), environmentally significant areas, conservation reserves or national or provincial parks within the study area and in the vicinity (120 m) of the site.

4.1.3 Natural Sciences

A Fish and Fish Habitat Study and a Terrestrial Ecosystems Study were carried out as part of this project. Terrestrial and aquatic ecosystems field investigations were conducted in August 2015. The studies are documented in a *Terrestrial Ecosystems Existing Conditions Report* (January 2016), *Terrestrial Ecosystems Impact Assessment Report* (June 2016), a *Fish and Fish Habitat Existing Conditions Report* (April 2016) and a *Fish and Fish Habitat Impact Assessment Report* (August 2016) that are on file with the MTO. All field investigations were conducted according to the MTO *Environmental Reference for Highway Design* (2006) and the MTO *Environmental Guide for Fish and Fish Habitat* (2006).

4.1.3.1 Fisheries and Aquatic Resources

Fisheries resources in the study area were identified through field investigations and data provided by the Ministry of Natural Resources and Forestry (MNRF), Minnesota Department of Natural Resources (MnDNR) and DFO.

The Rainy River is a large watercourse, with a coolwater thermal regime (MNRF 2015c). The study area is located approximately 18 km upstream from Lake of the Woods, which supports a diverse fish community. The study area is situated within the Rainy River and Lake of the Woods watershed. Lake Sturgeon and Shortjaw Cisco, which are Threatened species protected by Ontario's *Endangered Species Act*, are also present in Lake of the Woods and Rainy River. Baudette Bay and the Rainy River, including the area under the existing bridge, provide habitat for the following species during spawning migrations.

- Walleye – move through the study area in late March to April to spawn in the Rainy River at rapids located farther upstream (at River Mile 40)
- Northern Pike – spawn before ice out (late March to early April) in Rainy River tributaries, including Baudette Bay
- Lake Sturgeon – spawn in the Rapid River (located upstream of the Baudette River confluence) and migrate through the study area in April to May

The Rainy River provides a migratory corridor to many resident fish species. Within the study area, nearshore areas provide potential rearing habitat for a variety of species and potential spawning habitat for Northern Pike. Beyond the shallow nearshore areas, sand is the predominant substrate in the Rainy River. There are some coarse substrates in the nearshore areas and around bridge abutments and piers within the study area. Although limited coarse substrates associated with rock protection around bridge abutments and piers exist within the study area, fish habitat in the study area is not specialized, and functions primarily as a migratory corridor for a range of species including: Walleye, Northern Pike and Lake Sturgeon. In recent correspondence regarding habitat sensitivity, the MNRF (2016) indicated that it is unlikely that the study area provides spawning habitat for Walleye, White Sucker and Lake Sturgeon. While overwintering likely occurs in the study area, Lake of the Woods is 18 km downstream and likely provides more suitable overwintering habitat than the Rainy River or Baudette River. The habitat under the bridge is not specialized but part of the migratory corridor used to access upstream spawning areas.

On the east side of the Rainy River, nearshore habitat is similar on both sides of the existing bridge. On the west side of the river, there is a wider band of aquatic vegetation on the south side relative to the north side; therefore, a smaller area of wetland and in-water aquatic vegetation would be disturbed by the placement of a new bridge to the north of the existing structure.

Exhibit 6 identifies aquatic resources in the study area.

Aquatic Species at Risk

Background data indicated the potential presence of two aquatic species at risk (Ontario): Lake Sturgeon and Shortjaw Cisco.

Lake Sturgeon spawn in large rivers with high velocities over a variety of substrates including sand, gravel, cobble, and boulder as well as at the confluence of a tributary to a main river channel. Suitable depths, high velocities, and lack of barriers to movement seem to be the primary factor in habitat determination. Habitat requirements for Lake Sturgeon include diverse habitats, such as shallow sand bars with low velocity and deep water with moderate velocity over a variety of substrates. Substrate preference for general habitat is also variable and may vary between systems and populations.

Shortjaw Cisco prefer water that is deep (between 18 m and 183 m), cold, and well oxygenated. The species is typically found in lakes, but occasionally inhabit flowing water. Spawning occurs in lakes at depths between 10 m and 60 m. With suitable deep water habitat available nearby in Lake of the Woods, it is unlikely that Shortjaw Cisco would utilize the Rainy River as habitat.

4.1.3.2 Terrestrial Ecosystems

The Terrestrial Ecosystem Study included identifying vegetation units and wildlife habitat, based on available background data and field investigations carried out for the study. For this report the study area is the 120 metre (m) zone of investigation around the existing Baudette/Rainy River Bridge and replacement alternatives on the Canadian side of the international border. The terrestrial features are depicted in Exhibit 7.

Vegetation and Wetlands

The study area is located in Ecoregion 5S. Ecoregion 5S is approximately 58% sparse forest, including deciduous forest, mixed, and coniferous forests. Remaining lands include pasture and major river segments, including the Rainy River.

Eleven distinct vegetation communities were identified in the study area, including forest, wetland and open water communities that are typical of the Rainy River Forest Section of the Great Lakes-St. Lawrence Forest Region. Constructed communities included infrastructure associated with the United States and Canadian Port of Entry

facilities, and constructed parklands. All vegetation communities are summarized in the table below and mapped on Exhibit 7 and terrestrial constraints are shown on Exhibit 8.

Table 1: Summary of Vegetation Communities

Code	Description	Vegetation Characteristics
Terrestrial System		
FOD7	Fresh-Moist Lowland Deciduous Forest Ecosite	Deciduous tree species > 75% of canopy cover Dominant species: balsam poplar, Manitoba maple, black ash, Tartarian honeysuckle
Cultural System		
CUW1	Mineral Cultural Woodland Ecosite	Tree cover 35-60%; community maintained by anthropogenic-based disturbance Trembling aspen, Manitoba maple, peach-leaved willow, willow, red raspberry, prickly rose, and cool season graminoids
CUM1-1	Dry-Moist Old Field Meadow Type	Tree cover < 25% and shrub cover < 25%; community maintained by anthropogenic-based disturbance
CGL_2	Constructed Parkland	Manicured lawn and gardens associated with developed lands
CV	Constructed	Port of Entry facilities
Wetland System		
CUM1-1/MAM2	Dry-Moist Old Field Meadow / Mineral Meadow Marsh Complex	Tree and shrub cover < 25%; seasonal flooding in low lying areas with herbaceous wetland species
MAM2	Mineral Meadow Marsh Ecosite	Tree and shrub cover < 25%; graminoids dominate; seasonal flooding along shorelines and inland, dry at time of field investigations
MAS2	Mineral Shallow Marsh Ecosite	Hydrophytic emergent macrophytes cover > 25%; shoreline communities with prolonged flooding Dominant species: Cattails
SWT2	Mineral Swamp Thicket Ecosite	Hydrophytic shrubs > 25% cover; shoreline communities with prolonged flooding Dominant species: Missouri willow, willow, red-osier dogwood, and groundnut
Aquatic System		
SA	Shallow Water Community Class	Submergent vegetation in near-shore areas; permanent water < 2m deep
OAO	Open Aquatic Community Series	No tree, shrub or macrophyte vegetation; water > 2m deep

Wetlands

Mapped wetlands include wetlands identified by the MNRF, and Ecological Land Classification (ELC) wetland communities as determined through field investigations and air photo interpretation. Wetland communities were identified in the study area during the terrestrial field investigations and are located north of the existing bridge and directly south of the existing bridge along the shore of the Rainy River (see Exhibit 7). There are no provincially significant wetlands within the study area.

Rare Vegetation

One provincially rare plant (S3) was observed in the study area, wild licorice. Wild licorice was not delineated or mapped through the MNRF's database and for the purposes of this project, have been identified using MNRF's significant wildlife habitat technical guidance documents. This species was observed along the edge of the Cultural Woodland (CUW) and manicured lawn and gardens (CGL_2), south of the Canadian Port of Entry facility. A thorough search for the plant was not conducted and it may be present elsewhere along the river bank and woodland edges. No other rare or highly sensitive plant species were encountered during field surveys.

Significant Wildlife Habitat

Significant wildlife habitat is defined as habitat that is ecologically important in terms of features, functions, representation or amount and contributing to the quality and diversity of an identifiable geographic area or Natural Heritage System, and is protected under the *Provincial Policy Statement*.

Significant wildlife habitat includes habitats that fall within any of the following four categories:

- Seasonal concentration areas: such as moose aquatic feeding and wintering areas, deer winter yards, colonial bird nesting sites, reptile hibernacula, and heronries
- Rare vegetation communities and specialized habitats for wildlife: such as old-growth forest, areas known to support an unusually high diversity of species or vegetation communities, raptor nesting habitat, areas with concentrations of cavity trees and moose or bear foraging areas
- Habitats for species of conservation concern, excluding the habitats of endangered and threatened species: such as special concern species or species ranked provincially S1- S3, excluding the habitats of endangered and threatened species
- Animal movement corridors

The following confirmed significant wildlife habitat features were documented in the study area:

- Habitat for Species of Conservation Concern- Habitat with provincially rare species (wild licorice)

No records pertaining to specialized wildlife habitat for additional species, such as bat maternity colonies, deer wintering areas and moose late winter cover areas, and specialized wildlife habitat for birds, such as raptor wintering areas were provided by the MNRF and those habitats were not encountered during field work.

Avian Species and Migratory Birds

A comprehensive background review of avian species potentially within the study area was completed. The majority of bird species expected to be present within the study area are protected under the *Migratory Bird Convention Act (MBCA)*, which protects the birds and active nests during the breeding season.

Field investigations determined that there are no bird nests under the existing Baudette/Rainy River Bridge. The configuration of the bridge is such that it is not expected to provide the necessary protection to attract birds such as Barn Swallows. The bridge is a metal grate structure that does not offer protection from the elements, and the piers do not provide sufficient overhang to protect a bird nesting underneath. No bird nests were observed on the existing bridge structure. Vegetation in the study area is expected to support nests of common bird species that are protected under the MBCA.

Species of Conservation Concern

In Ontario, sensitive wildlife species and their habitat are protected under the *Provincial Policy Statement* (2005), the *Ontario Endangered Species Act* (2007), and the federal *Species-at-Risk Act* (2002).

Endangered, Threatened and Special Concern species are identified by the MNRF using procedures established by the Committee on the Status of Species-at-Risk in Ontario (COSSARO). The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assesses and designates which wildlife species are in some danger of disappearing at a federal level. Many, but not all, of the species designated as Endangered, Threatened or Special Concern may also be listed on the Species-at-Risk in Ontario list issued by the MNRF under the provincial *Endangered Species Act* or Schedule 1 of the federal *Species at Risk Act*. Provincial ranks (S-ranks) are used by the NHIC to set protection priorities for rare species and natural communities. They are based on the number of occurrences in Ontario and are not legal designations. By comparing the global and provincial ranks, the status, rarity, and the urgency of conservation needs can be ascertained.

Rare species are considered at a number of levels including globally, nationally and provincially. Significant species (or Species of Conservation Concern) include species that are provincially rare (with a provincial S-rank of S1 to S3) or are ranked as Endangered, Threatened, or Special Concern by COSSARO or COSEWIC. Provincial S-ranks are defined as follows:

S1: Critically imperiled; usually fewer than 5 occurrences

S2: Imperiled; usually fewer than 20 occurrences

S3: Vulnerable; usually fewer than 100 occurrences

S4: Apparently secure; uncommon but not rare, usually more than 100 occurrences

S5: Secure; common, widespread, and abundant

S?: Rank is uncertain

A review of the atlases identified 117 breeding birds, 45 mammals, eight amphibians and six reptiles with ranges that overlap with the study area. Thirteen of these species are designated in Ontario and/or Canada as Endangered (two species), Threatened (four species) and Special Concern (seven species), and six additional species are provincially rare (S1-S3). The bird, mammal, reptile and amphibian range maps are at relatively small scales and do not offer precise locations or detailed information on concentrations or densities of records; for example, the Ontario Breeding Bird Atlas records are provided in 10 kilometre (km) by 10 km square grids.

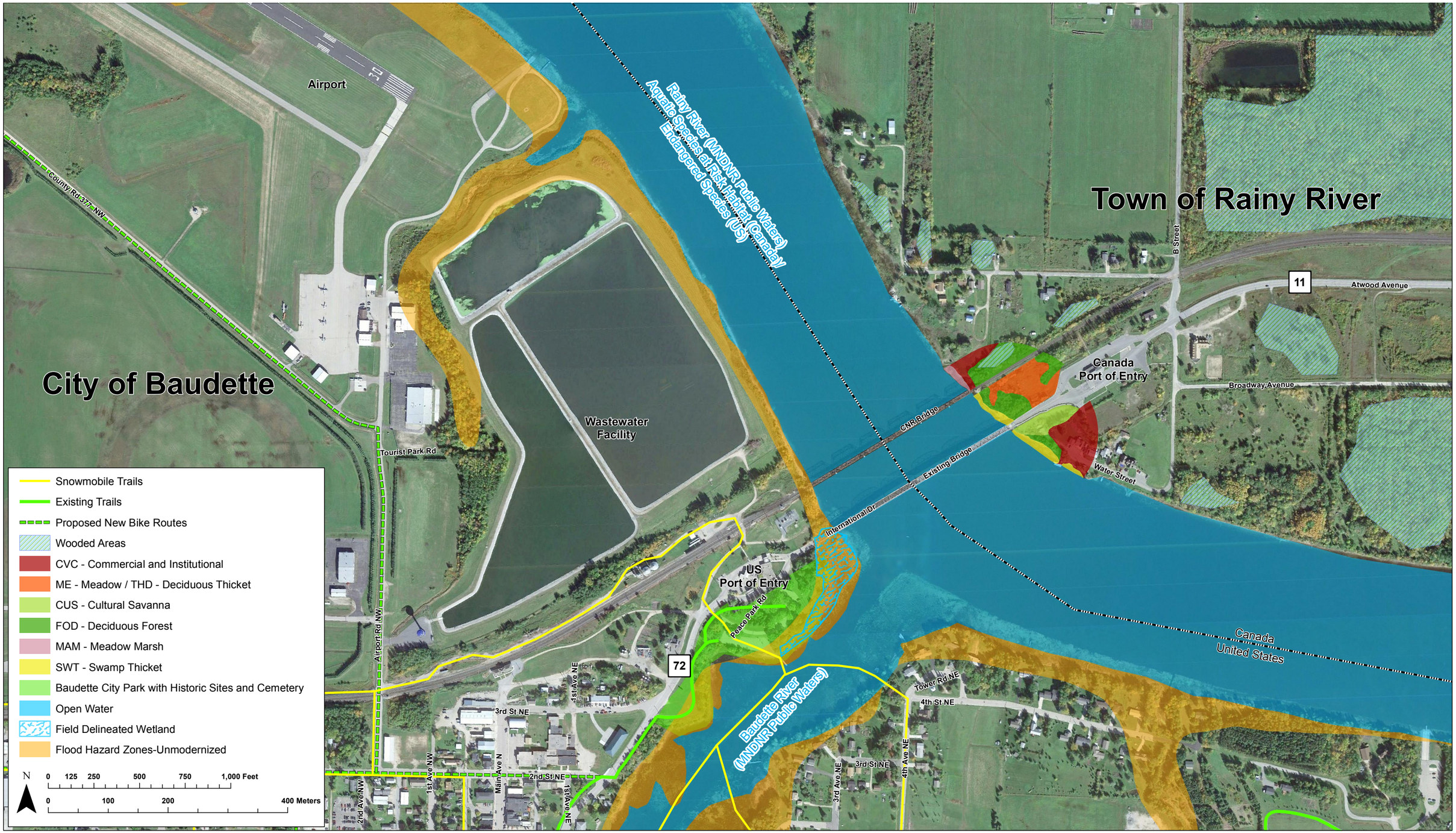
A review of the NHIC database did not identify any records of terrestrial species at risk within 1 km of the study area (see Section 4.1.3.1 for aquatic species at risk). MNRF correspondence indicated that the “bridge replacement has the potential to harm or harass Barn Swallows and/or damage/destroy their protected habitat but that there are currently no records indicating that other species at risk…inhabit the bridge site.” The entire Baudette/Rainy River International Bridge was searched by canoe during field investigations for the presence of Barn Swallow nests and nests of other species protected by the *Migratory Bird Convention Act*. Although no nests were seen, one Barn Swallow was observed near the bridge during the field investigations.

Although the NHIC database did not identify any records of species at risk, it did identify nine records of provincially rare (S1-S3) species within 1 km of the study area:

- **Plants:** wild licorice, Leiberg’s panicgrass, saxifrage, prairie white heath and rigid sedge
- **Mammals:** Franklin’s Ground Squirrel, White-tailed Jack Rabbit
- **Insects:** Elusive Clubtail, and Grey Copper

MNRF also noted that milkweed plants are known to occur in the study area. The Monarch butterfly is provincially ranked as S4 (apparently secure) and is designated as Special Concern federally and provincially.

The Monarch in the CUM1-1c community had an abundance of Common Milkweed, the larval host plant for this species. However, meadow habitat is not a limiting factor for Monarch in Ontario, and is not considered significant wildlife habitat.



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EXISTING CONDITIONS

MINISTRY OF TRANSPORTATION ONTARIO

BAUDETTE/RAINY RIVER INTERNATIONAL BRIDGE

EXHIBIT 5

DATE: OCTOBER 2016 PROJ. NO.: 193802870

Stantec
2335 Highway 36 W
St. Paul, MN 55113
www.stantec.com

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5397600 5397400 5397200

MAS2
MAS2
SWT2
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Canada Port of Entry
HIGHWAY 11
Rainy River, ON
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International Bridge
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Baudette, MN
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Rainy River
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Stantec

Legend

- Canada/US Border
- Flow Direction
- Wetland (USFWS)
- Ecological Land Classification (Stantec)

MAM2	Mineral Meadow Marsh Ecosite
MAS2	Mineral Shallow Marsh Ecosite
SA	Shallow Water Community Class
SWT2	Mineral Swamp Thicket Ecosite

Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2015.
3. Flood Hazard Zones produced by FEMA © 2006, FEMA Digital Flood Rate Insurance Maps (DFIRM), Minnesota, and Minnesota Department of Natural Resources (MNDNR)
4. Park Boundary provided by Lake of the Woods County
5. United States Fish and Wildlife Service (USFWS)
6. Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

April 2016
193802870

Client/Project

Baudette/Rainy River
International Bridge Replacement
GWP 6046-10-00

EXHIBIT 6

Title

Existing Conditions -
Fish and Fish Habitat

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Revised: 2016-04-28 By: awhite

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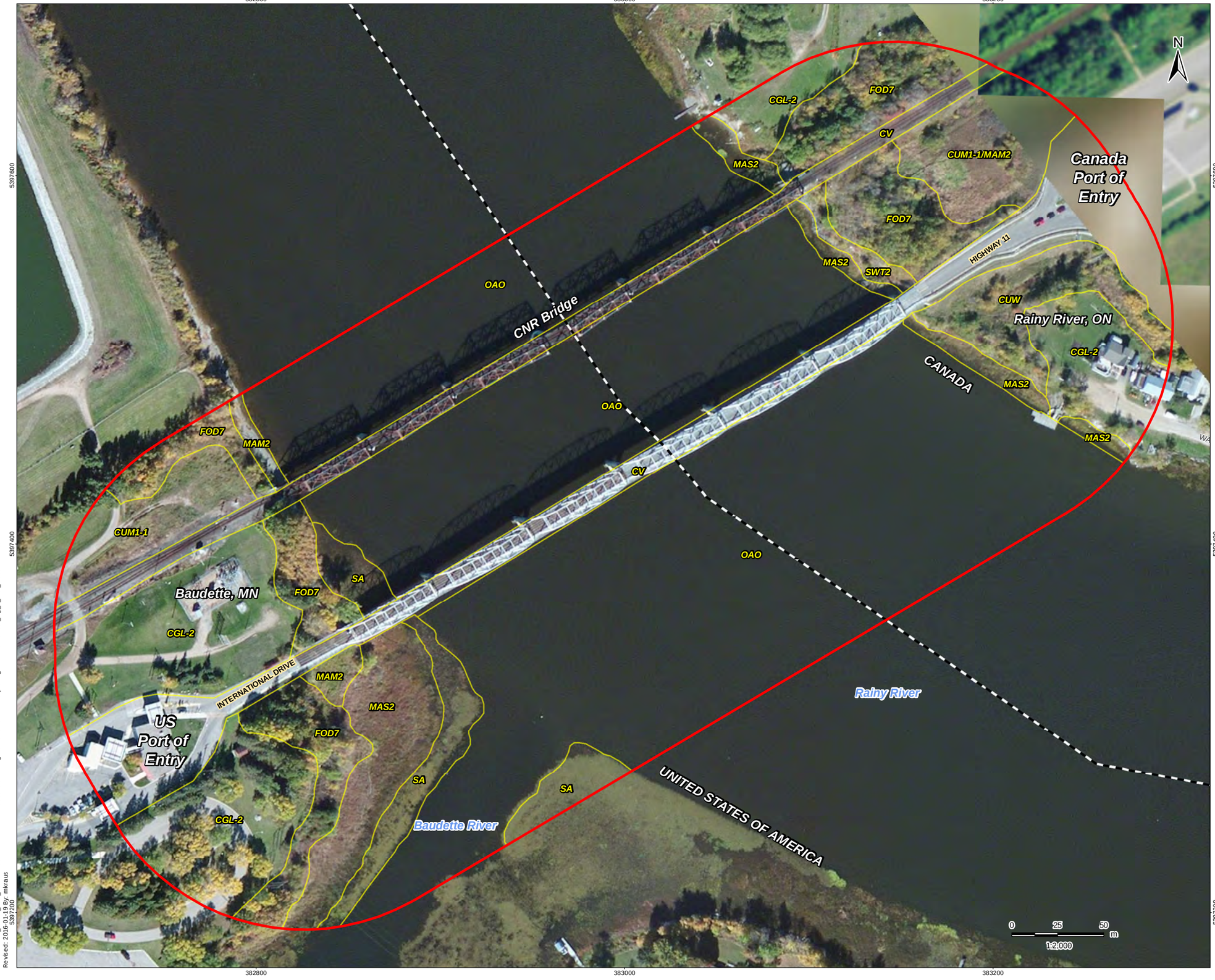

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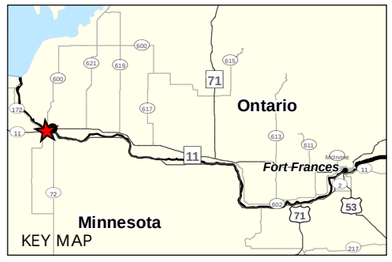
Revised: 2016-01-19 By: mkraus

Stantec

Legend

- Canada/US Border
- Ecological Land Classification
- StudyArea

CODE	DESCRIPTION
Terrestrial System	
FOD7	Fresh-Moist Lowland Deciduous Forest Ecosite
Cultural System	
CUW	Cultural Woodland Community Series
CUM1-1	Dry-Moist Old Field Meadow Type
CGL-2	Constructed Parkland
CV	Constructed
Wetland System	
CUM1-1/ MAM2	Dry-Moist Old Field Meadow/ Mineral Meadow Marsh Complex
MAM2	Mineral Meadow Marsh Ecosite
MAS2	Mineral Shallow Marsh Ecosite
SWT2	Mineral Swamp Thicket Ecosite
Aquatic System	
SA	Shallow Water Community Class
OAO	Open Aquatic Community Series



Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
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3. Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

January 2016
193802870

Client/Project

Baudette/Rainy River
International Bridge Replacement
GWP-6046-10-00

EXHIBIT 7

Title

Ecological Land Classification

383200

5397600

CV

CUM1-1/MAM2

FOD7

CV

Canada
Port of
Entry

N

HIGHWAY 11

SWT2

MAS2

0.10 Ha

CUW1

OAO

0.01 Ha

Rainy River, ON

CGL-2

MAS2

OAO

CANADA

0 6 12 m

1:500

383200

5397600

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Revised: 2016-05-02 By: mkraus

Stantec

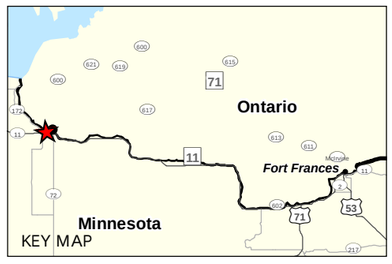
Legend

- Study Area
- Limit of Preferred Route
- Ecological Land Classification (Stantec)

ELC within Preferred Route Disturbance Footprint

- CUW1
- MAS2

CODE	DESCRIPTION
Terrestrial System	
FOD7	Fresh-Moist Lowland Deciduous Forest Ecosite
Cultural System	
CUW1	Mineral Cultural Woodland Ecosite
CUM1-1	Dry-Moist Old Field Meadow Type
CGL-2	Constructed Parkland
CV	Constructed
Wetland System	
CUM1-1/ MAM2	Dry-Moist Old Field Meadow/ Mineral Meadow Marsh Complex
MAS2	Mineral Shallow Marsh Ecosite
SWT2	Mineral Swamp Thicket Ecosite
Aquatic System	
OAO	Open Aquatic Community Series



Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2015.
3. Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

May 2016
193802870

Client/Project

Baudette/Rainy River
International Bridge Replacement
GWP-6046-10-00

EXHIBIT 8

Title

Terrestrial Impact Assessment

4.2 SOCIO/ECONOMIC ENVIRONMENT

4.2.1 Land Use

The study area is located within the Town of Rainy River and the Township of Dawson in the District of Kenora, Ontario and the City of Baudette, Lake of Woods County, Minnesota.

The study area includes the Canada Border Services Agency Port of Entry Facility at the east end of the bridge and the U.S. Port of Entry Facility at the west end of the bridge. The area surrounding the study area includes residential homes, rural and vacant land, a local business, and forested areas.

The Town of Rainy River *Official Plan* (2014) provides guidance for land use and development within the town limits. Similarly, the City of Baudette's City Code provides guidance for land use and zoning within the City. The Town of Rainy River's *Official Plan* (2014) has designated the land surrounding the study area as residential, institutional/ municipal and rural land. Outside of the settlement areas of Rainy River, the majority of the land is designated as rural. Permitted land uses include residential, rural or vacant land. Rural properties within the study area are generally large lots with single family residences.

The Town of Rainy River is located in the District of Kenora and has a population of approximately 800 residents. The areas directly adjacent to and surrounding the study area are designated residential, institutional/municipal land and CN Rail land as per the Official Plan, 2014. The Town of Rainy River has an elementary school (Riverview Elementary School) and a high school (Rainy River High School), a health centre (Rainy River Health Centre), a curling club (Rainy River Curling Club) and a recreation centre (Rainy River Recreation Centre).

The City of Baudette, Minnesota is the county seat of Lake of Woods County and has a population of approximately 1,100 residents.

The City of Baudette and the Town of Rainy River are closely-linked communities with joint social and recreational activities (i.e. joint sports teams) and commercial and business ties. The Baudette/Rainy River Bridge provides direct access and easy flow between the two communities.

4.2.1.1 Future Development

The Town of Rainy River *Official Plan* does not have any areas designated for Future Development within the study area.

4.2.1.2 Student Transportation

The Rainy River District Transportation Services Consortium provides student transportation for all schools in the Rainy River District School Board, including Riverview Elementary School which is located in the Town of Rainy River.

4.2.1.3 Commercial

Highway 11 is used as a commercial and goods transportation corridor for cross-border and for Trans-Canada transport of commercial goods.

Within the study area on Highway 11, highway-oriented businesses include the LCBO, Northern Lights Credit Union, Busy Beaver Fuels gas station, Beaver Mills Market, the Road Runner Motel, Roadside Restaurant, and two automotive repair shops.

4.2.2 Emergency Services

In the Town of Rainy River, ambulance services are provided by the Rainy River District Social Services Administration Board. Police services are provided by the Ontario Provincial Police (OPP) - Rainy River Detachment. The OPP office is located in Fort Frances. Fire services are provided by the Town of Rainy River Fire Department.

There are no hospitals in the Town of Rainy River. The Rainy River Health Centre is located at 115 Fourth Street in the Town of Rainy River. Baudette, Minnesota and Rainy River, Ontario do not have a reciprocity agreement relative to emergency services. Despite this however, the Rainy River ambulance often transports critically ill/injured patients to the Baudette Regional Airport for medical airlift as the Rainy River community does not have an airport facility.

4.2.3 Navigation

The Rainy River is utilized as a recreational navigation channel within the study area and provides numerous recreational opportunities for local residents and tourists. Due to the international nature of the river, navigational channels must be maintained on both the Canadian and U.S. sides of the border.

The CN Rail Bridge is a fixed bridge and was confirmed during the study as the structure limiting navigation on this section of the Rainy River. During the study, Transport Canada confirmed that the vertical and horizontal clearance should at a minimum; meet the clearances provided by the CN Rail Bridge, which would be 4.3 metres in height with a horizontal clearance of 30.5 m. It was also requested that the navigation envelope and bridge piers match, where possible, the adjacent CN Rail Bridge. The Recommended Plant includes the recommended navigational clearances on both sides of the border (see Section 8.2.6).

4.2.4 Agriculture

There are several farms located north of the study area and outside of the Town of Rainy River municipal boundaries. In general, soil capacity is limited in the study area and region and contains Class 4 soils which have severe limitations that restrict the range of crops or require special conservation practices.

4.2.5 Aggregates

There are no designated aggregate deposit areas or active and registered aggregate permits within and in close proximity to the study area.

4.2.6 Mining

There are no operating mines within the study area. There is a proposed Rainy River gold mine project (owned by NewGold), set to be located approximately 65 km northwest of Fort Frances, which is currently undergoing an individual Environmental Assessment and a Federal Environmental Assessment concurrently.

4.2.7 Recreation and Tourism

The Town of Rainy River's *Official Plan* identifies expanding tourism as a key goal. The Town has several tourism engagement and development strategies including developing a tourism website and brochure, partnering with neighbouring communities, and promoting ideas that will make Rainy River a tourist destination.

There are many recreational activities that take place within the study area including year-round fishing, snowmobiling, canoeing, snowshoeing, boating, and golfing. The City of Baudette is known as the "Walleye Capital of the World" and recreational fishing and associated tourism is a significant contributor to the local economy. There are several fishing resorts located in the vicinity of the study area. The Rainy River Walleye Tournament takes places annually in late September and utilizes the Rainy River directly including the area near the existing bridge.

4.2.7.1 Trails and Active Transportation

There are no existing trails located in the study area. The Town of Rainy River *Official Plan* (2014) identifies walking trails outside of the study area but within the Town along Mill Avenue, River Avenue, Fourth Street and Tower Road. As per the *Official Plan* (2014) there are no plans for future trail development in the Town of Rainy River. The existing Baudette/Rainy River International Bridge has a sidewalk located on the south side of the bridge to provide pedestrian access.

4.2.7.2 Snowmobile Trails

The study area is located within District 17 of the Ontario Federation of Snowmobile Clubs (OFSC), and the Emo Borderland Snowmobile Club Association maintains the snowmobile trails within the study area. There is one official snowmobile trail in the vicinity of the study area, Club Trail L201 that runs along Highway 11 from the east and crosses Highway 11 at Government Road in the Town of Rainy River. In the wintertime the Rainy River is used as an informal crossing by snowmobilers once the river freezes.

4.2.7.3 Noise

An *Environmental Noise Assessment* (2016) was carried out in accordance with the requirements of the MTO – *Environmental Guide for Noise* (2008). The study analysed existing noise conditions and compared them to future noise levels (with and without the proposed bridge replacement) to assess potential impacts from the preferred alignment and bridge type. The study also assessed mitigation measures where required and construction noise. A copy of the report is on file with MTO.

In keeping with MTO and Ministry of the Environment and Climate Change (MOECC) practices, the area of investigation for the project has been determined by assessing noise levels at all of the nearby noise sensitive areas (NSA). A distance of 250 metres from the edge of pavement on either side of the bridge and roadway was selected for the assessment. In the vicinity of the study area, traffic is the primary source of noise. Nine NSAs were identified within the Area of Investigation for the assessment. Existing noise levels from the existing bridge are generally low. Noise impacts and mitigation are discussed in Section 8.2.8.

4.3 CULTURAL ENVIRONMENT

4.3.1 Indigenous Communities Context

The study area is located within the Treaty 3 lands of Northwestern Ontario. Treaty 3 was signed in 1873 with Ojibway and Cree communities in Northern Ontario and that provides those Indigenous communities with various traditional rights within the area prescribed by the Treaty. The Rainy River as a whole is used by the Rainy River First Nation and the Sunset County Métis Community for hunting, fishing, gathering, trapping, cultural/spiritual/archaeological activities.

4.3.1.1 Archaeology

A Stage 1 Archaeological Assessment was carried out as part of this study in accordance with the provisions of the *Ontario Heritage Act* (1990) and the *Standards and Guidelines for Archaeological Assessments* (2006) provided by the Ministry of Tourism and Culture (MTC).

According to the Stage 1 assessment, the potential for archaeological resources is high. The stage 1 assessment resulted in the determination that a Stage 2 archaeological assessment will be required.

A Stage 2 Archaeological Assessment Study was carried out for the Recommended Plan as part of this study and the results of the Stage 2 Assessment are documented in Section 8.3.1.

4.3.1.2 Built Heritage and Cultural Landscape

There are no identified built heritage or cultural landscape sites located directly within or in close proximity to the study area. The existing bridge is not listed and is not eligible for inclusion on the Ontario Heritage Bridge List, however, the bridge is eligible for listing in the U.S. National Register of Historic Places. The bridge was found to be a significant example of major river crossings in Minnesota and an uncommon bridge type (Pennsylvania through-truss). Since federal funds will be used to complete this project, effects to the NRHP-eligible bridge must be evaluated through Section 106 of the National Historic Preservation Act process. The Section 106 process involves assessing effects of project activities to identified historic resources and avoiding, reducing, or mitigating adverse effects, if necessary. The Section 106 process involves assessing effects of project activities to identified historic resources and avoiding, reducing, or mitigating adverse effects, if necessary. The proposed action of removing the existing bridge and replacing it with the Preferred Alternative would result in an "adverse effect" under Section 106.

4.3.2 Transportation Conditions

4.3.2.1 Provincial Traffic

Regional traffic relies on Highway 11 and the Baudette/Rainy River Bridge for travel and for the movement of people and goods between the communities of Baudette and Rainy River and across the U.S. and Canadian border. Highway 11 is also the primary connection linking the communities of North Bay, Cochrane, Nipigon, Thunder Bay, and Fort Frances, and forms a strategic east-west link in the Trans-Canada Highway system.

The posted speed limit on Highway 11 just before the bridge is generally 70 km/h. There is no posted speed limit on the existing bridge.

4.3.2.2 Traffic Operations on the Baudette/Rainy River International Bridge

A traffic operations analysis was initiated at the beginning to the study. The analysis identified that the existing traffic counts across the bridge are approximately 1,200 vehicles per day. The study is documented in a technical memorandum titled *Traffic Count Data, Projection and Summary Report* that summarizes existing and future traffic operations in the study area. A copy of the report is on file with MTO.

4.3.2.3 Existing Structure

The structure consists of six main spans (three in Ontario and three in Minnesota) and an additional two approach spans on the Ontario side and four approach spans on the Minnesota side. The main spans consist of 58.7 m steel through truss spans and each approach span is a 6.1 m slab-on-steel girder span. The total bridge length is 391 m.

The roadway width on the bridge is about 7.3 m, and the centre to centre spacing of the trusses is approximately 8.4 m. There is a 1.8 m wide timber sidewalk cantilever from the south trusses/girders. The deck consists of open steel grating. There is illumination situated along the centre of the bridge (suspended from truss cross members).

The six trusses are supported by concrete piers founded on timber piles. The piers for the approach spans are pile bent piers that consist of steel columns, beams, and bracing, founded on a concrete footing with timber piles. Scour has been observed at most piers located in the Rainy River. The two abutments consist of conventional concrete abutments founded on timber piles.

4.3.2.4 Railways

The Canadian National Railway (CNR) is an east-west line and there is an existing CN Rail bridge located directly north or downstream of the existing Baudette/Rainy River International Bridge that also crosses the Rainy River.

4.3.2.5 Utilities

There is existing illumination on the bridge, with conduit strapped to the trusses on the south side of the bridge. Telecommunication cables are situated along the south side of the existing bridge.

Utility companies in the study area were contacted early in the process to determine their existing facilities in the study area.

Bell Canada owns and operates a 25 pair single-mode fiber (SMF) cable on the south side of the bridge on the Canadian side to the U.S./Canada border. This cable provides local loop circuits to allow local calling between Rainy River and Baudette.

The MTO owns, operates and maintains the lighting and conduit on the Canadian side of the bridge. The Minnesota Department of Transportation owns and maintains conduit and lighting on the U.S. side of the bridge.

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5.0 Preliminary Design Alternatives

The purpose of this project is to generate and evaluate a range of reasonable alternatives to replace the Baudette/ Rainy River International Bridge on Highway 11 in Rainy River, Ontario and Trunk Highway 72 in Baudette, Minnesota. This section of the report describes the alternatives considered and the evaluation process used to identify a Recommended Plan. The development of alternatives and the evaluation process encompassed the entire bridge on both sides of the border and included consideration of identified features and constraints on the Canadian and the U.S. sides of the border and bridge.

As discussed in Section 2.5 the development of alternatives began with identifying and evaluating a range of potential bridge replacement options with the goal of maintaining access from the U.S. and Canadian Port of Entry facilities and across the U.S./Canadian border, reducing the impact of construction to the surrounding communities of Baudette and Rainy River, and minimizing impacts to the natural environment including the Rainy River. The development and evaluation of alternatives for this project was separated into alignment alternatives and bridge type alternatives. The alignment alternatives were developed to be compatible with all of the bridge type alternatives but were evaluated independently from the bridge type alternatives.

A range of preliminary bridge replacement alignment and bridge type alternatives were evaluated through several stages of preliminary screenings including:

- Alignment Alternatives:
  - Alignment Alternative 1 – Downstream (north) of existing alignment
  - Alignment Alternative 2 – Upstream (south) of existing alignment
  - Alignment Alternative 3A – Replacement on existing alignment with temporary modular bridge located downstream of existing alignment
  - Alignment Alternative 3B – Replacement on existing alignment with temporary modular bridge located upstream of existing alignment
  - Alignment Alternative 4 – Replacement downstream of existing alignment-staged construction
  - Alignment Alternative 5 – Replacement upstream of existing alignment – staged construction
- Bridge Alternatives:
  - Bridge Alternative A – Continuous Steel I-Girder Superstructure
  - Bridge Alternative B – Simple – Span Precast/Prestressed I-Girder Superstructure
  - Bridge Alternative B1 – Spliced Prestressed Precast Concrete I-Girder Bridge
  - Bridge Alternative C – Continuous Steel Box Girder Superstructure
  - Bridge Alternative D – Segmental Concrete Box Girder Bridge
  - Bridge Alternative E – Tied Arch Main Span with Precast/Prestressed I-Girder Approaches
  - Bridge Alternative E1 – Through Arch Bridge
  - Bridge Alternative F – Concrete Slab Span Bridge
  - Bridge Alternative G –Spliced Steel Girder Bridge
  - Bridge Alternative H –Truss Bridge
  - Bridge Alternative I –Cable-Stayed Bridge
  - Bridge Alternative J –Suspension Bridge

A preliminary screening was completed for the alignment alternatives listed above and it was determined that Alternatives 4 and 5 would not be carried forward for the evaluation of alternatives due to increased cost and construction timing for the project.

Several stages of preliminary screenings of bridge type alternatives were also completed by the Project team and it was determined that Alternatives B1, E1, F, G, H, I, J would not be carried forward for the detailed evaluation of alternatives. These bridge type concepts were eliminated for the following reasons:

- Alternative B1 – Prestressed Precast Concrete Girder Bridge (Spliced)**:** There is limited construction experience in both Minnesota and Ontario and existing alternatives could be refined later to capture this configuration
- Alternative E1 – Through Arch: This alternative is not cost effective for the span lengths considered
- Alternative F – Concrete Slab Span: The span lengths are too small for this crossing which would increase the number of piers in the channel and minimize the navigation channel
- Alternative G – Spliced Steel Girder: There is limited construction experience in both Minnesota and Ontario and existing alternatives could be refined later to capture this configuration
- Alternative H – Truss: The industry is moving away from truss bridges because they require higher maintenance costs, long-term maintenance challenges, and are generally more labor intensive
- Alternative I – Cable-Stayed: This alternative is not cost effective for the span lengths considered. The short span lengths would increase the number of piers in the channel. Additionally, the structure height would likely exceed the aviation clearance envelope
- Alternative J – Suspension: This alternative is more appropriate for spans that are longer than this crossing. For this crossing, this option is not cost effective and would require higher maintenance costs. Additionally, the structure height would likely exceed the aviation clearance envelope

5.1 DEVELOPMENT OF ALIGNMENT OF ALTERNATIVES

Following the preliminary screenings of the alternatives listed above, the alignment alternatives were developed independently from the bridge type alternatives to identify potential locations/alignments for the replacement bridge. These alternatives are summarized in the sections below and illustrated in Exhibit 9.

5.1.1 Alternative 1 – Downstream of Existing Alignment (North Side)

Alignment Alternative 1 is for a new alignment for the replacement bridge to be located approximately 1 m north or downstream of the existing Baudette/Rainy River Bridge.

Alignment Alternative 1 has the following advantages:

- Access will be maintained across the border on the existing bridge until construction of replacement bridge is complete
- Avoids impacts to Peace Park on the U.S. side
- Avoids impacts to unidentified gravesites and culturally significant features on the U.S. side
- Minimizes impacts to identified wetlands on the U.S. side
- No visual or aesthetic impact due to alignment
- Minimal potential for noise impacts
- Cost is consistent with other similar bridge replacement projects with minimal throw-away costs

Alignment Alternative 1 has the following disadvantages:

- Constrained construction area between the existing bridge and the CN Rail Bridge
- Due to restricted roadway geometry, trucks approaching U.S. Port of Entry (POE) can use right lane only to avoid impacts to POE equipment
- May impact contaminated soils from former electric power plant on the U.S. side
- Requires purchase of private/municipal property on the U.S. side of the border
- Construction area between the existing bridge and the CN Rail Bridge is constrained
- Relocation of detection equipment is required to accommodate trucks in left lane on the U.S. side of the border

5.1.2 Alternative 2 – Upstream of Existing Alignment (South Side)

Alignment Alternative 2 is for the replacement bridge to be located approximately 1 metre south or upstream of the existing Baudette/Rainy River Bridge.

Alignment Alternative 2 has the following advantages:

- Access will be maintained across the border on the existing bridge until construction of replacement bridge is complete
- Provides desirable geometric alignment connections to existing U.S. and Canadian POE facilities
- Improved truck entry at U.S. POE avoids impacts to POE equipment (i.e. trucks can be accommodated in both lanes)
- U.S. POE detection equipment can remain in place
- Cost is consistent with other similar bridge replacement projects with minimal throw-away costs
- Minimal potential for noise impacts

Alignment Alternative 2 has the following disadvantages:

- Requires the purchase of private/municipal property on the U.S. and Canadian sides
- Impacts Peace Park on the U.S. side
- Impacts identified wetlands located south of the existing bridge on the U.S. side
- May impact unidentified gravesites/culturally significant features on the U.S. side
- Potential visual and aesthetic impact due to closer proximity of bridge for residents
- Requires natural vegetation removal

5.1.3 Alternative 3A – Existing Alignment, Temporary Modular Bridge (TMB North of Existing Bridge)

Alternative 3A is for the replacement bridge to be located on the alignment of the existing bridge with a Temporary Modular Bridge (TMB) to be located north or downstream of the existing bridge to provide access across the border to the Port of Entry facilities during construction.

Alignment Alternative 3A has the following advantages:

- Geometry accommodates trucks in both lanes at the U.S. POE, which avoids impacts to POE facilities/equipment
- Avoids impacts to Peace Park on the U.S. side
- Avoids impacts to unidentified gravesites and culturally significant features on the U.S. side
- Minimizes impacts to identified wetlands on the U.S. side
- Minimal potential for noise impacts
- Does not impact any registered archaeological sites
- No visual or aesthetic impact due to alignment
- Maintains existing alignment and minimizes permanent impacts to U.S. and Canadian POE facilities
- Maintains existing horizontal alignment and minimizes permanent impacts to U.S. and Canadian POE facilities
- Truck entry at U.S. POE will be maintained

Alignment Alternative 3A has the following disadvantages:

- Cost of temporary bridge is high resulting in significant throw away costs
- Temporary traffic delays and safety concerns due to narrow temporary bridge
- Increased duration of construction
- Requires temporary property on the U.S. side
- Increased risk of fish and aquatic habitat impacts due to additional piers in water for temporary bridge
- Constrained construction area between the existing bridge and the CN Rail Bridge
- May impact contaminated soils from former electric power plant on the U.S. side
- Potential impacts to threatened and endangered species/Species-at-Risk and their habitat
- Requires natural vegetation removal

5.1.4 Alternative 3B – Existing Alignment, Temporary Modular Bridge (TMB South of Existing Bridge)

Alternative 3B is for the replacement bridge to be located on the alignment of the existing bridge with the option of a Temporary Modular Bridge to be located south or upstream of the existing bridge to provide access across the border to the Port of Entry facilities during construction.

Alignment Alternative 3B has the following advantages:

- Maintains existing alignment and minimizes permanent impacts to U.S. and Canadian POE facilities
- Existing truck entry at U.S. POE can be accommodated in both lanes, which avoids impacts to POE facilities/equipment
- Does not impact any registered archaeological sites
- No visual or aesthetic impact due to alignment
- Minimal potential for noise impacts

Alignment Alternative 3B has the following disadvantages:

- Cost of temporary bridge is high resulting in significant throw away costs
- Temporary traffic delays and safety concerns due to narrow temporary bridge
- Increased duration of construction
- Increased risk of fish and aquatic habitat impacts due to additional piers in water for temporary bridge
- Requires temporary property on the U.S. and Canadian sides
- Impacts Peace Park on the U.S. side
- Impacts identified wetlands located south of the existing bridge on the U.S. side
- Temporary property requirements on U.S. side and Canadian side
- Potentially impacts unidentified gravesites/cultural heritage features on U.S. side and areas with high archaeological potential
- Requires natural vegetation removal

Alternatives 3A and 3B are illustrated on Exhibit 9.

5.2 EVALUATION PROCESS

An evaluation process was developed to provide an objective approach to the analysis and evaluation of the alternatives that would form a justifiable tool for the selection of a Preferred Plan. The goal of the evaluation process was to select a cost-effective structure removal/ replacement plan that provides safe operation and accommodates local access to adjacent properties, while minimizing impacts to the natural, social, and cultural environments.

In accordance with the *Class EA for Provincial Transportation Facilities (2000)*, Ministry of Transportation projects are required to consider a wide range of potential impacts to the natural, social, and cultural environments in the study area in addition to meeting highway engineering requirements.

The development of evaluation criteria and the evaluation of alignment alternatives are discussed below.

5.2.1 Evaluation Criteria

In coordination with the project Technical Advisory Committee (TAC) (discussed in Section 6), evaluation criteria that address the key issues related to the decision-making process of selecting a preferred alignment for the bridge replacement were identified. The evaluation criteria were selected as independent variables to reflect the study area constraints (on both Canadian and U.S. sides of the study area) identified during the collection of background and existing conditions data.

The evaluation criteria are independent variables, each of which may contribute a positive or negative influence on the overall suitability of an alternative. Although it was important to explicitly consider the suitability of an alternative in terms of each criterion, it was also useful to establish an overall composite score by determining appropriate weighting (relative importance) among the criteria. Each evaluation criterion was assigned a weight that represented its relative importance to the other criteria. The judgements on the relative importance of the evaluation criteria were based on a comparison of each criterion to each other criterion to assess which criterion is more important and by how much. Determining the importance of each criterion was based on engineering judgement, and environmental significance. The evaluation process included sensitivity testing, which includes adjusting the weightings, to confirm that no individual factor is significantly influencing the final result. The relative importance (i.e., weight factor) of each evaluation criterion, as applied for this study, is also included in Table 2.

Table 2: Evaluation Criteria and Factors Considered

Category	Criteria	Factors Considered
Transportation Engineering (56%)	*Geometrics (24%):*	• Horizontal alignment • Vertical alignment • Impacts to Port of Entry Facilities • Proximity to adjacent CN Rail Bridge • Sightlines for Port of Entry Facilities
	Constructability (14%):	• Construction feasibility • Construction staging • Temporary impacts to Port Operations • Delay for emergency service providers • Delay for residents and commercial traffic
	Cost (13%):	• Capital cost including construction and property acquisition • Future maintenance costs
	Pedestrians/Cyclists (5%):	• ADA/Accessibility (comply with ADA/accessibility regulations; not weighted) • Safety and access
Social & Cultural Environment (25%)	*Property/Right of Way (3%):*	• Private property and public land required
	Archaeology and Cultural Heritage (12%):	• Registered Archaeological Sites • Areas of high archaeological potential • Culturally significant features within Baudette City Park/Peace Park
	Impacts to Park Land/4(f) (5%):	• Designated parkland on U.S. side of border
	Aesthetics/Visual Impacts (2%):	• Aesthetics of bridge structure
	Environmental Justice/Business Impacts/Access Impacts (3%):	• Local businesses that rely on traffic • Access restrictions for residents and travellers
Natural Environment (19%)	*Fish and Aquatic Habitat (10%):*	• Alteration to existing watercourse (i.e., number of piers and locations) • Sensitive aquatic habitat (i.e., spawning areas)
	Wildlife and Terrestrial Habitat and Vegetation (3%):	• Threatened and Endangered Species/Species-at-Risk • Area of sensitive/environmentally significant areas impacted • Removal of vegetation • Impact to wildlife habitat
	Noise/Vibration (1%):	• Noise Sensitive Receptors • Vibration Sensitive Receptors
	Wetland/Floodplains/Protected Waters (5%):	• Area of wetlands impacted • Area of floodplains impacted

Some environmental factors that are relevant to this study are potentially impacted to the same degree or in the same way with all the alternatives. Impacts to these factors (if any) can be mitigated successfully using typical Ministry of Transportation design and mitigation techniques during construction. Although these factors may be relevant to the study area, they do not affect one alternative more than the others and therefore were not explicitly considered in the evaluation that led to the selection of the Preferred Plan. Impacts that are common to all the scenarios are addressed through mitigation, which is discussed in Section 1.0.

In addition to the environmental evaluation factors considered, it was also important to include engineering and technical aspects in the evaluation and selection of the Preferred Plan. The plan must consider highway and bridge design standards, provide for safe movement of traffic through the study area, and be constructible.

5.2.2 Evaluation of Alignment Alternatives

As part of the Preliminary Design and Environmental Assessment Study for the Baudette/Rainy River International Bridge Replacement on Highway 11 in the Town of Rainy River, Ontario, and Trunk Highway 72 in the City of Baudette, Minnesota, a detailed evaluation process was developed to select a preferred alignment for the replacement bridge.

The goal of the evaluation process was to select an alignment for the new bridge that provides safe operations and minimizes impacts to the existing ports of entry and adverse impacts to the environment.

The evaluation of alignment alternatives also included a qualitative assessment of the alternatives by tabulating the advantages and disadvantages of each alternative based upon the evaluation criteria developed and the scale of potential impacts for each criterion. The alternatives were scored based on the weights of each evaluation criterion and the total score was established by adding the score for each factor together to determine a total weighted score for each alternative.

To evaluate each of the alignment alternatives, a comparison was completed between the alternatives as they related to the evaluation criteria noted in in the table above. The goal of this comparison was to gain information on each alignment alternative that would assist in the evaluation of the configurations, and ultimately to arrive at the preferred configuration. Table 3 summarizes the comparison of alignment alternatives to replace the Baudette/Rainy River Bridge. Advantages and disadvantages have been identified by a plus sign (+) and minus sign (-), respectively. Otherwise, a bullet sign (●) denotes where there is no clear advantage or disadvantage.

Table 3: Comparison of Alignment Alternatives to Replace the Baudette/Rainy River International Bridge

Evaluation Category	Evaluation Criteria	Alternative 1 Downstream of Existing Alignment	Alternative 2 Upstream of Existing Alignment	Alternative 3A (Downstream) Replacement on Existing Alignment	Alternative 3B (Upstream) Replacement on Existing Alignment
Transportation Engineering	Geometrics	• New profile meets design standards • New horizontal alignment meets design standards – Trucks approaching the U.S. Port of Entry can use right lane only – Relocation of detection equipment is required to accommodate trucks in left lane on the U.S side of the border	• New profile meets design standards • New horizontal alignment meets design standards + Provides desirable geometric alignment connections to existing U.S. and Canadian Ports of Entry facilities • U.S. Port of Entry detection equipment can remain in place + Improved Truck entry at U.S. Port of Entry	• New profile meets design standards • Maintains existing horizontal alignment and minimizes permanent impacts to U.S. and Canadian Ports of Entry facilities • U.S. Port of Entry detection equipment can remain in place • Truck entry at U.S. Port of Entry will be maintained – Temporary traffic delays and safety concerns due to narrow temporary bridge	• New profile meets design standards • Maintains existing horizontal alignment and minimizes permanent impacts to U.S. and Canadian Ports of Entry facilities • U.S. Port of Entry detection equipment can remain in place • Truck entry at U.S. Port of Entry will be maintained – Temporary traffic delays and safety concerns due to narrow temporary bridge
	Constructability	– Construction area between the existing bridge and the CN Rail bridge is constrained	• No significant or unique constructability concerns	– Construction area between the existing bridge and the CN rail bridge is constrained – Increased duration of construction	– Increased duration of construction
	Cost	+ Cost is consistent with other similar bridge replacement projects with minimal throw-away costs	+ Cost is consistent with other similar bridge replacement projects with minimal throw-away costs	– Cost of temporary bridge is high, resulting in significant throw away costs	– Cost of temporary bridge is high, resulting in significant throw away costs
	Pedestrians/Cyclists	• No impacts to criteria	• No impacts to criteria	• No impacts to criteria	• No impacts to criteria

Evaluation Category	Evaluation Criteria	Alternative 1 Downstream of Existing Alignment	Alternative 2 Upstream of Existing Alignment	Alternative 3A (Downstream) Replacement on Existing Alignment	Alternative 3B (Upstream) Replacement on Existing Alignment
Social & Cultural Environment	Property/Right of Way	– Requires purchase of private/municipal property on U.S. side	– Requires purchase of property on U.S. side – Requires purchase of property on Canadian side	– Temporary property requirements on U.S. side	– Temporary property requirements on U.S. side – Temporary property requirements on Canadian side
	Archaeology and Cultural Heritage	• Does not impact unidentified gravesites/cultural heritage features on U.S. side and areas with high archaeological potential • Does not impact any registered archaeological sites	– Potentially impacts unidentified gravesites/cultural heritage features on U.S. side and areas with high archaeological potential • Does not impact any registered archaeological sites	• Does not impact unidentified gravesites/cultural heritage features on U.S. side and areas with high archaeological potential • Does not impact any registered archaeological sites	– Potentially impacts unidentified gravesites/cultural heritage features on U.S. side and areas with high archaeological potential • Does not impact any registered archaeological sites
	Impacts to Park Land/4(f)	• Does not impact Baudette City Park/Peace Park on U.S. side	– Impacts Baudette City Park/Peace Park on U.S. side	• Does not impact Baudette City Park/Peace Park on U.S. side	– Impacts Baudette City Park/Peace Park on U.S. side
	Aesthetics/Visual Impacts	• No visual or aesthetic impact due to alignment	– Potential visual and aesthetic impact due to closer proximity of bridge for residents	• No visual or aesthetic impact due to alignment	• No visual or aesthetic impact due to alignment
	Environmental Justice/Business Impacts/ Access Impacts	• No impacts to criteria	• No impacts to criteria	• No impacts to criteria	• No impacts to criteria
Natural Environment	Fish and Aquatic Habitat	– Potential impacts to threatened and endangered/Species-at-Risk and their habitat • Potential impacts to fisheries resources, including fish spawning areas – May impact contaminated soils from former electric power plant on U.S. side	– Potential impacts to threatened and endangered species/Species-at-Risk and their habitat • Potential impacts to fisheries resources, including fish spawning areas	– Potential impacts to threatened and endangered species/Species-at-Risk and their habitat – Greater impacts to fisheries resources, including fish spawning and nursery areas (additional piers in water) – May impact contaminated soils from former electric power plant on U.S. side	– Potential impacts to threatened and endangered species/Species-at-Risk and their habitat – Greater impacts to fisheries resources, including fish spawning and nursery areas (additional piers in water)
	Wildlife and Terrestrial Habitat and Vegetation	– Requires natural vegetation removal	– Requires natural vegetation removal	– Requires natural vegetation removal	– Requires natural vegetation removal
	Noise/Vibration	• Minimal potential for noise impacts	• Minimal potential for noise impacts	• Minimal potential for noise impacts	• Minimal potential for noise impacts
	Wetlands/Floodplains/ Protected Waters	• Minimizes impacts to identified wetlands on the U.S. side	– Impacts identified wetlands on the U.S. side	• Minimizes impacts to identified wetlands on the U.S. side	– Potential impacts to identified wetlands on the U.S. side

Following the comparison of the alignment alternatives as they relate to the evaluation criteria and the tabulation of positive, negative, and neutral counts, each alternative was scored based upon the sum of positive, neutral and negative counts multiplied by the criteria weights to determine a weighted score for each alternative. Specifically, the formula used to determine the weighted score for each evaluation criteria is [(Positive Count + 0.5 *Neutral Count)/(Positive Count+Neutral Count+Negative Count)] * Criteria Weight. Table 4 shows the results of the complete weighted scores for each alignment alternative.

Table 4: Alignment Scoring

Alternative 1: Downstream of Existing Alignment

Evaluation Category	Category Weight	Evaluation Criteria	Criteria Weight	Positive Count	Neutral Count	Negative Count	Raw Score	Weighted Score
Transportation Engineering	56%	Geometrics	24%	0	2	2	25.0%	6.0%
		Constructability	14%	0	0	1	0.0%	0.0%
		Cost	13%	1	0	0	100.0%	13.0%
		Pedestrians/Cyclists	5%	0	1	0	50.0%	2.5%
Social & Cultural Environment	25%	Property/Right-of-Way	3%	0	0	1	0.0%	0.0%
		Archaeology and Cultural Heritage	12%	0	2	0	50.0%	6.0%
		Impacts to Parkland/4(f)	5%	0	1	0	50.0%	2.5%
		Aesthetics/Visual Impacts	2%	0	1	0	50.0%	1.0%
		Environmental Justice/Business Impacts/Access Impacts	3%	0	1	0	50.0%	1.5%
Natural Environment	19%	Fish and Aquatic Habitat	10%	0	1	2	16.7%	1.7%
		Wildlife and Terrestrial Habitat and Vegetation	3%	0	0	1	0.0%	0.0%
		Noise/Vibration	1%	0	1	0	50.0%	0.5%
		Wetlands/Floodplains/Protected Waters	5%	0	1	0	50.0%	2.5%
Totals	100%		100%	1	11	7	34.2%	37.2%

Alternative 2: Upstream of Existing Alignment

Evaluation Category	Category Weight	Evaluation Criteria	Criteria Weight	Positive Count	Neutral Count	Negative Count	Raw Score	Weighted Score
Transportation Engineering	56%	Geometrics	24%	2	3	0	70.0%	16.8%
		Constructability	14%	0	1	0	50.0%	7.0%
		Cost	13%	1	0	0	100.0%	13.0%
		Pedestrians/Cyclists	5%	0	1	0	50.0%	2.5%
Social & Cultural Environment	25%	Property/Right-of-Way	3%	0	0	2	0.0%	0.0%
		Archaeology and Cultural Heritage	12%	0	1	1	25.0%	3.0%
		Impacts to Parkland/4(f)	5%	0	0	1	0.0%	0.0%
		Aesthetics/Visual Impacts	2%	0	0	1	0.0%	0.0%
		Environmental Justice/Business Impacts/Access Impacts	3%	0	1	0	50.0%	1.5%
Natural Environment	19%	Fish and Aquatic Habitat	10%	0	1	1	25.0%	2.5%
		Wildlife and Terrestrial Habitat and Vegetation	3%	0	0	1	0.0%	0.0%
		Noise/Vibration	1%	0	1	0	50.0%	0.5%
		Wetlands/Floodplains/Protected Waters	5%	0	0	1	0.0%	0.0%
Totals	100%		100%	3	9	8	37.5%	46.8%

Alternative 3A (Downstream): Replacement on Existing Alignment

Evaluation Category	Category Weight	Evaluation Criteria	Criteria Weight	Positive Count	Neutral Count	Negative Count	Raw Score	Weighted Score
Transportation Engineering	56%	Geometrics	24%	1	3	1	50.0%	12.0%
		Constructability	14%	0	0	2	0.0%	0.0%
		Cost	13%	0	0	1	0.0%	0.0%
		Pedestrians/Cyclists	5%	0	1	0	50.0%	2.5%
Social & Cultural Environment	25%	Property/Right-of-Way	3%	0	0	1	0.0%	0.0%
		Archaeology and Cultural Heritage	12%	0	2	0	50.0%	6.0%
		Impacts to Parkland/4(f)	5%	0	1	0	50.0%	2.5%
		Aesthetics/Visual Impacts	2%	0	1	0	50.0%	1.0%
		Environmental Justice/Business Impacts/Access Impacts	3%	0	1	0	50.0%	1.5%
Natural Environment	19%	Fish and Aquatic Habitat	10%	0	0	3	0.0%	0.0%
		Wildlife and Terrestrial Habitat and Vegetation	3%	0	0	1	0.0%	0.0%
		Noise/Vibration	1%	0	1	0	50.0%	0.5%
		Wetlands/Floodplains/Protected Waters	5%	0	1	0	50.0%	2.5%
Totals	100%		100%	1	11	9	31.0%	28.5%

Alternative 3B (Upstream): Replacement on Existing Alignment

Evaluation Category	Category Weight	Evaluation Criteria	Criteria Weight	Positive Count	Neutral Count	Negative Count	Raw Score	Weighted Score
Transportation Engineering	56%	Geometrics	24%	1	3	1	50.0%	12.0%
		Constructability	14%	0	0	1	0.0%	0.0%
		Cost	13%	0	0	1	0.0%	0.0%
		Pedestrians/Cyclists	5%	0	1	0	50.0%	2.5%
Social & Cultural Environment	25%	Property/Right-of-Way	3%	0	0	2	0.0%	0.0%
		Archaeology and Cultural Heritage	12%	0	1	1	25.0%	3.0%
		Impacts to Parkland/4(f)	5%	0	0	1	0.0%	0.0%
		Aesthetics/Visual Impacts	2%	0	1	0	50.0%	1.0%
		Environmental Justice/Business Impacts/Access Impacts	3%	0	1	0	50.0%	1.5%
Natural Environment	19%	Fish and Aquatic Habitat	10%	0	0	2	0.0%	0.0%
		Wildlife and Terrestrial Habitat and Vegetation	3%	0	0	1	0.0%	0.0%
		Noise/Vibration	1%	0	1	0	50.0%	0.5%
		Wetlands/Floodplains/Protected Waters	5%	0	0	1	0.0%	0.0%
Totals	100%		100%	1	8	11	25.0%	20.5%

5.2.3 Preferred Alignment Alternatives

After completing the evaluation process, including sensitivity testing, Alternative 2 has been selected as the preferred alignment. Alternative 2 had the highest overall weighted score and was also the highest scored (or tied for the highest score) alternative in 9 out of 13 categories analyzed.

The results of the evaluation of the alignment alternatives are shown in Table 5.

Table 5: Evaluation of Alignment Alternatives

Alternative	Weighted Score	Rank
Alternative 1	37.2%	2
Alternative 2	46.8%	1
Alternative 3A	28.5%	3
Alternative 3B	20.5%	4

5.3 DEVELOPMENT OF BRIDGE TYPE ALTERNATIVE

Similarly to the development of alignment alternatives, a set of five bridge type alternatives were developed independently from the alignment alternatives for the replacement bridge.

Alternatives A, B, C, D, and E are illustrated on Exhibit 10.

5.3.1 Alternative A – Continuous Steel I-Girder Superstructure

Alternative A is a continuous steel I-Girder superstructure which incorporates the following design features:

- Structural elements below deck require a higher roadway elevation
- Structure type is common in Minnesota and Ontario
- Construction can be performed using common techniques

5.3.2 Alternative B – Simple-Span Precast/Prestressed I-Girder Superstructure

Alternative B is a Simple-Span Precast/Prestressed I-Girder Superstructure which incorporates the following design features:

- Structural elements below deck require a higher roadway elevation
- Structure type is common in Minnesota and Ontario and standardized shapes exist
- Construction can be performed using common techniques

5.3.3 Alternative C – Continuous Steel Box Girder Superstructure

Alternative C is a continuous steel box girder superstructure which incorporates the following design features:

- Structural elements below deck require a higher roadway elevation
- Shape allows for construction of longer spans
- Construction can be performed using common techniques

5.3.4 Alternative D – Segmental Concrete Box Girder

Alternative D is a segmental concrete box girder structure which incorporates the following design features:

- Structural elements below deck require a higher roadway elevation
- Shape allows for construction of longer spans
- May require a specialty contractor to construct and/or inspect

5.3.5 Alternative E – Tied Arch Main Span with Precast/Prestressed I-Girder Approaches

Alternative E is a Tied Arch Main Span with Precast/Prestressed I-Girder approaches which incorporates the following design features:

- Structural elements above desk allow for a lower roadway elevation
- May result in the most piers in the river
- May require a specialty contractor to construct and/or inspect

5.4 EVALUATION OF BRIDGE TYPE ALTERNATIVES

An evaluation process was developed to provide an objective approach to the analysis and evaluation of the bridge type alternatives to form a justifiable tool for the selection of a preferred bridge type. The goal of the evaluation process was to select a cost-effective bridge replacement plan that provides safe operation and accommodates access to the U.S. and Canadian Port of Entry facilities and the communities of Baudette, Minnesota and Rainy River, Ontario, while minimizing impacts to the natural, social, and cultural environments. The Bridge Type Alternatives were evaluated through a four-phase evaluation approach.

During the first phase, existing site conditions were confirmed to determine potential bridge types and to develop site-specific evaluation criteria.

The second phase of the evaluation included an initial screening and high-level evaluation of the five bridge type alternatives developed utilizing the preliminary bridge evaluation matrix (see Figure 3 in Appendix A). The initial evaluation criteria developed for the bridge type alternative evaluation are listed below:

- Maximum increase in structure depth
- Number of substructures in river and location relative to adjacent CN Rail bridge
- Traffic impacts/staging considerations
- Geometric challenges
- Maintenance and inspection needs
- Security and vulnerability

The second phase eliminated the following three alternatives:

- Continuous steel box girder – This alternative was found to have minimal advantages over the continuous steel I-girder alternative, and would result in higher design and construction complexity and risk
- Segmental concrete box girder – This option had the deepest structure depth, resulting in the largest increase in roadway elevation, which seemed inappropriate for the context
- Tied arch main span with precast concrete I-girder approaches – Although this offered the shallowest structure depth, it did not provide sight distance from one bridge end to the other (requested by key stakeholders/TAC members), and resulted in a large number of substructures and increased complexity in design and maintenance

The two remaining alternatives, continuous steel I-girder and precast concrete I-girder superstructures, were further refined in the third phase of evaluation. The performance of these alternatives against the evaluation criteria can be seen in the matrix dated February 19, 2016 (in Appendix A). Through this refinement, the precast concrete I-girder alternative was eliminated due to several challenges. This bridge type would require the most substructures, increasing construction risk. This alternative would limit the number of potential fabricators, with few capable of fabricating a sufficiently long beam, especially in Canada. Lastly, the evaluation revealed differences between design practices and philosophies in Minnesota and Ontario, which would have required both bridge owners to compromise their typical practices.

The remaining alternative, a continuous steel I-girder superstructure, was brought into the final phase of evaluation, to determine the optimal span configuration. The agencies evaluated both four-span and five-span configurations, as well as haunched and prismatic (constant depth) superstructures. The matrix dated March 24, 2016 (in Appendix A), documents the alternative's performance against the evaluation criteria.

The four-span configuration was eliminated from consideration, mainly due to construction complexity and risk. A preliminary erection plan showed that this configuration would likely require eight temporary structures to support bridge segments during construction, compared to four segments with a five-span configuration. Additionally, the likely location of these temporary structures would decrease the allowable navigational opening by about half below the bridge during construction.

The evaluation between the five-span haunched and five-span prismatic continuous steel I-girder superstructures was primarily based on aesthetic components. From an aesthetic perspective, the haunched alternative featured a light and slender appearance, while the prismatic alternative featured a clean, parallel appearance. Ultimately, the five-span haunched continuous steel I-girder was selected as the Preferred Bridge Type Alternative based on the results of the evaluation and input from the Project Advisory Committee and the Technical Advisory Committee (see Section 6.0).

5.4.1 Preferred Bridge Type

After completing the evaluation process, Alternative A, the Steel I-Girder structure, was selected as the preferred bridge type. The Steel I-Girder structure was selected as the preferred bridge type because it:

- Requires the lowest number of substructures in the river
- No apparent traffic impacts
- Opportunity to launch structure
- Reduced design complexity
- Reduced construction risks
- Increased sight distance
- Construction can be performed using common techniques

Details of the Recommended Plan for the Baudette/Rainy River Bridge are discussed in Section 7.0.

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EXISTING CNR BRIDGE

TH 72

HIGHWAY 11

RAINY RIVER

CANADA - ONTARIO
INTERNATIONAL BORDER
UNITED STATES - MINNESOTA

LEGEND

ALIGNMENT ALTERNATIVE 1 (DOWNSTREAM OF EXISTING ALIGNMENT)

ALIGNMENT ALTERNATIVE 2 (UPSTREAM OF EXISTING ALIGNMENT)

ALIGNMENT ALTERNATIVE 3 (SAME LOCATION AS EXISTING ALIGNMENT)***

***NOTE: WILL REQUIRE A TEMPORARY STRUCTURE ON EITHER THE UPSTREAM OR DOWNSTREAM SIDE

150
SCALE IN FEET

45.72
SCALE IN METERS

MINNESOTA DEPARTMENT OF TRANSPORTATION AND ONTARIO MINISTRY OF TRANSPORTATION
BAUDETTE/RAINY RIVER INTERNATIONAL BRIDGE REPLACEMENT
ALIGNMENT ALTERNATIVES OVERVIEW

DATE: 09/12/2016

PROJ. NO. 193802870

EXHIBIT 9

Stantec

Plot Date: 09/30/2016 - 12:42pm
Drawing name: V:\1938\active\193802870\Environmental\MnDOT\PM3\Displays\Baudette Ministry of Transportation Ontario TB-17X11-L.dwg
Xrefs:

A Continuous Steel I-Girder Superstructure

Camden Bridge, Minneapolis, MN

Characteristics:

a. Structural elements below deck require a higher roadway elevation
b. Structure type is common in Minnesota and Ontario
c. Construction can be performed using common techniques

B Simple-Span Precast/Prestressed I-Girder Superstructure

Belleair Beach Causeway Bridge, Belleair Beach, FL

Characteristics:

a. Structural elements below deck require a higher roadway elevation
b. Structure type is common in Minnesota and Ontario and standardized shapes exist
c. Construction can be performed using common techniques

C Continuous Steel Box Girder Superstructure

Brigittenauer Bridge in Vienna Austria built 1982

Characteristics:

a. Structural elements below deck require a higher roadway elevation
b. Shape allows for construction of longer spans
c. Construction can be performed using common techniques

D Segmental Concrete Box Girder

I-35W Saint Anthony Falls Bridge, Minneapolis, MN

Characteristics:

a. Structural elements below deck require a higher roadway elevation
b. Shape allows for construction of longer spans
c. May require a specialty contractor to construct and/or inspect

E Tied Arch Main Span with Precast/Prestressed I-Girder Approaches

Blennerhassett Bridge, Belpre, OH & Parkersburg, WV

Characteristics:

a. Structural elements above deck allow for a lower roadway elevation
b. May result in the most piers in the river
c. May require a specialty contractor to construct and/or inspect

BRIDGE ALTERNATIVES

MINISTRY OF TRANSPORTATION ONTARIO
BAUDETTE/RAINY RIVER INTERNATIONAL BRIDGE

EXHIBIT 10

DATE: OCTOBER 2016 PROJ. NO.: 193802870

Stantec
2335 Highway 36 W
St. Paul, MN 55113
www.stantec.com

6.0 Consultation Process

The consultation process provided an opportunity for the Project Team and representatives from the Ministry of Transportation (MTO) to discuss the study process with the public, property owners, external agencies, and stakeholders.

The process aims to notify all interested parties of the project and to provide an opportunity for input to the study and decision-making processes. This was accomplished by presenting the findings of each stage of work to the public, and through ongoing discussions with the various government agencies and ministries, non-government interest groups and property owners.

Public input was received at three Public Meetings, through meetings with the Ontario Ministry of Transportation (MTO), the Town of Rainy River, and other external agencies and stakeholders. On-going contact was maintained with groups and organizations with interests in the study area.

To make sure that all interested members of the public were contacted, a consultation plan was followed that included:

- Newspaper notices in the Rainy River Record and Fort Francis Times
- Mailings to impacted property owners within the study area
- Direct mailings to external agencies, stakeholders, and property owners in the study area as well as members of the public who indicated an interest in the study

Newspaper notices and notification materials are provided in Appendix B.

6.1 U.S. AND CANADIAN COORDINATED CONSULTATION

The study process for this project, including the consultation program, has been developed with coordinated efforts from MnDOT and MTO to effectively coordinate the U.S. and Canadian study processes.

The consultation plan for this project has been developed in conjunction with the U.S. Environmental Assessment and consultation process. The public meetings for this project have been scheduled concurrently in Rainy River and Baudette to make sure the same information is shared with the public and local stakeholders at the same time throughout the duration of the project. The U.S. consultation component of the project is documented in the U.S. Environmental Assessment document and is on file with the MnDOT.

6.2 PUBLIC INVOLVEMENT PLAN

A joint U.S. and Canadian Public Involvement Plan (PIP) was developed for this project that includes details of planned public meetings, agency meetings, online resources including a project website, a dedicated online project interface called MindMixer, and a Project Advisory Committee (PAC). The PIP also included detailed engagement plans for local, municipal, provincial, federal and international agencies and stakeholders throughout the duration of the project through various consultation methods (i.e., correspondence, conference calls, and meetings). The public meetings for this project were scheduled concurrently to make sure the same information is shared with the public and local stakeholders on both sides of the border at the same time throughout the duration of the project.

The role of the PAC, which typically includes local organizations, agencies, municipalities, and emergency service providers, is to provide input on the project including the development of the alternatives, the evaluation of alternatives and the selection of a preferred plan. A total of four PAC meetings were held during this study.

In addition to the PIP, a separate Inter Agency Involvement Plan was developed that included an updated agency engagement consultation plan in order to increase international agency participation and coordination. The plan includes quarterly webinars and targeted agency meetings.

Informal and formal consultations have occurred with senior agency officials, elected federal provincial and municipal officials, their key political staff, and key community members and organizations to inform them about MTO's and MnDOT's Preliminary Design and Environmental Assessment Study to replace the existing Baudette/Rainy River International Bridge.

6.3 PROJECT WEBSITE

A project website (www.dot.state.mn.us/d2/projects/baudette-bridge) was developed to provide the public with easy access to project information, including background information, contact information and the ability to transfer information easily throughout the course of the study. As per MnDOT protocol, the project website was hosted on the MnDOT website. The website was updated frequently as the study progressed, and included links to project-specific documentation (i.e., study notifications, EA process, and Public Meeting displays) and supplementary information (i.e., Class EA document).

In addition to the project website, a dedicated online forum called MindMixer was also developed to provide and interactive online platform to facilitate online discussions on the project. The MindMixer website was regularly updated with project topics, milestones and consultation notices.

6.4 STUDY COMMENCEMENT

The purpose of the Notice of Study Commencement was to inform the public and external agencies about the study and to seek input from agencies, property owners, and users of the Baudette/Rainy River Bridge.

The Notice of Study Commencement was carried out through newspaper advertisements in the *Rainy River Record* on Tuesday, May 12, 2015 and the *Fort Frances Times* on Wednesday, May 13, 2015. The notice described the purpose of the study and the Class EA process. The notice also provided contact information for additional information on the study and requested public involvement.

Individual notification letters were sent to federal, provincial, and municipal agencies, property owners and stakeholder groups, including Indigenous Communities, expected to have an interest in the study. Letters to agencies requested information on the environmental (i.e., natural, social, or cultural) features of the study area and to seek

their input on the project. The correspondence included a flyer with additional information and a map of the study area. External agencies and stakeholders also received an agency comment sheet, requesting input by June 11, 2015.

Notification materials and a list of agencies and stakeholders that received the Notice of Study Commencement are contained in Appendix B.

6.4.1 Comments Received from Notice of Study Commencement

Following the Notice of Study Commencement, the Project Team received comments and emails from the general public, agencies, and property owners in the study area. In general, comments received included requests to be added to the project mailing list, potential impacts to the natural environment, permitting processes required, impacts to emergency services utilizing the existing bridge, and pedestrian safety concerns.

A summary of the comments received from the public and responses provided is in Appendix C. All names and addresses were added to the project mailing list.

6.5 PUBLIC MEETING 1

The first Public Meeting was held on Wednesday, June 24, 2015 at the Rainy River Recreation Centre in Rainy River, Ontario. Concurrently, a public meeting was held in the Lake of the Woods Ambulance Garage, in Baudette, Minnesota.

The purpose of Public Meeting 1 was to:

- Introduce the study
- Display and seek input on the existing conditions in the study area (i.e. natural, social, economic and cultural)
- Provide study background information
- Answer questions about the study

The Public Meeting was advertised in the *Rainy River Record* on Tuesday, June 16, 2015 and in the *Fort Frances Times* on Wednesday, June 17, 2015.

In addition, notification letters were mailed to Indigenous Communities, external agencies, stakeholders, property owners and the general public on Friday, June 5, 2015. External agencies and municipal staff were invited to attend an External Agency Drop-In Meeting prior to the Public Meeting from 3:00 PM to 4:00 PM, and the general public session was held at the same location from 4:00 PM to 7:00 PM.

Copies of the newspaper notice and notification letters are in Appendix B.

The following information was displayed at the first Public Meeting:

- Welcome
- Purpose and Objective
- Coordination
- Need and Justification
- Existing Conditions
- Evaluation
- Investigations
- Your input is important

Comment sheets were available and comments were requested by July 23, 2015. All information displayed at the Public Meeting, as well as the comment sheets and text panels, is included in Appendix D.

6.5.1 Attendance

In total, 11 members of the public and external agency representatives signed the visitor registers available at the Public Meeting. External agencies and stakeholders that were represented at the Public Meeting included the Town of Rainy River and the Ontario Provincial Police.

6.5.2 Comments Received

Seven comment sheets, letters and emails were received following the Public Meeting.

The main comments identified following the first Public Meeting included potential impacts to private property, access provided by the bridge, new bridge aesthetics, construction timing, construction noise and disruption, EMS access and public water (dock) access.

The public also provided comments on which evaluation criteria were important to them. Preservation of the natural environment, property impacts, and impacts to local businesses, were identified as important evaluation criteria.

A summary of the comments received from the public and responses provided can be found in Appendix C.

6.6 PUBLIC MEETING 2

The second Public Meeting was held on Wednesday, October 28, 2015 at the Rainy River Recreation Centre. Concurrently, a public meeting was held in the Lake of the Woods Ambulance Garage, in Baudette, Minnesota.

The purpose of Public Meeting 2 was to:

- Display and seek input on the evaluation criteria and evaluation process
- Present and seek input on the preliminary alignment and structural bridge replacement alternatives
- Answer questions about the study

The Public Meeting was advertised in the *Rainy River Record* on Tuesday, October 20, 2015 and in the *Fort Frances Times* on Wednesday, October 21, 2015.

In addition, notification letters were mailed to external agencies, Indigenous Communities, stakeholders, impacted property owners and the general public on Thursday, October 1, 2015. A Canada Post Unaddressed Ad Mail was completed the week of October 7, 2015 and was distributed to approximately 451 residents and businesses within the Town of Rainy River. Copies of the newspaper notice and notification letters are in Appendix B.

External agencies and municipal staff were invited to attend an External Agency Drop-In Meeting prior to the Public Meeting from 3:00 PM to 4:00 PM, and the general public session was held at the same location from 4:00 PM to 7:00 PM.

The following information was displayed at the second Public Meeting:

- Welcome
- Objectives
- Background
- Study Process
- Coordination
- Need and Justification
- Alignment Alternative 1
- Alignment Alternative 2
- Alignment Alternative 3
- Bridge Alternatives
- Existing Conditions
- Investigations
- Preliminary Evaluation Criteria
- Your Input is Important

Comment sheets were available and comments were requested by November 27, 2015. All information displayed at the Public Meeting, as well as the comment sheets and text panels, is included in Appendix D.

6.6.1 Attendance

In total, 17 members of the public and external agency representatives signed the visitor registers available at the Public Meeting. External agencies and stakeholders that were represented at the PIC included the Township of Dawson, the Ontario Ministry of Natural Resources and Forestry, and the Ontario Provincial Police.

6.6.2 Comments Received

In total, four comment sheets, letters and emails were received following the Public Meeting. A summary of comments received from external agencies is included in Appendix C. Responses were provided to those who requested them.

The main comments identified following the second Public Meeting include preference for Alignment Alternative 1 as it avoids impacts to potential gravesites and Peace Park, preference for Alignment Alternative 2 due to reduced traffic and port activity impacts, noise impacts from trucks braking on bridge, potential impacts to the airport, aesthetics, and concern regarding disruption caused by construction activities.

A summary of the comments received from the public and responses provided can be found in Appendix C.

6.7 PUBLIC MEETING 3

The third Public Meeting was held on Wednesday, May 25, 2016 at the Rainy River Recreation Centre.

The purpose of Public Meeting 3 was to:

- Display and seek input on the Preferred Plan
- Present and seek input on the results of the evaluation of alternatives
- Answer questions about the study

The Public Meeting was advertised in the *Rainy River Record* on Tuesday, May 17, 2016 and in the *Fort Frances Times* on Wednesday, May 18, 2016.

In addition, notification letters were mailed to external agencies, Indigenous Communities, stakeholders, impacted property owners and the general public on Wednesday, May 4, 2016. A Canada Post Unaddressed Ad Mail was completed the week of May 11, 2016 and was distributed to approximately 408 residents and businesses within the Town of Rainy River. Copies of the newspaper notice and notification letters are in Appendix B.

External agencies and municipal staff were invited to attend an External Agency Drop-In Meeting prior to the Public Meeting from 3:00 PM to 4:00 PM, and the general public session was held at the same location from 4:00 PM to 7:00 PM.

The following information was displayed at the third Public Meeting:

- Welcome
- Objectives
- Background
- Study Process
- Coordination
- Need and Justification
- Existing Conditions
- Alignment Alternatives Evaluation
- Bridge Alternatives Evaluation
- Investigation
- Preferred Plan
- Preferred Plan Visualizations
- Historic Bridge Construction and Proposed Video
- Mitigation and Protection Commitments
- Your Input is Important

Comment sheets were available and comments were requested by June 24, 2016. All information displayed at the Public Meeting, as well as the comment sheets and text panels, is included in Appendix D.

6.7.1 Attendance

In total, 20 members of the public and external agency representatives signed the visitor registers available at the Public Meeting. External agencies and stakeholders that were represented at the Public Meeting included the Town of Rainy River, the Ontario Ministry of Natural Resources and Forestry, and the Ontario Ministry of Northern Development and Mines.

6.7.2 Comments Received

In total, four comment sheets, letters and emails were received following the Public Meeting. A summary of comments received from external agencies are included in Appendix C. Responses were provided to those who requested them.

The main comments identified following the third Public Meeting include support for the preferred plan, concern for noise from big trucks braking on the bridge, preference for no overhead structures on bridge, access across border should be provided during construction, and construction timing.

A summary of the comments received from the public and responses provided can be found in Appendix C.

6.8 MUNICIPAL INPUT

The Town of Rainy River Council members, City of Baudette, Chamber of Commerce members, and other staff were invited to participate in various consultation events throughout the study, including invitations to attend all Public Meetings and to participate in the Project Advisory Committee. The Project Advisory Committee (PAC) was formed in June 2014 to help provide community input into the project process and to encourage communications between the MTO, MnDOT and the affected communities. The PAC is composed of representatives from each county, city and township directly affected by the proposed project. At the first Public Meeting and during the PAC meetings, Council and staff members identified support for the study, and the need to replace the existing bridge, the importance of bridge aesthetics, and the strong ties between the Town of Rainy River and the City of Baudette. The PAC played an essential role in providing input related to aesthetics of the proposed bridge.

The PAC is composed of representatives from the following organizations:

- City of Baudette
- Town of Rainy River
- Rainy River & District Chamber of Commerce
- Lake of the Woods County
- Ontario Ministry of Northern Development and Mines
- U.S. Customs and Border Protection (CBP)
- Canada Border Services Agency (CBSA)
- EMS Baudette
- EMS Rainy River

An Aesthetic Vision Report was prepared to document the context sensitive design process for the new Rainy River International Crossing, to synthesize input from the PAC, and to propose an aesthetic vision to guide designers during the next phase of the project. The report reviewed the aesthetic aspects of the overall form, appurtenances, and related structures for the bridge. The PAC provided input through open discussion and on-going surveys. The two themes that continued to resonate were:

1. International pride, mutual respect, and cooperation of two long-linked towns.
2. Outdoor recreation and natural resources, including water bodies that define the landscape.

Identification of the physical crossing from one nation to the other has been identified as an important component of the new bridge. Although the existing bridge merely notes the crossing with a plaque, more noticeable and substantive border delineation options are desired for the new bridge. Recommendations from the PAC will be used to make further refinements on the bridge in the areas of border delineation.

6.8.1 Project Advisory Committee Meeting 1

PAC 1 was held on Tuesday, September 1, 2015 at the Baudette Ambulance Garage.

The purpose of the PAC was to identify initial issues and concerns with the project. PAC input was used by the project team to:

- Identify and determine the extent of the most important issues to be analysed
- Identify and suggest eliminating issues which are not significant, narrowing the analysis and discussion of these issues
- Identify and fully develop the potential positive and negative impacts of the alternatives
- Further avoid and minimize impacts to the extent possible

A PAC questionnaire was distributed regarding project factors and concerns, agency contacts and how information will be shared with the public.

6.8.2 Project Advisory Committee Meeting 2

PAC 2 was held on Wednesday, October 28, 2015 at the Baudette Ambulance Garage.

The purpose of the PAC was to encourage others to review the Environmental Assessment (EA), help others understand the information, and to develop and submit comments to the project team. PAC input was used by the project team to:

- Confirm the content of the EA
- Make factual corrections and supplement the analysis
- Remain focused on the significant issues to be considered in decision-making

A PAC questionnaire regarding the bridge aesthetic preferences was distributed, and four responses were received.

6.8.3 Project Advisory Committee Meeting 3

PAC 3 was held on Wednesday, May 25, 2016 at the Baudette Ambulance Garage.

The purpose of the meeting was to provide a project update; to present the preferred alignment, bridge type, and construction method; to obtain input on the aesthetic components of the bridge; and to review the materials to be presented at the third Public Meeting. PAC input was used by the project team to:

- Facilitate preparation of the final EA
- Identify the preferred alternatives
- Embody mitigation measures

6.8.4 Project Advisory Committee Meeting 4

PAC 4 was held on Wednesday, July 6, 2016 in the Town of Rainy River.

The purpose of the fourth PAC meeting was to provide a project update; to present the preferred alignment and the pier, railing, border delineation and colour aesthetic options, and distribute votes; and to present the results of the Aesthetic Theme Survey distributed at the previous PAC meeting.

6.9 TECHNICAL ADVISORY COMMITTEE

A Technical Advisory Committee (TAC) was created to communicate project status, outstanding issues, problems and recommended solutions, and next steps. The TAC was made up of key members of the project team, MTO, MnDOT, CBSA and the CBP. To date, 21 TAC meetings have been held.

6.10 EXTERNAL AGENCY CONSULTATION

The following ministries, agencies, and stakeholders were contacted during the study:

International	
• International Boundary Commission	• International Joint Commission
• International Rainy-Lake of the Woods Watershed Board	

Federal	
• Canada Border Services Agency	• Citizenship and Immigration Canada
• Canadian Environmental Assessment Agency	• Environment and Climate Change Canada
• Transport Canada	• Global Affairs Canada
• Infrastructure Canada	• Canadian National Railway
• Royal Canadian Mounted Police	• Fisheries and Oceans Canada
• Canada Revenue Agency	• Health Canada

Provincial	
• Ontario Ministry of Municipal Affairs and Housing	• Ontario Ministry of Tourism, Culture and Sports
• Ontario Ministry of the Environment and Climate Change	• Ontario Ministry of Natural Resources and Forestry
• Ontario Provincial Police-Rainy River Detachment	• Ontario Ministry of Northern Development and Mines
• Ontario Ministry of Aboriginal Affairs – Consultation Unit	

Municipal & Stakeholders	
• Town of Rainy River	• Township of Dawson
• Rainy River Chamber of Commerce	• Rainy River Record
• Rainy River District Social Services Administration Board	• Rainy River Emergency Medical Services
• Rainy River Health Centre	• New Gold
• Trans Canada Trails	• Federation of Anglers and Hunters
• Rainy River Future Development Corporation	• Rainy River Recreation Centre

A summary of input received and responses provided to external agencies and municipalities is provided in Appendix C.

6.11 INTERNATIONAL STAKEHOLDER WEBINARS

A series of international stakeholder webinars was developed as part of this project's agency consultation plan. The webinars featured a common agenda; beginning with a look back at what was done over the last quarter, followed by a look ahead at what activities would occur in the next quarter and beyond. The webinars were planned to be interactive and intended to encourage involvement from the agencies. The goal of these meetings was to employ the connections and collective experience of the agency representatives to:

1. Identify opportunities for efficiencies between agencies
2. Define areas where we may have gaps
3. Confirm that we are headed in the right direction

6.11.1 International Stakeholder Webinar 1

International Stakeholder Webinar (ISW) 1 was held on Thursday, December 10, 2015. The purpose of the ISW 1 was to:

- Introduce the project to key stakeholders and agencies
- Review project bridge and alignment alternatives
- Discuss status of U.S. and Canadian permits and approvals; and,
- Provide an opportunity for agencies to provide input to the study and for interagency discussion

6.11.2 International Stakeholder Webinar 2

ISW 2 was held on Wednesday, March 2, 2016. The purpose of ISW 2 was to:

- Provide an update of project bridge and alignment alternatives
- Review the evaluation of alternatives and tentatively preferred alternatives

- Discuss status of U.S. and Canadian permits and approvals; and,
- Provide an opportunity for agencies to provide input to the study and for interagency discussion

6.11.3 International Stakeholder Webinar 3

ISW 3 was held on Thursday, August 11, 2016. The purpose of ISW 3 was to:

- Present the preferred alignment and the preferred bridge type
- Provide an update on Public Meeting 3
- Discuss potential environmental/social/cultural impacts and mitigation measures
- Discuss status of U.S. and Canadian permits and approvals; and,
- Provide an opportunity for agencies to provide input to the study and for interagency discussion

6.11.4 Canadian Environmental Assessment Agency Meeting

Several meetings were held with the Canadian Environmental Assessment Agency (CEAA) throughout the duration of the project. A meeting was held on Tuesday, January 26, 2016 at the CEA Agency office in Toronto. The purpose of the meeting was to provide a general overview of the Project as it then stood and to determine the need for the preparation and submission of a Project Description. The CEA Agency requested project updates, further details regarding the design, components and impacts of the Project and also noted that they would provide an informal review of the draft Project Description prior to the formal submission to the CEA Agency. The following agencies participated in the above-mentioned meeting: Global Affairs Canada, Fisheries and Oceans Canada, Environment and Climate Change Canada, and Transport Canada.

The purpose of this meeting was to discuss:

- Project history and funding
- Project schedule
- The environmental process
- A study area overview
- Project permits and approvals
- The CEAA process including: a project description, federal agency engagement/involvement, and Indigenous Communities consultation
- Next steps

A subsequent meeting was held on October 20, 2016 to discuss the project, project schedule, all relevant federal, provincial, and state environmental assessment processes, and all relevant permitting requirements. The following agencies participated in the meeting: Minnesota Department of Transportation, Ontario Ministry of Transportation, Canadian Environmental Assessment Agency, Federal Highways Administration, U.S. State Department, Global Affairs Canada, and Environment and Climate Change Canada. During the meeting, FHWA, MnDOT, CEAA and MTO provided overviews of their respective legislative and EA processes and Stantec provided a summary of the project, potential environmental effects, and required Canadian and U.S. permits.

A further meeting was held with CEAA and the MTO on November 18, 2016 to discuss the CEAA Project Description requirements, submission process, timing of submission, coordination. The following topics were discussed:

- Project and process updates
- Scheduling of Canadian and U.S. EA Process
- Indigenous and Public Consultation

6.11.5 Global Affairs Canada

A meeting was also held on December 18, 2015 with Global Affairs Canada to discuss the applicability and requirements of the *International Boundary Waters Treaty Act* and the project and application submission to the International Joint Commission. Global Affairs Canada (GAC) was consulted via a teleconference meeting held on Friday, December 18, 2015. The purpose of this meeting was to discuss:

- Confirmation of project contact at Canada Desk in the US
- Confirm the definition of 'significant' impact to hydrology; and,
- Provide preliminary hydraulic analysis to GAC

6.11.6 Indigenous Communities

There are a number of Indigenous Communities either located within and in the vicinity of the study area, or who may have an interest in the study. The consultation program included written communications with the Big Grassy River First Nation, Rainy River First Nation, Ojibways of Onigaming First Nation, Anishnaabeg of Naongashiing, Naichatchewenin First Nation, Couchiching First Nation, Mitaanjigamiing First Nation, Nigigoonsiminikaaning First Nation, Northwest Angle No. 33, Grand Council Treaty #3, Anishinabe of Wauzhushk Onigum, Northwest Angle No. 37, Pwi-Di-Goo-Zing-Ne-Yaa-Zhing Advisory Services, MNO Sunset Country, and the Métis Consultation Unit of the Métis Nation of Ontario.

Indigenous Communities	
• Big Grassy River First Nations	• Northwest Angle No. 33
• Rainy River First Nation	• Grand Council Treaty # 3
• Ojibways of Onigaming First Nation	• Anishinabe of Wauzhushk Onigum
• Anishnaabeg of Naongashiing (Big Island)	• Northwest Angle No. 37
• Naicatchewenin First Nation	• MNO Sunset Country Métis Council
• Mitaanjigamiing First Nation	• Nigigoonsiminikaaning First Nation
• Couchiching First Nation	• Métis Consultation Unit Métis Nation of Ontario

The Indigenous communities listed above were notified at various stages of the project including:

- Notice of Study Commencement letter and copy of the Ontario Government Notice on April 29, 2015
- Notice of Public Meeting 1 letter and a copy of the Ontario Government Notice on June 5, 2015
- Notice of Public Meeting 2 letter and a copy of the Ontario Government Notice on October 1, 2015
- Notice of Public Meeting 3 letter and a copy of the Ontario Government Notice on May 4, 2016

The notification letters invited the Indigenous communities to participate in the study through several avenues including attending the planned External Agency meetings that occur prior to the Public Meetings and an option to request individual meetings and presentations with the MTO.

Prior to Public Meeting 3, the Métis Nation of Ontario (MNO) expressed an interest in the project, additional project information and a potential informal information session with the MTO. Following this request, the MTO continued to consult with the MNO and offered a separate presentation and information session in Rainy River/Baudette for the MNO Community Councils. To-date the MNO has not confirmed a date for the potential information session. The MTO will continue to follow-up and provide project information to the MNO. To date, no specific concerns have been raised regarding the Project.

6.11.7 Future Consultation

Public consultation is an ongoing and continuous process that extends beyond the timeframe of a planning project. To-date, no significant concerns or issues have been raised by members of the public, Indigenous Communities, agencies and stakeholders regarding this project. Consultation will continue after the Preliminary Design and Environmental Assessment Study is completed, as described in Section 9.0.

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7.0 Recommended Plan

This section of the report describes the Recommended Plan for the replacement of the Baudette/Rainy River International Bridge.

The Recommended Plan evolved through a process that included the development and evaluation of alignment and bridge type alternatives, with several iterations and evaluation stages throughout the study, as documented in this report (Section 5).

The Recommended Plan for the replacement of the Baudette/Rainy River International Bridge includes a new replacement bridge on a new alignment south and directly adjacent to the existing bridge and also includes the decommissioning of the existing bridge once the replacement bridge is complete. The Recommended Plan also includes tying into the existing Canadian and U.S. Port of Entry facilities located on either end of the existing bridge.

The Recommended Plan is illustrated in Exhibit 12.

7.1 RECOMMENDED ALIGNMENT

Following the development and evaluation of alignment alternatives, as described in Section 5, a preferred alignment was selected for the location of the replacement bridge. Alignment Alternative 2 which is upstream (south) of the existing alignment was selected as the preferred alignment.

Alignment Alternative 2 was selected as the preferred alignment because:

- Access will be maintained across the border on the existing bridge until construction of the replacement bridge is complete
- Provides desirable geometric alignment connections to existing U.S. and Canadian Port of Entry facilities
- U.S. Port of Entry detection equipment can remain in place
- Truck entry at U.S. Port of Entry can be accommodated in both lanes
- Reduced cost compared to Alternative 3 since a temporary modular bridge is not required

The preferred alignment for the replacement bridge will be approximately 1 metre south of the existing bridge and will tie-into the existing Canadian and U.S. Port of Entry facilities located on the ends of the existing bridge on land. The tie-ins for the preferred alignment will require minor modifications to the U.S. Port of Entry facility while no modifications will be required for the Canadian Port of Entry. The tie-ins on the U.S. and Canadian sides have been designed to meet Ontario and Minnesota geometric and safety standards and will accommodate a 21.9 metre size vehicle with a trailer. As the replacement bridge is being constructed, access across the existing bridge and the U.S./Canadian border will be maintained on the existing bridge. Once the replacement bridge is built and in order to build the tie-ins into the port of entry facilities, access will be unavailable for a short period of time (one day or less). The tie-ins are shown in Appendix A. Details of the construction tie-ins and duration of the closure will be confirmed in Detail Design.

7.2 RECOMMENDED BRIDGE STRUCTURE

The preferred bridge type selected following the development and detailed evaluation of bridge types was Alternative A – Continuous Steel I-Girder Superstructure. The structure is a 5-span haunched girder bridge with 4 in-water piers and two abutments.

Bridge Alternative A was selected as the preferred bridge type because:

- Requires the lowest number of substructures in the river
- No apparent traffic impacts
- Reduced design complexity and reduced construction risks
- Can accommodate lower bridge profile
- Can use prefabricated elements

The length of the replacement bridge will be approximately 408 metres and the elevation of the bridge will be 330 metres. The cross-section includes one lane in each direction (each lane 3.5 m wide) with 2.4 metre shoulders on both sides of the bridge. A 1.83 metre sidewalk is included on the south side of the bridge. The total width of the bridge is approximately 14.7 metres. The posted speed of the bridge will 50 km/h. A typical cross-section is provided in Exhibit 11.

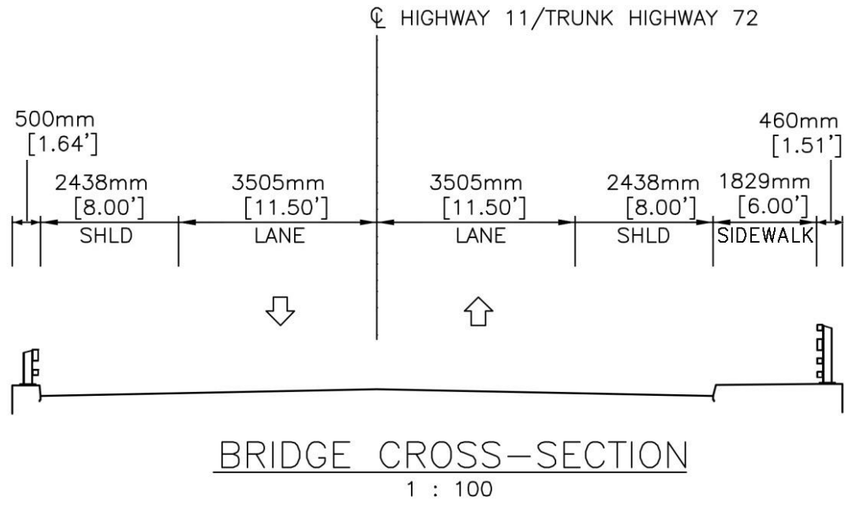


Exhibit 11: Typical Bridge Cross-Section

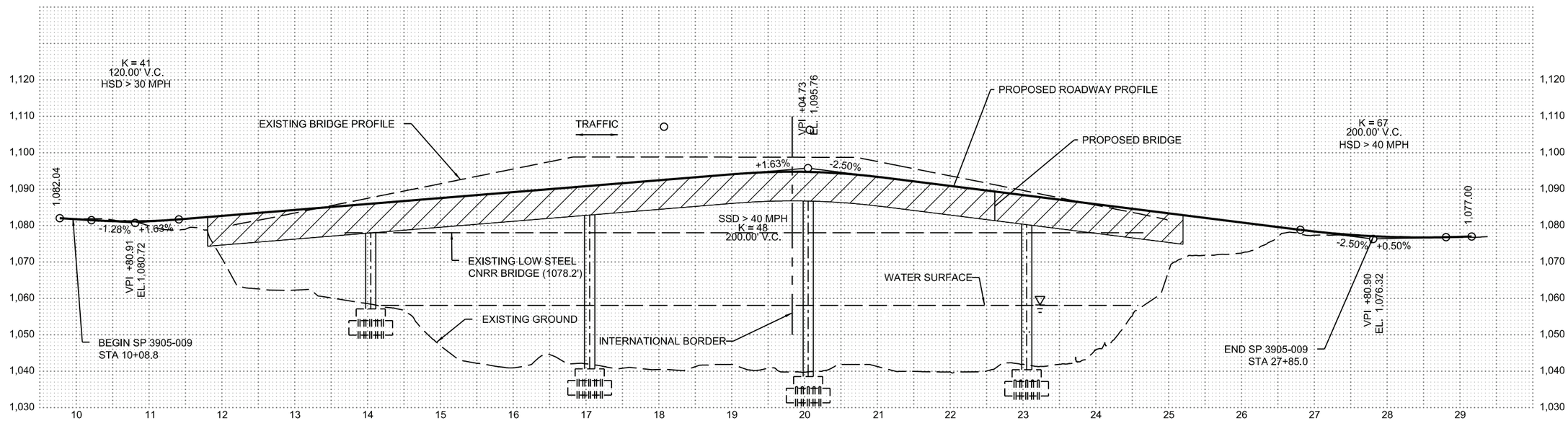
7.3 LOCAL ACCESS

Access will be maintained across the existing bridge during the construction of the replacement bridge. There will be no permanent changes in access following the completion of construction.

7.4 ACTIVE TRANSPORTATION

The Recommended Plan includes 2.4 metre shoulders on both sides of the bridge that will accommodate cyclists and a 1.8 metre sidewalk will be located on the south side of the bridge. The sidewalk will be designed according to both OADA and ADA requirements.

150
SCALE IN FEET
45.72
SCALE IN METERS
MNDOT R/W
TH 72
EXISTING BRIDGE NO. 9412
TO BE REMOVED
CANADA - ONTARIO
INTERNATIONAL BORDER
UNITED STATES - MINNESOTA
EXISTING CN RAIL BRIDGE
MTO R/W
HIGHWAY 11
EXISTING CL
PROPOSED CL
RAINY RIVER
COLOR KEY
BRIDGES
ROADWAYS (INCLUDING TURN LANES)
CURBS, PAVING & MEDIANS
SHOULDERS
SIDEWALKS
PRELIMINARY CONSTRUCTION LIMITS



RECOMMENDED PLAN

MINNESOTA DEPARTMENT OF TRANSPORTATION AND MINISTRY OF TRANSPORTATION ONTARIO

BAUDETTE/RAINY RIVER INTERNATIONAL BRIDGE REPLACEMENT

DATE: 09/14/2016

PROJ. NO. 193802870

EXHIBIT 12

Conceptual renderings of the proposed bridge are shown in Exhibits 13 to 16.

Exhibit 13: View from Peace Park on U.S. side and Baudette River – Looking North (one pier not shown)

Exhibit 14: View from U.S. side sidewalk on bridge – Looking Northeast towards Canadian Port of Entry

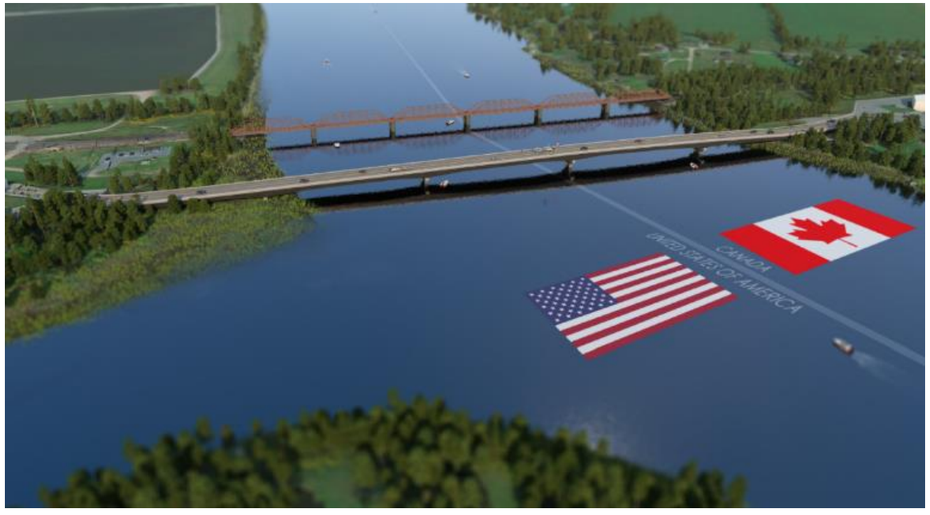


Exhibit 15: Bird's-eye View of Bridge showing both U.S. and Canadian Ports of Entry

Exhibit 16: Bird's-eye View of Bridge, looking north from U.S. side towards Canadian Port of Entry (one pier not shown)

7.5 CONSTRUCTION METHODS

As part of this project, several construction methods were assessed as part of the bridge type study to determine the feasibility, and advantages and disadvantages of each construction method.

7.5.1 Conventional Erection Method

This method uses high capacity cranes with long boom capabilities and heavy duty temporary falsework towers that will be 'leapfrogged' between spans as steel erection progresses. It is assumed that falsework towers will require temporary pile foundations. The evaluation of environmental considerations included factors such as impacts of a minimum of five temporary falsework towers (four located over water), the possible need for stability towers in the river during construction, potential impacts of tower construction and removal, and the need for a shoreline staging area.

7.5.2 Launching the Bridge from Canada into the United States

Launching consists of assembling the steel framework on the Canadian side of the Rainy River and pushing or pulling it across the river and on top of the piers. This method has several advantages, including environmental, since temporary falsework and stability towers would not be required. As a result, the risk of effects to the river and surrounding environment are reduced in comparison to the conventional erection method.

7.5.3 Constructing on Winter Ice

This method utilizes winter ice and the frozen river as an erection platform. Available data for ice thickness on the Rainy River indicate that the thickness was not adequate to perform bridge construction using ice as a construction platform (ice thickness is 400-450 mm). A minimum ice thickness of 1,270 mm is required for the construction and erection methods.

Following the assessment it was determined that the conventional erection method is the least costly method, has lower risks from in-water construction, increased worker safety and decreased schedule duration. The winter ice construction method was eliminated from further consideration due to insufficient ice thickness. The conventional erection method and the launching superstructure method will be carried forward for further consideration during the Detail Design Study when the final construction method will be confirmed and finalized.

7.5.4 Additional Construction Considerations

All three construction method alternatives will require additional access components on the U.S. side to allow barge/equipment access closer to the U.S. shore for the proposed Pier 1. The U.S. side of the Rainy River has a shallow bank/shelf near the shoreline that impedes barge access to the Pier 1 location. Access via barge will either be provided by dredging of the shallow U.S. side of the Rainy River near the shoreline or will require construction of a temporary causeway from the U.S. shore upstream or just south of the existing bridge. The causeway structure is expected to be approximately 73 m by 15.4 m. If dredging is selected as the access method, clearing and grubbing sufficient for crane placement on the U.S. shore would still be required.

Additional potential impacts and environmental considerations for the temporary causeway and dredging access method alternatives for the U.S. side will be determined and evaluated during Detail Design.

7.5.5 Construction Duration

Construction of the project is expected to last approximately 22 months.

7.5.6 Construction Activities

It is expected that materials will be stored on the Canadian side south of the bridge and the Canadian Port of Entry facility. Once materials are mobilized to the site, construction will begin with the substructures. It is assumed that construction would begin with the two abutments before shifting to the piers.

Once substructure construction has been substantially advanced, construction of the superstructure can begin. Superstructure construction will begin with steel girder erection, and will then be followed by deck construction. Once barriers are placed and lanes are striped, the bridge may be opened to traffic.

Construction laydown areas will be required for materials storage, and two potential sites have been identified and are shown in Exhibit 17 and Exhibit 18. In addition to the potential construction laydown areas, a construction access road and a temporary dock will be required for access to the site and transportation of materials for both construction methods.

Building of a temporary dock on the Canadian side of the Rainy River will also be required for the launching construction method. The temporary dock will be approximately 130 m^2. The potential location and area of impact for the construction access road and temporary dock is also identified in Exhibit 17 and Exhibit 18. The final location of the construction laydown area, access road and temporary dock will be confirmed during Detail Design once the construction method has been confirmed.

Materials will be transported to the site by truck or barge transport and construction will begin with the substructures. Access to the proposed Pier 1 location on the U.S. shore will be created utilizing dredging or a temporary causeway alternative. It is assumed that construction would begin with the two abutments before shifting to the piers. Once substructure construction has been substantially advanced, construction of the superstructure can begin. Superstructure construction will begin with steel girder erection, and will then be followed by deck construction. Once barriers are placed and lanes are striped, the bridge may be opened to traffic.

Equipment will operate in different areas of the construction site at different times during the construction period. Construction is planned to take place between 7:00 AM and 9:00 PM but the majority of the activities will likely occur between 7:00 AM and 7:00 PM. The U.S. construction activity noise restrictions allow construction from 7:00 AM to 10:00 PM, however, since noise impacts for the project are considered a potential transboundary effect, the more stringent Canadian construction time periods should be utilized. Major construction activities will be planned for daytime hours. Construction activities and timing will be confirmed during Detail Design.

Activities associated with the construction of the replacement bridge will include activities common to construction projects, such as:

- Mobilize to site

- Clearing and removal of trees and brush
- Stripping of all surficial organics and topsoil
- Site grading, including cut and fill earthworks, to accommodate the proposed equipment and laydown areas and to create a level working area
- Construct access road to site (if required)
- Construct abutments
- Install cofferdams
- Construct piers
- Remove cofferdams
- Erect structural steel spans
- Place bridge deck
- Decommissioning of existing bridge including cutting and removal of steel and removal of piers
- Installation of utilities
- Site restoration, stabilization of disturbed soils and restoration and enhancement activities

7.5.7 Construction Staging and Traffic Management

During the construction of the new bridge, access will be maintained via the existing bridge. Once the new bridge is complete, there will be short-term lane closures in order to build the tie-ins to the U.S. and Canadian ports of entry. The duration of the short-term lane closures will be confirmed during Detail Design. Once the tie-ins are complete then access will be provided on the new bridge while the existing bridge is decommissioned.

7.5.8 Decommissioning of Existing Baudette/Rainy River International Bridge

Following the completion of the replacement Baudette/Rainy River International Bridge, the existing bridge will need to be decommissioned and removed from the site. The decommissioning process will include cutting (torch/air cut) of the existing steel components into manageable pieces and then removing the steel components and structure via barge to land for processing and load out and transportation. The existing piers would then be removed from the Rainy River.

The trusses will be removed in-place or picked off of the piers and transported to a staging area for demolition. The concrete abutments will be removed using air tools such as pneumatic hammers and blunted chisel tools. The abutments will be removed to an elevation at least two feet below the final ground surface.

The seven concrete piers will be removed to the elevation of the stream bed, at a minimum, unless required to be removed deeper in accordance with regulatory agencies such as Transport Canada. These requirements will be confirmed with regulatory agencies during Detail Design. The pile bent piers will be disassembled using cutting tools, such that the members are a manageable size. Once severed, the members will be removed from the site. Pile bent piers will be removed to an elevation at least two feet below the final ground surface unless located in the Rainy River. For pile bents located in the Rainy River, the piers will be removed to the elevation of the stream bed, at a minimum.

The structural steel components of the existing bridge will be removed from site and will be transported to a waste and recycling facility where the steel will be melted down for raw materials to be re-used or will be disposed of as non-hazardous solid industrial or commercial waste. The location of the potential waste and recycling facilities will be identified during later study stages (i.e. Detail Design and Construction).

The concrete elements of the existing bridge will be removed from site and will be transported to a waste and recycling facility where they will either be disposed of as non-hazardous solid industrial or commercial waste or the concrete will be crushed and used for new granular/asphalt material.

7.6 UTILITIES

Utility relocations will be required to accommodate the Recommended Plan. Final utility relocations will be determined during Detail Design.

7.7 ACCESS

Access to the U.S. and Canadian Port of Entry facilities and buildings will be available throughout the entire construction duration of the replacement bridge. Access across the U.S./Canada border and to the Port of Entry facilities will be provided via the existing bridge during construction and traffic delays as a result of the construction are not anticipated. Navigation will be maintained throughout all project phases. There may be some minor delays for boaters due to barge activity and movement but these delays are expected to be minor. Once the replacement bridge is built, the bridge will be connected to the Port of Entry facilities and access will then be provided via the new bridge.

7.8 PROPERTY

The Recommended Plan does not require the acquisition of any private property and is entirely located on MTO-owned land. There is the potential that temporary land may be required during construction of the replacement bridge (i.e., laydown areas) but that will be determined during Detail Design, once a construction method is selected. Potentially impacted property owners will be notified during the subsequent project stage, Detail Design, once construction methods and details have been confirmed. Impacts to property on the U.S. side are documented in the U.S. EA, which is on file with MnDOT and available on the project website.

7.9 OPERATIONS

The Baudette/Rainy River International Bridge will be open 24 hours a day, seven days a week, in conjunction with the U.S. and Canadian Port of Entry facilities on either end of the bridge.

The project will be designed and built to accommodate future traffic projections of 1,250 – 1,450 for the year 2038.

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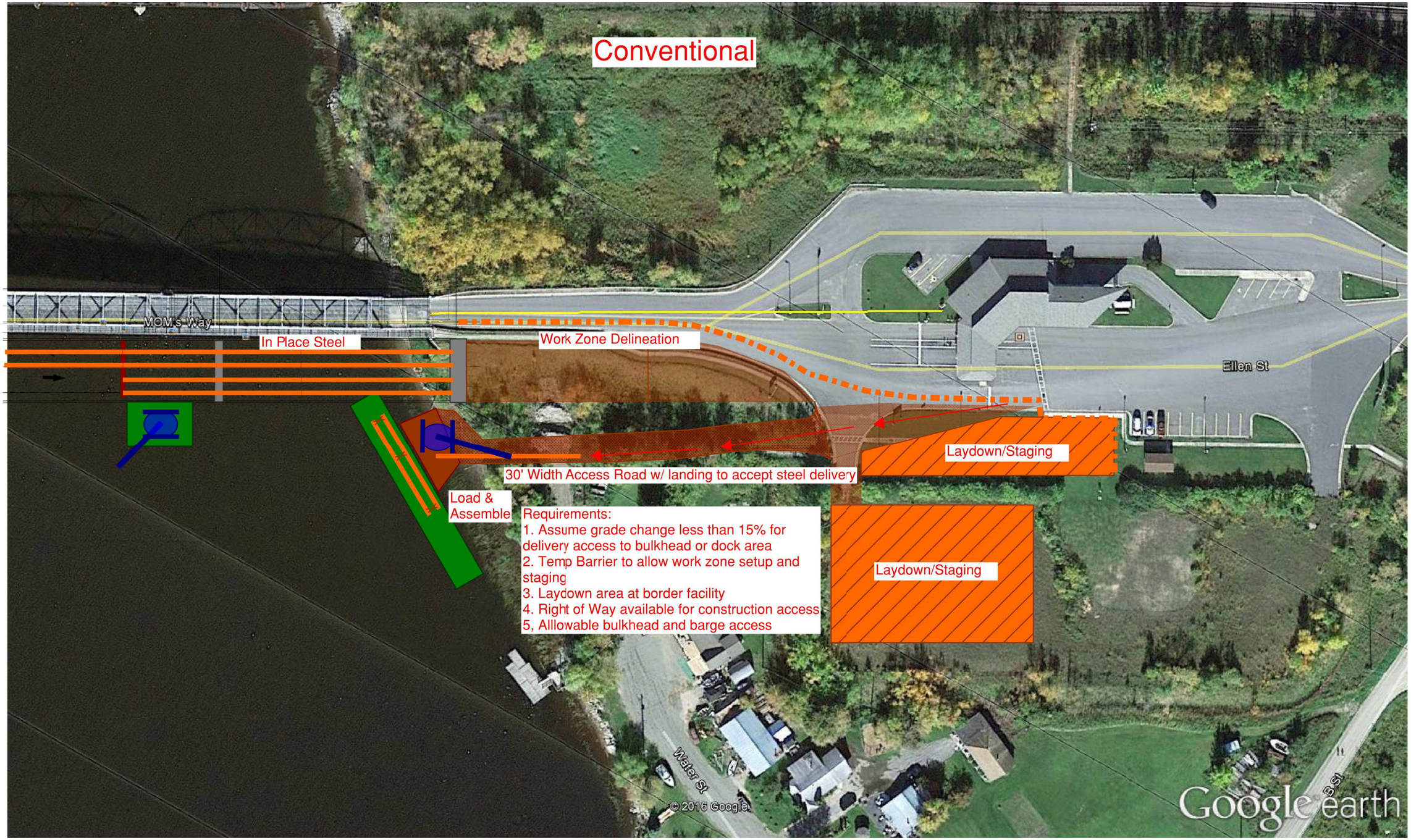


CONCEPTUAL STAGING FOR CONVENTIONAL ERECTION METHOD

MINISTRY OF TRANSPORTATION ONTARIO

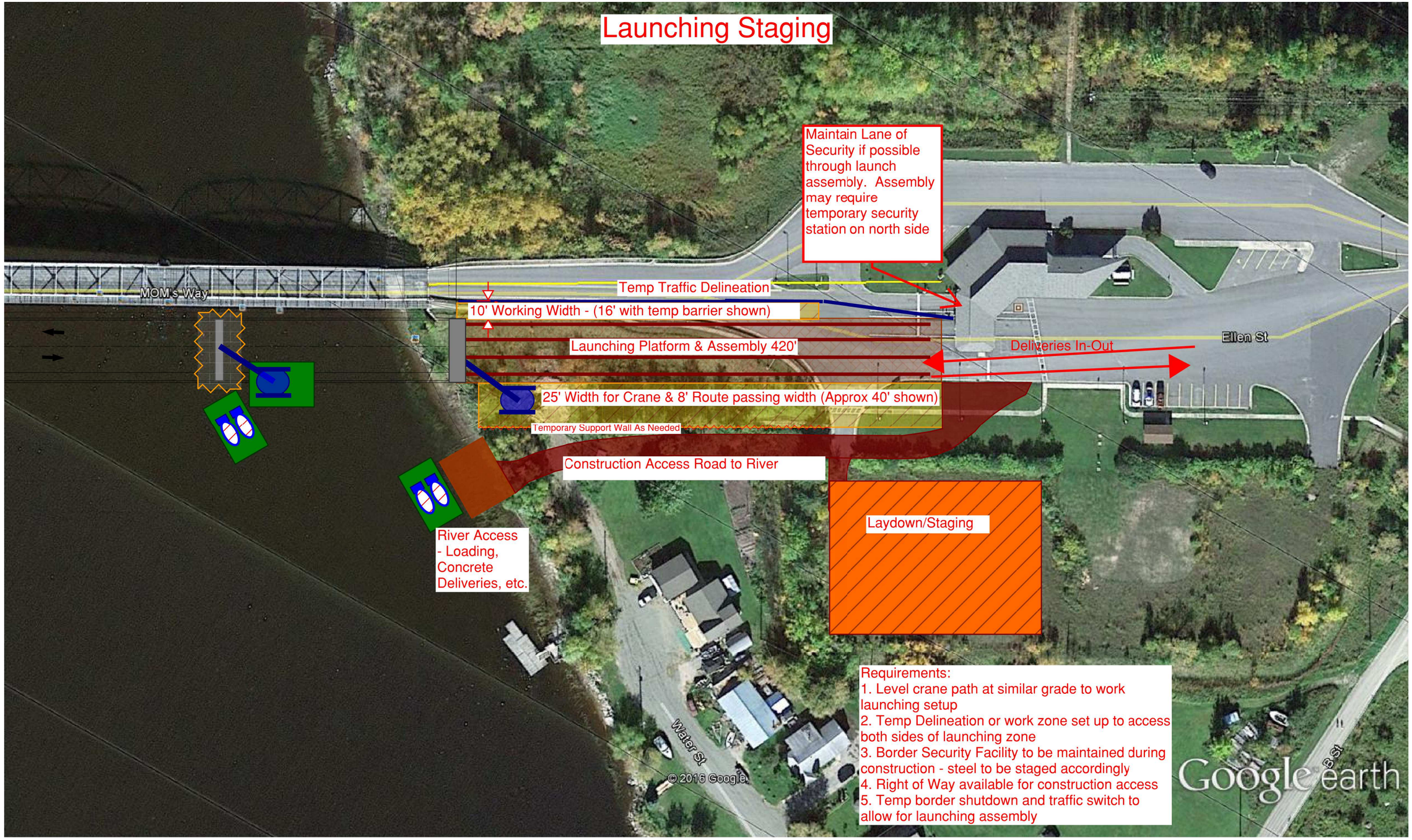
BAUDETTE/RAINY RIVER INTERNATIONAL BRIDGE

EXHIBIT 17

DATE: OCTOBER 2016 PROJ. NO.: 193802870

Stantec
2335 Highway 36 W
St. Paul, MN 55113
www.stantec.com

Plot Date: 09/30/2016 - 1:08pm
Drawing name: V:\1938\active\193802870\Environmental\MnDOT\PM3\Displays\Baudette Ministry of Transportation Ontario TB-17x11-L.dwg
Xrefs:



CONCEPTUAL STAGING FOR LAUNCHING OPERATION METHOD

MINISTRY OF TRANSPORTATION ONTARIO

BAUDETTE/RAINY RIVER INTERNATIONAL BRIDGE

EXHIBIT 18

DATE: OCTOBER 2016 PROJ. NO.: 193802870

Stantec
2335 Highway 36 W
St. Paul, MN 55113
www.stantec.com

Plot Date: 09/30/2016 - 1:10pm
Drawing name: V:\1938\active\193802870\Environmental\MnDOT\PM3\Displays\Baudette Ministry of Transportation Ontario TB-17x11-L.dwg
Xrefs:

7.10 MAINTENANCE

The new bridge will be designed with a minimum design life of 75 years. Over this 75-year period, inspections are expected to occur on a 24-month schedule, with additional underwater inspections every 5 years. These inspections may result in some general repairs to concrete and steel elements, such as sealing of concrete deck cracking and sidewalk/curb repair, which will occur on an as-needed basis. General bridge cleaning is also recommended on an annual basis to maximize the structure's life. A maintenance contract for snow-plowing will be arranged and signed by the MTO and MnDOT.

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8.0 Environmental Impacts and Mitigation

This section of the report describes the expected environmental impacts associated with the Recommended Plan, and appropriate mitigation at a Preliminary Design level of detail, in accordance with the *Class EA for Provincial Transportation Facilities* (2000) and the *Environmental Reference for Highway Design* (2006).

8.1 NATURAL ENVIRONMENT

The development of alignment and bridge structure alternatives was a systematic process that included consideration of input from the public, agencies, and stakeholder groups to help identify project specific issues and impacts. Alignment alternatives were generated based on the Principles for Generating Alternatives in the *Class EA for Provincial Transportation Facilities (2000)*.

Impacts to the natural environment have been minimized in part, by minimizing footprint impacts to undisturbed natural environments. Impacts and mitigation to major components of the ecological system and the Rainy River are described in the following sections.

The preferred alignment and the preferred bridge type are shown in Exhibits 9-10. The Preferred Plan will be refined as a result of further studies (i.e. Detail Design) and ongoing consultation activities.

A variety of environmental protection and mitigation measures will be adopted to guide the planning, design, construction, operation, and decommissioning of the project. These include:

- Avoid sensitive areas such as wetlands, sensitive fish habitat, where possible and where unavoidable-minimize the size and number of natural features that may be affected
- Regulated standards for air and water emissions, for storage and disposal of solid wastes, and for handling and disposal of hazardous materials
- Implement Best Management Practises for erosion and sediment control:
- Minimizing the “footprint” of Project facilities and activities to consequently minimize the amount of disturbed land, wetlands, fish habitat and water resources
- Implement in-water construction timing restrictions (i.e., in-water work allowed from July 16 – March 14)
- Implement well-developed consultation program during all phases of Project (i.e., Detail Design)

As stated above, the details of the Preferred Plan will be refined and finalized during later project stages. To the extent possible, project facilities and components will be sited to avoid and minimize interactions with wetlands, high sensitivity habitats, and areas of high archaeological/built and cultural heritage potential; where avoidance is not possible, mitigation or compensation measures will be developed in consultation with the applicable regulatory authorities.

Although the Recommended Plan will have direct impacts to wildlife habitat and vegetation, impacts at the larger watershed and ecosystem scale are not expected to be significant.

8.1.1 Physiography, Geology, and Soils

8.1.1.1 Erosion and Sediment Control

This study included a review of potential erosion and sediment control requirements for the Recommended Plan, based on the results of the geotechnical assessment and available background information, including soils and geological mapping.

During Detail Design, slope heights and lengths and stability will also be confirmed, and recommendations will be developed to ensure the stability of slope surfaces and minimize erosion. Bridge construction may create instability in slopes and increase the rate of erosion along the highway from the removal of vegetation or other construction activities on steep slopes. These potential effects are expected to be minor in sections of the study area that are relatively flat. Any increased erosion will be temporary and limited to the construction period.

8.1.2 Drainage and Surface Water

8.1.2.1 Stormwater Management

A *Preliminary Stormwater Management Plan* was developed for the project to document existing drainage patterns and presents a conceptual drainage plan.

The new bridge deck and bridge approach will add approximately 1.5 acres (0.61 hectares) of impervious surface to the study area. Stormwater runoff for the project will be captured at the bridge approach panels by catch basins and directed via storm sewer away from the roadway low points. Drainage system improvements on the Canadian side of the bridge will be designed to tie in to the existing drainage system for the parking lot at the Canadian border crossing facility. Both the Minnesota and Canadian side of the bridge will ultimately drain to the Rainy River.

Preliminary analysis of water quality treatment indicates that the project meets or exceeds the applicable standards. The preferred stormwater management approach identified for the bridge on the Canadian side includes a grass swale on the north side of the bridge. It is recommended that a grass swale be maintained on the south side of the bridge or that other options be considered and confirmed during Detail Design. The proposed system includes stormwater management Best Management Practices (BMPs) designed to meet the project needs and permit requirements. Further stormwater management design features such as erosion control measures will be confirmed and refined during Detail Design.

Standard erosion and sedimentation measures and controls will be implemented to minimize potential suspended solids in runoff and other related environmental effects. These measures will include a requirement that waste oils, fuels, and hazardous wastes (if any) shall be handled in a safe manner. Contractors will be required to transport, store and handle all such substances as recommended by the suppliers/manufacturers and in compliance with all applicable international, federal, provincial or municipal regulations.

8.1.3 Designated Areas

The Recommended Plan does not impact any known Designated Areas.

8.1.4 Natural Sciences

This preliminary impact assessment identifies potential impacts (direct and indirect) to natural science environment features and functions that may arise from the implementation of the Recommended Plan. The assessment of impacts and mitigation recommendations will be refined further during Detail Design.

8.1.4.1 Fisheries and Aquatic Resources

Fisheries impacts and potential mitigation measures are described below. All fisheries impacts will be mitigated in accordance with the *MTO/DFO/MNRF Fisheries Protocol* (2013) or current MTO/DFO/MNRF fisheries regulations and appropriate U.S. and Minnesota fisheries protection regulations, as documented in the U.S. EA (currently on file with MnDOT and available on the project website).

Background data and habitat assessments indicated that the Rainy River is a migratory corridor for Lake Sturgeon (Stantec 2016). The Lake Sturgeon population in Northwestern Ontario is Threatened and as such, the species and its habitats are protected by Ontario's *Endangered Species Act, 2007* (ESA 2007). The bridge design has considered Lake Sturgeon and their habitat and the project will avoid negative effects to the species. Permitting under the ESA 2007 is not anticipated and will be confirmed once details of the design are finalized.

Based on the information available from the Preliminary Design, the following potential effects to aquatic habitat were identified:

- Approximately 546 m² of natural substrate on the river bottom will be overprinted by the new bridge piers
- Aquatic vegetation and bottom substrate may be disturbed during construction; however, the disturbance would be temporary
- Other areas of the river bottom will be disturbed due to temporary work areas for construction

The footprint area of the bridge piers will occupy a relatively small area of the Rainy River. Although the area overprinted by the piers will not be available for use by fish, the areas around the piers will remain unchanged and the area currently occupied by piers of the existing bridge will provide habitat once the existing bridge is removed. Temporary work areas and shoreline areas will be rehabilitated following construction.

Mitigation measures that include in-water timing windows are provided in the *Fish and Fish Habitat Impact Assessment Report*. Mitigation measures are consistent with DFO's *Measures to Avoid Causing Harm to Fish and Fish Habitat*.

The following mitigation measures described below are applicable to protect fish and fish habitat in the study area and are consistent with DFO's Measures to Avoid Causing Harm to Fish and Fish Habitat (http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/measures-mesures-eng.html). The following measures will also protect Lake Sturgeon and their habitat.

Design

The Preferred Plan was designed to reduce the area of disturbance to the extent possible. Design considerations included as part of this study that may minimize potential impacts to fish and fish habitat include:

- Reduced number of in-water piers, when compared to the existing bridge
- Construction method options consider temporary structures such as false towers required for construction
- The preferred alignment alternative for the Recommended Plan (Alignment Alternative 2) does not require the use of a temporary modular bridge, which would result in a higher number of in-water piers (although temporary in nature)
- Wherever possible, the footprint of in-water piers was minimized

Construction

Timing of In-Water Work

Works adjacent to aquatic resources that provide fish habitat, or have the potential to support fish habitat, are often restricted to certain periods to avoid construction-related impacts to fish species during their most sensitive / vulnerable life cycles (i.e., during reproduction and early development stages of off-spring). Therefore, construction activities are often not permitted close to, or within fish habitat during these periods.

The thermal regime of the Rainy River is 'coolwater' as per information provided by the MNRF (2015c); therefore, in-water construction for the project is permitted from July 16 to March 14 (Ontario- no in-water work from April 1 to July 15, Minnesota – no in-water work from March 15-June 15). The timing window protects the sensitive life stages of resident fish species including Lake Sturgeon migration.

Flow Diversion/Dewatering

If required, the following mitigation measures will be applied to isolate construction activities from the Rainy River during construction:

- Design and implement isolation plan to isolate temporary in-water work zones to maintain clean flow around the work zone at all times
- Fish rescue plan – Transfer fish in the work area away from the construction area using capture, handling, and release techniques to minimize harm and stress. Ensure the intakes of pumping hoses are equipped with an appropriate device to avoid entraining and impinging fish
- Manage water from dewatering operations to prevent erosion and/or release of sediment laden or contaminated water to the waterbody (e.g., settling basin, filter bag, energy dispersion measures)
- As a contingency, materials shall be on site at all times in the event that water levels re-enter the work area once construction begins

Various mitigation techniques will be employed during construction to reduce the risk of impacts to natural environment features. Mitigation measures for sediment erosion and dust control will be implemented to prevent

sediment and dust from entering the Rainy River. See Section 8.1.1 for recommended erosion and sediment control measures. Erosion and sediment control measures and site restoration will be in accordance with Ontario Provincial Standard Specifications (OPSSs).

Monitoring

The preliminary Aquatic Effects Assessment and Risk Assessment (as documented in the Fish and Fish Habitat reports) determined that the project will result in **Low Risk** of impacts to fish and fish habitat. Low Risk projects do not require DFO review or *Fisheries Act* authorization.

Approvals

The project is following the approved MTO/DFO/OMNR Fisheries Protocol for determining and identifying risks associated with the Project for fish and fish habitat. A Fish and Fish Habitat Impact Assessment for this Project was completed and determined that the project will not cause serious harm to fish. Authorization under the *Fisheries Act* is not anticipated and will be confirmed during Detail Design.

8.1.4.2 Terrestrial Ecosystems

The Preferred Plan requires the removal of 0.10 ha of Cultural Woodland (CUW1) and 0.01 ha of Shallow Marsh (MAS2) vegetation communities (Exhibit 8). The CUW1 and MAS2 units at this location occur within the existing Highway 11 and the Baudette/Rainy River International Bridge ROW, and include a high proportion of cool season graminoids (non-native grasses) and other common roadside plants. Given these factors, habitat quality in the impacted area is relatively low compared to natural areas occurring elsewhere in the study area.

Potential Impacts to Sensitive Features

The Preferred Plan interacts with habitat with provincially rare species (wild licorice in the CUW1 unit)

Woodland edges and other suitable habitat for wild licorice is well-represented in other parts of the study area, and negligible long-term implications to the local population are anticipated as result of the loss of 0.10 ha of Cultural Woodland. Potential loss of individual plants of wild licorice can be offset through site specific protection and mitigation measures recommended for this species, as discussed below.

Potential Interference with Bird Nests

The MBCA protects nests of migratory birds from damage while they are active, including nests in vegetation and on structures. There were no bird nests documented on the Baudette/Rainy River International Bridge; however, vegetation in the area of the Preferred Plan may support nests of MBCA and/or FWCA protected species. Vegetation clearing has the potential to damage or disturb nests of MBCA protected species. In order to avoid contravention of the federal *Migratory Bird Convention Act* (MBCA), vegetation clearing is not recommended between April 21 and August 14. If vegetation clearing is required during this period, nest searches should identify nests of protected species and implement an appropriate buffer so that they are not disturbed. Nest searches should be completed within 7 days of the proposed works.

Species-at-Risk and Species of Conservation Concern

Field investigations determined that there are no bird nests under the existing Baudette/Rainy River International Bridge. The configuration of the bridge is such that it is not expected to provide the necessary protection to attract birds such as Barn Swallows. The bridge is a metal grate structure that does not offer protection from the elements, and the piers do not provide sufficient overhang to protect a bird nesting underneath. Although no nests were seen, one Barn Swallow was observed near the bridge during the field investigations. Barn Swallow was not observed to be nesting on the Baudette/Rainy River International Bridge or elsewhere in the study area; therefore, mitigation or authorization under the ESA is not anticipated for this species.

The CUM1-1c community had an abundance of Common Milkweed, the larval host plant for this species. However, meadow habitat is not a limiting factor for Monarch in Ontario, and is not considered significant wildlife habitat.

Environmental Protection Measures

Sediment and Erosion Control

Various mitigation techniques will be employed during construction to reduce the risk of impacts to natural environment features. Mitigation measures for sedimentation, erosion, and dust control should be implemented to prevent sediment and dust from entering sensitive natural features.

The primary principles associated with sedimentation and erosion protection measures are to: (1) minimize the duration of soil exposure; (2) retain existing vegetation, where feasible; (3) encourage re-vegetation; (4) divert runoff away from exposed soils; (5) keep runoff velocities low; and (6) trap sediment as close to the source as possible. To address these principles, the following mitigation measures are proposed:

- The limits of construction (site boundaries) adjacent to all natural areas, including Cultural Woodland (CUW1) and Shallow Marsh (MAS2) communities, should be flagged and fenced prior to construction, and monitored during construction (along with sediment and erosion control measures)
- No equipment should be permitted to enter any natural areas beyond the sediment fencing (site boundaries) during construction
- All materials requiring stockpiling (fill, topsoil, etc.) should be stabilized and kept a safe distance from any sensitive natural features
- All exposed soil areas should be stabilized and re-vegetated. Seed and mulching, or seed and an erosion control blanket should be applied to disturbed sites promptly upon completion of construction activities
- Refuelling of equipment should be carried out away from any sensitive natural features to avoid potential impacts, in the event that an accidental spill occurs
- In addition to any specified requirements, additional erosion and sediment controls should be available on site, prior to grading operations, to provide a contingency supply in the event of an emergency

- All sediment and erosion controls should be monitored regularly and properly maintained, as required. Controls should be removed only after the soils of the construction area have been stabilized and vegetation cover is re-established
- Any natural areas that are temporarily disturbed for access or construction should be restored to natural self-sustaining conditions
- Sediment fencing will be used adjacent to sensitive receptors, including the Rainy River, when exposed soil slopes are at risk of eroding
- If there is insufficient time remaining in the growing season, sites shall be stabilized with temporary erosion control measures such as erosion control blankets and seeded the following spring. Erosion and sediment control measures shall be maintained until vegetation has been established in disturbed areas
- Banks of the Rainy River disturbed during construction shall be restored to pre-construction configuration and condition (or better) using native species, where possible
- Environmental controls should be monitored by an environmental inspector

Protection of Peripheral Vegetation

During construction adjacent to vegetated areas, heavy equipment could damage peripheral vegetation through contact, excavation and/or soil compaction. Where natural features occur adjacent to construction activities, barrier fencing should be erected to protect vegetation that is to be retained, including fencing to protect the retained portions of the Cultural Woodland (CUW1). Areas to be cleared of existing vegetation should be clearly marked to prevent unnecessary clearing. Barrier fencing may coincide with sediment fencing used to control erosion and sediment transport at the site.

Site-Specific Protection Measures

Wild Licorice and Milkweed

One provincially rare plant (S3) was observed in the study area, wild licorice. No other rare or highly sensitive plant species were encountered during field surveys. Mitigation is available to protect wild licorice, including transplanting individual plants that may be affected by construction.

Suitable habitat for milkweed is well-represented in the study area and adjacent lands, and negligible long-term implications to milkweed populations are anticipated. Mitigation is available to protect milkweed plants, including transplanting individual plants that may be affected by construction.

Wildlife and Wildlife Habitat

Contractors should be aware of potential encounters with wildlife and avoid them to the extent possible. Generally, sediment and construction fencing will also prevent wildlife access; however, there is some potential that individuals may enter the limits of construction.

Wildlife habitat, including candidate significant wildlife habitat will be protected during construction using measures that are proposed to reduce potential impacts on wetlands and other vegetation communities (described above). Assuming the above noted measures are implemented, negligible impacts to significant wildlife habitat are anticipated during construction. Generally, sediment and construction fencing will serve the dual purpose of preventing access of wildlife; however there is some potential that individuals will enter the limits of construction; therefore, contractors should be aware of the potential to encounter other wildlife and avoid them to the extent possible.

Wetlands

Wetlands provide habitat for a diverse range of wildlife species and perform wetland hydrologic functions as water storage and water quality improvement.

Potential impacts to wetlands include:

- Direct alteration of wetland habitat through vegetation removal, grading, and other work associated with construction of the bridge
- Disturbance from vehicle use and construction activities and potential inadvertent releases of deleterious substances into the wetlands
- Alteration of wetland hydrology

Wetland Candidate significant wildlife habitat on the Canadian side is well-represented in the study area and adjacent lands, and negligible long-term implications to wildlife that use these areas are anticipated. Protection from indirect impacts to habitat such as sedimentation and erosion will be addressed through standard environmental protection measures discussed in the section above.

8.2 SOCIO/ECONOMIC ENVIRONMENT

This section of the report describes impacts and potential mitigation measures for the social and economic environments.

8.2.1 Land Use

Land use designations in the study area are not expected to change as a result of the Recommended Plan.

The Recommended Plan supports Regional and Provincial Growth Planning policies by providing the transportation infrastructure required to maintain a high level of service on the provincial highway system for the movement of people and goods.

It is not expected that residents in the study area will experience temporary delay or disruption during construction. Access will be maintained on the existing bridge while the replacement bridge is being built.

8.2.1.1 Communities

There are no impacts to the community facilities identified in Section 4.2.1.

Student Transportation

There will be no impacts to student bus routes as the Recommended Plan will maintain access across the border during construction of the bridge.

8.2.1.2 Commercial

The Recommended Plan is not anticipated to have any negative impacts to local businesses in Rainy River or Baudette as access across the border and to both communities will be maintained during construction of the replacement bridge.

8.2.1.3 Emergency Services

There are no anticipated impacts to emergency service providers in the study area because access will be maintained across the existing bridge while the replacement bridge is being built and once the replacement bridge is complete, access will be maintained across the bridge with 24-hour service across the bridge and the international border.

8.2.1.4 Municipal Services

There are no direct impacts to municipal services as a result of the Recommended Plan.

8.2.2 Agriculture

The Recommended Plan does not impact active agricultural land or associated operations.

8.2.3 Aggregates

The Recommended Plan does not impact any aggregate extraction facilities.

8.2.4 Mining

The Recommended Plan does not impact any mining operations or facilities.

8.2.5 Recreation and Tourism

The Recommended Plan supports regional tourism and recreational growth by replacing aging infrastructure, and improved safety and traffic operations within the study area; and by avoiding impacts to crown land, impacts to businesses and recreational facilities.

8.2.5.1 Trails and Active Transportation

The MTO is committed to sustainable transportation and active transportation as outlined in the MTO *Statement of Environmental Values* (2008). The Recommended Plan does not affect any identified trails in the study area.

The Recommended Plan includes 2.4 metre shoulders on both sides of the bridge that will accommodate cyclists and a 1.8 metre sidewalk will be located on the south side of the bridge.

8.2.5.2 Snowmobile Trails

There are no TOPS snowmobile trails or trail crossings located directly in the study area and there will be no direct impacts to any TOPS snowmobile trails.

8.2.5.3 Other Recreational Features

The Recommended Plan does not directly impact any known recreational features in close proximity to the study area

8.2.6 Navigable Waters

The project involves work on a waterway that is listed on the *List of Scheduled Waters*, governed by the Navigation *Protection Act,* which is administered by Transport Canada. Through consultation with Transport Canada it was determined that an application for the Project will be required to be submitted to the Navigation Protection Program for approval. Regulatory approval is required by Transport Canada for any works that occur in scheduled waterways. Through further consultation with Transport Canada it was established that the Recommended Bridge must provide navigational clearance that coincides with the existing navigational clearance and height of the CN Rail Bridge. In keeping with Transport Canada's navigational requirements the Recommended Plan and proposed bridge will have the same clearance or height from the surface of the Rainy River to the bottom of the substructure (6.1 metres).

Navigation will be maintained during construction and required clearances for watercraft will be provided. Any signage or lighting required for canoeists or boaters on the watercourse during construction will be confirmed during Detail Design.

8.2.7 Construction Air Quality Mitigation Measures

Intermittent air emissions as a result of the project construction will consist of products of combustion and will be limited to the following sources:

- Bridge Construction (including decommissioning of existing bridge): on-road mobile equipment (trucks), construction equipment (e.g., excavators, loaders, graders), and construction dust from construction equipment traffic on unpaved roads
- Construction emissions are expected to occur intermittently during the hours of construction over the duration of the construction period, depending on the level of construction activities
- Construction activities associated with the project will have the potential to generate dust. These emissions will be of relatively short duration and are unlikely to have any long-lasting effects on the surrounding area.

Construction dust impacts will be controlled during construction. The contractor will be required to adhere to standard restrictions (i.e., proper maintenance of equipment, no unnecessary idling) during construction. Standard dust suppressants (i.e., water, calcium chloride) will be used to minimize dust.

8.2.8 Noise

An *Environmental Noise Assessment* was carried out for the Recommended Plan in accordance with the MOE/MTO Noise Protocol and the MTO Noise Guide. A copy of the *Environmental Noise Assessment* is on file with the MTO.

In accordance with the MTO *Environmental Guide for Noise* (2006), residences that are exposed to sound level increases of 5 dBA or higher in the future or to future sound levels of 65 dBA or higher warrant investigation to establish their eligibility for noise controls at their Outdoor Living Areas (OLA's).

The following is a summary of the results of the noise study:

- Changes greater than 5 dB and absolute sound levels greater than 65 dBA are not predicted for residences within the study area. Therefore, noise mitigation is not required according to the MTO Environmental Guide for Noise requirements

8.2.8.1 Construction Noise

The Environmental Noise Assessment that was completed as part of this study recommended that a detailed construction noise evaluation be undertaken during Detail Design and documented in a separate report that also makes recommendations for a Code of Practise to minimize construction noise impacts.

In addition to the detailed construction noise evaluation, the contractor will be required to adhere to standard noise restrictions (i.e., proper maintenance of equipment, no unnecessary idling).

8.3 CULTURAL ENVIRONMENT

If cultural heritage values (archaeological or historical materials or features or human remains) are identified during operations, all activity in the vicinity of the recovery will be suspended and the Ministry of Tourism, Culture, and Sport archaeologist will be contacted (807-475-1551). Other appropriate authorities (i.e., Ontario Provincial Police, Registrar of Cemeteries, Ministry of Government Services) should also be notified, as needed. This condition provides for the potential for deeply buried or enigmatic local site areas not typically identified in evaluations of archaeological or heritage potential.

8.3.1 Archaeology

The Recommended Plan does not directly impact any registered archaeological sites. The Stage 1 background research resulted in the determination of high archaeological potential and that a Stage 2 Archaeological Assessment would be required. The Stage 2 Archaeological Assessment did not result in the identification of any archaeological materials.

The Stage 1 and 2 Archaeological Assessment Reports were filed with the MTCS for concurrence and endorsement through a Letter of Review and entry into the *Ontario Public Register of Archaeological Reports*.

8.3.2 Built Heritage and Cultural Landscape

The existing bridge is not listed and is not eligible for inclusion on the Ontario Heritage Bridge List, however, the bridge is eligible for listing in the U.S. National Register of Historic Places under Criterion A: Transportation and Criterion C: Engineering. Although the Preferred Alternative results in an adverse effect to Bridge 9412 under Section 106, the parties with jurisdiction over this resource has agreed that adequate measures were taken to minimize harm to the resource (to the extent possible, and that the mitigation measures are acceptable compensation for impacts). Mitigation measures for impacting the existing bridge are documented in a Section 106 Memorandum of Agreement (MOA) among the MnHPO, FHWA, MTO, and MnDOT. The MOA has been submitted and accepted by all signing parties and is in the process of being executed.

9.0 Future Consultation and Summary of Identified Concerns, Mitigating Measures and Future Commitments

9.1 FUTURE COMMITMENTS

Future consultation will be required during Detail Design to deal with all outstanding issues, including permits/ approvals from external agencies (international, federal, provincial), detailed environmental investigations regarding impacts and mitigation and engineering investigations to confirm the final design.

Future consultation is expected to include notification of the start of Detail Design to the public and external agencies and a Public Meeting near the completion of Detail Design to display plans, and to answer questions about the final design and proposed mitigation measures. The coordination of provincial, federal and international permits and approvals is a key component of this project and for future project phases including Detail Design. A summary of proposed future consultation is in Table 6.

Table 6: Future Consultation with External Agencies

External Agency	Subject of Consultation
International Joint Commission & Global Affairs Canada	• Confirm requirements of *International Boundary Waters Treaty Act* and special agreement between governments in order to circumvent IJC application process
International Boundary Commission	• Confirm requirements of application for working near the border as per the *International Boundary Commission Act*
Environment and Climate Change Canada	• Confirm stormwater management requirements
Fisheries and Oceans Canada	• Requirements of current MTO/DFO/MNRF Fisheries Protocol • Confirm potential fisheries impacts • Timing restrictions and other fisheries mitigation in contract package
Transport Canada	• Confirm requirements of *Navigation Protection Act* permit and approval and submit application • International Bridges and Tunnels Act permit application
Canadian Environmental Assessment Agency	• If CEAA determines that a federal Environmental Assessment is required, confirm all requirements of the federal EA process and initiate a federal EA
Ministry of Natural Resources and Forestry	• Confirm that habitat for Species-at-Risk are not negatively impacted by the Recommended Plan • Confirm whether an *Endangered Species Act* permit is required • Confirm potential mitigation measures for natural features and confirmed Significant Wildlife Habitat • Timing restrictions and other fisheries mitigation in contract package
Ministry of the Environment and Climate Change	• Prepare *a Design and Construction Report* for each Detail Design contract to be placed on the public record
Town of Rainy River	• Confirm Recommended Plan during Detail Design • Ongoing consultation during Detail Design • Continued participation in advisory committee
Railways	• Notify of start of Detail Design and construction phases
Snowmobile Clubs	• Notify of start of Detail Design and construction phases
Canada Border Services Agency	• Confirm Recommended Plan during Detail Design • Discussions and agreement regarding temporary use of CBSA land for construction staging areas • Ongoing consultation regarding construction methods, access requirements
Emergency service agencies (i.e., OPP, Fire, ambulance, etc.)	• Notify of start of Detail Design (i.e., staging etc.) and construction phases to minimize impacts to emergency response times during and after construction
All other agencies/groups involved in planning and preliminary design study (i.e., Rainy River Chamber of Commerce)	• Notify of start of Detail Design and construction phases
Utility companies	• Notify of start of Detail Design to confirm that potential conflict areas are properly identified and resolved

The U.S. permitting requirements are documented in the U.S. EA currently on file with MnDOT.

Other issues to be dealt with, through consultation during Detail Design include:

- Confirm maintenance agreement requirements between MTO and MnDOT
- Confirm noise protection and mitigation measures during construction during Detail Design

9.2 SUMMARY OF ENVIRONMENTAL EFFECTS, PROPOSED MITIGATION AND COMMITMENTS TO FUTURE WORK

A summary of environmental effects, proposed mitigation, and commitments to future work, as identified at the end of this study, is provided in Section 9.1. Table 7 below forms a comprehensive 'checklist' of outstanding issues identified at the end of preliminary design and will serve as a starting point for Detail Design.

Table 7: Outstanding Environmental Issues

ID #	Issue/Concerns and Potential Effects	Source	ID #	Mitigation or Commitment to Future Work
Natural Environment				
1	Surface Water • Potential impacts to surface water and groundwater from disturbance of contaminated soils, leaks and accidental spills	MTO Town of Rainy River MOECC Public	1.1 1.2 1.3 1.4 1.5 1.6	Complete drainage design to provide appropriate drainage capacity Direct runoff and overland flow away from working areas and areas of exposed soils Store all oils, lubricants and other chemicals in suitable containers and handle them in accordance with applicable regulations During construction, identify best management practices for fuel management including secondary containment of temporary fuel storage Identify spill response plan for construction and clean up all spills immediately and dispose of contaminated materials in an approved manner. The Ministry of the Environment and Climate Change will be informed of reportable spills Obtain draft Permit to Take Water (PTTW), if required
2	Fisheries and Aquatic • Potential for impacts to fisheries habitat (direct habitat loss and indirect impact to habitat)	MTO MNRF DFO Public	2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8	Include Special Provisions in Contract for work near watercourses Prepare erosion and sediment control plan to avoid or mitigate impacts to fish and fish habitat Confirm appropriate in-water work timing restrictions Where de-watering is required and fish habitat is present, apply DFO's Freshwater Intake End-of-Pipe Fish Screen Guideline Any displaced fish will be captured and released outside of the work area prior to the start of construction Refuelling of equipment will be carried out away from any sensitive natural features to avoid potential impacts, in the event that an accidental spill occurs Materials and equipment used for site preparation and project completion shall be operated and stored in a manner that prevents any deleterious substance from entering the water In-water work areas will be isolated so that clean flow is maintained downstream/around the work area
3	Vegetation and Wetlands • Potential for vegetation loss • Potential impact to provincially rare species • Potential impact to and loss of wetland habitat • Potential for wetland communities to be impacted by degradation of water quality due to erosion or surface water run-off during construction, or from contaminants from road run-off • Potential for heavy construction equipment to damage peripheral vegetation from contact, excavation or soil compaction	MTO MNRF Public	3.1 3.2 3.3	Areas to be cleared of existing vegetation should be clearly marked to prevent any unnecessary clearing Identify wetlands that provide sensitive species habitat and are not impacted by construction as an Environmentally Sensitive Area on construction drawings and the contractor will not be permitted to enter or store materials in these areas Confirm and refine stormwater management plans during Detail Design
4	Wildlife and SAR • Potential for loss of wildlife habitat • Potential for impacts to Species-at-Risk or species of Provincial concern	MTO MNRF	4.1 4.2	Potential impacts to SAR are not anticipated as a result of the project but will be confirmed during Detail Design and appropriate mitigation and protection measures will be developed and confirmed, if required, during Detail Design Include timing restrictions for tree clearing activities to minimize impacts to breeding birds

ID #	Issue/Concerns and Potential Effects	Source	ID #	Mitigation or Commitment to Future Work
5	Erosion and Sedimentation • Potential for sediment laden runoff to impact downstream resources during construction • Erosion of steep banks prior to stabilization • Potential fisheries impacts at fisheries habitat • Potential wildlife impacts in and around wetland	MTO MNRF DFO Public	5.1 5.2 5.3 5.4 5.5 5.6	Prepare an Erosion and Sediment Control Plan in advance of construction Comply with Best Management Practices (BMPs) in the Environmental Guide for Erosion and Sediment Control During Construction of Highway Projects Minimize impacts at approaches to Rainy River, including installation of sediment control fencing, slope restoration and stabilization during construction Temporary erosion control measures will be maintained until vegetation is re-established to a sufficient degree to provide adequate protection to disturbed work areas Inspect slope areas regularly during construction to identify erosion problems and seepage areas and plan for appropriate temporary stabilization and drainage measures Depending on the proposed grading determined during Detail Design, rip rap may be required to protect the embankments
6	Management of Excess Material • Potential impacts to soil or surface water from the use of de-icing activities along provincial highways	MTO	6.1	Manage excess materials in accordance with OPSS 180 and standard MTO specifications
Social and Economic Environment				
7	Land Use • Temporary delay or disruption to residents during construction • Temporary delay or disruption to EMS providers during construction	MTO EMS Providers Town of Rainy River OPP Public	7.1 7.2 7.3	Maintain access to private entrances and side roads during construction Notify OPP, Fire department and ambulance of start of Detail Design, construction staging, start of construction, etc. to minimize delay in emergency response times during construction Maintain liaison/coordinate construction with responding agencies (including school boards)
8	Property • Potential temporary impacts to private properties during construction or temporary land interest (TLI)	MTO Property Owners CBSA	8.1 8.2 8.3	Contact general public through newspaper notices and directly affected property owners through correspondence at start of Detail Design Hold Public Meeting during Detail Design to display and seek input on detailed plan and construction staging Confirm construction laydown areas and temporary land interest requirements
9	Construction Noise and Dust • Potential noise and dust increase during construction	MTO Town of Rainy River Public	9.1 9.2 9.3 9.4	Confirm noise mitigation requirements and complete Construction Noise Evaluation during Detail Design and prior to construction Include standard construction noise mitigation measures in contract package The contractor will be required to adhere to standard noise restrictions (i.e., proper maintenance of equipment, no unnecessary idling) Standard dust suppressants (i.e., water, calcium chloride) will be used to minimize dust
10	Utilities • Potential impacts to existing utilities	MTO Utility Companies	10.1	Contact potentially affected utilities at start of future study phases to confirm details of relocations required

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10.0 Monitoring

The planning and preliminary design phase of the project is now complete. Specific mitigation measures identified in this report will require confirmation during Detail Design and monitoring during construction.

Monitoring will be conducted by on-site construction supervisory staff to make sure that environmental protection measures, as outlined in this report and confirmed during Detail Design, and included in the contract package, are implemented. This includes making sure that the implementation of mitigating measures and key design features is consistent with commitments made to external agencies prior to construction.

For certain activities, monitoring by a Qualified Environmental Specialist will be required.

In the event that protective measures do not address concerns identified or if major problems develop, the appropriate agency will be contacted to provide additional input.

In the event that the impacts of construction are different than anticipated, or that the method of construction is such that there are greater than anticipated impacts, the Contractor's method of operation will be modified to reduce those impacts.

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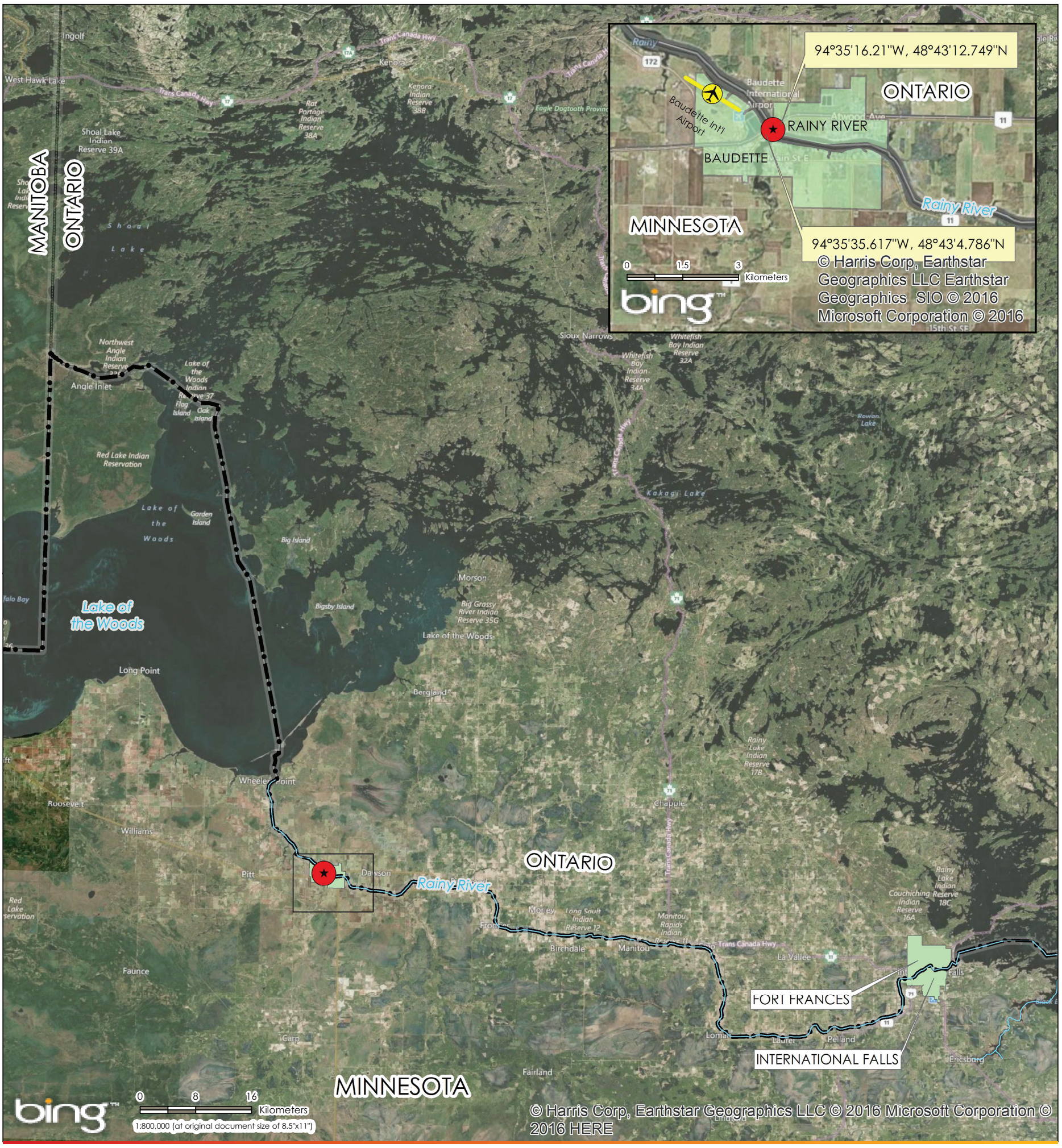
Appendix A: Figures

\\US1291-F01\workgroup\1938\active\193802870\GIS\Projects\Canadian Exhibits\AR Canadian Maps_metric_2016-12-22_overview.mxd Revised: 2016-12-22 By: aribachonek



Legend

- Project Area
- Rainy River
- International Boundary
- Provincial Boundaries
- Municipal Boundaries

Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

Stantec

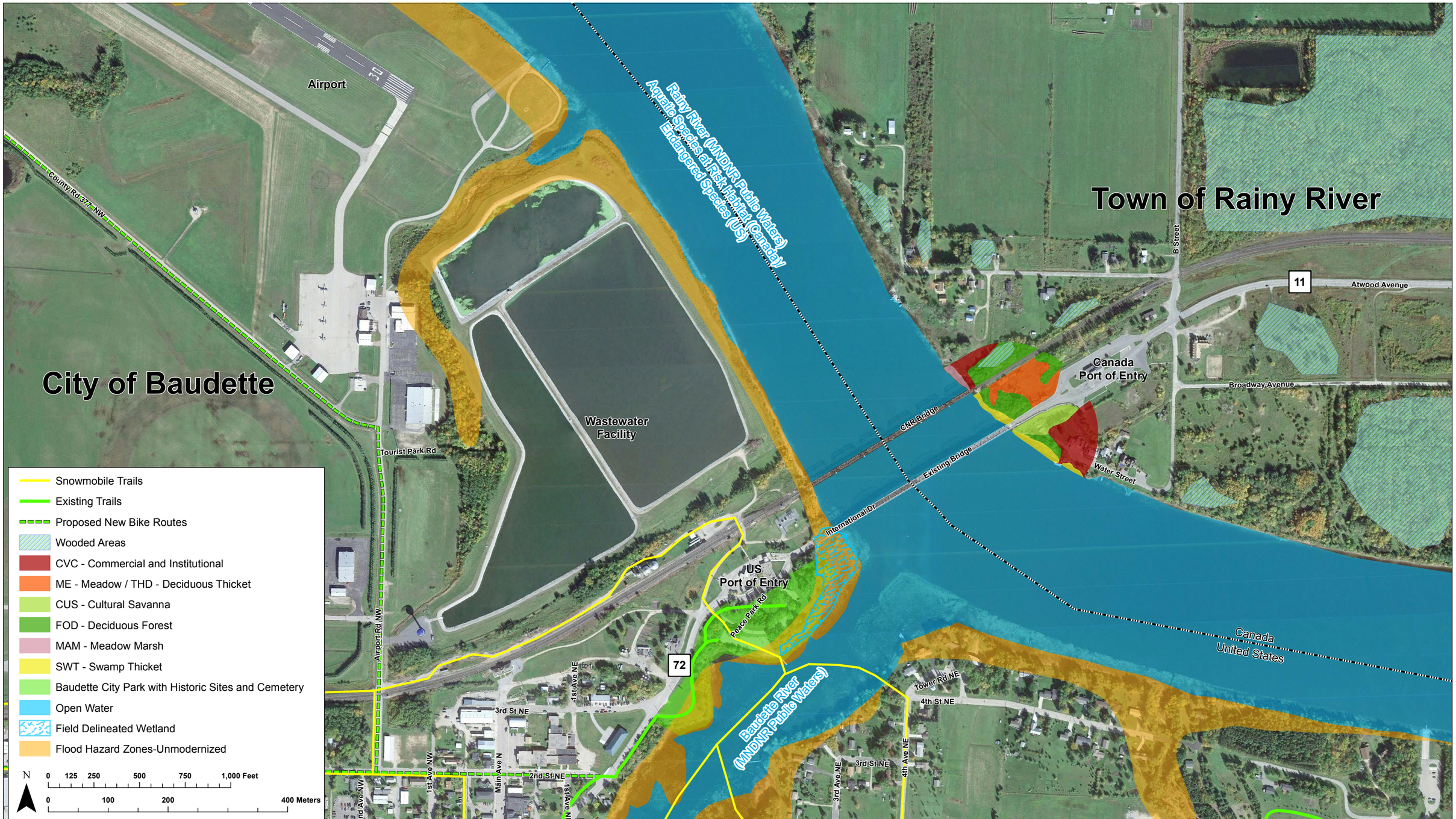
Project Location 193802870
T161N, R31W, S35
City of Baudette, MN

Prepared by aribachonek on 2016-12-20

Client/Project SP 3905-09
MnDOT / MTO
Baudette/Rainy River International Bridge Replacement

Figure No.
1

Title
PROJECT SITE AND REGIONAL CONTEXT



Plot Date: 09/30/2016 - 12:44pm
Drawing name: V:\1938\active\193802870\Environmental\MnDOT\Plot3\Display\Baudette Ministry of Transportation Ontario TB-17X11-L.dwg
Xrefs:

EXISTING CONDITIONS

MINISTRY OF TRANSPORTATION ONTARIO

BAUDETTE/RAINY RIVER INTERNATIONAL BRIDGE

FIGURE 2

DATE: OCTOBER 2016 PROJ. NO.: 193802870

Stantec
2335 Highway 36 W
St. Paul, MN 55113
www.stantec.com

Plot Date: 09/30/2016 - 12:46pm
Drawing name: V:\1938\active\193802870\Environmental\MnDOT\PIM3\Displays\Baudette Ministry of Transportation Ontario TB-17x11-L.dwg
Xrefs:

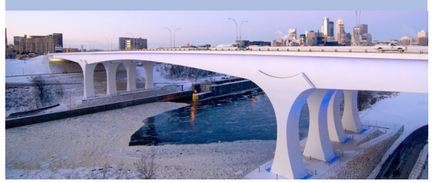
A wide range of initial bridge structure types were selected for review.
A preliminary analysis determined 5 alternatives to carry forward.

A Continuous Steel I-Girder Superstructure

B Simple-Span Precast/Prestressed Concrete I-Girder Superstructure

C Continuous Steel Box Girder Superstructure

D Continuous Concrete Box Girder



E Tied Arch Main Span with Precast/Pre-stressed Concrete I-Girder Approaches

ALTERNATIVE A1 - Steel I-Girder, 5 Span

ALTERNATIVE A2 - Steel I-Girder, 4 Span

ALTERNATIVE B - Concrete I-Girder

Reasons Not Carried Forward:

a. Has minimal advantages over the continuous steel I-girder alternative
b. Higher design complexity
c. Increased construction risk

Reasons Not Carried Forward:

a. Deepest structure depth, resulting in increased grades and reduced sight distance on bridge compared to other alternatives
b. Higher design complexity
c. Specialized construction/increased construction risk

Reasons Not Carried Forward:

a. Reduced sight distance compared to other alternatives
b. Requires the most piers in the water compared to other structures, increasing risk in construction and environmental impacts
c. Increased complexity in design and maintenance

Steel I-Girder, 5 Span

Reasons Not Carried Forward:

a. Increased construction complexity and risk compared to 5 span alternative
b. Would likely require eight temporary structures to support bridge segments during construction, compared to four segments with the 5 span alternative
c. The location of temporary structures would greatly reduce the navigational opening below the bridge during construction

Reasons Not Carried Forward:

a. Required the most substructures of remaining alternatives
b. Could limit the number of potential fabricators because of long beams required for structure

BRIDGE TYPE ALTERNATIVE PRELIMINARY ANALYSIS

MINISTRY OF TRANSPORTATION ONTARIO BAUDETTE/RAINY RIVER

INTERNATIONAL BRIDGE

FIGURE 3

DATE: OCTOBER 2016 PROJ. NO.: 193802870

Stantec
2335 Highway 36 W
St. Paul, MN 55113
www.stantec.com

Appendix B: Notification Materials

Initial Notification

Stantec

Memo

To: R. DeCal
MTO Northwestern Region

From: Nevena Gazibara
Stantec-Toronto Office

File: 193802870

Date: April 28, 2015

Reference: Baudette/Rainy River International Bridge on Highway 11, Town of Rainy River (GWP 6046-10-00)
Notice of Study Commencement Timing Strategy

Please find attached the Notice of Study Commencement timing strategy for the above-mentioned project for your information.

KEY STAGE	DATE
MTO Final Advertisement Approval and Internal Notification	**Friday, April 24, 2015**
Notice to MPP (sent by MTO)	Wednesday, April 29, 2015
External Agency Mailing (Letter, Flyer and Comment Sheet)	Wednesday, April 29, 2015
Businesses (Flyer), Property Owners (Letter and Flyer) and Stakeholder Mailing (Flyer)	Wednesday, April 29, 2015
Mailing to First Nation and Aboriginal groups (on MTO Letterhead)	Wednesday, April 29, 2015
Ontario Government Notice in: *Rainy River Record* (Published on Tuesdays)	Tuesday, May 12, 2015
Ontario Government Notice in: *Fort Frances Times* (Published on Wednesday)	Wednesday, May 13, 2015
External Agency Comments requested by:	Thursday, June 11, 2015

STANTEC CONSULTING LTD.

Nevena Gazibara, B.Sc., MREM
Environmental Planner
Phone: 416-598-7663
Fax: 416-596-6680
nevena.gazibara@stantec.com

c. D. Grove, G. Cooke – Stantec Consulting Ltd.
J. McKinnon – Minnesota Department of Transportation

Ontario

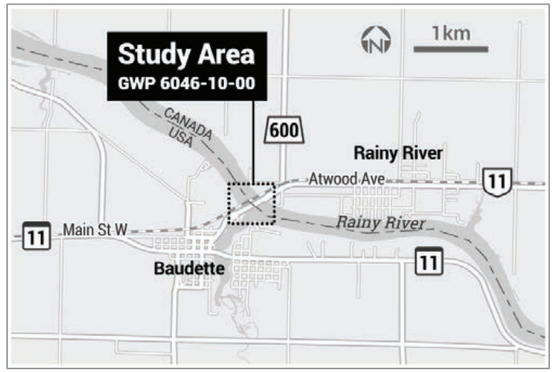
BAUDETTE/RAINY RIVER INTERNATIONAL BRIDGE REPLACEMENT
Highway 11, Town of Rainy River
Notice of Study Commencement

THE STUDY

The Ontario Ministry of Transportation (MTO), in cooperation with the Minnesota Department of Transportation, has retained Stantec Consulting Ltd. to undertake the Preliminary Design and Class Environmental Assessment (Class EA) Study for the replacement of the Baudette/Rainy River International Bridge on Highway 11 in the Town of Rainy River. The bridge provides access between the United States and Canada with 24-hour, full-service Port of Entry facilities in the City of Baudette and the Town of Rainy River. The study will include the development and evaluation of a range of reasonable bridge replacement alternatives; construction staging and traffic management options; and the selection of a Preferred Plan.

THE PROCESS

The study will follow the *Class Environmental Assessment* (Class EA) *for Provincial Transportation Facilities* (2000) process for a Group 'B' project. It includes carrying out environmental field investigations and undertaking consultation throughout the duration of the study. As part of the consultation process, three Public Information Centres (PICs) will be held. The first PIC is currently scheduled for summer 2015 to provide an opportunity to review the existing conditions in the study area (i.e., natural, social, economic and cultural) and to answer questions about the study.



Upon completion of Preliminary Design, a *Transportation Environmental Study Report* (TESR) will be prepared and made available for a 30-day public review period. Notices regarding the availability of the TESR and the times and location of the PICs will be published in local newspapers and sent to persons on the mailing list.

COMMENTS

If you wish to comment on this project, have your name added to the project mailing list, or have any questions about this project, please contact one of the individuals identified below.

Gregg Cooke, P.Eng.
Consultant Project Manager (Canada)
Stantec Consulting Ltd.
200-835 Paramount Drive
Stoney Creek ON L8J 0B4
Tel: 905-381-3227
Call Collect: 905-385-3234
Fax: 905-385-3534
Email: gregg.cooke@stantec.com

Rick DeCal
MTO Senior Project Manager
Ministry of Transportation
Northwestern Region
615 James Street South
Thunder Bay ON P7E 6P6
Tel: 807-473-2187
Toll free: 1-800-465-5034
Fax: 807-473-2168
Email: rick.decal@ontario.ca

If you have any accessibility requirements in order to participate in the project, please contact one of the Project Team members listed above.

Comments and information are being collected to assist MTO in meeting the requirements of the *Ontario Environmental Assessment Act*. Information will be collected in accordance with the *Freedom of Information and Protection of Privacy Act*. All comments will be maintained on file for use during the study and, with the exception of personal information, may be included in study documentation and become part of the public record.

Gazibara, Nevena

From: Wall, Steven (MTO) <Steven.Wall@ontario.ca>
Sent: Thursday, April 30, 2015 10:29 AM
To: Cooper, Doug (MTO); Coulter, Ken (MNDM); Galloway, Iain (MTO); Piscopo, Annemarie (MTO); Prystanski, Wayne (MTO); Kaszuba, Linda (MTO); Caldwell, Bruce (MTO); Schutte, Dan (MTO); scmpp@ndp.on.ca
Cc: DeCal, Rick (MTO); Cooke, Gregg; Gazibara, Nevena
Subject: Notice of Study Commencement: Baudette/Rainy River International Bridge Crossing
Attachments: adv_02870_nosc_fnl.pdf

Attached is a copy of a public advertisement to be placed in the ***Rainy River Record*** on **Tuesday, May 12th, 2015** and the
Fort Frances Times on ***Wednesday, May 13, 2015***.

This is a routine notice advising of the Notice of Study Commencement for a Group B project, and is a requirement of the ministry's environmental assessment process. The ad has been submitted by our consultant, Stantec Consulting Limited.

Project specific comments and concerns may be directed to Gregg Cooke or Rick DeCal, as indicated in the advertisement.

Steve Wall
Senior Environmental Planner (Acting)
Ministry of Transportation - Northwest Region
615 James Street South
Thunder Bay, Ontario P7E 6P6
Phone:(807) 473-2126

MINISTRY OF TRANSPORTATION

Provincial Highways Management
Planning & Design Section
Northwestern Region
615 James Street South
Thunder Bay, Ontario P7E 6P6
Tel.: (807) 473-2002
Fax.: (807) 473-2168

Ontario

April 29, 2015
File: 193802870

Ms. Ashley Johnson, Senior Advisor (Acting)
Ontario Ministry of Aboriginal Affairs – Consultation Unit
160 Bloor Street West, 9th Floor
Toronto ON M7A 2E6

Mr. Hank Rowlinson, Métis Community Relations Manager
Métis Nation of Ontario- Métis Consultation Unit
500 Old St. Patrick Street, Unit D
Ottawa ON K1N 9G4

Dear

Reference: **NOTICE OF STUDY COMMENCEMENT**
Preliminary Design and Class Environmental Assessment
Baudette/Rainy River International Bridge Replacement on Highway 11
Town of Rainy River (GWP 6046-10-00)

Stantec Consulting Ltd. has been retained by the Ontario Ministry of Transportation (MTO), in cooperation with the Minnesota Department of Transportation, to undertake the Preliminary Design and Class Environmental Assessment (Class EA) Study for the replacement of the Baudette/Rainy River International Bridge on Highway 11 in the Town of Rainy River. A copy of the Notice of Study Commencement is attached.

