Lake Manitoba
Lake St. Martin

Lake St. Martin Emergency Outlet Channel (Fall 2011) (photo courtesy of KGS)

Outlet Channels

Public Information Session

June 29, 2017

Manitoba

Background & History

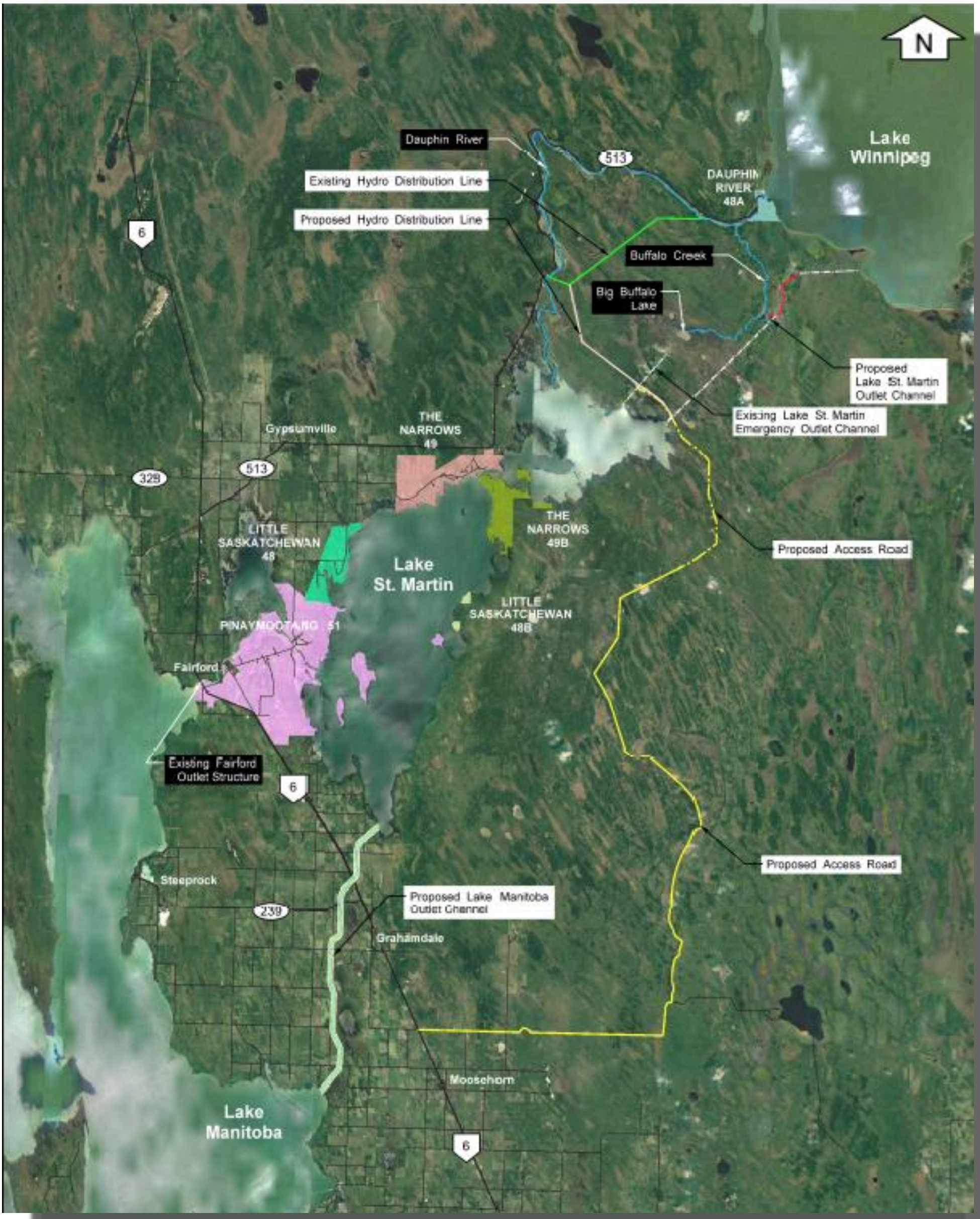
- 2011 Spring Flood Event
  - High flows recorded on most streams and rivers in the Assiniboine and Lake Manitoba Watershed
- 2011 Flood Review Task Force Report (Farlinger)
- Lake Manitoba and Lake St. Martin Regulation Review Committee Report (Westdal)
- Assiniboine River and Lake Manitoba Basins Flood Mitigation Study (KGS Group)
  - Consideration to
    - Water Retention along Assiniboine River
    - Water Control on Waterhen River
    - Pumping Lake Winnipegosis to Cedar Lake
    - Increased Outlet Capacity from Lake Manitoba and Lake St. Martin
- Lake Manitoba and Lake St. Martin Outlet Channel; Conceptual Design Stage 1 (KGS Group)
  - Development of Six Options for Lake Manitoba Outlet
  - Development of Two Options for Lake St. Martin Outlet
- 2014 Summer Rain Event
- Public Open House, Ashern MB, September 2014
- Lake Manitoba and Lake St. Martin Outlet Channel; Conceptual Design Stage 2 (KGS Group)
  - Further development of Options C and D on Lake Manitoba Channel
  - Addition of two options for Lake St Martin Outlet Channel

Background & History

- July 2015 Federal and Provincial Governments announce cost sharing of Outlet Channel Project
  - 50/50 cost share of $495 Million Budget Estimate
  - Desirable completion in 2020/21 creates accelerated schedule
- Environmental Data Collection and Field Investigation (M. Forster Enterprises)
  - Study area included options within Stage 2 Conceptual Design
  - Lake Manitoba Outlet Channel Options
  - Lake St. Martin Outlet Channel Options
  - Lake St. Martin OC Access Road Alignment
  - Lake St. Martin OC Hydro Distribution Line
- Investigation and Preliminary Engineering for the Lake Manitoba Outlet Channel; Options C and D (KGS Group)
  - Further investigation, preliminary engineering and evaluation of Options C and D
  - Recommendation of Route D as the preferred alternative
- Preliminary Design for Reach 2 of the Lake St. Martin Outlet Channel (KGS Group)
  - Evaluation of 4 alternatives
  - Recommendation of Option 4 with preliminary engineering design
- Spring 2017 RM of Grahamdale and Impacted Landowner Meetings; June 29th Public Information Session, Moosehorn
- July 13th Public Information Session, Winnipeg

