



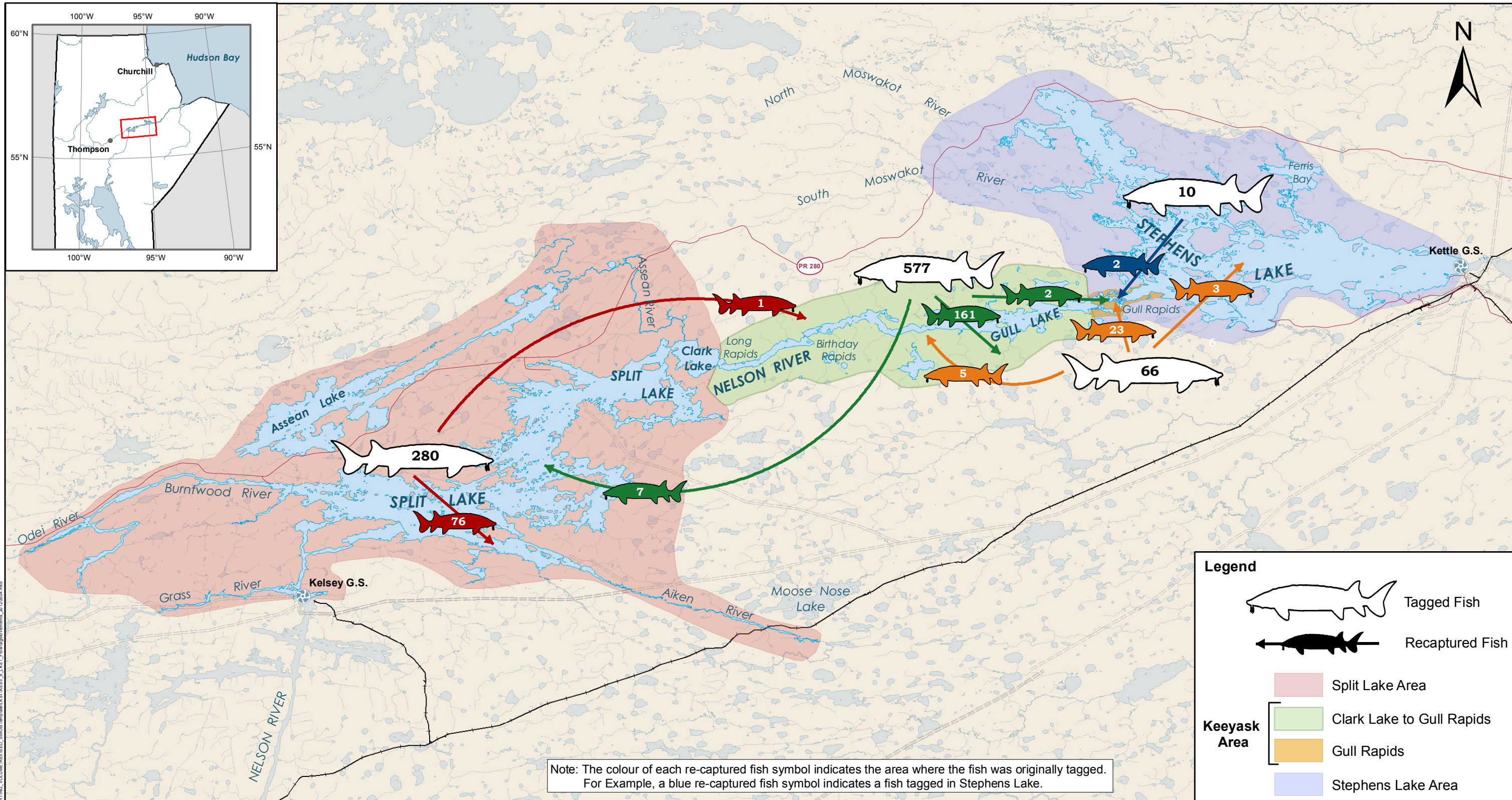
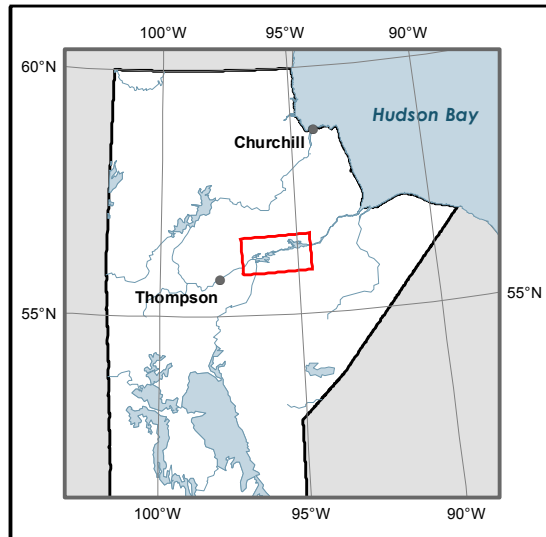
# Keeyask Generation Project Environmental Impact Statement

## Supporting Volume Aquatic Environment



June 2012





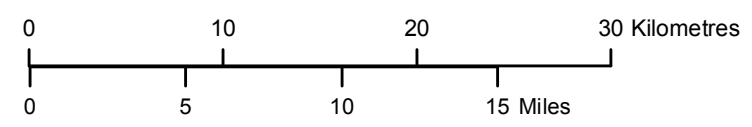
Note: The colour of each re-captured fish symbol indicates the area where the fish was originally tagged. For Example, a blue re-captured fish symbol indicates a fish tagged in Stephens Lake.