The purpose of the study is to identify a Recommended Plan for the replacement of the Baudette/Rainy River International Bridge on Highway 11. This study will include the development and evaluation of a range of reasonable bridge replacement alternatives; construction staging and traffic management options; and the selection of the Preferred Plan.

This Preliminary Design study is following an approved planning process under the *Class Environmental Assessment for Provincial Transportation Facilities* (2000) for a Group "B" project and will document the existing conditions and sensitivities of the study area, examine potential impacts/changes, give recommendations for proposed mitigation, and outline any commitments for future environmental work.

The project team will be contacting the following First Nations/Metis Groups to request their involvement in this study:

Chief Carl Tuesday
Big Grassy River First Nation
PO Box 414
Morson ON P0W 1J0

Chief Jim Leonard II
Rainy River First Nation
PO Box 450
Emo ON P0W 1E0

Grand Chief Warren White
Grand Council Treaty # 3
Office of the Grand Chief
PO Box 1720
Kenora ON P9N 3X7

Chief Katherine Kishiqueb
Ojibways of Onigaming First Nation
PO BOX 160
Nestor Falls ON P0X 1K0

Chief Wayne Smith
Naicatchewenin First Nation
PO BOX 15, RR 1
Devlin ON P0W 1C0

Chief Sara Mainville
Couchiching First Nation
RR 2, RMB 2027
Fort Frances ON P9A 3M3

Chief Janice Henderson
Mitaanjigamiing First Nation
PO BOX 609
Fort Frances ON P9A 3M9

Chief Patricia Big George
Anishnaabeg of Naongashiing (Big Island)
PO BOX 335
Morson ON P0W 1J0

Chief Darlene Ross Sandy
Northwest Angle No. 33
PO Box 1490
Kenora ON P9N 3X7

Chief Aileen Oshie-White
Northwest Angle No. 37
PO Box 267
Sioux Narrows ON P0X 1N0

Chief Chris Skead
Anishinabe of Wauzhushk Onigum
PO Box 1850
Kenora ON P9N 3X8

Chief William Windigo
Nigigoonsiminikaaning First Nation
PO Box 68
Fort Frances ON P9A 3M5

Reference: **NOTICE OF STUDY COMMENCEMENT**
Preliminary Design and Class Environmental Assessment
Baudette/Rainy River International Bridge on Highway 11, Town of Rainy River
(GWP 6046-10-00)

Pwi-Di-Goo-Zing Ne-Yaa-Zhing
Advisory Services
PO Box 522
1455 Idylwild Drive
Fort Frances ON P9A 3M8

President Clint Calder
MNO Sunset Country Métis
Council
418 Third Street East
Fort Frances ON P9A 3M3

We would appreciate it if you could advise us if there are any outstanding land claims associated with the study area or any additional First Nation or Métis groups that should be contacted as part of this study.

If you have any questions regarding the study, please contact the undersigned or one of the Project Managers named in the enclosed material.

Yours Truly,

Rick DeCal
MTO Project Manager, Northwestern Region
Tel: (807) 473-2187
Fax: (807) 473-2168
rick.decal@ontario.ca

c. D. Grove, G. Cooke, N. Gazibara – Stantec Consulting Ltd.
J. McKinnon – Minnesota Department of Transportation

MINISTRY OF TRANSPORTATION

Provincial Highways Management
Planning & Design Section
Northwestern Region
615 James Street South
Thunder Bay, Ontario P7E 6P6
Tel.: (807) 473-2002
Fax.: (807) 473-2168

Ontario

April 29, 2015
File: 193802870

LETTER TO FIRST NATIONS

Reference: **NOTICE OF STUDY COMMENCEMENT**
Preliminary Design and Class Environmental Assessment
Baudette/Rainy River International Bridge Replacement on Highway 11
Town of Rainy River (GWP 6046-10-00)

The Ontario Ministry of Transportation (MTO), in cooperation with the Minnesota Department of Transportation, has retained Stantec Consulting Ltd. to undertake the Preliminary Design and Class Environmental Assessment (Class EA) Study for the replacement of the Baudette/Rainy River International Bridge on Highway 11 in the Town of Rainy River. A copy of the Notice of Study Commencement is attached.

The purpose of the study is to identify a Recommended Plan for the replacement of the Baudette/Rainy River International Bridge on Highway 11. This study will include the development and evaluation of a range of reasonable bridge replacement alternatives; construction staging and traffic management options; and the selection of the Preferred Plan.

The study includes:

- Collecting and reviewing relevant background information and seeking input from the public, Aboriginal and First Nation groups, and external ministries/agencies
- Carrying out field investigations to confirm environmental and engineering information
- Detailed natural science, fisheries, migratory bird, noise and vibration studies
- A Stage 1 and Stage 2 Archaeological Assessment

This Preliminary Design study is following an approved planning process under the *Class Environmental Assessment for Provincial Transportation Facilities* (2000) for a Group "B" project and will document the existing conditions and sensitivities of the study area, examine potential impacts/changes, give recommendations for proposed mitigation, and outline any commitments for future environmental work.

A *Transportation Environmental Study Report* will be prepared documenting the existing natural and socio-economic environment, a summary of the Recommended Plan and design features, potential impacts of the undertaking, required mitigation procedures, and commitments to future work.

As part of the study commencement, MTO is inviting you to participate in this study and assist us in identifying the environmental, social, and cultural values your community may have within the study area. If you are aware of any additional First Nation or Aboriginal communities that we should be contacting, please forward that information to me and I will include them on our agency contact list.

The study team will keep you up-to-date on the status of the study as the project progresses. We invite and encourage your input.

Reference: Preliminary Design and Class Environmental Assessment Baudette/Rainy River International Bridge Replacement on Highway 11, Town of Rainy River (GWP 6046-10-00) Notice of Study Commencement

Should you have any questions, please contact me at (807) 473-2187 or 1-800-465-5034, or by email at rick.decal@ontario.ca. If you would prefer a meeting with ministry staff, that could also be arranged. Please contact me at your earliest convenience if you are interested in such a meeting.

Yours Truly,

Rick DeCal
MTO Senior Project Manager, Northwestern Region
Tel: (807) 473-2187
Fax: (807) 473-2168
rick.decal@ontario.ca

c. D. Grove, G. Cooke, N. Gazibara – Stantec Consulting Ltd.
J. McKinnon – Minnesota Department of Transportation

Baudette/Rainy River International Bridge Replacement (GWP 6046-10-00) First Nation and Aboriginal Communities and Agencies Mailing List

Title	First Name	Last Name	Position	Organization	Address	Address 2	City	Province	Postal Code
Ms.	Ashley	Johnson	Senior Advisor	Ministry of Aboriginal Affairs; Consultation Unit	160 Bloor Street West, 9th Floor		Toronto	ON	M7A 2E6
Chief	Carl	Tuesday	Chief	Big Grassy River First Nation	PO Box 414		Morson	ON	P0W 1J0
Chief	Jim	Leonard II	Chief	Rainy River First Nation	PO Box 450		Emo	ON	P0W 1E0
Chief	Katherine	Kishiqueb	Chief	Ojibways of Onigaming First Nation	PO BOX 160		Nestor Falls	ON	P0X 1K0
Chief	Wayne	Smith	Chief	Naicatchewenin First Nation	PO BOX 15	RR 1	Devlin	ON	P0W 1C0
Chief	Sara	Mainville	Chief	Couchiching First Nation	RR 2; RMB 2027		Fort Frances	ON	P9A 3M3
Chief	Janice	Henderson	Chief	Mitaanjigamiing First Nation	PO BOX 609		Fort Frances	ON	P9A 3M9
Chief	Patricia	Big George	Chief	Anishnaabeg of Naongashiing	PO BOX 335		Morson	ON	P0W 1J0
Chief	Darlene	Ross Sandy	Chief	Northwest Angle No.33	BOX 1490		Kenora	ON	P9N 3X7
Chief	Aileen	Oshie-White	Chief	Northwest Angle No.37	PO Box 267		Sioux Narrows	ON	P0X 1N0
Chief	Chris	Skead	Chief	Anishinabe of Wauzhushk Onigum	PO Box 1850		Kenora	ON	P9N 3X8
Chief	William	Windigo	Chief	Nigigoonsiminikaaning First Nation	PO Box 68		Fort Frances	ON	P9A 3M5
			Tribal Council	Pwi-Di-Goo-Zing Ne-Yaa-Zhing Advisory Services	PO Box 522; 1455 Idylwild Drive		Fort Frances	ON	P9A 3M8
Grand Chief	Warren	White	Grand Chief	Grand Council Treaty #3	PO Box 1720		Kenora	ON	P9N 3X7
President	Clint	Calder	President	MNO Sunset Country Métis Council	418 Third Street East		Fort Frances	ON	P9A 3M3
Mr.	Hank	Rowlinson	Métis Community Relations Manager	Métis Consultation Unit Métis Nation of Ontario	500 Old St. Patrick Street.; Unit D		Ottawa	ON	K1N 9G4

Stantec Consulting Ltd.
200 - 835 Paramount Drive, Stoney Creek, ON L8J 0B4

April 29, 2015
File: 193802870

«Organization_Name»
«Region»
«Address»
«Address_2»
«City» «Prov» «PostCode»

Attention: «First_Name» «Last_Name», «Position» **EXTERNAL AGENCY LETTER**

Dear «Title» «Last_Name»:

Reference: NOTICE OF STUDY COMMENCEMENT
Preliminary Design and Class Environmental Assessment
Baudette/Rainy River International Bridge Replacement on Highway 11
Town of Rainy River (GWP 6046-10-00)

The Ontario Ministry of Transportation (MTO), in cooperation with the Minnesota Department of Transportation, has retained Stantec Consulting Ltd. to undertake the Preliminary Design and Class Environmental Assessment (Class EA) Study for the replacement of the Baudette/Rainy River International Bridge on Highway 11 in the Town of Rainy River. The bridge provides access between the United States and Canada with 24-hour, full-service Port of Entry facilities. The enclosed Notice of Study Commencement provides a key plan and additional details for your reference.

The purpose of this letter is to introduce the project, to seek your input on the existing conditions within the study area, and to identify any issues, concerns or approval requirements that your organization may have. We respectfully request that you complete and return the enclosed form by **Thursday, June 11, 2015** so that your comments may be considered early in the design process.

As part of the consultation process for this project, three Public Information Centres (PICs) will be held. You will be notified in advance of the first PIC, currently scheduled for summer 2015 to provide an opportunity to discuss the study with members of the project team and to provide comments. A separate External Agency Meeting will also be scheduled to coincide with the PIC.

If you have any questions regarding the study, please contact the undersigned or one of the Project Managers named in the enclosed material.

Sincerely,

STANTEC CONSULTING LTD.

Nevena Gazibara, B.Sc., MREM
Environmental Planner
Phone: (416) 598-7663
Fax: (416) 596-6680
nevena.gazibara@stantec.com

Attachment: Notice of Study Commencement, Reply Form

c. R. DeCal – MTO Northwestern Region
D. Grove, G. Cooke – Stantec Consulting Ltd.
J. McKinnon – Minnesota Department of Transportation

Design with community in mind

PRELIMINARY DESIGN AND CLASS ENVIRONMENTAL ASSESSMENT
Baudette/Rainy River International Bridge Replacement on Highway 11
Town of Rainy River (GWP 6046-10-00)

AGENCY REPLY FORM

I have an interest in this project. Please keep my name on the study mailing list. ☐

Please remove my name from the study mailing list. ☐

Your organization's interests or concerns regarding the study area or the undertaking are:

Your organization/agency can provide the following environmental (i.e., natural, social, economic or cultural) information and requires the following permits / approvals:

Additional comment space is provided on the back of this form.

Contact Information on Study Mailing List	*If this information is incorrect please provide updated information or identify the key project contact below.*
«Title» «FirstName» «LastName», «Position» «OrganizationName» «Region» «Address», «Address_2» «City» «Province» «PostalCode» Tel: «WorkPhone»	

Please return the completed form by June 11, 2015 to:
Nevena Gazibara, B.Sc., MREM, Environmental Planner
Stantec Consulting Ltd., 100 - 401 Wellington Street West, Toronto ON M5V 1E7
Tel. (416) 598-7663, Fax (416) 596-6680
Email: nevena.gazibara@stantec.com

New Contact:		
Job Title:		
Name of Agency:		
Mailing Address:		
Tel:	Fax:	E-mail:

Ontario

Comments and information regarding this project are being collected to assist the Ontario Ministry of Transportation in meeting the requirements of the *Environmental Assessment Act*. This material will be maintained on file for use during the project and may be included in project documentation. Information collected will be used in accordance with the *Freedom of Information and Protection of Privacy Act*. With the exception of personal information, all comments will become part of the public record.

PRELIMINARY DESIGN AND CLASS ENVIRONMENTAL ASSESSMENT
Baudette/Rainy River International Bridge Replacement on Highway 11
Town of Rainy River (GWP 6046-10-00)

AGENCY REPLY FORM

2.

Baudette/Rainy River International Bridge Replacement (GWP 6046-10-00) Agency Mailing List

Category	Title	First Name	Last Name	Position	Organization	Address	Address 2	City	Province	Postal Code
Provincial	Mr.	Ray	Boivin	Senior Environmental Officer-Kenora Area Office	Ministry of the Environment and Climate Change	808 Robertson Street		Kenora	ON	P9N 1X9
Provincial	Ms.	Rachel	Hill	District Planner-Fort Frances District	Ministry of Natural Resources and Forestry	922 Scott Street		Fort Frances	ON	P9A 1J4
Provincial	Ms.	Bonnie	McNulty	Regional Advisor-Thunder Bay Office	Ministry of Tourism, Culture and Sport	435 James Street South	Suite 334	Thunder Bay	ON	P7E 6S7
Provincial	Ms.	Paige	Campbell	Archaeology Review Officer, Archaeology Program Unit	Ministry of Tourism, Culture and Sport	435 James Street South	Suite 334	Thunder Bay	ON	P7E 6S7
Provincial	Mr.	Frank	Bastone	Northern Development Advisor-Tourism, Kenora and Area	Ministry of Northern Development and Mines	810 Robertson Street	Suite 104	Kenora	ON	P9N 4J2
Provincial	Ms.	Kim	Austen	Northern Development Officer, Kenora and Area	Ministry of Northern Development and Mines	810 Robertson Street	Suite 104	Kenora	ON	P9N 4J2
Provincial	Mr.	Ken	Mantey	Traffic Staff Sargent	Ontario Provincial Police, Northwest Region Headquarters	615 James Street South	2nd Floor	Thunder Bay	ON	P7E 6P6
Provincial	Mr.	Steve	Shouldice	Rainy River Detachment Commander	Ontario Provincial Police Rainy River Detachment	320 Portage Avenue		Fort Frances	ON	P9A 3P9
Provincial	Mr.	Scott	Gobeil	Staff Sargent	Ontario Provincial Police- Rainy River Detachment	320 Portage Avenue		Fort Frances	ON	P9A 3P9
Provincial	Mr.	Ron	Van Straalen	Superintendent-Northwest Region Headquarters	Ontario Provincial Police, Northwest Region Headquarters	615 James Street South	2nd Floor	Thunder Bay	ON	P7E 6P6
Provincial	Ms.	Sarah	Campbell	MPP-Kenora-Rainy River	Sent by MTO	140 Fourth Street West	Suite 3	Fort Frances	ON	P9A 3B8
Municipal	Mr.	Veldron	Vogan	Chief Administration Officer	Town of Rainy River	PO Box 488		Rainy River	ON	P0W 1L0
Municipal	Ms.	Deborah	Ewald	Mayor	Town of Rainy River	PO Box 488		Rainy River	ON	P0W 1L0
Municipal	Mr.	Dan	McCormick	Chief Administration Officer	Rainy River District Social Services Administration Board	450 Scott Street		Fort Frances	ON	P9A 1H2
Municipal	Mr.	Ed	Carlson	EMS Deputy Chief	EMS Rainy River District Social Services Administration Board	801 Scott Street		Fort Frances	ON	P9A 1J3
Federal	Mr.	Rob	Dobos	Manager, Environmental Assessment Section	Environment Canada	867 Lakeshore Road	Box 5050	Burlington	ON	L7R 4A6
Federal	Mr.	John	Woodward	Senior Environmental Officer, Ontario Region	Canadian Transportation Agency	15 Eddy Street		Gatineau	PQ	K1A 0N9
Federal				Fisheries Protection Program	Department of Fisheries and Oceans Canada	867 Lakeshore Road		Burlington	ON	L7S 1A1
Federal	Ms.	Caitlin	Cafaro	Environmental Assessment Officer	Canadian Environmental Assessment Agency	55 St. Clair Avenue East	Suite 907	Toronto	ON	M4T 1M2
Federal	EMAIL			Environmental Assessment Coordinator	Transport Canada					
Federal	Ms.	Mary	Boone	Manager, Fixed Infrastructure	Canada Border Services Agency (CBSA)	5755 River Road		Niagara Falls	ON	L2G 3K9
Federal	Ms.	Tuula	Schuler	Director, Northwestern Ontario District	Canada Border Services Agency (CBSA)	1 Bridge Street		Point Edward	ON	N7V 4J5
Federal	Ms.	Debbie	Dundas	Project Officer- Infrastructure and Environmental	Canada Border Services Agency (CBSA)	5755 River Road		Niagara Falls	ON	L2G 3K9
Federal	Ms.	Kim	Beaudry	Chief of Operations	Canada Border Services Agency (CBSA)	301 Scott Street 2nd Floor		Fort Frances	ON	P9A 1H1
Federal	Ms.	Carol	Duthie	Interim Manager, Fixed Infrastructure	Canada Border Services Agency (CBSA)	2265 St. Laurent Blvd, 2nd Floor		Ottawa	ON	K1G 4K3
Federal	Ms.	Angela	MacNeil	Facilities Officer for Rainy River (Senior Program caretakers)	CBSA - SNC Lavelan (property Officer)	100 Metcalfe Street, 17th Floor		Ottawa	ON	K1A 0L8
Federal		Rejean	Cantlon	Communications Advisor	Citizenship and Immigration Canada (CIC)	25 St. Clair Avenue East	Suite 700	Toronto	ON	M4T 1M2

Baudette/Rainy River International Bridge Replacement (GWP 6046-10-00) Agency Mailing List

Category	Title	First Name	Last Name	Position	Organization	Address	Address 2	City	Province	Postal Code
Federal		Jean	Turner	Communications Specialist	Royal Canadian Mounted Police (RCMP)	130 Dufferin Avenue, 5th Floor PO Box 3240, Station B		London	ON	N6A 4K3
Federal				Enquiries Service (BCI)	Foreign Affairs and International Trade Canada	125 Sussex Drive		Ottawa	ON	K1A 0G2
Federal	Ms.	Nina	Hamad	Manager, Corporate and Internal Communications Unit	Canadian Food Inspection Agency	1400 Mervale Road Tower, Floor 2, Room 141		Ottawa	ON	K1A 0Y9
Federal	Ms.	Charlene	Bevan	Regional Director	Canada Food Inspection Agency (CFIA)	174 Stone Rd. W.		Guelph	ON	N1G 4S9
Federal	Ms.	Kelly	Senkiw	Environmental Assessment Coordinator	Health Canada	269 Laurier Avenue West, A/L 4904A		Ottawa	ON	K1A 0K9
Federal	Mr.	Kyle	Hipsley	Acting Commissioner International Boundary Commission US and Canada	International Boundary Commission (IBC) - US	2000L Street NW	Suite 615	Washington	DC	20036
Federal					International Boundary Commission - (IBC) Canada	575-615 Booth Street		Ottawa	ON	K1A 0E9
Utility	Ms.	Jackie	Macewicz	Manager of Public Projects	Canadian National Railway (CN)	1625 Depot Street		Stevens Point	WI	54481 USA
Utility	Mr.	Stefan	Under	Manager of Public Works	Canadian National Railway	4 Welding Way	PO Box 1000	Concord	ON	L4K 1B0

Stantec Consulting Ltd.
200 - 835 Paramount Drive, Stoney Creek, ON L8J 0B4

April 29, 2015
File: 193802870

«Address»
«Address_2»
«City» «Prov» «PostCode»

Attention: «First_Name» «Last_Name» **PROPERTY OWNERS/STAKEHOLDERS**

Dear «Title» «Last_Name»:

Reference: NOTICE OF STUDY COMMENCEMENT
Preliminary Design and Class Environmental Assessment
Baudette/Rainy River International Bridge Replacement on Highway 11
Town of Rainy River (GWP 6046-10-00)

The Ontario Ministry of Transportation (MTO), in cooperation with the Minnesota Department of Transportation, has retained Stantec Consulting Ltd. to undertake the Preliminary Design and Class Environmental Assessment (Class EA) Study for the replacement of the Baudette/Rainy River International Bridge on Highway 11 in the Town of Rainy River. The bridge provides access between the United States and Canada with 24-hour, full-service Port of Entry facilities. The enclosed Notice of Study Commencement provides a key plan and additional details for your reference.

The purpose of this letter is to introduce the project, to seek your input on the existing conditions within the study area, and to identify any issues that you may have.

As part of the consultation process for this project, three Public Information Centres (PICs) will be held. You will be notified in advance of the first PIC, currently scheduled for summer 2015 to provide an opportunity to discuss the study with members of the project team and to provide comments.

If you have any questions regarding the study, please contact the undersigned or one of the Project Managers named in the enclosed material.

Sincerely,

STANTEC CONSULTING LTD.

Nevena Gazibara, B.Sc., MREM
Environmental Planner
Phone: (416) 598-7663
Fax: (416) 596-6680
nevena.gazibara@stantec.com

Attachment: Notice of Study Commencement

c. R. DeCal – MTO Northwestern Region
D. Grove, G. Cooke – Stantec Consulting Ltd.
J. McKinnon – Minnesota Department of Transportation

Public Meeting 1

Stantec

Memo

To:	R. DeCal, K. Saunders, S. Wall MTO Northwestern Region	From:	Nevena Gazibara Stantec-Toronto Office
File:	193802870	Date:	May 29, 2015

Reference: **Baudette/Rainy River International Bridge on Highway 11, Town of Rainy River (GWP 6046-10-00)**
Notice of Public Information Centre (PIC) 1 Timing Strategy

Please find attached the Notice of Public Information Centre (PIC) 1 timing strategy for the above-mentioned project.

KEY STAGE	DATE
MTO Final Advertisement Approval and Internal Notification	**Monday, May 25, 2015**
Submit Draft PIC Displays to MTO	Monday, June 1, 2015
Notice to MPP (sent by MTO)	Tuesday, June 2, 2015
External Agency Mailing (Letter, Flyer and Comment Sheet)	Friday, June 5, 2015
Businesses, Property Owners and Stakeholder Mailing (Flyer)	Friday, June 5, 2015
Mailing to First Nation and Aboriginal groups (on MTO Letterhead)	Friday, June 5, 2015
Ontario Government Notice in: *Rainy River Record* (Published on Tuesdays)	Tuesday, June 16, 2015
Ontario Government Notice in: *Fort Frances Times* (Published on Wednesday)	Wednesday, June 17, 2015
External Agency Meeting 1 (Rainy River Recreation Centre, Rainy River)	Wednesday, June 24, 2015
Public Information Centre 1 (Rainy River Recreation Centre, Rainy River)	Wednesday, June 24, 2015
PIC Comments requested by:	Friday, July 24, 2015

STANTEC CONSULTING LTD.

Nevena Gazibara, B.Sc., MREM
Environmental Planner
Phone: 416-598-7663
Fax: 416-596-6680
nevena.gazibara@stantec.com

c. D. Grove, G. Cooke – Stantec Consulting Ltd.
J. McKinnon – Minnesota Department of Transportation

Ontario

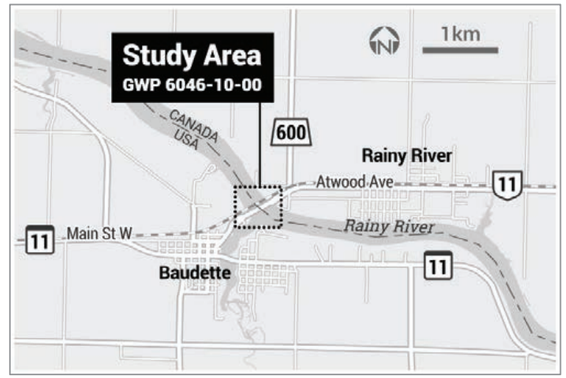
BAUDETTE/RAINY RIVER INTERNATIONAL BRIDGE REPLACEMENT
Highway 11, Town of Rainy River
Notice of Public Information Centre 1

THE STUDY

The Ontario Ministry of Transportation (MTO), in cooperation with the Minnesota Department of Transportation, has retained Stantec Consulting Ltd. to undertake the Preliminary Design and Class Environmental Assessment (Class EA) Study for the replacement of the Baudette/Rainy River International Bridge on Highway 11 in the Town of Rainy River. This notice is to announce the first Public Information Centre (PIC).

The purpose of the PIC is to:

- Display and seek input on the existing conditions in the study area (i.e. natural, social, economic, and cultural);
- Provide study background information; and
- Answer questions about the study.



The PIC is scheduled as follows:

Date: **Wednesday, June 24, 2015**
Location: **Rainy River Recreation Centre**
219 Government Road
Rainy River ON
Time: **4:00 p.m. to 7:00 p.m.**

The PIC will be held as a drop-in style, open house format. Representatives of the project team will be available to discuss the study, answer questions, and receive input on the study. We encourage you to attend this PIC to provide us with your comments.

THE PROCESS

This study is a Group 'B' project under the *Class Environmental Assessment (EA) for Provincial Transportation Facilities* (2000), and three Public Information Centres (PICs) will be held. The next PIC is planned for fall 2015 to review the bridge replacement alternatives, evaluation criteria and process to be used to identify a Preferred Plan.

A *Transportation Environmental Study Report* (TESR) will be prepared and made available for a 30-day public review period at the end of the study. Notices regarding the availability of the TESR and the times and location of the PICs will be published in local newspapers and sent to persons on the mailing list.

COMMENTS

If you wish to comment on this project, have your name added to the project mailing list, or have any questions about this project, please contact one of the individuals identified below.

Gregg Cooke, P.Eng.
Consultant Project Manager (Canada)
Stantec Consulting Ltd.
200-835 Paramount Drive
Stoney Creek ON L8J 0B4
Tel: 905-381-3227
Call Collect: 905-385-3234
Fax: 905-385-3534
Email: gregg.cooke@stantec.com

Rick DeCal
MTO Senior Project Manager
Ministry of Transportation
Northwestern Region
615 James Street South
Thunder Bay ON P7E 6P6
Tel: 807-473-2187
Toll free: 1-800-465-5034
Fax: 807-473-2168
Email: rick.decal@ontario.ca

If you have any accessibility requirements in order to participate in the project, please contact one of the Project Team members listed above.

Comments and information are being collected to assist MTO in meeting the requirements of the *Ontario Environmental Assessment Act*. Information will be collected in accordance with the *Freedom of Information and Protection of Privacy Act*. All comments will be maintained on file for use during the study and, with the exception of personal information, may be included in study documentation and become part of the public record.

Gazibara, Nevena

From: Wall, Steven (MTO) <Steven.Wall@ontario.ca>
Sent: Tuesday, June 02, 2015 3:20 PM
To: Cooper, Doug (MTO); Coulter, Ken (MNDM); Galloway, Iain (MTO); Piscopo, Annemarie (MTO); Prystanski, Wayne (MTO); Kaszuba, Linda (MTO); Caldwell, Bruce (MTO); Schutte, Dan (MTO); 'scmpp@ndp.on.ca'
Cc: DeCal, Rick (MTO); Cooke, Gregg; Gazibara, Nevena
Subject: Notice of Public Information Centre (PIC) 1: Baudette/Rainy River International Bridge Crossing
Attachments: adv_02870_PIC1_fnl.pdf

Attached is a copy of a public advertisement to be placed in the ***Rainy River Record*** on ***Tuesday, June 16, 2015*** and the ***Fort Frances Times*** on ***Wednesday, June 17, 2015.***

This is a routine notice advising of the Notice of Public Information Centre (PIC), and is a requirement of the ministry's environmental assessment process. This is the first of three Public Information Centres to be held for this project. The ad has been submitted by our consultant, Stantec Consulting Limited.

Project specific comments and concerns may be directed to Gregg Cooke or Rick DeCal, as indicated in the advertisement.

Steve Wall
Senior Environmental Planner (Acting)
Ministry of Transportation - Northwest Region
615 James Street South
Thunder Bay, Ontario P7E 6P6
Phone:(807) 473-2126

MINISTRY OF TRANSPORTATION

Provincial Highways Management
Planning & Design Section
Northwestern Region
615 James Street South
Thunder Bay, Ontario P7E 6P6
Tel.: (807) 473-2002
Fax.: (807) 473-2168

Ontario

June 5, 2015
File: 193802870

Attention: **Letter to First Nations and Aboriginal Groups**

Dear Chief:

Reference: **NOTICE OF PUBLIC INFORMATION CENTRE 1**
Preliminary Design and Class Environmental Assessment
Baudette/Rainy River International Bridge on Highway 11, Town of Rainy River
(GWP 6046-10-00)

The Ontario Ministry of Transportation (MTO), in cooperation with the Minnesota Department of Transportation, has retained Stantec Consulting Ltd. to undertake the Preliminary Design and Class Environmental Assessment (Class EA) Study for the replacement of the Baudette/Rainy River International Bridge on Highway 11 in the Town of Rainy River.

A letter was sent to you on April 29, 2015 to notify you of the commencement of the study, to provide you with information regarding environmental field investigations that are planned for this study, and to invite your input.

The purpose of this letter is to advise you of the first Public Information Centre (PIC) planned for the study. The enclosed Notice provides additional details for your reference.

External agencies and municipal staff are invited to attend an External Agency Drop-In Meeting on Wednesday, June 24, 2015, from 3:00 PM to 4:00 PM, at the Rainy River Recreation Centre, 219 Government Road, Rainy River. The External Agency Meeting is being held in advance of a general public session planned between 4:00 PM and 7:00 PM at the same location. The PIC will provide you with an opportunity to review the study background, existing conditions, and provide comments, and address questions or concerns directly with representatives of the project team. You are welcome to drop in anytime to review the display materials, provide comments, and address questions or concerns directly with the project team.

The project team will keep you up-to-date on the status of the study as the project progresses. We invite and encourage your input.

Reference: Preliminary Design and Class Environmental Assessment Baudette/Rainy River International Bridge on Highway 11, Town of Rainy River (GWP 6046 10 00)
Notice of Public Information Centre 1

Should you have any questions, please contact me at (807) 473-2187 or 1-800-465-5034, or by email at rick.decal@ontario.ca. If you would prefer a meeting with ministry staff, that could also be arranged. Please contact me at your earliest convenience if you are interested in such a meeting.

Yours Truly,

Rick DeCal
MTO Senior Project Manager, Northwestern Region
Tel: (807) 473-2187
Fax: (807) 473-2168
rick.decal@ontario.ca

c. D. Grove, G. Cooke, N. Gazibara – Stantec Consulting Ltd.
J. McKinnon – Minnesota Department of Transportation

Baudette/Rainy River International Bridge Replacement (GWP 6046-10-00) First Nation and Aboriginal Communities and Agencies Mailing List

Title	First Name	Last Name	Position	Organization	Address	Address 2	City	Province	Postal Code
Ms.	Ashley	Johnson	Senior Advisor	Ministry of Aboriginal Affairs; Consultation Unit	160 Bloor Street West, 9th Floor		Toronto	ON	M7A 2E6
Chief	Carl	Tuesday	Chief	Big Grassy River First Nation	PO Box 414		Morson	ON	P0W 1J0
Chief	Jim	Leonard II	Chief	Rainy River First Nation	PO Box 450		Emo	ON	P0W 1E0
Chief	Katherine	Kishiqueb	Chief	Ojibways of Onigaming First Nation	PO BOX 160		Nestor Falls	ON	P0X 1K0
Chief	Wayne	Smith	Chief	Naicatchewenin First Nation	PO BOX 15	RR 1	Devlin	ON	P0W 1C0
Chief	Sara	Mainville	Chief	Couchiching First Nation	RR 2; RMB 2027		Fort Frances	ON	P9A 3M3
Chief	Janice	Henderson	Chief	Mitaanijgamiing First Nation	PO BOX 609		Fort Frances	ON	P9A 3M9
Chief	Patricia	Big George	Chief	Anishnaabeg of Naongashiing	PO BOX 335		Morson	ON	P0W 1J0
Chief	Darlene	Ross Sandy	Chief	Northwest Angle No.33	BOX 1490		Kenora	ON	P9N 3X7
Chief	Aileen	Oshie-White	Chief	Northwest Angle No.37	PO Box 267		Sioux Narrows	ON	P0X 1N0
Chief	Chris	Skead	Chief	Anishinabe of Wauzhushk Onigum	PO Box 1850		Kenora	ON	P9N 3X8
Chief	William	Windigo	Chief	Niigoonsiminikaaning First Nation	PO Box 68		Fort Frances	ON	P9A 3M5
			Tribal Council	Pwi-Di-Goo-Zing Ne-Yaa-Zhing Advisory Services	PO Box 522; 1455 Idyllwild Drive		Fort Frances	ON	P9A 3M8
Grand Chief	Warren	White	Grand Chief	Grand Council Treaty #3	PO Box 1720		Kenora	ON	P9N 3X7
President	Clint	Calder	President	MNO Sunset Country Métis Council	418 Third Street East		Fort Frances	ON	P9A 3M3
Mr.	Hank	Rowlinson	Métis Community Relations Manager	Métis Consultation Unit Métis Nation of Ontario	500 Old St. Patrick Street.; Unit D		Ottawa	ON	K1N 9G4

Stantec Consulting Ltd.
200 - 835 Paramount Drive, Stoney Creek, ON L8J 0B4

June 5, 2015
File: 193802870

«Organization_Name»
«Region»
«Address»
«Address_2»
«City» «Prov» «PostCode»

Attention: «First_Name» «Last_Name», «Position» **LETTER TO EXTERNAL AGENCIES**

Dear «Title» «Last_Name»:

Reference: NOTICE OF PUBLIC INFORMATION CENTRE 1
Preliminary Design and Class Environmental Assessment
Baudette/Rainy River International Bridge Replacement on Highway 11
Town of Rainy River (GWP 6046-10-00)

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The purpose of this letter is to advise you of the first Public Information Centre (PIC) planned for the study. The enclosed Notice provides additional details for your reference.

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If you are unable to attend the External Agency Meeting and would like further information regarding the study, please contact either the undersigned or one of the project team members named in the enclosed information.

Sincerely,

STANTEC CONSULTING LTD.

Nevena Gazibara, B.Sc., MREM
Environmental Planner
Phone: (416) 598-7663
Fax: (416) 596-6680
nevena.gazibara@stantec.com

Attachment: Notice of Public Information Centre1

c. R. DeCal – MTO Northwestern Region
D. Grove, G. Cooke – Stantec Consulting Ltd.
J. McKinnon – Minnesota Department of Transportation

Design with community in mind

Baudette/Rainy River International Bridge Replacement (GWP 6046-10-00) Agency Mailing List

Category	Title	First Name	Last Name	Position	Organization	Address	Address 2	City	Province	Postal Code
Provincial	Mr.	Ray	Boivin	Senior Environmental Officer-Kenora Area Office	Ministry of the Environment and Climate Change	808 Robertson Street		Kenora	ON	P9N 1X9
Provincial	Ms.	Rachel	Hill	District Planner-Fort Frances District	Ministry of Natural Resources and Forestry	SEND BY EMAIL 922 Scott Street		Fort Frances	ON	P9A 1J4
Provincial	Ms.	Bonnie	McNulty	Regional Advisor-Thunder Bay Office	Ministry of Tourism, Culture and Sport	435 James Street South	Suite 334	Thunder Bay	ON	P7E 6S7
Provincial	Ms.	Paige	Campbell	Archaeology Review Officer, Archaeology Program Unit	Ministry of Tourism, Culture and Sport	435 James Street South	Suite 334	Thunder Bay	ON	P7E 6S7
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Provincial	Ms.	Kim	Austen	Northern Development Officer, Kenora and Area	Ministry of Northern Development and Mines	810 Robertson Street	Suite 104	Kenora	ON	P9N 4J2
Provincial	Ms.	Jane	Gillon	Northern Development Officer	Ministry of Northern Development and Mines	922 Scott Street		Fort Frances	ON	P9A 1J4
Provincial	Mr.	Ken	Mantey	Traffic Staff Sargent	Ontario Provincial Police, Northwest Region Headquarters	615 James Street South	2nd Floor	Thunder Bay	ON	P7E 6P6
Provincial	Mr.	Derek	McLean	Administrative Sergeant	Ontario Provincial Police Rainy River Detachment	320 Portage Avenue		Fort Frances	ON	P9A 3P9
Provincial	Mr.	Scott	Gobeil	Staff Sargent	Ontario Provincial Police- Rainy River Detachment	320 Portage Avenue		Fort Frances	ON	P9A 3P9
Provincial	Mr.	Ron	Van Straalen	Superintendent-Northwest Region Headquarters	Ontario Provincial Police, Northwest Region Headquarters	615 James Street South	2nd Floor	Thunder Bay	ON	P7E 6P6
Provincial	Ms.	Sarah	Campbell	MPP-Kenora-Rainy River	Sent by MTO	140 Fourth Street West	Suite 3	Fort Frances	ON	P9A 3B8
Municipal	Ms.	Veldron	Vogan	Chief Administration Officer	Town of Rainy River	PO Box 488		Rainy River	ON	P0W 1L0
Municipal	Ms.	Deborah	Ewald	Mayor	Town of Rainy River	PO Box 488		Rainy River	ON	P0W 1L0
Municipal	Mr.	Dan	McCormick	Chief Administration Officer	Rainy River District Social Services Administration Board	450 Scott Street		Fort Frances	ON	P9A 1H2
Municipal	Mr.	Ed	Carlson	EMS Deputy Chief	EMS Rainy River District Social Services Administration Board	801 Scott Street		Fort Frances	ON	P9A 1J3
Federal	Mr.	Rob	Dobos	Manager, Environmental Assessment Section	Environment Canada	867 Lakeshore Road	Box 5050	Burlington	ON	L7R 4A6
Federal	Mr.	John	Woodward	Senior Environmental Officer, Ontario Region	Canadian Transportation Agency	15 Eddy Street		Gatineau	PQ	K1A 0N9
Federal				Fisheries Protection Program	Department of Fisheries and Oceans Canada	867 Lakeshore Road		Burlington	ON	L7S 1A1
Federal	Ms.	Caitlin	Cafaro	Environmental Assessment Officer	Canadian Environmental Assessment Agency	55 St. Clair Avenue East	Suite 907	Toronto	ON	M4T 1M2
Federal	EMAIL			Environmental Assessment Coordinator	Transport Canada					
Federal	Ms.	Mary	Boone	Manager, Fixed Infrastructure	Canada Border Services Agency (CBSA)	5755 River Road		Niagara Falls	ON	L2G 3K9
Federal	Ms.	Tuula	Schuler	Director, Operations Branch	Canada Border Services Agency (CBSA)	1 Bridge Street		Point Edward	ON	N7V 4J5
Federal	Ms.	Debbie	Dundas	Project Officer- Infrastructure and Environmental	Canada Border Services Agency (CBSA)	5755 River Road		Niagara Falls	ON	L2G 3K9
Federal	Ms.	Kim	Beaudry	Chief of Operations	Canada Border Services Agency (CBSA)	301 Scott Street 2nd Floor		Fort Frances	ON	P9A 1H1
Federal	Ms.	Carol	Duthie	Interim Manager, Fixed Infrastructure	Canada Border Services Agency (CBSA)	2265 St. Laurent Blvd, 2nd Floor		Ottawa	ON	K1G 4K3
Federal	Mr.	Christopher	Lazette	Manager, Infrastructure Northern Ontario	Canada Border Services Agency (CBSA)	2265 St. Laurent Blvd, 2nd Floor		Ottawa	ON	K1G 4K3

Baudette/Rainy River International Bridge Replacement (GWP 6046-10-00) Agency Mailing List

Category	Title	First Name	Last Name	Position	Organization	Address	Address 2	City	Province	Postal Code
Federal	Mr.	Paul	Loo		Canada Border Services Agency (CBSA)	2265 St. Laurent Blvd, 2nd Floor		Ottawa	ON	K1G 4K3
Federal	Mr.	Sylvain	Cyr	Director General, Infrastructure and Environmental Operations	Canada Border Services Agency (CBSA)	2265 St. Laurent Blvd, 2nd Floor		Ottawa	ON	K1G 4K3
Federal	Ms.	Angela	MacNeil	Facilities Officer for Rainy River (Senior Program Officer)	CBSA - SNC Lavelan (property caretakers)	100 Metcalfe Street, 17th Floor		Ottawa	ON	K1A 0L8
Federal		Rejean	Cantlon	Communications Advisor	Citizenship and Immigration Canada (CIC)	25 St. Clair Avenue East	Suite 700	Toronto	ON	M4T 1M2
Federal		Jean	Turner	Communications Specialist	Royal Canadian Mounted Police (RCMP)	130 Dufferin Avenue, 5th Floor PO Box 3240, Station B		London	ON	N6A 4K3
Federal				Enquiries Service (BCI)	Foreign Affairs and International Trade Canada	125 Sussex Drive		Ottawa	ON	K1A 0G2
Federal	Ms.	Nina	Hamad	Manager, Corporate and Internal Communications Unit	Canadian Food Inspection Agency	1400 Merivale Road Tower, Floor 2, Room 141		Ottawa	ON	K1A 0Y9
Federal	Ms.	Charlene	Bevan	Regional Director	Canada Food Inspection Agency (CFIA)	174 Stone Rd. W.		Guelph	ON	N1G 4S9
Federal	Ms.	Kelly	Senkiw	Environmental Assessment Coordinator	Health Canada	269 Laurier Avenue West, A/L 4904A		Ottawa	ON	K1A 0K9
Federal	Mr.	Kyle	Hipsley	Acting Commissioner International Boundary Commission US and Canada	International Boundary Commission (IBC) - US	2000L Street NW	Suite 615	Washington	DC	20036
Federal	Mr.	Joe	Harrietha	Senior Surveyor	International Boundary Commission - (IBC) Canada	588 Booth Street	Rm 210	Ottawa	ON	K1A 0Y7
Utility	Ms.	Jackie	Macewicz	Manager of Public Projects	Canadian National Railway (CN)	1625 Depot Street		Stevens Point	WI	54481 USA
Utility	Mr.	Stefan	Linder	Manager of Public Works	Canadian National Railway	4 Welding Way	PO Box 1000	Concord	ON	L4K 1B0

Stantec Consulting Ltd.
200 - 835 Paramount Drive, Stoney Creek, ON L8J 0B4

June 5, 2015
File: 193802870

«Address»
«Address_2»
«City» «Prov» «PostCode»

Attention: «First_Name» «Last_Name» **LETTER TO PROPERTY OWNERS/STAKEHOLDERS**

Dear «Title» «Last_Name»:

Reference: NOTICE OF PUBLIC INFORMATION CENTRE 1
Preliminary Design and Class Environmental Assessment
Baudette/Rainy River International Bridge Replacement on Highway 11
Town of Rainy River (GWP 6046-10-00)

The Ontario Ministry of Transportation (MTO), in cooperation with the Minnesota Department of Transportation, has retained Stantec Consulting Ltd. to undertake the Preliminary Design and Class Environmental Assessment (Class EA) Study for the replacement of the Baudette/Rainy River International Bridge on Highway 11 in the Town of Rainy River. The bridge provides access between the United States and Canada with 24-hour, full-service Port of Entry facilities.

The purpose of this letter is to advise you of the first Public Information Centre (PIC) planned for the study. The enclosed Notice provides additional details for your reference.

You are invited to attend a Public Information Centre (PIC) on **Wednesday, June 24, 2015,** from 4:00 PM to 7:00 PM at the Rainy River Recreation Centre, 219 Government Road, Rainy River. The PIC will provide you with an opportunity to review the existing conditions and proposed evaluation criteria, provide comments, and address questions or concerns directly with representatives of the project team.

If you have any questions regarding the study, please contact the undersigned or one of the Project Managers named in the enclosed material.

Sincerely,

STANTEC CONSULTING LTD.

Nevena Gazibara, B.Sc., MREM
Environmental Planner
Phone: (416) 598-7663
Fax: (416) 596-6680
nevena.gazibara@stantec.com

Attachment: Notice of Public Information Centre 1

c. R. DeCal – MTO Northwestern Region
D. Grove, G. Cooke – Stantec Consulting Ltd.
J. McKinnon – Minnesota Department of Transportation

Public Meeting 2

Stantec

Memo

To:	K. Saunders, S. Wall MTO Northwestern Region	From:	Nevena Gazibara Stantec-Toronto Office
File:	193802870	Date:	October 19, 2015

Reference: **Baudette/Rainy River International Bridge on Highway 11, Town of Rainy River (GWP 6046-10-00)**
Notice of Public Meeting 2 Timing Strategy

Please find below the final Notice of Public Meeting 2 timing strategy for the above-mentioned project.

KEY STAGE	DATE
MTO Final Advertisement Approval and Internal Notification	**Thursday, August 13, 2015**
Notice to MPP (sent by MTO)	Friday, September 25, 2015
External Agency Mailing (Letter, Flyer and Comment Sheet)	Thursday, October 1, 2015
Businesses, Property Owners and Stakeholder Mailing (Flyer)	Thursday, October 1, 2015
Mailing to First Nation and Aboriginal groups (on MTO Letterhead)	Thursday, October 1, 2015
Canada Post Unaddressed Ad Mailing	Starting October 7, 2015
Ontario Government Notice in: *Rainy River Record* (Published on Tuesdays)	Tuesday, October 20, 2015
Ontario Government Notice in: *Fort Frances Times* (Published on Wednesday)	Wednesday, October 21, 2015
External Agency Meeting 2 (Rainy River Recreation Centre, Rainy River)	Wednesday, October 28, 2015
Public Meeting 2 (Rainy River Recreation Centre, Rainy River)	Wednesday, October 28, 2015
Public Meeting Comments requested by:	Friday, November 27, 2015

Reference: **Baudette/Rainy River International Bridge on Highway 11, Town of Rainy River (GWP 6046-10-00)**
Notice of Public Meeting 2 Timing Strategy

A Canada Post Unaddressed Ad Mailing was included as part of the Public Meeting 2 notification to include many residents and businesses within the Town of Rainy River. Approximately 451 residents and businesses within the Town of Rainy River will receive the Public Meeting 2 flyer. Flyers will be distributed to addresses in the P0W Forward Sortation Area.

Sincerely,

STANTEC CONSULTING LTD.

Nevena Gazibara, B.Sc., MREM
Environmental Planner
Phone: 416-598-7663
Fax: 416-596-6680
nevena.gazibara@stantec.com

c. D. Grove, G. Cooke – Stantec Consulting Ltd.
J. McKinnon – Minnesota Department of Transportation

Ontario

BAUDETTE/RAINY RIVER INTERNATIONAL BRIDGE REPLACEMENT

Highway 11, Town of Rainy River

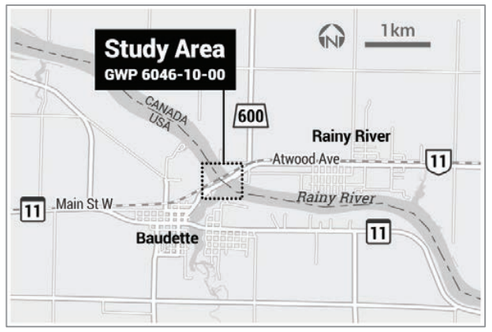
Notice of Public Meeting 2

THE STUDY

The Ontario Ministry of Transportation (MTO), in cooperation with the Minnesota Department of Transportation, has retained Stantec Consulting Ltd. to undertake the Preliminary Design and Class Environmental Assessment (Class EA) Study for the replacement of the Baudette/Rainy River International Bridge on Highway 11 in the Town of Rainy River. This notice is to announce the second Public Meeting.

The purpose of the Public Meeting is to:

- Display and seek input on the evaluation criteria and the evaluation process;
- Present and seek input on the preliminary alignment and structural bridge replacement alternatives; and
- Answer questions about the study.



The Public Meeting is scheduled as follows:

Date:	**Wednesday, October 28, 2015**
Location:	**Rainy River Recreation Centre**
	219 Government Road
	Rainy River ON
Time:	**4:00 p.m. to 7:00 p.m.**

The Public Meeting will be held as a drop-in style, open house format. Representatives of the project team will be available to discuss the study, answer questions, and receive input on the study. We encourage you to attend this meeting to provide us with your comments.

THE PROCESS

This study is a Group 'B' project under the *Class Environmental Assessment (EA) for Provincial Transportation Facilities* (2000), and three Public Meetings will be held. The third Public Meeting is planned for the spring of 2016 and will provide the public with an opportunity to review and comment on the Preferred Plan.

A *Transportation Environmental Study Report* (TESR) will be prepared and made available for a 30-day public review period at the end of the study. Notices regarding the availability of the TESR and the times and location of the Public Meetings will be published in local newspapers and sent to persons on the mailing list.

COMMENTS

If you wish to comment on this project, have your name added to the project mailing list, or have any questions about this project, please contact one of the individuals identified below.

Gregg Cooke, P.Eng.
Consultant Project Manager (Canada)
Stantec Consulting Ltd.
200-835 Paramount Drive
Stoney Creek ON L8J 0B4
Tel: 905-381-3227
Call Collect: 905-385-3234
Fax: 905-385-3534
Email: gregg.cooke@stantec.com

Kevin Saunders
MTO Project Manager
Ministry of Transportation
Northwestern Region
615 James Street South
Thunder Bay ON P7E 6P6
Tel: 807-473-2109
Toll free: 1-800-465-5034
Fax: 807-473-2168
Email: kevin.saunders@ontario.ca

You are encouraged to visit the project website, **www.dot.state.mn.us/d2/projects/baudette-bridge**, to obtain current project information. If you have any accessibility requirements in order to participate in the project, please contact one of the project team members listed above.

Comments and information are being collected to assist MTO in meeting the requirements of the *Ontario Environmental Assessment Act*. Information will be collected in accordance with the *Freedom of Information and Protection of Privacy Act*. All comments will be maintained on file for use during the study and, with the exception of personal information, may be included in study documentation and become part of the public record.

Gazibara, Nevena

From: Wall, Steven (MTO) <Steven.Wall@ontario.ca>
Sent: Friday, September 25, 2015 10:56 AM
To: Cooper, Doug (MTO); Coulter, Ken (MNDM); Galloway, Iain (MTO); Piscopo, Annemarie (MTO); Kaszuba, Linda (MTO); Caldwell, Bruce (MTO); Mossop, Ken (MTO); 'scmpp@ndp.on.ca'; Taylor, John (MOECC)
Cc: Saunders, Kevin (MTO); Cooke, Gregg; Gazibara, Nevena
Subject: Notice of Public Information Centre (PIC) 2: Baudette/Rainy River International Bridge Crossing
Attachments: adv_02870_PIC2_fnl.pdf

Attached is a copy of a public advertisement to be placed in the ***Rainy River Record*** on ***Tuesday, October 20, 2015*** and the ***Fort Frances Times*** on ***Wednesday, October 21, 2015.***

This is a routine notice advising of the Notice of Public Information Centre (PIC), and is a requirement of the ministry's environmental assessment process. This is the second of three Public Information Centres to be held for this project. The ad has been submitted by our consultant, Stantec Consulting Limited.

Project specific comments and concerns may be directed to Gregg Cooke, Project Manager, Stantec or Kevin Saunders, Project Manager, MTO as indicated in the advertisement.

Steve Wall
Environmental Planner
Ministry of Transportation - Northwest Region
615 James Street South
Thunder Bay, Ontario P7E 6P6
Phone:(807) 473-2126

MINISTRY OF TRANSPORTATION

Provincial Highways Management
Planning & Design Section
Northwestern Region
615 James Street South
Thunder Bay, Ontario P7E 6P6
Tel.: (807) 473-2002
Fax.: (807) 473-2168

October 1, 2015
File: 193802870

LETTER TO FIRST NATIONS

Dear Chief / Sir / Madam:

Reference: NOTICE OF PUBLIC MEETING 2
Preliminary Design and Class Environmental Assessment
Baudette/Rainy River International Bridge on Highway 11, Town of Rainy River
(GWP 6046-10-00)

The Ontario Ministry of Transportation (MTO), in cooperation with the Minnesota Department of Transportation, has retained Stantec Consulting Ltd. to undertake the Preliminary Design and Class Environmental Assessment (Class EA) Study for the replacement of the Baudette/Rainy River International Bridge on Highway 11 in the Town of Rainy River.

A letter was sent to you on June 5, 2015 to invite you to the first Public Meeting for this study.

The purpose of this letter is to advise you of the second Public Meeting planned for the study. The enclosed Notice provides additional details for your reference.

External agencies and municipal staff are invited to attend an External Agency Drop-In Meeting on Wednesday, October 28, 2015, from 3:00 PM to 4:00 PM, at the Rainy River Recreation Centre, 219 Government Road, Rainy River. The External Agency Meeting is being held in advance of a general public session planned between 4:00 PM and 7:00 PM at the same location. The Public Meeting will provide you with an opportunity to review the evaluation criteria and preliminary alignment and structure alternatives, and provide comments, and address questions or concerns directly with representatives of the project team. You are welcome to drop in anytime to review the display materials, provide comments, and address questions or concerns directly with the project team.

The project team will keep you up-to-date on the status of the study as the project progresses. We invite and encourage your input.

Should you have any questions, please contact me at (807) 473-2109 or 1-800-465-5034, or by email at kevin.saunders@ontario.ca. If you would prefer a meeting with ministry staff, that could also be arranged. Please contact me at your earliest convenience if you are interested in such a meeting.

Yours Truly,

Kevin Saunders
MTO Project Manager, Northwestern Region
Tel: (807) 473-2109
Fax: (807) 473-2168
kevin.saunders@ontario.ca

c. D. Grove, G. Cooke, N. Gazibara – Stantec Consulting Ltd.
J. McKinnon – Minnesota Department of Transportation

Baudette/Rainy River International Bridge Replacement (GWP 6046-10-00) First Nation and Aboriginal Communities and Agencies Mailing List

Title	First Name	Last Name	Position	Organization	Address	Address 2	City	Province	Postal Code
Chief	Carl	Tuesday	Chief	Big Grassy River First Nation	PO Box 414		Morson	ON	P0W 1J0
Chief	Jim	Leonard II	Chief	Rainy River First Nation	PO Box 450		Emo	ON	P0W 1E0
Chief	Katherine	Kishiqueb	Chief	Ojibways of Onigaming First Nation	PO BOX 160		Nestor Falls	ON	P0X 1K0
Chief	Wayne	Smith	Chief	Naicatchewenin First Nation	PO BOX 15	RR 1	Devlin	ON	P0W 1C0
Chief	Sara	Mainville	Chief	Couchiching First Nation	RR 2; RMB 2027		Fort Frances	ON	P9A 3M3
Chief	Janice	Henderson	Chief	Mitaanjigamiing First Nation	PO BOX 609		Fort Frances	ON	P9A 3M9
Chief	Patricia	Big George	Chief	Anishnaabeg of Naongashiing	PO BOX 335		Morson	ON	P0W 1J0
Chief	Darlene	Ross Sandy	Chief	Northwest Angle No.33	BOX 1490		Kenora	ON	P9N 3X7
Chief	Aileen	Oshie-White	Chief	Northwest Angle No.37	PO Box 267		Sioux Narrow	ON	P0X 1N0
Chief	Chris	Skead	Chief	Anishinabe of Wauzhushk Onigum	PO Box 1850		Kenora	ON	P9N 3X8
Chief	William	Windigo	Chief	Nigigoonsiminikaaning First Nation	PO Box 68		Fort Frances	ON	P9A 3M5
			Tribal Council	Pwi-Di-Goo-Zing Ne-Yaa-Zhing Advisory Services	PO Box 522; 1455 Idylwild Drive		Fort Frances	ON	P9A 3M8
Grand Chief	Warren	White	Grand Chief	Grand Council Treaty #3	PO Box 1720		Kenora	ON	P9N 3X7
President	Clint	Calder	President	MNO Sunset Country Métis Council	418 Third Street East		Fort Frances	ON	P9A 3M3
Mr.	Hank	Rowlinson	Métis Community Relations Manager	Métis Consultation Unit Métis Nation of Ontario	500 Old St. Patrick Street.; Unit D		Ottawa	ON	K1N 9G4

Stantec Consulting Ltd.
200 - 835 Paramount Drive, Stoney Creek, ON L8J 0B4

October 1, 2015
File: 193802870

«Organization_Name»
«Region»
«Address»
«Address_2»
«City» «Prov» «PostCode»

Attention: «First_Name» «Last_Name», «Position» **LETTER TO EXTERNAL AGENCIES**

Dear «Title» «Last_Name»:

Reference: NOTICE OF PUBLIC MEETING 2
Preliminary Design and Class Environmental Assessment
Baudette/Rainy River International Bridge Replacement on Highway 11
Town of Rainy River (GWP 6046-10-00)

The Ontario Ministry of Transportation (MTO), in cooperation with the Minnesota Department of Transportation, has retained Stantec Consulting Ltd. to undertake the Preliminary Design and Class Environmental Assessment (Class EA) Study for the replacement of the Baudette/Rainy River International Bridge on Highway 11 in the Town of Rainy River. The bridge provides access between the United States and Canada with 24-hour, full-service Port of Entry facilities.

The purpose of this letter is to advise you of the second Public Meeting planned for the study. The enclosed Notice provides additional details for your reference.

External agencies and municipal staff are invited to attend an External Agency Drop-In Meeting on **Wednesday, October 28, 2015,** from 3:00 PM to 4:00 PM, at the Rainy River Recreation Centre, 219 Government Road, Rainy River. The External Agency Meeting is being held in advance of a general public session planned between 4:00 PM and 7:00 PM at the same location. The Public Meeting will provide you with an opportunity to review the preliminary evaluation criteria, preliminary alignment and structure alternatives, and provide comments, and address questions or concerns directly with representatives of the project team.

If you are unable to attend the External Agency Meeting and would like further information regarding the study, please contact either the undersigned or one of the project team members named in the enclosed information.

Sincerely,

STANTEC CONSULTING LTD.

Nevena Gazibara, B.Sc., MREM
Environmental Planner
Phone: (416) 598-7663
Fax: (416) 596-6680
nevena.gazibara@stantec.com

Attachment: Notice of Public Meeting 2

c. K. Saunders – MTO Northwestern Region
D. Grove, G. Cooke – Stantec Consulting Ltd.
J. McKinnon – Minnesota Department of Transportation

Baudette/Rainy River International Bridge Replacement (GWP 6046-10-00) External Agencies Mailing List

Category	Title	First Name	Last Name	Position	Organization	Address	Address 2	City	Province	Postal Code
Federal	Mr.	Rob	Dobos	Manager, Environmental Assessment Section	Environment Canada	867 Lakeshore Road	Box 5050	Burlington	ON	L7R 4A6
Federal	Mr.	Rob	Read	Environmental Assessment Officer	Environment Canada	867 Lakeshore Road	Box 5050	Burlington	ON	L7R 4A6
Federal	Mr.	John	Woodward	Senior Environmental Officer, Ontario Region	Canadian Transportation Agency	15 Eddy Street		Gatineau	QC	K1A 0N9
Federal				Fisheries Protection Program	Department of Fisheries and Oceans Canada	867 Lakeshore Road		Burlington	ON	L7S 1A1
Federal	Ms.	Caitlin	Cafaro	Environmental Assessment Officer	Canadian Environmental Assessment Agency	55 St. Clair Avenue East	Suite 907	Toronto	ON	M4T 1M2
Federal	Mr.	David	Zeit	Senior Environmental Officer	Transport Canada	4900 Yonge Street		North York	ON	M2N 6A5
Federal	Ms	Sarah	O'Keefe	Senior Advisor - Environmental Assess	Transport Canada	330 Sparks Street		Ottawa	ON	K1A 0N5
Federal	Ms.	Sarah	Bunting	Environmental Officer	Transport Canada	4900 Yonge Street		North York	ON	M2N 6A5
Federal	Ms.	Tania	Havelka	Navigable Waters Protection Officer	Transport Canada	100 Front Street South		Sarnia	ON	N7T 2M4
Federal	Mr.	Sébastien	Richard	Policy Advisor	Transport Canada	330 Sparks Street		Ottawa	ON	K1A 0N5
Federal	Mr.	Sylvain	Cyr	Director General, Infrastructure and Environmental Operations	Canada Border Services Agency (CBSA)	2265 St. Laurent Boulevard	2nd Floor	Ottawa	ON	K1G 4K3
Federal	Mr.	Christopher	Lazette	Manager, Infrastructure Northern Ontario	Canada Border Services Agency (CBSA)	2265 St. Laurent Boulevard	2nd Floor	Ottawa	ON	K1G 4K3
Federal	Mr.	Paul	Loo	Director	Canada Border Services Agency (CBSA)	79 Bentley Avenue	2nd Floor	Ottawa	ON	K1A 0L8
Federal	Ms.	Tuula	Schuler	Director, Northwestern Ontario District	Canada Border Services Agency (CBSA)	1 Bridge Street		Point Edward	ON	N7V 4J5
Federal	Ms.	Debbie	Dundas	Project Officer- Infrastructure and Environmental	Canada Border Services Agency (CBSA)	5755 River Road		Niagara Falls	ON	L2G 3K9
Federal	Ms.	Kim	Beaudry	Chief of Operations	Canada Border Services Agency (CBSA)	301 Scott Street 2nd Floor		Fort Frances	ON	P9A 1H1
Federal	Ms.	Angela	MacNeil	Facilities Officer for Rainy River (Senior Program Officer)	CBSA - SNC Lavelan (property caretakers)	100 Metcalfe Street, 17th Floor		Ottawa	ON	K1A 0L8
Federal		Rejean	Cantlon	Communications Advisor	Citizenship and Immigration Canada (CIC)	25 St. Clair Avenue East	Suite 700	Toronto	ON	M4T 1M2
Federal	Mr.	Normand	Roy	Staff Seargant	Royal Canadian Mounted Police (RCMP)	221 Archibald Street North		Thunder Bay	ON	P7C 3Y3
Federal	Ms.	Daniella	Fisher	Public Affairs Officer	Department of Foreign Affairs, Trade and Development Canada	Consulate General of Canada in Minneapolis; 701 4th Avenue South	Suite 900	Minneapolis	MN	55415-1899
Federal	Mr.	Mathieu	Delorme	Senior Policy Officer	Department of Foreign Affairs, Trade and Development Canada	125 Sussex Drive		Ottawa	ON	K1A 0G2
Federal	Ms.	Nina	Hamad	Manager Corporate and Internal Communications Unit	Canadian Food Inspection Agency	1400 Mervale Road Tower, Floor 2, Room 141		Ottawa	ON	K1A 0Y9
Federal	Ms.	Charlene	Bevan	Regional Director	Canada Food Inspection Agency (CFIA)	174 Stone Rd. W.		Guelph	ON	N1G 4S9
Federal	Ms.	Kelly	Senkiw	Environmental Assessment Coordinator	Health Canada	269 Laurier Avenue West, A/L 4904A		Ottawa	ON	K1A 0K9
Federal	Mr.	Kyle	Hipsley	Acting Commissioner International Boundary Commission US and Canada	International Boundary Commission (IBC) - US	2000L Street NW	Suite 615	Washington	DC	20036 USA
Federal	Mr.	Joe	Harrietha	Senior Surveyor	International Boundary Commission (IBC) Canada	588 Booth Street	Room 210	Ottawa	ON	K1A 0Y7
Federal	Mr.	Daniel	Fortin	Senior Surveyor	International Boundary Commission (IBC) Canada	588 Booth Street	Room 210	Ottawa	ON	K1A 0Y7
Federal	Ms.	Trish	Morris	Director	International Joint Commission	100 Ouellette Avenue, 8th Fl		Windsor	ON	N9A 6T3
Utility	Ms.	Jackie	Macewicz	Manager of Public Projects	Canadian National Railway (CN)	1625 Depot Street		Stevens Point	WI	54481
Utility	Mr.	Stefan	Linder	Manager of Public Works	Canadian National Railway	4 Welding Way	PO Box 1000	Concord	ON	L4K 1B0
Provincial	Mr.	Ray	Boivin	Senior Environmental Officer-Kenora Area Office	Ministry of the Environment and Climate Change	808 Robertson Street		Kenora	ON	P9N 1X9
Provincial	Ms.	Ellen	Cramm	Environmental Planner/EA Coordinator	Ministry of the Environment and Climate Change	435 James Street South	Suite 331	Thunder Bay	ON	P7E 6S7
Provincial	Ms.	Bonnie	McNulty	Regional Advisor-Thunder Bay Office	Ministry of Tourism, Culture and Sport	435 James Street South	Suite 334	Thunder Bay	ON	P7E 6S7

Category	Title	First Name	Last Name	Position	Organization	Address	Address 2	City	Province	Postal Code
Provincial	Ms.	Paige	Campbell	Archaeology Review Officer, Archaeology Program Unit	Ministry of Tourism, Culture and Sport	435 James Street South	Suite 334	Thunder Bay	ON	P7E 6S7
Provincial	Mr.	Frank	Bastone	Northern Development Advisor-Tourism, Kenora and Area	Ministry of Northern Development and Mines	810 Robertson Street	Suite 104	Kenora	ON	P9N 4J2
Provincial	Ms.	Kim	Austen	Northern Development Officer, Kenora and Area	Ministry of Northern Development and Mines	810 Robertson Street	Suite 104	Kenora	ON	P9N 4J2
Provincial	Ms.	Jane	Gillon	Northern Development Officer, Kenora and Area	Ministry of Northern Development and Mines	922 Scott Street		Fort Frances	ON	P9A 1J4
Provincial	Mr.	Ken	Mantey	Traffic Staff Sergeant	Ontario Provincial Police, Northwest Region Headquarters	615 James Street South	2nd Floor	Thunder Bay	ON	P7E 6P6
Provincial	Mr.	Dereck	McLean	Administrative Sergeant	Ontario Provincial Police- Rainy River Detachment	320 Portage Avenue		Fort Frances	ON	P9A 3P9
Provincial	Mr.	Ron	Van Straalen	Superintendent-Northwest Region Headquarters	Ontario Provincial Police, Northwest Region Headquarters	615 James Street South	2nd Floor	Thunder Bay	ON	P7E 6P6
Municipal	Mr.	Veldron	Vogan	Chief Administration Officer	Town of Rainy River	PO Box 488		Rainy River	ON	P0W 1L0
Municipal	Ms.	Deborah	Ewald	Mayor	Town of Rainy River	PO Box 488		Rainy River	ON	P0W 1L0
Municipal	Mr.	Dan	McCormick	Chief Administration Officer	Rainy River District Social Services Administration Board	450 Scott Street		Fort Frances	ON	P9A 1H2
Municipal	Mr.	Ed	Carlson	EMS Deputy Chief	EMS Rainy River District Social Servic	801 Scott Street		Fort Frances	ON	P9A 1J3
Municipal					Rainy River Health Centre	115 Fourth Street		Rainy River	ON	P0W 1L0
Municipal	Ms.	Linda	Armstrong	Mayor	Dawson Township	PO Box 427		Rainy River	ON	P0W 1L0
Municipal	Mr.	Patrick	Giles	Clerk	Dawson Township	PO Box 427		Rainy River	ON	P0W 1L0

Stantec Consulting Ltd.
200 - 835 Paramount Drive, Stoney Creek, ON L8J 0B4

October 1, 2015
File: 193802870

«Address»
«Address_2»
«City» «Prov» «PostCode»

Attention: «First_Name» «Last_Name» **PROPERTY OWNER LETTER/STAKEHOLDERS**

Dear «Title» «Last_Name»:

Reference: NOTICE OF PUBLIC MEETING 2
Preliminary Design and Class Environmental Assessment
Baudette/Rainy River International Bridge Replacement on Highway 11
Town of Rainy River (GWP 6046-10-00)

The Ontario Ministry of Transportation (MTO), in cooperation with the Minnesota Department of Transportation, has retained Stantec Consulting Ltd. to undertake the Preliminary Design and Class Environmental Assessment (Class EA) Study for the replacement of the Baudette/Rainy River International Bridge on Highway 11 in the Town of Rainy River. The bridge provides access between the United States and Canada with 24-hour, full-service Port of Entry facilities.

The purpose of this letter is to advise you of the second Public Meeting planned for the study. The enclosed Notice provides additional details for your reference.

You are invited to attend a Public Meeting on **Wednesday, October 28, 2015,** from 4:00 PM to 7:00 PM at the Rainy River Recreation Centre, 219 Government Road, Rainy River. The Public Meeting will provide you with an opportunity to review the preliminary evaluation criteria, preliminary alignment and structure alternatives, provide comments, and address questions or concerns directly with representatives of the project team.

If you have any questions regarding the study, please contact the undersigned or one of the Project Managers named in the enclosed material.

Sincerely,

STANTEC CONSULTING LTD.

Nevena Gazibara, B.Sc., MREM
Environmental Planner
Phone: (416) 598-7663
Fax: (416) 596-6680
nevena.gazibara@stantec.com

Attachment: Notice of Public Meeting 2

c. K. Saunders– MTO Northwestern Region
D. Grove, G. Cooke – Stantec Consulting Ltd.
J. McKinnon – Minnesota Department of Transportation

Public Meeting 3

Stantec

Memo

To:	K. Saunders, S. Wall MTO Northwestern Region	From:	Nevena Gazibara Stantec-Toronto Office
File:	193802870	Date:	April 27, 2016

Reference: **Baudette/Rainy River International Bridge on Highway 11, Town of Rainy River (GWP 6046-10-00)**
Notice of Public Meeting 3 Timing Strategy

Please find below the draft Notice of Public Meeting 3 timing strategy for the above-mentioned project.

KEY STAGE	DATE
MTO Final Advertisement Approval and Internal Notification	**Friday, April 8, 2016**
Notice to MPP (sent by MTO)	Thursday, April 28, 2016
External Agency Mailing (Letter, Flyer and Comment Sheet)	Wednesday, May 4, 2016
Businesses, Property Owners and Stakeholder Mailing (Flyer)	Wednesday, May 4, 2016
Mailing to First Nation and Aboriginal groups (on MTO Letterhead)	Wednesday, May 4, 2016
Canada Post Unaddressed Ad Mailing	Starting May 11, 2016
Ontario Government Notice in: *Rainy River Record* (Published on Tuesdays)	Tuesday, May 17, 2016
Ontario Government Notice in: *Fort Frances Times* (Published on Wednesday)	Wednesday, May 18, 2016
External Agency Meeting 3 (Rainy River Recreation Centre, Rainy River)	Wednesday, May 25, 2016 3:00pm-4:00pm
Public Meeting 3 (Rainy River Recreation Centre, Rainy River)	Wednesday, May 25, 2016 4:00pm-7:00pm

Reference: **Baudette/Rainy River International Bridge on Highway 11, Town of Rainy River (GWP 6046-10-00)**
Notice of Public Meeting 3 Timing Strategy

Public Meeting Comments requested by:	Friday, June 24, 2016

A Canada Post Unaddressed Ad Mailing will be included as part of the Public Meeting 3 notification to include all residents and businesses within the Town of Rainy River. Approximately 451 residents and businesses within the Town of Rainy River will receive the notice. Flyers will be distributed to addresses in the P0W Forward Sortation Area.

Sincerely,

STANTEC CONSULTING LTD.

Nevena Gazibara, B.Sc., MREM
Environmental Planner
Phone: 416-598-7663
Fax: 416-596-6680
nevena.gazibara@stantec.com

c. D. Grove, G. Cooke – Stantec Consulting Ltd.
J. McKinnon – Minnesota Department of Transportation

Design with community in mind

Gazibara, Nevena

From: Wall, Steven (MTO) <Steven.Wall@ontario.ca>
Sent: Thursday, April 28, 2016 10:11 AM
To: Cooper, Doug (MTO); Coulter, Ken (MNDM); Galloway, Iain (MTO); Taylor, John P. (MTO); Piscopo, Annemarie (MTO); Kaszuba, Linda (MTO); Caldwell, Bruce (MTO); Weiss, Gary (MTO); scmpp@ndp.on.ca
Cc: Saunders, Kevin (MTO); DeCal, Patricia (MTO); Nye, Sharon (MTO); Cooke, Gregg; Gazibara, Nevena
Subject: G.W.P. 6046-10-00, Rainy River/Baudette International Bridge, Hwy 11 - Ontario Government Notice - Public Information Centre #3
Attachments: adv_02870_PIC3_fnl.pdf

Attached is a copy of a public advertisement to be placed in the following newspapers:

Rainy River Record Tuesday, May 17th, 2016

Fort Frances Times Wednesday May 18th, 2016

This is a routine notice for a Public Information Centre and is a requirement of the ministry's environmental assessment process. The ad has been prepared by our consultant Stantec Consulting Ltd.

Project specific comments and concerns may be directed to Kevin Saunders or Greg Cooke, as indicated in the advertisement.

Steve Wall
Environmental Planner
Ministry of Transportation – Northwest Region
615 James Street South
Thunder Bay, Ontario
(807) 473-2126

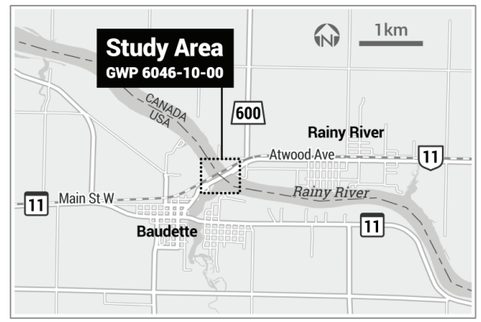
Ontario

BAUDETTE/RAINY RIVER INTERNATIONAL BRIDGE REPLACEMENT
Highway 11, Town of Rainy River
Notice of Public Meeting 3

THE STUDY
The Ontario Ministry of Transportation (MTO), in cooperation with the Minnesota Department of Transportation, has retained Stantec Consulting Ltd. to undertake the Preliminary Design and Class Environmental Assessment (Class EA) Study for the replacement of the Baudette/Rainy River International Bridge on Highway 11 in the Town of Rainy River. This notice is to announce the third Public Meeting.

The purpose of the third Public Meeting is to:

- Present and seek input on the Preferred Plan (preferred alignment and preferred bridge type);
- Present and seek input on the results of the evaluation of alternatives; and
- Answer questions about the study.



The Public Meeting is scheduled as follows:

Date: **Wednesday, May 25, 2016**
Location: **Rainy River Recreation Centre**
219 Government Road
Rainy River ON
Time: **4:00 p.m. to 7:00 p.m.**

The Public Meeting will be held as a drop-in style, open house format. Representatives of the project team will be available to discuss the study, answer questions, and receive input on the study. We encourage you to attend this meeting to provide us with your comments.

THE PROCESS
This study is a Group 'B' project under the *Class Environmental Assessment (EA) for Provincial Transportation Facilities* (2000), and three Public Meetings have been planned for this project. This will be the third and final Public Meeting.

A *Transportation Environmental Study Report* (TESR) will be prepared and made available for a 30-day public review period at the end of the study. Notices regarding the availability of the TESR will be published in local newspapers and sent to persons on the mailing list. This study is a Designated Project under the *Canadian Environmental Assessment Act* (2012). A Project Description will be prepared and submitted for public review at approximately the same time as the TESR public review period. The Project Description will be made publicly available on the Canadian Environmental Assessment Registry (**www.ceaa-acee.gc.ca**).

COMMENTS
If you wish to comment on this project, have your name added to the project mailing list, or have any questions about this project, please contact one of the individuals identified below.

Gregg Cooke, P.Eng.
Consultant Project Manager (Canada)
Stantec Consulting Ltd.
200-835 Paramount Drive
Stoney Creek ON L8J 0B4
Tel: 905-381-3227
Call Collect: 905-385-3234
Fax: 905-385-3534
Email: gregg.cooke@stantec.com

Kevin Saunders
MTO Senior Project Manager
Ministry of Transportation
Northwestern Region
615 James Street South
Thunder Bay ON P7E 6P6
Tel: 807-473-2109
Toll free: 1-800-465-5034
Fax: 807-473-2168
Email: kevin.saunders@ontario.ca

You are encouraged to visit the project website, **www.dot.state.mn.us/d2/projects/baudette-bridge**, to obtain current project information. If you have any accessibility requirements in order to participate in the project, please contact one of the Project Team members listed above.

Comments and information are being collected to assist MTO in meeting the requirements of the *Ontario Environmental Assessment Act*. Information will be collected in accordance with the *Freedom of Information and Protection of Privacy Act*. All comments will be maintained on file for use during the study and, with the exception of personal information, may be included in study documentation and become part of the public record.

MINISTRY OF TRANSPORTATION

Provincial Highways Management
Planning & Design Section
Northwestern Region
615 James Street South
Thunder Bay, Ontario P7E 6P6
Tel.: (807) 473-2002
Fax.: (807) 473-2168

May 4, 2016
File: 193802870

LETTER TO FIRST NATIONS

Dear Chief / Sir / Madam:

Reference: **NOTICE OF PUBLIC MEETING 3**
Preliminary Design and Class Environmental Assessment
Baudette/Rainy River International Bridge on Highway 11, Town of Rainy River
(GWP 6046-10-00)

The Ontario Ministry of Transportation (MTO), in cooperation with the Minnesota Department of Transportation, has retained Stantec Consulting Ltd. to undertake the Preliminary Design and Class Environmental Assessment (Class EA) Study for the replacement of the Baudette/Rainy River International Bridge on Highway 11 in the Town of Rainy River.

A letter was sent to you on October 1, 2015 to invite you to the second Public Meeting for this study. The purpose of this letter is to advise you of the third Public Meeting planned for the study. The enclosed Notice provides additional details for your reference.

We would also like to advise you that this study is a Designated Project under the *Canadian Environmental Assessment Act* (CEAA 2012). A Project Description will be prepared and submitted for public review at approximately the same time as the *Transportation Environmental Study Report* (TESR) public review period for the MTO Class EA process. If you have any questions about the CEAA process or would like to discuss the federal environmental assessment, please contact the CEAA Ontario office at 416-952-1576 or by email at CEAA.ontario.ACEE@ceaa-acee.gc.ca.

You are invited to attend an External Agency Drop-In Meeting on Wednesday, May 25, 2016, from 3:00 PM to 4:00 PM, at the Rainy River Recreation Centre, 219 Government Road, Rainy River, Ontario. The External Agency Meeting is being held in advance of a general public session planned between 4:00 PM and 7:00 PM at the same location. The Public Meeting will provide you with an opportunity to review the Preferred Plan, the results of the evaluation of alternatives, and to provide comments, questions or concerns to representatives of the project team.You are welcome to drop in anytime to review the display materials, provide comments, and address questions or concerns directly with the project team.

The project team will keep you up-to-date on the status of the study as the project progresses. We invite and encourage your input.

Should you have any questions, please contact me at (807) 473-2109 or 1-800-465-5034, or by email at kevin.saunders@ontario.ca. If you would prefer a meeting with ministry staff, that could also be arranged. Please contact me at your earliest convenience if you are interested in such a meeting.
Yours Truly,

Kevin Saunders
MTO Senior Project Manager, Northwestern Region
Tel: (807) 473-2109
Fax: (807) 473-2168
kevin.saunders@ontario.ca

c. D. Grove, G. Cooke, M. Caron, N. Gazibara – Stantec Consulting Ltd.
J. McKinnon – Minnesota Department of Transportation

Baudette/Rainy River International Bridge Replacement (GWP 6046-10-00) First Nation and Aboriginal Communities and Agencies Mailing List

Title	First Name	Last Name	Position	Organization	Address	Address 2	City	Province	Postal Code
Chief	Carl	Tuesday	Chief	Big Grassy River First Nation	PO Box 414		Morson	ON	P0W 1J0
Chief	Jim	Leonard II	Chief	Rainy River First Nation	PO Box 450		Emo	ON	P0W 1E0
Chief	Katherine	Kishiqueb	Chief	Ojibways of Onigaming First Nation	PO BOX 160		Nestor Falls	ON	P0X 1K0
Chief	Wayne	Smith	Chief	Naicatchewenin First Nation	PO BOX 15	RR 1	Devlin	ON	P0W 1C0
Chief	Sara	Mainville	Chief	Couchiching First Nation	RR 2; RMB 2027		Fort Frances	ON	P9A 3M3
Chief	Janice	Henderson	Chief	Mitaanjigamiing First Nation	PO BOX 609		Fort Frances	ON	P9A 3M9
Chief	Patricia	Big George	Chief	Anishnaabeg of Naongashiing	PO BOX 335		Morson	ON	P0W 1J0
Chief	Darlene	Ross Sandy	Chief	Northwest Angle No.33	BOX 1490		Kenora	ON	P9N 3X7
Chief	Aileen	Oshie-White	Chief	Northwest Angle No.37	PO Box 267		Sioux Narrows	ON	P0X 1N0
Chief	Chris	Skead	Chief	Anishinabe of Wauzhushk Onigum	PO Box 1850		Kenora	ON	P9N 3X8
Chief	William	Windigo	Chief	Nigigoonsiminikaaning First Nation	PO Box 68		Fort Frances	ON	P9A 3M5
			Tribal Council	Pwi-Di-Goo-Zing Ne-Yaa-Zhing Advisory Services	PO Box 522; 1455 Idyllwild Drive		Fort Frances	ON	P9A 3M8
Grand Chief	Warren	White	Grand Chief	Grand Council Treaty #3	PO Box 1720		Kenora	ON	P9N 3X7
President	Clint	Calder	President	MNO Sunset Country Métis Council	418 Third Street East		Fort Frances	ON	P9A 3M3
Mr.	Hank	Rowlinson	Métis Community Relations Manager	Métis Consultation Unit Métis Nation of Ontario	500 Old St. Patrick Street.; Unit D		Ottawa	ON	K1N 9G4
Ms.	Joanne	Meyer	Director of Intergovernmental Relations	Métis Consultation Unit Métis Nation of Ontario	75 Sherbourne Street, Suite 311		Toronto	ON	M5A 2P9

Stantec Consulting Ltd.
300-49 Bathurst Street, Toronto ON M5V 2P2

May 4, 2016
File: 193802870

Organization
Region
Address
Address 2
City Province Postal Code

Attention: First Name Last Name, Position **LETTER TO EXTERNAL AGENCIES**

Dear Title Last Name:

Reference: NOTICE OF PUBLIC MEETING 3
Preliminary Design and Class Environmental Assessment
Baudette/Rainy River International Bridge Replacement on Highway 11
Town of Rainy River (GWP 6046-10-00)

The Ontario Ministry of Transportation (MTO), in cooperation with the Minnesota Department of Transportation, has retained Stantec Consulting Ltd. to undertake the Preliminary Design and Class Environmental Assessment (Class EA) Study for the replacement of the Baudette/Rainy River International Bridge on Highway 11 in the Town of Rainy River. The bridge provides access between the United States and Canada with 24-hour, full-service Port of Entry facilities.

The purpose of this letter is to advise you of the third Public Meeting planned for the study. The enclosed Notice provides additional details for your reference.

External agencies and municipal staff are invited to attend an External Agency Drop-In Meeting on **Wednesday, May 25, 2016,** from 3:00 PM to 4:00 PM, at the Rainy River Recreation Centre, 219 Government Road, Rainy River. The External Agency Meeting is being held in advance of a general public session planned between 4:00 PM and 7:00 PM at the same location. The Public Meeting will provide you with an opportunity to review the Preferred Plan, the results of the evaluation of alternatives, and to provide comments, and address questions or concerns directly with representatives of the project team.

If you are unable to attend the External Agency Meeting and would like further information regarding the study, please contact either the undersigned or one of the project team members named in the enclosed information.

Sincerely,

STANTEC CONSULTING LTD.

Nevena Gazibara, B.Sc., MREM
Environmental Planner
Phone: (416) 598-7663
Fax: (416) 596-6680
nevena.gazibara@stantec.com

Attachment: Notice of Public Meeting 3

c. K. Saunders – MTO Northwestern Region
D. Grove, G. Cooke – Stantec Consulting Ltd.
J. McKinnon – Minnesota Department of Transportation

Baudette/Rainy River International Bridge Replacement (GWP 6046-10-00) External Agencies Mailing List

Category	Title	First Name	Last Name	Position	Organization	Address	Address 2	City	Province	Postal Code
Federal	Mr.	Rob	Dobos	Manager, Environmental Assessment Section	Environment Canada	867 Lakeshore Road	Box 5050	Burlington	ON	L7R 4A6
Federal	Mr.	Rob	Read	Environmental Assessment Officer	Environment Canada	867 Lakeshore Road	Box 5050	Burlington	ON	L7R 4A6
Federal	Mr.	John	Woodward	Senior Environmental Officer, Ontario Region	Canadian Transportation Agency	15 Eddy Street		Gatineau	QC	K1A 0N9
Federal				Fisheries Protection Program	Department of Fisheries and Oceans Canada	867 Lakeshore Road		Burlington	ON	L7S 1A1
Federal	Ms.	Caitlin	Cafaro	Environmental Assessment Officer	Canadian Environmental Assessment Agency	55 St. Clair Avenue East	Suite 907	Toronto	ON	M4T 1M2
Federal	Mr.	David	Zeit	Senior Environmental Officer	Transport Canada	4900 Yonge Street		North York	ON	M2N 6A5
Federal	Ms	Sarah	O'Keefe	Senior Advisor - Environmental Assessment	Transport Canada	330 Sparks Street		Ottawa	ON	K1A 0N5
Federal	Ms.	Sarah	Bunting	Environmental Officer	Transport Canada	4900 Yonge Street		North York	ON	M2N 6A5
Federal	Ms.	Tania	Havelka	Navigable Waters Protection Officer	Transport Canada	100 Front Street South		Sarnia	ON	N7T 2M4
Federal	Mr.	Sébastien	Richard	Policy Advisor	Transport Canada	330 Sparks Street		Ottawa	ON	K1A 0N5
Federal	Mr.	Sylvain	Cyr	Director General, Infrastructure and Environmental Operations	Canada Border Services Agency (CBSA)	2265 St. Laurent Boulevard	2nd Floor	Ottawa	ON	K1G 4K3
Federal	Mr.	Christopher	Lazette	Manager, Infrastructure Northern Ontario	Canada Border Services Agency (CBSA)	2265 St. Laurent Boulevard	2nd Floor	Ottawa	ON	K1G 4K3
Federal	Mr.	Paul	Loo	Director	Canada Border Services Agency (CBSA)	79 Bentley Avenue	2nd Floor	Ottawa	ON	K1A 0L8
Federal	Ms.	Tuula	Schuler	Director, Northwestern Ontario District	Canada Border Services Agency (CBSA)	1 Bridge Street		Point Edward	ON	N7V 4J5
Federal	Ms.	Debbie	Dundas	Project Officer- Infrastructure and Environmental	Canada Border Services Agency (CBSA)	5755 River Road		Niagara Falls	ON	L2G 3K9
Federal	Ms.	Kim	Beaudry	Chief of Operations	Canada Border Services Agency (CBSA)	301 Scott Street 2nd Floor		Fort Frances	ON	P9A 1H1
Federal	Ms.	Angela	MacNeil	Facilities Officer for Rainy River (Senior Program Officer)	CBSA - SNC Lavelan (property caretakers)	100 Metcalfe Street, 17th Floor		Ottawa	ON	K1A 0L8
Federal		Rejean	Cantlon	Communications Advisor	Citizenship and Immigration Canada (CIC)	25 St. Clair Avenue East	Suite 700	Toronto	ON	M4T 1M2
Federal	Mr.	Normand	Roy	Staff Seargant	Royal Canadian Mounted Police (RCMP)	221 Archibald Street North		Thunder Bay	ON	P7C 3Y3
Federal	Ms.	Daniella	Fisher	Public Affairs Officer	Department of Foreign Affairs, Trade and Development Canada	Consulate General of Canada in Minneapolis; 701 4th Avenue South	Suite 900	Minneapolis	MN	55415-1899
Federal	Mr.	Mathieu	Delorme	Senior Policy Officer	Department of Foreign Affairs, Trade and Development Canada	125 Sussex Drive		Ottawa	ON	K1A 0G2
Federal	Ms.	Nina	Hamad	Manager Corporate and Internal Communications Unit	Canadian Food Inspection Agency	1400 Mervale Road Tower, Floor 2, Room 141		Ottawa	ON	K1A 0Y9
Federal	Ms.	Charlene	Bevan	Regional Director	Canada Food Inspection Agency (CFIA)	174 Stone Rd. W.		Guelph	ON	N1G 4S9
Federal	Ms.	Kelly	Senkiw	Environmental Assessment Coordinator	Health Canada	269 Laurier Avenue West, A/L 4904A		Ottawa	ON	K1A 0K9
Federal	Mr.	Kyle	Hipsley	Acting Commissioner International Boundary Commission US and Canada	International Boundary Commission (IBC) - US	2000L Street NW	Suite 615	Washington	DC	20036 USA
Federal	Mr.	Joe	Harrietha	Senior Surveyor	International Boundary Commission (IBC) Canada	588 Booth Street	Room 210	Ottawa	ON	K1A 0Y7
Federal	Mr.	Daniel	Fortin	Senior Surveyor	International Boundary Commission (IBC) Canada	588 Booth Street	Room 210	Ottawa	ON	K1A 0Y7
Federal	Ms.	Trish	Morris	Director	International Joint Commission	100 Ouellette Avenue, 8th Fl		Windsor	ON	N9A 6T3
Utility	Ms.	Jackie	Macewicz	Manager of Public Projects	Canadian National Railway (CN)	1625 Depot Street		Stevens Point	WI	54481
Utility	Mr.	Stefan	Linder	Manager of Public Works	Canadian National Railway	4 Welding Way	PO Box 1000	Concord	ON	L4K 1B0
Provincial	Mr.	Ray	Boivin	Senior Environmental Officer-Kenora Area Office	Ministry of the Environment and Climate Change	808 Robertson Street		Kenora	ON	P9N 1X9
Provincial	Ms.	Ellen	Cramm	Environmental Planner/EA Coordinator	Ministry of the Environment and Climate Change	435 James Street South	Suite 331	Thunder Bay	ON	P7E 6S7
Provincial	Ms.	Bonnie	McNulty	Regional Advisor-Thunder Bay Office	Ministry of Tourism, Culture and Sport	435 James Street South	Suite 334	Thunder Bay	ON	P7E 6S7

Category	Title	First Name	Last Name	Position	Organization	Address	Address 2	City	Province	Postal Code
Provincial	Ms.	Paige	Campbell	Archaeology Review Officer, Archaeology Program Unit	Ministry of Tourism, Culture and Sport	435 James Street South	Suite 334	Thunder Bay	ON	P7E 6S7
Provincial	Mr.	Frank	Bastone	Northern Development Advisor-Tourism, Kenora and Area	Ministry of Northern Development and Mines	810 Robertson Street	Suite 104	Kenora	ON	P9N 4J2
Provincial	Ms.	Kim	Austen	Northern Development Officer, Kenora and Area	Ministry of Northern Development and Mines	810 Robertson Street	Suite 104	Kenora	ON	P9N 4J2
Provincial	Ms.	Jane	Gillon	Northern Development Officer, Kenora and Area	Ministry of Northern Development and Mines	922 Scott Street		Fort Frances	ON	P9A 1J4
Provincial	Mr.	Ken	Mantey	Traffic Staff Sergeant	Ontario Provincial Police, Northwest Region Headquarters	615 James Street South	2nd Floor	Thunder Bay	ON	P7E 6P6
Provincial	Mr.	Dereck	McLean	Administrative Sergeant	Ontario Provincial Police- Rainy River Detachment	320 Portage Avenue		Fort Frances	ON	P9A 3P9
Provincial	Mr.	Ron	Van Straalen	Superintendent-Northwest Region Headquarters	Ontario Provincial Police, Northwest Region Headquarters	615 James Street South	2nd Floor	Thunder Bay	ON	P7E 6P6
Municipal	Mr.	Veldron	Vogan	Chief Administration Officer	Town of Rainy River	PO Box 488		Rainy River	ON	P0W 1L0
Municipal	Ms.	Deborah	Ewald	Mayor	Town of Rainy River	PO Box 488		Rainy River	ON	P0W 1L0
Municipal	Mr.	Dan	McCormick	Chief Administration Officer	Rainy River District Social Services Administration Board	450 Scott Street		Fort Frances	ON	P9A 1H2
Municipal	Mr.	Ed	Carlson	EMS Deputy Chief	EMS Rainy River District Social Servic	801 Scott Street		Fort Frances	ON	P9A 1J3
Municipal					Rainy River Health Centre	115 Fourth Street		Rainy River	ON	P0W 1L0
Municipal	Ms.	Linda	Armstrong	Mayor	Dawson Township	PO Box 427		Rainy River	ON	P0W 1L0
Municipal	Mr.	Patrick	Giles	Clerk	Dawson Township	PO Box 427		Rainy River	ON	P0W 1L0

Appendix C: Correspondence

Summary of Agency and Public Correspondence

Contact Information	*Issue/Concern*	*Action taken by Project Team*
AGENCY COMMENTS		
Environment and Climate Change Canada (ECCC)	▪ Attended Global Affairs Canada (GAC) Meeting #1 (January 26, 2016) – separate meeting notes are available for the meeting ▪ Noted during GAC meeting that ECCC will review preliminary design hydraulic assessment, and that they have models they will utilize as a guideline ▪ Attended Canadian Environmental Assessment (CEA) Agency Meeting #1 (January 26, 2016) – separate meeting notes are available for the meeting ▪ At the meeting ECCC: - Discussed stormwater management and potential for U.S. stormwater to be directed toward Canada, along with differing standards of treatment on either side of the border - Noted they will discuss this internally and refer to experience on other international bridges ▪ Email (January 26, 2016) stating that the federal jurisdiction is Department of Fisheries and Oceans Canada (DFO) for aquatic species and ECCC for terrestrial species ▪ Noted that ECCC is discussing the issue of stormwater on the bridge and whether this issue has been raised/addressed in other international bridge projects ▪ Response (July 7, 2016) indicated that the Queenston-Lewiston and Peace International Bridges were constructed with stormwater/sediment management systems during construction and operations. Provided an example from the Peace Bridge project with respect to stormwater management and sediment control during construction and operation (implementing controls, monitoring, etc.). Indicated that the Queenston-Lewiston Bridge may have a collection system which can be closed to capture materials spilled on the road surface, but no specifics provided ▪ Attended CEA Agency Meeting #2 (October 20, 2016) – separate meeting notes are available for the meeting	▪ During GAC Meeting (December 18, 2015) Stantec noted a new hydraulic model is being prepared for the area as part of the study ▪ Response (February 9, 2016) asking whether or not there has been any discussion regarding the stormwater on the bridge based on experience with other international bridge projects

BAUDETTE/RAINY RIVER INTERNATIONAL BRIDGE REPLACEMENT
ON HIGHWAY 11, TOWN OF RAINY RIVER (GWP 6046-10-00)
TRANSPORTATION ENVIRONMENTAL STUDY REPORT

Summary of Agency and Public Correspondence

Contact Information	*Issue/Concern*	*Action taken by Project Team*
Fisheries Protection Program Department of Fisheries and Oceans Canada	▪ Attended CEA Agency Meeting #1 (January 26, 2016) – separate meeting notes are available for the meeting ▪ At the meeting, DFO had the following comments: - Noted that permits under their authority cannot be issued until *Canadian Environmental Assessment Act* (CEAA) process is complete - Provided detailed overview of federal process to identify aquatic impacts and submit for permits under the *Federal Fisheries Act* - Noted that impacts to fish habitat are possible due to proposed piers or infill at bridge abutments, and construction related impacts including potential for infill, causeways or coffer dams - Noted impacts to fish habitat can be offset by providing mitigation - Noted Ontario Ministry of Transportation (MTO) and DFO have approved protocol to identify risk associated with project – this process is proceeding - Noted that once DFO is notified of the project, a DFO contact can be assigned – subsequent to meeting, Megan Lay was assigned to the project	▪ Comments noted and circulated to project team
Global Affairs Canada 125 Sussex Drive Ottawa, Ontario K1A 0G2	▪ Email (October 1, 2015) indicates that information about the project must be submitted to Global Affairs Canada (GAC) and the State Department, and an assessment would need to be done if there are impacts on water levels and flows. GAC will liaise with ECCC, who will conduct the technical analysis to determine if there is an impact on water levels/flows ▪ Email (November 9, 2015) noting that the U.S. State Department should be included in the interagency consultation plan. Asked about federal and state funding and when construction is expected to begin. Asked what the third type of bidding process would be, aside from Design-build, and separate design and construction Request for Proposals (RFPs) ▪ Email (November 11, 2015) update indicating that the funding and construction dates are projected for 2018 ▪ Response (November 16, 2015) noted that GAC would	▪ Response (July 22, 2015) noting that the first international stakeholder meeting had not occurred yet and was tentatively scheduled for October 2015 ▪ Provided information about the Public Involvement Plan for the project ▪ Provided the displays presented at the first Public Meeting and a summary document ▪ Response (November 13, 2015) answering questions posed on November 9, 2015. Noted that a series of online webinar meetings to replace the international stakeholder meeting that had to be cancelled in October. Noted that the first webinar is scheduled for December. Asked how GAC would like to proceed with consultation. Provided a breakdown of funding for the project.

Summary of Agency and Public Correspondence

Contact Information	Issue/Concern	Action taken by Project Team
	internally discuss how they wish to proceed with consultation. Asked if any funding is projected to come from state dollars ▪ Response (December 2, 2015) with questions, including: is the State of Minnesota paying the entirety of the pre-letting consulting contract with Stantec, or is Ontario paying an equal amount? ▪ Attended GAC Meeting #1 (December 18, 2015) – separate meeting notes are available for the meeting ▪ At the meeting, GAC had the following comments: - Provided overview of their relationship with the IJC - Noted they are responsible for implementing *International Boundary Waters Treaty Act* for Canada - Noted that, based on discussions with ECCC, there are certain piers that are more hydraulically efficient than others - Noted the Act requires a hydraulic analysis be submitted, and that they will submit it to ECCC for review - Discussed study with US counterparts at the Canada Desk of the State Department - Advised that International Rainy-Lake of the Woods Watershed Board can provide expertise regarding drainage and stormwater management issues that have impacts across the border ▪ Response (January 7, 2016) provided contact information for the Rainy-Lake of the Woods Watershed Board ▪ Email (January 11, 2016) asking whether there is any information available on any plans to route traffic through the U.S. ▪ Response (January 11, 2016) asking to confirm that there are no plans to re-route traffic through the U.S. ▪ Attended CEA Agency Meeting #1 (January 26, 2016) – separate meeting notes are available for the meeting ▪ Email (March 2, 2016) indicating a potential issue during the construction stage, that because of anticipated U.S. federal funding, the project would be subject to U.S. content restrictions (e.g. Buy America) that would pose	Indicated and explained the new project delivery method of construction. Provided the Interagency Involvement Plan and Bridge Alignment Alternatives. ▪ Response (November 16, 2015) indicated that all bonds are State of Minnesota funds ▪ Response (December 6, 2015) providing answers to questions posed on December 2, 2015. Indicated that Ontario is paying an equal amount of the pre-letting consulting contract and will participate equally in future contracts required for project development. The Minnesota Department of Transportation (MnDOT) and MTO are planning to split construction costs equally ▪ GAC responded during GAC Meeting #1 (December 18, 2015) ▪ Stantec asked for additional detail to identify what could be considered a significant impact to hydrology ▪ Stantec noted design issues related to drainage on proposed bridge, which could lead to stormwater from U.S. side of structure being treated in Canada ▪ Notified of PIC 2 and External Agency Meeting through direct mail (October 1, 2015) ▪ Email (January 7, 2016) indicating that the project team is interested in corresponding with the Rainy – Lake of the Woods Watershed Board to discuss stormwater management, and asked for a contact for the Board ▪ Response (January 11, 2016) indicating one lane of traffic had been opened in the morning (eastbound). Jersey barriers were placed on the westbound lane to counterbalance uplift forces until the situation could be repaired. Noted there will be cross Canada traffic, and it will alternate between east and westbound traffic, with flaggers on

Summary of Agency and Public Correspondence

Contact Information	Issue/Concern	Action taken by Project Team
	market access barriers to Canadian firms (e.g. steel manufacturers). Indicated that GAC is interested in tracking this and risk-managing with the Minnesota Department of Transportation ▪ Email (May 9. 2016) asking if the project team had documentation regarding the Maine/New Brunswick example, and when Maine applied Buy America requirements. Inquired how recent this was, or if it was paid by New Brunswick ▪ Telephone conversation (May 11, 2016) noted that GAC met with the State Department and IJC to discuss the project, and that there was concern that the project would have to go through the complete IJC process. Indicated that they are planning to prepare a Special Agreement between Governments to expedite the process, noting all effects and mitigation of changes to levels and flows. The agreement framework is based on an agreement from 1969, and hydraulic assessment information will be inserted later. GAC and the State Department believe that developing the framework now will expedite the process ▪ Also advised that the Rainy River / Lake of the Woods Watershed Board is meeting August 8, and suggested the Project Team give an update ▪ Attended CEA Agency Meeting #2 (October 20, 2016) – separate meeting notes are available for the meeting	site ▪ Response (January 11, 2016) providing a response from the Minister, and indicated that traffic would no longer be directed through the U.S. corridor, and that oversized/overlimit vehicles are prohibited from the route ▪ Provided Contract Documents received from New Brunswick for GAC's review (May 11, 2016) and noted that a conference call was being planned with the New Brunswick Project Managers to discuss international coordination of that project
Canadian Environmental Assessment Agency	▪ During telephone conversation (September 9, 2015) noted that once the Preferred Plan is closer to being selected that the CEAA Project Description (PD) submission requirements can be discussed and a meeting can be arranged ▪ Noted that sample PDs would be provided ▪ Attended CEA Agency Meeting #1 (January 26, 2016) – separate meeting notes are available for the meeting ▪ At the meeting, CEA Agency had the following comments: - Questioned whether CEAA Environmental Assessment (EA) timing has been considered in overall project	▪ Response email to telephone conversation (September 10, 2015) providing update, PIC 1 displays, and information regarding the project (including website and mindmixer link) ▪ Noted that a summary package with any relevant information, notes, and handouts from the International Stakeholder Workshop would be provided ▪ During CEA Agency Meeting #1 (January 26, 2016), Stantec noted project permitting flowchart includes 365-day timeline, but there is concern that it could affect construction start and utilization of funding

Summary of Agency and Public Correspondence

Contact Information	Issue/Concern	Action taken by Project Team
	schedule. Noted legislated timelines with both the PD and an EA required by CEAA. These timelines also include public comment periods on federal PD or EA documentation. 365 day timeline for EA does not include allowance for 'timeouts' that would pause timeline - Noted draft PD should be sent for review, so comments may be provided to confirm PD will meet agency requirements and recommendations for improvements, if required - Noted Section 5 of PD (transboundary effects) should discuss effects outside of Canada, and cumulative effects would include effects that are not affected by international borders - Noted that if construction is required on federal lands, Section 67 of CEAA could be triggered – requiring Canada Border Services Agency (CBSA) to determine significance of environmental effects to federal lands - Noted that CEA Agency should be copied on all consultation with federal agencies ▪ Email (March 4, 2016) indicating that the project construction delivery method will not have an impact on whether a federal EA is required ▪ Noted that if the delivery method is not selected before the PD submission, then the PD will need to describe how each delivery method will impact elements of the project (consultation, environmental effects, etc.), and the differences between who will have care and control of physical activities and project components (proponent; 3rd party) ▪ Email (April 6, 2016) requesting update on timelines for project, as he must forecast whether there will be any PDs to review in the coming 2 fiscal quarters ▪ Response (April 14, 2016) acknowledges that he received the timeline and that he has no further input at this time ▪ Response (April 26, 2016) indicating that he does not have access to the CEAA Screening Report that was requested, and that the Responsible Authorities (TC and DFO in this	▪ MnDOT discussed that project schedule partly driven by a desire to utilize US Federal Funding available to MnDOT for this bridge – notes construction must start by June 2018 ▪ Provided overview of aboriginal / First Nation consultation to date, and that list of groups contacted will be provided to CEA Agency for review, with summary of consultation to date ▪ Future correspondence with FN groups will identify the CEAA trigger for the project, and advise that CEA Agency will contact them in the near future ▪ PD will include a plan of action for consultation with First Nations/aboriginal groups ▪ Currently showing that construction only lies on MTO property, so Section 67 of CEAA should not be an issue ▪ Notified of Second International Stakeholder Webinar through email (February 19, 2016) ▪ Phone call (February 24, 2016) and subsequent email correspondence asking whether the construction delivery method will have any effect on whether a federal EA is initiated. Also described the types of delivery methods being considered, including: design-bid-build, construction manager/general contractor, and design-build ▪ Circulated response from CEA Agency to Project Team via email (March 15, 2016) ▪ Response (April 6, 2016) provides suggested schedule and notes project schedule is based on timing of planned provincial Transportation Environmental Study Report (TESR) and US public review periods, and that it would be preferred for the PD Public Review to occur in September, 2016 ▪ Email (April 26, 2016) requesting an electronic copy of the CEAA Screening Report for the

Summary of Agency and Public Correspondence

Contact Information	Issue/Concern	Action taken by Project Team
	case) would need to be contacted to fulfill the request ▪ Telephone conversation (May 12, 2016) to advise that greenhouse gas (GHG) emissions must be considered in the PD, and a formal letter will be delivered to the project team regarding the requirements. Advised that this only applies to construction/maintenance under the "care and control" of the proponents, thus traffic on the bridge need not be considered ▪ Telephone conversation (mid-June, 2016) advising that the scope of the GHG assessment should be expanded beyond construction to include emissions from traffic (operations). Based on a direction received from ECCC after a PD for a new international bridge out west (George Matthew Tunnel Replacement) was submitted ▪ Email (May 20, 2016) with attached letter requesting to include GHG emissions data in the PD to be submitted to the CEA Agency ▪ Response (August 2, 2016) indicating that CEA Agency staff will discuss with their U.S. counterpart to discuss the question regarding the U.S. EA Process. Asked if there is a contact that MTO or MnDOT has engaged with regarding the U.S. EA process ▪ Attended CEA Agency Meeting #2 (October 20, 2016) – separate meeting notes are available for the meeting ▪ At the meeting, CEA Agency provided a presentation on the CEAA federal environmental assessment requirements including the Project Description submission process and timelines ▪ At the meeting, CEA Agency had the following comments: ▪ CEAA encourages submitting a draft Project Description for their internal review prior to the formal submission in order to confirm that the PD meets agency requirements. ▪ Noted that under CEA Act other federal approvals and permits cannot be issued until a decision has been made that either a federal EA is or is not required.	Clair Fort Kent International Bridge ▪ Response (April 26, 2016) providing a draft letter to First Nations/Aboriginal groups to advise them of the next meeting, and requested comments and confirmation if a CEA Agency contact should be provided in the letter ▪ Notified of PIC 3 and External Agency Meeting through direct mail (May 4, 2016) ▪ Email (July 28, 2016) with questions, in addition to the question posed during the telephone conversation (May 12, 2016) of whether the decommissioning of the existing bridge should be included in the greenhouse gas emissions assessment. The email asks is it possible to provide an example of the summary that the CEA Agency requested, and if there should be a subsection for each environmental component (e.g. fish, noise, etc.) that discusses existing conditions and impacts on the U.S. side

Summary of Agency and Public Correspondence

Contact Information	Issue/Concern	Action taken by Project Team
Transport Canada	▪ Email (August 5, 2015) indicating that Rainy River is a scheduled navigable waterway listed in the NPA, so a review of impacts to navigation and authorization under the NPA will be required. A Notice of Work package must be submitted, and it will be referred to the Aboriginal Consultation Unit and Environmental Assessment Group if a federal EA is required ▪ Email (November 20, 2015) summarizing telephone conversation. Indicated TC's Navigation Protection Program (NPP) needs confirmation from Canadian National Railway Company (CN) that the bridge is no longer functioning as a swing bridge and that there are no plans to re-introduce that feature. Notes that if the rail bridge remains permanently stationary, then it is the structure limiting navigation and the vehicle bridge could be built to have the same clearances as the rail bridge. Noted that vessel navigation needs to be maintained during construction, which may include a marked navigation channel during construction ▪ Response (December 11, 2015) indicates that the CN rail bridge is the structure limiting navigation. Asked if the U.S. Coast Guard (USCG) provided information in regards to their request for increased vertical clearance (compared to the rail bridge). Noted that a horizontal clearance of 100 feet per the recommendation of USCG would meet requirements. A safe navigation channel may need to be marked during construction. Indicated the navigation envelopes and bridge piers should match as much as possible between the two bridges ▪ Response (January 22, 2016) indicates that if navigation is restricted to a marked channel, then separate navigation channels for both sides of the border are recommended to avoid reporting requirements with border services ▪ Attended CEA Agency Meeting #1 (January 26, 2016) – separate meeting notes are available for the meeting ▪ At the meeting they noted that permits under their authority cannot be issued until CEAA process is complete	▪ Email (July 6, 2015) noted that a letter was sent to TC Navigation Protection Program office at the beginning of May requesting information on vertical and horizontal clearance requirements, but that no one has followed up. Asked for a contact who can answer the information request ▪ Response (November 19, 2015) indicated that the preliminary design stage is proceeding and a preferred bridge location would likely be identified in early 2016. Noted that preliminary discussions have occurred with the TC EA group. Indicated that the project team met with the USCG, who indicated that the adjacent CN Rail Bridge to be the controlling structure for navigation and have provided alternative horizontal and vertical navigation requirements, and comments on the location of the navigation channel for the future bridge. Indicated that a meeting should be scheduled to discuss the difference in requirements that have been received as it may affect the bridge design ▪ Response (November 23, 2015) indicates that other agencies indicate that the swing portion of the bridge is no longer operational, but CN has not confirmed. Indicated that there would be a meeting on December 10, 2015 ▪ Notified of First International Stakeholder Webinar through email (November 24, 2015) ▪ Attended First International Stakeholder Webinar ▪ Email (December 9, 2015) providing documents that verify the existing CN bridge is no longer a swing bridge ▪ Circulated email from TC received on November 20, 2015 to the project team, and indicated that it is expected that TC will consider the CN bridge to be the controlling

Summary of Agency and Public Correspondence

Contact Information	Issue/Concern	Action taken by Project Team
		structure for navigation (November 24, 2015) ▪ Response (December 15, 2015) indicating the project team had been informed and a follow-up email will be provided when the USCG clarifies their request for increased vertical clearance ▪ Response (January 22, 2016) asking if the TC navigation channel is required to be within Canadian boundaries, and if the temporary navigation channel during construction needs to be completely within Canada
Canada Border Services Agency (CBSA)	▪ Telephone call (October 26, 2015), where CBSA indicated that they are reviewing the Rainy River site to identify long-term needs and requirements, and within a year significant changes to the site in the future will be known; noted this may influence the study	▪ Circulated the telephone call information to the project team (October 26, 2015)
International Boundary Commission - (IBC) Canada	▪ Submitted Comment Form (May 12, 2015) to indicate that authorization from the International Boundary Commission is required for work within 10' of border. Provided a link to the agency website for further information. ▪ Telephone call (December 19, 2016) to discuss IBC border delineation requirements for the replacement bridge. IBC indicated that	▪ Comments noted and circulated to project team
Ministry of Natural Resources and Forestry	▪ Telephone call received (May 12, 2015) to inquire about the project and to request additional information on the Class EA process, and type of work that may be required along the river and banks to determine which MNRF permit may apply. Inquired about federal involvement and the process, as well as the project timeline. ▪ Telephone call received, requesting a summary of the habitat assessment that was conducted by Stantec on August 24, 2015 ▪ Response (March 24, 2016) noted habitat sensitivity is moderate-low on the Canadian side of the river ▪ Noted Lake Sturgeon and other fish with similar spawning requirements do not spawn here	▪ Consultant responded (May 12, 2015) to indicate that additional information on the Class EA process as well as potential alternatives and work that will be considered during the development and evaluation of alternatives will be provided on email. As per the Class EA process noted that a PD will be submitted to the CEA Agency in order to determine whether a federal EA will be required. Committed to providing information on the general timeline for the project. ▪ Response (March 18, 2016) with a summary of the Habitat Assessment and provided contact information for the Area Fisheries Supervisor

Summary of Agency and Public Correspondence

Contact Information	Issue/Concern	Action taken by Project Team
	▪ Noted the area does not have deeper pools, thus is not suitable for juveniles, however aquatic vegetation suggests potential habitat – for this reason, it has been given a moderate-low sensitivity classification ▪ Submitted a Comment Form (May 25, 2016) requesting a copy of the weighing scores used to assess the design alternatives ▪ Noted that the southern Canadian alignment contains habitat for a species of special concern, and that this should be included in the report if it has not yet been addressed ▪ Requested information pertaining to the rehabilitation of the current Canadian alignment ▪ Advocates that natural vegetation features be included to compensate for the revised alignment	from the Minnesota Department of Natural Resources (MnDNR) ▪ Provided a copy of the draft Fish and Fish Habitat Impact Assessment Report for their records and any comments (October 7, 2016)
Ontario Provincial Police Rainy River Detachment	▪ Submitted a Comment Form (May 13, 2015) to note that traffic and pedestrians cross the bridge into Canada from the United States	▪ Comments noted and circulated to project team
Town of Rainy River	▪ Submitted a Comment Form (May 25, 2015) to note that the Town of Rainy River is interested in all aspects of this work. ▪ Submitted a Comment Form (May 25, 2015) to indicate that the project will have an impact on the community	▪ Comments noted and circulated to project team
EMS Rainy River District Social Services Administration Board	▪ Submitted a Comment Form (May 19, 2015) to note that access should be maintained for patient transportation since patients are regularly transported across this bridge including drop-off and pick-up at Baudette airport for return to Rainy River. The crossing is also used to ship critical patients to Winnipeg	▪ Comments noted and circulated to project team
Canadian National Railway	▪ Submitted Comment Form (May 19, 2015) to note that Highway 11 runs adjacent to CN rail and crosses Rainy River into the United States from Canada ▪ Expressed concern regarding structural changes to the bridge including any construction works that could potentially impact CN and therefore noted that their future involvement on this project is required	▪ Comments noted and circulated to project team

BAUDETTE/RAINY RIVER INTERNATIONAL BRIDGE REPLACEMENT
ON HIGHWAY 11, TOWN OF RAINY RIVER (GWP 6046-10-00)
TRANSPORTATION ENVIRONMENTAL STUDY REPORT

Summary of Agency and Public Correspondence

Contact Information	Issue/Concern	Action taken by Project Team
	GENERAL PUBLIC COMMENTS	
	▪ Use of residents in the area that cross the bridge daily such as shopping in Baudette, sports, and school events ▪ Prefer Alignment Alternative 2 as it will result in less noise from trucks using brakes ▪ Prefer Alignment Alternative 1 as it will not impact the graves on the U.S. side ▪ Would prefer a continuous span without impacts to the water column ▪ Realigning the airport runway should be considered in evaluation to allow for suspension and cantilever design options ▪ Prefer Alignment Alternative 2 as it results in less disruption to traffic and to the surrounding area ▪ Bridge type alternatives are very similar but likely have different costs associated with each alternative-will wait to see what the cost is ▪ Prefer Alignment Alternative 1 as it results in less impact to park on U.S. side and is a better alignment with traffic and approach to the Canadian and U.S. Customs ▪ Support the Preferred Plan ▪ The Preferred Plan has very little impacts on existing terrain or to nearby property owners ▪ Concerned about noise impacts from large trucks braking-please include signage for no engine brakes	▪ Comments noted and circulated to project team

Appendix D: Public Meeting Materials

Public Meeting 1

Welcome

to the first

Public Meeting

for the replacement of the

Baudette – Rainy River International Bridge

This is the first Public Meeting for the
Baudette – Rainy River International Bridge Replacement
connecting Trunk Highway 72 in the City of Baudette, Minnesota
to Highway 11 in the Town of Rainy River, Ontario

Please sign-in

and take time to review the information, or discuss any aspect of the project with the study team members in attendance.

Objectives

Purpose and Objectives

The purpose and objectives of the first Public Meeting, are as follows:

- Introduce the project and outline the process being followed, see: **Study Process**
- Provide background information on the need for the improvements, see: **Background**, and **Needs & Justification**
- Seek input from the public on the existing conditions in the study area (e.g. natural, social, economic, and cultural conditions), see: **Existing Conditions**
- Answer questions about the study

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Coordination

A coordinated effort between the U.S. and Canada

The Baudette – Rainy River Bridge is jointly owned by the State of Minnesota and the Province of Ontario, and each respective state or provincial transportation agency is responsible for the maintenance on their half of the bridge. Since the bridge is jointly owned, decisions regarding the needs of this bridge are made by the Minnesota Department of Transportation (MnDOT) and the Ontario Ministry of Transportation (MTO).

This study process has been developed with coordinated efforts from MnDOT and MTO, and will abide by all applicable regulatory processes (U.S., Canadian, state, and provincial).

Public Involvement Plan

A public involvement plan has been developed as part of this study to coordinate the U.S. and Canadian study processes. It will allow the study team to effectively address all agency, stakeholder, and public concerns or comments, and fulfill regulatory processes and required approvals.

The public involvement plan includes three Public Meetings that will occur concurrently in the City of Baudette and the Town of Rainy River. In addition, separate agency meetings will also be scheduled throughout the duration of the project.

Study Process

This study follows multiple approved processes:

- Ontario Ministry of Transportation Class Environmental Assessment for Provincial Transportation Facilities (MTO Class EA)
- U.S. National Environmental Policy Act (NEPA)
- Minnesota Environmental Policy Act (MEPA)

Coordinated Environmental Assessment Process

The MTO Class Environmental Assessment Process

The MTO Class EA process is an approved process for highway planning, design, and construction projects. The study is following a Group 'B' process which is completed for major improvements to existing provincial transportation facilities.

A *Transportation Environmental Study Report* (TESR) will be filed for a 30-day public review period at the end of the study. During the 30-day public review period all comments are recorded and responded to and the public has an opportunity to request a Bump-Up / Part II Order from the Minister of the Environment and Climate Change. The TESR will summarize the study process, including a description of the project and its purpose, the consultation process, specific environmental effects and mitigation measures, the generation and evaluation of alternatives, and the selection of the Preferred Plan.

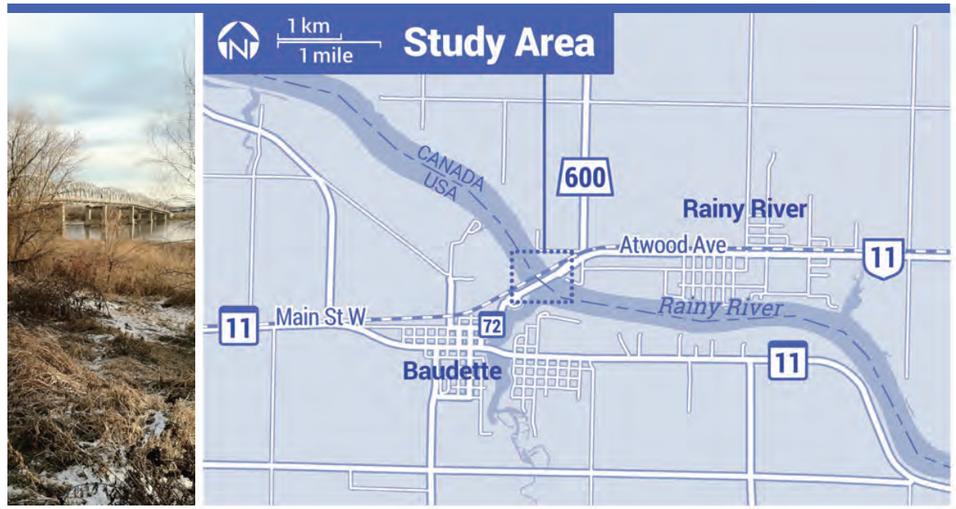
As part of this project and under the *Canadian Environmental Assessment Act, 2012* (CEAA 2012), a project description will be submitted to the Canadian Environmental Assessment Agency (the Agency) to determine whether a federal environmental assessment of the designated project is required. Following the submission of the project description, the Agency will have 45 days, including a 20-day public comment period, to conduct a screening of the designated project and determine whether a federal environmental assessment is required.

The MnDOT Environmental Review Process and NEPA

Minnesota Department of Transportation's (MnDOT's) environmental review will follow Minnesota's environmental review process set by the National Environmental Policy Act (NEPA), and Minnesota Environmental Policy Act (MEPA), to fulfill requirements at both the state and federal level. A combined Environmental Assessment / Environmental Assessment Worksheet (EA/EAW) will be prepared.. The EA/EAW uses public input and technical analysis to determine the needs, deficiencies, impacts, mitigation and design of the proposed project.

The Draft EA/EAW will be distributed for public comment over a 30-day public review period. At the federal level, the EA is used to provide sufficient environmental documentation to determine the need for an Environmental Impact Statement (EIS) or that a Finding of No Significant Impact (FONSI) is appropriate. At the state level, the EAW is used to provide sufficient environmental documentation to determine the need for an EIS or that a Negative Declaration is appropriate.

Background



The Baudette – Rainy River International Bridge

is located on Minnesota Trunk Highway 72 and Ontario Highway 11 and spans the Rainy River between Baudette, Minnesota and Rainy River, Ontario.

The bridge was originally built in 1959 and serves as a vital link between the two communities.

It carries approximately 2,500 vehicles per day and provides access between the U.S. and Canadian full-service, 24-hour Ports of Entry for the movement of international traffic and commerce.

The existing bridge is a six-span truss structure with six steel beam approach spans that carry two lanes of traffic over the Rainy River. It is 1,285 feet long (391 m) and has a 24-foot wide (7.3 m) two-lane roadway with an open steel grate deck. There is also a 6-foot wide (1.8 m) sidewalk cantilevered on the south side of the bridge.

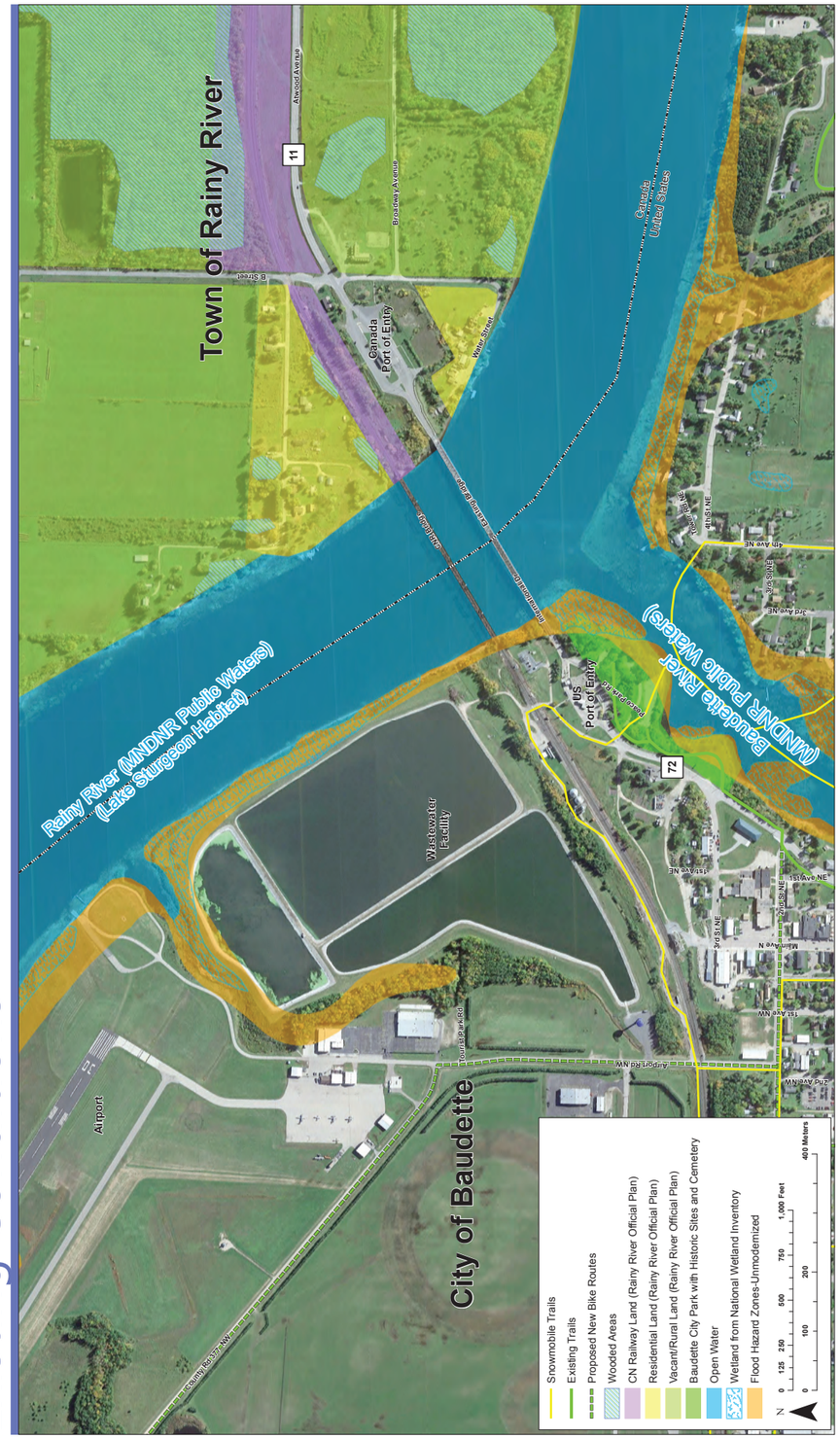
Need & Justification

MnDOT has recently completed a structural evaluation of the Baudette-Rainy River International Bridge to confirm that it is not economically feasible to rehabilitate the existing bridge to meet current design and maintenance requirements.

The study was initiated for the following reasons:

- Identify and evaluate bridge replacement alternatives to address the need to replace the existing bridge
- Identify a preferred bridge replacement location and structure type to be carried forward to detail design and construction
- Identify and consider construction staging and traffic management alternatives

Existing Conditions



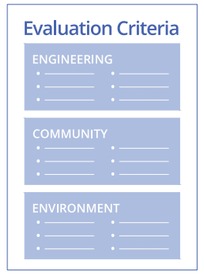
Evaluation

The Evaluation Process

A detailed evaluation of alternatives will be carried out to identify an improvement plan that is cost-effective, provides safe operations, and provides reasonable local access, while minimizing the effects on the natural, social and cultural environments. This is accomplished by identifying evaluation criteria along with their relative importance, and then ranking the overall scores of the design alternatives.

Two additional Public Meetings will be scheduled following Public Meeting 1.

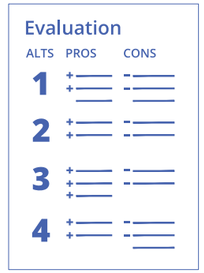
- Public Meeting 2 will present the evaluation criteria and the alternatives to be evaluated
- Public Meeting 3 will present the Preferred Plan



Identify Criteria

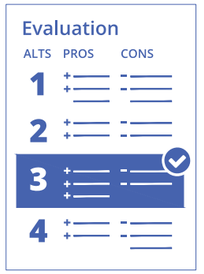
Evaluation criteria are established through:

- public input
- similar projects
- regulatory guidelines
- existing conditions



Evaluate the Alternatives

Evaluation of the alternatives is completed by assessing the advantages and disadvantages for each alternative based on the evaluation criteria.



Identify the Preferred Plan

The assessment of the alternatives is used as the basis for ranking the alternatives and identifying the Preferred Plan.

Investigations

In accordance with the MTO Class Environmental Assessment and U.S. National Environmental Policy Act (NEPA) and the Minnesota Environmental Policy (MEPA), this study includes engineering and environmental specialists who are carrying out background studies and site-specific work to support the evaluation of alternatives, confirm details of the recommended plan, and identify impacts and mitigation.

The investigations for this study will include but are not limited to the following:

Engineering Investigations

- Bridge
- Drainage and Hydrology
- Foundations
- Highway
- Traffic

Environmental Investigations

- Terrestrial Resources
- Aquatic Resources
- Cultural, and Archaeological Resources
- Noise, Air, and Visual Assessments

REPLACEMENT OF THE
Baudette – Rainy River International Bridge

Public Meeting 1
June 2015

Thank you
for attending

To provide your comments,
please fill out a comment sheet and place it in the comment box at today's meeting, or send your comments to:

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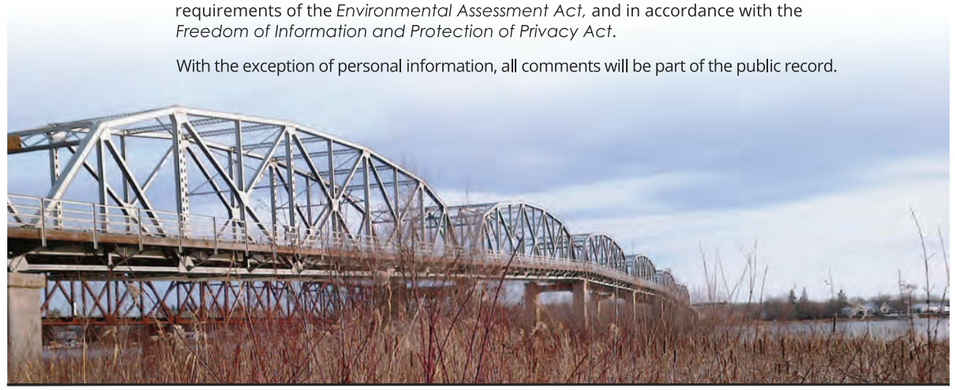
We would appreciate receiving your comments by July 24, 2015

Your input is important!

Freedom of Information & Protection of Privacy Act

Comments and information regarding this study are being collected to satisfy the requirements of the *Environmental Assessment Act,* and in accordance with the *Freedom of Information and Protection of Privacy Act*.

With the exception of personal information, all comments will be part of the public record.



REPLACEMENT OF THE
Baudette – Rainy River International Bridge

Public Meeting 1
June 2015

COMMENT FORM

Baudette/Rainy River International Bridge Replacement on Highway 11, Town of Rainy River (GWP 6046-10-00)

Public Information Centre 1, Rainy River Recreation Centre – Wednesday, June 24, 2015

Your comments will help us to understand what is important to people in the study area. Please provide your comments on the following questions. (*Use the back of this sheet if you need more space.*)

1. Do you have any comments on the study and the need for the study?

2. Would you like to provide any additional information about the study area?

3. Do you have any other comments or questions?

Please leave your completed comment sheet in the drop box provided or submit (**by July 23, 2015**) to:

Nevena Gazibara, B.Sc., MREM
Environmental Planner
Stantec Consulting Ltd.
100-401 Wellington Street West
Toronto, ON M5V 1E7
Tel. (416) 598-7663 Fax (416) 596-6680, Email: nevena.gazibara@stantec.com

Name and Address (optional) PLEASE PRINT

Name:

Mailing Address:

(include postal code)

Tel: Fax: Email:

Information collected will be used in accordance with the *Freedom of Information and Protection of Privacy Act*. With the exception of personal information, all comments will become part of the public record.

Ontario

Stantec

COMMENT FORM

Baudette/Rainy River International Bridge Replacement on Highway 11, Town of Rainy River (GWP 6046-10-00)

Public Information Centre 1, Rainy River Recreation Centre – Wednesday, June 24, 2015

Public Meeting 2

Welcome

to the second

Public Meeting

for the replacement of the

Baudette – Rainy River International Bridge

This is the second Public Meeting for the
Baudette – Rainy River International Bridge Replacement
on Trunk Highway 72 in the City of Baudette, Minnesota
and Highway 11 in the Town of Rainy River, Ontario

Please sign-in

and take time to review the information, or discuss any aspect of the project with the study team members in attendance. A comment sheet is available for you to fill out at today's meeting and submit to the project team.

Objectives

Purpose and Objectives

The purpose and objectives of the second Public Meeting, are as follows:

- Display and seek input on the evaluation criteria and the evaluation process, see: **Evaluation Criteria**
- Display and seek input on the preliminary alignment and structural bridge replacement alternatives, see: **Alternatives**
- Seek input from the public on the existing conditions in the study area (e.g. natural, social, economic, and cultural conditions), see: **Existing Conditions**
- Answer questions about the study

Contact Information

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REPLACEMENT OF THE
Baudette – Rainy River International Bridge

Public Meeting 2
October 2015

Coordination

A coordinated effort between the U.S. and Canada

The Baudette – Rainy River Bridge is jointly owned by the State of Minnesota and the Province of Ontario, and each respective state or provincial transportation agency is responsible for the maintenance on their half of the bridge. Since the bridge is jointly owned, decisions regarding the needs of this bridge are made by the Minnesota Department of Transportation (MnDOT) and the Ontario Ministry of Transportation (MTO).

This study process has been developed with coordinated efforts from MnDOT and MTO, and will abide by all applicable regulatory processes (U.S., Canadian, state, and provincial).

Public Involvement Plan

A public involvement plan has been developed as part of this study to coordinate the U.S. and Canadian study processes. It will allow the study team to effectively address all agency, stakeholder, and public concerns or comments, and fulfill regulatory processes and required approvals.

The public involvement plan includes three Public Meetings that will occur concurrently in the City of Baudette and the Town of Rainy River. The first Public Meeting for this project took place on June 24, 2015 in the Town of Rainy River and the City of Baudette, and all comments submitted and noted at the meetings have been incorporated into the study. In addition, separate agency meetings will also be scheduled throughout the duration of the project.

Project Website www.mndot.gov/baudette-bridge

MindMixer baudette-rainyriver-bridge.mindmixer.com

REPLACEMENT OF THE
Baudette – Rainy River International Bridge

Public Meeting 2
October 2015

Ontario Ministry of Transportation · Stantec

Study Process

This study follows multiple approved processes:

- Ontario Ministry of Transportation Class Environmental Assessment for Provincial Transportation Facilities (MTO Class EA)
- U.S. National Environmental Policy Act (NEPA)
- Minnesota Environmental Policy Act (MEPA)

Coordinated Environmental Assessment Process

The MTO Class Environmental Assessment Process

The MTO Class EA process is an approved process for highway planning, design, and construction projects. The study is following a Group 'B' process which is completed for major improvements to existing provincial transportation facilities.

A *Transportation Environmental Study Report* (TESR) will be filed for a 30-day public review period at the end of the study. During the 30-day public review period all comments are recorded and responded to and the public has an opportunity to request a Bump-Up / Part II Order from the Minister of the Environment and Climate Change. The TESR will summarize the study process, including a description of the project and its purpose, the consultation process, specific environmental effects and mitigation measures, the generation and evaluation of alternatives, and the selection of the Preferred Plan.

As part of this project and under the *Canadian Environmental Assessment Act, 2012* (CEAA 2012), a project description will be submitted to the Canadian Environmental Assessment Agency (the Agency) to determine whether a federal environmental assessment of the designated project is required. Following the submission of the project description, the Agency will have 45 days, including a 20-day public comment period, to conduct a screening of the designated project and determine whether a federal environmental assessment is required.

The MnDOT Environmental Review Process and NEPA

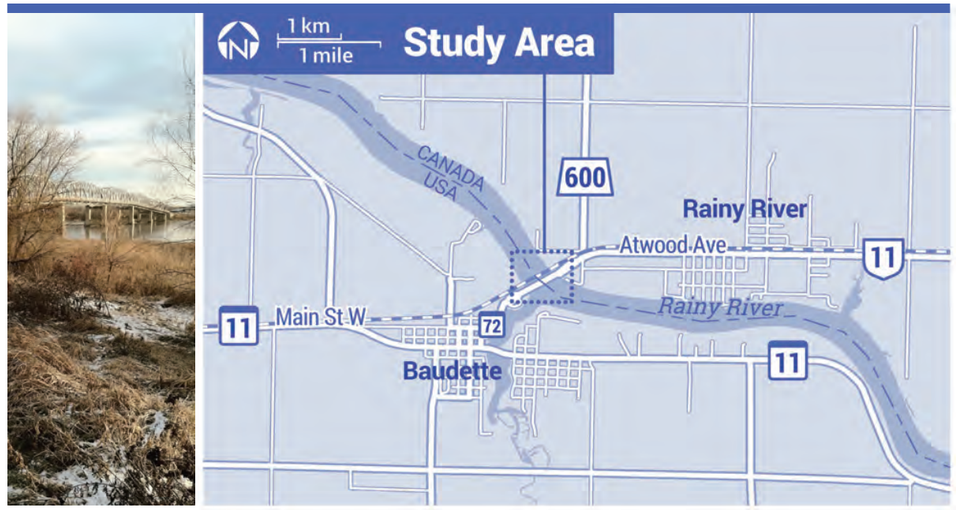
Minnesota Department of Transportation's (MnDOT's) environmental review will follow Minnesota's environmental review process set by the National Environmental Policy Act (NEPA), and Minnesota Environmental Policy Act (MEPA), to fulfill requirements at both the state and federal level. A combined Environmental Assessment / Environmental Assessment Worksheet (EA/EAW) will be prepared.. The EA/EAW uses public input and technical analysis to determine the needs, deficiencies, impacts, mitigation and design of the proposed project.

The Draft EA/EAW will be distributed for public comment over a 30-day public review period. At the federal level, the EA is used to provide sufficient environmental documentation to determine the need for an Environmental Impact Statement (EIS) or that a Finding of No Significant Impact (FONSI) is appropriate. At the state level, the EAW is used to provide sufficient environmental documentation to determine the need for an EIS or that a Negative Declaration is appropriate.

Replacement of the
Baudette – Rainy River International Bridge

Public Meeting 2
October 2015

Background



The Baudette – Rainy River International Bridge

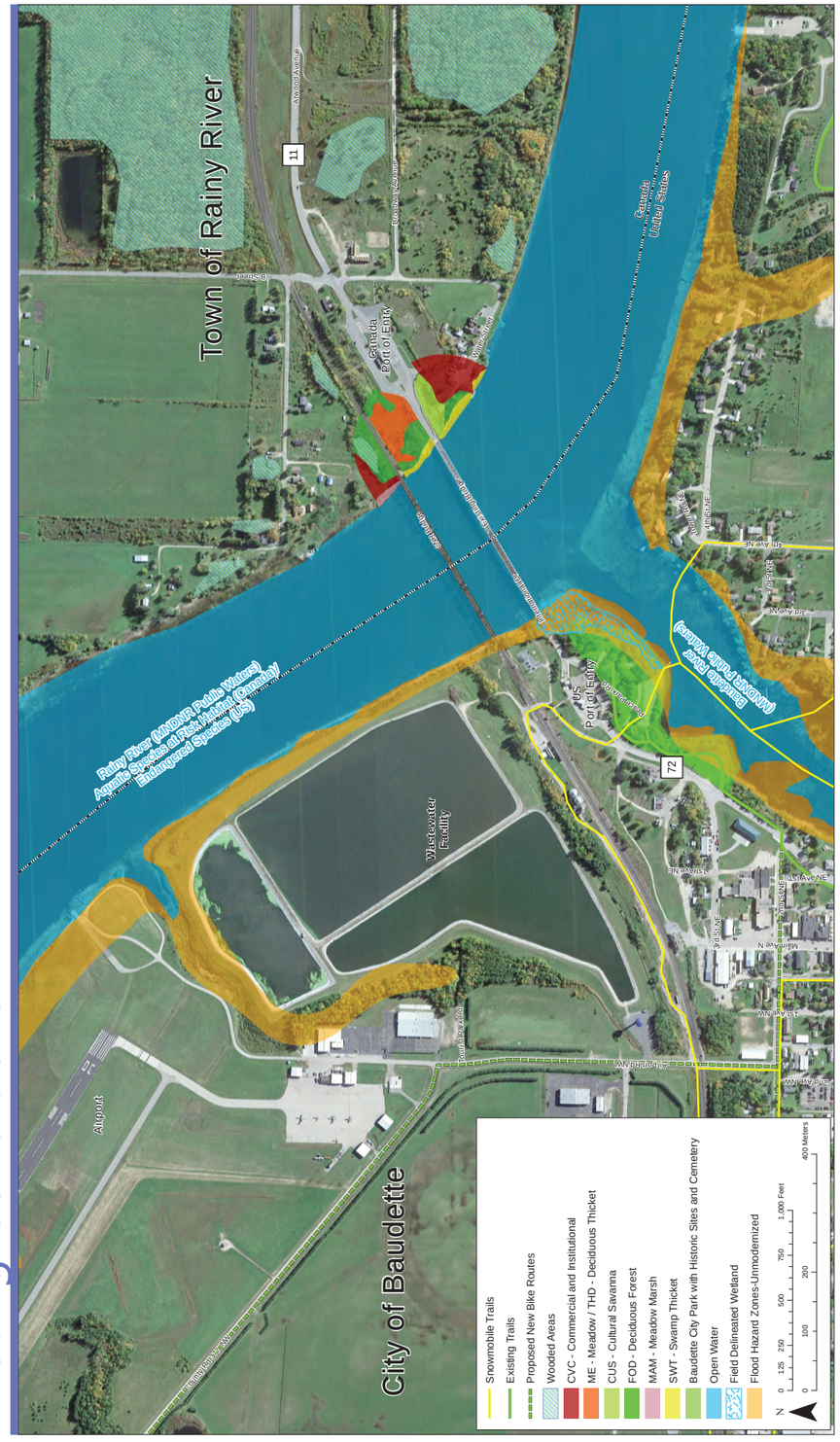
is located on Minnesota Trunk Highway 72 and Ontario Highway 11 and spans the Rainy River between Baudette, Minnesota and Rainy River, Ontario.

The bridge was originally built in 1959 and serves as a vital link between the two communities.

It carries approximately 2,500 vehicles per day and provides access between the U.S. and Canadian full-service, 24-hour Ports of Entry for the movement of international traffic and commerce.

The existing bridge is a six-span truss structure with six steel beam approach spans that carry two lanes of traffic over the Rainy River. It is 1,285 feet long (391 m) and has a 24-foot wide (7.3 m) two-lane roadway with an open steel grate deck. There is also a 6-foot wide (1.8 m) sidewalk cantilevered on the south side of the bridge.

Existing Conditions



Preliminary Evaluation Criteria

Category	Criteria	Factors Considered
Transportation Engineering	***Geometrics:***	• Horizontal and vertical alignment (i.e., curves and grade) • Safety • Airport clearance • Navigation channel • Permanent impacts to Port Operations • Proximity to adjacent CN rail bridge • Sightlines for Port Operators
	Constructability:	• Construction feasibility • Construction staging • Temporary impacts to Port Operations • Delay for emergency service providers • Delay for residents and commercial traffic
	Cost:	• Capital cost including construction and property acquisition • Future maintenance costs
	Pedestrians/Cyclists:	• ADA/AODA/Accessibility • Safety and access
Social & Cultural Environment	***Property:***	• Private property and public land required
	Archaeology and Cultural Heritage:	• Registered archaeological sites • Areas of high archaeological potential • Culturally significant features within Baudette City Park
	Impacts to Park Land/4(f):	• Designated parkland on U.S. side of border
	Aesthetics/Visual Impacts:	• Aesthetics of bridge structure
	Environmental Justice/Business Impacts/Access:	• Local businesses that rely on traffic • Access restrictions for residents and travellers
Natural Environment	***Fish and Aquatic Habitat:***	• Alteration to existing watercourse (i.e., number of piers and locations) • Sensitive aquatic habitat (i.e., spawning areas)
	Wildlife and Terrestrial Habitat and Vegetation:	• Threatened and endangered species/species-at-risk • Area of sensitive/environmentally significant areas impacted • Removal of vegetation • Impact to wildlife habitat • Environmentally sensitive areas or areas of biodiversity significance
	Noise/Vibration:	• Noise sensitive receptors • Vibration sensitive receptors
	Wetlands/Floodplains/Protected Waters:	• Area of wetlands impacted • Impact to floodplain

Investigations

In accordance with the MTO Class Environmental Assessment and U.S. National Environmental Policy Act (NEPA) and the Minnesota Environmental Policy (MEPA), this study includes engineering and environmental specialists who are carrying out background studies and site-specific work to support the evaluation of alternatives, confirm details of the recommended plan, and identify impacts and mitigation.

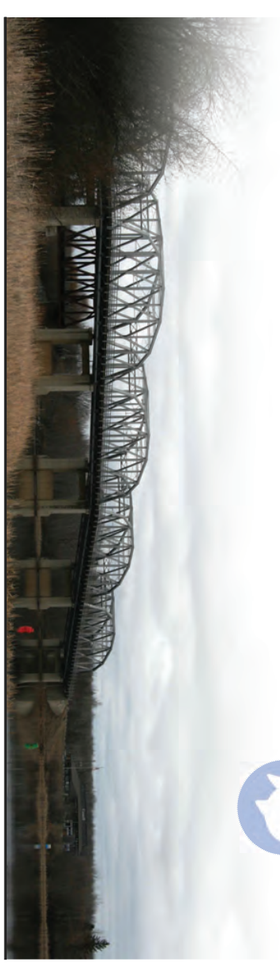
The ongoing investigations for this study include, but are not limited to, the following:

Engineering Investigations

- Bridge
- Drainage and Hydrology
- Foundations
- Highway
- Traffic
- Electrical (lighting)

Environmental Investigations

- Terrestrial Resources
  (Wildlife and Habitat, Vegetation, Threatened & Endangered Species / Species at Risk)
- Aquatic Resources
- Cultural, and Archaeological Resources
- Noise, Air, and Visual Assessments
- Contaminated Property, and Regulated Materials Review



REPLACEMENT OF THE
Baudette – Rainy River International Bridge
Public Meeting 2
October 2015
Ontario MINISTRY OF TRANSPORTATION · Minnesota Department of Transportation · Stantec

Alignment Alternatives

Baudette-Rainy River International Bridge

Downstream of Existing Alignment (North Side)

1

FEATURES

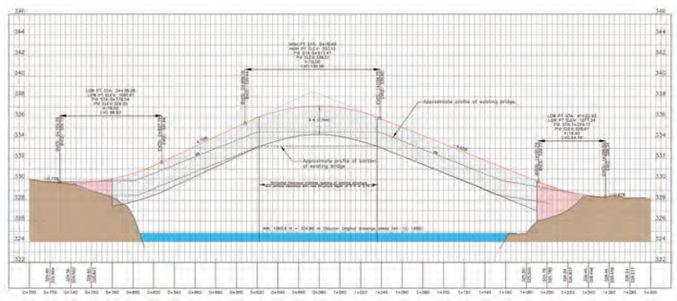
- Replacement bridge is built downstream of the existing bridge with approximately 1.0 m (3 ft) separation from the existing bridge
- Access will be maintained across the border on the existing bridge until construction of the replacement bridge is complete

ADVANTAGES

- Avoids impact to Baudette City Park on U.S. side
- Avoids impact to unidentified gravesites/cultural heritage features on U.S. side

DISADVANTAGES

- Requires purchase of private/ municipal property on the U.S. side of border
- Construction area between the existing bridge and the CN rail bridge is constrained
- Trucks approaching U.S. Port of Entry can use right lane only
- Relocation of detection equipment is required to accommodate trucks in left lane on the U.S. side of the border
- May impact contaminated soils from former electric power plant on the U.S. side of border



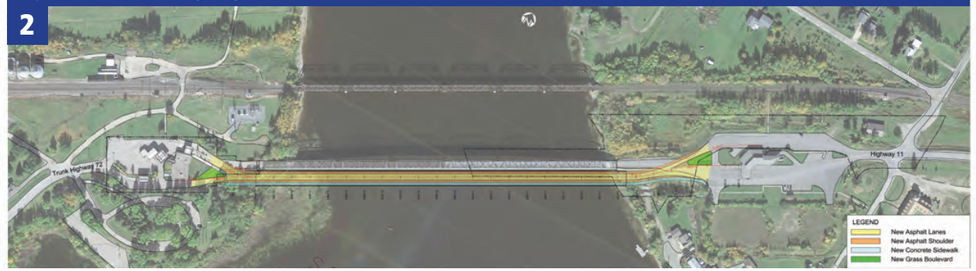
Metric Scale 2m 20m Imperial Scale 5ft 50ft

Alignment Alternatives

Baudette-Rainy River International Bridge

Upstream of Existing Alignment (South Side)

2



FEATURES

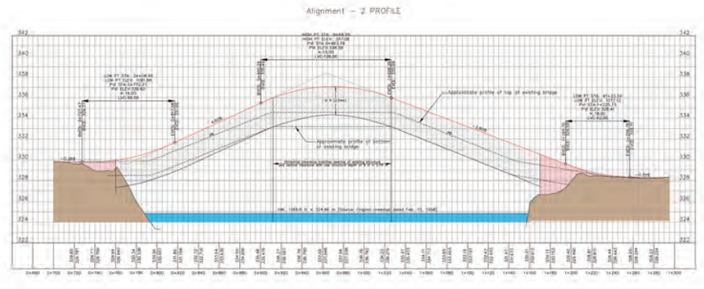
- Replacement bridge is built upstream of the existing bridge with approximately 1.0 m (3 ft) separation from the existing bridge
- Access will be maintained across the border on the existing bridge until construction of the replacement bridge is complete

ADVANTAGES

- Provides desirable geometric alignment connections to existing U.S. and Canadian Ports of Entry facilities
- U.S. Port of Entry detection equipment can remain in place
- Truck entry at U.S. Port of Entry can be accommodated in both lanes

DISADVANTAGES

- Impacts Baudette City Park (Designated Parkland 4 (f))
- May impact unidentified gravesites/cultural heritage features on U.S. side
- Requires purchase of property on the U.S. side of border and Canadian side of border
- May result in impacts to wetlands located south of the existing bridge on the U.S. side



Metric Scale 2m 20m Imperial Scale 5ft 50ft

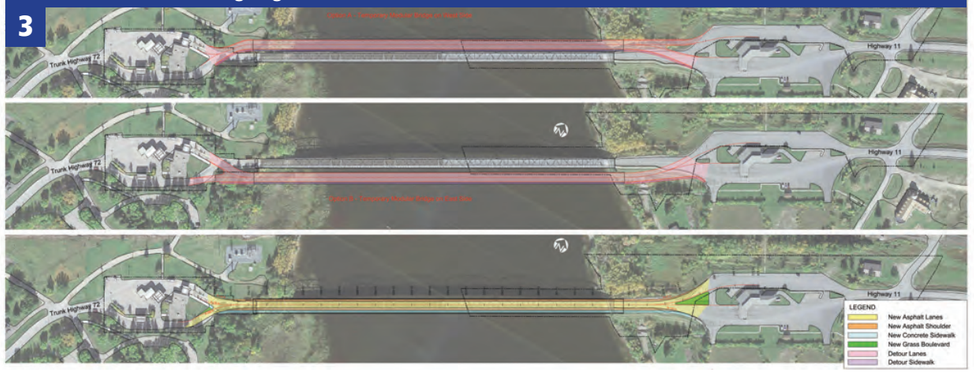
DEPARTMENT OF THE Baudette – Rainy River International Bridge
Public Meeting 3 October 2015
Ontario Ministry of Transportation Stantec

Alignment Alternatives

Baudette-Rainy River International Bridge

Same Location as Existing Alignment

3



FEATURES

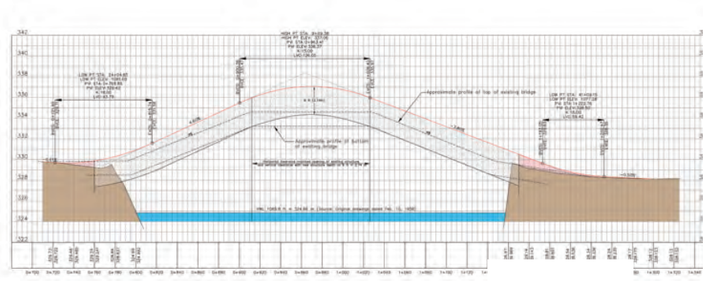
- Temporary bridge is built either downstream or upstream of the existing bridge to provide access while the replacement bridge is being constructed on the existing alignment

ADVANTAGES

- Maintains existing alignment and minimizes permanent impacts to U.S. and Canadian Ports of Entry facilities
- U.S. Port of Entry detection equipment can remain in place
- Truck entry at U.S. Port of Entry can be accommodated in both lanes
- Provides desirable geometric alignment connections to existing U.S. and Canadian Ports of Entry facilities

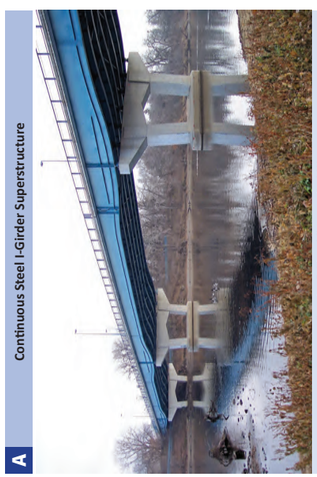
DISADVANTAGES

- Cost of temporary bridge is high, resulting in significant throw away costs
- Temporary traffic delays due to narrow temporary bridge
- Increased duration of construction
- Increased risk of environmental impact due to additional piers in water for temporary bridge



Bridge Alternatives

A Continuous Steel I-Girder Superstructure



Camden Bridge, Minneapolis, MN

Characteristics:

a. Structural elements below deck require a higher roadway elevation
b. Structure type is common in Minnesota and Ontario
c. Construction can be performed using common techniques

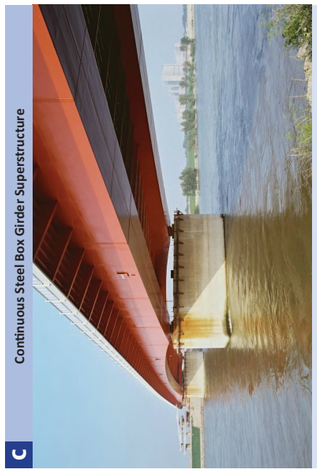
B Simple-Span Precast/Prestressed I-Girder Superstructure

Belleair Beach Causeway Bridge, Belleair Beach, FL

Characteristics:

a. Structural elements below deck require a higher roadway elevation
b. Structure type is common in Minnesota and Ontario and standardized shapes exist
c. Construction can be performed using common techniques

C Continuous Steel Box Girder Superstructure



Brigittenauer Bridge in Vienna Austria built 1982

Characteristics:

a. Structural elements below deck require a higher roadway elevation
b. Shape allows for construction of longer spans
c. Construction can be performed using common techniques

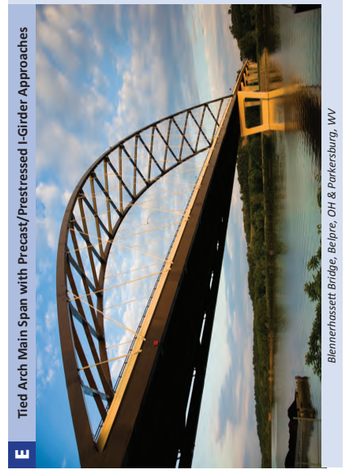
D Segmental Concrete Box Girder

I-35W Saint Anthony Falls Bridge, Minneapolis, MN

Characteristics:

a. Structural elements below deck require a higher roadway elevation
b. Shape allows for construction of longer spans
c. May require a specialty contractor to construct and/or inspect

E Tied Arch Main Span with Precast/Prestressed I-Girder Approaches



Blennerhassett Bridge, Belpre, OH & Parkersburg, WV

Characteristics:

a. Structural elements above deck allow for a lower roadway elevation
b. May result in the most piers in the river
c. May require a specialty contractor to construct and/or inspect

Thank you
for attending

To provide your comments,

please fill out a comment sheet and place it in the comment box at today's meeting, or send your comments to:

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Nevena Gazibara, B.Sc., MREM
Environmental Planner
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100–401 Wellington St W
Toronto ON M5V 1E7
CANADA
Tel: 416-598-7663
Fax: 416-596-6680
Email: nevena.gazibara@stantec.com

We would appreciate receiving your comments by November 27, 2015

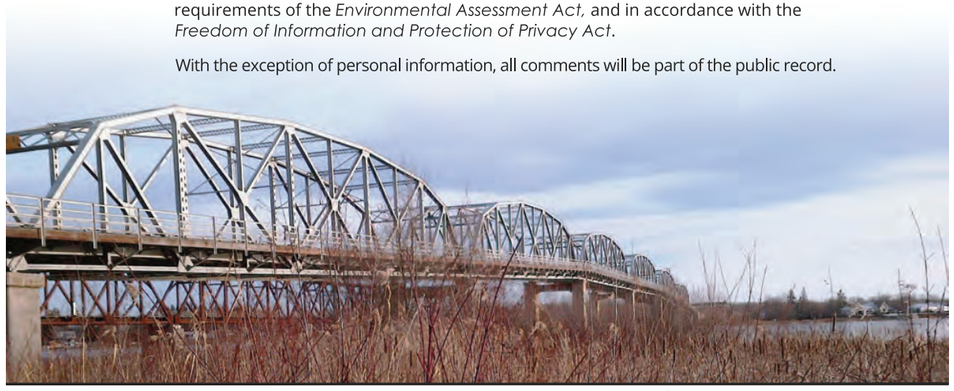
Your input is important!

If you have any accessibility requirements in order to participate in this project, please contact one of the project team members listed above

Freedom of Information & Protection of Privacy Act

Comments and information regarding this study are being collected to satisfy the requirements of the *Environmental Assessment Act,* and in accordance with the *Freedom of Information and Protection of Privacy Act*.

With the exception of personal information, all comments will be part of the public record.



REPLACEMENT OF THE
Baudette – Rainy River International Bridge

Public Meeting 2
October 2015

Ontario Ministry of Transportation | Transportation Transportation | Stantec

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COMMENT FORM
Baudette/Rainy River International Bridge Replacement on Highway 11, Town of Rainy River (GWP 6046-10-00)

Public Meeting 2, Rainy River Recreation Centre – Wednesday, October 28, 2015

Your comments will help us to understand what is important to people in the study area. Please provide your comments on the following questions.
(Use the back of this sheet if you need more space.)

1. Which Alignment Alternative do you prefer and why?

2. Please identify the preliminary evaluation criteria that are important to you? Do you have other comments about the evaluation criteria or the evaluation process?

Transportation/Highway Engineering
- ☐ Geometrics
- ☐ Constructability
- ☐ Pedestrians/Cyclists
- ☐ Cost

Natural Environment
- ☐ Fish and Aquatic Habitat
- ☐ Wildlife and Terrestrial Habitat and Vegetation
- ☐ Noise/Vibration
- ☐ Wetland/Floodplains/ Protected Waters

Social and Cultural Environment
- ☐ Property/ROW
- ☐ Archaeology and Cultural Heritage
- ☐ Impacts to Parkland/4(f)
- ☐ Aesthetics/Visual Impacts
- ☐ Environmental Justice/Business Impacts/Access Impacts

3. Which Bridge Alternative do you prefer and why?

- ☐ **A** (Continuous Steel I-Girder Superstructure)
- ☐ **B** (Simple-Span PC/PS I-Girder Superstructure)
- ☐ **C** (Continuous Steel Box Girder Superstructure)
- ☐ **D** (Segmental Concrete Box Girder)
- ☐ **E** (Tied Arch Main Span with PC/PS I-Girder Approaches)

Please leave your completed comment sheet in the drop box provided or submit (**by November 27, 2015**) to:
Nevena Gazibara, B.Sc., MREM
Environmental Planner
Stantec Consulting Ltd.
100-401 Wellington Street West
Toronto, ON M5V 1E7
Tel. (416) 598-7663 Fax (416) 596-6680, Email: nevena.gazibara@stantec.com

Name and Address (optional) PLEASE PRINT

Name:

Mailing Address:

(include postal code)

Tel: Fax: Email:

COMMENT FORM
Baudette/Rainy River International Bridge Replacement on Highway 11, Town of Rainy River (GWP 6046-10-00)

Public Meeting 2, Rainy River Recreation Centre – Wednesday, October 28, 2015

Information collected will be used in accordance with the *Freedom of Information and Protection of Privacy Act*. With the exception of personal information, all comments will become part of the public record.

Ontario

Stantec

4. Do you have any other additional comments or questions?

Public Meeting 3

Welcome

to the third

Public Meeting

for the replacement of the

Baudette – Rainy River International Bridge

This is the third Public Meeting for the
Baudette – Rainy River International Bridge Replacement
on Trunk Highway 72 in the City of Baudette, Minnesota
and Highway 11 in the Town of Rainy River, Ontario

Please sign-in

and take time to review the information, or discuss any aspect of the project with the project team members in attendance. A comment sheet is available for you to fill out at today's meeting and submit to the project team.

Objectives

Purpose and Objectives

The purpose and objectives of the third Public Meeting, are as follows:

- Display the results of the evaluation of alternatives, see: **Evaluation of Alternatives**
- Display and seek input on the preferred plan, see: **Preferred Plan**
- Answer questions about the study

Contact Information

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Fax: 807-473-2168
Email: kevin.saunders@ontario.ca

Coordination

A coordinated effort between the U.S. and Canada

The Baudette – Rainy River Bridge is jointly owned by the State of Minnesota and the Province of Ontario, and each respective state or provincial transportation agency is responsible for the maintenance on their half of the bridge. Since the bridge is jointly owned, decisions regarding the needs of this bridge are made by the Minnesota Department of Transportation (MnDOT) and the Ontario Ministry of Transportation (MTO).

This study process has been developed with coordinated efforts from MnDOT and MTO, and will abide by all applicable regulatory processes (U.S., Canadian, state, and provincial).

Public Involvement Plan

A public involvement plan has been developed as part of this study to coordinate the U.S. and Canadian study processes. It will allow the study team to effectively address all agency, stakeholder, and public concerns or comments, and fulfill regulatory processes and required approvals.

The public involvement plan includes three Public Meetings that will occur concurrently in the City of Baudette and the Town of Rainy River. The first and second Public Meetings for this project took place on June 24, and October 28, 2015, in the Town of Rainy River and the City of Baudette. All comments submitted and noted at the meetings have been incorporated into the study. In addition, separate agency meetings will also be scheduled throughout the duration of the project. A public hearing for the US study process will be held during Fall 2016.

Project Website www.mndot.gov/baudette-bridge

MindMixer baudette-rainyriver-bridge.mindmixer.com

REPLACEMENT OF THE
Baudette – Rainy River International Bridge

Public Meeting 3
May 2016

Ontario Ministry of Transportation | Stantec

Study Process

This study follows multiple approved processes:

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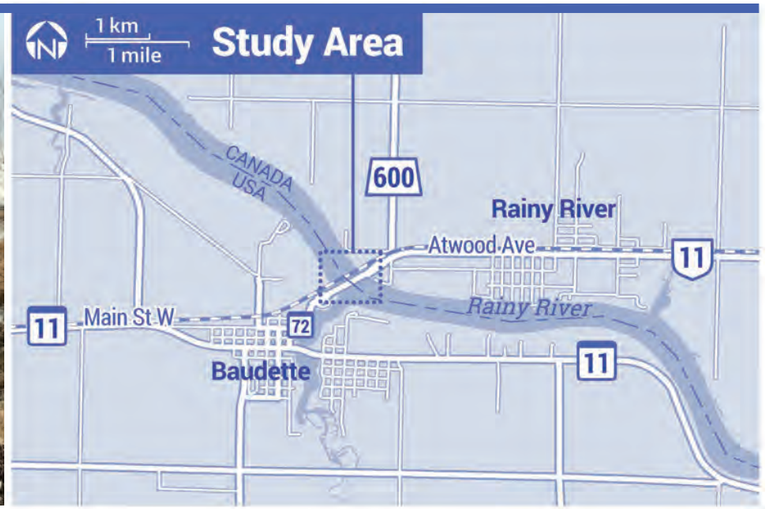
The Canadian Environmental Assessment Agency has confirmed that CEAA applies to this project. Section 28 of the regulations designating physical activities includes construction, operation, decommissioning, and abandonment of a new international bridge. A project description will be submitted to the agency to determine whether a federal environmental assessment of the designated project is required. Following the submission of the project description, the agency will have 45 days, including a 20-day public comment period, to conduct a screening of the designated project and determine whether a federal environmental assessment is required.

The MnDOT Environmental Review Process and NEPA

Minnesota Department of Transportation's (MnDOT's) environmental review will follow Minnesota's environmental review process set by the National Environmental Policy Act (NEPA), and Minnesota Environmental Policy Act (MEPA), to fulfill requirements at both the state and federal level. A combined Environmental Assessment / Environmental Assessment Worksheet (EA/EAW) will be prepared. The EA/EAW uses public input and technical analysis to determine the needs, deficiencies, impacts, mitigation and design of the proposed project.

The Draft EA/EAW will be distributed for public comment over a 30-day public review period. At the federal level, the EA is used to provide sufficient environmental documentation to determine the need for an Environmental Impact Statement (EIS) or that a Finding of No Significant Impact (FONSI) is appropriate. At the state level, the EAW is used to provide sufficient environmental documentation to determine the need for an EIS or that a Negative Declaration is appropriate.

Background



The Baudette – Rainy River International Bridge

is located on Minnesota Trunk Highway 72 and Ontario Highway 11 and spans the Rainy River between Baudette, Minnesota and Rainy River, Ontario.

The bridge was originally built in 1959 and serves as a vital link between the two communities.

It carries approximately 2,500 vehicles per day and provides access between the U.S. and Canadian full-service, 24-hour Ports of Entry for the movement of international traffic and commerce.

The existing bridge is a six-span truss structure with six steel beam approach spans that carry two lanes of traffic over the Rainy River. It is 1,285 feet long (391 m) and has a 24-foot wide (7.3 m) two-lane roadway with an open steel grate deck. There is also a 6-foot wide (1.8 m) sidewalk cantilevered on the south side of the bridge.

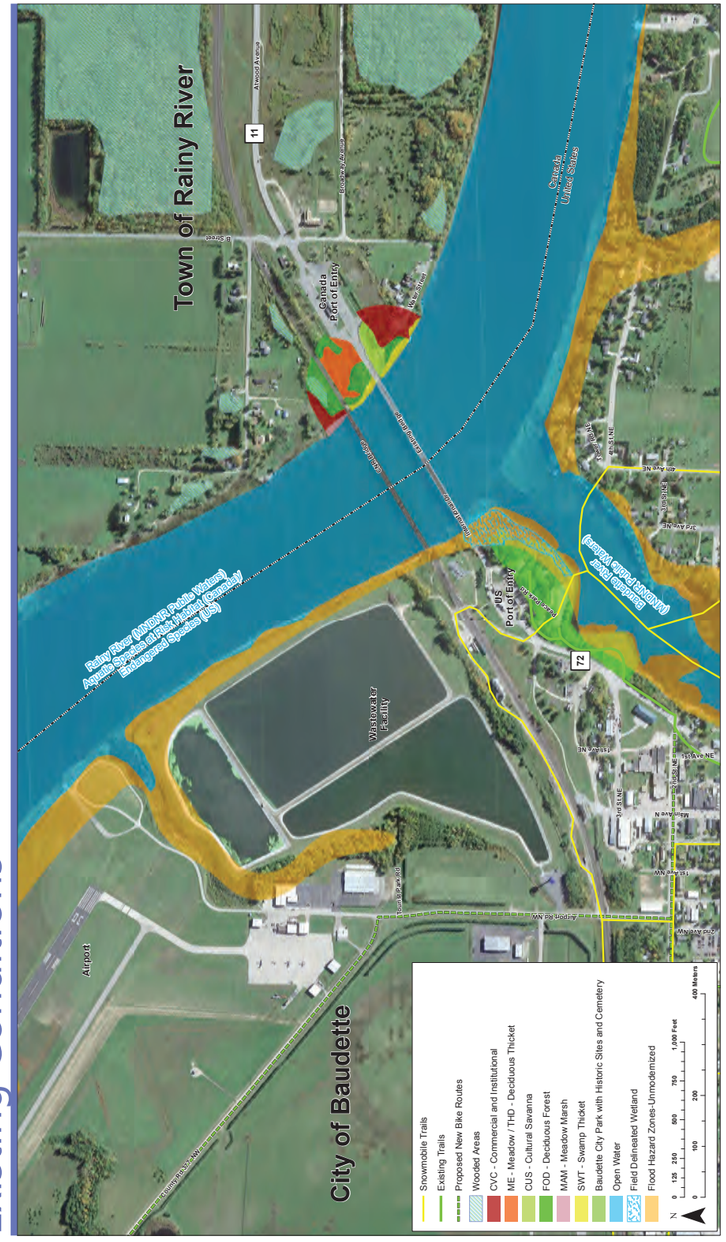
Need & Justification

MnDOT has recently completed a structural evaluation of the Baudette-Rainy River International Bridge to confirm that it is not economically feasible to rehabilitate the existing bridge to meet current design and maintenance requirements.

The study was initiated for the following reasons:

- Identify and evaluate bridge replacement alternatives to address the need to replace the existing bridge
- Identify a preferred bridge replacement location and structure type to be carried forward to detail design and construction
- Identify and consider construction staging and traffic management alternatives

Existing Conditions



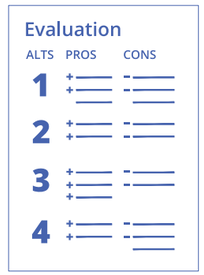
Evaluation Process

A detailed evaluation of alternatives was carried out to select a Preferred Plan that provides safe operations and minimizes impacts to the existing port of entry facilities, while minimizing the effects on the natural, social and cultural environments. This was accomplished by identifying evaluation criteria along with their relative importance, and then ranking the overall scores of the design alternatives.

Identify Criteria

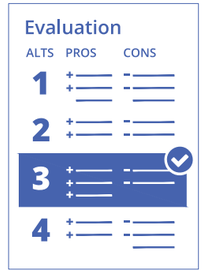
Evaluation criteria are established through:

- public input
- similar projects
- regulatory guidelines
- existing conditions



Evaluate the Alternatives

Evaluation of the alternatives is completed by assessing the advantages and disadvantages for each alternative based on the evaluation criteria.



Identify the Preferred Plan

The assessment of the alternatives is used as the basis for ranking the alternatives and identifying the Preferred Plan.

Investigations

In accordance with the MTO Class Environmental Assessment and U.S. National Environmental Policy Act (NEPA) and the Minnesota Environmental Policy (MEPA), this study includes engineering and environmental specialists who are carrying out background studies and site-specific work to support the evaluation of alternatives, confirm details of the preferred plan, and identify impacts and mitigation.

The ongoing investigations for this study include, but are not limited to, the following:

Engineering Investigations

- Bridge
- Drainage and Hydrology
- Foundations
- Highway
- Traffic
- Electrical (lighting)

Environmental Investigations

- Terrestrial Resources
  (Wildlife and Habitat, Vegetation, Threatened & Endangered Species / Species at Risk)
- Aquatic Resources
- Cultural, and Archaeological Resources
- Noise, Air, and Visual Assessments
- Contaminated Property, and Regulated Materials Review

REPLACEMENT OF THE
Baudette – Rainy River International Bridge

Public Meeting 3
May 2016

Ontario TRANSPORTATION · Minnesota Department of Transportation · Stantec

Bridge Alternatives

12 initial bridge structure types were selected for review.
A preliminary analysis determined 5 alternatives to carry forward.

ALTERNATIVE A1 - Steel I-Girder, 5 Span

ALTERNATIVE A2 - Steel I-Girder, 4 Span

ALTERNATIVE B - Concrete I-Girder

A Continuous Steel I-Girder Superstructure

B Simple-Span Precast/Prestressed Concrete I-Girder Superstructure

C Continuous Steel Box Girder Superstructure

D Continuous Concrete Box Girder

E Tied Arch Main Span with Precast/Pre-stressed Concrete I-Girder Approaches

Reasons Not Carried Forward:

a. Increased construction complexity and risk compared to 5 span alternative
b. Would likely require eight temporary structures to support bridge segments during construction, compared to four segments with the 5 span alternative
c. The location of temporary structures would greatly reduce the navigational opening below the bridge during construction

Reasons Not Carried Forward:

a. Has minimal advantages over the continuous steel I-girder alternative
b. Higher design complexity
c. Increased construction risk

Reasons Not Carried Forward:

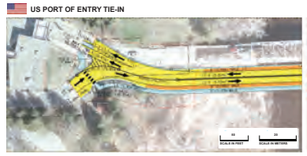
a. Deepest structure depth, resulting in increased grades and reduced sight distance on bridge compared to other alternatives

Reasons Not Carried Forward:

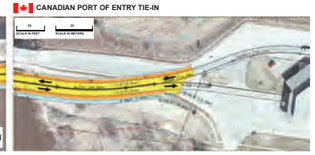
a. Reduced sight distance compared to other alternatives
b. Requires the most piers in the water compared to other structures, increasing risk in construction and environmental impacts
c. Increased complexity in design and maintenance

The Preferred Plan

US PORT OF ENTRY TIE-IN



CANADIAN PORT OF ENTRY TIE-IN

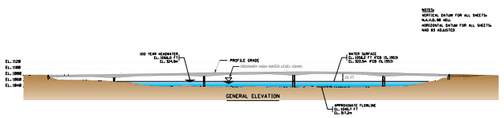


Alternative 2 was selected as the Preferred Alignment because:

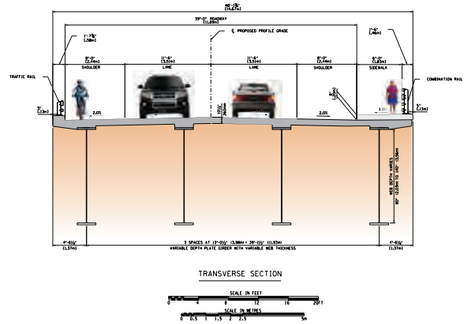
- U.S. Port of Entry detection equipment can remain in place
- Truck entry at U.S. Port of Entry can be accomodated in both lanes
- Reduced cost compared to Alternative 3 since a temporary modular bridge is not required
- Refinements can be made to alternative to minimize impacts to Baudette City Park and unidentified gravesites/cultural heritage features

The Proposed Bridge

CONTINUOUS STEEL I-GIRDER, 5 SPAN BRIDGE



Distance from Bottom of Structure to Surface of the Rainy River		
Structure	Elevation in Feet/Metres	Distance to Water in Feet/Metres
Existing Roadway Bridge	1093/333.1	35/10.7
Proposed Roadway Bridge	1083/330.1	25/6.1
Existing CN Rail Bridge	1078/328.6	20/6.1



Alternative A (5 Span Steel I-Girder) was selected as the Preferred Structure Type because:

- It is a standard structure type in Minnesota and Ontario
- Typical construction methodology and maintenance
- Fewer number of piers in river
- Can accomodate lower bridge profile
- Can use prefabricated elements

The Preferred Plan includes the following:

- The replacement of the existing bridge with a new bridge on a new alignment located approximately 3 ft (1m) upstream of the existing bridge
- Alignment and profile improvements that will improve sight distance across the bridge
- Realignment and regrading of Port of Entry Tie-in to accomodate the new bridge location
- Drainage improvements
- Maintaining two lanes of traffic on the existing bridge during construction
- A sidewalk on the south (upstream) side of the bridge and shoulders on both sides of the roadway

Mitigation & Protection Commitments

The Recommended Plan will include commitments by the Ontario Ministry of Transportation (MTO) and the Minnesota Department of Transportation (MnDOT) to eliminate or reduce impacts, and to future consultation with the public and other stakeholders.

