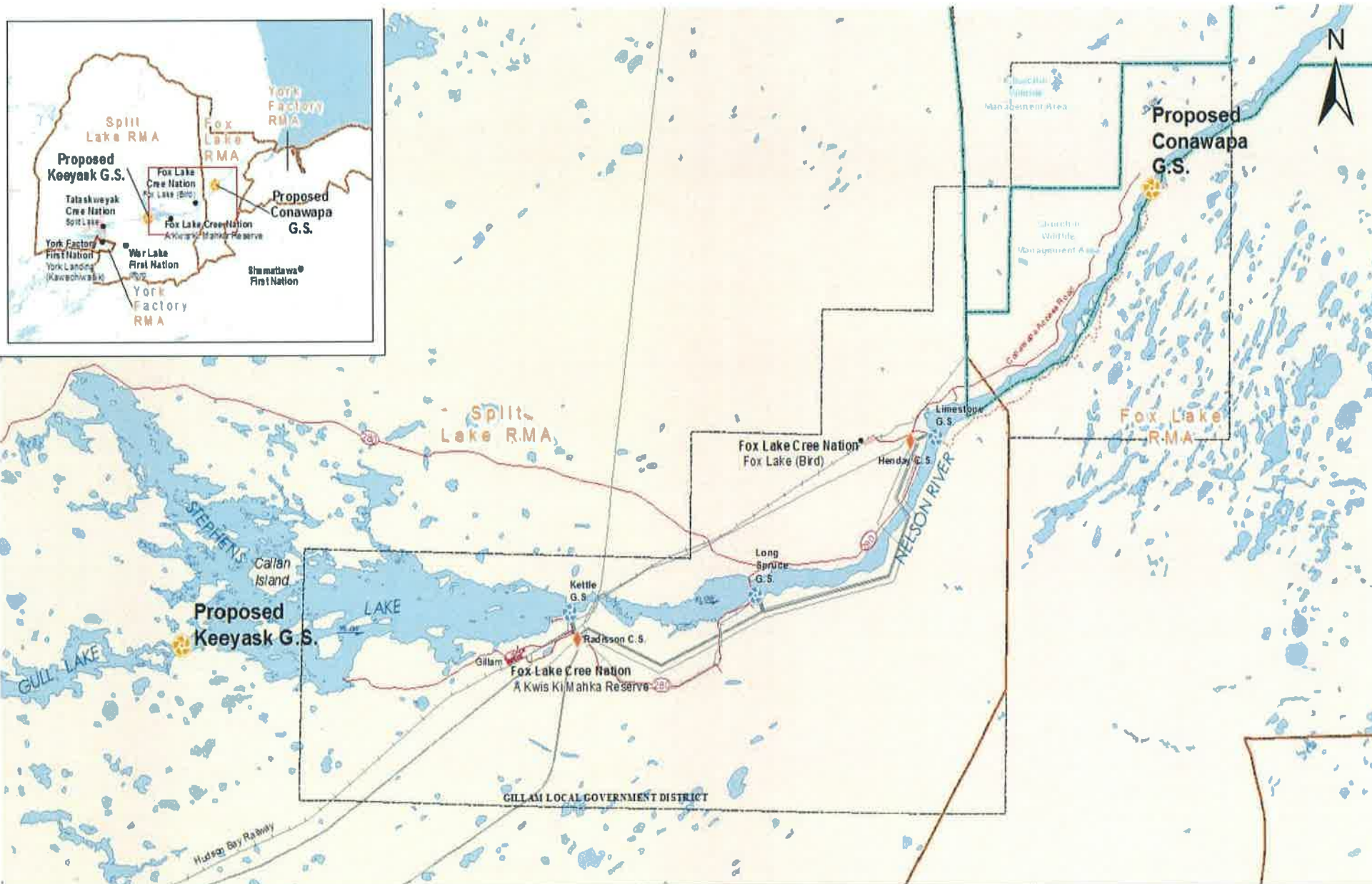


# Needs for & Alternatives To Project Descriptions

Ed Wojczynski





DATA SOURCE:  
Manitoba Hydro, Government of Manitoba, Government of Canada

DISCUSSED BY:  
Manitoba Hydro - Hydro Power Planning

COORDINATE SYSTEM:  
UTM NAD 1983 Z13N

DATE CREATED:  
15-JUL-13

REVISION DATE:

SCALE:  
0 1 2 3 Kilometers

VERSION NO:  
1.0

DWG:  
M-1-10-P

### Legend

Generating Station (Existing)