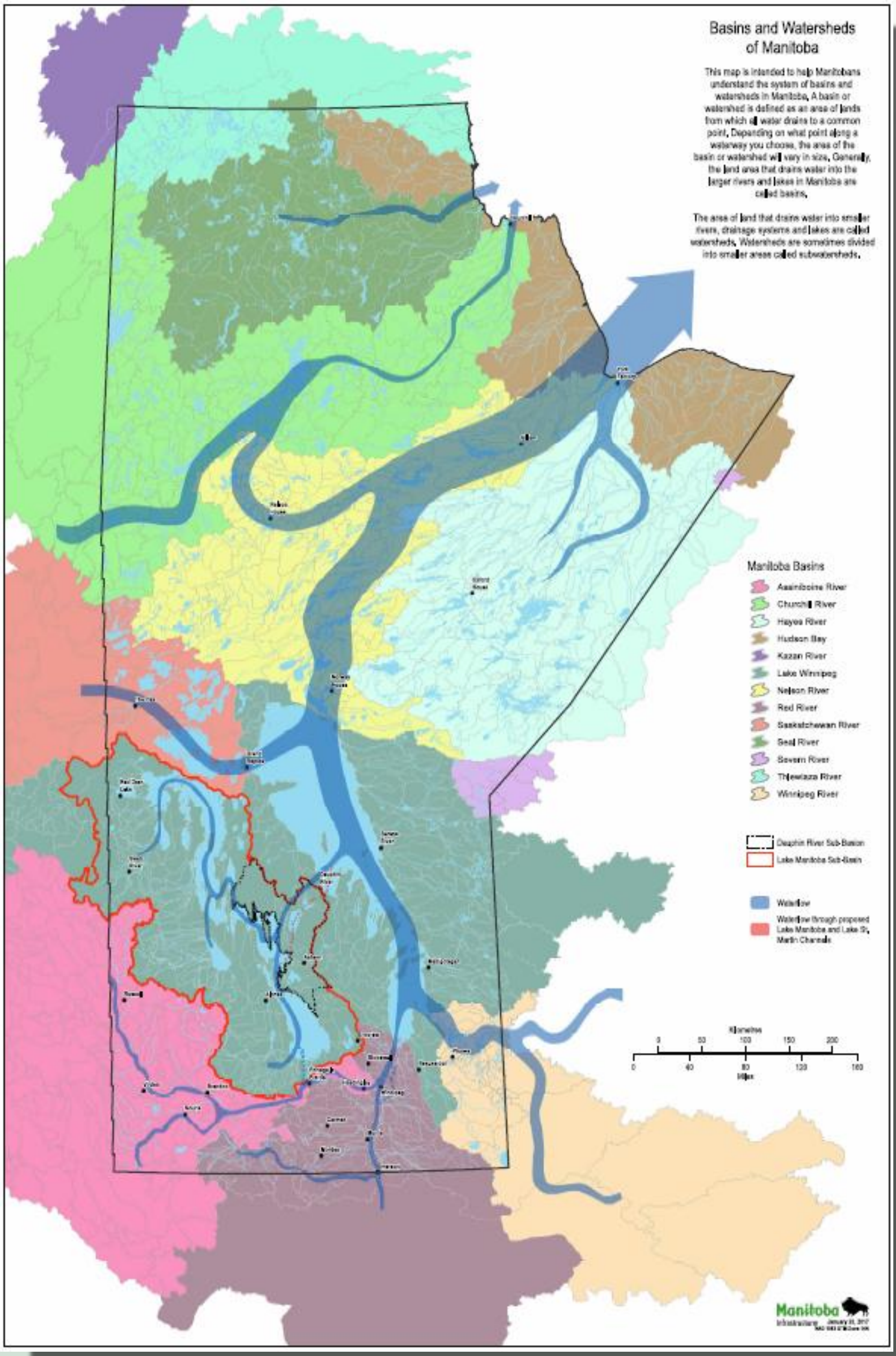
Manitoba

Project Location Overview



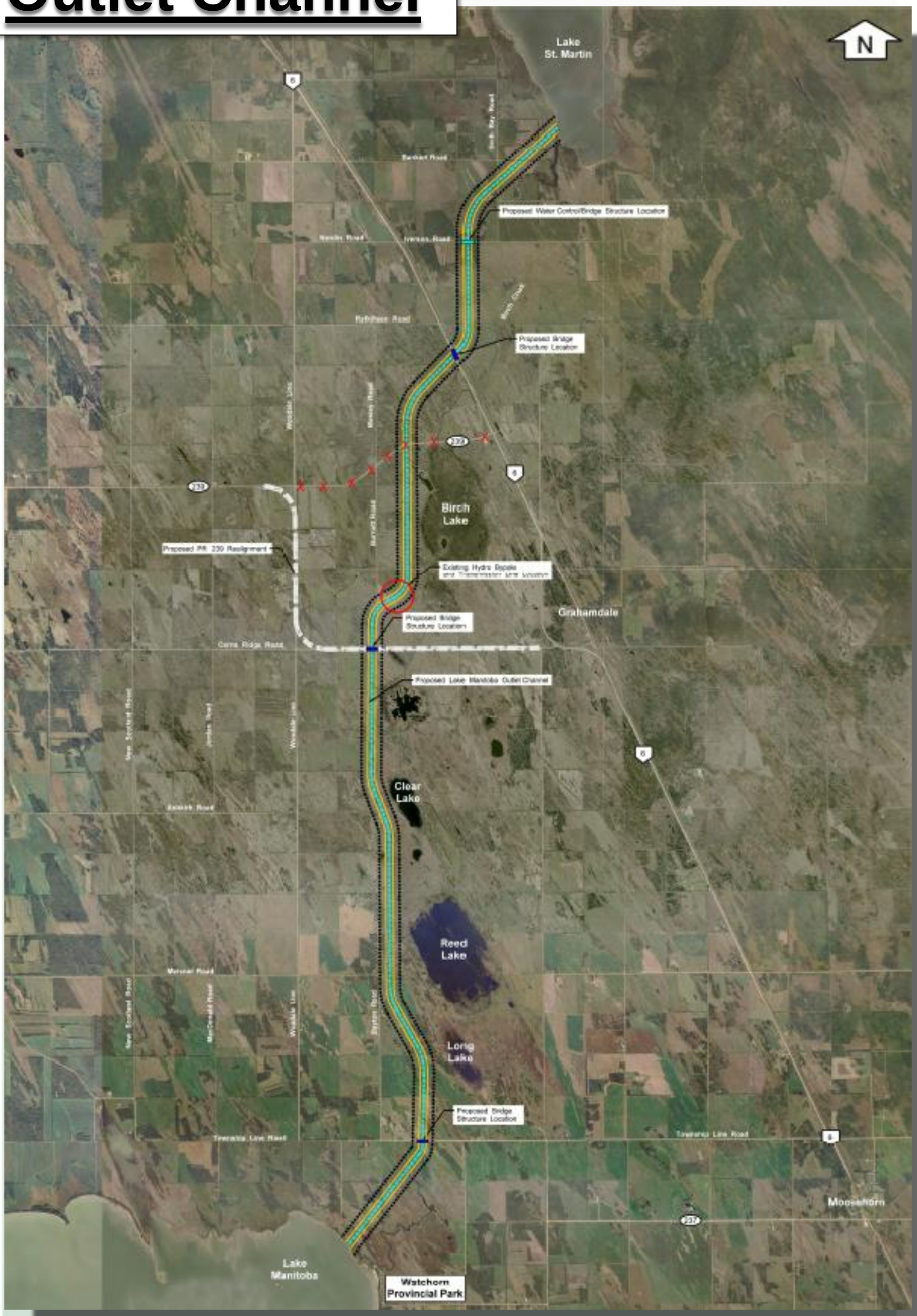
Manitoba

Basins and Watersheds of Manitoba



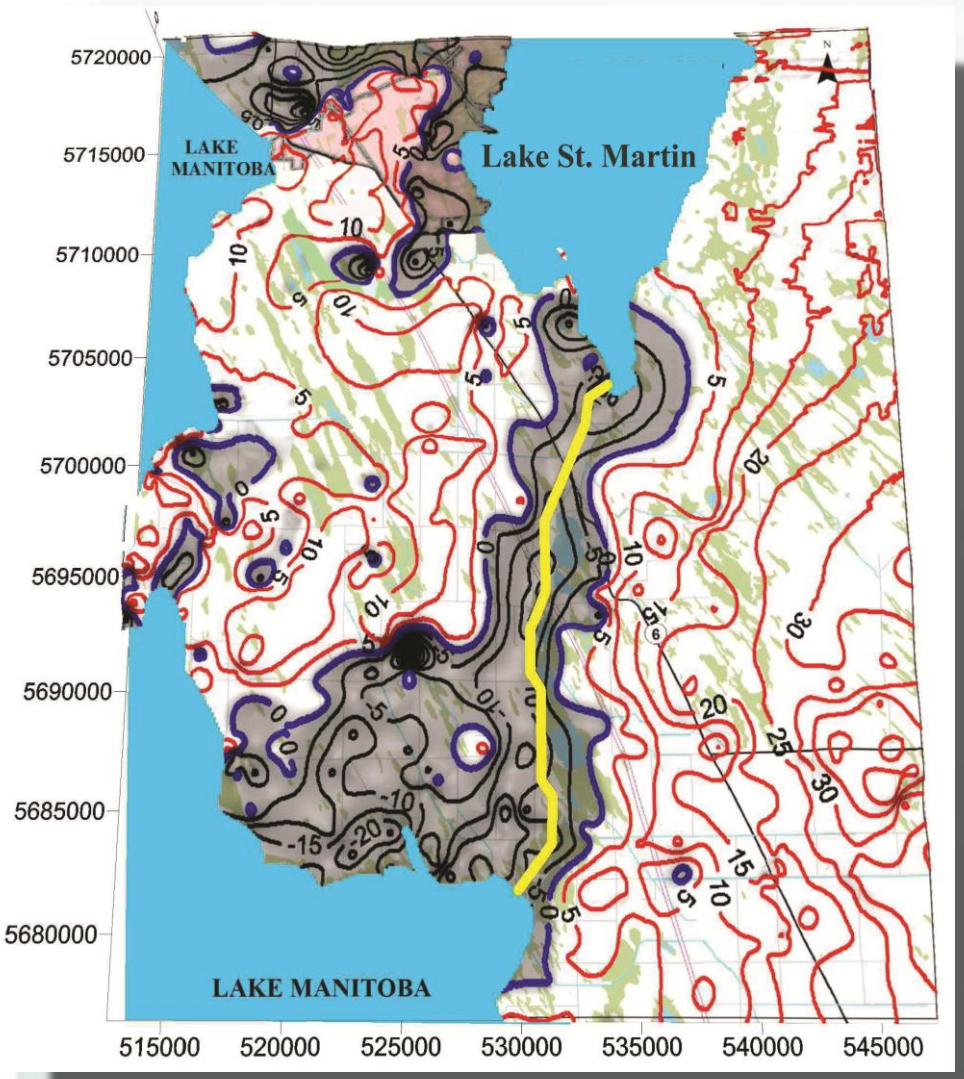
Proposed Lake Manitoba Outlet Channel

Manitoba



Lake Manitoba Outlet Channel

Bedrock Details

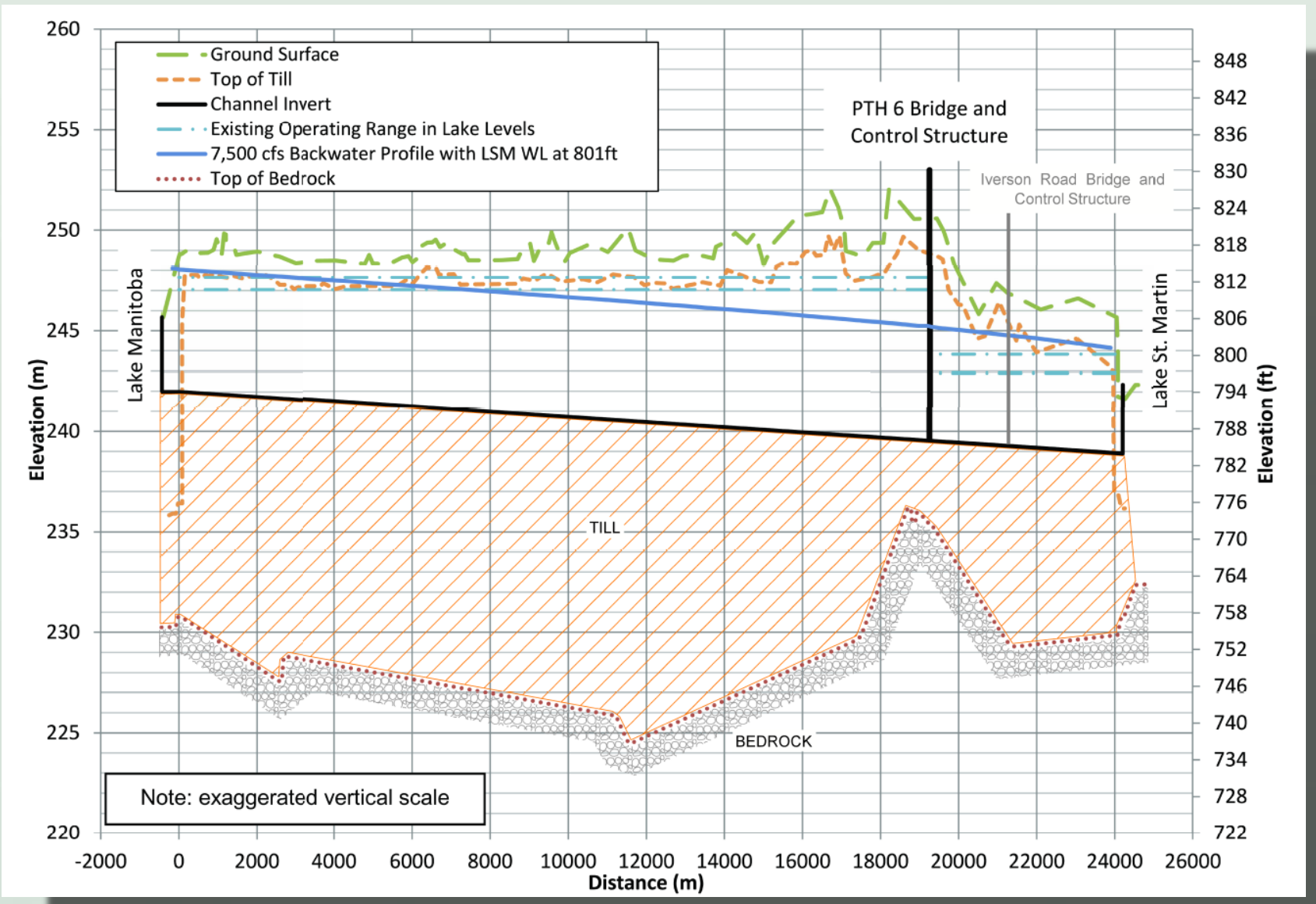


- Channel Excavation in Bedrock
- Channel Excavation in Till