In general, these commitments will be carried out during subsequent study stages, and in some cases, during construction. *The Ontario Transportation Environmental Study Report* (TESR), the *Canadian Environmental Assessment Act Project Description*, and the *U.S. Environmental Document*, will contain comprehensive details of these commitments.

CURRENT STUDY:

Environmental investigations completed as part of this Preliminary Design and Environmental Assessment Study have identified key constraint and high sensitivity areas which will be addressed through appropriate mitigation and protection measures.

The Preferred Plan includes the following site-specific mitigation measures:

Natural Environment:

- Mitigate fisheries impacts in accordance with the MTO/Department of Fisheries and Oceans (DFO)/Ministry of Natural Resources and Forestry (MNRF) Fisheries Protocol and the Minnesota Department of Natural Resources (MnDNR) and U.S. Fish and Wildlife Service (USFWS) guidelines
- Restrict vegetation removal along future bridge alignment
- Identify and mitigate Species-at-Risk/Endangered Species impacts in accordance with U.S. and Canadian regulations; where required confirm absence or presence of Species-at-Risk/Endangered Species
- Adhere to timing restrictions for in-water work and vegetation clearing as defined by the MnDNR, USFWS, MTO, DFO, MNRF, Environment and Climate Change Canada (ECCC)
- Minimize and mitigate for wetland impacts through the U.S. Army Corps of Engineers 404 permit

Social and Cultural Environment:

- Develop a Memorandum of Agreement between MnDOT, the U.S. Federal Highway Administration and the Minnesota State Historic Preservation Office for removal of historic bridge #9412
- Impacts to adjacent Peace Park, owned by the City of Baudette, will be temporary for grading of new bridge abutment.

DETAIL DESIGN:

- Complete design to a constructability level of detail
- Engineering work in the areas of:
  - Bridge
  - Drainage and stormwater
  - Highway design
  - Foundations
  - Surveys
- Public and stakeholders will be notified of the start of the Detail Design Phase
- Develop a construction staging and traffic management plan
- Confirm drainage and stormwater management requirements
- Confirm utility relocations and realignments
- Confirm and mitigate fish, terrestrial, and species-at-risk impacts
- Complete additional environmental investigations

CONSTRUCTION:

- Environmental monitoring during construction
- Erosion and sediment control
- Control construction dust and construction noise
- Construction of replacement Baudette/Rainy River International Bridge is tentatively scheduled for 2018

Figure 1:
Wetland and Riverine impacts will be mitigated through permitting.

Figure 2:
Removal of Historic Bridge will be mitigated as defined in the Memorandum of Agreement

Figure 3:
Temporary impacts to Baudette's Peace Park will occur during construction of new bridge abutment.

Thank you
for attending

To provide your comments,
please fill out a comment sheet and place it in the comment box at today's meeting, or send your comments to:

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We would appreciate receiving your comments by June 24, 2015

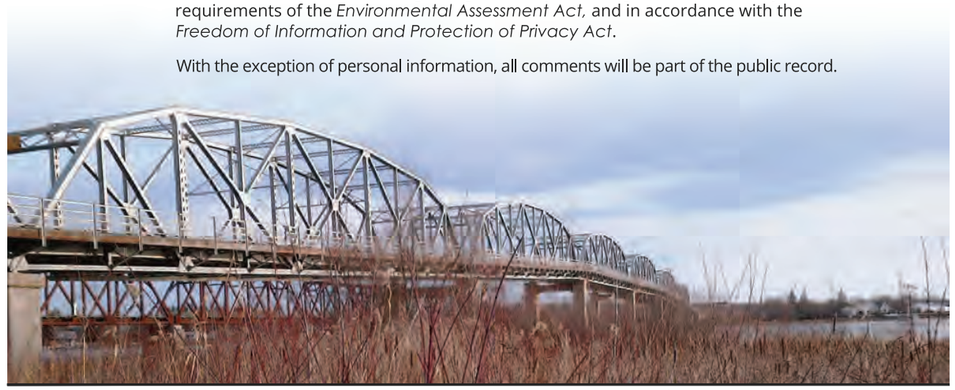
Your input is important!

If you have any accessibility requirements in order to participate in this project, please contact one of the project team members listed above

Freedom of Information & Protection of Privacy Act

Comments and information regarding this study are being collected to satisfy the requirements of the *Environmental Assessment Act,* and in accordance with the *Freedom of Information and Protection of Privacy Act*.

With the exception of personal information, all comments will be part of the public record.



COMMENT FORM

Baudette/Rainy River International Bridge Replacement on Highway 11, Town of Rainy River (GWP 6046-10-00)

Public Meeting 3, Rainy River Recreation Centre – Wednesday, May 25, 2015

Your comments will help us to understand what is important to people in the study area. Please provide your comments on the following questions.
(*Use the back of this sheet if you need more space.*)

1. Do you support the Preferred Plan?

2. Do you have any other additional comments or questions?

Please leave your completed comment sheet in the drop box provided or submit (**by June 24, 2016**) to:

Nevena Gazibara, B.Sc., MREM
Environmental Planner
Stantec Consulting Ltd.
300-49 Bathurst Street
Toronto, ON M5V 2P2
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Name and Address (optional) PLEASE PRINT

Name:

Mailing Address:

(include postal code)

Tel: Fax: Email:

Information collected will be used in accordance with the *Freedom of Information and Protection of Privacy Act*. With the exception of personal information, all comments will become part of the public record.

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COMMENT FORM

Baudette/Rainy River International Bridge Replacement on Highway 11, Town of Rainy River (GWP 6046-10-00)

Public Meeting 3, Rainy River Recreation Centre – Wednesday, May 25, 2015

C6: U.S. Environmental Assessment/ Environmental Assessment Worksheet

ENVIRONMENTAL ASSESSMENT/ ENVIRONMENTAL ASSESSMENT WORKSHEET

Trunk Highway: 72
State Project: 3905-09

From the United States Border Control to the Canadian Border Control in
City: Baudette, in County: Lake of the Woods of Minnesota
Section(s), Township(s), Range(s): 35, 161N, 31W
and
Town: Rainy River, in Province: Ontario, Country: Canada

Submitted pursuant to 42 U.S.C. 4332 and M. S. 116D
by the
U.S. Department of Transportation
Federal Highway Administration and
Minnesota Department of Transportation
for the
Baudette / Rainy River International Bridge Replacement Project

Contacts:

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MnDOT: Joe McKinnon
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MnDOT District 2
3920 Highway 2 West
Bemidji, MN 56601
Phone: 218-755-6517

Recommended for approval by:

MnDOT – District Engineer — Date: 1/27/2017

Approved by:

MnDOT – Chief Environmental Officer — Date: 1/30/17

Approved by:

WILLIAM R LOHR
2017.01.30 13:02:47 -06'00'

FHWA – Project Development Engineer — Date

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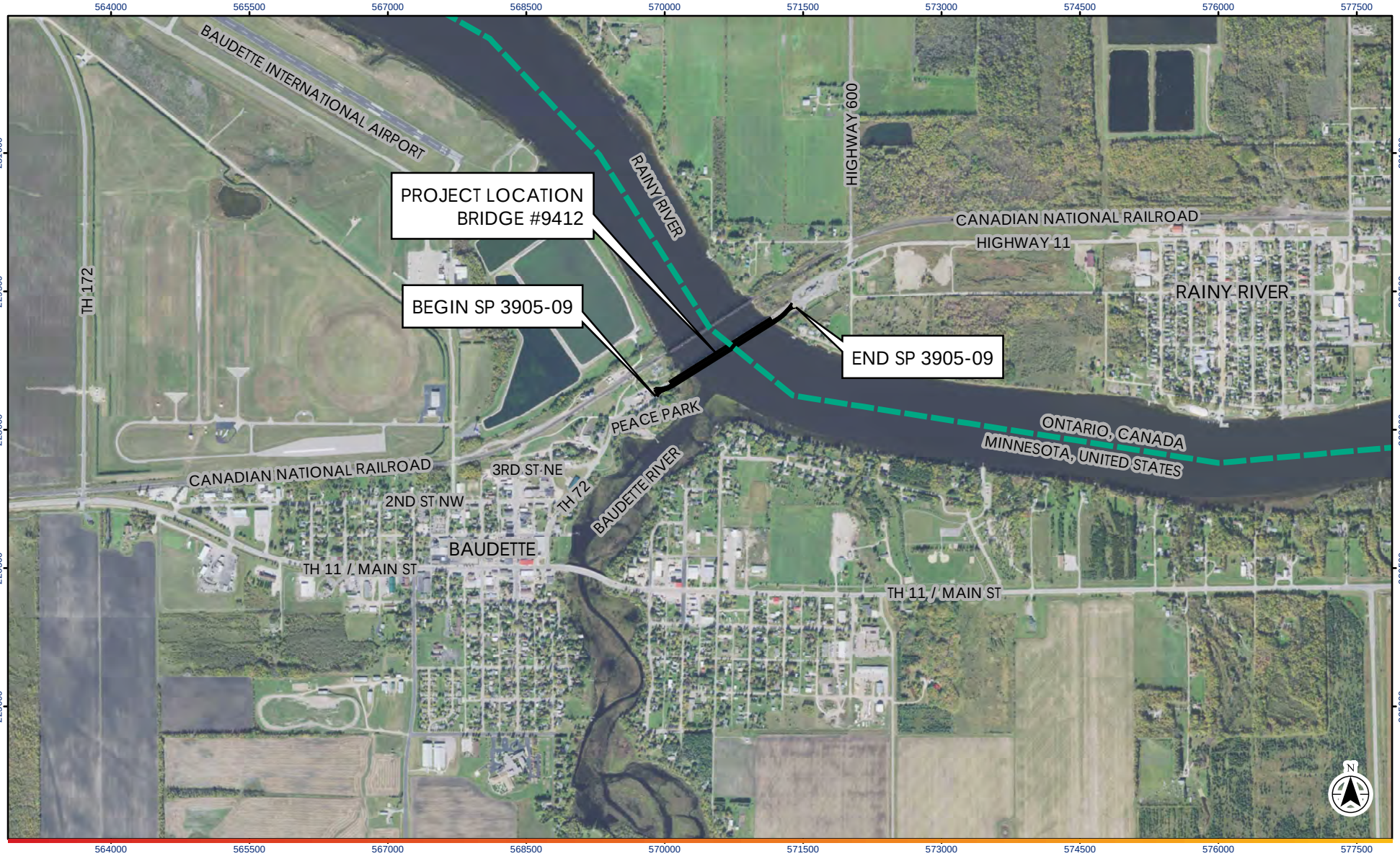

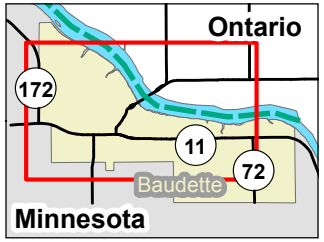

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Notes
1. Coordinate System: NAD 1983 HARN Adj MN Lake of the Woods South Feet.

2. Aerial: MnGEO WMS, 2015 FSA.

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Project Location 193802870
T161N, R31W, S35
City of Baudette, MN

Prepared by aribachonek on 2017-01-08

Client/Project SP 3905-09
MnDOT
Baudette/Rainy River International Bridge Replacement

Figure No.
1

Title
PROJECT LOCATION AERIAL

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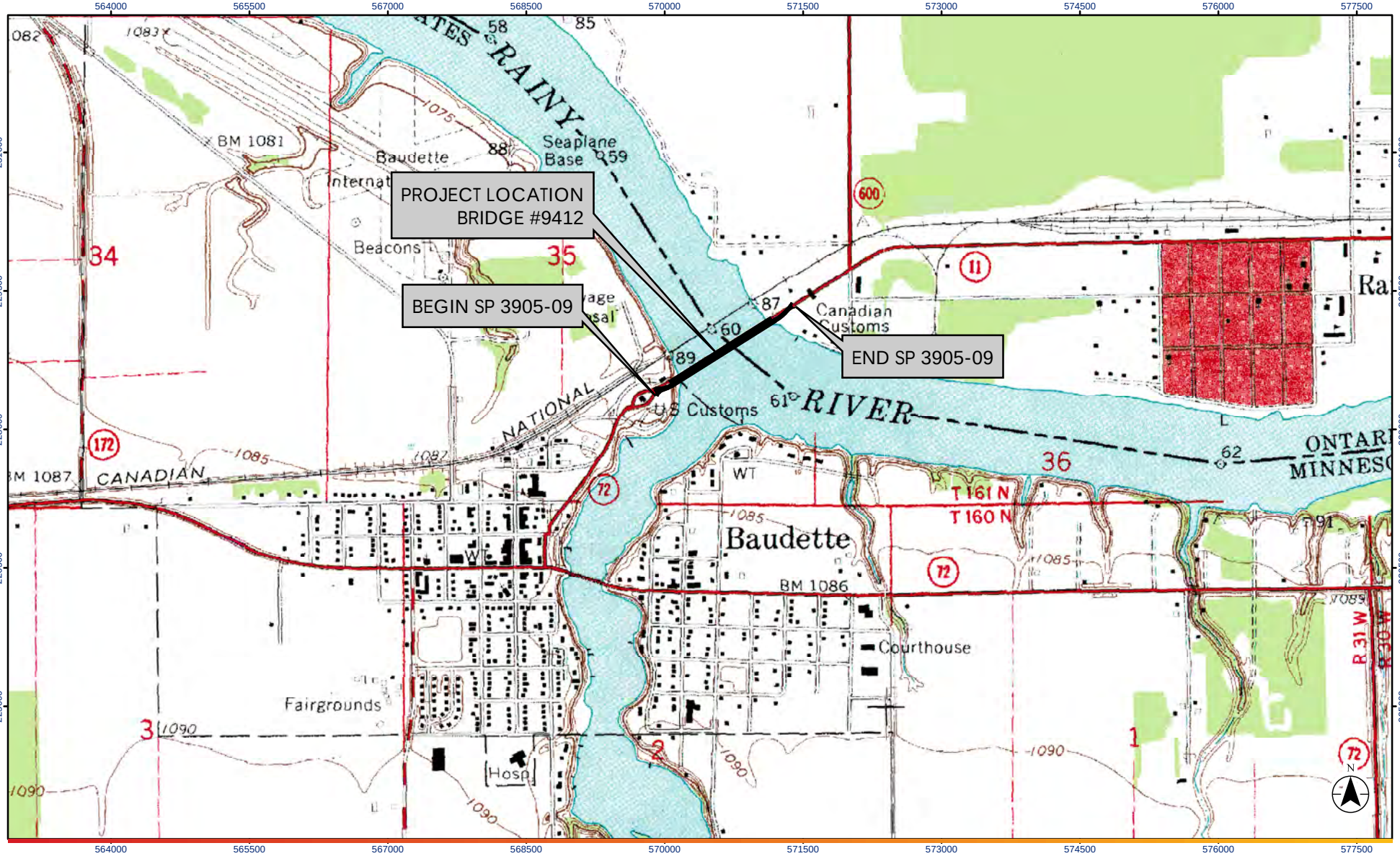

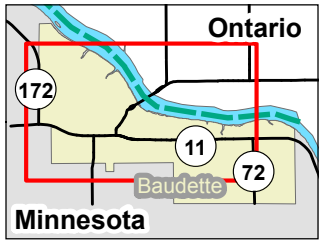

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Notes
1. Coordinate System: NAD 1983 HARN Adj MN Lake of the Woods South Feet.

2. USGS, Baudette Quad, 1968, Scale 24k.

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Project Location 193802870
T161N, R31W, S35
City of Baudette, MN

Prepared by aribachonek on 2017-01-08

Client/Project SP 3905-09
MnDOT
Baudette/Rainy River International Bridge Replacement

Figure No.
2

Title
PROJECT LOCATION USGS

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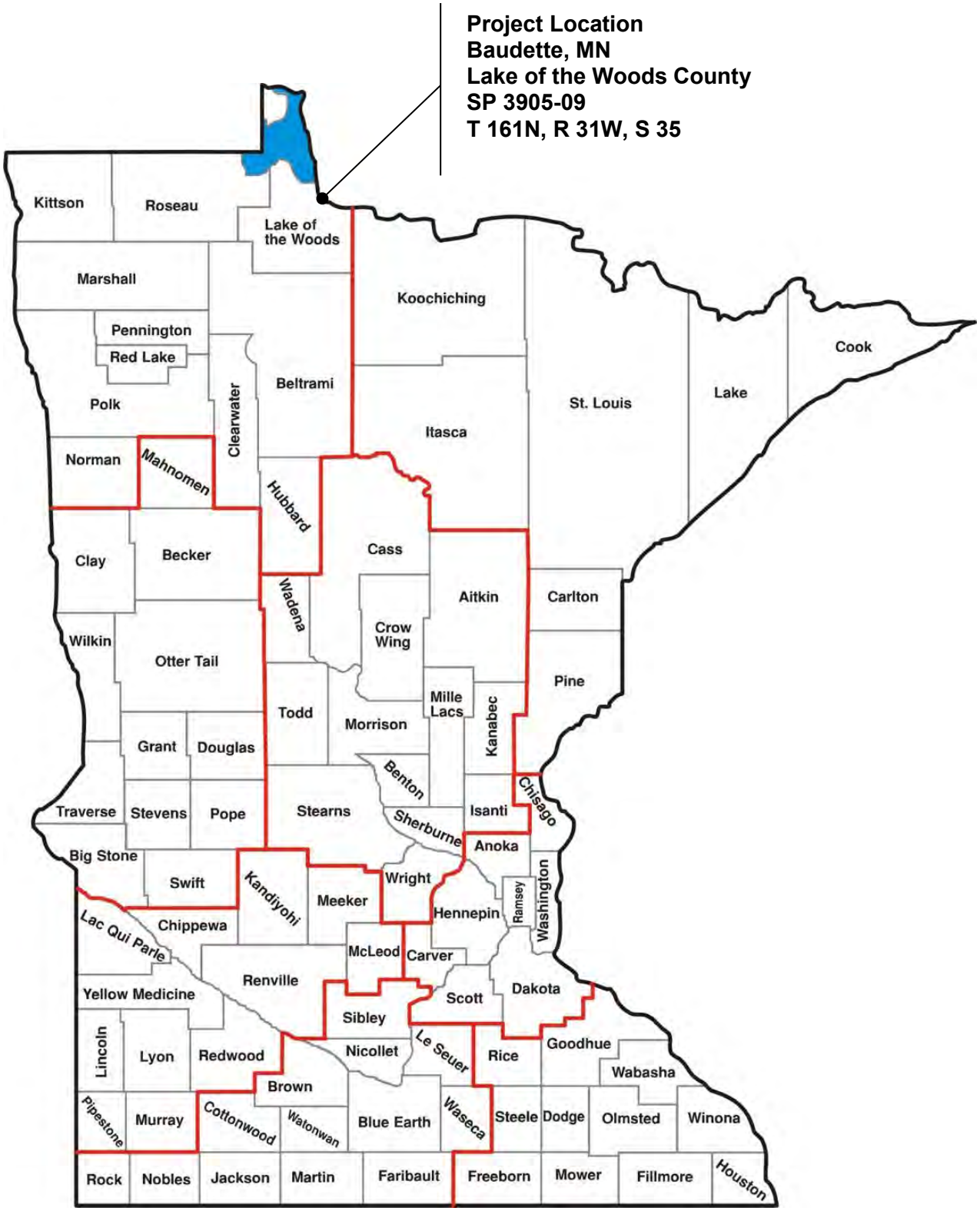

Figure 3: Area Map

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1.0 REPORT PURPOSE

This Environmental Assessment/Environmental Assessment Worksheet (EA/EAW) for the proposed Baudette / Rainy River International Bridge Replacement Project in Baudette, Minnesota, United States and Rainy River, Ontario, Canada provides background information and analysis, including:

- need for the proposed project
- alternatives considered
- environmental impacts and mitigation
- agency coordination and public involvement

This EA was prepared as a part of the National Environmental Policy Act (NEPA) process and state environmental review process to fulfill requirements of both 42 USC 4332 and M.S. 116D. At the federal level, the EA is used to provide sufficient environmental documentation to determine the need for an Environmental Impact Statement (EIS) or that a Finding of No Significant Impact (FONSI) is appropriate. At the state level, the EA is used to provide sufficient environmental documentation to determine the need for a state EIS or that a Negative Declaration is appropriate.

At the state level, this document also serves as an Environmental Assessment Worksheet (EAW). Minnesota Rules 4410.1300 allows the EA to take the place of the EAW form, provided that the EA addresses each of the environmental effects identified in the EAW form. This EA includes each of the environmental effects identified in the EAW form.

The Minnesota Department of Transportation is the proposer and Responsible Governmental Unit for this project within the Minnesota, United States boundary. Preparation of an EAW is considered discretionary under Minnesota Rules 4410.4500.

This document is made available for public review and comment in accordance with the requirements of 23 CFR 771.119 (d) and Minnesota Rules 4410.1500 through 4410.1600.

1.1 COORDINATED U.S. AND CANADIAN ENVIRONMENTAL ASSESSMENT PROCESS

The environmental assessment study process for this project, including public and agency consultation, has been developed with coordinated efforts from the Minnesota Department of Transportation (MnDOT) and the Ontario Ministry of Transportation (MTO) to effectively coordinate the U.S. and Canadian study processes.

The Canadian study process follows the MTO Class Environmental Assessment Process as a Group 'B' Project for Provincial Transportation Facilities. In addition to the MTO environmental assessment process, a Project Description will be submitted to the Canadian Environmental Assessment Agency to determine whether a federal environmental assessment will be required in accordance with the Canadian Environmental Assessment Act (2012).

The Minnesota Department of Transportation's (MnDOT's) environmental assessment process follows Minnesota's environmental review process set by the National Environmental Policy Act (NEPA), and Minnesota Environmental Policy Act (MEPA), to fulfill requirements at both the state and federal level. A combined Environmental Assessment/Environmental Assessment Worksheet (EA/EAW) was prepared. The EA/EAW uses public input and technical analysis to determine the needs, deficiencies, impacts, mitigation, and design of the proposed project. The EA/EAW is distributed for public comment over a 45-day public review period. At the federal level, the EA is used to provide sufficient environmental documentation to determine the need for an Environmental Impact Statement (EIS) or that a Finding of No Significant Impact (FONSI) is appropriate. At the state level, the EAW is used to provide sufficient environmental documentation to determine the need for an EIS or that a Negative Declaration is appropriate. The U.S. Environmental Assessment documentation will provide information on the U.S. process. The coordinated U.S. and Canadian EA processes for this project is shown in Figure 4.

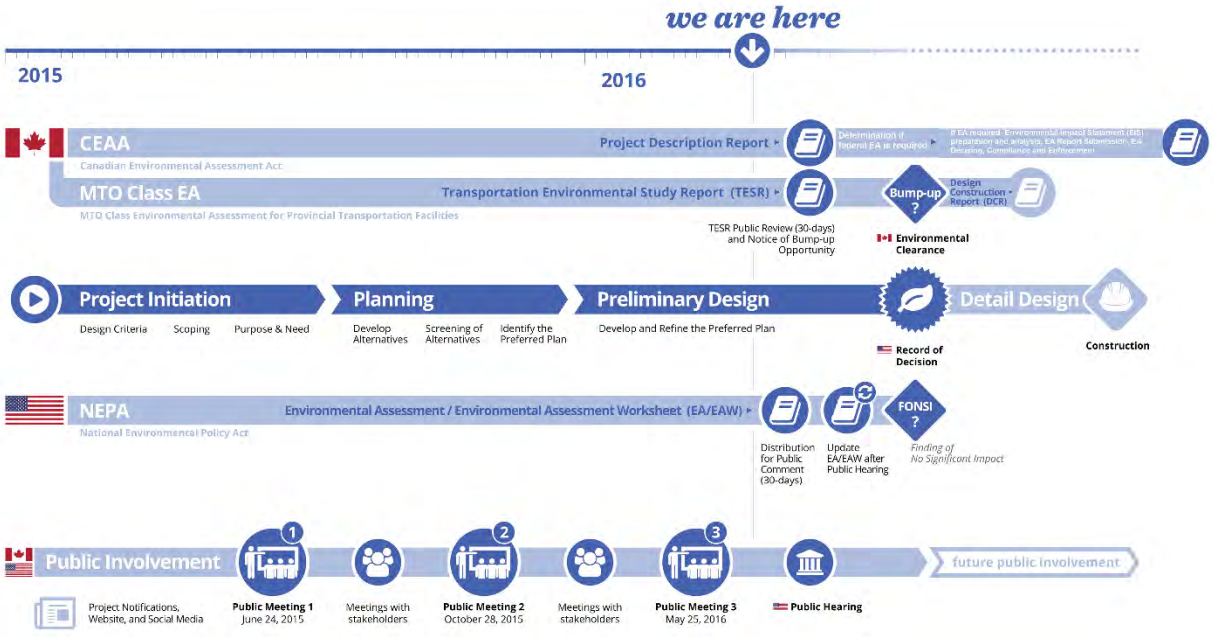


Figure 4: Overview of Class EA Process for U.S. and Canada

2.0 PURPOSE AND NEED FOR PROJECT

2.1 PURPOSE STATEMENT

The Baudette / Rainy River International Bridge (Bridge No. 9412) spans the Rainy River from Baudette, Minnesota to Rainy River, Ontario, Canada. The bridge was originally built in 1959, and has served as an international border crossing since that time. As part of a joint ownership agreement, the Minnesota Department of Transportation (MnDOT) and the Ontario Ministry of Transportation (MTO) maintain and operate the bridge. Minnesota Trunk Highway (TH) 72 and Highway 11 carry traffic over the bridge between the U.S. and Canada. Full service Ports of Entry (Customs) are located immediately after exiting on either end of the bridge.

The purpose of the Baudette / Rainy River International Bridge Replacement Project is to address the deteriorating condition of the bridge structure in order to maintain the international exchange of vehicular, freight and pedestrian traffic across the Rainy River at this location as follows:

- To provide a level of service that meets the transportation needs of area residents, tourists, businesses/industries, and farms;
- To address geometric deficiencies; and
- To ensure the continued serviceability of the route.

Additionally, Chapter 152 of the Minnesota Legislature 2008 Session Laws directs MnDOT to establish a bridge improvement program with an emphasis on structurally deficient and fracture critical bridges. The proposed improvements to this bridge are funded under the Chapter 152 program.

2.2 NEEDS / DEFICIENCIES

2.2.1 Primary Need

2.2.1.1 Need for Structurally Sound Bridge Crossing of the Rainy River between the Baudette Minnesota and Rainy River Ontario Ports of Entry

The primary need for the project is to address the deteriorating condition of the international bridge, and in doing so provide the public with a structurally sound bridge crossing over the Rainy River. The existing bridge carries approximately 1,300 vehicles per day, projected to increase to 1,400-1,450 by 2038 (MnDOT/MTO). The closest international crossing is located approximately 70 miles away.

MnDOT's Minnesota Structure Inventory Report indicates that Bridge #9412 is a fracture critical (non-redundant) bridge with a sufficiency rating of 48.8 out of 100 (Appendix B – MnDOT 2016). The bridge inspection notes provided in the Structure Inventory Report also indicate that inspections were performed with both MnDOT and MTO present on an annual basis. Structural deficiencies are described below:

2.2.1.1.1 Superstructure & Deck Deficiencies

Structural elements of the bridge have been observed to be actively corroding, with some members experiencing substantial section loss (up to 50%). Paint failure, microbial induced corrosion, and pack rust were identified on the surfaces and at the interfaces of many structural members and their connections. Additionally, trusses were found to display free edge distortion (buckling of the unfastened sides of gusset plates) as well as pack rust on many gusset plate connections.

The rocker bearings are in full expansion and in most cases are in contact with the lower chord of the superstructure. This condition has existed for several years and has likely contributed to the bending of several anchor bolts.

In certain areas, the open grid deck was observed to have moderate surface corrosion, several broken welds, and pack rust at its interface with the support beams. Several instances of missing and bent/broken grid bars and other repairs at various locations were noted throughout the field inspection notes (Appendix B – MnDOT 2016).

Due to observations noted in the April 2016 structural inspection report (MnDOT 2016), the superstructure and deck have most recently been given a National Bridge Inventory (NBI) condition rating of 5, indicating that they are in “fair” condition.

2.2.1.1.2 Substructure Deficiencies

The most recent underwater inspection report (See Appendix B – Ayres Associates & Collins Engineers, Inc. 2012), found that the six underwater piers (Piers 2 through 7, from west to east) were generally in good condition with no significant, observable structural defects, but that all six underwater piers showed light concrete scaling within a one-foot band from the top of the caissons. Additionally, the steel caisson shells for Piers 2 through 6 had light to moderate surface corrosion from the top to 3.5 feet below the water line. Below this point, there was moderate to heavy surface corrosion with 0.5-inch to 3-inch diameter rust nodules and up to 1/16-inch-deep pitting over 50% of the area. Moderate to heavy timber debris accumulation (1 foot in diameter and smaller) was also observed at Piers 4 and 5 from the channel bottom to the waterline.

Scour depressions up to 3 to 4 feet deep were observed around the downstream sides, particularly in areas where there was minimal riprap.

As noted in the April 2016 structural inspection report (Appendix B – MnDOT 2016), the substructure for the bridge received an NBI rating of 5, indicating a “fair” condition. The piers were given a Minnesota Scour Code of ‘O’ indicating that the bridge foundations have been determined to be stable for predicted scour conditions, but a “Scour Plan of Action” needs to be established to monitor the bridge during high water events. The scour was last evaluated in 1998.

2.2.2 Secondary Needs

2.2.2.1 Maximizing Maintenance of Traffic during Construction

Maintaining the continuity of traffic during construction will be critical as the Baudette/Rainy River International Bridge provides a vital connection within this region's transportation system. For the approximately 1,300 vehicles per day that use the crossing, the bridge provides access to the many resources that are shared between the two countries, including education and employment facilities, tourism, recreation, as well as timber, mining, and agricultural industries. The closest Customs crossing with continuous operations (open 24/7) is located in International Falls, Minnesota / Fort Francis, Ontario which would add a 140-mile round-trip detour to the local Rainy River and Baudette communities.

While Baudette, Minnesota and Rainy River, Ontario do not have a reciprocity agreement relative to emergency services, the Rainy River ambulance often transports critically ill/injured patients to the Baudette Regional Airport for medical airlift as the Rainy River community does not have an airport facility.

2.2.2.2 Pedestrian Facilities Deficiencies

There is a need to provide a structurally sound bridge crossing for pedestrian, bicycle, and non-motorized traffic. The existing bridge has provided a pedestrian crossing for residents of Rainy River and Baudette since the cantilevered walkway was constructed as part of the original bridge in 1959.

Additionally, the current pedestrian facilities are not ADA compliant. The sidewalk is constructed of a timber plank decking over steel beams and stringers that are in similar condition to the other structural members under the main bridge deck. Several instances of broken and generally weathered timber planks are cited in the 2009 bridge inspection field notes that have not been addressed (Appendix B – MnDOT 2016).

2.2.3 Additional Bridge Operational and Geometric Deficiencies

As detailed in the 2013 Bridge Rehabilitation Study Report, there are additional operational and geometric deficiencies identified in the current bridge related to the vertical clearance, load capacity, and geometric standards.

2.2.3.1 Vertical Clearance

The current bridge experiences daily over-dimensional load traffic. Due to the limited existing vertical clearance of 14.8 feet, the port authorities currently implement special procedures to accommodate over-dimensional loads. First, as documented in the bridge inspection notes, portal frames and sway frames in all spans have distortion from traffic impacts. The inspection notes also indicate that sway frames continue to get bumped by over-dimensional loads; bent members are documented but may be bent slightly more from year to year (Appendix B – MnDOT 2016). To avoid collisions, over-dimensional loads (over 14.8 feet high) are required to unload or otherwise reduce heights to cross the existing structure or use an alternative route. Second, some over-dimensional loads require travel down the center of the

bridge structure where the vertical clearance is maximized, prohibiting two-way traffic, and causing delays for on-coming traffic.

2.2.3.2 Load Capacity

Currently, the structural condition of the bridge can support legal loads of 80,000 lbs. traveling at a maximum of 10 mph, and permitted loads up to 88,000 lbs. when additional special procedures are followed. The bridge structural loading capacity is not consistent with special permitted roadway loading limits on TH 72 which allows loads up to 100,000 lbs., creating a limiting segment on an international corridor. Efficient travel of trucks with permitted overweight loads is not well-accommodated since the closest international crossing is 70 miles away; this inefficiency impedes international commerce.

2.2.3.3 Safety Standards

The main span guardrail and approach span guardrails do not meet current NCHRP 350 safety standards.

2.2.4 Additional Considerations

The following describes additional considerations that would be desirable to address:

2.2.4.1 Structural Redundancy

The Baudette/Rainy River International Bridge is a fracture critical bridge with non-redundant design. Current designs in compliance with MnDOT design standards do not contain fracture critical design components. Chapter 152 of the Minnesota Legislature 2008 Session Laws directs MnDOT to establish a bridge improvement program with an emphasis on structurally deficient and fracture critical bridges.

2.2.4.2 Regulatory Requirements

2.2.4.2.1 Joint Ownership with the Ontario Ministry of Transportation

The State of Minnesota and Province of Ontario operate the bridge under a joint bridge ownership agreement. As part of the joint ownership agreement, each transportation agency is responsible for the maintenance on their respective half of the bridge structure. Since the bridge is jointly owned, decisions regarding how to address the needs of this bridge need to be made jointly by MnDOT and the MTO.

2.2.4.2.2 Historic Resources

The current bridge structure is eligible for listing in the National Register of Historic Places (NRHP). Additionally, the project location is within the Minnesota and Manitoba Railroad Corridor Historic District, which includes the Canadian National (CN) Railway Bridge, located directly downstream of the Baudette/Rainy River International Bridge. The CN Railway Bridge has been determined eligible for listing in the NRHP. See Appendix E for the State of Minnesota Historic Preservation Office (MnHPO)'s letter of determination of no effect to the Canadian National (CN) Railway Bridge dated 10 December 2015.

Because federal funds will be used to complete this project, effects to the bridge must be evaluated in accordance with Section 106 of the National Historic Preservation Act, as well as Section 4(f) of the Department of Transportation Act. See Appendix E for additional coordination with MnHPO.

2.2.4.2.3 Parkland

In addition to protecting historic resources as described above, Section 4(f) provides protections for publicly owned parks, trails, recreational areas, and wildlife and waterfowl refuges. Section 4(f) requires avoidance unless there is no prudent and feasible alternative to the use. If avoidance is not possible, then Section 4(f) requires all possible planning to minimize harm to the park property. Peace Park is a Section 4(f) protected park property located directly adjacent to the current bridge.

2.2.4.2.4 Airport

The Baudette International Airport is located approximately 0.5 miles northwest of the Baudette / Rainy River International Bridge. The proposed bridge lies under the approach surface on that end of the Baudette International Airport runway and will need to stay under a 50:1 slope from the end of the primary surface (200 feet beyond the end of the runway). As such, coordination with the Federal Aviation Administration (FAA) has been initiated to verify compliance with these regulations.

2.2.4.2.5 Navigational Channel

The United States Coast Guard (USCG) maintains a navigational channel on the Rainy River and has jurisdiction over structures spanning the channel on the U.S. side of the river. Transport Canada has similar jurisdiction over the navigational channel on the Canadian side of the river. The USCG has determined that the use of the Rainy River in this location is almost entirely recreational and therefore has determined that the CN Railway Bridge located just downstream will be the controlling structure to set the required navigational clearances.

The following requirements were advised by the USCG to apply to the U.S. side of the river:

- The low steel elevation on the proposed bridge needs to be higher than the low steel of the current CN Railway Bridge. If possible, the proposed bridge should be 5 feet higher than the current CN Railway Bridge low elevation.
- The horizontal navigation channel provided beneath the current bridge would:
  - need to have a channel width of 100 feet or more;
  - not need to be in a specific location; and
  - not need to be offset of the border.

2.2.4.2.6 Stormwater

The current bridge deck is an open grate, allowing stormwater to drain directly to the Rainy River without treatment. Roadway contaminants (gasoline, oil, salt, etc.) or accidental spills of hazardous materials also discharge directly into the Rainy River. The existing infrastructure meets current stormwater management standards but does not meet recommended agency practices. Construction of bridge and/or roadway improvements may require incorporation of stormwater management practices consistent with current regulations.

3.0 ALTERNATIVES

3.1 MAJOR ALTERNATIVE DEVELOPMENT

Early in the project development process, MnDOT reviewed two build options for alternative development including (1) building a new structure at a different location without affecting the historic integrity of the old bridge, and (2) rehabilitating the historic bridge without affecting the historic integrity of the structure. The Programmatic Section 4(f) Evaluation and Approval for FHWA Projects that Necessitate the Use of Historic Bridges for Bridge 9412 (0, Section 5.0 – Avoidance Alternatives) describes the process for identifying alternatives, including the rationale for rejecting alternatives.

3.1.1 Bridge on a New Location

Alternatives for this project were developed with the intent to provide little to no disruption to either the U.S. and Canadian Ports of Entry (POE) facilities. Relocation of the port facilities would impart impacts and costs that would be outside of the scope of this project.

Additionally, as discussed in Sections 4.3.10 (Aviation) and 4.3.11 (Rainy River and Baudette River Navigational Traffic Impacts), other existing constraints within the project area include the Baudette International Airport airspace and navigational vertical clearance for the Rainy River. These airspace/navigational constraints, along with the need to tie into the existing POEs prohibited the development of a feasible replacement bridge in a new location.

3.1.2 Bridge Rehabilitation

MnDOT completed a bridge rehabilitation study in May 2013 to evaluate rehabilitation/replacement options. The rehabilitation study included minor rehabilitation options that result in relatively low impacts to the historic integrity of the bridge as well as major rehabilitation alternatives with a greater potential for impacts to historic features. In general, these rehabilitation options would provide longer service life and/or address more of the project's secondary needs and additional considerations. Five rehabilitation alternatives were presented in the study as feasible, two of which the State of Minnesota Historic Preservation Office (MnHPO) identified as meeting the U.S. Secretary of the Interior Standards for Rehabilitation. However, as discussed in Section 2.2.4.2.1 (Joint Ownership with the Ontario Ministry of Transportation), MnDOT and MTO are required to make joint decisions when addressing the needs of the bridge.

MnDOT's mitigation and rehabilitation options are constrained by some of MTO's current practices. Based on MTO's investigation, the Ontario Heritage Bridge Guidelines application for Bridge 45-110 resulted in the determination of moderate heritage value. This determination disqualifies the bridge from the Ontario Heritage Bridge List; therefore, MTO concluded that rehabilitation of the existing bridge is not a viable option and recommended replacement. MTO supported their recommendation by indicating that the bridge is experiencing serious ongoing maintenance issues (i.e. scour) and operational deficiencies, as

supported by its fracture critical classification. Without MTO support, rehabilitation is not a prudent or feasible avoidance alternative.

Therefore, rehabilitation of the existing bridge was eliminated from consideration.

A public meeting was held to present the need for the project and the determination that the project would include a full bridge replacement.

3.2 ALIGNMENT ALTERNATIVES

The development and evaluation of new bridge replacement alternatives was conducted in two independent parts: Roadway Alignments and Bridge Structure Types. This approach was possible because all Alignment Alternatives would be compatible with all Bridge Type Alternatives. The approach facilitated more manageable sub-processes, more refined analysis, and clearer communication with project stakeholders.

The Alignment Alternatives were developed and evaluated through a collaborative discussion among the Technical Advisory Committee (TAC) which included MnDOT project engineers, MTO project engineers, Port of Entry staff and design consultants. The TAC met regularly through the project development process. All of the alignment alternatives were developed to meet the constraints posed by the FAA for airspace, and USCG and Transport Canada for navigational clearances, and designed to tie into the existing Ports of Entry as quickly as possible.

Details of the alternatives decision-making process are discussed in each of the sections below. Appendix A and Appendix C show the alternative Figures and supporting Tables discussed throughout this section.

3.2.1 Alignment Alternatives Considered

Six preliminary Alignment Alternatives were presented to the Technical Advisory Committee (TAC) and are summarized in this section.

3.2.1.1 Alignment Alternative 1 – Downstream of Existing Alignment (North Side)

Alignment Alternative 1 (Figure 10 in Appendix A) is for the replacement bridge to be located north or downstream of the existing bridge with 3 feet separation from the existing bridge. Alignment Alternative 1 is parallel to the existing bridge with the centerline shifted approximately 52.1 feet downstream. The alignment curves from the end of the bridge to tie back into the existing alignment just before the channelization of the Port of Entry lanes.

3.2.1.2 Alignment Alternative 2 – Upstream of Existing Alignment (South Side)

Alignment Alternative 2 (Figure 11 in Appendix A) is for the replacement bridge to be located south or upstream of the existing bridge with 3 feet separation from the existing bridge. Alignment Alternative 2 is parallel to the existing bridge with the centerline shifted approximately 46.7 feet upstream. Compared to

the existing alignment, this alignment features a shorter, straight approach on the U.S. side and a longer, curved approach on the Canadian side, both of which tie back into the existing alignment just before the channelization of the Port of Entry lanes.

3.2.1.3 Alignment Alternative 3A – Existing Alignment, Temporary Modular Bridge (TMB North of Existing Bridge)

Alignment Alternative 3A (Figure 12 in Appendix A) is for the replacement bridge to be located on the alignment of the existing bridge. To maintain traffic during construction, a Temporary Modular Bridge (TMB) would be located north or downstream of the existing bridge in a similar location as Alignment Alternative 1 to provide access across the border to the Port of Entry facilities.

3.2.1.4 Alignment Alternative 3B – Existing Alignment, Temporary Modular Bridge (TMB South of Existing Bridge)

Alignment Alternative 3B (Figure 12 in Appendix A) is for the replacement bridge to be located on the alignment of the existing bridge. To maintain traffic during construction, a TMB would be located south or upstream of the existing bridge in a similar location as Alignment Alternative 2 to provide access across the border to the Port of Entry facilities.

3.2.1.5 Alignment Alternative 4 – Downstream of Existing Alignment (North Side), Staged Construction

Alignment Alternative 4 is for the replacement bridge to be located to the north or downstream of the existing bridge (similar to Alignment Alternative 1); however the centerline of Alignment Alternative 4 would be located only 28.5 feet from the existing centerline. This would be accomplished by constructing a section of the replacement bridge (U.S. bound) downstream of the existing bridge with approximately 3 feet of separation from the existing bridge. Two-way access would be maintained across the border on the existing bridge until construction of new section of replacement bridge is complete. When two-way access is shifted to the completed section of the replacement bridge, the existing bridge is removed and the final section of the replacement bridge is constructed.

3.2.1.6 Alignment Alternative 5 – Upstream of Existing Alignment (South Side), Staged Construction

Alignment Alternative 5 is for the replacement bridge to be located to the south or upstream of the existing bridge (similar to Alignment Alternative 2), however the centerline of Alignment Alternative 5 would be located only 27.1 feet from the existing centerline. This would be accomplished by constructing a section of the replacement bridge (Canada bound) downstream of the existing bridge with approximately 3 feet of separation from the existing bridge. Two-way access would be maintained across the border on the existing bridge until construction of new section of replacement bridge is complete. When two-way access is shifted to the completed section of the replacement bridge, the existing bridge is removed and the final section of the replacement bridge is constructed.

3.2.2 Evaluation Process

Each of the six Alignment Alternatives described in this section meet the Purpose and Need for the project. A comparison of the alignment alternatives was made by the TAC. Although Alignment Alternatives 4 and 5 had the same geometric advantages, it also had similar environmental impacts. Disadvantages to staged construction include increases in traffic delays, duration of construction operations and cost. Additionally, staged construction would require an overbuild of the new bridge to provide adequate width to maintain two-way traffic through construction. While Alternatives 4 and 5 maintain similar environmental impacts as other alignment alternatives under consideration, they were eliminated from further consideration based on the increased cost and construction timing for the project and were not subjected to more detailed evaluation.

A process was developed for selecting the Preferred Alignment Alternative from the remaining four Alignment Alternatives:

1. Alignment Alternative 1 – Downstream of Existing Alignment (North Side)
2. Alignment Alternative 2 – Upstream of Existing Alignment (South Side)
3. Alignment Alternative 3A – Existing Alignment, Temporary Modular Bridge (TMB North of Existing Bridge)
4. Alignment Alternative 3B – Existing Alignment, Temporary Modular Bridge (TMB South of Existing Bridge)

The development of evaluation criteria and the evaluation of alignment alternatives are discussed below.

3.2.3 Evaluation Criteria

Evaluation criteria that address the key issues for selecting a preferred alignment alternative were identified by the project team. The evaluation criteria reflect the proposed project area constraints (on both Canadian and U.S. sides of the project area) identified during the collection of background and existing conditions data.

The evaluation criteria, as shown in Table 1, are independent variables, each of which may contribute a positive or negative influence on the overall suitability of an alternative. .

Table 1: Preferred Alignment Evaluation Criteria

Category	Criteria	Factors Considered
Transportation Engineering	*Geometrics:*	Horizontal alignment Vertical alignment Impacts to Port of Entry Facilities Proximity to adjacent CN Rail Bridge Sightlines for Port of Entry Facilities
	Constructability:	Construction feasibility Construction staging Temporary impacts to Port Operations Delay for emergency service providers Delay for residents and commercial traffic
	Cost:	Capital cost including construction and property acquisition Future maintenance costs
	Pedestrians/Cyclists:	ADA/Accessibility Safety and access
Social & Cultural Environment	*Property/Right of Way:*	Private property and public land required
	Archaeology and Cultural Heritage:	Registered Archaeological Sites Areas of high archaeological potential Culturally significant features within Peace Park
	Impacts to Park Land/4(f):	Designated parkland on U.S. side of border
	Aesthetics/Visual Impacts:	Aesthetics of bridge structure
	Environmental Justice/Business Impacts/Access Impacts:	Local businesses that rely on traffic Access restrictions for residents and travelers
Natural Environment	*Fish and Aquatic Habitat:*	Alteration to existing watercourse (i.e., number of piers and locations) Sensitive aquatic habitat (i.e., spawning areas)
	Wildlife and Terrestrial Habitat and Vegetation:	Threatened and Endangered Species/Species-at-Risk Area of sensitive/environmentally significant areas impacted Removal of vegetation Impact to wildlife habitat
	Noise/Vibration:	Noise Sensitive Receptors Vibration Sensitive Receptors
	Wetland/Floodplains/Protected Waters:	Area of wetlands impacted Area of floodplains impacted

Some environmental resources that are relevant to this study are potentially impacted to the same degree or in the same way with all of the alternatives. Impacts to these resources (if any) can be avoided, minimized, and mitigated successfully using typical MnDOT design and mitigation techniques during construction, which is discussed throughout Section 4.0. Therefore, impacts to these resources were not explicitly considered in the evaluation that led to the selection of the Preferred Alternative.

In addition to the environmental evaluation factors considered, it was also important to include engineering and technical aspects in the evaluation and selection of the Preferred Alternative. The evaluation must consider highway and bridge design standards, provide for safe movement of traffic through the project area, and be constructible.

3.2.4 Evaluation of Alignment Alternatives

Each of the alignment alternatives were evaluated using, a qualitative comparison between the alternatives as they related to the evaluation criteria in Table 1 above. Table 22 in Appendix C compares the advantages and disadvantages for the four remaining alignment alternatives. Advantages and disadvantages are identified by plus sign (+) and minus sign (-), respectively. Otherwise, a bullet sign (●) denotes where there is no clear advantage or disadvantage. This approach was proposed by the project team and agreed upon by the TAC. The advantages and disadvantages for the four remaining Alignment Alternatives are summarized in this section.

3.2.4.1 Alignment Alternative 1 – Downstream of Existing Alignment (North Side)

Alignment Alternative 1 (Figure 10 in Appendix A) has the following advantages:

- Access will be maintained across the border on the existing bridge until construction of replacement bridge is complete
- Avoids impacts to Peace Park on the U.S. side (Section 4(f))
- Avoids impacts to unidentified gravesites and culturally significant features on the U.S. side
- Minimizes impacts to identified wetlands on the U.S. side

Alignment Alternative 1 has the following disadvantages:

- Requires the purchase of private/municipal property on the U.S. side
- Constrained construction area between the existing bridge and the CN Railroad Bridge
- Due to restricted roadway geometry, trucks approaching U.S. Port of Entry (POE) can use right lane only to avoid impacts to POE equipment
- Relocation of detection equipment is required to accommodate trucks in left lane on the U.S side
- May impact contaminated soils from former electric power plant on the U.S. side

3.2.4.2 Alignment Alternative 2 – Upstream of Existing Alignment (South Side)

Alignment Alternative 2 (Figure 11 in Appendix A) has the following advantages:

- Access will be maintained across the border on the existing bridge until construction of replacement bridge is complete

- Provides desirable geometric alignment connections to existing U.S. and Canadian Ports of Entry facilities
- Improved truck entry at U.S. Port of Entry (POE) avoids impacts to POE equipment (i.e. trucks can be accommodated in both lanes)

Alignment Alternative 2 has the following disadvantages:

- Requires the purchase of private/municipal property on the U.S. and Canadian sides
- Impacts Peace Park on the U.S. side (Section 4(f))
- Impacts identified wetlands located south of the existing bridge on the U.S. side
- May impact unidentified gravesites/culturally significant features on the U.S. side

3.2.4.3 Alignment Alternative 3A – Existing Alignment, Temporary Modular Bridge (TMB North of Existing Bridge)

Alignment Alternative 3A (Figure 12 in Appendix A) has the following advantages:

- Maintains existing alignment and minimizes permanent impacts to U.S. and Canadian Ports of Entry facilities
- Geometry accommodates trucks in both lanes at the U.S. Port of Entry (POE), which avoids impacts to POE facilities/equipment
- Avoids impacts to Peace Park on the U.S. side (Section 4(f))
- Avoids impacts to unidentified gravesites and culturally significant features on the U.S. side
- Minimizes impacts to identified wetlands on the U.S. side

Alignment Alternative 3A has the following disadvantages:

- Cost of temporary bridge is high resulting in significant throw away costs
- Temporary traffic delays and safety concerns due to narrow temporary bridge
- Increased duration of construction
- Requires temporary property on the U.S. side
- Increased risk of fish and aquatic habitat impacts due to additional piers in water for temporary bridge
- Constrained construction area between the existing bridge and the CN Railroad Bridge
- May impact contaminated soils from former electric power plant on the U.S. side

3.2.4.4 Alignment Alternative 3B – Existing Alignment, Temporary Modular Bridge (TMB South of Existing Bridge)

Alignment Alternative 3B (Figure 12 in Appendix A) has the following advantages:

- Maintains existing alignment and minimizes permanent impacts to U.S. and Canadian Ports of Entry facilities
- Existing truck entry at U.S. Port of Entry (POE) can be accommodated in both lanes, which avoids impacts to POE facilities/equipment

Alignment Alternative 3B has the following disadvantages:

- Cost of temporary bridge is high resulting in significant throw away costs
- Temporary traffic delays and safety concerns due to narrow temporary bridge

- Increased duration of construction
- Increased risk of fish and aquatic habitat impacts due to additional piers in water for temporary bridge
- Requires temporary property on the U.S. and Canadian sides
- Impacts Peace Park on the U.S. side (Section 4(f))
- Impacts identified wetlands located south of the existing bridge on the U.S. side
- May impact unidentified gravesites/culturally significant features on the U.S. side

3.2.4.5 Summary of Alignment Alternative Selection

The Project Team and TAC evaluated the four Alignment Alternatives considering the advantages and disadvantages outlined in the previous section.

The Temporary Modular Bridge Alignment Alternatives, 3A and 3B, provide similar advantages and disadvantages as Alignment Alternative 1 and 2, respectfully. However, Alignment Alternatives 3A and 3B were eliminated from consideration for having the following prohibitive disadvantages associated with the construction and decommissioning of the temporary bridge:

- Significant throw away costs
- Temporary traffic delays and safety concerns due to narrow temporary bridge
- Schedule impacts due to increased duration of construction
- Increased wetland, floodplain, and fish and aquatic habitat impacts due to additional piers in water for temporary bridge

Alignment Alternative 1 was eliminated from consideration for the following reasons:

- Constrained construction area between the existing bridge and the CN Railroad Bridge
- Due to restricted roadway geometry, trucks approaching U.S. Port of Entry (POE) can use right lane only to avoid impacts to POE equipment
- Relocation of detection equipment is cost prohibitive but required to accommodate trucks in left lane on the U.S side

Alignment Alternative 2 was selected as the Preferred Alignment Alternative as described in the following section.

3.2.5 Preferred Alignment Alternative

Following the comparison of the remaining alignment alternatives, each alternative's positive, negative, and neutral counts were tabulated as shown in Table 22. After completing the evaluation process, Alternative 2 was selected as the Preferred Alignment Alternative and is shown in Figure 11 in Appendix A.

Alignment Alternative 2, located south or upstream of the existing bridge with approximately 3 feet separation, was determined to meet all of the project primary needs and was selected as the Preferred Alignment for the following reasons:

- Alignment provides desirable geometric connections to existing U.S. Port of Entry facility allowing:
  - The existing U.S. Port of Entry infrastructure to remain in place

  - Accommodation of truck entry at the U.S. Port of Entry in both lanes
  - U.S. Border Patrol to maintain line of sight for the bridge
- Reduced cost compared to Alternatives 3A and 3B which require a temporary modular bridge
- Alignment does not pose significant or unique constructability concerns as posed by the other three alternatives
- Refinements can be made to the alignment geometry to reduce impact footprint affecting Peace Park and unidentified gravesites/cultural heritage features
- Will not impact the contaminated soils from former electric power plant on north side of existing bridge

3.3 BRIDGE TYPE ALTERNATIVES

As discussed previously in Section 3.2 (Alignment Alternatives), the Bridge Type Alternatives were developed independently from the Alignment Alternatives to identify potential locations/alignments for the replacement bridge. A process was developed by the project team with approval from the TAC to objectively analyze and evaluate the Bridge Type Alternatives in order to select a Preferred Bridge Type Alternative.

The development and evaluation of Bridge Type Alternatives are discussed and described below.

3.3.1 Bridge Type Alternatives Considered

Similar to the development of the Alignment Alternatives, an initial set of 12 conceptual bridge type structures were presented at the fourth Technical Advisory Committee (TAC) meeting and are summarized in this section.

3.3.1.1 Alternative A – Continuous Steel I-Girder Bridge

Alternative A is a continuous steel I-girder superstructure which incorporates the following design features:

- Structural elements below deck require a higher roadway elevation
- Structure type is common in Minnesota and Ontario
- Construction can be performed using common techniques
- Requires the lowest number of substructures in the river
- No apparent traffic impacts
- Opportunity to launch structure as defined in Section 4.1.6.2.1 (Construction: Potential Construction Options).

3.3.1.2 Alternative B – Simple-Span Precast/Prestressed I-Girder Bridge

Alternative B is a simple span precast prestressed concrete I-girder superstructure which incorporates the following design features:

- Structural elements below deck require a higher roadway elevation
- Structure type is common in Minnesota and Ontario and standardized shapes exist
- Construction can be performed using common techniques

3.3.1.3 Alternative B1 – Spliced Prestressed Precast Concrete I-Girder Bridge

Alternative B1 is a spliced precast prestressed concrete I-girder superstructure which incorporates the same design features as Alternative B, plus the following:

- Precast structural elements that are connected to achieve longer spans

3.3.1.4 Alternative C – Continuous Steel Box Girder Bridge

Alternative C is a continuous steel box girder superstructure which incorporates the following design features:

- Structural elements below deck require a higher roadway elevation
- Box shape adds stability and allows for construction of longer spans
- Construction can be performed using common techniques

3.3.1.5 Alternative D – Segmental Concrete Box Girder Bridge

Alternative D is a segmental concrete box girder structure which incorporates the following design features:

- Structural elements below deck require a higher roadway elevation
- Optimized shape allows for construction of longer spans
- May require a specialty contractor to construct and/or inspect

3.3.1.6 Alternative E – Tied Arch Main Span Bridge with Precast Prestressed I-Girder Approaches

Alternative E is a tied arch main span bridge with precast prestressed I-girder approaches which incorporates the following design features:

- Structural elements above deck allow for a lower roadway elevation
- May result in the most piers in the river
- May require a specialty contractor to construct and/or inspect

3.3.1.7 Alternative E1 – Through Arch Bridge

Alternative E1 is a through arch bridge which incorporates the same design features as Alternative E, plus the following:

- Design of foundation support is more complex.
- Challenging construction methods

3.3.1.8 Alternative F – Concrete Slab Span Bridge

Alternative F is a concrete slab span bridge which incorporates the following design features:

- Depth and shape can be optimized
- Shape allows for construction of short spans

3.3.1.9 Alternative G – Spliced Steel Girder Bridge

Alternative G is a spliced girder bridge which incorporates the following design features:

- Precast structural elements that are connected to achieve longer spans
- Steel plates are built up to resist loads

3.3.1.10 Alternative H – Truss Bridge

Alternative H is a truss bridge which incorporates the following design features:

- Efficient use of materials
- Multiple members assembled to resist loads

3.3.1.11 Alternative I – Cable-Stayed Bridge

Alternative I is a cable-stayed bridge which incorporates the following design features:

- Cables, edge beams, and towers to resist loads
- Tallest above deck structure

3.3.1.12 Alternative J – Suspension Bridge

Alternative J is a suspension bridge which incorporates the following design features:

- Cables and towers to resist loads
- Optimized for long spans

3.3.2 Evaluation of Bridge Type Alternatives

Each of the Bridge Type Alternatives considered would meet the Purpose and Need for the project. Early in the Bridge Type Alternatives development process, the TAC (based on recommendation from the Bridge Engineer team) eliminated seven of the 12 original concepts from further consideration and did not subjected them to more detailed evaluation. These bridge type concepts were eliminated for the following reasons:

- Alternative B1 – Prestressed Precast Concrete Girder Bridge (Spliced)**:** There is limited construction experience in both Minnesota and Ontario and existing alternatives could be refined later to capture this configuration.
- Alternative E1 – Through Arch: This alternative is not cost effective for the span lengths considered.
- Alternative F – Concrete Slab Span: The span lengths are too small for this crossing which would increase the number of piers in the channel and minimize the navigation channel.
- Alternative G – Spliced Steel Girder: There is limited construction experience in both Minnesota and Ontario and existing alternatives could be refined later to capture this configuration.

- Alternative H – Truss: The industry is moving away from truss bridges because they require higher maintenance costs, long-term maintenance challenges, and are generally more labor intensive.
- Alternative I – Cable-Stayed: This alternative is not cost effective for the span lengths considered. The short span lengths would increase the number of piers in the channel. Additionally, the structure height would likely exceed the aviation clearance envelope.
- Alternative J – Suspension: This alternative is more appropriate for spans that are longer than this crossing. For this crossing, this option is not cost effective and would require higher maintenance costs. Additionally, the structure height would likely exceed the aviation clearance envelope.

The following four-phase evaluation approach was used to evaluate the remaining five Bridge Type Alternatives and three configurations of Alternative A that were added and refined throughout this process:

1. Evaluation Criteria Development
2. High-Level Evaluation Screening
3. Alternative Refinement, and
4. Preferred Alternative Determination

Examples of the five remaining Bridge Type Alternatives A through E are illustrated in Figure 13 in Appendix A.

Phase 1: Evaluation Criteria Development

During the first phase, existing site conditions were determined to confirm potential bridge types and to develop site-specific evaluation criteria. The initial evaluation criteria developed for the bridge type alternative evaluation are listed below:

- Maximum increase in structure depth
- Number of substructures in river and location relative to adjacent CN Rail bridge
- Traffic impacts/staging considerations
- Geometric challenges
- Constructability
- Maintenance and inspection needs
- Security and vulnerability
- Estimated construction costs

At this point in the process, MTO requested refinements to Alternative A that would minimize impacts to the river. Therefore, the following base configurations of Alternative A were developed:

3.3.2.1 Configuration A1 – Continuous Steel I-Girder Bridge, 5 spans

Configuration A1 is a refinement of Alternative A that has five spans, which would require the construction of four substructures (piers) in the river bed.

3.3.2.2 Configuration A2 – Continuous Steel I-Girder Bridge, 3-4 spans

Configuration A2 is a refinement of Alternative A that has three to four spans, which would require the construction of two to three substructures (piers) in the river bed.

Phase 2: High-Level Evaluation Screening

The second phase of the evaluation included an initial screening and high-level evaluation of the five overall bridge type alternatives (including Configurations A1 and A2 of Alternative A) by utilizing the preliminary bridge evaluation matrix. Each alternative was compared against the evaluation criteria noted in the preliminary evaluation matrix.[1] During this phase the TAC eliminated the following three alternatives:

- Alternative C – Continuous steel box girder: This alternative was found to have minimal advantages over the continuous steel I-girder alternative, and would result in higher design and construction complexity and risk.
- Alternative D – Segmental concrete box girder: This option had the deepest structure depth, resulting in the largest increase in roadway elevation, which seemed inappropriate for the context.
- Alternative E – Tied arch main span with precast concrete I-girder approaches: Although this offered the shallowest structure depth, it resulted in a large number of substructures and increased complexity in design and maintenance, and did not provide sight distance from one bridge end to the other (a desire of U.S Customs and Border Protection (CBP) and General Services Administration (GSA)).

Phase 3: Alternative Refinement

The two remaining overall alternatives, Bridge Type Alternative A (including Configurations A1 and A2; continuous steel I-girder superstructures) and Bridge Type Alternative B (precast concrete I-girder superstructure), were further refined in the third phase of evaluation. With approval from the TAC, new evaluation criteria were added by the project team to closely examine the remaining alternatives. The new criteria included:

- Construction and fabrication complexity
- Geometric opportunities and challenges
- Ability to apply Advance Bridge Construction (ABC) techniques
- Construction duration
- Aesthetic opportunities

Using the new criteria, Bridge Type Alternatives A (Configurations A1 and A2) and B were evaluated in the refined evaluation matrix[2]. As a result of this refined evaluation, Alternative B was eliminated due to the following challenges:

- Alternative B – Simple-Span Precast/Prestressed I-Girder Bridge:
  - This bridge type would require the most substructures, increasing construction risk.
  - It would limit the number of potential fabricators, with few capable of fabricating a sufficiently long beam, especially in Canada.

[1] See Table 23 in Appendix C for the preliminary evaluation matrix dated January 20, 2016. Red text in the evaluation matrix indicates differences among the alternatives, both positive and negative.
[2] See Table 24 in Appendix C for the refined evaluation matrix dated February 19, 2016. Red text in the evaluation matrix indicates differences among the alternatives, both positive and negative.

- Lastly, the evaluation revealed differences between design practices and philosophies in MnDOT and MTO, which would have required both bridge owners to compromise their typical practices.

Phase 4: Preferred Alternative Determination

Bridge Type Alternative A, Configurations A1 and A2 were brought into the final phase of evaluation and further refined to develop and determine the following final, optimal span configurations which are summarized below:

3.3.2.3 Configuration A1.1 – Continuous Steel I-Girder Bridge, 5 spans, Prismatic

Configuration A1.1 is a refinement of Alternative A that has five spans, four substructures in the river bed, and a prismatic (constant depth – see Figure 14, Sheet 1 in Appendix A) superstructure. Aesthetically, the prismatic shape of the spans would provide clean, collinear lines for all bridge elements.

3.3.2.4 Configuration A1.2 – Continuous Steel I-Girder Bridge, 5 spans, Haunched

Configuration A1.2 is a refinement of Alternative A that has five spans, four substructures in the river bed, and a haunched (variable depth – see Figure 14, Sheet 2 in Appendix A) superstructure. Aesthetically, the haunched shape of the spans would provide an effect that the bridge is slender and efficient.

3.3.2.5 Refined Configuration A2 – Continuous Steel I-Girder Bridge, 4 spans, Haunched

The Refined Configuration A2 has four spans, three substructures in the river bed, and a haunched superstructure. Aesthetically, the haunched shape of the spans would provide an effect that the bridge is slender and efficient.

The agencies evaluated both four-span and five-span configurations, as well as haunched and prismatic (constant depth) superstructures. Again, new evaluation criteria were developed by the project team to closely examine the three proposed configurations of Bridge Type Alternative A. The final evaluation matrix[3] documents the performance of Bridge Type Alternative A configurations against the final evaluation criteria, which included:

- Hydraulic considerations
- Potential temporary bent[4] needs
- Potential impact to navigational openings during construction

[3] See Table 25 in Appendix C for the final evaluation matrix dated March 22, 2016.
[4] Temporary bents are temporary support units that facilitate the construction of a bridge. They consist of two or more column-like members connected at their topmost ends by a cap/another member holding them in their correct position.

The final evaluation eliminated the Refined Configuration A2 for the following reasons:

- Refined Configuration A2 – Continuous Steel I-Girder Bridge, 4 spans, Haunched:
  - This Configuration involved the most construction complexity and risk.
  - A preliminary erection plan showed that this configuration would likely require eight temporary structures to support bridge segments during construction, compared to four segments with a five-span configuration.
  - The likely location of these temporary structures would decrease the navigational opening by about half the allowable width during construction.

The differences between Configuration A1.1 (five-span prismatic) and Configuration A1.2 (five-span haunched) were more subtle. From an aesthetic perspective, the haunched alternative featured a light and slender appearance, while the prismatic alternative featured a clean, parallel appearance. Ultimately, the five-span haunched continuous steel I-girder (Alternative A Configuration A1.2) was selected as the Preferred Bridge Type Alternative based on the results of the evaluation and is depicted in Figure 14 in Appendix A. Public involvement in this decision is discussed in Sections 4.1.15 (Visual), 5.2.1 (Project Advisory Committee), and 5.2.2 (Technical Advisory Committee).

3.3.3 Preferred Bridge Type Alternative

Figure 15 in Appendix A provides a summary of the evaluation process detailed previously in Section 3.3.2 (Evaluation of Bridge Type Alternatives) that led to the selection of Alternative A Configuration A1.2 as the Preferred Bridge Type Alternative. Alternative A Configuration A1.2, a five-span, haunched continuous steel I-girder superstructure, is depicted in Figure 14 in Appendix A and was selected as the Preferred Bridge Type for the following reasons:

- It is a standard structure type in Minnesota and Ontario
- Typical construction methodology and maintenance
- Fewer number of piers in river than existing
- Can accommodate a lower bridge profile
- Can use prefabricated elements

3.4 DESCRIPTION OF ALTERNATIVES EVALUATED IN THIS EA

The Preferred Alternative (Preferred Alignment Alternative and Preferred Bridge Type Alternative) and the No Build Alternative are evaluated further in this EA against the detailed assessment of social, economic, and environmental (SEE) effects documented in Section 4.0.

3.4.1 No Build Alternative

The No Build Alternative entails maintaining and rehabilitating the existing bridge in its current alignment by performing necessary routine maintenance and repairs for as long as feasible to continue general use. The No Build Alternative also proposes that no replacement bridge is constructed. The existing bridge would continue to deteriorate unless major repairs were made.

The No Build Alternative does not address the issues discussed in Section 2.0 (Purpose and Need for Project).

3.4.2 Preferred Alternative

The Preferred Alternative is to construct a five-span, haunched continuous steel I-girder replacement bridge (Bridge Type Alternative A, Configuration 1B) along a new alignment located south or upstream of the existing bridge with 3 feet separation from the existing bridge (Alignment Alternative 2).

Following the selection of Alternative 2 as the Preferred Alignment Alternative and Alternative A Configuration A1.2 (five-span haunched steel I-girder) as the Preferred Bridge Type Alternative, refinements to the selected alignment alternative were made to minimize impacts at the tie-in points. See Appendix A for plan views of the U.S. and Canadian approach segments, Figure 16 and Figure 17, respectively. Also, Figure 18 and Figure 19 in Appendix A show the typical sections and plan/profile, respectively.

A three-dimensional model of the preferred bridge type on the preferred alignment was developed to render views of the preferred bridge from various angles. The visualizations were prepared using a standard pier type and railing and are intended to provide a conceptual idea of what the bridge would look like in its actual setting. These visualizations are available in Appendix C in Figure 32 through Figure 34.

Construction of the proposed bridge will address the needs outlined in Section 2.0 by providing a structurally sound bridge crossing over the Rainy River and continued access to vehicles and pedestrians. The proposed bridge will include new substructures and superstructures, eliminating all corrosion and structural deficiencies currently found on the existing bridge. Traffic will be maximized during construction for both vehicles and pedestrians, as the existing bridge will remain operational while the propose bridge is under construction.

The proposed bridge features an open design that does not feature any overhead structural elements, which will address vertical clearance issues experienced with the existing bridge. Current MnDOT and MTO design standards were incorporated into the proposed design to ensure adequate load capacity and guardrails will be supported and provided by the new bridge. To satisfy the program outlined by Chapter 152 of the Minnesota Legislature 2008 Session Laws, the proposed bridge does not feature fracture critical design.

Ongoing coordination continues to exist between MnDOT and MTO throughout this project. In accordance with Section 106 of the National Historic Preservation Act, there has been ongoing coordination with MnHPO and the FHWA to document effects to the existing bridge. The Preferred Alignment will impact parkland and wetlands on the U.S. side of the project. Throughout design, modifications to the alignment (i.e. tightening the curves to pull in the curbline) have been made to minimize the proposed bridge's footprint. Selection of the Preferred Bridge Type satisfies constraints set by the FAA related to Baudette International Airport's critical approach areas. MnDOT will continue coordination with the FAA and the Baudette International Airport as needed as the design progresses.

Design of the proposed bridge's substructures meet requirements advised by the USCG to apply to the U.S. side of the river to prevent navigational issues.

Compared to the existing bridge, the proposed bridge features a solid deck to eliminate direct drainage from the bridge into Rainy River. Additional stormwater treatment methods and inclusion of permanent Stormwater Best Management Practices (BMPs) will be determined in the final design phase of the project.

3.5 LIFE-CYCLE COST ANALYSIS

A life-cycle analysis appraises the effects of an investment into a measurable unit (2016 U.S. dollars). This approach allows for a comparison to be made between initial investments which occur during the initial years of the project, and the project benefits or costs that often accumulate over a long period of time.

A preliminary life-cycle and construction cost analysis was completed during the alternative refinement process. This analysis indicated the following estimated totals for construction (including contingency and escalation) and life-cycle costs:

Bridge Type Alternative	Bridge Description	Total Est. Life-Cycle Costs (2016 dollars)	Total Est. Construction Costs (2016 dollars)
Alternative B	Precast Concrete I-Girder, 5 Spans	$32.9 M	$31.4 M
Alternative A / Configurations 1 & 1B	Continuous Steel I-Girder, 5 Spans	$32.9 M	$31.7 M
Alternative A / Configuration 1A	Continuous Steel I-Girder, 4 Spans, Haunched	$34.2 M	$33.2 M

State of Minnesota Chapter 152 bond and Federal Aid will cover a majority of the initial construction costs. The project funding is outlined in the 2016-2019 State Transportation Improvement Program (STIP) as shown in the table below:

Sequence #	Cost Category	Expenditure Year	Total	FHWA	Bond
350	Construction	2018	$6.1M	$3M	$3.1M
381	Construction	2019	$9.4M	$9.4M	
		Totals:	$15.5M	$12.4M	$3.1M

Following selection of the preferred alternative, a refined total Project Construction Cost estimate was completed.

Project Construction Cost: $29,100,000 (in 2018/2019 dollars)

Anticipated Funding:

Federal (National Highway Performance Program (NHPP):	$ 12,400,000
State (Chapter 152 Bonds):	$ 7,000,000
Other (Canadian Portion of Project):	$ 9,700,000

3.6 PROPOSED PROJECT SCHEDULE

The following is a tentative schedule of activities for the project:

EA/EAW released for public comment	January/February 2017
Public hearing	February 2017
Complete Environmental Review Process	Spring 2017
Preliminary & Final Design	Winter 2017
Construction	Spring 2018 – Spring 2019

4.0 SOCIAL ECONOMIC AND ENVIRONMENTAL (SEE) IMPACTS

This section discusses environmental impacts of the No Build Alternative and the Preferred Alternative identified in Sections 3.4.1 and 3.4.2, respectively. It contains two sub-sections;

- State Environmental Assessment Worksheet (EAW)
- Additional Federal Issues

The EAW is a standard format used in Minnesota for environmental review of projects meeting certain thresholds at Minnesota Rule 4410.4300. Federal environmental regulations not addressed on the EAW are addressed in Sections 4.3 and 5.9.

4.1 ENVIRONMENTAL ASSESSMENT WORKSHEET

This Environmental Assessment Worksheet (EAW) form and EAW Guidelines are available at the Environmental Quality Board's website at:
http://www.eqb.state.mn.us/EnvRevGuidanceDocuments.htm.

The EAW form provides information about a project that may have the potential for significant environmental effects. The EAW Guidelines provide additional detail and resources for completing the EAW form.

Cumulative potential effects can either be addressed under each applicable EAW Item, or can be addresses collectively under EAW Item 19.

Note to reviewers: Comments must be submitted to the RGU during the 30-day comment period following notice of the EAW in the *EQB Monitor*. Comments should address the accuracy and completeness of information, potential impacts that warrant further investigation and the need for an EIS.

4.1.1 Project title

Baudette / Rainy River International Bridge Replacement Project

4.1.2 Proposer

Contact person: Craig Collison
Title: MnDOT District Engineer
Address: 3920 Highway 2 West
City, State, ZIP: Bemidji, MN 56601
Phone: (218) 755-6549
Fax: (218) 755-6512
Email: craig.collison@state.mn.us

4.1.3 RGU

Contact person: Joe McKinnon
Title: MnDOT Project Manager
Address: 3920 Highway 2 West
City, State, ZIP: Bemidji, MN 56601
Phone: (218) 755-6517
Fax: (218) 755-6512
Email: joseph.mckinnon@state.mn.us

4.1.4 Reason for EAW Preparation

Required:	**Discretionary:**
☐ EIS Scoping	☐ Citizen petition
☐ Mandatory EAW	☒ RGU discretion
	☒ Proposer initiated

If EAW or EIS is mandatory give EQB rule category subpart number(s) and name(s): N/A

4.1.5 Project Location

County: Lake of the Woods
City/Township: Baudette
PLS Location (Section, Township, Range): 35, 161N, 31W

Watershed (81 major watershed scale): #79: Rainy River – Baudette
GPS Coordinates: N/A
Tax Parcel Number: N/A

At a minimum attach each of the following to the EAW:

- County map showing the general location of the project;
  - See Figure 3 at the beginning of this report.
- U.S. Geological Survey 7.5 minute, 1:24,000 scale map indicating project boundaries (photocopy acceptable); and
  - See Figure 2 at the beginning of this report.
- Site plans showing all significant project and natural features. Pre-construction site plan and post-construction site plan.
  - See Figure 1 at the beginning of this report.

4.1.6 Project Description

4.1.6.1 Provide the brief project summary to be published in the EQB Monitor, (approximately 50 words).

MnDOT is proposing the replacement of the Baudette / Rainy River International Bridge with a new five-span, haunched continuous steel girder structure located on a new alignment immediately upstream of the existing bridge. The project will include reconstruction of the U.S. and Canadian approaches to tie into the existing roadway, Trunk Highway 72 and Highway 11.

4.1.6.2 Give a complete description of the proposed project and related new construction, including infrastructure needs. If the project is an expansion include a description of the existing facility. Emphasize: 1) construction, operation methods and features that will cause physical manipulation of the environment or will produce wastes, 2) modifications to existing equipment or industrial processes, 3) significant demolition, removal, or remodeling of existing structures, and 4) timing and duration of construction activities.

This project involves three components: the decommissioning and removal of the existing Bridge #9412, construction of the replacement bridge on a new alignment, and construction of the U.S. and Canadian approaches to be tied in with the existing roads. See Figure 16 through Figure 19 in Appendix A for the Preferred Alternative U.S. and Canada approach plans, overall plan and profile, and typical sections.

The existing bridge is a two-lane, six-span, 192.5-foot-long Pennsylvania through-truss structure. The current sidewalk is constructed of a timber plank decking over steel beams and stringers that are in similar condition to the other structural members under the main bridge deck. With the six steel beam approach spans, the total length is approximately 1,286 feet.

The replacement bridge will be a new five-span haunched continuous steel girder structure located on a new alignment immediately upstream of the existing bridge. The proposed new structure will include two

11.5-foot wide lanes, two 8-foot wide shoulders, and a 6-foot wide pedestrian/bicyclist facility on the south (upstream) side of the bridge. This results in a total width, including barriers, of 48.2 feet.

Construction is anticipated to begin in 2018, with substantial completion by the end of 2019. Since the existing bridge will remain open during construction of the new bridge, substantial traffic disruption to users is not expected.

4.1.6.2.1 Construction: Potential Construction Options

An assessment of potential superstructure erection and construction options was performed as part of the structure type study to determine and make recommendations on the feasibility, advantages, and disadvantages of each potential method. The three methods considered and evaluated were:

1. Conventional erection method using heavy duty cranes and erection towers;
2. Launching the superstructure steel framework from the Canadian side of the Rainy River into the U.S.; and
3. Using winter ice and the frozen river as an erection platform.

Following the assessment, the winter ice construction method (Method 3) was eliminated from the evaluation due to insufficient ice thickness (15.7-17.7 inches) that forms on the Rainy River. A minimum ice thickness of 50 inches is required for this construction and erection method.

The remaining two potential methods that were determined to be feasible for this project include:

Method 1 – Conventional Erection Method:

This method uses high capacity cranes with long boom capabilities and heavy duty temporary falsework towers that will be 'leapfrogged' between spans as steel erection progresses. It is assumed that falsework towers will require temporary pile foundations. The evaluation of environmental considerations included factors such as impacts of a minimum of five temporary falsework towers (four located over water), the possible need for stability towers in the river during construction, potential impacts of tower construction and removal, and the need for a shoreline staging area (girder laydown site).

Method 2 – Launching the Bridge from Canada into the United States:

Launching consists of incrementally assembling the steel framework on the Canadian side of the Rainy River and pushing or pulling it across the river and on top of the piers. The report concluded that this method has several advantages, including environmental, since temporary falsework and stability towers would not be required. As a result, the risk of effects to the river and surrounding environment are reduced in comparison to conventional methods.

The conventional erection method and the launching superstructure method will be carried forward and evaluated during the Detail Design Study when the final construction method will be confirmed and finalized.

Summary of Potential Construction Options

Either Method 1 or 2 is expected to be used to construct the proposed project. However, the final construction method will be determined in final design and construction.

4.1.6.2.2 Construction: Potential Staging Areas

Laydown and staging areas will likely be located on Canada Border Services Agency (CBSA) owned land located south of the bridge and the Canadian Port of Entry facilities. It is assumed that a bulkhead or dock area will need to be constructed, allowing material delivery and placement onto a barge via crane to occur. Foundation installation is assumed to require pile driving equipment placed on barges. Barge placement accommodating the existing bridge appears feasible.

Minor staging may occur on the US side of the border within Peace Park, a City-owned property, located directly adjacent to the project area. Contractors may request to use a portion of Peace Park during construction for staging purposes, including storage of materials or equipment in the parking lot and using the boat launch to provide access to Rainy River through the Baudette River. Access to proposed Pier 1[5] on the U.S. side would require either construction of a temporary causeway from the U.S. shore or dredging of the river to allow barge access closer to the shore. If dredging is performed, clearing and grubbing sufficient for crane placement on the U.S. shore would still be necessary.

See Sections 4.1.11.2.4 (Water Resources – Surface Waters) and 4.3.6.2 (Additional Federal Issues – Section 4(f) Resources – Peace Park) for additional discussions regarding the impacts of the proposed causeway on the river channel/wetlands and Peace Park, respectfully.

4.1.6.3 Project Magnitude:

Total Project Acreage	Approx. 0.5 in the U.S.; Approx. 0.9 in Canada
Linear project length	Approx. 1,200 feet in the U.S.; Approx. 900 feet in Canada
Number and type of residential units	NA
Commercial building area (in square feet)	NA
Industrial building area (in square feet)	NA
Institutional building area (in square feet)	NA
Other uses – specify (in square feet)	NA
Structure height(s)	NA

[5] Pier 1 is located at the end of the proposed bridge's first span; approximately 220 feet from the end of the proposed roadway – see Figure 29: Peace Park – 4(f) Impacts.

4.1.6.4 Explain the project purpose; if the project will be carried out by a governmental unit, explain the need for the project and identify its beneficiaries.

See Section 2.0 for the Purpose and Need for Project. Beneficiaries of this project will include all roadway users of the proposed river crossing from both the U.S. and Canada.

4.1.6.5 Are future stages of this development including development on any other property planned or likely to happen? ☐ Yes ☒ No. If yes, briefly describe future stages, relationship to present project, timeline and plans for environmental review.

4.1.6.6 Is this project a subsequent stage of an earlier project? ☐ Yes ☒ No. If yes, briefly describe the past development, timeline, and any past environmental review.

4.1.7 Cover Types

Estimate the acreage of the site with each of the following cover types before and after development:

Table 2: Cover Types (in acres) for U.S. Side of the Project

	Before	After		Before	After
Wetlands[1]	0.71	0.71	**Lawn/landscaping**	0.06	0.46
Deep water/streams[2]	3.44	3.20	**Impervious Surface[2]**	0.18	1.08
Wooded/forest	0.47	0	**Stormwater Pond[3]**	0	0
Brush/Grassland	0	0	**Pervious Bridge Surface[2]**	0.59	0
Cropland	0	0	**Other (describe)**	0	0
			TOTAL	5.45	5.45

[1] These areas are defined by the USACE Section 404 process. See Section 4.1.11.2.4 (Water Resources – Surface Waters), Figure 27A, and Figure 27B for additional discussion and visuals of both USACE and MnDNR/WCA wetland areas.

[2] The Deep Water area does not actually change. It is shown in the table to decrease due a change in bridge deck materials; the existing bridge deck is open grate (pervious) whereas the proposed bridge deck will be impervious.

[3] A Stormwater BMP design will be selected during final design development. If a stormwater pond or -like solution is incorporated during the final design process, acreage will most likely be taken from the lawn/landscaping category. At this time in the design process, pond area values of zero are provided for before and after project completion.

4.1.8 Permits and Approvals Required

In addition to U.S. federal, state and municipal permits and approvals, International and Canadian federal and provincial approval requirements will be required for this project, as outlined in this section.

4.1.8.1 U.S. Permits & Approvals

List all known local, state and federal permits, approvals, certifications, and financial assistance for the project. Include modifications of any existing permits, governmental review of plans and all direct and indirect forms of public financial assistance including bond guarantees, Tax Increment Financing and infrastructure. ***All of these final decisions are prohibited until all appropriate environmental review has been completed. See Minnesota Rules, Chapter 4410.3100.***

Unit of Government	Type of Application	Action Required
Federal		
FHWA/MNDOT	Environmental Assessment	Approval
FHWA	EIS Need Decision	Approval
	Section 4(f) de minimis determination	Approval
	Endangered Species Act Section 7	Consultation
	Section 106 (Historic/Archeological)	Approval
USACE	Section 404 Permit	Permit
USCG	Section 9 Permit[6]	Permit
General Services Administration (GSA)	Revocable License for Non-Federal Use of Federal Property	Approval
Federal Aviation Administration (FAA)	FAA 7460-1 Permit	Permit
US Department of State	Secretary of State Approval of agreements between MnDOT and MTO	Approval
	Special Agreement with Global Affairs Canada (if IJC Permit is not required – See Section 4.1.8.2)	Approval

[6] USACE Section 10 Permit is waived to USCG Bridge's Section 9 Permit.

State		
MnDOT	Environmental Assessment Worksheet (EAW)	Approval
	EIS Need Decision	Approval
	Wetland Conservation Act (Replacement Plan) for new roads and capacity expansion projects	Approval/Review
MnDNR	Dewatering permit	Permit
	Public Waters Work Permit	Permit
	Prohibited Invasive Species Permit (if needed)	Permit
MPCA	Section 401	Certification
	National Pollutant Discharge Elimination System – Construction Stormwater	Permit
	Notification to Manage Dredged Materials without a Permit	Form Submittal
Local		
City of Baudette	Municipal Consent	Approval
Lake of the Woods County	Floodplain Permit	Permit

4.1.8.2 International Permits & Approvals

See Section 5.2.5 (Other Agency Coordination & Meetings) for additional discussion on the following agencies:

Agency	Permit / Act	Project Activities	Project Phase when Permit/Approval will be Obtained
International			
International Joint Commission (IJC)	Special agreement or an Order of Approval	Work that takes place on an international waterway	Detail Design
International Boundary Commission (IBC)	International Boundary Waters Treaty Act - Duplicate of US Letter of Request - for work within 10 feet of a border	Any work that takes place within 3 m of the U.S./Canadian border	Detail Design/in advance of Construction

4.1.8.3 Canadian Federal and Provincial Permits & Approvals

Agency	Permit / Act	Project Activities	Project Phase when Permit/Approval will be Obtained
Federal			
Global Affairs Canada	Special Agreement with U.S State Department- no application required	Work that takes place on an international waterway	Preliminary and Detail Design
Canada Border Services Agency (CBSA)	Access permits	Work that takes place on CBSA property (including TLIs and access)	Detail Design / Construction
Transport Canada	Navigation Protection Act - application for works in Scheduled waterway - Submit NPP Notice of Work Form to the TC and the Minister	Work on a waterway that is listed on the List of Scheduled Waters	Detail Design
Transport Canada	International Bridges and Tunnels Act - Permit	Work on any international bridge/tunnel	Detail Design
Department of Fisheries & Oceans	Fisheries Act - Authorization for Works or Undertakings Affecting Fish Habitat Fisheries Act	Work that may result in serious harm to fish that are part of a commercial, recreational, or Aboriginal fishery, or to fish that support such a fishery	Detail Design
Environment and Climate Change Canada	Migratory Birds Convention Act (MBCA)	Work that may result in impacts to migratory birds or birds' nests listed on the MBCA	Detail Design
Canadian Environmental Assessment Agency (CEAA)	Canadian Environmental Assessment Act	Projects that are listed as Designated Project in the Regulations Designating Physical Activities of the Canadian Environmental Assessment Act	Preliminary Design (Project Description); Detail Design (Federal EA, if required)

Provincial			
Ontario Ministry of Natural Resources and Forestry	Endangered Species Act (ESA) Permit or Authorization	Work that have the potential to affect a species listed on the Species at Risk in Ontario List and/or its habitat	Detail Design
Ontario Ministry of Tourism, Culture, and Sport	Ontario Heritage Act-Acceptance of Report to Register	Disturbance of any potential archaeological sites	Preliminary Design
Ministry of the Environment Climate Change	Class Environmental Assessment (EA) for Provincial Transportation Facilities	Part II Order Requests during TESR Public Review Period	Preliminary and Detail Design

4.1.9 Land Use

4.1.9.1 Describe:

4.1.9.1.1 Existing land use of the site as well as areas adjacent to and near the site, including parks, trails, prime or unique farmlands.

Currently, the site is used as an international Port of Entry, with full-service, 24-hour Border Control facilities, a small rest stop area with adjacent boat launch into the Baudette River, and a public park (Peace Park, owned by the City of Baudette). The project is in an urban setting; no agricultural land exists within the project area. The proposed project seeks to maintain the current land use at the project site.

4.1.9.1.2 Plans: Describe planned land use as identified in comprehensive plan (if available) and any other applicable plan for land use, water, or resources management by a local, regional, state, or federal agency.

Future land use/desired future development in the vicinity of the project area includes rural development activities. According to the 2016 Lake of the Woods County Comprehensive Plan, this development may include industrial, commercial, tourism, residential or other uses as appropriate to the site's characteristics and neighborhood's character.

4.1.9.1.3 Zoning, including special districts or overlays such as shoreland, floodplain, wild and scenic rivers, critical area, agricultural preserves, etc.

4.1.9.1.3.1 Floodplain Assessment

The current Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) has been reviewed for this project (Map Number 27077C0425C in Lake of the Woods County, Minnesota dated September 5, 1990). Base flood (100-year or Zone A) floodplain boundaries are delineated on the U.S. side of the International Boundary on Figure 20 in Appendix A. Due to a lack of floodplain information regarding the Canadian side, the approximate riverine flood hazard area boundaries from the U.S. were used where base flood elevations have not been determined.

The project will span the Rainy River, connecting Baudette, Minnesota to Rainy River, Ontario. The project area encompasses the river crossing and the bridge approaches in both the U.S. and Canada. The project will also replace the existing Baudette / Rainy River International Bridge with a new crossing and approach roadways. The existing bridge has seven piers, three and a half of which exist on the U.S. side of the International Boundary (Pier 4 is located on the centerline of the International Boundary). The proposed bridge has four piers, two of which will be located on the U.S. side.

The project will encroach on the following floodplains:

Table 3: Floodplain Encroachment

Floodplain	Type of Encroachment	Length (feet)
Rainy River (U.S. Side)	Transverse	25
Rainy River (Canadian Side)	Transverse	220

Floodplain Impact Analysis

This project will not result in any significant floodplain impacts for the following reasons:

No significant interruption or termination of a transportation facility which is needed for emergency vehicles or provides a community's only evacuation route.

- All roadway grades will be designed above the 100-year flood elevation. Potential impacts to the existing floodplain were analyzed using the preliminary hydraulics model previously established for the project. Using the design flood (100-year recurrence) simulations of the existing and proposed conditions in HEC-RAS determined the limits for the existing floodplain. The 100-year flood elevation at Rainy River is 1066.49 feet (NAVD 88 datum) for the existing bridge condition. Similarly, the 100-year flood elevation at the Baudette River was modeled to be 1066.48 feet (NAVD 88 datum) post-construction (a 0.01 feet decrease from the existing condition).
- There is no recorded evidence of flooding or overtopping of the existing bridge or roadways at the river crossing.

No significant adverse impact on natural and beneficial floodplain values should result from this project.

- No substantial fisheries impacts are anticipated. Construction operations that may impact the river bed would not occur during fish spawning and migration periods (March 15th through June 15th in the U.S. and April 1st through July 15th in Canada) without approval from MnDNR and the Ontario Ministry of Natural Resources and Forestry (MNRF). See Section 4.1.13.4 (Fish, Wildlife, Plant Communities, and Sensitive Ecological Resources (Rare Features)) for additional information regarding avoidance, minimization, and mitigation measures.
- The new bridge structures will not increase the flow velocities in the river. Therefore, fish movements should not be affected.
- No changes in public access (boat or canoe) would result from the project.

The U.S. half of the proposed bridge and approach would require some fill in the field delineated wetland that is in the project vicinity. Impacts would be minimized to the greatest extent practicable – See Section 4.1.11.2.4.1 (Water Resources – Wetlands) for additional information.

- Lake sturgeon and the creek heelsplitter mussel are species of concern that have been identified in the floodplain within the project vicinity. However, no substantial impacts have been identified. See Sections 4.1.13.3 and 4.1.13.4 (Fish, Wildlife, Plant Communities, and Sensitive Ecological Resources (Rare Features)) for additional information regarding threatened or endangered species as well as avoidance, minimization, and mitigation measures.
- As discussed in Section 4.1.11.2.2 (Water Resources - Stormwater), appropriate erosion control measures will be used and decided upon during final design development.

No significant increased risk of flooding will result.

- No significant change in headwater or tailwater elevations will result. As discussed previously, hydraulic models of the existing and post-construction conditions indicate an expected stage decrease of 0.01 feet associated with the new bridge crossing of the Rainy River. There is no apparent flood damage potential upstream because there is no development in the floodplain.
- Hydraulic analysis indicates no stage increase for the new bridge crossing of the Rainy River. There are no known flooding problems at the Rainy River crossing.

This project should not result in any incompatible floodplain development.

- Lake of the Woods County, Minnesota has a floodplain ordinance that regulates floodplain development and conforms to the Minnesota Department of Natural Resources Floodplain Management guidelines. The Town of Rainy River, Ontario also has a bylaw prohibiting construction of certain features in the Flood Plain Zone (FZ). Public services of approved hydraulic design (including roads and bridges) are permitted in the FZ. There will be no incompatible development within the Regulatory Floodplain, which is defined as all lands situated below the Regulatory Flood Elevation of 1065.0 feet (324.6m, CGVD1928).
- No new access to the floodplain area is being created.

<u>Floodplain Impact Summary</u>

Based on hydraulic modeling and the above floodplain assessment, no significant floodplain impacts are expected.

4.1.9.1.3.2 Wild and Scenic Rivers

The National Wild and Scenic River System map and the Minnesota Department of Natural Resources Wild and Scenic River Program maps were reviewed, and there are no wild and scenic rivers within or directly adjacent to the project area.

4.1.9.1.3.3 Critical Area

There are no wild, scenic, and recreational river districts, Mississippi River Critical Areas, or special districts within the project area.

4.1.9.1.3.4 Shorelands

The Rainy River is not included in Lake of the Woods County shoreland ordinances or shoreland management areas.

4.1.9.1.3.5 Agricultural Districts

A review of the Lake of the Woods County zoning maps show that no agricultural preserves are located within the project area.

4.1.9.2 Discuss the project's compatibility with nearby land uses, zoning, and plans listed in Item 4.1.9.1 above, concentrating on implications for environmental effects.

The project is not expected to cause significant change in land use within the vicinity of the limits of construction. It is not anticipated to lead to the development of any large scale commercial, industrial, residential, or other development. Access will not be changed, and if so changes are not deemed significant. The project is consistent with local and/or regional comprehensive plans.

4.1.9.3 Identify measures incorporated into the proposed project to mitigate any potential incompatibility as discussed in Item 4.1.9.2 above.

N/A

4.1.10 Geology, soils, and topography/land forms

4.1.10.1 Geology - Describe the geology underlying the project area and identify and map any susceptible geologic features such as sinkholes, shallow limestone formations, unconfined/shallow aquifers, or karst conditions. Discuss any limitations of these features for the project and any effects the project could have on these features. Identify any project designs or mitigation measures to address effects to geologic features.

Additional discussion of geological and soil information can be found in the following reports outlined in Appendix B. A summary of this information is provided below.

1. *Phase I and Phase II Architecture/History Survey Report: Trunk Highway 72 Area of Potential Effects, Baudette, Minnesota*, (Mead and Hunt 2014).
2. *Phase I Environmental Site Assessment,* (Landmark Environmental 2014a).
3. *Phase II Drilling Investigation*, (Landmark Environmental 2014b).

The project area is located in the Agassiz Lacustrine Plain, Big Fork Valley geomorphic area and the Beltrami Arm of Glacial Lake Agassiz physiographic province. The project area consists of an upland point bar area that formed at the junction of the Rainy and Baudette Rivers. The soils located in the project area consist of layered mixtures of sands, silts, and clays with variable concentrations. Part of 'Old Town' Baudette was built along the uplands adjacent to the Baudette River, resulting in shallow disturbances of the sediment between 8 and 12 inches (20 and 30 cm) below the surface. In addition, the 'Old Town' cemetery was located near the northeastern tip of the point bar within the proposed project area. Most of the graves were reported to have been moved to a different cemetery location in the early 20th Century. Additional discussion regarding Old Town Cemetery is provided in Section 4.1.14 (Historic Properties).

Surface elevations of the project area range from 1,065 feet, near the river's edge, to 1,080 feet above mean sea level, upslope from the river. Unconsolidated sediments consisting of lake modified glacial till underlie the project area. The uppermost bedrock unit beneath the project area consists of metamorphosed felsic volcanic rock. According to the Minnesota Geological Survey (MGS), the approximate range of depths to bedrock is from 24.8 feet to 37.5 feet for the project area; approximately 1,040.2 feet to 1050.1 feet in elevation (see Figure 22 and Figure 23).

According to the MPCA website[7], karst conditions do not exist in proximity to the proposed project area and does not exist in a region where sinkhole and surface karst feature development is anticipated.[8]

4.1.10.2 Soils and topography - Describe the soils on the site, giving NRCS (SCS) classifications and descriptions, including limitations of soils. Describe topography, any special site conditions relating to erosion potential, soil stability or other soils limitations, such as steep slopes, highly permeable soils. Provide estimated volume and acreage of soil excavation and/or grading. Discuss impacts from project activities (distinguish between construction and operational activities) related to soils and topography. Identify measures during and after project construction to address soil limitations including stabilization, soil corrections or other measures. Erosion/sedimentation control related to stormwater runoff should be addressed in response to Item 4.1.11.2.2 (Water Resources – Stormwater).

A Unified Soil Classification System soils report for the approximate project area can be found in Appendix F. Additionally, Figure 21 in Appendix A shows the soils for the greater project area.

Table 4 summarizes the soil type information within the project area and adjacent areas. Significant soils and topographical constraints are not anticipated.

Table 4: USCS Soil Types in Greater Project Area

Symbol	Location	Name	Texture	Permeability
122B	Project Area	Taylor loam	Loam	Moderately well drained
172	Adjacent Area	Indus clay loam	Clay loam	Poorly drained
755	Adjacent Area	Woodlake clay	Clay	Very poorly drained

The project area is composed of Taylor loam which generally consists of 39.2% sand, 37.3% silt and 23.5% clay as a result of succession and deposition from the prehistoric Glacial Lake Agassiz. As

[7] Source: https://www.pca.state.mn.us/water/karst-minnesota. Accessed May 2, 2016.
[8] Source: https://gisdata.mn.gov/dataset/geos-surface-karst-feature-devel. Accessed May 2, 2016.

denoted in Table 5 below, the Taylor and Indus clay loams within and adjacent to the project area indicate a level of stability that is not likely to erode.

Table 5: Erosion Properties of USCS Soils

Symbol	Location	Erosion Factors	
		T, tons/acre/year	Wind Erodibility Group
122B	Project Area	5	6
172	Adjacent Area	5	6
755	Adjacent Area	5	4

Notes:

1. T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. Values rand from 1 (indicating shallow or fragile soils) to 5 (deep soils least subject to erosion damage) tons/acre/year and apply to the entire soil depth profile (surface to bedrock).

2. Wind Erodibility Groups indicate a soil's susceptibility to wind erosion in cultivated areas. Values range from 1 (most susceptible) to 8 (least) and apply only to the surface layer of soil.

As discussed in Section 2.2.1.1.2 (Substructure Deficiencies), channel scour near the existing bridge piers has been observed over time, particularly in areas with minimal riprap. A scour analysis was performed for the proposed pier foundations. The scour analysis considered both contraction scour and pier scour. The total scour for the Preferred Alternative was 31.34 feet for the 100-year event and 33.28 feet for the 500-year event. The predicted scour depths are comparable to the 30ft scour depth, which was documented in a June 19, 2009 MnDOT memorandum. This analysis was conducted using a pier skew at 18.7° relative to the channel thalweg, or lowest points along the stream bed. Aligning piers normal to the channel flow could effectively reduce the overall scour estimates.

4.1.11 Water Resources

4.1.11.1 Describe surface water and groundwater features on or near the site in 4.1.11.1.1 (Surface Water) and 4.1.11.1.2 (Groundwater) below.

4.1.11.1.1 Surface water - lakes, streams, wetlands, intermittent channels, and county/judicial ditches. Include any special designations such as public waters, trout stream/lake, wildlife lakes, migratory waterfowl feeding/resting lake, and outstanding resource value water. Include water quality impairments or special designations listed on the current MPCA 303d Impaired Waters List that are within 1 mile of the project. Include DNR Public Waters Inventory number(s), if any.

Figure 24 and Table 6 below lists the surface waters identified in Minnesota Public Water Inventory (PWI) as being located within one mile of the project.

Table 6: Minnesota Public Impaired Waters near Project Area

#	Reach Name	PWI ID / Assessment Unit (AUID)	Public Water	303d Impaired Water	Special Designations	Pollutant / Stressor
1	Baudette River	09030008-536	Yes	Yes	N/A	Dissolved Oxygen
2	Rainy River	09030008-504	Yes	Yes	N/A	Mercury in fish tissue
3		09030008-508				
4		09030008-509				

The Proposed Project will span the Rainy River and is located adjacent to the confluence of Rainy and Baudette Rivers. The Minnesota Pollution Control Agency (MPCA) has identified that the Rainy River is on the Impaired Waters List for mercury in fish tissue, not dissolve oxygen. The pollutant present in the Rainy River involves concentrations of mercury in fish tissue that exceeded the water quality standard, therefore a fish consumption advisory for this river was recommended by the Minnesota Department of Health (MDH). A Total Maximum Daily Load (TMDL) study has been approved by the Environmental Protection Agency (EPA) for mercury in fish impairments, however the MPCA does not require additional design or construction mitigation measures to be taken since mercury is not generally associated with stormwater discharges on roadway construction projects.

The section of the Baudette River that is adjacent to the project area is on the MPCA Impaired Waters List as a waterway that may not support a thriving community of fish and other aquatic organisms due to insufficient dissolved oxygen levels. For the dissolved oxygen impairment, a TMDL is required and in the process of being written. The target start and completion dates for this reach of Baudette River have been scheduled for 2017 and 2021, respectively.

The MPCA would require that a National Pollutant Discharge Elimination System (NPDES) construction stormwater permit be obtained for this project and all design and construction would follow the NPDES construction stormwater permitting requirements.

4.1.11.1.2 Groundwater – aquifers, springs, seeps. Include: 1) depth to groundwater; 2) if project is within a MDH wellhead protection area; 3) identification of any onsite and/or nearby wells, including unique numbers and well logs if available. If there are no wells known on site or nearby, explain the methodology used to determine this.

Depth to groundwater is approximately between 15 feet and 20 feet near the project area which is consistent with the boring logs taken for the *Phase II Drilling Investigation* (see Appendix G for boring logs and Section 4.1.12, Contamination/Hazardous Materials/Wastes, for additional discussion). Due to the project's proximity to the Rainy and Baudette Rivers, it is presumed that the groundwater level within the project area is consistent with the rivers' water elevation.

Possible groundwater contamination identified within the project area is discussed in Section 4.1.12 (Contamination/Hazardous Materials/Wastes). As part of the Phase I Environmental Site Assessment, the

Minnesota County Well Index (CWI) has been queried and there are no wells located in the project area and there are no wellhead protection areas in Lake of the Woods County[9]. No wells will be constructed and no existing wells will be closed as a result of this project.

4.1.11.2 Describe effects from project activities on water resources and measures to minimize or mitigate the effects in Item 4.1.11.2.1 through Item 4.1.11.2.4 below.

4.1.11.2.1 Wastewater - For each of the following, describe the sources, quantities, and composition of all sanitary, municipal/domestic, and industrial wastewater produced or treated at the site.

4.1.11.2.1.1 If the wastewater discharge is to a publicly owned treatment facility, identify any pretreatment measures and the ability of the facility to handle the added water and waste loadings, including any effects on, or required expansion of, municipal wastewater infrastructure.

Not applicable.

4.1.11.2.1.2 If the wastewater discharge is to a subsurface sewage treatment systems (SSTS), describe the system used, the design flow, and suitability of site conditions for such a system.

Not applicable.

4.1.11.2.1.3 If the wastewater discharge is to surface water, identify the wastewater treatment methods and identify discharge points and proposed effluent limitations to mitigate impacts. Discuss any effects to surface or groundwater from wastewater discharges.

No impacts to existing wastewater treatment or conveyance systems are anticipated.

[9] Source: Minnesota Department of Health. <http://www.health.state.mn.us/divs/eh/water/swp/maps/gis/whpa.pdf>. Accessed July 14, 2016.

4.1.11.2.2 Stormwater - Describe the quantity and quality of stormwater runoff at the site prior to and post construction. Include the routes and receiving water bodies for runoff from the site (major downstream water bodies as well as the immediate receiving waters). Discuss any environmental effects from stormwater discharges. Describe stormwater pollution prevention plans including temporary and permanent runoff controls and potential BMP site locations to manage or treat stormwater runoff. Identify specific erosion control, sedimentation control or stabilization measures to address soil limitations during and after project construction.

Under existing conditions, stormwater runoff from the bridge is discharged directly to the river through the open-grate bridge deck. The volume of runoff is expected to increase as a result of adding approximately 0.9 acres of impervious area to the proposed U.S. approach. The portion of existing and new impervious areas in Minnesota and Ontario is summarized in Table 7.

Table 7: Project Impervious Areas Summary (in acres)

	Existing Impervious (ac)	Proposed Impervious (ac)	Impervious Increase (ac)
U.S.	0.18	1.08	0.90
Canada	0.22	0.82	0.60
Total	0.40	1.90	1.50

A Stormwater Management Plan is being developed to address the preliminary design for drainage and water resources management for the proposed bridge. The Rainy River is one body of water handled by the International Joint Commission (IJC), a binational organization dedicated to managing boundary waters. The International Rainy-Lake of the Woods Watershed Board (IRLCB) is a subsidiary group within the IJC. The IRLCB does not have additional water resources standards.

Permanent stormwater management is required for projects where one or more acres of new impervious surface are added. As shown above, this project is adding approximately 0.90 acres of new impervious surface on the U.S. portion. The stormwater treatment method and inclusion of permanent Stormwater Best Management Practices (BMPs) will be determined in the final design phase of the project. If BMPs are employed, based on rate control and pollutant load reduction, the preferred stormwater practices would include a combination of dry pond and filtration swales. This proposed BMP configuration would provide volume abstraction adequate to meet water quality standards and will also provide retention to help meet the rate control design requirements.

The project may also mimic the existing conditions at the site and discharge bridge runoff directly to the Rainy River at the bridge abutment through overland flow.

The MPCA General Stormwater Permit requires additional water quality treatment for waters identified as impaired where the identified pollutants or stressors are phosphorus, turbidity, dissolved oxygen, or biotic impairment (fish bioassessment, aquatic plant bioassessment and aquatic macroinvertebrate bioassessment). As of this writing, the Rainy River is not classified as impaired, however, the tributary

Baudette River is classified as such due to dissolved oxygen. Additional water quality treatment is not required for the project based on this impairment.

Preliminary analysis of water quality treatment indicates that the project meets or exceeds the applicable standards. As the project goes into final design, a more detailed analysis of stormwater treatment features will be carried out.

Under present conditions, the site discharges directly into the Rainy River. The Rainy flows north and west to Lake of the Woods (approximately 11 miles downstream). Overland flow routes and drainage areas in the vicinity of the project are shown in the Drainage Overview Map provided in the Project Preliminary Stormwater Management Plan.

Rainy River (AUID: 09030008-509) is the ultimate receiving water body for the project area. Rainy River flows to Lake of the Woods (AUID: 39-0002-02) (approximately 11 miles downstream). Both Rainy River and Lake of the Woods have impairments for mercury in fish tissue. Nutrient/eutrophication biological indicators also impair Lake of the Woods. Stormwater discharged from urban developments has the potential to release pollutants in the form of suspended solids and nutrients (e.g. phosphorus). the implementation of a permanent stormwater management system would mitigate these pollutants.

Temporary erosion and sediment control measures will be implemented throughout construction activities to protect receiving waters. A National Pollutant Discharge Elimination System (NPDES) Construction Storm Water Permit will be required for this project. This permit requires the development of a project stormwater pollution prevention plan (SWPPP) which includes directives for both construction stage and permanent sediment and erosion control.

A Stormwater pollution prevention plan (SWPPP) is required as part of the NPDES permit. This SWPPP will provide methods, schedules, and details for best management practices to be used for this project to prevent impacts to the quality of receiving waters. Erosion control measures will be in place and maintained throughout the entire construction period with implementation schedule as stated in the SWPPP. Removal of erosion control measures will not occur until all disturbed areas have been stabilized.

4.1.11.2.3 Water appropriation - Describe if the project proposes to appropriate surface or groundwater (including dewatering). Describe the source, quantity, duration, use and purpose of the water use and if a DNR water appropriation permit is required. Describe any well abandonment. If connecting to an existing municipal water supply, identify the wells to be used as a water source and any effects on, or required expansion of, municipal water infrastructure. Discuss environmental effects from water appropriation, including an assessment of the water resources available for appropriation. Identify any measures to avoid, minimize, or mitigate environmental effects from the water appropriation.

The nature and extent of dewatering activities for this project are not yet known, though some temporary dewatering may reasonably be anticipated during construction of bridge piers, stormwater management facilities, or other underground utility. In the event the dewatering efforts exceed the minimum guidelines for a DNR Water Appropriations permit, the project Owner must coordinate with the DNR prior to construction. An equivalent permit (Permit to Take Water) would be required in Canada. Any dewatering required for this project will be temporary, and no adverse effects on the groundwater or surface water are anticipated. Depending on the dewatering activity (i.e. volume and duration), it is recommended that the project SWPPP include provisions for the management of the discharge to prevent erosion and particulate pollutant loading in the receiving water.

As part of the Phase I Environmental Site Assessment, the Minnesota County Well Index (CWI) has been queried and there are no wells located in the project area.

4.1.11.2.4 Surface Waters

4.1.11.2.4.1 Wetlands - Describe any anticipated physical effects or alterations to wetland features such as draining, filling, permanent inundation, dredging and vegetative removal. Discuss direct and indirect environmental effects from physical modification of wetlands, including the anticipated effects that any proposed wetland alterations may have to the host watershed. Identify measures to avoid (e.g., available alternatives that were considered), minimize, or mitigate environmental effects to wetlands. Discuss whether any required compensatory wetland mitigation for unavoidable wetland impacts will occur in the same minor or major watershed, and identify those probable locations.

Wetland/Watercourse Delineation, Assessment, and Classification

A wetland/watercourse site assessment was conducted in May 2015 to determine the presence and spatial arrangement of any wetlands and watercourses within the project area. The wetlands were delineated using the 3-parameter method prescribed in the 1987 Army Corps of Engineers Wetland Delineation Manual, specifically the Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Midwest Region (USACE 2012). The Study Area shown on Figure 26 is bounded by the Rainy River along the north and east boundary and the Baudette River along the southern boundary.

One wetland (W-1) was mapped within the project limits. Wetland W-1 is a PEMB, Type 2 (emergent marsh) wetland and is 1.98 acres in size. The wetland was dominated by reed canary grass (*Phalaris arundinacea*), soft stem bulrush (*Schoenoplectus tabernaemontani*), cattail (*Typha angustifolia*), and red-osier dogwood (*Cornus stolonifera*). The wetland is located underneath and to the east/southeast of the

existing bridge, on the shores of the Rainy and Baudette Rivers. The National Wetland Inventory (NWI) also indicates a freshwater emergent wetland at this location – see Figure 26 for the Wetland Location Map.

Two watercourses were identified adjacent to or within the Study Area and mapped. The rivers' edge (waterline) and estimated ordinary high water level (OHWL) were delineated in the Study Area using a sub-meter handheld GPS unit and mapped with GIS software. The OHWL was identified as defined by USACE Regulatory Guidance Letter (RGL) 05-05.

The delineated wetland boundaries were approved by MnDOT and Lake of the Woods County on November 19, 2015 (See WCA Notice of Decision in Appendix D). Aquatic Resource Boundaries were approved by the U.S. Army Corps of Engineers on January 11, 2016 (see letter of approval in Appendix D).

Wetlands and Watercourses are afforded federal protection under the Clean Water Act (Section 404, Executive Order 11990 – Protection of Wetlands). The Minnesota Wetland Conservation Act (WCA) regulates wetlands but does not regulate watercourses. The Minnesota Department of Natural Resources (MnDNR) regulates wetlands and watercourses if identified on the MnDNR Public Water Inventory maps (see Figure 24). The Baudette and Rainy Rivers are both shown as public waters on the MnDNR Public Water Inventory maps and thus are subject to MnDNR public water permits for the proposed temporary and permanent watercourse impacts. Impacts to the watercourse are discussed in Section 4.1.11.2.4.2 (Water Resources – Other Surface Waters). The laws protecting aquatic resources require projects to seek avoidance, then minimization, and finally mitigation for any potential impacts (referred to as "sequencing").

Wetland Impacts

This project does not propose permanent impacts to wetlands. Permanent impacts to the watercourse are required for the placement of piers within the watercourse, which are discussed in Section 4.1.11.2.4.2 (Water Resources – Other Surface Waters).

However, temporary impacts to wetlands are anticipated due to the construction of the proposed bridge and temporary causeway. As discussed in Section 4.1.6.2.1 (Project Description – Construction: Potential Staging Areas), access to proposed Pier 1 on the U.S. side would require either construction of a temporary causeway from the U.S. shore or dredging of the river to allow barge access closer to the shore. The temporary causeway would be constructed at an elevation 1 foot above the 100-year water surface elevation (WSE) with a top width of approximately 50 feet.

The temporary wetland impacts that are under USACE jurisdiction are shown on Figure 27A. Temporary impacts to wetlands within the watercourse are shown on Figure 27A as "Wetland / Watercourse Impacts" and are approximately 0.71 acres.

The temporary wetland impacts that are under the Wetland Conservation Act (WCA) jurisdiction are shown on Figure 27B and are approximately 221.8 square feet.

Sequencing: Avoidance and Minimization Alternatives for the Temporary Wetland Impacts

No Build – The No Build Alternative would not impact wetlands; however, it does not address the project purpose and need.

Of the four Alignment Alternatives evaluated in this EA (see Section 3.2.4), Alignment Alternatives 1 and 3A have the lowest potential for wetland impacts. Both Alignment Alternative 1 and 3A's Temporary Modular Bridge are located approximately 52.1 feet downstream (north) of the existing alignment. This location creates separation from the field delineated wetland boundary (see Figure 26), which minimizes the potential for wetland impacts among the Alternatives considered.

Alignment Alternatives 2 and 3B have an increased potential for wetland impacts. Both Alignment Alternative 2 and 3B's Temporary Modular Bridge are located approximately 46.7 feet upstream (south) of the existing alignment, creating a greater overlap with the identified wetland area.

Complete avoidance of wetland impacts is not feasible with any of the four Alignment Alternatives considered in this EA. As discussed previously in Section 3.2 (Alignment Alternatives), all alignment alternatives were developed to meet the constraints posed by the FAA for airspace, USCG and Transport Canada for navigational clearances and were designed to tie into the existing Ports of Entry. Although Alignment Alternative 2 was selected for the Preferred Alignment, it provided the best possible balance between minimizing wetland and cultural resource impacts, cost, and meeting these constraints.

Sequencing: Preferred Alignment Alternative Minimization

Once the Preferred Alignment Alternative was selected, refinements were made to the roadway geometry (i.e. tightening the curves to pull in the curbline) which reduced the wetland impact footprint. As previously discussed in Section 3.3.2 (Evaluation of Bridge Type Alternatives), Bridge Type Alternative development/refinement and evaluation included successive efforts to minimize river bed impacts throughout the processes.

Additionally, the proposed project will attempt to minimize potential wetland footprint impacts by using several structural and non-structural BMPs. To estimate impacts in this EA, standard design features and preliminary construction limits were assumed. Possible minimization measures will be explored in final design and permitting.

Mitigation and Regulatory Context

The intent of the wetland mitigation plan will be to replace lost wetland functions and restore wetland area to fulfill the regulatory mitigation requirements. Replacement of lost wetlands will be in accordance with Section 404 of the Clean Water Act, Executive Order 11990: Protection of Wetlands, and all state wetland protection regulations (Minnesota Wetland Conservation Act, etc.).

However, under the Wetland Conservation Act (WCA) jurisdiction, there are no permanent wetland impacts resulting from existing bridge demolition and construction of the proposed bridge (including associated roadway approaches, construction staging activities, heavy equipment access, and tree

clearing). Similarly, under USACE jurisdiction, there are no permanent wetland impacts resulting from the existing bridge demolition and construction of the proposed bridge.

Prior to construction a detailed survey will be conducted to confirm existing topography within the wetland and watercourse. Upon construction completion, the temporary fill for the causeway will be removed to pre-construction contours as feasible. Vegetation within the wetlands will also be restored to pre-construction conditions as feasible using native seed mixes.

More details on wetland mitigation requirements will be known as the project proceeds into final design and wetland impacts can be more accurately quantified, and disclosed in the required wetland permits.

4.1.11.2.4.2 Other surface waters- Describe any anticipated physical effects or alterations to surface water features (lakes, streams, ponds, intermittent channels, county/judicial ditches) such as draining, filling, permanent inundation, dredging, diking, stream diversion, impoundment, aquatic plant removal and riparian alteration. Discuss direct and indirect environmental effects from physical modification of water features. Identify measures to avoid, minimize, or mitigate environmental effects to surface water features, including in-water Best Management Practices that are proposed to avoid or minimize turbidity/sedimentation while physically altering the water features. Discuss how the project will change the number or type of watercraft on any water body, including current and projected watercraft usage.

The proposed project will construct the Preferred Bridge over the Rainy River. The proposed 4-pier bridge configuration will replace an existing 7-pier configuration. No substantial changes to the river channel are proposed. Any temporary measures (e.g. dredging) employed during construction will be restored prior to the completion of the project. The shoreline will be repaired and stabilized.

As discussed in Section 4.1.6.2.2 (Project Description – Construction: Potential Staging Areas), a temporary causeway is proposed from the U.S. shore or dredging of the river to allow barge access closer to the shore. The temporary causeway would be constructed at an elevation 1 foot above the 100-year water surface elevation (WSE) and an approximate top width of 45 feet. To isolate the backwater effects of the proposed causeway, a temporary conditions model was created to compare the existing bridge conditions with the Preferred Alternative (with and without the causeway included). The model results summarized below further indicate the proposed bridge design will not result in stage increase in the Rainy River, even with the temporary causeway:

- Under temporary conditions with the causeway included: The causeway will produce an increased backwater effect over existing conditions (approximately 0.012 feet)
- Under temporary conditions without the causeway included: The causeway will produce an increased backwater effect over existing conditions (approximately 0.010 feet)
- Under final conditions, the Preferred Alternative will produce a decreased backwater WSE for the 100-yr storm event from that of existing conditions (approximately 0.004 feet).

Other Water Impacts

Permanent impacts to the watercourse are required for placement of piers for the proposed bridge and are shown on Figure 27A. The placement of Proposed Piers 1 and 2 on the U.S. half of Rainy River will result in approximately 739.2 square feet of fill within the watercourse.

There are also temporary impacts to the watercourse that will result from the proposed bridge in addition to the temporary causeway necessary to construct the proposed bridge. The construction of the causeway results in approximately 0.25 acres of temporary watercourse impacts that are under USACE jurisdiction and approximately 0.98 acres of temporary watercourse impacts under the MnDNR jurisdiction. These impacts are shown on Figure 27A and Figure 27B.

Temporary structures such as cofferdams will be constructed to allow the pier footing and stem construction. The cofferdams will be removed when the pier structures have been completed. In-water BMPs will be provided as part of the project SWPPP.

Clearing and excavation of the river bank will be kept to a minimum. Regular inspection of erosion control practices at bridge abutments and slopes will be provided. The contractor will minimize the need for disturbing portions of the proposed project that have steep slopes and provide a slope maintenance plan for those slopes where disturbance cannot be avoided. The plan will address the maintenance of permanent BMPs installed to protect steep slopes. The plan will also address methods for stabilizing erosion-susceptible slopes.

Water pumped out of cofferdams may contain high concentrations of suspended solids. Adequate sediment control and, if necessary, treatment of water affected by construction activity must be provided before the pumped water is discharged. This includes filtered sump pits or other dewatering appropriate systems. Dewatering system must be inspected frequently and repaired or replaced if sediment buildup recurs or if the structure does not function as designed. The accumulated sediment that is removed from a dewatering device must be spread onsite and stabilized, used as fill, or disposed of at an approved disposal site. Dewatering discharge may be pumped directly to a settling basin or other treatment pond.

Moving water type flotation silt curtains will be utilized to isolate the active construction area within the river. The Project SWPPP will further identify BMPs to mitigate turbidity and sedimentation in the waterway.

Sequencing: Avoidance and Minimization Alternatives for the Permanent Fill from Proposed Piers

No Build – The No Build Alternative would not impact wetlands; however, it does not address the project purpose and need.

Several Bridge Type Alternatives for the proposed Alignment Alternative were evaluated with respect to potential environmental impacts. For all of the proposed Bridge Types, the footprint of each pier would be similar. However, the number of piers within the watercourse or the designated 100-year floodplain provided the basis for which impacts were assessed.

Early in the Bridge Type Alternative development process, five overall structure types were carried forward and evaluated: continuous steel I-girder (Alternative A, including Configurations A1 and A2), simple-span precast/prestressed I-girder (Alternative B), continuous steel box girder (Alternative C), segmental concrete box (Alternative D), and tied arch (Alternative E). The table below summarizes the total number of spans and the number of piers in the watercourse for each Bridge Type Alternative:

Bridge Type Alternatives Originally Considered[10]						
	A1	**A2**	**B**	**C**	**D**	**E**
# of Spans	5	3	9	5	4	8
# of Piers in watercourse	4	2	8	4	3	7

As explained in Section 3.3.2 (Bridge Type Alternatives – Evaluation of Bridge Type Alternatives), Alternatives B, C, D, and E were eliminated from consideration for various reasons. Among these reasons, the four alternatives had some of the largest number of piers. This is especially true for Alternatives B and E.

The Alternative Refinement process resulted in three configurations of Alternative A for final evaluation: continuous prismatic steel I-girder with five spans (Configuration A1.1), continuous haunched steel I-girder with four spans (Refined Configuration A2), and continuous haunched steel I-girder with five spans (Configuration A1.2).

Refined Bridge Type Alternative Configurations[11]		
	Refined A2	**A1.1 & A1.2**
# of Spans	4	5
# of Piers in watercourse	3	4

As discussed in Section 3.3.3 (Preferred Bridge Type Alternative Determination), following the development of a preliminary erection plan, Refined Configuration A2 was found to require approximately eight temporary structures to support its bridge segments during construction. This would cause additional watercourse, floodplain, and navigable channel impacts. Therefore, Refined Configuration A2 was eliminated from consideration.

The remaining Configurations A1.1 and A1.2 have the same implied impacts to the watercourse and floodplain based on having the same number and location of piers.

Sequencing: Avoidance and Minimization Alternatives for Existing Bridge Abutment and Pier Removal

The existing Baudette Bridge low steel elevation is 1094.46 (NAVD 88). Existing CNRR Bridge low steel elevation is 1078.20 feet. The low steel elevation on the proposed bridge will be lower than that of the

[10] Source: Table 23 and Table 24 in Appendix C – the preliminary and refined evaluation matrixes; dated January 20, 2016 and February 19, 2016, respectively.
[11] Source: Table 25 in Appendix C – the final evaluation matrix dated March 22, 2016.

existing bridge, but the downstream CNRR Bridge will be the limiting factor for navigational clearance. The proposed conditions will reduce the number of bridge piers from seven (7) to four (4). The resulting pier array will not limit watercraft usage on the River.

The existing bridge is comprised of three different types of substructures. At both the U.S. and Canadian shores, the bridge rests on concrete abutments. Each of the six truss spans is supported by concrete piers which are founded on timber piles. There are short, 20-foot approach spans leading up to the truss spans that rest on pile bent piers. The pile bents consist of steel columns, beams, and bracing.

The concrete abutments will be removed using air tools such as pneumatic hammers and blunted chisel tools. The abutments will be removed to an elevation at least two feet below the final ground surface. All debris will be removed from the site.

The seven concrete piers supporting the six truss spans are located in the Rainy River, three of which are in the deepest part of the channel where recreational navigation will occur. The piers will be removed to the elevation of the stream bed, at a minimum, unless required to be removed deeper in accordance to the United States Coast Guard (USCG) Section 9 permit.

One method for pier removal involves the use of barges. This would include using an excavator with a hoe ram attachment for demolition. The hoe ram would be placed under water and used to demolish each pier. The caissons, and presence of the timber piles inside the caisson, make this a slow and challenging process, likely needing to be stopped and started multiple times to clean out debris inside the caisson. Additionally, there may be feasibility issues noting the depth of the river. Another method for pier removal involves the use of cofferdams. The piers can be encased, dewatered, and removed using traditional means inside a cofferdam. The final pier removal method will be selected during final design development.

The pile bent piers will be dissembled using cutting tools, such that the members are a manageable size. Once severed, the members will be removed from the site. Pile bent piers will be removed to an elevation at least two feet below the final ground surface unless located in the Rainy River. For pile bents located in the Rainy River, the piers will be removed to the elevation of the stream bed, at a minimum. These piers are located in shallow water prohibiting navigation, and need not be removed any lower unless specified by a governing agency.

Mitigation and Regulatory Context

As discussed in Section 4.1.11.2.4.1 (Water Resources – Wetlands), the intent of the wetland mitigation plan will be to replace lost wetland functions and restore wetland area to fulfill the regulatory mitigation requirements. Replacement of lost wetlands will be in accordance with Section 404 of the Clean Water Act, Executive Order 11990: Protection of Wetlands, and all state wetland protection regulations (Minnesota Wetland Conservation Act, etc.).

The approximate 739.2 square foot area of permanent watercourse fill (Figure 27A) from the proposed piers will be mitigated through the removal of existing structures when the existing bridge is demolished.

The location of the existing structures (bents and piers) to be removed within the wetlands and watercourse are shown on Figure 27A. Approximately 373.4 square feet of existing structures will be removed from the wetland within the watercourse and approximately 415.8 square feet of structures will be removed from the watercourse for a total removal area of 789.2 square feet.

As discussed in Section 4.1.11.2.4.1 (Water Resources – Wetlands), a detailed survey will be conducted to confirm existing topography within the watercourse prior to construction. Upon construction completion, the temporary fill for the causeway will be removed to pre-construction contours as feasible. Vegetation within the watercourse will also be restored to pre-construction conditions as feasible using native seed mixes.

More details on wetland and watercourse mitigation requirements will be known as the project proceeds into final design and impacts can be more accurately quantified, and disclosed in the required permits.

4.1.12 Contamination, Hazardous Materials, and Wastes

4.1.12.1 Pre-project site conditions - Describe existing contamination or potential environmental hazards on or in close proximity to the project site such as soil or ground water contamination, dumps, closed landfills, existing or abandoned storage tanks, and hazardous liquid or gas pipelines. Discuss any potential environmental effects from pre-project site conditions that would be caused or exacerbated by project construction and operation. Identify measures to avoid, minimize or adverse effects from existing contamination or potential environmental hazards. Include development of a Contingency Plan or Response Action Plan.

Potential environmental hazards were reviewed within the surrounding project area as part of the completed Phase I and Phase II Environmental Site Assessments (ESAs). Summaries of these ESAs are provided below. Complete Phase I and Phase II Environmental Site Assessment reports are available upon request from the MnDOT Project Manager.

Existing Contamination and Potential Environmental Hazards

The Phase I Environmental Site Assessment (ESA) for the project area was completed in August 2014. As a result, six areas of recognized environmental conditions (RECs) were identified within the project area. A map of the six RECs is provided in Figure 2 of Appendix G.

The Phase I ESA compiled data obtained from Environmental Data Resources, Inc. (EDR), city and county public records, onsite inspections (REC-1 only), representative interviews, public access point/right-of-way field observations, review of historical aerial photographs, and Mead & Hunt's January 2014 history survey report.[12] The RECs were designated as having a "low", "medium", or "high" potential for contamination. The RECs and their rankings are summarized in Table 8 as follows:

[12] Source: See Appendix B – Mead and Hunt 2014.

Table 8: Recognized Environmental Condition (REC) Area Rankings from Phase I Environmental Site Assessment (ESA)

REC #	Name	Address	Rank	Rank Rationale
1	U.S. Customs and Border Protection	600 International Drive NE	Medium	Resource Conservation and Recovery Act (RCRA) – Small to Minimal Hazardous Waste Generator and possible historical presence of bulk storage aboveground storage tanks (ASTs).
2	Peace Park / Rest Area	South of International Drive	Low	Former surface disturbances observed in historical aerial photographs.
3	City Former Power Plant	North of International Drive	High	Historical industrial use as a power plant, possible historical presence of bulk storage ASTs, former surface disturbances observed in historical aerial photographs.
4	Minnkota Power Coop	South of Railroad Line/Railroad Bridge over Rainy River	Medium	Current electrical substation, possible historical presence of bulk storage ASTs, former surface disturbances observed in historical aerial photographs. Oils likely used in association with the substation.
5	Canadian National Railroad Company	Railroad Track and Surrounding Land	Medium	Current railroad track and bridge, liquid propane storage and loading facility, former surface disturbances/land scarring observed in historical aerial photographs.
6	Trunk Highway 72 and Bridge 9412	Trunk Highway 72	Low	RCRA – Non-Generator of Hazardous Waste

Based on the results of the Phase I ESA, a Phase II ESA was recommended and completed in October 2014. The Phase II ESA involved eight Landmark Geoprobe (LGP-1 through LGP-8) taken at boring locations across the project area, specifically within RECs 1 through 3. A map with the LGP sample locations is provided in Figure 3 of Appendix G. As summarized in Table 9, The Phase II ESA tested for the following potential contaminants and compared contaminant concentrations to the following standards:

Table 9: Phase II ESA Potential Contaminants and State Standards

Potential Contaminant	Soil State Standard	Groundwater State Standard
Volatile organic compounds (VOCs)	MPCA Industrial and Residential Soil Reference Values (ISRV and RSRV), and/or; MPCA Tier 1 Soil Leaching Values (SLV)	Minnesota Department of Health (MDH) Health Risk Limits (HRL)
Semi-volatile organic compounds (SVOCs)		
RCRA metals		
Petroleum compounds (diesel- and gasoline range organics; DRO and GRO)	MPCA Best Management Practice (BMP) for DRO and GRO	MDH Concentration for Total Petroleum Hydrocarbons (TPH)

Table 10 summarizes the significant findings from the soil and groundwater sampling field investigation (i.e. only potential contaminants that exceed standards and/or indicate a contaminant release event). Additional Tables detailing the complete results of the Phase II ESA field investigation are provided in Appendix G.

Table 10: Summary Significant Findings from the Phase II ESA

REC #	Sample # / Media	Depth, feet below ground surface	Contaminants Exceeding Standards	Significant Findings
REC-1	LGP-1 Soil	4-6	Arsenic	Concentration is within the naturally occurring background range, therefore not indicative of a release event.
	LGP-1 Groundwater	18-23	Selenium	Likely naturally occurring since adjacent properties utilize municipal water for potable purposes.
REC-3	LGP-5 Soil	2-4	4 VOCs, 1 SVOC, DRO and GRO	The DRO concentration indicates a petroleum release to groundwater.
	LGP-5 Groundwater	19-24	2 VOCs, DRO and GRO	
	LGP-6 Groundwater	9-14	DRO	The DRO concentration indicates a petroleum release to groundwater.
	LGP-7 Soil	11-13	Arsenic	Concentration is within the naturally occurring background range, therefore not indicative of a release event.
			DRO and GRO	
	LGP-8 Soil	10-12	DRO	

The results of the Phase II ESA investigation indicated petroleum impacts to soil and groundwater in the northern portion of the project area. Since the intended replacement of the Baudette / Rainy River International Bridge will involve earthwork activities (road construction, grading, drainage, etc.) potential fill material may be sourced from within the project area. Special provisions will be developed for properly handling contaminated soil and/or groundwater encountered during construction in accordance with all applicable state and federal regulations.

4.1.12.2 Project related generation/storage of solid wastes - Describe solid wastes generated/stored during construction and/or operation of the project. Indicate method of disposal. Discuss potential environmental effects from solid waste handling, storage, and disposal. Identify measures to avoid, minimize or mitigate adverse effects from the generation/storage of solid waste including source reduction and recycling.

An Asbestos and Regulated Waste Assessment Report[13] was prepared in September 2013 following an inspection of the U.S. side of the existing bridge structure. The complete report is available upon request from the MnDOT Project Manager.

In the Asbestos and Regulated Waste Assessment Report, several regulated wastes were identified as part of the existing bridge structure. The identified waste included:

- 665 linear feet of 4-inch asbestos-containing transite pipe on the east side of the bridge, under the wooden pedestrian walkway (non-friable and in good condition);
- two Mercury-containing HID lights near the south approach of the bridge;
- two PCB-containing light ballasts near the south approach of the bridge; and,
- approximately 11,000 linear feet of treated lumber associated with the existing pedestrian walkway and south abutment under the bridge.

The asbestos containing material must be removed by a MnDOT approved contractor listed under 19.2 at: http://www.dot.state.mn.us/consult/prequal/documents/pqbyworktype.pdf. HID bulbs and light ballasts must be recycled through MnDOT's approved contractor, Green Lights Recycling. All treated wood must be disposed of at an MPCA permitted lined mixed municipal solid waste landfill or industrial landfill.

All regulated solid wastes generated by construction of the proposed project will be disposed of properly in a permitted, licensed solid waste facility or a similarly regulated facility elsewhere. Project demolition of concrete, asphalt and other potentially recyclable construction materials will be directed to the appropriate storage, crushing or renovation facility for recycling or reuse.

Materials anticipated to be present on-site during construction are those normally associated with the operation or maintenance of construction equipment including petroleum products such as gasoline and other engine fluids. Toxic or hazardous materials, such as fuel for construction equipment, and materials used in construction of bridges/roads (paint, contaminated rags, acids, bases, herbicides, and pesticides) will likely be used during site preparation and bridge/road construction. Although spills of these materials

[13] Source: See Appendix B – Groundwater & Environmental Services, Inc., September 2013.

are not planned, any spills or reportable quantities that occur will be reported to the Minnesota Duty Officer and the contractor will clean up spilled material according to state requirements.

4.1.12.3 Project related use/storage of hazardous materials - Describe chemicals/hazardous materials used/stored during construction and/or operation of the project including method of storage. Indicate the number, location, and size of any above or below ground tanks to store petroleum or other materials. Discuss potential environmental effects from accidental spill or release of hazardous materials. Identify measures to avoid, minimize or mitigate adverse effects from the use/storage of chemicals/hazardous materials including source reduction and recycling. Include development of a spill prevention plan.

No other toxic or hazardous materials are anticipated during construction and none will be present following construction. No above- or below-ground storage tanks are planned for permanent use in conjunction with the bridge project. Temporary storage tanks for petroleum products may be located in the project area for refueling construction equipment during roadway construction activities. Appropriate measures will be taken during construction to avoid spills that could contaminate groundwater and/or surface water in the project area. In the event that a leak or spill occurs during construction, appropriate action to remedy the situation will be taken immediately in accordance with MPCA guidelines and regulations.

If a spill of hazardous/toxic substances should occur during or after the proposed project, it is the responsibility of MnDOT and their contractor(s) to notify the Department of Public Safety, Division of Emergency Services, to arrange for corrective measures to be taken pursuant to 6 MCAR 4.9005E. Any contaminated spills or leaks that occur during construction are the responsibility of the contractor and would be responded to according to MPCA containment and remedial action procedures.

4.1.12.4 Project related generation/storage of hazardous wastes - Describe hazardous wastes generated/stored during construction and/or operation of the project. Indicate method of disposal. Discuss potential environmental effects from hazardous waste handling, storage, and disposal. Identify measures to avoid, minimize or mitigate adverse effects from the generation/storage of hazardous waste including source reduction and recycling.

Any hazardous waste materials generated or encountered during construction would be disposed of in the manner specified by local or state regulation or by the manufacturer. Whenever possible, vehicle refueling and maintenance should not be performed on the construction site. However, any vehicle refueling or maintenance that must take place on the construction site must have proper spill prevention controls in place prior to commencing work. The Contractor’s personnel shall be instructed in these practices and the Contractor’s Erosion Control Supervisor shall be responsible for seeing that these practices are followed.

4.1.13 Fish, Wildlife, Plant Communities, and Sensitive Ecological Resources (Rare Features)

4.1.13.1 Describe fish and wildlife resources as well as habitats and vegetation on or in near the site.

The project area depicted in Figure 1 includes the confluence of the Baudette River and the Rainy River in the immediate vicinity of the existing international bridge and CN Railroad Bridge over the Rainy River between Baudette, Minnesota and Rainy River, Ontario. The Rainy River is a large riverine watercourse with fisheries resources that provide ecological and recreational value. The Rainy River has a coolwater thermal regime and its fish community can be characterized as having cool and warm-water fish.

Field investigations were conducted in 2015 within the 1,300 feet reach of the proposed project area and the Rainy River was observed to have an approximate average width of 1,030 feet with an average water depth of 20 feet in the middle of the channel and 8 feet along the shoreline habitats. Beyond the shallow nearshore areas, sand is the predominant bottom substrate in the Rainy River. On both sides of the river, nearshore substrate was dominated by sand with some coarse material. The coarse substrate (on both shorelines) consisted of cobble and gravel between the existing international bridge crossing and the CN Railroad Bridge. Upstream from the bridge on the east shore, there were boulders and concrete debris, likely from decommissioned docks at that location. Emergent vegetation (predominantly sedges and grasses) was prevalent along both shorelines. The average width of aquatic vegetation extending out into the river channel is 50 feet on the east bank and 165 feet on the west bank. On the east side of the Rainy River, nearshore habitat is similar on both sides of the existing bridge (i.e. upstream and downstream). On the west side of the river, there is a wider band of aquatic vegetation on the south side relative to the north side; therefore, a smaller area of wetland and in-water aquatic vegetation would be disturbed by the placement of a new bridge to the north of the existing structure.

Within the proposed project area, the Rainy River provides a migratory corridor to many resident fish species. During the 2007 to 2008 fisheries survey which was conducted in the Rainy River between river mile (RM) 0 and 40, 23 different species were recorded. The project area is located approximately 11 miles up-river of the Lake of the Woods and it is likely that the fish community in the Rainy River is similar to the fish community observed in Lake of the Woods (see Appendix B – MNRF 2015b. As many as 55 fish species have been documented in Lake of the Woods, including Northern Pike (*Esox lucius*), Walleye (*Sander vitrius)*, Sauger (*Sander canadensis*), Yellow Perch (*Perca flavescens*), White Sucker (*Catostomus commersoni*) and Smallmouth Bass (*Micropterus dolomieu*) Lake Sturgeon (*Acipenser fulvescens*) and Shortjaw Cisco (*Coregonus zenithicus*) (see Appendix B – MnDNR 2015b and MNRF 2015b). Lake sturgeons have been observed in the Lake of the Woods and in the Rainy River fish surveys.

According to the Fort Frances District of the Ministry of Natural Resources and Forestry (MNRF), the areas around the abutments of the CN Railroad Bridge provide potential spawning habitat for Walleye, White Sucker, and Lake Sturgeon (see Appendix B – MNRF 2015a). Nearshore areas within the project area provide potential rearing habitat for a variety of species and potential spawning habitat for Northern Pike. Coarse substrates also provide potential spawning areas for Walleye, White Sucker, and Lake

Sturgeon. According to MnDNR, Walleye move through the project area in late March to spawn in the Rainy River rapids at RM 40 upstream of the project area, northern pike spawn in the tributaries of the Rainy River, and lake sturgeon spawn in the Rapid River located upstream of the project area (see Appendix B – MnDNR 2015c). Those recreationally important species all move through the project area for their spawning migrations from approximately March through May (see Appendix B – MnDNR 2015c). These spawning migrations through the project area align with the proposed in-water exclusion dates from March 15th through June 15th in the U.S. (see Appendix B – MnDNR 2015a) and April 1st through July 15th in Canada per the Ontario Ministry of Natural Resources and Forestry (MNRF). Therefore, no in-water work is permitted from March 15th through July 15th for this project.

While overwintering likely occurs in the project area by some resident species, Lake of the Woods is approximately 11 RMs downstream and likely provides more suitable overwintering habitat than the Rainy River or Baudette River. Within the project area, the Baudette River provides a diversity of habitats with shallow water, slower velocity, and abundant emergent vegetation to support a variety of fish species. Maximum water depth in the middle of the channel at the mouth of the Baudette River is 8 feet. The mouth of the Baudette River was approximately 436 feet wide. However, dense aquatic vegetation characterized the area such that the open water area was limited to a 115 feet wide area. The emergent vegetation extended to 263 feet from shore on the southeast side of the Baudette River and 49 feet from shore on the northwest bank. Some of the vegetated areas along the Baudette River shoreline are within areas identified as wetlands in background data obtained from the National Wetland Inventory (see Appendix B – USFWS 2013).

Within the project area, the Baudette River flows into the Rainy River. The confluence is just upstream of the existing bridge on the south side of the river. The lower 2 miles of the Baudette River are known to support a healthy, warmwater aquatic community (see Appendix B – MPCA 2015). As the Baudette River nears the City of Baudette, the channel widens to form Baudette Bay, which is a popular area for sport fishing. During a Minnesota Department of Natural Resource electrofishing survey in 2005, total of 13 different fish species were captured in the Baudette River including Central mudminnow (*Umbra limi*), Northern Pike (*Esox Lucius*), Golden Shiner (*Notemigonus crysoleucas*), Common Shiner (*Notropis cornutus*), Creek chub (*Semotilus atromaculatus*), Brown bullhead (*Ictaluris nebulosus*), Yellow Perch (*Perca flavescens*) and Rock Bass (*Ambloplites rupestris*).

Trans-boundary effects and appropriate transboundary protection and mitigation measures will be confirmed during Detail Design. Protection and mitigation measures for potential impacts to fish and fish habitat (e.g. in-water construction timing restrictions with respect to spawning migrations as defined in this section) will be adhered to on both sides of the border. In addition, potential impacts to surface water and the stormwater management plan has been developed for the entire project and provides protection measures for both sides of the border.

4.1.13.2 Describe rare features such as state-listed (endangered, threatened or special concern) species, native plant communities, Minnesota County Biological Survey Sites of Biodiversity Significance, and other sensitive ecological resources on or within close proximity to the site. Provide the license agreement number (LA-) and/or correspondence number (ERDB) from which the data were obtained and attach the Natural Heritage letter from the DNR. Indicate if any additional habitat or species survey work has been conducted within the site and describe the results.

The lake sturgeon (*Acipenser fulvescens*) is listed as a Species of Special Concern under Minnesota's Threatened and Endangered Species Statute, and is known to exist in the Rainy River in the vicinity of the project area as well as within Lake of the Woods, located 11 miles downstream. Lake sturgeon are most likely to be in in the project area during their spawning migration in April and May from the Lake of the Woods upstream to the Rapid River (upstream of the project area) (see Appendix B – MnDNR 2015c). There is no known spawning habitat for lake sturgeon within the project area and the portion of the Rainy River within the proposed bridge project area is not critical habitat for the lake sturgeon. Because lake sturgeon is known to exist in the Rainy River, prevention, and control measures for stormwater, acoustic effects during construction and containment for debris and construction material are advised to be in place during construction. The proposed project is not anticipated to affect fish migrations or impact critical fish habitat for any other species. Additional Lake Sturgeon species-specific surveys conducted within the project area are unknown at the time of this report.

In addition to lake sturgeon, the Creek Heelsplitter (*Lamigona compressa*) mussel is also listed as a Species of Special Concern in Minnesota. The MnDNR identified the Creek Heelsplitter as occurring within a 5-mile radius of the project area. Best management practices for stormwater and accidental spill prevention and treatment procedures will be implemented during project construction activities to reduce the potential impacts to water quality in the project area. No additional Creek Heelsplitter species-specific surveys were conducted within the project area.

The northern long eared bat (*Myotis septentrionalis*), little brown bat (*Myotis lucifugus*), and tri-colored bat (*Perimyotis subflavus*) are also listed as a Species of Special Concern in Minnesota and may utilize forested habitat in or around the proposed project area; however, the Minnesota Natural Heritage Information System (NHIS) database query[14] did not produce record of these species in the area. The current project schedule anticipates tree removal and clearing occurring during the winter months to minimize impacts to both bat species. A survey for the presence or absence of the bats may be required prior to the commencement of construction if project clearing occurs during the summer and pup rearing period.

The MnDOT Roadside Vegetation Management Unit was contacted via an Early Notification Memo dated July 11, 2013 to determine potential vegetation impacts caused by the proposed project. Resulting

[14] Source: See Appendix D – Email from MnDNR dated June 19, 2015.

correspondence indicated that the project area was unlikely to contain rare species, rare native plant communities, trees, shrubs, or other notable vegetation.

4.1.13.3 Discuss how the identified fish, wildlife, plant communities, rare features and ecosystems may be affected by the project. Include a discussion on introduction and spread of invasive species from the project construction and operation. Separately discuss effects to known threatened and endangered species.

Possible effects to fish, wildlife, plant communities, and known threatened and endangered species include possible acoustic and turbidity effects and associated habitat impacts from construction and clearing. Construction of the bridge will include direct and permanent impacts to the benthic habitat within the footprint of the proposed piers. Other permanent impacts include minimal tree clearing of terrestrial habitat on the southern side of the Rainy River and the removal of the existing bridge likely providing habitat to barn swallows (*Hirundo rustica*). Potential acoustic and water quality impacts will be temporary and limited to the period of bridge construction. Turbidity curtains will be installed around in –water work areas to reduce any elevated turbidity from demolition of the piers. Best management practices (BMPs) will be implemented during construction to minimize sedimentation including implementing stormwater controls. Stormwater BMPs include following the erosion prevention and stormwater control plan issued for the project presented in 4.1.11.2.2 (Water Resources – Stormwater). There is a large wetland complex located on the upstream of the existing bridge on the eastern shore that maybe effected by sedimentation from shoreline soil disturbance if there are any failures in stormwater controls. Acoustic impacts to resident fish during construction will be reduced with engineering controls outlined below in Section 4.1.13.4.

The Rainy River has been designated as infested with aquatic invasive species due to the known presence of the spiny water flea. Additionally, there are reports of zebra mussels having been introduced into the watershed. As a result, precautions to prevent the spread of zebra mussels into or out of the project area will be in place prior to project commencement. A memo dated August 26, 2013[15] from the MnDOT Roadside Vegetation Management Unit states that there are not likely to be any impacts to rare species, rare native plant communities, trees, shrubs, or other notable vegetation from the project. However, typical erosion control and native reseeding practices should be implemented.

4.1.13.4 Identify measures that will be taken to avoid, minimize, or mitigate adverse effects to fish, wildlife, plant communities, and sensitive ecological resources.

To minimize impacts to spawning fish populations in the Rainy River (identified above in Section 4.1.13.1), the project activities will adhere to fisheries exclusion dates issued by MnDNR and will avoid in-water work and impacts from March 15th through June 15th in the U.S. and April 1st through July 15th in Canada per the Ontario Ministry of Natural Resources and Forestry (MNRF). Conducting all in-water work before the above dates will avoid impacts to important recreational and state listed special of concern species (e.g. Walleye, Northern Pike, and Lake Sturgeon) during their spawning migrations through the project area.

[15] Source: See Appendix D – MnDOT Roadside Vegetation Management Unit Response Memo. August 26, 2013.

For resident species, during in-water work construction practices to minimize and mitigate acoustic effects during pile driving for the new piers will be implemented. These practices include “soft starts” (e.g. light initial hammering) and/or bubble curtains. Vibratory hammers as opposed to impact hammers will be used for pile driving, where at all possible. Typically, vibratory hammers have less of an acoustic effect than impact hammering. To minimize impacts to wildlife and threatened and endangered bats (including Northern Long-Eared Bats) the minimal tree clearing and terrestrial impacts will occur during the winter months.

To minimize any adverse effects to water quality for fish, wildlife, and plant communities, stormwater controls and best management practices as described in Section 4.1.11.2.2 (Water Resources – Stormwater) will be implemented during construction in accordance with the project’s National Pollutant Discharge Elimination System – Construction Stormwater. All best management practices to avoid potential effects from spills or contamination from project activities will be implemented on-site during bridge construction and replacement, as described in Section 4.1.12 (Contamination/Hazardous Materials/Wastes). These stormwater controls include implementing stabilization methods on exposed soils within 200 feet of the Rainy River immediately after construction activity has ceased. Revegetation of disturbed soils will include native seed mixes.

4.1.14 Historic Properties

4.1.14.1 Describe any historic structures, archeological sites, and/or traditional cultural properties on or in close proximity to the site. Include: 1) historic designations, 2) known artifact areas, and 3) architectural features. Attach letter received from the State Historic Preservation Office (SHPO). Discuss any anticipated effects to historic properties during project construction and operation. Identify measures that will be taken to avoid, minimize, or mitigate adverse effects to historic properties.

The project has undergone extensive historic properties assessment and coordination to help make decisions that meet objectives outlined in the project’s Purpose and Need as identified in Section 2.0. The project is being reviewed pursuant to Section 106 of the National Historic Preservation Act of 1966 and Section 4(f) of the Department of Transportation Act of 1966 (Section 4(f) may apply if a historic property is adversely affected by the project). A Section 106 Memorandum of Agreement (MOA) has been accepted by all signatories and is in the process of being executed. The final agreement will be included in the Findings of Fact and Conclusions later in the environmental review documentation process. The review includes findings related to archaeological, historic, and architecturally significant properties (i.e., properties listed or eligible for listing on the National Register of Historic Places (NRHP)). Preliminary findings are discussed in the sections that follow.

The technical studies that are listed in Appendix B and informed the identification of historic properties and/or evaluation of impacts included:

1. *Bridge Rehabilitation Study Report for Baudette Bridge No. 9412*, (MnDOT 2013).
2. *Phase I and Phase II Architecture/History Survey Report: Trunk Highway 72 Area of Potential Effects, Baudette, Minnesota*, (Mead and Hunt 2014).

3. *Phase I Archaeological Investigations of Bridge 9412 and Phase II Archaeological Investigation of Site 21LW0026, Lake of the Woods County Minnesota*, (Mullholland 2015).
4. *Programmatic Section 4(f) Evaluation and Approval for FHWA Projects that Necessitate the Use of Historic Bridges – Baudette / Rainy River International Bridge (Bridge 9412)*, (see Appendix H).

The complete Reports 1 through 3 as listed above are available upon request from the MnDOT Project Manager. Appendix E includes correspondence related to historic and cultural resources.

4.1.14.1.1 Archaeology

Archaeological investigations performed for the project to date include Phase I and Phase II archaeological investigations (Mullholland 2015).

The Phase I study included shovel testing that identified portions of the project area of potential effect (APE) having the potential to contain intact archaeological resources. The Phase II investigation involved additional shovel testing and a ground penetrating radar (GPR) survey to assess the potential for deeply buried archaeological resources within the APE. The evaluations concluded with a recommendation to consider the site ineligible for the National Register of Historic Places (NRHP). Based on shovel tests, ground penetrating radar and excavations, the results indicated that cultural deposits with intact stratigraphic integrity are likely present. However, the artifact grouping was extremely sparse and no cultural period could be attributed to any undisturbed deposits.

Following the review of Phase I and Phase II studies, MnHPO recommended expanding the APE[16] to include the riverbed of the Rainy River due to disturbance by the proposed project construction to the underwater surface. MnDOT confirmed the APE was revised to include the bed of the river within approximately 150 feet of the centerline of the existing bridge and terminating at the U.S. / Canadian border; determined that the revised APE contains no known historic properties other than Bridge 9412; and determined that it is unlikely for the revised APE to contain unidentified historic properties.[17] MnHPO agreed that the revised APE is unlikely to contain unidentified archaeological resources and that Bridge 9412 is the only historic property that will be adversely affected by the project.[18] MnHPO was consulted during the early notification process and determined that although the graves remain within the project boundary, the site is not eligible for the NRHP under any criteria of significance.

MnDOT is required to comply with Minnesota Statute 307.08 (“Minnesota Private Cemeteries Act”) because Peace Park is the site of the unplatted Old Town Cemetery, created in 1894. In 1909, the city relocated most of the burials to Elm Park Cemetery, located south of Baudette.[19] However, two burials remained as the city was unable to contact any surviving relatives of the individuals for permission to relocate their remains. There is no documentation regarding the relocations other than anecdotal sources, which indicate that unmarked graves may remain within Peace Park. In compliance with the Minnesota Statute 307.08, MnDOT retained a consultant to determine whether graves were present within the project APE. This investigation was conducted in October 2016 under license from the Office of the State

[16] Source: Letter from MnHPO to MnDOT CRU. April 23, 2015. See Appendix E.
[17] Source: Letter from MnDOT CRU to MnHPO. September 9, 2015. See Appendix E.
[18] Source: Letter from MnHPO to MnDOT CRU. December 10, 2015. See Appendix E.
[19] Source: Works Progress Administration, “Old Town Cemetery,” WPA Cemetery Project, 1941.

Archaeologist as required by statute. No graves were identified within the project's APE. The report of the burial investigation will be completed in early 2017.

4.1.14.1.2 Historic Properties Overview

The information below focuses on Bridge 9412, the only historic property within the APE that will be adversely affected by the proposed project. The Minnesota & Manitoba (Canadian National) Railroad Corridor is a historic property also within the APE; however, MnDOT CRU has determined, and MnHPO has concurred, that the railroad will not be adversely affected by the project. The following properties evaluated to determine if they were eligible for listing in the NRHP and identified within the "Results" section of the *Phase I and Phase II Architecture / History Investigation* document[20] with the following determinations:

- Baudette Bridge (Bridge 9412): Eligible for listing in the NRHP under Criterion A (Transportation) and Criterion C (Engineering).
- Minnesota & Manitoba (Canadian National) Railroad Bridge: Not eligible for listing in the NRHP due to compromised integrity as a result of a major rehabilitation in 2005.
- Minnesota & Manitoba (Canadian National) Railroad Corridor: Eligible for listing in the NRHP under Criterion A (Transportation), however it was determined that the corridor will not be impacted by the proposed project.[18] The following associated properties of the CN Railroad Corridor were also considered and found not eligible for listing in the NRHP:
  - c. 1962 switch house
  - c. 1962 station house
  - c. 1962 storage building
- Baudette Rest Area / Peace Park and Old Town Cemetery: not eligible for listing. The proposed project will impact part of the park both temporarily and permanently, however the overall use of the park will not be affected. Additional discussion of Peace Park and its impacts are available in Section 4.3.6.2 (Additional Federal Issues – Section 4(f) Resources – Peace Park).

4.1.14.1.3 Historic Properties: Bridge 9412 (US) / Bridge 45-110 (Canada)

The existing Bridge 9412 was completed in 1959 and spans the Rainy River by approximately 1,286 feet in length from Baudette, Minnesota to Rainy River, Ontario, Canada. It was the first structure of its kind at this location and symbolized the local transportation initiatives seeking to connect Minnesota and Canada. The bridge provides vehicular, bicycle and pedestrian access between Baudette and Rainy River. The bridge also serves as a connection between United States and Canadian with full-service, 24-hour Port of Entry facilities on both bridge approaches.

The bridge is eligible for listing in the National Register of Historic Places under Criterion A: Transportation and Criterion C: Engineering. Under these criteria, the bridge was found to be a significant example of major river crossings in Minnesota and an uncommon bridge type (Pennsylvania through-truss). The bridge consists of six 192.5-foot long Pennsylvania through-truss main spans and six steel-beam approach spans that were built between 1958 and 1959. On the U.S. side, there are four south approach spans and three south main spans; on the Canadian side, there are three north main spans and two north approach spans. The truss components include riveted built-up members and rolled members. Members are connected with riveted gusset plates. The open steel grate deck includes a two-lane, 24-

[20] Property determination is also confirmed in Source: Letter from MnHPO to MnDOT CRU. June 6, 2014. See Appendix E.

foot wide roadway and a six-foot wide wooden sidewalk is cantilevered on the east side of the northbound bridge. The bridge also features a pair of international boundary plates that are mounted on the upstream and downstream railings or curb rails to delineate the international border between the U.S. and Canada.

The bridge does not exhibit physical alterations and it retains its historic integrity of location, design, materials, workmanship, setting, feeling and association. The only identified alteration is a potential change to the end portals to provide additional overhead clearance.

Since federal funds will be used to complete this project, effects to the NRHP-eligible Bridge must be evaluated through Section 106 of the National Historic Preservation Act process. The Section 106 process involves assessing effects of project activities to identified historic resources and avoiding, reducing, or mitigating adverse effects, if necessary.

Additionally, per Section 4(f) legislation, the FHWA may not approve the use of land from a significant publicly owned park, recreation area, or wildlife and waterfowl refuge, or any significant historic site unless a determination is made that there is no feasible and prudent alternative to the use of land from the property and the action includes all possible planning minimize harm to the property resulting from such use.[21]

The proposed action of removing the existing Bridge 9412 and replacing it with the Preferred Alternative (a steel I-girder bridge structure) would result in an “adverse effect” under Section 106 (see the determination letter in Appendix E) and, therefore a Section 4(f) “use.” The Programmatic Section 4(f) Evaluation, located in Appendix H, determined there is no feasible and prudent alternative to the use (i.e., the removal) of the Bridge 9412 and its approaches. See the Programmatic Section 4(f) Evaluation for a more detailed discussion of Section 4(f) process decision-making and findings.

Although the Preferred Alternative results in an adverse effect to Bridge 9412 under Section 106 and results in a Section 4(f) use, the parties with jurisdiction over this resource have agreed that adequate measures were taken to minimize harm to the resources (to the extent possible), and that the mitigation measures are acceptable compensation for impacts. See the MnHPO letter of concurrence in Appendix E for additional information. Mitigation measures for impacting the existing Bridge 9412 will be documented in the MOA among the MnHPO, FHWA, and MnDOT.

4.1.15 Visual

4.1.15.1 Describe any scenic views or vistas on or near the project site. Describe any project related visual effects such as vapor plumes or glare from intense lights. Discuss the potential visual effects from the project. Identify any measures to avoid, minimize, or mitigate visual effects.

The current bridge is an identifying feature for the towns of Baudette and Rainy River. This project will replace the existing bridge on a similar alignment and is therefore not introducing a new transportation element to the view shed. However, replacement of the steel truss structure will change the view from

[21] Source: 23 CFR 774.3

land, particularly from the upstream side of the bridge. Downstream, the view of the existing roadway bridge is obscured for people on land by the CN Railroad Bridge located about 300 feet away.

As described in Section 5.2.5 (Agency Coordination & Meetings), a Project Advisory Committee (PAC) was formed consisting of local, municipal, provincial, federal, and international agencies and stakeholders. The PAC played an essential role in providing input related to aesthetics of the proposed bridge.

An Aesthetic Vision Report was prepared to document the context sensitive design process for the new Rainy River International Crossing, to synthesize input from the PAC, and to propose an aesthetic vision to guide designers during the next phase of the project. The report reviewed the aesthetic aspects of the overall form, appurtenances, and related structures for the bridge. The PAC provided input through open discussion and on-going surveys. The two themes that continued to resonate were:

1. International pride, mutual respect, and cooperation of two long-linked towns.
2. Outdoor recreation and natural resources, including water bodies that define the landscape.

Also, identification of the physical crossing from one nation to the other has been identified as an important component of the new bridge. Although the existing bridge merely notes the crossing with a plaque, more noticeable and substantive border delineation options are desired for the new bridge. Recommendations from the PAC will be used to make further refinements on the bridge in the areas of lighting, railing and border delineation.

4.1.16 Air

4.1.16.1 Stationary source emissions - Describe the type, sources, quantities, and compositions of any emissions from stationary sources such as boilers or exhaust stacks. Include any hazardous air pollutants, criteria pollutants, and any greenhouse gases. Discuss effects to air quality including any sensitive receptors, human health, or applicable regulatory criteria. Include a discussion of any methods used assess the project's effect on air quality and the results of that assessment. Identify pollution control equipment and other measures that will be taken to avoid, minimize, or mitigate adverse effects from stationary source emissions.

This project will not have stationary source air emissions concerns because all of the emission sources are mobile.

4.1.16.2 Vehicle emissions - Describe the effect of the project's traffic generation on air emissions. Discuss the project's vehicle-related emissions effect on air quality. Identify measures (e.g. traffic operational improvements, diesel idling minimization plan) that will be taken to minimize or mitigate vehicle-related emissions.

4.1.16.2.1 National Ambient Air Quality Standards (NAAQS) – Criteria Pollutants

Motorized vehicles affect air quality by emitting airborne pollutants. Changes in traffic volumes, travel patterns, and roadway locations affect air quality by changing the number of vehicles and the congestion levels in a given area. The air quality impacts from the project are analyzed by addressing criteria pollutants, a group of common air pollutants regulated by the EPA on the basis of criteria (information on health and/or environmental effects of pollution). The criteria pollutants identified by the EPA are ozone, particulate matter, carbon monoxide, nitrogen dioxide, lead, and sulfur dioxide. Potential impacts resulting from these pollutants are assessed by comparing projected concentrations to National Ambient Air Quality Standards (NAAQS).

In addition to the criteria air pollutants, the EPA also regulates air toxics. The FHWA provides guidance for the assessment of Mobile Source Air Toxic (MSAT) effects for transportation projects in the NEPA process. A qualitative evaluation of MSATs has been performed for this project as documented below. The scope and methods of the analysis performed were developed in collaboration with MnDOT and the MPCA.

4.1.16.2.1.1 Ozone

Ground-level ozone is a primary constituent of smog and is a pollution problem throughout many areas of the United States. Exposures to ozone can cause people to be more susceptible to respiratory infection, resulting in lung inflammation, and aggravating respiratory diseases, such as asthma. Ozone is not emitted directly from vehicles but is formed when volatile organic compounds (VOCs) and nitrogen oxides (NOx) react in the presence of sunlight. Transportation sources emit NOx and VOCs and can, therefore, affect ozone concentrations. However, due to the phenomenon of atmospheric formation of ozone from chemical precursors, concentrations are not expected to be elevated near a particular roadway.

The MPCA, in cooperation with various other agencies, industries, and groups, has encouraged voluntary control measures for ozone and has begun developing a regional ozone modeling effort. Ozone concentrations in the lower atmosphere are influenced by a complex relationship of precursor concentrations, meteorological conditions, and regional influences on background concentrations. MPCA states in *Air Quality in Minnesota: 2015 Report to the Legislature*[22] that:

> *On November 24, 2014, the EPA announced proposed changes to the National Ambient Air Quality Standard for ozone. The proposal seeks to strengthen the ozone standard by lowering the standard from 75 ppb to a value between 65 ppb and 70 ppb. The proposal is based on scientific evidence that strongly indicates ozone impacts human health at levels below the existing standard of 75 ppb.*

[22] Source: http://archive.leg.state.mn.us/docs/2015/mandated/150152.pdf

> *Based on 2013 ozone monitoring results, all areas of Minnesota will meet the revised ozone standard if it is set at 70 ppb. If the ozone standard is set at 66 ppb or lower, the Twin Cities metropolitan area will not meet the standard. The EPA is expected to finalize the revised ozone standard in October 2015. EPA plans to use monitoring data from 2014-2016 to determine compliance. The MPCA will closely monitor ozone levels over the summer of 2015 and 2016 to assess the likelihood of violating the revised ozone standard.*

The project is located in an area that has been designated as an unclassifiable / attainment area for ozone. This means that the project area has been identified as a geographic area that meets the national health-based standards for ozone levels, and therefore is exempt from performing further ozone analyses.

4.1.16.2.1.2 Particulate Matter

Particulate matter (PM) is the term for particles and liquid droplets suspended in the air. Particles come in a wide variety of sizes and have been historically assessed based on size, typically measured by the diameter of the particle in micrometers. $PM_{2.5}$, or fine particulate matter, refers to particles that are 2.5 micrometers or less in diameter. PM_{10} refers to particulate matter that is 10 micrometers or less in diameter.

Motor vehicles (i.e., cars, trucks, and buses) emit direct PM from their tailpipes, as well as from normal brake and tire wear. Vehicle dust from paved and unpaved roads may be re-entrained, or re-suspended, in the atmosphere. In addition, $PM_{2.5}$ can be formed in the atmosphere from gases such as sulfur dioxide, nitrogen oxides, and volatile organic compounds. $PM_{2.5}$ can penetrate the human respiratory system's natural defenses and damage the respiratory tract when inhaled. Numerous scientific studies have linked particle pollution exposure to a variety of problems, including[23]:

- Premature death in people with heart or lung disease;
- Nonfatal heart attacks;
- Irregular heartbeat;
- Aggravated asthma;
- Decreased lung function; and,
- Increased respiratory symptoms, such as irritation of the airways, coughing, or difficulty breathing.

On December 14, 2012, the EPA issued a final rule revising the annual health NAAQS for fine particles ($PM_{2.5}$). The EPA website states[24]:

> *With regard to primary (health-based) standards for fine particles (generally referring to particles less than or equal to 2.5 micrometers (mm) in diameter, $PM_{2.5}$), the EPA is strengthening the annual $PM_{2.5}$ standard by lowering the level to 12.0 micrograms per cubic meter ($\mu g/m^3$). The existing annual standard, 15.0 $\mu g/m^3$, was set in 1997. The EPA is revising the annual $PM_{2.5}$ standard to 12.0 $\mu g/m^3$ so as to provide increased protection against health effects associated with long- and short-term exposures (including*

[23] Source: https://www3.epa.gov/pm/health.html
[24] Source: https://www3.epa.gov/pm/actions.html

> *premature mortality, increased hospital admissions and emergency department visits, and development of chronic respiratory disease), and to retain the 24-hour $PM_{2.5}$ standard at a level of 35 µg/m^3 (the EPA issued the 24-hour standard in 2006). The EPA is revising the Air Quality Index (AQI) for $PM_{2.5}$ to be consistent with the revised primary $PM_{2.5}$ standards.*

The EPA also retained the existing standards for coarse particle pollution (PM_{10}). The NAAQS 24-hour standard for PM_{10} is 150 µg/m^3 which is not to be exceeded more than once per year on average over three years.

The Clean Air Act conformity requirements include the assessment of localized air quality impacts of federally-funded or federally-approved transportation projects that are located within $PM_{2.5}$ nonattainment and maintenance areas and deemed to be projects of air quality concern. The project is located in an area that has been designated as an unclassifiable/attainment area for PM. This means that the project area has been identified as a geographic area that meets the national health-based standards for PM levels, and therefore is exempt from performing PM analyses.

4.1.16.2.1.3 Nitrogen Dioxide (Nitrogen Oxides)

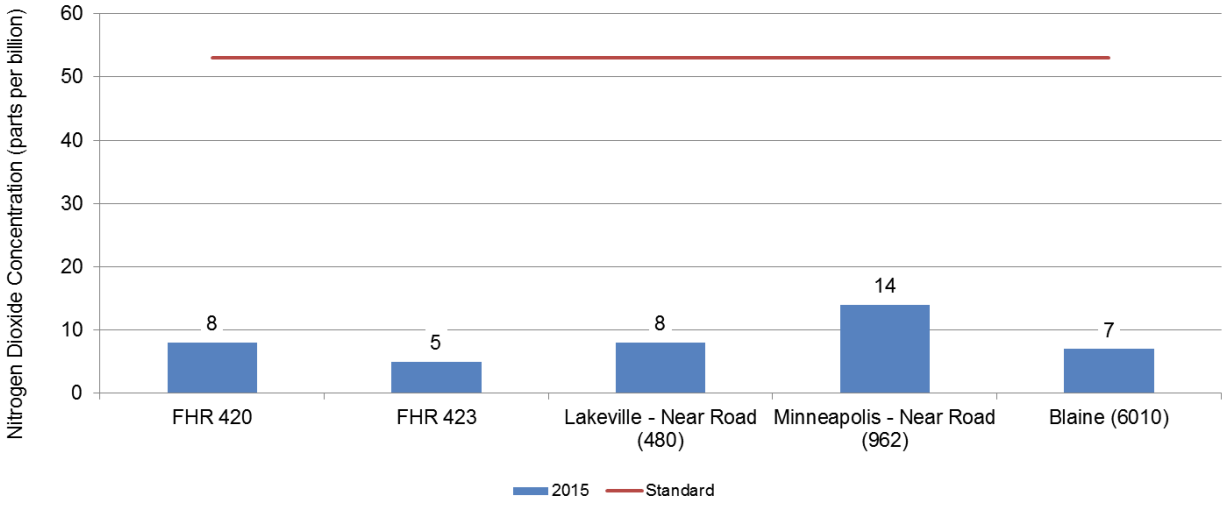
Nitrogen oxides, or NO_x, are the generic term for a group of highly reactive gases, all of which contain nitrogen and oxygen in varying amounts. Nitrogen oxides form when fuel is burned at high temperatures, as in a combustion process. The primary sources of NO_x are motor vehicles, electric utilities, and other industrial, commercial, and residential sources that burn fuels. The MPCA's *Air Quality in Minnesota: 2015 Report to the Legislature*[25] indicates that:

> *On road gasoline vehicles and diesel vehicles account for 40% of NO_x emissions in Minnesota. In additions to being a precursor to ozone, NO_x can worsen respiratory irritation, and increase risk of premature death from heart or lung disease.*

Nitrogen dioxide (NO_2), which is a form of nitrogen oxide (NO_x), is regularly monitored. Minnesota currently meets federal nitrogen dioxide standards, according to the *2017 Annual Air Monitoring Network Plan*[26]. A monitoring site meets the annual NAAQS for NO_2 if the annual average is less than or equal to 53 parts per billion (ppb). As shown in Figure 5, the 2015 Minnesota NO_2 monitoring site averages ranged from 5 ppb to 14 ppb; therefore, Minnesota currently meets the annual NAAQS for NO_2.

[25] Source: https://www.pca.state.mn.us/sites/default/files/lraq-1sy15.pdf
[26] Source: https://www.pca.state.mn.us/sites/default/files/aq10-14a.pdf

Figure 5: Annual Average NO_2 Concentrations Compared to the NAAQs



The EPA's December 1999 regulatory announcement, EPA420-F-99-051[27], describes the Tier 2 standards for tailpipe emissions, and states:

> *The new tailpipe standards are set at an average standard of 0.07 grams per mile for nitrogen oxides for all classes of passenger vehicles beginning in 2004. This includes all light-duty trucks, as well as the largest SUVs. Vehicles weighing less than 6000 pounds will be phased-in to this standard between 2004 and 2007.*
>
> *As newer, cleaner cars enter the national fleet, the new tailpipe standards will significantly reduce emissions of nitrogen oxides from vehicles by about 74 percent by 2030. The standards also will reduce emissions by more than 2 million tons per year by 2020 and nearly 3 million tons annually by 2030.*

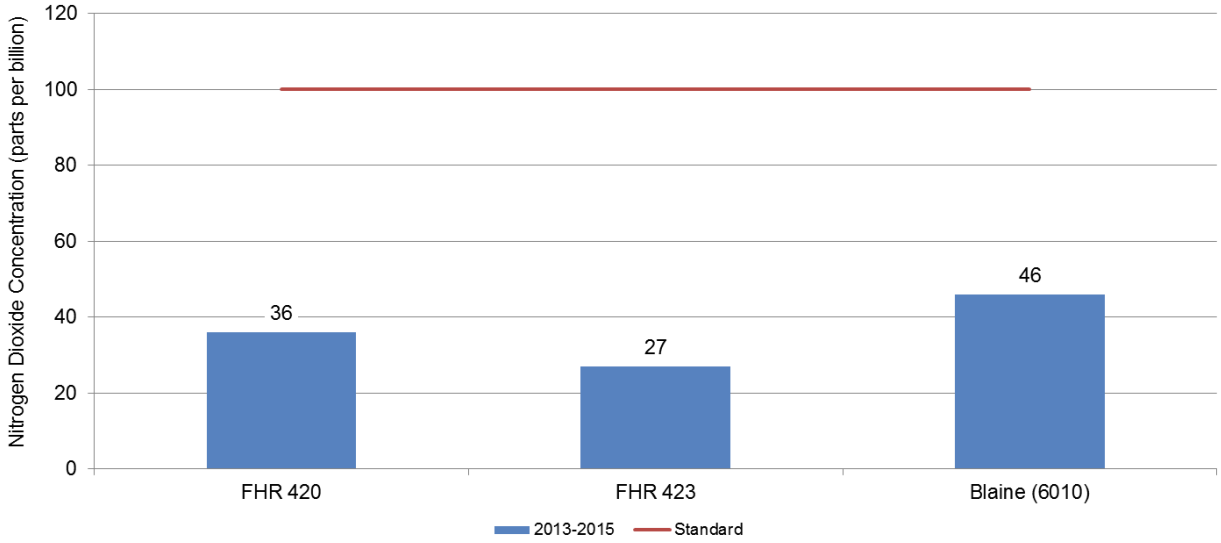
According to *Air Quality in Minnesota: 2015 Report to the Legislature*, MPCA monitoring shows ambient NO_2 concentrations at 44 percent of federal standards in 2013, in other words consistently below state and federal standards. In the *2017 Annual Air Monitoring Network Plan for Minnesota*[28], it states the following with regard to NO_2:

> *On January 22, 2010, the EPA finalized revisions to the NO_2 NAAQS. As part of the standard review process, the EPA retained the existing annual NO_2 NAAQS, but also created a new 1-hour standard. This new 1-hour NAAQS will protect against adverse health effects associated with short term exposures to elevated NO2. To meet this standard, the three-year average of the annual 98th percentile daily maximum 1-hour*

[27] Source: https://www3.epa.gov/tier2/documents/f99051.pdf
[28] Source: https://www.pca.state.mn.us/sites/default/files/aq10-14a.pdf

NO_2 concentration must not exceed 100 ppb. [Figure 6: 1-Hour NO_2 Concentrations Compared to the NAAQs below] shows the 2013-2015 average of the annual 98th percentile daily maximum 1-hour NO_2 concentrations at Minnesota sites and compares them to the 1-hour standard. Minnesota averages ranged from 27 ppb at Flint Hills Refinery 423 to 46 ppb at Blaine (6010); therefore, all Minnesota sites currently meet the 1-hour NAAQS for NO_2.

Figure 6: 1-Hour NO_2 Concentrations Compared to the NAAQs



Within the project area, it is unlikely that NO_2 standards will be approached or exceeded based on the relatively low ambient concentrations of NO_2 in Minnesota and on the long-term trend toward reduction of NO_x emissions. Because of these factors, a specific analysis of NO_2 was not conducted for this project.

4.1.16.2.1.4 Sulfur Dioxide

Sulfur dioxide (SO_2) and other sulfur oxide gases (SO_x) are formed when fuel containing sulfur, such as coal, oil, and diesel fuel is burned. Sulfur dioxide is a heavy, pungent, colorless gas. Elevated levels can impair breathing, lead to other respiratory symptoms, and at very high levels aggravate heart disease. People with asthma are most at risk when SO_2 levels increase. Once emitted into the atmosphere, SO_2 can be further oxidized to sulfuric acid, a component of acid rain. Emissions of sulfur oxides from transportation sources are a small component of overall emissions and continue to decline due to the desulphurization of fuels.

