



Keeyask Generation Project Environmental Impact Statement

Supporting Volume Physical Environment



June 2012



DATA SOURCE:
Study areas, permafrost data and Nelson River shoreline - ECOSTEM Ltd.;
Water - NTS; Infrastructure - Manitoba Hydro; Roads and rail - Manitoba
Conservation.

CREATED BY:
ECOSTEM Ltd.

COORDINATE SYSTEM:
UTM NAD 1983 Z15N

DATE CREATED:
06-FEB-12

REVISION DATE:
27-APR-12

VERSION NO.:
1.0

QA/QC:
APPROVED

Legend

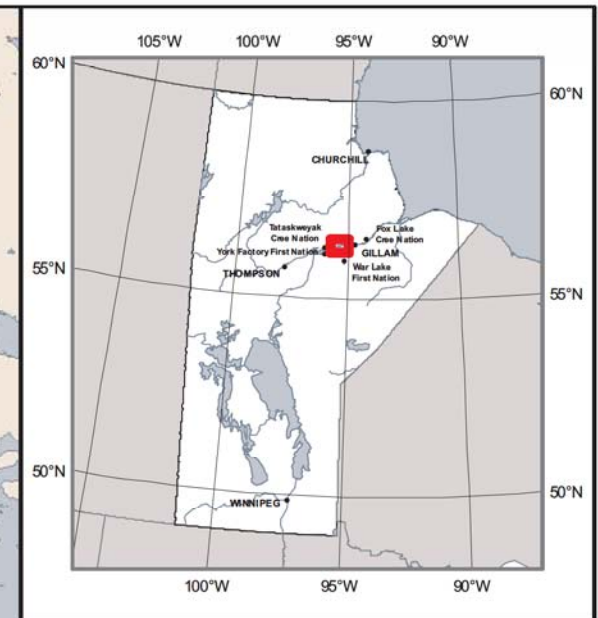
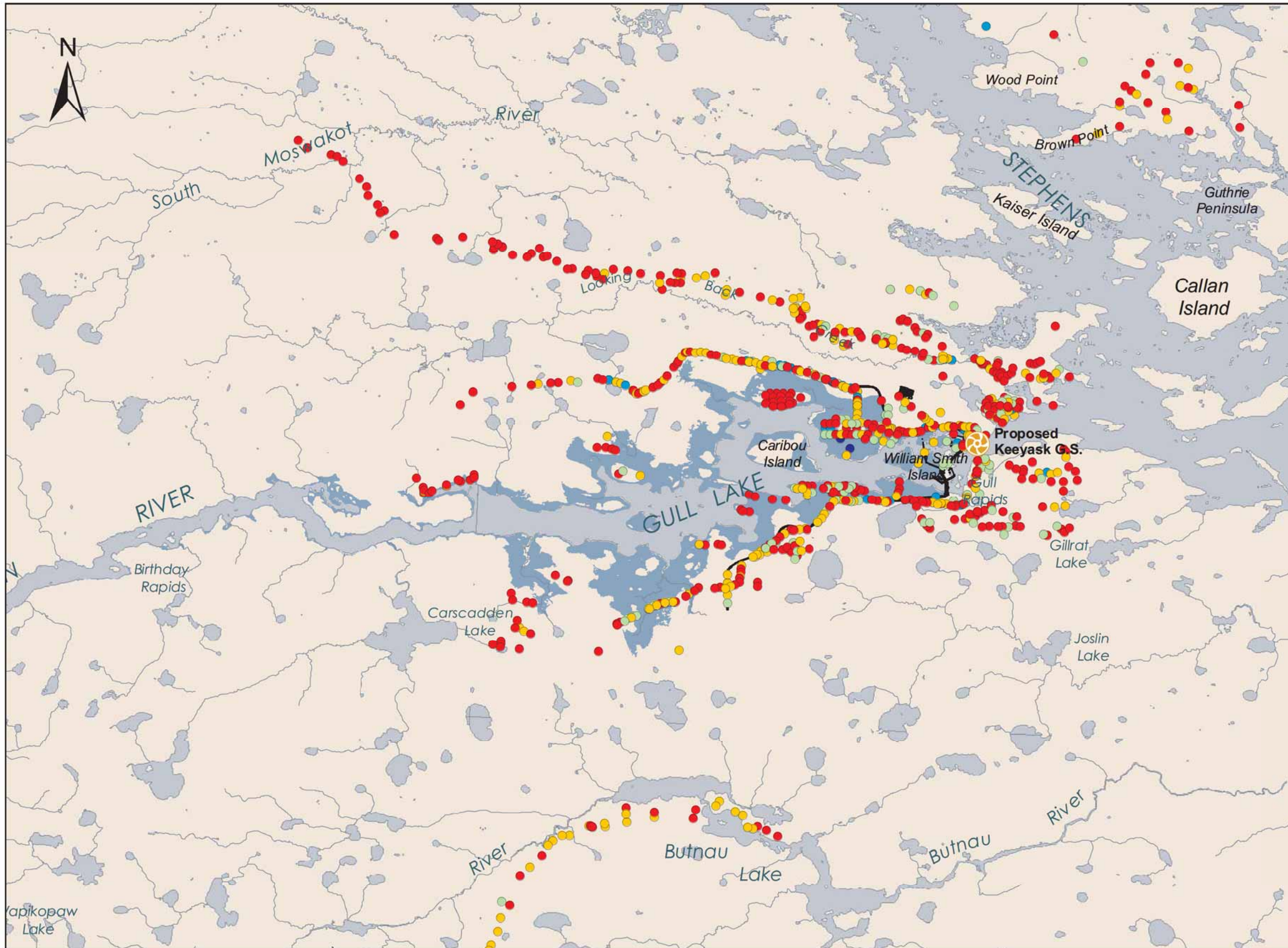
Permafrost Continuity