•Excavation in bedrock creates high risk of aquifer contamination

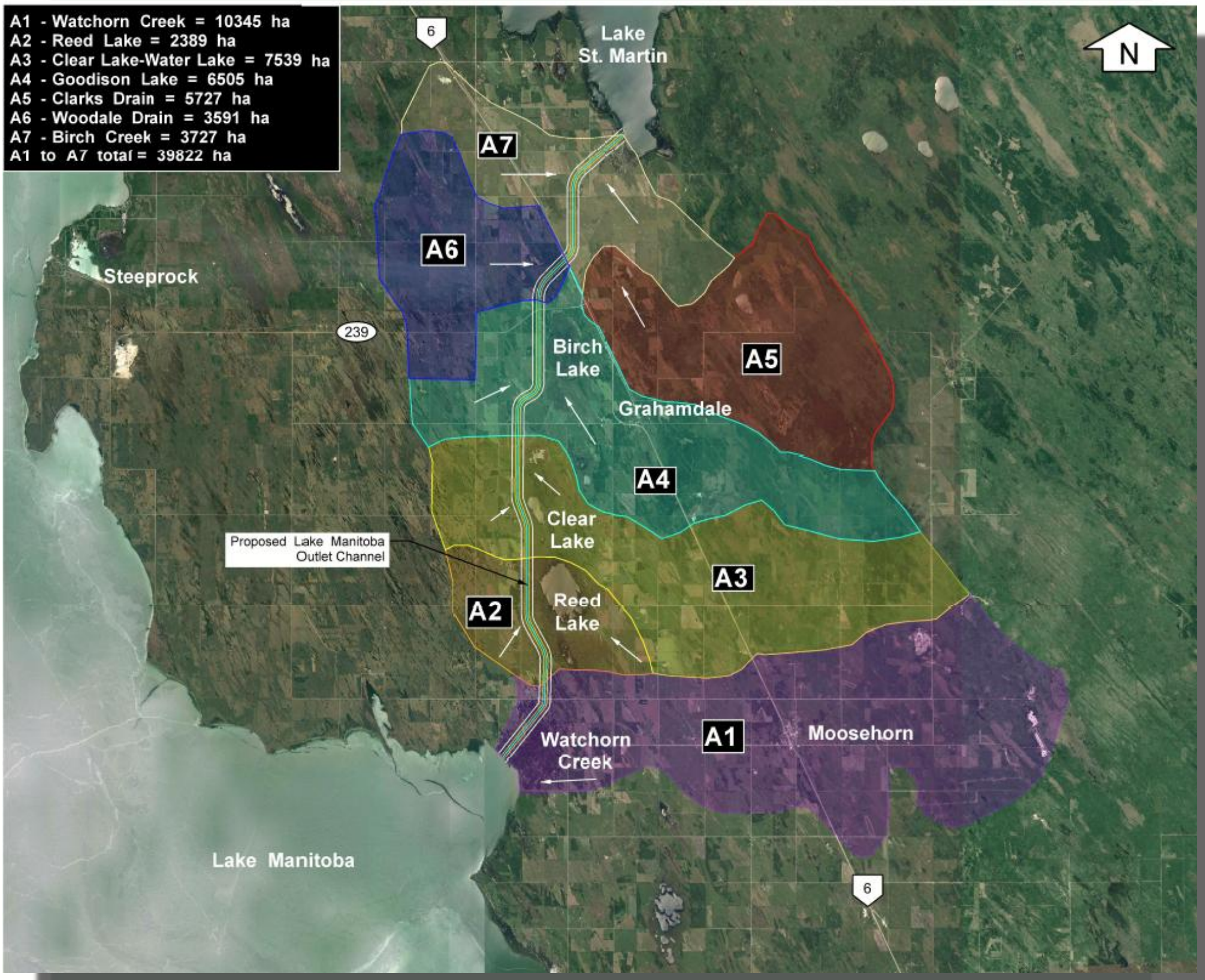
•Proposed channel will be excavated in Till

Proposed Channel Profile with Bedrock



Information provided by KGS Group

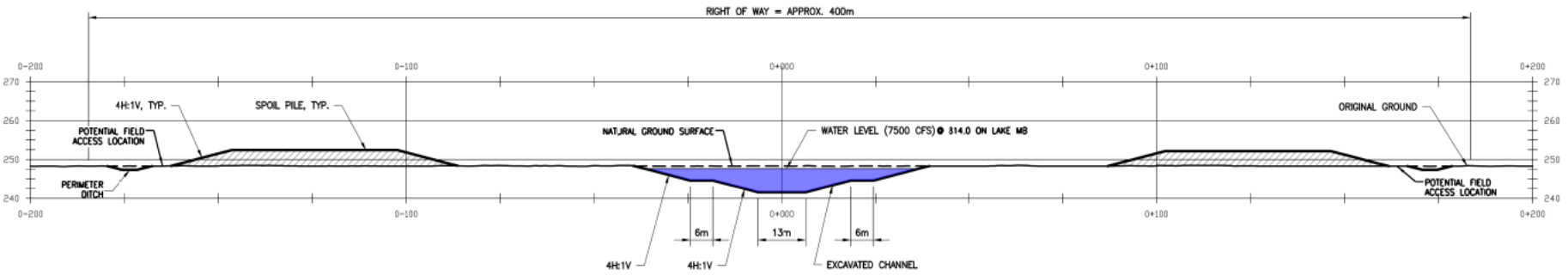
Local Watersheds
Vicinity of Lake Manitoba
Outlet Channel



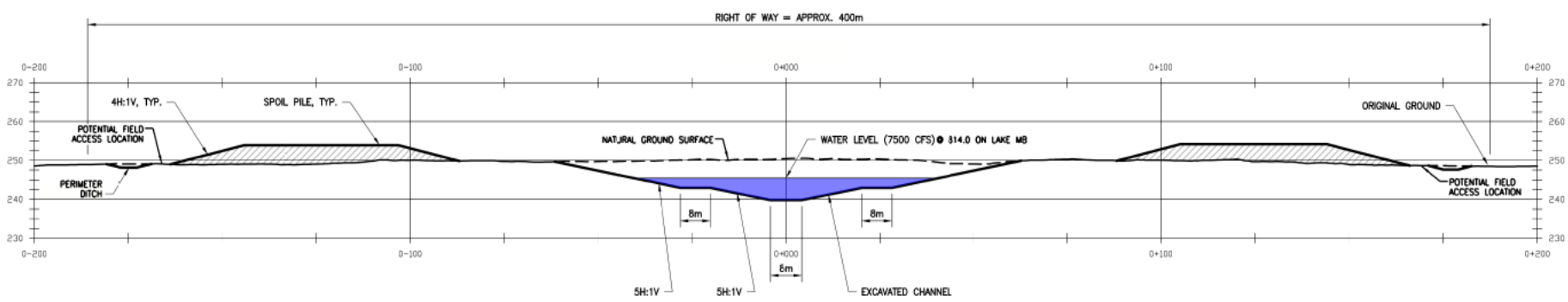
- Perimeter ditching to accommodate local area drainage