Keyask & Conawapa Generating Stations

Converter Station

First Nation Reserve

Resource Management Area

Local Government District

Wildlife Management Area

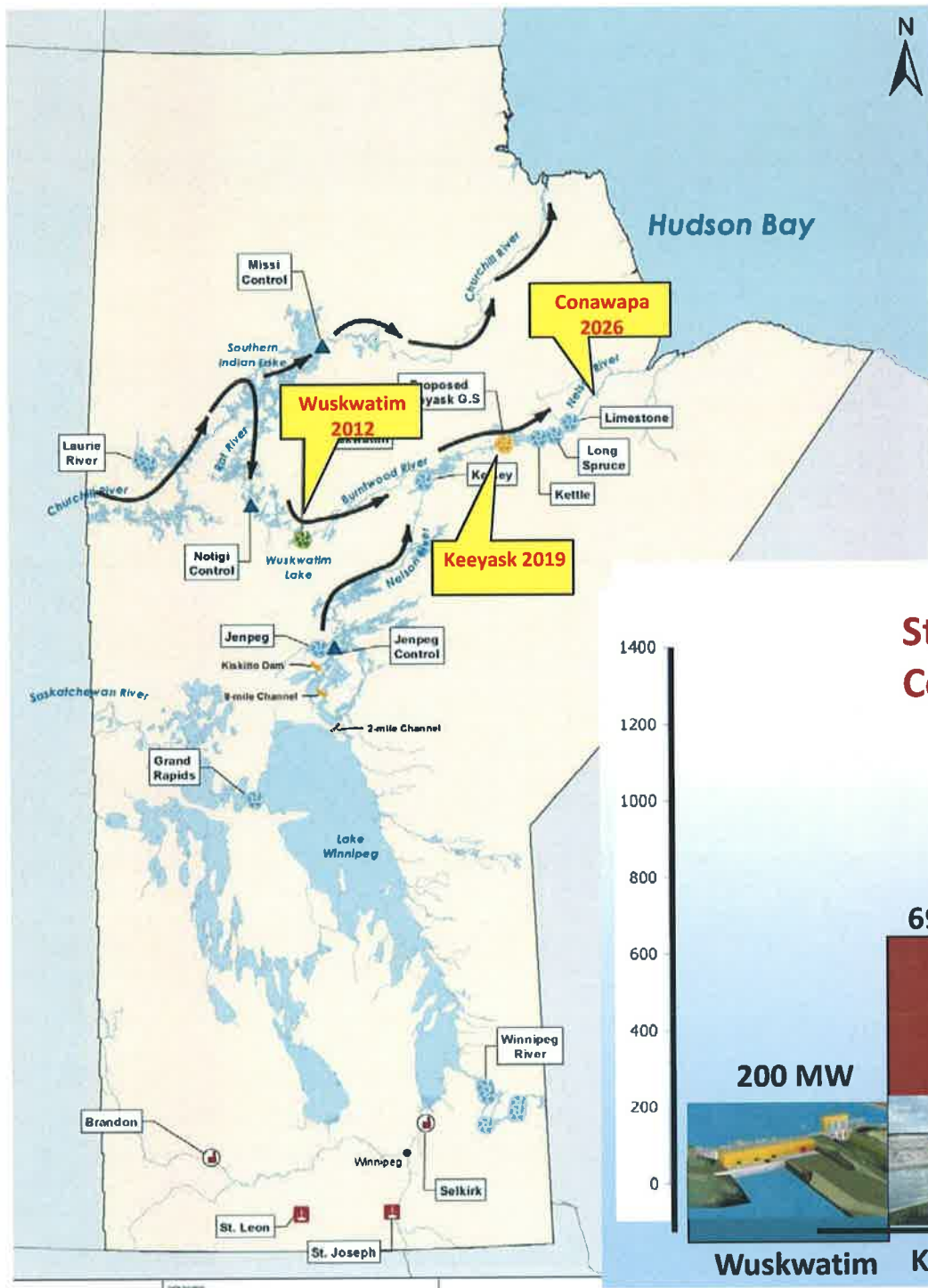
Transmission Line

South Winter Trail

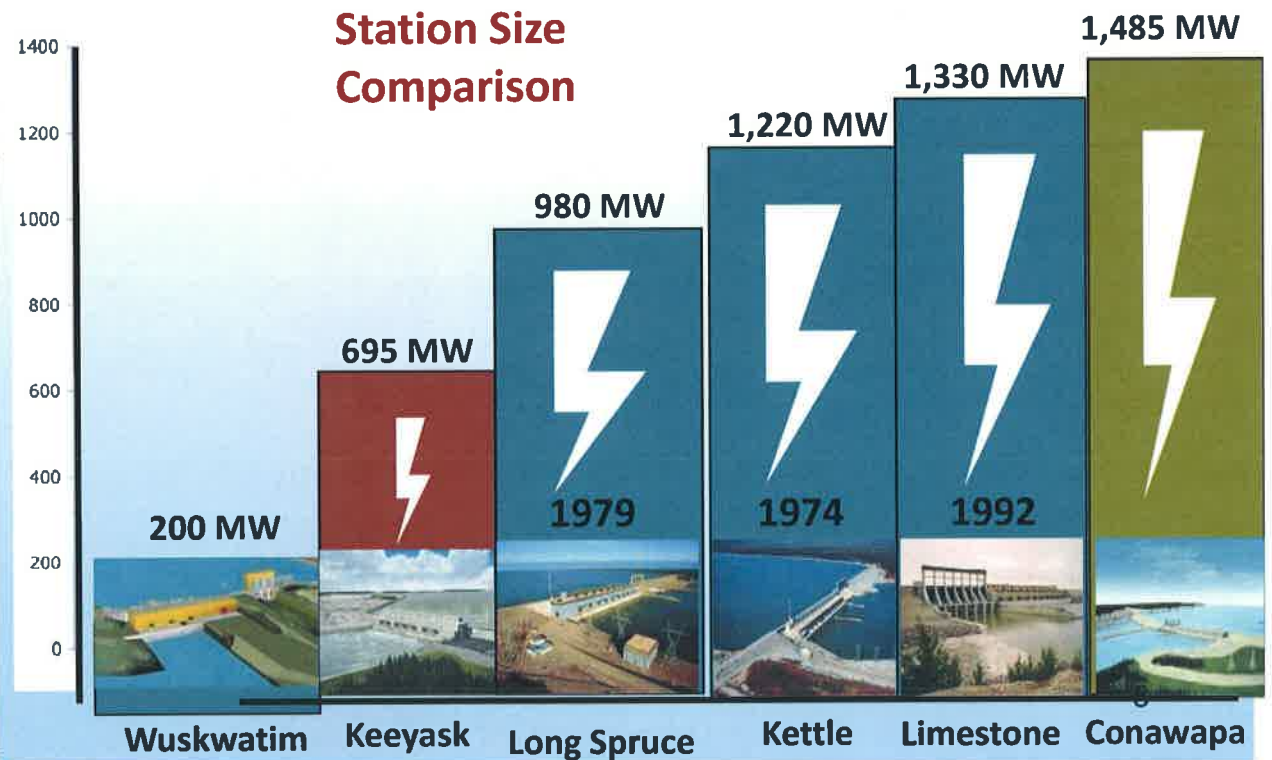
Rail

Highway

## Keyask & Conawapa Project Locations

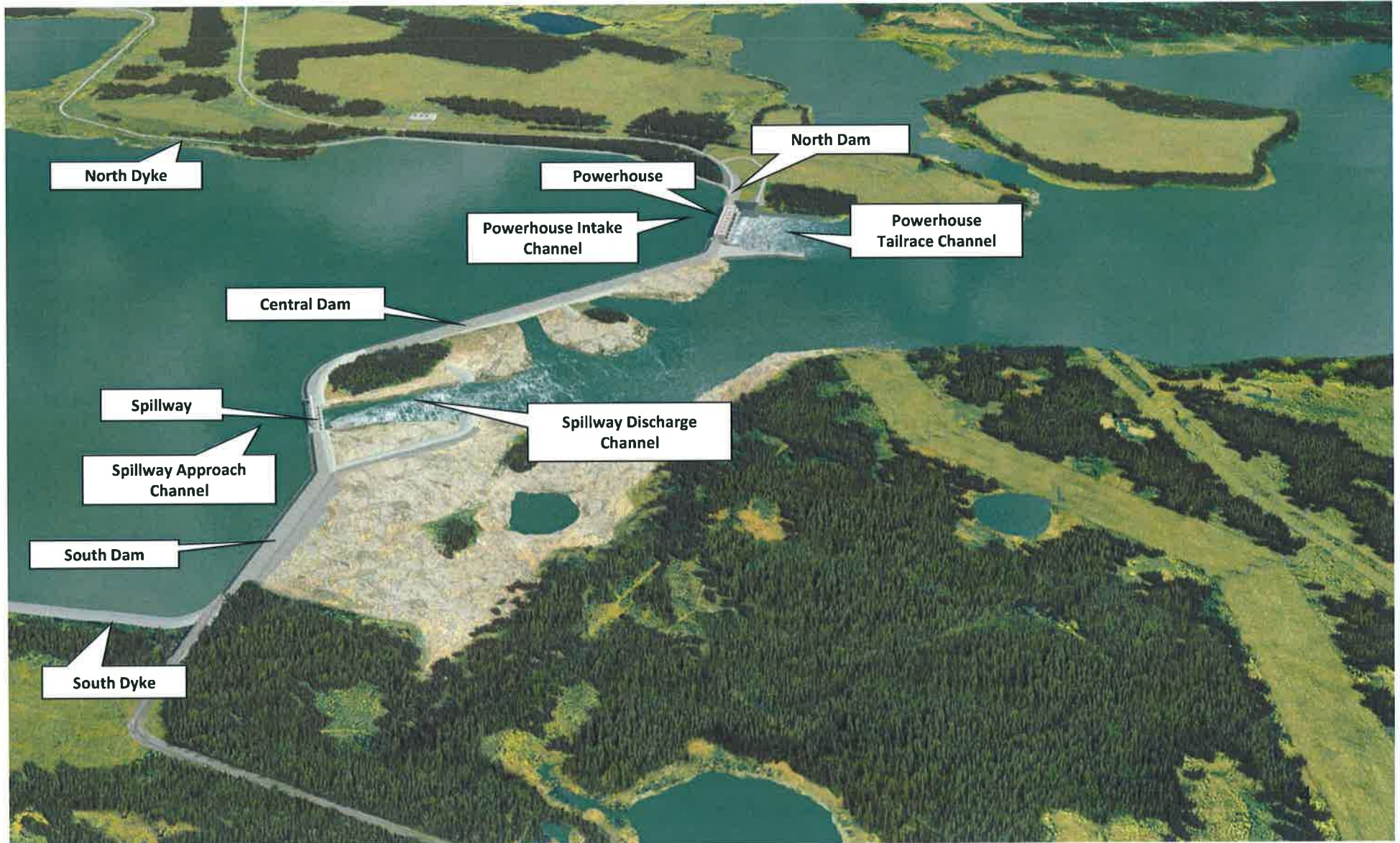


## Station Size Comparison



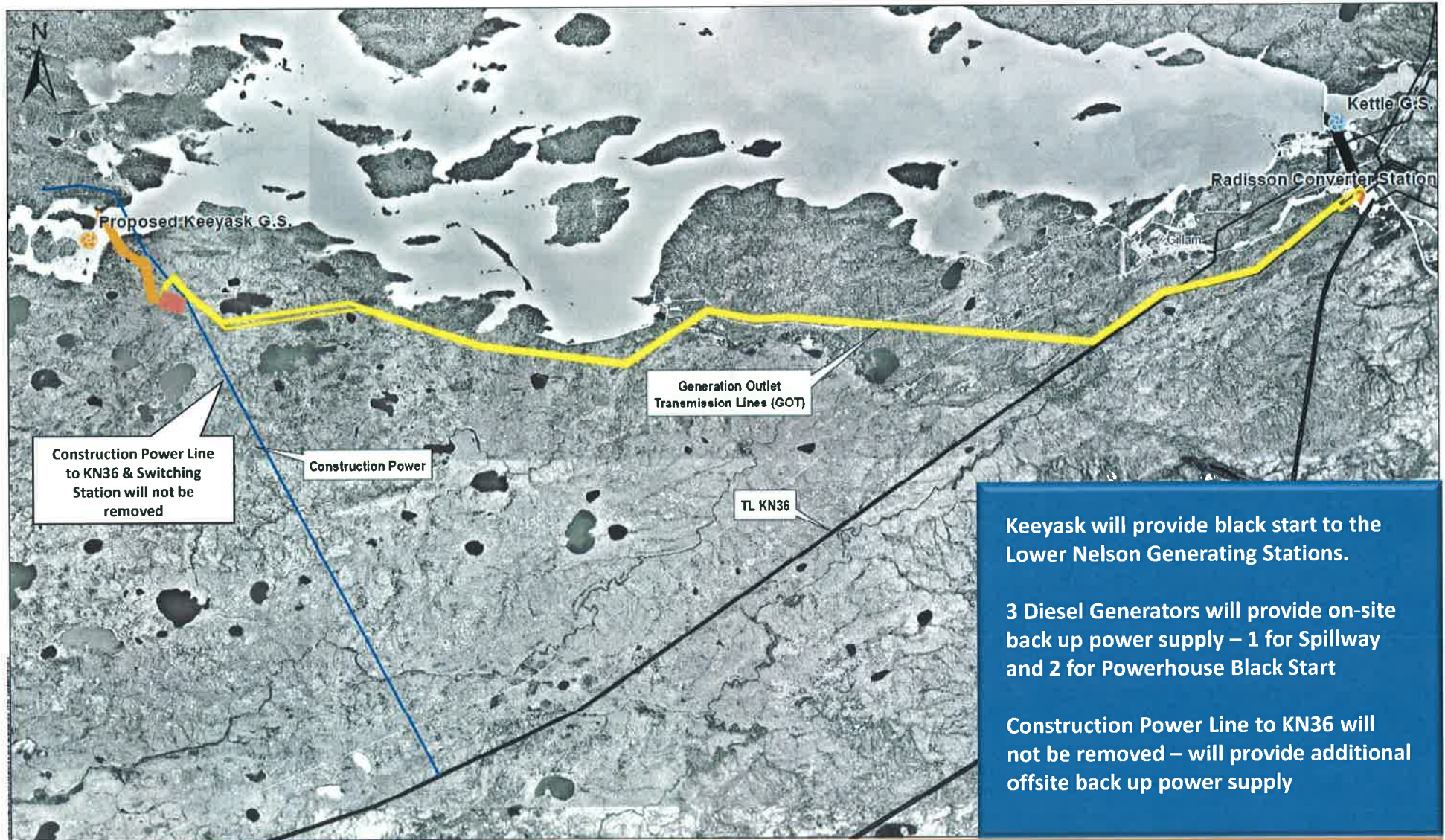


# Keeyask Principal Structures



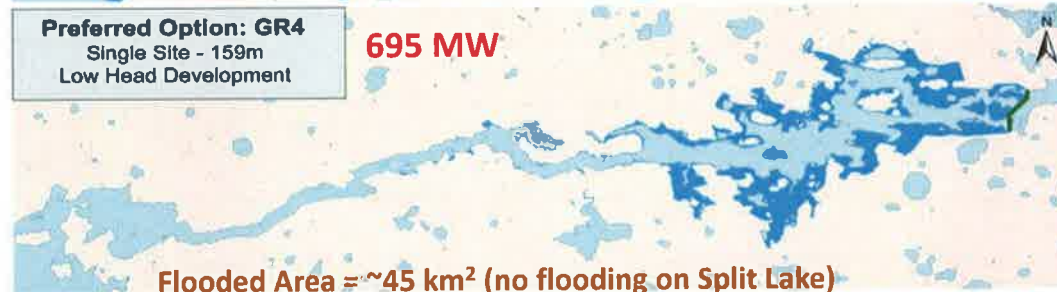
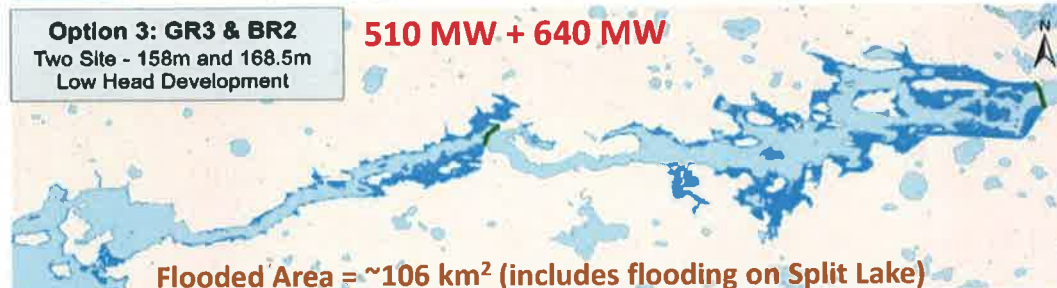
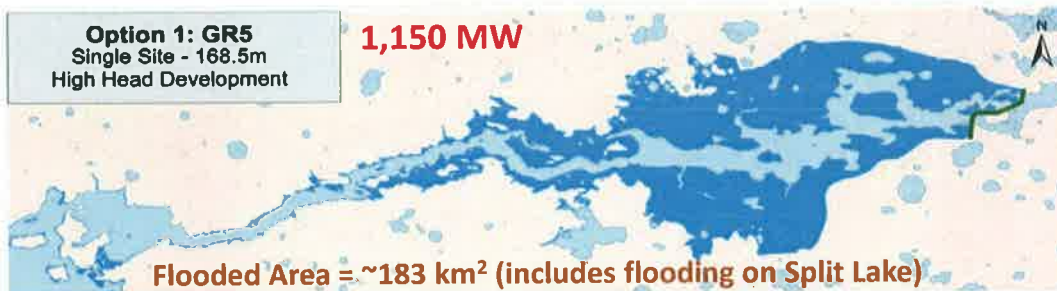


# Keeyask Generation Outlet Lines





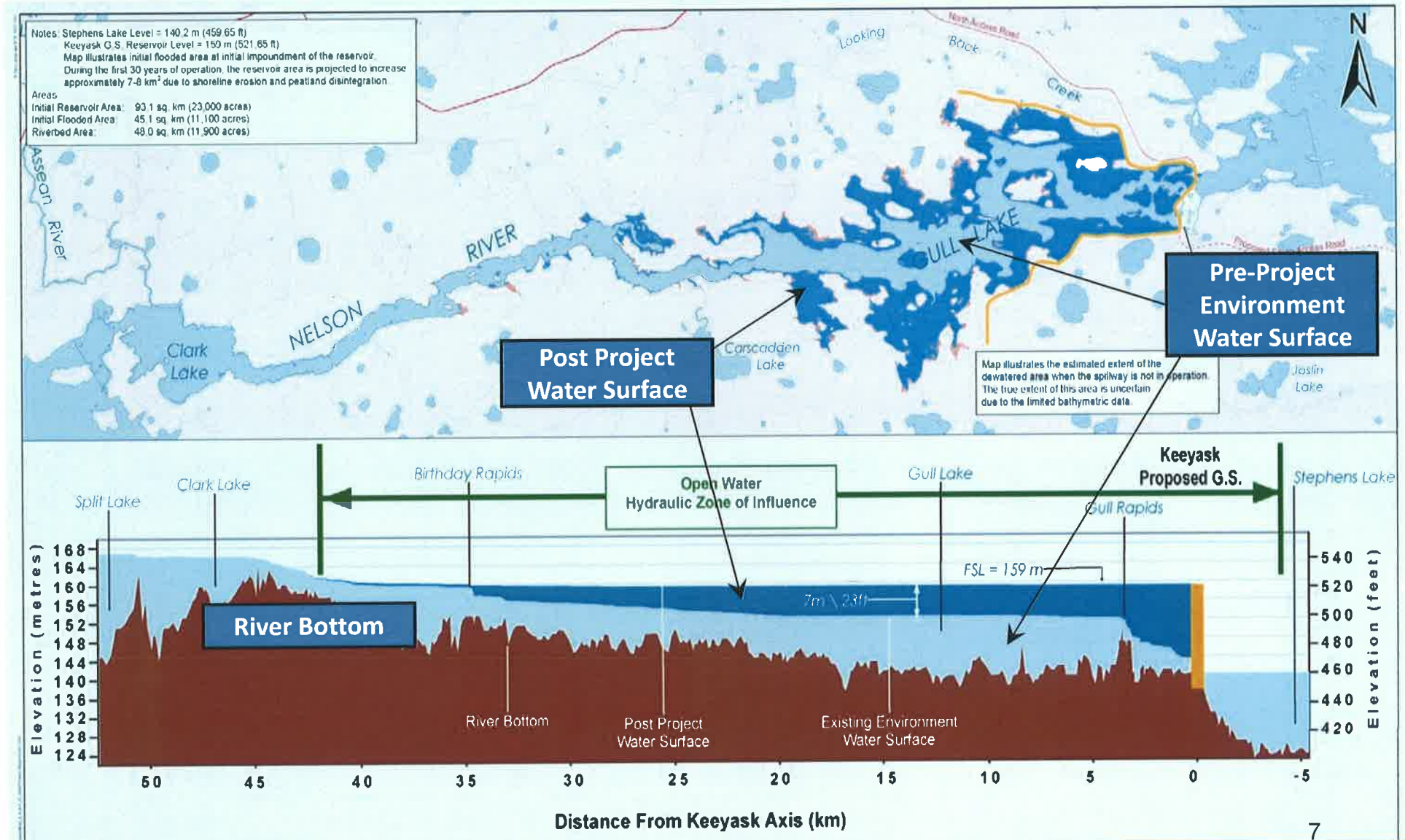
# Split-Stephens Lake Reach Development Options



- Least flooding
- Least Environmental effects
- Least power production

Note: Estimates of flooded area are preliminary

# Keeyask Reservoir



# Keeyask Generating Station

- 7 units - 695 MW Capacity
- Generation \$6.2 B – IFF Budget cost
- Transmission \$ 0.2 B cost
- 4,430 GW.hr Average annual energy
- 3,000 GW.hr Dependable energy
- 9,700 Manitoba construction employment person years
  - 24,700 PY Canadian employment (direct & indirect)
- Years of field investigations and engineering to:
  - first select basic parameters (e.g. site location, approximate forebay level)
  - and then optimize final design (e.g. number of units, unit size, final forebay level, operating regime, spillway capacity)



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# Keeyask Management of Environmental Impacts and Benefits

- Reduced size: From 1150 MW with 180 km<sup>2</sup> of flooding to 695 with 45 km<sup>2</sup>
- Limited operating range: Between 158 and 159 m above sea level (very small for a major project)
- Fish passage: turbines designed so that 90% of small fish survive when they pass through the powerhouse; bar racks prevent large fish from passing; and plans for upstream passage
- Reservoir clearing: Most trees and shrubs cleared before inundation
- Avoidance of sensitive sites: e.g. routing of north access road
- Sturgeon: New habitat and stocking
- Moose: Harvest sustainability plan



# Management of Environmental Impacts and Benefits for Keeyask (& Conawapa) – Caribou

- Caribou require regional approach
- Three types of caribou in the region – barren ground caribou, coastal caribou and summer resident caribou (herd affiliation and range uncertain).
- Calving habitat loss in area is small and Environment Canada benchmark for undisturbed habitat will remain met.
- Cumulative effects are expected to be negligible to small for both resident and migratory caribou, and are considered regionally acceptable.