- Continuous
- Extensive Discontinuous
- Sporadic Discontinuous
- Isolated Patches
- None

Physiography Local Study Area

Physiography Regional Study Area

Surface Permafrost in the Physiography Local Study Area



Legend

Depth to Bottom of Permafrost

- 0.05 - 1.61 meters
- 1.61 - 3.54 meters
- 3.54 - 6.87 meters
- 6.87 - 14.67 meters
- 14.67 - 27.18 meters
- Area of Impoundment
- ⊙ Potential G.S.

Projection: UTM Zone 15,NAD 1983
 Data Source: Manitoba Hydro and NTS of Canada

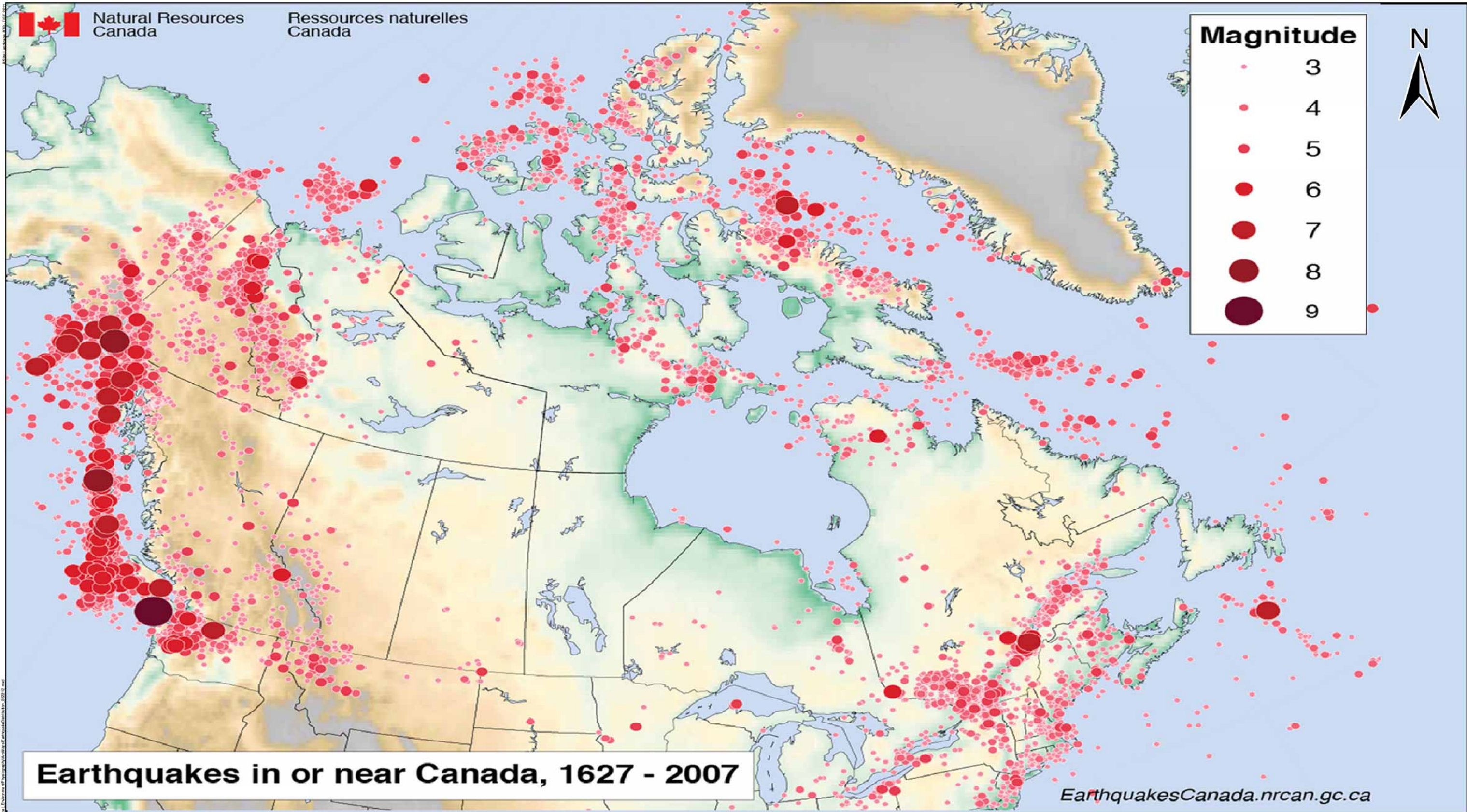
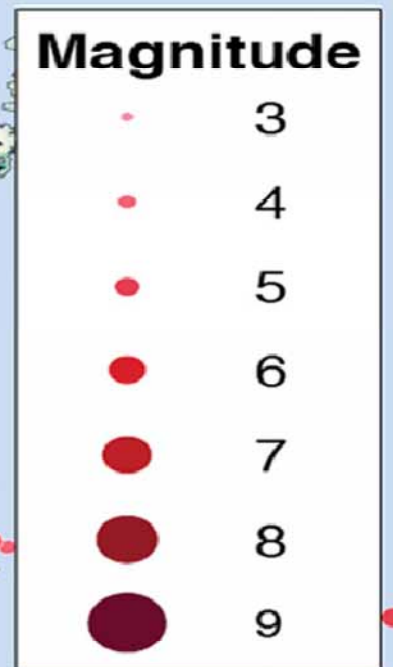
**Depth to Bottom of Permafrost
 as Observed from
 Field Drilling Investigations**