Lake Manitoba Outlet Channel

Typical Channel Cross Sections

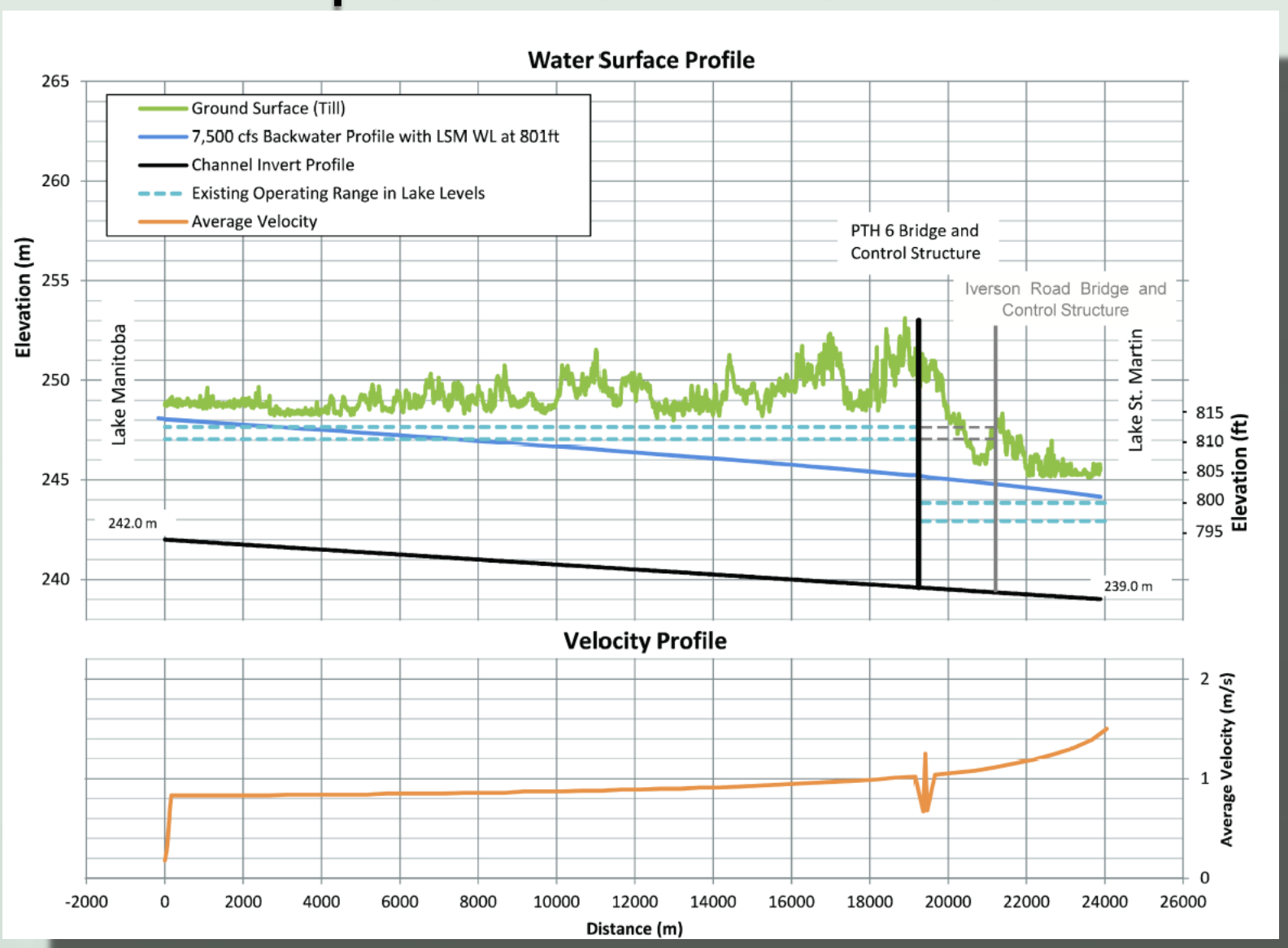


ROUTE D – CROSS SECTION 8m CUT OR LESS



ROUTE D – CROSS SECTION >8m CUT

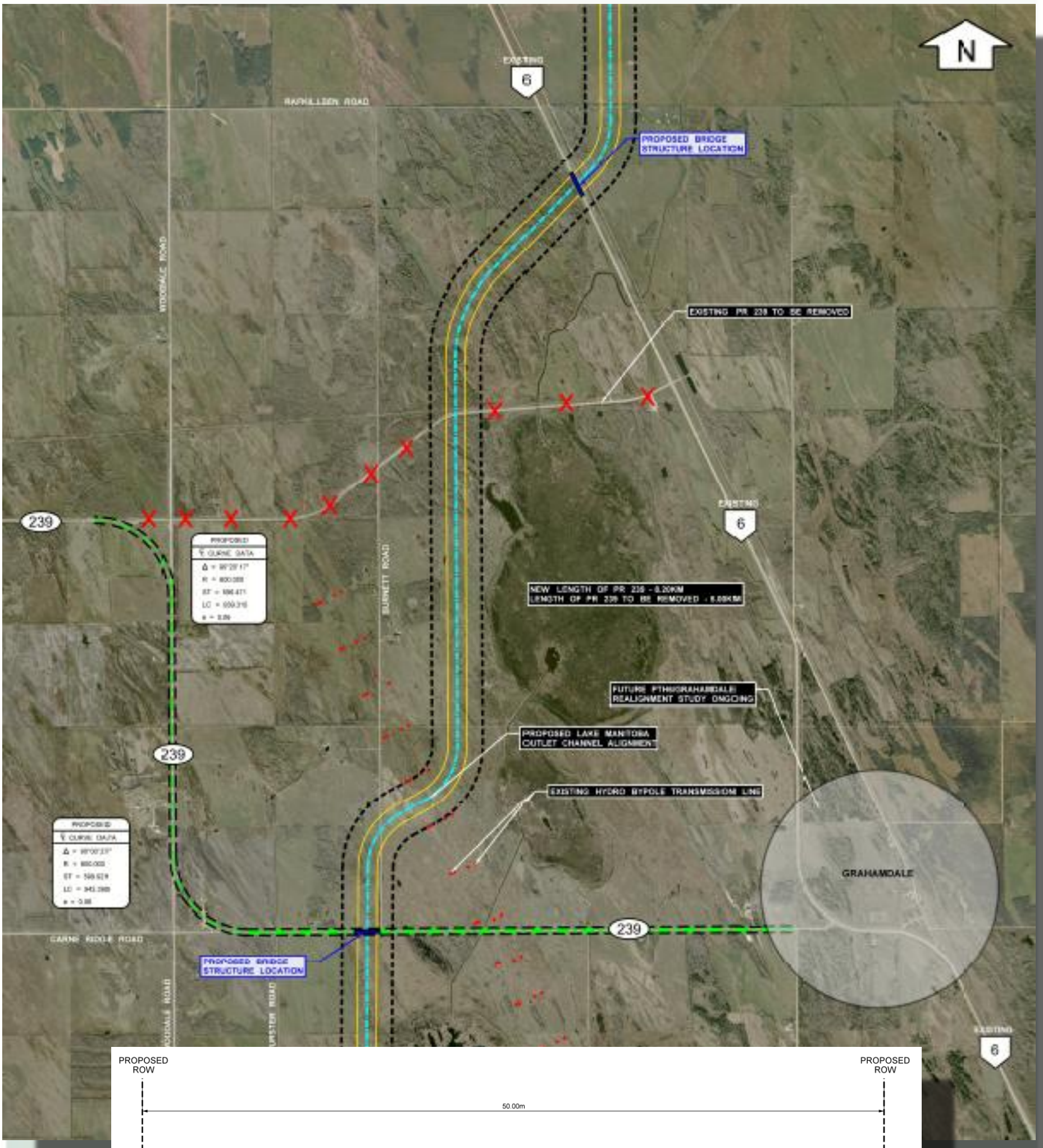
Proposed Channel Profile

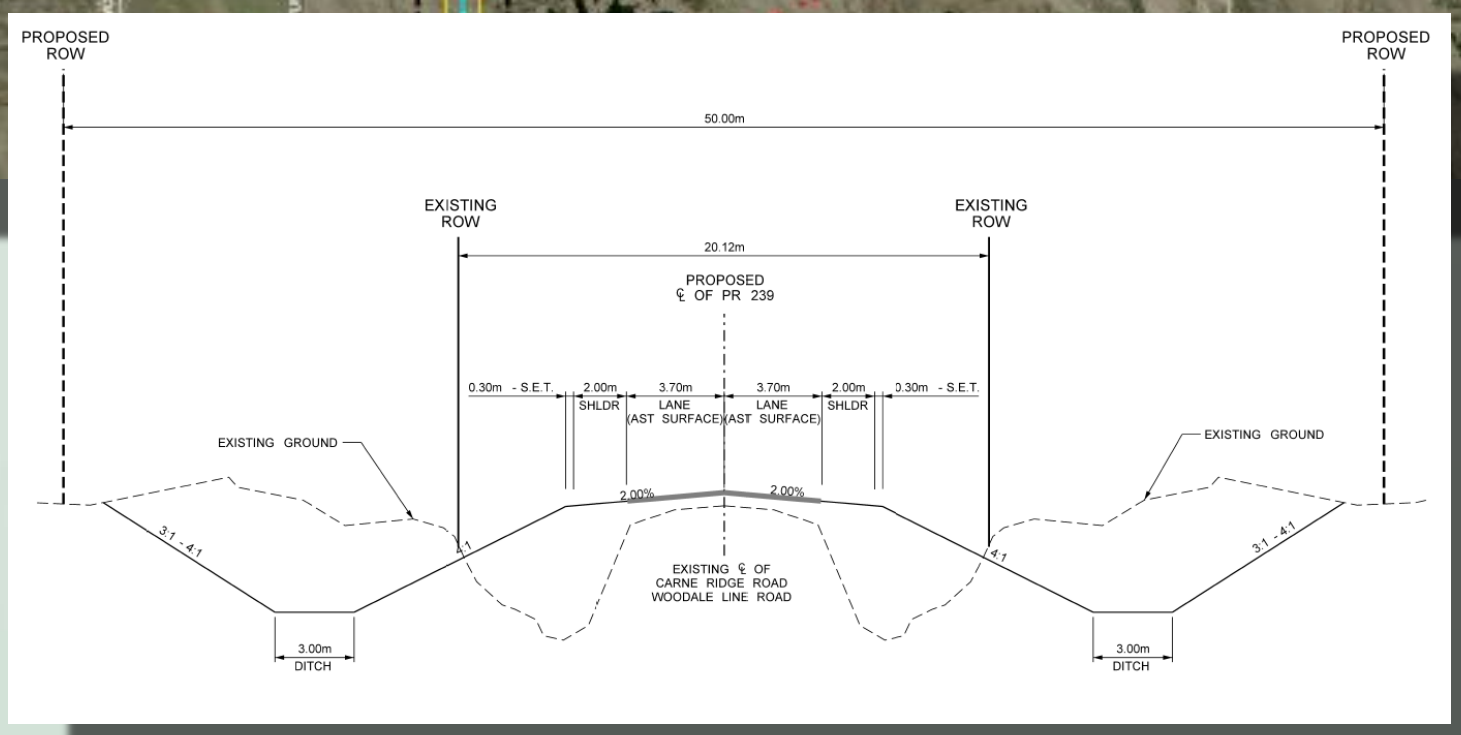


Information provided by KGS Group

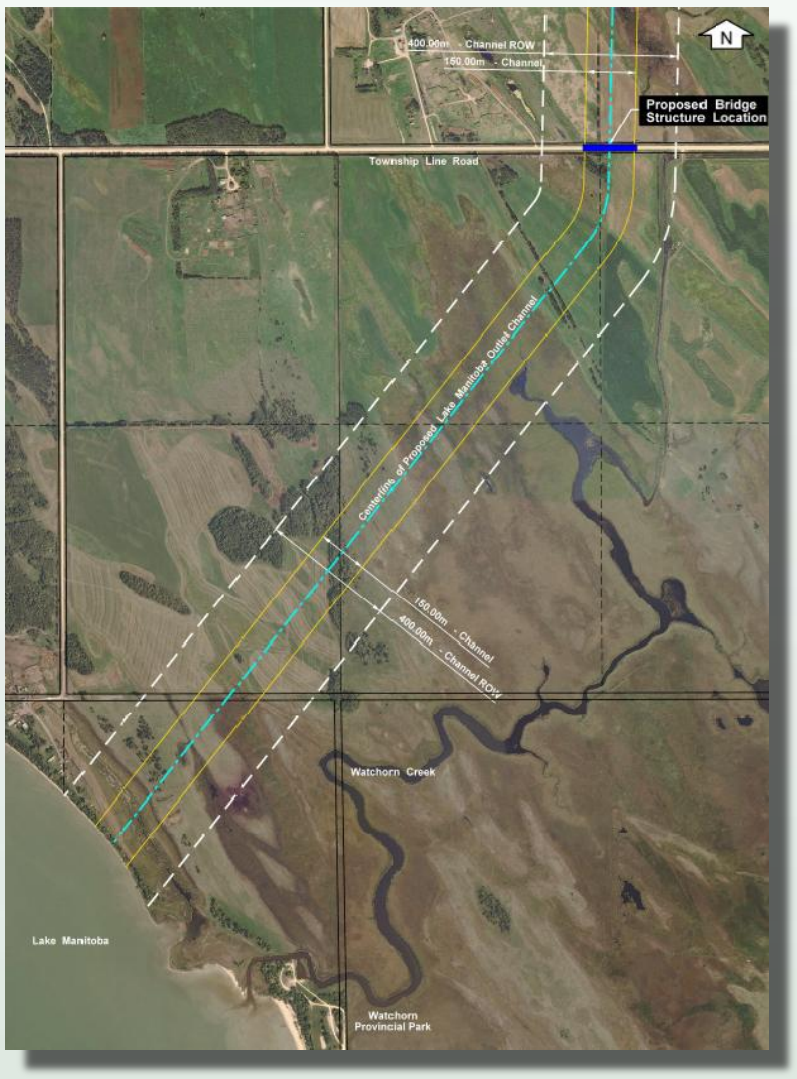
Manitoba

Lake Manitoba Outlet Channel
PR 239 Realignment

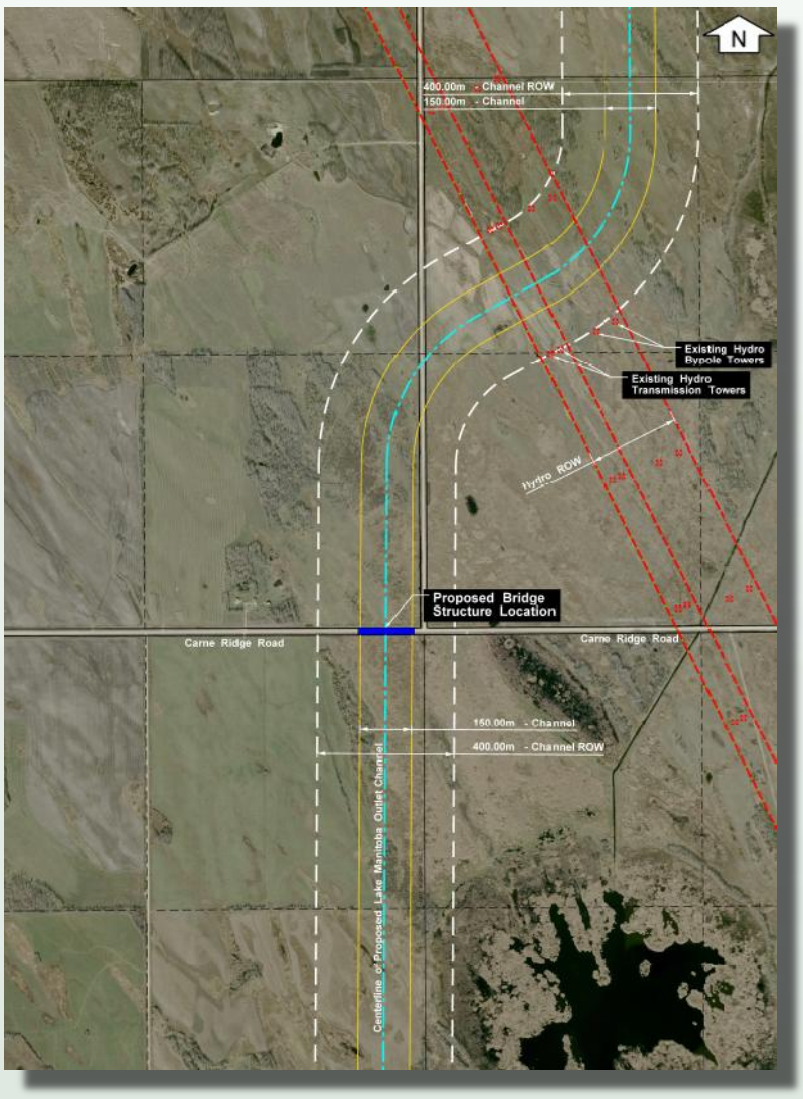




Lake Manitoba Outlet Channel Structure Locations