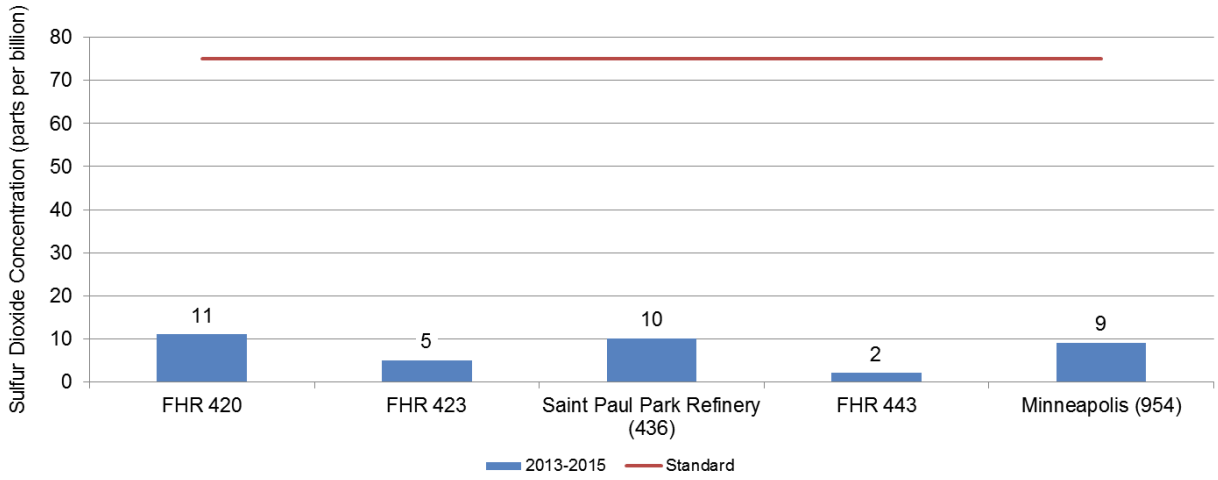
According to *Air Quality in Minnesota: 2015 Report to the Legislature*, MPCA monitoring shows ambient SO_2 concentrations at 19 percent of federal standards in 2013, in other words consistently below state and federal standards. The MPCA has concluded that long-term trends in both ambient air concentrations

and total SO_2 emissions in Minnesota indicate steady improvement. In the *2017 Annual Air Monitoring Network Plan for Minnesota*[29], it states the following with regard to SO_2:

> *On June 2, 2010, the EPA finalized revisions to the primary SO_2 NAAQS. EPA established a new 1-hour standard which is met if the three-year average of the annual 99th percentile daily maximum 1-hour SO_2 concentration is less than 75 ppb. In addition to creating the new 1-hour standard, the EPA revoked the existing 24-hour and annual standards. [Figure 7: 1-Hour SO_2 Concentrations Compared to the NAAQs below] describes the 2013-2015 average 99th percentile 1-hour SO_2 concentration and compares them to the 1-hour standard. Minnesota averages ranged from 2 ppb at Flint Hills Refinery (FHR) 443 to 11 ppb at FHR 420; therefore, all Minnesota sites currently meet the 1-hour NAAQS for SO_2.*

Because of these factors, an analysis for sulfur dioxide was not conducted for this project.

Figure 7: 1-Hour SO_2 Concentrations Compared to the NAAQs



4.1.16.2.1.5 Lead

Due to the phase out of leaded gasoline, lead is no longer a pollutant associated with vehicular emissions.

4.1.16.2.1.6 Carbon Monoxide

This project is not located in an area where conformity requirements apply, and the scope of the project does not indicate that air quality impacts would be expected. Furthermore, the EPA has approved a screening method to determine which intersections need a carbon monoxide (CO) hotspot analysis. The results of the screening procedure demonstrate that traffic volumes are below the threshold of 79,400 ADT and do not require a detailed hotspot analysis. Therefore, no further air quality analysis is necessary.

[29] Source: https://www.pca.state.mn.us/sites/default/files/aq10-14a.pdf

Improvements in vehicle technology and in motor fuel regulations continue to result in reductions in vehicle emission rates. The EPA MOVES 2010b emissions model estimates that emission rates will continue to fall from existing rates through year 2030. Consequently, year 2030 vehicle related CO concentrations in the study area are likely to be lower than existing concentrations even considering any increase in development-related and background traffic.

4.1.16.2.2 Mobile Source Air Toxics

Controlling air toxic emissions became a national priority with the passage of the Clean Air Act Amendments (CAAA) of 1990, whereby Congress mandated that the EPA regulate 188 air toxics, also known as hazardous air pollutants. The EPA has assessed this expansive list in their latest rule on the Control of Hazardous Air Pollutants from Mobile Sources[30], and identified a group of 93 compounds emitted from mobile sources that are listed in their Integrated Risk Information System (IRIS).[31]

In addition, EPA identified seven compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers from their 1999 National-Scale Air Toxics Assessment (NATA).[32] These are acrolein, benzene, 1,3-butidiene, diesel particulate matter plus diesel exhaust organic gases (diesel PM), formaldehyde, naphthalene, and polycyclic organic matter. While FHWA considers these the priority mobile source air toxics, the list is subject to change and may be adjusted in consideration of future EPA rules.

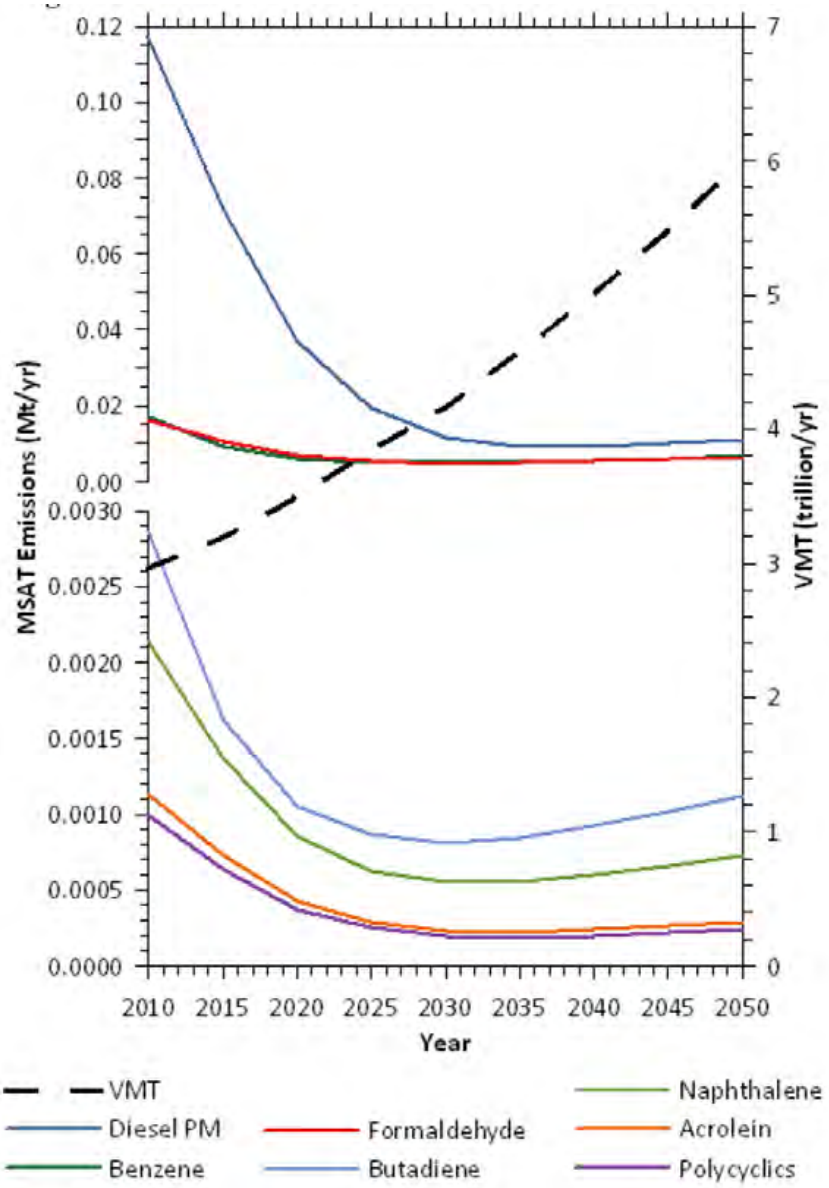
4.1.16.2.2.1 Motor Vehicle Emissions Simulator (MOVES)

According to EPA, MOVES improves upon the previous MOBILE model in several key aspects: MOVES is based on a vast amount of in-use vehicle data collected and analyzed since the latest release of MOBILE, including millions of emissions measurements from light-duty vehicles. Analysis of this data enhanced EPA's understanding of how mobile sources contribute to emissions inventories and the relative effectiveness of various control strategies. In addition, MOVES accounts for the significant effects that vehicle speed and temperature have on PM emissions estimates, whereas MOBILE did not. MOVES2010b includes all air toxic pollutants in NATA that are emitted by mobile sources. EPA has incorporated more recent data into MOVES2010b to update and enhance the quality of MSAT emission estimates. These data reflect advanced emission control technology and modern fuels, plus additional data for older technology vehicles.

Based on an FHWA analysis using EPA's MOVES2010b model, as shown in Figure 8 below, even if vehicle-miles travelled (VMT) increases by 102 percent as assumed from 2010 to 2050, a combined reduction of 83 percent in the total annual emissions for the priority MSAT is projected for the same time period.

[30] Source: Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007; http://www.gpo.gov/fdsys/pkg/FR-2007-02-26/pdf/E7-2667.pdf
[31] Source: http://www.epa.gov/iris/
[32] Source: https://www3.epa.gov/air/sat/mobile.html

Figure 8: National MSAT Emissions Trends 1999-2005 for Vehicles Operating on Roadways Using EPA's MOVES2010b Model[33]



Source: EPA MOVES2010b model runs conducted during May - June 2012 by FHWA.
http://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/nmsatetrends.cfm

Note: Trends for specific locations may be different, depending on locally derived information representing vehicle-miles travelled, vehicle speeds, vehicle mix, fuels, emission control programs, meteorology, and other factors.

[33] Source: https://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/aqintguidmem.cfm

The implications of MOVES on MSAT emissions estimates compared to MOBILE are: lower estimates of total MSAT emissions; significantly lower benzene emissions; significantly higher diesel PM emissions, especially for lower speeds. Consequently, diesel PM is projected to be the dominant component of the emissions total.[34]

4.1.16.2.2.2 MSAT Research

Air toxics analysis is a continuing area of research. While much work has been done to assess the overall health risk of air toxics, many questions remain unanswered. In particular, the tools and techniques for assessing project-specific health outcomes as a result of lifetime MSAT exposure remain limited. These limitations impede the ability to evaluate how potential public health risks posed by MSAT exposure should be factored into project-level decision-making within the context of NEPA.

Nonetheless, air toxics concerns continue to be raised on highway projects during the NEPA process. Even as the science emerges, we are duly expected by the public and other agencies to address MSAT impacts in our environmental documents. The FHWA, EPA, the Health Effects Institute, and others have funded and conducted research studies to try to more clearly define potential risks from MSAT emissions associated with highway projects. The FHWA will continue to monitor the developing research in this field.

4.1.16.2.2.3 NEPA Context

The NEPA requires, to the fullest extent possible, that the policies, regulations, and laws of the Federal Government be interpreted and administered in accordance with its environmental protection goals. The NEPA also requires Federal agencies to use an interdisciplinary approach in planning and decision-making for any action that adversely impacts the environment. The NEPA requires and FHWA is committed to the examination and avoidance of potential impacts to the natural and human environment when considering approval of proposed transportation projects. In addition to evaluating the potential environmental effects, we must also take into account the need for safe and efficient transportation in reaching a decision that is in the best overall public interest. The FHWA policies and procedures for implementing NEPA are contained in regulation at 23 CFR Part 771.[35]

4.1.16.2.2.4 Incomplete or Unavailable Information for Project Specific MSAT Health Impacts Analysis

The EPA is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. They are the lead authority for administering the Clean Air Act and its amendments and have specific statutory obligations with respect to hazardous air pollutants and MSAT. The EPA is in the continual process of assessing human health effects, exposures, and risks posed by air pollutants. They maintain the IRIS, which is "a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects."[36] Each report contains assessments of non-cancerous and cancerous effects for individual compounds and quantitative estimates of risk levels from lifetime oral and inhalation exposures with uncertainty spanning perhaps an order of magnitude.

[34] Source: http://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/aqintguidmem.cfm
[35] Source: http://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title23/23cfr771_main_02.tpl
[36] Source: http://www.epa.gov/iris/

Other organizations are also active in the research and analyses of the human health effects of MSAT, including the Health Effects Institute (HEI). Two HEI studies are summarized in Appendix D of FHWA's *Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA*.[37] Among the adverse health effects linked to MSAT compounds at high exposures are cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human health effects of MSAT compounds at current environmental concentrations[38] or in the future as vehicle emissions substantially decrease.

The methodologies for forecasting health impacts include emissions modeling; dispersion modeling; exposure modeling; and then final determination of health impacts - each step in the process building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70 year) assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame, since such information is unavailable.

It is particularly difficult to reliably forecast 70-year lifetime MSAT concentrations and exposure near roadways; to determine the portion of time that people are actually exposed at a specific location; and to establish the extent attributable to a proposed action, especially given that some of the information needed is unavailable.

There are considerable uncertainties associated with the existing estimates of toxicity of the various MSAT, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population, a concern expressed by HEI.[39] As a result, there is no national consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds, and in particular for diesel PM. The EPA and the HEI have not established a basis for quantitative risk assessment of diesel PM in ambient settings.

There is also the lack of a national consensus on an acceptable level of risk. The current context is the process used by the EPA as provided by the Clean Air Act to determine whether more stringent controls are required in order to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable control technology standards, such as benzene emissions from refineries.

The decision framework is a two-step process. The first step requires EPA to determine an "acceptable" level of risk due to emissions from a source, which is generally no greater than approximately 100 in a million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than 1 in a million due to emissions from a source. The results of this statutory

[37] Source: https://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/aqintguidmem.cfm
[38] Source: Health Effects Institute, Mobile-Source Air Toxics: A Critical Review of the Literature on Exposure and Health Effects, 2007; http://pubs.healtheffects.org/view.php?id=282.
[39] Source: Health Effects Institute, Mobile-Source Air Toxics: A Critical Review of the Literature on Exposure and Health Effects, 2007; http://pubs.healtheffects.org/view.php?id=282.

two-step process do not guarantee that cancer risks from exposure to air toxics are less than 1 in a million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the U.S. Court of Appeals for the District of Columbia Circuit upheld EPA's approach to addressing risk in its two step decision framework. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than deemed acceptable.

Because of the limitations in the methodologies for forecasting health impacts described, any predicted difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with predicting the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against project benefits, such as reducing traffic congestion, accident rates, and fatalities plus improved access for emergency response, that are better suited for quantitative analysis.

4.1.16.2.2.5 Qualitative MSAT Analysis

For the Preferred Alternative, the amount of MSAT emitted would be proportional to the average daily traffic, or ADT, assuming that other variables such as fleet mix are the same. The ADT estimated for the Preferred Alternative does not differ from that for the No Build Alternative because the proposed project is intended to provide a structurally sound bridge crossing and provide acceptable mobility conditions, not to increase capacity. Since no change in ADT is expected through the project corridor, or along parallel routes, no changes in MSAT emissions are expected compared to the No Build Alternative. There is a potential for lower MSAT emission rates due to increased speeds and reduction in congestion/delays particularly in cases which over-sized loads require temporary one-directional traffic due to the limiting vertical clearance and lane/shoulder widths of the existing bridge. According to EPA's MOVES2010b model, emissions of all of the priority MSAT decrease as speed increases. Also, regardless of the alternative chosen, emissions will likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce annual MSAT emissions by over 80 percent between 2010 and 2050. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in nearly all cases.

The magnitude and the duration of potentially increased MSAT concentrations under the Preferred Alternative compared to the No Build Alternative cannot be reliably quantified due to incomplete or unavailable information in forecasting project-specific MSAT emissions. In summary, with the operational efficiencies and increased vertical clearance on the proposed bridge, the localized level of MSAT emissions for the Preferred Alternative could be higher relative to the No Build Alternative, but this could be offset due to increases in speeds and reductions in congestion (which are associated with lower MSAT emissions). However, on a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be significantly lower than today.

4.1.16.3 Dust and odors - Describe sources, characteristics, duration, quantities, and intensity of dust and odors generated during project construction and operation. (Fugitive dust may be discussed under item 16a). Discuss the effect of dust and odors in the vicinity of the project including nearby sensitive receptors and quality of life. Identify measures that will be taken to minimize or mitigate the effects of dust and odors.

The Preferred Alternative would not generate substantial odors during construction. Potential odors would include exhaust from diesel engines and fuel storage. Dust generated during construction will be minimized through standard dust control measures such as applying water to exposed soils and limiting the extent and duration of exposed soil conditions. Construction contractors will be required to control dust and other airborne particulates in accordance with MnDOT specifications. After construction is complete, dust levels are anticipated to be minimal because all soil surfaces exposed during construction would be in permanent cover (i.e., paved or revegetated areas).

4.1.17 Noise

Describe sources, characteristics, duration, quantities, and intensity of noise generated during project construction and operation. Discuss the effect of noise in the vicinity of the project including 1) existing noise levels/sources in the area, 2) nearby sensitive receptors, 3) conformance to state noise standards, and 4) quality of life. Identify measures that will be taken to minimize or mitigate the effects of noise.

4.1.17.1 Noise During Construction

The construction activities associated with implementation of the Preferred Alternative may result in increased noise levels relative to existing conditions. These impacts will primarily be associated with construction equipment and pile driving. Table 11 shows peak noise levels monitored at 50 feet from various types of construction equipment. This equipment is primarily associated with site grading, site preparation, and roadway construction and is associated with the higher noise levels due to construction.

Table 11: Typical Construction Equipment Noise Levels at 50 Feet

Equipment Type	Manufacturers Sampled	Total Number of Models in Sample	Peak Noise Level (dBA)	
			Range	Average
Backhoes	5	6	74-92	83
Front Loaders	5	30	75-96	85
Dozers	8	41	65-95	85
Graders	3	15	72-92	84
Scrapers	2	27	76-98	87
Pile Drivers	N/A	N/A	95-105	101

Source: United States Environmental Protection Agency and Federal Highway Administration

Elevated noise levels are to a degree unavoidable for this type of project. MnDOT will require that construction equipment be properly muffled and in proper working order. While MnDOT and its contractor(s) are exempt from local noise ordinances, it is the practice to require that the contractor(s) comply with applicable local noise restrictions to the extent possible. Advance notice will be provided to affected communities for any abnormally loud construction activities. It is anticipated that nighttime construction may sometimes be required to minimize traffic impacts and improve safety. However, construction will be limited to daytime hours as much as possible. This project is anticipated to be under construction for 12 months. Any proposed noise barriers will be constructed as early as the construction staging allows. Any associated high-impact equipment noise such as pile driving, pavement sawing, or jack hammering will be unavoidable with construction of the Preferred Alternative. Pile driving noise is associated with any sheet piling necessary for any retaining wall construction. The use of pile drivers, pavement sawing and jack-hammering equipment will be prohibited during nighttime hours.

4.1.17.2 Noise Impacts & Mitigation

Noise is defined as any unwanted sound. Sound travels in a wave motion and is measured as a sound pressure level. This sound pressure level is commonly measured in decibels. Decibels (dB) represent the logarithm of the ratio of a sound energy relative to a reference sound energy. For highway traffic noise, an adjustment, or weighting, of the high-and low-pitched sound is made to approximate the way that an average person hears sound. The adjusted sound levels are stated in units of “A-weighted decibels” (dBA). A sound increase of 3 dBA is barely noticeable by the human ear, a 5 dBA increase is clearly noticeable, and a 10 dBA increase is heard as twice as loud. For example, if the sound energy is doubled (i.e., the amount of traffic doubles), there is a 3 dBA increase in noise, which is just barely noticeable to most people. On the other hand, if traffic increases by a factor of ten times, the resulting sound level will increase by about 10 dBA and be heard to be twice as loud.

Traffic noise impacts in Minnesota are evaluated by measuring and/or modeling the traffic noise levels that are exceeded 10 percent and 50 percent of the time during the hours of the day and/or night that have the loudest traffic scenario. These numbers are identified as the L_{10} and L_{50} levels, respectively. The L_{10} value is the noise level that is exceeded for a total of 10 percent, or 6 minutes, of an hour. The L_{50} value is the noise level that is exceeded for a total of 50 percent, or 30 minutes, of an hour.

Table 12 provides a rough comparison of the noise levels of some common noise sources.

Traffic volume, types of vehicles, operating speed, topography, and distance from the road to the receptor influences the traffic noise level at the receptor. The sound level decreases as distance from a source increases. A rule of thumb regarding sound level decrease due to increasing distance from a line source (roadway) that is commonly used is: beyond approximately 50 feet from the sound source, each doubling of distance from the line source over hard ground (such as pavement or water) will reduce the sound level by 3 dBA, whereas each doubling of distance over soft ground (such as vegetated or grassy ground) results in a sound level decrease of 4.5 dBA.

Table 12: Decibel Level of Common Noise Sources

Sound Pressure Level (dBA)	Noise Source
140	Jet Engine (at 75 feet)
130	Jet Aircraft (at 300 feet)
120	Rock and Roll Concert
110	Pneumatic Chipper
100	Jointer/Planer
90	Chainsaw
80	Heavy Truck Traffic
70	Business Office
60	Conversational Speech
50	Library
40	Bedroom
30	Secluded Woods
20	Whisper

Sources:
"A Guide to Noise Control in Minnesota," Minnesota Pollution Control Agency, http://www.pca.state.mn.us/programs/pubs/noise.pdf
"Highway Traffic Noise," FHWA, http://www.fhwa.dot.gov/environment/htnoise.htm

Minnesota state noise standards have been established for daytime and nighttime periods. The state standards for residential land uses (identified as Noise Area Classification 1, or NAC-1) are 65 dBA L_{10}, daytime and 55 dBA L_{10}, nighttime. The L_{50} standards are 60 dBA and 50 dBA for daytime and nighttime, respectively. The Minnesota Pollution Control Agency (MPCA) defines daytime as 7:00 a.m. to 10:00 p.m. and nighttime from 10:00 p.m. to 7:00 a.m. The state noise standards are depicted in Table 13.

Table 13: Minnesota State Noise Standard

Land Use	NAC: Noise Area Classification	Exterior Hourly Noise Level Limit, dBA			
		Daytime 7:00 am – 10:00 pm		Nighttime 10:00 pm – 7:00 am	
		L_{10}	L_{50}	L_{10}	L_{50}
Residential	**NAC-1**	65	60	55	50
Commercial	**NAC-2**	70	65	70	65
Industrial	**NAC-3**	80	75	80	75

Notes:
1. NAC-1 includes household units, transient lodging and hotels, educational, religious, cultural entertainment, camping and picnicking land uses.
2. NAC-2 includes retail and restaurants, transportation terminals, professional offices, parks, recreational and amusement land uses.
3. NAC-3 includes industrial, manufacturing, transportation facilities (except terminals), and utilities land uses.
4. Source: Minnesota Pollution Control Agency, Minn. Rules sec. 7030.0040.

The State noise standards apply to the entire project length. Exemptions to State noise standard are found in Minnesota Statues 2000, Section 116.07 subd. (2a). Minnesota State Statutes 2000, Section 116.07 subd. (2a) identifies the conditions and roadway types that are exempt from the State noise standards.

The Federal Highway Administration's (FHWA) Procedures for Abatement of Highway Traffic Noise and Construction Noise is presented in the Code of Federal Regulations, Title 23 Part 772 (23 CFR 772). This regulation established the noise abatement criteria (NAC) for various land uses. Noise abatement measures will be considered when the predicted noise levels approach or exceed those values shown for the appropriate activity category in Table 14, or when the predicted traffic noise levels substantially exceed the existing noise levels. MnDOT has defined an increase over existing noise levels of 5 dBA or greater a substantial noise level increase.

Since the Residential NAC-1 MCPA L_{10} noise level of 65 dBA in Table 13 is an absolute level and is lower than the FHWA NAC L_{10} noise level of 70 dBA for Activity Category B land use (residential) shown in Table 14, the MPCA State Noise Standards supersede the FHWA's NAC.

Table 14: Noise Abatement Criteria – Hourly A-Weighted Sound Level-Decibels (dBA)

Activity Category	Activity Criteria[1,2] L_{10}(h), dBA	Evaluation Location	Activity Description
A	60	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the lands are to continue to serve their intended purpose.
B(3)	70	Exterior	Residential.
C(3)	70	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, place of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	55	Interior	Auditoriums, daycare centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E(3)	75	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F.
F			Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G			Undeveloped lands that are not permitted.

Notes:
1. L_{10}(h) shall be used for impact assessment.
2. The L_{10}(h) Activity Criteria values are for impact determination only, and are not design standards for noise abatement measures.
3. Includes undeveloped lands permitted for this activity category.
Source: MnDOT Noise Policy, June 15, 2015.

4.1.17.3 Methodology

4.1.17.3.1 Affected Environment

The purpose of this noise analysis is to determine the potential noise impacts from the proposed reconstruction of the Baudette / Rainy River International Bridge. The noise analysis presents the existing and future acoustical environment at various receptors located throughout the study area. The determination of noise impact and potential abatement measures and locations is in compliance with MnDOT's Noise Policy for Type I Federal-aid Projects and MPCA's State Noise Standards.

Noise level measurements were conducted on Wednesday, June 17, 2015, at a picnic table in Peace Park adjacent to the approach to the Rainy River Bridge and in a residential area southeast of Peace Park across the Baudette River. The 2 Field Sites (FS) were selected in representative areas of outdoor human activity (i.e., residential and recreational land uses) in the areas adjacent to the Peace Bridge. The daytime noise measurements were taken three times at each site: (1) once in the morning between 8:30 a.m. and 10:00 a.m., (2) once in the afternoon between 12:00 p.m. and 1:00 p.m., and (3) once in the afternoon between 2:30 p.m. and 4:00 p.m. Each measurement was taken for a twenty-minute time period. The locations of the field sites are described in Table 15 and shown on Figure 35 in Appendix I. The L_{10} noise levels ranged from 48.0 to 53.0 dBA and are presented in Table 16. The results of computer modeling for daytime and nighttime noise conditions are presented in Table 27 in Appendix I.

Table 15: Noise Measurement Locations

Field Site #	Site Description	Figure #
FS-1	Peace Park, picnic table 55 ft southeast of northbound International Drive and 30 ft northeast of parking lot.	Figure 35 in Appendix I
FS-2	Residence, 63 ft northwest of intersection of Tower Drive and 4th Street North along utility corridor.	

4.1.17.3.2 Comparison of Measured vs. Modeled Noise Levels

MINNOISEV31, a version of the FHWA's "STAMINA" model adapted by MnDOT was used to model traffic count data from the two measurement sites. MINNOISEV31 uses traffic volumes, speed, vehicle classes, and the typical characteristics of the roadway being analyzed (e.g., roadway horizontal and vertical alignment). The results of the MINNOISEV31 modeling were then compared to the measured noise levels. Comparing the modeled noise levels to the measured noise levels confirms the applicability of the computer model to the specific project. The site by site comparison is presented in Table 16.

Table 16: Comparison of Measured and Modeled Noise Levels

Location	Date	Time	L_{10} (dBA) Monitored	L_{10} (dBA) Modeled	Difference
FS-1a	6/17/2015	8:40 am	52.5	50.2	-2.3
FS-1b	6/17/2015	12:00 pm	53.0	52.2	-0.8
FS-1c	6/17/2015	3:17 pm	50.5	48.0	-2.5
FS-2a	6/17/2015	9:28 am	48.0	45.3	-2.7
FS-2b	6/17/2015	12:41 pm	48.3	46.0	-2.3
FS-2c	6/17/2015	2:30 pm	48.7	45.9	-2.8

The comparison indicated that FS-1 modeled -2.3, -0.8, and -2.5 dB for the morning, noon, and afternoon measurements, respectively. FS 2 modeled -2.7, -2.3, and -2.8 dB for the morning, noon, and afternoon measurements, respectively. Traffic passing through plaza was very light with less than a vehicle per minute to only 2 vehicles per minute. Vehicles leaving the US come through the plaza at 15 mph or so. Vehicles entering the plaza from the bridge coast to the plaza. The tire bridge noise on the bridge's open metal deck was unique with a tonal quality unlike any typical tire pavement noise. There were instantaneous increases in the noise level of 4-8 dB when traffic left the pavement for the bridge deck, and a 4-5 dB decrease when transitioning from the bridge deck to the plaza pavement. In addition, 6 freight trains crossed the railroad bridge paralleling the Rainy River Bridge during the 7 hours on site. When possible, the train noise was eliminated from the measurements. However, distant train noise, audible to the human ear was not apparent in the one-second noise data.

4.1.17.3.3 Noise Modeling

Traffic noise impacts were assessed by modeling noise levels at 6 representative locations along the Peace Bridge project area in Baudette, Minnesota. These receptors were selected to model the noise levels at 5 picnic tables within Peace Park and a residential area adjacent to Baudette River. The locations of the receptors are shown on Figure 35 in Appendix I. Land uses (residential, commercial, etc.) are listed for each modeled receptor location in Table 27 in Appendix I.

Noise modeling was done using the noise prediction program "MINNOISEV31", a version of the FHWA's "STAMINA" model adapted by MnDOT. This model uses traffic volumes, speed, vehicle classes, and the typical characteristics of the roadway being analyzed (e.g., roadway horizontal and vertical alignment). Noise model input files were developed based on the following assumptions:

- Traffic data used in the MINNOISEV31 noise model included existing 2013 and future No Build and Build 2038 forecasted traffic volumes.
- Five years of MnDOT traffic counts were reviewed to determine the loudest daytime and nighttime hours of the day. The mid-day hour from 12:00 p.m. to 1:00 p.m. was identified to be the loudest hour of the daytime period and the period from 6:00 a.m. to 7:00 a.m. was identified as the loudest

nighttime hour due to overall volumes and commercial truck volumes compared to other times of the day.
- The 6:00 a.m. to 7:00 a.m. period, just prior to the start of the morning rush hour, was identified as the loudest nighttime hour.
- An acoustically "soft" surface (alpha=0.5) was utilized between the roads approaching the plaza and the receptors in Peace Park, while a "hard" surface (alpha=0.0) was utilized between the bridge and all receptors along with roads and FS-2 across the Baudette River in the noise model input files.

4.1.17.3.4 Noise Modeling Results

The results of the noise modeling are presented in Table 26 (daytime – loudest hour from 12:00 p.m. to 1:00 p.m.) and Table 27 (nighttime – loudest hour from 6:00 a.m. to 7:00 a.m.; not all night) in Appendix I. The tables present the receptor identifications, the land use, the number of units per receptor, the L_{10} and L_{50} noise levels measured at each field site, the modeled Existing (2013), No-Build and Build (2038) L_{10} and L_{50} noise levels, the dBA difference between No-Build and Existing, the difference between Build and Existing, and the MPCA Noise Standards, and the FHWA NAC.

Existing (2013) daytime L_{10} noise levels at the 6 receptors range from 53.9 to 58.2 dBA. None of the 6 receptors are exposed to noise levels that exceed the MPCA L_{10} and L_{50} Standards. The L_{50} noise levels range from 46.5 to 50.2 dBA. None of the receptors noise levels would exceed the MPCA L_{50} Standards. The existing nighttime L_{10} noise levels are 4.0 to 4.2 decibels less than daytime noise levels. Since the MPCA Nighttime Standards are more stringent than the Daytime Standards, the nighttime noise levels during the 6:00 a.m. to 7:00 a.m. period would not exceed the 55 dBA L_{10} Nighttime Standard. None of the receptors would exceed the Nighttime L_{50} Standard of 50 dBA.

The 2038 daytime No-Build L_{10} noise levels would increase 0.4 decibels above existing conditions. The resulting daytime noise levels would range from 54.3 dBA to 58.6 dBA L_{10}. None of the receptors would be exposed to noise levels that exceed the daytime L10 MPCA Standard. The L_{50} noise levels would increase from 0.5 to 0.6 decibels over existing conditions with the noise levels ranging from 47.1 to 50.8 dBA. None of the receptors would be exposed to noise levels that exceed the L_{50} MPCA Standard. The 2038 nighttime No-Build noise levels would range from 45.8 to 52.3 dBA L_{10} while the L_{50} noise levels would range from 41.8 to 45.5 dBA. None of the nighttime noise levels would exceed the L_{10} and L_{50} MPCA Standards.

The modeled 2038 design year Preferred Alternative daytime noise levels would range from 49.7 to 56.4 dBA L_{10}. These noise levels would be 1.6 to 5.2 dBA less than existing conditions. The daytime MPCA L_{10} Standard would not be exceeded by any receptor. The L_{50} noise levels would range from 43.6 to 48.2 dBA. None of the receptors would exceed the L_{50} MPCA Standards. Nighttime L_{10} and L_{50} noise levels would decrease 1.3 to 4.6 and 1.5 to 3.7 dBA, respectively, from existing conditions. As with the 2038 build conditions, none of the receptors would exceed the MPCA nighttime L_{10} and L_{50} Standard.

4.1.17.3.5 Conclusions

This project will move the bridge alignment southeast slightly, and propose to use a concrete bridge deck versus the existing open metal deck. This change in bridge decks will create a reduction in traffic noise levels compared to existing conditions. Changes in daytime traffic noise levels from existing to future (2038) build conditions are projected to see a total decrease ranging from 1.6 to 5.2 dBA. The modeled

2038 design year Preferred Alternative daytime noise levels would range from 49.7 to 56.4 dBA L_{10}. The daytime MPCA L_{10} Standards would not be exceeded by any receptor. The L_{50} noise levels would range from 43.6 to 48.2 dBA. None of the receptors would exceed the L_{50} MPCA Standards. Nighttime L_{10} and L_{50} noise levels would decrease 1.3 to 4.6 dBA and 1.5 to 3.7 dBA, respectively, from existing conditions. As with the 2038 No-Build conditions, none of the receptors would exceed the Nighttime L_{10} and L_{50} Standards.

The modeled 2038 design year Preferred Alternative daytime and nighttime noise levels do not exceed the MPCA L_{10} or L_{50} standards in Table 13. Likewise, none of the noise levels approach or exceed the FHWA's NAC in Table 14. Therefore, a noise mitigation analysis was not required.

4.1.18 Transportation

4.1.18.1 Describe traffic-related aspects of project construction and operation. Include: 1) existing and proposed additional parking spaces, 2) estimated total average daily traffic generated, 3) estimated maximum peak hour traffic generated and time of occurrence, 4) indicate source of trip generation rates used in the estimates, and 5) availability of transit and/or other alternative transportation modes.

Parking spaces (if project involves expansion): 0

Estimated total average daily traffic generated: NA.

Estimated maximum peak hour traffic generated and time of occurrence: NA.

Traffic will not be generated by the proposed project. A Traffic Count Data, Projection and Summary Report (Appendix B) was prepared which summarizes existing and future traffic operations in the study area. The analysis identified that the existing traffic counts across the bridge are approximately 1,200 vehicles per day.

Transit service is not currently available in the project area in either the City of Baudette or the Town of Rainy River and no transit is planned. No adverse impact to transit will occur.

4.1.18.2 Discuss the effect on traffic congestion on affected roads and describe any traffic improvements necessary. The analysis must discuss the project's impact on the regional transportation system. If the peak hour traffic generated exceeds 250 vehicles or the total daily trips exceeds 2,500, a traffic impact study must be prepared as part of the EAW. Use the format and procedures described in the Minnesota Department of Transportation's Access Management Manual, Chapter 5 (available at: http://www.dot.state.mn.us/accessmanagement/resources.html) or a similar local guidance.

The Traffic Count Data, Projection and Summary Report (Appendix B) indicates a declining AADT history and suggests that lower traffic volumes will occur in the future compared to existing values. However,

MnDOT policy is to project minimal increases in traffic into the future, providing a conservative estimate of future traffic demands. For Lake of the Woods County, MnDOT's minimum growth rate is 0.5 percent annually. This produces a 2018 AADT estimate of 1,350 vehicles per day and a 2038 estimate of 1,450 vehicles per day.

Existing and projected traffic volumes are well below 2,500 trips per day, therefore a traffic impact study was not prepared.

4.1.18.3 Identify measures that will be taken to minimize or mitigate project related transportation effects.

Negative transportation effects are not anticipated to occur from this project. As mentioned previously, some over-dimensional loads require travel down the center of the bridge structure where the vertical clearance is maximized, prohibiting two-way traffic, and causing delays for on-coming traffic. The proposed steel I-girder bridge type eliminates all above-deck bridge elements, removing traffic vertical restrictions, and eliminating this delay.

4.1.19 Cumulative Potential Effects

4.1.19.1 Describe the geographic scales and timeframes of the project related environmental effects that could combine with other environmental effects resulting in cumulative potential effects.

Cumulative impacts are defined as "impacts on the environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or persons undertakes such actions". The geographic areas considered are those areas directly adjacent to and near the Baudette Rainy River Bridge. The project impacts described in this document for the Baudette Rainy River Bridge include impacts to wetlands, floodplains, cultural resources and increased stormwater runoff.

Past actions in the project vicinity include decades of agricultural, residential, institutional, industrial, and commercial development and transportation infrastructure improvements. All these have resulted in the current built environment surrounding the Baudette Rainy River Bridge, which is generally urban development. No future development opportunities in the surrounding area have been identified.

Planning documents utilized to identify applicable projects include Minnesota's final 2016-2019 State Transportation Improvement Plan (STIP), and existing city and county comprehensive plans and capital improvement plans.

4.1.19.2 Describe any reasonably foreseeable future projects (for which a basis of expectation has been laid) that may interact with environmental effects of the proposed project within the geographic scales and timeframes identified above.

The following projects are listed in Minnesota's Final State Transportation Program (STIP) for 2016-2019 for the City of Baudette:

- Construction of a Pedestrian Bike Path in east Baudette, 2016
- Mill and Overlay of TH 11 from 7.6 miles west of TH 172 to TH 72, 2016

A proposed Rainy River gold mine project (owned by NewGold), proposed to be located approximately 40 miles northwest of Fort Frances, which is currently undergoing a separate environmental assessment through the Canadian federal environmental process.

4.1.19.3 Discuss the nature of the cumulative potential effects and summarize any other available information relevant to determining whether there is potential for significant environmental effects due to these cumulative effects.

4.1.19.3.1 Wetlands

4.1.19.3.1.1 Existing Conditions and Impacts from Proposed and Future Actions

Existing wetland conditions consist of floodplain, emergent marsh wetlands and watercourse impacts. Impacts to wetlands within the project area are described in Section 4.1.11.2.4 (Water Resources – Surfaces Waters). Wetlands in the project vicinity may be affected by the foreseeable future actions. However, these impacts will be mitigated, as required by state and federal regulations.

4.1.19.3.1.2 Cumulative Potential Effects

Wetlands are afforded protection under Federal (the Clean Water Act – Section 404, Executive Order 11990 – Protection of Wetlands) and State (Minnesota Wetland Conservation Act (WCA) in Minnesota) laws that mandate “no net loss” of wetland functions and values. These Federal and State laws require the avoidance of wetland impacts when possible, and when avoidance is not possible, impacts must be minimized and mitigated. Both Federal and State laws require permits. Given the requirements in place, negative impacts would be mitigated, and no adverse cumulative wetland impacts are anticipated to result from the project.

4.1.19.3.2 Stormwater

4.1.19.3.2.1 Existing Conditions and Impacts from Proposed and Future Actions

Prior to construction, under existing conditions, stormwater runoff from the bridge is discharged directly to the river through the open-grate bridge deck. Impacts to stormwater from the proposed action are described in Section 4.1.11.2.2 (Water Resources – Stormwater). Identified foreseeable actions may result in increased impervious surfaces and stormwater effects. However, these projects will be required to provide mitigation in conformance with NPDES and/or watershed regulations, minimizing surface water impacts.

4.1.19.3.2.2 Cumulative Potential Effects

Federal, state, and local surface and groundwater regulations require mitigation be provided in conjunction with proposed actions. Given the design standards and management controls available for protecting the quality of surface waters, it is likely that potential impacts of the project, along with other future actions, will be minimized or mitigated to a substantial degree. Therefore, substantial adverse cumulative effects on stormwater are not anticipated.

4.1.19.3.3 Fish, Wildlife, Plant Communities, and Sensitive Ecological Resources (Rare Features)

4.1.19.3.3.1 Existing Conditions and Impacts from Proposed and Future Actions

Existing conditions and impacts from the proposed action are outlined in Section 4.1.13 (Fish/Wildlife/Ecological Resources). Possible effects to fish, wildlife, plant communities, and known threatened and endangered species include possible acoustic and turbidity effects and associated habitat impacts from construction and clearing. Construction of the bridge will require substantial in-river work within the footprint of the proposed piers. Fisheries and other aquatic species may be impacted. Other permanent impacts include minimal tree clearing of terrestrial habitat on the southern side of the Rainy River and the removal of the existing bridge potentially providing habitat to barn swallows.

None of the foreseeable future actions are anticipated to result in substantial impacts to other wildlife, existing facilities and do not expand capacity or substantially change existing alignments, thus limiting anticipated impacts to wildlife habitats.

4.1.19.3.3.2 Cumulative Potential Effects

Impacts to fisheries and other aquatic species resulting from in-river work of foreseeable future actions will be minimized through project coordination with the U.S. Fish and Wildlife Service and the Minnesota Department of Natural Resources. Substantial cumulative effects to wildlife are not anticipated.

4.1.19.3.4 Contamination, Hazardous Materials, and Wastes

4.1.19.3.4.1 Existing Conditions and Impacts from Proposed and Future Actions

Existing conditions and impacts from the proposed action can be found in Section 4.1.12 (Contamination/Hazardous Materials/Wastes). Regulated materials are present on the existing bridge and would be disposed of per State and Federal rules and regulations when the existing bridge is removed. Two areas of recognized environmental condition or contamination are also located within the project area. Construction activities related to the foreseeable future actions listed above may encounter existing hazardous materials, regulated waste, or contaminated properties.

4.1.19.3.4.2 Cumulative Potential Effects

Hazardous materials and regulated waste encountered as part of the proposed and future actions would be handled and disposed of according to applicable state and federal rules and regulations. As a result, substantial cumulative effects resulting from hazardous materials or regulated waste are not anticipated within the project.

4.1.19.3.5 Cultural Resources

4.1.19.3.5.1 Existing Conditions and Impacts from Proposed and Future Actions

Cultural resources in the project area include the Baudette Bridge, CN Railroad Bridge, Railroad corridor and the Old Town Cemetery. See Section 4.1.14 (Historic Properties) for a description of the existing conditions and potential impacts. Removal of the Baudette River Bridge would result in an adverse effect to Bridge 9412 under Section 106.

4.1.19.3.5.2 Cumulative Potential Effects

Substantial cumulative impacts to cultural resources are not anticipated in conjunction with the identified foreseeable future actions. A Memorandum of Agreement (MOA) has been accepted by all signatories

and is in the process of being executed to document mitigation of the adverse effect. Given the requirements in place and that the negative impacts would be mitigated, no adverse cumulative cultural resource impacts are anticipated to result from the project. If federal funds, licenses, or permits are required on future actions, the Section 106 process and associated federal requirements would apply.

4.1.19.3.6 Section 4(f) Resources

4.1.19.3.6.1 Existing Conditions and Impacts from Proposed and Future Actions

Section 4(f) resources in the project area include the Baudette Rainy River Bridge and Peace Park. See Sections 4.1.14 (Historical Properties) and 4.3.6 (Additional Federal Issues – Section 4(f) Resources) for descriptions of the existing conditions and potential impacts.

4.1.19.3.6.2 Cumulative Potential Effects

Impacts to Peace Park in the City of Baudette will be temporary and will be documented through the Section 4(f) process. Substantial cumulative effects to Peace Park are not anticipated. Removal of the bridge will be mitigated through the Section 106 process and documented through the use of a Programmatic 4(f) for Historic Bridges. See Appendix H for the Programmatic Section 4(f) Evaluation and Approval for FHWA Projects that Necessitate the Use of Historic Bridges for Bridge #9412.

4.1.19.3.7 Conclusion

Based on the information known through the development of this EA/EAW, there is little potential for substantial cumulative impacts to the resources directly or indirectly impacted by the project. The potential impacts to resources identified can be avoided or minimized through existing regulatory controls, as described above. Therefore, no potentially substantial cumulative potential effects to the resources affected by this project have been identified.

4.1.20 Other Potential Environmental Effects

If the project may cause any additional environmental effects not addressed by items 1 to 19, describe the effects here, discuss the how the environment will be affected, and identify measures that will be taken to minimize and mitigate these effects.

Not applicable.

4.2 RGU CERTIFICATION

*(The Environmental Quality Board will only accept **SIGNED** Environmental Assessment Worksheets for public notice in the EQB Monitor.)*

I hereby certify that:

- The information contained in this document is accurate and complete to the best of my knowledge.
- The EAW describes the complete project; there are no other projects, stages, or components other than those described in this document, which are related to the project as connected actions or phased actions, as defined at Minnesota Rules, parts 4410.0200, subparts 9c and 60, respectively.
- Copies of this EAW are being sent to the entire EQB distribution list.

Signature _____ Date 01/30/2017

Title Chief Environmental Officer

Environmental Assessment Worksheet was prepared by the staff of the Environmental Quality Board at the Minnesota Department of Administration, Office of Geographic and Demographic Analysis. For additional information, worksheets or for *EAW Guidelines*, contact: Environmental Quality Board, 658 Cedar St., St. Paul, MN 55155, 651-201-2492, or http://www.eqb.state.mn.us

4.3 ADDITIONAL FEDERAL ISSUES

Discussed below are the federal issues not discussed in the EAW.

4.3.1 Right-of-Way and Relocation

Approximately 0.45 acres of temporary right-of-way (0.26 acres from the City of Baudette; 0.19 acres from General Services Administration (GSA)) will be required for this project as shown on Figure 30. No people, homes or businesses will be relocated with this project.

4.3.2 Economics

No business/economic activity is anticipated to be negatively affected by this project; however, minor impacts may occur with minor traffic delays related to bridge construction and the movement of heavy equipment.

Beneficial economic impacts include the increased height and width of the replacement bridge allowing overweight and over-dimensional loads to cross the bridge without delaying traffic as previously discussed in Section 2.2.2 (Secondary Needs).

4.3.3 Social Impacts

The project is not expected to cause any adverse impact to any sensitive groups within the nearby communities and neighborhoods. No categories of people uniquely sensitive to transportation will be unduly impacted. The project is located adjacent to schools, churches, and recreational activities; however, the existing bridge will remain open during the construction of the new bridge so as not to disturb the exchange of resources and community cohesion.

4.3.4 Transit

See Section 4.1.18 (Transportation). The project is not anticipated to affect potential public transit routes because the existing bridge will remain open during the construction of the new replacement bridge. Additionally, transit service is not currently available in the project area in either the City of Baudette or the Town of Rainy River and no transit is planned. No adverse impact to transit will occur.

4.3.5 Considerations Relating to Pedestrians and Bicycles

The Preferred Alternative will provide a 6-foot wide pedestrian/bicyclist facility on the south (upstream) side of the bridge and two 8-foot wide shoulders.

Pedestrian and bike traffic is not anticipated to be affected during construction as the existing bridge will remain open during construction. Provisions for pedestrian and bike traffic are included in the design of the replacement bridge.

4.3.6 Section 4(f) Resources

Section 4(f) legislation, as established under the Department of Transportation Act of 1966, provides protection for publicly owned parks, recreation areas, historic sites, wildlife, and/or waterfowl refuges from conversion to transportation use. The FHWA may not approve the use of land from a significant publicly owned park, recreation area, or wildlife and/or waterfowl refuge, or any significant historic site unless a determination is made that there is no feasible and prudent alternative to the use of land from the property and the action includes all possible planning to minimize harm to the property resulting from such use.

4.3.6.1 Baudette / Rainy River International Bridge

The proposed action of removing and replacing the Baudette / Rainy River International Bridge would result in an 'adverse effect' under Section 106 and, therefore, a Section 4(f) 'use'. The Programmatic Section 4(f) Evaluation and Approval for FHWA Projects that Necessitate the Use of Historic Bridges, located in Appendix H, determined there is no feasible and prudent alternative to the use (i.e., the removal and replacement) of the Baudette / Rainy River International Bridge and its approaches. See the Programmatic Section 4(f) Evaluation for a more detailed discussion of Section 4(f) process decision-making and findings.

As discussed in Section 4.1.14 (Historic Properties), through the Section 106 review process, MnDOT CRU on behalf of FHWA has determined that the project would not have an adverse effect on other historic properties. It furthermore describes that, as plans are further reviewed, if an adverse effect to one or more historic properties is identified, mitigation measures will be developed in accordance with the Section 106 Memorandum of Agreement (MOA) which is in the process of being executed. In addition, if an adverse effect is identified, the proposed action would be reviewed to determine if it constitutes a Section 4(f) use, and if so, would be evaluated per Section 4(f) regulations.

4.3.6.2 Peace Park

4.3.6.2.1 De Minimis Impact Finding

Peace Park is located in Baudette, Minnesota on City-owned land adjacent to the existing bridge. MnDOT would have temporary and permanent easements over the park for the purposes of construction, staging access, and long term access to the bridge. Use of the park is unavoidable due to its adjacent location to the existing and proposed bridges. Based on consultation with City of Baudette, a Section 4(f) De Minimis Impact Finding to Peace Park is proposed since the impact does not adversely affect the activities, features, and attributes of the resource. See the Section 4(f) De Minimis Impact Finding for Peace Park below.

The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) amendment to the Section 4(f) requirements allows the U.S. DOT Federal Highway Administration (FHWA) to determine that certain uses of Section 4(f) land are de minimis.

An impact may be determined to be de minimis if the transportation use of the Section 4(f) resource, including consideration of impact avoidance, minimization, and mitigation or enhancement measures, is so minor in nature that it does not adversely affect the activities, features, and attributes that qualify the resource for protection under Section 4(f). Such a finding will be conditioned upon:

- the official(s) with jurisdiction over the resource indicating, in writing, that the proposed action, including consideration of the mitigation, will not adversely affect the activities, features and attributes that are important to the resource, and
- the public has been afforded an opportunity (by public notice) to review and comment on the effects of the project on the protected activities, features, and attributes of the Section 4(f) resource, and
- implementation of the mitigation measures.

When this is the case, an analysis of avoidance alternatives is not required and the Section 4(f) evaluation process is complete. The official(s) with jurisdiction (City of Baudette Public Works Department) over the resource will be informed of FHWA's intent to make the de minimis impact finding.

Based on consultation with the City of Baudette Public Works Department, a de minimis impact finding to Peace Park is proposed. The FHWA will make a final determination regarding the proposed de minimis finding following the public comment period for the EA/EAW. See correspondence in Appendix D.[40]

Information providing the basis for the proposed Section 4(f) de minimis impact finding is provided below:

1. **Description of the 4(f) Property.** See Figure 1 and Figure 29 for the overall size of Peace Park and the relative size of the impact area, respectively.

   Name: Peace Park (Baudette Rest Area)

   Size (acres): 7.32

   Location: As shown in Figure 1, the park is bounded mainly by the Baudette River to the south and TH 72 to the north. The park begins near 3rd St NE in Baudette, Minnesota and ends along the Rainy River.

   Ownership: City of Baudette

   Type of Section 4(f) Property: Peace Park includes a public rest area (Baudette Rest Area), and historical event markers.

   Function of Property and Available Activities: Peace Park includes a public rest area, roadside parking areas, and a dock and boat launch area available to travelers between the U.S. and Canada. The park also includes a number of historical markers and gravesites.

   Description and Location of All Existing and Planned Facilities: The park currently includes circular cast concrete picnic tables, a restroom building and seasonal water fountain which were

[40] Source: See Appendix D – Draft de minimis impact finding of Peace Park Letter seeking concurrence from City of Baudette dated January 18, 2017.

constructed by MnDOT in 1969. The park also currently features four parking areas, the largest of which provides dock and boat launch access into Baudette River along the southern edge of the park.

The storage building adjacent to the roadway along the northeast section of the park was added by MnDOT in 1980. Additionally, the park features two historical event markers along its northern edge which were erected by the Minnesota Historic Society and Minnesota Historic Sites and Markers Commission in 1966. The markers contain texts that address the Great Fire of 1910 and Massacre Island. Lastly, the park area contains the former location of the Old Town Cemetery, established in 1894. Many burials were moved to Elm Park Cemetery in 1909 by the City with permission from surviving relatives of the deceased; however, two unclaimed gravesites with headstones dated 1904 and 1907 remain in Peace Park.

Access: Peace Park can be accessed by pedestrians, bicyclists, and motorized vehicles. Minnesota Trunk Highway (TH) 72 and Highway 11 provide vehicular, bicycle and pedestrian access to and from Baudette, Minnesota and Rainy River, Ontario. The bridge also serves as a connection between United States and Canadian full-service, 24-hour Port of Entry facilities in each country.

Usage: Peace Park receives regular use during the summer months as well as some winter use. Park visitors include a mix of neighborhood residents as well as those traveling between the U.S. and Canada.

Relationship to Other Similarly Used Lands in the Vicinity: None.

Applicability Clauses Affecting the Ownership: There is no known lease, easement, covenants, restrictions, or other condition affecting ownership.

Unusual Characteristics Reducing or Enhancing the Value of the Property: Baudette River and Rainy River form the south and east boundaries of Peace Park. Portions of the park are susceptible to flooding during large storm events.

LAWCON Section 6(f) Impacts: Not applicable.

2. Impacts to the Section 4(f) Property.

Amount of Land Impacted: Approximately 0.22 acres.

Permanent R/W Acquisition/Easement: No permanent right-of-way or easements will be required for this project.

Temporary Easements: Approximately 0.22 acres of temporary easement area (see Figure 29 in Appendix A) will involve tree removal to accommodate construction movements and equipment; approximately four of which will be removed within the Peace Park boundary. This temporary impact area also includes possible minor excavation activities and the proposed temporary causeway (See Sections 4.1.6.2.2 and 4.1.11.2.4, Project Description – Construction: Potential Staging Areas and Water Resources – Surface Waters, respectively).

Functions Affected: Functions of Peace Park would not be affected as a result of the proposed project.

Facilities Affected: The existing facilities within Peace Park would not be affected as a result of the proposed project.

3. **Coordination with Responsible Official with Jurisdiction over the Section 4(f) Property:** The City of Baudette Public Works Department is the official with jurisdiction over Peace Park and was consulted along with the FHWA to discuss and solicit approval for the proposed activities. Letters of concurrence from the City of Baudette and FHWA are in Appendix D.

4. **Considerations.**

Impact Avoidance: The proposed replacement bridge and approaches have been designed to minimize, to the greatest extent possible, use of Peace Park.

Planning to Minimize Harm: The proposed roadway design minimizes encroachment to Peace Park and other neighboring entities as detailed by the following:

- None of the existing park facility structures will be removed, relocated, or temporarily disturbed.
- None of the historical markers or graves will be removed, relocated, or temporarily disturbed.
- Upon construction completion, vegetation and landscaping will be restored as feasible.
- No impacts to the Canadian National Railroad corridor or the Minnkota Power Coop, both of which are located adjacent to the existing Bridge #9412.

Mitigation: As discussed above, upon construction completion, Peace Park land will be restored as feasible and its existing facilities will not be impacted.

Enhancement: The proposed roadway design includes a sidewalk that will provide continued pedestrian access between the park and the bridge.

5. **Public Notice:** Park impacts will be reviewed by the public in conjunction with the public review of this EA. A 45-day comment period will follow. Comments will become part of the official record and will be considered when making future project related decisions.

6. **Conclusion:** The proposed action includes all possible planning to minimize harm to the resource, and is not anticipated to adversely affect the activities, features and attributes of Peace Park.

4.3.6.2.2 Temporary Occupancy

Additionally, contractors may request to use a portion of Peace Park during construction for staging purposes including the proposed temporary causeway, storage of materials or equipment in the parking lot, and using the boat launch to provide access to Rainy River through the Baudette River; see Figure 29: Peace Park – 4(f) Impacts. If contractors utilize the park for staging in this manner, a temporary occupancy of Peace Park will occur. In this case, the City of Baudette would retain ownership over Peace Park throughout the duration of construction. This temporary occupancy will last for a shorter timeframe than the two construction seasons required for construction and removal of the existing bridge. No changes within Peace Park would result from the use of the parking lot, dock and boat landing and the

amenities would be fully restored to its prior use upon construction completion. These amenities would generally remain open to the public during construction, however limited closures may be needed to address safety concerns. Coordination between MnDOT and the City of Baudette is currently underway to document the determination of temporary occupancy. See the temporary occupancy letter for concurrence from the City of Baudette in Appendix D.

4.3.7 Section 6(f) Resources

The project has been reviewed for potential Section 6(f) involvement.[41] The project will not cause the conversion of any land acquired, planned, or developed with funds from the Land, and Water Conservation Fund (LAWCON). Therefore, there is no Section 6(f) involvement on this project.

Additionally, MnDNR was contacted to confirm the project would not impact any Section 6(f) properties. MnDNR provided a list of Section 6(f) properties near the project area which confirmed that no Section 6(f) properties will be affected[42].

4.3.8 Section 106 Process

See Section 4.1.14 (Historic Properties) for information regarding the Section 106 process and project impacts to historic resources and MnHPO coordination regarding determination of effects and other Section 106 process issues.

4.3.9 Environmental Justice

Executive Order (EO) 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations," dated February 1, 1994, requires that environmental justice be addressed in all federal planning and programming activities. The purpose of EO 12898 is to identify, address, and avoid disproportionately high and adverse human health or environmental effects of programs, policies, and activities on minority populations and low-income populations. The proposed project has potential federal permit requirements and will utilize federal funding. As such, it is considered a federal project for the purpose of compliance with this Executive Order. EO 12898 requires that the proposed actions be reviewed to determine if there are "disproportionately" high or adverse impacts on minority or low income populations. "Disproportionate" is defined in two ways: the impact is "predominantly borne" by the minority or low-income population group, or the impact is "more severe" than that experienced by non-minority or non-low-income populations. The steps for defining environmental justice impacts include the following:

- Step 1: Determine if an identifiable low income and/or minority population exists in the project area;
- Step 2: Determine if there are potentially high and adverse environmental impacts disproportionately borne and appreciably greater for the low income and/or minority populations;

[41] MnDNR, "Parks and Natural Areas Subject to Permanent Land Use Requirements through Grant Agreements Administered by the MN Dept. of Natural Resources," Page 10, June 15, 2015, http://files.dnr.state.mn.us/aboutdnr/lawcon/lawcon_1.pdf.
[42] Source: Email from MnDNR confirming no Section 6(f) involvement. January 20, 2016. See Appendix D.

- Step 3: If the determination in Step 2 is 'Yes", then determine if further mitigation is possible to avoid or reduce the adverse effect to the population; or are other alternatives to avoid or reduce impacts practicable?

4.3.9.1 Step 1: Assessment of Project Area Demographics

The first step in the environmental justice determination process is to determine whether any minority and/or low-income populations are present within the project area. For the purposes of environmental justice, a low-income population or minority population is defined as a population of people or households located in close geographic proximity meeting the racial or income criteria set forth in Department of Transportation Order 5610.2(a) and FHWA Order 6640.23A.

Information on population characteristics of the project area was obtained from 2010 Census data and the 2010-2014 American Community Survey data. The project area is located in one Census Tract (4603) and one Census Block Group (1), both of which are located within Lake of the Woods County, Minnesota and encompass the entire project area. See Figure 31 in Appendix A for the location of Census Tract 4603, Block Group 1 with respect to Lake of the Woods County and the project location.

4.3.9.1.1 Identification of Minority Populations

The term "minority" is defined using race and ethnicity definitions from the 2010 Census. Minority communities are generally defined as one where the minority population is either 10 percentage points higher than the county average; or greater than 50 percent of the total geographic unit; or determined based on input for local officials or stakeholders. For this analysis, the presence of minority populations was assessed using block group level data. Table 17 outlines population and race information for Census Block Groups.

According to the minority criteria definition outlined above, Census Tract 4603, Block Group 1 indicates minority populations are not located in the project vicinity. Based on this data, for the purpose of this environmental justice assessment, it has been determined that a minority population does not exist in the vicinity of the proposed U.S. approach portion of the project.

Table 17: Population and Race

Demographic Group	Lake of the Woods County: Census Tract 4603, Block Group 1	% of Population	Lake of the Woods County	% of Population
Households	729	N/A	1,700	N/A
Population	1,694	100%	4,045	100%
White	1,599	94%	3,863	96%
Minorities	71	4%	147	4%
African American	6	0%	13	0%
American Indian	14	1%	27	1%
Asian	9	1%	32	1%
Pacific Islander	0	0%	0	0%
Some Other	0	0%	2	0%
Two or More	42	2%	73	2%
Hispanic / Latino	24	1%	35	1%

Sources: P9 and QT-P11, 2010 U.S. Census SF1 100% Data.

4.3.9.1.2 Identification of Low-Income Populations

For the purposes of this study, the term “low-income” is defined as persons with income below the 2014 poverty level. Data for Table 18 came from the 2010-2014 American Community Survey five-year estimates.

Census Tract 4603, Block Group 1 suggests the presence of low-income families (8 percent) and persons (8 percent) in the project area, as they exceed Lake of the Woods County’s percentages for families (3 percent) and persons (7 percent). Given the data presented above, it is reasonable to conclude that low-income populations exist within Census Tract 4603, Block Group 1 and possibly in the vicinity of the project on the U.S. side. However, based on coordination with the City of Baudette and familiarity of project staff[43] with the local landowners indicate an absence of a low-income population within the project area. Therefore, it is reasonable to conclude that low-income populations do not exist in the vicinity of the proposed project.

[43] City of Baudette Clerk, personal communication, January 12, 2017.

Table 18: Income and Poverty

Demographic Group	Lake of the Woods County: Census Tract 4603, Block Group 1
Total Households	1,616
Total Families	367
Median Household Income (2014 inflation adjusted dollars)	$43,611
Median Family Income (2014 inflation adjusted dollars)	$60,625
Per Capita Income in 2014 (dollars)	$21,660
% of families whose income in the past 12 months is below poverty level	8%
% of people whose income in the past 12 months is below poverty level	8%

Source: 2010-2014 American Community Survey 5-Year Estimates.

4.3.9.2 Step 2: Determination of Effect

The determination of effect includes two steps:

- Is there an anticipated adverse impact high, and if so, is it high?
- Is the high and adverse impact anticipated to fall disproportionately on low income or minority populations?

If no high levels of adverse impacts are anticipated the consideration of potential disproportionate impacts does not apply.

4.3.9.2.1 Is there an anticipated adverse impact, and if so, is it high?

This EA documents the range of beneficial and adverse impacts associated with the Preferred Alternative along with proposed mitigation measures to address adverse effects. The following subject areas were considered when determining whether the collective adverse impacts to the identified low-income population is high:

- Right-of-Way and Relocation
- Economics
- Social Impacts
- Visual
- Air
- Noise
- Transportation & Transit

- Pedestrians & Bicycles
- Cultural Resources

Right-of-Way and Relocation – The Preferred Alternative requires only the acquisition of City and MnDOT right-of-way. No people, homes or businesses will be relocated with this project.

Economics – No business/economic activity is anticipated to be negatively affected by this project – See Section 4.3.2 (Economics). No adverse economic impacts are anticipated.

Social Impacts – The project is not expected to cause any adverse impact to sensitive groups within the nearby communities and neighborhoods – See Section 4.3.3 (Social Impacts). There are no adverse social impacts to be predominantly borne by the identified low-income population.

Visual – Visual impacts from the proposed project will be minimal. The current bridge is an identifying feature for the towns of Baudette and Rainy River. This project will replace the existing bridge on a similar alignment and is therefore not introducing a new transportation element to the view shed. However, replacement of the steel truss structure will change the view from land, particularly from the upstream side of the bridge. Downstream, the view of the existing roadway bridge is obscured for people on land by the CN Railroad Bridge located about 300 feet away. Recommendations from Public Involvement Meetings and the PAC will continue to be used to make design refinements in the areas of lighting, railing and border delineation (see Section 4.1.15, Visual). Therefore, there are no adverse visual impacts to be predominantly borne by the identified low-income population.

Air – No air quality impacts are expected to result from the proposed project.

Noise – A detailed traffic noise analysis was conducted for the Preferred Alternative (see Section 4.1.17, Noise). The analysis concluded that the proposed project would result in slight reductions in traffic noise levels compared to existing conditions. The analysis also found that daytime and nighttime MPCA L_{10} and L_{50} Standards would not be exceeded by the Preferred Alternative (the No Build Alternative also does not exceed these standards). For these reasons, no adverse noise impact is anticipated.

Transportation & Transit – As discussed previously in Sections 4.1.18 (Transportation) and 4.3.4 (Additional Federal Issues – Transit), the project is not anticipated to affect public transportation or transit routes because the existing bridge will remain open during the construction of the new replacement bridge. Additionally, transit service is not currently available within the project area in either the City of Baudette or the Town of Rainy River, and no transit is planned. No adverse impacts to transportation or transit are anticipated.

Pedestrians & Bicycles – Pedestrian and bike traffic is not anticipated to be affected during construction as the existing bridge will remain open during construction. Additionally, provisions for pedestrian and bike traffic are included in the design of the replacement bridge – See Section 4.3.5 (Considerations Relating to Pedestrians and Bicycles). Therefore, there are no adverse pedestrian/bike impacts to be predominantly borne by the identified low-income population.

Cultural Resources – A small area of Peace Park will involve temporary construction impacts (0.22 acres) and minor tree removal. The amenities of Peace Park (i.e. public rest area facilities, parking lots, and a boat launch area/dock) will remain open throughout construction. As suggested in Section 4.3.6 (Additional Federal Issues – Section 4(f) Resources), there is a chance that contractors may request to use the boat launch/dock and some parking lot areas for construction staging purposes. Additionally, a field review for any potential unmarked graves will be completed by a MnDOT-approved contractor prior to construction (Section 4.1.14 – Historic Properties). Both scenarios have the potential for temporarily restricting access to park amenities during construction. However, potential impacts will be shared by the overall community and not predominantly borne by the identified low-income population. No adverse social impacts borne predominantly by the identified low-income population are anticipated.

Based on consideration of the direct and indirect impacts (both beneficial and adverse), the net adverse impact of the Preferred Alternative on the identifiable low-income population will not be disproportionately high or adverse. Given this conclusion, the remainder of Step 2 and Step 3 do not need to be addressed.

4.3.9.3 Environmental Justice Finding

The proposed action will not introduce high levels of adverse impacts that would have disproportionately high and adverse human health or environmental effects to any minority population or low income population.

4.3.10 Aviation

The proposed project is located southeast of Baudette International Airport in Baudette, Minnesota and within the MnDOT Office of Aeronautics area of influence[44]. To protect aircrafts approaching the Baudette International Airport, MnDOT Aeronautics stated that the replacement bridge must stay under a 50:1 slope from 200 feet beyond the east end of the runway across the span of the bridge[45]. MnDOT Aeronautics later added that the replacement bridge must also stay under a 40:1 slope from the east end of the runway across the span of the bridge to protect aircrafts departing Baudette International Airport.[46] These critical approach areas are depicted in Appendix D[47].

Given the proximity to the Baudette International Airport and use of cranes for construction, the Federal Aviation Administration (FAA) will be notified to complete an airspace obstruction analysis and the required FAA Form 7460-1 will be submitted for review. Terrain height will factor into whether the project affects the navigable airspace.

MnDOT will continue coordination with the FAA and the Baudette International Airport as needed as the design progresses.

[44] Source: http://www.dot.state.mn.us/aero/documents/airportinfluence/District2/BaudetteInternationalAirport.pdf
[45] Source: Appendix D – Email from MnDOT Aeronautics. December 15, 2015.
[46] Source: 14 CFR 77.19(d)(2)iii.
[47] Source: Appendix D – BDE Airspace, Baudette / Rainy River Figure. June 16, 2015.

4.3.11 Rainy River and Baudette River Navigational Traffic Impacts

The United States Coast Guard (USCG) conducted a preliminary review of the project prior to meeting with MnDOT and MTO on November 13, 2015. The USCG determined that the use of the Rainy River was almost entirely recreational due to the absence of large commercial or marine facilities in the area. Therefore, the USCG considers the CN Railroad Bridge to be a controlling structure by which the navigational channel should align. The USCG also discussed the following requirements on the U.S. side of the Proposed Project:

- The low steel elevation of the proposed bridge structure needs to be higher than the low steel of the current CN Railroad Bridge, if possible, by 5-6 feet.
- A horizontal navigational channel of 100 feet or wider needs to be provided beneath the proposed bridge, if possible, in the deepest area of the river. A specific location and offset of the international border are not required.
- The navigational channel does not need to line up with the CN Railroad Bridge, but attempts should be made to align the openings.
- The navigational channel under the proposed bridge will likely not match the navigational channel of the existing bridge, which will cause a disruption to navigational activity until the existing bridge is removed. The USCG did not feel this was an issue since it is a temporary condition.
- No agreements between the USCG and Canada are required related to the navigational channel.

Coordination with USCG is still underway as needed. The USCG has indicated that it would adopt this EA/EAW upon approval from the FWHA and will issue its own FONSI.

4.3.12 Construction Impacts

See Section 4.1.17.1 (Noise During Construction) for noise impacts during construction. While MnDOT and its contractor(s) are exempt from local noise ordinances, it is MnDOT's practice to require contractor(s) to comply with applicable local noise restrictions and ordinances to the extent that it is reasonable. Public notices and outreach will be conducted within any areas that may experience abnormally loud construction activity. Construction will be limited to daytime hours as much as possible; however, night construction may be required. The project is anticipated to last two construction seasons.

See Section 4.1.16.3 (Dust and Odors) for dust and odor impacts during construction. Dust will be generated by normal construction activities and will be minimized through standard dust control measures such as watering. Post-construction dust levels are anticipated to be minimal as all exposed soil surfaces will receive permanent cover.

See Section 4.1.19 (Cumulative Potential Effects) for additional discussion on construction impacts.

4.3.13 Federal Threatened and Endangered Species

Section 7 of the Endangered Species Act of 1973, as amended, requires each federal agency to review any action that it funds, authorizes, or carries out to determine whether it may affect threatened, endangered, or proposed species, or affect listed critical habitat.

See Appendix D for Section 7 correspondence from MnDOT to the U.S. Fish and Wildlife Service dated March 1, 2016 that describes MnDOT's determinations made on behalf of FHWA, and the rationale for those determinations, including:

- A determination that project impacts are not of a magnitude that would result in jeopardizing the continued existence of the northern long-eared bat, a species proposed for federal listing as endangered at the time of EA/EAW publication; and
- Determination of No Effect for the Canada lynx, Gray wolf, and Piping plover since there are no known occurrences of these species in the project area.

The northern long eared bat (NLEB) has been officially listed by the USFWS since May 4, 2015. The USFWS accepted public comments on the interim 4(d) rules regarding activities in NLEB habitat from January 14, 2016 through February 16, 2016.

4.3.14 Farmland Protection Policy Act

The Farmland Protection Act (FPPA) is intended to minimize the extent to which federal activities contribute to the unnecessary and irreversible conversion of agricultural land to nonagricultural uses. The policy also seeks to ensure that federal policies are administered in a manner that will be compatible with state, local, and private policies that protect farmland.

The project is not anticipated to cause any adverse impact to agricultural land or operations. No agricultural land will be acquired; no farm will be severed or triangulated. The project will not affect agricultural production in Lake of the Woods County. See Section 4.1.9 (Land Use) for additional information.

4.3.15 Accessibility Requirements

The proposed project must comply with provisions set by the Americans with Disabilities Act of 1990 or by state or local access codes if they contain more stringent requirements. The project would comply with Americans with Disabilities Act requirements for the new bicycle and pedestrian facility on the new bridge and all crosswalk improvements. Crosswalks were specifically designed to meet current Americans with Disabilities Act (ADA) standards.

See Section 4.3.5 (Considerations Relating to Pedestrians and Bicycles) for additional information on the new bridge's fully accessible shared used facility.

4.3.16 Indirect Effects and Cumulative Impacts

See Section 4.1.19 (Cumulative Potential Effects) for information regarding cumulative impacts.

Since this project would provide infrastructure improvements that allow for continued functioning of TH 72 and Highway 11 between Baudette, Minnesota and Rainy River, Ontario, and therefore, would not introduce any new roadways that would affect/induce development patterns in the project vicinity, no potential indirect effects have been identified.

5.0 PUBLIC AND AGENCY INVOLVEMENT (AND PERMITS/APPROVALS)

The study process for this project, including the consultation program, has been developed with coordinated efforts from MnDOT and MTO to effectively coordinate the U.S. and Canadian study processes.

The consultation plan for this project has been developed in conjunction with the Canadian Transportation Environmental Study Report (TESR) and consultation process. The public meetings for this project have been scheduled concurrently in Rainy River and Baudette to make sure the same information is shared with the public and local stakeholders at the same time throughout the duration of the project. The U.S. consultation component of the project is documented in the Canadian Transportation Environmental Study Report (TESR) Document and is on file with the MTO.

5.1 PUBLIC INVOLVEMENT PLAN

A public involvement plan was developed and implemented early in the project development process. This plan has helped to establish communication between MnDOT and the public and has given MnDOT a better understanding of the concerns that the public and agencies have about the proposed project. It has also given the public and agencies knowledge about what it is that MnDOT is trying to accomplish with the project, and the standards, procedures, and constraints that MnDOT needs to consider while developing the project. Elements of the public involvement plan include coordination and contact meetings, advisory groups, newsletters, a web-site, public hearings, and the public comment period on the Environmental Assessment.

5.2 AGENCY COORDINATION & MEETINGS

Several public and agency meetings were held and newsletters sent out between March 2015 and August 2016. Coordination with the agencies listed in the following Sections was conducted throughout project development. The preparation of this EA develops the basis of understanding regarding project impacts, mitigation, and future coordination described in this EA.

Copies of agency comments received as a result of coordination meetings can be found in Appendix D and Appendix E. Significant issues and comments are discussed throughout this EA.

5.2.1 Project Advisory Committee

A Project Advisory Committee (PAC) was formed to help provide community input into the project process and to encourage communications between the MnDOT and the affected communities. The purpose of a PAC is to provide a comprehensive and orderly means of involving local interests in a transportation project. The role of the PAC is to advise MnDOT and MTO on community sentiment about a project. To do so equitably, the PAC must be democratic and representative of opposing points of view, with equal

status for each participant in presenting and deliberating the views of their interests. By providing for representation of many different interests, a PAC can help to resolve conflicts between those interests.

The PAC is composed of representatives from each county, city and township directly affected by the proposed project. There are also members representing the following organizations:

- City of Baudette
- Town of Rainy River
- Baudette Chamber of Commerce
- Rainy River & District Chamber of Commerce
- Lake of the Woods County
- General Services Administration (GSA)
- U.S. Coast Guard (USCG)
- Transport Canada
- U.S. Customs and Border Protection (CBP)
- Canada Border Services Agency (CBSA)
- International Rainy-Lake of the Woods Watershed Board (U.S. and CA)
- EMS Rainy River
- EMS Baudette

The following agencies and stakeholders were invited to join the PAC, but declined membership:

- Lake of the Wood Land & Water Planning
- Department of Foreign Affairs, Trade and Development
- CN Railroad

PAC members provide collaborative input on the project by following nine objectives:

1. advise MnDOT and MTO on issues
2. convey the concerns of local organizations, governments, and businesses to the study team
3. relay information presented by the study team back to citizens and community groups
4. identify transportation deficiencies and needs
5. strengthen public understanding of the study process and its regulatory framework
6. discuss progress, work efforts, and activities
7. provide input on a preferred course of action
8. ensure that information is understandable to the public seeing it for the first time
9. provide continuing visibility and credibility for the public involvement program

The PAC held four meetings between September 2015 and July 2016 and is expected to continue involvement throughout final design. Table 19 provides a summary of the important decisions and notable items from each of the PAC meetings to date.

Table 19: Important Decisions Summary (PAC Meetings)

PAC Meeting #	Date	Summary of Meeting
1	September 1, 2015	The first PAC meeting was held in the City of Baudette, MN. Fifteen people attended. Notable items include: • PAC Membership conducted introductions and reviewed PAC requirements. • Few issues identified with the proposed new bridge. • The PAC suggested extending membership to include the hospitals on both sides of the river and Dawson Township. • Hospital in Rainy River uses airport in Baudette and needs quick access across the bridge. This needs to be a consideration during construction. • Aesthetics of the bridge don't seem to be a concern as voiced at the PAC, most just want a functional bridge. • The PAC was interested in placing an indicator on the bridge to show when you are crossing the border. • Advertisements for Public Meeting were discussed (Radio, local paper, local television channel). Several outreach methods will be used.
2	October 28, 2015	PAC Meeting #2 was held in the City of Baudette, MN. The main focus of this meeting was to gather input on bridge aesthetics. The project team presented to the PAC on potential aesthetic treatment and provided a survey to collect opinion.
3	May 25, 2016	PAC meeting #3 was held in the City of Baudette, MN. Fifteen people attended. Notable items include: • The PAC was shown alignment options and aesthetics for the bridge • PAC Members wanted to see more aesthetics above deck vs focusing on the piers. The PAC expressed interest in providing open railing options to allow for less obstructed views while driving. • PAC members were interested in seeing aesthetic options for the bridge that add interest. (Stamping concrete, including signs indicating when you are crossing to each country, adding decorative features to add interest to the exterior of the bridge). • Results of the PAC 2 survey were presented. Railing was a very high importance on the ballot. Railing types were reviewed and discussed for aesthetic and safety benefits.
4	July 6, 2016	PAC meeting #4 was held in the Town of Rainy River, Ontario. Eight people attended. Visualizations for the proposed bridge were presented to the PAC for consideration and comment. The PAC was also presented with options for delineating the border. Notable comments include: • Comments from meeting participants focused on safety of the bridge as it relates to aesthetics.

5.2.2 Technical Advisory Committee

A Technical Advisory Committee (TAC) was created to communicate project status, outstanding issues, problems and recommended solutions, and next steps. The TAC consists of professional and technical staff from MnDOT, professional and technical staff from MTO, and the consulting team. To date, a total of 20 TAC meetings have been held. The important decisions from these meetings are outlined in Table 20 below.

Table 20: Important Decisions Summary (TAC Meetings)

TAC Meeting #	Date	Summary of Important Discussions
1	March 13, 2015	• The project delivery method will need to be determined through MnDOT and MTO management • Funding: – MnDOT may use Chapter 152 Funding which has a sunset date of June 2018. – MTO project funding will not impact the project schedule. • Existing Schedule
2	April 23, 2015	• Known Environmental Issues were summarized: – MnDOT has conducted a soil investigation that identified contaminated soils in the project area. Canada does site screening for contaminants if ROW is required. No major contamination impact is anticipated. – CRU has finished the initial investigation. Archaeology sent to SHPO for bridge, nothing significant was found.
3	May 21, 2015	• Environmental Documentation: – PIM/PIC meetings will be held simultaneously. • Project Advisory Committee (PAC) membership invitee list created. • MindMixer as a Public Involvement Tool:
4	June 25, 2015	• International Coordination Meetings was scheduled for the fall. Meeting coordination and logistics will be reviewed. • Public Involvement Plan was developed. • Bridge Engineer on the project team presented 12 Bridge Type Alternatives and narrowed this list to the 5 most feasible alternatives, as agreed by the TAC.
5	July 21, 2015	• PIP Update: – A detailed agency list will not be included in the plan as it is dedicated to public involvement, and does not address agency coordination. • USCG Permit Information – Permit is required, so a decision was made to involve the USCG prior to submittal to make the process as smooth as possible. • Environmental Update: – Federal Funds will be used on the project; therefore, Section 4(f) is applicable for the Historic Bridge and Park.
6	September 1, 2015	• Section 4(f) Process for the Bridge was reviewed. The FWHA will require the current bridge be put up for 'sale'. The bridge should be offered to the public agencies first who would have the ability to maintain the historic nature of the truss bridge, and then it will be put to the public. • Review and Confirm Revised Geometric Standards Request: – The roadway needs to be reconsidered with an 8' shoulder. – MTO would agree to recommend larger shoulders if it were to deter future maintenance costs. • Alignment Alternatives were reduced from 5 to the 2-3 most feasible alternatives.

Table 20: Important Decisions Summary (TAC Meetings) (Continued)

TAC Meeting #	Date	Summary of Important Discussions
7	October 29, 2015	• Schedule Status: – Public Meetings will be increased from 3 to 4. • Stakeholder and Agency Coordination: – Agency Consultation Plan – a quarterly webinar is proposed to keep agencies up to date. – A critical path schedule was created to show the critical links between the approvals and permits needed for construction. • Facilitated Bridge Discussion Meeting #2 Review: – The 5 alternatives will be reduced to 2-3 by the December TAC meeting. • Environmental Update: – State Archaeologist wants to do a field study covering the area that could be impacted from the upstream alignment alternative.
8	November 19, 2015	• Project overview: – Starting 12/10/15, agency webinars will be held quarterly. – Bridge types have been narrowed from 12 to 5, and will soon be narrowed again to 2 or 3 options. • USCG Meeting Update: – No commercial traffic and bridge should ideally span the deepest part of the river. – Bridge cannot be lower than the CN rail bridge.
9	December 17, 2015	• Schedule Status: – The Bridge Engineer on the project team will reassess dismissed structure options to confirm that they still are not relevant. – The 5 current options will be redesigned to fit the new navigational channel requirements and to minimize piers in the water. • Procurement Options Report: – MTO and MnDOT should provide comments on the report as soon as possible to allow changes to be incorporated and to address comments. • Alignment Alternative Selection: – Draft evaluation was narrowed down to 4 options.
10	January 28, 2016	• Structure Type Selection: – Bridge options narrowed to Alternate 1 and Alternate 2. • Confirmation of Alignment Alternative Selection: – A contingency plan will be developed in case Alternative 2 is not buildable due to archeological or environmental issues. – A due diligence field review is scheduled for the spring to allow for a visual inspection for any unknown graves in the alignment corridor. • Watershed Update: – Watershed Board can act as a forum for disagreement between agencies. – Agencies with stormwater permitting authority will continue to be contacted.
11	February 25, 2016	• Structure Type Analysis Update: – It was generally agreed that haunched girders will provide an aesthetic advantage over prismatic beams. – Profiles will be reviewed to keep the high point as close to the international border as practical. • International Construction Issues: – Calais/St. Stephen project can be used as a reference for permitting and documentation that is needed when moving forward. – Work with the local FHWA division staff to establish what is needed and what level of involvement they would like to have with this project.

Table 20: Important Decisions Summary (TAC Meetings) (Continued)

TAC Meeting #	Date	Summary of Important Discussions
12	March 24, 2016	• VE Study Status: – TAC members may be invited to provide information for other consideration. – Information provided to the VE participants will include previous decisions on alignment, structure type and procurement options. • Structure Type Analysis: – TAC members decided that the 4-span option should be dropped from further consideration. • Agency Coordination: – The GSA will review the preferred design layout with the CBP and provide comments regarding impacts to their services and property. – The GSA will provide their design guidelines for use in plan development. • Public Meeting #3: – At the next PIM/PIC, the preferred alternative for the alignment and the bridge will be presented to the public for comments.
13	May 4, 2016	• Structure Type Analysis: – Preferred bridge type refinement discussion included advantages and disadvantages for three bridge types. – Technical decisions to be made by TAC; aesthetic decisions to be decided by PAC members. – TAC members decided to drop the 4-span option from further consideration. – Hydraulics - No significant issues with water levels and no significant differences found between 5-span and 4-span option. • Agency Coordination: – Remaining in contact with Rainy Lake of the Woods Watershed District/MnDNR/MPCA. – Meeting with GSA staff brought GSA up-to-speed on the project and provided the opportunity to ask questions. GSA raised concerns about site lines and potential implications regarding landscape. – CEAA will review draft project description. Different permits and processes should be included in project description. – Decision to be made on whether a Federal EA needs to be completed. • Public Meeting #3: – Preferred alternative for alignment will be presented to the public for comments.
14	May 4, 2016	• Design Standards: – List of design criterial to be combined from different sources and will be sent to MTO/MnDOT for review. • Agency Coordination: – Meeting with City of Baudette to discuss park impacts and potential tree removal. De minimis approach will be used whenever possible. – Park may be open during construction, or may be used as a staging area for construction.
15	June 22, 2016	• Design Criteria: – Review of concrete, steel and decks within the MnDOT and MTO material requirements technical memorandum. • Border Delineation Package Ideas: – Three concepts will be presented to the PAC. • Geotechnical Permit Requirements: – USACE and MnDNR will not be issuing permits for the project, but will review EA and other documents as they are available.

Table 20: Important Decisions Summary (TAC Meetings) (Continued)

TAC Meeting #	Date	Summary of Important Discussions
16	August 2, 2016	• Updates on Aesthetics/PAC – Aesthetics were reviewed with the PAC and recommendations will be carried into final design • Final Design Decision Discussion and Requirements • Operations and Maintenance Tech Memo Outline • Contractor Pre-Qualification and Coordination • Buy America Status • Upcoming Agency Webinar

17	September 14, 2016	• Final Design Status
		• Hydraulic Analysis Discussion
		• Bridge and Approach Lighting
		• Operations and Maintenance Tech Memo
		• Agency Coordination
		  – Lighting standards and fixtures will be sent to MnDNR for review and sent to MnDOT Aeronautics
		  – U.S. Army Corps of Engineers will be looking for hydraulic report and wetland impact memo
		• Webinar Summary
		• Update on Aesthetics
		• Buy America Status

18	October 27, 2016	• Final Design Process and Status • Update on the Contractor Information Guide • Update on Environmental Assessment Documents
19	December 8, 2016	• Bridge Aesthetics Discussion • Final Design Process and Status • Contractor Information Guide & Pre-Qualifications • Update on Environmental Assessment Documents • Preliminary Bridge Plans • Bridge Standard Items • Foundation Review/Report • Coast Guard Update • Operations and Maintenance Memo Review Update • Stormwater Management/Hydraulics
20	January 11, 2017	• Bridge Aesthetics Discussion • Final Design Process and Status • Contractor Pre-Qualification Update • Update on Environmental Assessment Documents • Update on Preliminary Bridge Plans • Construction Materials • Port of Entry Construction “Wish Lists” • Foundation Report Status • Coast Guard Update • Operations and Maintenance Memo Review Update • Stormwater Management/Hydraulics • Lighting Update

5.2.3 Facilitated Bridge Discussions

Facilitated Bridge Discussions (FBD) were used as part of the alternative development process to coordinate with specialized agency staff and allow the TAC meetings to focus on decision-making information. The FBD were attended by project team members; specifically, MnDOT, MTO, and consultant Bridge Engineers. To date, a total of 3 FBD meetings have been held. The important decisions from these meetings are outlined in Table 21 below.

Table 21: Important Discussions Summary (FBD)

FBD #	Date	Summary of Important Discussions
1	June 19, 2015	• The objective of the meeting was to define the alternative evaluation criteria: – Potential evaluation criteria presented included navigational clearance (vertical and horizontal), scour, aeronautical clearance, Peace Park (Section 4(f)) impacts, constructability, Ports of Entry operations, procurement and delivery method, equipment required, and cost. • Bridge Engineer on the project team presented 12 Bridge Type Alternatives and narrowed this list to the 5 most feasible alternatives.
2	October 15, 2015	• The objective of the meeting was to present up to 5 alternatives. – The 5 alternatives from the alternative screening process (See Section 3.3.2 Evaluation of Bridge Type Alternatives) were presented so that a recommendation could be made at TAC 7 regarding which 2-3 alternatives would be moved into the alternative refinement phase. • Guidance from the USCG and Transport Canada was discussed regarding navigational channel constraints on the bridge design.
3	January 20, 2016	• The objective of the meeting was to select 2-3 alternatives for additional evaluation. – Updates to the evaluation matrix were discussed which led to the: ▪ elimination of Bridge Type Alternatives C, D, and E, and ▪ development of new evaluation criteria for Phase 3: Alternative Refinement for the remaining alternatives, Alternatives A and B.

5.2.4 Federal Highway Administration (FHWA)

In addition to participating in the PAC/TAC meetings, the FHWA has been actively engaged throughout the process to discuss ongoing federal considerations, share relevant information, and to ensure all Federal regulations and guidelines were appropriately accounted for and incorporated into the project development process.

5.2.5 Other Agency Coordination & Meetings:

5.2.5.1 U.S. Army Corps of Engineers

See Section 4.1.11 (Water Resources) regarding wetland delineation approval and permitting coordination.

5.2.5.2 U.S. Customs and Border Protection

The U.S. Customs and Border Protection assisted the proposed project effort by participating in representative interviews and onsite inspections (see Section 4.1.12, Contamination/Hazardous Materials/Wastes), and providing traffic data. The U.S. Customs and Border Protection also actively participated in the TAC.

5.2.5.3 U.S. Coast Guard (USCG)

See Section 4.3.11 (Rainy River and Baudette River Navigational Traffic Impacts) for information on the November 13, 2015 meeting with USCG.

The project team also met with the USCG on November 16, 2016 to discuss the USCG Section 9 permit and its July 2016 update. As a result of this meeting, the USCG agreed to let the project team apply for the previous version of the Section 9 permit.

5.2.5.4 U.S. State Department

A tele-conference meeting with the U.S. State Department was held on February 23, 2016 to identify and discuss future agreements between the U.S. and Canada that would be needed to facilitate construction, operation, and maintenance of the proposed bridge.

The U.S. State Department is also coordinating with Global Affairs Canada to determine the need to pursue approval through the International Joint Commission (IFC).

5.2.5.5 City of Baudette

The City of Baudette is the official with jurisdiction over Peace Park. MnDOT and the City have discussed the proposed project's impacts to the Park and are currently coordinating the Section 4(f) De Minimis Impact Finding. See Section 4.1.14 (Historic Properties) and Section 4.3.6.2 (Additional Federal Issues – Section 4(f) Resources – Peace Park).

5.2.5.6 The State of Minnesota Historic Preservation Office (MnHPO)

See Section 4.1.14 (Historic Properties).

5.2.5.7 Federal Aviation Administration (FAA)

See Section 4.3.10 (Aviation).

5.2.5.8 Tribal Coordination

On behalf of FHWA's Section 106 review process, MnDOT contacted Tribal Representatives to determine whether the proposed project would have any historical, cultural, and/or archaeological impact. As a result, it was determined that there are no native tribes associated with the U.S. side of the project.

5.2.5.9 International Joint Commission (IJC)

The Project falls under the *International Boundary Waters Treaty Act* which is internationally administered by the International Joint Commission (IJC). The Act is intended, in part, to address disputes regarding water quality and quantity in boundary waters. The governments of Canada and the U.S. have a mutual obligation with respect to implementing the Act. Through meetings and correspondence, a Special Agreement between governments will be prepared to cover all of the potential effects and mitigation of changes to levels and flow of the Rainy River as a result of the project and construction. This Special Agreement would circumvent the IJC review process and no further approvals would be required from the IJC.

5.2.5.10 International Boundary Commission (IBC)

Through discussions with officials of the International Boundary Commission (IBC), it was determined that authorization and approval from the IBC is required for work within 10 feet (3 m) of the border and a construction permit application will be submitted to the IBC during the Detail Design stage of this Project.

5.2.5.11 MnDNR

See Section 4.1.13 (Fish/Wildlife/Ecological Resources) and Section 4.3.13 (Federal Threatened and Endangered Species).

5.2.5.12 Baudette City Council

5.2.5.13 Emergency Service Providers (Both Rainy River and Baudette)

Emergency service providers and agencies will be notified of start of Detail Design (i.e., staging etc.) and construction phases to minimize impacts to emergency response times during and after construction. Providers and agencies to be contacted include local police and fire departments, emergency medical personnel (i.e., ambulances and Baudette Regional Airport for medical airlift support), and local hospitals.

5.3 EXTERNAL AGENCY COORDINATION

5.3.1 International Stakeholder Webinar #1

International Stakeholder Webinar (ISW) 1 was held on Thursday, December 10, 2015. The purpose of the ISW 1 was to:

- Introduce the project to key stakeholders and agencies;
- Review project bridge and alignment alternatives;
- Discuss status of U.S. and Canadian permits and approvals; and,
- Provide an opportunity for agencies to provide input to the study and for interagency discussion.

5.3.2 International Stakeholder Webinar #2

ISW 2 was held on Wednesday, March 2, 2016. The purpose of ISW 2 was to:

- Provide an update of project bridge and alignment alternatives;
- Review the evaluation of alternatives and tentatively preferred alternatives;
- Discuss status of U.S. and Canadian permits and approvals; and,
- Provide an opportunity for agencies to provide input to the study and for interagency discussion.

5.3.3 International Stakeholder Webinar #3

ISW 3 was held on Thursday, August 11, 2016. The purpose of ISW 3 was to:

- Provide project updates to key stakeholders and agencies;
- Clarify U.S. and Canadian permits and approval requirement; and,
- Provide an opportunity for agencies to provide input to the study and for interagency discussion.

5.4 PUBLIC PARTICIPATION

5.4.1 Public Involvement Meeting #1

Public Involvement Meeting 1 (PIM1) was held on June 24, 2015 in the Lake of the Woods Ambulance Garage. The purpose of the PIM was to:

- Display and seek input on the existing conditions in the project area (i.e. natural, social, economic, and cultural);
- Provide study background information; and
- Answer questions about the project and the study.

The PIM was held in an Open House format. Representatives of the project team were available to discuss the study, answer questions, and receive input on the study. Attendees included representatives from Lake of the Woods County, MnDOT, Northern Light Region newspaper, the Mayor of Baudette, and private citizens. Items discussed at PIM1 included:

- Welcome
- Introduction
- Coordination
- Study Process
- Background
- Need for the Project
- Existing Conditions
- Evaluation Process
- Investigations
- Your Input is Important

Two comment forms were received after the meeting, discussing bridge aesthetic concerns, impacts to local businesses, and impacts to traffic using the bridge.

5.4.2 Public Involvement Meeting #2

Public Involvement Meeting 2 (PIM2) was held on Wednesday, October 28, 2015 in the Lake of the Woods Ambulance Garage. The purpose of the PIM was to:

- Provide an opportunity to review the preliminary evaluation criteria;
- Provide an opportunity to review preliminary alignment and structure alternatives;
- Provide comments; and,
- Address questions or concerns directly with representatives of the project team.

Items discussed at PIM2 included:

- Welcome
- Objectives
- Background
- Study Process
- Coordination
- Need and Justification
- Alignment Alternative 1
- Alignment Alternative 2
- Alignment Alternative 3
- Bridge Alternatives
- Existing Conditions
- Investigations
- Preliminary Evaluation Criteria
- Your input is important

One comment form was received after the meeting, discussing bridge alignment and structure alternative preferences.

5.4.3 Public Involvement Meeting #3

The third Public Meeting was held on Wednesday, May 25, 2016 at the Lake of the Woods Ambulance Garage. The purpose of Public Meeting 3 (PIM3) was to:

- Display and seek input on the Preferred Plan;
- Present and seek input on the results of the evaluation of alternatives; and
- Answer questions about the study.

The Public Meeting was advertised in the Northern Light Region newspaper on Wednesday, May 18, 2016. In addition, notification letters were mailed to external agencies, stakeholders, impacted property owners and the general public on Friday, May 20, 2016.

The following information was displayed at the Public Meeting:

- Welcome
- Objectives
- Background
- Study Process
- Coordination
- Need and Justification
- Existing Conditions
- Alignment Alternatives Evaluation
- Bridge Alternatives Evaluation
- Investigation
- Preferred Plan
- Preferred Plan Visualizations
- Historic Bridge Construction and Proposed Video
- Mitigation and Protection Commitments
- Your input is Important

Two comments were received after the meeting discussing preferences over bridge aesthetic, international boundary monument, and bridge lookout.

5.5 ONGOING COMMUNICATION

5.5.1 Website

A project website was established and maintained on the MnDOT website, located here: (www.dot.state.mn.us/baudette-bridge). Website materials include a project overview and schedule, updated status reports, maps, graphics, design concepts, PAC/TAC meeting notes and presentations, opportunities for public comment, and other elements as appropriate to build understanding of the proposed project. MTO, the City of Baudette and the Town of Rainy River also have webpages about the project on their home sites, which links to the MnDOT website.

5.5.2 Newsletters, Project Updates, and Fact Sheets

Project updates in the form of e-newsletters, printed newsletters and flyers, and fact sheets were provided to key stakeholders, the media, and general public. Newsletters were made available through the project website, the PIC/PIM meetings, PAC/TAC members, and other public locations where they could be posted for viewing. Mailings were sent to local residents and business owners which included detailed project updates and upcoming public meeting information.

These documents informed stakeholders about the project needs and goals, kept stakeholders apprised of new information and milestones, announced upcoming project meetings and events, and shared project conclusions and decisions.

5.6 PERMITS AND APPROVAL REQUIREMENTS

See Section 4.1.8 (Permits and Approvals Required).

5.7 PUBLIC COMMENT PERIOD AND PUBLIC HEARING

Comments from the public and agencies affected by this project are requested during the public comment period described on the transmittal letter distributing this Environmental Assessment. A combined public informational meeting/public hearing will be held after this Environmental Assessment has been distributed to the public and to the required and interested federal, Native American Tribes, state, and local agencies for their review.

At the informational meeting/public hearing, preliminary design layouts for the alternatives under consideration along with other project documentation will be available for public review. The public will also be given the opportunity to express their comments, ideas, and concerns about the proposed project. These comments will be received at the hearing and during the remainder of the comment period, and will become a part of the official hearing record.

5.8 REPORT DISTRIBUTION

Copy(ies) of this document have been sent to agencies, local government units, libraries, and others as per Minnesota Rule 4410.1500 (Publication and Distribution of an EAW).

5.9 PROCESS BEYOND THE HEARING

Following the comment period, MnDOT and the FHWA will make a determination as to the adequacy of the environmental documentation. If further documentation is necessary it could be accomplished by preparing an Environmental Impact Statement (EIS), by revising the Environmental Assessment, or clarification in the Findings of Fact and Conclusion, whichever is appropriate.

When the environmental documentation is determined adequate, MnDOT will choose a project alternative, either the No Build or one of the alternatives under consideration.

If an EIS is not necessary, MnDOT will prepare a "Negative Declaration" for the state environmental requirements. MnDOT will also prepare a request for a "Finding of No Significant Impacts" (FONSI) that will be submitted to the FHWA. If the FHWA agrees that this finding is appropriate, it will issue a FONSI.

Notices of the federal and state decisions and availability of the above documents will be placed in the Federal Register and the Minnesota Environmental Quality Boards (MEQB) Monitor. MnDOT will also distribute the Negative Declaration and FONSI to the Environmental Assessment Worksheet (EAW) distribution list.

APPENDICES

Appendix A– FIGURES

Figure 9: Location Options Overview

Figure 10: Alignment Alternative 1 (Downstream of Existing Alignment)

Figure 11: Alignment Alternative 2 (Upstream of Existing Alignment)

Figure 12: Alignment Alternative 3 (Same Location Alignment as Existing)

Figure 13: Bridge Type Example Photos

Figure 14: Alternative A1 Plans – Continuous Steel I-Girder, 5 Spans

Figure 15: Bridge Type Alternative Selection Flow Chart

Figure 16: Preferred Alternative – United States Approach Plan

Figure 17: Preferred Alternative – Canada Approach Plan

Figure 18: Preferred Alternative – Plan and Profile

Figure 19: Preferred Alternative – Typical Sections

Figure 20: Flood Zones

Figure 21: Soils Map (USCS)

Figure 22: Depth to Bedrock (MGS)

Figure 23: Bedrock Elevation (MGS)

Figure 24: Public Waters

Figure 25: Impaired Waters

Figure 26: Wetland Location Map

Figure 27: Aquatic Impacts

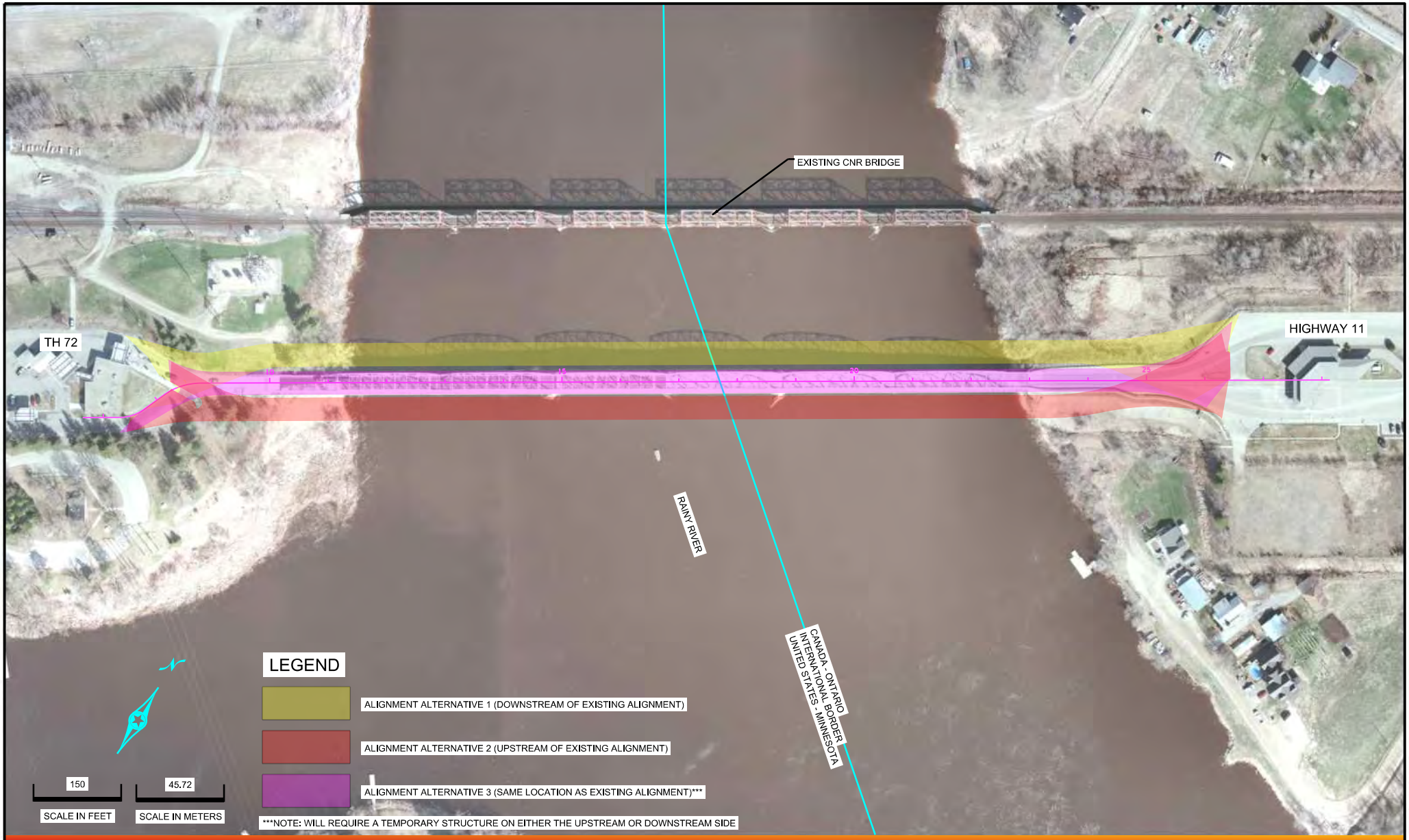
- Figure 27A – Aquatic Impacts – USACE Section 404
- Figure 27B – Aquatic Impacts – MnDNR Protected Waters & WCA

Figure 28: Land Cover Types (NLCD 2011)

Figure 29: Peace Park – 4(f) Impacts

Figure 30: Right of Way Map

Figure 31: Environmental Justice Study Area



MINNESOTA DEPARTMENT OF TRANSPORTATION AND ONTARIO MINISTRY OF TRANSPORTATION

FIGURE 9

BAUDETTE/RAINY RIVER INTERNATIONAL BRIDGE REPLACEMENT

ALIGNMENT ALTERNATIVES OVERVIEW

DATE: 09/12/2016

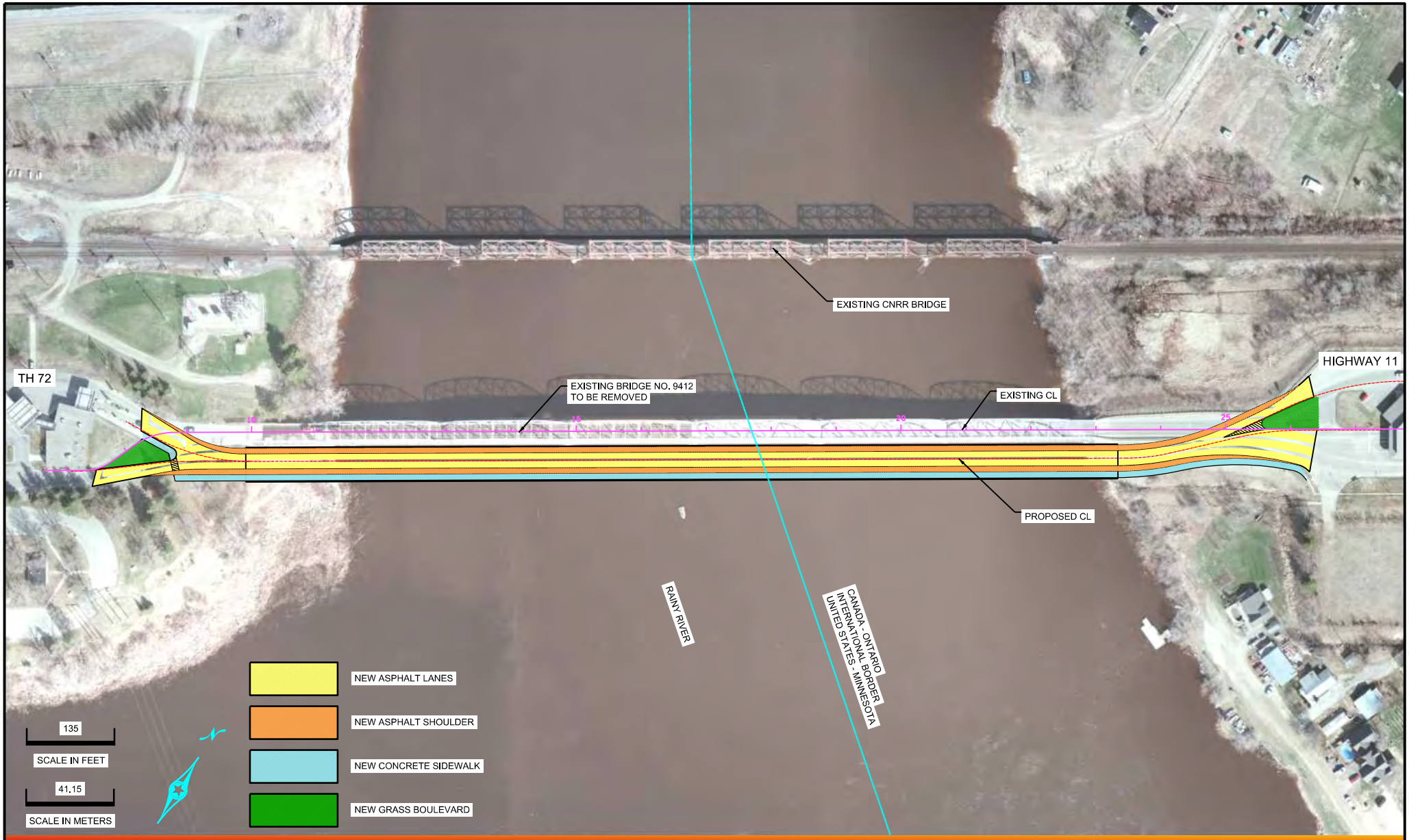
PROJ. NO. 193802870

MINNESOTA DEPARTMENT OF TRANSPORTATION AND MINISTRY OF TRANSPORTATION ONTARIO
BAUDETTE/RAINY RIVER INTERNATIONAL BRIDGE REPLACEMENT
ALIGNMENT ALTERNATIVE 1 (DOWNSTREAM OF EXISTING ALIGNMENT)

FIGURE 10

DATE: 05/04/2016

PROJ. NO. 193802870



MINNESOTA DEPARTMENT OF TRANSPORTATION AND MINISTRY OF TRANSPORTATION ONTARIO
BAUDETTE/RAINY RIVER INTERNATIONAL BRIDGE REPLACEMENT
ALIGNMENT ALTERNATIVE 2 (UPSTREAM OF EXISTING ALIGNMENT)

FIGURE 11

DATE: 05/04/2016

PROJ. NO. 193802870

MINNESOTA DEPARTMENT OF TRANSPORTATION AND MINISTRY OF TRANSPORTATION ONTARIO
BAUDETTE/RAINY RIVER INTERNATIONAL BRIDGE REPLACEMENT
ALIGNMENT ALTERNATIVE 3 (SAME LOCATION ALIGNMENT AS EXISTING)

FIGURE 12

DATE: 05/04/2016

PROJ. NO. 193802870

Plot Date: 08/17/2016 - 2:39pm
Drawing Name: V:\13938\active\193802870\Environmental\MnDOT\PM3\Displays\Baudette MnDOTTB-17x11-L.dwg
Xrefs:

A Continuous Steel I-Girder Superstructure

Camden Bridge, Minneapolis, MN

Characteristics:

a. Structural elements below deck require a higher roadway elevation
b. Structure type is common in Minnesota and Ontario
c. Construction can be performed using common techniques

B Simple-Span Precast/Prestressed I-Girder Superstructure

Belleair Beach Causeway Bridge, Belleair Beach, FL

Characteristics:

a. Structural elements below deck require a higher roadway elevation
b. Structure type is common in Minnesota and Ontario and standardized shapes exist
c. Construction can be performed using common techniques

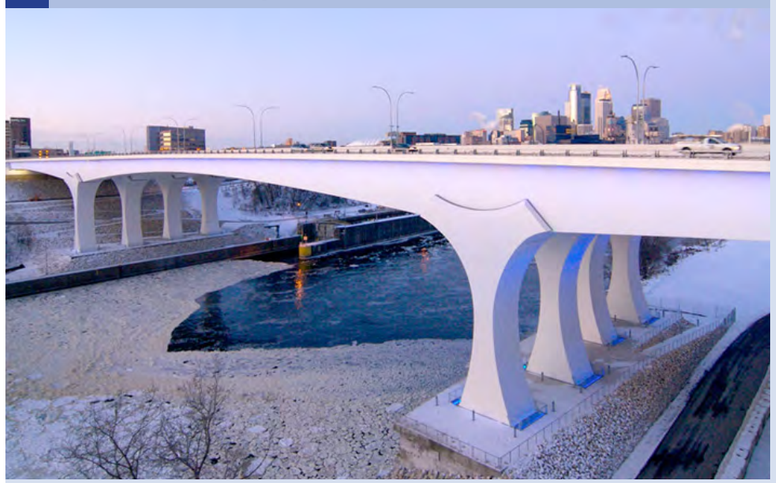
C Continuous Steel Box Girder Superstructure

Brigittenauer Bridge in Vienna Austria built 1982

Characteristics:

a. Structural elements below deck require a higher roadway elevation
b. Shape allows for construction of longer spans
c. Construction can be performed using common techniques

D Segmental Concrete Box Girder



I-35W Saint Anthony Falls Bridge, Minneapolis, MN

Characteristics:

a. Structural elements below deck require a higher roadway elevation
b. Shape allows for construction of longer spans
c. May require a specialty contractor to construct and/or inspect

E Tied Arch Main Span with Precast/Prestressed I-Girder Approaches

Blennerhassett Bridge, Belpre, OH & Parkersburg, WV

Characteristics:

a. Structural elements above deck allow for a lower roadway elevation
b. May result in the most piers in the river
c. May require a specialty contractor to construct and/or inspect

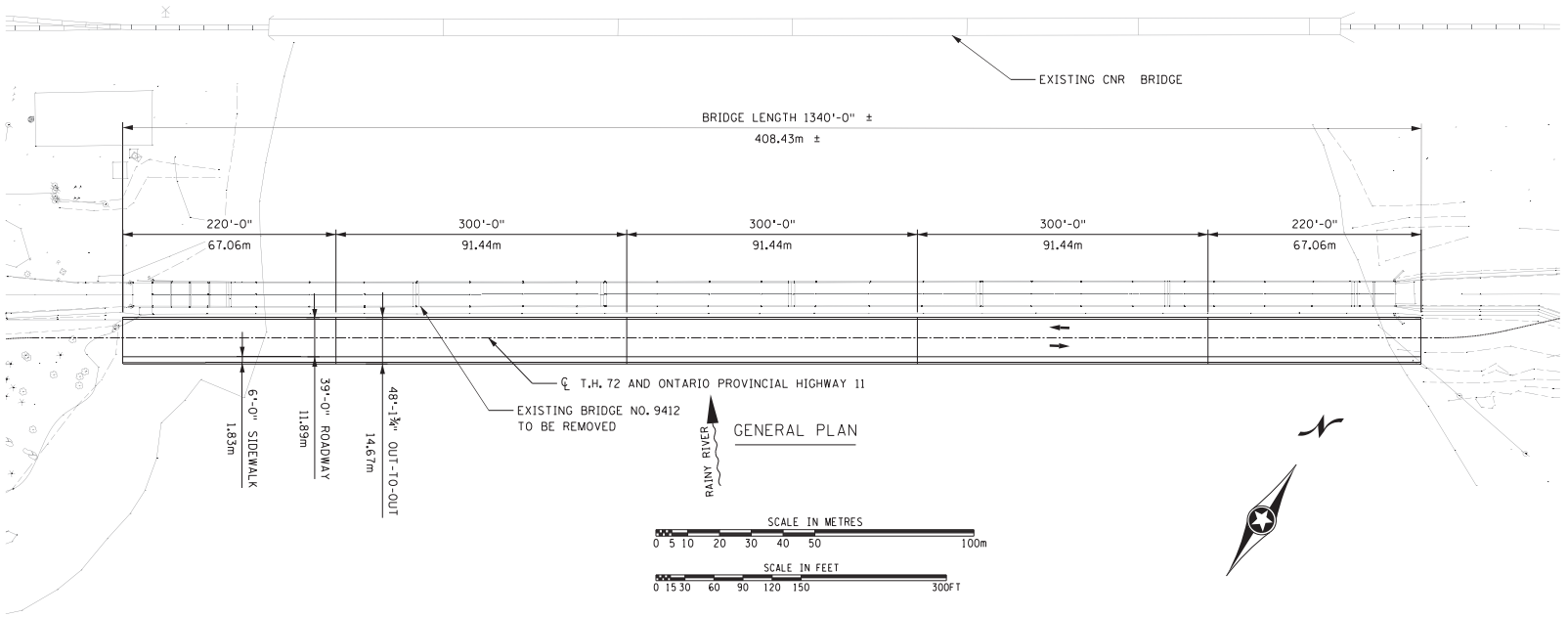
BRIDGE TYPE EXAMPLE PHOTOS

MINNESOTA DEPARTMENT OF TRANSPORTATION AND MINISTRY OF TRANSPORTATION ONTARIO

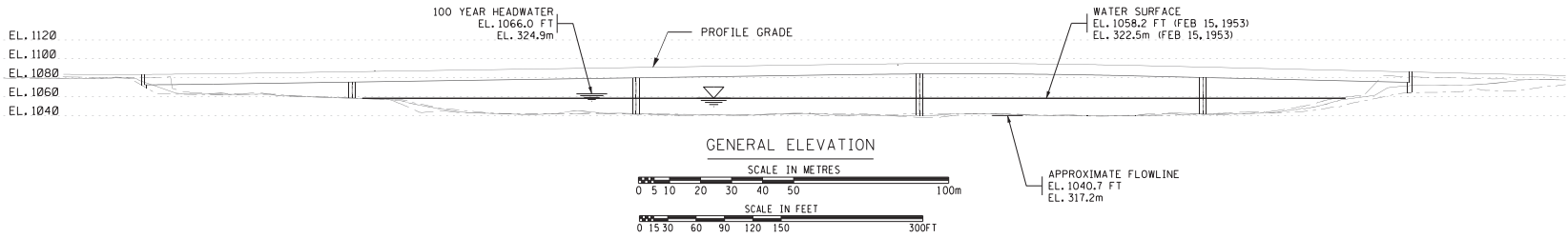
BAUDETTE/RAINY RIVER INTERNATIONAL BRIDGE

FIGURE 13

DATE: AUGUST 2016 PROJ. NO.: 193802870



NOTES:
VERTICAL DATUM FOR ALL SHEETS:
N.A.V.D. 88 ADJ.
HORIZONTAL DATUM FOR ALL SHEETS:
NAD 83 ADJUSTED



EXISTING GROUND PROFILE
20' LT. – – – – –
℄ T.H. 72 ————
20' RT. —— —— ——

DEPTH OF STRUCTURE:
10'-8⅝" (3.27m) GUTTER TO LOW BRIDGE
109" (2.77m) STEEL PLATE GIRDER
4 LINES

DESIGN DATA

2014 AND CURRENT INTERIM AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS
CHBDC 2006 (CAN/CSA S6-06)

LOAD AND RESISTANCE FACTOR DESIGN METHOD
HL93 LIVE LOAD (CL-625-ONT LIVE LOAD)

DEAD LOAD INCLUDES 20 PSF (1.0 kN PER SQ. METRE) ALLOWANCE FOR FUTURE WEARING COURSE MODIFICATIONS

MATERIAL DESIGN PROPERTIES*:
REINFORCED CONCRETE:
f'c = 4 KSI OR 30 MPA n = 8
fy = 60 KSI OR 400 MPA REINFORCEMENT

PRESTRESSED CONCRETE:
f'c = 9 KSI OR 60 MPA n = 1
fpu = 270 KSI OR 1,860 MPA LOW RELAXATION STRANDS 0.75 fpu FOR INITIAL PRESTRESS

STRUCTURAL STEEL:
fy = 50 KSI OR 350 MPA SPEC 3309 (PAINTED)

DESIGN SPEED:
OVER = 35 MPH (56 KPH)

APPROXIMATE DECK AREA 64,515 SQ FT
(5,994 SQ METRES)

2038 PROJECTED TRAFFIC VOLUMES

ROADWAY OVER	
1,450	A.D.T.
287	D.H.V.
109	A.D.T.T.

LIST OF SHEETS

SHEET NO.	DESCRIPTION
1	GPE (PRISMATIC)
2	GPE (HAUNCHED)
3	TYPICAL BRIDGE CROSS SECTION
4	BEAM ELEVATION
5	NAVIGATION SPAN
6	PIER DETAILS

* U.S. CUSTOMARY AND METRIC MATERIAL PROPERTIES PROVIDED. DESIGN SHALL ALLOW FOR EITHER MATERIAL

PROPOSED TYPE OF STRUCTURE

DECK:
109" (2.77m) STEEL PLATE GIRDER
10¼" (260mm) CONCRETE DECK

SUBSTRUCTURE:
PARAPET ABUTMENTS SUPPORTED ON XXX
CONCRETE PIERS SUPPORTED ON XXX

MINNESOTA DEPARTMENT OF TRANSPORTATION
MINISTRY OF TRANSPORTATION - ONTARIO

NEW RAINY RIVER INTERNATIONAL CROSSING

RAINY RIVER UNDER T.H. 72/ ONTARIO PROVINCIAL HIGHWAY 11
MTO SITE 45-110
STATE PROJECT NO. 3905-09

ALTERNATE **A1**
CONTINUOUS STEEL I-GIRDER
5 SPANS

HNTB | Stantec

FIGURE 14 - SHEET NO. 1 OF 6 SHEETS

MX	CTW
TFK	AJN

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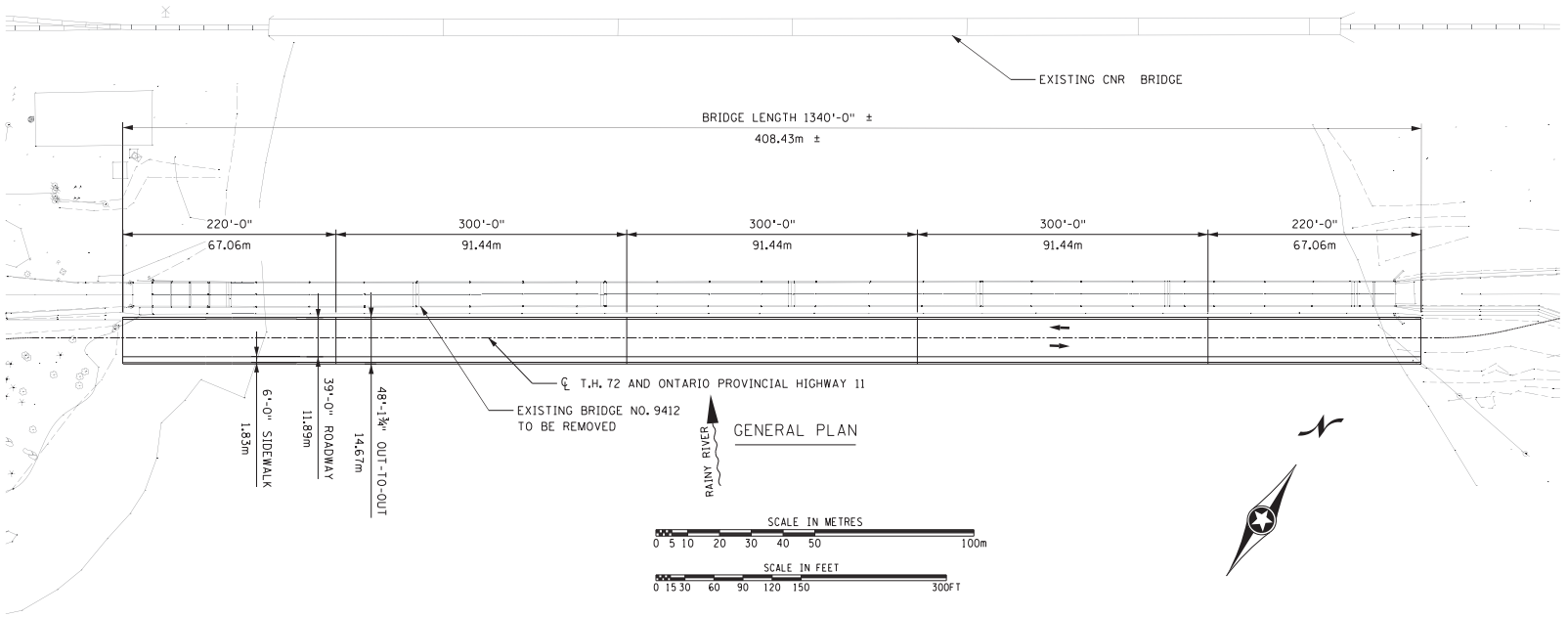
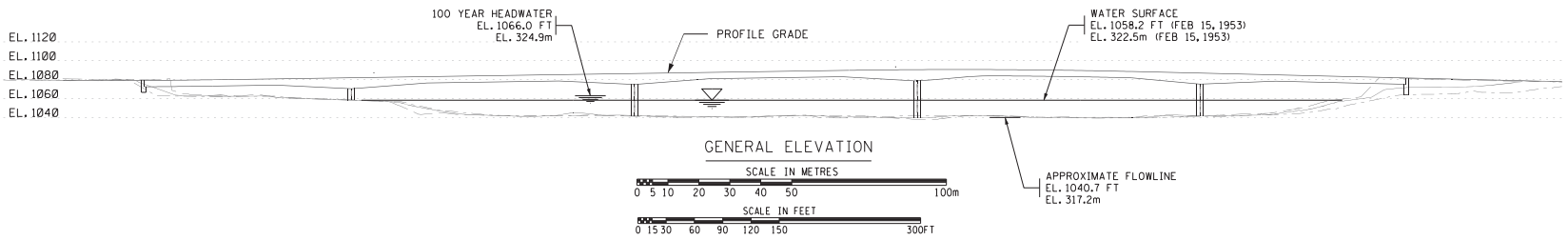


NOTE: HAUNCHED ALTERNATIVE SHOWN CAN BE FURTHER DEVELOPED IF DESIRED FOR AESTHETICS.



NOTES:
VERTICAL DATUM FOR ALL SHEETS:
N.A.V.D. 88 ADJ.
HORIZONTAL DATUM FOR ALL SHEETS:
NAD 83 ADJUSTED

EXISTING GROUND PROFILE
20' LT. – – – – –
℄ T.H. 72 ————
20' RT. —— —— ——

DEPTH OF STRUCTURE:
13'-1½" (4.00m) GUTTER TO LOW BRIDGE
80" (2.03m) TO 140" (3.56m) VARIABLE DEPTH WELDED STEEL PLATE GIRDER 4 LINES

DESIGN DATA

2014 AND CURRENT INTERIM AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS
CHBDC 2006 (CAN/CSA S6-06)

LOAD AND RESISTANCE FACTOR DESIGN METHOD
HL93 LIVE LOAD (CL-625-ONT LIVE LOAD)

DEAD LOAD INCLUDES 20 PSF (1.0 kN PER SQ. METRE) ALLOWANCE FOR FUTURE WEARING COURSE MODIFICATIONS

MATERIAL DESIGN PROPERTIES*:
REINFORCED CONCRETE:
f'c = 4 KSI OR 30 MPA n = 8
fy = 60 KSI OR 400 MPA REINFORCEMENT

PRESTRESSED CONCRETE:
f'c = 9 KSI OR 60 MPA n = 1
fpu = 270 KSI OR 1,860 MPA LOW RELAXATION STRANDS 0.75 fpu FOR INITIAL PRESTRESS

STRUCTURAL STEEL:
fy = 50 KSI OR 350 MPA SPEC 3309 (PAINTED)

DESIGN SPEED:
OVER = 35 MPH (56 KPH)

APPROXIMATE DECK AREA 64,515 SQ FT (5,994 SQ METRES)

2038 PROJECTED TRAFFIC VOLUMES

ROADWAY OVER	
1,450	A.D.T.
287	D.H.V.
109	A.D.T.T.

LIST OF SHEETS

SHEET NO.	DESCRIPTION
1	GPE (PRISMATIC)
2	GPE (HAUNCHED)
3	TYPICAL BRIDGE CROSS SECTION
4	BEAM ELEVATION
5	NAVIGATION SPAN
6	PIER DETAILS

* U.S. CUSTOMARY AND METRIC MATERIAL PROPERTIES PROVIDED. DESIGN SHALL ALLOW FOR EITHER MATERIAL

PROPOSED TYPE OF STRUCTURE

DECK:
VARIABLE DEPTH STEEL PLATE GIRDER
10¼" (260mm) CONCRETE DECK

SUBSTRUCTURE:
PARAPET ABUTMENTS SUPPORTED ON XXX
CONCRETE PIERS SUPPORTED ON XXX

MINNESOTA DEPARTMENT OF TRANSPORTATION
MINISTRY OF TRANSPORTATION - ONTARIO

NEW RAINY RIVER INTERNATIONAL CROSSING

RAINY RIVER UNDER T.H. 72/ ONTARIO PROVINCIAL HIGHWAY 11

MTO SITE 45-110
STATE PROJECT NO. 3905-09

ALTERNATE A1.2
CONTINUOUS STEEL I-GIRDER
5 SPANS

HNTB | Stantec

MX	CTW
TFK	AJN

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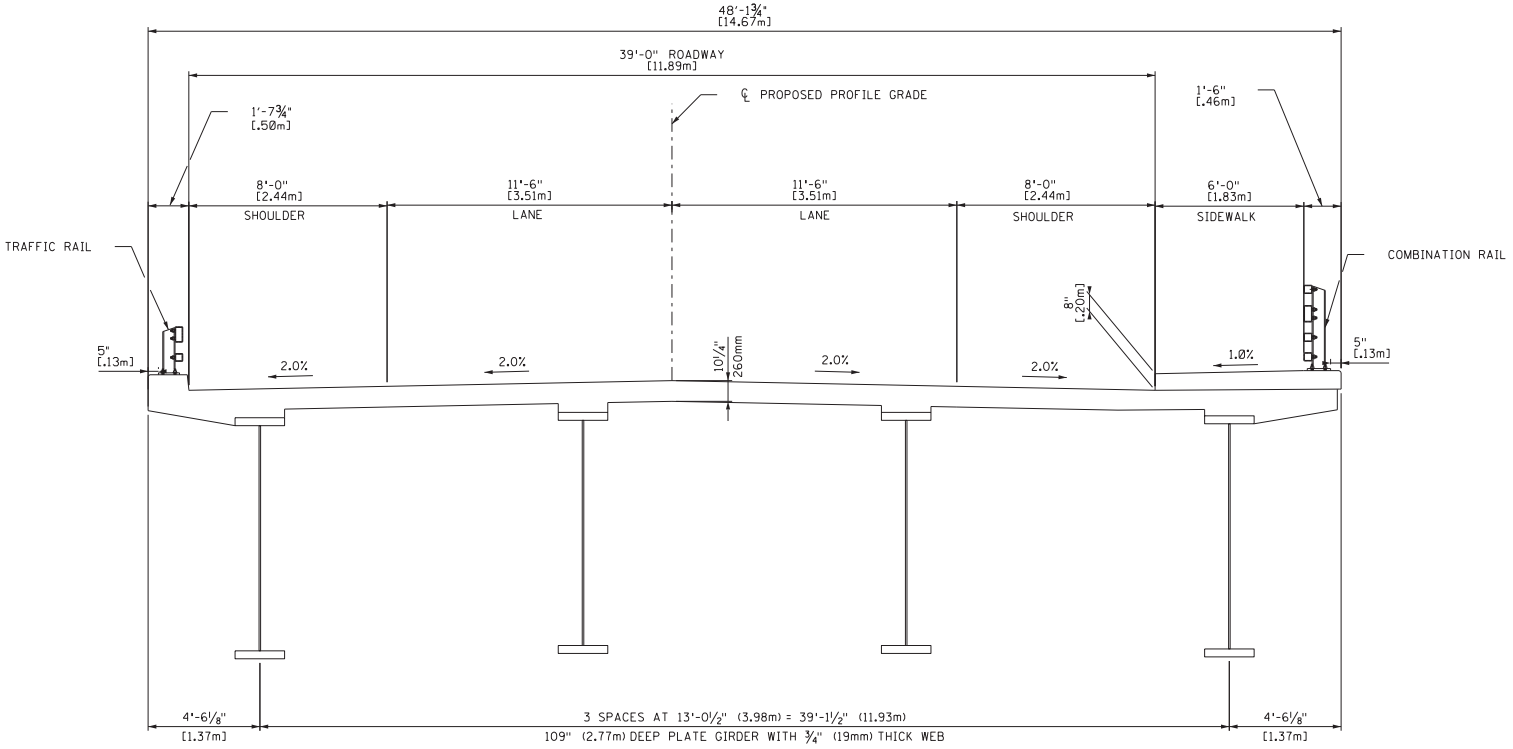

TRANSVERSE SECTION

SCALE IN FEET

0 4 8 12 16 20FT

SCALE IN METRES

0 0.5 1 1.5 2 2.5 5m

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TYPICAL BRIDGE CROSS SECTION	DR: CTW	CHK: AJN	NEW RAINY RIVER INTERNATIONAL CROSSING
	SHEET NO. 3 OF 6 SHEETS		

Plot Date: 08/17/2016 - 2:30pm
Drawing Name: V:\13938\active\193802870\Environmental\MnDOT\PM3\Displays\Baudette MnDOTTB-17x11-L.dwg
Xrefs:

A wide range of initial bridge structure types were selected for review. A preliminary analysis determined 5 alternatives to carry forward.

A Continuous Steel I-Girder Superstructure

B Simple-Span Precast/Prestressed Concrete I-Girder Superstructure

C Continuous Steel Box Girder Superstructure

D Continuous Concrete Box Girder

E Tied Arch Main Span with Precast/Pre-stressed Concrete I-Girder Approaches

ALTERNATIVE A1 - Steel I-Girder, 5 Span

ALTERNATIVE A2 - Steel I-Girder, 4 Span

ALTERNATIVE B - Concrete I-Girder

Steel I-Girder, 5 Span

Reasons Not Carried Forward:

a. Has minimal advantages over the continuous steel I-girder alternative

b. Higher design complexity

c. Increased construction risk

Reasons Not Carried Forward:

a. Deepest structure depth, resulting in increased grades and reduced sight distance on bridge compared to other alternatives

b. Higher design complexity

c. Specialized construction/increased construction risk

Reasons Not Carried Forward:

a. Reduced sight distance compared to other alternatives

b. Requires the most piers in the water compared to other structures, increasing risk in construction and environmental impacts

c. Increased complexity in design and maintenance

Reasons Not Carried Forward:

a. Increased construction complexity and risk compared to 5 span alternative

b. Would likely require eight temporary structures to support bridge segments during construction, compared to four segments with the 5 span alternative

c. The location of temporary structures would greatly reduce the navigational opening below the bridge during construction

Reasons Not Carried Forward:

a. Required the most substructures of remaining alternatives

b. Could limit the number of potential fabricators because of long beams required for structure

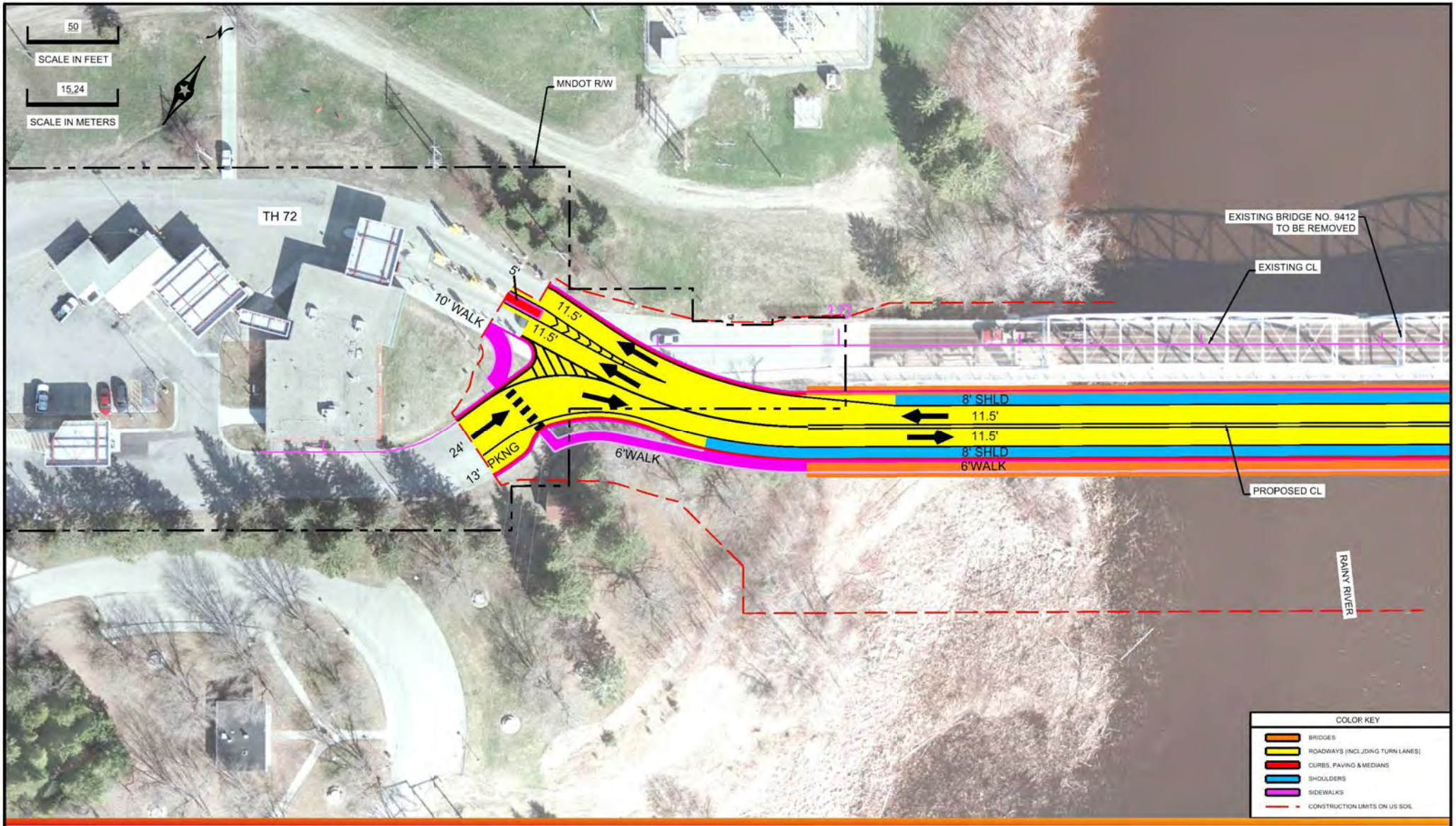
BRIDGE TYPE ALTERNATIVE SELECTION FLOW CHART

MINNESOTA DEPARTMENT OF TRANSPORTATION AND MINISTRY OF TRANSPORTATION ONTARIO

BAUDETTE/RAINY RIVER INTERNATIONAL BRIDGE

FIGURE 15

DATE: AUGUST 2016 PROJ. NO.: 193802870



PREFERRED ALTERNATIVE - UNITED STATES APPROACH PLAN

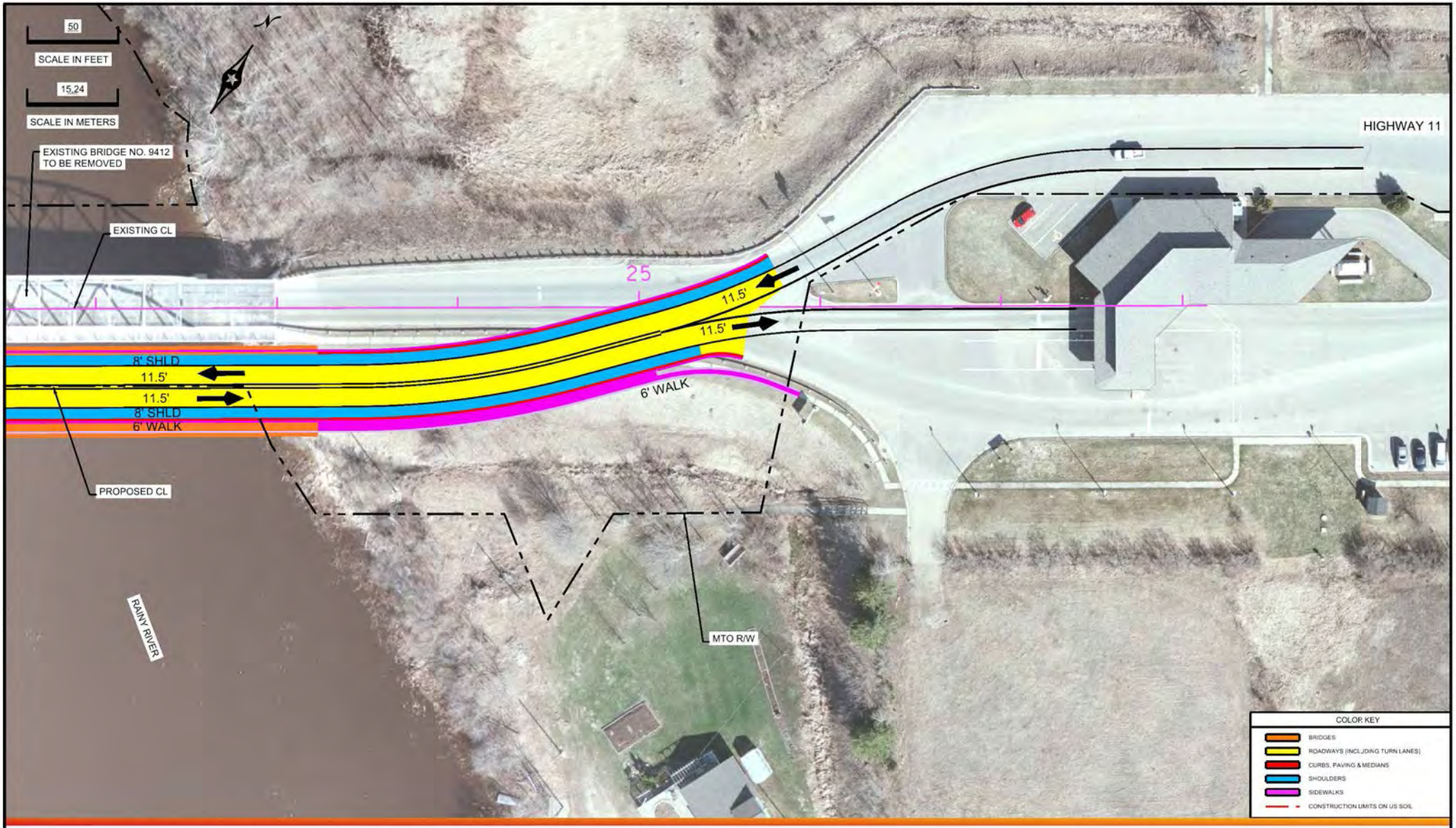
FIGURE 16

MINNESOTA DEPARTMENT OF TRANSPORTATION AND MINISTRY OF TRANSPORTATION ONTARIO

BAUDETTE/RAINY RIVER INTERNATIONAL BRIDGE REPLACEMENT

DATE: 01/09/2017

PROJ. NO. 193802870



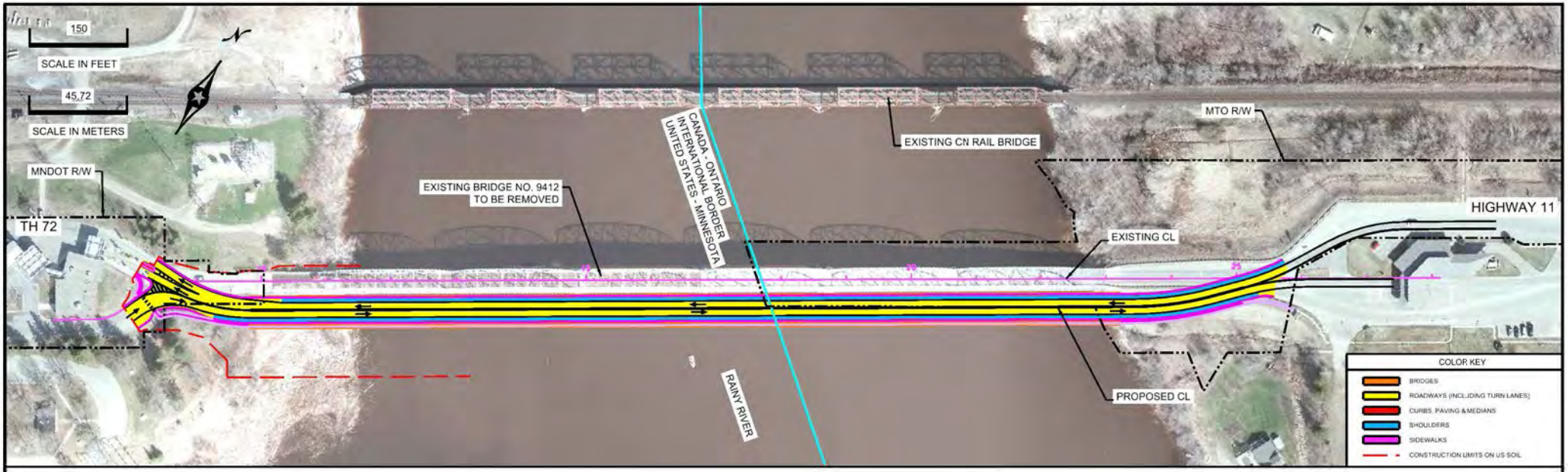
PREFERRED ALTERNATIVE - CANADA APPROACH PLAN

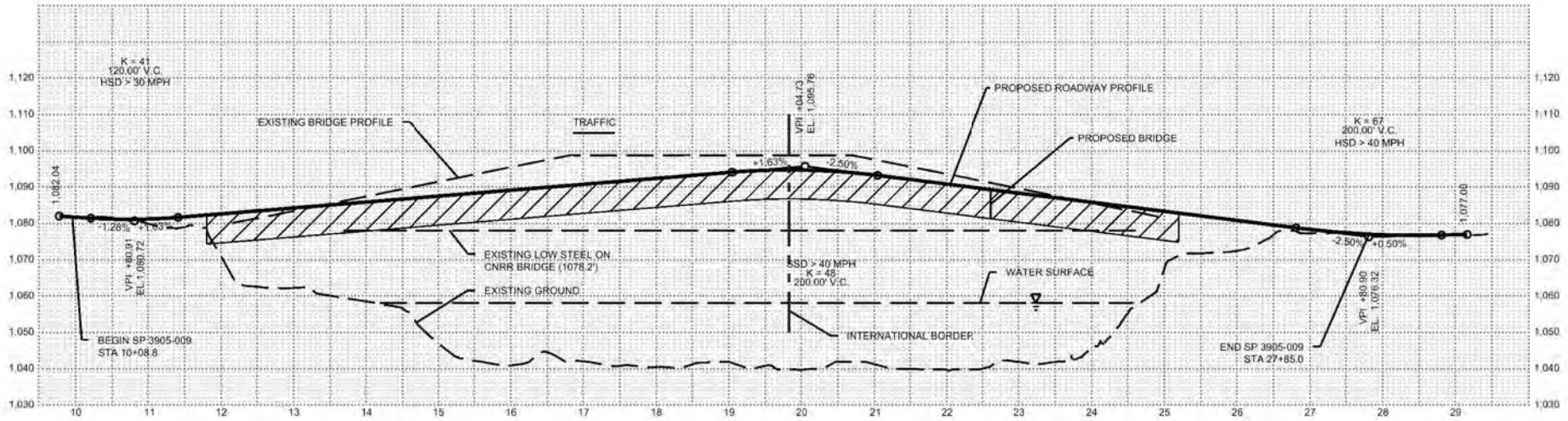
FIGURE 17

MINNESOTA DEPARTMENT OF TRANSPORTATION AND MINISTRY OF TRANSPORTATION ONTARIO

BAUDETTE/RAINY RIVER INTERNATIONAL BRIDGE REPLACEMENT

DATE: 01/09/2017 PROJ. NO. 193802870





PREFERRED ALTERNATIVE - PLAN AND PROFILE

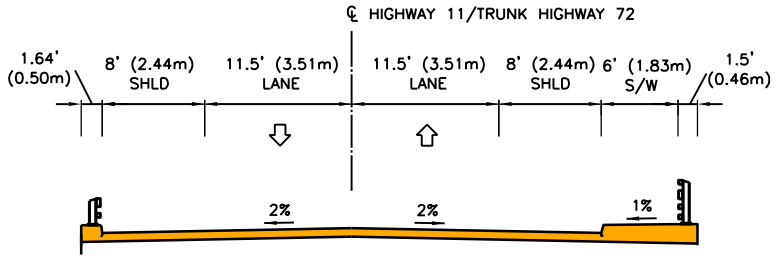
FIGURE 18

MINNESOTA DEPARTMENT OF TRANSPORTATION AND MINISTRY OF TRANSPORTATION ONTARIO

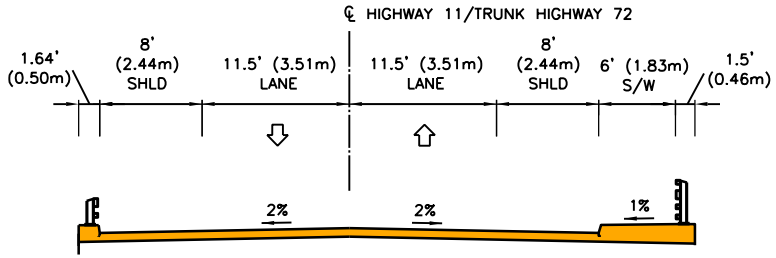
BAUDETTE/RAINY RIVER INTERNATIONAL BRIDGE REPLACEMENT

DATE: 01/09/2017

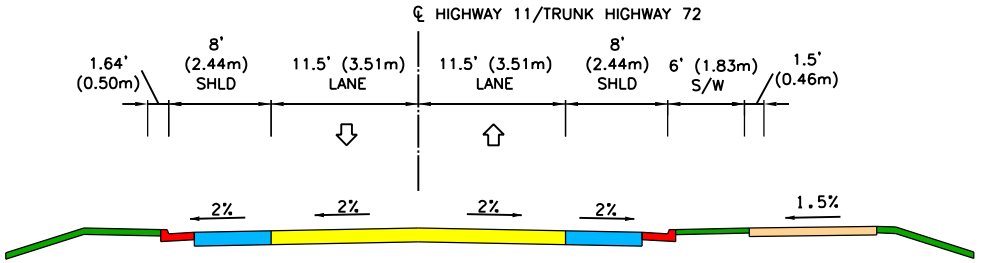
PROJ. NO. 193802870



EXISTING BRIDGE CROSS-SECTION
NOT TO SCALE



BRIDGE CROSS-SECTION
NOT TO SCALE



ROADWAY TYPICAL SECTION
NOT TO SCALE

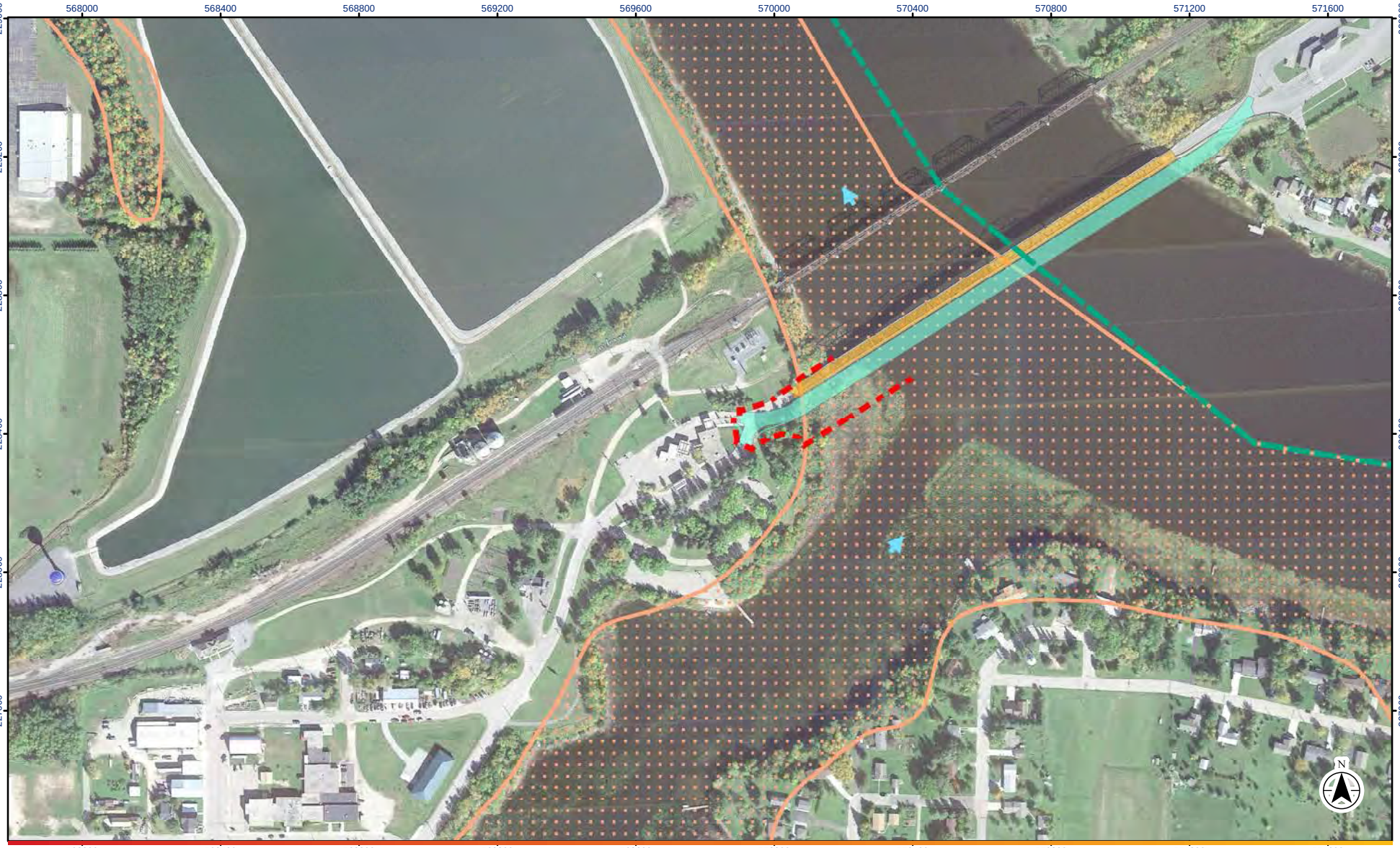
TYPICAL SECTIONS

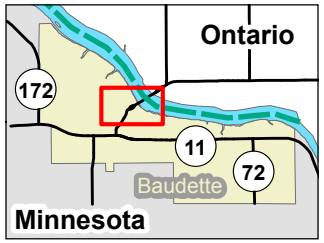
MINNESOTA DEPARTMENT OF TRANSPORTATION AND MINISTRY OF TRANSPORTATION ONTARIO
BAUDETTE/RAINY RIVER INTERNATIONAL BRIDGE REPLACEMENT

FIGURE 19

DATE: 08/18/2016 PROJ. NO. 193802870

\\US1291-F01\workgroup\11998\active\193802870\GIS\Projects\AR Base Map_2017-01-09.mxd Revised: 2017-01-09 By: aribachonek





0 400 Feet

1:4,800 (at original document size of 8.5x11)

Legend

- Construction Limits on U.S. Soil
- Approximate International Boundary
- Proposed Bridge & Approach
- Existing Bridge
- Flow Direction

FEMA Flood Zones

- 100-year Floodplain

Notes
1. Coordinate System: NAD 1983 HARN Adj MN Lake of the Woods South Feet.
2. Aerial: Google Earth, 2014.

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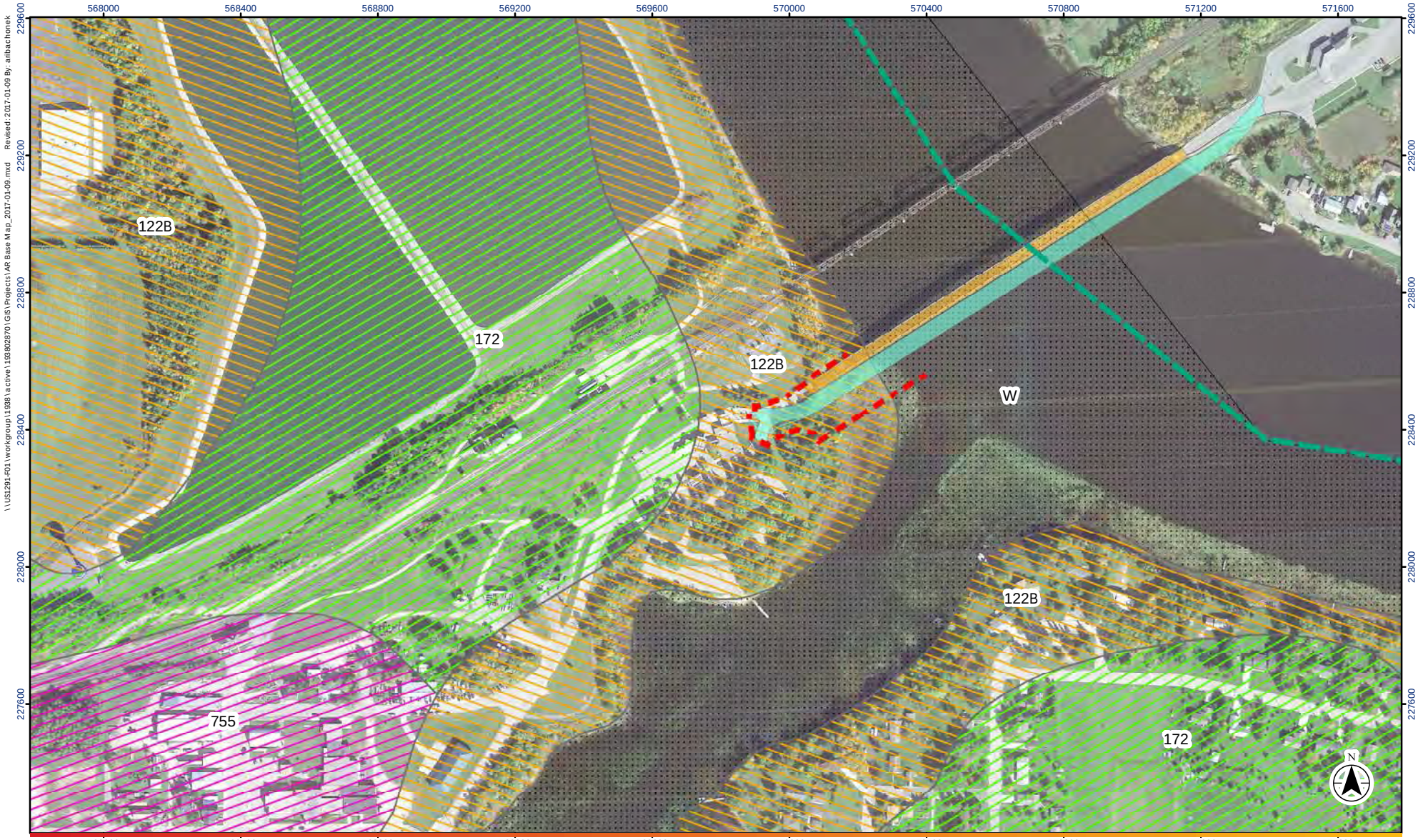
Project Location 193802870
T161N, R31W, S35
City of Baudette, MN

Prepared by aribachonek on 2017-01-09

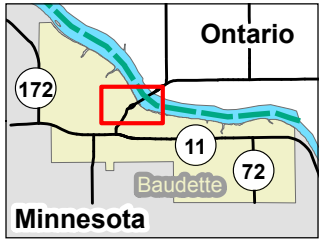
Client/Project SP 3905-09
MnDOT
Baudette/Rainy River International Bridge Replacement

Figure No.
20

Title
FLOOD ZONES



\\US1291-F01\workgroup\1398\active\193802870\GIS\Projects\AR Base Map_2017-01-09.mxd Revised: 2017-01-09 By: aribachonek



0 400 Feet

1:4,800 (at original document size of 8.5x11)

Legend

- Construction Limits on U.S. Soil
- Approximate International Boundary
- Proposed Bridge & Approach
- Existing Bridge

USCS Soils

- 122B
- 172
- 755
- W

Notes

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2. Aerial: Google Earth, 2014.

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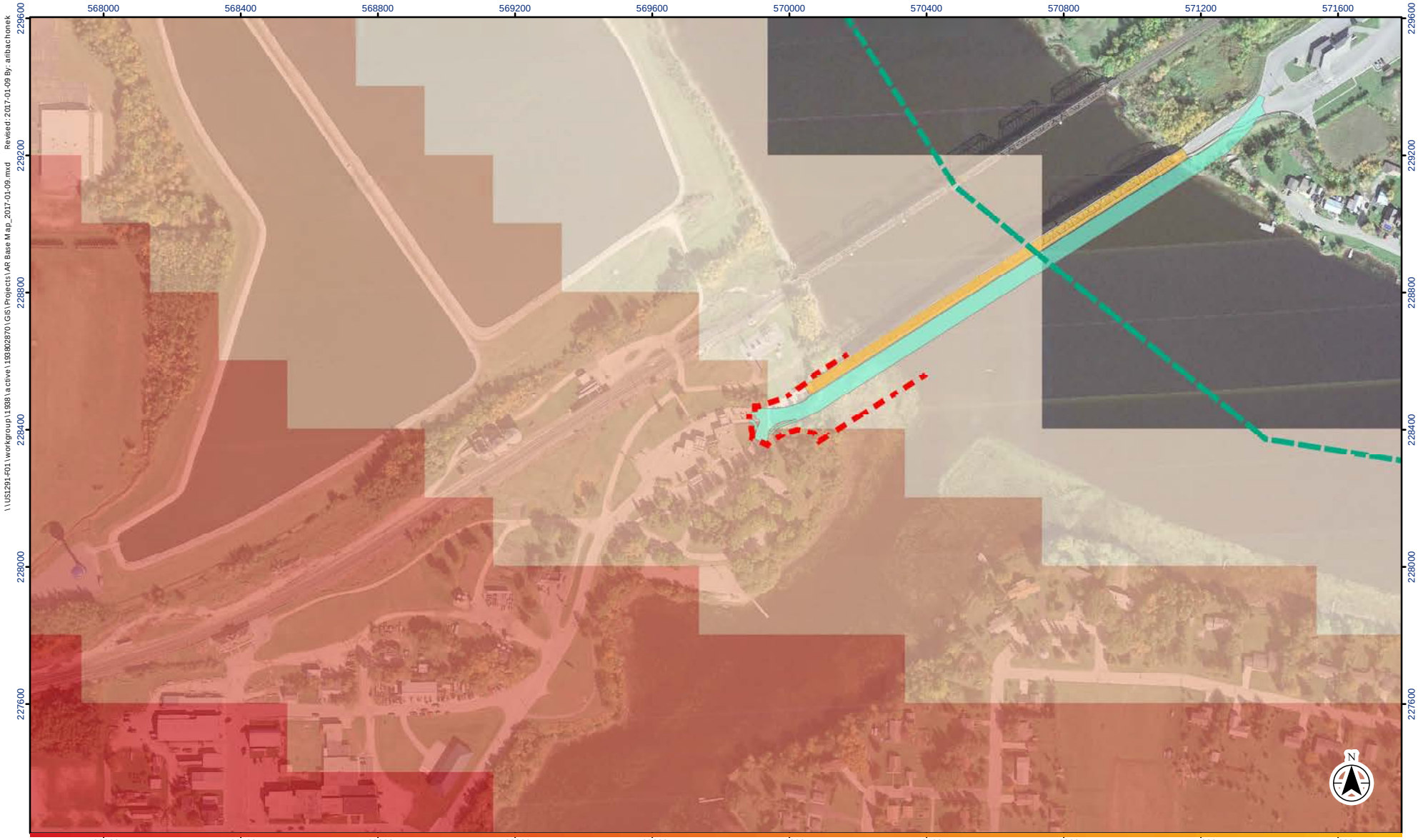
T161N, R31W, S35
City of Baudette, MN

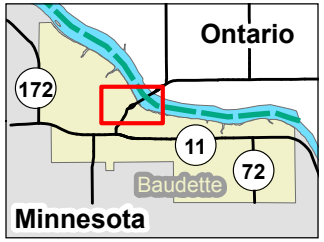
Prepared by aribachonek on 2017-01-09

Client/Project SP 3905-09
MnDOT
Baudette/Rainy River International Bridge Replacement

Figure No.
21

Title
SOILS MAP (USCS)





0 400 Feet

1:4,800 (at original document size of 8.5x11)

Legend

- Construction Limits on U.S. Soil
- Approximate International Boundary
- Proposed Bridge & Approach
- Existing Bridge

Depth to Bedrock (ft)

- 24.8 - 37.4
- 37.5 - 46.5
- 46.6 - 56.8
- 56.9 - 71

Notes
1. Coordinate System: NAD 1983 HARN Adj MN Lake of the Woods South Feet.
2. Aerial: Google Earth, 2014.

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Project Location 193802870
T161N, R31W, S35
City of Baudette, MN

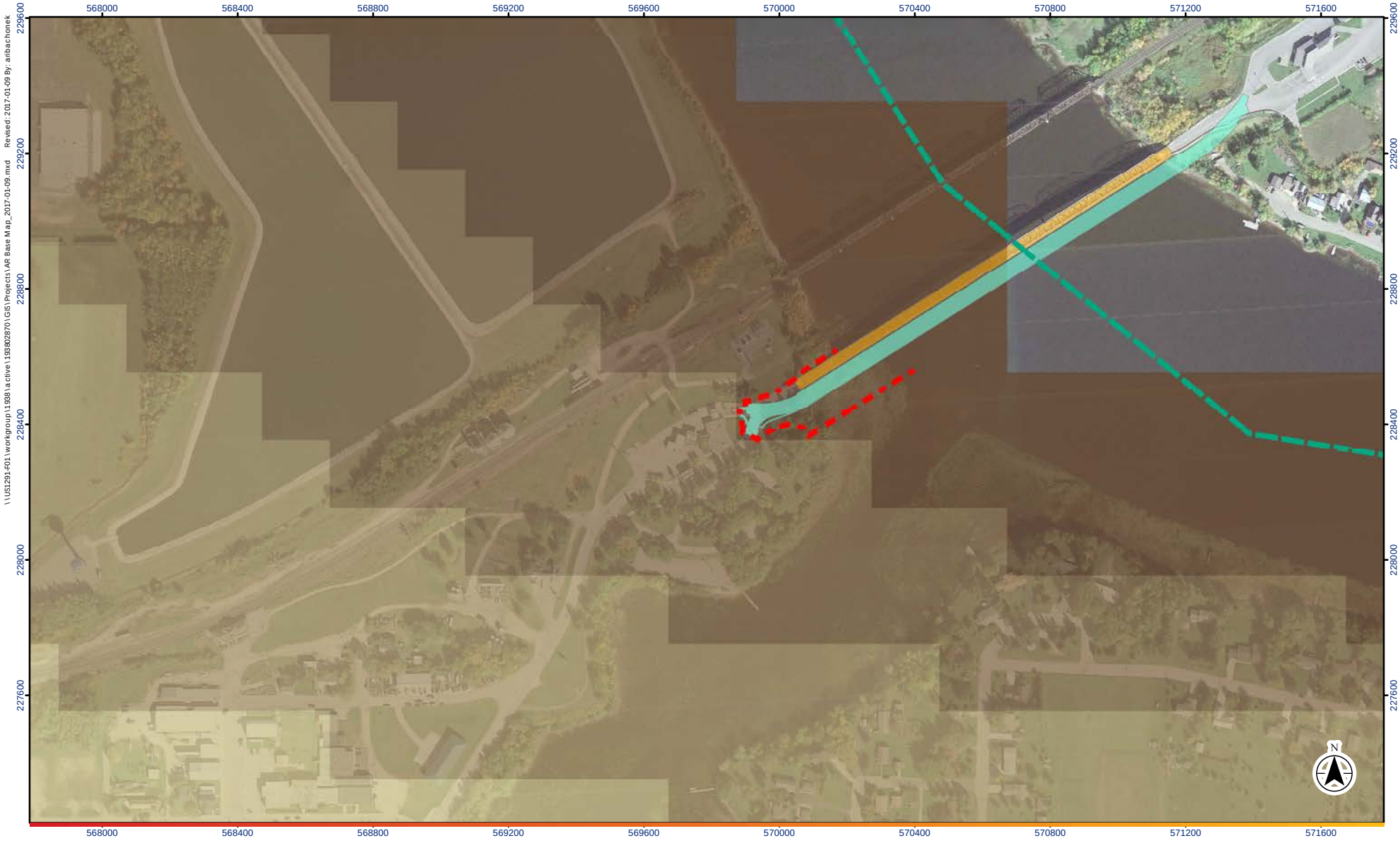
Prepared by aribachonek on 2017-01-09

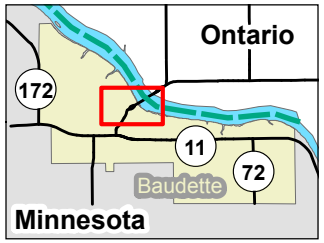
Client/Project SP 3905-09
MnDOT
Baudette/Rainy River International Bridge Replacement

Figure No.
22

Title
DEPTH TO BEDROCK (MGS)

\\US1291-F01\workgroup\1398\active\193802870\GIS\Projects\AR Base Map_2017-01-09.mxd Revised: 2017-01-09 By: aribachonek





0 400 Feet

1:4,800 (at original document size of 8.5x11)

Legend

- Construction Limits on U.S. Soil
- Approximate International Boundary
- Proposed Bridge & Approach
- Existing Bridge

Bedrock Elevation (ft)

- 1,017.2 - 1,024.8
- 1,024.9 - 1,032.5
- 1,032.6 - 1,040.1
- 1,040.2 - 1,050.1

Notes
1. Coordinate System: NAD 1983 HARN Adj MN Lake of the Woods South Feet.
2. Aerial: Google Earth, 2014.

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Project Location 193802870
T161N, R31W, S35
City of Baudette, MN

Prepared by aribachonek on 2017-01-09

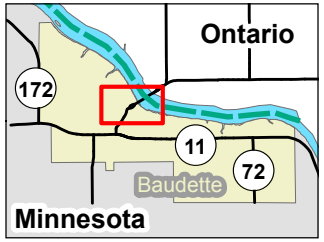
Client/Project SP 3905-09
MnDOT
Baudette/Rainy River International Bridge Replacement

Figure No.
23

Title
BEDROCK **ELEVATION** (MGS)

\\US1291-F01\workgroup\1193802870\active\193802870\GIS\Projects\AR Base Map_2017-01-09.mxd Revised: 2017-01-09 By: aribachonek

\\US1291-F01\workgroup\11998\active\193802870\GIS\Projects\AR Base Map_2017-01-09.mxd Revised: 2017-01-09 By: aribachonek



0 400 Feet

1:4,800 (at original document size of 8.5x11)

Legend

- Construction Limits on U.S. Soil
- Approximate International Boundary
- Proposed Bridge & Approach
- Existing Bridge
- Flow Direction
- Public Waters

Notes
1. Coordinate System: NAD 1983 HARN Adj MN Lake of the Woods South Feet.
2. Aerial: Google Earth, 2014.

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Project Location 193802870
T161N, R31W, S35
City of Baudette, MN

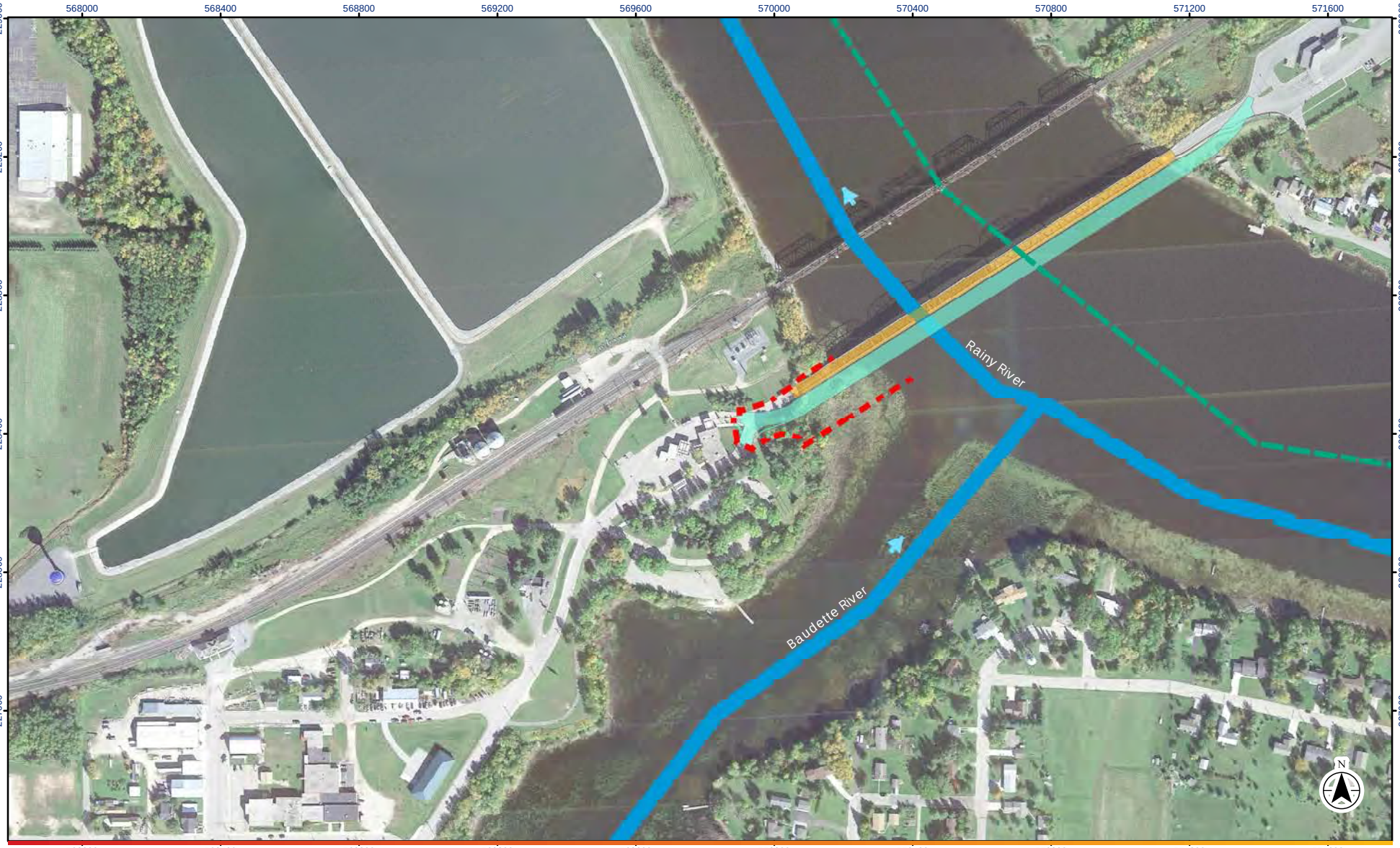
Prepared by aribachonek on 2017-01-09

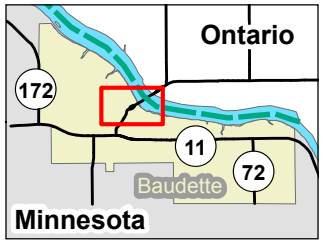
Client/Project SP 3905-09
MnDOT
Baudette/Rainy River International Bridge Replacement

Figure No.
24

Title
PUBLIC WATERS

\\US1291-F01\workgroup\1198\active\193802870\GIS\Projects\AR Base Map_2017-01-09.mxd Revised: 2017-01-09 By: aribachonek





0 400 Feet

1:4,800 (at original document size of 8.5x11)

Legend

- Construction Limits on U.S. Soil
- Approximate International Boundary
- Proposed Bridge & Approach
- Existing Bridge
- Flow Direction
- Impaired Waters

Notes
1. Coordinate System: NAD 1983 HARN Adj MN Lake of the Woods South Feet.
2. Aerial: Google Earth, 2014.