Natural Resources Canada

Ressources naturelles Canada



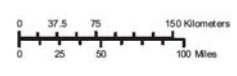
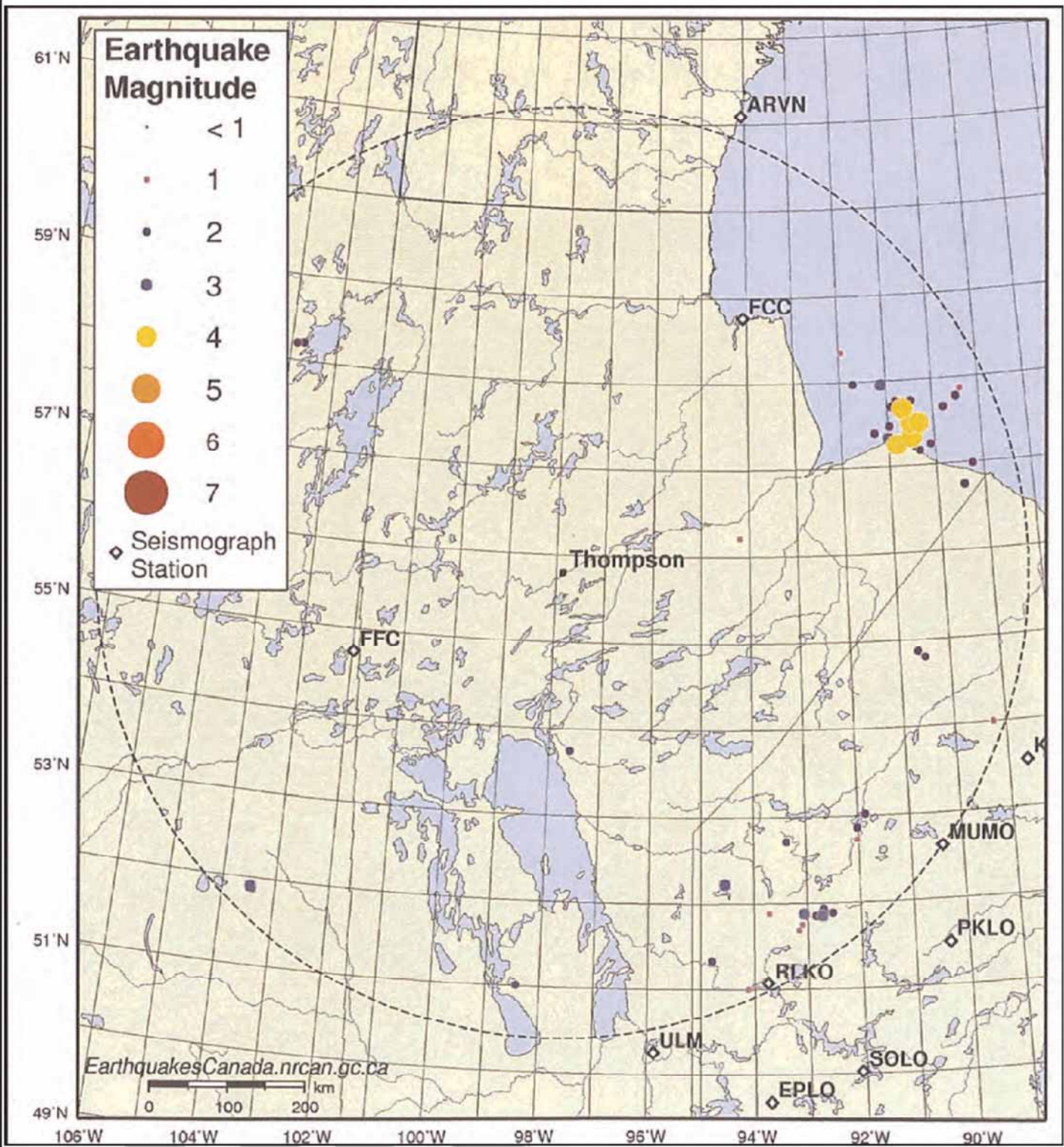
Earthquakes in or near Canada, 1627 - 2007

EarthquakesCanada.nrcan.gc.ca



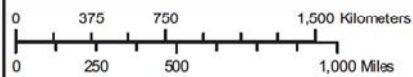