Township Road Bridge Structure

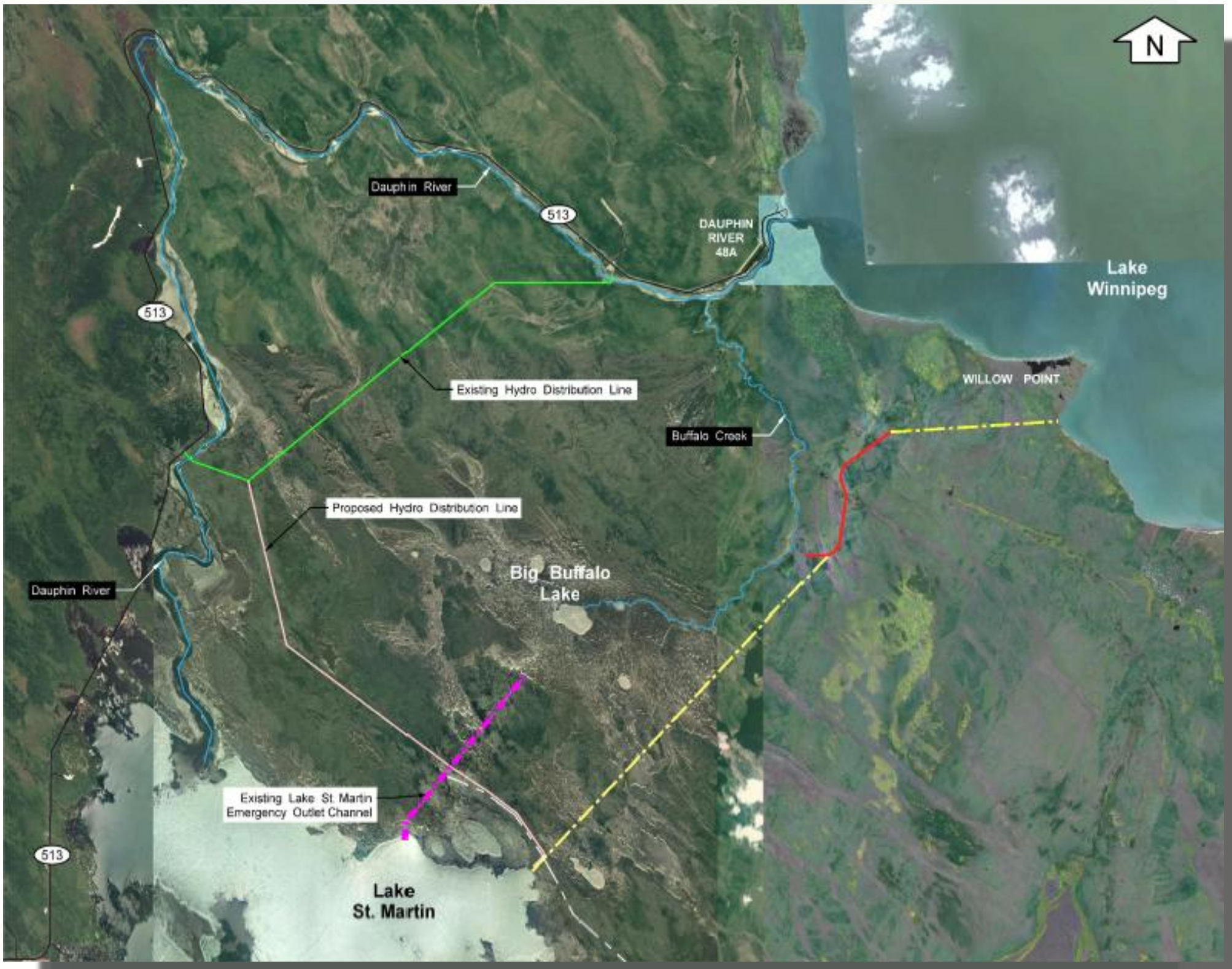


Carne Ridge Road Bridge Structure

PTH 6 Bridge Structure

Iverson Road Water Control & Bridge Structure

Existing Lake St. Martin Emergency Outlet Channel



- Lake St. Martin Emergency Outlet Channel available for use during construction

- Lake St. Martin Emergency Outlet Channel used to maintain water levels in Big Buffalo Lake complex

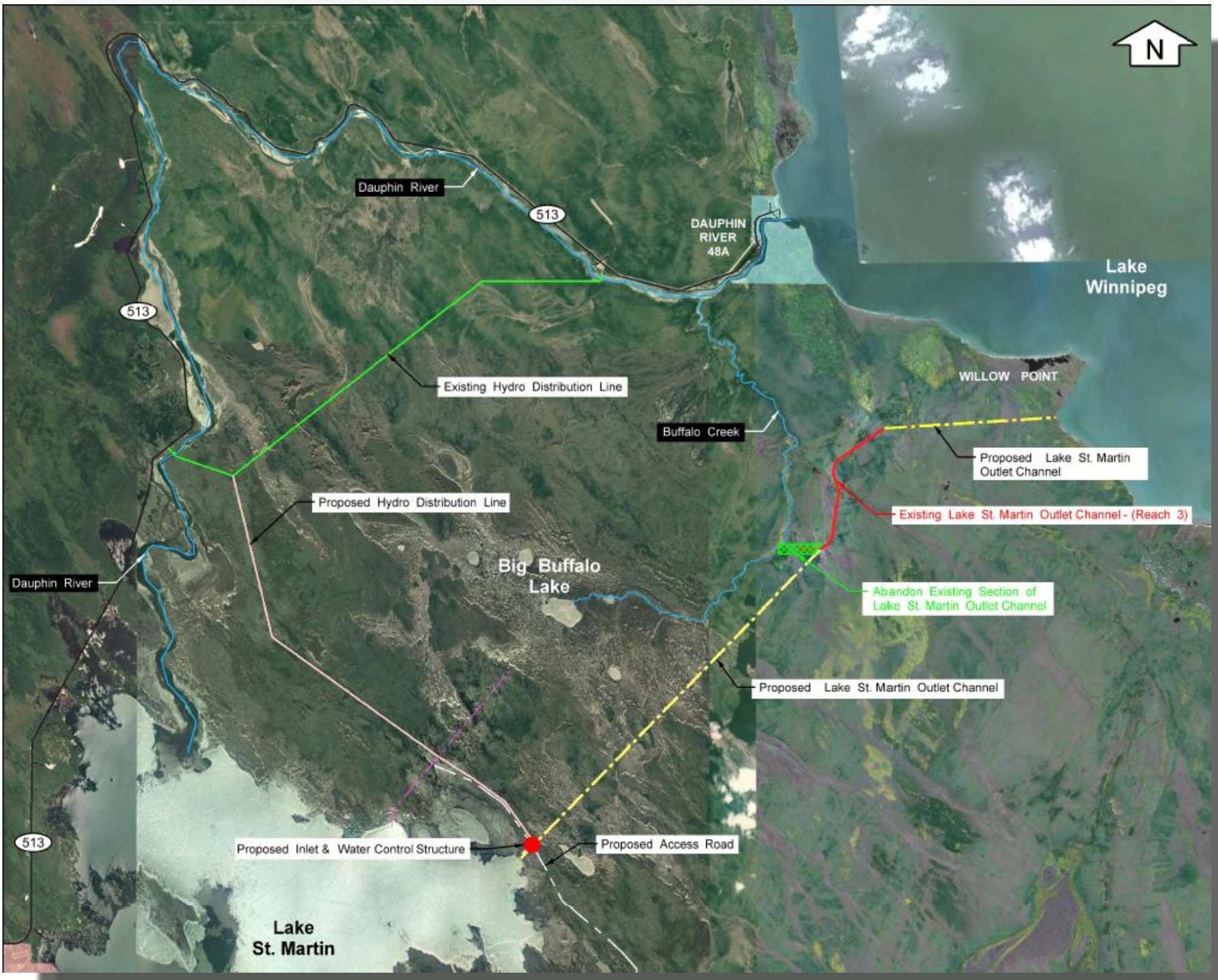
- No long term impacts to Big Buffalo Lake / Buffalo Creek aquatic system