# Keeyask Management of Socio-economic Effects and Benefits

- First Nation investment income and governance: Up to 25% of project ownership, with extensive involvement in planning and governance (board and committees)
  - Referendums: TCN, 61%; War, 94%; York, 83%; Fox, 87%
- Training: Extensive pre-project training
- Employment: Preferences for Aboriginal and northern workers
  - Commitment to 630 person years to Keeyask Cree Nation employment
- Business: Contracts have been negotiated directly with First Nation businesses; more identified in JKDA
- Effects on local Cree communities: Adverse effects agreements provide programming and compensation to address effects on the four local First Nations, including Treaty and Aboriginal rights



# Residual Socio-economic Effects and Benefits

- Keeyask Cree Nations: In their own words and from their own worldview, express their feelings about the project in their own Environmental Evaluations
  - While they have reservations, they look to the project with hope for their future generations, employment, business, income, as well as cultural and traditions
- Employment:
  - Construction: 4200 person years of employment, with between 500 and 1700 expected for northern Aboriginal people
- Operations: About 50 permanent jobs at Keeyask: Operational jobs: binding commitment of 182 jobs in Manitoba Hydro operations for KCN Members

# Residual Socio-economic Effects and Benefits

- Contracts: Contracts to be negotiated with KCN businesses identified in JKDA
- Resource Economy: With opportunities in adverse effects agreement, effects will be very limited
- Culture and Spirituality: Ceremonies will be held at appropriate milestones, counseling will be available
- KCN members can have a sense of ownership in the project
- However, for some there still will be a long-term negative effect



# Non-KCN Aboriginal Residents in the CBN area-Benefits

- Benefit from employment and business opportunities with Project construction.
- Operational jobs would be open to any qualified individuals, including the above population.

## Non-KCN Aboriginal Residents in the CBN area - Impacts

- Partnership undertaken 10 years of study and three rounds of public engagement
- Based on available sources of information, the Partnership is not aware of any potential Project effects specific to a particular non-KCN Aboriginal community, including land and resource use for traditional purposes.
- MMF Agreement for a Metis Specific Land Use and Knowledge Study, socio-economic impact assessment and historical narrative for the Keeyask region
- Working towards development of a PCN study proposal (traditional land and resource use).
- The Partnership remains open to reviewing and considering additional information about potential effects it may receive through these and other processes.



# Residual Socio-economic Effects and Benefits- Public Safety and Human Health

- The Partnership has implemented a number of measures at camp, and is working collaboratively with:

- the Town of Gillam,
- Fox Lake Cree Nation,
- the Northern Regional Health Authority,
- the RCMP and others

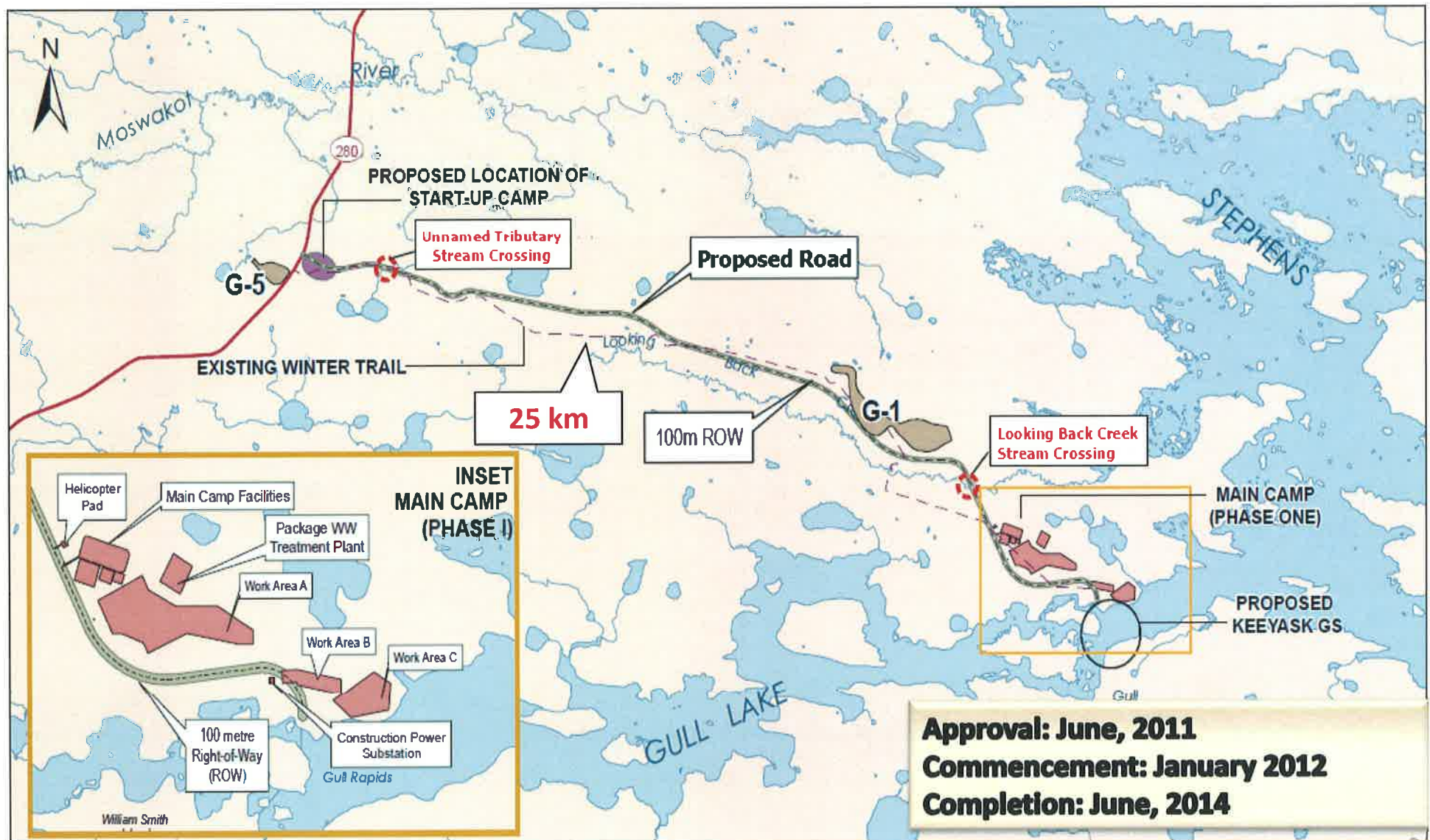
to address issues with respect to community health and the potential for undesirable interaction between workers and local residents

- It is not possible to fully predict the nature and extent of effects, but some residual adverse effects are anticipated

# Worker Interaction Mitigation

- Provide shuttle to take workers from Gillam and Thompson to camp
- Provide facilities to encourage workers to stay in camp during off-hours (e.g. recreational facilities, lounge)
- Establish appropriate camp rules
- Provide cultural training
- Dialogue with RCMP
- Coordinate discussions and information with community leaders, service providers and other Manitoba Hydro projects
- Working with health authority to secure an on-site health care professional at Keeyask

# Keeyask Infrastructure Project





# Keeyask Infrastructure Project – Timing

|                    | 2012   |     |     |     |     |     |     |     |     |     |     |     | 2013   |     |     |     |     |     |     |     |     |     |     |     | 2014 |     |     |     |     |     |
|--------------------|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|
|                    | Jan  | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan  | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan  | Feb | Mar | Apr | May | Jun |
| NORTH ACCESS ROAD  | \$30 Million<br>23.5Km -All weather gravel access road designed & built to Provincial Highways Standards   |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |
| LOOKING BACK CREEK | \$6 Million<br>30m - Clear span precast prestressed concrete bridge designed to handle 135.000Kg transformer loads                               |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |
| START UP CAMP      | \$15 Million<br>200 Person Construction Camp - Room, Board & recreation facilities along with on site potable & waste water treatment facilities |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |
| MAIN CAMP Phase 1  |  |     |     |     |     |     |     |     |     |     |     |     | \$121 M<br>500 person lodge to house workers on Keeyask GS Project. Room, Board & Recreation facilities with onsite potable & waste water treatment facilities |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |
| WORK AREAS         |  |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |

# Why Keeyask Infrastructure Project - KIP

- The Keeyask Infrastructure Project was undertaken to achieve the following objectives
  - To provide early business opportunities for KCN
    - Reduce risks to KCN businesses arising from tight construction schedule
  - To provide early employment opportunities for FN members northern aboriginal people and other northern and Manitoba workers
  - To increase proportion of aboriginal employment by spreading infrastructure work out over more time
  - To provide more time for Cree businesses to develop management capacities

# Why Keeyask Infrastructure Project - KIP

- To accelerate investment to support the promotion of sustainable growth in the province
- To provide for timely and efficient construction of the station should a decision be made to proceed after regulatory approvals are received.
- To reduce risks to project due to delays in infrastructure construction progress.