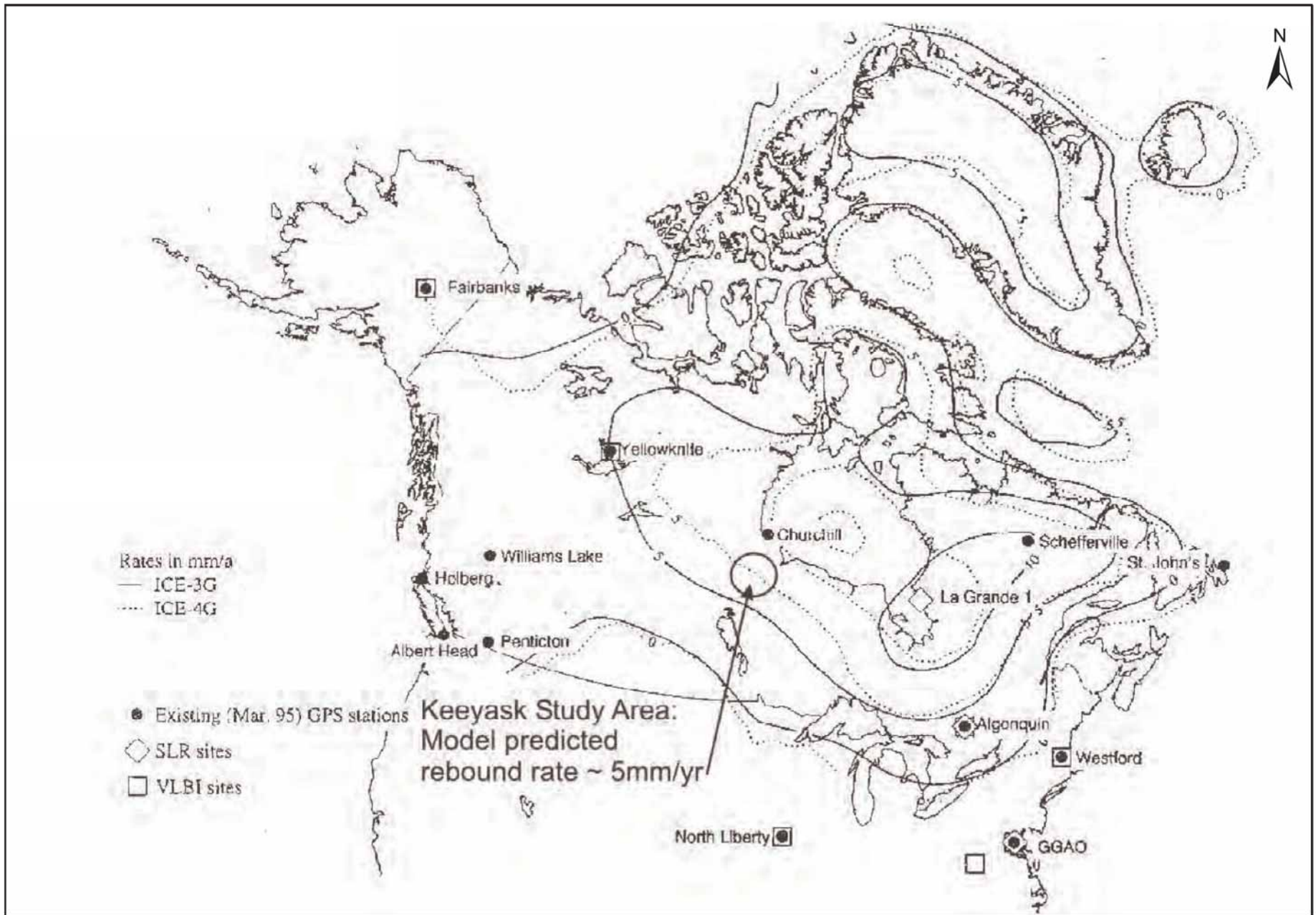
DATA SOURCE: Natural Resources Canada EarthquakesCanada.nrcan.gc.ca		
CREATED BY: Stantec		
COORDINATE SYSTEM: UTM NAD 1983 Z15N	DATE CREATED: 10-02-10	REVISION DATE: 23-MAY-12
	VERSION NO: 1.0	QA/QC: APPROVED