- Construction costs are similar between options

- Future opportunities for environmental compensation

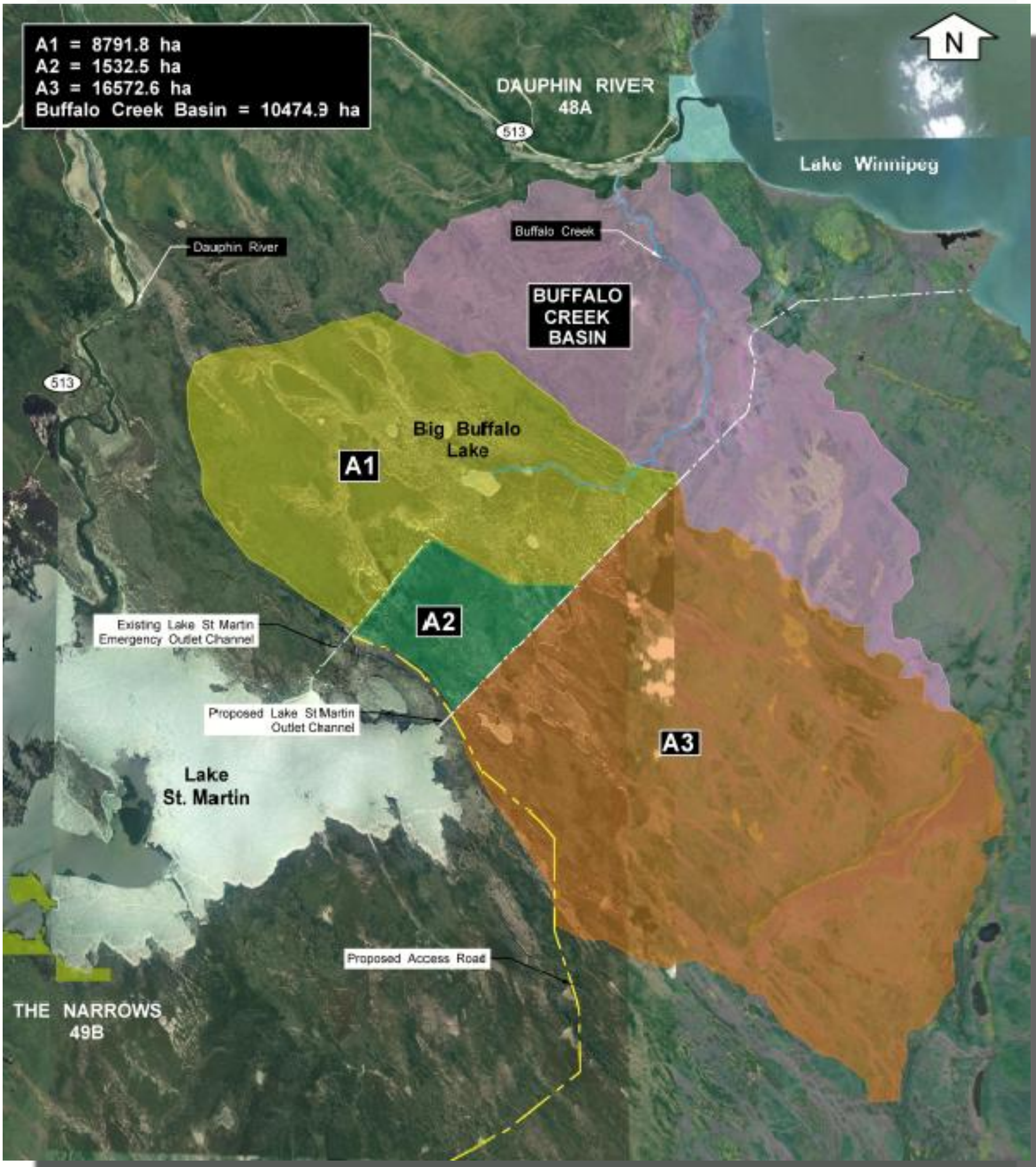
Manitoba

Proposed Lake St. Martin Outlet Channel



Manitoba

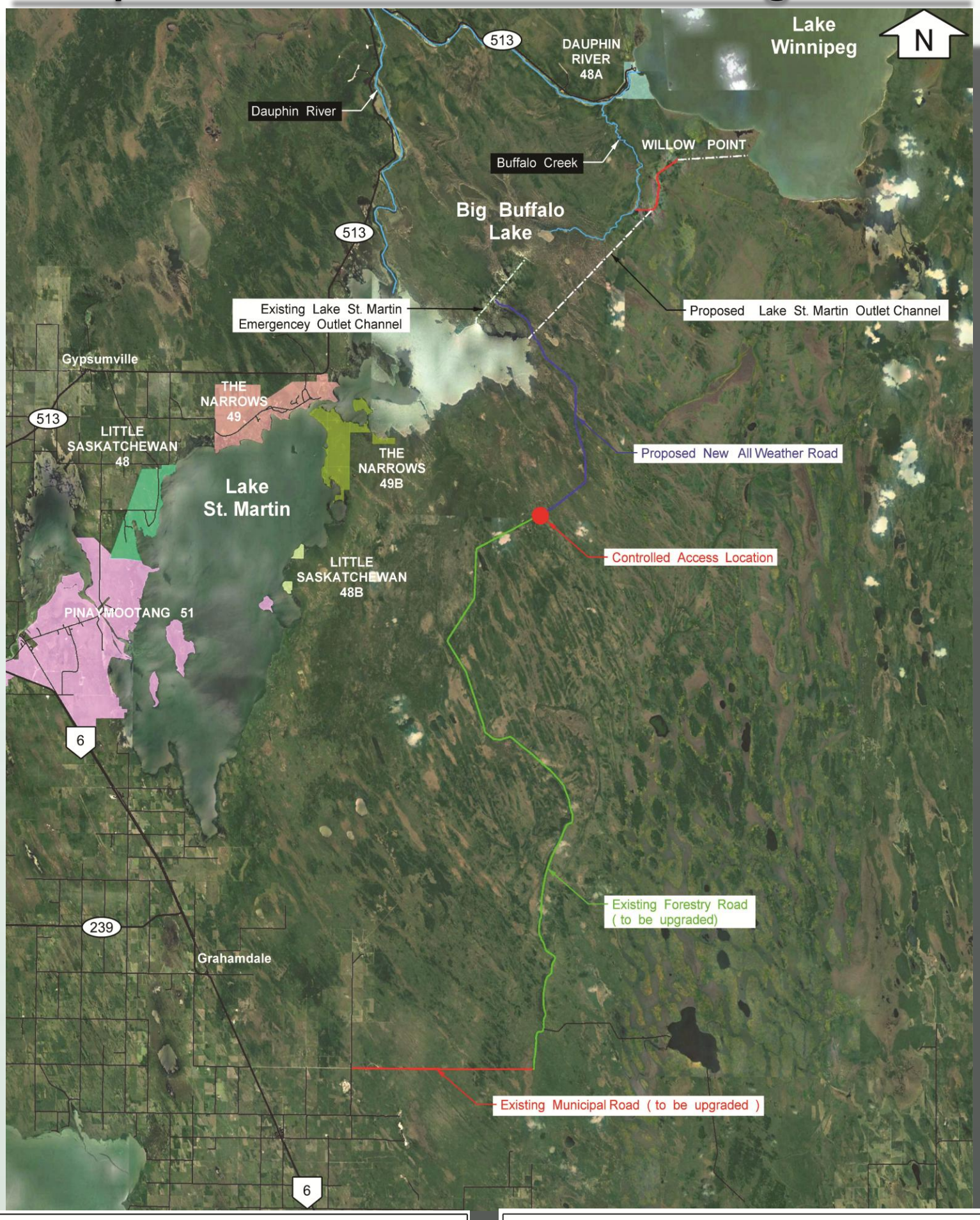
Lake St. Martin Outlet Channel Drainage Area