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Project Location 193802870
T161N, R31W, S35
City of Baudette, MN

Prepared by aribachonek on 2017-01-09

Client/Project SP 3905-09
MnDOT
Baudette/Rainy River International Bridge Replacement

Figure No.
25

Title
IMPAIRED WATERS

\\US1291-F01\workgroup\1938\active\193802870\GIS\Projects\Wetland Impacts\AR Wetland Figures_2017-01-11.mxd Revised: 2017-01-11 By: aribachonek

570000

228000

570000

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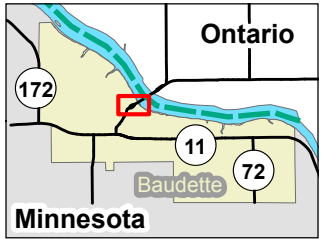

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Legend

- Construction Limits on U.S. Soil
- Approximate International Boundary
- Proposed Bridge & Approach
- Existing Bridge

NWI Wetlands

- Riverine
- Freshwater Emergent Wetland
- Lake

Field Delineated Wetlands

- Freshwater Emergent Wetland, W-1
- Wetland Study Area
- Water Level at Site Visit
- USACE OHWL of Channel

Notes

1. Coordinate System: NAD 1983 HARN Adj MN Lake of the Woods South Feet.
2. Aerial: Google Earth, 2014.

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Project Location 193802870
T161N, R31W, S35
City of Baudette, MN

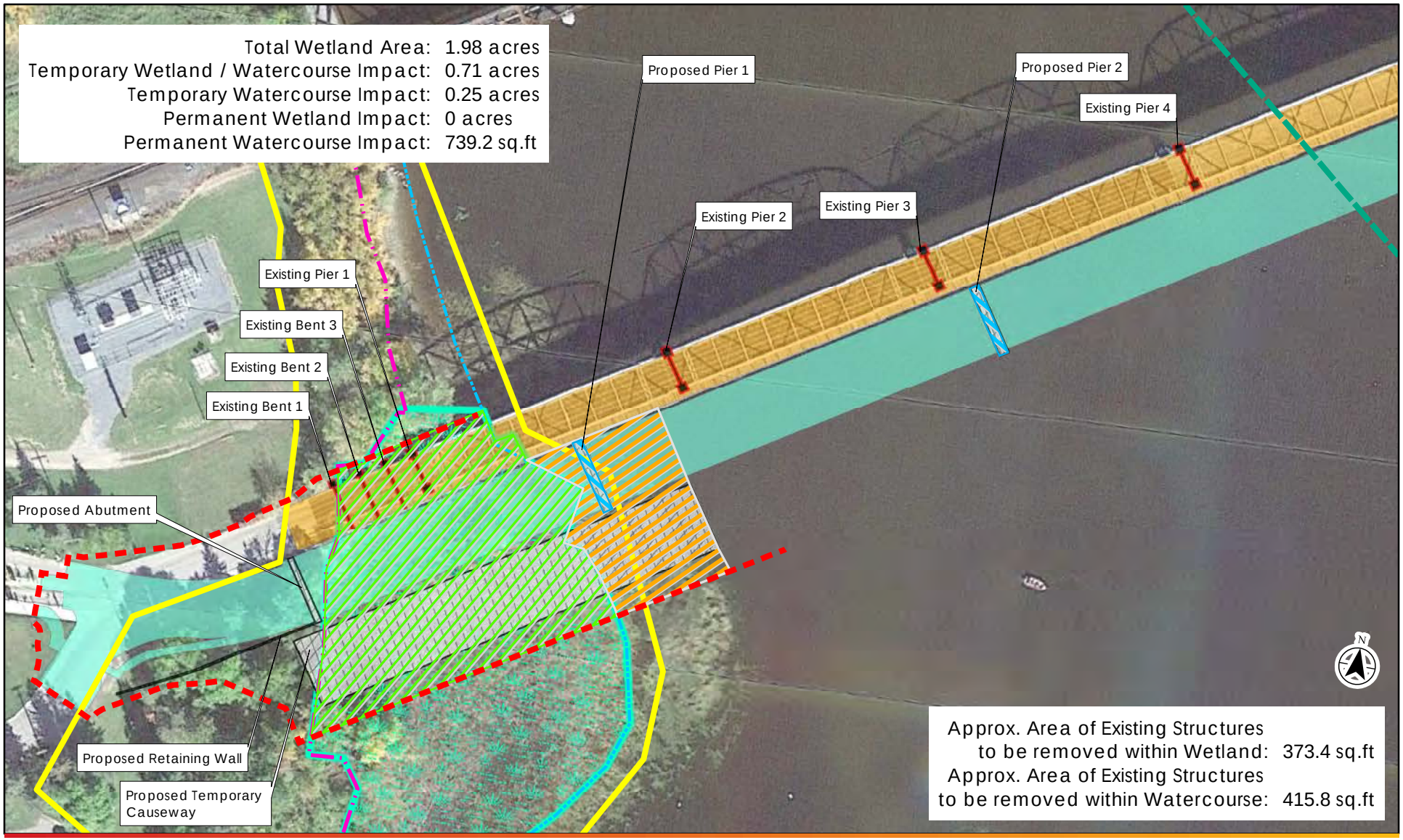
Prepared by aribachonek on 2017-01-11

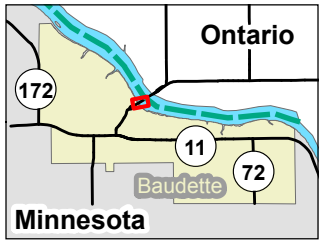
Client/Project SP 3905-09
MnDOT
Baudette/Rainy River International Bridge Replacement

Figure No.
26

Title
WETLAND LOCATION MAP

\\US1291-F01\workgroup\193BI\active\193802870\GIS\Projects\Wetland impacts\AR Wetland Figures_27A_USACE_2017-01-11.mxd Revised: 2017-01-11 By: aribachonek





0 100 Feet

1:1,200 (at original document size of 8.5x11)

Legend

- Construction Limits on U.S. Soil
- Approximate International Boundary
- Proposed Bridge & Approach
- Existing Bridge

Field Delineated Wetlands

- Freshwater Emergent Wetland, W-1
- Wetland Study Area
- Water Level at Site Visit
- USACE OHWL of Channel

Bridge Structures within U.S. Aquatic Resource Boundaries

- Existing (to be removed)
- Proposed

Wetland / Watercourse Impacts

- Temporary Wetland / Watercourse
- Temporary Watercourse
- Permanent Watercourse

Notes

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2. Aerial: Google Earth, 2014.

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Project Location 193802870
T161N, R31W, S35
City of Baudette, MN

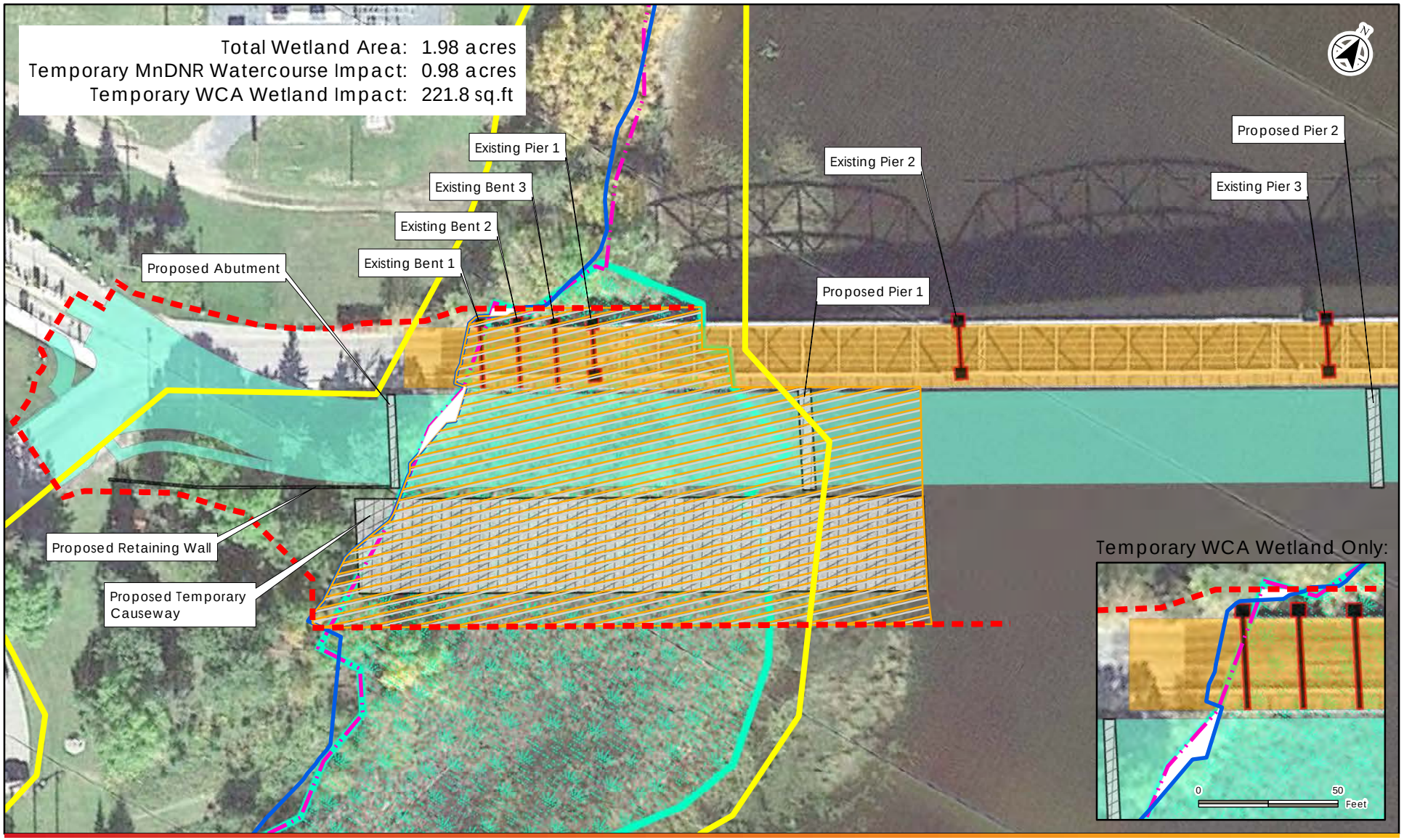
Prepared by aribachonek on 2017-01-11

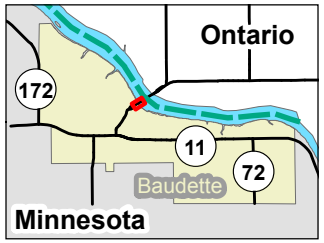
Client/Project
MnDOT
Baudette/Rainy River International Bridge Replacement
SP 3905-09

Figure No.
27A

Title
AQUATIC IMPACTS - USACE SECTION 404

\\US1291-F01\workgroup\193801\active\193802870\GIS\Projects\Wetland impacts\AR Wetland Figures_27B_DNR WCA_2017-01-11.mxd Revised: 2017-01-11 By: aribachonek





0 75 Feet

1:900 (at original document size of 8.5x11)

Legend

- Construction Limits on U.S. Soil
- Approximate International Boundary
- Proposed Bridge & Approach
- Existing Bridge

Field Delineated Wetlands

- Freshwater Emergent Wetland, W-1
- Wetland Study Area
- USACE OHWL of Channel
- MnDNR OHWL (1067 ft)

Bridge Structures within U.S. Aquatic Resource Boundaries

- Existing (to be removed)
- Proposed

Wetland / Watercourse Impacts

- MnDNR Protected Waters
- Temporary WCA Wetland

Notes

1. Coordinate System: NAD 1983 HARN Adj MN Lake of the Woods South Feet.
2. Aerial: Google Earth, 2014.

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Project Location 193802870
T161N, R31W, S35
City of Baudette, MN

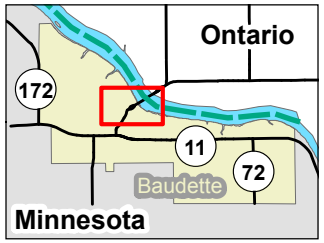
Prepared by aribachonek on 2017-01-11

Client/Project SP 3905-09
MnDOT
Baudette/Rainy River International Bridge Replacement

Figure No.
27B

Title
AQUATIC IMPACTS - MNDNR PROTECTED WATERS **& WCA**

\\US1291-F01\workgroup\1398\active\193802870\GIS\Projects\AR Base Map_2017-01-09.mxd Revised: 2017-01-09 By: aribachonek



0 400 Feet

1:4,800 (at original document size of 8.5x11)

Legend

- Construction Limits on U.S. Soil
- Approximate International Boundary
- Proposed Bridge & Approach
- Existing Bridge
- Open Water
- Developed, Open Space
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, High Intensity
- Deciduous Forest
- Woody Wetlands
- Emergent Herbaceuous Wetlands
- Hay/Pasture
- Cultivated Crops

Notes
1. Coordinate System: NAD 1983 HARN Adj MN Lake of the Woods South Feet.
2. Aerial: Google Earth, 2014.

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Project Location 193802870
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City of Baudette, MN

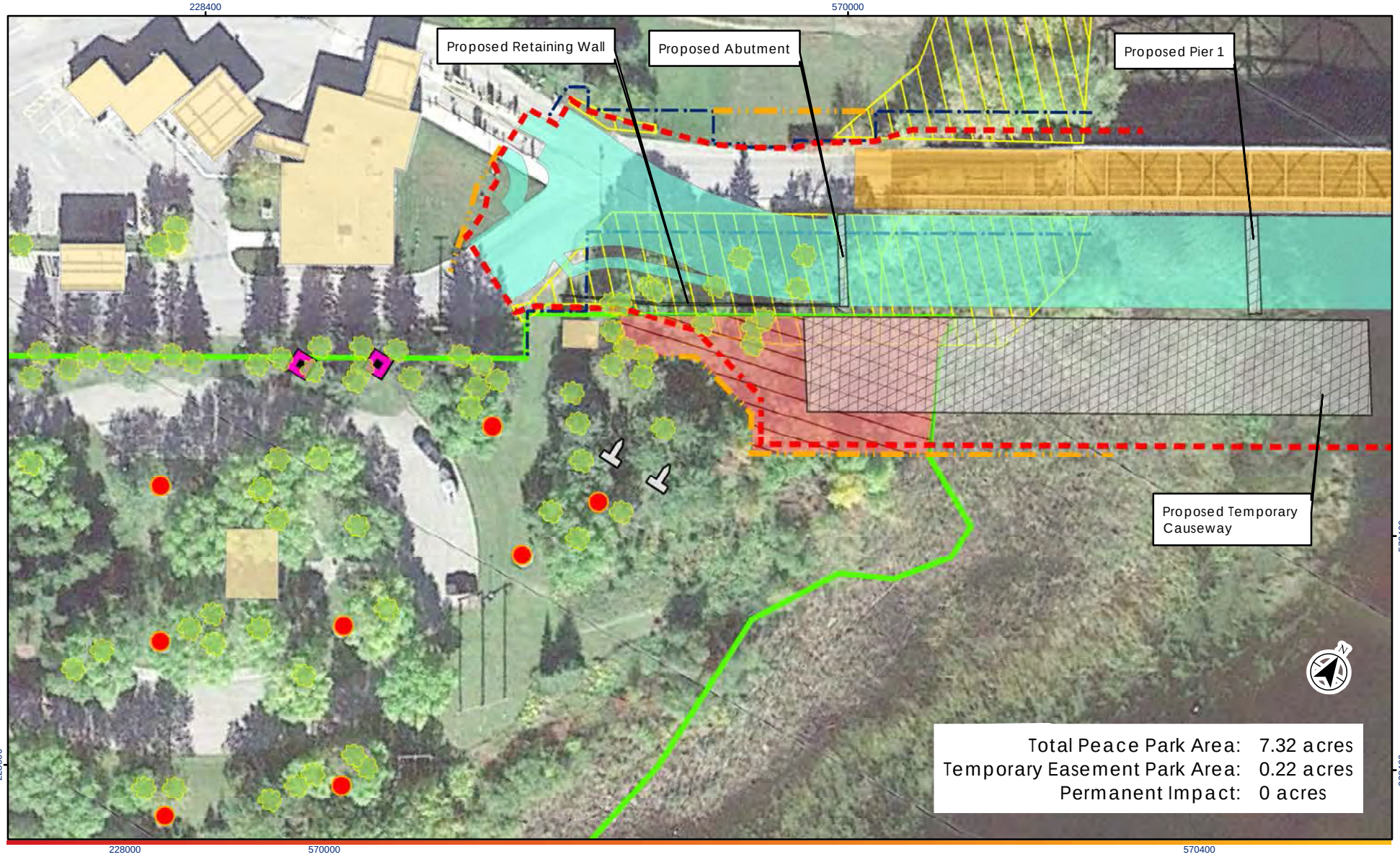
Prepared by aribachonek on 2017-01-09

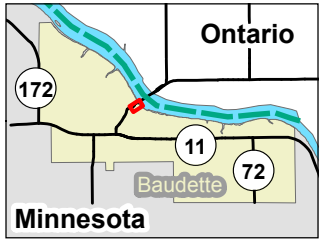
Client/Project SP 3905-09
MnDOT
Baudette/Rainy River International Bridge Replacement

Figure No.
28

Title
LAND COVER TYPES (NLCD 2011)

\\US1291-F01\workgroup\1938\active\193802870\GIS\Projects\Park Impacts\Park Impact Exhibit_2017-01-11.mxd Revised: 2017-01-11 By: aribachonek





0 75 Feet

1:900 (at original document size of 8.5x11)

Legend

- Construction Limits on U.S. Soil
- Proposed Bridge Structures
- Proposed Bridge & Approach
- Existing Bridge
- Existing Structures
- Property Inplace
- Temporary Easement
- Peace Park
- Temporary Easement Park Area
- Tree Removal Area
- Gravesites
- Historic Markers
- Picnic Tables
- Existing Trees from Field Survey

Notes
1. Coordinate System: NAD 1983 HARN Adj MN Lake of the Woods South Feet.
2. Aerial: Google Earth, 2014.

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Project Location 193802870
T161N, R31W, S35
City of Baudette, MN

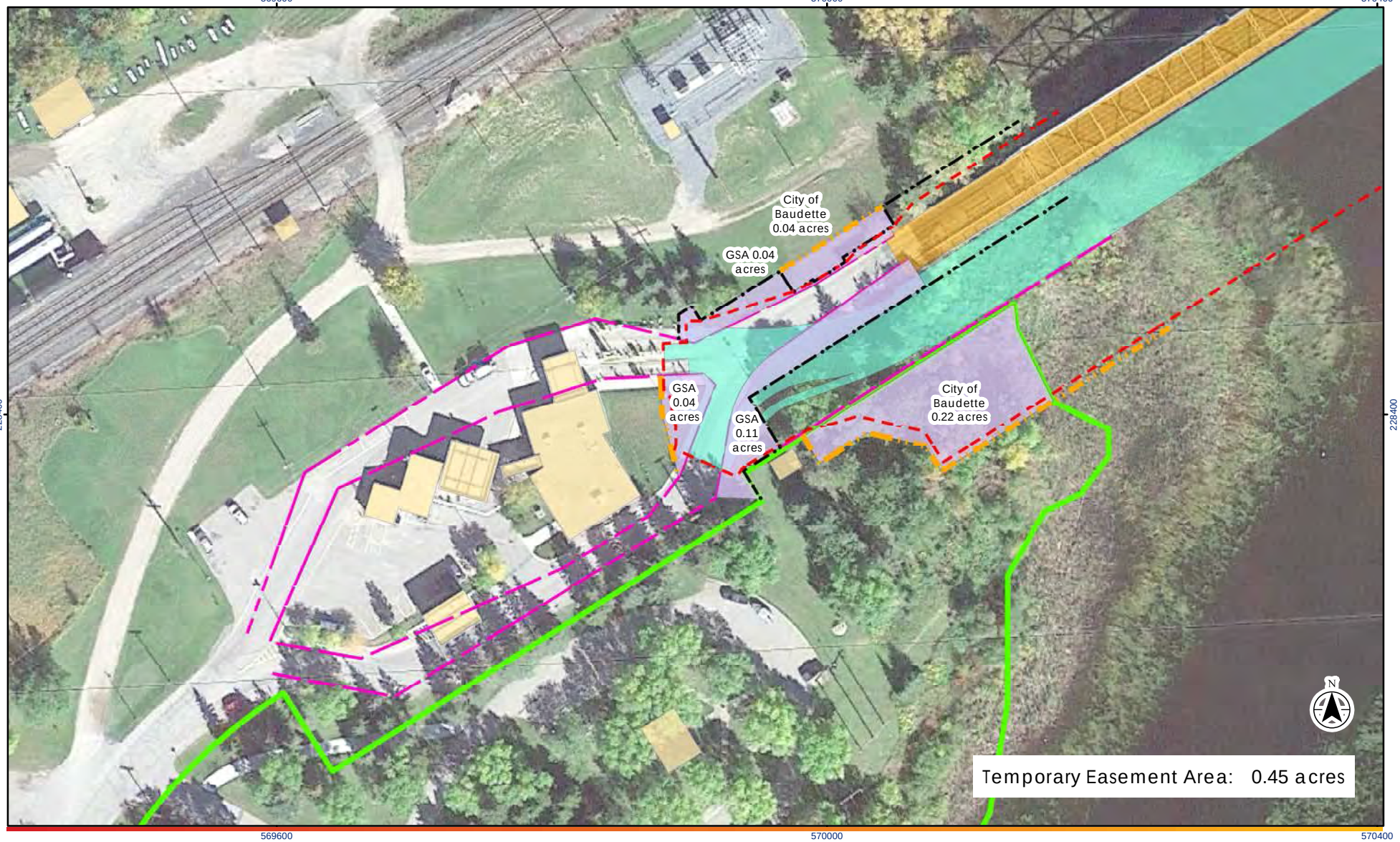
Prepared by aribachonek on 2017-01-11

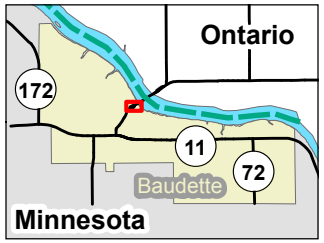
Client/Project SP 3905-09
MnDOT
Baudette/Rainy River International Bridge Replacement

Figure No.
29

Title
PEACE PARK - 4(f) IMPACTS

\\US1291-F01\workgroup\1938\active\193802870\GIS\Projects\Park Impacts\ROW_2017-01-10.mxd Revised: 2017-01-10 By: aribachonek





0 50 100 Feet

1:1,200 (at original document size of 8.5x11)

Legend

- Construction Limits on U.S. Soil
- Proposed Bridge & Approach
- Existing Bridge
- Existing Structures
- Peace Park
- Property Inplace
- Existing Right-of-Way
- Temporary Easement
- Temporary Easement Area by Parcel Owner

Notes

1. Coordinate System: NAD 1983 HARN Adj MN Lake of the Woods South Feet.
2. Aerial: Google Earth, 2014.

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Project Location 193802870
T161N, R31W, S35
City of Baudette, MN

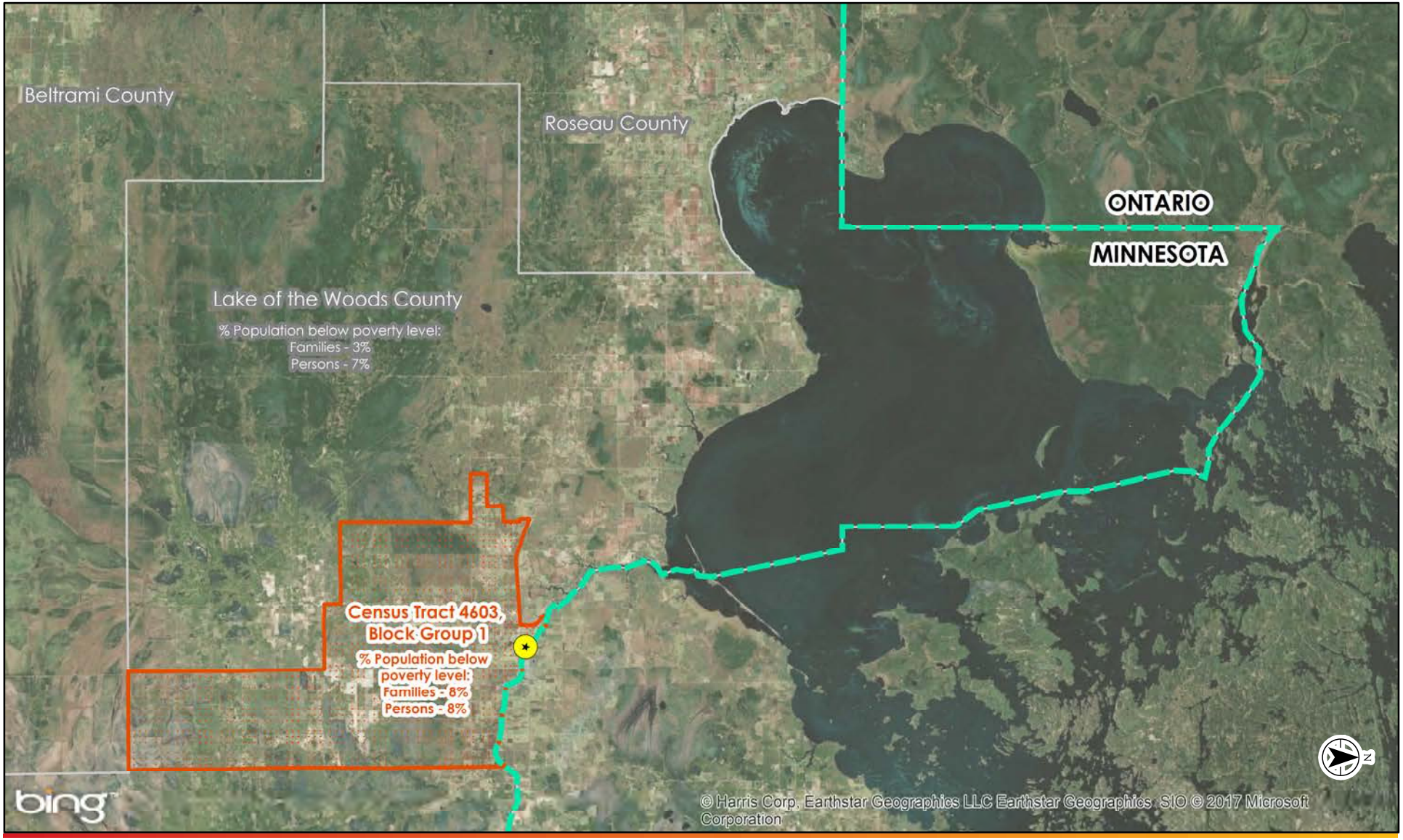
Prepared by aribachonek on 2017-01-10

Client/Project SP 3905-09
MnDOT
Baudette/Rainy River International Bridge Replacement

Figure No.
30

Title
RIGHT OF WAY

\\US1291-F01\workgroup\193801active\193802870\GIS\Projects\EJ_2017-01-09.mxd Revised: 2017-01-09 By: aribachonek



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Legend

- Project Area
- Approximate International Boundary
- Minnesota Counties

Notes
1. Coordinate System: NAD 1983 HARN Adj MN Lake of the Woods South Feet.
2. Aerial: Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation

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Project Location 193802870
T161N, R31W, S35
City of Baudette, MN

Prepared by aribachonek on 2017-01-09

Client/Project SP 3905-09
MnDOT
Baudette/Rainy River International Bridge Replacement

Figure No.
31

Title
ENVIRONMENTAL JUSTICE

Appendix B– REFERENCES

Technical Memoranda and Reports Informing the Alternatives Development and Evaluation Process[48]

B.1 BACKGROUND

- Ayres Associates & Collins Engineers, Inc. *Underwater Inspection Report: Structure No. 9412*. August 15, 2012.
- Minnesota Department of Transportation (MnDOT). *2013 Routine and Fracture Critical Bridge Inspection Report: Bridge #9412, TH 72 over Rainy River*. December 17, 2013.
- Minnesota Department of Transportation (MnDOT). *Minnesota Structure Inventory Report: Bridge 9412, TH 72 over Rainy River.* Accessed April 21, 2016.
- HNTB. *Traffic Count Data, Projection and Summary Report*. June 2015.

B.2 DEVELOPMENT AND EVALUATION OF ALTERNATIVES

- Minnesota Department of Transportation (MnDOT) & Mead and Hunt. *Bridge Rehabilitation Study Report for Baudette Bridge No. 9412.* May 14, 2013.

B.3 FISHERIES & WETLANDS

- Ministry of Natural Resources and Forestry (MNRF). 2015a. Natural Heritage Information Centre (NHIC) Biodiversity Explorer Database. <http://nhic.mnr.gov.on.ca/MNR/nhic/species.cfm>. Accessed May 2015.
- Ministry of Natural Resources and Forestry (MNRF). 2015b. Email correspondence from Rachel Hill to Greg Cooke and Rick DeCal. June 11, 2015.
- Minnesota Department of Natural Resources (MnDNR). 2015a. Email correspondence from Peter Leete (MnDNR Ecological and Water Resources) to Staci Cann (MnDOT). June 19, 2015.
- Minnesota Department of Natural Resources (MnDNR). 2015b. Lake of the Woods Fish Population Surveys and Status handout. <http://files.dnr.state.mn.us/areas/fisheries/baudette/winter_handout_2013.pdf>. Accessed October 2015.
- Minnesota Department of Natural Resources (MnDNR). 2015c. Personal communication with Phil Talmage (MnDNR).
- Minnesota Pollution Control Agency (MPCA). Lake and Stream Water Quality Data, Baudette River. <http://cf.pca.state.mn.us/water/watershedweb/wdip/waterunit.cfm?wid=09030008-519>. Accessed October 2015.
- United States Fish and Wildlife Service. National Wetland Inventory. 2013.

[48] All documents listed are available upon request from the MnDOT Project Manager.

B.4 CULTURAL RESOURCES

- Mead and Hunt. *Phase I and Phase II Architecture/History Survey Report: Trunk Highway 72 Area of Potential Effects, Baudette, Minnesota*. January 2014.
- Mullholland, Stephen L. Duluth Archaeology Center. *Phase I Archaeological Investigations of Bridge 9412 and Phase II Archaeological Investigation of Site 21LW0026, Lake of the Woods County, Minnesota*. March 2015.

B.5 HAZARDOUS WASTE & CONTAMINATION

- Groundwater & Environmental Services, Inc. *Asbestos and Regulated Waste Assessment Report: Bridge #9412, TH 72 over Rainy River, Baudette Minnesota*. September 2013.
- Landmark Environmental, LLC. 2014a. *Phase I Environmental Site Assessment*. August 2014.
- Landmark Environmental, LLC. 2014b. *Phase II Drilling Investigation*. October 2014.

Appendix C– ALTERNATIVES DEVELOPMENT

Table 22: Comparison of Alignment Alternatives to Replace the Baudette/Rainy River International Bridge

Evaluation Category	Evaluation Criteria	Alternative 1 Downstream of Existing Alignment	Alternative 2 Upstream of Existing Alignment	Alternative 3A (Downstream) Replacement on Existing Alignment	Alternative 3B (Upstream) Replacement on Existing Alignment
Transportation Engineering	Geometrics	● New profile meets design standards ● New horizontal alignment meets design standards - Trucks approaching the U.S. Port of Entry can use right lane only - Relocation of detection equipment is required to accommodate trucks in left lane on the U.S side of the border	● New profile meets design standards ● New horizontal alignment meets design standards + Provides desirable geometric alignment connections to existing U.S. and Canadian Ports of Entry facilities ● U.S. Port of Entry detection equipment can remain in place + Improved Truck entry at U.S. Port of Entry	● New profile meets design standards ● Maintains existing horizontal alignment and minimizes permanent impacts to U.S. and Canadian Ports of Entry facilities ● U.S. Port of Entry detection equipment can remain in place ● Truck entry at U.S. Port of Entry will be maintained - Temporary traffic delays and safety concerns due to narrow temporary bridge	● New profile meets design standards ● Maintains existing horizontal alignment and minimizes permanent impacts to U.S. and Canadian Ports of Entry facilities ● U.S. Port of Entry detection equipment can remain in place ● Truck entry at U.S. Port of Entry will be maintained - Temporary traffic delays and safety concerns due to narrow temporary bridge
	Constructability	- Construction area between the existing bridge and the CN rail bridge is constrained	● No significant or unique constructability concerns	- Construction area between the existing bridge and the CN rail bridge is constrained - Increased duration of construction	- Increased duration of construction
	Cost	+ Cost is consistent with other similar bridge replacement projects with minimal throw-away costs	+ Cost is consistent with other similar bridge replacement projects with minimal throw-away costs	- Cost of temporary bridge is high, resulting in significant throw away costs	- Cost of temporary bridge is high, resulting in significant throw away costs
	Pedestrians/Cyclists	● No impacts to criteria	● No impacts to criteria	● No impacts to criteria	● No impacts to criteria

Table 22: Comparison of Alignment Alternatives to Replace the Baudette/Rainy River International Bridge (Continued)

Evaluation Category	Evaluation Criteria	Alternative 1 Downstream of Existing Alignment	Alternative 2 Upstream of Existing Alignment	Alternative 3A (Downstream) Replacement on Existing Alignment	Alternative 3B (Upstream) Replacement on Existing Alignment
Social & Cultural Environment	Property/Right of Way	- Requires purchase of private/municipal property on U.S. side	- Requires purchase of property on U.S. side - Requires purchase of property on Canadian side	- Temporary property requirements on U.S. side	- Temporary property requirements on U.S. side - Temporary property requirements on Canadian side
	Archaeology and Cultural Heritage	● Does not impact unidentified gravesites/ cultural heritage features on U.S. side and areas with high archaeological potential ● Does not impact any registered archaeological sites	- Potentially impacts unidentified gravesites/ cultural heritage features on U.S. side and areas with high archaeological potential ● Does not impact any registered archaeological sites	● Does not impact unidentified gravesites/ cultural heritage features on U.S. side and areas with high archaeological potential ● Does not impact any registered archaeological sites	- Potentially impacts unidentified gravesites/ cultural heritage features on U.S. side and areas with high archaeological potential ● Does not impact any registered archaeological sites
	Impacts to Park Land/ 4(f)	● Does not impact Peace Park on U.S. side	- Impacts Peace Park on U.S. side	● Does not impact Peace Park on U.S. side	- Impacts Peace Park on U.S. side
	Aesthetics/Visual Impacts	● No visual or aesthetic impact due to alignment	- Potential visual and aesthetic impact due to closer proximity of bridge for residents	● No visual or aesthetic impact due to alignment	● No visual or aesthetic impact due to alignment
	Environmental Justice/ Business Impacts/ Access Impacts	● No impacts to criteria	● No impacts to criteria	● No impacts to criteria	● No impacts to criteria
Natural Environment	Fish and Aquatic Habitat	- Potential impacts to threatened and endangered/Species-at-Risk and their habitat ● Potential impacts to fisheries resources, including fish spawning areas - May impact contaminated soils from former electric power plant on U.S. side	- Potential impacts to threatened and endangered species/Species-at-Risk and their habitat ● Potential impacts to fisheries resources, including fish spawning areas	- Potential impacts to threatened and endangered species/Species-at-Risk and their habitat - Greater impacts to fisheries resources, including fish spawning and nursery areas (additional piers in water) - May impact contaminated soils from former electric power plant on U.S. side	- Potential impacts to threatened and endangered species/Species-at-Risk and their habitat - Greater impacts to fisheries resources, including fish spawning and nursery areas (additional piers in water)
	Wildlife and Terrestrial Habitat and Vegetation	- Requires natural vegetation removal	- Requires natural vegetation removal	- Requires natural vegetation removal	- Requires natural vegetation removal
	Noise/Vibration	● Minimal potential for noise impacts	● Minimal potential for noise impacts	● Minimal potential for noise impacts	● Minimal potential for noise impacts
	Wetlands/Floodplains/ Protected Waters*	● Minimizes impacts to identified wetlands on the U.S. side	- Impacts identified wetlands on the U.S. side	● Minimizes impacts to identified wetlands on the U.S. side	- Potential impacts to identified wetlands on the U.S. side

Notes:
* Impacts to Floodplain and Protected Waters (i.e. Public Waters designated by MnDNR) were considered under both the Alignment and Bridge Type Alternative analyses. However, these impacts were more of a factor in the Bridge Type Alternative analysis due to substructure considerations. See Section 3.3 (Bridge Type Alternatives) and Table 25: Bridge Type Alternative Final Evaluation Matrix for detailed discussion on piers and pier configuration.
1. Advantages and disadvantages have been identified by plus sign (+) and minus sign (-), respectively.
2. A bullet sign (●) denotes where there is no clear advantage or disadvantage.

Table 23: Bridge Type Alternative Preliminary Evaluation Matrix

January 20, 2016 | Alternative Development Phase Evaluation Matrix | State Project No. 3905-90 MTO Site 45-110

Evaluation Criteria \ Alternative Description	A1 - Continuous Steel I-Girder 5 spans - 220'-300'-300'-300'-220' (67.1m-91.4m-91.4m-91.4m-67.1m)	A2 - Continuous Haunched Steel I-Girder 3 spans - 412.5'-515'-412.5' (125.7m-157.0m-125.7m)	B - Simple-Span Precast/Prestressed I-Girder 9 spans @ 149' (45.4m)	C - Continuous Steel Box Girder 5 spans - 220'-300'-300'-300'-220' (67.1m-91.4m-91.4m-91.4m-67.1m)	D - Segmental Concrete Box Girder 4 spans - 254'-416'-416'-254' (77.4m-126.8m-126.8m-77.4m)	E - Tied Arch Main Span, Precast/ Prestressed I-Girder Approaches 8 spans - 4@ 145'-1@ 325'-3@ 145' (4@ 44.2m-1@ 99.1m-3@ 44.2m)
Maximum Increase in Structure Depth from Existing (3'-11" [1.2m] ±)	• 7'-11" (2.4m) ± • 124" (3,150 mm) steel plate girders	• 18'-5" (5.6m) to 10'-5" (3.2m) ± • Variable depth steel girders • Maximum depth at piers	• 2'-5" (0.7m) ± • 63" (1600 mm) precast beams	• 7'-1" (2.2m) ± • 9'-6" (2.9m) steel tub girders	• 21'-1" (6.4m) to 8'-1" (2.5m) ± • Variable depth box section • Maximum depth at piers	• 2'-4" (0.7m) ± • Approach spans similar
Number of Substructures in River and Effect on Existing Navigation Openings During Construction	• 4 substructures in river • Truss span 3 constrained approximately 25' (7.6m) • Truss span 4 constrained approximately 60' (18.3m)	• 2 substructures in river • No impact to truss span 3 • No impact to truss span 4	• 8 substructures in river • Truss span 3 width reduced by half • Truss span 4 constrained approximately 55' (16.8m)	• 4 substructures in river • Truss span 3 constrained approximately 25' (7.6m) • Truss span 4 constrained approximately 60' (18.3m)	• 3 substructures in river • Truss span 3 constrained approximately 35' (10.7m) • No impact to truss span 4	• 7 substructures in river • Truss span 3 width reduced by half • Possibly no impact to truss span 4
Traffic Impacts / Staging Considerations	• No apparent traffic impacts • If curvature introduced near west abutment, first span may need an additional stringer or temporary span to allow for construction in stages	• No apparent traffic impacts • If curvature introduced near west abutment, first span may need an additional stringer or temporary span to allow for construction in stages	• No apparent traffic impacts • If curvature introduced near west abutment, first span may need to be constructed in stages	• No apparent traffic impacts • If curvature introduced near west abutment, a jump span with a different structure type more apt for staged construction may be needed	• No apparent traffic impacts • If curvature introduced near west abutment, a jump span with a different structure type more apt for staged construction may be needed	• No apparent traffic impacts • If curvature introduced near west abutment, first span may need to be constructed in stages
Geometric Opportunities and Challenges	• May be opportunity to optimize by adding a beam line (less deck load, easier to form deck) • May be opportunity to optimize with four spans	• May be opportunity to optimize by adding a beam line (less deck load, easier to form deck) • May be opportunity to optimize with four spans or five spans with constant end spans	• Opportunities may exist to decrease number of spans by one (167' +/-, 51m +/-) or two (192' +/-, 60m +/-)	• May be opportunity to optimize with four spans • Depth of tubs may require cross section internal stiffening to make cross frames efficient • Preferred 1:4 slope of webs will limit the bottom flange width and may not be feasible	• Three span configuration may be possible, but will require larger profile raise and may need jump spans on ends	• Arch unit limited due to aviation requirements • As drawn, only provides 2' additional clearance above CNRR bridge low steel, not the preferred 5'; 5' likely feasible at a slightly less efficient span to depth ratio
Constructability	• Standard structure type	• Will require additional fabrication effort for haunches, including longitudinal stiffener and CJP weld in haunched region • Haunched sections will be more difficult to transport • Transportation and placement of large beams could be challenging	• Standard structure type	• Box shape may create a more stable structure for handling and erection • May require more stringent fabrication requirements for fit up and assembly	• If precast, could possibly result in smallest units to transport • Requires contractor with segmental experience and possibly specialized contractors • Piers may consist of mass concrete	• May require more stringent fabrication requirements for fit up • Requires contractor with tied arch experience and possibly specialized contractors • Piers may consist of mass concrete
Maintenance and Inspection Needs (Number of Joints, Uncommon Elements, Durability, etc.)	• A minimum of two expansion joints needed at ends (modular) • Articulation with only strip seal joints not feasible as shown • Pot or disc bearings may be needed to accommodate load and movement	• A minimum of two expansion joints needed at ends (modular) • Articulation with only strip seal joints not feasible as shown • Pot or disc bearings may be needed to accommodate load and movement	• A minimum of two expansion joints needed at ends (modular) • Multiple units may prevent need for unique bearings	• A minimum of two expansion joints needed at ends (modular) • Articulation with only strip seal joints not feasible as shown • Pot or disc bearings may be needed to accommodate load and movement	• A minimum of two expansion joints needed at ends (modular) • Articulation with only strip seal joints not feasible • Pot or disc bearings likely to accommodate load and movement • Use of post-tensioning may require special inspections	• A minimum of four expansion joints likely (modular) • Articulation with only strip seal joints may not be feasible as shown • Pot or disc bearings likely to accommodate load and movement • Arch may require special inspections
Security and Vulnerability	• Redundant, standard structure type	• Redundant, standard structure type	• Highly redundant, standard structure type	• Redundant structure type • Closed members will need to be secured against unwanted access	• Highly redundant structure with numerous prestressing strands • Closed unit will need to be secured against unwanted access	• Arch unit assumed internally redundant to decrease vulnerability; load path redundancy possible but not common • Closed members will need to be secured against unwanted access
High-Level Estimate of Probable Construction Costs (US Dollars)	$25.6 Million	$35.3 Million	$14.5 Million	$25.3 Million	$22.1 Million	$20.6 Million

Table 24: Bridge Type Alternative Refined Evaluation Matrix

February 19, 2016 | Alternative Refinement Phase Evaluation Matrix | State Project No. 3905-90 MTO Site 45-110

Alternative / Description / Evaluation	A1 - Continuous Steel I-Girder 5 spans: 220' - 300' - 300' - 300' - 220' (67.1m - 91.4m - 91.4m - 91.4m - 67.1m)	A2 - Continuous Steel I-Girder 4 spans: 290' - 380' - 380' - 290' (88.4m - 115.8m - 115.8m - 88.4m)	B - Precast/Prestressed I-Girder 8 spans: 2 @ 162.2' - 3 @ 175'- 3 @ 163.2' (2 @ 49.7m - 3 @ 53.3m - 3 @49.7m)
Estimate of Probable Construction Costs* and Life-Cycle Costs (US Dollars) * *includes 30% contingency and escallation factor*	• Estimated construction costs: $31.7M • Estimated life-cycle costs: $32.9M	• Estimated construction costs: $33.2M • Estimated life-cycle costs: $34.2M	• Estimated construction costs: $31.4M • Estimated life-cycle costs: $32.9M
Construction and Fabrication Complexity	• Standard structure type • Will require additional fabrication effort if haunched • Temporary shoring required for erection, possibly temporary bents in the river • Transportation of large beams could be challenging	• Will require additional fabrication effort for haunches • Haunched sections may be more difficult to transport • Transportation of large beams could be challenging • Temporary shoring required for erection, possibly temporary bents in the river	• Length may limit number of fabricators or force modifications to existing casting beds • Transportation and placement of beams may be challenging
Geometric Opportunities and Challenges	• If haunched, may be able to lower profile	• None identified	• May be opportunities to decrease profile (using 82MW) or eliminate beam line (using 96MW shape) • May require deviations from standard state/provincial design practices and philosophies
Ability to Apply ABC Techniques	• Opportunity to launch structure exists and may be optimal, more difficult with haunches • Can use prefabricated elements • Opportunity to float spans or use gantry for superstructure elements exist	• Opportunity to launch structure exists and may be optimal, more difficult with haunches • Can use prefabricated elements • Opportunity to float spans or use gantry for superstructure elements exist	• Can use prefabricated elements, such as deck panels or forms • Opportunity to float spans exist
Construction Duration	• Approximately 22 months	• Approximately 22 months	• Approximately 22 months
Maximum Increase in Structure Depth from Existing (3'-11" [1.2m] ±)	• 6'-9" (2.1m) ± • 109" (2,770 mm) steel plate girders web depth	• 5'-10" (1.8m) to 10'-0" (3.0m) ± • Variable depth steel plate girders, 100" (2,540 mm) to 150" (3,810 mm) web depth • Maximum depth at piers	• 5'-2" (1.6m) ± • 96" (2400 mm) precast beams
Aesthetic Opportunities	• May be haunched for aesthetic appeal • Additional opportunities similar to other alternatives (piers, barriers/railings, fencing, etc.)	• Opportunities similar to other alternatives (piers, barriers/railings, fencing, etc.)	• Opportunities similar to other alternatives (piers, barriers/railings, fencing, etc.)
Number of Substructures in River and Effect on Existing Pier Openings During Construction	• 4 substructures in river • Truss span 3 constrained approximately 25' (7.6m) • Truss span 4 constrained approximately 60' (18.3m)	• 3 substructures in river • Piers located close to existing piers, offset about 25' (7.6m) to avoid existing pier elements	• 7 substructures in river • Piers in center of river closely align with existing piers • Piers towards river banks do not align well with existing piers
Traffic Impacts / Staging Considerations	• No apparent traffic impacts • If curvature introduced near west abutment, first span may need an additional girder line or temporary span to allow for construction in stages	• No apparent traffic impacts • If curvature introduced near west abutment, first span may need an additional girder line or temporary span to allow for construction in stages	• No apparent traffic impacts • If curvature introduced near west abutment, first span may need to be constructed in stages
Maintenance/Inspection Needs (Number of Joints, Uncommon Elements, Durability, etc.)	• A minimum of two expansion joints needed at ends (modular) • Articulation with only strip seal joints not feasible as shown • Pot or disc bearings may be needed to accommodate load and movement • Use of boat or snooper may be needed for inspections	• A minimum of two expansion joints needed at ends (modular) • Articulation with only strip seal joints not feasible as shown • Pot or disc bearings may be needed to accommodate load and movement • Use of boat or snooper may be needed for inspections	• A minimum of two expansion joints needed at ends (modular) • Multiple units may prevent need for unique bearings • Use of boat or snooper may be needed for inspections
Security and Vulnerability	• Redundant, standard structure type	• Redundant, standard structure type	• Highly redundant, standard structure type

Table 25: Bridge Type Alternative Final Evaluation Matrix

March 22, 2016 | Preferred Alternative Phase Evaluation Matrix | State Project No. 3905-90 MTO Site 45-110

Evaluation Criteria \ Alternative Description	**A1.1 - Continuous Steel I-Girder, 5 Spans Prismatic 220' - 300' - 300' - 300' - 220' (67.1m - 91.4m - 91.4m - 91.4m - 67.1m)**	**A2 - Continuous Steel I-Girder, 4 Spans Haunched 290' - 380' - 380' - 290' (88.4m - 115.8m - 115.8m - 88.4m)**	**A1.2 - Continuous Steel I-Girder, 5 Spans Haunched 220' - 300' - 300' - 300' - 220' (67.1m - 91.4m - 91.4m - 91.4m - 67.1m)**
Estimate of Probable Construction Costs* and Life-Cycle Costs (US Dollars) * *includes 30% contingency and escalation factor*	• Estimated construction costs: $31.7M • Estimated life-cycle costs: $32.9M	• Estimated construction costs: $33.2M • Estimated life-cycle costs: $34.2M	• Estimated construction costs: $31.7M • Estimated life-cycle costs: $32.9M
Construction Duration	• Approximately 22 months	• Approximately 22 months	• Approximately 22 months
Construction and Fabrication Complexity	• Conceptual configuration has 9 segments, largest at 150' (45.7m) and 63 tons • 13 segment configuration similar to A1.2 exists	• Will require additional fabrication effort due to haunches • Conceptual configuration has 13 segments, largest length at 125' (38.1m) and largest weight at 52 tons • Longitudinal web splice needed at haunch (depth exceeds available plate width)	• Will require additional fabrication effort due to haunches • Conceptual configuration has 13 segments, largest at 135' (41.1m) and 56 tons • Longitudinal web splice needed at haunch (depth exceeds available plate width) •Through optimization, may be able to eliminate longitudinal web splice at haunch for certain American steel mills
Relative Profile Difference at High Point	• Profile is approximately 2' (0.6m) higher than Alternative A1.2 to meet navigational requirements	• Profile is approximately 4' (1.2m) higher than Alternative A1.2 to meet navigational requirements	• Lowest profile which meets navigational requirement
Aesthetic Opportunities	• Prismatic superstructure, creating clean, concentric lines for all bridge elements • Additional opportunities similar to other alternatives (piers, barriers/railings, fencing, etc.)	• Haunched superstructure, giving effect that bridge is light, slender, and efficient • Additional opportunities similar to other alternatives (piers, barriers/railings, fencing, etc.)	• Haunched superstructure, giving effect that bridge is light, slender, and efficient • Additional opportunities similar to other alternatives (piers, barriers/railings, fencing, etc.)
Number of Substructures in River	• 4 substructures in river	• 3 substructures in river	• 4 substructures in river
Hydraulic Considerations	• 0.16" (4mm) 100 year surface elevation decrease in permanent condition • 0.08" (2mm) 100 year surface elevation increase in temporary condition • Total scour estimated at 31.34' (9.6m) for 100 year event and 33.28' (10.1m) for 500 year event	• 0.20" (5mm) 100 year surface elevation decrease in permanent condition • 0.04" (1mm) 100 year surface elevation decrease in temporary condition • Total scour estimated at 30.85' (9.4m) for 100 year event and 32.69' (10.0m) for 500 year event	• 0.16" (4mm) 100 year surface elevation decrease in permanent condition • 0.08" (2mm) 100 year surface elevation increase in temporary condition • Total scour estimated at 31.34' (9.6m) for 100 year event and 33.28' (10.1m) for 500 year event
Potential Temporary Bent Needs	• If temporary bents are used, scheme appears to exist which only uses 4 • Potential to avoid temporary bents in span 3 exists	• If temporary bents are used, at minimum, 6 are needed, likely 8	• If temporary bents are used, scheme appears to exist which only uses 4 • Potential to avoid temporary bents in span 3 exists
Potential Impact to Navigational Openings During Construction	• Truss span 3 constrained approximately 25' (7.6m) • Truss span 4 constrained approximately 60' (18.3m) • Temporary bents, if used, can likely be placed outside of truss spans 3 and 4, minimizing construction impacts	• Piers located close to existing piers, offset about 25' (7.6m) to avoid existing pier elements • Temporary bents, if used, may be placed approximately midspan of truss spans 3 and 4	• Truss span 3 constrained approximately 25' (7.6m) • Truss span 4 constrained approximately 60' (18.3m) • Temporary bents, if used, can likely be placed outside of truss spans 3 and 4, minimizing construction impacts

Figure 32: Preferred Alternative Visualization Aerial Facing U.S. Port of Entry

Figure 33: Preferred Alternative Visualization from Bridge

Figure 34: Preferred Alternative Visualization from Rainy River

Appendix D– AGENCY CORRESPONDENCE

- WCA Notice of Decision. November 20, 2015.
- U.S. Army Corps of Engineers letter of approval. January 11, 2016.
- MnDOT Section 7 Notification of Determination. March 1, 2016.
- Email from MnDNR. June 19, 2015.
- MnDOT Roadside Vegetation Management Unit Response Memo. August 26, 2013.
- Email from MnDNR confirming no Section 6(f) involvement. January 20, 2016.
- Draft de minimis impact finding of Peace Park Letter seeking concurrence from City of Baudette. January 18, 2017.
- Temporary Occupancy of Peace Park letter; concurrence from City of Baudette. January 10, 2017.
- Email from MnDOT Aeronautics. December 15, 2015.
- BDE Airspace, Baudette / Rainy River Figure. June 16, 2015.

Minnesota Wetland Conservation Act
Notice of Decision

Local Government Unit (LGU)	Address
Lake of the Woods County **Land & Water Planning Office**	**206 8th Avenue SE Suite #290** **Baudette MN 56623**
Minnesota Department of Transportation Office of Environmental Stewardship	**395 John Ireland Blvd** **Mailstop 620** **St. Paul MN 55155-1899**

1. PROJECT INFORMATION

Applicant Name	Project Name	Date of Application	Application Number
MNDOT Bemidji District (Staci Cann)	**TH 72 SP 3905-09**	**October 20, 2015**	**102015**

☒ Attach site locator map.

Type of Decision:

☒ Wetland Boundary or Type ☐ No-Loss ☐ Exemption ☐ Sequencing
☐ Replacement Plan ☐ Banking Plan

Technical Evaluation Panel Findings and Recommendation (if any):

☒ Approve ☐ Approve with conditions ☐ Deny

Summary (or attach): The TEP reviewed the site with Mike Pederson, Stantec, to verify the delineated wetland boundary and recommends approval as presented.

2. LOCAL GOVERNMENT UNIT DECISION

Date of Decision: **November 19,2015**

☒ Approved ☐ Approved with conditions (include below) ☐ Denied

LGU Findings and Conclusions (attach additional sheets as necessary):

This Notice of Decision encompasses the entire "study area" as defined in the wetland delineation report dated July 31, 2015, for the Rainy River International Bridge Replacement project. This Notice of Decision provides approval from the two local government units (LGU) having authority within the current right-of-way (ROW) for Highway 72 and other properties identified within the "study area".

The TEP reviewed the site on November 19, 2015, in order to verify the delineated wetland boundaries. Based upon the TEP review of the site, the LGU's concur with the recommendation of the TEP to approve the wetland delineation.

For Replacement Plans using credits from the State Wetland Bank:

Bank Account #	Bank Service Area	County	Credits Approved for Withdrawal

Replacement Plan Approval Conditions. In addition to any conditions specified by the LGU, the approval of a Wetland Replacement Plan is conditional upon the following:

☐ **Financial Assurance:** For project-specific replacement that is not in-advance, a financial assurance specified by the LGU must be submitted to the LGU in accordance with MN Rule 8420.0522, Subp. 9 (List amount and type in LGU Findings).

☐ **Deed Recording:** For project-specific replacement, evidence must be provided to the LGU that the BWSR "Declaration of Restrictions and Covenants" and "Consent to Replacement Wetland" forms have been filed with the county recorder's office in which the replacement wetland is located.

☐ **Credit Withdrawal:** For replacement consisting of wetland bank credits, confirmation that BWSR has withdrawn the credits from the state wetland bank as specified in the approved replacement plan.

Wetlands may not be impacted until all applicable conditions have been met!

LGU Authorized Signature:

Signing and mailing of this completed form to the appropriate recipients in accordance with 8420.0255, Subp. 5 provides notice that a decision was made by the LGU under the Wetland Conservation Act as specified above. If additional details on the decision exist, they have been provided to the landowner and are available from the LGU upon request.		
Name **Josh Stromlund** **Sarma Straumanis**	Title **Land & Water Planning Director** **Wetland Program Coordinator (MNDOT)**	
Signature Josh R. Stromlund Sarma Straumanis	Date **November 20, 2015**	Phone Number and E-mail **(218) 634-1945** **josh_s@co.lake-of-the-woods.mn.us** **(651) 366-3626** **sarma.straumanis@state.mn.us**

THIS DECISION ONLY APPLIES TO THE MINNESOTA WETLAND CONSERVATION ACT. Additional approvals or permits from local, state, and federal agencies may be required. Check with all appropriate authorities before commencing work in or near wetlands.

Applicants proceed at their own risk if work authorized by this decision is started before the time period for appeal (30 days) has expired. If this decision is reversed or revised under appeal, the applicant may be responsible for restoring or replacing all wetland impacts.

This decision is valid for three years from the date of decision unless a longer period is advised by the TEP and specified in this notice of decision.

3. APPEAL OF THIS DECISION

Pursuant to MN Rule 8420.0905, any appeal of this decision can only be commenced by mailing a petition for appeal, including applicable fee, within thirty (30) calendar days of the date of the mailing of this Notice to the following as indicated:

Check one:

☒ Appeal of an LGU staff decision. Send petition and $**500** fee (if applicable) to: **Lake of the Woods County** **Land & Water Planning Office** **206 8th Avenue SE Suite #290** **Baudette MN 56623**	☐ Appeal of LGU governing body decision. Send petition and $500 filing fee to: Executive Director Minnesota Board of Water and Soil Resources 520 Lafayette Road North St. Paul, MN 55155

4. LIST OF ADDRESSEES

- ☒ SWCD TEP member: **Mike Hirst, P.O. Box 217, Baudette MN 56623**
- ☒ BWSR TEP member: **Dale Krystosek, 403 4th St. NW Suite #200, Bemidji MN 56601**
- ☐ LGU TEP member (if different than LGU Contact):
- ☒ DNR TEP member: **Dan Thul, Eco/Water Resources**
- ☒ DNR Regional Office (if different than DNR TEP member): **Nathan Kestner, Eco/Water Resources**
- ☐ WD or WMO (if applicable):
- ☒ Applicant and Landowner (if different): **John Smyth, Stantec (MNDOT Consultant)**
  2335 Highway 36 West St. Paul MN 55113-3819

  Joe McKinnon, MNDOT District 2 Project Engineer
  3920 Highway 2 West, Bemidji MN 56601
- ☐ Members of the public who requested notice:

- ☒ Corps of Engineers Project Manager: **Craig Jarnot, 4111 Technology Drive**
  Suite #295, Bemidji MN 56601

  Benjamin Orne, 180 5th Street East, Suite 700,
  St. Paul MN 55101

- ☐ BWSR Wetland Bank Coordinator (wetland bank plan decisions only)

5. MAILING INFORMATION

➢For a list of BWSR TEP representatives: www.bwsr.state.mn.us/aboutbwsr/workareas/WCA_areas.pdf

➢For a list of DNR TEP representatives: www.bwsr.state.mn.us/wetlands/wca/DNR_TEP_contacts.pdf

➢Department of Natural Resources Regional Offices:

NW Region:	NE Region:	Central Region:	Southern Region:
Reg. Env. Assess. Ecol. Div. Ecol. Resources 2115 Birchmont Beach Rd. NE Bemidji, MN 56601	Reg. Env. Assess. Ecol. Div. Ecol. Resources 1201 E. Hwy. 2 Grand Rapids, MN 55744	Reg. Env. Assess. Ecol. Div. Ecol. Resources 1200 Warner Road St. Paul, MN 55106	Reg. Env. Assess. Ecol. Div. Ecol. Resources 261 Hwy. 15 South New Ulm, MN 56073

For a map of DNR Administrative Regions, see: http://files.dnr.state.mn.us/aboutdnr/dnr_regions.pdf

➢For a list of Corps of Project Managers: www.mvp.usace.army.mil/regulatory/default.asp?pageid=687
or send to:

US Army Corps of Engineers
St. Paul District, ATTN: OP-R
180 Fifth St. East, Suite 700
St. Paul, MN 55101-1678

➢For Wetland Bank Plan applications, also send a copy of the application to:

Minnesota Board of Water and Soil Resources
Wetland Bank Coordinator
520 Lafayette Road North
St. Paul, MN 55155

6. ATTACHMENTS

In addition to the site locator map, list any other attachments:

☐
☐

Legend

Study Area

Figure No.
1

Title
Project Location

Client/Project
Minnesota Department of Transportation
Baudette International Bridge

Project Location
T161N, R31W, S35
City of Baudette
Lake of the Woods Co., MN

193802870
Prepared by SF on 2015-05-18
Technical Review by JM on 2015-07-13
Independent Review by MP on 2015-07-13

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Stantec

Notes
1. Coordinate System: NAD 1983 StatePlane Minnesota North FIPS 2201 Feet
2. Data Sources Include: Stantec and Esri.
3. Base Data: World Street Map

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

DEPARTMENT OF THE ARMY
ST. PAUL DISTRICT, CORPS OF ENGINEERS
180 FIFTH STREET EAST, SUITE 700
ST. PAUL MN 55101-1678

REPLY TO
ATTENTION OF

JAN 1 1 2016

Operations
Regulatory (2010-05515-BGO)

Stantec Consulting Services, Inc.
c/o Mr. John Smyth
2335 Highway 36 West
St. Paul, Minnesota 55113

Dear Mr. Smyth:

This letter is in response to your correspondence dated September 23, 2015, requesting Corps of Engineers concurrence with the delineation of aquatic resources and a preliminary jurisdictional determination (JD) for the SP 3905-09 Rainy River International Bridge Replacement site located in Section 35, Township 161N, Range 31W, Lake of the Woods County, Minnesota. The review area for our jurisdictional determination is identified as the "Study Area" on the attached figures labeled MVP-2010-05515-BGO, Page 1 of 2 through Page 2 of 2.

We have reviewed the July 31, 2015 delineation report titled *SP 3905-09 – Rainy River International Bridge Replacement* and determined that the limits of the aquatic resources have been accurately identified in accordance with current agency guidance including the *Corps of Engineers Wetland Delineation Manual* (1987 Manual) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region. This concurrence is only valid for the review area shown on the attached figures. The boundaries shown on Figure 5 accurately reflect the limits of the aquatic resources in the review area.

This concurrence may generally be relied upon for five years from the date of this letter. However, we reserve the right to review and revise our concurrence in response to changing site conditions, information that was not considered during our initial review, or off-site activities that could indirectly alter the extent of wetlands and other resources on-site. Our concurrence may be renewed at the end of this period provided you submit a written request and our staff are able to verify that the determination is still valid.

This preliminary JD presumes that all of the aquatic resources identified in the review area are subject to Corps of Engineers jurisdiction under the Clean Water Act. Since the determination is considered preliminary it is not appealable under our administrative appeal procedures (33 CFR 331). If you prefer an appealable approved jurisdictional determination that verifies the jurisdictional status of the aquatic resources within the review area you may request one by contacting the Corps representative identified in the final paragraph of this letter.

If this preliminary JD is acceptable, please sign and date both copies of the Preliminary Jurisdictional Determination Form and return one copy to the letterhead address within 15 days from the date of this letter.

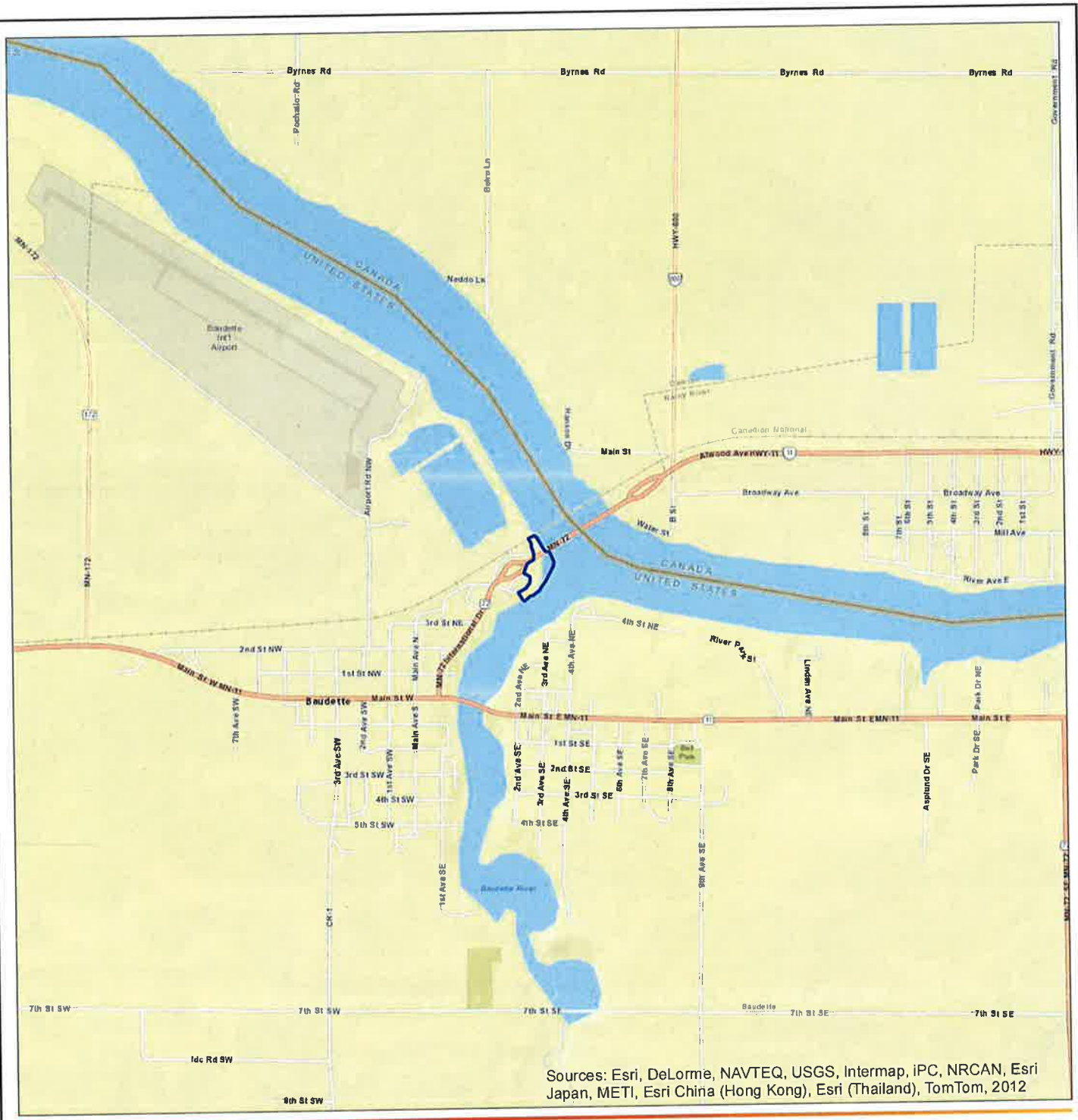
Thank you for your cooperation with the U.S. Army Corps of Engineers regulatory program. If you have any questions, please contact me in our St. Paul office at (651) 290-5280 or benjamin.g.orne@usace.army.mil. In any correspondence or inquiries, please refer to the Regulatory number shown above.

Sincerely,

Benjamin Orne
Senior Project Manager

Enclosures

cc:
Joe McKinnon, MnDOT
Sarma Straumanis, MnDOT
Josh Stromlund, Lake of the Woods County



Legend

Study Area

Notes
1. Coordinate System: NAD 1983 StatePlane Minnesota North FIPS 2201 Feet
2. Data Sources Include: Stantec and Esri.
3. Base Data: World Street Map

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

Figure No.
1

Title
Project Location

Client/Project
Minnesota Department of Transportation
Baudette International Bridge

Project Location
T161N, R31W, S35
City of Baudette
Lake of the Woods Co., MN

193802870
Prepared by SF on 2015-05-18
Technical Review by JM on 2015-07-13
Independent Review by MP on 2015-07-13

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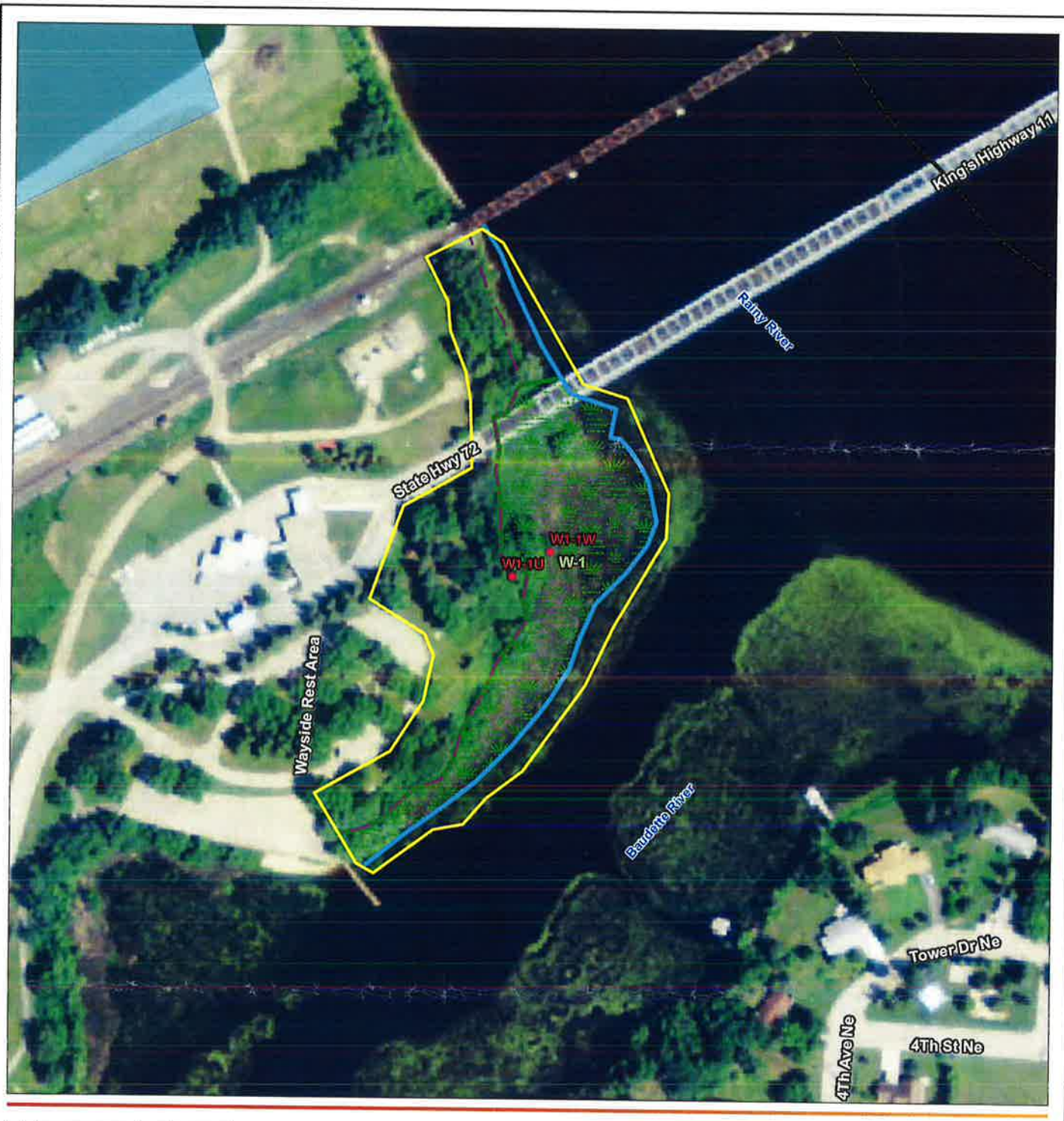
Stantec



Notes
1. Coordinate System: NAD 1983 StatePlane Minnesota North FIPS 2201 Feet
2. Data Sources Include: Stantec, USGS, and Esri.
3. Orthophotography: 2013 NAIP

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

Legend

- Study Area
- Sample Points
- Field Delineated Wetland
- Field Delineated Wetland Area
- Water Level at Site Visit
- Ordinary High Water Mark

National Hydrography Data

- Perennial Stream
- Intermittent Stream
- Waterbody

Figure No.
5

DRAFT

Title
Field Collected Data

Client/Project
Minnesota Department of Transportation
Baudette International Bridge

Project Location
T161N, R31W, S35
City of Baudette
Lake of the Woods Co., MN

193802870
Prepared by SF on 2015-05-18
Technical Review by MP on 2015-05-18
Independent Review by JS on 2015-12-22

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Stantec

Page 01 of 01

Copy mailed to COE

PRELIMINARY JURISDICTIONAL DETERMINATION FORM 1/20/16

This preliminary JD finds that there *"may be"* waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

District Office: St. Paul District | File/ORM #: MVP-2010-05515-BGO | PJD Date: Dec 23, 2015

State: MN | City/County: Lake of the Woods County

Nearest Waterbody: Rainy River and Baudette River

Location: TRS, LatLong or UTM: Section 35, Township 161N, Range 31W

Name/ Address of Person Requesting PJD: Stantec Consulting Services Inc.
c/o Mr. John Smyth
2335 Highway 36 West
St. Paul, Minnesota 55113

Identify (Estimate) Amount of Waters in the Review Area:

Non-Wetland Waters: 1,000 linear ft | 250 width | 3.0 acres | Stream Flow: Perennial

Wetlands: 1.98 acre(s) | Cowardin Class: Palustrine, emergent

Name of Any Water Bodies on the Site Identified as Section 10 Waters: Tidal: | Non-Tidal: Rainy River

☑ Office (Desk) Determination
☐ Field Determination: Date of Field Trip:

SUPPORTING DATA: Data reviewed for preliminary JD (check all that apply - checked items should be included in case file and, where checked and requested, appropriately reference sources below):

- ☑ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: July 31, 2015 Delineation Report
- ☑ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
  - ☑ Office concurs with data sheets/delineation report.
  - ☐ Office does not concur with data sheets/delineation report.
- ☐ Data sheets prepared by the Corps
- ☐ Corps navigable waters' study:
- ☑ U.S. Geological Survey Hydrologic Atlas:
  - ☑ USGS NHD data.
  - ☐ USGS 8 and 12 digit HUC maps.
- ☑ U.S. Geological Survey map(s). Cite quad name: 24K MN-BAUDETTE
- ☑ USDA Natural Resources Conservation Service Soil Survey. Citation: Lake of the Woods County Soil Survey
- ☑ National wetlands inventory map(s). Cite name: MN NWI
- ☐ State/Local wetland inventory map(s):
- ☐ FEMA/FIRM maps:
- ☐ 100-year Floodplain Elevation is:
- ☑ Photographs: ☑ Aerial (Name & Date): FSA 2013
  - ☐ Other (Name & Date):
- ☐ Previous determination(s). File no. and date of response letter:
- ☑ Other information (please specify): Lake of the Woods LiDAR Data

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

Benjamin Ow 12/23/2015
Signature and Date of Regulatory Project Manager (REQUIRED)

1/20/16
Signature and Date of Person Requesting Preliminary JD (REQUIRED, unless obtaining the signature is impracticable)

EXPLANATION OF PRELIMINARY AND APPROVED JURISDICTIONAL DETERMINATIONS:

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "preconstruction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable.

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

This preliminary JD finds that there *"may be"* waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

Appendix A - Sites

District Office	St. Paul District	File/ORM #	MVP-2010-05515-BGO	PJD Date:	Dec 23, 2015
State	MN	City/County	Lake of the Woods County	Person Requestinq PJD	John Smyth, Stantec

Site Number	Latitude	Longitude	Cowardin Class	Est. Amount of Aquatic Resource in Review Area	Class of Aquatic Resource
W1	48.718	-94.593	Palustrine, emergent	1.98 ac	non-section 10 - wetland
T1	48.719	-94.593	Riverine	230 lf (0.30 ac)	section 10 - tributary
T2	48.717	-94.593	Riverine	770 lf (2.7 ac)	non-section 10 - tributary

Notes:

T1 - Rainy River

T2 - Baudette River

Minnesota Department of Transportation
395 John Ireland Boulevard
Saint Paul, MN 55155

March 1, 2016

Andrew Horton
Fish and Wildlife Biologist
U.S. Fish and Wildlife Service
Twin Cities ES Field Office
4101 American Blvd East
Bloomington, MN 55425-1665

Notification of Determination – May Affect, but will not cause prohibited incidental take – northern long-eared bat (*Myotis septentrionalis*)

No Effect Determination – canada lynx (*Lynx canadensis*)
No Effect Determination – gray wolf (*Canis lupus*)
No Effect Determination – piping plover (*Charadrius melodus*)

State Project 3905-09, Trunk Highway 72
Baudette, MN and Rainy River, Ontario; Lake of the Woods County; T 160, R 31, Section 2
This project proposes to replace bridge 9412 on Highway 72 over the Rainy River. Work will include bypass lane construction, stormwater pond construction, and up to 1.25 acres of tree removal.

Figure 1: View of Bridge 9412 from the east

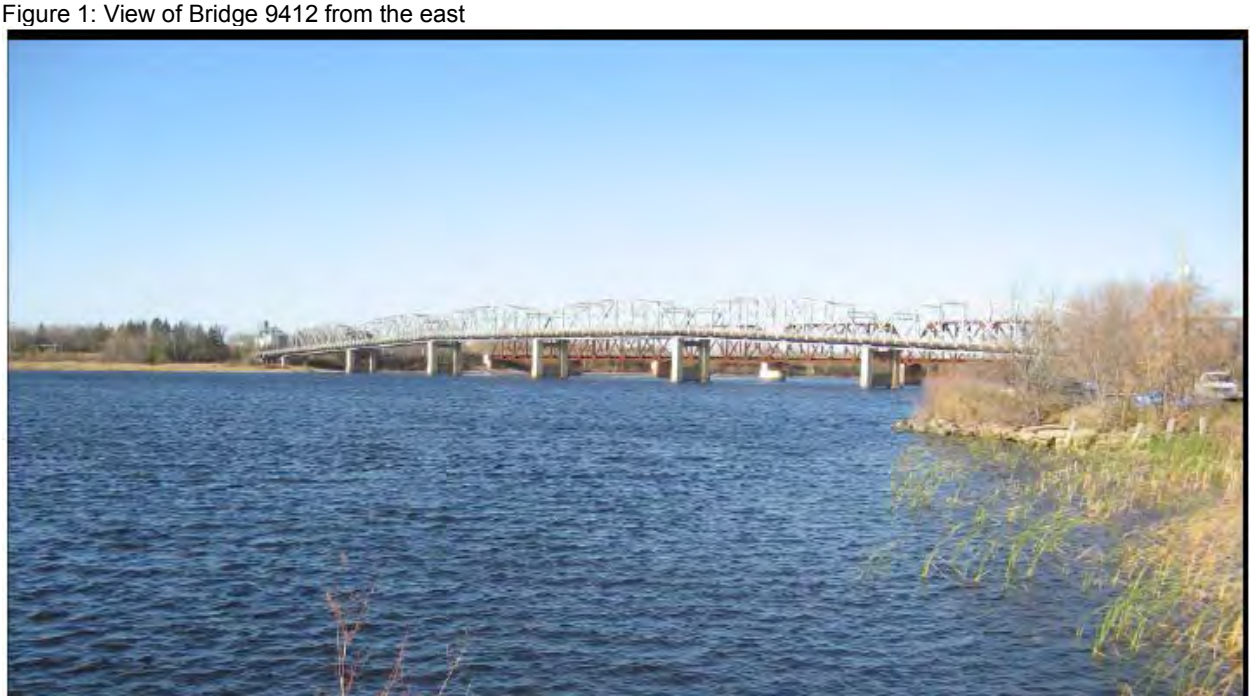
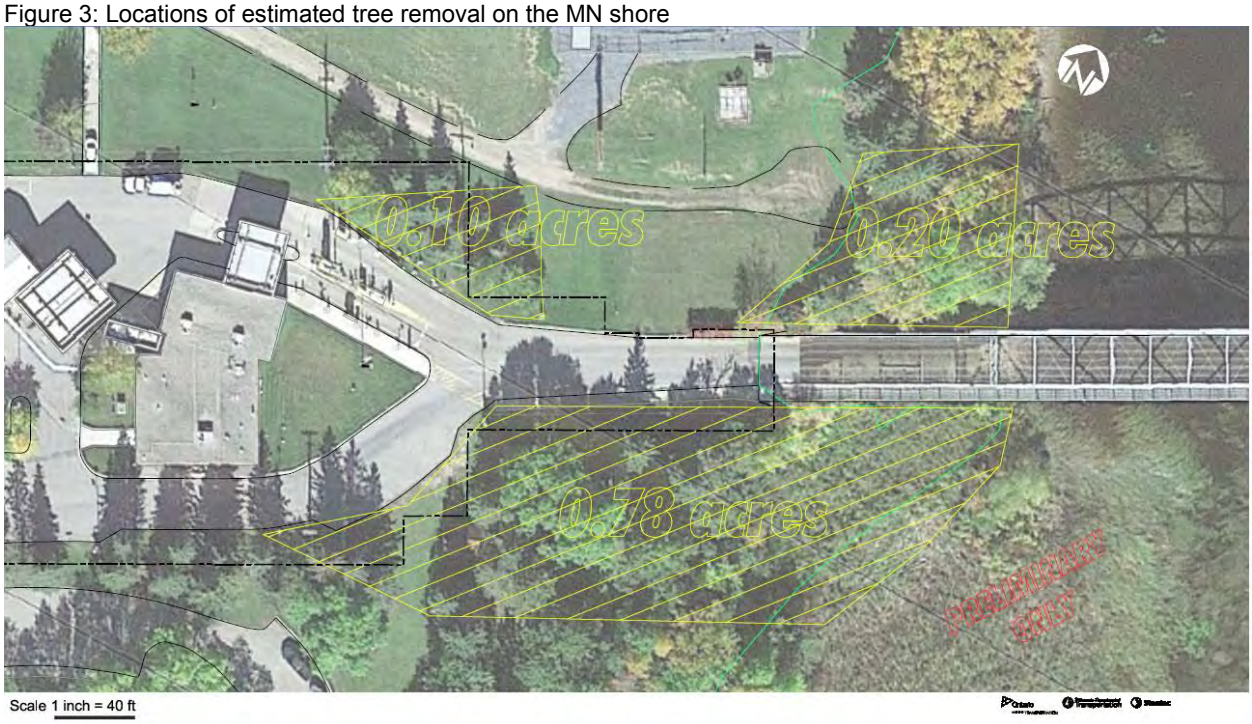


Figure 2: Project Location

Figure 3: Locations of estimated tree removal on the MN shore



Species List for the Project County

According to the official County Distribution of Minnesota and Wisconsin's Federally-Listed Threatened, Endangered, Proposed, and Candidate Species list (revised in February 2016), maintained by the Service, the project county is within the distribution range of the following:

Revised February 2016

County	Species	Status	Habitat
Lake of the Woods	Canada lynx *(Lynx canadensis)*	Threatened	Northern forest
	Gray wolf *Canis lupus*	Threatened	Northern forest
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. Roosts and forages in upland forests during spring and summer.
	Piping plover *(Charadrius melodus)* Northern Great Plains Breeding Population	Threatened; and Critical Habitat	Sandy beaches, islands Map of Critical Habitat Unit (1-page PDF)

No Effect Determinations

Section 7 of Endangered Species Act of 1973, as amended (Act), requires each Federal agency to review any action that it funds, authorizes or carries out to determine whether it may affect threatened, endangered, proposed species or listed critical habitat. Federal agencies (or their designated representatives) must consult with the U.S. Fish and Wildlife Service (Service) if any such effects may occur as a result of their actions. Consultation with the Service is not necessary if the proposed action will not directly or indirectly affect listed species or critical habitat. If a federal agency finds that an action will have no effect on listed species or critical habitat, it should maintain a written record of that finding that includes the supporting rationale.

No Effect Determination – canada lynx (*Lynx canadensis*)
No Effect Determination – gray wolf (*Canis lupus*)
No Effect Determination – piping plover (*Charadrius melodus*)

Lynx canadensis – Determination of No Effect
The proposed project will replace the bridge in place. Any impacts to adjacent habitat will be minimal. This project is outside of any critical habitat designated for this species. ***Therefore, MnDOT on behalf of the FHWA has made a determination of no effect for this species.***

Canis lupus – Determination of No Effect
The proposed project will replace the bridge in place. Any impacts to adjacent habitat will be minimal. This project is outside of any critical habitat designated for this species. ***Therefore, MnDOT on behalf of the FHWA has made a determination of no effect for this species.***

Charadrius melodus – Determination of No Effect
There are no known occurrences of the species in the project area and the project is outside of any critical habitat identified for this species. ***Therefore, MnDOT on behalf of the FHWA has made a determination of no effect for this species.***

Notice of Determination
Northern long-eared bat— May Affect, but will not cause prohibited incidental take.

According to the information provided, this project will include bridge replacement and tree removal. There are no known occurrences of NLEB roost trees or hibernacula in the vicinity of this project. Although there is a slight chance that this work could impact bats, it is not considered to be prohibited incidental take based on the final 4(d) rule for the northern long-eared bat as published on January 14, 2016 and effective beginning February 16, 2016.

Based on the optional framework for section 7 consultation described in the Programmatic Biological Opinion on the Final 4(d) Rule for the Northern Long-Eared Bat, MnDOT on behalf of the FHWA has determined that the proposed action may affect, but will not cause prohibited incidental take of the northern long-eared bat (Myotis septentrionalis). MnDOT will proceed with this action unless we receive additional information from the service within 30 days.

Please contact me if there are any questions or concerns.

Ken Graeve
Minnesota Department of Transportation,
Office of Environmental Stewardship
395 John Ireland Boulevard,
St. Paul, MN 55155
Phone: 651-366-3613
Email: kenneth.graeve@state.mn.us

From: Leete, Peter (DOT) [mailto:peter.leete@state.mn.us]
Sent: Friday, June 19, 2015 10:01 AM
To: Cann, Staci (DOT)
Cc: Maahs-Henderson, Theresa; Wingard, John (DOT); Wingert, Sarah E MVP (Sarah.E.Wingert@usace.army.mil); Straumanis, Sarma (DOT); Joyal, Lisa (DNR); Bump, Samantha (DNR); Kestner, Nathan (DNR); Talmage, Phil J (DNR); Alcott, Jason (DOT); Dahlin, Greg (DNR); Thul, Dan C (DNR); Laudenslager, Scott L (DNR); Tom.Kleinboeck@dfo-mpo.gc.ca
Subject: DNR Comments on MnDOT Early Notification Memo, TH72 Rainy River Bridge Replacement (SP3905-09), LOTW Co

Staci,
This email is the DNR response for your project records. The DNR has had input on this project at several opportunities over the past four years, though I find no record of a single summary of concerns/issues. I am now getting calls for such a letter now that the project is moving into the next phase. With a new set of consultants and project managers, I agree that one is needed. Most concerns are in regards to temporary impacts during construction/demolition. Though staging for these concerns could impact project development and final design. Please consider the following comments as final designs and special provisions are developed:

1. The Rainy River is a Public Waters. A Public Waters Work Permit will be required. Though, as you know there is a General Permit to MnDOT for replacement of bridges and culverts to aid in streamlining of the permit process. A copy of the DNR's General Permit to MnDOT (GP2004-0001) is attached, please review all the conditions of this permit and integrate their requirements into project design. Please contact me if you have questions on any of its requirements. Authorization for the project will require final review at a later date. When the project is further along, please enter the project into the DNR online permitting system (MPARS) when there is enough information to do so: www.dnr.state.mn.us/mpars. Specific items to incorporate into design and construction are:

    A. As the project moves forward, design of the crossing should meet the conditions listed in GP 2004-0001: http://files.dnr.state.mn.us/waters/watermgmt_section/pwpermits/General_Permit_2004-0001.pdf. Additional information, including options on how to meet the conditions of the GP are presented in the collection of ' Best Practices for Meeting GP 2004-0001', at http://www.dnr.state.mn.us/waters/watermgmt_section/pwpermits/gp_2004_0001_manual.html

    B. We typically limit work in the water (Work Exclusion dates) to allow for undisturbed fish migration and spawning. These dates are March 15 through June 15. While we may revise these dates for a particular project, there may still be limitations on the types of work during this time. The Rainy river is an important fisheries resource. As such, the waiving of these dates is not likely – see 'C' below.

    Please be aware that the MPCA NPDES general permit for authorization to discharge stormwater associated with construction activities (permit MN R10001) recognizes the DNR "work in water restrictions" during specified fish migration and spawning time frames for areas adjacent to water. During the restriction period, all exposed soil areas that are within 200 feet of the water's edge and drain to these waters, must have

erosion prevention stabilization activities initiated immediately after construction activity has ceased (and be completed within 24 hours).

C. Approval of construction and demolition methods will need to occur at a later date, though be aware that due to the work exclusion dates, in-water work will be limited or prohibited from March 15 through June 15. Typical movement of barges and tugs for above water construction will not be an issue during these dates. However, seismic activities could frighten or harm migrating or spawning fish. As such, pile driving, sheet pile installation/removal, or implosions for span or pier removal of the existing bridge we would not be allowed. Please design the projects staging to avoid these types of activities during the dates given. IE: stage pier construction to begin after June 15 and be up and out of the water prior to March 15. Ditto for bridge pier demolition.

D. Revegetation of disturbed soils should include native mixes in areas that are not proposed for mowed turf grass. Please utilize the native recommendations developed by BWSR (http://www.bwsr.state.mn.us/native_vegetation/) or MnDOT' in the 'Turf Establishment Recommendations – dated April 14, 2014 (http://www.dot.state.mn.us/environment/erosion/seedmixes.html). In addition, for meeting DNR concerns, revegetation may include woody vegetation (trees and shrubs) in addition to grasses and/or forbs.

E. Water appropriation is not included in the GP. Please remind contractors that a separate water use permit is required for withdrawal of more than 10,000 gallons of water per day or 1 million gallons per year from surface water or ground water. GP1997-0005 (temporary water appropriations) covers a variety of activities associated with road construction and should be applied of if applicable. An individual appropriations permit may be required for projects lasting longer than one year or exceeding 50 million gallons. Information is located at: http://www.dnr.state.mn.us/waters/watermgmt_section/appropriations/permits.html

2. The Rainy River has been designated as infested with aquatic invasive species due to the known presence of the spiny water flea. There are also reports of zebra mussels having been introduced into the watershed. By the time of bridge construction, precautions for the zebra mussel may also be in place. Attached are best practices that have been developed for construction equipment to prevent the spread of these species. This information is also online at
http://files.dnr.state.mn.us/publications/ewr/invasives/ais/best_practices_for_prevention_ais.pdf
It is likely that a permit will be required for transporting construction equipment. More information is also at: http://www.dnr.state.mn.us/invasives/ais_transport.html

3. Aesthetic bridge lighting has not been in any discussions to date that I am aware of. However these large 'signature bridges' tend to have such a discussion at some point. Attached is what has been developed by the DNR, Audubon Society, and USFWS in regards to aesthetic lighting. This was developed primarily due potential conflicts with bird migrations in the Mississippi river flyway. I attach this as an FYI in case the question comes up.

4. The project shall allow for recreational navigation through the work area. Coordination with local authorities (including the DNR conservation officer) for providing passage is will need to occur as the project nears construction. Parameters to consider are a temporary no-wake zone and channel through the worksite delineated with a buoy system and be maintained throughout the project for the safest passage through the work site. This channel shall continue above and below the work site. Buoys must meet US Coast Guard regulations and DNR standards for channel navigation. Activities that would necessitate a temporary closure of all recreational navigation through the work site would require advance notification to local authorities. Being that this is an international boundary, such coordination will involve many authorities.

5. The Minnesota Natural Heritage Information System (NHIS) has been queried to determine if any rare plant or animal species, native plant communities, or other significant natural features are known to occur within an approximate one-mile radius of the project area. Based on this query, several rare features have been documented within the search area (If details are needed for documentation, please contact me). Please note that the following rare features *may* be impacted by the proposed project:

    A. Lake Sturgeon (Acipenser fulvescens), a state listed 'Species of Concern' is known to exist in the Rainy River. Stringent prevention and control measures for debris and construction material containment should be in place to prevent adverse material from entering the river. Also see item 1.C for preventing adverse impacts during the spring migration and spawning period.

    The NHIS is not an exhaustive inventory and thus does not represent all of the occurrences of rare features within the state. If information becomes available indicating additional listed species or other rare features, further review may be necessary.

DNR folks, if I've missed anything, or have any suggestions for MnDOT to consider, please respond ASAP to Staci, and myself.

Contact me if you have questions

Peter Leete
Transportation Hydrologist (DNR-MnDOT Liaison)
DNR Ecological & Water Resources
Ph: 651-366-3634

Best Practices for Preventing the Spread of Aquatic Invasive Species

All equipment[1] being transported on roads or placed in Waters of the State shall be free of prohibited and regulated invasive species and unlisted non-native species (any other species not native to Minnesota)

1. **Project plans or documents should identify Designated Infested Waters**[2] located in or near the project area.

2. **Prior to transportation along roads into or out of any worksite, or between water bodies within a project area, all equipment** must be free of any aquatic plants, water, and prohibited invasive species.
   A. **Drain** all water from equipment where water may be trapped, such as tanks, pumps, hoses, silt curtains, and water-retaining components of boats/barges (see Figures 5 & 6) **AND**
   B. **Remove** all visible aquatic remnants (plants, seeds and animals). Removal of mud & soil is not required at all sites, though is encouraged as a Best Practice. Removal of mud and soil may be required on sites designated as infested (see #4).

3. **Prior to placing equipment into any waters,** all equipment must be free of aquatic plants and non-native animals.

4. **Additional measures are required on *Designated Infested Waters* to remove and kill prohibited species such as zebra mussels, quagga mussels, New Zealand mudsnails, faucet snails, or spiny waterfleas.**
   Note: The DNR is available to train site inspectors and/or assist in these inspections. Contact the appropriate Regional Invasive Species Specialist: www.mndnr.gov/invasives/ais/contacts.html
   A. For day use equipment (in contact with the water for 24 hours or less); Perform #2 above or,
   B. For in-water exposure greater than 24 hours: Perform #2 above, and inspect all equipment for the prohibited invasive species present (see Figure 1).

Figure 1. Invasive species may not be readily visible on equipment. Some species are less than 1/4 inch in size.
Photo credit: Brent Wilber, Lunda Construction

   Then choose one of the following three: **on-site treatment, off-site treatment**, or **customized alternative.**

On-Site Treatment

Remove by handscraping or powerwashing (minimum 3000 psi) all accessible areas (Figures 1 and 2) **AND**

Kill Prohibited Aquatic Invasive Species in non-accessible areas using one or more of the following four techniques:

- **Hot Water (minimum 140°F) for ten seconds** (Figure 2) for zebra mussels, quagga mussels, New Zealand mudsnails, faucet snails **OR**
- **Air Dry** (Figures 3 & 4)
  Spiny waterfleas – air dry for a minimum of 2 days
  New Zealand mudsnails – air dry for a minimum of 7 days
  zebra or quagga mussels, faucet snails – air dry for a minimum of 21 days **OR**
- **Freezing Temperatures**
  zebra mussels - expose to continuous temperature below 32°F for 2 days **OR**
- **Crush**
  Crush rock, concrete, or other debris by running it through a crushing plant to kill prohibited species

Figure 2. Removal of aquatic remnants is required before transporting.
Photo credit: Peter Leete, DNR

Off-Site Treatment

Under certain conditions, the DNR will allow transportation of equipment off-site after partial removal of prohibited species (for example, after "removal" has been done and equipment will be taken to a facility to complete final treatment [i.e., "kill"]) This is a 'one-way pass' to allow transport to a storage area or disposal facility. This option can only be utilized if the receiving site is at least 300 feet from riparian areas, wetlands, ditches, stormwater inlets or treatment facilities, seasonally-flooded areas, or other waters of the state. To be allowed to use the off-site treatment option you must do the following:

- Read, complete, and comply with the appropriate authorization form for transportation of Prohibited Invasive Species at www.mndnr.gov/invasives/ais_transport.html (Note that a completed form is required to be in every vehicle that is transporting equipment containing infested species) **AND**
- Complete on-site treatment described in 4B above prior to re-use in or adjacent to water.

Best Practices for Preventing the Spread of Aquatic Invasive Species

Contact a DNR Invasive Species Specialist for authorization of a customized alternative

There may be situations due to time of year, length of exposure, type of equipment, or site conditions that a DNR Invasive Species Specialist could approve alternative methods or requirements for treatment. Contact the appropriate Regional Invasive Species Specialist: www.mndnr.gov/invasives/contacts.html

5. **Temporary appropriations of water from Designated Invested Waters to utilize elsewhere (such as for dust control, landscaping, bridge washing, etc.) is not allowed except by permit, thus should be avoided.**

If use of Designated Infested Waters is unavoidable, permit information is located at www.mndnr.gov/waters/watermgmt_section/appropriations/permits.html

Figure 3. Drying will also kill aquatic organisms. Lay out materials to dry in the proper time. Drying times vary by species. Inspect after drying period is over.
Photo credit: Dwayne Stenlund, MnDOT

Figure 4. Drying techniques must not trap water. This equipment will not dry adequately.
Photo credit: Peter Leete, DNR

Figure 5. Pumping from designated infested waters for use elsewhere on the project is prohibited without a permit.
Photo credit: Peter Leete, DNR

Figure 6. Drain all water from equipment where water may be trapped. Remove drain plugs and drain hoses prior to transport.
Photo Credit: Peter Leete, DNR

Document Information
www.mndnr.gov/waters/watermgmt_section/pwpermits/gp_2004_0001_manual.html
Best Practices for Meeting DNR GP 2004-0001 (published 5/11, updated 12/12) – Chapter 1/Page 8

More on the DNR Invasives Species Program can be found at: www.mndnr.gov/AIS

[1] **'Equipment'** is defined as any implement utilized in construction. This includes boats, barges, heavy machinery, light machinery, or other material that may be moved on-site or off-site, including but not limited to rock (riprap) or timber for temporary workpads, backhoes, pumps, hoses, worksite isolation materials (eg, sheet pile or jersey barriers), boats, barges, temporary staging materials, erosion prevention products, sediment control products (eg, silt curtain), water trucks that take water from open bodies of water (eg, dust control), or dewatering components.
[2] **List of Designated Infested Waters**: http://files.dnr.state.mn.us/eco/invasives/infested_waters.pdf

DNR Contact Information

DNR Ecological and Water Resources lists area office staff at www.mndnr.gov/waters

DNR Ecological and Water Resources
500 Lafayette Road, Box 32, St. Paul, MN 55155-4032, (651)259-5700 or 5100

DNR Ecological and Water Resources website provides information at www.mndnr.gov or by calling (651) 259-5700 or 5100.

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DNR Information Center

This information is available in an alternative format on request

Twin Cities: (651) 296-6157
Minnesota toll free: 1-888-646-6367
Telecommunication device for the deaf (TDD): (651) 296-5484
TDD toll free: 1-800-657-3929

Equal opportunity to participate in and benefit from programs of the Minnesota Department of Natural Resources is available regardless of race, color, national origin, sex, sexual orientation, marital status, status with regard to public assistance, age, or disability. Discrimination inquiries should be sent to Minnesota DNR, 500 Lafayette Road, St. Paul, MN 55155-4049; or the Equal Opportunity Office, Department of the Interior, Washington, DC 20240.

Minnesota Department of Transportation
Roadside Vegetation Management Unit
395 John Ireland Boulevard
Saint Paul, MN 55155

Mail Stop 620
Office Phone 651-366-3610
Fax 651-366-3603

Memo

TO: J.T. Anderson, P.E.
Project Manager

FROM: Dan Gullickson
Natural Resource Program Coordinator

DATE: August 26, 2013

SUBJECT: SP 3905-09 (TH 72) Vegetation Review

I reviewed the area using ArcMap and the Video Log to determine potential vegetation impacts based on the information you supplied in your Early Notification Memo dated July 11, 2013 and our phone conversation on August 20, 2013. The following are my observations and recommendations.

Potential Impacts: There are not likely to be any impacts to rare species, rare native plant communities, trees, shrubs or other notable vegetation from this project. Typical erosion control and reseeding practices where soil disturbance occurs should suffice.

Should vegetation concerns become discovered during the upcoming public involvement process feel free to call upon me to take a closer look at any specific vegetation concerns that may arise.

Thank you for the opportunity to review this project for vegetation concerns. Please feel free to contact me if you have any other questions.

cc. Lynn Clarkowski-OES Director
Roadside Vegetation Management Unit

An Equal Opportunity Employer

Ribachonek, Allison

From: Hiller, Joe H (DNR) <Joe.Hiller@state.mn.us>
Sent: Wednesday, January 20, 2016 3:44 PM
To: Maahs-Henderson, Theresa
Subject: RE: LAWCON Funded Property - Baudette City Boat Launch Inquiry
Attachments: Baudette Map.PNG; Pages from LW27-00230_M.pdf; Pages from LW27-01051_M.pdf

Theresa,

Attached are three maps

1. Baudette Area showing the location of two funded parks
2. Project map of "Boat Launch" Grant 27-00230
3. Project map of "Timbermill Park" Grant 27-01051

The City has agreed to retain these sites and operate them solely for outdoor recreation. If your project would convert any part of them to a non-recreation use, please contact me.

Thanks for checking,

Joe Hiller
Park Grant Coordinator
MN Dept. of Natural Resources, Division of Parks and Trails
651-259-5538
Joe.hiller@state.mn.us
500 Lafayette Road, St. Paul, MN 55155-4039

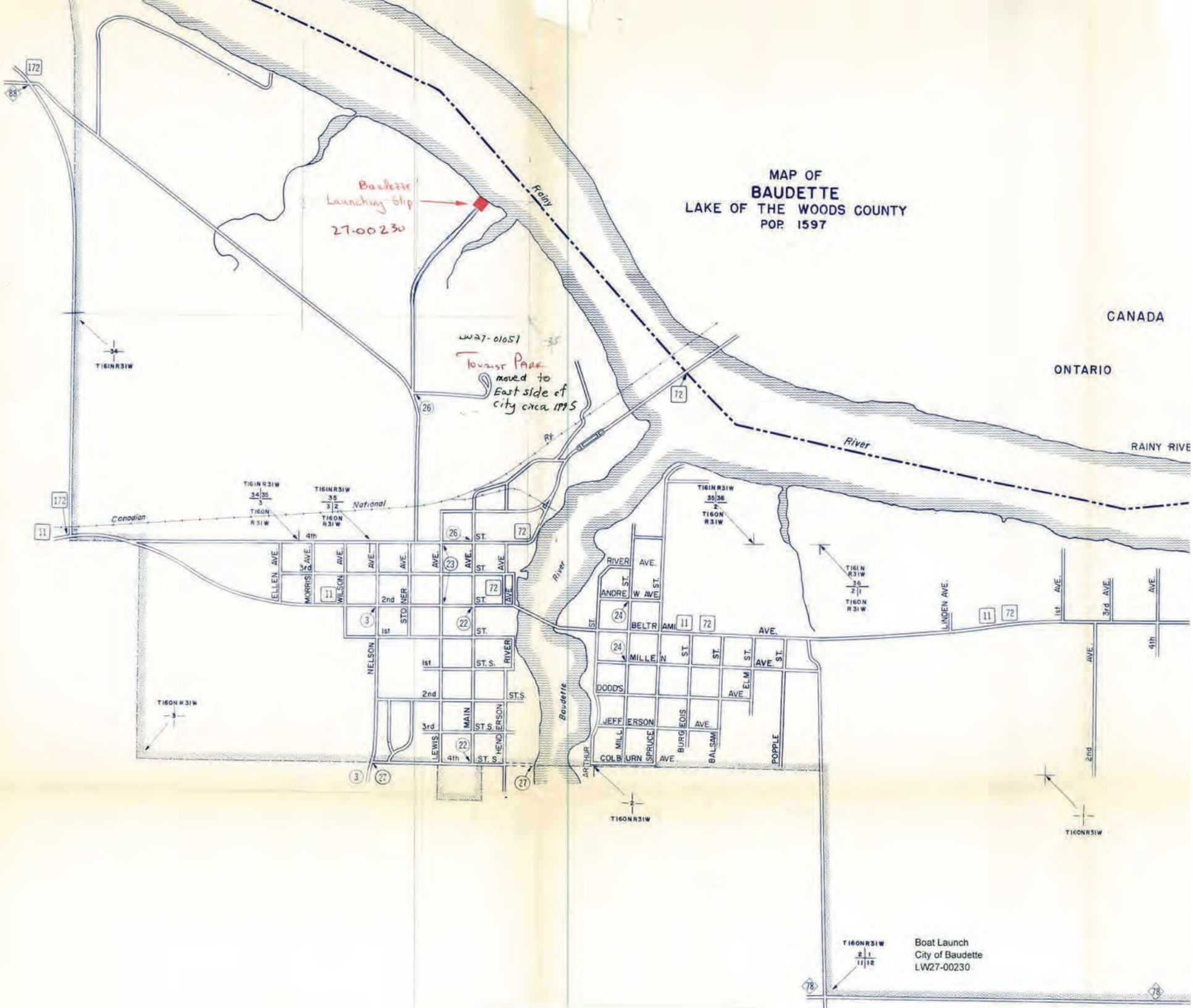
From: Maahs-Henderson, Theresa [mailto:Theresa.Maahs-Henderson@stantec.com]
Sent: Wednesday, January 20, 2016 3:39 PM
To: Hiller, Joe H (DNR)
Subject: LAWCON Funded Property - Baudette City Boat Launch Inquiry

Hi Joe,
Since I have your email, I thought it might be easier for you to just to reply to an email.

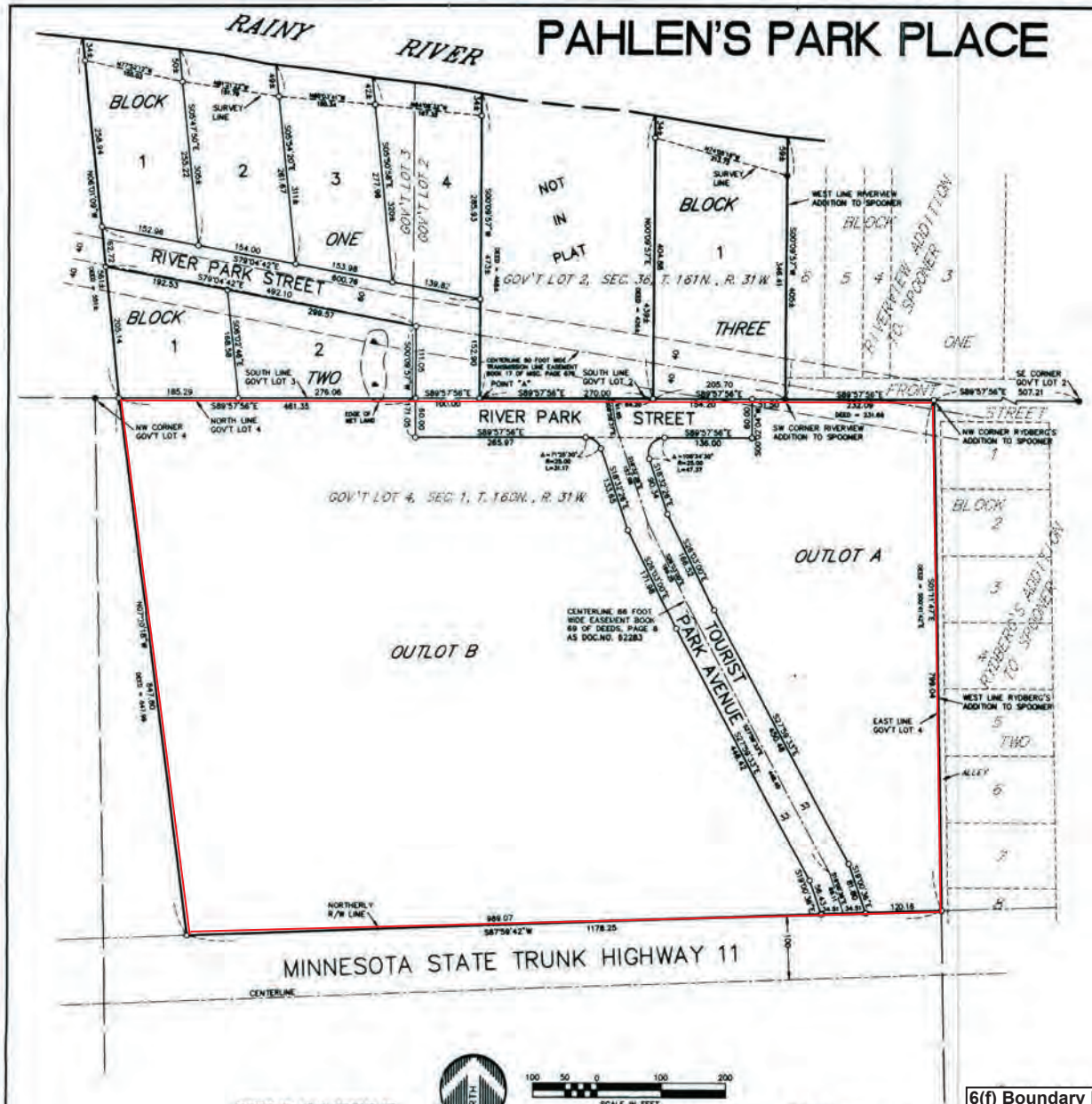
Thanks again.

Theresa Maahs, PE, LEED AP
Project Manager
Stantec
2335 Highway 36 West St. Paul MN 55113
Phone: 651-604-4786
Cell: 612-749-9177
Fax: 651-636-1311
theresa.maahs@stantec.com

Byrnes Rd
Belro Ln
600
172
City of Baudette ...
LW27-00230
County Road 377
Baudette International Airport
Airport Rd NW
14th Ave NW
Main St
Atwood Ave
Broadway Ave
8th St
7th St
5th St
3rd St
1st St
7th Ave
6th Ave
4th Ave
3rd Ave
2nd Ave
1st Ave
Park St
Little St
Bedard Rd
Rainy River
River Ave
Baudette - Timb...
LW27-01051
4th St N
2nd St NW
Main St W
Baudette
72
11
2nd St SE
9th Ave SE
1st Ave SE
MN-72 SE
County Road 164
1


MAP OF
BAUDETTE
LAKE OF THE WOODS COUNTY
POP. 1597
CANADA
ONTARIO
RAINY RIVE
Rainy
River
Baudette
Baudette Launching Slip
27-00230
LW27-01051
Tourist Park moved to East side of city circa 1995
Canadian
National
Rt
ELLEN AVE.
MORRIS AVE.
WILSON AVE.
NELSON
STONER AVE.
LEWIS
MAIN
HENDERSON
RIVER
ST.
ST. S.
1st
2nd
3rd
4th
ANDREW AVE.
BELTRAMI AVE.
MILLEN AVE.
DODDS AVE.
JEFFERSON AVE.
COLBURN AVE.
ARTHUR
MILL
SPRUCE
BURGEOIS
BALSAM
ELM
POPPLE
LINDEN AVE.
1st AVE.
2nd AVE.
3rd AVE.
4th AVE.
T161N R31W
T160N R31W
Boat Launch
City of Baudette
LW27-00230

PAHLEN'S PARK PLACE



WIDSETH SMITH NOLTING
ENGINEERS ARCHITECTS LAND SURVEYORS PROJECT MANAGERS
2000 Industrial Park Blvd P.O. Box 3700 Baxter, MN 56425 218-829-5117

KNOW ALL PERSONS BY THESE PRESENTS: That Scott Pahlen and Carolyn Pahlen, husband and wife, are the owners of the following described property situated in Lake of the Woods County, Minnesota, to-wit:

LEGAL DESCRIPTION:

That part of Government Lots Two (2) and Three (3), Section Thirty-six (36), Township One Hundred Sixty-one (161) North, Range Thirty-one (31) West and that part of Government Lot Four (4), Section One (1), Township One Hundred Sixty (160) North, Range Thirty-one (31) West of the Fifth Principal Meridian in Minnesota, according to the United States Government Survey thereof, Lake of the Woods County, Minnesota described as follows, to-wit:

Commencing at the Northwest corner of RYDBERG'S ADDITION to Spooner, according to the plat on file in the office of the County Recorder, Lake of the Woods County, Minnesota; thence North 89 degrees 57 minutes 56 seconds West, assumed bearing, along the South line of said Government Lot 2, Section 36, a distance of 231.66 feet to the Southwest corner of RIVERVIEW ADDITION to Spooner; the point of beginning of the tract to be described; thence reversing South 89 degrees 57 minutes 56 seconds East, a distance of 231.66 feet to the Northwest corner of said RYDBERG'S ADDITION; thence South 00 degrees 41 minutes 42 seconds East, along the West line of said RYDBERG'S ADDITION, a distance of 799.04 feet to the North right-of-way line of Minnesota's State Trunk Highway Number 11; thence South 87 degrees 59 minutes 42 seconds West, a distance of 1178.25 feet along the North right-of-way line of said Minnesota State Trunk Highway Number 11; thence North 07 degrees 20 minutes 18 seconds West, a distance of 847.99 feet to the South line of said Government Lot 3; thence North 06 degrees 01 minute 09 seconds West, a distance of 551 feet, more or less, to the shoreline of Rainy River; thence Easterly along the shoreline of the Rainy River, to the intersection with the line which bears North 00 degrees 09 minutes 57 seconds East from a point hereinafter designated as Point A (Point A is located as follows: Commencing at the southeast corner of Government Lot 2, Section 36, thence North 89 degrees 57 minutes 56 seconds West, assumed bearing along the South line of said Government Lot 2, a distance of 1215.00 feet to hereinbefore designated Point A); thence South 00 degrees 09 minutes 57 seconds West, a distance of 468 feet, more or less, to hereinbefore designated Point A; thence South 89 degrees 57 minutes 56 seconds East, a distance of 270.00 feet; thence North 00 degrees 09 minutes 57 seconds East, a distance of 426 feet, more or less, to the shoreline of the Rainy River; thence Easterly along the shoreline of the Rainy River, to the intersection with the West line of said RIVERVIEW ADDITION which bears North 00 degrees 09 minutes 57 seconds East from the point of beginning; thence South 00 degrees 09 minutes 57 seconds West, a distance of 405 feet, more or less, to the point of beginning. Subject to easements, reservations or restrictions of record, if any.

Have caused the same to be surveyed and platted as PAHLEN'S PARK PLACE and do hereby donate and dedicate to the public for public use forever RIVER PARK STREET and TOURIST PARK AVENUE, the roads shown on this plat and also dedicating the drainage and utility easements as shown on this plat for drainage and utility purposes only.

IN WITNESS WHEREOF, said Scott Pahlen and Carolyn Pahlen have hereunto set their hands this ___ day of _____, 19___.

OWNERS:

_____ Scott Pahlen

_____ Carolyn Pahlen

State of Minnesota
County of _____

The foregoing instrument was acknowledged before me this _____ day of _____, 19_____, by Scott Pahlen and Carolyn Pahlen, husband and wife.

_____
Notary Public
_____ County, Minnesota
My Commission Expires: _____

I hereby certify that I have surveyed and platted the property described on this plat as PAHLEN'S PARK PLACE, that this plat is a correct representation of the survey, that all distances are correctly shown on the plat in feet and hundredths of a foot, that all monuments have been correctly placed in the ground as shown or will be correctly placed in the ground as designated; that the outside boundary lines are correctly designated on the plat; and that there are no wet lands as defined in MS 505.02, Subd. 1, or public highways to be designated other than as shown.

_____
Donn R. Rasmussen, Land Surveyor
Minnesota License Number 16102

State of Minnesota
County of Crow Wing

The foregoing Surveyor's Certificate was acknowledged before me this _____ day of _____, 19_____, by Donn R. Rasmussen, Minnesota License Number 16102.

_____
Notary Public
Crow Wing County, Minnesota
My Commission Expires: _____

I hereby certify that I have checked the plat of PAHLEN'S PARK PLACE. I have found the mathematical computations to be correct, blocks and lots are correctly dimensioned and defined; related bearings and distances as shown are correct. This plat meets the requirements of Minnesota Statutes, Chapter 505.02. It is my professional opinion this plat is complete and accurate and I recommend it be approved for recording.

_____
Donald Coulter, Land Surveyor
Minnesota License Number 5452

COUNTY TREASURER

TAX STATEMENT
No delinquent taxes due and transfer entered this _____ day of _____, 19_____

_____
County Treasurer

COUNTY TREASURER

TAX STATEMENT
I hereby certify that all taxes for 19___ on the land described herein are paid

_____
County Treasurer

BAUDETTE CITY COUNCIL

I hereby certify that on the _____ day of _____, 19_____, the City Council of the City of Baudette, Minnesota, approved this plat.

_____
Mayor

RECORDING CERTIFICATE

I hereby certify that this Instrument was filed in the office of the County Recorder for record on this _____ day of _____, 19_____ at _____ o'clock ___ M., and was duly recorded in Plat file, Slide No. _____ Instrument No. _____

_____
County Recorder

6(f) Boundary Map 27-0151.1

City of Baudette - Timbermill Park

Add 22 acres to replace original Tourist Park near airport.

U.S. Department of Transportation
Federal Highway Administration

Minnesota Division

380 Jackson Street
Cray Plaza, Suite 500
St. Paul, MN 55101-4802
651.291.6100
Fax 651.291.6000
www.fhwa.dot.gov/mndiv

January 18, 2017

January 17, 2017

Mr. Roger Schotl
Public Works Director
City of Baudette
219 8th Avenue SE
Baudette, MN 56623

RE: Baudette/Rainy River International Bridge Reconstruction
SP 3905-09
Request for Concurrence on De Minimis Impact to Park

Dear Mr. Schotl:

This letter is regarding the proposed impacts to the Peace Park property located adjacent to the existing international bridge crossing (Bridge #9412), as a result of the bridge replacement project. The Minnesota Department of Transportation (MnDOT), in cooperation with the Ontario Ministry of Transportation (MTO), is planning to replace the Baudette/Rainy River International Bridge on Minnesota Trunk Highway 72 in the City of Baudette and Highway 11 in the Town of Rainy River. The proposed improvements involve removing of the existing Bridge and constructing a replacement bridge on a new alignment. The project will also include tying the new bridge structure into the existing U.S. and Canadian approaches. Construction is anticipated to begin in 2018, with substantial completion by the end of 2019.

As you are aware, this project includes approximately 0.22 acres of temporary easement area to accommodate tree removal for construction movements and equipment (approximately four trees will be removed within the Peace Park boundary). This temporary impact area also includes possible minor excavation activities to facilitate the installation of the proposed bridge abutment and retaining wall. Lastly, construction of the proposed temporary causeway for construction staging will take place within park property. None of the existing park facility structures, historical markers, or graves will be removed, relocated, or temporarily disturbed. Upon construction completion, vegetation and landscaping will be restored as feasible and the existing facilities will not be impacted.

Under Section 4(f) of the U.S. Department of Transportation Act of 1966, this park property is considered a Section 4(f) resource. A review of the project impacts and proposed construction shows that the impacts to the park will be minimal and will not alter or affect the use of the park. Based on this assessment, we intend to make a determination that the impact to the park property would be de minimis.

In order to make the Section 4(f) de minimis finding, your written concurrence that this project will not adversely affect the activities, features, and attributes of the park property is necessary. To acknowledge that you have been notified of the intent to apply the Section 4(f) de minimis finding, and your agreement that the activities, features, and attributes of the park will not be adversely affected, please sign below and return the signed copy to me at the letterhead address. Your prompt response is appreciated.

If you have any questions, please call me at (651) 291-6121.

Sincerely,

Joe W Campbell

JOSEPH W CAMPBELL
2017.01.18 10:38:36 -06'00'

Joe Campbell, P.E. Date
Area Engineer / Assistant Bridge Engineer

As the official with jurisdiction over Peace Park, I hereby concur with the recommendation of the project proponents that the use and impacts associated with this project along with the identified avoidance, minimization, and mitigation measures, will not adversely affect the activities, features, and attributes that qualify the property for protection under section 4(f).

Mr. Roger Schotl Date
City of Baudette Public Works

Date: January 10, 2017

Mr. Roger Schotl
Public Works Director
City of Baudette
219 8th Avenue SE
Baudette, MN 56623

RE: Baudette/Rainy River International Bridge Reconstruction
SP 3905-09
Temporary occupancy in Peace Park

Mr. Schotl:

The Minnesota Department of Transportation (MnDOT), in cooperation with the Ontario Ministry of Transportation (MTO), is planning to replace the Baudette/Rainy River International Bridge on Minnesota Trunk Highway 72 in the City of Baudette and Highway 11 in the Town of Rainy River – see Figure 1 which shows the project area.

The purpose of this project is to address the deteriorating condition of the existing bridge structure in order to maintain the international exchange of vehicular, freight and pedestrian traffic across the Rainy River at this location as follows:

- To provide a level of service that is consistent with the transportation needs of area residents, businesses and industries;
- To improve public safety by providing a roadway that conforms to the current minimum standards for geometry and width; and
- To ensure the continued serviceability of the route.

The proposed improvements involve removing of the existing Bridge and constructing a replacement bridge on a new alignment. The project will also include tying the new bridge structure into the existing U.S. and Canadian approaches. Construction is anticipated to begin in 2018, with substantial completion by the end of 2019.

Peace Park is a City Owned property, located directly adjacent to the project area and is considered to be subject to Section 4(f) regulations (23 CFR 774). Contractors may request to use a portion of Peace Park during construction for staging purposes, including storage of materials or equipment in the parking lot and using the boat launch to provide access to Rainy River through the Baudette River. If contractors utilize the park for staging in this manner, a temporary occupancy of Peace Park will occur – see Figure 2 which shows the anticipated temporary occupancy area in Peace Park.

DRAFT

As per the 23 CFR 774.13(d), a temporary occupancy does not constitute a Section 4(f) use when all of the conditions listed below are satisfied:

- **Duration must be temporary, less than the time needed for construction of the project, and there should be no change in ownership of the land;**

  The duration of the occupancy would be temporary in nature. The City is anticipating that contractors may desire to utilize the parking lot, dock and boat landing within Peace Park for construction staging. The staging work would generally include transporting and storage of materials. SP 3905-09 is anticipated to be constructed under a single contract with a total estimated duration of two construction seasons (approximately 24 months). Staging activities will occur only during construction and will not last beyond the approximate 24 month period.

  The City of Baudette will retain ownership of Peace Park throughout the duration of the project. No change in ownership will occur.

- **Scope of the work must be minor, both the nature and the magnitude of the changes to the Section 4(f) property are minimal;**

  Contractor use of the parking lot, dock and boat landing would be temporary and will not result in any changes within Peace Park.

- **There are no anticipated permanent adverse physical impacts, nor will there be interference with the protected activities, features, or attributes of the property, on either a temporary or permanent basis;**

  There are no anticipated permanent adverse physical impacts or interference with the protected activities, features, or attributes of the property. The site would generally remain open during construction so that visitors would have access to the boat ramp, picnic tables, and other amenities on the site. Limited closures may be needed for safety concerns and for short-term nighttime work. Parking may be temporarily reduced; however additional parking is available on Trunk Highway 72.

- **The land being used must be fully restored, the property must be returned to a condition which is at least as good as that which existed prior to the project;**

  The parking lot, driveway and dock areas will be fully restored to its prior use upon completion of the project. The land would be fully restored following construction, including replanting trees and other vegetation, repair of asphalt paving if necessary, and removal of all construction equipment and debris.

- **There must be documented agreement of the official(s) with jurisdiction over the Section 4(f) resource regarding the above conditions.**

Please review the attached figures and indicate your concurrence with the work proposed, and that the above conditions are met, by signing below. Please forward the signed original back to me for our records. I will forward this information to the Federal Highway Administration for concurrence.

If you have questions regarding this matter, feel free to contact me at your earliest convenience at 218-755-6517. Thank you.

Sincerely,

Joseph McKinnon, P.E.
Project Manager, MnDOT District 2

DRAFT

I concur that the assessment of impacts for each of the four conditions and understand this will likely result in a FHWA determination of a temporary occupancy in Peace Park.

_____ _____

Mr. Roger Schotl
City of Baudette Public Works

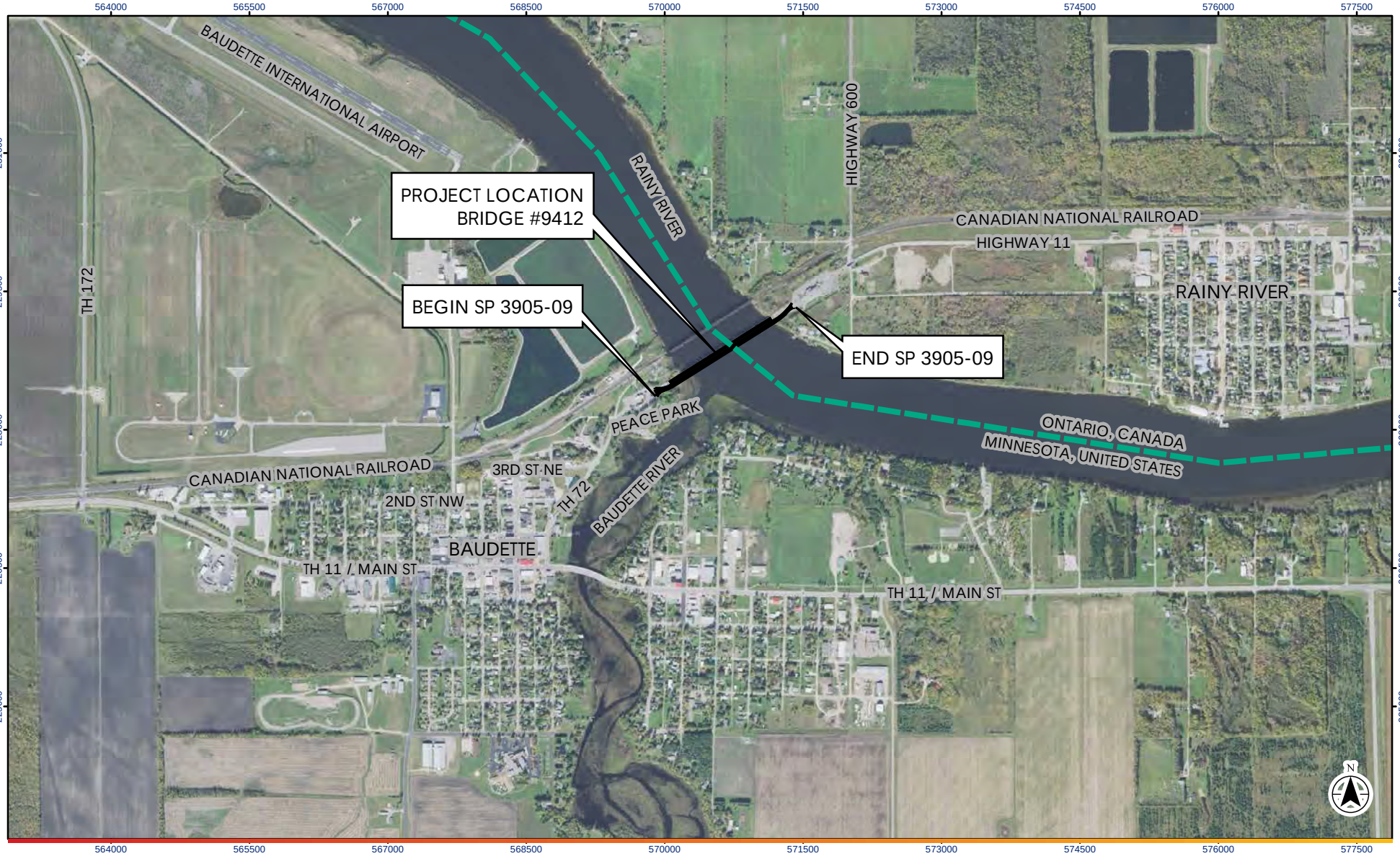
Date

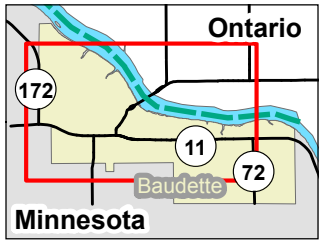
Attachments:

1. Figure 1 – Project Location Map
2. Figure 2 – Temporary Occupancy Area

cc: Phil Forst, FHWA

DRAFT





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Notes
1. Coordinate System: NAD 1983 HARN Adj MN Lake of the Woods South Feet.

2. Aerial: MnGEO WMS, 2015 FSA.

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Project Location 193802870
T161N, R31W, S35
City of Baudette, MN

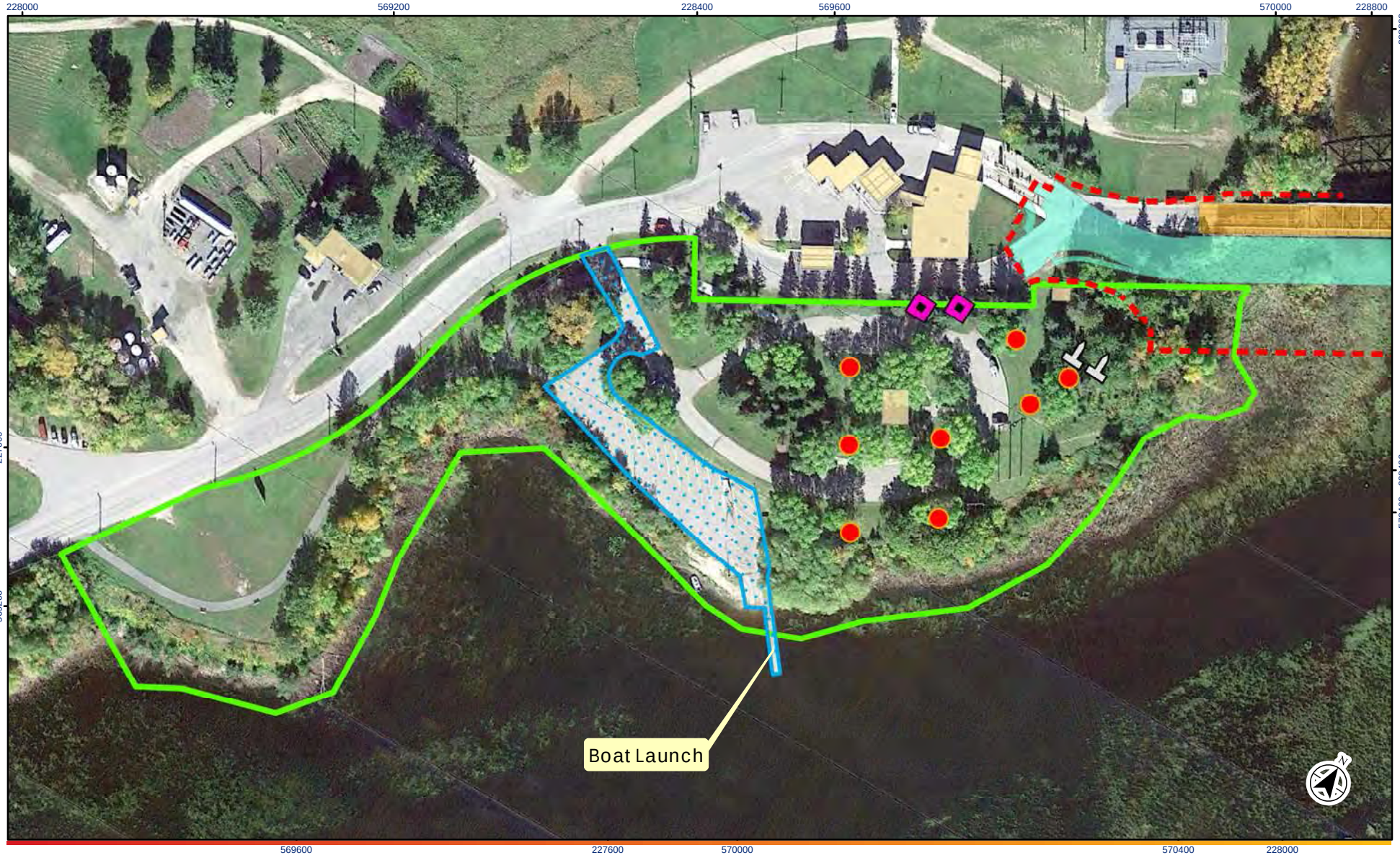
Prepared by aribachonek on 2017-01-08

Client/Project SP 3905-09
MnDOT
Baudette/Rainy River International Bridge Replacement

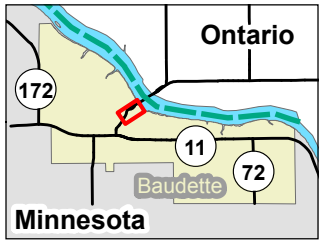
Figure No.
1

Title
PROJECT LOCATION AERIAL

\\US1291-F01\workgroup\193B\active\193802870\GIS\Projects\Park Impacts\AR Aerial &USGS Figures_2017-01-08.mxd Revised: 2017-01-08 By: aribachonek



\\US1291-F01\workgroup\193B\active\193802870\GIS\Projects\Park impacts\Temp Occupancy_2017-01-09.mxd Revised: 2017-01-09 By: aribachonek



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1:1,800 (at original document size of 8.5x11)

Legend

- Construction Limits on U.S. Soil
- Proposed Bridge & Approach
- Existing Bridge
- Existing Structures
- Peace Park
- Temporary Occupancy Area
- Gravesites
- Historic Markers
- Picnic Tables

Notes

1. Coordinate System: NAD 1983 HARN Adj MN Lake of the Woods South Feet.
2. Aerial: Google Earth, 2014.

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

Project Location 193802870
T161N, R31W, S35
City of Baudette, MN

Prepared by aribachonek on 2017-01-09

Client/Project SP 3905-09
MnDOT
Baudette/Rainy River International Bridge Replacement

Figure No.
2

Title
PEACE PARK -
TEMPORARY OCCUPANCY AREA

From: Obermoller, Rachel (DOT)
Sent: Tuesday, December 15, 2015 1:30 PM
To: McKinnon, Joseph (DOT)
Cc: Carr, Julie (DOT)
Subject: Baudette Bridge

Hi Joe,

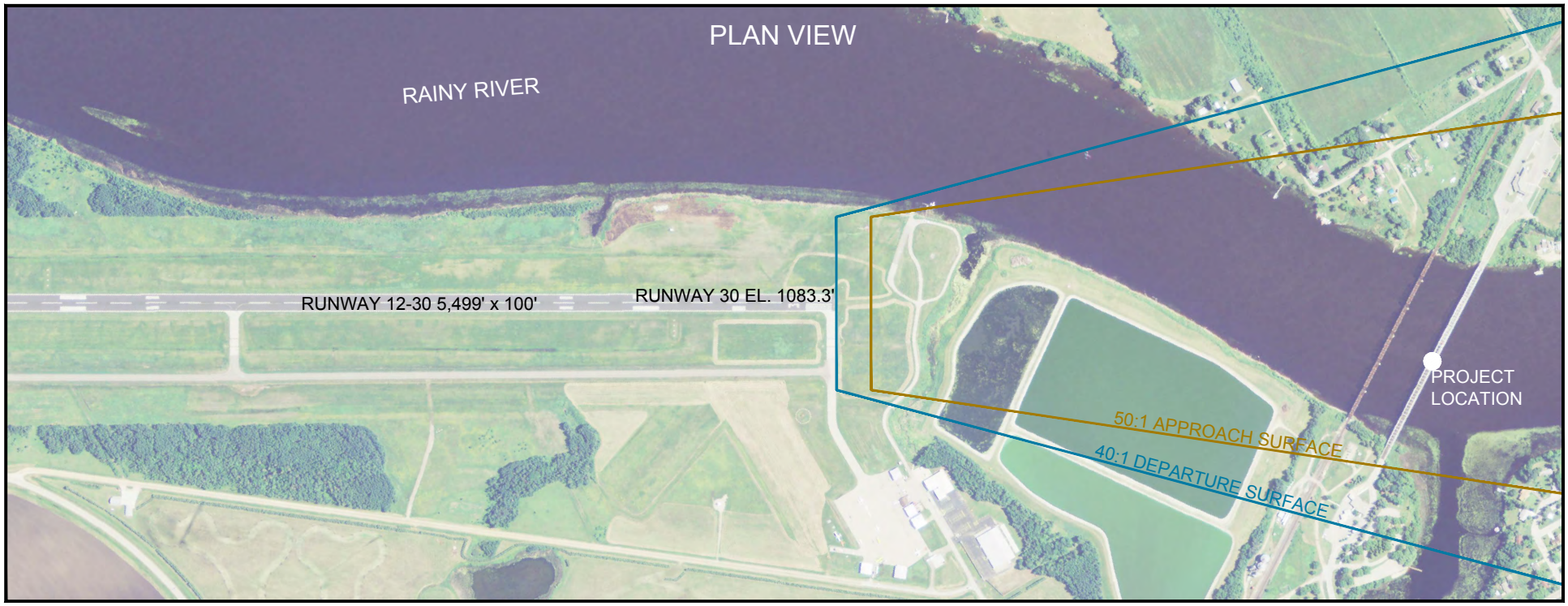
Julie Carr and I both listened to the webinar last week on the Baudette bridge project, and just wanted to reiterate the need for the bridge to stay under a 50:1 slope from the end of the primary surface (200 feet beyond the end of the runway) across the span of the bridge which lies under the approach surface on that end of the runway. Of the concepts presented, several looked to have significant vertical height and we are concerned about the impact this could have on the airport in Baudette now and in the future. I know there was discussion about coordinating with the FAA to ensure the bridge does not pose an issue for the approaches to the airport, and we in addition would like to be involved in the discussion, as our office looks at the long term plans for the airport and the state licensing for the airport and want to prevent any issues now or down the road because of the design and location of the bridge.

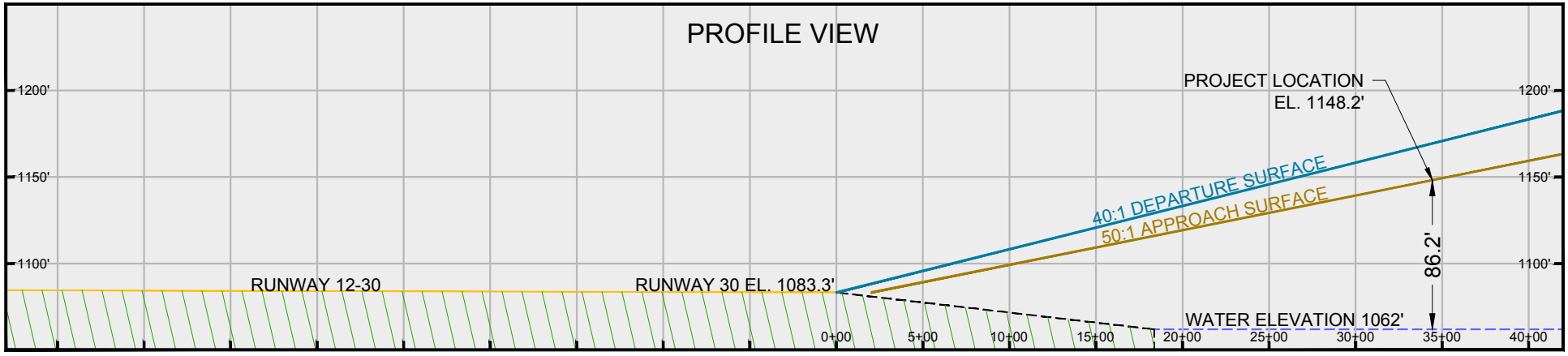
Please let us know how we can be involved in the discussion or share our concerns for the project so they can be considered as the design is selected.

Rachel Obermoller
Aviation Representative – MnDOT Aeronautics
222 East Plato Boulevard
St. Paul, MN 55107
651-234-7207
Rachel.Obermoller@state.mn.us

Connect with us:

Sign up for email updates





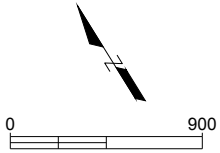


FIGURE 1

BDE AIRSPACE
BAUDETTE / RAINY RIVER

06.16.2015

GENERAL NOTES:

(1) VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

(2) ALL ELEVATIONS ARE HEIGHT ABOVE MEAN SEA LEVEL (MSL).

(3) ONLY THE CRITICAL APPROACH AND DEPARTURE AIRSPACE SURFACES ARE SHOWN HERE.

HNTB

Appendix E– AGENCY CORRESPONDENCE – SECTION 106

- Letter from MnHPO to MnDOT CRU. June 6, 2014.
- Letter from MnHPO to MnDOT CRU. April 23, 2015.
- Letter from MnDOT CRU to MnHPO. September 9, 2015.
- Letter from MnHPO to MnDOT CRU. December 10, 2015.
- Section 106 Determination Letter from MnHPO (IN PROGRESS – DRAFT ATTACHED).

Minnesota Historical Society
STATE HISTORIC PRESERVATION OFFICE

June 6, 2014

Elizabeth Abel
MnDOT Cultural Resources Unit
Transportation Building, Mail Stop 620
395 John Ireland Boulevard
St. Paul MN 55155-1899

RE: S.P. 3905-09
Repair or Replace Bridge No. 9412 over the Rainy River
Baudette, Lake of the Woods County
SHPO Number: 2013-1191

Dear Ms. Abel:

Thank you for continuing consultation on the above project. The report is being reviewed pursuant to the responsibilities given the State Historic Preservation Officer by the National Historic Preservation Act of 1966 and implementing federal regulations at 36 CFR 800, responsibilities given the Minnesota Historical Society by the Minnesota Historic Sites Act and the Minnesota Field Archaeology Act, and per the terms of the 2005 Programmatic Agreement between the Federal Highway Administration, the Minnesota Department of Transportation and the Minnesota State Historic Preservation Office.

We have completed our review of the project materials received in our office on 9 May 2014 which included:

- Correspondence letter dated 7 May 2014
- Report entitled *Phase I and Phase II Architecture/History Survey Report: Trunk Highway 72 Area of Potential Effects, Baudette, Minnesota* (Mead & Hunt, January 2014)

You have indicated that a preferred alternative for the bridge project has not yet been identified and that both rehabilitation and replacement of the existing bridge are still being considered. Your determination of the area of potential effects (APE) for the project takes into account both options and we concur with your determination of this APE, based upon information available to us at this time. You have also indicated that the APE may be adjusted at a future date as project design is further refined.

We concur with your agency's determinations regarding eligibility for listing in the National Register of Historic Places (NRHP) for the following identified historic properties within the APE:

- **Baudette Rest Area/Peace Park (LW-BDC-030)** – not eligible for listing in the NRHP;
- **Switch House (LW-BDC-032)** – not eligible for listing in the NRHP;
- **Station House (LW-BDC-033)** – not eligible for listing in the NRHP;
- **Storage Building (LW-BDC-034)** – not eligible for listing in the NRHP;

- **Canadian Northern (Canadian National) Railroad Bridge (LW-BDC-025)** – not eligible for listing in the NRHP due to compromised integrity as a result of major bridge rehabilitation in 2005;
- **Baudette-Rainy River International Bridge (Bridge 9412) (LW-BDC-031)** – previously determined eligible for listing in the NRHP under Criterion A (Transportation) and Criterion C (Engineering);
- **Minnesota & Manitoba (Canadian National) Railroad Corridor (LW-RRD-001)** – determined eligible for listing in the NRHP under Criterion A (Transportation).

We look forward to continuing consultation on this project. Feel free to contact me if you have any questions or concerns regarding our review. I may be reached at 651-259-3456 or by e-mail at sarah.beimers@mnhs.org.

Sincerely,

Sarah J. Beimers, Manager
Government Programs and Compliance

Minnesota Historical Society
STATE HISTORIC PRESERVATION OFFICE

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PRESERVING › SHARING › CONNECTING

April 23, 2015

Elizabeth Abel
MnDOT Cultural Resources Unit
Transportation Building, Mail Stop 620
395 John Ireland Boulevard
St. Paul MN 55155-1899

RE: S.P. 3905-09
Repair or Replace Bridge No. 9412 over the Rainy River
Baudette, Lake of the Woods County
SHPO Number: 2013-1191

Dear Ms. Abel:

Thank you for continuing consultation on the above project. Information received in our office on 24 March 2015 has been reviewed pursuant to the responsibilities given the State Historic Preservation Officer by the National Historic Preservation Act of 1966 and implementing federal regulations at 36 CFR 800, responsibilities given the Minnesota Historical Society by the Minnesota Historic Sites Act and the Minnesota Field Archaeology Act, and per the terms of the 2005 Programmatic Agreement between the Federal Highway Administration, the Minnesota Department of Transportation and the Minnesota State Historic Preservation Office.

We have completed our review of the project materials included with your March 17th correspondence letter:

- Delineation/documentation of the area of potential effects (APE) for direct effects for both Alternative 1 and Alternative 2; and
- Report entitled *Phase I Archaeological Investigations of Bridge 9412 and Phase II Archaeological Investigation of Site 21LW0026, Lake of the Woods County, Minnesota* (Duluth Archaeology Center, March 2015)

We agree that the APE is generally appropriate to take into account the potential effects of the proposed undertaking as we currently understand it. We do recommend, however, that your agency consider expanding the APE for direct effects to include the riverbed of the Rainy River if the proposed bridge project will involve disturbance of the underwater surface. Also, as a general rule, as the project's scope of work is further defined, or if it is significantly altered from the current scope, additional consultation with our office may be necessary in order to revise the current APE.

In addition, we concur with your determination that archaeological site 21LW0026 is not eligible for listing in the National Register of Historic Places (NRHP).

We look forward to continuing consultation on this project. Feel free to contact me if you have any questions or concerns regarding our review. I may be reached at 651-259-3456 or by e-mail at sarah.beimers@mnhs.org.

Sincerely,

Sarah J. Beimers

Sarah J. Beimers, Manager
Government Programs and Compliance

Minnesota Department of Transportation

Office of Environmental Stewardship
Mail Stop 620
395 John Ireland Boulevard
St. Paul, MN 55155-1899

Office Tel: (651) 366-3604
Fax: (651) 366-3603

September 9, 2015

Sarah J. Beimers, Manager
Government Programs and Compliance
State Historic Preservation Office
Minnesota Historical Society
345 Kellogg Blvd. W.
St. Paul, MN 55102

Re: S.P. 3905-09 (Replace Bridge 9412, Rainy River International Bridge)
Baudette, Lake of the Woods County
SHPO Number: 2013-1191

Dear Ms. Beimers:

Thank you for your July 21, 2015, letter to me concurring with our finding that the above-referenced undertaking will have an adverse effect on National Register-eligible **Bridge 9412 (LW-BDC-031)** by replacing it with a new structure.

At the time we made our initial finding (June 2015), our office did not have enough preliminary engineering information to assess project effects to the National Register-eligible **Minnesota and Manitoba Railroad Corridor Historic District (LW-RRD-001)**. I am writing now to apprise you of: (1) the three bridge replacement alternatives that are being considered; (2) our revision to the project area of potential effects (APE) for direct impacts; and (3) our finding that none of the replacement alternatives will result in adverse effects to historic properties beyond those to Bridge 9412, which have been documented through previous correspondence with your office.

Bridge Replacement Alternatives

The bridge replacement alternatives will construct a new bridge either immediately northwest of (Alternative 1), immediately southeast of (Alternative 2), or in the same location as (Alternative 3), Bridge 9412 (see attached draft preliminary alternative layouts dated July 21, 2015). Border patrol and customs facilities on each end of the bridge will remain in their current locations, with some minor modifications to the existing bridge approaches to accommodate the new structure. Alternatives 1 and 2 would retain Bridge 9412 to carry traffic until the replacement bridge is completed. Alternative 3 would involve construction and use of a temporary modular bridge either northwest or southwest of Bridge 9412 until the replacement bridge is completed.

The new bridge will be constructed in the same location as, or adjacent to, Bridge 9412 and will be a steel I-beam or concrete box girder structure. There will be no change in the alignment and little or no change in the overall length of the crossing (1286 feet). Bridge 9412 carries two 12-foot wide traffic lanes and the overall width of the deck measures 26.5 feet. A six-foot wide sidewalk is cantilevered on one side of the existing bridge. The replacement bridge will also carry two 12-foot traffic lanes, with the addition of 8-foot shoulders, and a 10-foot wide sidewalk, and will measure approximately 50 feet in width. The profile of the new bridge deck will not be markedly different from that of Bridge 9412. At its midpoint, the new bridge will be approximately 8 feet higher in elevation than the existing bridge, and the height of the new bridge deck will be approximately 9 feet while the existing deck height is approximately 5 feet (see attached alternative layouts).

APE Revisions

The proposed replacement alternatives require no revision to our delineation of the APE for indirect effects. All three replacement alternatives involve installation of new pilings and piers

within the river. Therefore, as recommended in your April 25, 2015, letter to me, we have extended the direct effects APE to include that portion of the Rainy River riverbed that may be impacted by new bridge construction. The width of the new bridge will not measure more than 60 feet and a replacement structure (and any temporary structure if Alternative 3 is chosen) will be built within a few feet of the existing bridge. We have revised the direct effects APE to include the bed of the river within approximately 150 feet of the centerline of existing Bridge 9412 and terminating at the U.S. Canadian border (see attached figure labeled *Revised Direct Effects APE*). Our office has determined that this addition to the APE contains no known historic properties other than Bridge 9412 and is unlikely to contain unidentified historic properties.

Minnesota and Manitoba Rail Corridor

Construction of any of the three replacement alternatives and removal of existing Bridge 9412 will result in no direct impacts to the Minnesota and Manitoba Railroad Corridor Historic District. New construction, particularly a new bridge structure, will be visible from the corridor. The integrity of the railroad corridor district's setting has been compromised by the clearing of the largely forested landscape that existed when the corridor was established, the removal of adjacent industrial facilities in Baudette (e.g., lumber storage buildings and businesses, fuel tanks, grain elevators, ancillary buildings), the 2005 replacement of the superstructure of the Canadian National Railroad Bridge carrying the corridor over the Rainy River, and the construction of Bridge 9412 and related facilities after the corridor's period of significance (1901-1956). The project will have no effect on the Minnesota and Manitoba Railroad Corridor Historic District's integrity of materials, design, workmanship, location, feeling or association, and little additional impact on its already altered setting.

We are requesting your concurrence with our revision to the direct effects APE and our finding that the project as currently proposed will have **no additional adverse effects on historic properties**. We look forward to continuing consultation with your office, including developing a memorandum of agreement to mitigate the adverse effect to Bridge 9412 resulting from its removal. If you have any questions or concerns, please call or email me.

Sincerely,

Elizabeth J. Abel
Archaeologist/Historian
Cultural Resources Unit
elizabeth.abel@state.mn.us

attachments: 3

cc: Joe McKinnon, MnDOT D. 2
Tim Anderson, FHWA
David Dominguez, FHWA
Phil Forst, FHWA
Theresa Maahs, Stantec

Minnesota
Historical Society

STATE HISTORIC PRESERVATION OFFICE

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December 10, 2015

Elizabeth Abel
MnDOT Cultural Resources Unit
Transportation Building, Mail Stop 620
395 John Ireland Boulevard
St. Paul MN 55155-1899

RE: S.P. 3905-09
Replace Bridge 9412 over the Rainy River
Baudette, Lake of the Woods County
SHPO Number: 2013-1191

Dear Ms. Abel:

Thank you for continuing consultation on the above project. Information received in our office on 13 November 2015 has been reviewed pursuant to the responsibilities given the State Historic Preservation Officer by the National Historic Preservation Act of 1966 and implementing federal regulations at 36 CFR 800, responsibilities given the Minnesota Historical Society by the Minnesota Historic Sites Act and the Minnesota Field Archaeology Act, and per the terms of the 2005 Programmatic Agreement between the Federal Highway Administration, the Minnesota Department of Transportation and the Minnesota State Historic Preservation Office.

Your correspondence dated 11/12/2015 provided further information regarding your assessment of archaeological potential within the revised area of potential effects (APE) for this project. We appreciate this information and we agree with your assessment that the revised APE is unlikely to contain unidentified archaeological resources, in particular submerged historic properties.

To summarize, we agree that Bridge 9412 is the only historic property within the direct APE for this project and we have concurred with your agency's adverse effect determination.

We look forward to continuing consultation regarding resolution of adverse effects to Bridge 9412. Feel free to contact me if you have any questions or concerns regarding our review. I may be reached at 651-259-3456 or by e-mail at sarah.beimers@mnhs.org.

Sincerely,

Sarah J. Beimers

Sarah J. Beimers, Manager
Government Programs and Compliance

MEMORANDUM OF AGREEMENT
BETWEEN
THE FEDERAL HIGHWAY ADMINISTRATION
AND
THE MINNESOTA HISTORIC PRESERVATION OFFICE
REGARDING THE
REPLACEMENT OF THE RAINY RIVER INTERNATIONAL BRIDGE (MINNESOTA BRIDGE 9412/ONTARIO BRIDGE 45-110) (S.P. 3905-09) BETWEEN BAUDETTE, LAKE OF THE WOODS COUNTY, MINNESOTA, AND RAINY RIVER, ONTARIO

WHEREAS, the Federal Highway Administration (FHWA) plans to provide Federal-Aid Highway Program funds to the Minnesota Department of Transportation (MnDOT) to replace the Rainy River International Bridge (MnDOT Bridge 9412/Ontario Bridge 45-110) carrying Minnesota Trunk Highway 72/Ontario Provincial Highway (King's Highway) 11 over the Rainy River between Baudette, Minnesota, and Rainy River, Ontario, with a new bridge, and reconstruct a portion of the bridge approaches (S.P. 3905-09) (PROJECT); and

WHEREAS, FHWA has determined that the PROJECT is a federal undertaking with the potential to affect historic properties listed in or eligible for listing in the National Register of Historic Places (NRHP) and is therefore subject to review under Section 106 of the National Historic Preservation Act (54 USC § 306108) and its implementing regulations at 36 CFR 800; and

WHEREAS, review of this PROJECT has been conducted per the terms of the *2005 Programmatic Agreement Among the Federal Highway Administration; the Minnesota State Historic Preservation Office; the Advisory Council on Historic Preservation; the Department of the Army, Corps of Engineers, St. Paul District; and the Minnesota Department of Transportation Regarding Implementation of the Federal-Aid Highway Program in Minnesota* (as amended 2014) (Statewide PA), various stipulations of which are incorporated by reference; and

WHEREAS, the PROJECT will require permits from the U.S. Army Corps of Engineers, St. Paul District (Corps), pursuant to Section 10 of the Rivers and Harbors Act of 1899 (33 USC § 403) and Section 404 of the Clean Water Act (33 USC §1344); and

WHEREAS, in accordance with 36 CFR 800.2(a)(2) and per the terms of the Statewide PA, FHWA and the Corps have agreed that FHWA is the lead federal agency in the Section 106 review of this PROJECT; and

WHEREAS, MnDOT's Cultural Resources Unit (MnDOT CRU), on behalf of FHWA and in consultation with the Minnesota Historic Preservation Office (MnHPO), has defined the PROJECT area of potential effects (APE) as shown in Attachments A and B to this Memorandum of Agreement (AGREEMENT); and

WHEREAS, MnDOT CRU, in consultation with MnHPO, has completed surveys of the PROJECT APE and has identified two historic properties within the APE: the Minnesota and Manitoba Railroad Corridor Historic District (LW-RRD-001) and the Rainy River International Bridge (LW-BDC-031), both of which are eligible for listing in the NRHP; and

WHEREAS, MnDOT CRU has determined, and MnHPO has concurred, that based on the draft preliminary alternative layouts dated July 21, 2015, the PROJECT will have no adverse effect

FINAL DRAFT

on the Minnesota and Manitoba Railroad Corridor Historic District (LW-RRD-001) but will have an adverse effect on the Rainy River International Bridge (LW-BDC-031) by removing the structure; and

WHEREAS, in accordance with 36 CFR 800.2(c)(2)(ii), MnDOT CRU, on behalf of FHWA, has, in a good faith effort, contacted by letter dated February 16, 2012, the federally recognized American Indian tribes listed in Attachment C to this AGREEMENT, asking if they knew of any properties of historical and/or cultural significance within the APE and inviting their participation in consultation, and none have indicated that they are aware of the presence of these properties and they have not requested to participate in the consultation; and

WHEREAS, in accordance with 36 CFR 800.6(a)(1), FHWA has notified the Advisory Council on Historic Preservation (ACHP) of its finding of adverse effect for the PROJECT and has provided ACHP with documentation specified in 36 CFR 800.11(e), and ACHP has chosen not to participate in the consultation; and

WHEREAS, FHWA has consulted with MnHPO and MnDOT pursuant to 36 CFR 800 to resolve the adverse effect of the PROJECT on the Rainy River International Bridge (LW-BDC-031); and

WHEREAS, MnDOT has assumed certain responsibilities under this AGREEMENT and FHWA has invited MnDOT to become a signatory to this AGREEMENT pursuant to 36 CFR 800.6(c)(2); and

WHEREAS, the Rainy River International Bridge (LW-BDC-031) is jointly owned and maintained by MnDOT and the Ministry of Transportation - Ontario (MTO) and FHWA has consulted with MTO and has asked them to concur with this AGREEMENT pursuant to 36 CFR 800.6(c)(3); and

WHEREAS, MnDOT CRU has consulted with the Lake of the Woods County Historical Society (LOW County Historical Society) per 36 CFR 800.3(f) and has asked them to concur with this AGREEMENT pursuant to 36 CFR 800.6(c)(3); and

WHEREAS, FHWA has conducted public participation in this review in coordination with the scoping, public review and comment, and public hearings conducted to comply with the National Environmental Policy Act (NEPA) and its implementing regulations as allowed per 36 CFR 800.2(d)(3); and

NOW, THEREFORE, FHWA and MnHPO agree that upon FHWA's approval of the PROJECT, FHWA will ensure that the following stipulations are implemented in order to take into account the effects of the PROJECT on historic properties, and that these stipulations shall govern the PROJECT and all of its parts until this AGREEMENT expires or is terminated.

STIPULATIONS

FHWA shall ensure that the following measures are carried out:

I. HAER RECORDATION OF THE RAINY RIVER INTERNATIONAL BRIDGE (LW-BDC-031)

A. Prior to awarding a contract for construction, MnDOT CRU shall have the Rainy River International Bridge (LW-BDC-031) documented according to the standards and guidelines of the Historic American Engineering Record (HAER) by an individual who meets the *Secretary*

FINAL DRAFT

of the Interior's Professional Qualifications Standards in architecture, historic architecture, or architectural history (36 CFR 61). The recordation shall be Level II and will include: select existing drawings that will be photographed with large-format negatives or photographically reproduced on Mylar; photographs with large-format negatives of the bridge and its relationship to the cities of Baudette, Minnesota, and Rainy River, Ontario, and historic views, where available; an index to photographs; and a written narrative (history and description) of the historic bridge.

B. MnDOT CRU shall submit a copy of the draft HAER documentation package including a set of example photographs and negatives (both original and of the drawing sets) to the National Park Service (NPS) Midwest Regional Office for review.

C. MnDOT CRU shall incorporate any changes required by NPS and submit one original final HAER documentation package (including photographs and negatives) to the NPS Midwest Regional Office, one original final HAER documentation package and a PDF copy on an archivally stable CD to MnHPO, and one original final documentation package and a PDF copy on an archivally stable CD to LOW County Historical Society. MnDOT CRU shall upload a PDF copy of the final documentation onto its Historic Bridges website.

II. **PUBLIC INTERPRETATION AND EDUCATION**

A. Within two (2) years following execution of this AGREEMENT, MnDOT shall develop and install an interpretive panel in the vicinity of the new bridge that will include photos, graphics and text relating the history and importance of the Rainy River International Bridge (LW-BDC-031) crossing to the history of Baudette and detailing the historical significance and unique features of the bridge structure. MnDOT shall develop the content of the interpretive panel and determine an appropriate location in consultation with LOW County Historical Society and MnHPO. MnDOT CRU shall submit draft interpretive panel content and proposed location to LOW County Historical Society and MnHPO for a sixty-day (60-day) review and comment period. Any written comments received by MnDOT CRU within the sixty-day (60-day) review period will be incorporated into the final interpretive panel design.

B. Within two (2) years following execution of this AGREEMENT, MnDOT CRU shall prepare an exhibit panel or panels regarding the historical significance of the Rainy River International Bridge (Bridge 9412) (LW-BDC-031) for display at the Lake of the Woods County Museum. Designed for public education, the exhibit shall include photographs and other images of the Rainy River International Bridge (LW-BDC-031), including images from the HAER documentation, and information about its NRHP eligibility within the context of Minnesota's historic bridges and its importance in the history of Baudette and the surrounding area. MnDOT CRU shall develop the content of the exhibit in consultation with LOW County Historical Society, who will take ownership of the exhibit, and MnHPO. MnDOT CRU shall submit draft exhibit content to LOW County Historical Society and MnHPO for a sixty-day (60-day) review and comment period. Any written comments received by MnDOT CRU within the sixty-day (60-day) review period will be incorporated into the final exhibit design.

III. POST-REVIEW DISCOVERIES

If MnDOT CRU determines that the PROJECT will affect a previously unidentified property that may be historic or affect a known historic property in an unanticipated manner, MnDOT CRU shall ensure that the measures contained in Stipulation 5 of the Statewide PA are carried out.

FINAL DRAFT

The terms of any mitigation for adverse effects to historic properties identified during post-review discovery shall be addressed by amending this AGREEMENT.

III. TREATMENT OF HUMAN REMAINS

If MnDOT or its contractors discover human remains, possible human remains, or artifacts associated with mortuary features during PROJECT-related construction activities, MnDOT CRU shall follow the terms and conditions of Stipulation 6 of the Statewide PA.

IV. DISPUTE RESOLUTION

Should any party to this AGREEMENT object at any time to any actions proposed or the manner in which the terms of the AGREEMENT are implemented, MnDOT CRU on behalf of FHWA shall consult with the objecting party (or parties) to resolve the objection. If objections cannot be resolved, FHWA shall follow the steps outlined in Stipulation 7 of the Statewide PA. FHWA's responsibility to carry out all other actions subject to the terms of this AGREEMENT that are not subjects of the dispute remain unchanged pending resolution.

V. DURATION, AMENDMENTS AND TERMINATION

A. This AGREEMENT shall remain in effect from the date of full execution for a period not to exceed five (5) years. If FHWA anticipates that the terms of the AGREEMENT cannot be completed within this timeframe, it shall notify the parties in writing at least thirty (30) days prior to the AGREEMENT's expiration date. The AGREEMENT may be extended by the written concurrence of the signatories and invited signatories. If the AGREEMENT expires and FHWA elects to continue with the undertaking, FHWA shall reinitiate review of the undertaking in accordance with 36 CFR 800.

B. Any signatory or invited signatory to this AGREEMENT may propose to FHWA that the terms of the AGREEMENT be amended. FHWA shall use the same consultation process exercised in creating the original AGREEMENT to consider the proposed amendment. If the signatories and relevant invited signatories elect to amend this AGREEMENT, FHWA shall file the amendment with ACHP upon execution.

C. If any signatory or invited signatory to this AGREEMENT determines that the AGREEMENT cannot be fulfilled, or that an amendment to the terms of the AGREEMENT must be made, the signatories shall consult to seek an amendment to its terms using the same consultation process as that exercised in creation of the original AGREEMENT. FHWA shall file any amendments with ACHP upon execution.

D. Any signatory or invited signatory to this AGREEMENT may terminate the AGREEMENT by providing sixty (60) days' written notice to the other parties, provided the parties consult during the period prior to termination to agree on amendments or other actions that would avoid termination. If the AGREEMENT is terminated and FHWA elects to continue with the undertaking, FHWA shall reinitiate review of the undertaking in accordance with 36 CFR 800.

VI. IMPLEMENTATION

A. This AGREEMENT may be implemented in counterparts, with a separate signature page for each party. This AGREEMENT shall become effective on the date of the final signature by the signatories and invited signatories. The refusal of any concurring party to sign the

FINAL DRAFT

AGREEMENT does not invalidate the AGREEMENT. FHWA shall ensure each party is provided with a fully executed copy of the AGREEMENT and that the final AGREEMENT, updates to attachments, and any amendments are filed with ACHP.

B. Execution of this AGREEMENT by FHWA and MnHPO and implementation of its terms is evidence that FHWA has taken into account the effects of its undertaking on historic properties and has afforded ACHP opportunity to comment pursuant to Section 106 of the National Historic Preservation Act.

FINAL DRAFT

SIGNATORY PAGE

MEMORANDUM OF AGREEMENT
BETWEEN
THE FEDERAL HIGHWAY ADMINISTRATION AND
THE MINNESOTA HISTORIC PRESERVATION OFFICE
REGARDING
REPLACEMENT OF THE RAINY RIVER INTERNATIONAL BRIDGE (MINNESOTA BRIDGE 9412/ONTARIO BRIDGE 45-110) BETWEEN BAUDETTE, LAKE OF THE WOODS COUNTY, MINNESOTA, AND RAINY RIVER, ONTARIO

SIGNATORY :

FEDERAL HIGHWAY ADMINISTRATION (FHWA)

By:_____
Arlene Kocher, Minnesota Division Administrator

Date:_____

FINAL DRAFT

SIGNATORY PAGE

MEMORANDUM OF AGREEMENT
BETWEEN
THE FEDERAL HIGHWAY ADMINISTRATION
AND
THE MINNESOTA HISTORIC PRESERVATION OFFICE
REGARDING THE
REPLACEMENT OF THE RAINY RIVER INTERNATIONAL BRIDGE (MINNESOTA BRIDGE 9412/ONTARIO BRIDGE 45-110) (S.P. 3905-09) BETWEEN BAUDETTE, LAKE OF THE WOODS COUNTY, MINNESOTA, AND RAINY RIVER, ONTARIO

SIGNATORY :

MINNESOTA HISTORIC PRESERVATION OFFICE (MnHPO)

By:_____
Amy H. Spong, Deputy State Historic Preservation Officer

Date:_____

FINAL DRAFT

SIGNATORY PAGE

MEMORANDUM OF AGREEMENT
BETWEEN
THE FEDERAL HIGHWAY ADMINISTRATION
AND
THE MINNESOTA HISTORIC PRESERVATION OFFICE
REGARDING THE
REPLACEMENT OF THE RAINY RIVER INTERNATIONAL BRIDGE (MINNESOTA BRIDGE 9412/ONTARIO BRIDGE 45-110) (S.P. 3905-09) BETWEEN BAUDETTE, LAKE OF THE WOODS COUNTY, MINNESOTA, AND RAINY RIVER, ONTARIO

INVITED SIGNATORY:

MINNESOTA DEPARTMENT OF TRANSPORTATION (MnDOT)

By:_____
Charles E. Zelle, Commissioner

Date:_____

FINAL DRAFT

SIGNATORY PAGE

MEMORANDUM OF AGREEMENT
BETWEEN
THE FEDERAL HIGHWAY ADMINISTRATION
AND
THE MINNESOTA HISTORIC PRESERVATION OFFICE
REGARDING THE
REPLACEMENT OF THE RAINY RIVER INTERNATIONAL BRIDGE (MINNESOTA BRIDGE 9412/ONTARIO BRIDGE 45-110) (S.P. 3905-09) BETWEEN BAUDETTE, LAKE OF THE WOODS COUNTY, MINNESOTA, AND RAINY RIVER, ONTARIO

CONCURRING PARTY:

MINISTRY OF TRANSPORTATION - ONTARIO (MTO)

By:_____

Date:_____

The Ministry of Transportation-Ontario was invited to sign this AGREEMENT and has elected not to take a signature action. Since this concurring party does not have a duty or responsibility under the AGREEMENT, the AGREEMENT is valid without their signature per ACHP guidance documents.