Earthquakes in or Near Canada, 1627-2007



Projection: UTM NAD83, Zone 15N
Data Source: Natural Resources Canada.
Note: Map scale may not be accurate

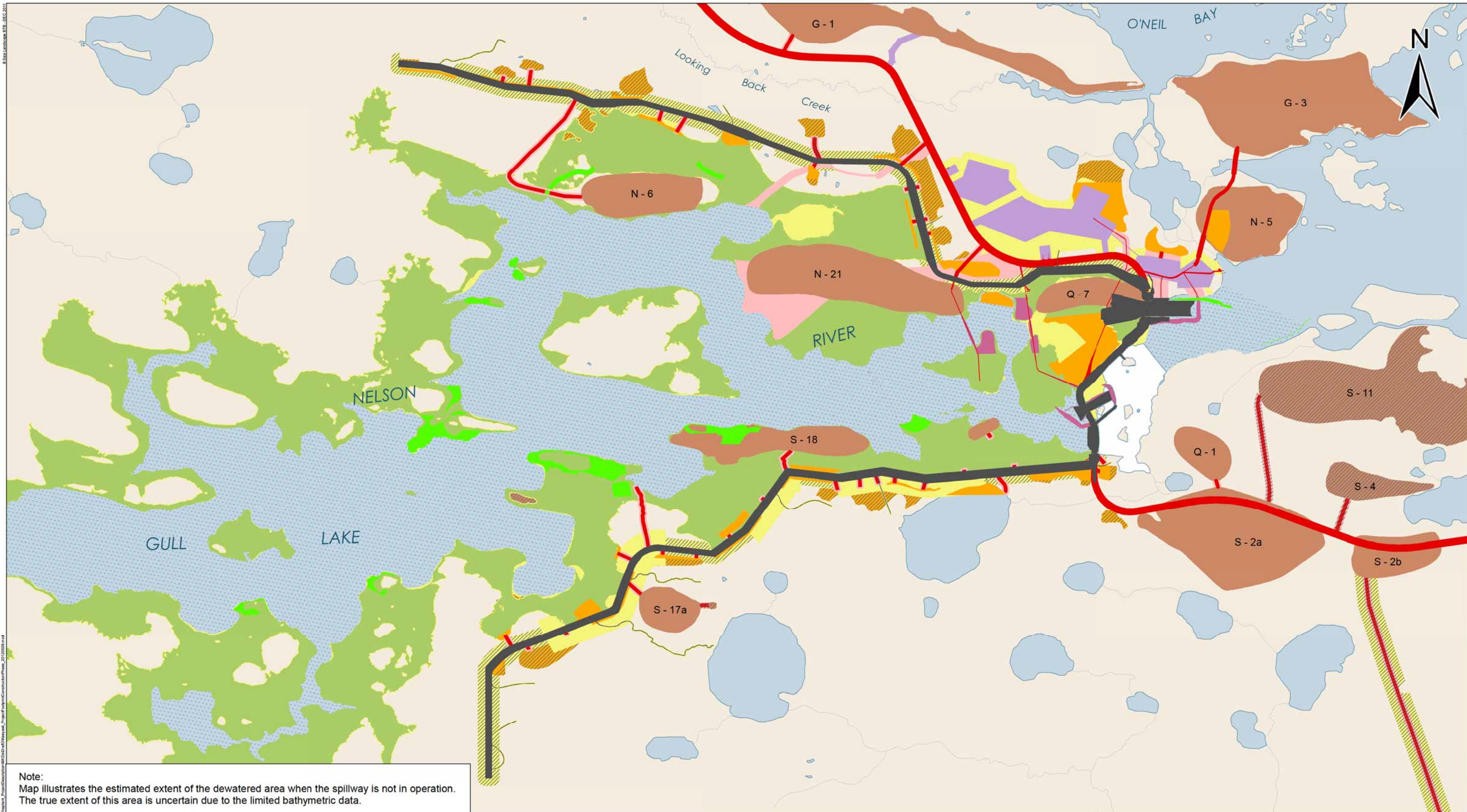
Earthquakes within 600km of Thompson, Manitoba, 1965-2007