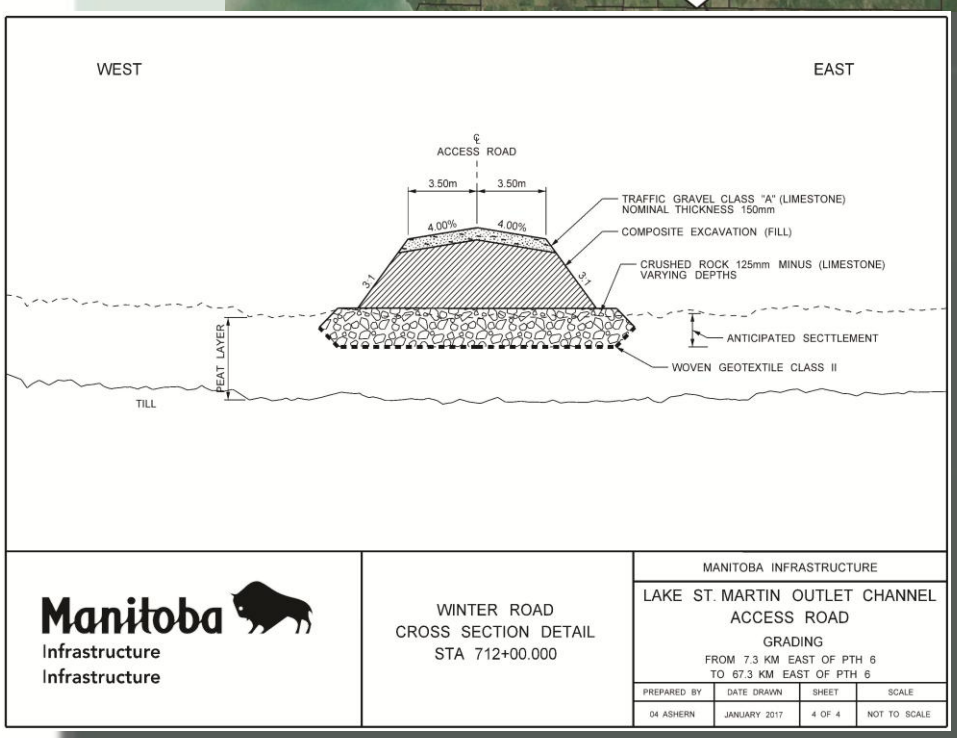


Manitoba

Lake St. Martin Outlet Channel

Proposed Access Road Alignment





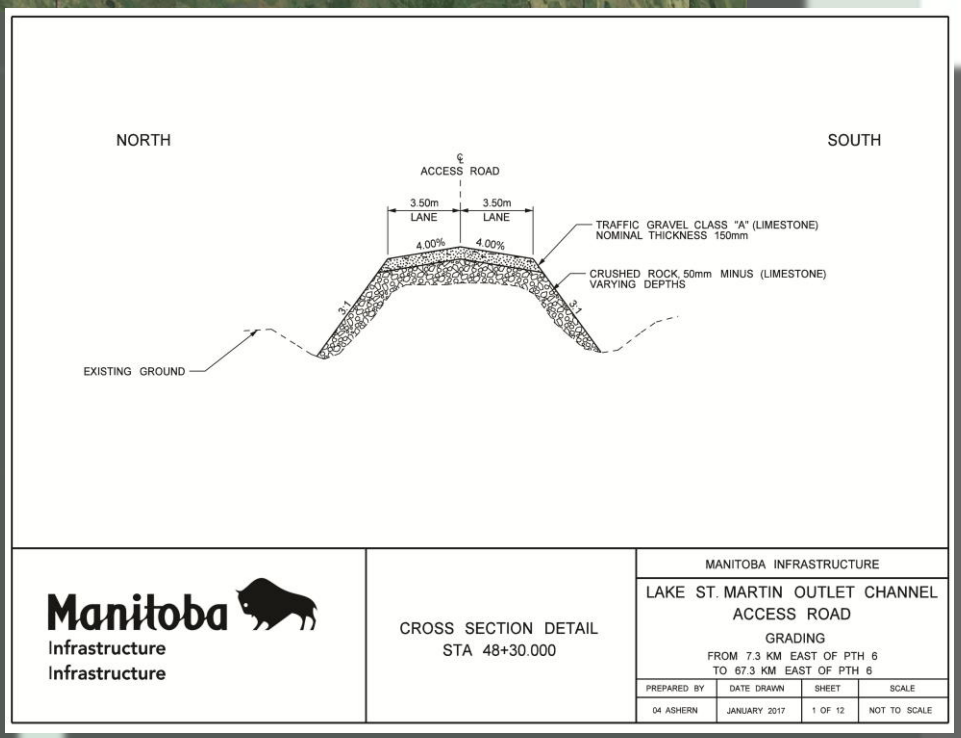
Manitoba
Infrastructure
Infrastructure

WINTER ROAD
CROSS SECTION DETAIL
STA 712+00.000

MANITOBA INFRASTRUCTURE

LAKE ST. MARTIN OUTLET CHANNEL
ACCESS ROAD
GRADING
FROM 7.3 KM EAST OF PTH 6
TO 67.3 KM EAST OF PTH 6

PREPARED BY	DATE DRAWN	SHEET	SCALE
04 ASHERN	JANUARY 2017	4 OF 4	NOT TO SCALE



Manitoba
Infrastructure
Infrastructure

CROSS SECTION DETAIL
STA 48+30.000

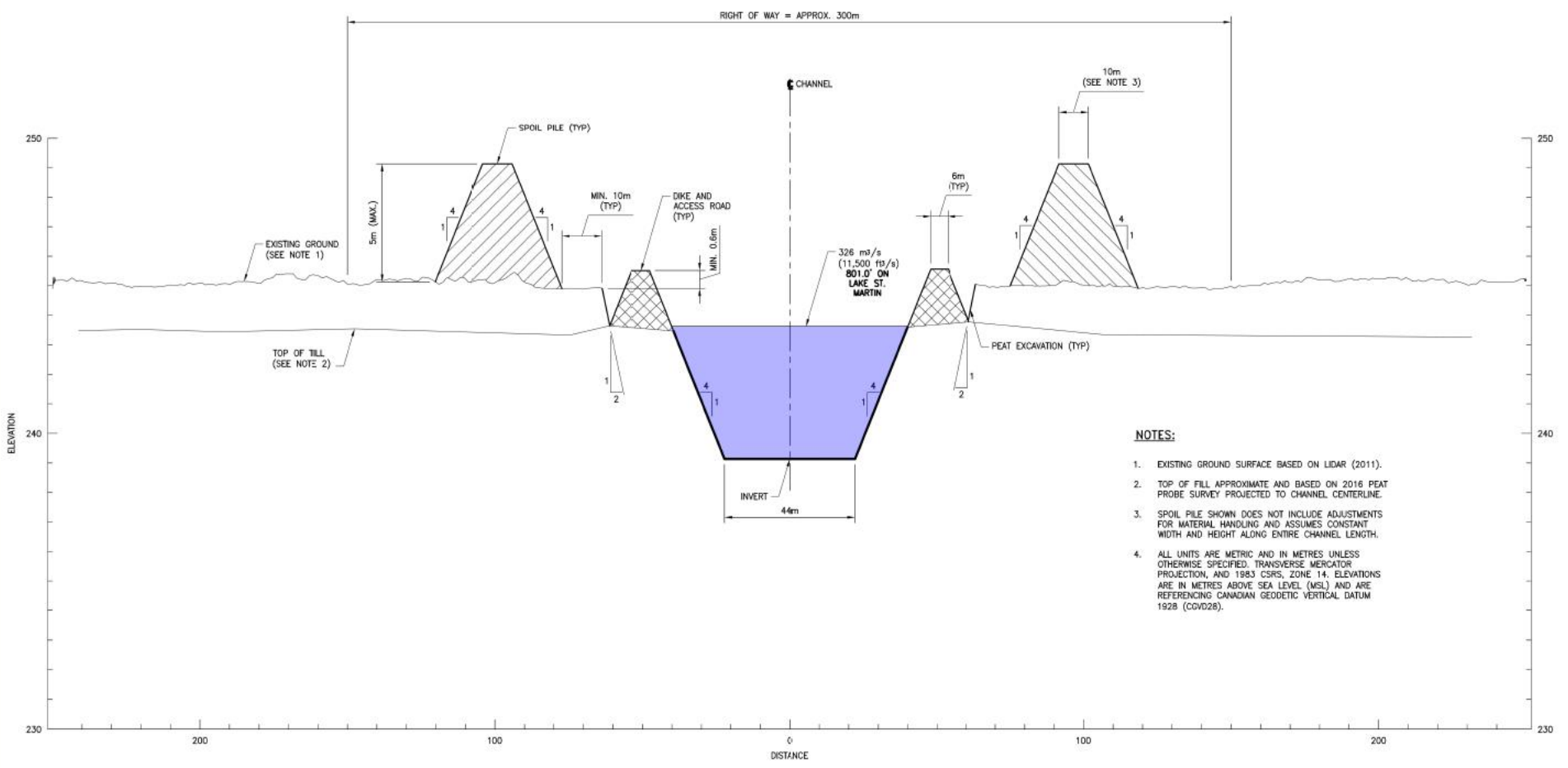
MANITOBA INFRASTRUCTURE

LAKE ST. MARTIN OUTLET CHANNEL
ACCESS ROAD
GRADING
FROM 7.3 KM EAST OF PTH 6
TO 67.3 KM EAST OF PTH 6

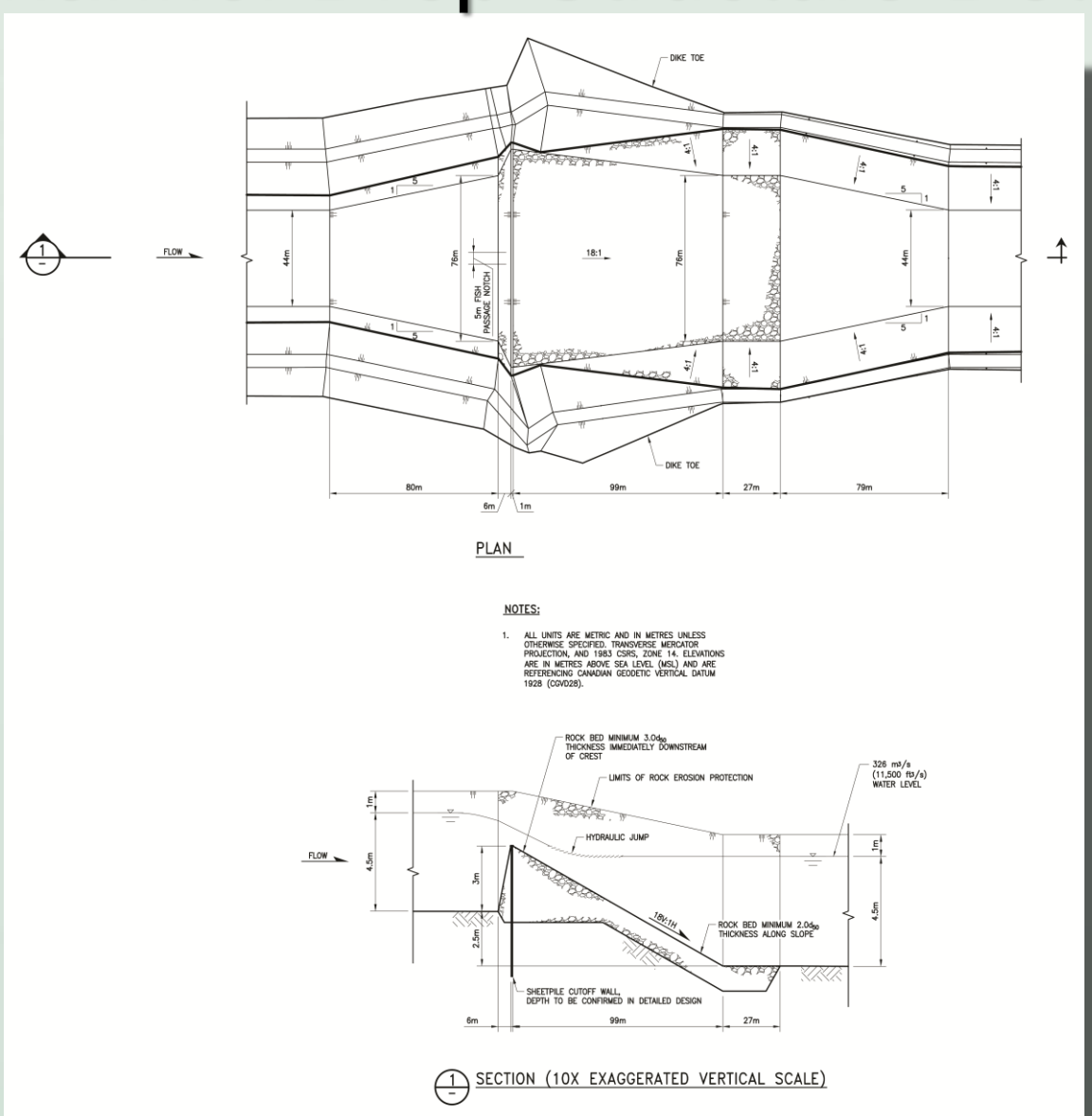
PREPARED BY	DATE DRAWN	SHEET	SCALE
04 ASHERN	JANUARY 2017	1 OF 12	NOT TO SCALE

Lake St. Martin Outlet Channel

Typical Channel Cross Sections



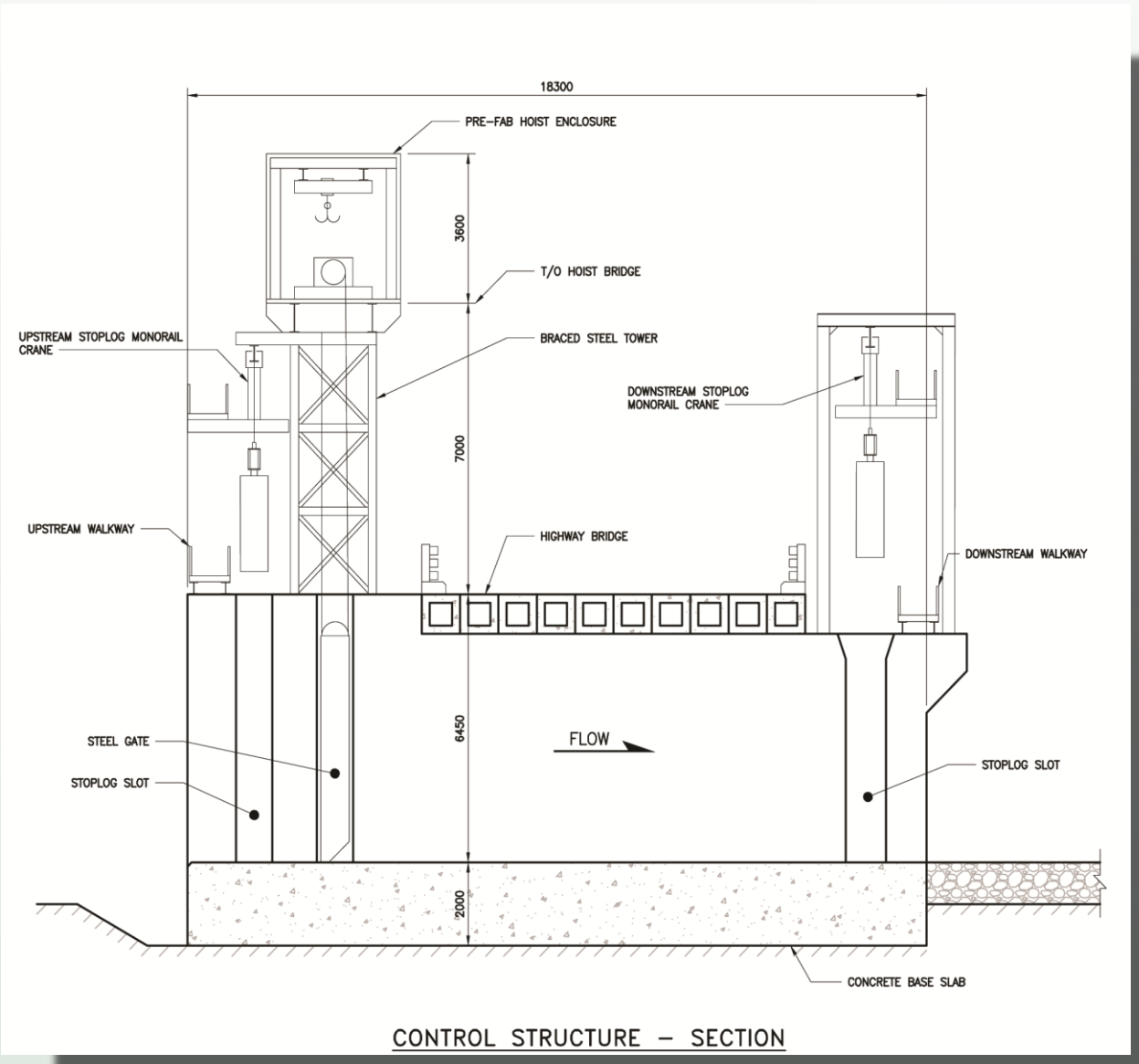
Channel Drop Structure Detail



Information provided by KGS Group

Lake Manitoba - Lake St. Martin Outlet Channels

Water Control Structure Details - Conceptual



CONTROL STRUCTURE – SECTION

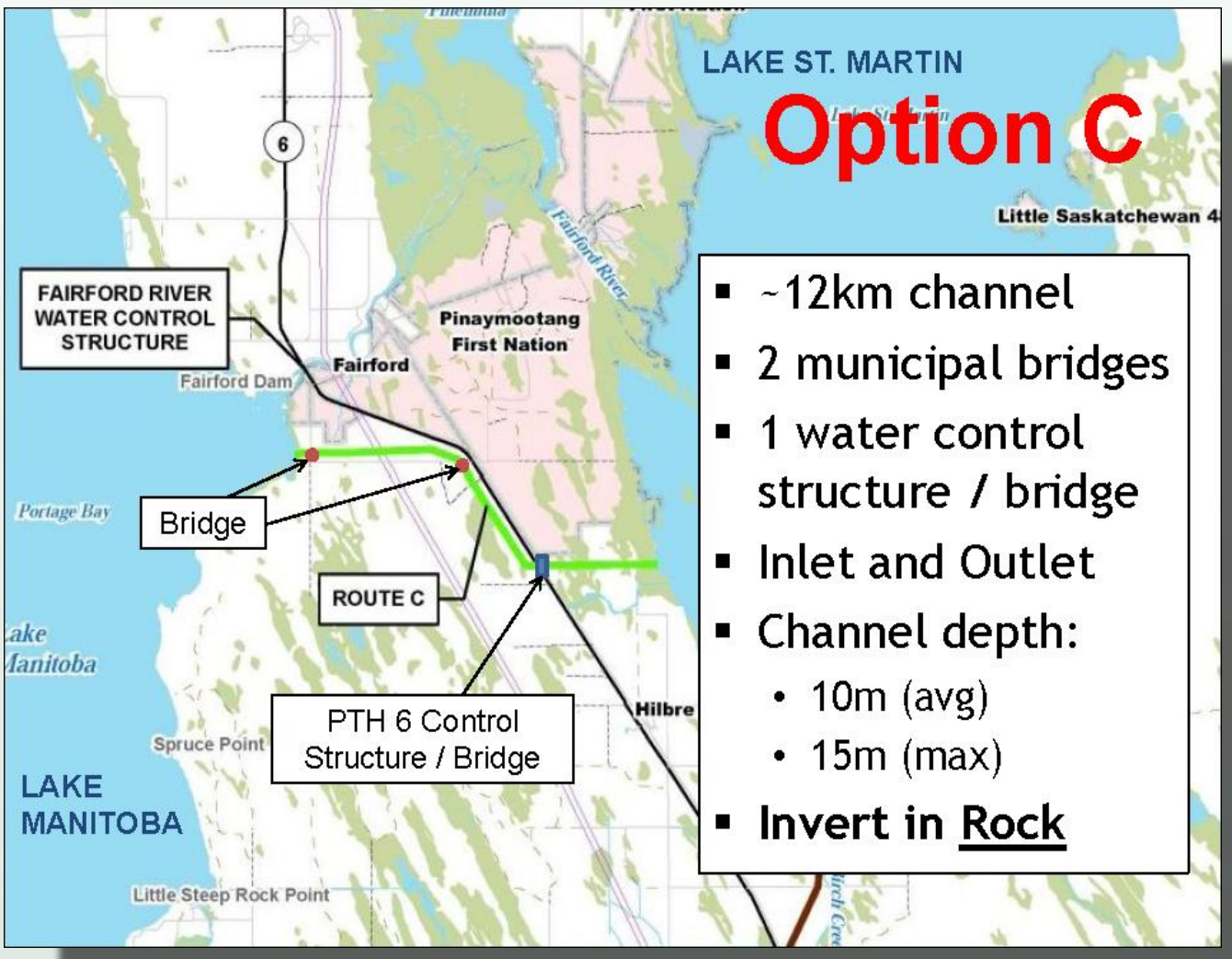
3 BAY CONTROL STRUCTURE – UPSTREAM ELEVATION

Information provided by KGS Group

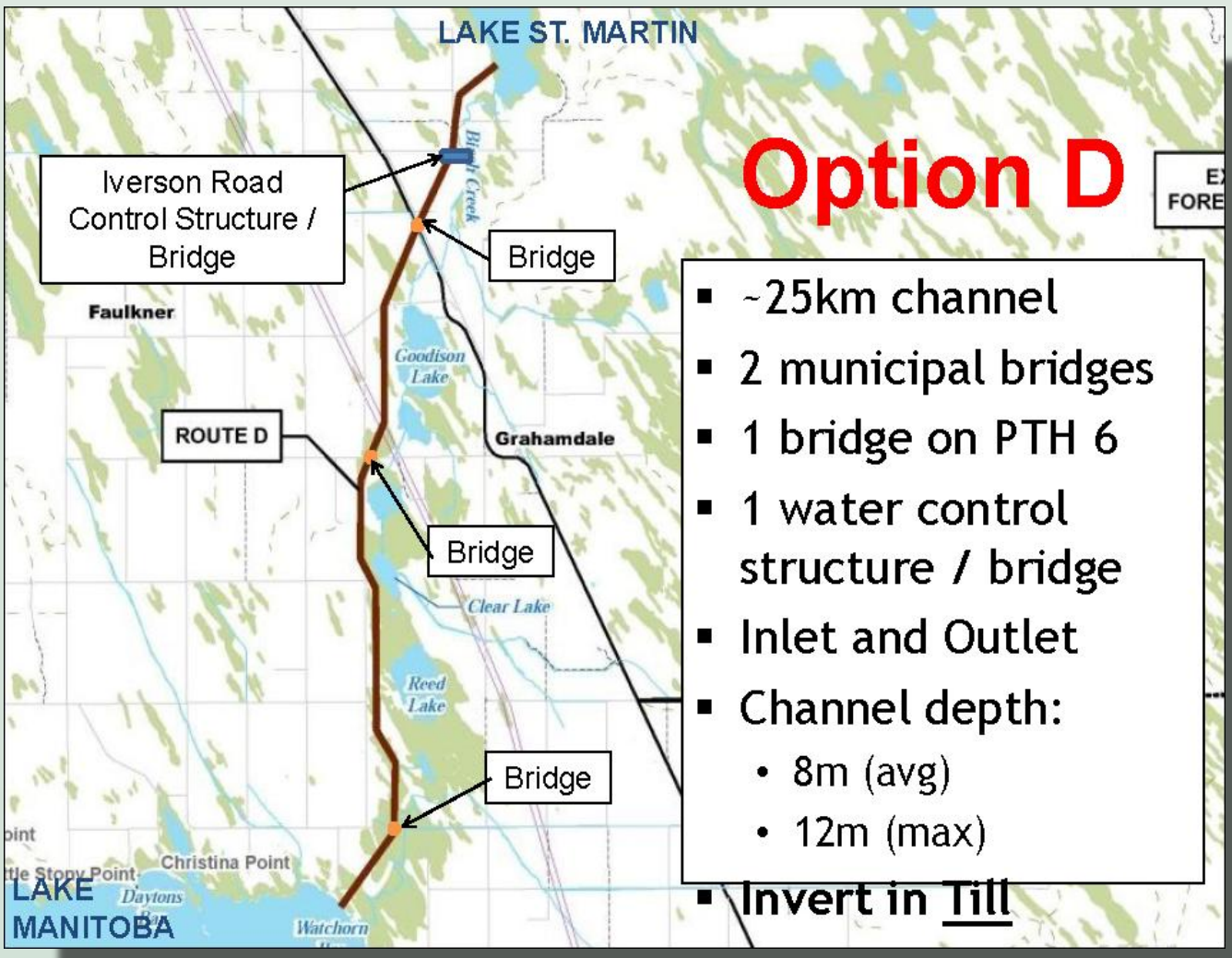
Lake Manitoba Outlet Channel

Channel Alignment Options

Option C



Option D



Information provided by KGS Group

Lake Manitoba Outlet Channel

Channel Alignment Options

Summary of Results

	Route C	Route D
Constructability	★★½	★★½
Operation and Maintenance	★½	★½
Cost	★★★	★★½
Risk	★	★★★½
Physical / Biological Environment Impacts	★★★★★	★★★½
Social Economic Considerations	★½	★½
Surface Water Impacts	★½	★
Groundwater Impacts	★	★★★★★
Average Rating	★★	★★½

- Option D identified as preferred alternative
- Mostly attributed to groundwater impacts and associated risks

Information provided by KGS Group

Proposed Operating Guidelines

Lake Manitoba Outlet Channel

Lake Manitoba

Fairford River Water Control Structure

- The Fairford River Water Control Structure will be operated according to the "Minimal Log Change Regime" with target Lake Manitoba range between 810.5 – 812.5 ft (recognizing that the lake will occasionally reach 810.0 ft or lower on the low side, and 813.0 ft or higher on the high side) and Lake St. Martin range between 797.0 – 800.0 ft
- Under normal operating conditions, outflow will be set to 50% capacity and there are no further stop-log adjustments
- During recovery from flood conditions on Lake Manitoba (level above 812.5 ft), the FRWCS will be kept wide open until Lake Manitoba recedes to the middle of the range (811.5 ft) after which point the FRCWS will be operated to achieve normal outflow (50% capacity)
- For recovery from drought on Lake Manitoba (level below 810.5 ft), the FRWCS is kept at 800 cfs until Lake Manitoba levels increase to the middle of the range (811.5 ft) after which point the FRCWS will be operated to achieve normal outflow (50% capacity)

Lake Manitoba Outlet Channel

- The outlet channel will be opened to maximum capacity when Lake Manitoba is above top of operating range (812.5 ft),
- Once the water level on Lake Manitoba recedes below the middle of the regulation range (811.5 ft), the outflow from the Lake Manitoba Outlet Channel will be reduced so that the outflow from the Fairford River Water Control Structure and the Lake Manitoba Outlet Channel, insofar as possible matches the inflow into Lake Manitoba