# What Happens to Keeyask Infrastructure if Keeyask does not proceed in the reasonable future?

- If Keeyask Generating Station does not proceed, the road will be decommissioned and the disturbed sites remediated

# Aboriginal Partnership

- The Keeyask Hydropower Limited Partnership will own and operate the project under the terms of the JKDA.
- Manitoba Hydro, the general partner and each of Keeyask Cree Nation investment entities will invest in the equity of the Keeyask Hydropower Limited Partnership .
- MH and the general partner will own at least 75%.
- The Keeyask Cree Nations will own up to 25%
  - CNP has an option to own up to 15% of the equity in the Project; and Fox Lake and York Factory, up to 5% each

# Keeyask Income Opportunities

- The Keeyask Cree have the opportunity to acquire up to a 25% interest in the Keeyask Hydropower Limited Partnership.
- As a common unit partner, the Keeyask Cree will be eligible to receive annual distributions based on their proportionate share of distributable cash after equity loan repayments.
- The Keeyask Cree may alternatively elect to invest in the Partnership as preferred unit partners to limit their risk and be eligible to receive distributions which correspond with the lower risk based on adjusted gross revenues.



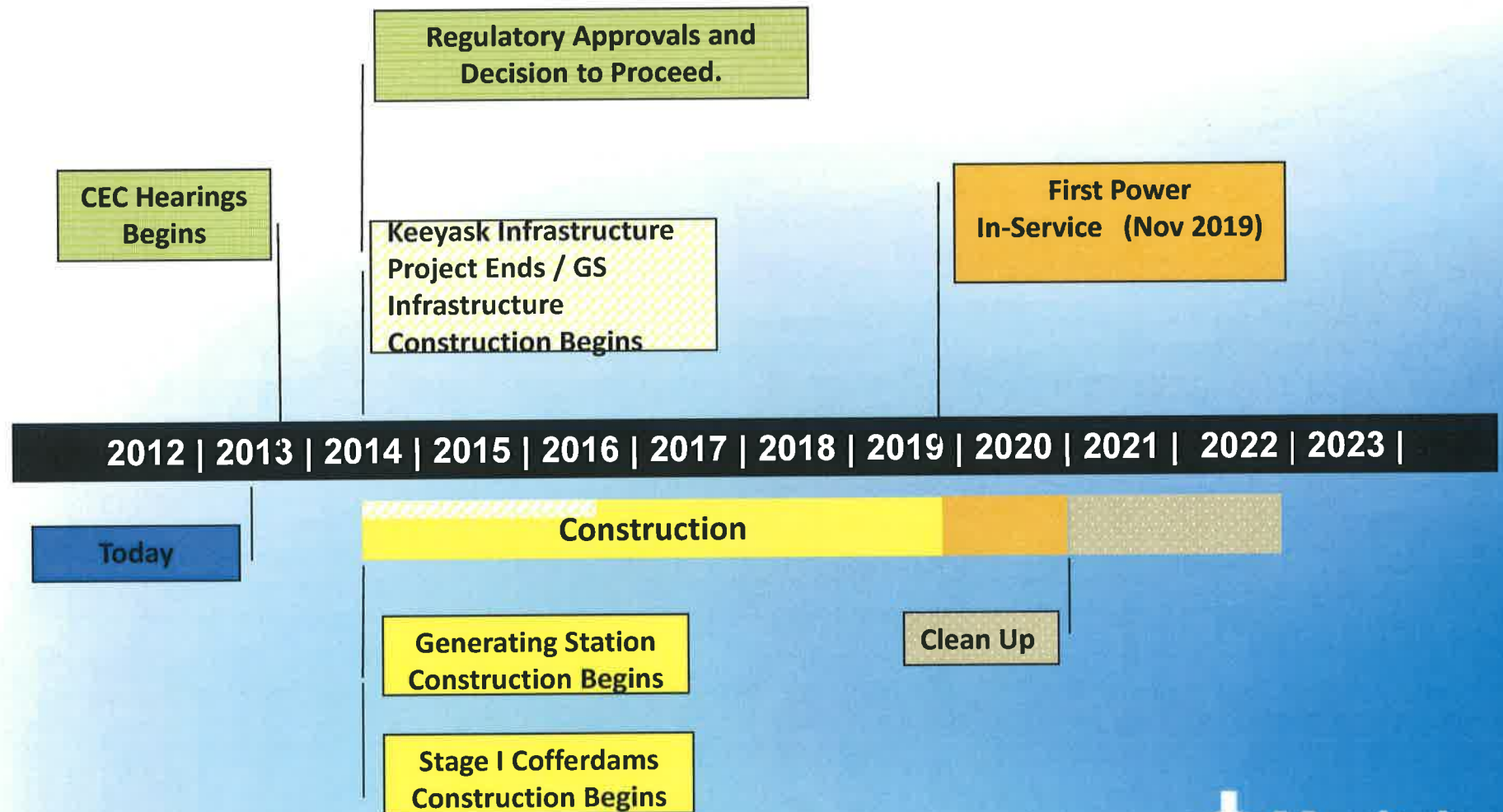
# Keeyask Regulatory Schedule

- Environmental studies:
  - Began with Tataskweyak Cree Nation in the 1990s
  - Expanded with War, York and Fox in early 2000s
- Keeyask Infrastructure Project:
  - Application in 2009
  - Approval in 2011

# Keeyask Generation Project Regulatory Schedule

- Keeyask Generation Project:
  - Application in 2011
  - Environmental impact statement filed in 2012
  - Manitoba Conservation and Water Stewardship, with CEAA, conducted two rounds of IRs
  - Canadian Environmental Assessment Agency drafting comprehensive study report
  - Clean Environment Commission: Round 1 responses filed – 535 questions, totaling over 1,350 pages
  - Hearings set for September – November
  - Decisions expected in 2014