Projection: UTM NAD83, Zone 16N
Data Source: Natural Resources Canada.

Note: Map scale may not be accurate

Model Predicted Glacial Isostatic Rebound Rates (Lambert 1996)



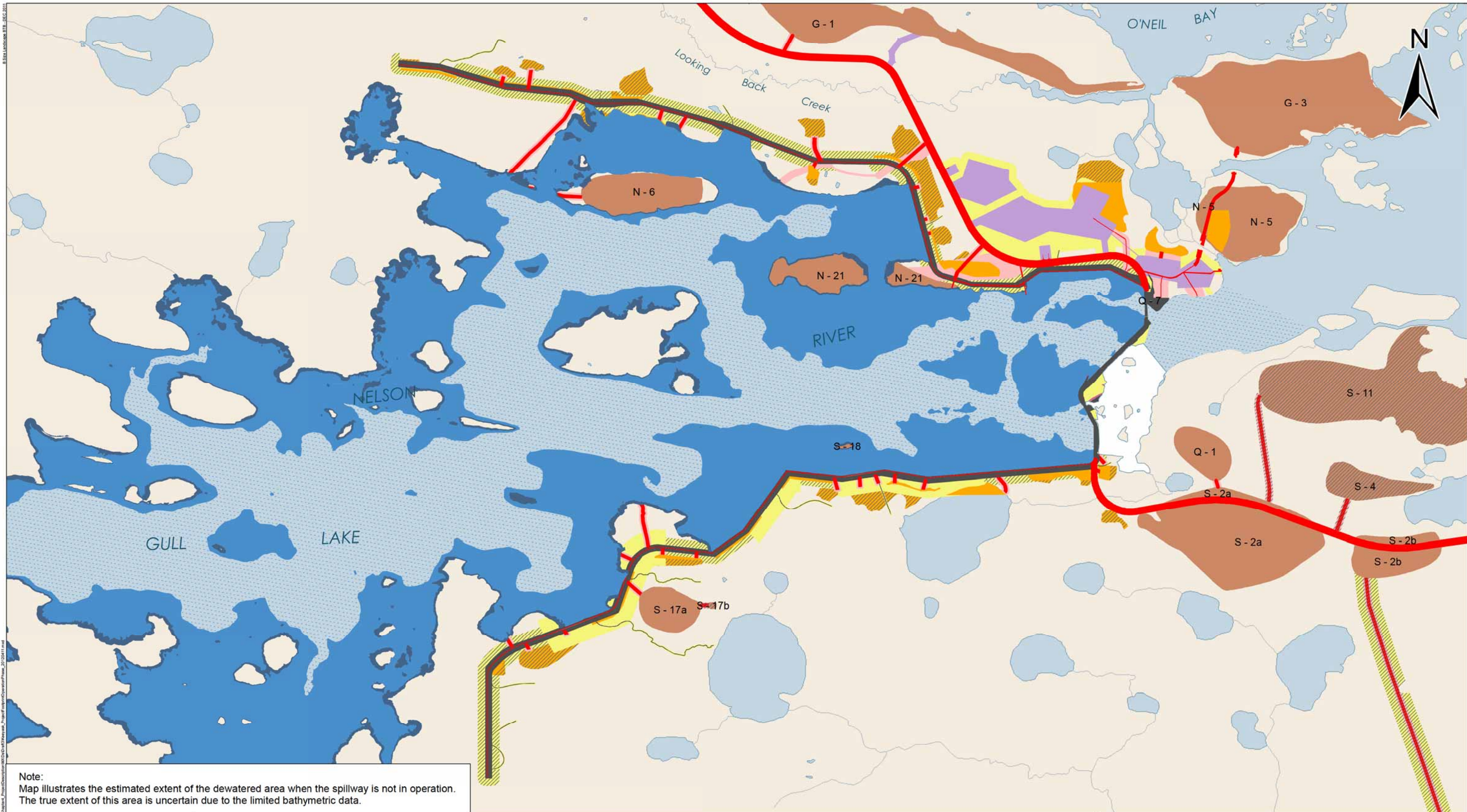
Note:
 Map illustrates the estimated extent of the dewatered area when the spillway is not in operation.
 The true extent of this area is uncertain due to the limited bathymetric data.