- The Lake Manitoba Outlet Channel will be closed once Lake Manitoba is below 811.5 ft and the outflow from the Fairford River Water Control Structure is greater than the total inflow into Lake Manitoba
- Initial operation of the outlet control structure shall not be initiated during the period in which there is solid ice cover in the channel (typically from Dec 1 – April 30th)

Proposed Operating Guidelines

Lake St. Martin Outlet Channel

Lake St. Martin

Lake St. Martin Outlet Channel

- The target regulation range for Lake St. Martin is 797-800 ft
- The Lake St. Martin Outlet Channel will be opened to full capacity when the Lake St. Martin water level rises above 800 ft or when the Lake Manitoba Outlet is opened for initial operation and Lake St. Martin is above 797 ft.
- During recovery from high water when the lake level decreases below 800 ft, the outflow from the Lake St. Martin Outlet Channel will be reduced to the greater of either 50% of channel capacity or the outflow required to ensure total outflow from Lake St. Martin matches inflow from the Fairford River and Lake Manitoba Outlet Channel
- If the Lake Manitoba Outlet is in operation in November, the Lake St. Martin Outlet Channel should be operated so that the total outflow from Lake St. Martin, insofar as possible, matches inflow from the Fairford River and Lake Manitoba Outlet Channel during winter
- The Lake St. Martin Outlet Channel will be closed fully when Lake St. Martin drops below 798 ft during the period from when ice cover has cleared out of the channel in the spring to October 31st
- During the spring freshet the Lake St. Martin Outlet Channel will be operated if the Lake Manitoba Outlet Channel has been in operation over the winter under the following conditions:
  - If the Dauphin River outflow plus Lake St. Martin Outlet Channel capacity is less than the total inflow into Lake St. Martin, then the Lake St. Martin Outlet Channel will be open to full capacity
  - Otherwise, the Lake St. Martin Outlet Channel should be operated so that the total outflow from Lake St. Martin, insofar as possible, matches inflow from the Fairford River and Lake Manitoba Outlet Channel
- Initial operation of the outlet control structure shall not be initiated during the period in which there is solid ice cover in the channel (typically from Dec 1 – April 30th)

Project Schedule / Next Steps

Item	Schedule
Preliminary Design Packages Complete	Jan 31 – June 30, 2018
Crown Consultation wrap up	First ¼ of 2018
Environmental Impact Statement Submission (by Manitoba Infrastructure)	Second ¼ of 2018
Detailed Design Packages Complete	Jan 31 – June 30, 2019
Environmental Authorization	Second ¼ of 2019
Initiate Tendering	Second ¼ of 2019
* Construction commences	Second ¼ of 2019
Completion of Channel	Fourth ¼ of 2021

* Lake St. Martin Outlet Channel access road construction commences summer of 2017

Questions / Comments

Feedback forms available here today or please feel free to share your feedback at Survey Monkey using the following link:
https://www.surveymonkey.com/r/BT7FYXJ

Reach out to one of the Manitoba Infrastructure or KGS Group Representatives here today! They would be happy to answer any questions or discuss the project with you!

OR

Contact:

Mark Allard, P.Eng.
Project Director
Phone: 204-622-2261
Email: Mark.Allard@gov.mb.ca

For any Environmental Assessment Information Contact

Christine Baljko
Environmental Coordinator
Phone: 204-479-6025
Email: Christine.Baljko@gov.mb.ca