# Keeyask 2019 Schedule



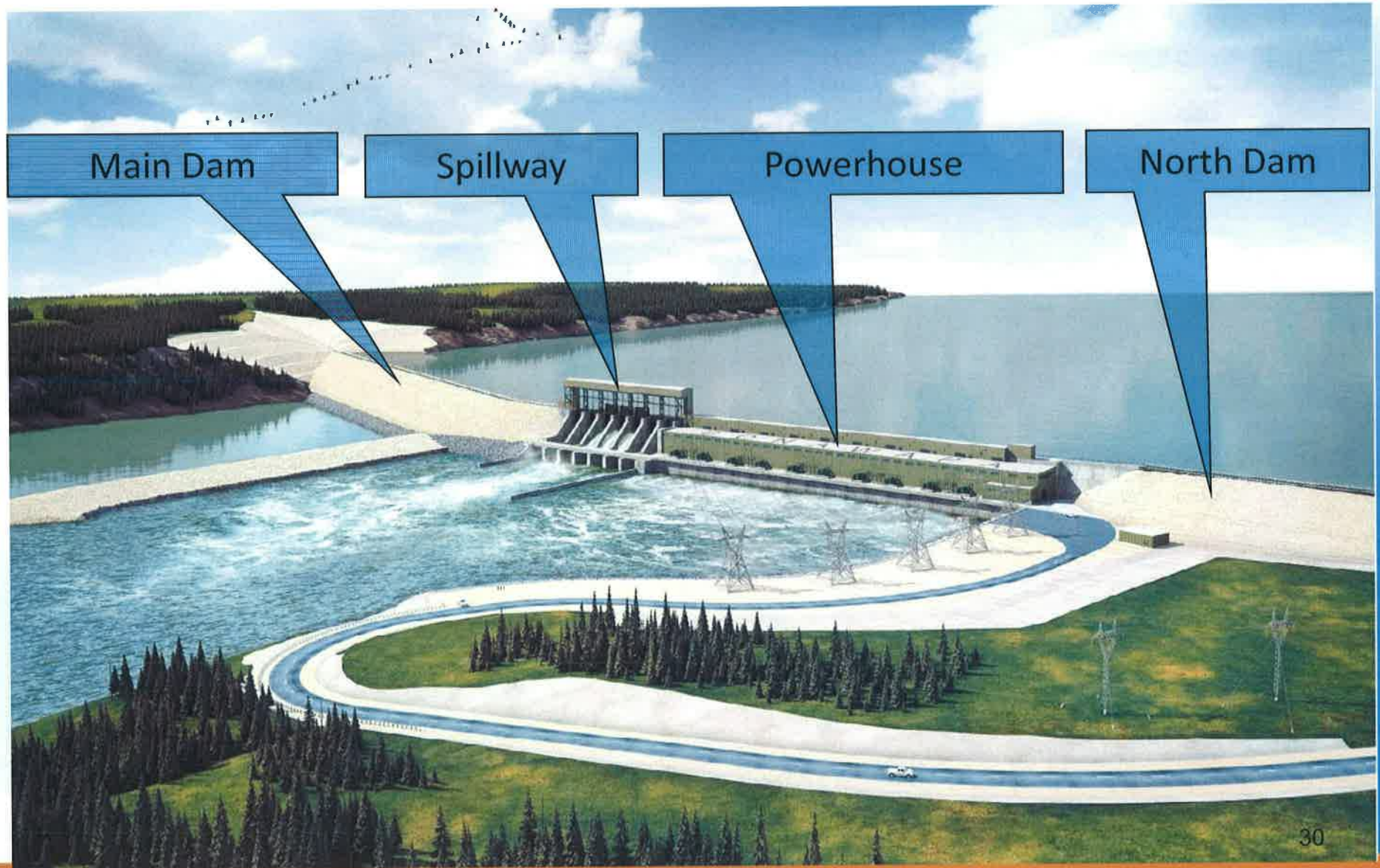


# CONAWAPA



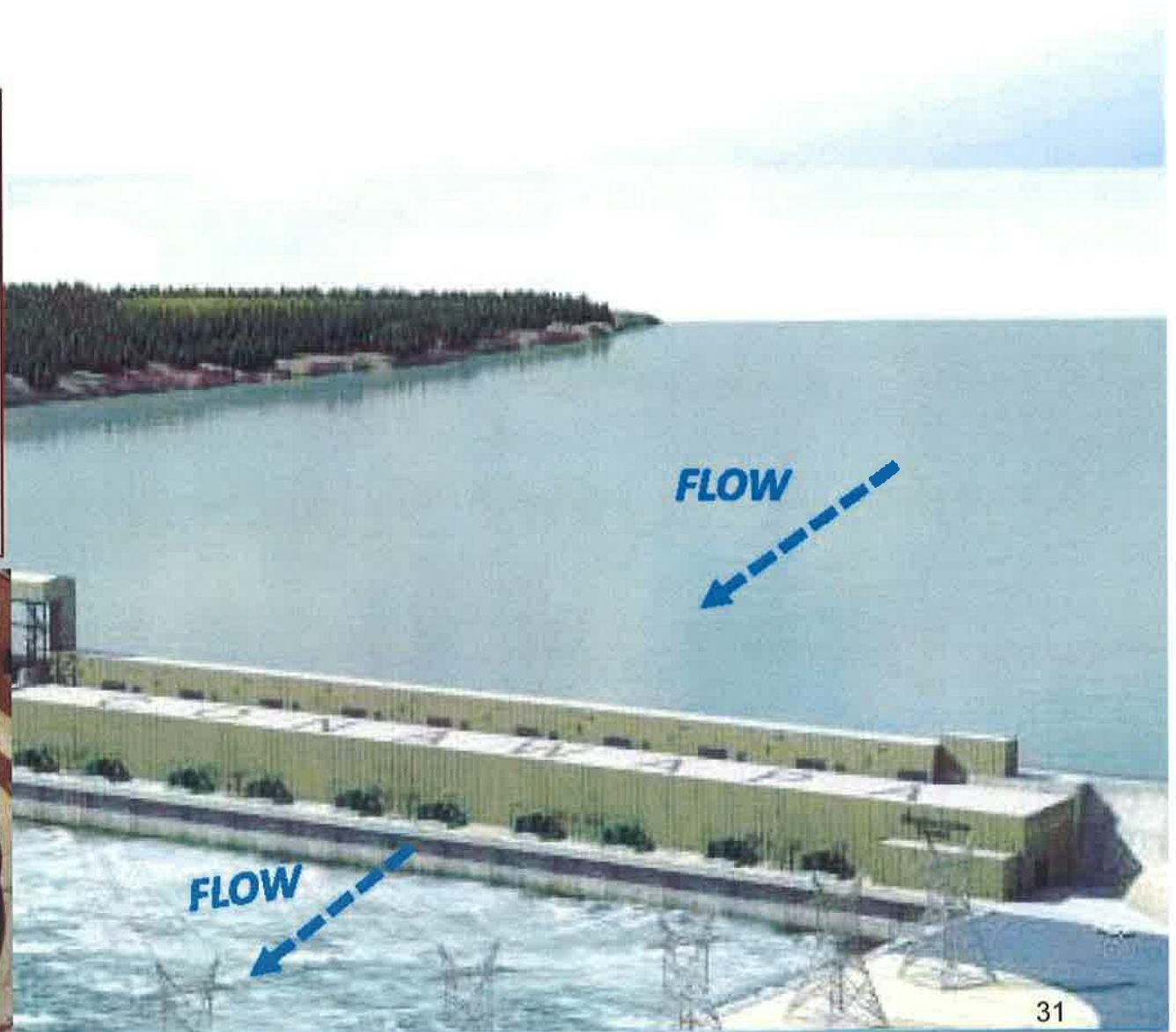
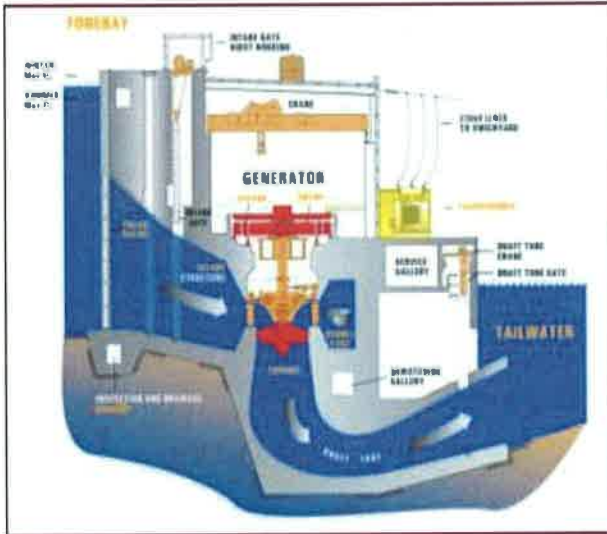
 Manitoba  
Hydro