FINAL DRAFT

SIGNATORY PAGE

MEMORANDUM OF AGREEMENT
BETWEEN
THE FEDERAL HIGHWAY ADMINISTRATION
AND
THE MINNESOTA HISTORIC PRESERVATION OFFICE
REGARDING THE
REPLACEMENT OF THE RAINY RIVER INTERNATIONAL BRIDGE (MINNESOTA BRIDGE 9412/ONTARIO BRIDGE 45-110) (S.P. 3905-09) BETWEEN BAUDETTE, LAKE OF THE WOODS COUNTY, MINNESOTA, AND RAINY RIVER, ONTARIO

CONCURRING PARTY:

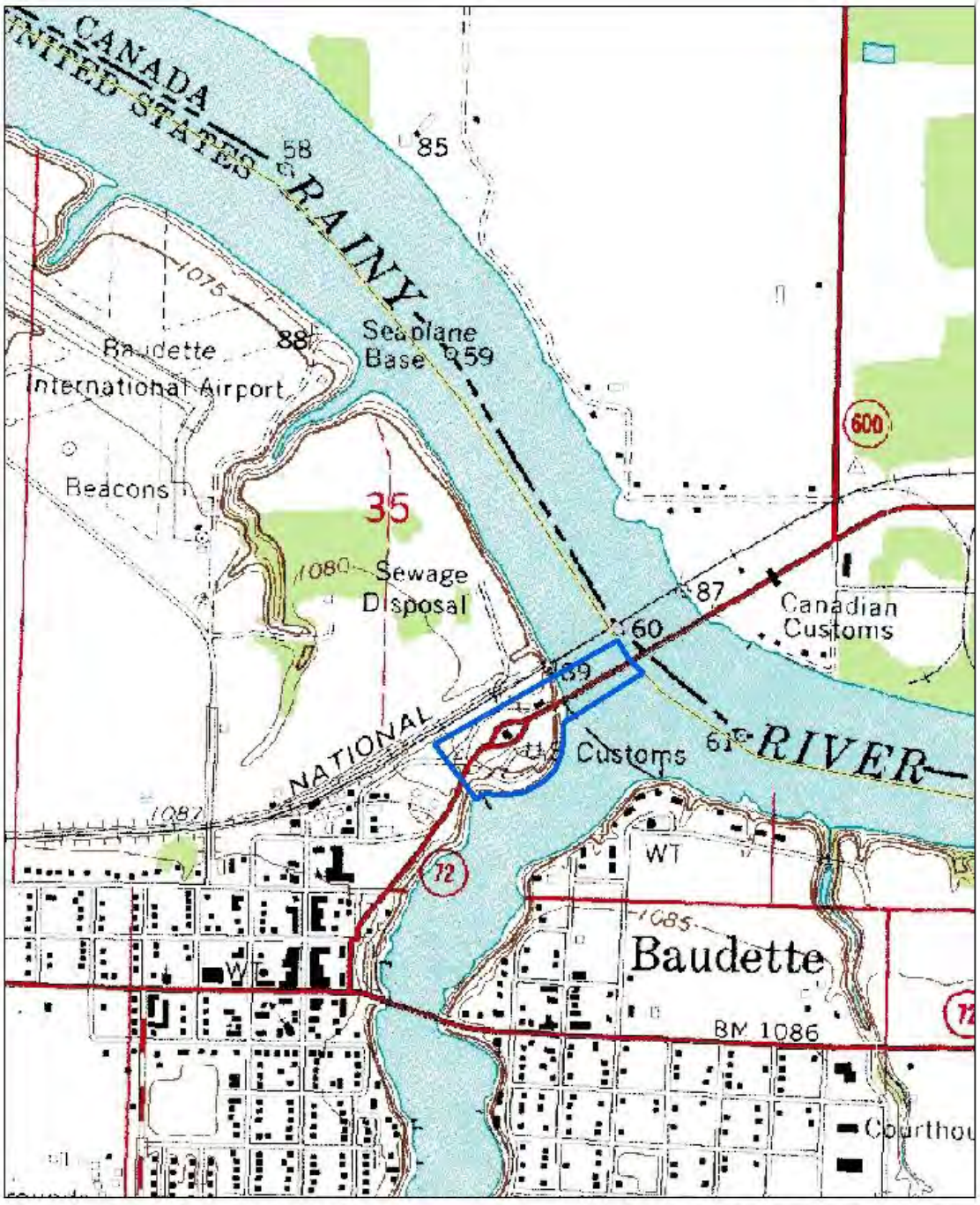
LAKE OF THE WOODS COUNTY HISTORICAL SOCIETY

By:_____
Gary Aery, President, Board of Directors

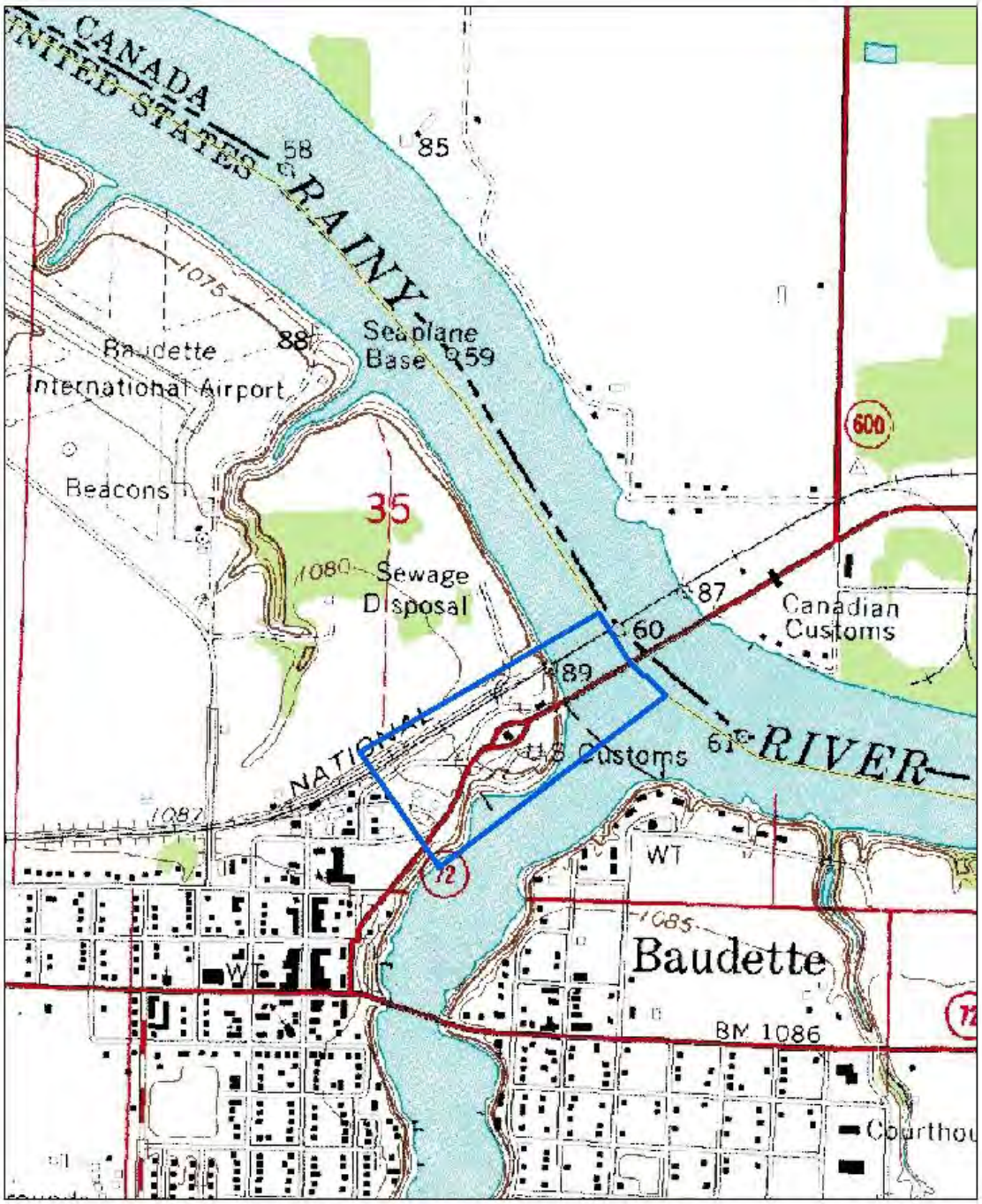
Date:_____

FINAL DRAFT

ATTACHMENT A



ATTACHMENT B



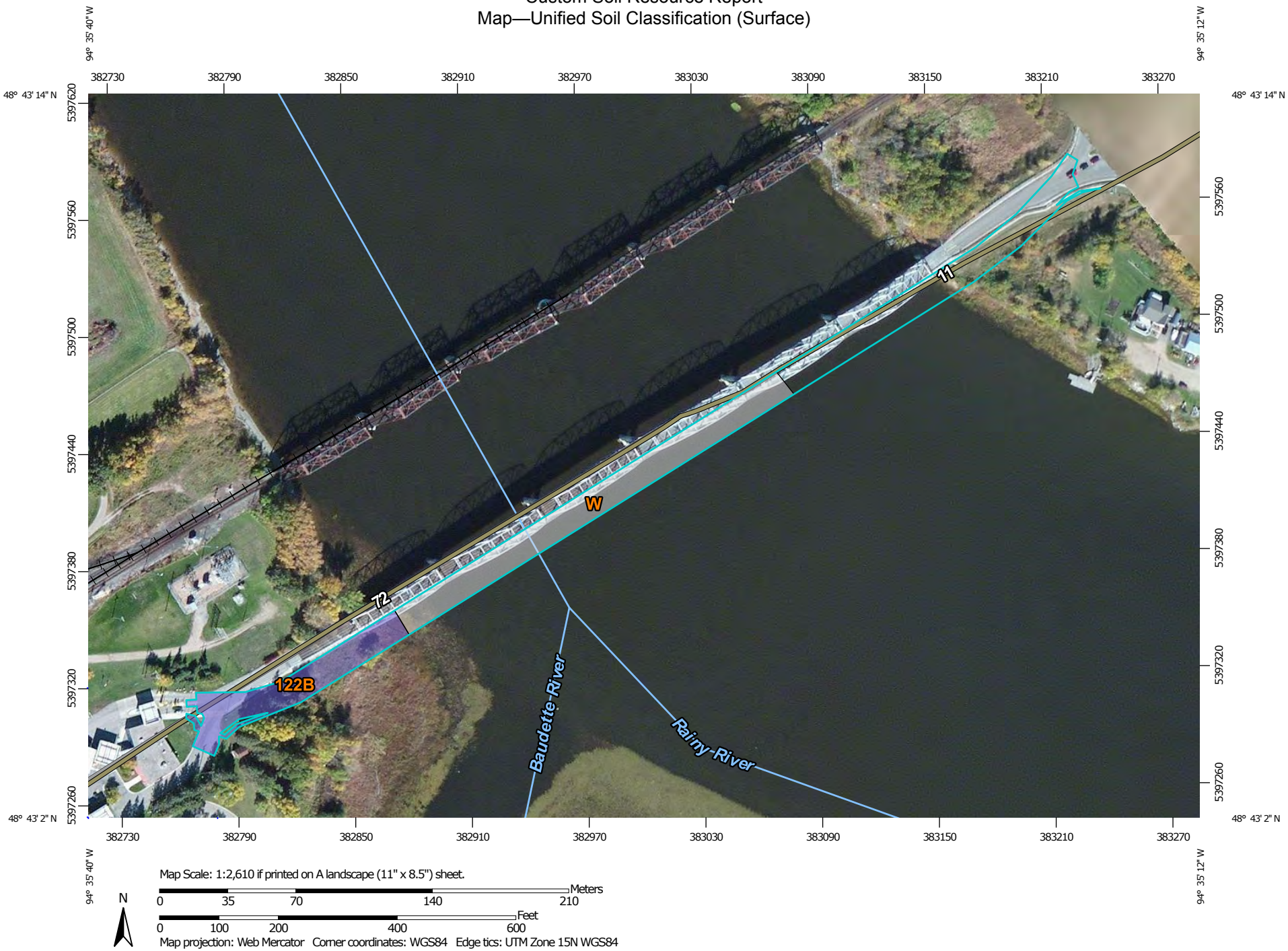
ATTACHMENT C
CONTACTED TRIBES

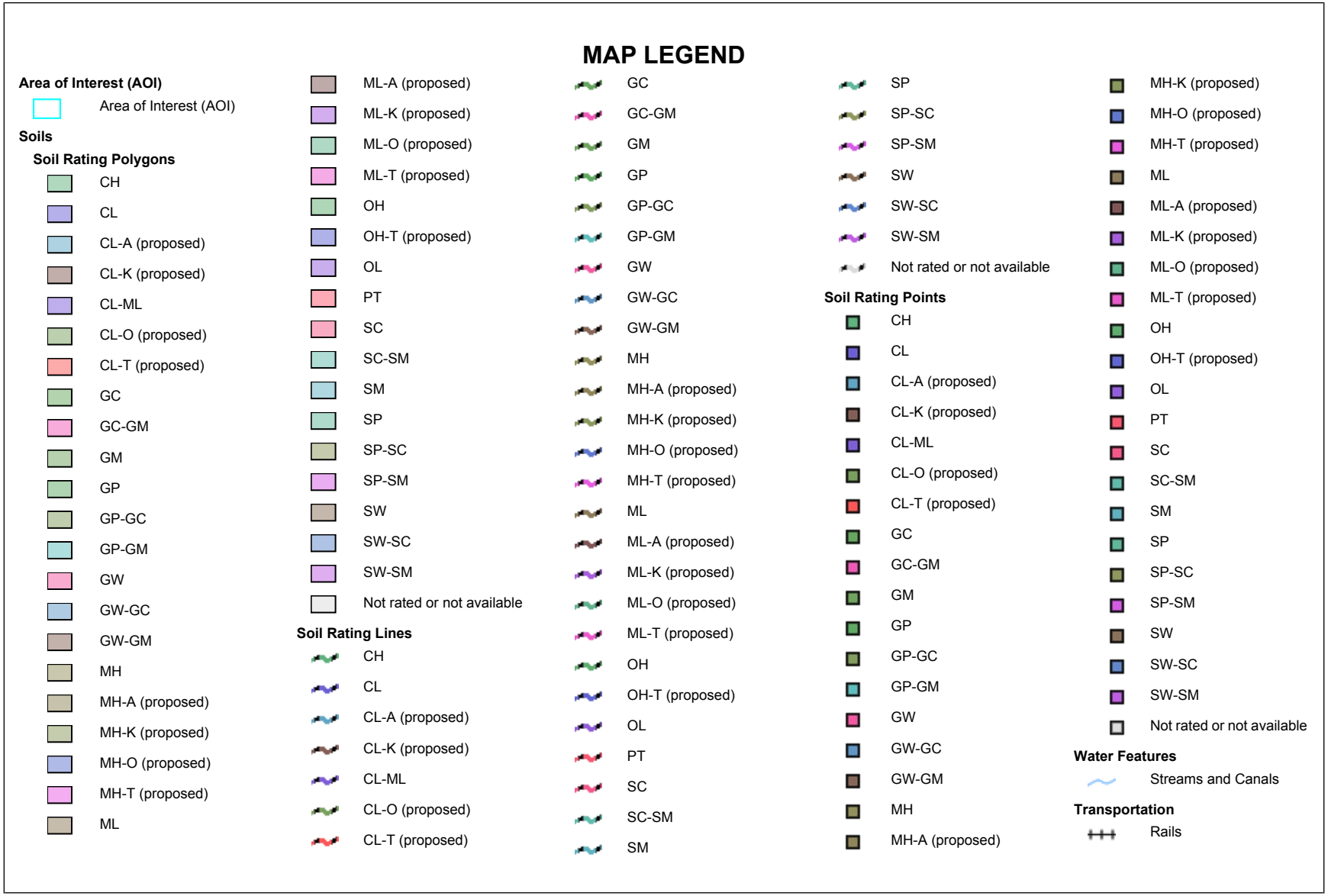
Bad River Band of Lake Superior Chippewa
Fort Peck Tribes
Flandreau Santee Sioux Tribe
Keweenaw Bay Indian Community
Lac Courte Oreilles Band of Lake Superior Chippewa
Lac du Flambeau Band of Lake Superior Chippewa
Lac Vieux Desert Band of Lake Superior Chippewa
Red Cliff Band of Lake Superior Chippewa
Red Lake Band of Chippewa
St. Croix Chippewa Indians of Wisconsin
Santee Sioux Tribe
Shakopee Mdewakanton Sioux Community
Sokaogon Chippewa Community
Spirit Lake Tribe
Standing Rock Sioux Tribe
Turtle Mountain Band of Chippewa

FINAL DRAFT

Appendix F – UNIFIED SOIL CLASSIFICATION SYSTEM SOILS REPORT

Map—Unified Soil Classification (Surface)




MAP LEGEND
Area of Interest (AOI)
Area of Interest (AOI)
Soils
Soil Rating Polygons
CH
CL
CL-A (proposed)
CL-K (proposed)
CL-ML
CL-O (proposed)
CL-T (proposed)
GC
GC-GM
GM
GP
GP-GC
GP-GM
GW
GW-GC
GW-GM
MH
MH-A (proposed)
MH-K (proposed)
MH-O (proposed)
MH-T (proposed)
ML
ML-A (proposed)
ML-K (proposed)
ML-O (proposed)
ML-T (proposed)
OH
OH-T (proposed)
OL
PT
SC
SC-SM
SM
SP
SP-SC
SP-SM
SW
SW-SC
SW-SM
Not rated or not available
Soil Rating Lines
CH
CL
CL-A (proposed)
CL-K (proposed)
CL-ML
CL-O (proposed)
CL-T (proposed)
GC
GC-GM
GM
GP
GP-GC
GP-GM
GW
GW-GC
GW-GM
MH
MH-A (proposed)
MH-K (proposed)
MH-O (proposed)
MH-T (proposed)
ML
ML-A (proposed)
ML-K (proposed)
ML-O (proposed)
ML-T (proposed)
OH
OH-T (proposed)
OL
PT
SC
SC-SM
SM
SP
SP-SC
SP-SM
SW
SW-SC
SW-SM
Not rated or not available
Soil Rating Points
CH
CL
CL-A (proposed)
CL-K (proposed)
CL-ML
CL-O (proposed)
CL-T (proposed)
GC
GC-GM
GM
GP
GP-GC
GP-GM
GW
GW-GC
GW-GM
MH
MH-A (proposed)
MH-K (proposed)
MH-O (proposed)
MH-T (proposed)
ML
ML-A (proposed)
ML-K (proposed)
ML-O (proposed)
ML-T (proposed)
OH
OH-T (proposed)
OL
PT
SC
SC-SM
SM
SP
SP-SC
SP-SM
SW
SW-SC
SW-SM
Not rated or not available
Water Features
Streams and Canals
Transportation
Rails

MAP INFORMATION

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Lake of the Woods County, Minnesota
Survey Area Data: Version 12, Sep 18, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 1, 1999—Oct 21, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Unified Soil Classification (Surface)

Unified Soil Classification (Surface)— Summary by Map Unit — Lake of the Woods County, Minnesota (MN077)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
122B	Taylor loam, 1 to 8 percent slopes	CL	0.5	24.5%
W	Water		0.8	42.2%
Subtotals for Soil Survey Area			**1.3**	**66.7%**
Totals for Area of Interest			**2.0**	**100.0%**

Rating Options—Unified Soil Classification (Surface)

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Lower

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Layer Options (Horizon Aggregation Method): Surface Layer (Not applicable)

For an attribute of a soil horizon, a depth qualification must be specified. In most cases it is probably most appropriate to specify a fixed depth range, either in centimeters or inches. The Bottom Depth must be greater than the Top Depth, and the Top Depth can be greater than zero. The choice of "inches" or "centimeters" only applies to the depth of soil to be evaluated. It has no influence on the units of measure the data are presented in.

When "Surface Layer" is specified as the depth qualifier, only the surface layer or horizon is considered when deriving a value for a component, but keep in mind that the thickness of the surface layer varies from component to component.

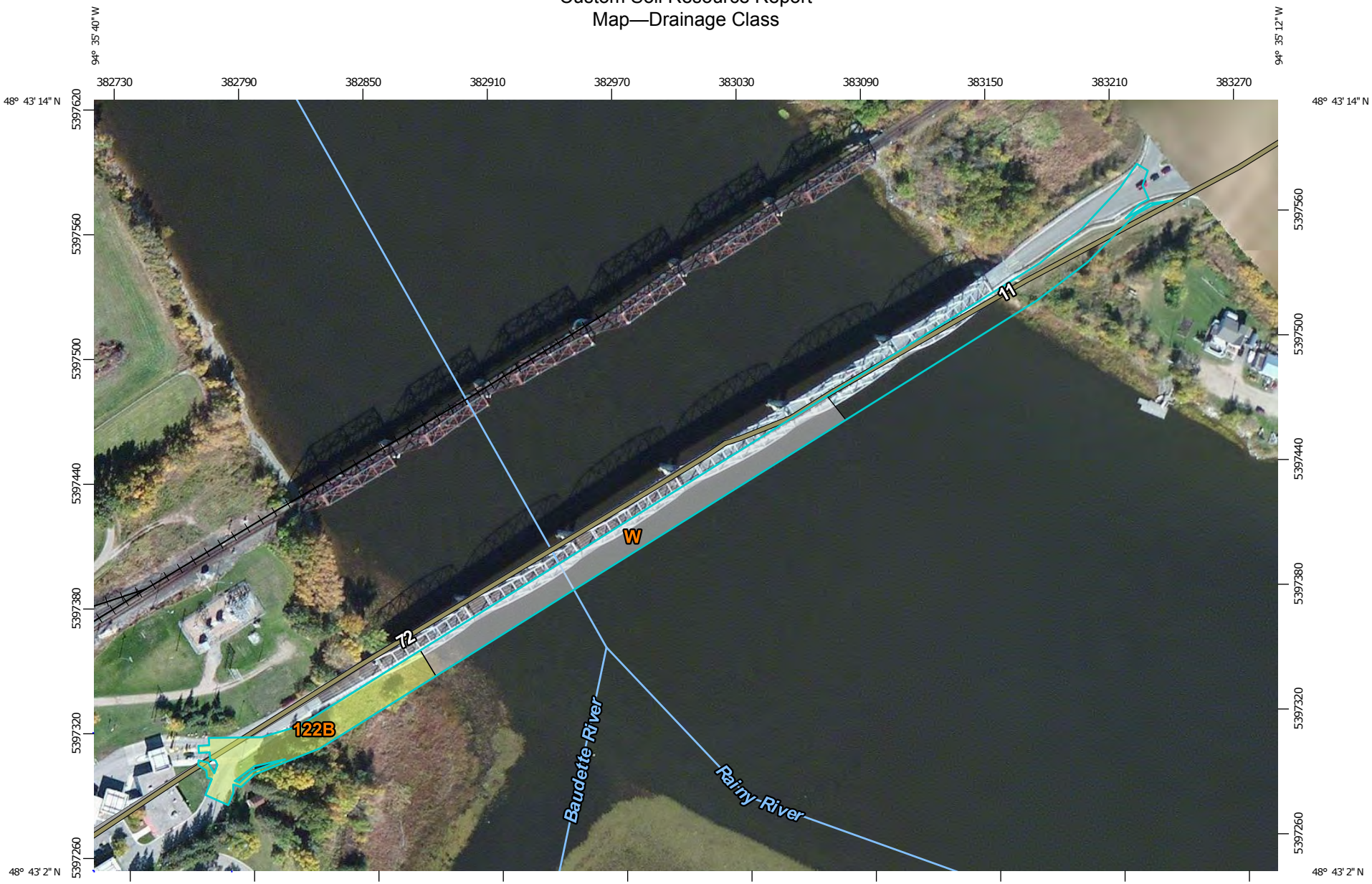
When "All Layers" is specified as the depth qualifier, all layers recorded for a component are considered when deriving the value for that component.

Whenever more than one layer or horizon is considered when deriving a value for a component, and the attribute being aggregated is a numeric attribute, a weighted average value is returned, where the weighting factor is the layer or horizon thickness.

Drainage Class

"Drainage class (natural)" refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized-excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained. These classes are defined in the "Soil Survey Manual."

Custom Soil Resource Report
Map—Drainage Class



Map Scale: 1:2,610 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 35 70 140 210

Feet
0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- Excessively drained
- Somewhat excessively drained
- Well drained
- Moderately well drained
- Somewhat poorly drained
- Poorly drained
- Very poorly drained
- Subaqueous
- Not rated or not available

Soil Rating Lines

- Excessively drained
- Somewhat excessively drained
- Well drained
- Moderately well drained
- Somewhat poorly drained
- Poorly drained
- Very poorly drained
- Subaqueous
- Not rated or not available

Soil Rating Points

- Excessively drained
- Somewhat excessively drained
- Well drained
- Moderately well drained
- Somewhat poorly drained
- Poorly drained
- Very poorly drained
- Subaqueous
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Lake of the Woods County, Minnesota
Survey Area Data: Version 12, Sep 18, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 1, 1999—Oct 21, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Drainage Class

Drainage Class— Summary by Map Unit — Lake of the Woods County, Minnesota (MN077)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
122B	Taylor loam, 1 to 8 percent slopes	Moderately well drained	0.5	24.5%
W	Water		0.8	42.2%
Subtotals for Soil Survey Area			**1.3**	**66.7%**
Totals for Area of Interest			**2.0**	**100.0%**

Rating Options—Drainage Class

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Appendix G– PHASE I & II ENVIRONMENTAL SITE ASSESSMENT EXCERPTS

TABLE 3

Soil - Detected Parameters
Trunk Highway 72/Bridge 9412
Baudette, Minnesota
October 2014

Parameter	Method	MPCA Industrial SRVs	MPCA Tier 1 SLVs	MPCA Residential SRVs	LGP-1/1-3	LGP-1/4-6	LGP-2/1-3	LGP-2/6-8	LGP-3/2-4	LGP-3/5-7	LGP-4/1-3	LGP-4/5-7	LGP-5/2-4	LGP-5/8-10	LGP-6/1-3	LGP-6/5-7	LGP-7/1-3	LGP-7/11-13	LGP-8/10-12	LGP-8/2-4
RCRA Metals																				
Arsenic	EPA 6010C	20	5.8	9	2.2	**6.2**	4.2	3.9	3.2	3.6	4.2	ND	5.7	2.2	2.9	3.1	3.2	**7.0**	1.5	3.1
Barium	EPA 6010C	18000	1700	1100	56.3	58.7	68.2	63.9	42.5	88.6	61.3	111	117	49.1	68.9	70.6	129	102	62.0	112
Cadmium	EPA 6010C	200	8.8	25	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.34	0.20	0.40	0.46	ND	ND
Chromium	EPA 6010C	NS	NS	NS	11.5	17.9	27.6	17.0	12.2	20.3	21.6	37.8	34.0	13.2	13.0	21.9	12.1	21.9	18.5	31.0
Lead	EPA 6010C	700	2700	300	37.9	10.5	10.0	6.1	4.4	6.4	7.2	7.0	12.6	5.1	63.0	11.5	53.7	7.9	5.5	10.3
Selenium	EPA 6010C	1300	2.6	160	2.2	1.4	ND	ND	ND	ND	2.4	ND	0.89	1.1	ND	2.3	2.4	1.9	1.7	ND
Mercury	EPA 7471B	1.5	3.3	.5	0.058	0.032	0.027	NA*	0.023	0.025	0.029	ND	0.030	ND	0.047	ND	0.038	0.032	0.024	0.041
SVOCs																				
1-Methylnaphthalene	EPA 8270	NS	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	19.1	ND	ND	ND	ND	2.78	ND	ND
2-Methylnaphthalene	EPA 8270	369	NS	100	ND	ND	ND	ND	ND	ND	ND	ND	33.6	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	EPA 8270	5260	81	1200	ND	ND	ND	ND	ND	ND	ND	ND	1.66	ND	ND	ND	ND	ND	ND	ND
Anthracene	EPA 8270	45400	1300	7880	ND	ND	ND	ND	ND	ND	ND	ND	0.519	ND	ND	ND	ND	ND	ND	ND
Fluorene	EPA 8270	4120	110	850	ND	ND	ND	ND	ND	ND	ND	ND	2.55	ND	ND	ND	ND	0.746	ND	ND
Naphthalene	EPA 8270	28	4.5	10	ND	ND	ND	ND	ND	ND	ND	ND	**5.39**	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	EPA 8270	NS	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	5.64	ND	ND	ND	ND	1.51	ND	ND
BaP Equivalent		3	2	10.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
VOCs																				
1,2,4-Trimethylbenzene	EPA 8260	25	2.7	8	ND	ND	ND	ND	ND	ND	ND	ND	**12.3**	ND	ND	ND	ND	0.13	ND	ND
1,3,5-Trimethylbenzene	EPA 8260	10	2.7	3	ND	ND	ND	ND	ND	ND	ND	ND	**4.8**	0.10	ND	ND	ND	ND	ND	ND
Ethylbenzene	EPA 8260	200	1	200	ND	ND	ND	ND	ND	ND	ND	ND	**1.6**	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene (Cumene)	EPA 8260	87	9.5	30	ND	ND	ND	ND	ND	ND	ND	ND	0.93	0.064	ND	ND	ND	0.62	ND	ND
Naphthalene	EPA 8260	28	4.5	10	ND	ND	ND	ND	ND	ND	ND	ND	**16.6**	ND	ND	ND	ND	ND	ND	ND
Xylene (Total)	EPA 8260	130	5.4	45	ND	ND	ND	ND	ND	ND	ND	ND	3.4	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	EPA 8260	92	NS	30	ND	ND	ND	ND	ND	ND	ND	ND	2.8	0.14	ND	ND	ND	1.9	ND	ND
n-Propylbenzene	EPA 8260	93	NS	30	ND	ND	ND	ND	ND	ND	ND	ND	2.1	0.10	ND	ND	ND	1.4	ND	ND
p-Isopropyltoluene	EPA 8260		NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	2.0	0.085	ND	ND	ND	1.5	ND	ND
sec-Butylbenzene	EPA 8260	70	NS	25	ND	ND	ND	ND	ND	ND	ND	ND	1.9	0.10	ND	ND	ND	1.7	0.095	ND
Petroleum																				
Diesel Range Organics (DRO)	WI DRO	NS*	NS*	NS*	ND	ND	ND	ND	ND	ND	7.9	ND	***332***	ND	19.4	ND	36.1	***1370***	***105***	ND
Gasoline Range Organics (GRO)	WI GRO	NS*	NS*	NS*	ND	ND	ND	ND	ND	ND	ND	ND	***292***	ND	ND	ND	ND	***192***	27.6	ND

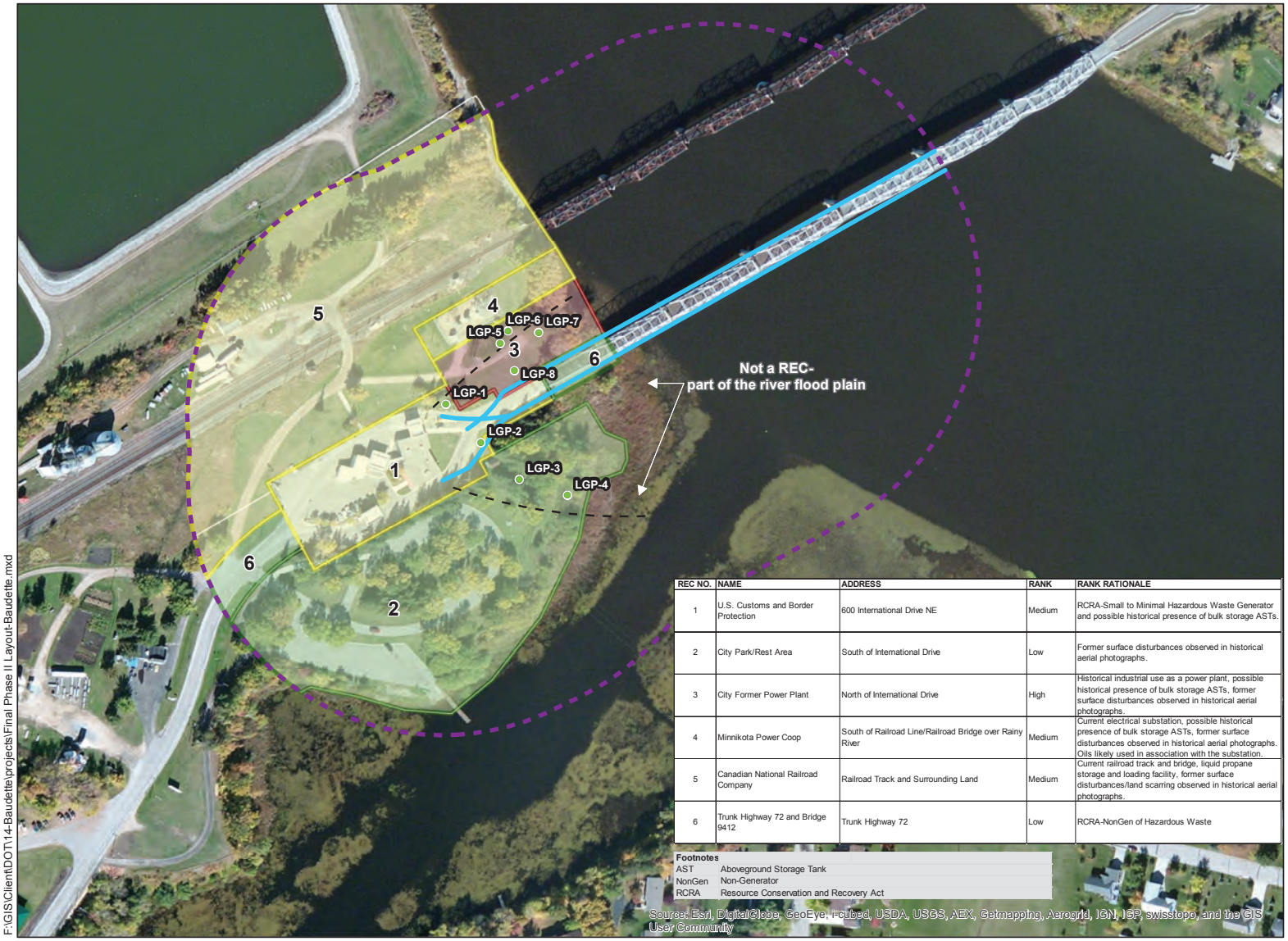
NS - No Standard listed by MPCA for parameter
ND - Parameter Not Detected
MPCA - Minnesota Pollution Control Agency
SRV - Soil Reference Value
SLV - Soil Leaching Value
BOLD - Parameter Detected Above MPCA Tier I SLV Criteria
BOLD - Parameter Detected Above MPCA Residential SRV Criteria
*Best Management Practice for DRO and GRO of 100 mg/kg when defining unregulated fill for soil with no field screening indications of contamination. Exceedances of the MPCA BMP shown in ***BOLD***.

Table 4

Groundwater - Detected Parameters
Trunk Highway 72/Bridge 9412
Baudette, Minnesota
October 2014

Parameter	Method	MDH HRLs	LGP-1/18-23	LGP-2/13-18	LGP-3/14-19	LGP-4/8-13	LGP-5/19-24	LGP-6/9-14
RCRA Metals								
Barium, Dissolved	6010C Met	2000	151	240	190	146	236	145
Selenium, Dissolved	6010C Met	30	**33.0**	ND	ND	20.5	ND	23.9
SVOCs								
1-Methylnaphthalene	EPA 8270	NS	ND	ND	ND	ND	237	ND
2-Methylnaphthalene	EPA 8270	NS	ND	ND	ND	ND	481	ND
Acenaphthene	EPA 8270	400	ND	ND	ND	ND	20.8	ND
Fluorene	EPA 8270	300	ND	ND	ND	ND	30.0	ND
Naphthalene	EPA 8270	300	ND	ND	ND	ND	217	ND
Phenanthrene	EPA 8270	NS	ND	ND	ND	ND	55.5	ND
VOCs								
1,2,4-Trimethylbenzene	EPA 8260	100	ND	ND	ND	ND	93.8	ND
1,3,5-Trimethylbenzene	EPA 8260	100	ND	ND	ND	ND	93.6	ND
Benzene	EPA 8260	2	ND	ND	ND	ND	**53.9**	ND
Ethylbenzene	EPA 8260	50	ND	ND	ND	ND	21.8	ND
Isopropylbenzene (Cumene)	EPA 8260	300	ND	ND	ND	ND	34.0	ND
Naphthalene	EPA 8260	300	ND	ND	ND	ND	**326**	ND
Toluene	EPA 8260	200	ND	ND	ND	ND	2.9	ND
Xylene (Total)	EPA 8260	300	ND	ND	ND	ND	110	ND
n-Butylbenzene	EPA 8260	NS	ND	ND	ND	ND	31.7	ND
n-Propylbenzene	EPA 8260	NS	ND	ND	ND	ND	55.4	ND
p-Isopropyltoluene	EPA 8260	NS	ND	ND	ND	ND	21.5	ND
sec-Butylbenzene	EPA 8260	NS	ND	ND	ND	ND	26.5	ND
Petroleum								
Diesel Range Organics (DRO)	WI DRO	200*	140	ND	ND	140	**24,800**	**320**
Gasoline Range Organics (GRO)	WI GRO	200*	ND	ND	ND	ND	**2420**	ND

NS - No Standard for parameter listed by MDH
ND - Parameter Not Detected
BOLD - Parameter detected above MDH HRL Criteria
MDH - Minnesota Department of Health
HRL - Health Risk Limit
* - MDH Concentration for Total Petroleum Hydrocarbons of 200 ug/L utililzed for DRO/GRO comparison



LEGEND

- Project Area
- **Recognized Environmental Conditions (RECs)**
- **REC Ranking**
- Low
- Medium
- High
- Alignment Alternatives
- Proposed Excavation Limits
- Investigation Locations

REC NO.	NAME	ADDRESS	RANK	RANK RATIONALE
1	U.S. Customs and Border Protection	600 International Drive NE	Medium	RCRA-Small to Minimal Hazardous Waste Generator and possible historical presence of bulk storage ASTs.
2	City Park/Rest Area	South of International Drive	Low	Former surface disturbances observed in historical aerial photographs.
3	City Former Power Plant	North of International Drive	High	Historical industrial use as a power plant, possible historical presence of bulk storage ASTs, former surface disturbances observed in historical aerial photographs.
4	Minnikota Power Coop	South of Railroad Line/Railroad Bridge over Rainy River	Medium	Current electrical substation, possible historical presence of bulk storage ASTs, former surface disturbances observed in historical aerial photographs. Oils likely used in association with the substation.
5	Canadian National Railroad Company	Railroad Track and Surrounding Land	Medium	Current railroad track and bridge, liquid propane storage and loading facility, former surface disturbances/land scarring observed in historical aerial photographs.
6	Trunk Highway 72 and Bridge 9412	Trunk Highway 72	Low	RCRA-NonGen of Hazardous Waste

Footnotes

AST	Aboveground Storage Tank
NonGen	Non-Generator
RCRA	Resource Conservation and Recovery Act

N

200 100 0 200 Feet

FIGURE 2

PROJECT AREA LAYOUT MAP WITH INVESTIGATION LOCATIONS

Rainy River Bridge Replacement
Trunk Highway 72/International Drive
Baudette, Minnesota

LANDMARK ENVIRONMENTAL, LLC

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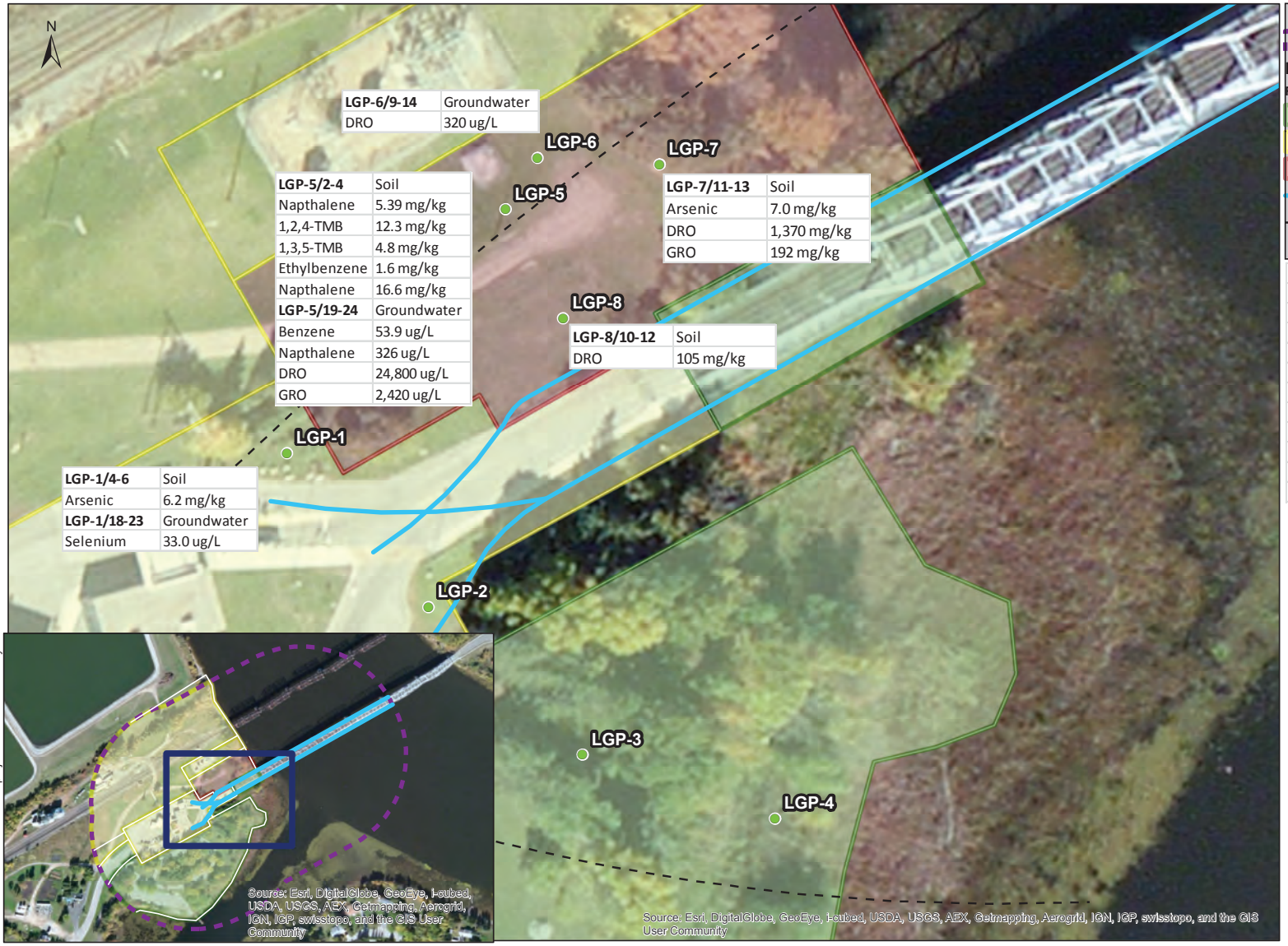

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LEGEND

- Project Area

Recognized Environmental Conditions (RECs)

REC Ranking

- Low
- Medium
- High
- Alignment Alternatives
- Proposed Excavation Limits
- Investigation Locations

Parameter	MPCA RSRV	MPCA SLV	MDH HRL
Arsenic	9 mg/kg	5.8 mg/kg	NA
Selenium	NA	NA	30 ug/L
Napthalene	NA	NA	326 ug/L
Benzene	NA	NA	2 ug/L
1,2,4-TMB	8 mg/kg	2.7 mg/kg	NA
1,3,5-TMB	3 mg/kg	2.7 mg/kg	NA
Ethylbenzene	NA	1 mg/kg	NA
DRO	100 mg/kg*	100 mg/kg*	200 ug/L*
GRO	100 mg/kg*	100 mg/kg*	201 ug/L*
See Tables 3 and 4 for details			

Footnotes:
TMB: Trimethylbenzene
DRO: Diesel Range Organics
GRO: Gasoline Range Organics
mg/kg: milligrams per kilogram
ug/L: micrograms per liter
MPCA: Minnesota Pollution Control Agency
RSRV: Residential Soil Reference Value
SLV: Tier I Soil Leaching Value
MDH: Minnesota Department of Health
HRL: Health Risk Limit
*Best Management Practice used for DRO and GRO in soil; Total Petroleum Hydrocarbon HRL used for groundwater
NA: No detections above the listed regulatory criteria
Note: No parameters detected above listed regulatory criteria in LGP-2, LGP-3, LGP-4

50 25 0 50 Feet

FIGURE 3

SOIL AND GROUNDWATER ANALYTICAL RESULTS DETECTED PARAMETERS EXCEEDING REGULATORY CRITERIA

Rainy River Bridge Replacement
Trunk Highway 72/International Drive
Baudette, Minnesota

LANDMARK ENVIRONMENTAL, LLC

PROJECT: Trunk Hwy 72/Bridge 9412

Boring Log No.LGP-1

PROJECT LOCATION: Baudette, Minnesota	COORDINATES (UTM NAD83): 382748/5397322
DRILLING CONTRACTOR: MESA	DATE STARTED: 10/8/2014 / DATE FINISHED: 10/8/2014
DRILLING METHOD: Geoprobe	TOTAL DEPTH (ft.): 25 / MEASURING POINT: Ground Surface
SAMPLING EQUIPMENT: 5-foot Sampler	DEPTH GROUNDWATER ENCOUNTERED: 19.5
NUMBER OF SAMPLES: 5	DEPTH TO GROUNDWATER AT COMPLETION: 18
NUMBER OF ANALYTICAL SAMPLES:	LOGGED BY: Jerry Mullin

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample Interval	SAMPLES: GW (ft)	MATERIAL DESCRIPTION	LABORATORY TESTS: PID (ppm)	LABORATORY TESTS: Remarks
0–1				Fine-grained sandy silt with trace clay, rootlets and organics throughout, dark grayish brown, topsoil	0	Soil sample LGP-1/1-3 submitted for laboratory analysis
1–3				Sand with 30% gravel, loose, some wood chips, grayish brown, fill	0	
3–5				Sandy clay with trace pebbles, firm/compact, very moist, brownish gray, reworked native till	0	Soil sample LGP-1/4-6 submitted for laboratory analysis
5–12				Clay with silt, very moist-slightly wet, low to moderate plasticity, dense, light grayish brown with oxidation mottling, till	0	
12–15				Very fine-grained sandy clay with silt, firm and dense, light grayish brown with oxidation mottling, very moist - wet, till	0	
15–16					0	
16–17				some pebbles in clay below 16 feet		
17–18					0	
18–19				wet and clay is "sticky", rainbow sheen observed on water sample, no odor		Groundwater sample LGP-1/18-23 submitted for laboratory analysis
19–21			▼		4	
21–23					0	
23–24				Sand, medium-grained, poorly graded, saturated, brown, aluvium	0	
24–25				EOB = 25 Feet	0	
25–26						

PROJECT:
Trunk Hwy 72/Bridge 9412

Boring Log No.LGP-2

PROJECT LOCATION: Baudette, Minnesota	COORDINATES (UTM NAD83): 382781/5397287
DRILLING CONTRACTOR: MESA	DATE STARTED: 10/7/2014 / DATE FINISHED: 10/7/2014
DRILLING METHOD: Geoprobe	TOTAL DEPTH (ft.): 20 / MEASURING POINT: Ground Surface
SAMPLING EQUIPMENT: 5-foot Sampler	DEPTH GROUNDWATER ENCOUNTERED: 15
NUMBER OF SAMPLES: 4	DEPTH TO GROUNDWATER AT COMPLETION: 13
NUMBER OF ANALYTICAL SAMPLES:	LOGGED BY: Jerry Mullin

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample Interval	SAMPLES: GW (ft)	MATERIAL DESCRIPTION	LABORATORY TESTS: PID (ppm)	LABORATORY TESTS: Remarks
0–1				Fine-grained sandy silt with trace clay, rootlets and organics throughout, dark grayish brown, topsoil	0	Soil sample LGP-2/1-3 submitted for laboratory analysis
1–5				Clayey silt with trace sand, very moist, light brown, reworked native till	0	
5–10				Clay with silt, very moist-slightly wet, "sticky", moderate plasticity, dense, light grayish brown with oxidation mottling, till	0	Soil sample LGP-2/6-8 submitted for laboratory analysis
10–15			▼	Silt with clay, dense, very compact, very moist, gray with oxidation banding, till	0	Groundwater sample LGP-2/13-18 submitted for laboratory analysis
15–20				Clayey fine-grained sand, dense, "sticky", saturated, grayish brown, till	0	
18				laminar bedding below 18 feet		
20				EOB = 20 Feet		

PROJECT: Trunk Hwy 72/Bridge 9412

Boring Log No.LGP-3

PROJECT LOCATION: Baudette, Minnesota	COORDINATES (UTM NAD83): 382801/5397266
DRILLING CONTRACTOR: MESA	DATE STARTED: 10/7/2014 / DATE FINISHED: 10/7/2014
DRILLING METHOD: Geoprobe	TOTAL DEPTH (ft.): 20 / MEASURING POINT: Ground Surface
SAMPLING EQUIPMENT: 5-foot Sampler	DEPTH GROUNDWATER ENCOUNTERED: 14.8
NUMBER OF SAMPLES: 4	DEPTH TO GROUNDWATER AT COMPLETION: 14
NUMBER OF ANALYTICAL SAMPLES:	LOGGED BY: Jerry Mullin

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample Interval	SAMPLES: GW (ft)	MATERIAL DESCRIPTION	LABORATORY TESTS: PID (ppm)	LABORATORY TESTS: Remarks
0–1				Fine-grained sandy silt with trace clay, rootlets and organics throughout, dark grayish brown, topsoil	0	
1–5				Silt with trace clay, very moist, tree roots throughout, light brown, reworked native	0	Soil sample LGP-3/2-4 submitted for laboratory analysis
5–6					0	Soil sample LGP-3/5-7 submitted for laboratory analysis
6–14				Clay with silt and trace fine-grained sand, very moist-slightly wet, "sticky", moderate plasticity, dense, light grayish brown with oxidation mottling, till; sand content increases with depth	0	
14–15			▼	Sand, fine-grained with trace clay, very moist, grayish brown, outwash		Groundwater sample LGP-3/14-19 submitted for laboratory analysis
15–16				Silt with clay and trace sand, dense, very compact, very moist, gray with oxidation banding, saturated, till	0	
16–17				Clayey fine-grained sand, grayish brown with oxidation banding, saturated, outwash-till transition	0	
17–19					0	
19–20				EOB = 20 Feet		

PROJECT:
Trunk Hwy 72/Bridge 9412

Boring Log No.LGP-4

PROJECT LOCATION: Baudette, Minnesota	COORDINATES (UTM NAD83): 382821/5397252
DRILLING CONTRACTOR: MESA	DATE STARTED: 10/8/2014 / DATE FINISHED: 10/8/2014
DRILLING METHOD: Geoprobe	TOTAL DEPTH (ft.): 15 / MEASURING POINT: Ground Surface
SAMPLING EQUIPMENT: 5-foot Sampler	DEPTH GROUNDWATER ENCOUNTERED: 9.8
NUMBER OF SAMPLES: 3	DEPTH TO GROUNDWATER AT COMPLETION: 8
NUMBER OF ANALYTICAL SAMPLES:	LOGGED BY: Jerry Mullin

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample Interval	SAMPLES: GW (ft)	MATERIAL DESCRIPTION	LABORATORY TESTS: PID (ppm)	LABORATORY TESTS: Remarks
0–1				Fine-grained sandy silt with trace clay, rootlets and organics throughout, dark grayish brown, topsoil	0	Soil sample LGP-4/1-3 submitted for laboratory analysis
1–3				Silt with trace clay, very moist, organics throughout, variegated gray and reddish brown (oxidation mottling), reworked native	0	
3–10				Clayey silt with trace sand, low- to moderate plasticity, very moist, variegated gray and reddish brown (oxidation staining), very moist - wet, native till	0	Soil sample LGP-4/5-7 submitted for laboratory analysis
10–11			▼	Clay with sand, "sticky", moderate plasticity, light grayish brown with oxidation mottling, saturated, till	0	Groundwater sample LGP-4/8-13 submitted for laboratory analysis
11–15				Silty clay with very fine-grained sand, variegated grayish brown and reddish brown, dense, saturated, till below river elevation EOB = 15 Feet	0	

PROJECT: Trunk Hwy 72/Bridge 9412

Boring Log No.LGP-5

PROJECT LOCATION: Baudette, Minnesota	COORDINATES (UTM NAD83): 382797/5397351
DRILLING CONTRACTOR: MESA	DATE STARTED: 10/8/2014 / DATE FINISHED: 10/8/2014
DRILLING METHOD: Geoprobe	TOTAL DEPTH (ft.): 25 / MEASURING POINT: Ground Surface
SAMPLING EQUIPMENT: 5-foot Sampler	DEPTH GROUNDWATER ENCOUNTERED: 21
NUMBER OF SAMPLES: 5	DEPTH TO GROUNDWATER AT COMPLETION: 19.5
NUMBER OF ANALYTICAL SAMPLES:	LOGGED BY: Jerry Mullin

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample Interval	SAMPLES: GW (ft)	MATERIAL DESCRIPTION	LABORATORY TESTS: PID (ppm)	LABORATORY TESTS: Remarks
0–1				Class 5 sand and gravel, brown, moist, loose, fill	0	
1–2				Silty clay, moderate plasticity, very moist - slightly wet, soft, pale brown reworked native till		
2–3				slight- to moderate petroleum odor from 3.3 to 14 feet, no sheen	70	Soil sample LGP-5/2-4 submitted for laboratory analysis
4–5				clay is more firm with depth	112	
6–7				Silty clay with sand and 15% pebbles, massive/no bedding, variegated gray and yellowish brown, very moist, compact, dense, till	137	
8–9				Clay with silt, moderate plasiticity, yellowish brown, very moist, soft, till	76	Soil sample LGP-5/8-10 submitted for laboratory analysis
10–11				Silty clay with 20% coarse-grained sand and pebbles, massive/no bedding, very moist, compact, dense, low plasticity, variegated gray and yellowish brown with oxidation mottling, till	44	
12–13					16	
14–15				no petroleum odor below 14 feet	0	
16–17					0	
18–19				1-inch thick sand seam, wet groundwater sample has petroleum odor and light sheen till is soft at 19.5 and wet	0	Groundwater sample LGP-5/19-24 submitted for laboratory analysis
20–21			▼		0	
22–23				Sandy clay with some silt, light grayish brown with oxidation mottling, "sticky/soupy", saturated, till		
24–25				EOB = 25 Feet		
26						

PROJECT:
Trunk Hwy 72/Bridge 9412

Boring Log No.LGP-6

PROJECT LOCATION: Baudette, Minnesota	COORDINATES (UTM NAD83): 382799/5397370
DRILLING CONTRACTOR: MESA	DATE STARTED: 10/9/2014 — DATE FINISHED: 10/9/2014
DRILLING METHOD: Geoprobe	TOTAL DEPTH (ft.): 15 — MEASURING POINT: Ground Surface
SAMPLING EQUIPMENT: 5-foot Sampler	DEPTH GROUNDWATER ENCOUNTERED: 10.3
NUMBER OF SAMPLES: 3	DEPTH TO GROUNDWATER AT COMPLETION: 10.3
NUMBER OF ANALYTICAL SAMPLES:	LOGGED BY: Jerry Mullin

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample Interval	SAMPLES: GW (ft)	MATERIAL DESCRIPTION	DEPTH (feet)	LABORATORY TESTS: PID (ppm)	LABORATORY TESTS: Remarks
0–1				Clayey silt with fine-grained sand and organics/rootlets throughout, compact, dark grayish brown, topsoil	0–1	0	Soil sample LGP-6/1-3 submitted for laboratory analysis
1–3				Sand and silt with gravel, loose, brown, fill	1–3	0	
3–7				Silty clay, moderate plasiticity, soft, slightly wet, pale brown, reworked native material	3–7	0	Soil sample LGP-6/5-7 submitted for laboratory analysis
7–8				till is more firm with depth	7–8	0	
8–12			▼	Silty clay with sand and 15% pebbles, massive/no bedding, variegated gray and yellowish brown, very moist, compact, dense, till	8–12	0	Groundwater sample LGP-6/9-14 submitted for laboratory analysis
12–13				Silty clay with 15% coarse sand and pebbles, massive/no bedding, very moist, dense, low plasticity, compact, till	12–13	0	
13–15				EOB = 15 Feet	13–15		

PROJECT:
Trunk Hwy 72/Bridge 9412

Boring Log No.LGP-7

PROJECT LOCATION: Baudette, Minnesota	COORDINATES (UTM NAD83): 382821/5397363
DRILLING CONTRACTOR: MESA	DATE STARTED: 10/9/2014 / DATE FINISHED: 10/9/2014
DRILLING METHOD: Geoprobe	TOTAL DEPTH (ft.): 30 / MEASURING POINT: Ground Surface
SAMPLING EQUIPMENT: 5-foot Sampler	DEPTH GROUNDWATER ENCOUNTERED: NA
NUMBER OF SAMPLES: 6	DEPTH TO GROUNDWATER AT COMPLETION: NA
NUMBER OF ANALYTICAL SAMPLES:	LOGGED BY: Jerry Mullin

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample Interval	SAMPLES: GW (ft)	MATERIAL DESCRIPTION	LABORATORY TESTS: PID (ppm)	LABORATORY TESTS: Remarks
0–1				Clayey silt with fine-grained sand and organics/rootlets throughout, compact, dark grayish brown, topsoil	0	Soil sample LGP-7/1-3 submitted for laboratory analysis
1–2				Gravelly silt with some peat, loose, dark gray and brown, fill		
2–3				Clayey silt, variegated gray and yellowish brown, reworked native	0	
3–4						
4–5				Silty clay with 20% pebbles, massive/no bedding, low- to moderate plasiticity, variegated gray and yellowish brown with oxidation mottling, very moist, till	0	
5–6						
6–7					2	
7–8						
8–9				moderate petroleum odor from 8.5 to 22 feet	72	
9–10						
10–11					183	Soil sample LGP-7/11-13 submitted for laboratory analysis
11–12						
12–13					138	
13–14				low plasticity and very dense till below 13.5 feet		
14–15					7	
15–16						
16–17				till has a petroleum sheen from 16 to 18 feet	35	
17–18						
18–19					69	
19–20						
20–21					41	
21–22						
22–23				no petroleum odor below 22 feet	2	
23–24						
24–25					0	
25–26						
26–27					0	
27–28						
28–29					0	
29–30				EOB = 30 Feet		

PROJECT: Trunk Hwy 72/Bridge 9412

Boring Log No.LGP-8

PROJECT LOCATION: Baudette, Minnesota	COORDINATES (UTM NAD83): 382800/5397344
DRILLING CONTRACTOR: MESA	DATE STARTED: 10/8/2014 / DATE FINISHED: 10/8/2014
DRILLING METHOD: Geoprobe	TOTAL DEPTH (ft.): 30 / MEASURING POINT: Ground Surface
SAMPLING EQUIPMENT: 5-foot Sampler	DEPTH GROUNDWATER ENCOUNTERED: NA
NUMBER OF SAMPLES: 6	DEPTH TO GROUNDWATER AT COMPLETION: NA
NUMBER OF ANALYTICAL SAMPLES:	LOGGED BY: Jerry Mullin

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample Interval	SAMPLES: GW (ft)	MATERIAL DESCRIPTION	LABORATORY TESTS: PID (ppm)	LABORATORY TESTS: Remarks
0–1				Clayey silt with fine-grained sand and organics/rootlets throughout, compact, dark grayish brown, topsoil	0	
1–2				Concrete and sandy gravel, loose, yellowish brown, fill		
2–4				Silty clay with trace sand, dense, yellowish brown with oxidation mottling, low- to moderate plasiticity, very moist - slightly wet, reworked native till	0	Soil sample LGP-8/2-4 submitted for laboratory analysis
4–6				15% pebbles below 6 feet, firm, very moist, native/undisturbed till	0	
6–8				color change to gray and moderate petroleum odor from 8.5 to 16 feet	0	
8–10					50	
10–12				as above, variegated yellowish brown and gray, clay is very dense/hard with low plasticity, moist	62	Soil sample LGP-8/10-12 submitted for laboratory analysis
12–14					4	
14–16					33	
16–18				Sandy clay, very dense/hard, moist, variegated light grayish brown and reddish brown (oxidation staining), till	7	
18–20					0	
20–22					0	
22–24				Clay, trace silt and 10% pebbles, massive/no bedding, very hard and dense, dark gray, moist, till	0	
24–26					0	
26–28					0	
28–30				EOB = 30 Feet	0	

Appendix H– DRAFT PROGRAMMATIC SECTION 4(F) EVALUATION AND APPROVAL FOR FHWA PROJECTS THAT NECESSITATE THE USE OF HISTORIC BRIDGES FOR BRIDGE #9412

PROGRAMMATIC SECTION 4(F) EVALUATION AND APPROVAL FOR FHWA PROJECTS THAT NECESSITATE THE USE OF HISTORIC BRIDGES – BAUDETTE / RAINY RIVER INTERNATIONAL BRIDGE (BRIDGE #9412)

DRAFT

TRUNK HIGHWAY 72
SP 3905-09
City of Baudette, Minnesota
Lake of the Woods County

Prepared for:
MnDOT

January 30, 2017

PROGRAMMATIC SECTION 4(F) EVALUATION AND APPROVAL FOR FHWA PROJECTS THAT NECESSITATE THE USE OF HISTORIC BRIDGES – BAUDETTE / RAINY RIVER INTERNATIONAL BRIDGE (BRIDGE #9412)

January 30, 2017

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APPENDIX C – MNDOT STRUCTURE INVENTORY REPORT: BRIDGE 9412, TH 72 OVER RAINY RIVER C.1

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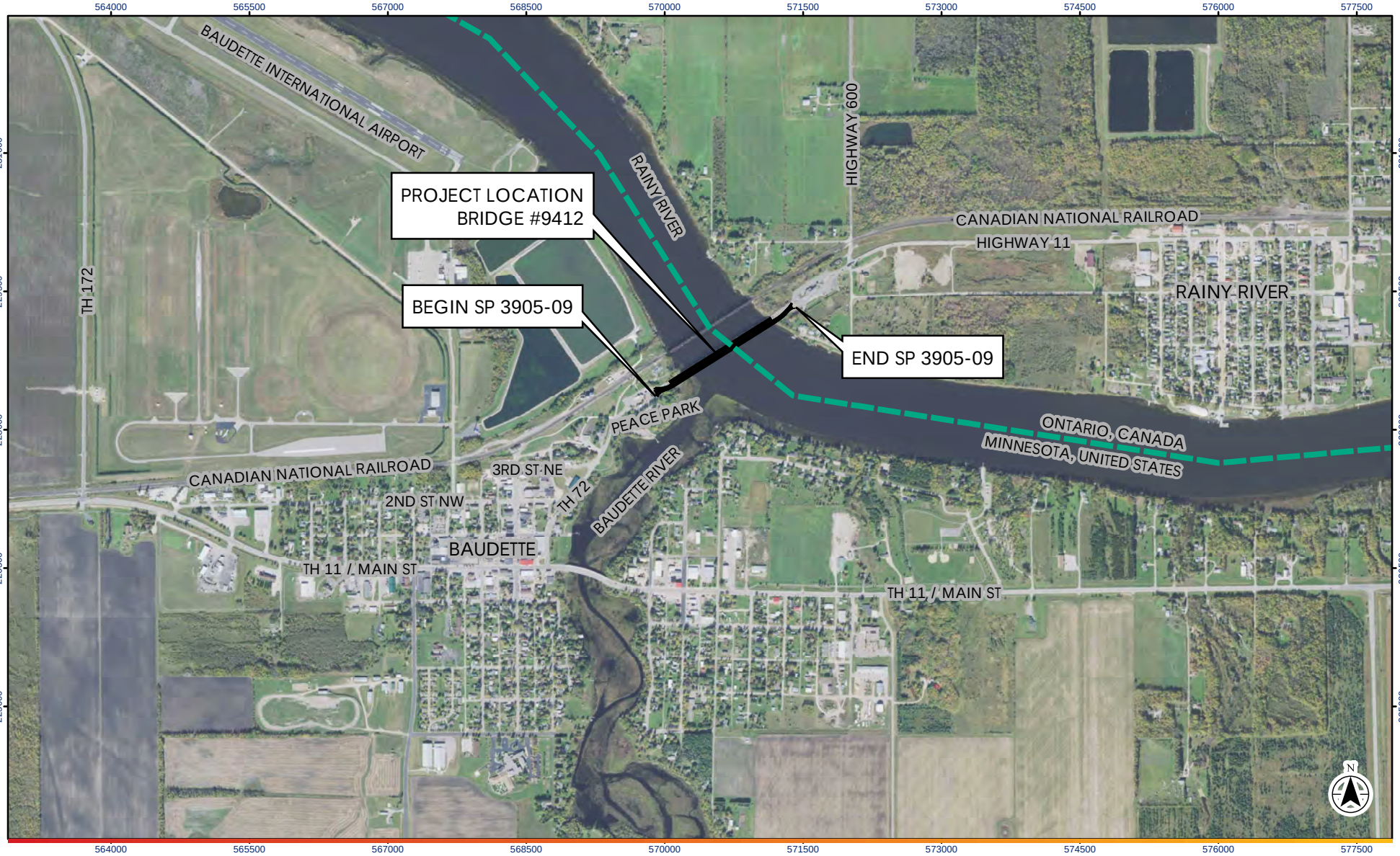

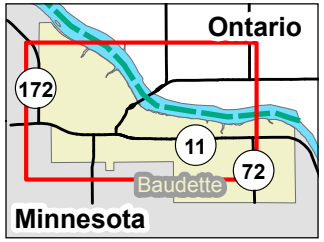

0 1,500 Feet

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Notes
1. Coordinate System: NAD 1983 HARN Adj MN Lake of the Woods South Feet.

2. Aerial: MnGEO WMS, 2015 FSA.

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Project Location 193802870
T161N, R31W, S35
City of Baudette, MN

Prepared by aribachonek on 2017-01-08

Client/Project SP 3905-09
MnDOT
Baudette/Rainy River International Bridge Replacement

Figure No.
1

Title
PROJECT LOCATION AERIAL

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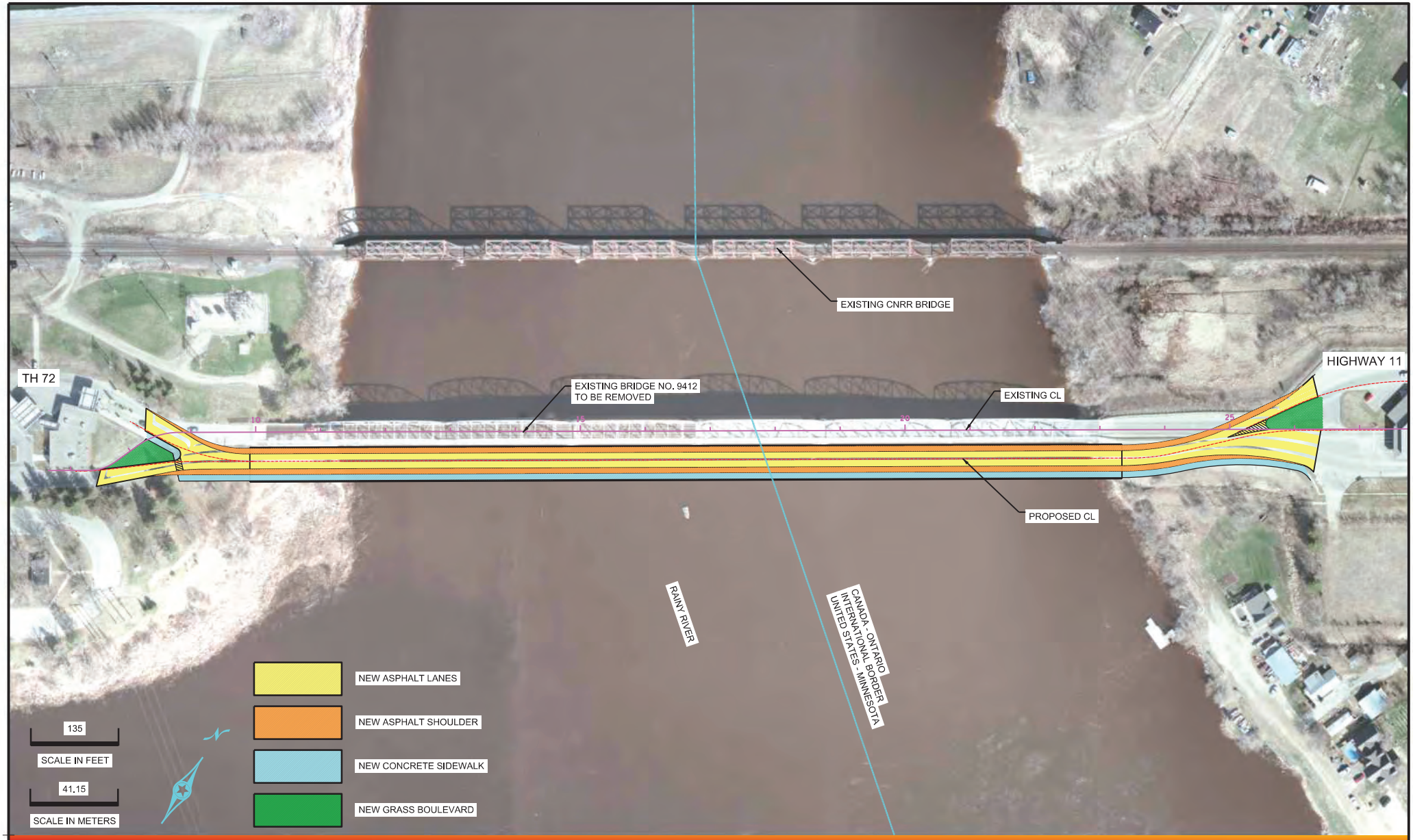

MINNESOTA DEPARTMENT OF TRANSPORTATION AND MINISTRY OF TRANSPORTATION ONTARIO
BAUDETTE/RAINY RIVER INTERNATIONAL BRIDGE REPLACEMENT
ALIGNMENT ALTERNATIVE 2 (UPSTREAM OF EXISTING ALIGNMENT)

FIGURE 2

DATE: 05/04/2016

PROJ. NO. 193802870

Report Purpose
January 30, 2017

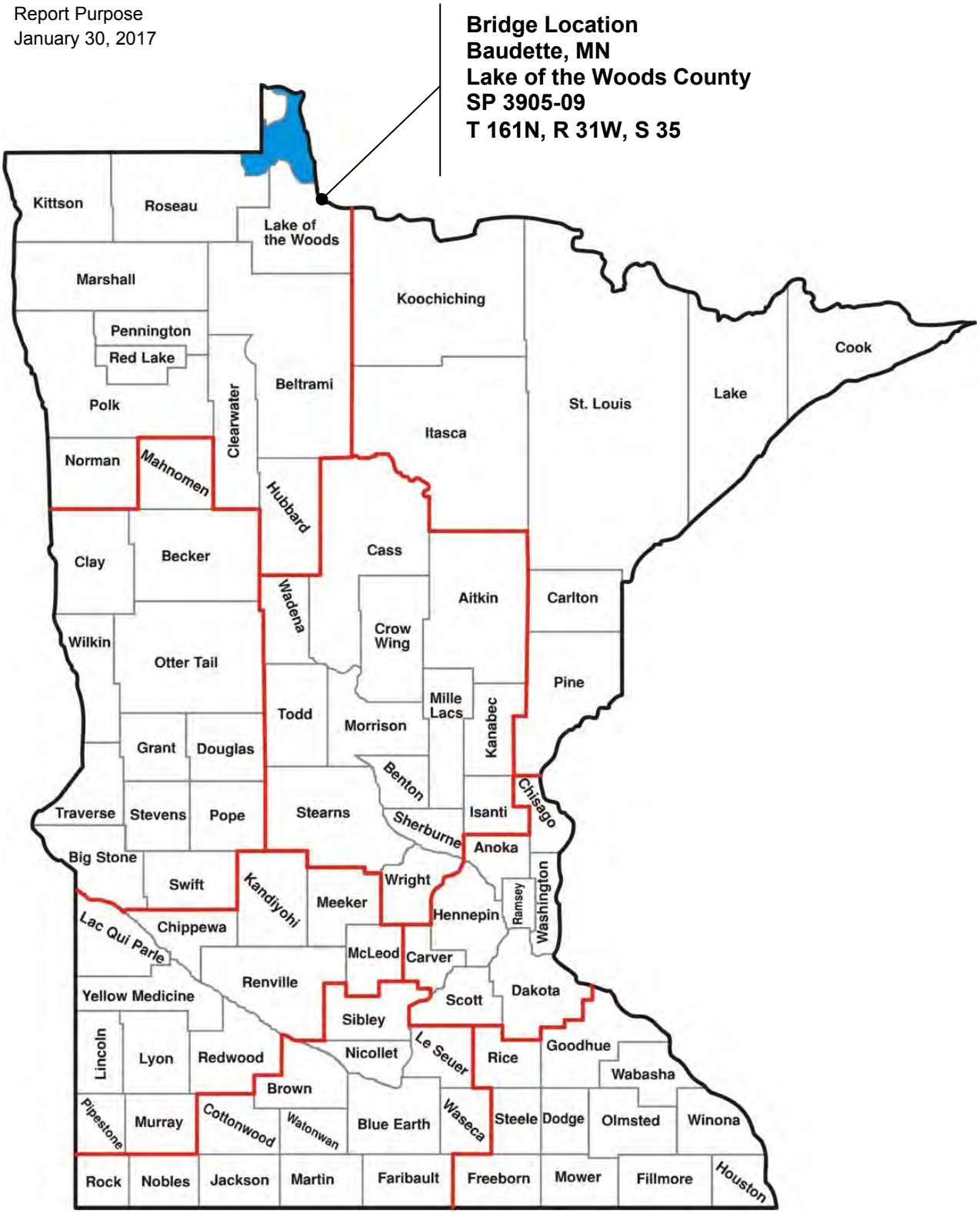

Figure 3: Area Map

PROGRAMMATIC SECTION 4(F) EVALUATION AND APPROVAL FOR FHWA PROJECTS THAT NECESSITATE THE USE OF HISTORIC BRIDGES – BAUDETTE / RAINY RIVER INTERNATIONAL BRIDGE (BRIDGE #9412)

Report Purpose
January 30, 2017

1.0 REPORT PURPOSE

The purpose of this Programmatic Section 4(f) Evaluation and Approval for FHWA Projects that Necessitate the Use of Historic Bridges is to document information needed by the FHWA to make a decision regarding the use of a property protected by Section 4(f) legislation (49 USC 303 & 23 USC 138) and FHWA Section 4(f) regulations under 23 CFR 771.135(a).

The Section 4(f) legislation as established under the Department of Transportation Act of 1966 (49 USC 303, 23 USC 138) provides protection for publicly owned parks, recreation areas, historic sites, wildlife and/or waterfowl refuges from conversion to a transportation use. The Federal Highway Administration (FWHA) may not approve the use of land from a significant publicly owned park, recreation area, or wildlife and waterfowl refuge, or any significant historic site unless a determination is made that:

- There is no feasible and prudent alternative to the use of land from the property; and
- The action includes all possible planning to minimize harm to the property resulting from such use (23 CFR 77.135).

Additional protection is provided for outdoor recreational lands under the Section 6(f) legislation (16 USC 4602-8(f) (3)) where Land and Water Conservation (LAWCON) funds were used for the planning, acquisition or development of the property. These properties may be converted to a non-outdoor recreational use only if replacement of land of at least the same fair market value and reasonably equivalent usefulness and location is assured. There are no Section 6(f) properties within the project impact area; therefore, this document will not address Section 6(f) issues or processes.

The purpose of this Programmatic Section 4(f) Evaluation and Approval for FHWA Projects that Necessitate the Use of Historic Bridges is to provide the information required by the Secretary of Transportation to make the decision regarding replacement of the Baudette/Rainy River International Bridge, a property protected by Section 4(f) legislation which will be affected as a result of the decommissioning and replacement of the Baudette/Rainy River International Bridge.

This Programmatic Section 4(f) Evaluation and Approval for FHWA Projects that Necessitate the Use of Historic Bridges describes the identified Section 4(f) historic site which is proposed to be “used” under the preferred alternative, potential impacts on that property, and possible mitigation measures to minimize impacts. A “use” occurs (1) when land from a Section 4(f) site is acquired for a transportation project, (2) when there is occupancy of land that is adverse in terms of the statute’s preservationist purposes, or (3) when the proximity impacts of the transportation project on the Section 4(f) sites, without acquisition of land, are so great that the purposes for which the Section 4(f) site exists are substantially impaired (normally referred to as a constructive use).

The proposed use of Bridge 9412 satisfies the requirements for use of a Programmatic Section 4(f) Evaluation for FHWA projects that necessitate the use of historical bridges by meeting the following criteria:

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- **The bridge is to be replaced or rehabilitated with Federal funds.** The project is programmed in the 2016-2019 Minnesota STIP. The programmed funding includes approximately $12.4 million of Federal funds. Implementation of the preferred alternative would result in the replacement of Bridge 9412.

- **The resource is a historic bridge that is not a National Historic Landmark.** The bridge has been determined to be eligible for the National Register of Historic Places (NRHP). It is not a National Historic Landmark.

- **If the bridge is replaced, the existing bridge must be made available for alternative use.** The Minnesota Department of Transportation (MnDOT) will comply with the Historic Bridge Requirements and Uniform Relocation Assistance Act of 1987, Section 123(f). The United States' half of the Baudette/Rainy River International Bridge will be marketed for sale. The Ministry of Transportation Ontario (MTO) has decided not to market the Canadian half of the bridge for sale. The demolition and removal of the existing structure will be included in the tender specifications or contract language. Therefore, the Contractor would be solely responsible for the disposal of any material that is removed from the old structure as part of the replacement (see Appendix B for MTO's responses to MnDOT's 2013 Bridge Rehabilitation Study Report).

- **A Programmatic Section 4(f) Evaluation cannot be used for projects that require and Environmental Impact Statement (EIS).** The project does not cross a threshold that would require preparation of an EIS in 23 CFR 771.115. An EIS is not required for the proposed project.

- **The State Historic Preservation Office (MnHPO) must concur in writing with the assessment of impacts and proposed mitigation.** Coordination with MnHPO is underway. MnHPO has concurred with the Section 106 determination of effect and is developing a signatory to the Memorandum of Agreement (MOA) stipulating mitigation for the impact to Bridge 9412 (see Appendix A). *[NOTE: A Section 106 Memorandum of Agreement (MOA) has been accepted by all signatories and is in the process of being executed. The final agreement will be included in the Final Programmatic Section 4(f) Evaluation document, which will be part of the Fact and Conclusions documentation supporting the FHWA's NEPA determination on the EA process.]*

2.0 PURPOSE AND NEED & PROPOSED ACTION FOR PROJECT

2.1 PURPOSE STATEMENT

The Baudette / Rainy River International Bridge (Bridge No. 9412) spans the Rainy River from Baudette, Minnesota to Rainy River, Ontario, Canada. The bridge was originally built in 1959, and has served as an international border crossing since that time. As part of a joint ownership agreement, the Minnesota Department of Transportation (MnDOT) and the Ontario Ministry of Transportation (MTO) maintain and operate the bridge. Minnesota Trunk Highway (TH) 72 and Highway 11 carry traffic over the bridge between the U.S. and Canada. Full service Ports of Entry (Customs) are located immediately after exiting on either end of the bridge.

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The purpose of the Baudette / Rainy River International Bridge Replacement Project is to address the deteriorating condition of the bridge structure in order to maintain the international exchange of vehicular, freight and pedestrian traffic across the Rainy River at this location as follows:

- To provide a level of service that meets the transportation needs of area residents, tourists, businesses/industries, and farms;
- To address geometric deficiencies; and
- To ensure the continued serviceability of the route.

Additionally, Chapter 152 of the Minnesota Legislature 2008 Session Laws directs MnDOT to establish a bridge improvement program with an emphasis on structurally deficient and fracture critical bridges. The proposed improvements to this bridge are funded under the Chapter 152 program.

2.2 NEEDS / DEFICIENCIES

2.2.1 Primary Need

2.2.1.1 Need for Structurally Sound Bridge Crossing of the Rainy River between the Baudette Minnesota and Rainy River Ontario Ports of Entry

The primary need for the project is to address the deteriorating condition of the international bridge, and in doing so provide the public with a structurally sound bridge crossing over the Rainy River. The existing bridge carries approximately 1,300 vehicles per day, projected to increase to 1,400-1,450 by 2038 (MnDOT/MTO). The closest international crossing is located approximately 70 miles away.

MnDOT's Minnesota Structure Inventory Report indicates that Bridge #9412 is a fracture critical (non-redundant) bridge with a sufficiency rating of 48.8 out of 100 (Appendix C – MnDOT 2016). The bridge inspection notes provided in the Structure Inventory Report also indicate that inspections were performed with both MnDOT and MTO present on an annual basis. Structural deficiencies are described below:

2.2.1.1.1 Superstructure & Deck Deficiencies

Structural elements of the bridge have been observed to be actively corroding, with some members experiencing substantial section loss (up to 50%). Paint failure, microbial induced corrosion, and pack rust were identified on the surfaces and at the interfaces of many structural members and their connections. Additionally, trusses were found to display free edge distortion (buckling of the unfastened sides of gusset plates) as well as pack rust on many gusset plate connections.

The rocker bearings are in full expansion and in most cases are in contact with the lower chord of the superstructure. This condition has existed for several years and has likely contributed to the bending of several anchor bolts.

In certain areas, the open grid deck was observed to have moderate surface corrosion, several broken welds, and pack rust at its interface with the support beams. Several instances of missing and

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bent/broken grid bars and other repairs at various locations were noted throughout the field inspection notes (Appendix C – MnDOT 2016).

Due to observations noted in the April 2016 structural inspection report (MnDOT 2016), the superstructure and deck have most recently been given a National Bridge Inventory (NBI) condition rating of 5, indicating that they are in "fair" condition.

2.2.1.1.2 Substructure Deficiencies

The most recent underwater inspection report (Ayres Associates & Collins Engineers, Inc. 2012), found that the six underwater piers (Piers 2 through 7, from west to east) were generally in good condition with no significant, observable structural defects, but that all six underwater piers showed light concrete scaling within a one-foot band from the top of the caissons. Additionally, the steel caisson shells for Piers 2 through 6 had light to moderate surface corrosion from the top to 3.5 feet below the water line. Below this point, there was moderate to heavy surface corrosion with 0.5-inch to 3-inch diameter rust nodules and up to 1/16-inch-deep pitting over 50% of the area. Moderate to heavy timber debris accumulation (1 foot in diameter and smaller) was also observed at Piers 4 and 5 from the channel bottom to the waterline.

Scour depressions up to 3 to 4 feet deep were observed around the downstream sides, particularly in areas where there was minimal riprap.

As noted in the April 2016 structural inspection report (Appendix C – MnDOT 2016), the substructure for the bridge received an NBI rating of 5, indicating a "fair" condition. The piers were given a Minnesota Scour Code of 'O' indicating that the bridge foundations have been determined to be stable for predicted scour conditions, but a "Scour Plan of Action" needs to be established to monitor the bridge during high water events. The scour was last evaluated in 1998.

2.2.2 Secondary Needs

2.2.2.1 Maximizing Maintenance of Traffic during Construction

Maintaining the continuity of traffic during construction will be critical as the Baudette/Rainy River International Bridge provides a vital connection within this region's transportation system. For the approximately 1,300 vehicles per day that use the crossing, the bridge provides access to the many resources that are shared between the two countries, including education and employment facilities, tourism, recreation, as well as timber, mining, and agricultural industries. The closest Customs crossing with continuous operations (open 24/7) is located in International Falls, Minnesota / Fort Francis, Ontario which would add a 140-mile round-trip detour to the local Rainy River and Baudette communities.

While Baudette, Minnesota and Rainy River, Ontario do not have a reciprocity agreement relative to emergency services, the Rainy River ambulance often transports critically ill/injured patients to the Baudette Regional Airport for medical airlift as the Rainy River community does not have an airport facility.

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2.2.2.2 Pedestrian Facilities Deficiencies

There is a need to provide a structurally sound bridge crossing for pedestrian, bicycle, and non-motorized traffic. The existing bridge has provided a pedestrian crossing for residents of Rainy River and Baudette since the cantilevered walkway was constructed as part of the original bridge in 1959.

Additionally, the current pedestrian facilities are not ADA compliant. The sidewalk is constructed of a timber plank decking over steel beams and stringers that are in similar condition to the other structural members under the main bridge deck. Several instances of broken and generally weathered timber planks are cited in the 2009 bridge inspection field notes that have not been addressed (Appendix C – MnDOT 2016).

2.2.3 Additional Bridge Operational and Geometric Deficiencies

As detailed in the 2013 Bridge Rehabilitation Study Report, there are additional operational and geometric deficiencies identified in the current bridge related to the vertical clearance, load capacity, and geometric standards.

2.2.3.1 Vertical Clearance

The current bridge experiences daily over-dimensional load traffic. Due to the limited existing vertical clearance of 14.8 feet, the port authorities currently implement special procedures to accommodate over-dimensional loads. First, as documented in the bridge inspection notes, portal frames and sway frames in all spans have distortion from traffic impacts. The inspection notes also indicate that sway frames continue to get bumped by over-dimensional loads; bent members are documented but may be bent slightly more from year to year (Appendix C – MnDOT 2016). To avoid collisions, over-dimensional loads (over 14.8 feet high) are required to unload or otherwise reduce heights to cross the existing structure or use an alternative route. Second, some over-dimensional loads require travel down the center of the bridge structure where the vertical clearance is maximized, prohibiting two-way traffic, and causing delays for on-coming traffic.

2.2.3.2 Load Capacity

Currently, the structural condition of the bridge can support legal loads of 80,000 lbs. traveling at a maximum of 10 mph, and permitted loads up to 88,000 lbs. when additional special procedures are followed. The bridge structural loading capacity is not consistent with special permitted roadway loading limits on TH 72 which allows loads up to 100,000 lbs., creating a limiting segment on an international corridor. Efficient travel of trucks with permitted overweight loads is not well-accommodated since the closest international crossing is 70 miles away; this inefficiency impedes international commerce.

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2.2.3.3 Safety Standards

The main span guardrail and approach span guardrails do not meet current NCHRP 350 safety standards.

2.2.4 Additional Considerations

The following describes additional considerations that would be desirable to address:

2.2.4.1 Structural Redundancy

The Baudette/Rainy River International Bridge is a fracture critical bridge with non-redundant design. Current designs in compliance with MnDOT design standards do not contain fracture critical design components. Chapter 152 of the Minnesota Legislature 2008 Session Laws directs MnDOT to establish a bridge improvement program with an emphasis on structurally deficient and fracture critical bridges.

2.2.4.2 Regulatory Requirements

2.2.4.2.1 Joint Ownership with the Ontario Ministry of Transportation (MTO)

The State of Minnesota and Province of Ontario operate the bridge under a joint bridge ownership agreement. As part of the joint ownership agreement, each transportation agency is responsible for the maintenance on their respective half of the bridge structure. Since the bridge is jointly owned, decisions regarding how to address the needs of this bridge need to be made jointly by MnDOT and the MTO.

2.2.4.2.2 Historic Resources

The current bridge structure is eligible for listing in the National Register of Historic Places (NRHP). Additionally, the project location is within the Minnesota and Manitoba Railroad Corridor Historic District, which includes the Canadian National (CN) Railway Bridge, located directly downstream of the Baudette/Rainy River International Bridge. The CN Railway Bridge has been determined eligible for listing in the NRHP. See Appendix B for the State of Minnesota Historic Preservation Office (MnHPO)'s letter of determination of no effect to the Canadian National (CN) Railway Bridge dated 10 December 2015.

Because federal funds will be used to complete this project, effects to the bridge must be evaluated in accordance with Section 106 of the National Historic Preservation Act, as well as Section 4(f) of the Department of Transportation Act. See Appendix B for additional coordination with MnHPO.

2.2.4.2.3 Parkland

In addition to protecting historic resources as described above, Section 4(f) provides protections for publicly owned parks, trails, recreational areas, and wildlife and waterfowl refuges. Section 4(f) requires avoidance unless there is no prudent and feasible alternative to the use. If avoidance is not possible, then Section 4(f) requires all possible planning to minimize harm to the park property. Peace Park is a Section 4(f) protected park property located directly adjacent to the current bridge.

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2.2.4.2.4 Airport

The Baudette International Airport is located approximately 0.5 miles northwest of the Baudette / Rainy River International Bridge. The proposed bridge lies under the approach surface on that end of the Baudette International Airport runway and will need to stay under a 50:1 slope from the end of the primary surface (200 feet beyond the end of the runway). As such, coordination with the Federal Aviation Administration (FAA) has been initiated to verify compliance with these regulations.

2.2.4.2.5 Navigational Channel

The United States Coast Guard (USCG) maintains a navigational channel on the Rainy River and has jurisdiction over structures spanning the channel on the U.S. side of the river. Transport Canada has similar jurisdiction over the navigational channel on the Canadian side of the river. The USCG has determined that the use of the Rainy River in this location is almost entirely recreational and therefore has determined that the CN Railway Bridge located just downstream will be the controlling structure to set the required navigational clearances.

The following requirements were advised by the USCG to apply to the U.S. side of the river:

- The low steel elevation on the proposed bridge needs to be higher than the low steel of the current CN Railway Bridge. If possible, the proposed bridge should be 5 feet higher than the current CN Railway Bridge low elevation.
- The horizontal navigation channel provided beneath the current bridge would:
  - need to have a channel width of 100 feet or more;
  - not need to be in a specific location; and
  - not need to be offset of the border.

2.2.4.2.6 Stormwater

The current bridge deck is an open grate, allowing stormwater to drain directly to the Rainy River without treatment. Roadway contaminants (gasoline, oil, salt, etc.) or accidental spills of hazardous materials also discharge directly into the Rainy River. The existing infrastructure meets current stormwater management standards but does not meet recommended agency practices. Construction of bridge and/or roadway improvements may require incorporation of stormwater management practices consistent with current regulations.

2.3 PROPOSED PROJECT ACTION

2.3.1 Location

The bridge is located on Minnesota Trunk Highway 72 and Highway 11 between the US and Canadian Port of Entry.

2.3.2 Roadway Alignment

The preferred alternative recommends locating the new bridge just upstream (south) of the existing bridge with an offset of approximately three feet from the outer rail of the existing bridge to that of the new

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bridge. There will be no change in the alignment and little or no change in the overall length of the crossing (1,286 feet). The roadway on the proposed bridge will include a two-lane section, consisting of an 11.5-foot through lane and an 8-foot shoulder in each direction.

2.3.3 Pedestrian and Bicycle Accommodations

The 8-foot shoulders will accommodate bicyclists and snowmobilers. A 6-foot sidewalk will be constructed to provide pedestrians an ADA compliant route across the bridge.

2.3.4 Bridge Structure Type

The preferred alternative recommends a five-span continuous steel I-girder with a haunched shape based on its ability lower the roadway profile and aesthetic preference.

3.0 SECTION 4(F) PROPERTY

3.1 MAP OF SECTION 4(F) PROPERTY

The Section 4(f) property discussed in this report is illustrated in Figure 1 located at the front of this report.

3.2 SIZE AND LOCATION

Completed in 1959, the Baudette/Rainy River International Bridge is approximately 1,286 feet in length and spans the Rainy River from Baudette, MN to Rainy River, Ontario, Canada. The bridge serves as an international border crossing between the United States and Canada and currently supports 1,300 vehicles per day, 14.8% of which involves truck traffic. The bridge cannot currently accommodate overweight or over-dimensional loads. In part, this is due to the existing bridge structure's low vertical clearance of 14.8 feet.

The bridge consists of six 192.5-foot long Pennsylvania through-truss main spans and six steel-beam approach spans for a total structural length of 1,286 feet. On the US side, there are four south approach spans and three south main spans; on the Canadian side, there are three north main spans and two north approach spans. The truss components include riveted built-up members and rolled members. Members are connected with riveted gusset plates. The open steel grate deck includes a two-lane, 24-foot wide roadway and a six-foot wide sidewalk is cantilevered on the east side of the northbound bridge.

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3.3 OWNERSHIP AND TYPE OF SECTION 4(F) PROPERTY

The historic bridge is jointly owned and maintained by MnDOT and MTO, ownership is split at the international border. As part of the joint ownership agreement, each transportation agency is responsible for their respective half of the bridge structure. Additionally, decisions regarding how to address the needs of the bridge are to be made jointly by MnDOT and the MTO.

The MnHPO and FHWA determined that Baudette/Rainy River International Bridge (MnDOT Bridge #9412 and MTO Bridge #45-110) is eligible for listing in the National Register of Historic Places under Criterion A: Transportation and Criterion C: Engineering (MnDOT & Mead and Hunt, 2013). Under these respective criteria, the bridge was found to be a significant example of major river crossings in Minnesota and an uncommon bridge type (Pennsylvania through-truss).

3.4 FUNCTION OF PROPERTY AND AVAILABLE ACTIVITIES

The bridge provides international access across the Rainy River between the United States and Canada. Available activities include driving vehicles, walking or biking on the bridge.

3.5 DESCRIPTION AND LOCATION OF ALL EXISTING AND PLANNED FACILITIES

The existing bridge facility is described above. Prior to the proposed action (described in Section 4.1 Preferred Alternative) and shown in Figure 2, there were no plans for modifying the existing facility.

3.6 ACCESS

Minnesota Trunk Highway 72 and Highway 11 provide vehicular, bicycle and pedestrian access to and from Baudette, Minnesota and Rainy River, Ontario. The bridge also serves as a connection between United States and Canadian full-service, 24-hour Port of Entry facilities in each country.

3.7 APPLICABLE CLAUSES AFFECTING THE OWNERSHIP

As discussed previously in Section 3.3, Ownership and Type of Section 4(f) Property, Bridge #9412 is jointly owned by MnDOT and MTO. Due to this joint ownership dynamic, rehabilitation options and mitigation are constrained by some of MTO's current practices. MTO provided its determination that the bridge is not eligible for inclusion on the Ontario Heritage Bridge List. MTO also explained that the bridge is nearing the end of its useful life and it does not consider rehabilitation as a viable option.

3.8 UNUSUAL CHARACTERISTICS REDUCING OR ENHANCING THE VALUE OF THE PROPERTY

None

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4.0 IMPACTS TO THE SECTION 4(F) PROPERTY

4.1 PREFERRED ALTERNATIVE

The proposed project includes the replacement of the Baudette/Rainy River International Bridge, causing a direct impact to the historic resource due to its removal and replacement of the bridge.

5.0 AVOIDANCE ALTERNATIVES

5.1 "NO BUILD" ALTERNATIVE

The "No Build" alternative would avoid a direct impact to the Baudette/Rainy River International Bridge. However, this alternative does not meet Chapter 152 of the Minnesota Legislature 2008 Session Laws, as well as the basic transportation needs; therefore, it is neither feasible nor prudent. Normal maintenance does not correct the structural and operational issues listed in Section 2.0, Purpose and Need & Proposed Action for Project. Without action, the bridge will continue to deteriorate requiring increased inspections and on-going maintenance.

5.2 BUILD A NEW STRUCTURE AT A DIFFERENT LOCATION WITHOUT AFFECTING THE HISTORIC INTEGRITY OF THE OLD BRIDGE, AS DETERMINED BY PROCEDURES IMPLEMENTING THE NATIONAL HISTORIC PRESERVATION ACT.

Alternatives for this project were developed with the intent to provide little to no disruption to either the U.S. and Canadian Ports of Entry (POE) facilities. Relocation of the port facilities would impart impacts and costs that would be outside of the scope of this project.

Additionally, as discussed in EA Sections 4.3.10 (Aviation) and 4.3.11 (Rainy River and Baudette River Navigational Traffic Impacts), other existing constraints within the project area include the Baudette International Airport airspace and navigational vertical clearance for the Rainy River. These airspace/navigational constraints, along with the need to tie into the existing POEs prohibited the development of a feasible replacement bridge in a new location.

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5.3 REHABILITATE THE HISTORIC BRIDGE WITHOUT AFFECTING THE HISTORIC INTEGRITY OF THE STRUCTURE, AS DETERMINED BY PROCEDURES IMPLEMENTING THE NATIONAL HISTORIC PRESERVATION ACT.

MnDOT completed a bridge rehabilitation study in May 2013 to evaluate rehabilitation/replacement options. The rehabilitation study included minor rehabilitation options that result in relatively low impacts to the historic integrity of the bridge as well as major rehabilitation alternatives with a greater potential for impacts to historic features. In general, these rehabilitation options would provide longer service life and/or address more of the project's secondary needs and additional considerations. Five rehabilitation alternatives were presented in the study as feasible.

However, MnDOT's mitigation and rehabilitation options are constrained by some of MTO's current practices. As discussed in Section 2.2.4.2.1 (Joint Ownership with the Ontario Ministry of Transportation), MnDOT and MTO are required to make joint decisions when addressing the needs of the bridge. Accordingly, MnDOT provided the May 2013 Bridge Rehabilitation Study to the MTO who offered the following determinations:

1. The Baudette/Rainy River Bridge is not eligible for the inclusion on the Ontario Heritage Bridge List.
2. The bridge is nearing the end of its useful life.
3. MTO does not consider rehabilitation of the existing bridge to be a viable option.

Following the MTO review of the Rehabilitation Study Report, the Minnesota State Historic Preservation Office (MnHPO) provided MnDOT with comments regarding the proposed rehabilitation alternatives. MnHPO's historic architect concurred that two of the five alternatives recommended in the report meet the U.S. Secretary of the Interior's Standards for preservation of a National Register eligible bridge, and that a third alternative could meet the Secretary's Standards if designed appropriately.

In October 2015, MnDOT requested that MTO staff review the Bridge Rehabilitation Study and reconsider the two alternatives that MnHPO determined meet U.S. Secretary of the Interior's Standards for preservation.

Based on MTO's investigations, the Ontario Heritage Bridge Guidelines application for Bridge 45-110 resulted in the determination of moderate heritage value. This determination disqualifies the bridge from the Ontario Heritage Bridge List; therefore, MTO concluded that rehabilitation of the existing bridge is not a viable option and recommended replacement. MTO supported their recommendation by indicating that the bridge is experiencing serious ongoing maintenance issues (i.e. scour) and operational deficiencies, as supported by its fracture critical classification. See the correspondence letters in Appendix B for additional details on the MTO's determination. Without MTO support, rehabilitation is not a prudent or feasible avoidance alternative.

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Therefore, rehabilitation of the existing bridge was eliminated from consideration.

A public meeting was held to present the need for the project and the determination that the project would include a full bridge replacement.

6.0 MEASURES TO MINIMIZE HARM

The FHWA Programmatic Section 4(f) guidance includes the following measures to minimize harm for historic bridges that are to be replaced:

- The existing bridge is to be made available for an alternative use provided a responsible party agrees to maintain and preserve the bridge.

  As noted above, MnDOT will market the United States' half of the Baudette/Rainy River International Bridge for sale. MTO has no policy or directive that would allow the agency to sell its half of the bridge structure. To avoid potential liability issues, MTO typically includes the demolition/removal of such an existing structure in the contract language and specifications. Therefore, MTO has decided not to market the Canadian half of the bridge for sale.

- For bridges that are to be rehabilitated to the point that the historic integrity is affected or that are to be moved or demolished, the FHWA ensures that, in accordance with the Historic American Engineering Record (HAER) standards, or other suitable means developed through consultation, fully adequate records are made of the bridge.

  A MOA, among MnDOT, the FHWA, and the MnHPO stipulates that MnDOT will have the Baudette/Rainy River International Bridge documented to the Minnesota Historic Property Record (MHPR) and HAER standards as mitigation for the project impact.

- For bridges that are adversely affected, agreement among the FHWA, MnHPO, and Advisory Council on Historic Preservation (ACHP) (as applicable) is reached through the Section 106 process of the National Historic Preservation Act (NHPA) on measures to minimize harm and those measures are incorporated into the project.

7.0 COORDINATION

MnHPO and FWHA were consulted to discuss impacts and solicit recommendations regarding mitigation of the bridge. See Appendix B for the following correspondence:

In a letter to the MnDOT Cultural Resources Unit (CRU), MnHPO confirmed Bridge #9412 to be eligible for the NRHP. MnHPO also concurred with CRU's determination that the proposed project will result in an adverse effect to the existing bridge. MnHPO confirmed this determination again on December 10, 2015 following a revision to the proposed project's area of potential effects.

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On December 11, 2015, the CRU indicated that it will be coordinating a Memorandum of Agreement (MOA) with MnHPO to mitigate the adverse effect to the bridge. A Section 106 Memorandum of Agreement (MOA) has been accepted by all signatories and is in the process of being executed. The MOA is intended to include documentation to the MHPR with photographs and a narrative that discusses the importance of the bridge type and setting. The final agreement will be included in Appendix A of this report and the Findings of Fact and Conclusions later in the environmental review documentation process.

8.0 CONCLUSION

Based upon the above considerations, there is no feasible and prudent alternative to the replacement of the Baudette/Rainy River International Bridge and the proposed action includes all possible planning to minimize harm to the Bridge resulting from the removal of the historic structure.

9.0 REFERENCES

Ayres Associates & Collins Engineers, Inc. Underwater Inspection Report: Structure No. 9412. 2012 Aug 15.

Minnesota Department of Transportation (MnDOT). Minnesota Structure Inventory Report: Bridge 9412, TH 72 over Rainy River. Accessed 2016 April 21.

Minnesota Department of Transportation (MnDOT) & Mead and Hunt. Bridge Rehabilitation Study Report for Baudette Bridge No. 9412. 2013 May 14.

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APPENDICES

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Appendix A– SECTION 106 MEMORANDUM OF AGREEMENT (MOA) (IN PROGRESS – DRAFT ATTACHED)

[NOTE: The final agreement will be included in the Final Programmatic Section 4(f) Evaluation document.]

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MEMORANDUM OF AGREEMENT
BETWEEN
THE FEDERAL HIGHWAY ADMINISTRATION
AND
THE MINNESOTA HISTORIC PRESERVATION OFFICE
REGARDING THE
REPLACEMENT OF THE RAINY RIVER INTERNATIONAL BRIDGE (MINNESOTA BRIDGE 9412/ONTARIO BRIDGE 45-110) (S.P. 3905-09) BETWEEN BAUDETTE, LAKE OF THE WOODS COUNTY, MINNESOTA, AND RAINY RIVER, ONTARIO

WHEREAS, the Federal Highway Administration (FHWA) plans to provide Federal-Aid Highway Program funds to the Minnesota Department of Transportation (MnDOT) to replace the Rainy River International Bridge (MnDOT Bridge 9412/Ontario Bridge 45-110) carrying Minnesota Trunk Highway 72/Ontario Provincial Highway (King's Highway) 11 over the Rainy River between Baudette, Minnesota, and Rainy River, Ontario, with a new bridge, and reconstruct a portion of the bridge approaches (S.P. 3905-09) (PROJECT); and

WHEREAS, FHWA has determined that the PROJECT is a federal undertaking with the potential to affect historic properties listed in or eligible for listing in the National Register of Historic Places (NRHP) and is therefore subject to review under Section 106 of the National Historic Preservation Act (54 USC § 306108) and its implementing regulations at 36 CFR 800; and

WHEREAS, review of this PROJECT has been conducted per the terms of the *2005 Programmatic Agreement Among the Federal Highway Administration; the Minnesota State Historic Preservation Office; the Advisory Council on Historic Preservation; the Department of the Army, Corps of Engineers, St. Paul District; and the Minnesota Department of Transportation Regarding Implementation of the Federal-Aid Highway Program in Minnesota* (as amended 2014) (Statewide PA), various stipulations of which are incorporated by reference; and

WHEREAS, the PROJECT will require permits from the U.S. Army Corps of Engineers, St. Paul District (Corps), pursuant to Section 10 of the Rivers and Harbors Act of 1899 (33 USC § 403) and Section 404 of the Clean Water Act (33 USC §1344); and

WHEREAS, in accordance with 36 CFR 800.2(a)(2) and per the terms of the Statewide PA, FHWA and the Corps have agreed that FHWA is the lead federal agency in the Section 106 review of this PROJECT; and

WHEREAS, MnDOT's Cultural Resources Unit (MnDOT CRU), on behalf of FHWA and in consultation with the Minnesota Historic Preservation Office (MnHPO), has defined the PROJECT area of potential effects (APE) as shown in Attachments A and B to this Memorandum of Agreement (AGREEMENT); and

WHEREAS, MnDOT CRU, in consultation with MnHPO, has completed surveys of the PROJECT APE and has identified two historic properties within the APE: the Minnesota and Manitoba Railroad Corridor Historic District (LW-RRD-001) and the Rainy River International Bridge (LW-BDC-031), both of which are eligible for listing in the NRHP; and

WHEREAS, MnDOT CRU has determined, and MnHPO has concurred, that based on the draft preliminary alternative layouts dated July 21, 2015, the PROJECT will have no adverse effect

FINAL DRAFT

on the Minnesota and Manitoba Railroad Corridor Historic District (LW-RRD-001) but will have an adverse effect on the Rainy River International Bridge (LW-BDC-031) by removing the structure; and

WHEREAS, in accordance with 36 CFR 800.2(c)(2)(ii), MnDOT CRU, on behalf of FHWA, has, in a good faith effort, contacted by letter dated February 16, 2012, the federally recognized American Indian tribes listed in Attachment C to this AGREEMENT, asking if they knew of any properties of historical and/or cultural significance within the APE and inviting their participation in consultation, and none have indicated that they are aware of the presence of these properties and they have not requested to participate in the consultation; and

WHEREAS, in accordance with 36 CFR 800.6(a)(1), FHWA has notified the Advisory Council on Historic Preservation (ACHP) of its finding of adverse effect for the PROJECT and has provided ACHP with documentation specified in 36 CFR 800.11(e), and ACHP has chosen not to participate in the consultation; and

WHEREAS, FHWA has consulted with MnHPO and MnDOT pursuant to 36 CFR 800 to resolve the adverse effect of the PROJECT on the Rainy River International Bridge (LW-BDC-031); and

WHEREAS, MnDOT has assumed certain responsibilities under this AGREEMENT and FHWA has invited MnDOT to become a signatory to this AGREEMENT pursuant to 36 CFR 800.6(c)(2); and

WHEREAS, the Rainy River International Bridge (LW-BDC-031) is jointly owned and maintained by MnDOT and the Ministry of Transportation - Ontario (MTO) and FHWA has consulted with MTO and has asked them to concur with this AGREEMENT pursuant to 36 CFR 800.6(c)(3); and

WHEREAS, MnDOT CRU has consulted with the Lake of the Woods County Historical Society (LOW County Historical Society) per 36 CFR 800.3(f) and has asked them to concur with this AGREEMENT pursuant to 36 CFR 800.6(c)(3); and

WHEREAS, FHWA has conducted public participation in this review in coordination with the scoping, public review and comment, and public hearings conducted to comply with the National Environmental Policy Act (NEPA) and its implementing regulations as allowed per 36 CFR 800.2(d)(3); and

NOW, THEREFORE, FHWA and MnHPO agree that upon FHWA's approval of the PROJECT, FHWA will ensure that the following stipulations are implemented in order to take into account the effects of the PROJECT on historic properties, and that these stipulations shall govern the PROJECT and all of its parts until this AGREEMENT expires or is terminated.

STIPULATIONS

FHWA shall ensure that the following measures are carried out:

I. HAER RECORDATION OF THE RAINY RIVER INTERNATIONAL BRIDGE (LW-BDC-031)

A. Prior to awarding a contract for construction, MnDOT CRU shall have the Rainy River International Bridge (LW-BDC-031) documented according to the standards and guidelines of the Historic American Engineering Record (HAER) by an individual who meets the *Secretary*

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of the Interior's Professional Qualifications Standards in architecture, historic architecture, or architectural history (36 CFR 61). The recordation shall be Level II and will include: select existing drawings that will be photographed with large-format negatives or photographically reproduced on Mylar; photographs with large-format negatives of the bridge and its relationship to the cities of Baudette, Minnesota, and Rainy River, Ontario, and historic views, where available; an index to photographs; and a written narrative (history and description) of the historic bridge.

B. MnDOT CRU shall submit a copy of the draft HAER documentation package including a set of example photographs and negatives (both original and of the drawing sets) to the National Park Service (NPS) Midwest Regional Office for review.

C. MnDOT CRU shall incorporate any changes required by NPS and submit one original final HAER documentation package (including photographs and negatives) to the NPS Midwest Regional Office, one original final HAER documentation package and a PDF copy on an archivally stable CD to MnHPO, and one original final documentation package and a PDF copy on an archivally stable CD to LOW County Historical Society. MnDOT CRU shall upload a PDF copy of the final documentation onto its Historic Bridges website.

II. **PUBLIC INTERPRETATION AND EDUCATION**

A. Within two (2) years following execution of this AGREEMENT, MnDOT shall develop and install an interpretive panel in the vicinity of the new bridge that will include photos, graphics and text relating the history and importance of the Rainy River International Bridge (LW-BDC-031) crossing to the history of Baudette and detailing the historical significance and unique features of the bridge structure. MnDOT shall develop the content of the interpretive panel and determine an appropriate location in consultation with LOW County Historical Society and MnHPO. MnDOT CRU shall submit draft interpretive panel content and proposed location to LOW County Historical Society and MnHPO for a sixty-day (60-day) review and comment period. Any written comments received by MnDOT CRU within the sixty-day (60-day) review period will be incorporated into the final interpretive panel design.

B. Within two (2) years following execution of this AGREEMENT, MnDOT CRU shall prepare an exhibit panel or panels regarding the historical significance of the Rainy River International Bridge (Bridge 9412) (LW-BDC-031) for display at the Lake of the Woods County Museum. Designed for public education, the exhibit shall include photographs and other images of the Rainy River International Bridge (LW-BDC-031), including images from the HAER documentation, and information about its NRHP eligibility within the context of Minnesota's historic bridges and its importance in the history of Baudette and the surrounding area. MnDOT CRU shall develop the content of the exhibit in consultation with LOW County Historical Society, who will take ownership of the exhibit, and MnHPO. MnDOT CRU shall submit draft exhibit content to LOW County Historical Society and MnHPO for a sixty-day (60-day) review and comment period. Any written comments received by MnDOT CRU within the sixty-day (60-day) review period will be incorporated into the final exhibit design.

III. POST-REVIEW DISCOVERIES

If MnDOT CRU determines that the PROJECT will affect a previously unidentified property that may be historic or affect a known historic property in an unanticipated manner, MnDOT CRU shall ensure that the measures contained in Stipulation 5 of the Statewide PA are carried out.

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The terms of any mitigation for adverse effects to historic properties identified during post-review discovery shall be addressed by amending this AGREEMENT.

III. TREATMENT OF HUMAN REMAINS

If MnDOT or its contractors discover human remains, possible human remains, or artifacts associated with mortuary features during PROJECT-related construction activities, MnDOT CRU shall follow the terms and conditions of Stipulation 6 of the Statewide PA.

IV. DISPUTE RESOLUTION

Should any party to this AGREEMENT object at any time to any actions proposed or the manner in which the terms of the AGREEMENT are implemented, MnDOT CRU on behalf of FHWA shall consult with the objecting party (or parties) to resolve the objection. If objections cannot be resolved, FHWA shall follow the steps outlined in Stipulation 7 of the Statewide PA. FHWA's responsibility to carry out all other actions subject to the terms of this AGREEMENT that are not subjects of the dispute remain unchanged pending resolution.

V. DURATION, AMENDMENTS AND TERMINATION

A. This AGREEMENT shall remain in effect from the date of full execution for a period not to exceed five (5) years. If FHWA anticipates that the terms of the AGREEMENT cannot be completed within this timeframe, it shall notify the parties in writing at least thirty (30) days prior to the AGREEMENT's expiration date. The AGREEMENT may be extended by the written concurrence of the signatories and invited signatories. If the AGREEMENT expires and FHWA elects to continue with the undertaking, FHWA shall reinitiate review of the undertaking in accordance with 36 CFR 800.

B. Any signatory or invited signatory to this AGREEMENT may propose to FHWA that the terms of the AGREEMENT be amended. FHWA shall use the same consultation process exercised in creating the original AGREEMENT to consider the proposed amendment. If the signatories and relevant invited signatories elect to amend this AGREEMENT, FHWA shall file the amendment with ACHP upon execution.

C. If any signatory or invited signatory to this AGREEMENT determines that the AGREEMENT cannot be fulfilled, or that an amendment to the terms of the AGREEMENT must be made, the signatories shall consult to seek an amendment to its terms using the same consultation process as that exercised in creation of the original AGREEMENT. FHWA shall file any amendments with ACHP upon execution.

D. Any signatory or invited signatory to this AGREEMENT may terminate the AGREEMENT by providing sixty (60) days' written notice to the other parties, provided the parties consult during the period prior to termination to agree on amendments or other actions that would avoid termination. If the AGREEMENT is terminated and FHWA elects to continue with the undertaking, FHWA shall reinitiate review of the undertaking in accordance with 36 CFR 800.

VI. IMPLEMENTATION

A. This AGREEMENT may be implemented in counterparts, with a separate signature page for each party. This AGREEMENT shall become effective on the date of the final signature by the signatories and invited signatories. The refusal of any concurring party to sign the

FINAL DRAFT

AGREEMENT does not invalidate the AGREEMENT. FHWA shall ensure each party is provided with a fully executed copy of the AGREEMENT and that the final AGREEMENT, updates to attachments, and any amendments are filed with ACHP.

B. Execution of this AGREEMENT by FHWA and MnHPO and implementation of its terms is evidence that FHWA has taken into account the effects of its undertaking on historic properties and has afforded ACHP opportunity to comment pursuant to Section 106 of the National Historic Preservation Act.

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SIGNATORY PAGE

MEMORANDUM OF AGREEMENT
BETWEEN
THE FEDERAL HIGHWAY ADMINISTRATION AND
THE MINNESOTA HISTORIC PRESERVATION OFFICE
REGARDING
REPLACEMENT OF THE RAINY RIVER INTERNATIONAL BRIDGE (MINNESOTA BRIDGE 9412/ONTARIO BRIDGE 45-110) BETWEEN BAUDETTE, LAKE OF THE WOODS COUNTY, MINNESOTA, AND RAINY RIVER, ONTARIO

SIGNATORY :

FEDERAL HIGHWAY ADMINISTRATION (FHWA)

By:_____
Arlene Kocher, Minnesota Division Administrator

Date:_____

FINAL DRAFT

SIGNATORY PAGE

MEMORANDUM OF AGREEMENT
BETWEEN
THE FEDERAL HIGHWAY ADMINISTRATION
AND
THE MINNESOTA HISTORIC PRESERVATION OFFICE
REGARDING THE
REPLACEMENT OF THE RAINY RIVER INTERNATIONAL BRIDGE (MINNESOTA BRIDGE 9412/ONTARIO BRIDGE 45-110) (S.P. 3905-09) BETWEEN BAUDETTE, LAKE OF THE WOODS COUNTY, MINNESOTA, AND RAINY RIVER, ONTARIO

SIGNATORY :

MINNESOTA HISTORIC PRESERVATION OFFICE (MnHPO)

By:_____
Amy H. Spong, Deputy State Historic Preservation Officer

Date:_____

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SIGNATORY PAGE

MEMORANDUM OF AGREEMENT
BETWEEN
THE FEDERAL HIGHWAY ADMINISTRATION
AND
THE MINNESOTA HISTORIC PRESERVATION OFFICE
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REPLACEMENT OF THE RAINY RIVER INTERNATIONAL BRIDGE (MINNESOTA BRIDGE 9412/ONTARIO BRIDGE 45-110) (S.P. 3905-09) BETWEEN BAUDETTE, LAKE OF THE WOODS COUNTY, MINNESOTA, AND RAINY RIVER, ONTARIO

INVITED SIGNATORY:

MINNESOTA DEPARTMENT OF TRANSPORTATION (MnDOT)

By:_____
Charles E. Zelle, Commissioner

Date:_____

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SIGNATORY PAGE

MEMORANDUM OF AGREEMENT
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THE FEDERAL HIGHWAY ADMINISTRATION
AND
THE MINNESOTA HISTORIC PRESERVATION OFFICE
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REPLACEMENT OF THE RAINY RIVER INTERNATIONAL BRIDGE (MINNESOTA BRIDGE 9412/ONTARIO BRIDGE 45-110) (S.P. 3905-09) BETWEEN BAUDETTE, LAKE OF THE WOODS COUNTY, MINNESOTA, AND RAINY RIVER, ONTARIO

CONCURRING PARTY:

MINISTRY OF TRANSPORTATION - ONTARIO (MTO)

By:_____

Date:_____

The Ministry of Transportation-Ontario was invited to sign this AGREEMENT and has elected not to take a signature action. Since this concurring party does not have a duty or responsibility under the AGREEMENT, the AGREEMENT is valid without their signature per ACHP guidance documents.

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SIGNATORY PAGE

MEMORANDUM OF AGREEMENT
BETWEEN
THE FEDERAL HIGHWAY ADMINISTRATION
AND
THE MINNESOTA HISTORIC PRESERVATION OFFICE
REGARDING THE
REPLACEMENT OF THE RAINY RIVER INTERNATIONAL BRIDGE (MINNESOTA BRIDGE 9412/ONTARIO BRIDGE 45-110) (S.P. 3905-09) BETWEEN BAUDETTE, LAKE OF THE WOODS COUNTY, MINNESOTA, AND RAINY RIVER, ONTARIO

CONCURRING PARTY:

LAKE OF THE WOODS COUNTY HISTORICAL SOCIETY

By:_____
Gary Aery, President, Board of Directors

Date:_____

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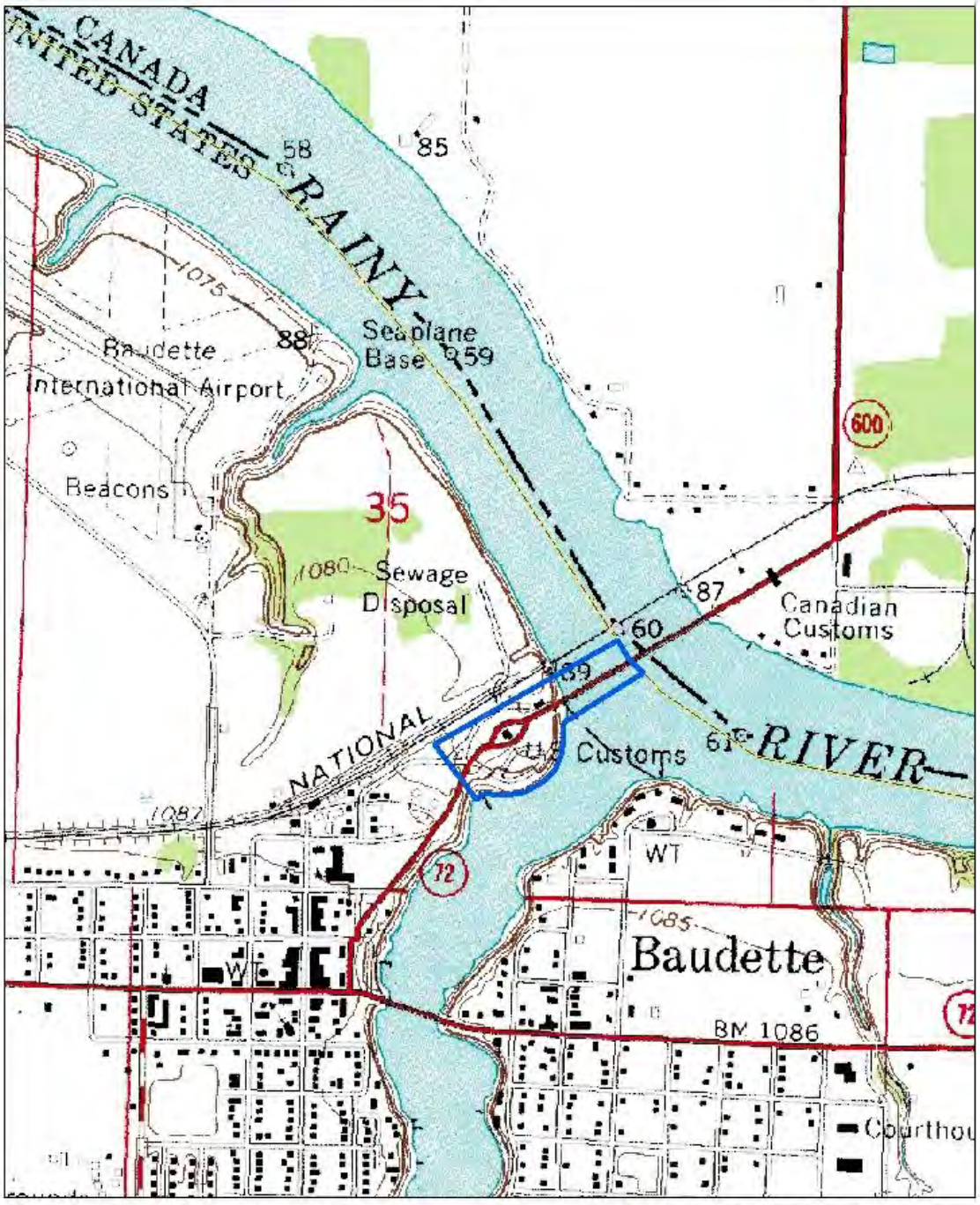
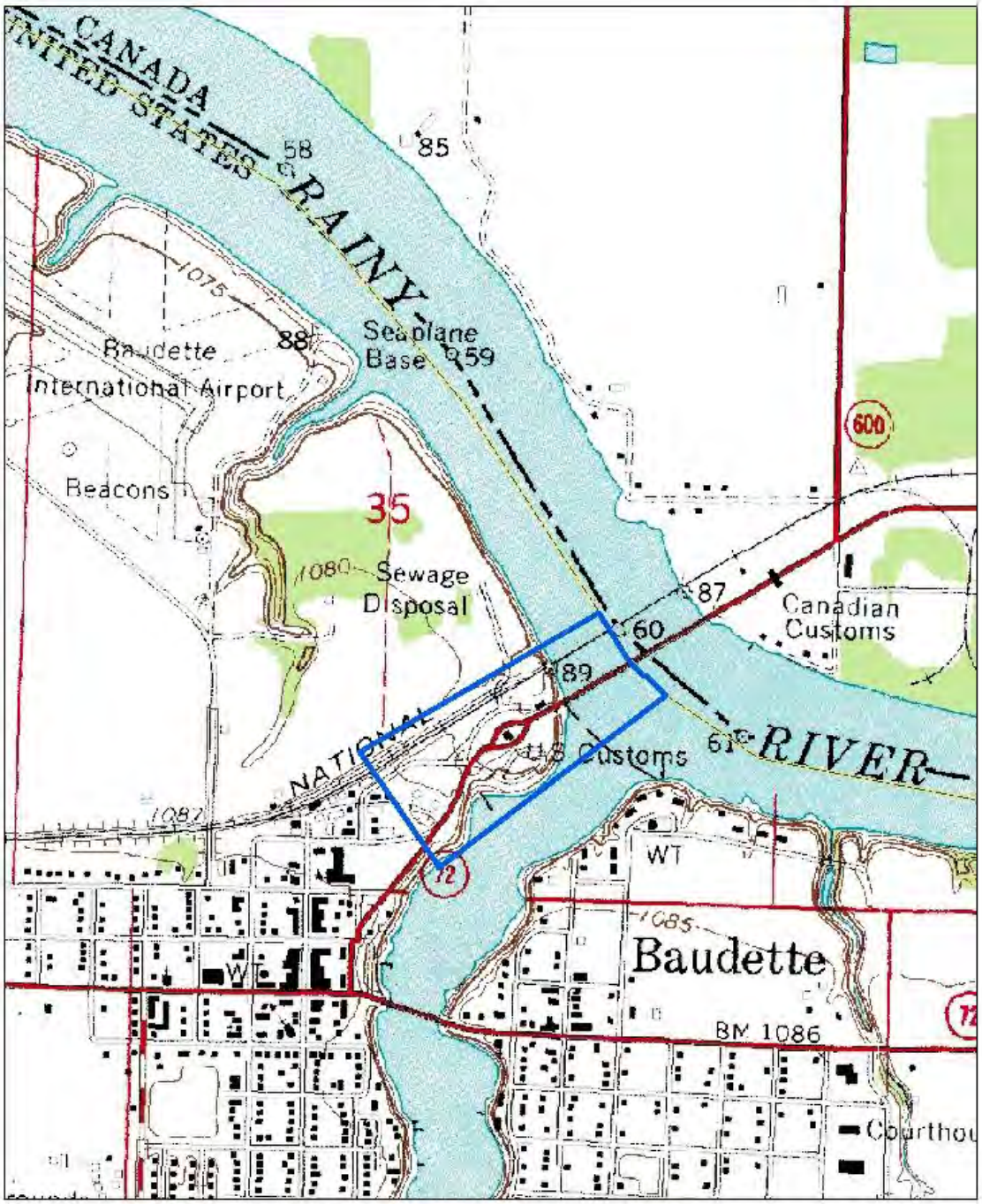
ATTACHMENT A



ATTACHMENT B



ATTACHMENT C
CONTACTED TRIBES

Bad River Band of Lake Superior Chippewa
Fort Peck Tribes
Flandreau Santee Sioux Tribe
Keweenaw Bay Indian Community
Lac Courte Oreilles Band of Lake Superior Chippewa
Lac du Flambeau Band of Lake Superior Chippewa
Lac Vieux Desert Band of Lake Superior Chippewa
Red Cliff Band of Lake Superior Chippewa
Red Lake Band of Chippewa
St. Croix Chippewa Indians of Wisconsin
Santee Sioux Tribe
Shakopee Mdewakanton Sioux Community
Sokaogon Chippewa Community
Spirit Lake Tribe
Standing Rock Sioux Tribe
Turtle Mountain Band of Chippewa

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Appendix B– COORDINATION

1. MnDOT and MnHPO: regarding Bridge #9412
2. MTO Responses to the Bridge Rehabilitation Study

DRAFT

Minnesota Historical Society
STATE HISTORIC PRESERVATION OFFICE

Using the Power of History to Transform Lives
PRESERVING › SHARING › CONNECTING

July 21, 2015

Elizabeth Abel
MnDOT Cultural Resources Unit
Transportation Building, Mail Stop 620
395 John Ireland Boulevard
St. Paul MN 55155-1899

RE: S.P. 3905-09
Replace Bridge No. 9412 over the Rainy River
Baudette, Lake of the Woods County
SHPO Number: 2013-1191

Dear Ms. Abel:

Thank you for continuing consultation on the above project. Information received in our office on 11 June 2015 has been reviewed pursuant to the responsibilities given the State Historic Preservation Officer by the National Historic Preservation Act of 1966 and implementing federal regulations at 36 CFR 800, responsibilities given the Minnesota Historical Society by the Minnesota Historic Sites Act and the Minnesota Field Archaeology Act, and per the terms of the 2005 Programmatic Agreement between the Federal Highway Administration, the Minnesota Department of Transportation and the Minnesota State Historic Preservation Office.

We have completed our review of your correspondence dated June 10, 2015 which provides updated information regarding your agency's determination that the preferred alternative for the project is replacement, not repair, of **Bridge 9412**, a property which has previously been determined eligible for listing in the National Register of Historic Places (NRHP). Also located within the currently delineated area of potential effect (APE) for this bridge replacement project is the **Minnesota and Manitoba Railroad Corridor Historic District**, which has also been determined eligible for listing in the NRHP.

We agree with your agency's determination that the bridge replacement project would constitute an **adverse effect** to Bridge 9412. It is our understanding that your agency is currently developing preliminary engineering plans for the project and that the assessment of adverse effects to the Minnesota Railroad Corridor Historic District will be completed in conjunction with plan development. We look forward to continuing consultation with your agency as we seek to resolve the adverse effect to Bridge 9412 and review effect determinations to the historic district.

Feel free to contact me if you have any questions or concerns regarding our review. I may be reached at 651-259-3456 or by e-mail at sarah.beimers@mnhs.org.

Sincerely,

Sarah J. Beimers

Sarah J. Beimers, Manager
Government Programs and Compliance

Maahs-Henderson, Theresa

From:	Abel, Elizabeth (DOT) <elizabeth.abel@state.mn.us>
Sent:	Friday, December 11, 2015 8:59 AM
To:	Maahs-Henderson, Theresa
Cc:	Moynihan, Debra (DOT); McKinnon, Joseph (DOT)
Subject:	Baudette Bridge SHPO letter
Attachments:	SP3905-09 12_10_15 SHPO concurrence with adverse effect.pdf

Hi, Theresa,
Attached is a copy of the SHPO's 12-10-15 concurrence with our finding of adverse effect for the project. The next step in consultation with the SHPO will be to develop a Memorandum of Agreement to mitigate the adverse effect to the bridge. Please call or email if you have any questions.
Liz

Elizabeth J. Abel
Cultural Resources Unit **/** Office of Environmental Stewardship
Minn. Dept. of Transportation
395 John Ireland Blvd., Mail Stop 620
St. Paul, MN 55155-1800
Office: 651-366-3604 **/** Fax: 651-366-3603
elizabeth.abel@state.mn.us

Minnesota
Historical Society

STATE HISTORIC PRESERVATION OFFICE

Using the Power of History to Transform Lives
PRESERVING › SHARING › CONNECTING

December 10, 2015

Elizabeth Abel
MnDOT Cultural Resources Unit
Transportation Building, Mail Stop 620
395 John Ireland Boulevard
St. Paul MN 55155-1899

RE: S.P. 3905-09
Replace Bridge 9412 over the Rainy River
Baudette, Lake of the Woods County
SHPO Number: 2013-1191

Dear Ms. Abel:

Thank you for continuing consultation on the above project. Information received in our office on 13 November 2015 has been reviewed pursuant to the responsibilities given the State Historic Preservation Officer by the National Historic Preservation Act of 1966 and implementing federal regulations at 36 CFR 800, responsibilities given the Minnesota Historical Society by the Minnesota Historic Sites Act and the Minnesota Field Archaeology Act, and per the terms of the 2005 Programmatic Agreement between the Federal Highway Administration, the Minnesota Department of Transportation and the Minnesota State Historic Preservation Office.

Your correspondence dated 11/12/2015 provided further information regarding your assessment of archaeological potential within the revised area of potential effects (APE) for this project. We appreciate this information and we agree with your assessment that the revised APE is unlikely to contain unidentified archaeological resources, in particular submerged historic properties.

To summarize, we agree that Bridge 9412 is the only historic property within the direct APE for this project and we have concurred with your agency's adverse effect determination.

We look forward to continuing consultation regarding resolution of adverse effects to Bridge 9412. Feel free to contact me if you have any questions or concerns regarding our review. I may be reached at 651-259-3456 or by e-mail at sarah.beimers@mnhs.org.

Sincerely,

Sarah J. Beimers

Sarah J. Beimers, Manager
Government Programs and Compliance

Ministry of Transportation

615 South James Street
3rd Floor
Thunder Bay, Ontario P7E 6P6
Tel: (807) 473-2187
Fax: (807) 473-2168

Ministère des Transports

615 rue James
3ième étage
Thunder Bay (Ontario) P7E 6P6
Tél: (807) 473-2187
Télé: (807) 473-2168

Ontario

July 5, 2013

Mr. J.T. Anderson, P.E.
Assistant District Engineer
MnDOT District 2
1320 Sunflower Street
Crookston, MN 56716

Dear Mr. Anderson:

Re: Rehabilitation of the International Bridge between Baudette, Minnesota and Rainy River, Ontario

Thank you for providing the MTO an opportunity to comment on MnDOT's report assessing the rehabilitation options for the Rainy River/Baudette International Bridge located on Highway 11.

The MTO agrees that the rehabilitation alternatives are possible but has concluded that the Rainy River Bridge is nearing the end of its useful life. The current condition of the existing bridge is experiencing serious ongoing maintenance issues (i.e. scour), operational deficiencies and is classified as fracture critical.

The MTO is of the opinion that the bridge requires replacement and that the rehabilitation of the existing bridge is not a viable option.

Please call if you have any questions or require additional information.

Yours truly,

Rick DeCal
Sr. Project Manager
Northwestern Region

Ministry of Transportation

Northwestern Region
Engineering Office
615 South James Street, 3rd Floor
Thunder Bay ON P7E 6P6
Tel.: 807-473-2001
Fax.: 807-473-2168
Email : iain.galloway@ontario.ca

Ministère des Transports

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Thunder Bay ON P7E 6P6
Tél.: 807-473-2001
Téléc.: 807-473-2168
Courriel : iain.galloway@ontario.ca

Ontario

December 16, 2015

Minnesota Department of Transportation
District 2
3920 Highway 2 West
Bemidji, MN 56601

Attention: Mr. Joe McKinnon, MnDOT Project Manager

Dear Mr. McKinnon,

Re: Rehabilitation of the Baudette/Rainy River International Bridge

---

Thank you for providing the MTO an opportunity to comment on the Minnesota State Historic Preservation Office (SHPO) evaluation of the proposed rehabilitation alternatives included in the MnDOT 2013 Bridge Rehabilitation Study Report on the Rainy River/Baudette International Bridge.

At this time MnDOT has requested that MTO provide our decision process and conclusions regarding the two alternatives that SHPO has determined meet Standards: Rehab Alternatives 1a and 1b. As previously noted in our 2013 correspondence regarding rehabilitation of this structure and in the MTO 2011 Position Paper we have determined the following: the Baudette/Rainy River Bridge is not eligible for inclusion on the Ontario Heritage Bridge List, the bridge is nearing the end of its useful life, and MTO does not consider rehabilitation of the existing bridge to be a viable option. MTO maintains this position and, as requested by MnDOT, the following provides additional details regarding MTO's conclusion that the proposed rehabilitation alternatives are not viable or cost effective solutions to prolong the life of this structure and ensure our key priorities are achieved.

Alternative 1a – Minimal Rehabilitation (Straight Forward Rehab)

In the description of this alternative it is stated that the treatment "would not prolong the service life of the bridge to the same extent as a more extensive rehabilitation alternative that addresses the condition of both the superstructure and the substructure". This treatment does not address the fact that the bridge is fracture critical, functionally obsolete, has potential pier stability issues, and evidence of microbial induced corrosion (MIC) on the steel caissons.

Ministry of Transportation

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Ontario

The current open grating steel deck has been identified as one of the factors contributing to the deterioration of floorbeams and stringers. The grating is also a maintenance issue as the steel bars can come loose and pop up causing a hazard to the travelling public. Alternative 1a involves replacing the existing open grating steel deck with a new matching steel grid deck and states the "alternative provides no improvement to the problem of water and chlorides permeating to the supporting stringers and floorbeams". Since only select floor system members are replaced as part of this alternative that leaves the remaining members prone to continued deterioration at an accelerated rate due to the severe environmental exposure conditions. MTO is not willing to invest in a rehab strategy that fails to provide any improvement to the current conditions and does not halt or, at a minimum, slow the progress of any ongoing deterioration.

Alternative 1a fails to address the functionally obsolete vertical clearance issue caused by the existing overhead portal bracing. This bracing has a history of impact damage caused by overheight loads. Repairing the bracing typically requires closure of the bridge which, as detailed in Appendix D of the study, is a key issue due to the fact that the site is a major border crossing between the US and Canada and the only available detour route is 90 miles long.

Baudette/Rainy River International Bridge has a long history of scour issues at the pier locations. The most recent MTO underwater inspection reports identify the underwater components to be in poor condition. There is detailed evidence of MIC occurring on the steel caissons. MnDOT also reports that pier movement is suspected and continuous monitoring is recommended. Alternative 1a does not consider halting the deterioration, ensuring stability or preserving the submerged substructure components. Ignoring the underwater issues could eventually lead to overall structural instability. Addressing these deficiencies would be a complex undertaking and would add significant value to the project. MTO would not consider a plan that invests millions of dollars in superstructure upgrades while ignoring the serious issues occurring with substructure components.

MTO is also concerned with the following statement included in Alternative 1a:"It is anticipated that these procedures would extend the life of the bridge for a limited period of time and continued investigation and repairs would need to be done on a regular basis. This option also carries the largest amount of risk, as many areas of concern would not be addressed, such as the substructures, in order to maintain an initial low level of investment."

The estimated value of this rehabilitation alternative is $12,660,000 dollars (US) based on a series of assumptions outlined in appendix D of the study. MTO considers this to be a significant investment to achieve such minimal results. There is risk and uncertainty with the extent of floorbeam and stringer repair work required and the bearings may not be salvageable. The life

Ministry of Transportation

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Téléc.: 807-473-2168
Courriel : iain.galloway@ontario.ca

gained from this investment is limited and the active deterioration of structural elements due to the open grating deck and MIC will continue unabated. The ongoing investigations and monitoring are also deterrents, as they require long term funding and staff resources and costly repairs will likely continue to be identified as a result. The MTO does not see this as a prudent solution to improve the condition of the bridge for any significant amount of time.

Alternative 1b – Mid-level Rehabilitation (Replace all floorbeams and stringers)

This alternative is essentially the same as Alternative 1a, the only difference being complete replacement of all stringers and floorbeams rather than select members only. The plan does not include elimination of the open grating deck system, thus the structural steel floor system will still be prone to water and chloride exposure and will experience a shortened life expectancy.

Alternative 1b offers no significant improvement compared to Alternative 1a with respect to addressing the majority of the concerns outlined by MTO (see Alternative 1a section above). For this reason the MTO does not endorse considering Alternative 1b as a viable option for rehabilitation of this structure.

Conclusion

The numerous issues with this bridge are well documented and it is agreed by both MTO and MnDOT that the structure is near the end of its useful life. The MTO does not consider this bridge to be a candidate for inclusion on the Ontario Heritage Bridge list, thus our priority is to ensure the work carried out provides the travelling public with a safe, reliable and sustainable structure that ensures good value for the dollars invested. The MTO does not support either of these rehabilitation alternatives as effective strategies to achieve that priority.

Yours truly,

Iain Galloway, P.Eng.
Manager, Engineering
Northwestern Region

Ministry of Transportation

Northwestern Region
Engineering Office
615 South James Street, 3rd Floor
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Ministère des Transports

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Tél.: 807-473-2001
Téléc.: 807-473-2168
Courriel : iain.galloway@ontario.ca

Ontario

December 16, 2015

Minnesota Department of Transportation
District 2
3920 Highway 2 West
Bemidji, MN 56601

Attention: Mr. Joe McKinnon, MnDOT Project Manager

Dear Mr. McKinnon,

Re: Rehabilitation of the Baudette/Rainy River International Bridge

Thank you for providing the Ministry of Transportation (MTO) with an opportunity to respond to the Minnesota Department of Transportation's (MnDOT's) request to "sell" our half of the Rainy River/Baudette International Bridge as part of the replacement of the structure.

At this time, MTO has no policy or directive that would allow us to simply sell the structure. Current practice is to include the demolition/removal of the existing structure via tender specifications/language in a contract package. This inclusion would indicate that the Contractor is solely responsible for the disposal of any material that is removed from the old structure as part of the replacement. With some structural replacements, there is value in the steel that is removed so salvage by the contractor for resale can and has become part of their bid price. As well, the Ministry of Transportation avoids the potential liability issues. "Selling" a structure to another group/private party could put the Ministry in a potential liability situation despite all legal actions taken. It has been and remains the Ministry's policy to avoid such situations.

Yours truly,

Iain Galloway, P.Eng.
Manager, Engineering
Northwestern Region

Appendix C– MNDOT STRUCTURE INVENTORY REPORT: BRIDGE 9412, TH 72 OVER RAINY RIVER

DRAFT

MINNESOTA DEPARTMENT OF TRANSPORTATION

DISTRICT 2

ALL BRIDGE INSPECTIONS

1 BRIDGE INSPECTION

SORTED BY INSPECTION DATE

Individual Bridge(s) 9412

Report Type: Inventory and Inspection

MINNESOTA STRUCTURE INVENTORY REPORT

Bridge ID: 9412 **TH 72 over RAINY RIVER**

Date: 04/21/2016

+ GENERAL +

Agency Br. No. 45-110
District 2 **Maint. Area** 2A
County 39 - LAKE OF THE WOODS
City BAUDETTE
Township
Desc. Loc. IN BAUDETTE
Sect., Twp., Range 02 - 160N - 31W
Latitude 48d 43m 08.75s
Longitude 94d 35m 25.72s
Custodian STATE HWY
Owner STATE HWY
Inspection By DISTRICT 2
Year Built 1959
MN Year Remodeled
FHWA Year Reconstructed
Bridge Plan Location DISTRICT
ABC Suitable

+ STRUCTURE +

Service On HWY;PED
Service Under STREAM
Main Span Type STEEL HIGH TRUSS
Main Span Detail PENNSYLVANIA
Appr. Span Type STEEL BM SPAN
Appr. Span Detail
Skew
Culvert Type
Barrel Length
Number of Spans
MAIN: 6 APPR: 6 TOTAL: 12
Main Span Length 192.5 ft
Structure Length 1,285.0 ft
Deck Width 26.5 ft
Deck Material OPEN GRATING
Wear Surf Type OTHER
Wear Surf Install Year
Wear Course/Fill Depth
Deck Membrane NONE
Deck Rebars N/A
Deck Rebars Install Year
Structure Area 34,053 sq ft
Roadway Area 30,839 sq ft
Sidewalk Width - L/R 6.4 ft
Curb Height - L/R 0.75 ft 0.75 ft
Rail Codes - L/R 35 35

+ ROADWAY +

Bridge Match ID (TIS) 1
Roadway O/U Key 1-ON
Route Sys/Nbr MNTH 72
Roadway Name or Description
MN 72
Roadway Function MAINLINE
Roadway Type 2 WAY TRAF
Control Section (TH Only) 3905
Ref. Point 076+00.864
Date Opened to Traffic 01-01-1959
Detour Length 98 mi.
Lanes 2 Lanes ON Bridge
ADT (YEAR) 1,950 (2006)
HCADT 59
Functional Class. RUR/PR ART OTH

+ RDWY DIMENSIONS +

If Divided	NB-EB	SB-WB
Roadway Width	24.0 ft	
Vertical Clearance	14.6 ft	
Max. Vert. Clear.	14.6 ft	
Horizontal Clear.	23.9 ft	
Lateral Clr. - Lt/Rt		
Appr. Surface Width	36.0 ft	
Bridge Roadway Width	24.0 ft	
Median Width on Bridge		

+ MISC. BRIDGE DATA +

Structure Flared NO
Parallel Structure NONE
Field Conn. ID RIVETED
Cantilever ID
Foundations
Abut. CONC - FTG PILE
Pier CONC - FTG PILE
Historic Status NOT ELIGIBLE
On - Off System ON

+ PAINT +

Year Painted 2003 **Pct. Unsound** 20 %
Painted Area 220,037 sf
Primer Type ORGANIC ZINC
Finish Type CHLORINATED RUBBER ALU

+ BRIDGE SIGNS +

Posted Load NOT REQUIRED
Traffic NOT REQUIRED
Horizontal NOT REQUIRED
Vertical ROADWAY RESTRICTION

+ INSPECTION +

Deficient Status ADEQ
Sufficiency Rating 48.8
Last Inspection Date 06-17-2015
Inspection Frequency 12
Inspector Name DISTRICT2
Status A-OPEN

+ NBI CONDITION RATINGS +

Deck	5
Superstructure	5
Substructure	5
Channel	6
Culvert	N

+ NBI APPRAISAL RATINGS +

Structure Evaluation	5
Deck Geometry	4
Underclearances	N
Waterway Adequacy	8
Approach Alignment	7

+ SAFETY FEATURES +

Bridge Railing 0-SUBSTANDARD
GR Transition 0-SUBSTANDARD
Appr. Guardrail 1-MEETS STANDARDS
GR Termini 0-SUBSTANDARD

+ IN DEPTH INSP. +

Frac. Critical Y 24 mo 06/2015
Underwater Y 60 mo 08/2012
Pinned Asbly.
Spec. Feat.

+ WATERWAY +

Drainage Area
Waterway Opening 99999 sq ft
Navigation Control NO PRMT REQD
Pier Protection
Nav. Vert./Horz. Clr.
Nav. Vert. Lift Bridge Clear.
MN Scour Code O-STBL;ACT REQD
Scour Evaluation Year 1998

+ CAPACITY RATINGS +

Design Load H 20
Operating Rating HS 22.50
Inventory Rating HS 15.70
Posting
Rating Date 07-22-2008
Overweight Permit Codes
A: 3 B: X C: X

04/21/2016

MINNESOTA BRIDGE INSPECTION REPORT

Inspected by: DISTRICT 2

BRIDGE 9412 TH 72 OVER RAINY RIVER **INSP. DATE: 06-17-2015**

County: LAKE OF THE WOODS
City: BAUDETTE
Township:
Section: 02 Township: 160N Range: 31W
Span Type: STEEL HIGH TRUSS
NBI Deck: 5 Super: 5 Sub: 5 Chan: 6 Culv: N

Location: IN BAUDETTE
Route: MNTH 72 Ref. Pt.: 076+00.864
Control Section: 05 Maint. Area: 2A
Local Agency Bridge Nbr: 45-110

Length: 1,285.0 ft
Deck Width: 26.5 ft
Rdwy. Area / Pct. Unsnd: 30,839 sq ft
Paint Area / Pct. Unsnd: 220,037 sq ft 20 %
Culvert : N/A

Open, Posted, Closed: OPEN

Appraisal Ratings - Approach: 7 Waterway: 8
MN Scour Code: O-STBL;ACT REQD Def. Stat: ADEQ Suff. Rate: 48.8
Required Bridge Signs - Load Posting: NOT REQUIRED Traffic: NOT REQUIRED
Horizontal: NOT REQUIRED Vertical: ROADWAY RESTRICTION

ELEM NBR	ELEMENT NAME	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
800	CRITICAL DEFS OR SAFETY HAZARDS	06-17-2015	1 EA	1	0	0	0

Notes: NO CRITICAL FINDINGS OBSERVED DURING THE LAST INSPECTION.
No critical findings were identified during this inspection FC 6/2011.
[2015] No critical findings were noted.

28	STEEL GRID DECK OPEN	06-17-2015	34,053 SF	30,648	0	3,405	0

Notes: 1 grid bar missing in the EBL of truss span #6 near the west end, 2 others missing-same span EBL & WBL. Paint has failed on the grid, US side. Canada painted there Grid in 05 & starting to rust in wheel tracks. There are several broken welds in the grid, Canada side, US side was repaired 6/2010. Bottom of grid and support beams corroded with some pack rust. Grid was tack welded to sliding plates @ piers but pulled apart with 1/8 - 1/4 in gap all the way accross deck @ 3 US center piers,cracked with no gap @ pile bents. **Repaired broken grid bars @ various locations on the US side on2/7/06, 6/16/08, 6/14&15/2010. DSH Numerous loose and missing bars throughout deck. Loose bars rattle under traffic. Widespread surface corrosion throughout deck on west approach and truss spans 1-3.Fc 6/2011 Gridbars broken at various locations but br. crew welds grid on an annual basis. GK 5/2012
[2013] No change noted.
2014 br crew tack welded broken grid bars.
Mn side has surface corrosion, Canada po

301	POURED SEAL JOINT	06-17-2015	50 LF	0	50	0	0

Notes: Bridge has a steel grid deck, with concrete approach panels west end, with bituminous sealant on ends. GK 6/15/10
**Sealed jts. / pourable on 11/09. DSH
Quantity includes poured joints at west edge and along center of concrete approach slab at west end of bridge.FC 6/2011
Poured jts on ends of bridge need sealing

305	ASSEMBLY DECK JOINT	06-17-2015	132 LF	0	132	0	0

Notes: The welds holding exp. plates to grid deck are cracked & seperated slightly. 6/15/10 GK
2009 FC inspection: Pier 1 joint closed tight JZink 6-10-2009
Pier 1 joint open 1.00" (was reported closed tight in 2009). Other joints open 1.25" to 2.88"FC 6/2011
Pier 1 joint was open slightly but not much room for expansion looking at angles on end before impacting chanfer on angle plate. GK 5/2012
Assembly deck jts are functioning. GK 4/14
[2015] Deck joint measurements were taken at 60° and are as follows: Span 1-2 South 1 3/4" , North 1 3/4", Span 2-3 South 3", North 2 3/4", Span 3-4 South 3 1/4", North 2 3/4", Span 4-5 South 2 1/2", North 2 1/2", Span 5-6 South 1 3/8", North 1 3/16".

330	METAL BRIDGE RAILING	06-17-2015	3,855 LF	3,431	424	0	0

Notes: Some areas of paint failure & corrosion on pedestrian railing.Rail seperated at Canada end SE corner GK 6/15/2010
2009 FC inspection: impact damage at southeast Canadian approach. JZink6/10/2009
38 LF in CS3 moved to CS2. Traffic impact damage at SE corner has been repaired.FC 6/2011
Metal br rail has minor corrosion near the bases, and a few scattered areas. GK 4/14
[2015] No significant change noted.

515	*STEEL PROTECTIVE COATING*	06-17-2015	999 SF	999	0	0	0

Notes: [2016] Migrator assumed CS1 and a quantity of 999 SF.

321	CONCRETE APPROACH SLAB	06-17-2015	720 SF	720	0	0	0

Notes: [2016] Migrator assumed an approach slab length of 20FT and used the inventory quantity of 36FT for the width.
20 foot approach panel added to the west end, scaling.
Minor cracks and small spalls developing @ SE corner of west appr. slab. GK 6/15/2010
West end of bridge. Good condition with minor scaling from tire wear.FC 6/2011
Approach slab looks good with the tining being worn away in the wheel tracks and a few minor spalls along the steel edge of deck. GK 4/14
[2015] No significant change noted.

822	BITUMINOUS APPROACH ROADWAY	06-17-2015	1 EA	1	0	0	0

Notes: East end of bridge. Good condition with a few minor cracks.FC 6/2011
East approach slab has a moderate crack at centerline GK 4/14
[2015] No significant change noted.

107	STEEL GIRDER OR BEAM	06-17-2015	840 LF	0	830	10	0

Notes: 2009 FC inspection: New element Quantity applies to approach span beams that were once included under the stringer element. Approach Span 1 Beam 2 north face at Pile Bent 1 has new through corrosion in web at splice. Approach Span 2: Beam 3 north face, Beam 4 south face and Beam 2 north face has bottom flange and web surface corrosion. J Zink 6/10/2009
Bridge crew added web splices/ stiffeners to several girders where section loss was most prevelant.GK 6/15/2010 Through corrosion at Bent #1 has been repaired, and web splices added to other areas with large amounts of section loss. Active pitting and corrosion at east end of approach span 6 where girders attach to east abutment.FC 6/2011
Paint failed at a few locations where appears paint thickness was not sufficeant, continues to rust at east abut. GK 5/2012
[2013] No significant change noted.
Bottom flanges continue to rust at abuts.Paint pealing bottom flanges beams 5 & 6 between bent 1 & 2 GK 4/14
[2015] Span A4 Beam 3 has a

515	*STEEL PROTECTIVE COATING*	06-17-2015	220,037 SF	0	0	110,019	110,019

Notes: [2016] Migrator used inventory quantity of 220,037 SF and estimated the condition states.

113	STEEL STRINGER	06-17-2015	8,133 LF	3,067	4,966	100	0

Notes: Paint system new in 2003 on west " US " 1/2 of bridge. Paint system is new 2005 on east " Canada " 1/2 of bridge. corrosion and section loss is most prevalent at floor beam connections.Stringer conection plates,corrosion behind causing deformation of the plates. . 4th base-south fascia stringer west span-electricians drilled 1/4" hole in web. Top flange of sidewalk stringer is rusting under conc curb on S side. East end Span #1, 3rd. stringer from north has 2 popped riviets @ floor beam connection. Paint failing small 5 ft area bottom of stringer,4th from the south mid span, 1st span.Br. crew added gusset plates to several stringers over sect. loss areas, various locations. Approach span 1, S1, bolted repair, 50 % sect. loss.S4, severe pitting bottom flange. App. span 2, S2, pitting and hole in web at bent 1. App. span 4, S2,S3,& S4,pockets of pitting in web over east pier. Truss span 1, bay 5, S4 &S5, light to severe pitting of bottom flanges.Bay 8,S3, moderate pitting over FB9.Bay

515	*STEEL PROTECTIVE COATING*	06-17-2015	999 SF	377	0	499	123

Notes: [2016] Migrator assumed quantity of 999 SF and estimated the condition states.

120	STEEL TRUSS	06-17-2015	2,324 LF	0	2,324	0	0

Notes: Bottom Chord Notes: West 1/2 painted 2003. East 1/2 -Painted by Canada in 2005. Pack rust on some gusset plates on the bottom chord. Pack rust between some connection points @ piers. There are cracked welds between gusset plate & end post channel on the south side @ the W end of the E truss and several other truss end locations(low tension areas). These cracks do not propagate into the structural members. 1 broken rivet at the sidewalk cantilever at the end of the floor beam side at the 4th pier from the U.S. **Bridge Maint. completed the spot painting of the gusset plates (US Side) the wk. of 6/22/09. The paint system that was done in 2003 was still looking good. A couple of areas were touched up with paint and (all gusset seams on the lower cord were caulked to repel moisture. DSH Isolated areas of paint failure, but underlying primer still intact. A few locations (Span 5 @ L9S, Span 6 @ L9N) show evidence of plug-welded mis- drilled holes in lower chord member (also noted in 2009)

515	*STEEL PROTECTIVE COATING*	06-17-2015	999 SF	0	0	999	0

Notes: [2016] Migrator assumed quantity of 999 SF and estimated the condition states.

152	STEEL FLOORBEAM	06-17-2015	1,744 LF	174	1,570	0	0

Notes: West 1/2 repainted in 2003. East 1/2 Painted by Canada in 2005- Was a considerable amount of layered rust w/sect loss. Paint on floor beams & stringers was in very poor condition w/pack rust forming on both flanges section loss in small areas near mid-point. Knee braces (stringer to floor beam) at the east pier have pack rust between angles causing minor deformation. See section loss report in file - 2003.. Between piers 3 & 4 2nd. stringer from the south,2 1/2 in. holes drilled in bottom flange, Canada plated floorbeams over piers 5 & 6 US plated bottom flanges of some floor beams spans 1 & 2. Truss span 1,FB 1 light to moderate pitting of web and bottom flange at center of span.FB4 cracked tack weld so. side,no propagation.FB 7, 8 , 9 & 11,light to moderate pitting on bottom flanges. Truss span 2, FB 1, moderate to severe pitting,FB 2-4, light to moderate pitting of top & bottom flanges, FB 5-7, moderate to severe pitting, strengh. plates bolted to bottom flanges.FB 10,11, moderate

515	*STEEL PROTECTIVE COATING*	06-17-2015	999 SF	100	0	699	200
	Notes: [2016] Migrator assumed quantity of 999 SF and estimated the condition states.						
162	STEEL GUSSET PLATE	06-17-2015	276 EA	276	0	0	0

Notes: 2009 FC inspection All gussets exhibit minimal to no pack rust and no paint failure.
Gussets at Piers 3-6 are impacted due to fully expanded bearings (see element #967 notes). Tack welds are present on gusset plate interfaces mainly at the pier locations. Some are cracked, but none have propogated into the base metal. JZink 6/10/2009.
** A (3) stage spot painting of gussets was completed the wk. of 6/22/09. DSH
Several outer gusset plates at L4N locations have plug-welded misdrilled holes (also noted in 2009)FC 6/2011.
No problems noted in 2014 GK
[2015] No significant change noted.

Gusset Plate Distortion Notes: 2009 FC inspection: Added element Most bottom chord and a few upper chord gusset plates exhibit free edge distortion up to 1/8" attributed to fit-up or very minor pack rust. Span 6 L10N inside gusset is bowed out slightly more than 1/8" that is not attributed to pack rust or fit-up. Possibly due to impact of gusset on fully expanded bearing. This type of distortion shou

515	*STEEL PROTECTIVE COATING*	06-17-2015	999 SF	999	0	0	0
	Notes: [2016] Migrator assumed quantity of 999 SF and estimated the condition states.						
202	STEEL COLUMN	06-17-2015	20 EA	5	15	0	0

Notes: Mn west approach span columns painted 2003, east in 05
Layered/ speckeled rust forming at west approach span.GK 6/15/2010
Quant. reflects 5 columes per bent.3 bents at west end and 1 bent at east end.
West end columes have some diag. bracing, bent to bent.GK 6/15/2010
Steel columns in approach span bents are in good condition. Some corrosion and minor pack rust is present between columns and diagonal bracing members FC 6/2011.
Corrosion along bottoms of columns at connection points,mid and upper connection points beginning to rust, repainted areas have some minor section loss, but all connections are sound and in proper position. GK 4/14
[2015] No significant change noted.

515	*STEEL PROTECTIVE COATING*	06-17-2015	999 SF	250	0	749	0
	Notes: [2016] Migrator assumed quantity of 999 SF and estimated the condition states.						
231	STEEL PIER CAP	06-17-2015	142 LF	0	142	0	0

Notes: [2013-2015] Scattered areas of failed paint with surface corrosion.

515	*STEEL PROTECTIVE COATING*	06-17-2015	999 SF	0	0	999	0
	Notes: [2016] Migrator assumed quantity of 999 SF and estimated the condition states.						
205	REINFORCED CONCRETE COLUMN	06-17-2015	14 EA	0	14	0	0

Notes: Base of columns & web walls are are heavily scaled @ E pier.
The top of the pier webs are cracked & deteriorating w/heavy scaling-should be sealed.
Pier 6, top of concrete web / diaph. is scaling badly, both caps map cracked near center.
The bottom of the columns & web walls are heavily scaled up to 3" deep - 2004 underwater inspection.
2009 FC inspection: 2008 UW report---light scaling with .25 inches to 1 inch penetration and exposed aggregate from top of caissons to 1 foot above top of caissons. Scaling around waterline. JZink 6/10/2009
Pier columns have light spalling and staining. Scaling is prevalent near water line above caissons. Due to concerns about possible pier movement, tilt measurements were taken on east and west faces of all pier columns with a 4' level. The numbers represent amount of tilt over 4 feet, with the direction of tilt (East or West). All readings were small, and could partially be the result of uneven placement of forms when they were cast. Meas. in

210	REINFORCED CONCRETE PIER WALL	06-17-2015	151 LF	0	129	22	0

Notes: The top of the east pier wall is heavily scaled and deteriorated. The bottom of the east pier wall is map-cracked & spalling-approx. 16 sq. ft..
1st pier br. crew repaired top 8-10 in.
Top of pier walls have heavy scalingFC 6/2011
Pier walls are encased at the bottom with a metal caison with shows signs of corrosion at and below the waterline. GK 5/2012.
[2015] No significant change noted.

215	REINFORCED CONCRETE ABUTMENT	06-17-2015	106 LF	36	63	7	0

Notes: [2016] Migrator added 40 LF to abutment quantity to account for wingwalls (CS1:10 CS2:30 CS3:0 CS4:0).
12 SQ. FT. of deteriorated concrete @ the NE corner of east abut. (rebar exposed & corroding). Approx. 5 Lin Ft of parapet @ east abut is spalled & cracked. .
West abut. was patched and repaired by br. crew in 2004. east abutment has numerous cracks w/leaching. End blocks are cracked & deteriorated. E end block has been patched. East seat needs to be flushed.
East abutment has moderate staining, spalling and scaling. A vertical crack extends from the bottom to 3/4 of the way up the abutment face between STR5 & STR6. Between STR4 and STR5, there is a 4' X 2' area of delamination below the bearing seat, and another area about 3 feet in diameter below that. Heavy dirt accumulation on bearing ledge holding moisture against beam ends. West abutment has numerous repairs and timber bracing. FC 6/2011
Bridge crew flushed abut in spring of 2012, and abut. ledge was fairly clean and dry bu

220	REINFORCED CONCRETE FOOTING	06-17-2015	160 LF	20	140	0	0

Notes: [2016] Migrator assumed 10LF per EA quantity, a total of 160 LF.
Bridge crew repaired bent 1 & 2 footings on W. end in 2004. Footings under bents have light to moderate cracking, spalling and scaling.FC 6/2011 ** Bridge crew made repairs to 2nd & 3rd bent footings on10/03/05. DSH [2011] Piers 2-7 have caissons visible above the water line. Visible elements have light to moderate surface corrosion on steel shells and moderate to heavy scaling in concrete surface. See 2008 Underwater Report for further details. FC 6/2011.
[2013] Element 382 deleted and Under Water Inspection notes moved to this element. The bent footings consist of reinforced concrete supported by driven pile. Pier 1 and 7 footings consist of reinforced concrete supported by driven pile for each column, the footings are below grade and therefore not included in the rated quantity. piers 2 through 6 consist of 19 driven pile surrounded by a steel tube filled with concrete. The entire footing is generally submerged

234	REINFORCED CONCRETE PIER CAP	06-17-2015	241 LF	0	145	96	0

Notes: Concrete on top of main pier caissons is deteriorated up to 3IN deep. Rebar is exposed on the cap @ the center pier. Spall under base plate-N & S side-7IN X 2IN X 2-1/2IN D on N side of pier #2. Caps are also cracked & scaled w/minor spalls. Mortar pad is breaking up under base plate @ SW cor of pier #2. There is a 6 SQ IN spall on the N end of the bottom of the cap @ pier #3.Approx. 4 sq. ft. of spall top of pier 1. Column caps are cracked.Pier 7 top of web has been overlaid with concrete by Canada. Pier caps have moderate to heavy scaling. Vertical cracks through the cap are present in several locations, mostly on the piers on the Canadian side. FC 6/2011 **Bridge crew repaired concrete cap w/ delam in 10/06., approx. 3yds. of concrete MN side. DSH
[2015] No significant change noted.

228	TIMBER PILING	06-17-2015	4 EA	4	0	0	0

Notes: Minor splitting & checking of timber columns under W appr span.
Minor splitting and checking. No change from 2009 FC 6/2011.
Columns tend to see alot of moisture, moderately weathered in 2014 / GK
[2015] No significant change noted.

235	TIMBER PIER CAP	06-17-2015	30 LF	30	0	0	0

Notes: Minor splitting & checking of timber cap under W appr span.
Minor splitting and checking. Unchanged from 2009. FC 6/2011.
Moisture and sand accumulate on this element. GK 4/14
[2015] No significant change noted.

311	EXPANSION BEARING	06-17-2015	12 EA	0	4	0	8

Notes: Rockers could be adjusted, gusset plates @ pier 3 & 4 " USA portion inspected" are restricting bearing movement-attention is needed to this area."see pictuers in Br. 9412 file" Pier 5 SE rocker " 4 in. nut "coming loose, some movement noticed because of rusting of new paint, pics on file 2007 inspect, in 2010 same cond. Br inspect in 08, by Br. office and follow up with snooper on routine inspect. found that all rocker bearings are in maximum expansion with the gusset plate resting on the bearing causing an indentation of the gusset plate. All bearings were measured" with comps on file in D2 br. office" & will moniter for movement over time and temps to see if they are frozen or moving as designed
2009 FC inspection: All bearings in full expansion tipping to the west on piers 3-6; impacting gusset plates at 8 of the 12 locations (not at piers 1 and 2). Full expansion of these bearings was first noted in 2000; however 1995 inspection notes indicate that the bearing displacement was a

313	FIXED BEARING	06-17-2015	12 EA	0	12	0	0

Notes: Rusting at various locations. Base plates have pack rust @ the W bents.Br. crew installed new base plates @ west abutment. Base plates @ the E abut have pack rust w/minor sect loss-paint failed.
Bearings are in good condition with minimal deterioration (unchanged from 2009).FC 6/2011.
Bearings were painted and look good but anchor bolts have moderate corrosion along with the bearing seat. GK 4/14
[2015] No significant change noted.

855	SECONDARY MEMBERS (SUPER)	06-17-2015	1 EA	0	0	1	0

Notes: 2009 FC inspection: New element Used to rate lateral bracing, truss portal, and sway bracing. Most bracing in all spans is bent or loose due to previous impact damage. Bent bracing includes: Span 3 U4, U6; Span 4 U4. Loose bracing includes: Span 3 U8 to U9, Span 4 U8 to U9 and U1 to U2. Portal damage in Span 5. JZink 6/10/2009
Several portal frames and sway frames are bent due to traffic impact.
Maximum distortion is in Span 1, where both sway frames are bent 8" out of plane. Heavy pitting and corrosion present in horizontal member between bents #2 and #3. FC 6/2011
Sway frames continue to get bumped from high loads and bent members are documented but may be bent slightly more from year to year. GK 5/2012.
Below deck, some of the wind bracing threaded ends are impacting lower chord, bolt heads and rivet heads at various locations. GK 4/14
[2015] Span 6 east portal frame has impact damage and is bent out of plane; also the sway frame at L6-U6N has a bow at the bottom of the sway fram

880	IMPACT DAMAGE	06-17-2015	1 EA	0	1	0	0

Notes: **Doug Zarling & Davis Holthusen inspected traffic impact to guard rail on 3/13/08 N. side (middle of the bridge) accident took place on 3/10/08. Very minor damage and no Repair is needed. DSH
Portal frames and sway frames in all spans have distortion from traffic impact. See note for element #380.FC 6/2011.
[2015] Span 6 east portal frame has impact damage and is bent out of plane; also U9-L10 have some distorion.

881	STEEL SECTION LOSS	06-17-2015	1 EA	0	1	0	0

Notes: 2003 Bridge office report details section loss for MN Approach spans and 3 truss spans. 5 corrections have been identified for installation in 2004.
Heavy section loss in floorbeams and stringers due to pitting is present in many areas. Most section loss has been arrested by cleaning and repainting. FC 6/2011.
[2015] No significant change noted.

882	STEEL CRACKING	06-17-2015	1 EA	0	1	0	0

Notes: 2009 FC inspection: New smart flag Span 2 Floorbeam 8 had crack-like indication found in 2008 at top cope at south truss connection; ¾" hole drilled to arrest. Additional top cope linear fabrication defects found in 2009 at these locations: Sp2 FB2N, Sp2 FB5S, Sp2 FB8N, Sp3 FB3S, Sp3 FB5N, Sp5 FB2S, Sp5 FB7N, Sp6 FB3S – ¼" (cracked tack weld only), Sp6 FB3N – 1/8" (cracked tack weld only), Sp6 FB4N & S (cracked tack welds only), Sp6 FB5S – 5/8". These areas were marked to be monitored during future inspections. Span 6 FB5S indication does originate from top cope into tack weld, but was marked for future inspection as crack did not extend through thickness of web. Jzink 6/10/2009
2010 inspection these areas were inspected with no propagation of cracks.GK 6/15/2010
Span 2 Floorbeam 8 had crack-like indication found in 2008 at top cope at south truss connection; ¾" hole drilled to arrest. No change to that crack or others observed during this inspection.FC 6/2011
Observed cracked tac

883	CONCRETE SHEAR CRACKING	06-17-2015	1 EA	1	0	0	0

Notes: Use this element to monitor the presence of shear cracking on concrete elements. Pay particular attention to the concrete pier caps.

884	SUBSTRUCTURE SETTLEMENT & MVMT	06-17-2015	1 EA	0	1	0	0

Notes: 2009 FC inspection: New smart flag Evidence of continuing substructure settlement/slidng (see element #311). Evidence of abutment or pier tipping not apparent at this time. Monitor during all future inspections. JZink 6/10/2009 All truss rocker bearings tipped to the east. Measurement of pier column slopes indicated little or no tipping (see notes for element #205). Continue to monitor. FC 6/2011.
[2013-2015] Substructure movement may have occurred, however movement cannot be confirmed with rudimentary measurement available during inspections. Recommend survey targets be permanently mounted on each pier to enable more accurate monitoring.

885	SCOUR	06-17-2015	1 EA	0	1	0	0

Notes: There has been a pier scour problem. Monitoring in the past 5 years does not indicate any change. See monitoring plan. 2 2009 FC inspection: Scour depressions exist at Pier 6 (see 2008 Underwater Report) – 6' diameter by 5' deep downstream north caisson and 5' diameter by 3' deep upstream south caisson. Scour issues have been troublesome at this bridge in the past since the mid-1970's – see element #311 notes. JZink 6/10/2009
Scour depressions exist at Pier 6 (see 2008 Underwater Report) – 6' diameter by 5' deep downstream north caisson and 5' diameter by 3' deep upstream south caisson. New underwater inspection will be performed in 2012.FC 6/2011.
[2015] 2012 Underwater Report states: Riprap, 2 foot to 3 foot in diameter, was observed around the perimeters of Piers 2 through 5. At the downstream nose of Pier 6 a scour depression was observed, 8 feet in diameter and up to 2 feet deep. Otherwise large riprap was observed around the perimeter of the caissons at Pier 6. No other ch

891	OTHER BRIDGE SIGNING	06-17-2015	1 EA	0	1	0	0

Notes: Signs Required: Vertical Clearance . Vert clearance signs inplace, 14 ft 8 in. Knee brace signs removed, because knee braces removed.
Vertical clearance signs have minor deterioration but are in place and readable. FC 6/2011.
[2015] No significant change noted.

892	SLOPES & SLOPE PROTECTION	06-17-2015	1 EA	0	1	0	0

Notes: 2009 FC inspection: Added element 2008 UW Report – downstream sides of caissons, there is minimal ripap. Jzink6/10/2009
According to 2008 Underwater report, the downstream sides of caissons have minimal riprap. New underwater inspection will be performed in 2012. FC 6/2011
A stream x section was preformed in winter of 2011 and found some of the rip rap had migrated downstream of the piers. GK.
[2015] No significant change noted.

893	GUARDRAIL	06-17-2015	1 EA	0	1	0	0

Notes: Platebeam terminal end has been hit and damaged at the southeast corner. New platebeam installed at the northeast corner, new curb here also.Bolt loose on west rail.
Guardrail on SE corner of bridge has minor damage due to traffic impact. FC 6/2011.
Same in 2014 / GK
[2015] Guardrail end treatments at the Southeast and Northeast are damaged.

894	DECK & APPROACH DRAINAGE	06-17-2015	1 EA	1	0	0	0

Notes: Bridge crew installed sheet pile and drain tile @ west abut. on north bank. drain tile exposed on 8/24/05. DSH
Deck has no drainage system due to open-grid deck. Sheet pile and drain tile on north end of west abutment unchanged from 2009. FC 6/2011.
[2015] No significant change noted.

895	SIDEWALK, CURB, & MEDIAN	06-17-2015	1 EA	0	1	0	0

Notes: Small void under sidewalk @ SW cor. Sidewalk stringers & planking showing signs of deterioration. Outside face of curbs are spalled w/rebar exposed, whole length of bridge. Inside face of curb @ NE & SW corners heavily scaled. Numerous cracks in curb faces. 1 plank split in sidewalk-2nd span from the W & the 2nd & 3rd spans from the E. There is a 4IN vert lip(new wall on MN side-ok) @ start of the timber walk @ E end. New sidewalk at the southwest corner-new bit in west end in 1997, concrete walk settled 11/2" @ beginning of wood walk in SW corner. Curb fractured from traffic damage at the end of pipe rail-southwest corner. Appr curb scaled from plows-SW corner. Conc walk @ SE cor has settled approx. 3IN-a bit wedge has been placed. 1" opening at sidewalk joint, also settled at wood sidewalk approach.Pier 3 sidewalk slide plate missing 1 of 3 screws holding, plate loose, needs attention. **Br. maint. repaired sidewalk slide plate (screws missing) in 08. DSH
Trees should be pruned/ cu

899	MISCELLANEOUS ITEMS	06-17-2015	1 EA	0	1	0	0

Notes: Conduit pulled apart on N side-2nd floor beam W of pier #2. 1 light conduit pulled apart on N side(vert member)1st truss span from the E, & 3rd truss span from the E.Top of chain link fence bent in 2 places @ southwest corner.Telephone box on span 4, should have a padlock, " next to sidewalk" 6/09
Conduit along north lower chord has exposed (insulated) wiring between feed conduit, transformer and lighting conduit. This appears to be by design, since it is present at all lighting locations. Feed conduit running along span 6, FB10, has rusted-through holes. FC 6/2011.
[2015] Span 4 at L4N electical transformer has blown up and there is tar splattered all over.

900	PROTECTED SPECIES	06-17-2015	1 EA	0	1	0	0

Notes: [2016] Migrator determined the presence of swallows on this structure based on data in the inventory or comments in the general/miscellaneous notes.

General Notes: Bridge layout =”" USA”" west abut, bent 1, bent 2 , bent 3, Pier 1, P2,P3,P4,P5,P6,P7, bent 4, east abutment ””Canada””

Some pigeon nesting on truss. Swallow nests are inplace. FC INSP-MAY 2000-DIVER INSP-AUG 2000-SEE REPORTS. Inspected with canadian Dept of Province of Ontario & MN. DOT 10/22/2001 snooper inspected USA portion 4/26/2006 GK/DZ & BR.crew, 5/2/07 GK, DZ, & JL/ Snooper Inspect. and with Highlift Canada MTO 9/24-26th/2007 GK & DZ observing " inspect. with Gary Weiss & John Canada MTO" Br. office" ST. Paul" did courtesy reveiw,/ special gusset,inspect June 16th-19th 2008, & D2 did routine snooper inspect. sept. 9th 2008 MN. DOT walk through inspection, USA side 6/09, as fracture crit. crew doing inspection with 2 snoopers and man lift. 6/09 Snooper inspected 6 /14 - 15/ 2010 GK, Mn. DOT & Gary Weiss Canada MOT .
FC inspection June 27th - 29th 2011
Snooper inspected 5/1 2012, 4 /29/ 2014 routine

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BRIDGE 9412 TH 72 OVER RAINY RIVER **INSP. DATE: 06-17-2015**

ELEM NBR	ELEMENT NAME	ENV	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
28	STEEL GRID DECK-OPEN	2	06-17-2015	34,053 SF	0	0	34,053	0	0
			04-29-2014	34,053 SF	0	0	34,053	0	0

Notes: |1 grid bar missing in the EBL of truss span #6 near the west end, 2 others missing-same span EBL & WBL. Paint has failed on the grid, US side. Canada painted there Grid in 05 & starting to rust in wheel tracks. There are several broken welds in the grid, Canada side, US side was repaired 6/2010. Bottom of grid and support beams corroded with some pack rust. Grid was tack welded to sliding plates @ piers but pulled apart with 1/8 - 1/4 in gap all the way accross deck @ 3 US center piers,cracked with no gap @ pile bents. **Repaired broken grid bars @ various locations on the US side on2/7/06, 6/16/08, 6/14&15/2010. DSH Numerous loose and missing bars throughout deck. Loose bars rattle under traffic. Widespread surface corrosion throughout deck on west approach and truss spans 1-3.Fc 6/2011 Gridbars broken at various locations but br. crew welds grid on an annual basis. GK 5/2012
[2013] No change noted.
2014 br crew tack welded broken grid bars.
Mn side has surface corrosion, Canada portion has moderate paint failure CS3 GK 4/14
[2015] The first section of deck on Span A6 is loose and deflecting up and down when traffic moves over; condition state quantities where changed to reflect this.|

ELEM NBR	ELEMENT NAME	ENV	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
301	POURED DECK JOINT	2	06-17-2015	50 LF	0	50	0	N/A	N/A
			04-29-2014	50 LF	0	50	0	N/A	N/A

Notes: |Bridge has a steel grid deck, with concrete approach panels west end, with bituminous sealant on ends. GK 6/15/10

**Sealed jts. / pourable on 11/09. DSH
Quantity includes poured joints at west edge and along center of concrete approach slab at west end of bridge.FC 6/2011
Poured jts on ends of bridge need sealing|

ELEM NBR	ELEMENT NAME	ENV	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
303	ASSEMBLY DECK JOINT	2	06-17-2015	132 LF	0	132	0	N/A	N/A
			04-29-2014	132 LF	0	132	0	N/A	N/A

Notes: | The welds holding exp. plates to grid deck are cracked & seperated slightly. 6/15/10 GK

2009 FC inspection: Pier 1 joint closed tight JZink 6-10-2009
Pier 1 joint open 1.00” (was reported closed tight in 2009). Other joints open 1.25” to 2.88”FC 6/2011
Pier 1 joint was open slightly but not much room for expansion looking at angles on end before impacting chanfer on angle plate. GK 5/2012
Assembly deck jts are functioning. GK 4/14
[2015] Deck joint measurements were taken at 60° and are as follows: Span 1-2 South 1 3/4" , North 1 3/4", Span 2-3 South 3", North 2 3/4", Span 3-4 South 3 1/4", North 2 3/4", Span 4-5 South 2 1/2", North 2 1/2", Span 5-6 South 1 3/8", North 1 3/16".|

ELEM NBR	ELEMENT NAME	ENV	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
320	CONC APPR SLAB-BITOL	2	06-17-2015	1 EA	1	0	0	0	N/A
			04-29-2014	1 EA	1	0	0	0	N/A

Notes: |East end of bridge. Good condition with a few minor cracks.FC 6/2011
East approach slab has a moderate crack at centerline GK 4/14
[2015] No significant change noted.