DATA SOURCE: Manitoba Hydro; Government of Manitoba; Government of Canada; ECOSTEM		
CREATED BY: Hydro Power Planning - Keeyask & Burntwood Planning Section		
COORDINATE SYSTEM: UTM NAD 1983 Z15N	DATE CREATED: 18-JAN-12	REVISION DATE: 09-MAY-12
	VERSION NO.: 3.0	QA/QC: APPROVED

Legend					
	Road		Camp and Work Area		Altered Water Level or Flow
	Road Corridor		Excavated Material Placement Area		Potential Dewatered Area
	Infrastructure		Mitigation Area		Existing Water Surface Area
	River Management		Possible Disturbed Area		Areas Unlikely to be Used
	Borrow Area		Reservoir Clearing		

Project Footprint Construction Phase Site Level



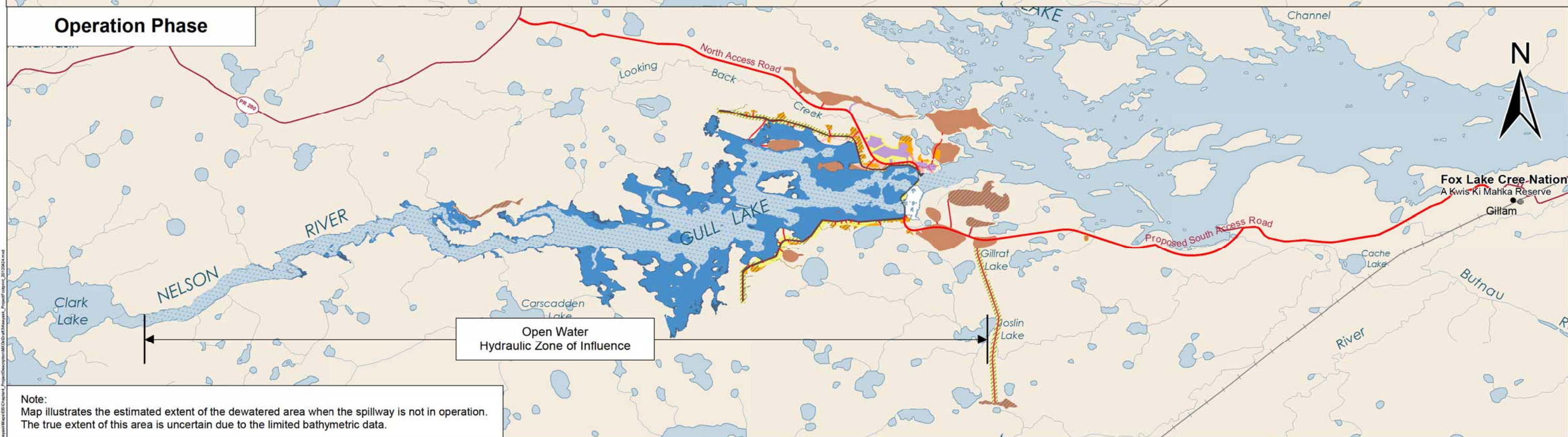
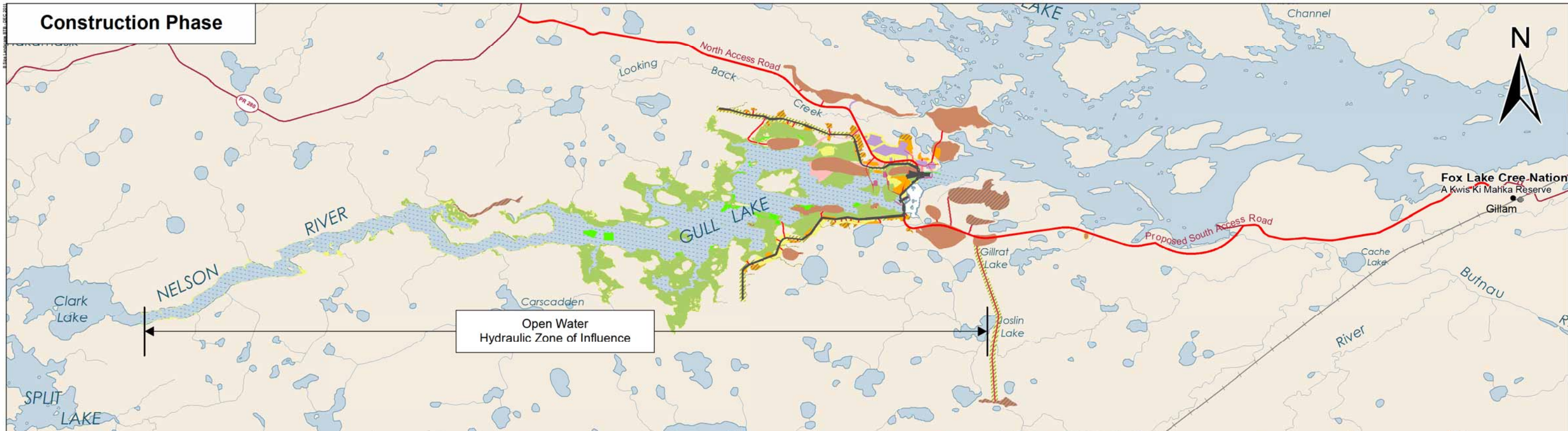
Note:
 Map illustrates the estimated extent of the dewatered area when the spillway is not in operation. The true extent of this area is uncertain due to the limited bathymetric data.



DATA SOURCE: Manitoba Hydro; Government of Manitoba; Government of Canada; ECOSTEM		
CREATED BY: Hydro Power Planning - Keeyask & Burntwood Planning Section		
COORDINATE SYSTEM: UTM NAD 1983 Z15N	DATE CREATED: 18-JAN-12	REVISION DATE: 18-APR-12
VERSION NO.: 3.0	QA/QC: APPROVED	

Legend			
	Road		30-year Reservoir Expansion Area (159 m)