# Conawapa Principal Structures



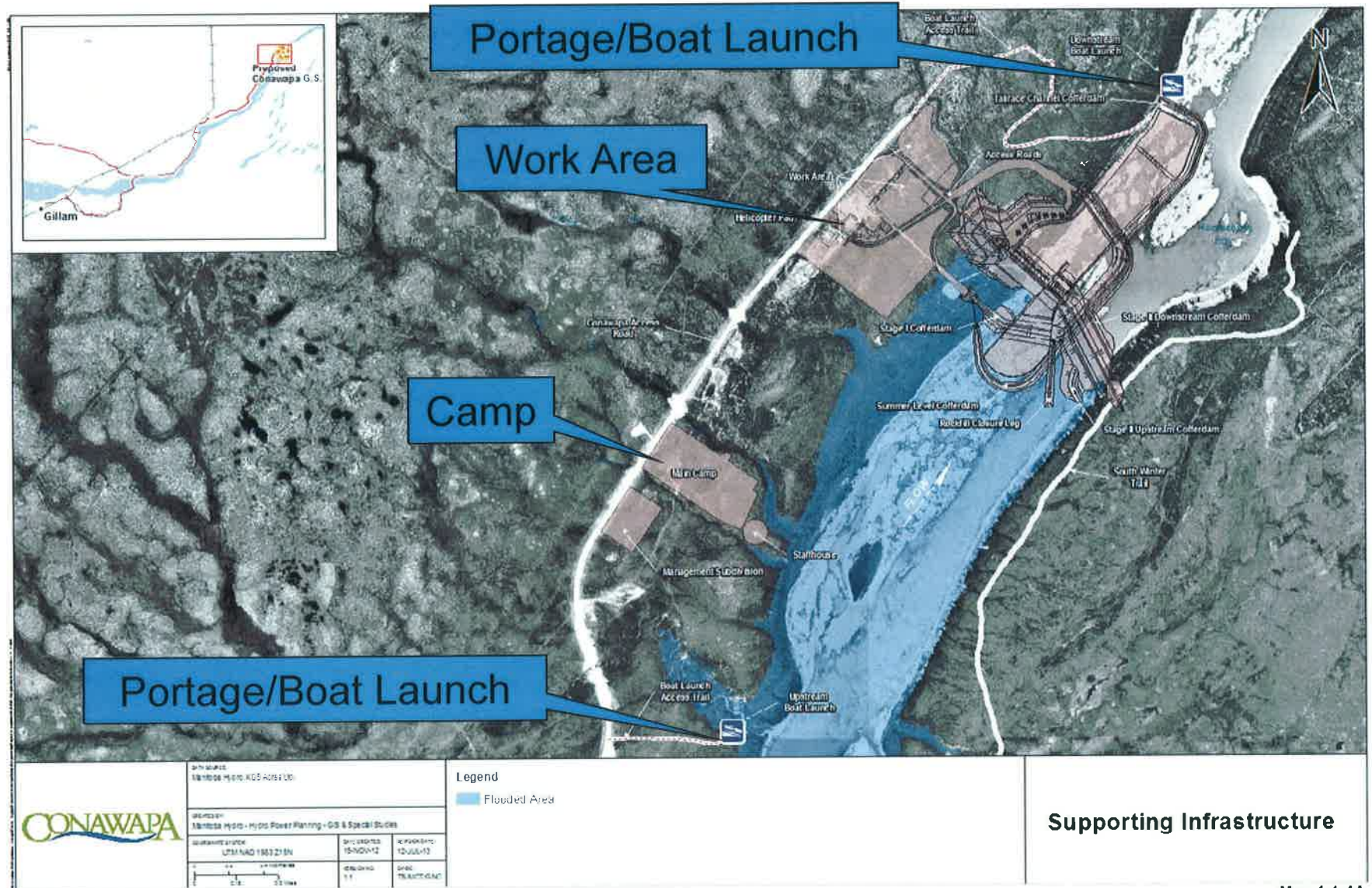


# Conawapa Powerhouse Complex





# Conawapa Support Infrastructure



Map 1.1-4A

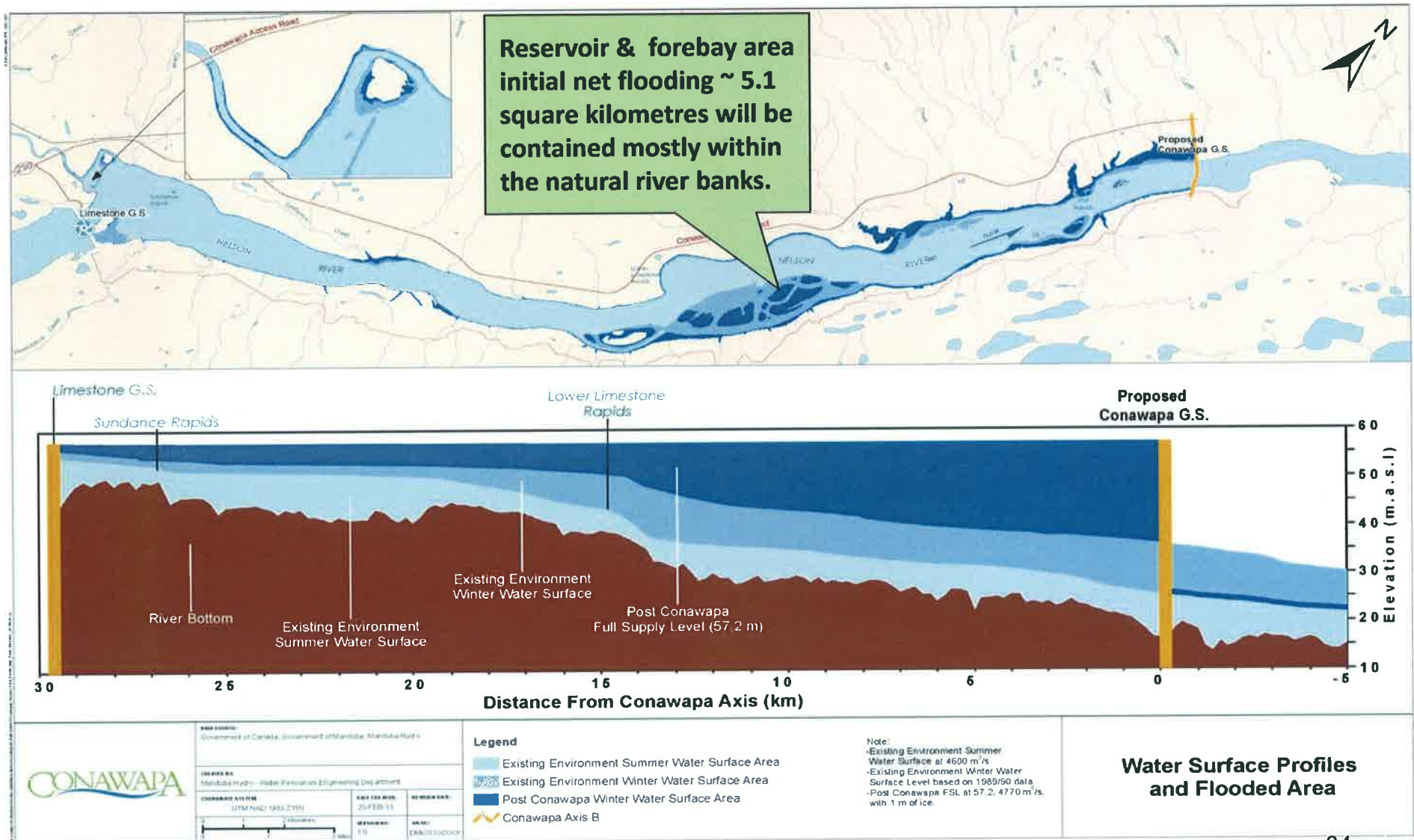
# Conawapa Generating Station

- 10 Units – 1,485 MW Capacity
- Generation \$10.2 B – IFF Budget cost
- Outlet transmission \$ 30 M
- 7,000 GW.hr Average annual energy
- 4,650 GW.hr Dependable energy
- 6,500 Construction employment in person years
- Construction access road already built
- Keewatinoow Construction power will have been built for BP III
- Uses Keewatinoow camp as the starter camp



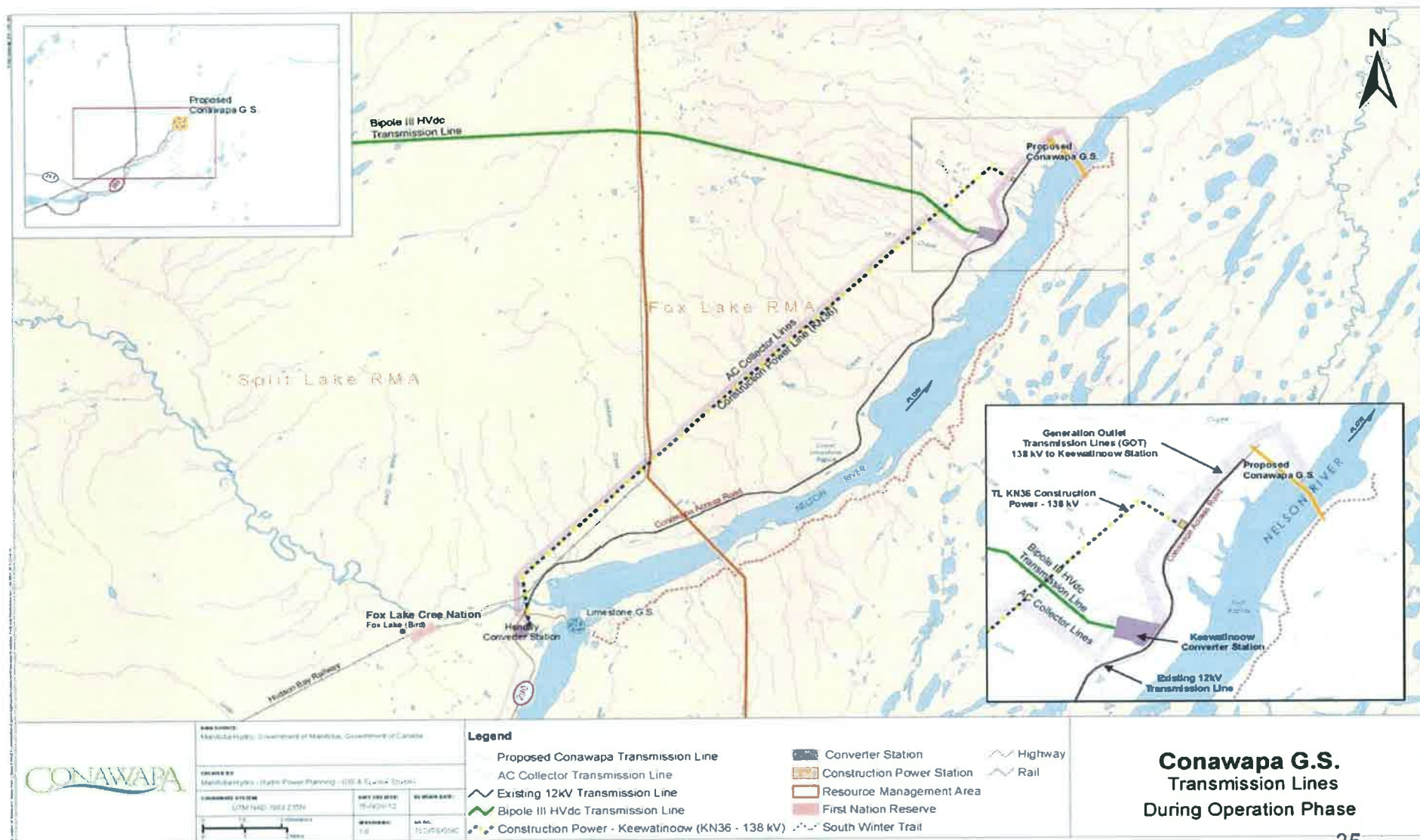
# Plan – Existing & Future Shorelines

## Nelson River – Limestone to Conawapa





# Conawapa Generation Outlet Transmission



DRAFT - FOR DISCUSSION PURPOSES

# Conawapa Environmental & Socio-economic Effects

- Environmental assessment on-going
  - Local FNs involved as per Conawapa process agreements
- A number of potential effects and mitigation measures are being considered
  - Measures are based on current studies and past experience
- While participation structure not decided, commitment to:
  - FN involvement in project planning
  - Long-term sustainable benefits for FNs in project vicinity
- Employment and business preferences for northern Aboriginals
- Fish passage under study
- Mitigation for lake sturgeon includes stocking

# Worker Interaction Mitigation

- Conawapa assessment is still on-going
- At this time, many measures for Keeyask will also apply to Conawapa
- Since many effects of Keeyask and Conawapa overlap (i.e. they are cumulative effects), the mitigation measures not only will be the same—the management of these measures will also be coordinated