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ELEM NBR	ELEMENT NAME	ENV	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
321	CONC APPROACH SLAB	2	06-17-2015	1 EA	1	0	0	0	N/A
			04-29-2014	1 EA	1	0	0	0	N/A

Notes: | 20 foot approach panel added to the west end, scaling.
Minor cracks and small spalls developing @ SE corner of west appr. slab. GK 6/15/2010
West end of bridge. Good condition with minor scaling from tire wear.FC 6/2011
Approach slab looks good with the tining being worn away in the wheel tracks and a few minor spalls along the steel edge of deck. GK 4/14
[2015] No significant change noted. |

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ELEM NBR	ELEMENT NAME	ENV	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
334	METAL RAIL-COATED	2	06-17-2015	3,855 LF	3,431	424	0	0	0
			04-29-2014	3,855 LF	3,431	424	0	0	0

Notes: | Some areas of paint failure & corrosion on pedestrian railing.Rail seperated at Canada end SE corner GK 6/15/2010
2009 FC inspection: impact damage at southeast Canadian approach. JZink6/10/2009
38 LF in CS3 moved to CS2. Traffic impact damage at SE corner has been repaired.FC 6/2011
Metal br rail has minor corrosion near the bases, and a few scattered areas. GK 4/14
[2015] No significant change noted. |

ELEM NBR	ELEMENT NAME	ENV	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
107	PAINTED STEEL GIRDER	1	06-17-2015	840 LF	0	420	410	10	0
			04-29-2014	840 LF	0	420	410	10	0

Notes: |2009 FC inspection: New element Quantity applies to approach span beams that were once included under the stringer element. Approach Span 1 Beam 2 north face at Pile Bent 1 has new through corrosion in web at splice. Approach Span 2: Beam 3 north face, Beam 4 south face and Beam 2 north face has bottom flange and web surface corrosion. J Zink 6/10/2009
Bridge crew added web splices/ stiffeners to several girders where section loss was most prevelant.GK 6/15/2010
Through corrosion at Bent #1 has been repaired, and web splices added to other areas with large amounts of section loss. Active pitting and corrosion at east end of approach span 6 where girders attach to east abutment.FC 6/2011
Paint failed at a few locations where appears paint thickness was not sufficeant, continues to rust at east abut. GK 5/2012
[2013] No significant change noted.
Bottom flanges continue to rust at abuts.Paint pealing bottom flanges beams 5 & 6 between bent 1 & 2 GK 4/14
[2015] Span A4 Beam 3 has a 2 3/4" crack in web just above bottom flange above Pier 1 (Photo 69).|

ELEM NBR	ELEMENT NAME	ENV	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
113	PAINT STEEL STRINGER	2	06-17-2015	8,133 LF	3,067	4,066	900	100	0
			04-29-2014	8,133 LF	3,067	4,066	900	100	0

Notes: |Paint system new in 2003 on west " US " 1/2 of bridge. Paint system is new 2005 on east " Canada " 1/2 of bridge. corrosion and section loss is most prevalent at floor beam connections.Stringer conection plates,corrosion behind causing deformation of the plates. . 4th base-south fascia stringer west span-electricians drilled 1/4" hole in web. Top flange of sidewalk stringer is rusting under conc curb on S side. East end Span #1, 3rd. stringer from north has 2 popped riviets @ floor beam connection. Paint failing small 5 ft area bottom of stringer,4th from the south mid span, 1st span.Br. crew added gusset plates to several stringers over sect. loss areas, various locations. Approach span 1, S1, bolted repair, 50 % sect. loss.S4, severe pitting bottom flange. App. span 2, S2, pitting and hole in web at bent 1. App. span 4, S2,S3,& S4,pockets of pitting in web over east pier. Truss span 1, bay 5, S4 &S5, light to severe pitting of bottom flanges.Bay 8,S3, moderate pitting over FB9.Bay 10, S1-S5, moderate to severe pittingt on web & bottom flanges, web repair of S3,one rivit missing on S5. Truss span 2, bay 1, S3 & S4, ligth to severe pitting, Bay 3 & 4, S2-S5, light to moderate pitting, web strengh, repair, of S3 @ FB 4.Bay 5, S3,severe sect. loss with holes. Bay 6, S4, light to moderate pitting.Bay 10, S2, web repair, strengh plates, added due to severe sect. loss @ FB 11. Truss span 3, bays 9&10, S3 & S4, light to moderate pitting. Inspect. in 08 detected some stringers in spans 1-3 have surface corosion. 2009 FC inspection: Stringer quantities apply only to truss stringers. Sapn 2 corrosion on Stringer 3 near FB4; new web through corrosion---two 1/4 " diameter holes. Span 2 corrosion on Stringer 4 midpoint bottom flange corrosion.JZink 6/10/2009
Areas of through corrosion in web reported previously have been arrested by cleaning and repainting. Isolated areas of active pitting in bottom flange of STR5, Span

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ELEM NBR	ELEMENT NAME	ENV	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
121	P/STL THRU TRUSS/BOT	2	06-17-2015	2,324 LF	0	2,324	0	0	0
			04-29-2014	2,324 LF	0	2,324	0	0	0

Notes: |West 1/2 painted 2003. East 1/2 -Painted by Canada in 2005. Pack rust on some gusset plates on the bottom chord. Pack rust between some connection points @ piers. There are cracked welds between gusset plate & end post channel on the south side @ the W end of the E truss and several other truss end locations(low tension areas). These cracks do not propagate into the structural members. 1 broken rivet at the sidewalk cantilever at the end of the floor beam side at the 4th pier from the U.S. **Bridge Maint. completed the spot painting of the gusset plates (US Side) the wk. of 6/22/09. The paint system that was done in 2003 was still looking good. A couple of areas were touched up with paint and (all gusset seams on the lower cord were caulked to repel moisture. DSH Isolated areas of paint failure, but underlying primer still intact. A few locations (Span 5 @ L9S, Span 6 @ L9N) show evidence of plug-welded mis- drilled holes in lower chord member (also noted in 2009).FC 6/2011
2012 inspection looked at bottom chord closely and no problems found.Paint failing at ends of chords under jts, in areas that were hard to blast and paint, behind rivet heads, and rockers. GK 5/2012.
[2013] The parallel faces of the horizontal legs of the angles were not cleaned and painted and surface corrosion exists. S
All connections are sound.
Wind braceing impacting lower chord span 6, FB2 east. GK 4/14
[2015] No significant change noted.|

ELEM NBR	ELEMENT NAME	ENV	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
126	P/STL THRU TRUSS/TOP	2	06-17-2015	2,324 LF	1,785	346	193	0	0
			04-29-2014	2,324 LF	1,785	346	193	0	0

Notes: |High loads were impacting knee braces so all knee braces removed. Corrosion beginning at the interface of vertical members. Minor surface corrosion of upper portion of truss. Span #1 , vert. #2 no. truss,cracked tack welds at diag. knee brace, not propagating.Diag. #12, of the no. truss,"fabrication defect, as per disscussion with br. office" in inner flange at midpoint marked for propagation / monitering.Inpact damage of trans. bracing.1st trans.brace bent approx. 7 inches,connect. bent at truss connection , 2d & 3rd trans braces are bent,impacted,clip angles bent also. 6/09 Span #2, rivet missing @ diag. brace connection on vert #1 of no. truss.Minor impact damage of trans. bracing. Span #3, cracked tack welds @ diag. bracing, knee brace locations.Vert #2 so. truss, minor impact damage to trans. bracing. Approx 9-08-08 a truck with a load of hay, impacted trans. bracing,span 6 east U4 vert. Trans. bracing bent and pulled away from U4, bending angle connecting,cracking some tack welds and popping one rivit. Three of the diag. braces bent and some minor tearing of the edge of U4 member, D2 br. crew replaced rivet with a bolt.GK 08 Canada br. personel notified and will follow up with there own inspect. & repair. 2009 FC inspection: Paint failure and surface corrosion is prevalent on most rivet heads. Built-up members exhibit localized areas of pack rust which are starting to cause spreading. JZink6/10/2009 Paint failure and surface corrosion is prevalent on most rivet heads. Built-up members exhibit localized areas of pack rust which are starting to cause minor scalloping. No change from 2009. Span 6 member U1S-L1S has slight bend in flange near bottom, probably due to traffic impact. Span 4 member U4NL4N has plug-welded mis-drilled holes in lower portion near L4N (previously noted in 2009).FC 6/2011 Paint faliure bottom side Span 2 SE GK 5/2012.
[2013] There are some areas of paint failure with minor surfac

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ELEM NBR	ELEMENT NAME	ENV	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
152	PAINT STL FLOORBEAM	2	06-17-2015	1,744 LF	174	1,220	350	0	0
			04-29-2014	1,744 LF	174	1,220	350	0	0

Notes: |West 1/2 repainted in 2003. East 1/2 Painted by Canada in 2005- Was a considerable amount of layered rust w/sect loss. Paint on floor beams & stringers was in very poor condition w/pack rust forming on both flanges section loss in small areas near mid-point. Knee braces (stringer to floor beam) at the east pier have pack rust between angles causing minor deformation. See section loss report in file - 2003.. Between piers 3 & 4 2nd. stringer from the south,2 1/2 in. holes drilled in bottom flange, Canada plated floorbeams over piers 5 & 6 US plated bottom flanges of some floor beams spans 1 & 2. Truss span 1,FB 1 light to moderate pitting of web and bottom flange at center of span.FB4 cracked tack weld so. side,no propagation.FB 7, 8 , 9 & 11,light to moderate pitting on bottom flanges. Truss span 2, FB 1, moderate to severe pitting,FB 2-4, light to moderate pitting of top & bottom flanges, FB 5-7, moderate to severe pitting, strengh. plates bolted to bottom flanges.FB 10,11, moderate to severe pitting on flanges. Truss span 3, FB 5,7,9,10 & 11, light to moderate pitting of flanges and webs. The floor beams have been repainted arresting most corrosion : however there are some connections with active pack rust, & bottom flanges are starting to corrode with paint pealing, most noticeably near west end spans 1 & 2.GK 6/15/2010 Floor beam 8 span 2 had a crack like indication that was stop drilled by D2 br. crew. Many floorbeams have moderate to severe pitting in lower webs and flanges, which has been arrested by repainting. Several floorbeams reinforced with bolted cover plates, with paint failure and active corrosion occurring on Span 4 FB10. Active corrosion present under bottom flange connection to truss panel points at many locations. Span 2, FB8, south end has a crack in the top flange cope that was drilled out in 2008. Other flange copes and tack welds should be monitored for possible cracking.FC 6/2011 2012 insp

ELEM NBR	ELEMENT NAME	ENV	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
423	GUSSET PLATE (PAINT)	1	06-17-2015	276 EA	276	0	0	0	0
			04-29-2014	276 EA	276	0	0	0	0

Notes: |2009 FC inspection All gussets exhibit minimal to no pack rust and no paint failure.
Gussets at Piers 3-6 are impacted due to fully expanded bearings (see element #967 notes). Tack welds are present on gusset plate interfaces mainly at the pier locations. Some are cracked, but none have propogated into the base metal. JZink 6/10/2009.
** A (3) stage spot painting of gussets was completed the wk. of 6/22/09. DSH
Several outer gusset plates at L4N locations have plug-welded misdrilled holes (also noted in 2009)FC 6/2011.
No problems noted in 2014 GK
[2015] No significant change noted.|

ELEM NBR	ELEMENT NAME	ENV	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
380	SECONDARY ELEMENTS	1	06-17-2015	1 EA	0	0	1	0	N/A
			04-29-2014	1 EA	0	0	1	0	N/A

Notes: |2009 FC inspection: New element Used to rate lateral bracing, truss portal, and sway bracing. Most bracing in all spans is bent or loose due to previous impact damage. Bent bracing includes: Span 3 U4, U6; Span 4 U4. Loose bracing includes: Span 3 U8 to U9, Span 4 U8 to U9 and U1 to U2. Portal damage in Span 5. JZink 6/10/2009

Several portal frames and sway frames are bent due to traffic impact.
Maximum distortion is in Span 1, where both sway frames are bent 8" out of plane. Heavy pitting and corrosion present in horizontal member between bents #2 and #3. FC 6/2011
Sway frames continue to get bumped from high loads and bent members are documented but may be bent slightly more from year to year. GK 5/2012.
Below deck, some of the wind bracing threaded ends are impacting lower chord, bolt heads and rivet heads at various locations. GK 4/14
[2015] Span 6 east portal frame has impact damage and is bent out of plane; also the sway frame at L6-U6N has a bow at the bottom of the sway frame and the sway frame is bent 11 ¾" to the west and 2" up. |

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ELEM NBR	ELEMENT NAME	ENV	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
311	EXPANSION BEARING	2	06-17-2015	12 EA	0	4	8	N/A	N/A
			04-29-2014	12 EA	0	4	8	N/A	N/A

Notes: |Rockers could be adjusted, gusset plates @ pier 3 & 4 " USA portion inspected" are restricting bearing movement-attention is needed to this area."see pictuers in Br. 9412 file" Pier 5 SE rocker " 4 in. nut "coming loose, some movement noticed because of rusting of new paint, pics on file 2007 inspect, in 2010 same cond. Br inspect in 08, by Br. office and follow up with snooper on routine inspect. found that all rocker bearings are in maximum expansion with the gusset plate resting on the bearing causing an indentation of the gusset plate. All bearings were measured" with comps on file in D2 br. office" & will moniter for movement over time and temps to see if they are frozen or moving as designed 2009 FC inspection: All bearings in full expansion tipping to the west on piers 3-6; impacting gusset plates at 8 of the 12 locations (not at piers 1 and 2). Full expansion of these bearings was first noted in 2000; however 1995 inspection notes indicate that the bearing displacement was at about 10 - 15 degrees away from center of span at a temperature of 65 degrees. Exp joints in 1995 had about 1 inch of possible additional expansion. In 2008, pier 1 exp joint was closed tight. Sliding movment of the bearings is also evident at pier 4 (fixed bearing bolt hole elongation) and pier 6 (1/2 inch movement to the east from 2008 to 2009) perhaps indicating substructure movment/settlement eastward. Measurements of bearing movment were taken in 2008 and 2009 to establish evidence of movement. There are signs of bearing movement from 2008 to 2009. Meaurements should continue to be taken, especially during different temperature extremes JZink6/10/2009. Measurement grid on file in N drive. All bearings in full expansion tipping to the west on Piers 3-6; impacting gusset plates at these locations. Bent anchor bolt at Span 4 L0S. Short anchor bolt with exposed internal threads on nut at Span 5 L0S. Marks made on bearing

313	FIXED BEARING	2	06-17-2015	12 EA	0	12	0	N/A	N/A
			04-29-2014	12 EA	0	12	0	N/A	N/A

Notes: | Rusting at various locations. Base plates have pack rust @ the W bents.Br. crew installed new base plates @ west abutment. Base plates @ the E abut have pack rust w/minor sect loss-paint failed.

Bearings are in good condition with minimal deterioration (unchanged from 2009).FC 6/2011.
Bearings were painted and look good but anchor bolts have moderate corrosion along with the bearing seat. GK 4/14
[2015] No significant change noted.|

202	PAINT STL COLUMN	2	06-17-2015	20 EA	5	15	0	0	0
			04-29-2014	20 EA	5	15	0	0	0

Notes: | Mn west approach span columns painted 2003, east in 05
Layered/ speckeled rust forming at west approach span.GK 6/15/2010
Quant. reflects 5 columes per bent.3 bents at west end and 1 bent at east end.
West end columes have some diag. bracing, bent to bent.GK 6/15/2010

Steel columns in approach span bents are in good condition. Some corrosion and minor
pack rust is present between columns and diagonal bracing members FC 6/2011.
Corrosion along bottoms of columns at connection points,mid and upper connection points beginning to rust, repainted areas have some minor section loss, but all connections are sound and in proper position. GK 4/14
[2015] No significant change noted. |

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ELEM NBR	ELEMENT NAME	ENV	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
205	CONCRETE COLUMN	2	06-17-2015	14 EA	0	14	0	0	N/A
			04-29-2014	14 EA	0	14	0	0	N/A

Notes: |Base of columns & web walls are are heavily scaled @ E pier.
The top of the pier webs are cracked & deteriorating w/heavy scaling-should be sealed.
Pier 6, top of concrete web / diaph. is scaling badly, both caps map cracked near center.
The bottom of the columns & web walls are heavily scaled up to 3" deep - 2004 underwater inspection.
2009 FC inspection: 2008 UW report---light scaling with .25 inches to 1 inch penetration and exposed aggregate from top of caissons to 1 foot above top of caissons. Scaling around waterline. JZink 6/10/2009

Pier columns have light spalling and staining. Scaling is prevalent near water line above caissons. Due to concerns about possible pier movement, tilt measurements were taken on east and west faces of all pier columns with a 4' level. The numbers represent amount of tilt over 4 feet, with the direction of tilt (East or West). All readings were small, and could partially be the result of uneven placement of forms when they were cast. Meas. in FC report. FC 6/2011
[2013] The 2012 Under Water report identified Light scaling with ¼-inch typical to 1-inch maximum penetration and exposed aggregate was observed at Piers 2 through 7 on the concrete columns from the top of the caissons to 1 foot above the top of the caisson. At Pier 7, scaling was concentrated near and around the waterline.
Sounded columns at various suspect locations and found no delams. GK 4/14
[2015] No significant change noted. |

ELEM NBR	ELEMENT NAME	ENV	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
206	TIMBER COLUMN	2	06-17-2015	4 EA	4	0	0	0	N/A
			04-29-2014	4 EA	4	0	0	0	N/A

Notes: | Minor splitting & checking of timber columns under W appr span.
Minor splitting and checking. No change from 2009 FC 6/2011.
Columns tend to see alot of moisture, moderately weathered in 2014 / GK
[2015] No significant change noted.|

ELEM NBR	ELEMENT NAME	ENV	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
210	CONCRETE PIER WALL	2	06-17-2015	151 LF	0	129	22	0	N/A
			04-29-2014	151 LF	0	129	22	0	N/A

Notes: | The top of the east pier wall is heavily scaled and deteriorated. The bottom of the east pier wall is map-cracked & spalling-approx. 16 sq. ft..
1st pier br. crew repaired top 8-10 in.
Top of pier walls have heavy scalingFC 6/2011
Pier walls are encased at the bottom with a metal caison with shows signs of corrosion at and below the waterline. GK 5/2012.
[2015] No significant change noted.|

ELEM NBR	ELEMENT NAME	ENV	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
215	CONCRETE ABUTMENT	2	06-17-2015	66 LF	26	33	7	0	N/A
			04-29-2014	66 LF	26	33	7	0	N/A

Notes: | 12 SQ. FT. of deteriorated concrete @ the NE corner of east abut. (rebar exposed & corroding). Approx. 5 Lin Ft of parapet @ east abut is spalled & cracked. .
West abut. was patched and repaired by br. crew in 2004. east abutment has numerous cracks w/leaching. End blocks are cracked & deteriorated. E end block has been patched. East seat needs to be flushed.

East abutment has moderate staining, spalling and scaling. A vertical crack extends from the bottom to 3/4 of the way up the abutment face between STR5 & STR6. Between STR4 and STR5, there is a 4' X 2' area of delamination below the bearing seat, and another area about 3 feet in diameter below that. Heavy dirt accumulation on bearing ledge holding moisture against beam ends. West abutment has numerous repairs and timber bracing. FC 6/2011
Bridge crew flushed abut in spring of 2012, and abut. ledge was fairly clean and dry but open grated deck allows material to accumulate, and corrosion to continue. GK 5/2012.
Canada did some concrete repair to the top of the east abut, as the surface was crumbleing.
Delams beggining to spall on east abut below bearing seats CS3 GK 4/14
[2015] 2 sq ft of delam in the about 5' up from the bottom. No other changes noted.|

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220	CONCRETE FOOTING	2	06-17-2015	16 EA	2	14	0	0	N/A
			04-29-2014	16 EA	2	14	0	0	N/A

Notes: |Bridge crew repaired bent 1 & 2 footings on W. end in 2004. Footings under bents have light to moderate cracking, spalling and scaling.FC 6/2011 ** Bridge crew made repairs to 2nd & 3rd bent footings on10/03/05. DSH [2011] Piers 2-7 have caissons visible above the water line. Visible elements have light to moderate surface corrosion on steel shells and moderate to heavy scaling in concrete surface. See 2008 Underwater Report for further details. FC 6/2011.
[2013] Element 382 deleted and Under Water Inspection notes moved to this element. The bent footings consist of reinforced concrete supported by driven pile. Pier 1 and 7 footings consist of reinforced concrete supported by driven pile for each column, the footings are below grade and therefore not included in the rated quantity. piers 2 through 6 consist of 19 driven pile surrounded by a steel tube filled with concrete. The entire footing is generally submerged and is inspected during scheduled under water inspection. (2008 UW Report - Steel caissons exhibit light to moderate surface corrosion extending from top of caisson to 3.5 feet below waterline. From the channel bottom to 3.5' below the waterline, the caissons exhibit moderate to heavy surface corrosion 1/ 11/2" diameter to 3" diameter nodules and up to 1/16" deep pitting over 50% of the area. Scour holes undercutting the pier steel caissons (mostly at pier 6) have been noted since the mid-1970. The 1991 underwater inspection report recommended a scour and foundation stability analysis of the channel bottom at pier 6 along with reiprap placement. JZink 6/10/2009) The 2012 Under Water Report identifies surface corrosion on the caissons up to 3 inches in diameter and 1/16 inch deep. Rip rap was observed around 2 through 6, however a scour hole 8 feet in diameter and 2 feet deep exists at the nose of Pier 6.
[2015] Footing at Bent has 6' feet of spall with exposed rebar. |

ELEM NBR	ELEMENT NAME	ENV	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
231	PAINTED STEEL CAP	2	06-17-2015	142 LF	0	142	0	0	0
			04-29-2014	142 LF	0	142	0	0	0

Notes: |[2013-2015] Scattered areas of failed paint with surface corrosion.|

ELEM NBR	ELEMENT NAME	ENV	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
234	CONCRETE CAP	2	06-17-2015	241 LF	0	145	96	0	N/A
			04-29-2014	241 LF	0	145	96	0	N/A

Notes: |Concrete on top of main pier caissons is deteriorated up to 3IN deep. Rebar is exposed on the cap @ the center pier. Spall under base plate-N & S side-7IN X 2IN X 2-1/2IN D on N side of pier #2. Caps are also cracked & scaled w/minor spalls. Mortar pad is breaking up under base plate @ SW cor of pier #2. There is a 6 SQ IN spall on the N end of the bottom of the cap @ pier #3.Approx. 4 sq. ft. of spall top of pier 1. Column caps are cracked.Pier 7 top of web has been overlaid with concrete by Canada. Pier caps have moderate to heavy scaling. Vertical cracks through the cap are present in several locations, mostly on the piers on the Canadian side. FC 6/2011 **Bridge crew repaired concrete cap w/ delam in 10/06., approx. 3yds. of concrete MN side. DSH
[2015] No significant change noted.|

ELEM NBR	ELEMENT NAME	ENV	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
235	TIMBER CAP	2	06-17-2015	30 LF	30	0	0	0	N/A
			04-29-2014	30 LF	30	0	0	0	N/A

Notes: | Minor splitting & checking of timber cap under W appr span.
Minor splitting and checking. Unchanged from 2009. FC 6/2011.
Moisture and sand accumulate on this element. GK 4/14
[2015] No significant change noted.|

ELEM NBR	ELEMENT NAME	ENV	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
387	CONCRETE WINGWALL	2	06-17-2015	4 EA	1	3	0	0	N/A
			04-29-2014	4 EA	1	3	0	0	N/A

Notes: | 1/8IN diag crack in NE w/wall-concrete continues to deteriorate (to a depth of 6IN+) @ top of this w/wall. The SW w/wall was repaired by bridge crew in 2004. 1/4" diagonal crack in the southwest wingwall has been sealed. Top of north east wingwall continues to spall & delaminate. 20 s.f. concrete top of southeast wingwall cracking with efflorescence.
Light to moderate cracking, spalling and scaling. No change from 2009. FC 6/2011.
[2015] No significant change noted.|

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ELEM NBR	ELEMENT NAME	ENV	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
356	FATIGUE CRACKING	1	06-17-2015	1 EA	1	0	0	N/A	N/A
			04-29-2014	1 EA	1	0	0	N/A	N/A

Notes: |2009 FC inspection: New smart flag Span 2 Floorbeam 8 had crack-like indication found in 2008 at top cope at south truss connection; ¾" hole drilled to arrest. Additional top cope linear fabrication defects found in 2009 at these locations: Sp2 FB2N, Sp2 FB5S, Sp2 FB8N, Sp3 FB3S, Sp3 FB5N, Sp5 FB2S, Sp5 FB7N, Sp6 FB3S – ¼" (cracked tack weld only), Sp6 FB3N – 1/8" (cracked tack weld only), Sp6 FB4N & S (cracked tack welds only), Sp6 FB5S – 5/8". These areas were marked to be monitored during future inspections. Span 6 FB5S indication does originate from top cope into tack weld, but was marked for future inspection as crack did not extend through thickness of web. Jzink 6/10/2009
2010 inspection these areas were inspected with no propagation of cracks.GK 6/15/2010

Span 2 Floorbeam 8 had crack-like indication found in 2008 at top cope at south truss connection; ¾" hole drilled to arrest. No change to that crack or others observed during this inspection.FC 6/2011
Observed cracked tack welds and drilled area and found no changes in 2012 inspection GK.
2014 two FB's appeared to have crack like indications " See element 152" These areas were marked to be monitored during future inspections. GK 4/14
[2015] No significant change noted. |

ELEM NBR	ELEMENT NAME	ENV	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
357	PACK RUST	2	06-17-2015	1 EA	0	1	0	0	N/A
			04-29-2014	1 EA	0	1	0	0	N/A

Notes: | Pack rust @ bott chord connection points

Minor pack rust distortion (1/16" or less) is present between some gusset plates and lower chord.
Pack rust up to 1/4" present between horizontal shelf plates and floorbeams. A few stringer splice plates over floorbeams have pack rust distortion of 1/8" or less.FC 6/2011
Staining from pack rust behind plates. GK 5/2012.
Pier 2 and Pier 3 west appeared to have the heaviest pack rust between the shelf plate and floorbeam GK 4/14
[2015] No significant change noted. |

ELEM NBR	ELEMENT NAME	ENV	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
360	SETTLEMENT	1	06-17-2015	2 EA	0	2	0	N/A	N/A
			04-29-2014	2 EA	0	2	0	N/A	N/A

Notes: |2009 FC inspection: New smart flag Evidence of continuing substructure settlement/slidng (see element #311). Evidence of abutment or pier tipping not apparent at this time. Monitor during all future inspections. JZink 6/10/2009 All truss rocker bearings tipped to the east. Measurement of pier column slopes indicated little or no tipping (see notes for element #205). Continue to monitor. FC 6/2011.
[2013-2015] Substructure movement may have occurred, however movement cannot be confirmed with rudimentary measurement available during inspections. Recommend survey targets be permanently mounted on each pier to enable more accurate monitoring.|

ELEM NBR	ELEMENT NAME	ENV	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
361	SCOUR	2	06-17-2015	1 EA	0	1	0	N/A	N/A
			04-29-2014	1 EA	0	1	0	N/A	N/A

Notes: | There has been a pier scour problem. Monitoring in the past 5 years does not indicate any change. See monitoring plan. 2
2009 FC inspection: Scour depressions exist at Pier 6 (see 2008 Underwater Report) – 6' diameter by 5' deep downstream north caisson and 5' diameter by 3' deep upstream south caisson. Scour issues have been troublesome at this bridge in the past since the mid-1970's – see element #311 notes. JZink 6/10/2009
Scour depressions exist at Pier 6 (see 2008 Underwater Report) – 6' diameter by 5' deep downstream north caisson and 5' diameter by 3' deep upstream south caisson. New underwater inspection will be performed in 2012.FC 6/2011.
[2015] 2012 Underwater Report states: Riprap, 2 foot to 3 foot in diameter, was observed around the perimeters of Piers 2 through 5. At the downstream nose of Pier 6 a scour depression was observed, 8 feet in diameter and up to 2 feet deep. Otherwise large riprap was observed around the perimeter of the caissons at Pier 6. No other changes were noted.|

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ELEM NBR	ELEMENT NAME	ENV	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
362	TRAFFIC IMPACT	2	06-17-2015	1 EA	0	1	0	N/A	N/A
			04-29-2014	1 EA	0	1	0	N/A	N/A

Notes: |**Doug Zarling & Davis Holthusen inspected traffic impact to guard rail on 3/13/08 N. side (middle of the bridge) accident took place on 3/10/08. Very minor damage and no Repair is needed. DSH

Portal frames and sway frames in all spans have distortion from traffic impact. See note for element #380.FC 6/2011.
[2015] Span 6 east portal frame has impact damage and is bent out of plane; also U9-L10 have some distorion.|

363	SECTION LOSS	2	06-17-2015	1 EA	0	1	0	0	N/A
			04-29-2014	1 EA	0	1	0	0	N/A

Notes: | 2003 Bridge office report details section loss for MN Approach spans and 3 truss spans. 5 corrections have been identified for installation in 2004.
Heavy section loss in floorbeams and stringers due to pitting is present in many areas. Most section loss has been arrested by cleaning and repainting. FC 6/2011.
[2015] No significant change noted.|

964	CRITICAL FINDING	2	06-17-2015	1 EA	1	0	N/A	N/A	N/A
			04-29-2014	1 EA	1	0	N/A	N/A	N/A

Notes: | DO NOT DELETE THIS CRITICAL FINDING SMART FLAG.
No critical findings were identified during this inspection FC 6/2011.
[2015] No critical findings were noted.|

966	FRACTURE CRITICAL	2	06-17-2015	1 EA	0	1	0	N/A	N/A
			04-29-2014	1 EA	0	1	0	N/A	N/A

Notes: |Do Not Remove. See in-depth report for location of F/C members.
2009 FC inspection: Prior to 2003, section loss was prevalent on the bottom flange of numerous truss span floorbeams. As a result, UT thickness testing was preformed in 2003 and repairs were made to many of the bottom flanges by way of bolted cover plates along the bottom flange. The floorbeam top copes at the truss connections are stress risers that should also be monitored during all future inspections. Jzink6/10/2009
[2015] No significant change noted.

Fracture-critical floorbeams have significant section loss, but this has been arrested by cleaning and repainting. Floorbeams with most significant loss have been reinforced with bolted cover plates. FC 6/2011.|

981	SIGNING	2	06-17-2015	1 EA	0	1	0	0	0
			04-29-2014	1 EA	0	1	0	0	0

Notes: |Signs Required: Vertical Clearance . Vert clearance signs inplace, 14 ft 8 in. Knee brace signs removed, because knee braces removed.
Vertical clearance signs have minor deterioration but are in place and readable. FC 6/2011.
[2015] No significant change noted.
|

982	GUARDRAIL	2	06-17-2015	1 EA	0	1	0	N/A	N/A
			04-29-2014	1 EA	0	1	0	N/A	N/A

Notes: | Platebeam terminal end has been hit and damaged at the southeast corner. New platebeam installed at the northeast corner, new curb here also.Bolt loose on west rail.
Guardrail on SE corner of bridge has minor damage due to traffic impact. FC 6/2011.
Same in 2014 / GK
[2015] Guardrail end treatments at the Southeast and Northeast are damaged.|

984	DRAINAGE	2	06-17-2015	1 EA	1	0	0	N/A	N/A
			04-29-2014	1 EA	1	0	0	N/A	N/A

Notes: | Bridge crew installed sheet pile and drain tile @ west abut. on north bank. drain tile exposed on 8/24/05. DSH
Deck has no drainage system due to open-grid deck. Sheet pile and drain tile on north end of west abutment unchanged from 2009. FC 6/2011.
[2015] No significant change noted.|

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985	SLOPES	1	06-17-2015	1 EA	0	1	0	N/A	N/A
			04-29-2014	1 EA	0	1	0	N/A	N/A

Notes: |2009 FC inspection: Added element 2008 UW Report – downstream sides of caissons, there is minimal ripap. Jzink6/10/2009

According to 2008 Underwater report, the downstream sides of caissons have minimal riprap. New underwater inspection will be performed in 2012. FC 6/2011
A stream x section was preformed in winter of 2011 and found some of the rip rap had migrated downstream of the piers. GK.
[2015] No significant change noted.|

ELEM NBR	ELEMENT NAME	ENV	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
986	CURB & SIDEWALK	2	06-17-2015	1 EA	0	1	0	N/A	N/A
			04-29-2014	1 EA	0	1	0	N/A	N/A

Notes: | Small void under sidewalk @ SW cor. Sidewalk stringers & planking showing signs of deterioration. Outside face of curbs are spalled w/rebar exposed, whole length of bridge. Inside face of curb @ NE & SW corners heavily scaled. Numerous cracks in curb faces. 1 plank split in sidewalk-2nd span from the W & the 2nd & 3rd spans from the E. There is a 4IN vert lip(new wall on MN side-ok) @ start of the timber walk @ E end. New sidewalk at the southwest corner-new bit in west end in 1997, concrete walk settled 11/2" @ beginning of wood walk in SW corner. Curb fractured from traffic damage at the end of pipe rail-southwest corner. Appr curb scaled from plows-SW corner. Conc walk @ SE cor has settled approx. 3IN-a bit wedge has been placed. 1" opening at sidewalk joint, also settled at wood sidewalk approach.Pier 3 sidewalk slide plate missing 1 of 3 screws holding, plate loose, needs attention. **Br. maint. repaired sidewalk slide plate (screws missing) in 08. DSH
Trees should be pruned/ cut on both east & west ends, north side for snooper bucket access.GK 6/14/2010
Concrete curb is in good condition, with isolated cracking and spalling. Steel stay-in-place form on bottom of curb has extensive pitting, corrosion and rust-through holes. Timber sidewalk has minor cracking and checking, with broken out pieces in some areas. Surface of sidewalk has pitting from snowmobile studs. FC 6/2011
Sidewalk on Mn portion was repaired and or replaced by br. crew. GK 5/2012.
NE and SE curbs continue to deteriorate GK 4/14
[2015] No significant change noted.|

ELEM NBR	ELEMENT NAME	ENV	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
988	MISCELLANEOUS	2	06-17-2015	1 EA	0	1	0	N/A	N/A
			04-29-2014	1 EA	0	1	0	N/A	N/A

Notes: |Conduit pulled apart on N side-2nd floor beam W of pier #2. 1 light conduit pulled apart on N side(vert member)1st truss span from the E, & 3rd truss span from the E.Top of chain link fence bent in 2 places @ southwest corner.Telephone box on span 4, should have a padlock, " next to sidewalk" 6/09

Conduit along north lower chord has exposed (insulated) wiring between feed conduit, transformer and lighting conduit. This appears to be by design, since it is present at all lighting locations. Feed conduit running along span 6, FB10, has rusted-through holes. FC 6/2011.
[2015] Span 4 at L4N electical transformer has blown up and there is tar splattered all over.|

ELEM NBR	ELEMENT NAME	ENV	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
967	GUSSET DISTORTION	1	06-17-2015	1 EA	0	1	0	0	N/A
			04-29-2014	1 EA	0	1	0	0	N/A

Notes: |2009 FC inspection: Added element Most bottom chord and a few upper chord gusset plates exhibit free edge distortion up to 1/8” attributed to fit-up or very minor pack rust. Span 6 L10N inside gusset is bowed out slightly more than 1/8” that is not attributed to pack rust or fit-up. Possibly due to impact of gusset on fully expanded bearing. This type of distortion should be monitored in the future for all pier gussets due to the impacted gussets. JZink6/10/2009
Most bottom chord and a few upper chord gusset plates exhibit free edge distortion up to 1/8” due to fit-up or very minor pack rust. Eight gusset plate connections (L0S & L0N on spans 3-6) have gouges due to impact from rocker bearings. FC 6/2011.
[2015] There is a bulge at Span 6 M3N Exterior Gusset Plate .125" bulge between members L6-M3 & U6-M3 appears to have been caused by impacts to the back.|

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General Notes: Bridge layout =”” USA”” west abut, bent 1, bent 2 , bent 3, Pier 1, P2,P3,P4,P5,P6,P7, bent 4, east abutment ””Canada””

Some pigeon nesting on truss. Swallow nests are inplace. FC INSP-MAY 2000-DIVER INSP-AUG 2000-SEE REPORTS. Inspected with canadian Dept of Province of Ontario & MN. DOT 10/22/2001 snooper inspected USA portion 4/26/2006 GK/DZ & BR.crew, 5/2/07 GK, DZ, & JL/ Snooper Inspect. and with Highlift Canada MTO 9/24-26th/2007 GK & DZ observing " inspect. with Gary Weiss & John Canada MTO" Br. office" ST. Paul" did courtesy reveiw,/ special gusset,inspect June 16th-19th 2008, & D2 did routine snooper inspect. sept. 9th 2008 MN. DOT walk through inspection, USA side 6/09, as fracture crit. crew doing inspection with 2 snoopers and man lift. 6/09 Snooper inspected 6 /14 - 15/ 2010 GK, Mn. DOT & Gary Weiss Canada MOT .
FC inspection June 27th - 29th 2011
Snooper inspected 5/1 2012, 4 /29/ 2014 routine

Appendix I – NOISE STUDY

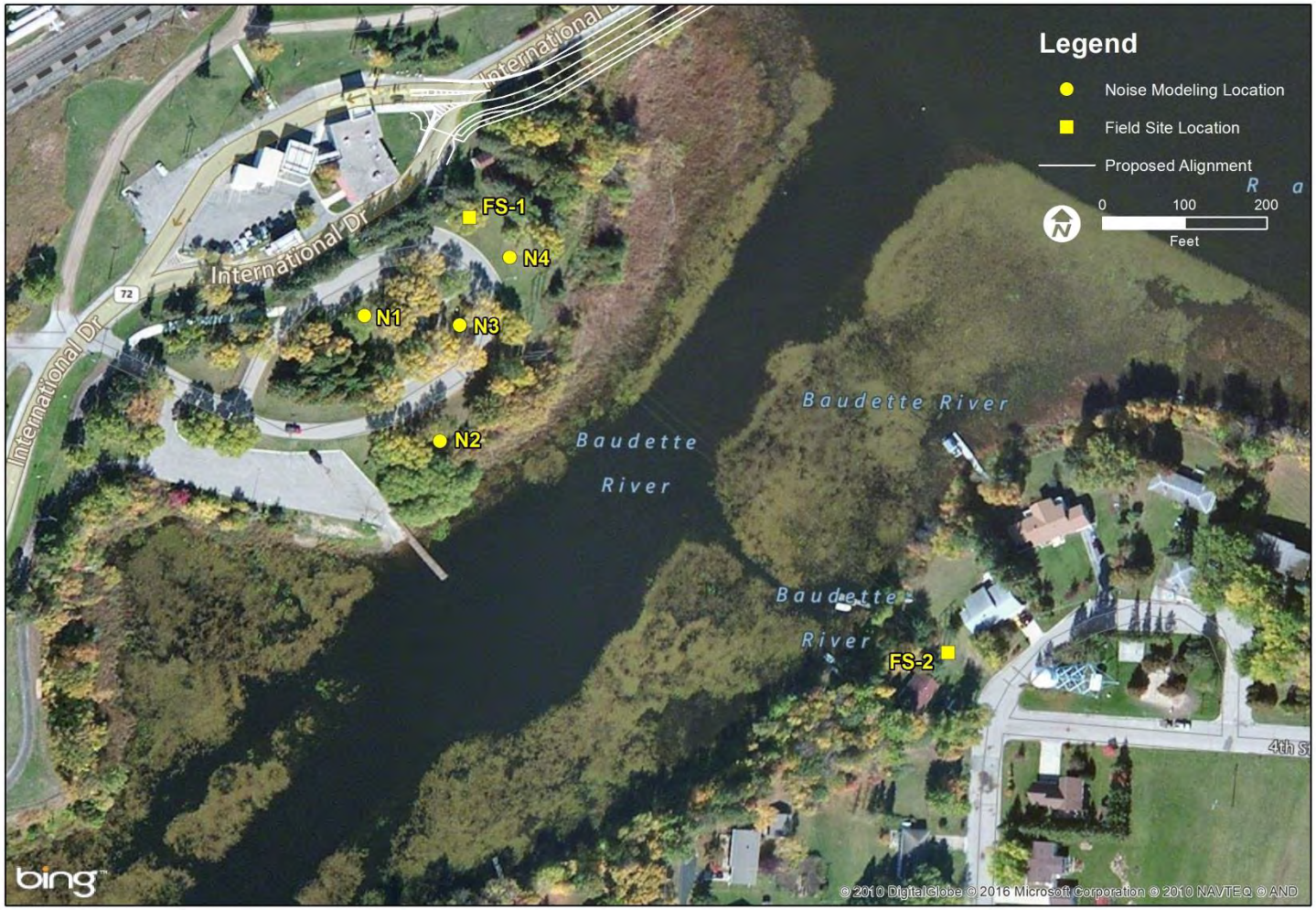

Figure 35: Noise Modeling Locations

Table 26: Daytime Model Results (12:00 p.m. - 1:00 p.m.), Baudette Bridge, Baudette, Minnesota

Receptor	Land Use	Number of Units	Monitored Noise Levels (2015)		Existing Conditions (2013)		No-Build Alternative (2038)		Difference No-Build (2038) - Existing (2013)		Preferred Alternative (2038)		Difference Pref. Alt. (2038) - Existing (2013)	
			L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}
FS-1	Park	--	53.0	47.4	58.2	50.2	58.6	50.8	0.4	0.6	56.4	48.2	-1.8	-2.0
FS-2	Residential	2	48.3	41.9	54.9	47.9	55.3	48.4	0.4	0.5	49.7	43.6	-5.2	-4.3
N1	Park	--	--	--	56.2	48.9	56.6	49.5	0.4	0.6	54.6	47.0	-1.6	-1.9
N2	Park	--	--	--	53.9	46.5	54.3	47.1	0.4	0.6	51.1	44.1	-2.8	-2.4
N3	Park	--	--	--	55.5	47.8	55.9	48.4	0.4	0.6	52.8	45.3	-2.7	-2.5
N4	Park	--	--	--	56.9	48.8	57.3	49.3	0.4	0.5	54.1	45.9	-2.8	-2.9
MPCA Residential Daytime Standard			**65**	**60**	**65**	**60**	**65**	**60**	**-**	**-**	**65**	**60**	**-**	**-**
FHWA Activity Category B, C			**70**	**-**	**70**	**-**	**70**	**-**	**-**	**-**	**70**	**-**	**-**	**-**
FHWA Activity Category E			**75**	**-**	**75**	**-**	**75**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
MPCA Commercial Daytime Standard			**70**	**65**	**70**	**65**	**70**	**65**	**-**	**-**	**70**	**65**	**-**	**-**
MPCA Industrial Daytime Standard			**80**	**75**	**80**	**75**	**80**	**75**	**-**	**-**	**80**	**75**	**-**	**-**
FHWA Activity Category F			**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Table 27: Nighttime Model Results (6:00 a.m. - 7:00 a.m.), Baudette Bridge, Baudette, Minnesota

Receptor	Land Use	Number of Units	Existing Conditions (2013)		No-Build Alternative (2038)		Difference No-Build (2038) - Existing (2013)		Preferred Alternative (2038)		Difference Pref. Alt. (2038) - Existing (2013)	
			L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}
FS-1	Park	--	54.1	44.6	54.8	45.5	0.7	0.9	52.6	43.0	-1.5	-1.6
FS-2	Residential	2	50.9	42.3	51.6	43.2	0.7	0.9	46.3	38.6	-4.6	-3.7
N1	Park	--	52.2	43.3	52.9	44.3	0.7	1.0	50.9	41.8	-1.3	-1.5
N2	Park	--	49.8	40.9	50.5	41.8	0.7	0.9	47.4	38.9	-2.4	-2.0
N3	Park	--	51.4	42.2	52.2	43.1	0.8	0.9	49.1	40.2	-2.3	-2.0
N4	Park	--	52.7	43.1	53.5	44.0	0.8	0.9	50.3	40.7	-2.4	-2.4
MPCA Residential Nighttime Standard			**55**	**50**	**55**	**50**	**-**	**-**	**55**	**50**	**-**	**-**
FHWA Activity Category B, C			**70**	**-**	**70**	**-**	**-**	**-**	**70**	**-**	**-**	**-**
FHWA Activity Category E			**75**	**-**	**75**	**-**	**-**	**-**	**75**	**-**	**-**	**-**
MPCA Commercial Nighttime Standard			**70**	**65**	**70**	**65**	**-**	**-**	**70**	**65**	**-**	**-**
MPCA Industrial Nighttime Standard			**80**	**75**	**80**	**75**	**-**	**-**	**80**	**75**	**-**	**-**
FHWA Activity Category F			**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

C7: Stage 1 Archaeological Assessment Report

Stage 1 Archaeological Assessment, Baudette/Rainy River International Bridge Replacement on Highway 11, Town of Rainy River (GWP 6046-10-00)

Lots 25 and 26, Section 28 Rainy River Range, Atwood Township, Rainy River District, Ontario

Prepared for:
Ministry of Transportation
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ORIGINAL REPORT

File No. 193802870

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Executive Summary

The Ontario Ministry of Transportation (MTO), in cooperation with the Minnesota Department of Transportation, has retained Stantec Consulting Ltd. to undertake the Preliminary Design and Class Environmental Assessment (Class EA) Study for the replacement of the Baudette/Rainy River International Bridge on Highway 11 in the Town of Rainy River. This study was initiated because the existing Baudette/Rainy River bridge is classified as fracture critical and has been identified for replacement by the MTO and MnDOT. The existing bridge can currently support normal weight loads but is not permitted to carry overweight loads or over-dimensional loads.

The bridge is located over the Rainy River on Minnesota Trunk Highway 72 and Ontario Provincial Highway 11. The route provides access to and from Baudette, Minnesota and Rainy River, Ontario. The bridge provides a connection between the United States and Canada and full-service 24 hour Port of Entry facilities. The project is currently in the preliminary design phase of the project, including environmental studies on both sides of the border. As part of those environmental studies a Stage 1 archaeological assessment was required to be completed for the area of land where the proposed new bridge location alternatives may be on the Ontario side of the project.

The objectives of the Stage 1 assessment were to compile available information about the known and potential archaeological heritage resources within the Study Area and to provide specific direction for the protection, management and/or recovery of these resources. **Stage 1 background research has resulted in the determination that the proposed project is located in an area of high archaeological potential and a Stage 2 archaeological assessment is required**. Given the existing conditions of the project property the Stage 2 assessment will require the use of a test pit excavation methodology.

The Ontario Ministry of Tourism, Culture and Sport (MTCS) is asked to review the results presented and to accept this report into the Ontario Public Register of Archaeological Reports. Additional archaeological assessment is still required and so the archaeological sites recommended for further archaeological fieldwork remain subject to Section 48(1) of the Ontario Heritage Act and may not be altered, or have artifacts removed, except by a person holding an archaeological license.

The Executive Summary highlights key points from the report only; for complete information and findings, the reader should examine the complete report.

PROJECT PERSONNEL

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1.0 Project Summary

1.1 DEVELOPMENT CONTEXT

The Ontario Ministry of Transportation (MTO), in cooperation with the Minnesota Department of Transportation, has retained Stantec Consulting Ltd. to undertake the Preliminary Design and Class Environmental Assessment (Class EA) Study for the replacement of the Baudette/Rainy River International Bridge on Highway 11 in the Town of Rainy River. This study was initiated because the existing Baudette/Rainy River Bridge is classified as fracture critical and has been identified for replacement by the MTO and MnDOT. The existing bridge can currently support normal weight loads but is not permitted to carry overweight loads or over-dimensional loads.

The bridge is located over the Rainy River on Minnesota Trunk Highway 72 and Ontario Provincial Highway 11 (Figure 1). The route provides access to and from Baudette, Minnesota and Rainy River, Ontario. The bridge provides a connection between the United States and Canada and full-service 24 hour Port of Entry facilities. The project is currently in the preliminary design phase of the project, including environmental studies on both sides of the border. As part of those environmental studies a Stage 1 archaeological assessment was required to be completed for the area of land where the proposed new bridge location alternatives may be on the Ontario side of the project under the *Class Environmental Assessment for Provincial Transportation Facilities*.

The objectives of the Stage 1 assessment were to compile available information about the known and potential archaeological heritage resources within the Study Area and to provide specific direction for the protection, management and/or recovery of these resources. In compliance with the provincial standards and guidelines set out in the Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011), the objectives of the Stage 1 Archaeological Overview/Background Study are as follows:

- to provide information about the Study Area's geography, history, previous archaeological fieldwork and current land conditions;
- to evaluate in detail the Study Area's archaeological potential which will support recommendations for Stage 2 survey for all or parts of the property; and
- to recommend appropriate strategies for Stage 2 survey.

To meet these objectives Stantec archaeologists employed the following research strategies:

- a review of relevant archaeological, historic and environmental literature pertaining to the Study Area;
- a review of the land use history, including pertinent historic maps; and
- an examination of the Ontario Archaeological Sites Database (ASDB) to determine the presence of known archaeological sites in and around the Study Area.

No site visit was conducted for the Stage 1 assessment. The assessment of existing conditions of the Study Area was completed using available aerial imagery.

1.2 HISTORICAL CONTEXT

The Stage 1 archaeological assessment has examined a property of approximately 1.2 ha located between an active railway line and the existing border crossing and bridge abutment along Ellen Street in the Town of Rainy River (Figure 2). The property is located immediately along approximately 80 m of shoreline of the Rainy River and is located in parts of Lots 25 and 26, Section 28 Rainy River Range, Atwood Township, Rainy River District. The property is undeveloped and composed of forested and some cleared land.

1.2.1 Post-Contact Aboriginal Resources

The post-contact Aboriginal occupation of Northern Ontario was heavily influenced by an influx of European explorers, traders and missionaries. The growing fur trade and the designation of animal skins as money led to changes in economic and social organization patterns (Dawson 1983: 34).

During the initial expansion of the fur trade in Northern Ontario, settlement size and population distribution did not shift. Once bands began to congregate along trade routes, joint villages and hunting grounds were set up in relation to fur trading posts. Technologies such as ceramics were phased out and replaced by more convenient European goods such as brass or copper kettles. In contrast, Aboriginal residences continued to be dome-shaped wigwams constructed from locally available materials (Dawson 1983).

The Study Area is situated within the Rainy River District, Ontario. It was not subject to surrender or treaty until Manitoba Treaty Number 3 of October 1873. The land was "surrendered by the Chippewa and Swampy Cree tribes of Indians to Her Majesty". The majority of lands within the treaty area are a part of Ontario. The location of the Study Area in relation to this treaty is illustrated in Figure 3. According to the Canadian government, the treaty was negotiated:

> *Commencing at a point on the Pigeon River route where the international boundary line between the Territories of Great Britain and the United States intersects the height of land separating the waters running to Lake Superior from those flowing to Lake Winnipeg; thence northerly, westerly and easterly along the height of land aforesaid, following its sinuosities, whatever their course may be, to the point at which the said height of land meets the summit of the watershed from which the streams flow to Lake Nipigon; thence northerly and westerly, or whatever may be its course, along the ridge separating the waters of the Nipigon and the Winnipeg to the height of land dividing the waters of the Albany and the Winnipeg; thence westerly and north-westerly along the height of land dividing the waters flowing to Hudson's Bay by the Albany or other rivers from those running to English River and the Winnipeg to a point on the said height of land bearing north forty-five degrees east from Fort Alexander, at the mouth of the Winnipeg; thence south forty-five degrees west to Fort Alexander, at the mouth of the Winnipeg; thence southerly along the eastern bank of the Winnipeg to the mouth of*

> *White Mouth River; thence southerly by the line described as in that part forming the eastern boundary of the tract…*
>
> (Morris 1943:39)

Overall, the treaty allowed for the development of the natural resources under both the Canadian federal and provincial government's supervision, with limited rights provided to the original Aboriginal inhabitants (Morrison 1986).

At the time of the early settlement of the area around Rainy River the Ojibwa and Chippewa camped at a place known as "the Pines", approximately one mile (1.6 km) downstream of the present day town site (RRR, 1994).

1.2.2 Historic Euro-Canadian Archaeological Resources and Surveys

The Rainy River District was established in 1885, although it did not become a separate district until 1914. Up to 1914 the area remained part of the Thunder Bay District. (Canada Gen Web 2015).

The fur trade developed during the late 17th and 18th centuries as European groups (specifically the French and the British) founded and abandoned a number of trading posts. The earliest Euro-Canadian to travel the Rainy River was Jacques de Noyon, a soldier, explorer and fur trader born in Trois Rivieres, Quebec. In 1688 he travelled to Lake Superior and up the Pigeon River where he spent the winter in the area where Fort Frances is currently located. In 1689 he continued up to Lake of the Woods and traded with the Assiniboine before returning to Montréal (OHF 1989).

In 1717 Robutel de la Noue was sent by then Governor of New France Philippe de Rigaud de Vaudreuil (Vaudreuil) to establish a trading post on the Kaministiquia River (at present day Thunder Bay) and then on to Rainy Lake where he established Fort Tekamanigan. However, that post was soon abandoned (OHF, 1989).

The next notable Euro-Canadian exploration was that of Piere Gaultier de Varennes, Sieur de La Verendrye, who was also born in Trois Rivieres (OHF 1989). In 1727, while posted at Lake Nipigon, La Verendrye was shown a map of a route to a "Western Sea" by a Cree guide by the name Ochagach (Figure 4) and he began exploring the area west of Lake Superior, including the Pigeon River, the Rainy River and Lake of the Woods (Albanese 1984: OHF 1989). Over the next five years La Verendrye and his associates spent considerable effort setting up trade posts, including Fort St. Pierre on Rainy Lake (replacing the abandoned Noue post) in 1731, and Fort St. Charles (near present day Kenora). Trading activities occurred on Lake of the Woods as early as 1732 at Fort St. Charles (Bryce 2010) which connected the Great Lakes trade routes to the Winnipeg River. The post at Fort St. Pierre was abandoned around 1758 during the Seven Year's War.

At the conclusion of the Seven Year's War the territory where these posts were located came under British rule and the rights to the fur trade fell into the hands of the Hudson's Bay (HBC) and

North West (NWC) companies (Voorhis 1930). The HBC built Lac La Pluie House two miles (3.5 km) downstream of Rainy Lake near the former Fort St. Pierre in 1818 to compete with the NWCs Fort Lac La Pluie (Rainy Lake House), which was established further downstream, past the falls, sometime between 1775 and 1787 (OHF 1989). When the two companies merged only Lac La Pluie House remained in operation. The post was surrounded by a stockade 10 feet (3 m) high (Voorhis 1930). In 1830 the post was renamed Fort Frances after a visit by HBC Governor Sir George Simpson and his wife Lady Frances Simpson (OHF 1989). The post remained operational until it was destroyed by fire in 1903, and was an important supply depot during the period of settlement expeditions to the Rainy River District and the Prairies beyond (OHF 1989). The HBC also established Hungry Hall House in 1850 on the right (north) bank of the Rainy River, three miles (5 km) upstream of its outlet at Lake of the Woods (Voorhis 1930). The post operated until *circa* 1880.

As the routes became more widely documented, and the importance of the fur trade began to wane in the mid-19th century, they were increasingly used to bring early settlers into the area. In 1857 engineer Simon Dawson was commissioned to survey a route to move settlers from Lake Superior to the Red River settlement in Manitoba. The route, to be known as the Dawson Trail, or the Dawson Road, began at present day Thunder Bay and followed a road to Shebandowan Lake, from where it followed a water route to Rainy Lake and Fort Frances. From Fort Frances the route followed the Rainy River and Lake of the Woods. Originally the route would have followed the Winnipeg River to Lake Winnipeg and then on to the Red River Settlement (Figure 5). However, in the end the route disembarked at the northwest part of Lake of the Woods and followed an overland road to its destination. Construction of the roads began in 1868, and even before it was completed it was used in 1870 by Colonel Garnet Wolesley and his men to put down the Red River Rebellion of Louis Riel and the Métis. The Dawson Trail was used throughout the 1870s and 1880s, but with the coming of the railway between Fort William (Thunder Bay) and Winnipeg the route was all but abandoned.

The next major episode in the development of the region occurred in 1895 when a party of lumbermen from Bemidji, Minnesota moved a small sawmill overland to the Rapid River (upstream from Rainy River) then over to where the Manitoba and Southwestern Railway had planned to build the railway bridge, at the present Study Area (RRR, 1994). In 1898 the mill was purchased by the Beaver Mills Lumber Company and the mill workers constructed a small settlement around the mill, and became known as Beaver Mills (RRR, 1994). Survey of the area began in 1899, and in 1900 construction of the steel railway bridge was underway. All of the steel and other material for the bridge had been way-billed as 'Rainy River', rather than Beaver Mills, and that point in the railway, and soon the surrounding town, became known as Rainy River (RRR, 1994). When the railway was completed the town was joined to locations south in Minnesota and north to the Canadian National Railway.

1.2.3 Recent Reports

Other than the existing historic documentation, the Study Area has not been documented in recent archaeological assessments. No archaeological assessments within 50 m of the Study

Area have been identified. Earlier archaeological surveys conducted for non-consulting activities have occurred and are discussed below in Section 1.3.3.

1.3 ARCHAEOLOGICAL CONTEXT

1.3.1 The Natural Environment

Although the Study Area is technically situated within the Canadian Shield physiographic region the specific project area lies within the Rainy River Clay Plain, which lies along the Rainy River and runs from Rainy Lake in the east to Lake of the Woods in the west, comprising an area of approximately 235,000 ha (580,000 acres) (Hills and Morwick 1944). The soils of the clay plain have developed over clay and silt deposits in areas covered by glacial Lake Agassiz or on materials brought in by the earlier Keewatin ice lobe which were then modified by the actions of Lake Agassiz (Hills and Morwick 1944). Soils along the Rainy River are typically lacustrine or alluvial clays. The project property is composed entirely of Bluettt series clay soils which have moderately poor drainage, but are generally level and stone free (OIP 1984). Most of the soil types surrounding the project property, including Devlin clay loam and Atwood clay loam exhibit imperfect drainage and gently sloping topography. Immediately to the west of the project property the soil is composed of La Vallee silt loam, which is a well-drained soil type. However, it is also characterized by moderate to steep slope and so provides less advantageous habitation use then its good drainage would suggest.

With respect to water resources the project property is in a very advantageous position. It is situated immediately on the Rainy River and across from the mouth of the Baudette River located on the Minnesota side of the Rainy River. The Rainy River has its source at Rainy Lake, approximately 120 km east of the Study Area. Rainy Lake is part of a chain of lakes that also gives rise to the Pigeon River which runs east to Lake Superior. Three kilometres upstream on the Ontario side are Miller's Creek and the Kaunamaekauk River. Further upstream on the Minnesota side the Rapid River enters the Rainy River. Most importantly, however, the Rainy River connects Lake of the Woods to Lake Superior, and also provides an entrance to the Mississippi River drainage further south in Minnesota.

The natural forest cover of the area is Great Lakes-St. Lawrence forest, dominated by white, red and Jack pine. Other coniferous species include black and white spruce and balsam fir. Deciduous species include bur oak, mountain maple, trembling aspen and white birch (Haywood, 1989).

1.3.2 Pre-contact Aboriginal Resources

The Study Area has been potentially occupied from 7000 BC until the present day. A summary of the culture history for the northern Lake Superior shoreline is provided in **Table 1** and discussed further below.

Project Summary

The following general summary of the possible archaeological resources and occupation north of the Lake Superior shoreline is based on Bray and Epp 1984, Dawson 1983, Government of Ontario 1997, Hamilton 2013, Hinshelwood 2004, Mason 2002, Morris 1943, Ross and Arthurs 1979 and Wright 1995-2004. A more specific discussion of the archaeological resources in the Rainy River area can be found in Section 1.3.3 below.

Table 1 Cultural Chronology of North-Western Ontario

Period	Groups	Time Period	Comments
Paleo-Indian	Plano Group	7000 - 5000 BC	Unfluted projectile points; big game hunters; small camps along strandlines
Archaic	Shield Archaic	5000 - 500 BC	Seasonal camps; cold hammering of native copper
Initial Woodland	Laurel Culture	500 BC - 1000 AD	Introduction of pottery; evidence for exchange networks
Terminal Woodland	Blackduck Culture	1000 - 1650 AD	Fabric-impressed globular ceramic vessels
Contact Aboriginal	Various Algonkian Groups	1650 - 1850 AD	Early European contact and fur trade
Late Historic	Euro-Canadian	1850 AD - present	European settlement and treaties

The area between Lake of the Woods and Lake Superior was either beneath the Wisconsin Glacier or submerged under glacial Lake Agassiz until approximately 8,200 BC, known as the Moorehead phase, when the waters receded and spruce forest emerged (Haywood 1989). However, a few hundred years after this, known as the Emerson Phase, the ice sheet re-advanced and raised the level of Lake Agassiz so that the Rainy River area was re-submerged. Around 7,500 BC the ice sheet began its last retreat and the waters of Lake Agassiz began receding again, at around 7,000 BC the pine and deciduous forest that would characterize the area began to emerge. At about that time Paleo-Indian groups began moving into Northwestern Ontario from the west or south. Although there is some evidence of early, fluted point using Palaeo-Indian peoples in northern Minnesota (Buhta *et al.* 2011) there is, as yet, no such evidence for the Rainy River District. The Plano phase of the Paleo-Indian culture (7000 - 5000 BC) includes a variety of temporal and regional variations in tool sets composed of unfluted points. Plano sites tend to be found on the beaches of the Upper Great Lakes and former beaches on the shores of glacial lakes (strandlines), most notably for the Rainy River area strandlines associated with the Campbell phase of Lake Agassiz, which dates between 7,900 and 7,500 BC (Haywood 1989).

The Shield Archaic period (5000 - 500 BC) in Northern Ontario is evidenced by campsites throughout the Canadian Shield. Early Shield Archaic hunters followed the same subsistence patterns as Plano hunters. As the Continental Glacier receded and the glacial lakes dried, Archaic hunters moved farther into the interior of Northern Ontario following caribou and moose populations. Tool technologies were adapted to include axes, adzes and chisels in response to the developing northern forests. Stone tools are generally ground or polished rather than the chipped and flaked tools that occurred in the Plano period and early Archaic. The addition of

copper as a raw material led to the production of a more specialized Southern Shield Archaic tool set that included a variety of tools for woodworking and more commonly fishing. Fishing technology grew to include copper harpoons, fish hooks and large gaff hooks. In addition to tool technology development, ceremonial burial practices developed in the Southern Shield Archaic period to include the practice of depositing grave goods. There was also an increase in trade with groups throughout the Great Lakes region, with trade networks extending into Southern Ontario and the American Midwest. Although the evidence of Archaic occupation in the Rainy River District is limited, it has been documented west of the Town of Stratton and in sites on the Minnesota side of the Rainy River.

The Initial Woodland period in Northern Ontario (500 BC - 1000 AD) is characterized by the introduction of ceramics as part of the Laurel culture. There is no evidence that ceramic technology developed independently in Northern Ontario, instead, the skill level indicates the introduction of a new group of people into Northern Ontario. Settlement patterns of the Initial Woodland period indicate seasonal settlement generally along major watercourses. Subsistence continued to depend more heavily on hunting in the interior of Northern Ontario and on fishing in the Upper Great Lakes Region. New tool technologies include net sinkers, which have been found at sites along the shore of Lake Superior and red ochre appears to have been used as pigment. The practice of using burial mounds was also adopted during the Initial Woodland period, and is particularly notable during the Laurel Tradition of the Middle Woodland period (Wright, 1967).

The Terminal Woodland period (1000 - 1650 AD) is marked by changes in the shape of ceramic artifacts. Whereas Initial Woodland ceramics were generally conical in shape with stamped decoration, Terminal Woodland ceramics were globular and fabric or cord-impressed. As with the introduction of Laurel pottery, there is no evidence that Terminal Woodland Blackduck ceramics developed in Northern Ontario. Throughout the Terminal Woodland, sites become larger and more extensive although they remain seasonal in nature. Villages were likely composed of extended families or hunting bands. Rock paintings also appear during the Terminal Woodland.

The Algonkian culture moved into Northern Ontario during the Terminal Woodland and is identified through the development of new pottery types. Small scrapers and projectile points used for hunting and fur processing become an integral component of the stone tool set as well as bone awls and copper knives, fish hooks and scrapers. Algonkian groups became more mobile as food sources became sparser and seasonally unreliable as the climate changed during the Little Ice Age (*circa* 1550 AD). Trade networks with Iroquoian villages to the south were established allowing Algonkian hunters to exchange furs for agricultural goods.

1.3.3 Previously Identified Archaeological Sites and Surveys

In order that an inventory of archaeological resources could be compiled, the registered archaeological site records kept by the Ontario Ministry of Tourism, Culture and Sport (MTCS) were consulted. In Ontario, information concerning archaeological sites is stored in the ASDB maintained by the MTCS. This database contains archaeological sites registered according to

the Borden system. Under the Borden system, Canada is divided into grid blocks based on latitude and longitude. A Borden Block is approximately 13 km east to west and approximately 18.5 km north to south. Each Borden Block is referenced by a four-letter designator and sites within a block are numbered sequentially as they are found. The Study Area under review is within Borden Block DkKj.

Information concerning specific site locations is protected by provincial policy, and is not fully subject to the *Freedom of Information and Protection of Privacy Act*. The release of such information in the past has led to looting or various forms of illegally conducted site destruction. Confidentiality extends to all media capable of conveying location, including maps, drawings, or textual descriptions of a site location. The MTCS will provide information concerning site location to the party or an agent of the party holding title to a property, or to a licensed archaeologist with relevant cultural resource management interests.

An examination of the ASDB has shown that no archaeological sites have been registered within a 1 km radius (in Ontario) of the Study Area. No archaeological assessment studies have been undertaken within 50 m of the Study Area (personal communication, Robert von Bitter July 28, 2015; Government of Ontario n.d.). On the Minnesota side of the Rainy River one documented archaeological site containing confirmed Woodland period artifacts and historic period material from lumbering and railroad activity has been documented directly across the river and within 1.2 km of the Study Area (personal communication, Thomas Cinadr July 28, 2015; Minnesota Historic Preservation Office n.d.). Another two reported (but not yet confirmed) historic period sites associated with lumbering are located less than 3 km upstream (east) of the Study Area.

There have been some research focused archaeological studies in the general Rainy River area. Walter Kenyon conducted fieldwork on several burial mounds sites distributed along the Canadian side of the Rainy River, including Hungry Hall Mounds 1 and 2, Mount Point, Armstrong Mound, Pithers Point Mound and Oak Point Island Mound, between 1957 and 1961 (Kenyon 1986). For his thesis on palaeo-environments and Palaeo-Indian occupation of the Rainy River District Norman Haywood compiled data from existing and widely dispersed private and publicly held artifact collections and from his own field program in 1986 that mapped and tested Campbell phase strandlines (Haywood 1989). Based on the results of his work confirmed Palaeo-Indian artifacts were identified at strandlines located in the central and eastern portions of his study region, between the towns of Pinewood and Fort Frances. However, the confirmed Archaic period artifacts were located above the Campbell strandlines, west and north of the town of Stratton, which is located in the centre of the study region. All of the confirmed Woodland period artifacts were located east of Stratton (Haywood 1989). Clearly there are Woodland period mound sites all along the Rainy River, and there is a known Woodland period site west of the Study Area on the Minnesota side of the Rainy River. Nevertheless, from the limited number of known or documented sites in the Rainy River District this is a notable phenomenon.

Finally, although not directly related to the Study Area, C.S. "Paddy" Reid completed an extensive inventory of pre and post contact archaeological sites and pictograph and petroglyph sites in the eastern and northern portions of Lake of the Woods in 1976 and 1977

(Reid 1977). This work documented the long and widespread use of Lake of the Woods, and in particular noted a corridor of safer passage along the eastern and northern shore of the lake, and the importance of the route through Lake of the Woods and along the Rainy River as a pre and post contact transportation hub.

1.3.4 Existing Conditions

The north part of the proposed project Study Area incorporates a parcel of approximately 1.2 ha adjacent to the Rainy River (Figure 2). The north side of the parcel is bordered by the active railway line and trestle bridge. The south side of the parcel is bordered by the existing operational border crossing station and international bridge at the end of Ellen Street. The east end of the project area is a cleared cart trail between the rail line and the border crossing station, being approximately the half-way point between the Rainy River and B Street (Figure 2). The south part of the proposed project study area incorporates approximately 0.25 ha of land located south of the border crossing station and international bridge (figure 2). At present the Study Area is composed of forest and meadow ground cover, although some small portion of the south part may be previously disturbed (Figure 2). The grade of the project area is generally level.

2.0 Field Methods

The Stage 1 archaeological assessment compiled the available information concerning any known and/or potential archaeological heritage resources within the Study Area. This Stage 1 archaeological assessment was completed under archaeological consulting license P1084 issued to Paige Glenen, M.Sc., by the MTCS.

No property inspection was conducted at this time and any areas that are deemed to be disturbed, wet, or retaining low archaeological potential otherwise will be documented during the Stage 2 archaeological assessment.

3.0 Analysis and Conclusions

Archaeological potential is established by determining the likelihood that archaeological resources may be present on a subject property. Stantec applied archaeological potential criteria commonly used by the MTCS (Government of Ontario 2011) to determine areas of archaeological potential within the Study Area. These variables include proximity to previously identified archaeological sites, distance to various types of water sources, soil texture and drainage, glacial geomorphology, elevated topography and the general topographic variability of the area.

Distance to modern or ancient water sources is generally accepted as the most important determinant of past human settlement patterns and, considered alone, may result in a determination of archaeological potential. However, any combination of two or more other criteria, such as well-drained soils or topographic variability, may also indicate archaeological potential. Finally, extensive land disturbance can eradicate archaeological potential (Wilson and Horne 1995).

Distance to water is an essential factor in archaeological potential modeling. When evaluating distance to water it is important to distinguish between water and shoreline, as well as natural and artificial water sources, as these features affect site locations and types to varying degrees. The MTCS categorizes water sources in the following manner:

- Primary water sources: lakes, rivers, streams, creeks;
- Secondary water sources: intermittent streams and creeks, springs, marshes and swamps;
- Past water sources: glacial lake shorelines, relic river or stream channels, cobble beaches, shorelines of drained lakes or marshes; and
- Accessible or inaccessible shorelines: high bluffs, swamp or marshy lake edges, sandbars stretching into marsh.

The Study Area is located immediately adjacent to the Rainy River, and has approximately 80 m of river frontage. The Rainy River is both a source of potable water and food and plant resources but is also a documented important transportation route in both the pre and post contact periods.

Although no archaeological sites have been found within one kilometre of the Study Area, there is a known Woodland period site within 1.2 km of the Study Area on the Minnesota side of the river and there are several Middle Woodland burial mound sites located up and downstream of the Study Area. Both Plano period Palaeo-Indian and Archaic period artifacts are known from upstream of the Town of Rainy River. As such, the pre-contact Aboriginal archaeological potential of the Study Area is judged to be high.

Similarly, given the location of the Study Area in close proximity to water bodies and documented evidence of fur trading activity and campsites downstream of the area, the post-contact Aboriginal archaeological potential of the Study Area is also judged to be moderate to high.

Finally, considering the evidence for Euro-Canadian exploration, fur trading activities, early settlement routes to the Prairies, and the early 20th century railway immediately adjacent, the historic Euro-Canadian archaeological potential of the Study Area was judged to be high.

Archaeological potential assigned across the Study Area is illustrated in Figure 3. All modern potable water sources retain archaeological potential around them. Archaeological potential is also retained by early transportation corridors related to both Aboriginal and Euro-Canadian activities within the Study Area. Although there may be some small part of the south Study Area that has been previously disturbed this would need to be confirmed during a Stage 2 assessment and until that time the entirety of the project Study Area is considered to contain archaeological potential.

4.0 Recommendations

The Stage 1 background research resulted in the determination that a Stage 2 archaeological assessment will be required. Since it is not feasible to conduct a pedestrian survey on the property due to current ground cover the Stage 2 archaeological assessment will follow standard survey procedures for test pit survey outlined in Section 2.1.2 of *the Standard and Guidelines for Consultant Archaeologists* (Government of Ontario 2011) as follows:

- Space test pits at maximum intervals of 5 m (400 test pits per hectare) in areas less than 300 m form any feature of archaeological potential;
- Test pit to within 1 m of built structures (both intact and ruins), or until test pits show evidence of recent ground disturbance.

All test pitting will involve excavating test pits that are approximately 30 centimetres in diameter and excavated five centimetres into sterile subsoil. The soils will be examined for stratigraphy, cultural features, or evidence of fill. All soil will be screened through six millimetre mesh hardware cloth to facilitate the recovery of small artifacts and then used to backfill the pit.

The Ontario Ministry of Tourism, Culture and Sport is asked to review the results presented and to accept this report into the Ontario Provincial Register of Archaeological Reports.

5.0 Advice on Compliance with Legislation

This report is submitted to the Minister of Tourism, Culture and Sport as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c 0.18. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the Ministry of Tourism, Culture and Sport, a letter will be issued by the ministry stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.

It is an offence under Sections 48 and 69 of the *Ontario Heritage Act* for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed fieldwork on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeological Reports referred to in Section 65.1 of the *Ontario Heritage Act*.

Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48(1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48(1) of the *Ontario Heritage Act*.

The *Cemeteries Act*, R.S.O. 1990 c. C.4 and the *Funeral, Burial and Cremation Services Act*, 2002, S.O. 2002, c.33 (when proclaimed in force) require that any person discovering human remains must notify the police or coroner and the Registrar of Cemeteries at the Ministry of Consumer Services.

Archaeological sites recommended for further archaeological fieldwork or protection remain subject to Section 48(1) of the *Ontario Heritage Act* and may not be altered, or have artifacts removed from them, except by a person holding an archaeological license.

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7.0 Maps

All maps will follow on succeeding pages.

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Revised: 2015-07-31 By: ncrukshank

July 2015
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Notes
1. Coordinate System: NAD 1983 UTM Zone 15N
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Legend
- Project Area
- Watercourse
- Road
- Waterbody
- Wooded Area

Client/Project

Baudette International Bridge
Rainy River, ON
Stage 1 Archaeological Assessment

Figure No.
1

Title

Site Location

V:\01225\active\other_pc\193802870\GIS\MXD\193802870_Fig02_StudyArea.mxd
Revised: 2015-07-31 By: ncrukshank

July 2015
Project No. 193802870

Stantec

Legend

Project Area

Client/Project

Baudette International Bridge
Rainy River, ON
Stage 1 Archaeological Assessment

Figure No.

2

Title

Study Area

Notes

Coordinate System: NAD 1983 UTM Zone 15N

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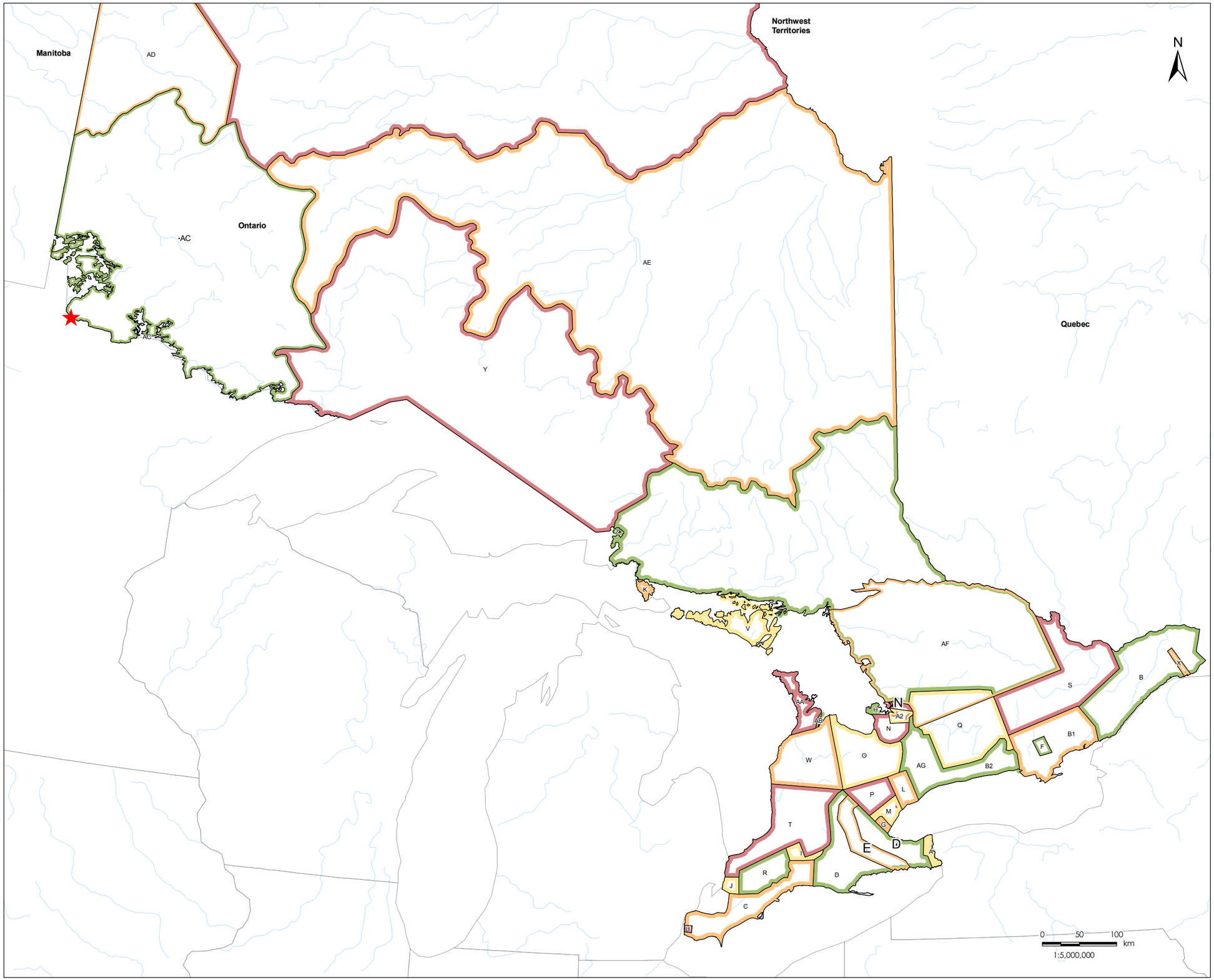

Stantec

Legend

★ Site Location

- **A** Treaty No. 381, May 9th, 1781 (Mississauga and Chippewa)
- **B** Crawford's Purchase, October 9th, 1783 (Algonquin and Iroquois)
- **B1** Crawford's Purchase, October 9th, 1783 (Mississauga)
- **B2** Crawford's Purchases, 1784, 1787 And 1788 (Mississauga)
- **A2** John Collins' Purchase, 1785 (Chippewa)
- **C** Treaty No. 2, May 19th, 1790 (Odawa, Chippewa, Pottawatomi, and Huron)
- **D** Treaty No. 3, December 2nd, 1792 (Mississauga)
- **E** Haldimand Tract:from the Crown to the Mohawk, 1793
- **F** Tyendinaga:from the Crown to the Mohawk, 1793
- **G** Treaty No. 3 3/4:from the Crown to Joseph Brant, October 24th, 1795
- **H** Treaty No. 5, May 22nd, 1798 (Chippewa)
- **I** Treaty No. 6, September 7th, 1796 (Chippewa)
- **J** Treaty No. 7, September 7th, 1796 (Chippewa)
- **L** Treaty No. 13, August 1st, 1805 (Mississauga)
- **M** Treaty No. 13A, August 2nd, 1805 (Mississauga)
- **N** Treaty No.16, November 18th, 1815 (Chippewa)
- **O** Treaty No. 18, October 17th, 1818 (Chippewa)
- **P** Treaty No. 19, October 28th 1818 (Chippewa)
- **Q** Treaty No. 20, November 5th, 1818 (Chippewa)
- **R** Treaty No. 21, March 9th, 1819 (Chippewa)
- **S** Treaty No. 27, May 31st, 1819 (Mississauga)
- **T** Treaty No. 27½, April 25th, 1825 (Ojibwa and Chippewa)
- **U** Treaty No. 35, August 13th, 1833 (Wyandot or Huron)
- **V** Treaty No. 45, August 9th, 1836 (Chippewa and Odawa, "For All Indians To Reside Thereon")
- **W** Treaty No. 45½, August 9th, 1836 (Saugeen)
- **X** Treaty No. 57, June 1st, 1847 (Iroquois of St. Regis)
- **Z** Treaty No. 61, September 9th, 1850 (Robinson Treaty:Ojibwa)
- **AA** Treaty No. 72, October 30th, 1854 (Chippewa)
- **AB** Treaty No. 82, February 9th, 1857 (Chippewa)
- **AF** Williams Treaty, October 31st and November 15th, 1923 (Chippewa and Mississauga)
- **AG** Williams Treaty, October 31st, 1923 (Chippewa)

Treaty boundaries adapted from MNR July 1980, based on map compiled by J.L. Morris, 2 March 1931. For cartographic representation only.

Notes

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Baudette International Bridge
Rainy River, ON
Stage 1 Archaeological Assessment

Figure No.

3

Title

Treaties and Purchases (Adapted from Morris 1943)

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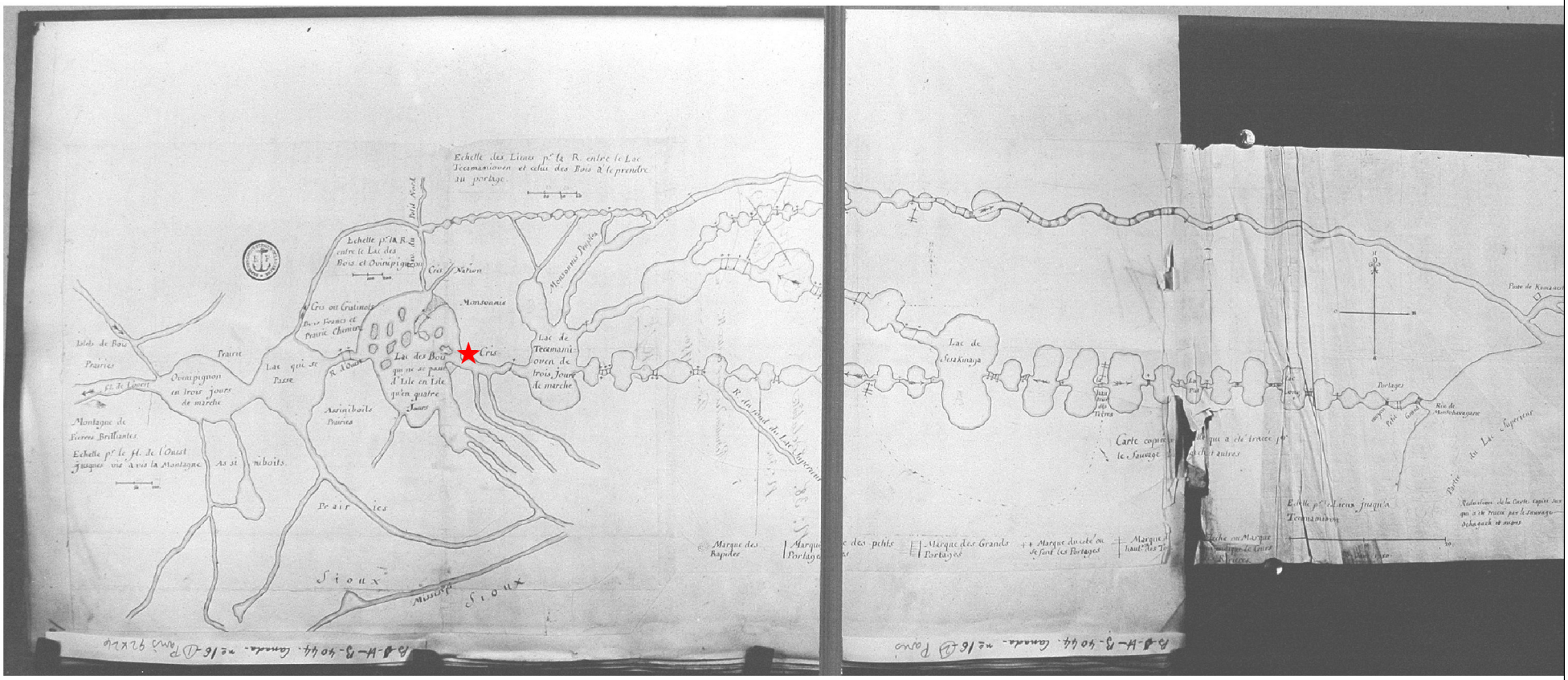
Revised: 2015-07-31 By: ncrulkshank



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Legend

★ Site Location

Notes

1. Historic map not to scale.
2. Map: TITLE(S): Map shewing line of route between Lake Superior and Red River settlement [cartographic material] / compiled by A. L. Russell PUBLISHER: Toronto : Hunter Rose & Co., 1868

Client/Project

Baudette International Bridge
Rainy River, ON
Stage 1 Archaeological Assessment

Figure No.

4

Title

Study Area as Shown Over 1727 Ochagach Map

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Legend

★ Site Location

Notes

1. Historic map not to scale.

Client/Project

Baudette International Bridge
Rainy River, ON
Stage 1 Archaeological Assessment

Figure No.

5

Title

Study Area Shown on Settlement Route Between Lake Superior and Red River Settlement

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Revised: 2015-07-31 By: ncrukshank

July 2015
Project No. 193802870

Stantec

Legend

- Project Area
- Area of Archaeological Potential - Stage 2 Recommended; Test Pitting at 5 metre intervals

Client/Project

Baudette International Bridge
Rainy River, ON
Stage 1 Archaeological Assessment

Figure No.

6

Title

Zones of Archaeological Potential

Notes

Coordinate System: NAD 1983 UTM Zone 15N

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8.0 Closure

This report has been prepared for the sole benefit of Ontario Ministry of Transportation and may not be used by any third party without the express written consent of Stantec Consulting Ltd. and Ontario Ministry of Transportation. Any use which a third party makes of this report is the responsibility of such third party.

We trust this report meets your current requirements. Please do not hesitate to contact us should you require further information or have additional questions about any facet of this report.

Yours truly,

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C8: Stage 2 Archaeological Assessment Report

Stage 2 Archaeological Assessment, Baudette/Rainy River International Bridge Replacement on Highway 11, Town of Rainy River (GWP 6046- 10-00)

Lots 25 and 26, Section 28 Rainy River Range, Atwood Township, Rainy River District, Ontario

Prepared for:
Ministry of Transportation
Northwestern Region
615 James Street South
Thunder Bay ON P7E 6P6

Prepared by:
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Ottawa, ON, K2C 3G4

Licensee: Patrick Hoskins
License Number: P415
PIF Number: P415-0062-2015
ORIGINAL REPORT

File No. 193802870

December 10, 2015

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Executive Summary

The Ontario Ministry of Transportation (MTO), in cooperation with the Minnesota Department of Transportation (MnDOT), has retained Stantec Consulting Ltd. to undertake the Preliminary Design and Class Environmental Assessment (Class EA) Study for the replacement of the Baudette/Rainy River International Bridge on Highway 11 in the Town of Rainy River. This study was initiated because the existing Baudette/Rainy River bridge is classified as fracture critical and has been identified for replacement by the MTO and MnDOT. The existing bridge can currently support normal weight loads but is not permitted to carry overweight loads or over-dimensional loads.

The bridge is located over the Rainy River on Minnesota Trunk Highway 72 and Ontario Provincial Highway 11. The route provides access to and from Baudette, Minnesota and Rainy River, Ontario. The bridge provides a connection between the United States and Canada and full-service 24 hour Port of Entry facilities. The project is currently in the preliminary design phase and includes environmental studies on both sides of the border. As part of those environmental studies a Stage 1 archaeological assessment was completed for the area of land where the proposed new bridge location alternatives may be on the Ontario side of the project. The Stage 1 report concluded that the proposed project area is located in an area of high archaeological potential and Stage 2 assessment using a test pit excavation strategy was recommended.

The objectives of the Stage 2 assessment were to document archaeological resources present within the study area, to determine whether any of the resources might be artifacts or archaeological sites with cultural heritage value or interest requiring further assessment, and to provide specific Stage 3 direction for the protection, management and/or recovery of the identified archaeological resources (Government of Ontario 2011). No archaeological resources were documented during the Stage 2 assessment of the proposed replacement for the Baudette/Rainy River International Bridge. **Therefore it is recommended that no further archaeological assessment of the property is required**.

The Ontario Ministry of Tourism, Culture and Sport (MTCS) is asked to review the results presented and to accept this report into the Ontario Public Register of Archaeological Reports.

The Executive Summary highlights key points from the report only; for complete information and findings, the reader should examine the complete report.

PROJECT PERSONNEL

Archaeology Project Director:	Jim Wilson, MA, Principal, Regional Discipline Leader, Archaeology (P001)
Archaeology Task Manager:	Colin Varley, MA, Associate, Senior Archaeologist (P002)
Project Manager:	Gregg Cooke, P.Eng., AVS
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Ministry of Tourism, Culture and Sport:	Robert von Bitter

1.0 Project Summary

1.1 DEVELOPMENT CONTEXT

The Ontario Ministry of Transportation (MTO), in cooperation with the Minnesota Department of Transportation (MnDOT), has retained Stantec Consulting Ltd. to undertake the Preliminary Design and Class Environmental Assessment (Class EA) Study for the replacement of the Baudette/Rainy River International Bridge on Highway 11 in the Town of Rainy River. This study was initiated because the existing Baudette/Rainy River Bridge is classified as fracture critical and has been identified for replacement by the MTO and MnDOT. The existing bridge can currently support normal weight loads but is not permitted to carry overweight loads or over-dimensional loads.

The bridge is located over the Rainy River on Minnesota Trunk Highway 72 and Ontario Provincial Highway 11 (Figure 1). The route provides access to and from Baudette, Minnesota and Rainy River, Ontario. The bridge provides a connection between the United States and Canada and full-service 24 hour Port of Entry facilities. The project is currently in the preliminary design phase and includes environmental studies on both sides of the border. As part of those environmental studies a Stage 1 archaeological assessment was completed for the area of land where the proposed new bridge location alternatives may be on the Ontario side of the project under the *Class Environmental Assessment for Provincial Transportation Facilities* (Stantec 2015). The Stage 1 assessment identified that all of the project area demonstrated criteria identifying elevated archaeological potential and a Stage 2 assessment was recommended.

The objectives of the Stage 2 assessment were to document archaeological resources present within the study area, to determine whether any of the resources might be artifacts or archaeological sites with cultural heritage value or interest requiring further assessment, and to provide specific Stage 3 direction for the protection, management and/or recovery of the identified archaeological resources (Government of Ontario 2011).

Permission to enter the project area to conduct the Stage 2 archaeological assessment was provided to Stantec by the Ministry of Transportation and Canada Border Services Agency.

1.2 HISTORICAL CONTEXT

The Stage 2 archaeological assessment examined a project area composed of two sections, a preferred and an alternate project area, measuring approximately 0.95 hectares (ha) located on either side of the existing border crossing and bridge abutment along Ellen Street in the Town of Rainy River (Figure 2). The property is located immediately along approximately 80 m of shoreline of the Rainy River and is located in parts of Lots 25 and 26, Section 28 Rainy River Range, Atwood Township, Rainy River District. The property is undeveloped and composed of forested and some cleared land.

1.2.1 Post-Contact Aboriginal Resources

The post-contact Aboriginal occupation of Northern Ontario was heavily influenced by an influx of European explorers, traders and missionaries. The growing fur trade and the designation of animal skins as money led to changes in economic and social organization patterns (Dawson 1983: 34).

During the initial expansion of the fur trade in Northern Ontario, settlement size and population distribution did not shift. Once bands began to congregate along trade routes, joint villages and hunting grounds were set up in relation to fur trading posts. Technologies such as ceramics were phased out and replaced by more convenient European goods such as brass or copper kettles. In contrast, Aboriginal residences continued to be dome-shaped wigwams constructed from locally available materials (Dawson 1983).

The Study Area is situated within the Rainy River District, Ontario. It was not subject to surrender or treaty until Manitoba Treaty Number 3 of October 1873. The land was "surrendered by the Chippewa and Swampy Cree tribes of Indians to Her Majesty". The majority of lands within the treaty area are a part of Ontario. The location of the Study Area in relation to this treaty is illustrated in Figure 3. According to the Canadian government, the treaty was negotiated:

> *"Commencing at a point on the Pigeon River route where the international boundary line between the Territories of Great Britain and the United States intersects the height of land separating the waters running to Lake Superior from those flowing to Lake Winnipeg; thence northerly, westerly and easterly along the height of land aforesaid, following its sinuosities, whatever their course may be, to the point at which the said height of land meets the summit of the watershed from which the streams flow to Lake Nipigon; thence northerly and westerly, or whatever may be its course, along the ridge separating the waters of the Nipigon and the Winnipeg to the height of land dividing the waters of the Albany and the Winnipeg; thence westerly and north-westerly along the height of land dividing the waters flowing to Hudson's Bay by the Albany or other rivers from those running to English River and the Winnipeg to a point on the said height of land bearing north forty-five degrees east from Fort Alexander, at the mouth of the Winnipeg; thence south forty-five degrees west to Fort Alexander, at the mouth of the Winnipeg; thence southerly along the eastern bank of the Winnipeg to the mouth of White Mouth River; thence southerly by the line described as in that part forming the eastern boundary of the tract… "*
>
> (Morris 1943:39)

Overall, the treaty allowed for the development of natural resources under both the Canadian federal and provincial government's supervision, with limited rights provided to the original Aboriginal inhabitants (Morrison 1986).

At the time of the early settlement of the area around Rainy River the Ojibwa and Chippewa camped at a place known as "the Pines", approximately one mile (1.6 km) downstream of the present day town site (RRR, 1994).

1.2.2 Historic Euro-Canadian Archaeological Resources and Surveys

The Rainy River District was established in 1885, although it did not become a separate district until 1914. Up to 1914 the area remained part of the Thunder Bay District (Canada Gen Web 2015).

The fur trade developed during the late 17th and 18th centuries as European groups (specifically the French and the British) founded and abandoned a number of trading posts. The earliest Euro-Canadian to travel the Rainy River was Jacques de Noyon, a soldier, explorer and fur trader born in Trois Rivieres, Quebec. In 1688 he travelled to Lake Superior and up the Pigeon River where he spent the winter in the area where Fort Frances is currently located. In 1689 he continued up to Lake of the Woods and traded with the Assiniboine before returning to Montréal (OHF 1989).

In 1717 Robutel de la Noue was sent by then Governor of New France Philippe de Rigaud de Vaudreuil (Vaudreuil) to establish a trading post on the Kaministiquia River (at present day Thunder Bay) and then on to Rainy Lake where he established Fort Tekamanigan. However, that post was soon abandoned (OHF, 1989).

The next notable Euro-Canadian exploration was that of Piere Gaultier de Varennes, Sieur de La Verendrye, who was also born in Trois Rivieres (OHF 1989). In 1727, while posted at Lake Nipigon, La Verendrye was shown a map of a route to a "Western Sea" by a Cree guide by the name Ochagach (Figure 4) and he began exploring the area west of Lake Superior, including the Pigeon River, the Rainy River and Lake of the Woods (Albanese 1984: OHF 1989). Over the next five years La Verendrye and his associates spent considerable effort setting up trade posts, including Fort St. Pierre on Rainy Lake (replacing the abandoned Noue post) in 1731, and Fort St. Charles (near present day Kenora). Trading activities occurred on Lake of the Woods as early as 1732 at Fort St. Charles (Bryce 2010) which connected the Great Lakes trade routes to the Winnipeg River. The post at Fort St. Pierre was abandoned around 1758 during the Seven Years' War.

At the conclusion of the Seven Year's War the territory where these posts were located came under British rule and the rights to the fur trade fell into the hands of the Hudson's Bay (HBC) and North West (NWC) companies (Voorhis 1930). The HBC built Lac La Pluie House two miles (3.5 km) downstream of Rainy Lake near the former Fort St. Pierre in 1818 to compete with the NWCs Fort Lac La Pluie (Rainy Lake House), which was established further downstream, past the falls, sometime between 1775 and 1787 (OHF 1989). When the two companies merged only Lac La Pluie House remained in operation. The post was surrounded by a stockade 10 feet (3 m) high (Voorhis 1930). In 1830 the post was renamed Fort Frances after a visit by HBC Governor Sir George Simpson and his wife Lady Frances Simpson (OHF 1989). The post remained operational until it was destroyed by fire in 1903, and was an important supply depot during the period of settlement expeditions to the Rainy River District and the Prairies beyond (OHF 1989). The HBC also established Hungry Hall House in 1850 on the right (north) bank of the Rainy River, three miles (5 km) upstream of its outlet at Lake of the Woods (Voorhis 1930). The post operated until *circa* 1880.

As the routes became more widely documented, and the importance of the fur trade began to wane in the mid-19th century, they were increasingly used to bring early settlers into the area. In 1857 engineer Simon Dawson was commissioned to survey a route to move settlers from Lake Superior to the Red River settlement in Manitoba. The route, to be known as the Dawson Trail, or the Dawson Road, began at present day Thunder Bay and followed a road to Shebandowan Lake, from where it followed a water route to Rainy Lake and Fort Frances. From Fort Frances the route followed the Rainy River and Lake of the Woods. Originally the route would have followed the Winnipeg River to Lake Winnipeg and then on to the Red River Settlement (Figure 5). However, in the end the route disembarked at the northwest part of Lake of the Woods and followed an overland road to its destination. Construction of the roads began in 1868, and even before it was completed it was used in 1870 by Colonel Garnet Wolesley and his men to put down the Red River Rebellion of Louis Riel and the Métis. The Dawson Trail was used throughout the 1870s and 1880s, but with the coming of the railway between Fort William (Thunder Bay) and Winnipeg the route was all but abandoned.

The next major episode in the development of the region occurred in 1895 when a party of lumbermen from Bemidji, Minnesota moved a small sawmill overland to the Rapid River (upstream from Rainy River) then over to where the Manitoba and Southwestern Railway had planned to build the railway bridge, at the present Study Area (RRR, 1994). In 1898 the mill was purchased by the Beaver Mills Lumber Company and the mill workers constructed a small settlement around the mill, and became known as Beaver Mills (RRR, 1994). Survey of the area began in 1899, and in 1900 construction of the steel railway bridge was underway. All of the steel and other material for the bridge had been way-billed as 'Rainy River', rather than Beaver Mills, and that point in the railway, and soon the surrounding town, became known as Rainy River (RRR, 1994). When the railway was completed the town was joined to locations south in Minnesota and north to the Canadian National Railway.

1.3 ARCHAEOLOGICAL CONTEXT

1.3.1 The Natural Environment

Although the Study Area is technically situated within the Canadian Shield physiographic region the specific project area lies within the Rainy River Clay Plain, which lies along the Rainy River and runs from Rainy Lake in the east to Lake of the Woods in the west, comprising an area of approximately 235,000 ha (580,000 acres) (Hills and Morwick 1944). The soils of the clay plain have developed over clay and silt deposits in areas covered by glacial Lake Agassiz or on materials brought in by the earlier Keewatin ice lobe which were then modified by the actions of Lake Agassiz (Hills and Morwick 1944). Soils along the Rainy River are typically lacustrine or alluvial clays. The project property is composed entirely of Bluettt series clay soils which have moderately poor drainage, but are generally level and stone free (OIP 1984). Most of the soil types surrounding the project property, including Devlin clay loam and Atwood clay loam exhibit imperfect drainage and gently sloping topography. Immediately to the west of the project property the soil is composed of La Vallee silt loam, which is a well-drained soil type. However, it is also characterized by moderate to steep slope and so provides less advantageous habitation use then its good drainage would suggest.

With respect to water resources the project property is in a very advantageous position. It is situated immediately on the Rainy River and across from the mouth of the Baudette River located on the Minnesota side of the Rainy River. The Rainy River has its source at Rainy Lake, approximately 120 km east of the Study Area. Rainy Lake is part of a chain of lakes that also gives rise to the Pigeon River which runs east to Lake Superior. Three kilometres upstream on the Ontario side are Miller's Creek and the Kaunamaekauk River. Further upstream on the Minnesota side the Rapid River enters the Rainy River. Most importantly, however, the Rainy River connects Lake of the Woods to Lake Superior, and also provides an entrance to the Mississippi River drainage further south in Minnesota.

The natural forest cover of the area is Great Lakes-St. Lawrence forest, dominated by white, red and Jack pine. Other coniferous species include black and white spruce and balsam fir. Deciduous species include bur oak, mountain maple, trembling aspen and white birch (Haywood, 1989).

1.3.2 Pre-contact Aboriginal Resources

The Study Area has been potentially occupied from 7000 BC until the present day. A summary of the culture history for the northern Lake Superior shoreline is provided in **Table 1** and discussed further below.

The following general summary of the possible archaeological resources and occupation north of the Lake Superior shoreline is based on Bray and Epp 1984, Dawson 1983, Government of Ontario 1997, Hamilton 2013, Hinshelwood 2004, Mason 2002, Morris 1943, Ross and Arthurs 1979 and Wright 1995-2004. A more specific discussion of the archaeological resources in the Rainy River area can be found in Section 1.3.3 below.

Table 1 Cultural Chronology of North-Western Ontario

Period	Groups	Time Period	Comments
Paleo-Indian	Plano Group	7000 - 5000 BC	Unfluted projectile points; big game hunters; small camps along strandlines
Archaic	Shield Archaic	5000 - 500 BC	Seasonal camps; cold hammering of native copper
Initial Woodland	Laurel Culture	500 BC - 1000 AD	Introduction of pottery; evidence for exchange networks
Terminal Woodland	Blackduck Culture	1000 - 1650 AD	Fabric-impressed globular ceramic vessels
Contact Aboriginal	Various Algonkian Groups	1650 - 1850 AD	Early European contact and fur trade
Late Historic	Euro-Canadian	1850 AD - present	European settlement and treaties

The area between Lake of the Woods and Lake Superior was either beneath the Wisconsin Glacier or submerged under glacial Lake Agassiz until approximately 8,200 BC, known as the Moorehead phase, when the waters receded and spruce forest emerged (Haywood 1989).

However, a few hundred years after this, known as the Emerson Phase, the ice sheet re-advanced and raised the level of Lake Agassiz so that the Rainy River area was re-submerged. Around 7,500 BC the ice sheet began its last retreat and the waters of Lake Agassiz began receding again. At around 7,000 BC the pine and deciduous forest that would characterize the area began to emerge. At about that time Paleo-Indian groups began moving into Northwestern Ontario from the west or south. Although there is some evidence of early, fluted point using Palaeo-Indian peoples in northern Minnesota (Buhta *et al.* 2011) there is, as yet, no such evidence for the Rainy River District. The Plano phase of the Paleo-Indian culture (7000 - 5000 BC) includes a variety of temporal and regional variations in tool sets composed of unfluted points. Plano sites tend to be found on the beaches of the Upper Great Lakes and former beaches on the shores of glacial lakes (strandlines), most notably for the Rainy River area strandlines associated with the Campbell phase of Lake Agassiz, which dates between 7,900 and 7,500 BC (Haywood 1989).

The Shield Archaic period (5000 - 500 BC) in Northern Ontario is evidenced by campsites throughout the Canadian Shield. Early Shield Archaic hunters followed the same subsistence patterns as Plano hunters. As the Continental Glacier receded and the glacial lakes dried, Archaic hunters moved farther into the interior of Northern Ontario following caribou and moose populations. Tool technologies were adapted to include axes, adzes and chisels in response to the developing northern forests. Stone tools are generally ground or polished rather than the chipped and flaked tools that occurred in the Plano period and early Archaic. The addition of copper as a raw material led to the production of a more specialized Southern Shield Archaic tool set that included a variety of tools for woodworking and more commonly fishing. Fishing technology grew to include copper harpoons, fish hooks and large gaff hooks. In addition to tool technology development, ceremonial burial practices developed in the Southern Shield Archaic period to include the practice of depositing grave goods. There was also an increase in trade with groups throughout the Great Lakes region, with trade networks extending into Southern Ontario and the American Midwest. Although the evidence of Archaic occupation in the Rainy River District is limited, it has been documented west of the Town of Stratton and in sites on the Minnesota side of the Rainy River.

The Initial Woodland period in Northern Ontario (500 BC - 1000 AD) is characterized by the introduction of ceramics as part of the Laurel culture. There is no evidence that ceramic technology developed independently in Northern Ontario, instead, the skill level indicates the introduction of a new group of people into Northern Ontario. Settlement patterns of the Initial Woodland period indicate seasonal settlement generally along major watercourses. Subsistence continued to depend more heavily on hunting in the interior of Northern Ontario and on fishing in the Upper Great Lakes Region. New tool technologies include net sinkers, which have been found at sites along the shore of Lake Superior and red ochre appears to have been used as pigment. The practice of using burial mounds was also adopted during the Initial Woodland period, and is particularly notable during the Laurel Tradition of the Middle Woodland period (Wright, 1967).

The Terminal Woodland period (1000 - 1650 AD) is marked by changes in the shape of ceramic artifacts. Whereas Initial Woodland ceramics were generally conical in shape with stamped decoration, Terminal Woodland ceramics were globular and fabric or cord-impressed. As with the introduction of Laurel pottery, there is no evidence that Terminal Woodland Blackduck ceramics developed in Northern Ontario. Throughout the Terminal Woodland, sites become larger and more extensive although they remain seasonal in nature. Villages were likely composed of extended families or hunting bands. Rock paintings also appear during the Terminal Woodland.

The Algonkian culture moved into Northern Ontario during the Terminal Woodland and is identified through the development of new pottery types. Small scrapers and projectile points used for hunting and fur processing become an integral component of the stone tool set as well as bone awls and copper knives, fish hooks and scrapers. Algonkian groups became more mobile as food sources became sparser and seasonally unreliable as the climate changed during the Little Ice Age (*circa* 1550 AD). Trade networks with Iroquoian villages to the south were established allowing Algonkian hunters to exchange furs for agricultural goods.

1.3.3 Previously Identified Archaeological Sites and Surveys

In order that an inventory of archaeological resources could be compiled, the registered archaeological site records kept by the Ontario Ministry of Tourism, Culture and Sport (MTCS) were consulted. In Ontario, information concerning archaeological sites is stored in the ASDB maintained by the MTCS. This database contains archaeological sites registered according to the Borden system. Under the Borden system, Canada is divided into grid blocks based on latitude and longitude. A Borden Block is approximately 13 km east to west and approximately 18.5 km north to south. Each Borden Block is referenced by a four-letter designator and sites within a block are numbered sequentially as they are found. The Study Area under review is within Borden Block DkKj.

Information concerning specific site locations is protected by provincial policy, and is not fully subject to the *Freedom of Information and Protection of Privacy Act*. The release of such information in the past has led to looting or various forms of illegally conducted site destruction. Confidentiality extends to all media capable of conveying location, including maps, drawings, or textual descriptions of a site location. The MTCS will provide information concerning site location to the party or an agent of the party holding title to a property, or to a licensed archaeologist with relevant cultural resource management interests.

An examination of the ASDB for the Stage 1 assessment identified that no archaeological sites have been registered within a 1 km radius (in Ontario) of the Study Area. No archaeological assessment studies have been undertaken within 50 m of the Study Area (personal communication, Robert von Bitter July 28, 2015; Government of Ontario n.d.).

On the Minnesota side of the Rainy River one documented archaeological site containing confirmed Woodland period artifacts and historic period material from lumbering and railroad activity has been documented directly across the river and within 1.2 km of the Study Area

(personal communication, Thomas Cinadr July 28, 2015; Minnesota Historic Preservation Office n.d.). Another two reported (but not yet confirmed) historic period sites associated with lumbering are located less than 3 km upstream (east) of the Study Area.

Other than the existing historic documentation, the Study Area has only been documented in the Stage 1 archaeological assessment previously completed by Stantec (Stantec 2015). The Stage 1 assessment identified that archaeological potential existed for all of the proposed project area (Stantec 2015). No other archaeological assessments within 50 m of the Study Area have been identified. Earlier archaeological surveys conducted for non-consulting activities in the general area of Rainy River are discussed below.

Walter Kenyon conducted fieldwork on several burial mounds sites distributed along the Canadian side of the Rainy River, including Hungry Hall Mounds 1 and 2, Mount Point, Armstrong Mound, Pithers Point Mound and Oak Point Island Mound, between 1957 and 1961 (Kenyon 1986). For his thesis on palaeo-environments and Palaeo-Indian occupation of the Rainy River District Norman Haywood compiled data from existing and widely dispersed private and publicly held artifact collections and from his own field program in 1986 that mapped and tested Campbell phase strandlines (Haywood 1989). Based on the results of his work confirmed Palaeo-Indian artifacts were identified at strandlines located in the central and eastern portions of his study region, between the towns of Pinewood and Fort Frances. However, the confirmed Archaic period artifacts were located above the Campbell strandlines, west and north of the town of Stratton, which is located in the centre of the study region. All of the confirmed Woodland period artifacts were located east of Stratton (Haywood 1989). Clearly there are Woodland period mound sites all along the Rainy River, and there is a known Woodland period site west of the Study Area on the Minnesota side of the Rainy River. Nevertheless, from the limited number of known or documented sites in the Rainy River District this is notable.

Finally, although not directly related to the Study Area, C.S. "Paddy" Reid completed an extensive inventory of pre and post contact archaeological sites and pictograph and petroglyph sites in the eastern and northern portions of Lake of the Woods in 1976 and 1977 (Reid 1977). This work documented the long and widespread use of Lake of the Woods, and in particular noted a corridor of safer passage along the eastern and northern shore of the lake, and the importance of the route through Lake of the Woods and along the Rainy River as a pre and post contact transportation hub.

1.3.4 Existing Conditions

The north part of the Stage 2 project area incorporates a parcel of approximately 0.7 ha adjacent to the Rainy River (Figure 2). The north limit of the project area is bordered by the fence demarcating the south boundary of the railway lands. The south side of the parcel is bordered by the existing operational border crossing station and international bridge at the end of Ellen Street. The east end of the project area is a foot path paved with concrete pavers that runs between the rail line and the Port of Entry facility (Figure 2). The south part of the proposed project study area incorporates approximately 0.25 ha of land located south of the Port of Entry facility and international bridge (Figure 2).

2.0 Field Methods

The Stage 2 archaeological assessment was conducted on September 22 and 23, 2015 under archaeological consulting license P415 issued to Patrick Hoskins, MA, of Stantec by the Ontario Ministry of Tourism, Culture and Sport. The weather was partly cloudy and warm on both days and visibility was excellent. At no time were field, lighting, or weather conditions detrimental to the recovery of archaeological resources. Photos 1, 4, 8 and 12 confirm that conditions met the requirements for Stage 2 archaeological assessment, as per the Standards and Guidelines for Consultant Archaeologists (Section 7.8.6, Standard 1a; Government of Ontario 2011). The photos provide an illustration of the Stage 2 assessment methods, as well as locations and directions (Figure 6).

Once the field team arrived on site it was evident that there was variable archaeological potential across the project area, differences that were not able to be determined in the Stage 1 report. In accordance with Section 2.1.5 of the *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011) those areas which were neither sloped, disturbed or in low and wet or poorly drained conditions were subject to Stage 2 test pit survey at 5 metre intervals for the areas identified (Photos 1 and 9). Each test pit was approximately 30 centimetres in diameter and excavated five centimetres into sterile subsoil (Photos 2 and 6). The soils were then examined for stratigraphy, cultural features, or evident of fill. All soil was screened (Photo 9) through six millimetre mesh hardware cloth to facilitate the recovery of small artifacts and then used to backfill the pit.

On the north side of the current bridge the project area was composed of three areas of archaeological potential (Areas 1, 2 and 3) with areas of low, poorly drained ground, or areas of slope associated with the construction of the bridge and Port of Entry facility (Figure 6). Area 1 was located closest to the Rainy River and is composed of relatively level ground with forest ground cover and composed of a sandy clay loam topsoil that was very friable and screened very easily (Photo 1). Closer to the river edge there was some amount of small stones and gravel noted in the topsoil matrix. Subsoil in Area 1 was composed of a stony, grey/tan sandy soil (Photo 2). Topsoil depth throughout Area 1varied between 18 and 27 cm. Area 1 measured approximately 40 m x 35 m. At the south side of Area 1, approximately 8 m north of the abutment there is a small drainage channel. Testing on the south side of Area 1 ended at the base of the constructed bridge abutment (Photos 3 and 4).

Between Area 1 and Area 2 there is a 9 m wide band of low, wet ground that runs across the width of the north project area (Photo 5) (Figure 6). East of the low area the ground rose in elevation and test pit survey resumed in what was designated Area 2. The ground cover in Area 2 was composed of tall grasses. The soil matrix in Area 2 is very different from Area 1, being composed of a deep, very dark organic silt soil above a heavy grey clay subsoil (Photo 6). Topsoil depth in Area 2 ranged from 27 to 40 cm in depth, with the deepest soils being located toward the west end of Area 2. Moving east in Area 2 the soils became shallower and drier. Area 2 was tested to the north up to the fence line that demarcates the railway lands. At the south side test pit survey stopped at a low, poorly drained swale between the elevated Area 2

and the bottom of the constructed bridge abutment (Photo 7). Test pit survey in Area 2 covered approximately 45 m x 30 m.

Test pit survey continued across Area 2 to a point where the grade began to slope up slightly moving to the east. Based on both the rise in elevation and the change in soil matrix and ground cover this was designated Area 3. Area 3 is considerably narrower than either Area 1 or 2, approximately 18 m wide, due to the increased width of the Port of Entry facility to the south (Figure 6). Between the elevated testable area on the north and the constructed parking area on the south there is a gully of poorly drained soil that also acts as a drainage channel for run off (Photo 8). With the gully and the slope from the parking area there was only room for two rows of test pits in Area 3. The soil matrix in Area 3 was similar to Area 1, with a dry, friable clay loam topsoil, medium brown in colour, over a denser clay subsoil of a lighter brown colour. Topsoil depth in Area 3 ranged between 18 and 24 cm. Test pit survey in Area 3 ended at the constructed foot path between the railway and the Port of Entry facility (Photos 10 and 11).

An alternate project development area is located on the south side of the current bridge. The south project area measures approximately 90 m east-west and 27 m north-south. Ground conditions in the south project area are composed of sloped grade from the construction of the bridge abutment and a staircase and walkway from the river up to the Port of Entry facility, with smaller areas of previously disturbed ground and a low, poorly drained swale (Photos 12-16). Two small areas, one a narrow area to the south of the walkway and the other an irregularly shaped area closer to the river, were suitable for test pit survey. Soils in these areas were similar to those noted in Area 1.

The soil matrix in Area 2 suggests that this area was formerly composed of poorly drained marshy ground and it appears that the construction of the current bridge structure and its associated abutments and Port of Entry facility, as well as the earlier construction of the railway, has considerably altered the natural hydrology of the project area and in its natural state the project area may have had less archaeological potential than was identified in the Stage 1 assessment.

3.0 Record of Finds

The Stage 2 archaeological assessment was conducted employing the methods described in Section 2.0. An inventory of the documentary record generated by fieldwork is provided in Table 2 below.

Table 2 Inventory of the Documentary Record

Document Type	Current Location of Document Type	Additional Comments
9 pages of field notes	Stantec office in Ottawa	In original field book and scanned into project folder
3 maps provided by client	Stantec office in Ottawa	Hard and digital copies in project file
35 digital photographs	Stantec office in Ottawa	Stored digitally in project file

No material culture remains were identified or collected during the Stage 2 assessment of either the north or south project areas.

4.0 Recommendations

No archaeological resources were documented during the Stage 2 assessment of the proposed replacement for the Baudette/Rainy River International Bridge. Therefore it is recommended that no further archaeological assessment of the property is required.

The Ontario Ministry of Tourism, Culture and Sport is asked to review the results presented and to accept this report into the Ontario Provincial Register of Archaeological Reports.

5.0 Advice on Compliance with Legislation

This report is submitted to the Minister of Tourism, Culture and Sport as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c 0.18. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the Ministry of Tourism, Culture and Sport, a letter will be issued by the ministry stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.

It is an offence under Sections 48 and 69 of the *Ontario Heritage Act* for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed fieldwork on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeological Reports referred to in Section 65.1 of the *Ontario Heritage Act*.

Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48(1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48(1) of the *Ontario Heritage Act*.

The *Cemeteries Act*, R.S.O. 1990 c. C.4 and the *Funeral, Burial and Cremation Services Act*, 2002, S.O. 2002, c.33 (when proclaimed in force) require that any person discovering human remains must notify the police or coroner and the Registrar of Cemeteries at the Ministry of Consumer Services.

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7.0 Images

Photo 1 Excavating test pits along in Area 1, along north shoreline fo Rainy River, facing east

Photo 2 Typical test pit stratigraphy in Area 1

Photo 3 Showing built-up slope for bridge abutment, looking south from Area 1, bridge approach in background

Photo 4 Showing built-up slope for bridge abutment at shoreline of Rainy River, looking southeast from Area 1, bridge approach in background

Photo 5 Looking east to Area 2 across low, wet area, from Area 1

Photo 6 Typical test pit stratigraphy, Area 2

Photo 7 Low, wet area at south side of Area 2, at bottom of bridge abutment

Photo 8 Looking north-east at start of Area 3 showing low, wet gully on east side and higher, testable area on west

Photo 9 Excavating test pits in Area 3, looking west

Photo 10 Walkway berm from railway to Port of Entry facility, across Area 3

Photo 11 Walkway across north end of Area 3

Photo 12 Area 4, showing general ground conditions on south side of bridge abutment, including slope at right and low, wet gully in centre

Photo 13 Area 4, showing exisitng path and staircase up to Port of Entry facility and low, wet gully on left. Test pit survey area at right.

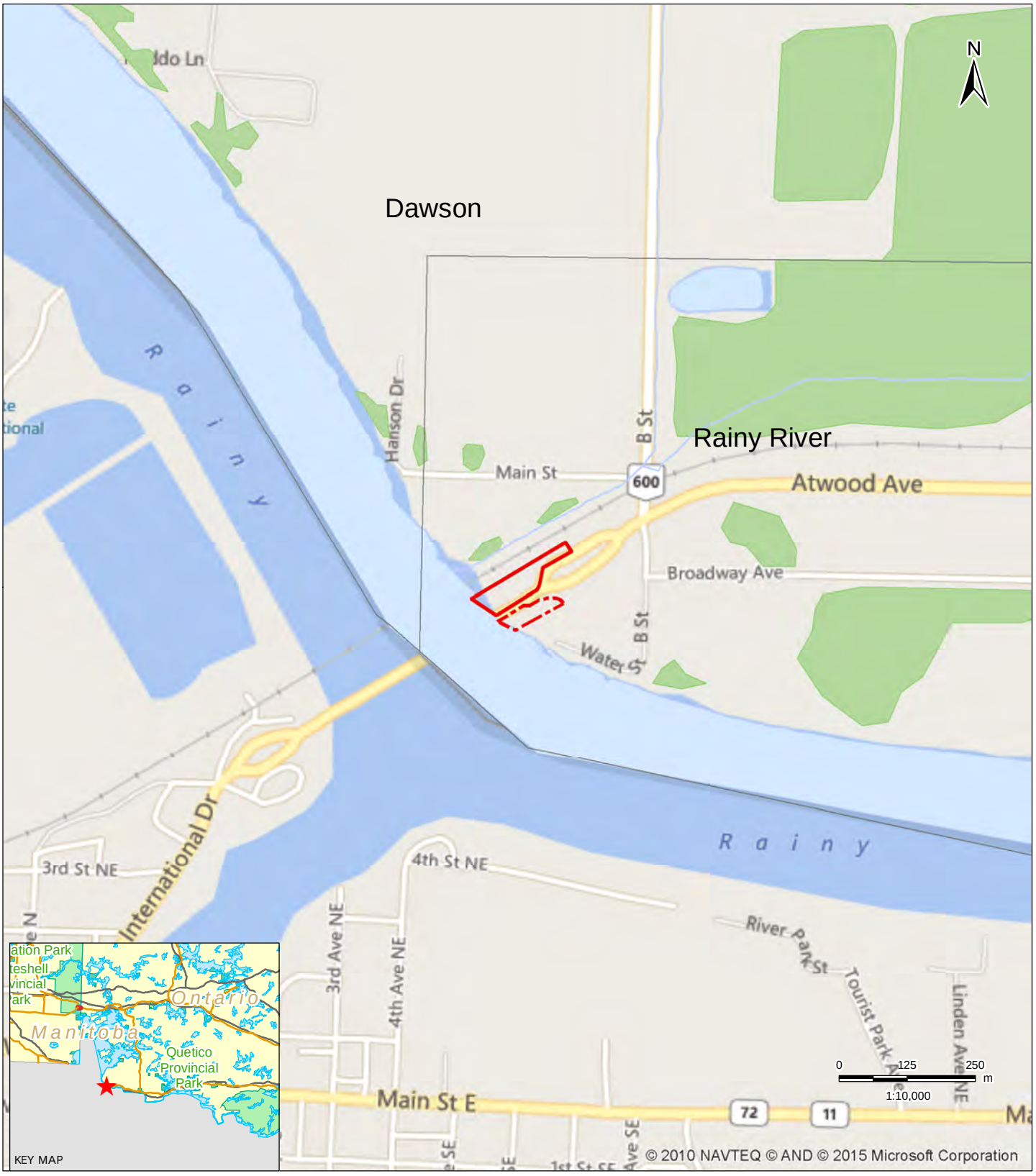
Photo 14 Water running through gulley in Area 4

Photo 15 Area of disturbed, mounded soils at south end of Area 4, east of bridge abutment

Photo 16 Area of disturbed, mounded soils from constructed access road, at south end of Area 4

8.0 Maps

All maps will follow on succeeding pages.



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Revised: 2015-12-06 By: ncrukshank

December 2015
Project No. 193802870

Stantec

Notes
1. Coordinate System: NAD 1983 UTM Zone 15N
2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2013.
3. Microsoft Product Screenshots used with permission.

Legend
- Project Area
- Project Area - Alternate
- Watercourse
- Waterbody
- Wooded Area

Client/Project
Baudette International Bridge
Rainy River, ON
Stage 2 Archaeological Assessment

Figure No.
1

Title
Site Location

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Revised: 2015-12-06 By: ncrukshank

December 2015
Project No. 193802870

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Legend

Project Area

Project Area - Alternate Location

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Rainy River, ON
Stage 2 Archaeological Assessment

Figure No.

2

Title

Study Area

Notes

Coordinate System: NAD 1983 UTM Zone 15N

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2. Aerial imagery provided by ESRI.

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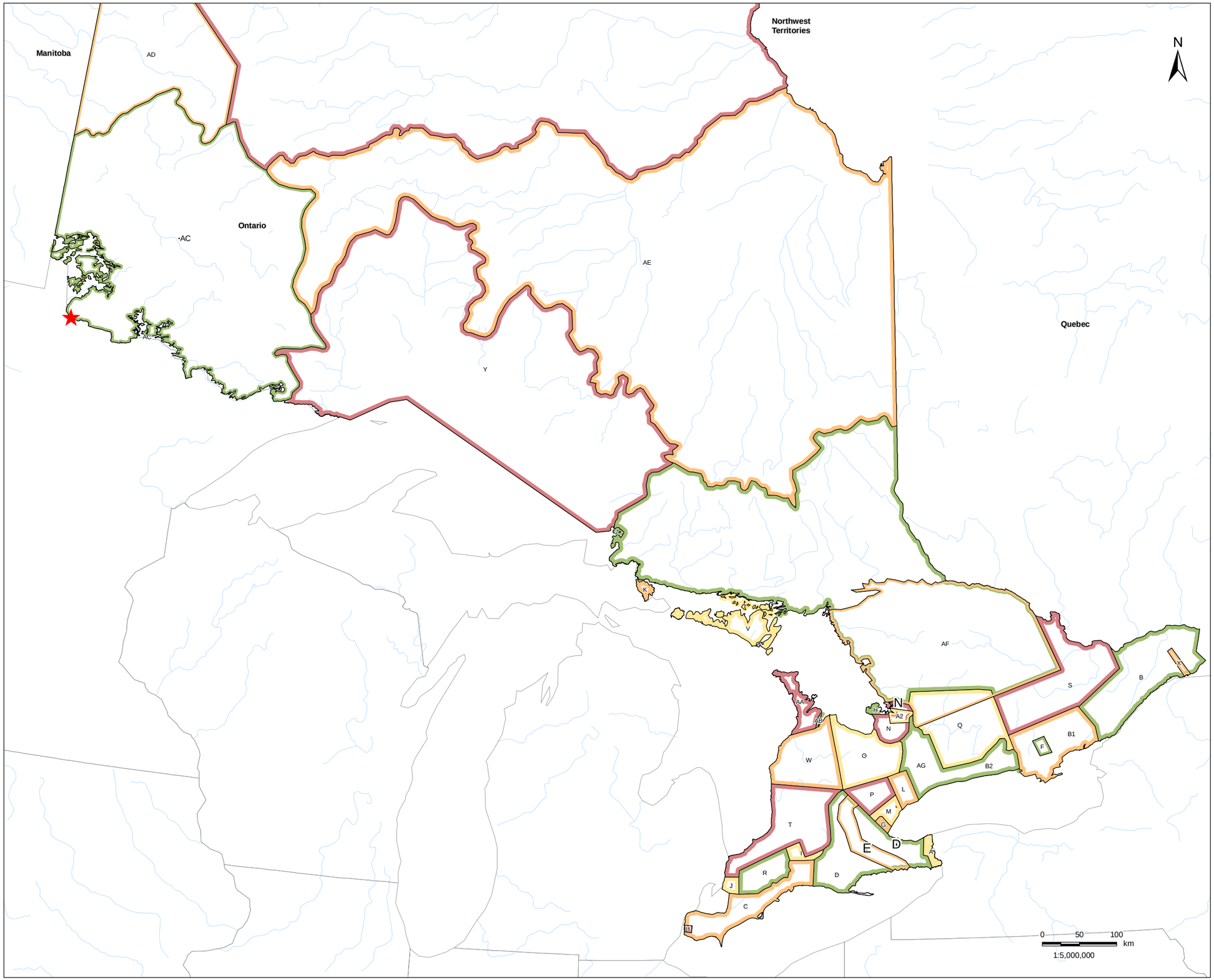

Legend

★ Site Location

A Treaty No. 381, May 9th, 1781 (Mississauga and Chippewa)
B Crawford's Purchase, October 9th, 1783 (Algonquin and Iroquois)
B1 Crawford's Purchase, October 9th, 1783 (Mississauga)
B2 Crawford's Purchases, 1784, 1787 And 1788 (Mississauga)
A2 John Collins' Purchase, 1785 (Chippewa)
C Treaty No. 2, May 19th, 1790 (Odawa, Chippewa, Pottawatomi, and Huron)
D Treaty No. 3, December 2nd, 1792 (Mississauga)
E Haldimand Tract:from the Crown to the Mohawk, 1793
F Tyendinaga:from the Crown to the Mohawk, 1793
G Treaty No. 3 3/4:from the Crown to Joseph Brant, October 24th, 1795
H Treaty No. 5, May 22nd, 1798 (Chippewa)
I Treaty No. 6, September 7th, 1796 (Chippewa)
J Treaty No. 7, September 7th, 1796 (Chippewa)
L Treaty No. 13, August 1st, 1805 (Mississauga)
M Treaty No. 13A, August 2nd, 1805 (Mississauga)
N Treaty No.16, November 18th, 1815 (Chippewa)
O Treaty No. 18, October 17th, 1818 (Chippewa)
P Treaty No. 19, October 28th 1818 (Chippewa)
Q Treaty No. 20, November 5th, 1818 (Chippewa)
R Treaty No. 21, March 9th, 1819 (Chippewa)
S Treaty No. 27, May 31st, 1819 (Mississauga)
T Treaty No. 27½, April 25th, 1825 (Ojibwa and Chippewa)
U Treaty No. 35, August 13th, 1833 (Wyandot or Huron)
V Treaty No. 45, August 9th, 1836 (Chippewa and Odawa, "For All Indians To Reside Thereon")
W Treaty No. 45½, August 9th, 1836 (Saugeen)
X Treaty No. 57, June 1st, 1847 (Iroquois of St. Regis)
Z Treaty No. 61, September 9th, 1850 (Robinson Treaty:Ojibwa)
AA Treaty No. 72, October 30th, 1854 (Chippewa)
AB Treaty No. 82, February 9th, 1857 (Chippewa)
AF Williams Treaty, October 31st and November 15th, 1923 (Chippewa and Mississauga)
AG Williams Treaty, October 31st, 1923 (Chippewa)

Treaty boundaries adapted from MNR July 1980, based on map compiled by J.L. Morris, 2 March 1931. For cartographic representation only.

Notes

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Figure No.

3

Title

Treaties and Purchases (Adapted from Morris 1943)

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Revised: 2015-07-31 By: ncruikshank

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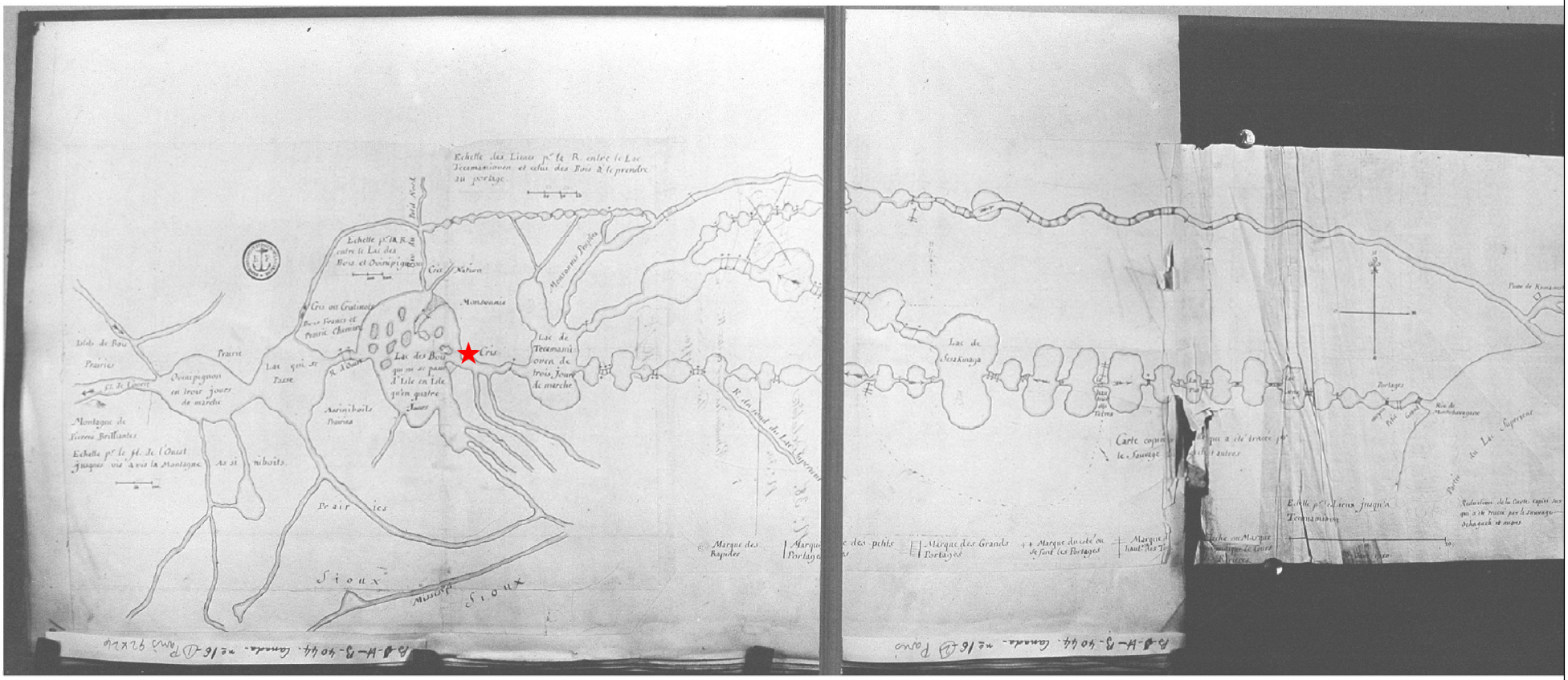

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Legend

★ Site Location

Notes

1. Historic map not to scale.
2. Map: TITLE(S): Map shewing line of route between Lake Superior and Red River settlement [cartographic material] / compiled by A. L. Russell PUBLISHER: Toronto : Hunter Rose & Co., 1868

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Rainy River, ON
Stage 2 Archaeological Assessment

Figure No.

4

Title

Study Area as Shown Over 1727 Ochagach Map

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Legend

★ Site Location

Notes

1. Historic map not to scale.

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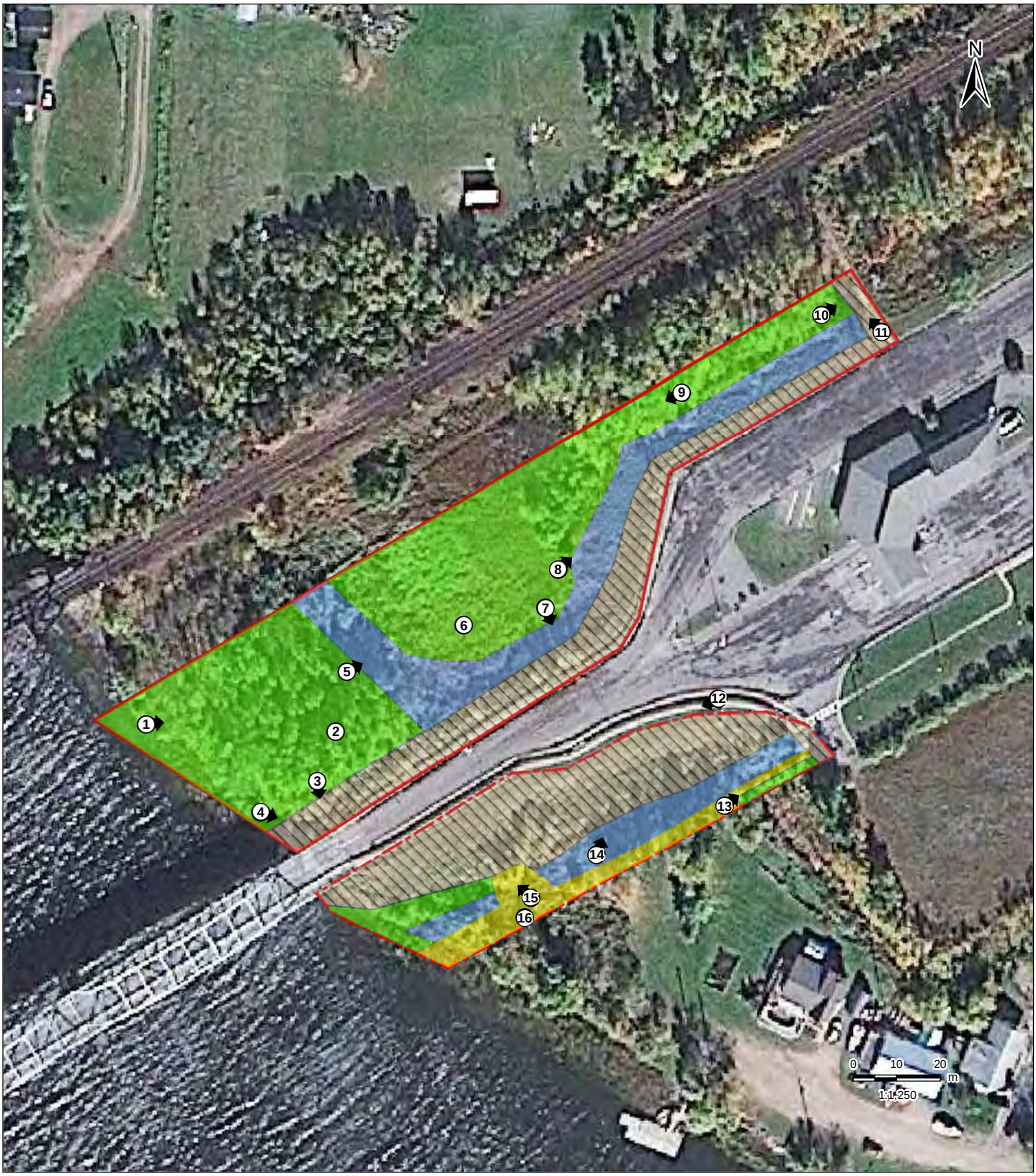
Baudette International Bridge
Rainy River, ON
Stage 2 Archaeological Assessment

Figure No.

5

Title

Study Area Shown on Settlement Route Between Lake Superior and Red River Settlement



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Revised: 2015-12-06 By: ncrukshank

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Notes

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Legend

- Photo Location and Direction
- 360 Photo
- Test Pit Survey at 5m Intervals
- Previously Disturbed; Low Archaeological Potential
- Slope; Low Archaeological Potential
- Wet Ground; Low Archaeological Potential
- Project Area
- Project Area - Alternate

Client/Project

Baudette International Bridge
Rainy River, ON
Stage 2 Archaeological Assessment

Figure No.

6

Title

Stage **2** Results and Photo Locations

9.0 Closure

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We trust this report meets your current requirements. Please do not hesitate to contact us should you require further information or have additional questions about any facet of this report.

Yours truly,

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C9: Terrestrial Existing Conditions Report

Terrestrial Ecosystems Existing Conditions Report: Preliminary Design and Class Environmental Assessment – Baudette/Rainy River International Bridge Replacement on Highway 11, Town of Rainy River (GWP 6046-10-00)

FINAL REPORT

Prepared for:
Ontario Ministry of Transportation – Northwestern Region

Prepared by:
Stantec Consulting Ltd.
200 – 835 Paramount Drive
Stoney Creek, Ontario L8J 0B4

FILE 193802870
January 21, 2016

Sign-off Sheet

This document entitled Terrestrial Ecosystems Existing Conditions Report: Preliminary Design and Class Environmental Assessment – Baudette/Rainy River International Bridge Replacement on Highway 11, Town of Rainy River (GWP 6046-10-00) was prepared by Stantec Consulting Ltd. ("Stantec") for the account of Ontario Ministry of Transportation (the "Client"). Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

Prepared by _____

(signature)

Sean Spisani, B.Sc., ERGC, Senior Ecologist

Reviewed by _____

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David Charlton, M.Sc., P.Ag., LEED® AP, Senior Principal

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1.0 INTRODUCTION

The Ontario Ministry of Transportation (MTO), in cooperation with the Minnesota Department of Transportation (MnDOT), has retained Stantec Consulting Ltd. to undertake the Preliminary Design and Class Environmental Assessment (Class EA) Study for the replacement of the Baudette/Rainy River International Bridge on Highway 11 in the Town of Rainy River (the Project). The bridge provides access between the United States and Canada with 24-hour, full-service Port of Entry facilities in the City of Baudette and the Town of Rainy River. The study will follow the *Class EA for Provincial Transportation Facilities* (MTO, 2000) process for a Group 'B' project. It includes the development and evaluation of a range of reasonable bridge replacement alternatives; construction staging and traffic management options; and the selection of a Preferred Plan. The location of the Study Area is shown in **Figure 1**.

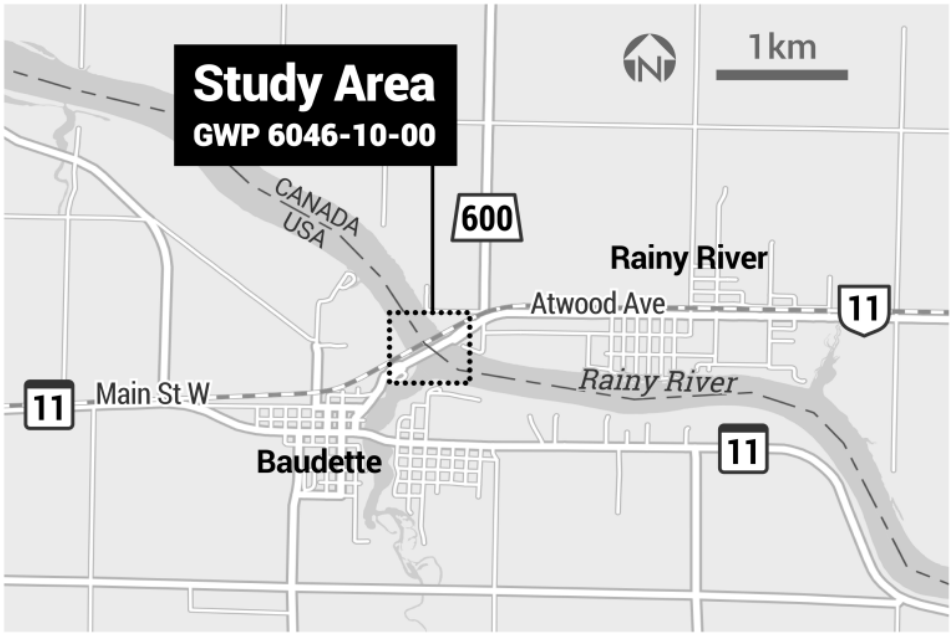

Figure 1 Baudette/Rainy River International Bridge Replacement Study Area

This report provides a description of terrestrial ecosystems and terrestrial species at risk within the Study Area as supporting documentation to the Class EA. Supporting documentation was compiled in accordance with Section 3.2 - Terrestrial Ecosystems and Section 4 – Wildlife and Wildlife Management of the *Environmental Reference for Highway Design* (MTO, 2013).

The purpose of this report is to:

- Describe existing vegetation communities, wildlife, and wildlife habitat conditions;
- Document sensitivities of vegetation communities, wildlife species and habitats; and,
- Identify required permits and/or other approvals related to terrestrial ecosystems.

For this report the Study Area is the 120 metre (m) zone of investigation around the existing Baudette/Rainy River Bridge and replacement alternatives on the Canadian side of the international border (**Figure 3**, **Appendix A**). The replacement alternatives are located along the existing alignment, including:

- Alignment Alternative 1 - slightly offset from the existing alignment to the north (**Appendix B.1**);
- Alignment Alternative 2 - slightly offset from the existing alignment to the south (**Appendix B.2**); and,
- Alignment Alternative 3 - replacement on the existing alignment, with temporary (construction phase) modular bridges on either the north or south (**Appendix B.3**)

Fish and fish habitat are described for the Project in a separate report (Stantec, 2015).

2.0 METHODOLOGY

2.1 BACKGROUND DATA AND AGENCY CONSULTATION

The Study Area is located within the jurisdiction of the Fort Francis District of the Ministry of Natural Resources and Forestry (MNRF). The MNRF was contacted to obtain available data for the Study Area. The key agency contact person was:

- Rachel Hill, Fort Francis District Planner, MNRF

MNRF's Natural Heritage Information Centre online database (NHIC, 2015) and Land Information Ontario (LIO, 2015) Natural Heritage Area Mapping tool were accessed to identify records of species at risk, provincially rare species and significant natural features in the vicinity of the Study Area. MNRF correspondence is provided in **Appendix C**.

Additional background information was obtained from the following resources:

- 2nd Ontario Breeding Bird Atlas (Cadman *et al.*, 2007);
- Atlas of Mammals of Ontario (Dobbyn, 1994);
- Ontario Reptile and Amphibian Atlas (Ontario Nature, 2014);
- Species at Risk in Ontario List (http://www.ontario.ca/environment-and-energy/species-risk-ontario-list); and
- the federal Species at Risk Public Registry (http://www.registrelep-sararegistry.gc.ca/species/default_e.cfm).

2.1.1 Significant Species

Significant species are considered at a number of scales, including globally, nationally and provincially. In Ontario and Canada significant species are those that are provincially rare (with a Provincial S-rank of S1 to S3), are on the Species at Risk in Ontario (SARO) list, on Schedule 1 of the *Species at Risk Act* (SARA) or were assessed as Endangered, Threatened or Special Concern by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) but have not yet been added to Schedule 1.

Provincially Endangered, Threatened and Special Concern species are identified on the SARO list. The Ontario *Endangered Species Act*, 2007 (ESA 2007) prohibits harm or harassment to Threatened or Endangered species, or damage or disturbance to their habitat. The ESA applies on all private and Crown lands in Ontario. Habitat protection under the ESA is typically comprehensive, including all habitats that directly or indirectly support species at risk.

Federally protected Endangered, Threatened and Special Concern species are identified in Schedule 1 of the *Species at Risk Act* (SARA 2002). SARA applies to federally owned lands, with the exception of fish [those species covered by the *Fisheries Act* (FA 1985)] and migratory birds [those species covered by the *Migratory Bird Convention Act* (MBCA 1994)], which are afforded protection on all lands. This report will address migratory birds that are listed on Schedule 1 of the Act and/or covered under the MBCA. The *Fisheries Act* will be addressed in the fisheries specialist report provided under separate cover (Stantec, 2015).

Provincial ranks (S-ranks) are used by the NHIC to set protection priorities for rare species and vegetation communities. They are based on the number or occurrences in Ontario and are not legal designations. By comparing the global and provincial ranks, the status, rarity and the urgency of conservation needs can be ascertained. Species with provincial ranks of S1 to S3, and those tracked by the MNRF, are considered species of conservation concern. Provincial S-ranks are defined as follows:

S1 Critically imperiled; usually fewer than 5 occurrences
S2 Imperiled; usually fewer than 20 occurrences
S3 Vulnerable; usually fewer than 100 occurrences
S4 Apparently secure; uncommon but not rare, usually more than 100 occurrences
S5 Secure; common, widespread and abundant
S-rank followed by a "?" indicates the rank is uncertain

Identification of potentially sensitive native plant species is based on their assigned coefficient of conservatism (CC) value, as determined by Oldham *et al.* (1995). This CC value, ranging from 0 (low) to 10 (high), is based on a species' tolerance of disturbance and fidelity to a specific natural habitat. Species with a CC value of 9 or 10 generally exhibit a high degree of fidelity to a narrow range of habitat parameters.

2.1.2 Species at Risk

The potential for species at risk within the Study Area was evaluated based on a review of background information, agency consultation, and field investigations. Information regarding significant species occurrences and species at risk was obtained from the NHIC online database (NHIC, 2015). The NHIC database was consulted to document the occurrences of significant floral or faunal species in the vicinity of the Study Area. Local MNRF biologists provided current and local information concerning known and potential species at risk in the Study Area (**Appendix C**). This information was used to assist in the assessment of habitats during field investigations and to determine the habitat potential for species at risk in the Study Area.

2.2 FIELD DATA COLLECTION

Field investigations were conducted within the Study Area on August 28, 2015. Investigations documented vegetation communities, vegetation species, wildlife habitat, bird nests, and incidental encounters with wildlife.

2.2.1 Vegetation Communities and Floristic Survey

Vegetation communities within the Study Area were classified according to the *Ecosites of Ontario Operational Draft* (Ministry of Natural Resources (MNR), 2009), using the Ecological Land Classification (ELC) field data cards to collect detailed vegetation community information (Lee *et al.*, 2008). Vegetation communities were delineated on aerial photographs for the entire Study Area and verified in the field on the Canadian side of the border. Data collected included plant species composition and community structure. English colloquial names and scientific binomials of plant species generally follow Newmaster *et al.* (1998). However, many updates to genera, specific epithets and family names have been made to reflect recent taxonomic revisions. The primary source of these updates is Michigan Flora Online (Reznicek et al., 2011).

2.2.2 Wildlife and Wildlife Habitat

2.2.2.1 Nest Surveys

The entire Baudette/Rainy River International Bridge was searched by canoe for the presence of Barn Swallow nests and nests of other species protected by the *Migratory Bird Convention Act*, 1994 (MBCA). As a Threatened species, Barn Swallow and its habitat are also protected under the *ESA 2007*.

2.2.2.2 Significant Wildlife Habitat

The *Significant Wildlife Habitat Technical Guide* (MNR, 2000) and *Mitigation Support Tool* (MNRF, 2014) identify four general categories of Significant Wildlife Habitat (SWH): (a) seasonal concentration areas, (b) rare or specialized habitat, (c) habitat for species of conservation concern, and (d) animal migration corridors. Candidate SWH features were identified in the field and assessed using ELC (Lee *et al.*, 2008), the *Significant Wildlife Habitat Technical Guide* (MNR, 2000), the *Mitigation Support Tool* (MNRF, 2014), and the *Criteria Schedules for Ecoregion 3E* and 5E (MNRF, 2015a-b), which are the nearest available criteria schedules.

Targeted species-use surveys are used to determine if candidate features qualify as confirmed SWH. Targeted species use surveys were not completed for this report, so significant habitats remain candidate and not confirmed, unless incidental observations provided sufficient information to confirm SWH.

3.0 EXISTING ECOLOGICAL CONDITIONS

3.1 BACKGROUND DATA

3.1.1 Physiography

The Study Area is located in Ecoregion 5S, which is dominated by extensive post-glacial Lake Agassiz clay deposits, and is part of a clay plain that extends into Minnesota and Manitoba (Crins *et al.*, 2009). The landscape is relatively flat and poorly drained, with wet ecosystems occurring throughout, including open water, peatlands and swamps. Ecoregion 5S is approximately 58% sparse forest, including deciduous forest, mixed, and coniferous forests. Remaining lands include pasture and major river segments, including the Rainy River.

Ecoregion 5S also corresponds with the Rainy River Forest Section of the Great Lakes-St. Lawrence Forest Region. The Rainy River Forest includes a mix of flora and fauna characteristic of Great Lakes mixed forest (southern species), boreal (northern species) and prairie ecosystems (western species) (Crins *et al.*, 2009). Great Lakes mixed forest species are at their northern range limit and are uncommon in the Rainy River Forest, including sugar maple (*Acer saccharum* ssp. *saccharum*), red maple (*A. rubrum*), black cherry (*Prunus serotina*), American basswood (*Tilia americana*) and green ash (*Fraxinus pennsylvanica*). Typical boreal species frequently occur throughout, including white spruce (*Picea glauca*), black spruce (*P. mariana*), tamarack (*Larix laricina*), eastern white cedar (*Thuja occidentalis*), balsam fir (*Abies balsamea*), willow (*Salix* sp.), trembling aspen (*Populus tremuloides*), speckled alder (*Alnus incana* ssp. *rugosa*) and white birch (*Betula papyrifera*). Typical prairie species are associated with dry clay and rock outcrops, including bur oak (*Quercus macrocarpa*), northern pin oak (*Q. ellipsoidalis*) and American elm (*Ulmus americana*). Some western fauna are at their eastern range limit and have limited occurrences elsewhere in Ontario, including Sharp-tail Grouse, Black-billed Magpie, Western Meadowlark and Franklin's Ground Squirrel (Crins *et al.*, 2009).

3.1.2 Significant Natural Areas

The NHIC and LIO data for the four squares that overlap with the Study Area (**Figure 2**, **Appendix A**) do not include any records of designated natural areas (Provincially Significant Wetlands (PSW), Areas of Natural and Scientific Interest (ANSI), Provincial Parks, Conservation Reserves or known areas of SWH) in the Study Area. Correspondence with MNRF (**Appendix C**) confirmed there are "currently no PSWs, ANSIs, or other special habitat features located in the vicinity (120 m) of the site." Based on this, significant natural areas are considered to be absent from the Study Area.

3.1.3 Species at Risk and Provincially Rare Species

A review of the atlases identified 117 breeding birds, 45 mammals, eight amphibians and six reptiles with ranges that overlap with the Study Area. Thirteen of these species are designated in Ontario and/or Canada as Endangered (two species), Threatened (four species) and Special Concern (seven species), and six additional species are provincially rare (S1-S3). All species identified during the atlas review are listed in **Appendix D**. The bird, mammal, reptile and amphibian range maps are at relatively small scales and do not offer precise locations or detailed information on concentrations or densities of records; for example, the Ontario Breeding Bird Atlas records are provided in 10 kilometre (km) by 10 km square grids.

The NHIC database provides more precise mapping than the atlases (1 km by 1km squares) and is a better indicator of occurrence of significant species, particularly when used in combination with MNRF correspondence. This method also supplements wildlife atlas records with records of insects and plant species. A review of the NHIC database (NHIC, 2015) did not identify any records of species at risk within 1km of the Study Area. All species identified during the review of the NHIC data base are listed in **Appendix D.**

MNRF correspondence (**Appendix C**) indicated that the "bridge replacement has the potential to harm or harass Barn Swallows and/or damage/destroy their protected habitat." The MNRF correspondence continues "there are currently no records indicating that other species at risk…inhabit the bridge site."

Although the NHIC database did not identify any records of species at risk, it did identify nine records of provincially rare (S1-S3) species within 1 km of the Study Area:

- **Plants:** wild licorice (*Glycyrrhiza lepidota*), Leiberg's panicgrass (*Dichanthelium leibergii*), saxifrage (*Micranthese pensylvanica*), prairie white heath (*Symphyotrichum ericoides* var. *pansum*) and rigid sedge (*Carex tentanica*)
- **Mammals:** Franklin's Ground Squirrel, White-tailed Jack Rabbit
- **Insects:** Elusive Clubtail (*Stylurus notatus*), and Grey Copper

3.2 FIELD INVESTIGATIONS

3.2.1 Vegetation

Eleven distinct vegetation communities were identified in the Study Area, including forest, wetland and open water communities that are typical of the Rainy River Forest Section of the Great Lakes-St. Lawrence Forest Region. Constructed communities included infrastructure associated with the United States and Canadian Port of Entry facilities, and constructed

parklands. All vegetation communities are summarized in **Table 1** and mapped on **Figure 3** (**Appendix A**). Representative photos are included in **Appendix E**.

Table 1 Summary of Vegetation Communities

CODE	DESCRIPTION	Vegetation Characteristics
Terrestrial System		
FOD7	Fresh-Moist Lowland Deciduous Forest Ecosite	Deciduous tree species > 75% of canopy cover Dominant species: balsam poplar (*Populus balsamifera*), Manitoba maple (*Acer negundo*), black ash (*Fraxinus nigra*), Tartarian honeysuckle (*Lonicera tatarica*) See photo 3 (**Appendix E**)
Cultural System		
CUW	Cultural Woodland Community Series Ecosite	Tree cover 35-60%; community maintained by anthropogenic-based disturbance Trembling aspen (*Populus tremuloides*), Manitoba maple, peach-leaved willow (*Salix amygdaloides*), willow (*Salix* sp.), red raspberry (*Rubus idaeus* ssp. *strigosus*), prickly rose (*Rosa acicularis*), and cool season graminoids See photos 5-7 (**Appendix E**)
CUM1-1	Dry-Moist Old Field Meadow Type	Tree cover < 25% and shrub cover < 25%; community maintained by anthropogenic-based disturbance
CGL_2	Constructed Parkland	Manicured lawn and gardens associated with developed lands See photo 4 (**Appendix E**)
CV	Constructed	Port of Entry facilities
Wetland System		
CUM1-1/MAM2	Dry-Moist Old Field Meadow / Mineral Meadow Marsh Complex	Tree and shrub cover < 25%; seasonal flooding in low lying areas with herbaceous wetland species See photo 11 (**Appendix E**)
MAM2	Mineral Meadow Marsh Ecosite	Tree and shrub cover < 25%; graminoids dominate; seasonal flooding along shorelines and inland
MAS2	Mineral Shallow Marsh Ecosite	Hydrophytic emergent macrophytes cover > 25%; shoreline communities with prolonged flooding Dominant species: Cattails (*Typha* sp.) See photo 10 (**Appendix E**)
SWT2	Mineral Swamp Thicket Ecosite	Hydrophytic shrubs > 25% cover; shoreline communities with prolonged flooding Dominant species: Missouri willow (*Salix eriocephala*), willow (*Salix sp.*), red-osier dogwood (*Cornus stolonifera*), and groundnut (*Apios americana*) See photos 8-9 (**Appendix E**)

Table 1 Summary of Vegetation Communities

CODE	DESCRIPTION	Vegetation Characteristics
Aquatic System		
SA	Shallow Water Community Class	Submergent vegetation in near-shore areas; permanent water < 2m deep
OAO	Open Aquatic Community Series	No tree, shrub or macrophyte vegetation; water > 2m deep

One provincially rare plant (S3) was observed in the Study Area, wild licorice. This species was observed along the edge of the Cultural Woodland (CUW) and manicured lawn and gardens (CGL_2), south of the Canadian Port of Entry (see photo 4, **Appendix E**). A thorough search for the plant was not conducted and it may be present elsewhere along the river bank and woodland edges. No other rare or highly sensitive plant species were encountered during field surveys.

3.2.2 Wildlife Observations and Wildlife Habitat

3.2.2.1 Nest Surveys

Field investigations determined that there are no bird nests under the existing Baudette/Rainy River International Bridge. The configuration of the bridge is such that it is not expected to provide the necessary protection to attract birds such as Barn Swallows. The bridge is a metal grate structure that does not offer protection from the elements, and the piers do not provide sufficient overhang to protect a bird nesting underneath (see photos 1-2, **Appendix E**).

Although no nests were seen, one Barn Swallow was observed near the bridge during the field investigations.

A thorough search of the Study Area was not completed; however, vegetation (and possibly other structures) are expected to support nests of common bird species that are protected under the MBCA.

3.2.2.2 Significant Wildlife Habitat

Significant Wildlife Habitat is discussed below in four general categories: (a) seasonal concentration areas, (b) rare or specialized habitat, (c) habitat for species of conservation concern, and (d) animal migration corridors.

The wildlife habitat types considered in this assessment include all features listed in the *Criteria Schedules for Ecoregion 3E* and *5E* (MNRF, 2015a-b), and features identified in the *Mitigation Support Tool* (MNRF, 2014) as occurring in "all of Ontario". Habitat types are listed in **Table 2 to**

Table 5. The tables also indicate if candidate or confirmed SWH is present in the Study Area based the criteria in the MNRF guidance documents.

Seasonal concentration areas are sites where large numbers of a species gather together at one time of the year, or where several species congregate. Only the best examples of these concentration areas are typically designated as SWH. Areas that support a species at risk, or areas where a large proportion of the population may be lost if the habitat is destroyed, are examples of seasonal concentration areas that should be designated as significant (MNR, 2000).

Six candidate seasonal concentrations areas are present in the Study Area as documented in **Table 2**. No seasonal concentration areas were confirmed as SWH for the Study Area.

Table 2 Summary of Wildlife Habitat – Seasonal Concentration Areas in the Study Area

Habitat Type	Habitat Features (MNRF, 2014; MNRF, 2015)	Candidate SWH
Bat hibernacula	Abandoned mine shafts, underground foundations, caves and crevices	None
Deer Wintering Areas	Deer yards are mapped by MNRF and are shown on Figure 2, Appendix A. None are present in the Study Area.	None
Colonially – nesting bird breeding habitat (bank and cliff)	Eroding banks, sandy hills, steep slopes, rock faces or piles	None
Colonially – nesting bird breeding habitat (trees/shrubs)	Dead trees in large marshes and lakes, flooded timber and shrubs, with nests of Great Blue Heron, Great Egret, Green Heron or Black-crowned Night-Heron	None
Colonially – nesting bird breeding habitat (ground)	Rock islands and peninsulas in a lake or large river	None
Waterfowl stopover and staging areas	Field with evidence of annual spring flooding from meltwater or runoff; aquatic habitats including large marshy wetlands	Shoreline MAM2 and MAS2 units, and OA units
Shorebird migratory stopover area	Shorelines of lakes, rivers and wetlands	MAM2 and SWT shoreline units
Raptor Wintering Areas	Combination of fields and woodland (> 20 ha)	None
Bat maternity colonies	Mature (80 yrs old) to over-mature mixed and deciduous stands with large diameter dead or dying trees with cavities	None; FOD7 units are young forests
Reptile hibernacula	Rock piles or slopes, stone fences, crumbling foundations	Bridge footings
Amphibian breeding habitat (woodland)	Treed uplands with vernal pools	FOD7 and CUW units

Table 2 Summary of Wildlife Habitat – Seasonal Concentration Areas in the Study Area

Habitat Type	Habitat Features (MNRF, 2014; MNRF, 2015)	Candidate SWH
Amphibian breeding habitat (wetland)	Wetlands ecosites	MAM, MAS2 and SWT2 units
Turtle Wintering Area	Permanent waterbodies and large wetlands with sufficient dissolved oxygen	Nearshore aquatic (OAO and SA) and marsh (MAS and MEM) units
Moose Late Cover	Dense conifer cover	None

Rare or specialized habitats are defined as separate components of SWH. Rare habitats are habitats with vegetation communities that are considered rare (S1-S3) in the province. It is assumed that these habitats are at risk and that they are also likely to support additional wildlife species that are considered significant. Field investigations indicated that no rare (S1-S3) ELC communities occur in the Study Area.

Specialized habitats are microhabitats that are critical to some wildlife species. Three candidate specialized habitats are present in the Study Area as documented in **Table 3** (habitat for waterfowl, raptor nesting areas and moose aquatic feeding habitat). No specialized habitats were confirmed as SWH for the Study Area.

Table 3 Summary of Wildlife Habitat – Rare or Specialized Habitat in the Study Area

Habitat Type	Habitat Features (MNRF, 2014; MNRF, 2015a-b)	Candidate SWH
Rock barren, alvar, cliffs and talus slopes	Rock barren, Alvar, Cliff and Talus ELC Community Classes, and other areas of exposed bed rock and patchy soil development, near vertical exposed bedrock and slopes of rock rubble	None
Prairie and savannah	Open canopy habits (tree cover < 60%) dominated by prairie species	None
Beaches, beach ridges, bars, sand dunes and sand barren	Exposed sand habitat with little to no soil and protruding rock; tree cover (e.g. < 60%)	None
Bog and fen	Bog and fen ELC Community Classes	None
Old growth forest	Relatively undisturbed, structurally complex; dominant trees > 100 years old	None
Great Lakes arctic-alpine shoreline	Lake Superior shoreline with arctic-alpine indicator flora species	None
Shallow Atlantic coastal marsh	Shallow marsh with Atlantic coast indicator flora species	None
Rare treed types	Tree stands dominated by species that are rare in the Ecoregion	None

Table 3 Summary of Wildlife Habitat – Rare or Specialized Habitat in the Study Area

Habitat Type	Habitat Features (MNRF, 2014; MNRF, 2015a-b)	Candidate SWH
Hardwood swamps	Deciduous Swamp (SWD) ELC codes	None
Other rare vegetation communities	Vegetation communities ranked S1-S3 by the NHIC.	None
Waterfowl nesting areas	Upland habitats adjacent to wetlands (within 120m)	FOD7, CUW1 and CUM1-1/MAM2 units
Bald Eagle and Osprey nesting, foraging and perching habitat	Treed communities adjacent to rivers, lakes ponds and other wetlands with stick nests of Bald Eagle or Osprey	None
Woodland raptor nesting habitat	Intermediate to mature aged forests	FOD7 and CUW1 units
Reptile nesting areas	Exposed soil, including sand and gravel in open sunny areas	None
Seeps and springs, and mineral licks	Any area with groundwater at surface	None
Moose aquatic feeding habitat	Forested areas close adjacent to water	FOD7 and CUW1 units
Denning sites for Mink, Otter, Marten, Fisher and Eastern Wolf	All forested sites; particularly in undisturbed areas	None
Wolf rendezvous sites	Isolated open areas, including bogs, fens , meadows and clearcuts; site removed from human activity are more sensitive	None
Mast Producing Areas	Mature forests and other shrub and treed ecosites with numerous listed berry/nut mast producing flora species.	None
Sharp-tailed Grouse Leks	Grassy fields/meadows > 15 ha if adjacent to shrublands and > 30 ha if adjacent to treed areas	None

Habitat for species of conservation concern includes four types of species: (a) those that are rare, (b) those whose populations are significantly declining, (c) those that have been identified as being at risk to certain common activities, and (d) those with relatively large populations in Ontario compared to the remainder of the globe.

Two candidate habitats for species of conservation occur in the Study Area as documented in **Table 4**. Shoreline wetlands are candidate breeding habitat for marsh birds, and the CUW1unit was confirmed as SWH for provincially rare species, wild licorice. This species may also occur along the riverbank and woodland edges in the Study Area.

Table 4 Summary of Wildlife Habitat – Habitat for Species of Conservation Concern in the Study Area

Habitat Type	Habitat Features (MNRF, 2014; MNRF, 2015a-b)	Candidate SWH
Open country bird breeding habitat	Large grasslands and fields (> 30ha)	None
Shrub/early successional bird breeding habitat	Large shrub and thicket habitats (> 30ha)	None
Marsh bird breeding habitat	Wetlands with emergent aquatic vegetation	Shoreline MAM2 and MAS2 units
Special Concern and provincially rare wildlife	Habitat with Special Concern and provincially rare species (wild licorice; S3)	CUW1, FOD7 and riverbanks ***CUW1 is confirmed SWH***

Animal movement corridors are areas that are traditionally used by wildlife to move between habitats. Movement is usually in response to different seasonal habitat requirements. Movement corridors are identified once the following seasonal concentration areas or specialized habitats are confirmed as SWH: amphibian breeding habitat, moose aquatic feeding areas, mineral licks, and denning sites for Mink, Otter, Marten, Fisher and Eastern Wolf.

Two candidate animal movement corridors occur in the Study Area as documented in **Table 5** (cervid movement and amphibian movement corridors).

Table 5 Summary of Wildlife Habitat – Animal Movement Corridors in the Study Area

Habitat Type	Habitat Features (MNRF, 2014; MNRF, 2015a-b)	Candidate SWH
Cervid movement corridors	Associated with known moose aquatic feeding areas and mineral licks	Movement corridors associated with candidate moose aquatic feeding habitat
Amphibian movement corridors	Associated with confirmed amphibian breeding habitat	Movement corridors associated with candidate amphibian breeding habitat
Furbearer movement corridors	Associated with denning sites for Mink, Otter, Marten, Fisher and Eastern Wolf	None; denning sites are absent

4.0 SUMMARY

MTO in cooperation with MnDOT has retained Stantec to undertake the Preliminary Design and Class Environmental Assessment Study for the replacement of the Baudette/Rainy River International Bridge on Highway 11. The bridge provides access between the United States and Canada with 24-hour, full-service Port of Entry facilities in the City of Baudette, Minnesota and the Town of Rainy River, Ontario. The study includes the development and evaluation of a range of reasonable bridge replacement alternatives, construction staging and traffic management options, and the selection of a Preferred Plan.

This *Terrestrial Ecosystems Existing Conditions Report* provides supporting documentation for the Project and describes terrestrial ecosystems and terrestrial species at risk within the Study Area.

Significant natural heritage features were evaluated according to the *Environmental Reference for Highway Design* (MTO 2013). The results of this evaluation of significant natural heritage features in the Study Area are summarized below:

- **Designated natural areas:** There are no PSWs, ANSIs, Provincial Parks, Conservation Reserves, or other designated natural areas in the Study Area.
- **Species at risk:** Barn Swallow was observed flying over Rainy River during field investigations; however, no nests were observed on the bridge or elsewhere in the Study Area. The bridge structure is poorly suited for nesting of Barn Swallow; however, it is possible that Barn Swallow may nest on the bridge in subsequent breeding seasons. There are no other records or observations of species at risk in the Study Area.
- **MBCA protected nests:** No nests were observed on the bridge during field investigations; however, it is possible that MBCA protected species may nest on the bridge in subsequent breeding seasons. Vegetation throughout the Study Area is expected to support nests of MBCA protected species.
- **Candidate Significant Wildlife Habitat:** The following candidate SWH features were documented in the Study Area:
  - Seasonal Concentration Areas: Waterfowl stopover and staging areas, shorebird migratory stopover area, reptile hibernacula, amphibian breeding habitat (woodland), amphibian breeding habitat (wetland), and turtle wintering areas;
  - Rare or Specialized Habitat: Waterfowl nesting areas, woodland raptor nesting habitat, and moose aquatic feeding habitat;

- Habitat for Species of Conservation Concern: Habitat with provincially rare species (possible occurrence of wild licorice in woodland edges and riverbanks), and marsh bird breeding habitat; and
- Movement Corridors: cervid movement and amphibian movement corridors.

- **Confirmed Significant Wildlife Habitat:** The following confirmed SWH feature was documented in the Study Area:
  - Habitat for Species of Conservation Concern: Habitat with provincially rare species (wild licorice in the CUW1 unit).

The proposed work will occur along the existing Highway 11/bridge ROW and will likely require some minimal removal of terrestrial habitat to accommodate construction of the new bridge. Standard and site specific mitigation measures are available to address the anticipated impacts, including: timing restrictions to address MBCA protected nests; feature protection measures such as sediment and erosion control, and barrier fencing; wildlife avoidance; and post-construction restoration.

Based on the findings discussed above, authorization under the ESA for Barn Swallow (or any other ESA protected species) is not anticipated as an approval requirement.

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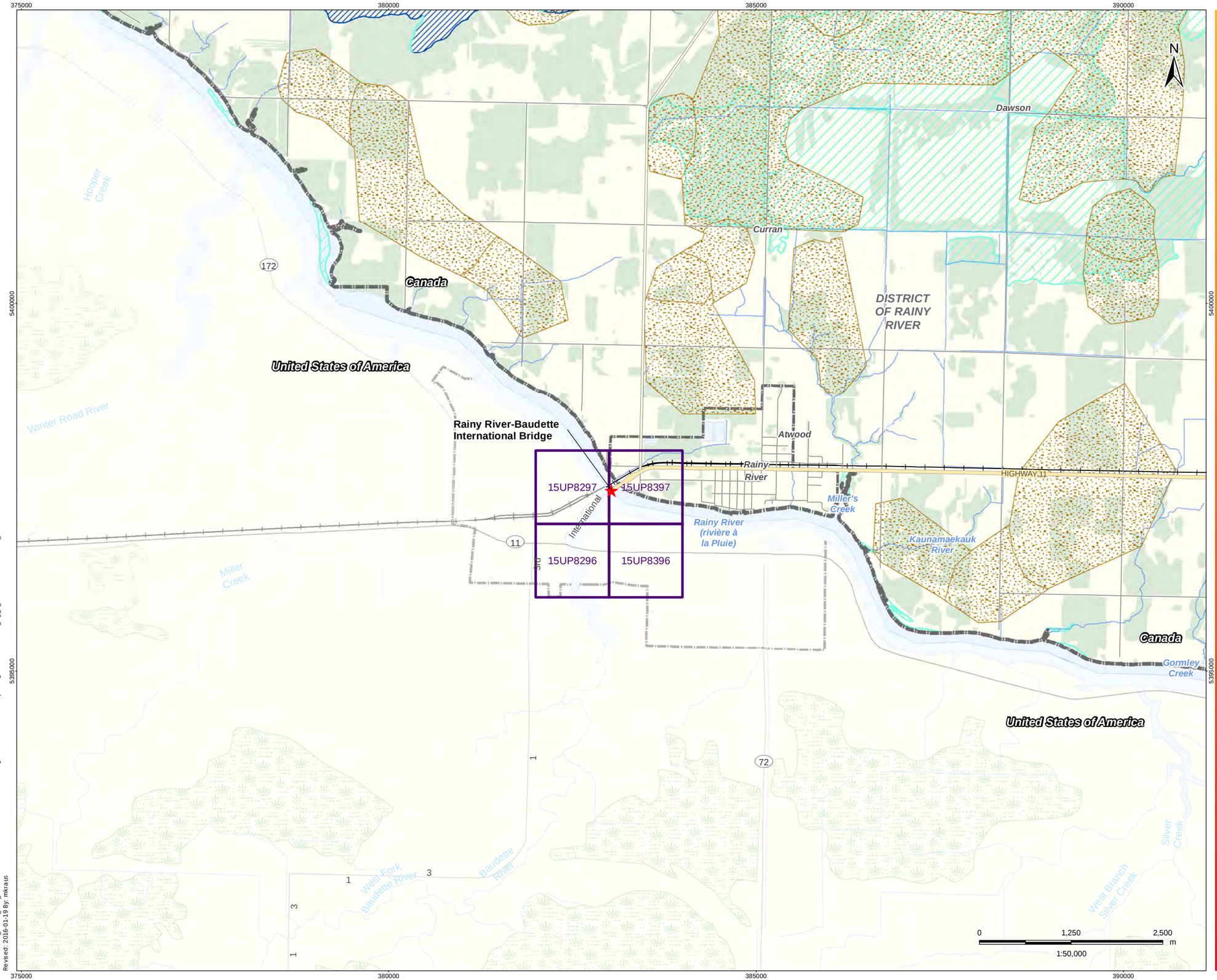
Appendix A FIGURES



Stantec

Legend

- SiteLocation
- Highway
- Major Road
- Minor Road
- Railway_railway
- Watercourse
- Deer Wintering Area
- Municipal Boundary, Upper
- Municipal Boundary, Lower
- NHIC 1 km Square
- Waterbody
- Wetland, Provincially Significant (Evaluated)
- Wetland, Unevaluated
- Wooded Area

Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2015.
3. Additioal USA Data Provided by Esri

January 2016
193802780

Client/Project

Baudette/Rainy River
International Bridge Replacement
GWP-6046-10-00

Figure No.

2

Title

Regional Context

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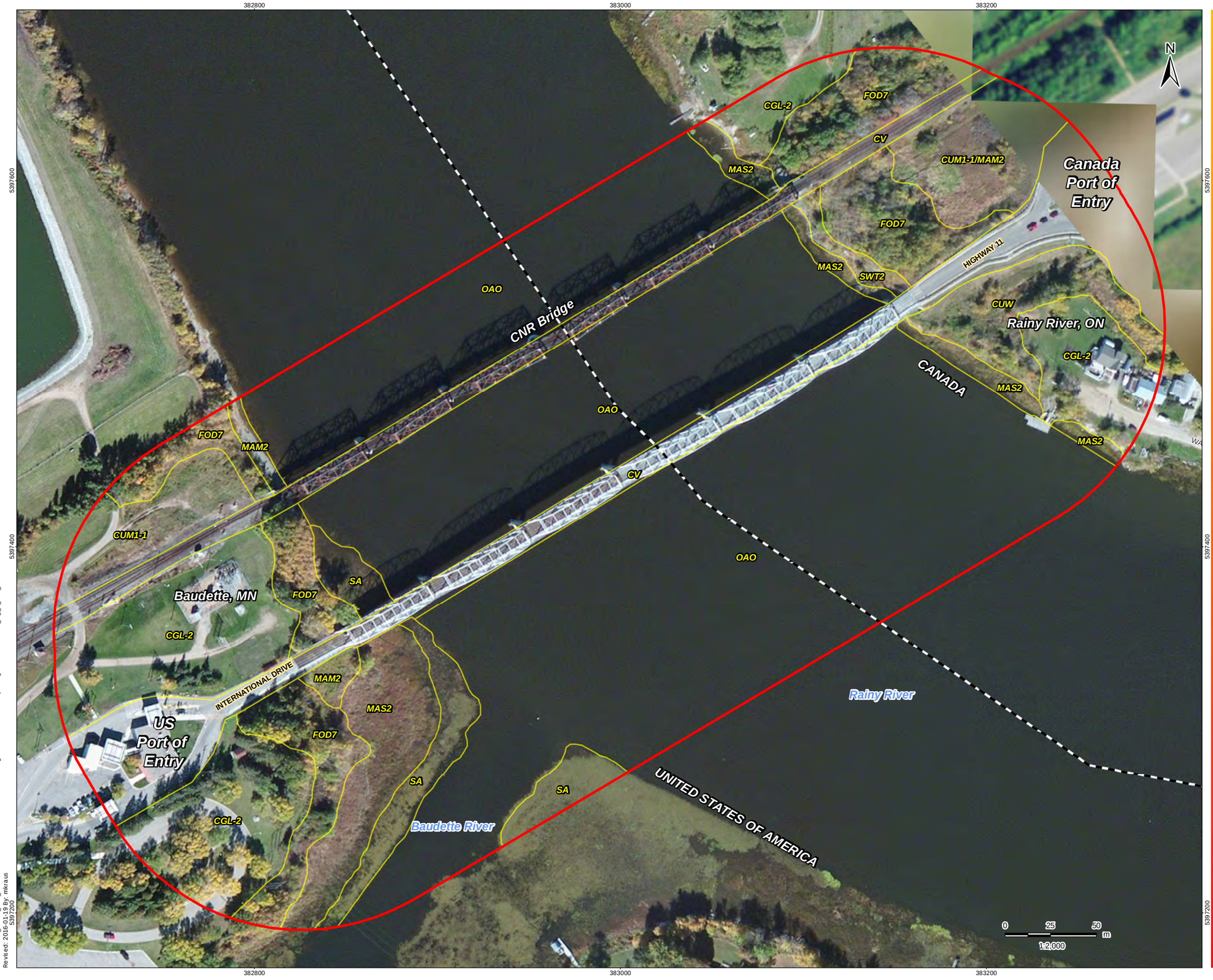

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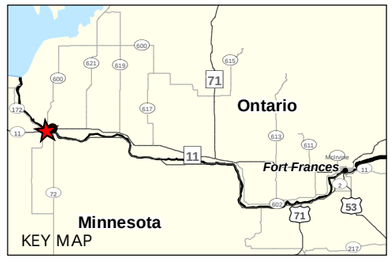
Revised: 2016-01-19 By: mkraus

Stantec

Legend

- Canada/US Border
- Ecological Land Classification
- StudyArea

CODE	DESCRIPTION
Terrestrial System	
FOD7	Fresh-Moist Lowland Deciduous Forest Ecosite
Cultural System	
CUW	Cultural Woodland Community Series
CUM1-1	Dry-Moist Old Field Meadow Type
CGL-2	Constructed Parkland
CV	Constructed
Wetland System	
CUM1-1/ MAM2	Dry-Moist Old Field Meadow/ Mineral Meadow Marsh Complex
MAM2	Mineral Meadow Marsh Ecosite
MAS2	Mineral Shallow Marsh Ecosite
SWT2	Mineral Swamp Thicket Ecosite
Aquatic System	
SA	Shallow Water Community Class
OAO	Open Aquatic Community Series



Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2015.
3. Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

January 2016
193802870

Client/Project

Baudette/Rainy River
International Bridge Replacement
GWP-6046-10-00

Figure No.