	Road Corridor		Altered Water Level or Flow
	Infrastructure		Potential Dewatered Area
	Camp and Work Area		Existing Water Surface Area
	Excavated Material Placement Area		Areas Unlikely to be Used
	Mitigation Area		
	Possible Disturbed Area		
	Borrow Area		Initial Flooded Area (159 m)

Project Footprint Operation Phase Site Level



Note:
Map illustrates the estimated extent of the dewatered area when the spillway is not in operation. The true extent of this area is uncertain due to the limited bathymetric data.



DATA SOURCE: Manitoba Hydro; Government of Manitoba; Government of Canada; ECOSTEM		
CREATED BY: Manitoba Hydro - Hydro Power Planning		
COORDINATE SYSTEM: UTM NAD 1983 Z15N	DATE CREATED: 18-JAN-12	REVISION DATE: 25-APR-12
	VERSION NO.: 3.0	QA/QC: APPROVED

Legend		
Road	Excavated Material Placement Area	Altered Water Level or Flow
Road Corridor	Mitigation Area	Potential Dewatered Area
Infrastructure	Possible Disturbed Area	Existing Water Surface Area
River Management	Reservoir Clearing	Areas Unlikely to be Used
Borrow Area	Initial Flooded Area (159 m)	
Camp and Work Area	30-year Reservoir Expansion Area (159 m)	

Project Footprint Overview

Construction and Operation Phase