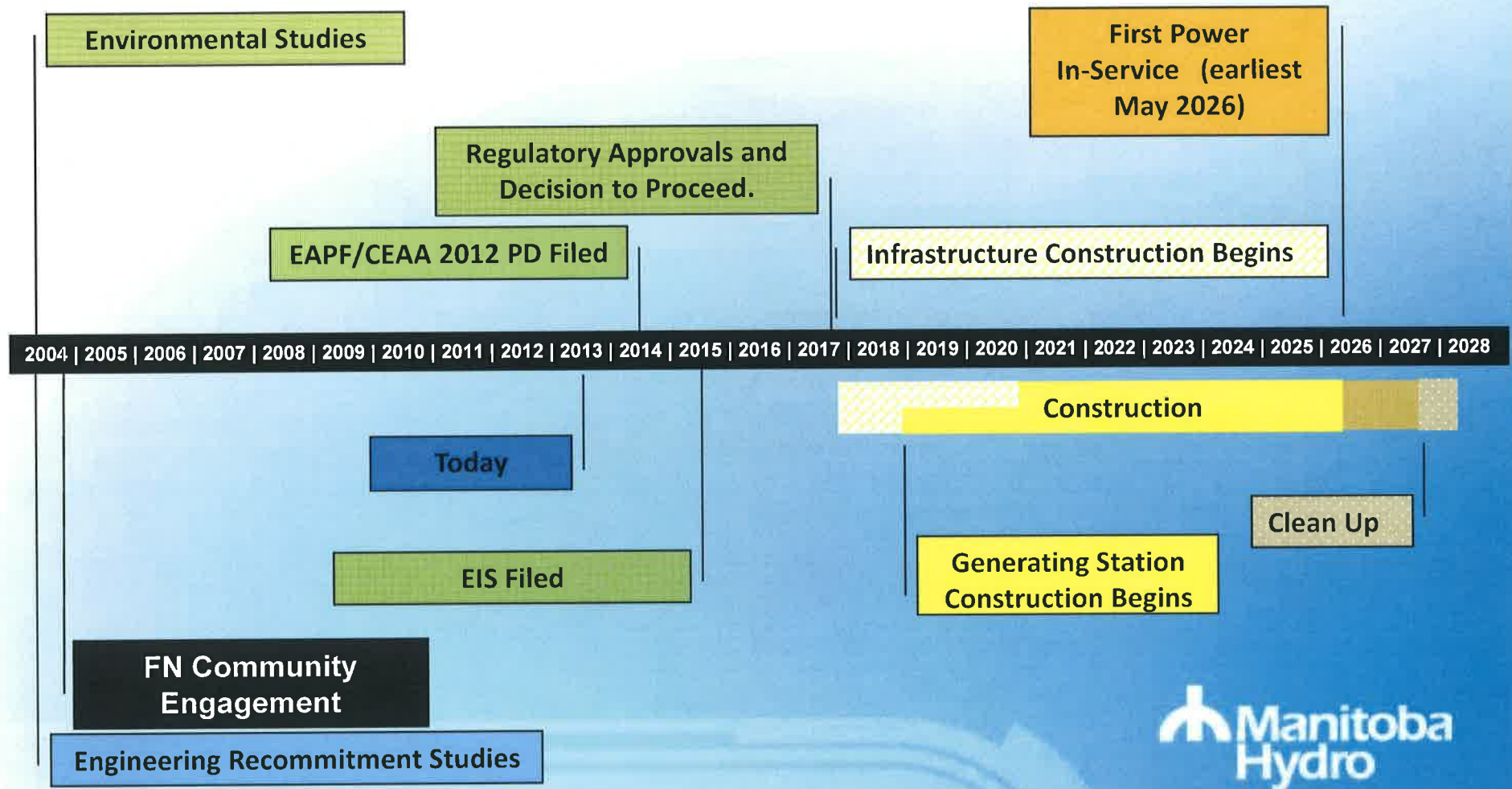
# Conawapa First Nation Participation

- Five local Cree Nations are involved in environmental and planning studies: Fox Lake Cree Nation, York Factory First Nation, Split Lake Cree Nation, War Lake First Nation and Shamattawa First Nation
- Manitoba Hydro plans to negotiate adverse effects and aboriginal participation agreements with these 5 First Nations.
- Aboriginal participation agreements would include income opportunity, training, employment and business opportunities
- Opportunities to participate in environmental assessment, monitoring and governance
- Discussions with the First Nations are in the initial stages

# Conawapa Income Opportunities

- Currently under negotiation with the Lower Nelson River Cree.
- Income opportunities will also be available to broader regional Aboriginal communities but are yet to be developed and negotiated.

# Conawapa 2026 Schedule

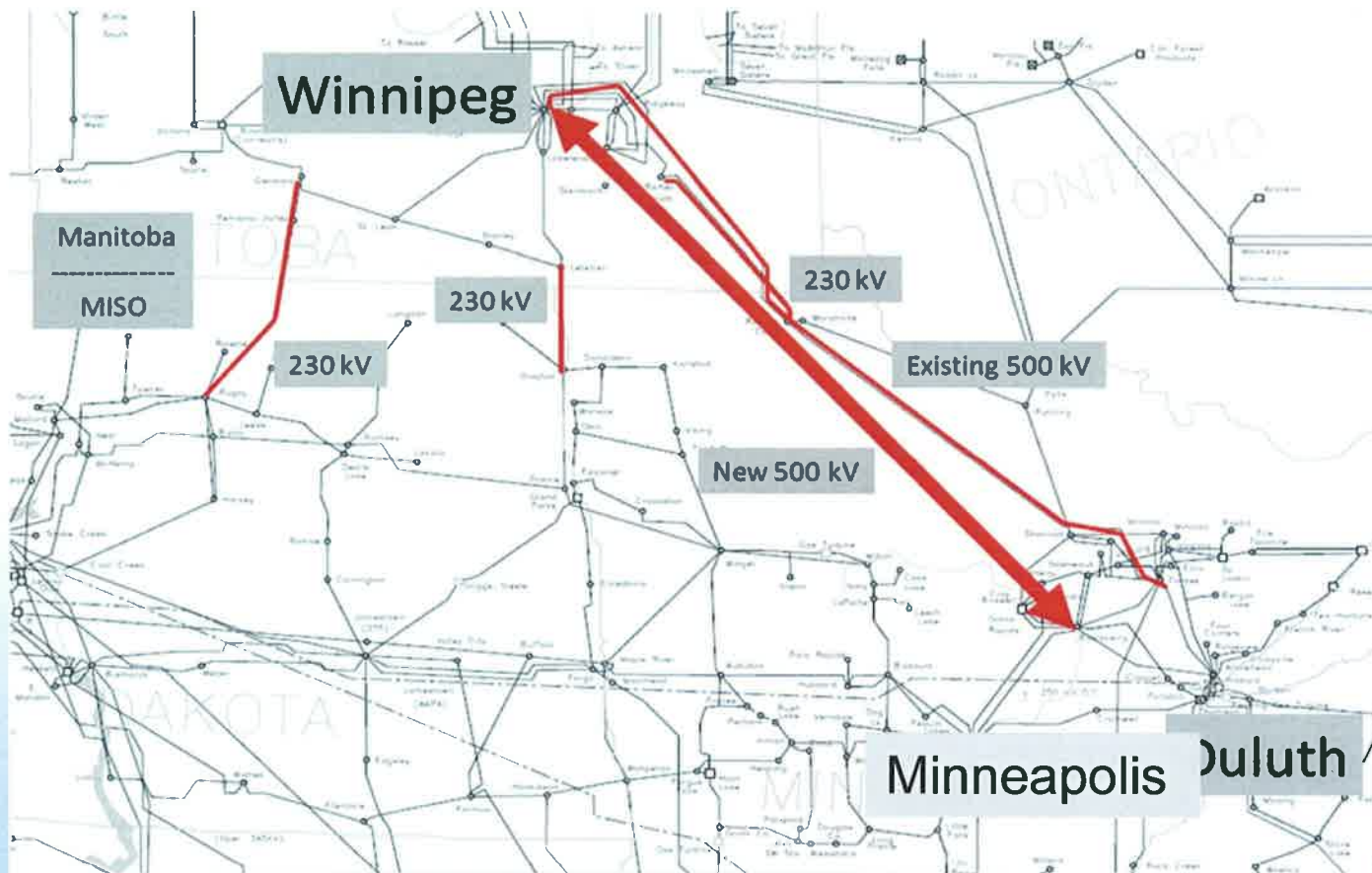




# North – South Major Transmission System Enhancement

- If Keeyask & Conawapa both proceed then require North-South capacity in addition to Bipole III
- 230KV Transmission stations and lines
- In-Service Cost \$498 M
- Timing to match last units of Conawapa

# Proposed U.S. Interconnection – In Service 2020



- Canadian portion of the 750 MW line capital cost = approx \$350M In-Service cost
- US Capital cost and MH share of U.S. portion of 750 MW line capital cost and related arrangements are still under study and negotiation
- If 250 MW line, MH only cover Canadian portion = \$95 M In-Service cost

An aerial photograph of a wide river flowing through a vast, forested landscape. The river is light greenish-grey, contrasting with the dark green of the surrounding forest. On the left, a prominent, dark, rocky shoreline curves into the water. The right bank is more gradual and covered in dense forest. In the distance, the river continues towards a flat horizon under a pale sky. The word "Questions?" is superimposed in the center of the image.

Questions?