3

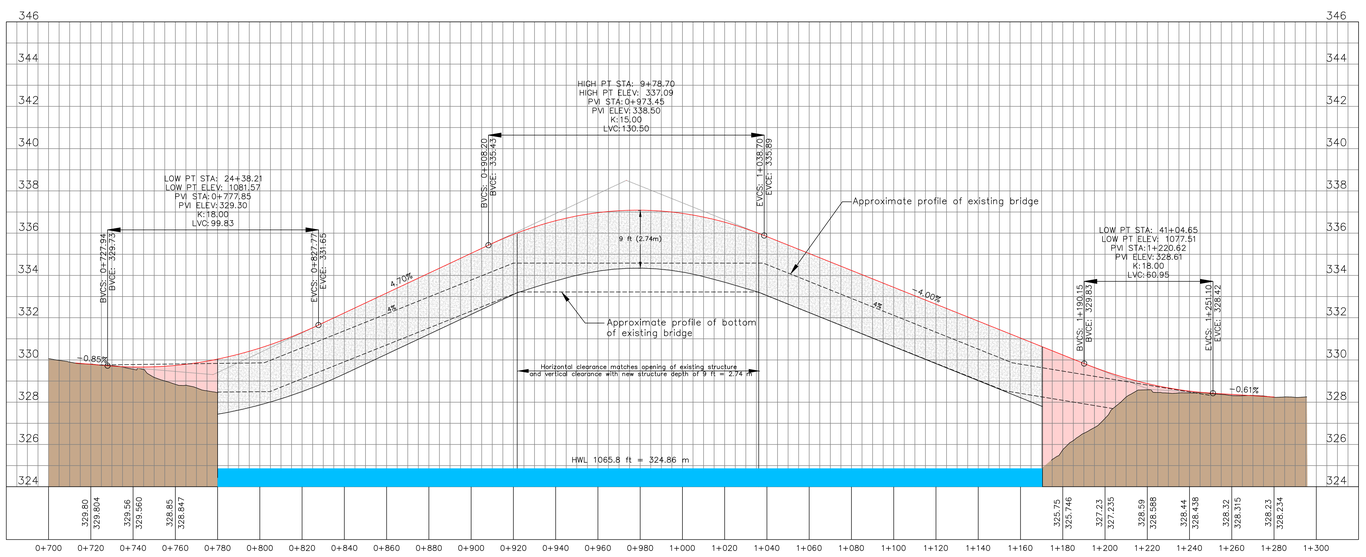
Title

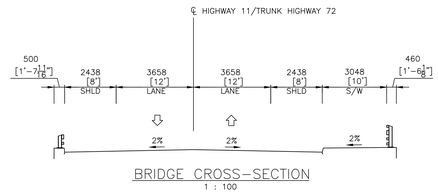
Ecological Land Classification

Appendix B ALIGNMENT ALTERNATIVES

Alternative 1 - Baudette-Rainy River International Bridge

Alignment – 1 PROFILE





BRIDGE CROSS-SECTION
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PRELIMINARY ONLY

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TAC Meeting #4
June 25, 2015

Ontario Ministry of Transportation | Minnesota Department of Transportation | Stantec

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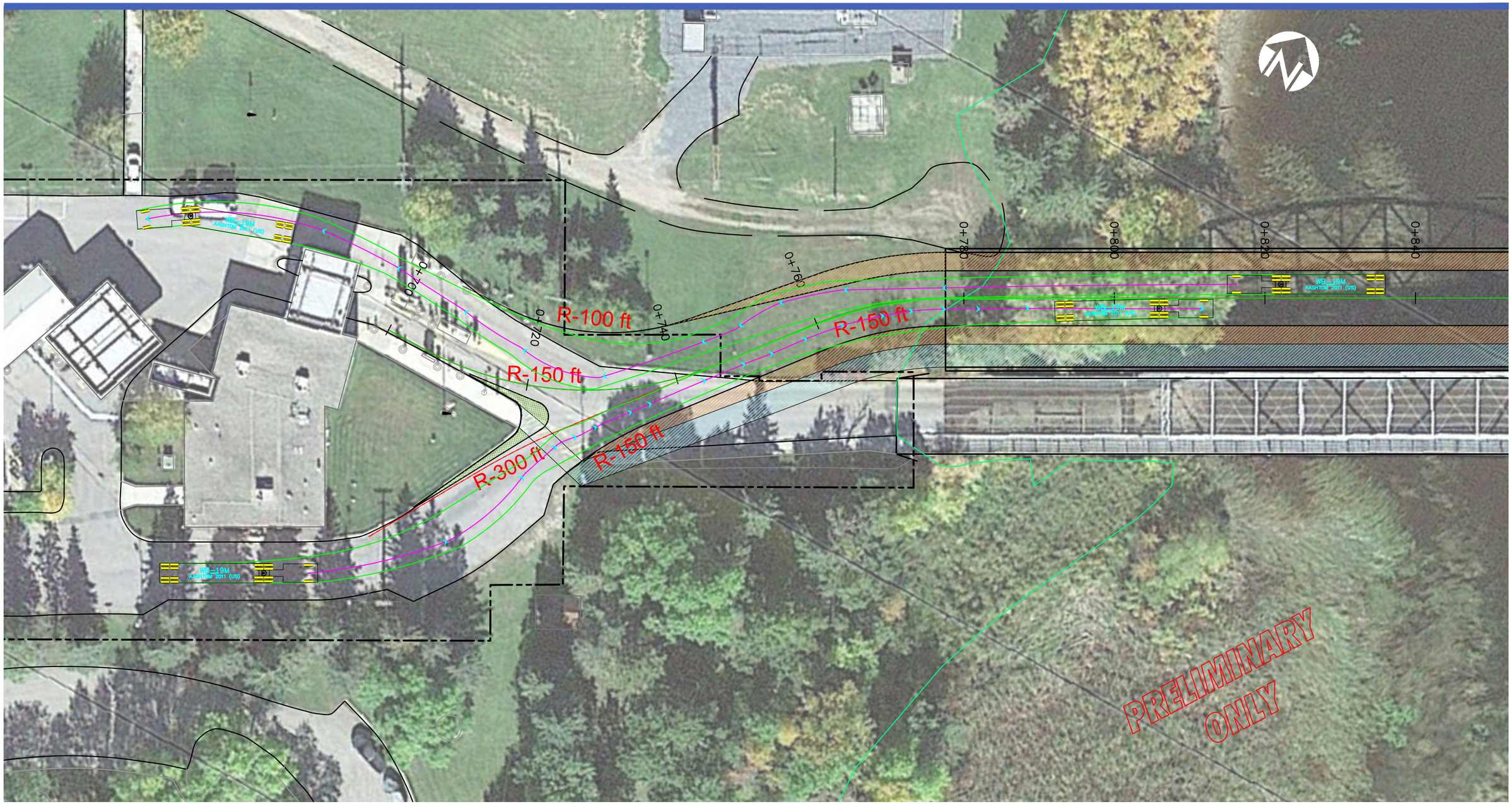

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June 25, 2015

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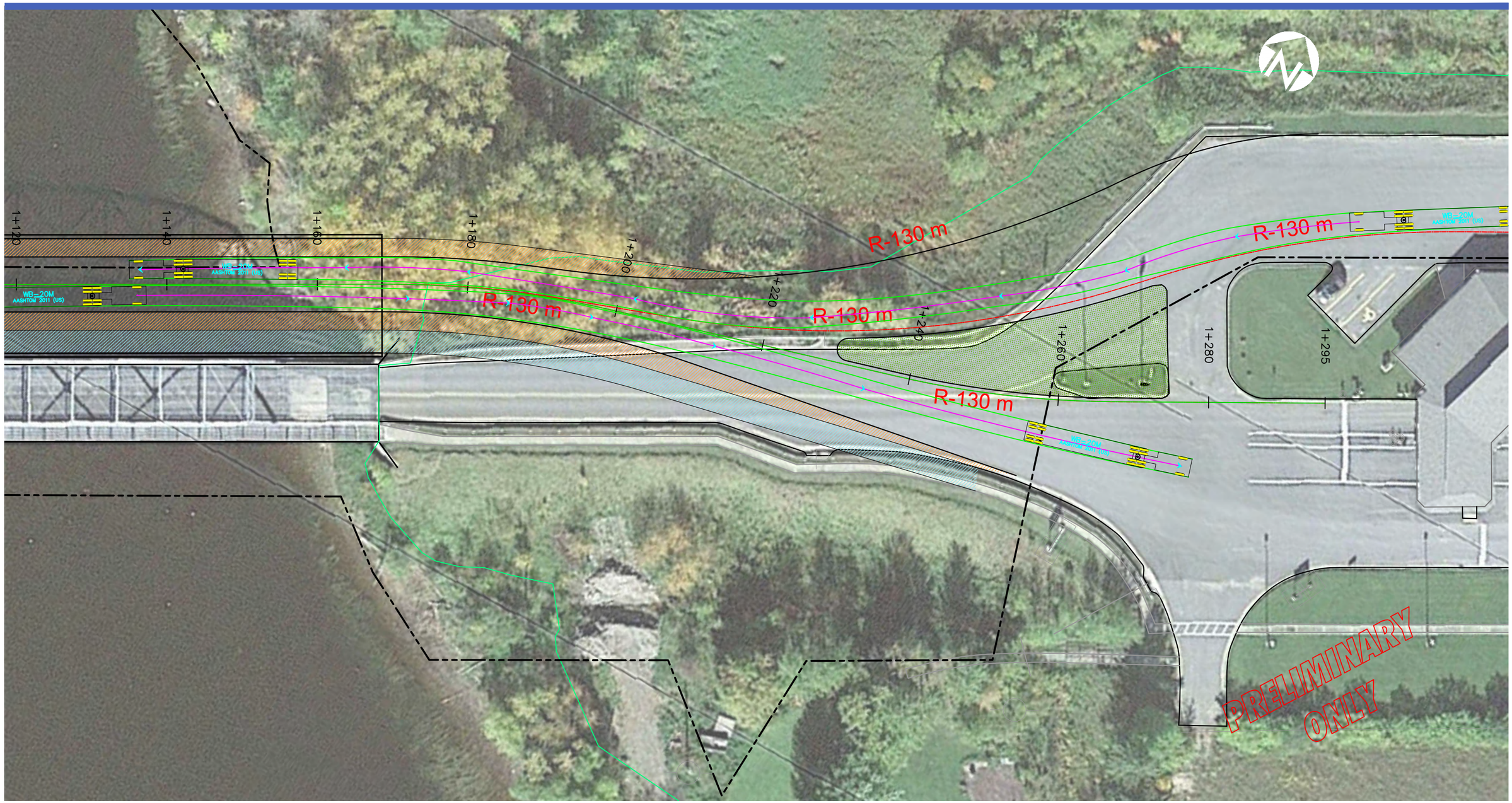

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TAC Meeting #4
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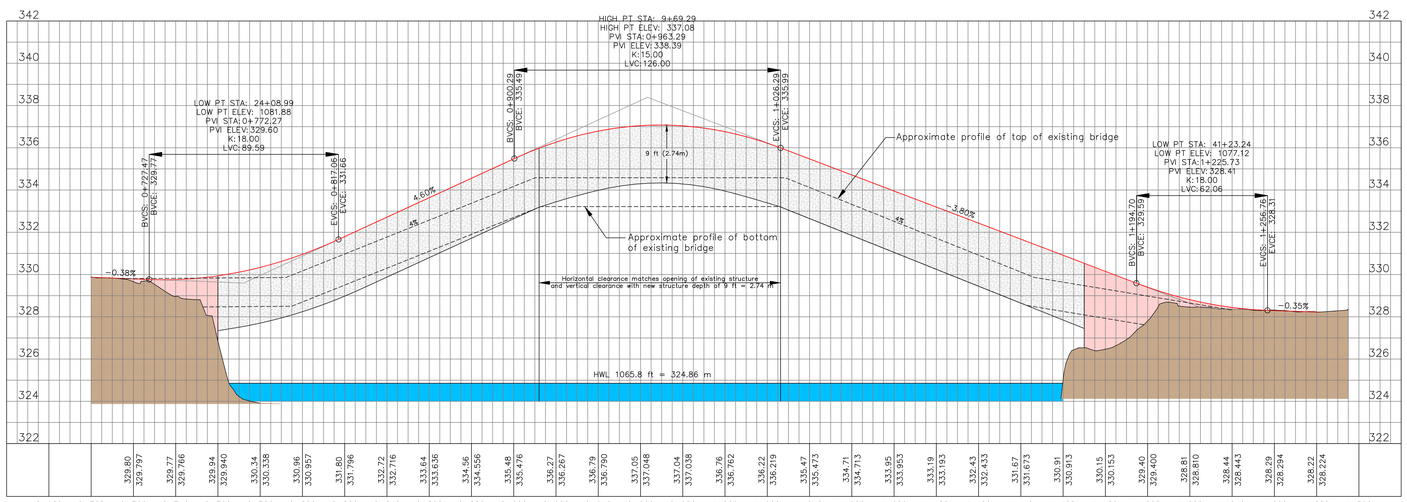
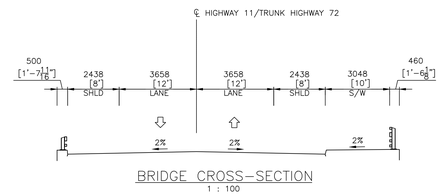
Alternative 2 - Baudette-Rainy River International Bridge

Alignment – 2 PROFILE





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TAC Meeting #4
June 25, 2015

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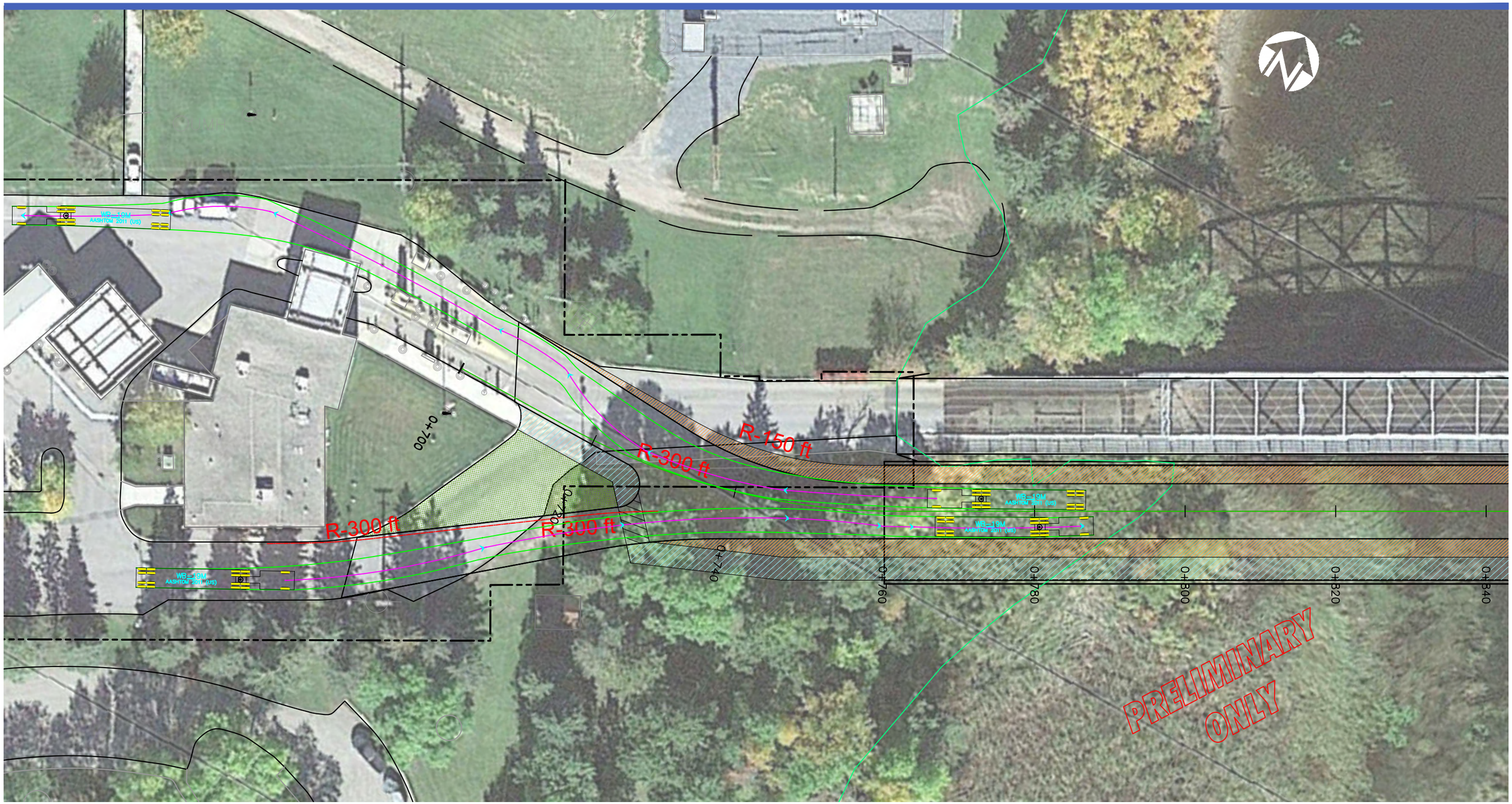

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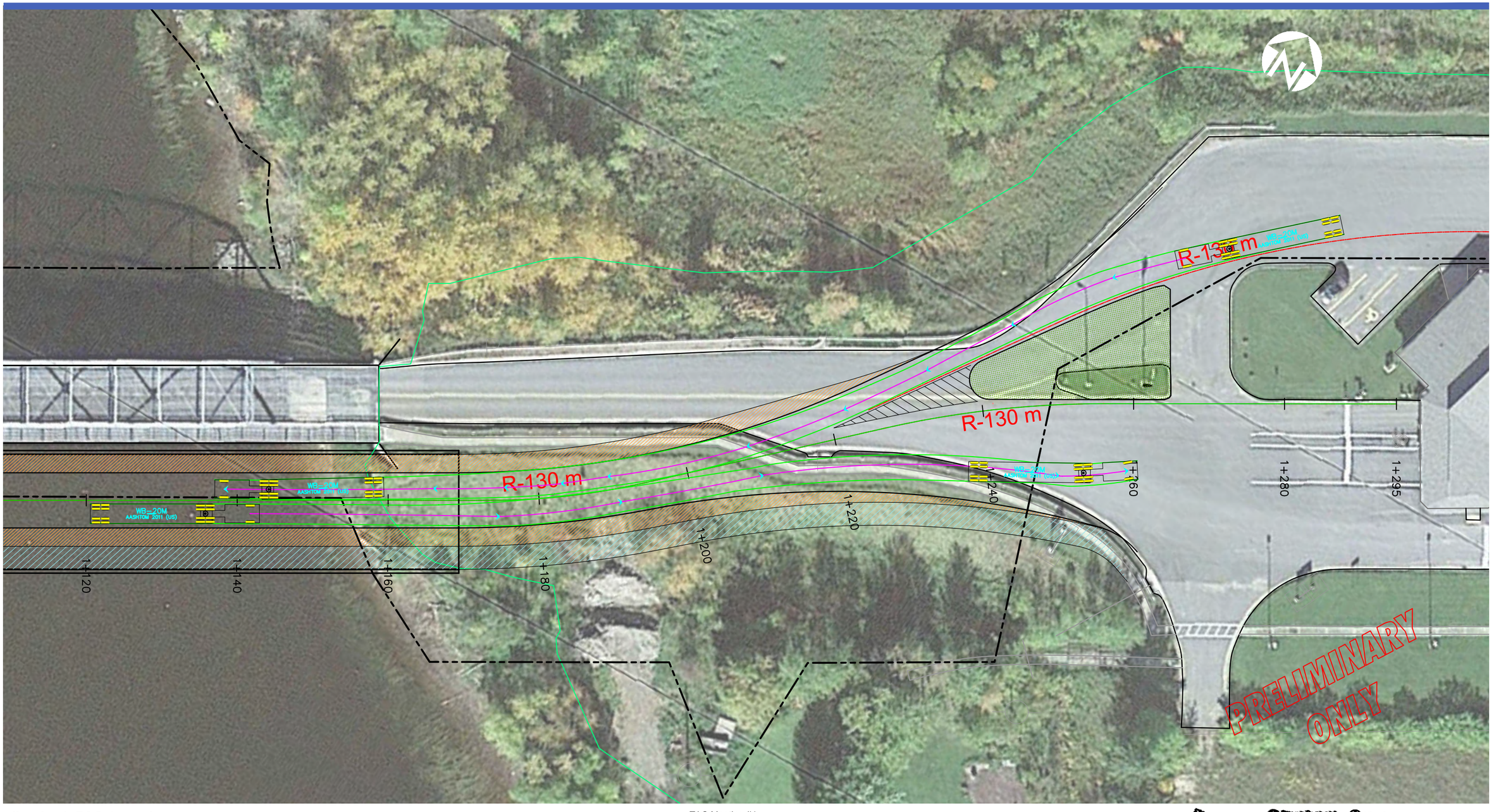

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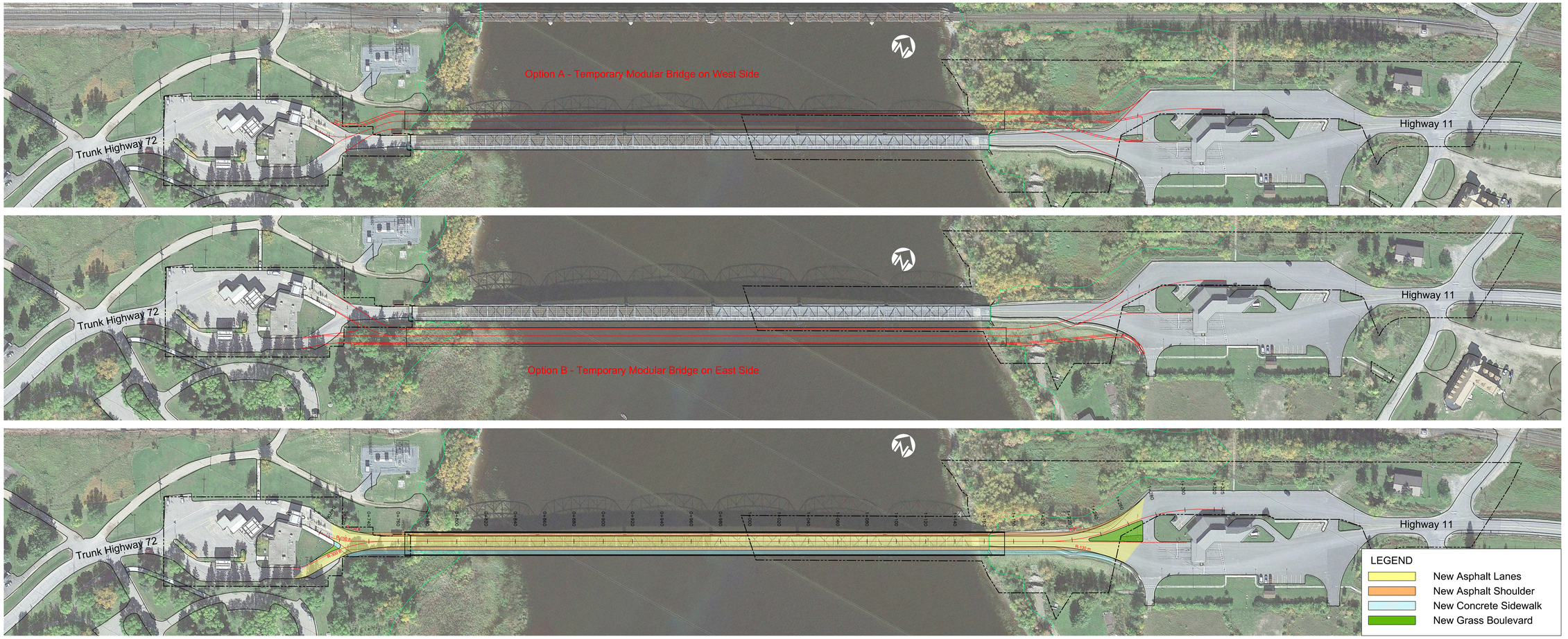
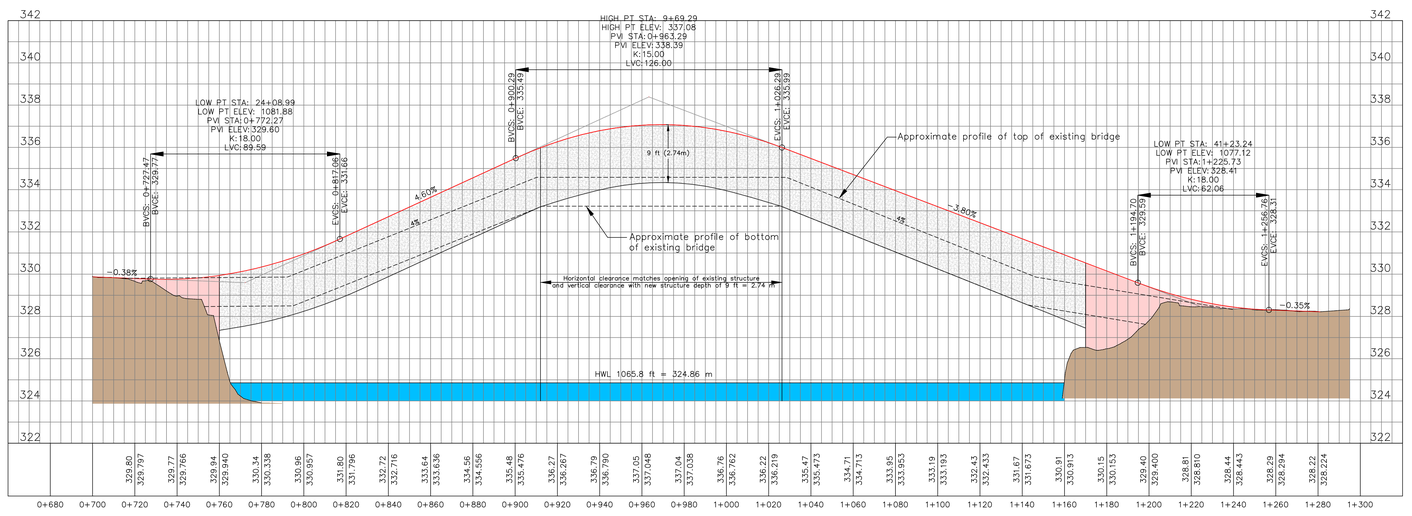
Alternative 3 - Baudette-Rainy River International Bridge





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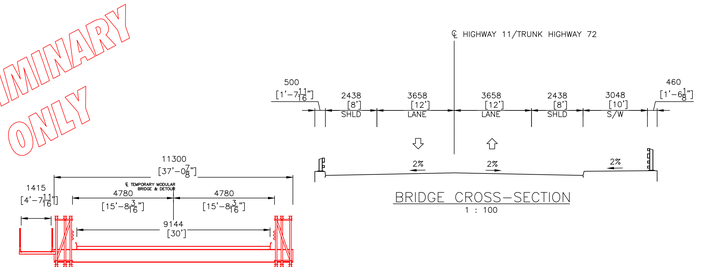
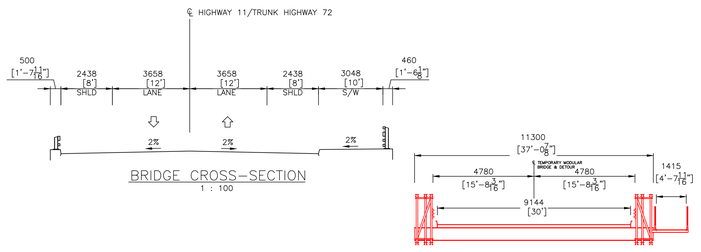


Option A - Temporary Modular Bridge on West Side



Option B - Temporary Modular Bridge on East Side

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July 21, 2015

Ontario Ministry of Transportation | Minnesota Department of Transportation | Stantec

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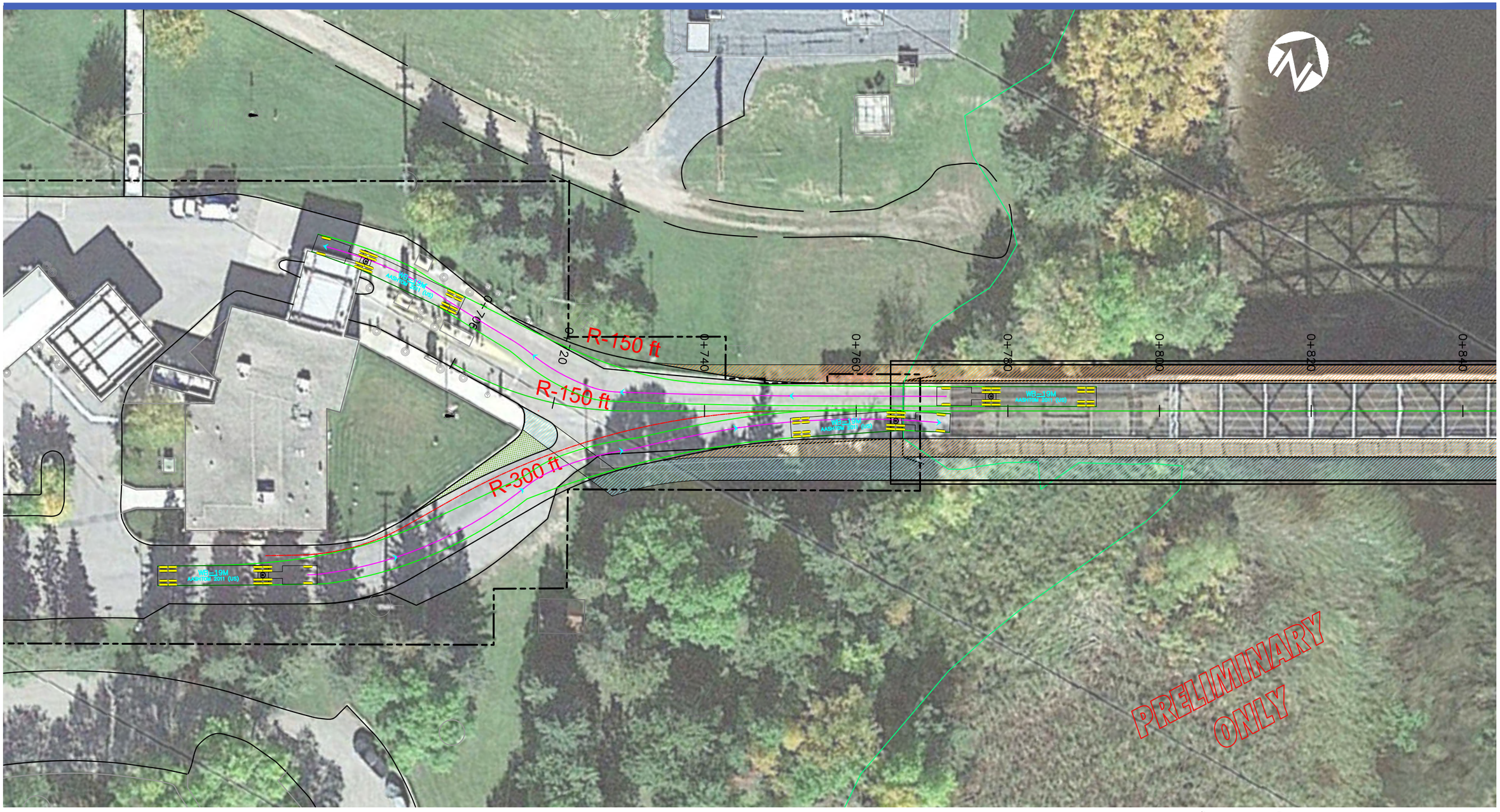

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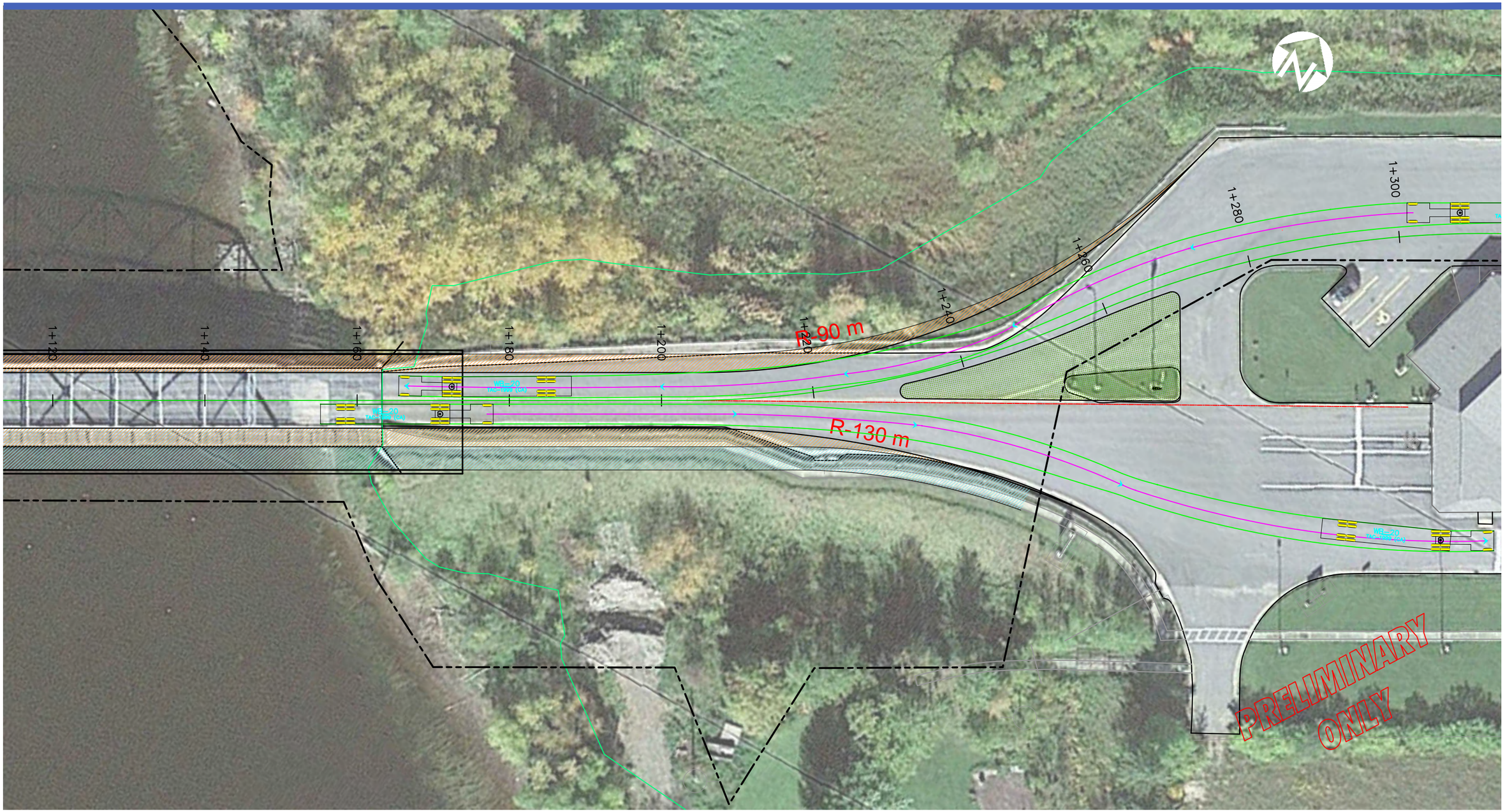

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Appendix C MNRF CORRESPONDENCE

From: "Hill, Rachel (MNRF)" <rachel.hill@ontario.ca>
Date: June 11, 2015 at 6:02:35 PM EDT
To: "Cooke, Gregg" <gregg.cooke@stantec.com>, "DeCal, Rick (MTO)" <Rick.DeCal@ontario.ca>, "Easterling, Katie" <Katie.Easterling@stantec.com>
Cc: "nevena.gazibara@stantech.com" <nevena.gazibara@stantech.com>, "Myers, Matt (MNRF)" <matt.myers@ontario.ca>, "Hyatt, Alex (MNRF)" <Alex.Hyatt@ontario.ca>, "Vandenbroeck, John (MNRF)" <john.vandenbroeck@ontario.ca>
Subject: Notice of Commencement - Rainy River-Baudette International Bridge

Attention: Gregg Cooke and Rick DeCal

Thank you for the Notice of Study Commencement that was received May 7, 2015. If possible, MNRF would like to request that further notification and/or information be sent to this office electronically.

The notice identifies a request for information on existing conditions within the study area and identification of any issues, concerns or approval requirements that our organisation may have. Unfortunately our Ministry is limited in providing this information to you based on the lack of details about the project that have not yet been established.

Here is some information on local and site specific natural heritage values that we can provide at this time:

- The thermal regime of Rainy River is coolwater.

- The Baudette/Rainy River International Bridge is directly upstream of Lake of the Woods, therefore it is highly likely that many species that inhabit Lake of the Woods are present in the Rainy River.

- A total of 55 fish species have been documented in Lake of the Woods, including lake sturgeon and shortjaw cisco.

  These species are listed as threatened on the Species at Risk in Ontario (SARO) List, Ontario Regulation 230/08 of the *Endangered Species Act*.

- There is potential for spawning habitat of walleye, white sucker, and lake sturgeon in the immediate area of the bridge replacement site: on the abutments of the adjacent rail bridge.

Timing of construction work should consider these species, as well as northern pike and smallmouth bass. No in-water work is recommended from April 1- July 15.

- There are currently no known provincially significant wetlands, areas of natural or scientific interest, or other special habitat features located in the vicinity (120 m) of the site.

- Bridge replacement has the potential to harm or harass barn swallows and/or damage/destroy their protected habitat. Surveys to determine barn swallow use of the bridge should be completed.

  If barn swallows are observed using (nesting in) this structure at any time, please contact John Van den Broeck, Management Biologist (807 274-8631) immediately.

- There are currently no records indicating that the other Species at Risk on the list provided, inhabit the bridge site.

However this office should be contacted soon as possible should any Species at Risk in the immediate vicinity of the bridge be observed. The *Endangered Species Act, 2007* prohibits harm and harassment of individuals, and in many cases, damage and destruction of their habitat for species that are listed under the *Act*.

We will be able to provide assessment of fisheries resources and habitat sensitivity information once we have been provided the appropriate form (Appendix 3A) as per the MTO/DFO/OMNR Fisheries Habitat Protocol.

Our Ministry will also be able to provide further information regarding potential permits and approvals or other issues once we have more information about the project plans and designs.

If you have any questions or need clarification regarding this e-mail, please feel free to contact me.

Thank you.

Rachel Hill
District Planner
Fort Frances District
Phone (807) 274-8605
Fax (807) 274-4438

Appendix D WILDLIFE LIST COMPILED FROM BACKGROUND SOURCES

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COMMON NAME	SCIENTIFIC NAME	ONTARIO STATUS	GLOBAL STATUS	COSSARO	COSEWIC	AREA SENSITIVITY (ha)	Source	Area Sensitive Reference
ODONATA								
Elusive Clubtail	*Stylurus notatus*	S2	G3				NHIC (2015)	
BUTTERFLIES								
Grey Copper	*Lycaena xanthoides (syn. dione)*	S2	G5				NHIC (2015)	
AMPHIBIANS								
American Toad	*Anaxyrus americanus*	S5	G5				Ontario Nature (2014)	
Tetraploid Gray Treefrog	*Hyla versicolor*	S5	G5				Ontario Nature (2014)	
Boreal Chorus Frog	*Pseudacris maculata*	S5	G5				Ontario Nature (2014)	
Spring Peeper	*Pseudacris crucifer*	S5	G5				Ontario Nature (2014)	
Northern Green Frog	*Lithobates clamitans*	S5	G5				Ontario Nature (2014)	
Wood Frog	*Lithobates sylvatica*	S5	G5				Ontario Nature (2014)	
Northern Leopard Frog	*Lithobates pipiens*	S5	G5	NAR	NAR		Ontario Nature (2014)	
Mink Frog	*Lithobates septentrionalis*	S5	G5				Ontario Nature (2014)	
REPTILES								
Snapping Turtle	*Chelydra serpentina*	S3	G5	SC	SC		Ontario Nature (2014)	
Western Painted Turtle	*Chrysemys picta bellii*	S4	G5T5				Ontario Nature (2014)	
Eastern Gartersnake	*Thamnophis sirtalis sirtalis*	S5	G5				Ontario Nature (2014)	
Red-sided Gartersnake	*Thamnophis sirtalis parietalis*	S4?	G5T5				Ontario Nature (2014)	
Redbelly Snake	*Storeria occipitomaculata*	S5	G5				Ontario Nature (2014)	
Ringneck Snake	*Diadophis punctatus*	S4	G5				Ontario Nature (2014)	
BIRDS								
Canada Goose	*Branta canadensis*	S5	G5				Cadman et al. (2007)	
Wood Duck	*Aix sponsa*	S5	G5				Cadman et al. (2007)	
Gadwall	*Anas strepera*	S4	G5				Cadman et al. (2007)	
American Wigeon	*Anas americana*	S4	G5				Cadman et al. (2007)	
American Black Duck	*Anas rubripes*	S4	G5				Cadman et al. (2007)	
Mallard	*Anas platyrhynchos*	S5	G5				Cadman et al. (2007)	
Blue-winged Teal	*Anas discors*	S4	G5				Cadman et al. (2007)	
Northern Shoveler	*Anas clypeata*	S4	G5				Cadman et al. (2007)	
Northern Pintail	*Anas acuta*	S5	G5				Cadman et al. (2007)	
Green-winged Teal	*Anas crecca*	S4	G5				Cadman et al. (2007)	
Ring-necked Duck	*Aythya collaris*	S5	G5				Cadman et al. (2007)	
Lesser Scaup	*Aythya affinis*	S4	G5				Cadman et al. (2007)	
Common Goldeneye	*Bucephala clangula*	S5	G5				Cadman et al. (2007)	
Common Merganser	*Mergus merganser*	S5B,S5N	G5				Cadman et al. (2007)	
Ruddy Duck	*Oxyura jamaicensis*	S4B,S4N	G5			10	Cadman et al. (2007)	
Horned Grebe	*Podiceps auritus*	S1B, S4N	G5	SC			Cadman et al. (2007)	
Eared Grebe	*Podiceps nigricollis*	SNA	G5				Cadman et al. (2007)	
Turkey Vulture	*Cathartes aura*	S5B	G5				Cadman et al. (2007)	
Northern Harrier	*Circus cyaneus*	S4B	G5	NAR	NAR	55	Cadman et al. (2007)	Sandilands, 2005

COMMON NAME	SCIENTIFIC NAME	ONTARIO STATUS	GLOBAL STATUS	COSSARO	COSEWIC	AREA SENSITIVITY (ha)	Source	Area Sensitive Reference
Sharp-shinned Hawk	*Accipiter striatus*	S5	G5	NAR	NAR	20-30	Cadman et al. (2007)	Sandilands, 2006
Broad-winged Hawk	*Buteo platypterus*	S5B	G5			100	Cadman et al. (2007)	Sandilands, 2007
Red-tailed Hawk	*Buteo jamaicensis*	S5	G5	NAR	NAR		Cadman et al. (2007)	
American Kestrel	*Falco sparverius*	S4	G5				Cadman et al. (2007)	
Merlin	*Falco columbarius*	S5B	G5	NAR	NAR		Cadman et al. (2007)	
Yellow Rail	*Coturnicops noveboracensis*	S4B	G4	SC	SC		Cadman et al. (2007)	
Sora	*Porzana carolina*	S4B	G5				Cadman et al. (2007)	
Sandhill Crane	*Grus canadensis*	S5B	G5	NAR	NAR		Cadman et al. (2007)	
Killdeer	*Charadrius vociferus*	S5B, S5N	G5				Cadman et al. (2007)	
Marbled Gotwit	*Limosa fedoa*	S3B	G5				Cadman et al. (2007)	
Spotted Sandpiper	*Actitis macularia*	S5	G5				Cadman et al. (2007)	
Upland Sandpiper	*Bartramia longicauda*	S4B	G5			25	Cadman et al. (2007)	
Wilson's Snipe	*Gallinago delicata*	S5B	G5				Cadman et al. (2007)	
Ring-billed Gull	*Larus delawarensis*	S5B,S4N	G5				Cadman et al. (2007)	
Black Tern	*Chlidonias niger*	S3B	G4	SC	NAR	20	Cadman et al. (2007)	Dunn and Agro, 1995
Rock Pigeon	*Columba livia*	SNA	G5				Cadman et al. (2007)	
Mourning Dove	*Zenaida macroura*	S5	G5				Cadman et al. (2007)	
Black-billed Cuckoo	*Coccyzus erythropthalmus*	S5B	G5				Cadman et al. (2007)	
Great Horned Owl	*Bubo virginianus*	S5	G5				Cadman et al. (2007)	
Common Nighthawk	*Chordeiles minor*	S4B	G5	SC	THR		Cadman et al. (2007)	
Chimney Swift	*Chaetura pelagica*	S4B, S4N	G5	THR	THR		Cadman et al. (2007)	
Ruby-throated Hummingbird	*Archilochus colubris*	S5B	G5				Cadman et al. (2007)	
Belted Kingfisher	*Ceryle alcyon*	S4B	G5				Cadman et al. (2007)	
Yellow-bellied Sapsucker	*Sphyrapicus varius*	S5B	G5			30-50	Cadman et al. (2007)	
Downy Woodpecker	*Picoides pubescens*	S5	G5				Cadman et al. (2007)	
Hairy Woodpecker	*Picoides villosus*	S5	G5			10	Cadman et al. (2007)	
Northern Flicker	*Colaptes auratus*	S4B	G5				Cadman et al. (2007)	
Pileated Woodpecker	*Dryocopus pileatus*	S5	G5			30-50*	Cadman et al. (2007)	Naylor et al., 1996
Eastern Wood-Pewee	*Contopus virens*	S4B	G5	SC	SC-NS		Cadman et al. (2007)	
Alder Flycatcher	*Empidonax alnorum*	S5B	G5				Cadman et al. (2007)	
Least Flycatcher	*Empidonax minimus*	S4B	G5				Cadman et al. (2007)	
Eastern Phoebe	*Sayornis phoebe*	S5B	G5				Cadman et al. (2007)	
Great Crested Flycatcher	*Myiarchus crinitus*	S4B	G5				Cadman et al. (2007)	
Eastern Kingbird	*Tyrannus tyrannus*	S4B	G5				Cadman et al. (2007)	
Warbling Vireo	*Vireo gilvus*	S5B	G5				Cadman et al. (2007)	
Red-eyed Vireo	*Vireo olivaceus*	S5B	G5				Cadman et al. (2007)	
Blue Jay	*Cyanocitta cristata*	S5	G5				Cadman et al. (2007)	
American Crow	*Corvus brachyrhynchos*	S5B	G5				Cadman et al. (2007)	
Common Raven	*Corvus corax*	S5	G5				Cadman et al. (2007)	
Black-billed Magpie	*Pica hudsonia*	S3?	G5				Cadman et al. (2007)	

COMMON NAME	SCIENTIFIC NAME	ONTARIO STATUS	GLOBAL STATUS	COSSARO	COSEWIC	AREA SENSITIVITY (ha)	Source	Area Sensitive Reference
Horned Lark	*Eremophila alpestris*	S5B	G5				Cadman et al. (2007)	
Purple Martin	*Progne subis*	S4B	G5				Cadman et al. (2007)	
Tree Swallow	*Tachycineta bicolor*	S4B	G5				Cadman et al. (2007)	
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	S4B	G5				Cadman et al. (2007)	
Bank Swallow	*Riparia riparia*	S4B	G5	THR	THR-NS		Cadman et al. (2007)	
Cliff Swallow	*Petrochelidon pyrrhonota*	S4B	G5				Cadman et al. (2007)	
Barn Swallow	*Hirundo rustica*	S4B	G5	THR	THR-NS		Cadman et al. (2007)	
Black-capped Chickadee	*Poecile atricapillus*	S5	G5				Cadman et al. (2007)	
Red-breasted Nuthatch	*Sitta canadensis*	S5	G5			0	Cadman et al. (2007)	
White-breasted Nuthatch	*Sitta carolinensis*	S5	G5			10	Cadman et al. (2007)	
Brown Creeper	*Certhia americana*	S5B	G5			30	Cadman et al. (2007)	
House Wren	*Troglodytes aedon*	S5B	G5				Cadman et al. (2007)	
Winter Wren	*Troglodytes hiemalis*	S5B	G5			30	Cadman et al. (2007)	Hejl et al. 2002
Sedge Wren	*Cistothorus platensis*	S4B	G5	NAR	NAR		Cadman et al. (2007)	
Golden-crowned Kinglet	*Regulus satrapa*	S5B	G5			0	Cadman et al. (2007)	
Eastern Bluebird	*Sialia sialis*	S5B	G5	NAR	NAR		Cadman et al. (2007)	
Veery	*Catharus fuscescens*	S4B	G5			10-20	Cadman et al. (2007)	
Hermit Thrush	*Catharus guttatus*	S5B	G5			20-30	Cadman et al. (2007)	
American Robin	*Turdus migratorius*	S5B	G5				Cadman et al. (2007)	
Gray Catbird	*Dumetella carolinensis*	S4B	G5				Cadman et al. (2007)	
Brown Thrasher	*Toxostoma rufum*	S4B	G5				Cadman et al. (2007)	
European Starling	*Sturnus vulgaris*	SNA	G5				Cadman et al. (2007)	
Cedar Waxwing	*Bombycilla cedrorum*	S5B	G5				Cadman et al. (2007)	
Ovenbird	*Seiurus aurocapilla*	S4B	G5			20	Cadman et al. (2007)	
Northern Waterthrush	*Parkesia noveboracensis*	S5B	G5			20	Cadman et al. (2007)	
Black-and-white Warbler	*Mniotilta varia*	S5B	G5			100	Cadman et al. (2007)	
Nashville Warbler	*Oreothlypis ruficapilla*	S5B	G5				Cadman et al. (2007)	
Mourning Warbler	*Geothlypis philadelphia*	S4B	G5			30	Cadman et al. (2007)	
Common Yellowthroat	*Geothlypis trichas*	S5B	G5				Cadman et al. (2007)	
American Redstart	*Setophaga ruticilla*	S5B	G5			20-30	Cadman et al. (2007)	
Blackburnian Warbler	*Setophaga fusca*	S5B	G5			30-50	Cadman et al. (2007)	
Yellow Warbler	*Setophaga petechia*	S5B	G5				Cadman et al. (2007)	
Chestnut-sided Warbler	*Setophaga pensylvanica*	S5B	G5				Cadman et al. (2007)	
Pine Warbler	*Setophaga pinus*	S5B	G5			15-30	Cadman et al. (2007)	
Yellow-rumped Warbler	*Setophaga coronata*	S5B	G5				Cadman et al. (2007)	
Connecticut Warbler	*Oporornis agilis*	S4B	G4				Cadman et al. (2007)	
Chipping Sparrow	*Spizella passerina*	S5B	G5				Cadman et al. (2007)	
Clay-colored Sparrow	*Spizella pallida*	S4B	G5				Cadman et al. (2007)	
Savannah Sparrow	*Passerculus sandwichensis*	S4B	G5				Cadman et al. (2007)	
Grasshopper Sparrow	*Ammodramus savannarum*	S4B	G5	SC	SC-NS		Cadman et al. (2007)	

COMMON NAME	SCIENTIFIC NAME	ONTARIO STATUS	GLOBAL STATUS	COSSARO	COSEWIC	AREA SENSITIVITY (ha)	Source	Area Sensitive Reference
Song Sparrow	*Melospiza melodia*	S5B	G5				Cadman et al. (2007)	
Swamp Sparrow	*Melospiza georgiana*	S5B	G5				Cadman et al. (2007)	
White-throated Sparrow	*Zonotrichia albicollis*	S5B	G5			20	Cadman et al. (2007)	
Le Conte's Sparrow	*Ammodramus leconteii*	S4B	G4				Cadman et al. (2007)	
Dark-eyed Junco	*Junco hyemalis*	S5B	G5				Cadman et al. (2007)	
Scarlet Tanager	*Piranga olivacea*	S4B	G5			20	Cadman et al. (2007)	
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	S4B	G5				Cadman et al. (2007)	
Indigo Bunting	*Passerina cyanea*	S4B	G5				Cadman et al. (2007)	
Bobolink	*Dolichonyx oryzivorus*	S4B	G5	THR	THR-NS	10	Cadman et al. (2007)	
Red-winged Blackbird	*Agelaius phoeniceus*	S4	G5				Cadman et al. (2007)	
Western Meadowlark	*Sturnella neglecta*	S3B	G5				Cadman et al. (2007)	
Yellow-headed Blackbird	*Xanthocephalus xanthocephalus*	S2B	G5				Cadman et al. (2007)	
Brewer's Blackbird	*Euphagus cyanocephalus*	S4B	G5				Cadman et al. (2007)	
Common Grackle	*Quiscalus quiscula*	S5B	G5				Cadman et al. (2007)	
Brown-headed Cowbird	*Molothrus ater*	S4B	G5				Cadman et al. (2007)	
Baltimore Oriole	*Icterus galbula*	S4B	G5				Cadman et al. (2007)	
House Finch	*Haemorhous mexicanus*	SNA	G5				Cadman et al. (2007)	
Sharp-tailed Grouse	*Tympanuchus phasianellus*	S4	G4				Cadman et al. (2007)	
MAMMALS								
Black-backed Shrew	*Sorex arcticus*	S5	G5				Dobbyn (1994)	
Masked Shrew	*Sorex cinereus*	S5	G5				Dobbyn (1994)	
Pygmy Shrew	*Sorex hoyi*	S4	G5				Dobbyn (1994)	
Water Shrew	*Sorex palustris*	S5	G5				Dobbyn (1994)	
Northern Short-tailed Shrew	*Blarina brevicauda*	S5	G5				Dobbyn (1994)	
Star-nosed Mole	*Condylura cristata*	S5	G5				Dobbyn (1994)	
Little Brown Myotis	*Myotis lucifugus*	S4	G5	END	END		Dobbyn (1994)	
Red Bat	*Lasiurus borealis*	S4	G5				Dobbyn (1994)	
Big Brown Bat	*Eptesicus fuscus*	S5	G5				Dobbyn (1994)	
Snowshoe Hare	*Lepus americanus*	S5	G5			20	Dobbyn (1994)	
White-tailed Jack Rabbit	*Lepus townsendii*	S1	G5				NHIC (2015), Dobbyn (1994)	
Least Chipmuck	*Neotamias minimus*	S5	S5				Dobbyn (1994)	
Eastern Chipmunk	*Tamias striatus*	S5	G5				Dobbyn (1994)	
Woodchuck	*Marmota monax*	S5	G5				Dobbyn (1994)	
Franklin's Ground Squirrel	*Spermophilus franklinii*	S3	G5				NHIC (2015), Dobbyn (1994)	
Red Squirrel	*Tamiasciurus hudsonicus*	S5	G5				Dobbyn (1994)	
Northern Flying Squirrel	*Glaucomys sabrinus*	S5	G5				Dobbyn (1994)	
Beaver	*Castor canadensis*	S5	G5				Dobbyn (1994)	
Deer Mouse	*Peromyscus maniculatus*	S5	G5				Dobbyn (1994)	
Southern Red-backed Vole	*Clethrionomys gapperi*	S5	G5				Dobbyn (1994)	
Muskrat	*Ondatra zibethicus*	S5	G5				Dobbyn (1994)	

COMMON NAME	SCIENTIFIC NAME	ONTARIO STATUS	GLOBAL STATUS	COSSARO	COSEWIC	AREA SENSITIVITY (ha)	Source	Area Sensitive Reference
Northern Bog Lemming	*Synaptomys borealis*	SU	G4				Dobbyn (1994)	
Southern Bog Lemming	*Synaptomys cooperi*	S4	G5				Dobbyn (1994)	
Meadow Vole	*Microtus pennsylvanicus*	S5	G5				Dobbyn (1994)	
Norway Rat	*Rattus norvegicus*	SNA	G5				Dobbyn (1994)	
Meadow Jumping Mouse	*Zapus hudsonicus*	S5	G5				Dobbyn (1994)	
Woodland Jumping Mouse	*Napaeozapus insignis*	S5	G5				Dobbyn (1994)	
Porcupine	*Erethizon dorsatum*	S5	G5				Dobbyn (1994)	
Coyote	*Canis latrans*	S5	G5				Dobbyn (1994)	
Grey Wolf	*Canis lupus occidentalis*	S4	G4	NAR	NAR		Dobbyn (1994)	
Red Fox	*Vulpes vulpes*	S5	G5				Dobbyn (1994)	
Black Bear	*Ursus americanus*	S5	G5	NAR	NAR		Dobbyn (1994)	
Raccoon	*Procyon lotor*	S5	G5				Dobbyn (1994)	
Marten	*Martes americana*	S5	G5				Dobbyn (1994)	
Fisher	*Martes pennanti*	S5	G5				Dobbyn (1994)	
Ermine	*Mustela erminea*	S5	G5				Dobbyn (1994)	
Mink	*Mustela vison*	S4	G5				Dobbyn (1994)	
Least Weasel	*Mustela nivalis*	SU	G5				Dobbyn (1994)	
American Badger (northwestern)	*Taxidea taxus taxus*	S2	G5	END	END		Dobbyn (1994)	
Striped Skunk	*Mephitis mephitis*	S5	G5				Dobbyn (1994)	
River Otter	*Lutra canadensis*	S5	G5				Dobbyn (1994)	
Lynx	*Lynx canadensis*	S5	G5		NAR		Dobbyn (1994)	
Bobcat	*Lynx rufus*	S4	G5				Dobbyn (1994)	
White-tailed Deer	*Odocoileus virginianus*	S5	G5				Dobbyn (1994)	
Moose	*Alces alces*	S5	G5				Dobbyn (1994)	
SUMMARY								
Total Amphibians:	**8**							
Total Reptiles:	**6**							
Total Breeding Birds:	**117**							
Total Mammals:	**45**							

COMMON NAME	*SCIENTIFIC NAME*	ONTARIO STATUS	GLOBAL STATUS	COSSARO	COSEWIC	AREA SENSITIVITY (ha)	Source	Area Sensitive Reference
SIGNIFICANT SPECIES								
COSSARO Status - END	**2**							
COSSARO Status - THR	**4**							
COSSARO Status - SC	**7**							
Provincial Status - Vulnerable (S3)	**6**							
Provincial Status - Imperiled (S2)	**4**							
Provincial Status - Critically Imperiled (S1)	**2**							
Explanation of Status and Acronymns								
COSSARO: Committee on the Status of Species at Risk in Ontario								
COSEWIC: Committee on the Status of Endangered Wildlife in Canada								
S1: Critically Imperiled—Critically imperiled in the province (often 5 or fewer occurrences)								
S2: Imperiled—Imperiled in the province, very few populations (often 20 or fewer),								
S3: Vulnerable—Vulnerable in the province, relatively few populations (often 80 or fewer)								
S4: Apparently Secure—Uncommon but not rare								
S5: Secure—Common, widespread, and abundant in the province								
SX: Presumed extirpated								
SH: Possibly Extirpated (Historical)								
SNR: Unranked								
SU: Unrankable—Currently unrankable due to lack of information								
SNA: Not applicable—A conservation status rank is not applicable because the species is not a suitable target for conservation activities.								
S#S#: Range Rank—A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species								
S#B- Breeding status rank								
S#N- Non Breeding status rank								
?: Indicates uncertainty in the assigned rank								
G1: Extremely rare globally; usually fewer than 5 occurrences in the overall range								
G1G2: Extremely rare to very rare globally								
G2: Very rare globally; usually between 5-10 occurrences in the overall range								
G2G3: Very rare to uncommon globally								
G3: Rare to uncommon globally; usually between 20-100 occurrences								
G3G4: Rare to common globally								
G4: Common globally; usually more than 100 occurrences in the overall range								
G4G5: Common to very common globally								
G5: Very common globally; demonstrably secure								
GU: Status uncertain, often because of low search effort or cryptic nature of the species; more data needed.								
GNR: Unranked—Global rank not yet assessed.								
T: Denotes that the rank applies to a subspecies or variety								

COMMON NAME	*SCIENTIFIC NAME*	ONTARIO STATUS	GLOBAL STATUS	COSSARO	COSEWIC	AREA SENSITIVITY (ha)	Source	Area Sensitive Reference
Q: Denotes that the taxonomic status of the species, subspecies, or variety is **questionable**.								
END: Endangered								
THR: Threatened								
SC: Special Concern								
2, 3 or NS after a COSEWIC ranking indicates the species is either on Schedule 2, Schedule 3 or No Schedule of the Species At Risk Act (SARA)								
NAR: Not At Risk								
IND: Indeterminant, insufficient information to assign status								
DD: Data Deficient								
Area: Minimum patch size for area-sensitive species (ha)								
LATEST STATUS UPDATE								
Odonata: April 2015								
Butterflies: July 2014								
Amphibans: July 2014								
Reptiles: April 2015								
Birds: April 2015								
Mammals: April 2015								
NOTE								
All rankings for birds refer to breeding birds unless the ranking is followed by N								
REFERENCES								
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COSEWIC Status								
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Area-sensitive information								
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Appendix E PHOTOGRAPHIC RECORD

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C10: Terrestrial Impact Assessment Report

Terrestrial Ecosystems Impact Assessment Report: Preliminary Design and Class Environmental Assessment – Baudette/Rainy River International Bridge Replacement on Highway 11, Town of Rainy River (GWP 6046-10-00)

FINAL REPORT

Prepared for:
Ontario Ministry of Transportation – Northwestern Region

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June 30, 2016

Sign-off Sheet

This document entitled Terrestrial Ecosystems Impact Assessment Report: Preliminary Design and Class Environmental Assessment – Baudette/Rainy River International Bridge Replacement on Highway 11, Town of Rainy River (GWP 6046-10-00) was prepared by Stantec Consulting Ltd. ("Stantec") for the account of Ontario Ministry of Transportation (the "Client"). Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

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1.0 INTRODUCTION

The Ontario Ministry of Transportation (MTO), in cooperation with the Minnesota Department of Transportation (MnDOT), has retained Stantec Consulting Ltd. (Stantec) to undertake the Preliminary Design and Class Environmental Assessment (Class EA) Study for the replacement of the Baudette/Rainy River International Bridge on Highway 11 in the Town of Rainy River (the Project). The bridge provides access between the United States and Canada with 24-hour, full-service Port of Entry facilities in the City of Baudette, Minnesota and the Town of Rainy River, Ontario. The study will follow the *Class EA for Provincial Transportation Facilities* (MTO, 2000) process for a Group 'B' project. It includes the development and evaluation of a range of reasonable bridge replacement alternatives; construction staging and traffic management options; and the selection of a Preferred Plan. The location of the Study Area is shown in **Figure 1**.

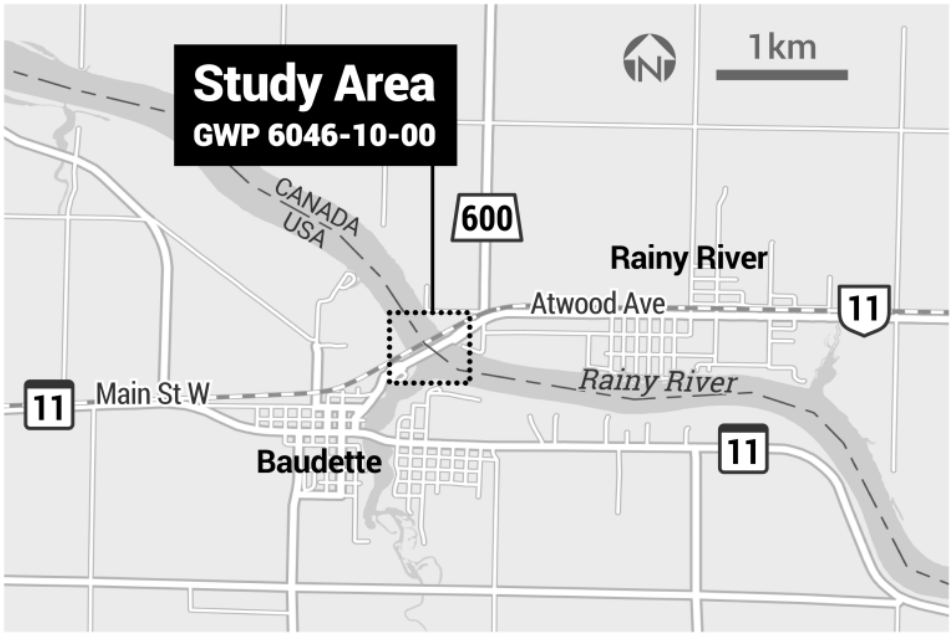

Figure 1 Baudette/Rainy River International Bridge Replacement Study Area

This report provides a description of terrestrial ecosystems and terrestrial species at risk within the Study Area on the Canadian side of the border as supporting documentation to the Class EA. Supporting documentation was compiled in accordance with Section 3.2 - Terrestrial Ecosystems and Section 4 – Wildlife and Wildlife Management of the *Environmental Reference for Highway Design* (MTO, 2013).

The purpose of this report is to:

- Describe existing vegetation communities, wildlife, and wildlife habitat conditions;
- Document sensitivities of vegetation communities, wildlife species and habitats;
- Document potential impacts to terrestrial ecosystems as a result of the Preferred Plan;
- Identify appropriate protection and mitigation measures; and
- Identify required permits and/or other approvals related to terrestrial ecosystems.

For this report the Study Area is the 120 metre (m) zone of investigation around the existing Baudette/Rainy River Bridge and replacement alternatives on the Canadian side of the international border (**Figure 3**, **Appendix A**). The replacement alternatives included:

- Alignment Alternative 1 – approximately 1 metre north of the existing alignment to the north (**Appendix B.1**);
- Alignment Alternative 2 – approximately 1 metre south of the existing alignment to the south (**Appendix B.2**); and
- Alignment Alternative 3 - replacement on the existing alignment, with temporary (construction phase) modular bridges on either the north or south side of the existing bridge (**Appendix B.3**).

Fish and fish habitat are described for the Project in a separate report (Stantec, 2016).

2.0 METHODOLOGY

2.1 BACKGROUND DATA AND AGENCY CONSULTATION

The Study Area is located within the jurisdiction of the Fort Francis District of the Ministry of Natural Resources and Forestry (MNRF). The MNRF was contacted to obtain available data for the Study Area. The key agency contact person was:

- Rachel Hill, Fort Francis District Planner, MNRF; and
- MNRF's Natural Heritage Information Centre online database (NHIC, 2015) and Land Information Ontario (LIO, 2015) Natural Heritage Area Mapping tool were accessed to identify records of species at risk, provincially rare species and significant natural features in the vicinity of the Study Area. MNRF correspondence is provided in **Appendix C**.

Additional background information was obtained from the following resources:

- 2nd Ontario Breeding Bird Atlas (Cadman *et al.*, 2007);
- Atlas of Mammals of Ontario (Dobbyn, 1994);
- Ontario Reptile and Amphibian Atlas (Ontario Nature, 2015);
- Species at Risk in Ontario List (http://www.ontario.ca/environment-and-energy/species-risk-ontario-list); and
- Federal Species at Risk Public Registry (http://www.registrelep-sararegistry.gc.ca/species/default_e.cfm).

2.1.1 Significant Species

Significant species are considered at a number of scales, including globally, nationally and provincially. In Ontario and Canada significant species are those that are provincially rare (with a Provincial S-rank of S1 to S3), are on the Species at Risk in Ontario (SARO) list, on Schedule 1 of the *Species at Risk Act* (SARA) or were assessed as Endangered, Threatened or Special Concern by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) but have not yet been added to Schedule 1.

Provincially Endangered, Threatened and Special Concern species are identified on the SARO list. The Ontario *Endangered Species Act*, 2007 (ESA 2007) prohibits harm or harassment to Threatened or Endangered species, or damage or disturbance to their habitat. The ESA applies on all private and Crown lands in Ontario. Habitat protection under the ESA is typically comprehensive, including all habitats that directly or indirectly support species at risk.

Federally protected Endangered, Threatened and Special Concern species are identified in Schedule 1 of the *Species at Risk Act* (SARA 2002). SARA applies to federally owned lands, with the exception of fish [species that are covered by the *Fisheries Act* (FA 1985)] and migratory birds [species that are covered by the *Migratory Bird Convention Act* (MBCA 1994)], which are afforded protection on all lands. This report will address migratory birds that are listed on Schedule 1 of the Act and/or covered under the MBCA. The *Fisheries Act* will be addressed in the fisheries specialist report provided under separate cover (Stantec, 2016). The provincial *Fish and Wildlife Conservation Act*, 1997 (FWCA) also provides protection for nests of wild birds, including birds that are not protected by the MBCA, such as raptors.

Provincial ranks (S-ranks) are used by the NHIC to set protection priorities for rare species and vegetation communities. They are based on the number of occurrences in Ontario and are not legal designations. By comparing the global and provincial ranks, the status, rarity and the urgency of conservation needs can be ascertained. Species with provincial ranks of S1 to S3, and those tracked by the MNRF, are considered species of conservation concern. Provincial S-ranks are defined as follows:

S1 Critically imperiled; usually fewer than 5 occurrences;
S2 Imperiled; usually fewer than 20 occurrences;
S3 Vulnerable; usually fewer than 100 occurrences;
S4 Apparently secure; uncommon but not rare, usually more than 100 occurrences;
S5 Secure; common, widespread and abundant; and
S-rank followed by a "?" indicates the rank is uncertain.

Identification of potentially sensitive native plant species is based on their assigned coefficient of conservatism (CC) value, as determined by Oldham *et al.* (1995). This CC value, ranging from 0 (low) to 10 (high), is based on a species' tolerance of disturbance and fidelity to a specific natural habitat. Species with a CC value of 9 or 10 generally exhibit a high degree of fidelity to a narrow range of habitat parameters.

2.1.2 Species at Risk

The potential for species at risk within the Study Area was evaluated based on a review of background information, agency consultation, and field investigations. Information regarding significant species occurrences and species at risk was obtained from the NHIC online database (NHIC, 2015). The NHIC database was consulted to document the occurrences of significant floral or faunal species in the vicinity of the Study Area. Local MNRF biologists provided current and local information concerning known and potential species at risk in the Study Area (**Appendix C**). This information was used to assist in the assessment of habitats during field investigations and to determine the habitat potential for species at risk in the Study Area.

2.2 FIELD DATA COLLECTION

Field investigations were conducted within the Study Area on August 28, 2015. Investigations documented vegetation communities, vegetation species, wildlife habitat, bird nests, and incidental encounters with wildlife.

2.2.1 Vegetation Communities and Floristic Survey

Vegetation communities within the Study Area were classified according to the *Ecosites of Ontario Operational Draft* (Ministry of Natural Resources (MNR), 2009), using the Ecological Land Classification (ELC) field data cards to collect detailed vegetation community information (Lee *et al.*, 1998). Vegetation communities were delineated on aerial photographs for the entire Study Area and verified in the field on the Canadian side of the border. Data collected included plant species composition and community structure. English colloquial names and scientific binomials of plant species generally follow Newmaster *et al.* (1998). However, many updates to genera, specific epithets and family names have been made to reflect recent taxonomic revisions. The primary source of these updates is Michigan Flora Online (Reznicek *et al.*, 2011).

2.2.2 Wildlife and Wildlife Habitat

2.2.2.1 Nest Surveys

The entire Baudette/Rainy River International Bridge was searched by canoe for the presence of Barn Swallow nests and nests of other species protected by the *Migratory Bird Convention Act*, 1994 (MBCA). As a Threatened species, Barn Swallow and its habitat are also protected under the *ESA 2007*.

2.2.2.2 Significant Wildlife Habitat

The *Significant Wildlife Habitat Technical Guide* (MNR, 2000) and *Mitigation Support Tool* (MNRF, 2014) identify four general categories of Significant Wildlife Habitat (SWH): (a) seasonal concentration areas, (b) rare or specialized habitat, (c) habitat for species of conservation concern, and (d) animal migration corridors. Candidate SWH features were identified in the field and assessed using ELC (Lee *et al.*, 1998), the *Significant Wildlife Habitat Technical Guide* (MNR, 2000), the *Mitigation Support Tool* (MNRF, 2014), and the *Criteria Schedules for Ecoregion 3E* and *5E* (MNRF, 2015a-b), which are the nearest available criteria schedules.

Targeted species-use surveys are used to determine if candidate features qualify as confirmed SWH. Targeted species use surveys were not completed for this report, so significant habitats remain candidate and not confirmed, unless incidental observations provided sufficient information to confirm SWH.

3.0 EXISTING ECOLOGICAL CONDITIONS

3.1 BACKGROUND DATA

3.1.1 Physiography

The Study Area is located in Ecoregion 5S, which is dominated by extensive post-glacial Lake Agassiz clay deposits, and is part of a clay plain that extends into Minnesota and Manitoba (Crins *et al.*, 2009). The landscape is relatively flat and poorly drained, with wet ecosystems occurring throughout, including open water, peatlands and swamps. Ecoregion 5S is approximately 58% sparse forest, including deciduous forest, mixed, and coniferous forests. Remaining lands include pasture and major river segments, including the Rainy River.

Ecoregion 5S also corresponds with the Rainy River Forest Section of the Great Lakes-St. Lawrence Forest Region. The Rainy River Forest includes a mix of flora and fauna characteristic of Great Lakes mixed forest (southern species), boreal (northern species) and prairie ecosystems (western species) (Crins *et al.*, 2009). Great Lakes mixed forest species are at their northern range limit and are uncommon in the Rainy River Forest, including sugar maple (*Acer saccharum* ssp. *saccharum*), red maple (*A. rubrum*), black cherry (*Prunus serotina*), American basswood (*Tilia americana*) and green ash (*Fraxinus pennsylvanica*). Typical boreal species frequently occur throughout, including white spruce (*Picea glauca*), black spruce (*P. mariana*), tamarack (*Larix laricina*), eastern white cedar (*Thuja occidentalis*), balsam fir (*Abies balsamea*), willow (*Salix* sp.), trembling aspen (*Populus tremuloides*), speckled alder (*Alnus incana* ssp. *rugosa*) and white birch (*Betula papyrifera*). Typical prairie species are associated with dry clay and rock outcrops, including bur oak (*Quercus macrocarpa*), northern pin oak (*Q. ellipsoidalis*) and American elm (*Ulmus americana*). Some western fauna are at their eastern range limit and have limited occurrences elsewhere in Ontario, including Sharp-tail Grouse, Black-billed Magpie, Western Meadowlark and Franklin's Ground Squirrel (Crins *et al.*, 2009).

3.1.2 Significant Natural Areas

The NHIC and LIO data for the four squares that overlap with the Study Area (**Figure 2**, **Appendix A**) do not include any records of designated natural areas (Provincially Significant Wetlands (PSW), Areas of Natural and Scientific Interest (ANSI), Provincial Parks, Conservation Reserves or known areas of SWH) in the Study Area. Correspondence with MNRF (**Appendix C**) confirmed there are "currently no PSWs, ANSIs, or other special habitat features located in the vicinity (120 m) of the site." Based on this, significant natural areas are considered to be absent from the Study Area.

3.1.3 Species at Risk and Provincially Rare Species

A review of the atlases named in **Section 2.1** identified 117 breeding birds, 45 mammals, eight amphibians and six reptiles with ranges that overlap with the Study Area. Thirteen of these species are designated in Ontario and/or Canada as Endangered (two species), Threatened (four species) and Special Concern (seven species), and six additional species are provincially rare (S1-S3). All species identified during the atlas review are listed in **Appendix D**. The bird, mammal, reptile and amphibian range maps are at relatively small scales and do not offer precise locations or detailed information on concentrations or densities of records; for example, the Ontario Breeding Bird Atlas records are provided in 10 kilometre (km) by 10 km square grids.

The NHIC database provides more precise mapping than the atlases (1 km by 1km squares) and is a better indicator of occurrence of significant species, particularly when used in combination with MNRF correspondence. This method also supplements wildlife atlas records with records of insects and plant species. A review of the NHIC database (NHIC, 2015) did not identify any records of species at risk within 1km of the Study Area. All species identified during the review of the NHIC database are listed in **Appendix D.**

MNRF correspondence (**Appendix C**) indicated that the "bridge replacement has the potential to harm or harass Barn Swallows and/or damage/destroy their protected habitat." The MNRF correspondence continues "there are currently no records indicating that other species at risk…inhabit the bridge site."

Although the NHIC database did not identify any records of species at risk, it did identify nine records of provincially rare (S1-S3) species within 1 km of the Study Area:

- **Plants:** wild licorice (*Glycyrrhiza lepidota*), Leiberg's panicgrass (*Dichanthelium leibergii*), saxifrage (*Micranthese pensylvanica*), prairie white heath (*Symphyotrichum ericoides* var. *pansum*) and rigid sedge (*Carex tentanica*);
- **Mammals:** Franklin's Ground Squirrel, White-tailed Jack Rabbit; and
- **Insects:** Elusive Clubtail (*Stylurus notatus*), and Grey Copper.

MNRF (John Van den Broeck pers. comm., May 25, 2016) also noted that milkweed (*Asclepias* sp.) plants are known to occur in the study area. In Ontario, the Monarch (*Danaus plexippus)* is found primarily wherever milkweed and other wildflowers exist, including goldenrods (*Solidago* sp.), asters (*Asteracea*) and purple loosestrife (*Lythrum salicaria*) (COSEWIC, 2010). Monarch caterpillars feed on milkweed plants and are confined to meadows where milkweed is present; adults are more generalized, feeding on a variety of wildflower nectar (MNR, 2010). Milkweed plants are common and widespread in abandoned farmland, along roadsides, and other open

spaces throughout Ontario. The Monarch butterfly is provincially ranked as S4 (apparently secure) and is designated as Special Concern federally and provincially.

The Monarch in the CUM1-1c community had an abundance of Common Milkweed, the larval host plant for this species. However, meadow habitat is not a limiting factor for Monarch in Ontario, and is not considered significant wildlife habitat.

3.2 FIELD INVESTIGATIONS

3.2.1 Vegetation

Eleven distinct vegetation communities were identified in the Study Area, including forest, wetland and open water communities that are typical of the Rainy River Forest Section of the Great Lakes-St. Lawrence Forest Region. Constructed communities included infrastructure associated with the United States and Canadian Port of Entry facilities, and constructed parklands. All vegetation communities are summarized in **Table 1** and mapped on **Figure 3** (**Appendix A**). Representative photos are included in **Appendix E**.

Table 1 Summary of Vegetation Communities

Code	Description	Vegetation Characteristics
Terrestrial System		
FOD7	Fresh-Moist Lowland Deciduous Forest Ecosite	Deciduous tree species >75% of canopy cover Dominant species: balsam poplar (*Populus balsamifera*), Manitoba maple (*Acer negundo*), black ash (*Fraxinus nigra*), Tartarian honeysuckle (*Lonicera tatarica*) See photo 3 (**Appendix E**)
Cultural System		
CUW1	Mineral Cultural Woodland Ecosite	Tree cover 35-60%; community maintained by anthropogenic-based disturbance Trembling aspen (*Populus tremuloides*), Manitoba maple, peach-leaved willow (*Salix amygdaloides*), willow (*Salix* sp.), red raspberry (*Rubus idaeus* ssp. *strigosus*), prickly rose (*Rosa acicularis*), and cool season graminoids See photos 5-7 (**Appendix E**)
CUM1-1	Dry-Moist Old Field Meadow Type	Tree cover <25% and shrub cover <25%; community maintained by anthropogenic-based disturbance
CGL_2	Constructed Parkland	Manicured lawn and gardens associated with developed lands See photo 4 (**Appendix E**)
CV	Constructed	Port of Entry facilities

Table 1 Summary of Vegetation Communities

Code	Description	Vegetation Characteristics
Wetland System		
CUM1-1/MAM2	Dry-Moist Old Field Meadow / Mineral Meadow Marsh Complex	Tree and shrub cover <25%; seasonal flooding in low lying areas with herbaceous wetland species See photo 11 (**Appendix E**)
MAM2	Mineral Meadow Marsh Ecosite	Tree and shrub cover <25%; graminoids dominate; seasonal flooding along shorelines and inland
MAS2	Mineral Shallow Marsh Ecosite	Hydrophytic emergent macrophytes cover >25%; shoreline communities with prolonged flooding Dominant species: Cattails (*Typha* sp.) See photo 10 (**Appendix E**)
SWT2	Mineral Swamp Thicket Ecosite	Hydrophytic shrubs >25% cover; shoreline communities with prolonged flooding Dominant species: Missouri willow (*Salix eriocephala*), willow (*Salix sp.*), red-osier dogwood (*Cornus stolonifera*), and groundnut (*Apios americana*) See photos 8-9 (**Appendix E**)
Aquatic System		
SA	Shallow Water Community Class	Submergent vegetation in near-shore areas; permanent water <2 m deep
OAO	Open Aquatic Community Series	No tree, shrub or macrophyte vegetation; water >2 m deep

One provincially rare plant (S3) was observed in the Study Area, wild licorice. This species was observed along the edge of the Cultural Woodland (CUW1) and manicured lawn and gardens (CGL_2), south of the Canadian Port of Entry (see photo 4, **Appendix E**). A thorough search for the plant was not conducted and it may be present elsewhere along the river bank and woodland edges. No other rare or highly sensitive plant species were encountered during field surveys.

3.2.2 Wildlife Observations and Wildlife Habitat

3.2.2.1 Nest Surveys

Field investigations conducted in August 2015 determined that there are no bird nests under the existing Baudette/Rainy River International Bridge. The configuration of the bridge is such that it is not expected to provide the necessary protection to attract birds such as Barn Swallows. The bridge is a metal grate structure that does not offer protection from the elements, and the piers do not provide sufficient overhang to protect a bird nesting underneath (see photos 1-2, **Appendix E**).

Although no nests were seen, one Barn Swallow was observed near the bridge during the field investigations.

A thorough search of the Study Area was not completed; however, vegetation (and possibly other structures) are expected to support nests of common bird species that are protected under the MBCA.

3.2.2.2 Significant Wildlife Habitat

Significant Wildlife Habitat (SWH) is discussed below in four general categories: (a) seasonal concentration areas, (b) rare or specialized habitat, (c) habitat for species of conservation concern, and (d) animal migration corridors.

The wildlife habitat types considered in this assessment include all features listed in the *Criteria Schedules for Ecoregion 3E* and *5E* (MNRF, 2015a-b), and features identified in the *Mitigation Support Tool* (MNRF, 2014) as occurring in "all of Ontario". Habitat types are listed in **Table 2 to Table 5**. The tables also indicate if candidate or confirmed SWH is present in the Study Area based on the criteria in the MNRF guidance documents.

Seasonal concentration areas are sites where large numbers of a species gather together at one time of the year, or where several species congregate. Only the best examples of these concentration areas are typically designated as SWH. Areas that support a species at risk, or areas where a large proportion of the population may be lost if the habitat is destroyed, are examples of seasonal concentration areas that should be designated as significant (MNR, 2000).

Six candidate seasonal concentration areas are present in the Study Area as documented in **Table 2**. No seasonal concentration areas were confirmed as SWH for the Study Area.

Table 2 Summary of Wildlife Habitat – Seasonal Concentration Areas in the Study Area

Habitat Type	Habitat Features (MNRF, 2014; MNRF, 2015)	Candidate SWH
Bat hibernacula	Abandoned mine shafts, underground foundations, caves and crevices	None
Deer Wintering Areas	Deer yards are mapped by MNRF and are shown on **Figure 2**, **Appendix A**. None are present in the Study Area.	None
Colonially – nesting bird breeding habitat (bank and cliff)	Eroding banks, sandy hills, steep slopes, rock faces or piles	None
Colonially – nesting bird breeding habitat (trees/shrubs)	Dead trees in large marshes and lakes, flooded timber and shrubs, with nests of Great Blue Heron, Great Egret, Green Heron or Black-crowned Night-Heron	None

Table 2 Summary of Wildlife Habitat – Seasonal Concentration Areas in the Study Area

Habitat Type	Habitat Features (MNRF, 2014; MNRF, 2015)	Candidate SWH
Colonially – nesting bird breeding habitat (ground)	Rock islands and peninsulas in a lake or large river	None
Waterfowl stopover and staging areas	Field with evidence of annual spring flooding from meltwater or runoff; aquatic habitats including large marshy wetlands	Shoreline MAM2 and MAS2 units, and OA units
Shorebird migratory stopover area	Shorelines of lakes, rivers and wetlands	MAM2 and SWT shoreline units
Raptor Wintering Areas	Combination of fields and woodland (>20 ha)	None
Bat maternity colonies	Mature (80 yrs old) to over-mature mixed and deciduous stands with large diameter dead or dying trees with cavities	None; FOD7 units are young forests
Reptile hibernacula	Rock piles or slopes, stone fences, crumbling foundations	Bridge footings
Amphibian breeding habitat (woodland)	Treed uplands with vernal pools	FOD7 and CUW1 units
Amphibian breeding habitat (wetland)	Wetlands ecosites	MAM, MAS2 and SWT2 units
Turtle Wintering Area	Permanent waterbodies and large wetlands with sufficient dissolved oxygen	Nearshore aquatic (OAO and SA) and marsh (MAS and MEM) units
Moose Late Winter Cover	Dense conifer cover	None

Rare or specialized habitats are defined as separate components of SWH. Rare habitats are habitats with vegetation communities that are considered rare (S1-S3) in the province. It is assumed that these habitats are at risk and that they are also likely to support additional wildlife species that are considered significant. Field investigations indicated that no rare (S1-S3) ELC communities occur in the Study Area.

Specialized habitats are microhabitats that are critical to some wildlife species. Three candidate specialized habitats are present in the Study Area as documented in **Table 3** (habitat for waterfowl, raptor nesting areas and moose aquatic feeding habitat). No specialized habitats were confirmed as SWH for the Study Area.

Table 3 Summary of Wildlife Habitat – Rare or Specialized Habitat in the Study Area

Habitat Type	Habitat Features (MNRF, 2014; MNRF, 2015a-b)	Candidate SWH
Rock barren, alvar, cliffs and talus slopes	Rock barren, Alvar, Cliff and Talus ELC Community Classes, and other areas of exposed bed rock and patchy soil development, near vertical exposed bedrock and slopes of rock rubble	None
Prairie and savannah	Open canopy habitats (tree cover <60%) dominated by prairie species	None
Beaches, beach ridges, bars, sand dunes and sand barren	Exposed sand habitat with little to no soil and protruding rock; tree cover (e.g. <60%)	None
Bog and fen	Bog and fen ELC Community Classes	None
Old growth forest	Relatively undisturbed, structurally complex; dominant trees >100 years old	None
Great Lakes arctic-alpine shoreline	Lake Superior shoreline with arctic-alpine indicator flora species	None
Shallow Atlantic coastal marsh	Shallow marsh with Atlantic coast indicator flora species	None
Rare treed types	Tree stands dominated by species that are rare in the Ecoregion	None
Hardwood swamps	Deciduous Swamp (SWD) ELC codes	None
Other rare vegetation communities	Vegetation communities ranked S1-S3 by the NHIC.	None
Waterfowl nesting areas	Upland habitats adjacent to wetlands (within 120 m)	FOD7, CUW1 and CUM1-1/MAM2 units
Bald Eagle and Osprey nesting, foraging and perching habitat	Treed communities adjacent to rivers, lakes, ponds and other wetlands with stick nests of Bald Eagle or Osprey	None
Woodland raptor nesting habitat	Intermediate to mature aged forests	FOD7 and CUW1 units
Reptile nesting areas	Exposed soil, including sand and gravel in open sunny areas	None
Seeps and springs, and mineral licks	Any area with groundwater at surface	None
Moose aquatic feeding habitat	Forested areas close/adjacent to water	FOD7 and CUW1 units
Denning sites for Mink, Otter, Marten, Fisher and Eastern Wolf	All forested sites; particularly in undisturbed areas	None
Wolf rendezvous sites	Isolated open areas, including bogs, fens, meadows and clearcuts; sites removed from human activity are more sensitive	None

Table 3 Summary of Wildlife Habitat – Rare or Specialized Habitat in the Study Area

Habitat Type	Habitat Features (MNRF, 2014; MNRF, 2015a-b)	Candidate SWH
Mast Producing Areas	Mature forests and other shrub and treed ecosites with numerous listed berry/nut mast producing flora species.	None
Sharp-tailed Grouse Leks	Grassy fields/meadows >15 ha if adjacent to shrublands and >30 ha if adjacent to treed areas	None

Habitat for species of conservation concern includes four types of species: (a) those that are rare, (b) those whose populations are significantly declining, (c) those that have been identified as being at risk to certain common activities, and (d) those with relatively large populations in Ontario compared to the remainder of the globe.

Two candidate habitats for species of conservation concern occur in the Study Area as documented in **Table 4**. Shoreline wetlands are candidate breeding habitat for marsh birds, and the CUW1 unit was confirmed as SWH for provincially rare species, wild licorice. This species may also occur along the riverbank and woodland edges in the Study Area.

Table 4 Summary of Wildlife Habitat – Habitat for Species of Conservation Concern in the Study Area

Habitat Type	Habitat Features (MNRF, 2014; MNRF, 2015a-b)	Candidate SWH
Open country bird breeding habitat	Large grasslands and fields (>30 ha)	None
Shrub/early successional bird breeding habitat	Large shrub and thicket habitats (>30 ha)	None
Marsh bird breeding habitat	Wetlands with emergent aquatic vegetation	Shoreline MAM2 and MAS2 units
Special Concern and provincially rare wildlife	Habitat with Special Concern and provincially rare species (wild licorice; S3)	CUW1, FOD7 and riverbanks ***CUW1 is confirmed SWH***

Animal movement corridors are areas that are traditionally used by wildlife to move between habitats. Movement is usually in response to different seasonal habitat requirements. Movement corridors are identified once the following seasonal concentration areas or specialized habitats are confirmed as SWH: amphibian breeding habitat, moose aquatic feeding areas, mineral licks, and denning sites for Mink, Otter, Marten, Fisher and Eastern Wolf.

Two candidate animal movement corridors occur in the Study Area as documented in **Table 5** (cervid movement and amphibian movement corridors).

Table 5 Summary of Wildlife Habitat – Animal Movement Corridors in the Study Area

Habitat Type	Habitat Features (MNRF, 2014; MNRF, 2015a-b)	Candidate SWH
Cervid movement corridors	Associated with known moose aquatic feeding areas and mineral licks	Movement corridors associated with candidate moose aquatic feeding habitat
Amphibian movement corridors	Associated with confirmed amphibian breeding habitat	Movement corridors associated with candidate amphibian breeding habitat
Furbearer movement corridors	Associated with denning sites for Mink, Otter, Marten, Fisher and Eastern Wolf	None; denning sites are absent

4.0 DESCRIPTION OF THE PROPOSED WORKS

The goal of the evaluation process was to select an alignment for the new bridge that provides safe operations and minimizes impacts to the existing port of entry facilities and adverse impacts to the environment.

Evaluation criteria that address the key issues related to the decision-making process of selecting a preferred alignment for the bridge replacement were identified. The evaluation criteria were selected as independent variables, each of which may contribute a positive or negative influence on the overall suitability of an alternative. Each evaluation criterion was assigned a weight that represented its relative importance to the other criteria. Determining the importance of each criterion was based on engineering judgment, environmental significance, input received from external agencies, and input received from the public. The evaluation process incorporated sensitivity testing, which included adjusting the weightings, to confirm that no individual factor significantly influenced the final results.

The evaluation of alignment alternatives (identified in **Section 1.0**) also included a qualitative assessment of the alternatives by tabulating the advantages and disadvantages of each alternative based upon the evaluation criteria developed and the scale of potential impacts for each criterion. The alternatives were scored based on the weights of each evaluation criterion and the total score was established by adding the score for each factor together to determine a total weighted score for each alternative.

Alignment Alternative 2 (Upstream Alignment) was selected as the preferred alignment for the bridge replacement because:

- U.S. Port of Entry detection equipment can remain in place;
- Truck entry at U.S. Port of Entry can be accommodated in both lanes;
- Reduced cost compared to Alternative 3 since a temporary modular bridge is not required; and
- Refinements can be made to alternative to minimize/avoid impacts to Baudette City Park and unidentified gravesites/cultural heritage features.

4.1 EVALUATION OF BRIDGE TYPE ALTERNATIVES

In addition to the evaluation of alignment alternatives, an evaluation process was developed to provide an objective approach to the analysis and evaluation of the bridge type alternatives to form a justifiable tool for the selection of a preferred bridge type. The goal of the evaluation

process was to select a cost-effective bridge replacement plan that provides safe operation and accommodates access to the U.S. and Canadian Port of Entry facilities and the communities of Baudette, Minnesota and Rainy River, Ontario, while minimizing impacts to the natural, social, and cultural environments. The Bridge Type Alternatives were evaluated through a four-phase evaluation approach.

The initial evaluation criteria developed for the bridge type alternative evaluation are listed below:

- Maximum increase in structure depth;
- Number of substructures in river and location relative to adjacent CN Rail bridge;
- Traffic impacts/staging considerations;
- Geometric challenges;
- Maintenance and inspection needs; and
- Security and vulnerability.

Alternative A (5 Span Steel I-Girder) was selected as the preferred bridge structure type because:

- It is a standard structure type in Minnesota and Ontario;
- Typical construction methodology and maintenance;
- Fewer number of piers in river;
- Can accommodate lower bridge profile; and
- Can use prefabricated elements.

4.2 THE PREFERRED PLAN

The Preferred Plan includes the following features:

- The replacement of the existing bridge with a new bridge on a new alignment located approximately 1 m upstream of the existing bridge;
- Alignment and profile improvements that will improve sight distance across the bridge;
- Realignment and regrading of Port of Entry Tie-in to accommodate the new bridge location;
- Drainage improvements; and
- Maintaining two lanes of traffic on the existing bridge during construction.

Several construction methods are being considered for the construction of the replacement bridge including:

- Conventional erection method using heavy duty cranes and erection towers;
- Launching the superstructure steel framework from the Canadian shoreline of the Rainy River into the U.S. side; and
- Winter ice and frozen conditions on Rainy River to be utilized as an erection platform.

Construction methodology will be confirmed during Detail Design.

5.0 IMPACT ASSESSMENT

The Preferred Plan requires the removal of 0.10 ha of Cultural Woodland (CUW1) and 0.01 ha of Shallow Marsh (MAS2) vegetation communities (**Figure 4, Appendix A**). The CUW1 and MAS2 units at this location occur within the existing Highway 11 and the Baudette/Rainy River International Bridge ROW, and include a high proportion of cool season graminoids (non-native grasses) and other common roadside plants. Given these factors, habitat quality in the Preferred Alignment is relatively low compared to natural areas occurring elsewhere in the Study Area.

5.1 POTENTIAL IMPACTS TO SENSITIVE FEATURES

The Preferred Plan interacts with the following *confirmed* Significant Wildlife Habitat (SWH) features:

- Habitat for Species of Conservation Concern: Habitat with provincially rare species (wild licorice in the CUW1 unit).

Woodland edges and other suitable habitat for wild licorice is well-represented in other parts of the Study Area, and negligible long-term implications to the local population are anticipated as result of the loss of 0.10 ha of Cultural Woodland. Potential loss of individual plants of wild licorice can be offset through site specific protection and mitigation measures recommended for this species in **Section 7.1**.

The Preferred Plan also interacts with the following *candidate* SWH features:

- Seasonal Concentration Areas: Waterfowl stopover and staging areas, reptile hibernacula, amphibian breeding habitat (woodland), amphibian breeding habitat (wetland), and turtle wintering areas;
- Rare or Specialized Habitat: Waterfowl nesting areas, woodland raptor nesting habitat, and moose aquatic feeding habitat;
- Habitat for Species of Conservation Concern: Marsh bird breeding habitat; and
- Animal Movement Corridors: Cervid movement and amphibian movement corridors.

Candidate SWH habitats are well-represented in the Study Area and adjacent lands, and negligible long-term implications to wildlife that use these areas are anticipated. Protection from indirect impacts to habitat such as sedimentation and erosion will be addressed through standard environmental protection measures discussed in **Section 6.0**. Site specific protection for wildlife is addressed in **Section 7.2.**

Although Monarch was not observed during field investigations, the Preferred Plan will remove suitable habitat for milkweed and Monarch larvae. Suitable habitat for milkweed is well-represented in the Study Area and adjacent lands, and negligible long-term implications to milkweed populations are anticipated. Potential loss of individual milkweed plants and Monarach larvae can be offset through site specific protection and mitigation measures recommended in **Section 7.1**.

5.2 POTENTIAL INTERFERENCE WITH BIRD NESTS

The MBCA protects nests of migratory birds from damage while they are active, including nests in vegetation and on structures. There were no bird nests documented on the Baudette/Rainy River International Bridge; however, vegetation in the area of the Preferred Plan may support nests of MBCA and/or FWCA protected species. Vegetation clearing has the potential to damage or disturb nests of MBCA protected species. Measures to avoid contravention of the MBCA during vegetation clearing and construction are provided in **Section 7.3**.

Barn Swallow was not observed to be nesting on the Baudette/Rainy River International Bridge or elsewhere in the Study Area; therefore mitigation or authorization under the ESA is not anticipated for this species.

6.0 ENVIRONMENTAL PROTECTION MEASURES

6.1 SEDIMENT AND EROSION CONTROL

Various mitigation techniques will be employed during construction to reduce the risk of impacts to natural environment features. Mitigation measures for sedimentation, erosion, and dust control should be implemented to prevent sediment and dust from entering sensitive natural features.

The primary principles associated with sedimentation and erosion protection measures are to: (1) minimize the duration of soil exposure; (2) retain existing vegetation, where feasible; (3) encourage re-vegetation; (4) divert runoff away from exposed soils; (5) keep runoff velocities low; and (6) trap sediment as close to the source as possible. To address these principles, the following mitigation measures are proposed:

- The limits of construction (site boundaries) adjacent to all natural areas, including Cultural Woodland (CUW1) and Shallow Marsh (MAS2) communities, should be flagged and fenced prior to construction, and monitored during construction (along with sediment and erosion control measures).
- No equipment should be permitted to enter any natural areas beyond the sediment fencing (site boundaries) during construction.
- All materials requiring stockpiling (fill, topsoil, etc.) should be stabilized and kept a safe distance from any sensitive natural features.
- All exposed soil areas should be stabilized and re-vegetated. Seed and mulching, or seed and an erosion control blanket should be applied to disturbed sites promptly upon completion of construction activities.
- Refueling of equipment should be carried out away from any sensitive natural features to avoid potential impacts, in the event that an accidental spill occurs.
- In addition to any specified requirements, additional sediment fence should be available on site, prior to grading operations, to provide a contingency supply in the event of an emergency.
- All sediment and erosion controls should be monitored regularly and properly maintained, as required. Controls should be removed only after the soils of the construction area have been stabilized and vegetation cover is re-established.
- Any natural areas that are temporarily disturbed for access or construction should be restored to natural self-sustaining conditions.

- Environmental controls should be monitored by an environmental inspector.

6.2 PROTECTION OF PERIPHERAL VEGETATION

During construction adjacent to vegetated areas, heavy equipment could damage peripheral vegetation through contact, excavation and/or soil compaction. Where natural features occur adjacent to construction activities, barrier fencing should be erected to protect vegetation that is to be retained, including fencing to protect the retained portions of the Cultural Woodland (CUW1). Areas to be cleared of existing vegetation should be clearly marked to prevent unnecessary clearing. Barrier fencing may coincide with sediment fencing used to control erosion and sediment transport at the site (see also **Section 6.1**).

7.0 SITE SPECIFIC PROTECTION MEASURES

7.1 WILD LICORICE AND MILKWEED

Pre-construction surveys are recommended to locate individual plants of wild licorice and milkweed within the limits of construction (site boundaries). Individual wild licorice plants should be transplanted to a location in the Study Area that is outside the limits of construction and suitable for the species. Transplanting should occur under the direction of a biologist or other professional qualified to direct handling of plant material, selection of suitable recipient habitat and aftercare requirements. Aftercare should including watering immediately following transplanting, and application of mulch to control competition by other plants.

If vegetation clearing will proceed when Monarch larvae may be present (April 1 to September 30), milkweed plants should be inspected for Monarch larvae prior to their removal. If larvae are present, they may be moved to a location that is suitable and safe under the direction of a qualified professional. Monarch caterpillars may be moved to other milkweed plants; for other larval stages (i.e., eggs and chrysalis), entire milkweed plants should be transplanted.

7.2 WILDIFE AND WILDIFE HABITAT

Protection of natural areas, including candidate SWH is provided by standard environmental protection measures discussed in **Section 6.0**. Protection of nesting waterfowl and raptors is addressed in **Section 7.3**. Contractors should be aware of potential encounters with wildlife, including reptiles (snakes and turtles), amphibians and cervids (moose), and avoid them to the extent possible. Generally, sediment and construction fencing will also prevent wildlife access; however there is some potential that individuals may enter the limits of construction.

Regular visual searches for reptiles (turtles and snakes) are recommended to address potential interaction with candidate turtle overwintering and candidate reptile hibernacula SWH, and other incidental encounters with reptiles. A thorough visual search of work areas should be conducted by construction contractors before work commences each day. Visual searches should include inspection of machinery and equipment for snakes, prior to starting equipment, particularly during the peak snake activity period (generally April 30 to October 31). If reptiles are encountered during construction, they should be permitted reasonable time to flee the area. If an animal must be moved to outside the construction zone, a qualified biologist should be consulted to determine appropriate handling protocols.

If activities disturb hibernating reptiles (generally November 1 to May 1), individuals should be immediately moved to the care of a qualified Animal Care professional. Required handling of

reptiles should follow the *Ontario Species at Risk Handling Manual: For Endangered Species Act Authorization Holders* (MNR, undated).

7.3 BIRD NESTS

The Primary Nesting Period (PNP; the period when the percent of total nesting species is greater than 10%) for this Study Area is between April 21 and August 14, although nesting also infrequently occurs outside of this period (Environment Canada, 2014). If work is scheduled to occur outside of the PNP, no mitigation will be required.

Vegetation clearing is not recommended between April 21 and August 14. If vegetation clearing is required during this period, an avian biologist should be retained to search suitable areas prior to work. The biologist should search for nests to manage risks to active nests protected by the MBCA and FWCA. Nest searches should be completed within 7 days of the proposed works. If work is not completed within 7 days following the nest search, the search should be repeated to make sure that no birds have established new nests during that period.

8.0 SUMMARY

MTO in cooperation with MnDOT has retained Stantec to undertake the Preliminary Design and Class Environmental Assessment Study for the replacement of the Baudette/Rainy River International Bridge on Highway 11. The bridge provides access between the United States and Canada with 24-hour, full-service Port of Entry facilities in the City of Baudette, Minnesota and the Town of Rainy River, Ontario. The study includes the development and evaluation of a range of reasonable bridge replacement alternatives, construction staging and traffic management options, and the selection of a Preferred Plan.

This *Terrestrial Ecosystems Impact Assessment Report* provides supporting documentation for the Project and describes terrestrial ecosystems and terrestrial species at risk within the Study Area.

Significant natural heritage features were evaluated according to the *Environmental Reference for Highway Design* (MTO 2013). The results of this evaluation of significant natural heritage features in the Study Area are summarized below:

- **Designated natural areas:** There are no PSWs, ANSIs, Provincial Parks, Conservation Reserves, or other designated natural areas in the Study Area.
- **Species at risk:** Barn Swallow was observed flying over the Rainy River during field investigations; however, no nests were observed on the bridge or elsewhere in the Study Area. The bridge structure is poorly suited for nesting of Barn Swallow; however, it is possible that Barn Swallow may nest on the bridge in subsequent breeding seasons. There are no other records or observations of species at risk in the Study Area.
- **MBCA protected nests:** No nests were observed on the bridge during field investigations. Metal grate structure of the existing bridge does not offer protection for nests and it is unlikely that MBCA protected species will nest on the bridge in subsequent breeding seasons. Vegetation throughout the Study Area is expected to support nests of MBCA protected species, and may support raptor nests that are protected by the FWCA.
- **Candidate Significant Wildlife Habitat:** The following candidate SWH features were documented in the Study Area:
  - Seasonal Concentration Areas: Waterfowl stopover and staging areas, shorebird migratory stopover area, reptile hibernacula, amphibian breeding habitat (woodland), amphibian breeding habitat (wetland), and turtle wintering areas;
  - Rare or Specialized Habitat: Waterfowl nesting areas, woodland raptor nesting habitat, and moose aquatic feeding habitat;

- Habitat for Species of Conservation Concern: Habitat with provincially rare species (possible occurrence of wild licorice in woodland edges and riverbanks), and marsh bird breeding habitat; and
- Animal Movement Corridors: Cervid movement and amphibian movement corridors.

- **Confirmed Significant Wildlife Habitat:** The following confirmed SWH feature was documented in the Study Area:
  - Habitat for Species of Conservation Concern: Habitat with provincially rare species (wild licorice in the CUW1 unit).

Suitable habitat for milkweed plants and larval Monarch butterflies was also documented in the Study Area.

The Preferred Plan does not extend outside the existing Highway 11 and the Baudette/Rainy River International Bridge ROW, but it will require some minimal removal of terrestrial habitat to accommodate construction of the new bridge. Standard and site specific mitigation measures are recommended to address the anticipated impacts, including: timing restrictions to address protected nests; feature protection measures such as sediment and erosion control and construction barrier fencing; wildlife avoidance; and post-construction restoration.

Based on the findings discussed above, authorization under the ESA for Barn Swallow (or any other ESA protected species) is not anticipated as an approval requirement.

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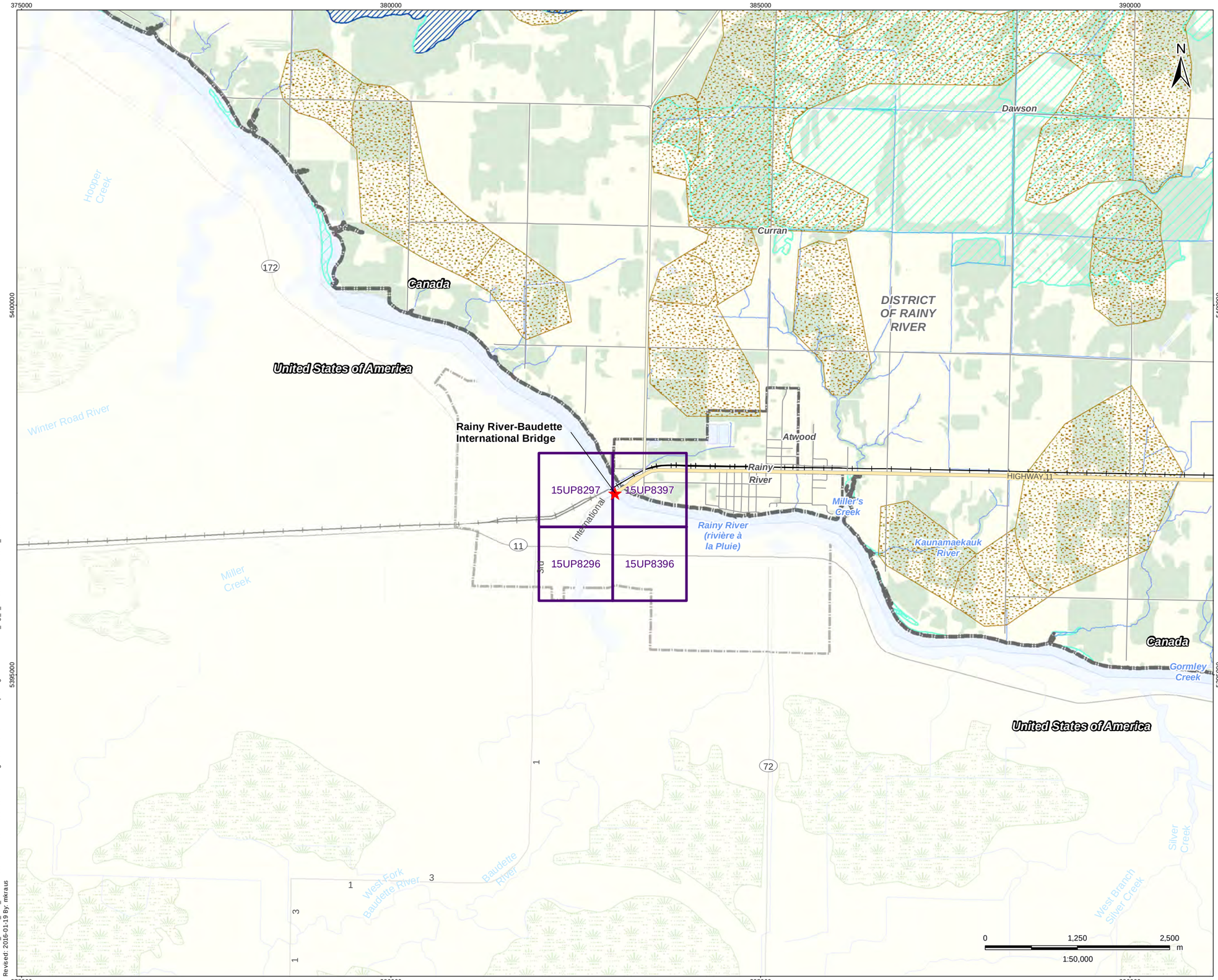
Appendix A FIGURES



Stantec

Legend

- SiteLocation
- Highway
- Major Road
- Minor Road
- Railway_railway
- Watercourse
- Deer Wintering Area
- Municipal Boundary, Upper
- Municipal Boundary, Lower
- NHIC 1 km Square
- Waterbody
- Wetland, Provincially Significant (Evaluated)
- Wetland, Unevaluated
- Wooded Area

Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2015.
3. Additioal USA Data Provided by Esri

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Client/Project

Baudette/Rainy River
International Bridge Replacement
GWP-6046-10-00

Figure No.

2

Title

Regional Context

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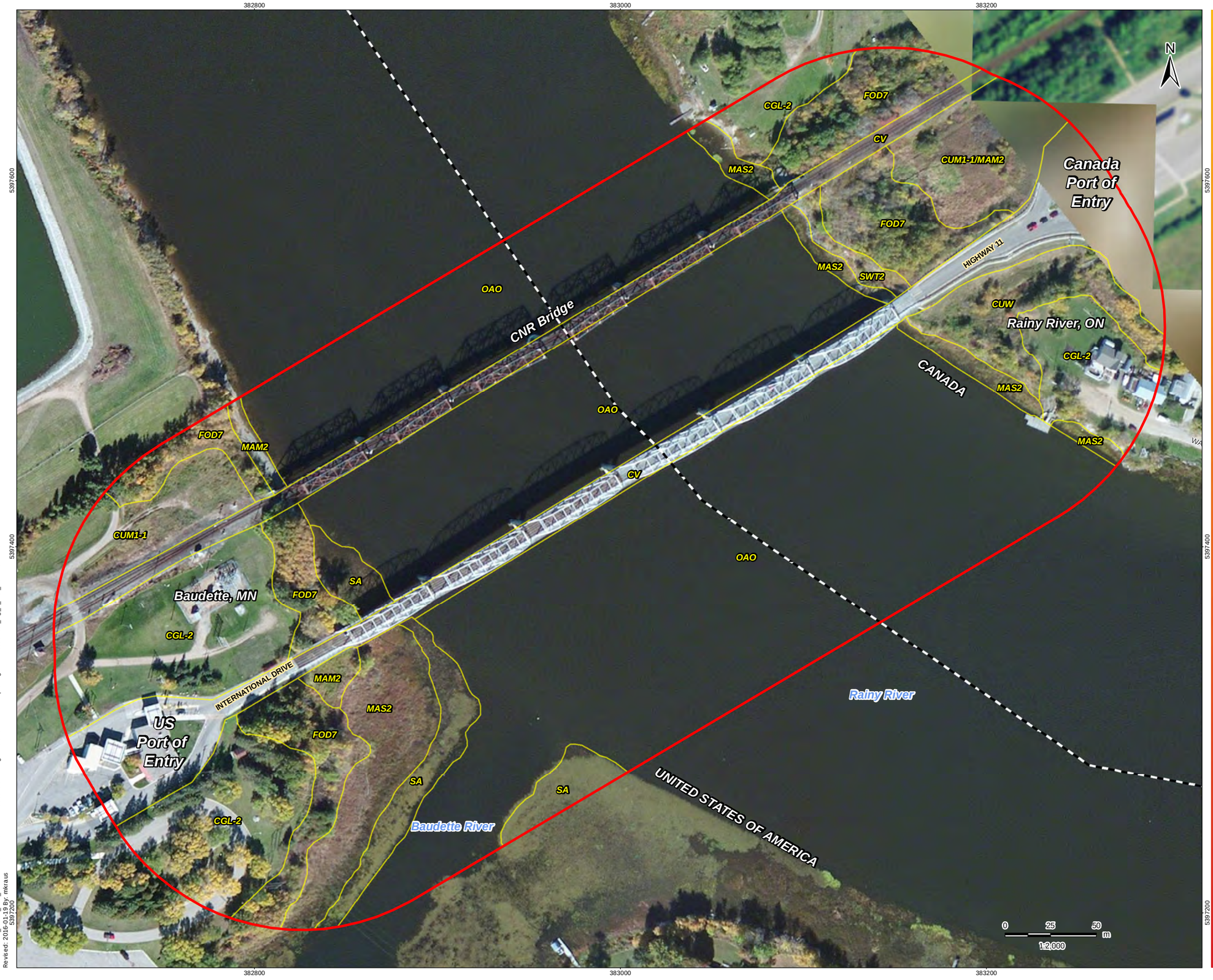

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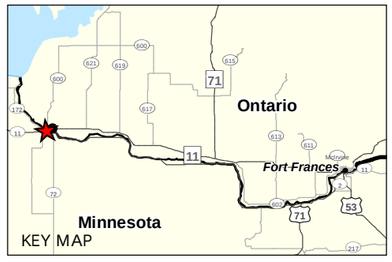
Revised: 2016-01-19 By: mkraus

Stantec

Legend

- Canada/US Border
- Ecological Land Classification
- StudyArea

CODE	DESCRIPTION
Terrestrial System	
FOD7	Fresh-Moist Lowland Deciduous Forest Ecosite
Cultural System	
CUW	Cultural Woodland Community Series
CUM1-1	Dry-Moist Old Field Meadow Type
CGL-2	Constructed Parkland
CV	Constructed
Wetland System	
CUM1-1/ MAM2	Dry-Moist Old Field Meadow/ Mineral Meadow Marsh Complex
MAM2	Mineral Meadow Marsh Ecosite
MAS2	Mineral Shallow Marsh Ecosite
SWT2	Mineral Swamp Thicket Ecosite
Aquatic System	
SA	Shallow Water Community Class
OAO	Open Aquatic Community Series



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Client/Project

Baudette/Rainy River
International Bridge Replacement
GWP-6046-10-00

Figure No.

3

Title

Ecological Land Classification

383200

5397600

CV

CUM1-1/MAM2

FOD7

CV

Canada
Port of
Entry

N

HIGHWAY 11

SWT2

MAS2

0.10 Ha

CUW1

OAO

0.01 Ha

Rainy River, ON

CGL-2

MAS2

OAO

CANADA

0 6 12 m

1:500

383200

5397600

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Revised: 2016-05-02 By: mkraus

Stantec

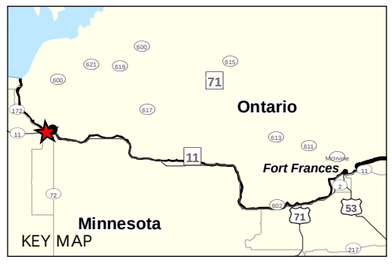
Legend

- Study Area
- Limit of Preferred Route
- Ecological Land Classification (Stantec)

ELC within Preferred Route Disturbance Footprint

- CUW1
- MAS2

CODE	DESCRIPTION
Terrestrial System	
FOD7	Fresh-Moist Lowland Deciduous Forest Ecosite
Cultural System	
CUW1	Mineral Cultural Woodland Ecosite
CUM1-1	Dry-Moist Old Field Meadow Type
CGL-2	Constructed Parkland
CV	Constructed
Wetland System	
CUM1-1/ MAM2	Dry-Moist Old Field Meadow/ Mineral Meadow Marsh Complex
MAS2	Mineral Shallow Marsh Ecosite
SWT2	Mineral Swamp Thicket Ecosite
Aquatic System	
OAO	Open Aquatic Community Series



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Client/Project

Baudette/Rainy River
International Bridge Replacement
GWP-6046-10-00

Figure No.

4

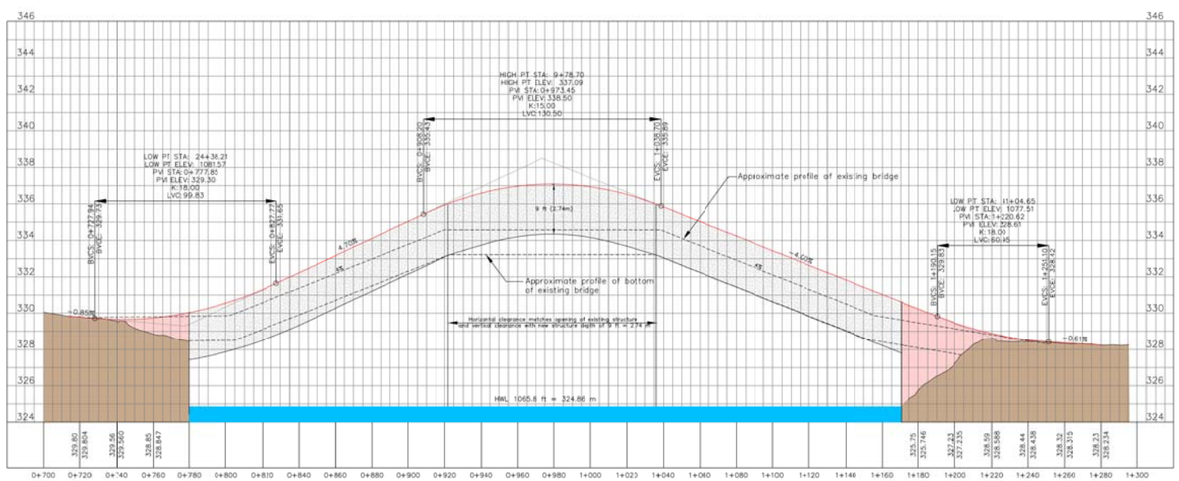
Title

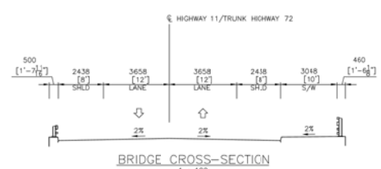
Impact Assessment

Appendix B ALIGNMENT ALTERNATIVES

Alternative 1 - Baudette-Rainy River International Bridge

Alignment – 1 PROFILE





BRIDGE CROSS–SECTION
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PRELIMINARY ONLY

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Ver 1:100 (metric)

TAC Meeting #4
June 25, 2015

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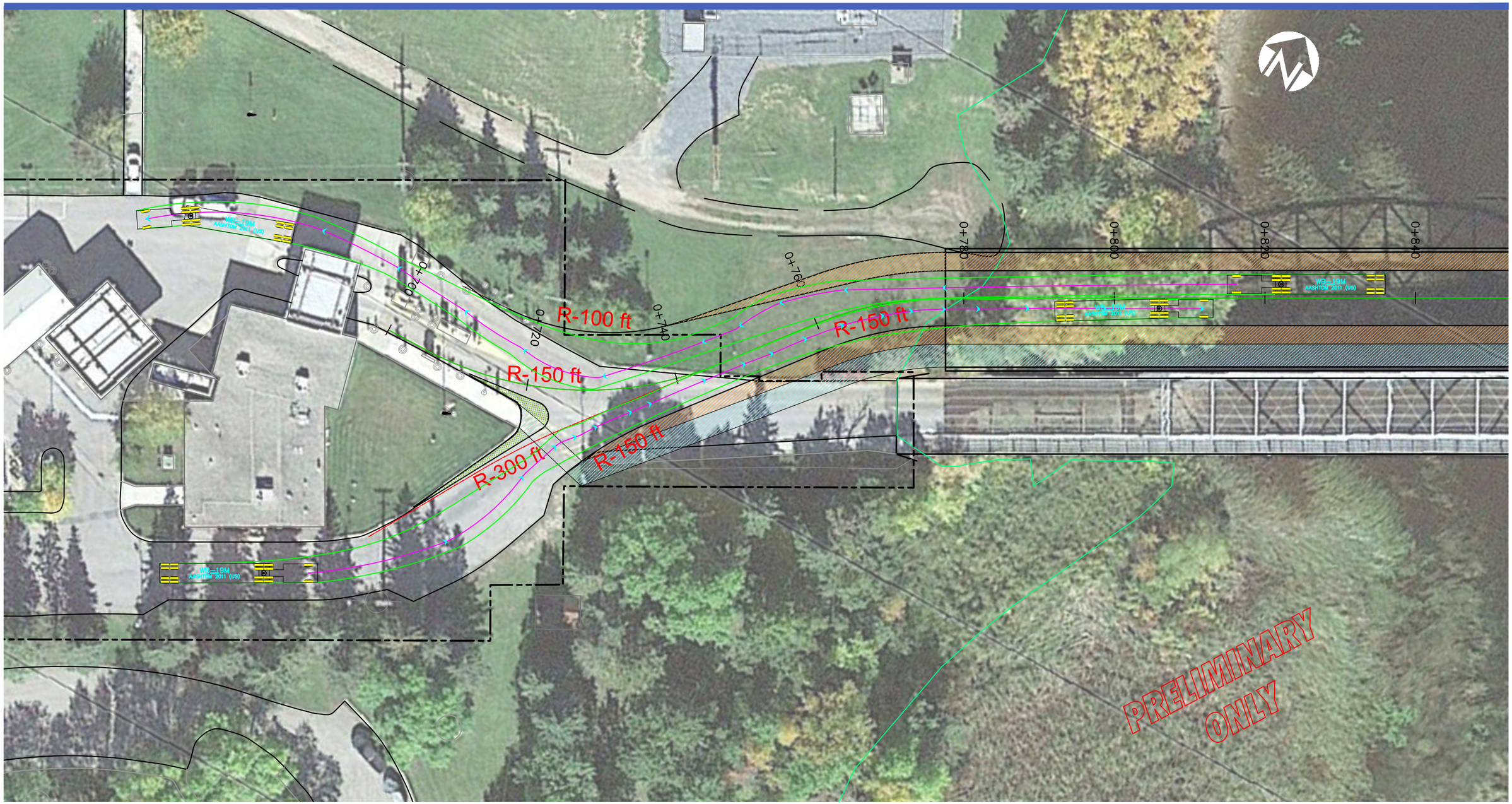
Alternative 1 - US Border - WB-19 (WB-62) turning template path



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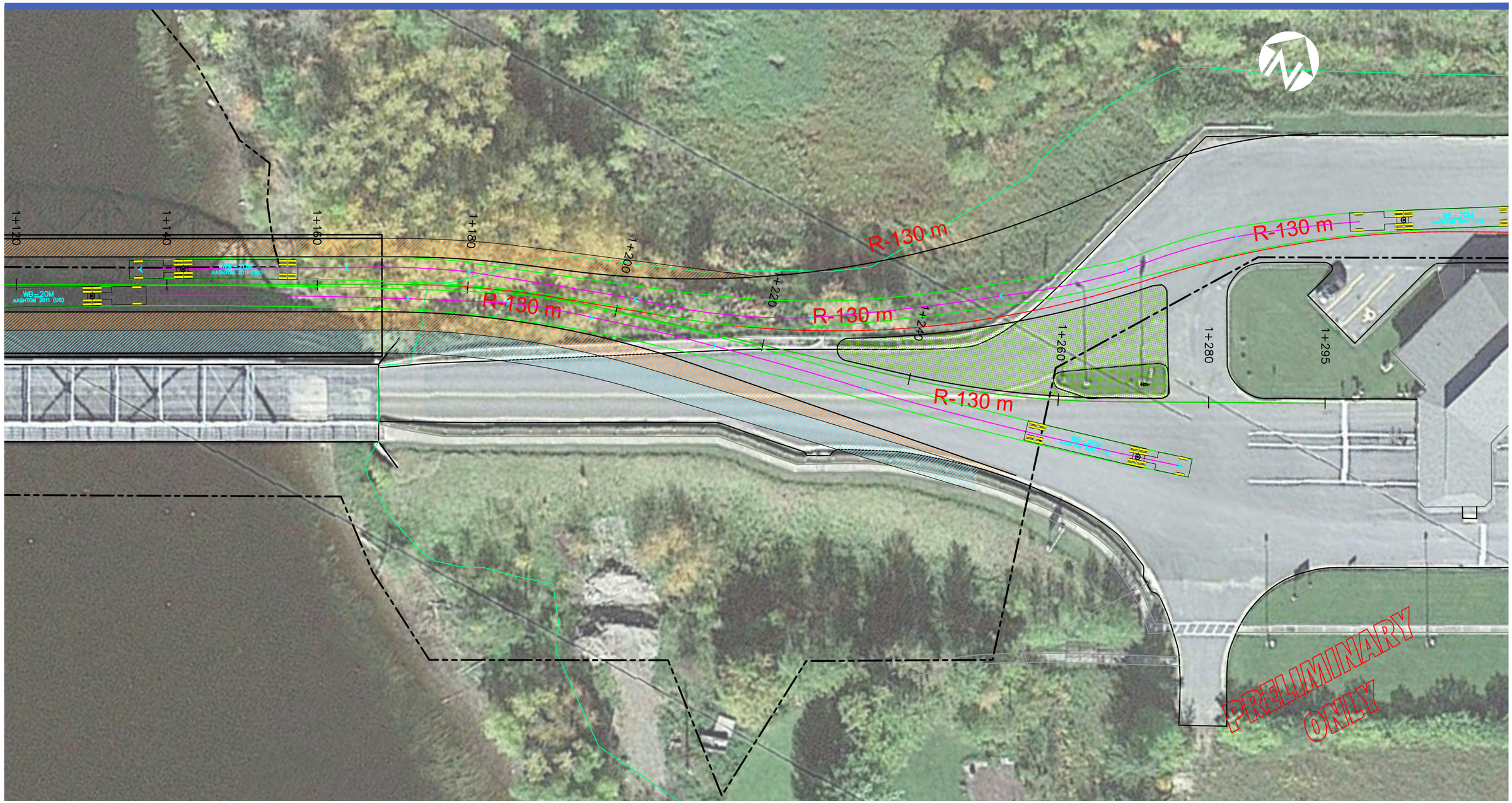
TAC Meeting #4
June 25, 2015

Ontario Ministry of Transportation | Stantec

Alternative 1 - CA Border - WB-17.5 turning template path



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TAC Meeting #4
June 25, 2015

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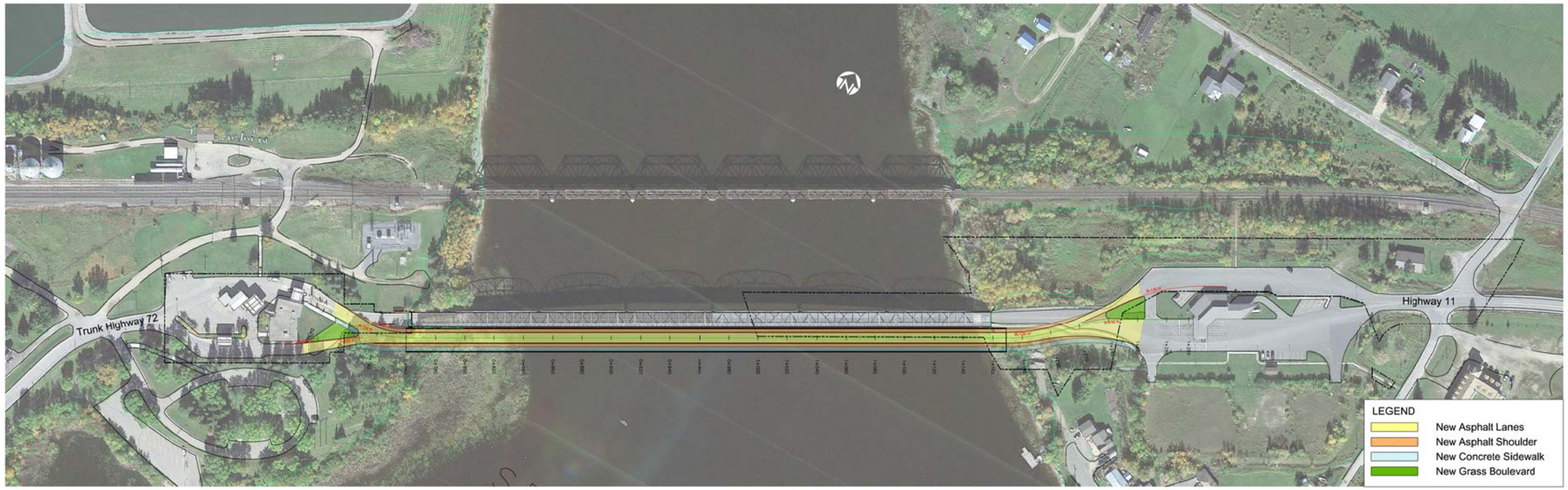
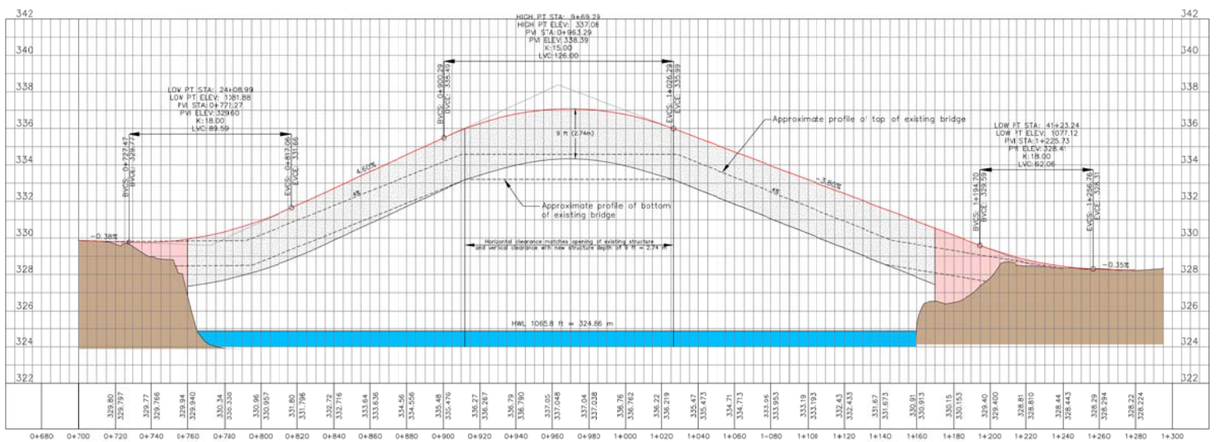
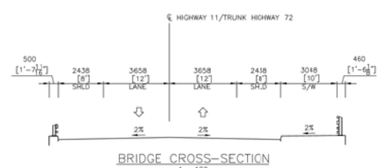
Alternative 2 - Baudette-Rainy River International Bridge



Alignment – 2 PROFILE





BRIDGE CROSS–SECTION
1 : 100

PRELIMINARY ONLY

Scale Hor 1:1000
Ver 1:100 (metric)

TAC Meeting #4
June 25, 2015

This figure has been scaled to Tabloid size and is provided for illustrative purposes

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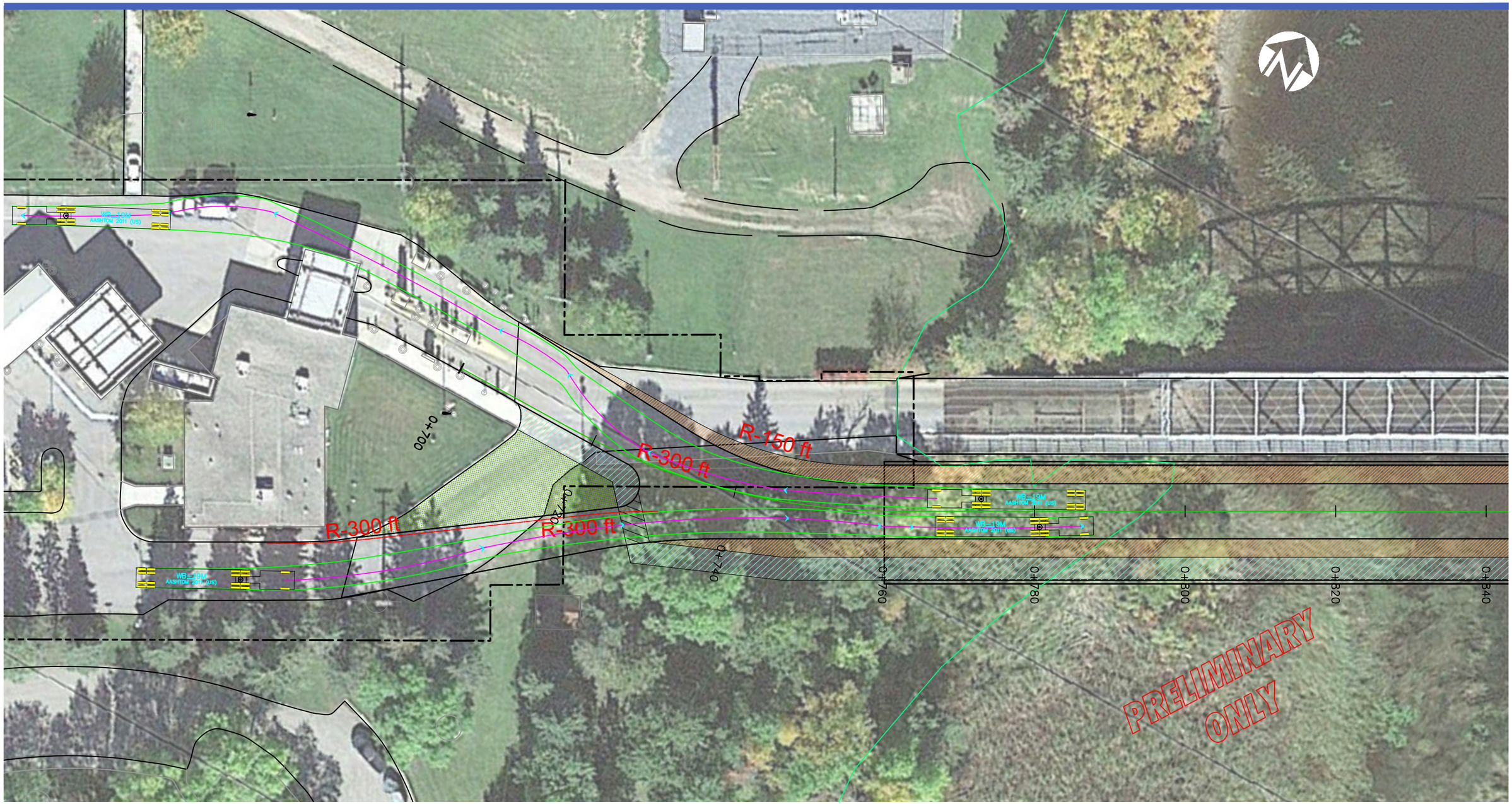
Alternative 2 - US Border - WB-19 (WB-62) turning template path



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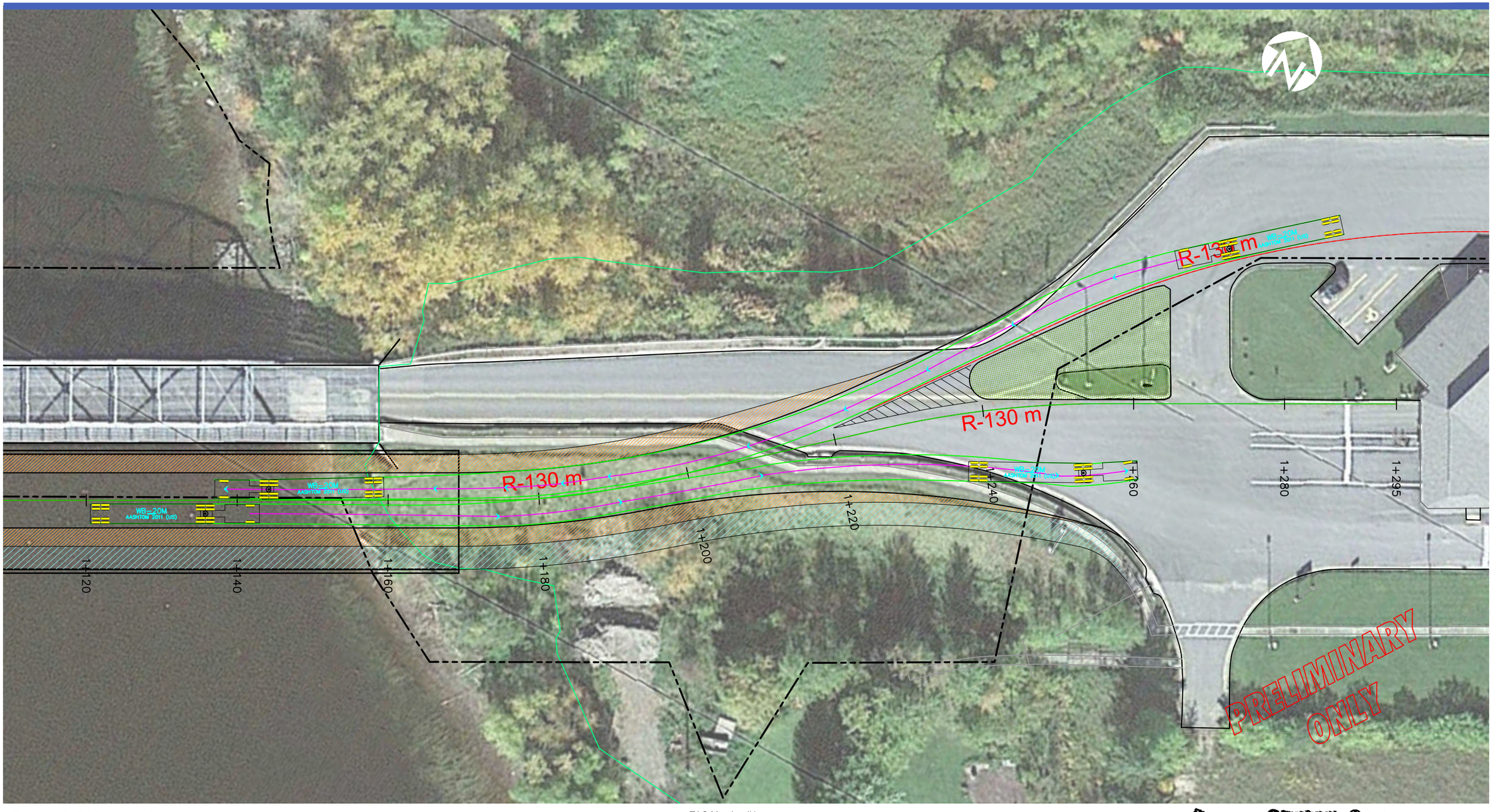
TAC Meeting #4
June 25, 2015

Alternative 2 - CA Border - WB-17.5 turning template path



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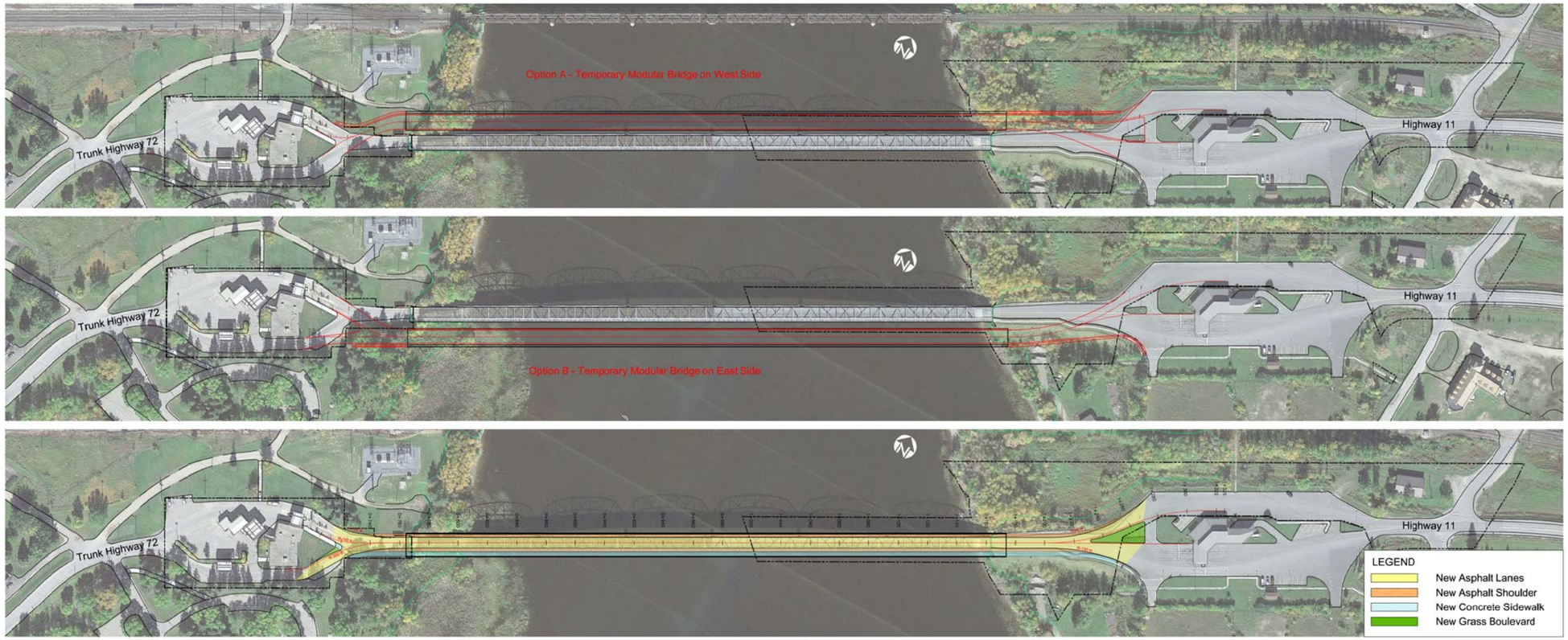
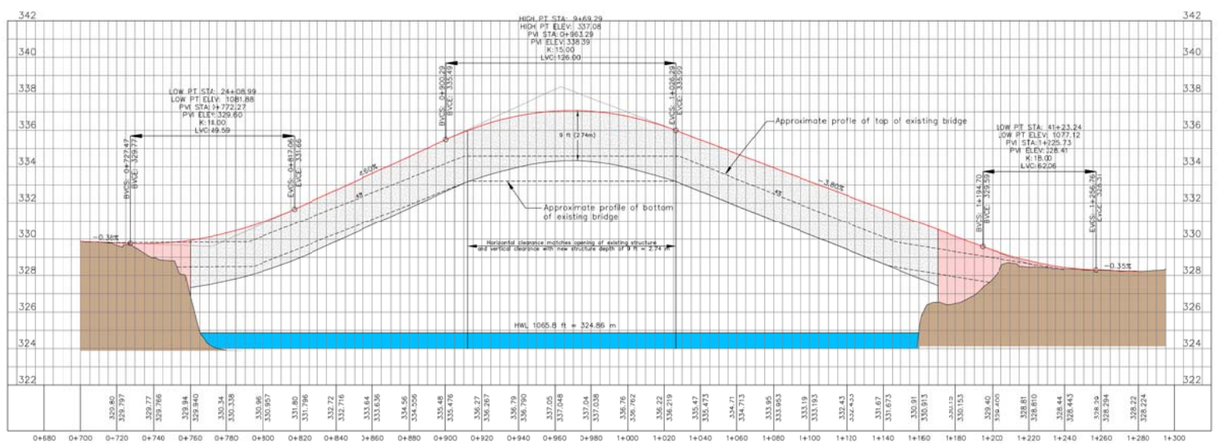
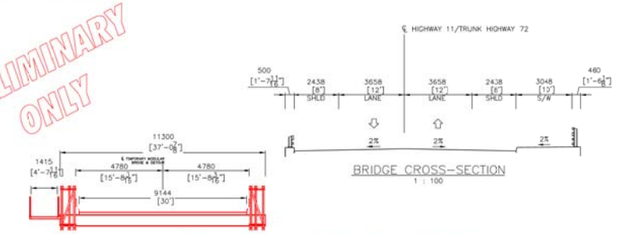
Alternative 3 - Baudette-Rainy River International Bridge

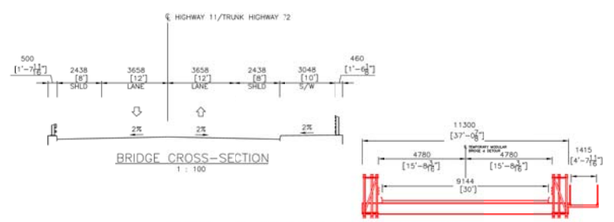




PRELIMINARY ONLY



Option A - Temporary Modular Bridge on West Side



Option B - Temporary Modular Bridge on East Side

Scale Hor 1:1000
Ver 1:100 (metric)

TAC Meeting #5
July 21, 2015

This figure has been scaled to Tabloid size and is provided for illustrative purposes

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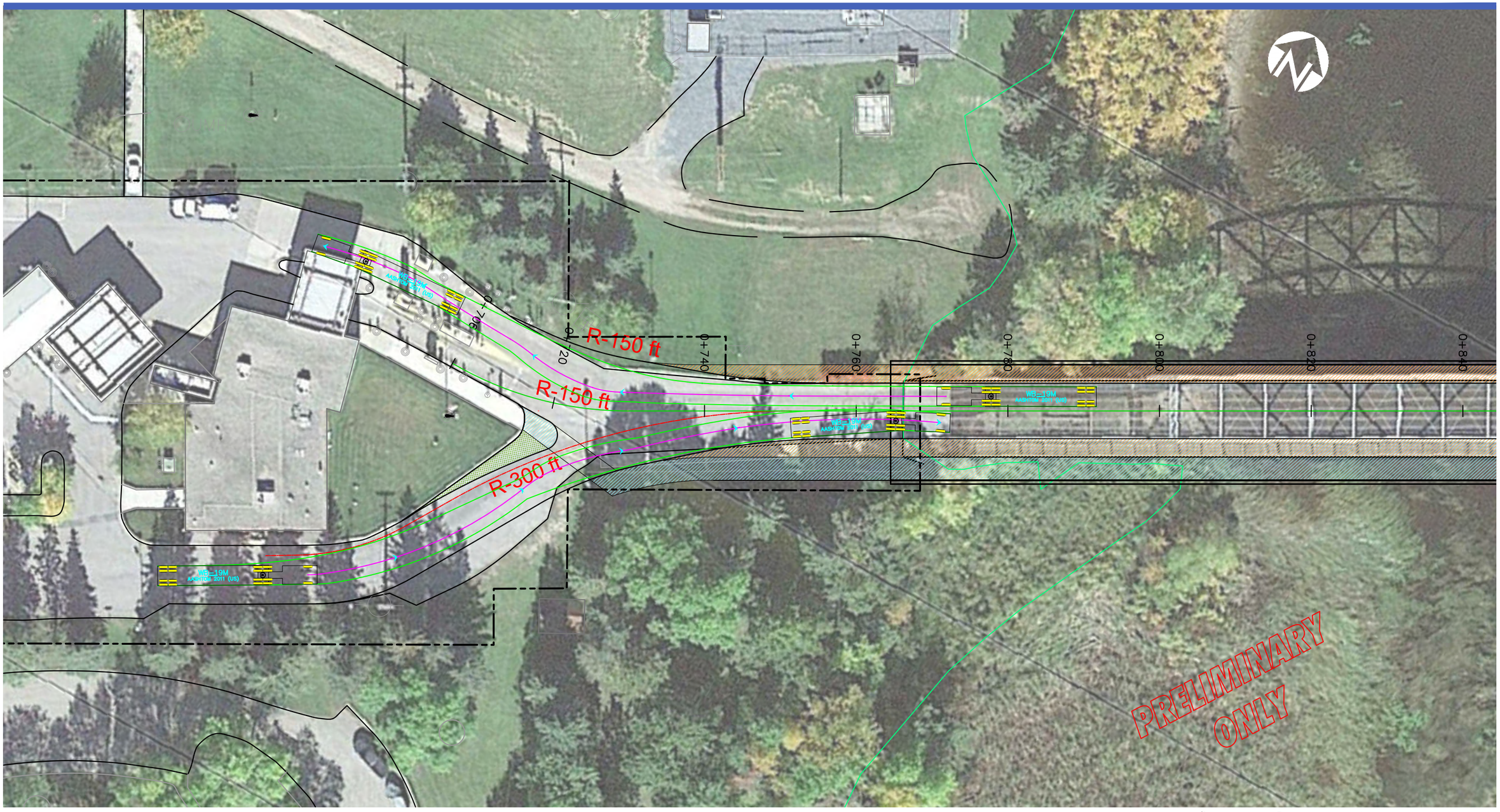
Alternative 3 - US Border - WB-19 (WB-62) turning template pat



Scale 1:500 (metric)

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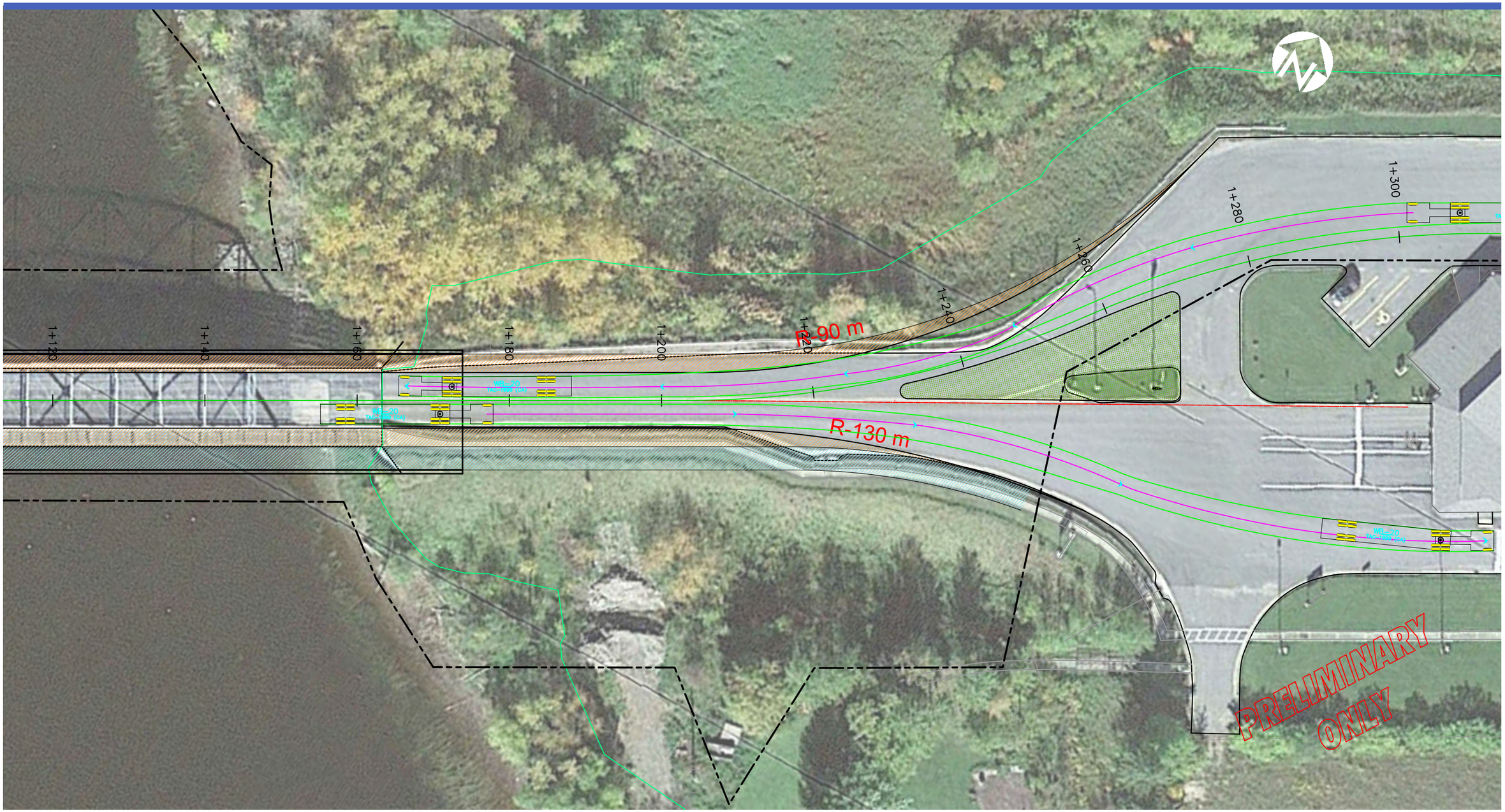
Ontario Ministry of Transportation · Stantec

Alternative 3 - CA Border - WB-17.5 turning template path



Scale 1:500 (metric)

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Appendix C MNRF CORRESPONDENCE

From: "Hill, Rachel (MNRF)" <rachel.hill@ontario.ca>
Date: June 11, 2015 at 6:02:35 PM EDT
To: "Cooke, Gregg" <gregg.cooke@stantec.com>, "DeCal, Rick (MTO)" <Rick.DeCal@ontario.ca>, "Easterling, Katie" <Katie.Easterling@stantec.com>
Cc: "nevena.gazibara@stantech.com" <nevena.gazibara@stantech.com>, "Myers, Matt (MNRF)" <matt.myers@ontario.ca>, "Hyatt, Alex (MNRF)" <Alex.Hyatt@ontario.ca>, "Vandenbroeck, John (MNRF)" <john.vandenbroeck@ontario.ca>
Subject: Notice of Commencement - Rainy River-Baudette International Bridge

Attention: Gregg Cooke and Rick DeCal

Thank you for the Notice of Study Commencement that was received May 7, 2015. If possible, MNRF would like to request that further notification and/or information be sent to this office electronically.

The notice identifies a request for information on existing conditions within the study area and identification of any issues, concerns or approval requirements that our organisation may have. Unfortunately our Ministry is limited in providing this information to you based on the lack of details about the project that have not yet been established.

Here is some information on local and site specific natural heritage values that we can provide at this time:

- The thermal regime of Rainy River is coolwater.

- The Baudette/Rainy River International Bridge is directly upstream of Lake of the Woods, therefore it is highly likely that many species that inhabit Lake of the Woods are present in the Rainy River.

- A total of 55 fish species have been documented in Lake of the Woods, including lake sturgeon and shortjaw cisco.

  These species are listed as threatened on the Species at Risk in Ontario (SARO) List, Ontario Regulation 230/08 of the *Endangered Species Act*.

- There is potential for spawning habitat of walleye, white sucker, and lake sturgeon in the immediate area of the bridge replacement site: on the abutments of the adjacent rail bridge.

Timing of construction work should consider these species, as well as northern pike and smallmouth bass. No in-water work is recommended from April 1- July 15.

- There are currently no known provincially significant wetlands, areas of natural or scientific interest, or other special habitat features located in the vicinity (120 m) of the site.

- Bridge replacement has the potential to harm or harass barn swallows and/or damage/destroy their protected habitat. Surveys to determine barn swallow use of the bridge should be completed.

  If barn swallows are observed using (nesting in) this structure at any time, please contact John Van den Broeck, Management Biologist (807 274-8631) immediately.

- There are currently no records indicating that the other Species at Risk on the list provided, inhabit the bridge site.

However this office should be contacted soon as possible should any Species at Risk in the immediate vicinity of the bridge be observed. The *Endangered Species Act, 2007* prohibits harm and harassment of individuals, and in many cases, damage and destruction of their habitat for species that are listed under the *Act*.

We will be able to provide assessment of fisheries resources and habitat sensitivity information once we have been provided the appropriate form (Appendix 3A) as per the MTO/DFO/OMNR Fisheries Habitat Protocol.

Our Ministry will also be able to provide further information regarding potential permits and approvals or other issues once we have more information about the project plans and designs.

If you have any questions or need clarification regarding this e-mail, please feel free to contact me.

Thank you.

Rachel Hill
District Planner
Fort Frances District
Phone (807) 274-8605
Fax (807) 274-4438

Appendix D WILDLIFE LIST COMPILED FROM BACKGROUND SOURCES

COMMON NAME	SCIENTIFIC NAME	ONTARIO STATUS	GLOBAL STATUS	COSSARO	COSEWIC	AREA SENSITIVITY (ha)	Source	Area Sensitive Reference
ODONATA								
Elusive Clubtail	*Stylurus notatus*	S2	G3				NHIC (2015)	
BUTTERFLIES								
Grey Copper	*Lycaena xanthoides (syn. dione)*	S2	G5				NHIC (2015)	
AMPHIBIANS								
American Toad	*Anaxyrus americanus*	S5	G5				Ontario Nature (2014)	
Tetraploid Gray Treefrog	*Hyla versicolor*	S5	G5				Ontario Nature (2014)	
Boreal Chorus Frog	*Pseudacris maculata*	S5	G5				Ontario Nature (2014)	
Spring Peeper	*Pseudacris crucifer*	S5	G5				Ontario Nature (2014)	
Northern Green Frog	*Lithobates clamitans*	S5	G5				Ontario Nature (2014)	
Wood Frog	*Lithobates sylvatica*	S5	G5				Ontario Nature (2014)	
Northern Leopard Frog	*Lithobates pipiens*	S5	G5	NAR	NAR		Ontario Nature (2014)	
Mink Frog	*Lithobates septentrionalis*	S5	G5				Ontario Nature (2014)	
REPTILES								
Snapping Turtle	*Chelydra serpentina*	S3	G5	SC	SC		Ontario Nature (2014)	
Western Painted Turtle	*Chrysemys picta bellii*	S4	G5T5				Ontario Nature (2014)	
Eastern Gartersnake	*Thamnophis sirtalis sirtalis*	S5	G5				Ontario Nature (2014)	
Red-sided Gartersnake	*Thamnophis sirtalis parietalis*	S4?	G5T5				Ontario Nature (2014)	
Redbelly Snake	*Storeria occipitomaculata*	S5	G5				Ontario Nature (2014)	
Ringneck Snake	*Diadophis punctatus*	S4	G5				Ontario Nature (2014)	
BIRDS								
Canada Goose	*Branta canadensis*	S5	G5				Cadman et al. (2007)	
Wood Duck	*Aix sponsa*	S5	G5				Cadman et al. (2007)	
Gadwall	*Anas strepera*	S4	G5				Cadman et al. (2007)	
American Wigeon	*Anas americana*	S4	G5				Cadman et al. (2007)	
American Black Duck	*Anas rubripes*	S4	G5				Cadman et al. (2007)	
Mallard	*Anas platyrhynchos*	S5	G5				Cadman et al. (2007)	
Blue-winged Teal	*Anas discors*	S4	G5				Cadman et al. (2007)	
Northern Shoveler	*Anas clypeata*	S4	G5				Cadman et al. (2007)	
Northern Pintail	*Anas acuta*	S5	G5				Cadman et al. (2007)	
Green-winged Teal	*Anas crecca*	S4	G5				Cadman et al. (2007)	
Ring-necked Duck	*Aythya collaris*	S5	G5				Cadman et al. (2007)	
Lesser Scaup	*Aythya affinis*	S4	G5				Cadman et al. (2007)	
Common Goldeneye	*Bucephala clangula*	S5	G5				Cadman et al. (2007)	
Common Merganser	*Mergus merganser*	S5B,S5N	G5				Cadman et al. (2007)	
Ruddy Duck	*Oxyura jamaicensis*	S4B,S4N	G5			10	Cadman et al. (2007)	
Horned Grebe	*Podiceps auritus*	S1B, S4N	G5	SC			Cadman et al. (2007)	
Eared Grebe	*Podiceps nigricollis*	SNA	G5				Cadman et al. (2007)	
Turkey Vulture	*Cathartes aura*	S5B	G5				Cadman et al. (2007)	
Northern Harrier	*Circus cyaneus*	S4B	G5	NAR	NAR	55	Cadman et al. (2007)	Sandilands, 2005

COMMON NAME	SCIENTIFIC NAME	ONTARIO STATUS	GLOBAL STATUS	COSSARO	COSEWIC	AREA SENSITIVITY (ha)	Source	Area Sensitive Reference
Sharp-shinned Hawk	*Accipiter striatus*	S5	G5	NAR	NAR	20-30	Cadman et al. (2007)	Sandilands, 2006
Broad-winged Hawk	*Buteo platypterus*	S5B	G5			100	Cadman et al. (2007)	Sandilands, 2007
Red-tailed Hawk	*Buteo jamaicensis*	S5	G5	NAR	NAR		Cadman et al. (2007)	
American Kestrel	*Falco sparverius*	S4	G5				Cadman et al. (2007)	
Merlin	*Falco columbarius*	S5B	G5	NAR	NAR		Cadman et al. (2007)	
Yellow Rail	*Coturnicops noveboracensis*	S4B	G4	SC	SC		Cadman et al. (2007)	
Sora	*Porzana carolina*	S4B	G5				Cadman et al. (2007)	
Sandhill Crane	*Grus canadensis*	S5B	G5	NAR	NAR		Cadman et al. (2007)	
Killdeer	*Charadrius vociferus*	S5B, S5N	G5				Cadman et al. (2007)	
Marbled Gotwit	*Limosa fedoa*	S3B	G5				Cadman et al. (2007)	
Spotted Sandpiper	*Actitis macularia*	S5	G5				Cadman et al. (2007)	
Upland Sandpiper	*Bartramia longicauda*	S4B	G5			25	Cadman et al. (2007)	
Wilson's Snipe	*Gallinago delicata*	S5B	G5				Cadman et al. (2007)	
Ring-billed Gull	*Larus delawarensis*	S5B,S4N	G5				Cadman et al. (2007)	
Black Tern	*Chlidonias niger*	S3B	G4	SC	NAR	20	Cadman et al. (2007)	Dunn and Agro, 1995
Rock Pigeon	*Columba livia*	SNA	G5				Cadman et al. (2007)	
Mourning Dove	*Zenaida macroura*	S5	G5				Cadman et al. (2007)	
Black-billed Cuckoo	*Coccyzus erythropthalmus*	S5B	G5				Cadman et al. (2007)	
Great Horned Owl	*Bubo virginianus*	S5	G5				Cadman et al. (2007)	
Common Nighthawk	*Chordeiles minor*	S4B	G5	SC	THR		Cadman et al. (2007)	
Chimney Swift	*Chaetura pelagica*	S4B, S4N	G5	THR	THR		Cadman et al. (2007)	
Ruby-throated Hummingbird	*Archilochus colubris*	S5B	G5				Cadman et al. (2007)	
Belted Kingfisher	*Ceryle alcyon*	S4B	G5				Cadman et al. (2007)	
Yellow-bellied Sapsucker	*Sphyrapicus varius*	S5B	G5			30-50	Cadman et al. (2007)	
Downy Woodpecker	*Picoides pubescens*	S5	G5				Cadman et al. (2007)	
Hairy Woodpecker	*Picoides villosus*	S5	G5			10	Cadman et al. (2007)	
Northern Flicker	*Colaptes auratus*	S4B	G5				Cadman et al. (2007)	
Pileated Woodpecker	*Dryocopus pileatus*	S5	G5			30-50*	Cadman et al. (2007)	Naylor et al., 1996
Eastern Wood-Pewee	*Contopus virens*	S4B	G5	SC	SC-NS		Cadman et al. (2007)	
Alder Flycatcher	*Empidonax alnorum*	S5B	G5				Cadman et al. (2007)	
Least Flycatcher	*Empidonax minimus*	S4B	G5				Cadman et al. (2007)	
Eastern Phoebe	*Sayornis phoebe*	S5B	G5				Cadman et al. (2007)	
Great Crested Flycatcher	*Myiarchus crinitus*	S4B	G5				Cadman et al. (2007)	
Eastern Kingbird	*Tyrannus tyrannus*	S4B	G5				Cadman et al. (2007)	
Warbling Vireo	*Vireo gilvus*	S5B	G5				Cadman et al. (2007)	
Red-eyed Vireo	*Vireo olivaceus*	S5B	G5				Cadman et al. (2007)	
Blue Jay	*Cyanocitta cristata*	S5	G5				Cadman et al. (2007)	
American Crow	*Corvus brachyrhynchos*	S5B	G5				Cadman et al. (2007)	
Common Raven	*Corvus corax*	S5	G5				Cadman et al. (2007)	
Black-billed Magpie	*Pica hudsonia*	S3?	G5				Cadman et al. (2007)	

COMMON NAME	SCIENTIFIC NAME	ONTARIO STATUS	GLOBAL STATUS	COSSARO	COSEWIC	AREA SENSITIVITY (ha)	Source	Area Sensitive Reference
Horned Lark	*Eremophila alpestris*	S5B	G5				Cadman et al. (2007)	
Purple Martin	*Progne subis*	S4B	G5				Cadman et al. (2007)	
Tree Swallow	*Tachycineta bicolor*	S4B	G5				Cadman et al. (2007)	
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	S4B	G5				Cadman et al. (2007)	
Bank Swallow	*Riparia riparia*	S4B	G5	THR	THR-NS		Cadman et al. (2007)	
Cliff Swallow	*Petrochelidon pyrrhonota*	S4B	G5				Cadman et al. (2007)	
Barn Swallow	*Hirundo rustica*	S4B	G5	THR	THR-NS		Cadman et al. (2007)	
Black-capped Chickadee	*Poecile atricapillus*	S5	G5				Cadman et al. (2007)	
Red-breasted Nuthatch	*Sitta canadensis*	S5	G5			0	Cadman et al. (2007)	
White-breasted Nuthatch	*Sitta carolinensis*	S5	G5			10	Cadman et al. (2007)	
Brown Creeper	*Certhia americana*	S5B	G5			30	Cadman et al. (2007)	
House Wren	*Troglodytes aedon*	S5B	G5				Cadman et al. (2007)	
Winter Wren	*Troglodytes hiemalis*	S5B	G5			30	Cadman et al. (2007)	Hejl et al. 2002
Sedge Wren	*Cistothorus platensis*	S4B	G5	NAR	NAR		Cadman et al. (2007)	
Golden-crowned Kinglet	*Regulus satrapa*	S5B	G5			0	Cadman et al. (2007)	
Eastern Bluebird	*Sialia sialis*	S5B	G5	NAR	NAR		Cadman et al. (2007)	
Veery	*Catharus fuscescens*	S4B	G5			10-20	Cadman et al. (2007)	
Hermit Thrush	*Catharus guttatus*	S5B	G5			20-30	Cadman et al. (2007)	
American Robin	*Turdus migratorius*	S5B	G5				Cadman et al. (2007)	
Gray Catbird	*Dumetella carolinensis*	S4B	G5				Cadman et al. (2007)	
Brown Thrasher	*Toxostoma rufum*	S4B	G5				Cadman et al. (2007)	
European Starling	*Sturnus vulgaris*	SNA	G5				Cadman et al. (2007)	
Cedar Waxwing	*Bombycilla cedrorum*	S5B	G5				Cadman et al. (2007)	
Ovenbird	*Seiurus aurocapilla*	S4B	G5			20	Cadman et al. (2007)	
Northern Waterthrush	*Parkesia noveboracensis*	S5B	G5			20	Cadman et al. (2007)	
Black-and-white Warbler	*Mniotilta varia*	S5B	G5			100	Cadman et al. (2007)	
Nashville Warbler	*Oreothlypis ruficapilla*	S5B	G5				Cadman et al. (2007)	
Mourning Warbler	*Geothlypis philadelphia*	S4B	G5			30	Cadman et al. (2007)	
Common Yellowthroat	*Geothlypis trichas*	S5B	G5				Cadman et al. (2007)	
American Redstart	*Setophaga ruticilla*	S5B	G5			20-30	Cadman et al. (2007)	
Blackburnian Warbler	*Setophaga fusca*	S5B	G5			30-50	Cadman et al. (2007)	
Yellow Warbler	*Setophaga petechia*	S5B	G5				Cadman et al. (2007)	
Chestnut-sided Warbler	*Setophaga pensylvanica*	S5B	G5				Cadman et al. (2007)	
Pine Warbler	*Setophaga pinus*	S5B	G5			15-30	Cadman et al. (2007)	
Yellow-rumped Warbler	*Setophaga coronata*	S5B	G5				Cadman et al. (2007)	
Connecticut Warbler	*Oporornis agilis*	S4B	G4				Cadman et al. (2007)	
Chipping Sparrow	*Spizella passerina*	S5B	G5				Cadman et al. (2007)	
Clay-colored Sparrow	*Spizella pallida*	S4B	G5				Cadman et al. (2007)	
Savannah Sparrow	*Passerculus sandwichensis*	S4B	G5				Cadman et al. (2007)	
Grasshopper Sparrow	*Ammodramus savannarum*	S4B	G5	SC	SC-NS		Cadman et al. (2007)	

COMMON NAME	SCIENTIFIC NAME	ONTARIO STATUS	GLOBAL STATUS	COSSARO	COSEWIC	AREA SENSITIVITY (ha)	Source	Area Sensitive Reference
Song Sparrow	*Melospiza melodia*	S5B	G5				Cadman et al. (2007)	
Swamp Sparrow	*Melospiza georgiana*	S5B	G5				Cadman et al. (2007)	
White-throated Sparrow	*Zonotrichia albicollis*	S5B	G5			20	Cadman et al. (2007)	
Le Conte's Sparrow	*Ammodramus leconteii*	S4B	G4				Cadman et al. (2007)	
Dark-eyed Junco	*Junco hyemalis*	S5B	G5				Cadman et al. (2007)	
Scarlet Tanager	*Piranga olivacea*	S4B	G5			20	Cadman et al. (2007)	
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	S4B	G5				Cadman et al. (2007)	
Indigo Bunting	*Passerina cyanea*	S4B	G5				Cadman et al. (2007)	
Bobolink	*Dolichonyx oryzivorus*	S4B	G5	THR	THR-NS	10	Cadman et al. (2007)	
Red-winged Blackbird	*Agelaius phoeniceus*	S4	G5				Cadman et al. (2007)	
Western Meadowlark	*Sturnella neglecta*	S3B	G5				Cadman et al. (2007)	
Yellow-headed Blackbird	*Xanthocephalus xanthocephalus*	S2B	G5				Cadman et al. (2007)	
Brewer's Blackbird	*Euphagus cyanocephalus*	S4B	G5				Cadman et al. (2007)	
Common Grackle	*Quiscalus quiscula*	S5B	G5				Cadman et al. (2007)	
Brown-headed Cowbird	*Molothrus ater*	S4B	G5				Cadman et al. (2007)	
Baltimore Oriole	*Icterus galbula*	S4B	G5				Cadman et al. (2007)	
House Finch	*Haemorhous mexicanus*	SNA	G5				Cadman et al. (2007)	
Sharp-tailed Grouse	*Tympanuchus phasianellus*	S4	G4				Cadman et al. (2007)	
MAMMALS								
Black-backed Shrew	*Sorex arcticus*	S5	G5				Dobbyn (1994)	
Masked Shrew	*Sorex cinereus*	S5	G5				Dobbyn (1994)	
Pygmy Shrew	*Sorex hoyi*	S4	G5				Dobbyn (1994)	
Water Shrew	*Sorex palustris*	S5	G5				Dobbyn (1994)	
Northern Short-tailed Shrew	*Blarina brevicauda*	S5	G5				Dobbyn (1994)	
Star-nosed Mole	*Condylura cristata*	S5	G5				Dobbyn (1994)	
Little Brown Myotis	*Myotis lucifugus*	S4	G5	END	END		Dobbyn (1994)	
Red Bat	*Lasiurus borealis*	S4	G5				Dobbyn (1994)	
Big Brown Bat	*Eptesicus fuscus*	S5	G5				Dobbyn (1994)	
Snowshoe Hare	*Lepus americanus*	S5	G5			20	Dobbyn (1994)	
White-tailed Jack Rabbit	*Lepus townsendii*	S1	G5				NHIC (2015), Dobbyn (1994)	
Least Chipmuck	*Neotamias minimus*	S5	S5				Dobbyn (1994)	
Eastern Chipmunk	*Tamias striatus*	S5	G5				Dobbyn (1994)	
Woodchuck	*Marmota monax*	S5	G5				Dobbyn (1994)	
Franklin's Ground Squirrel	*Spermophilus franklinii*	S3	G5				NHIC (2015), Dobbyn (1994)	
Red Squirrel	*Tamiasciurus hudsonicus*	S5	G5				Dobbyn (1994)	
Northern Flying Squirrel	*Glaucomys sabrinus*	S5	G5				Dobbyn (1994)	
Beaver	*Castor canadensis*	S5	G5				Dobbyn (1994)	
Deer Mouse	*Peromyscus maniculatus*	S5	G5				Dobbyn (1994)	
Southern Red-backed Vole	*Clethrionomys gapperi*	S5	G5				Dobbyn (1994)	
Muskrat	*Ondatra zibethicus*	S5	G5				Dobbyn (1994)	

COMMON NAME	SCIENTIFIC NAME	ONTARIO STATUS	GLOBAL STATUS	COSSARO	COSEWIC	AREA SENSITIVITY (ha)	Source	Area Sensitive Reference
Northern Bog Lemming	*Synaptomys borealis*	SU	G4				Dobbyn (1994)	
Southern Bog Lemming	*Synaptomys cooperi*	S4	G5				Dobbyn (1994)	
Meadow Vole	*Microtus pennsylvanicus*	S5	G5				Dobbyn (1994)	
Norway Rat	*Rattus norvegicus*	SNA	G5				Dobbyn (1994)	
Meadow Jumping Mouse	*Zapus hudsonicus*	S5	G5				Dobbyn (1994)	
Woodland Jumping Mouse	*Napaeozapus insignis*	S5	G5				Dobbyn (1994)	
Porcupine	*Erethizon dorsatum*	S5	G5				Dobbyn (1994)	
Coyote	*Canis latrans*	S5	G5				Dobbyn (1994)	
Grey Wolf	*Canis lupus occidentalis*	S4	G4	NAR	NAR		Dobbyn (1994)	
Red Fox	*Vulpes vulpes*	S5	G5				Dobbyn (1994)	
Black Bear	*Ursus americanus*	S5	G5	NAR	NAR		Dobbyn (1994)	
Raccoon	*Procyon lotor*	S5	G5				Dobbyn (1994)	
Marten	*Martes americana*	S5	G5				Dobbyn (1994)	
Fisher	*Martes pennanti*	S5	G5				Dobbyn (1994)	
Ermine	*Mustela erminea*	S5	G5				Dobbyn (1994)	
Mink	*Mustela vison*	S4	G5				Dobbyn (1994)	
Least Weasel	*Mustela nivalis*	SU	G5				Dobbyn (1994)	
American Badger (northwestern)	*Taxidea taxus taxus*	S2	G5	END	END		Dobbyn (1994)	
Striped Skunk	*Mephitis mephitis*	S5	G5				Dobbyn (1994)	
River Otter	*Lutra canadensis*	S5	G5				Dobbyn (1994)	
Lynx	*Lynx canadensis*	S5	G5		NAR		Dobbyn (1994)	
Bobcat	*Lynx rufus*	S4	G5				Dobbyn (1994)	
White-tailed Deer	*Odocoileus virginianus*	S5	G5				Dobbyn (1994)	
Moose	*Alces alces*	S5	G5				Dobbyn (1994)	
SUMMARY								
Total Amphibians:	**8**							
Total Reptiles:	**6**							
Total Breeding Birds:	**117**							
Total Mammals:	**45**							

COMMON NAME	*SCIENTIFIC NAME*	ONTARIO STATUS	GLOBAL STATUS	COSSARO	COSEWIC	AREA SENSITIVITY (ha)	Source	Area Sensitive Reference
SIGNIFICANT SPECIES								
COSSARO Status - END	**2**							
COSSARO Status - THR	**4**							
COSSARO Status - SC	**7**							
Provincial Status - Vulnerable (S3)	**6**							
Provincial Status - Imperiled (S2)	**4**							
Provincial Status - Critically Imperiled (S1)	**2**							
Explanation of Status and Acronymns								
COSSARO: Committee on the Status of Species at Risk in Ontario								
COSEWIC: Committee on the Status of Endangered Wildlife in Canada								
S1: Critically Imperiled—Critically imperiled in the province (often 5 or fewer occurrences)								
S2: Imperiled—Imperiled in the province, very few populations (often 20 or fewer),								
S3: Vulnerable—Vulnerable in the province, relatively few populations (often 80 or fewer)								
S4: Apparently Secure—Uncommon but not rare								
S5: Secure—Common, widespread, and abundant in the province								
SX: Presumed extirpated								
SH: Possibly Extirpated (Historical)								
SNR: Unranked								
SU: Unrankable—Currently unrankable due to lack of information								
SNA: Not applicable—A conservation status rank is not applicable because the species is not a suitable target for conservation activities.								
S#S#: Range Rank—A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species								
S#B- Breeding status rank								
S#N- Non Breeding status rank								
?: Indicates uncertainty in the assigned rank								
G1: Extremely rare globally; usually fewer than 5 occurrences in the overall range								
G1G2: Extremely rare to very rare globally								
G2: Very rare globally; usually between 5-10 occurrences in the overall range								
G2G3: Very rare to uncommon globally								
G3: Rare to uncommon globally; usually between 20-100 occurrences								
G3G4: Rare to common globally								
G4: Common globally; usually more than 100 occurrences in the overall range								
G4G5: Common to very common globally								
G5: Very common globally; demonstrably secure								
GU: Status uncertain, often because of low search effort or cryptic nature of the species; more data needed.								
GNR: Unranked—Global rank not yet assessed.								
T: Denotes that the rank applies to a subspecies or variety								

COMMON NAME	*SCIENTIFIC NAME*	ONTARIO STATUS	GLOBAL STATUS	COSSARO	COSEWIC	AREA SENSITIVITY (ha)	Source	Area Sensitive Reference
Q: Denotes that the taxonomic status of the species, subspecies, or variety is **questionable**.								
END: Endangered								
THR: Threatened								
SC: Special Concern								
2, 3 or NS after a COSEWIC ranking indicates the species is either on Schedule 2, Schedule 3 or No Schedule of the Species At Risk Act (SARA)								
NAR: Not At Risk								
IND: Indeterminant, insufficient information to assign status								
DD: Data Deficient								
Area: Minimum patch size for area-sensitive species (ha)								
LATEST STATUS UPDATE								
Odonata: April 2015								
Butterflies: July 2014								
Amphibans: July 2014								
Reptiles: April 2015								
Birds: April 2015								
Mammals: April 2015								
NOTE								
All rankings for birds refer to breeding birds unless the ranking is followed by N								
REFERENCES								
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Appendix E PHOTOGRAPHIC RECORD

Photo 1: Rainy River Bridge

Photo 2: Rainy River Bridge – metal grate construction

Photo 3: FOD7 – Fresh-Moist Lowland Deciduous Forest Ecosite

Photo 4: CGL_2 – Constructed Parkland

Photo 5: CUW – Cultural Woodland Community Series

Photo 6: CUW – Cultural Woodland Community Series

Photo 7: CUW – Cultural Woodland Community Series

Photo 8: SWT2 – Mineral Swamp Thicket Ecosite

Photo 9: SWT2 – Mineral Swamp Thicket Ecosite

Photo10: MAS2 – Mineral Shallow Marsh Ecosite

Photo 11: CUM1-1/MAM2 – Old Field/Mineral Meadow Marsh Complex