**Legend**

- Tagged Fish
- Recaptured Fish

**Keeyask Area**

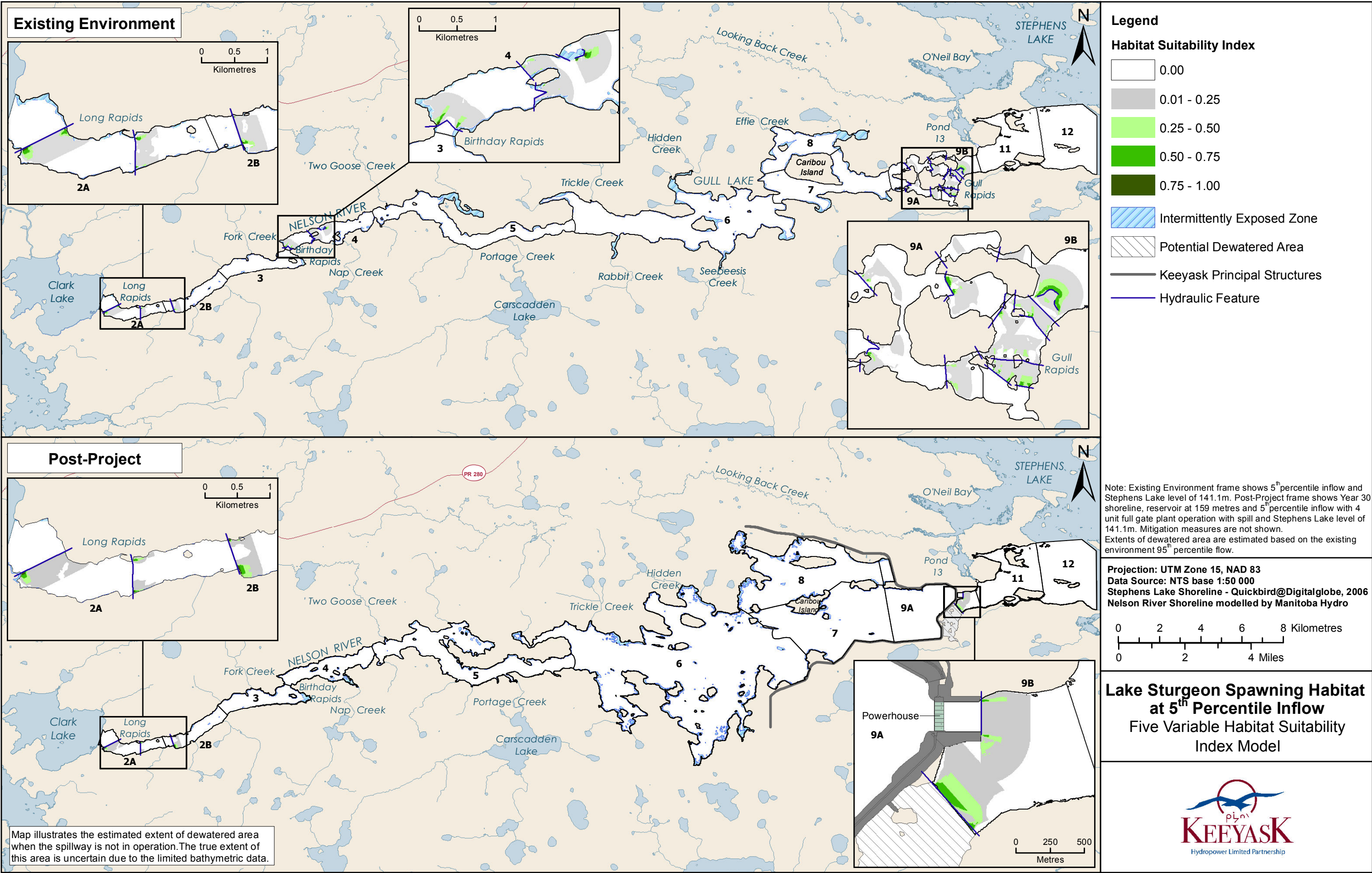
- Split Lake Area
- Clark Lake to Gull Rapids
- Gull Rapids
- Stephens Lake Area



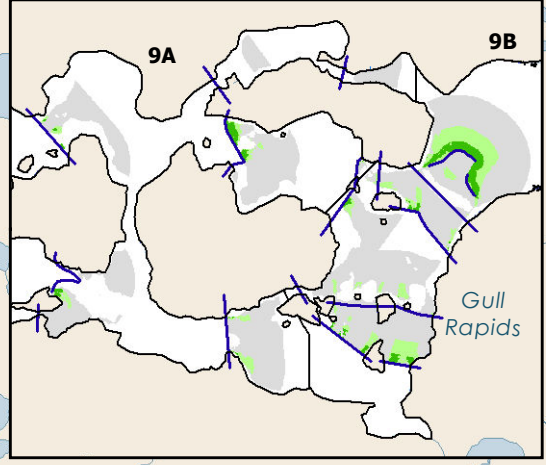
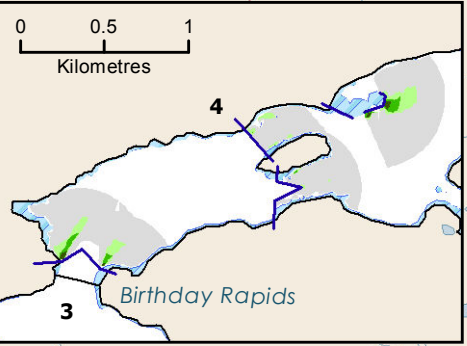
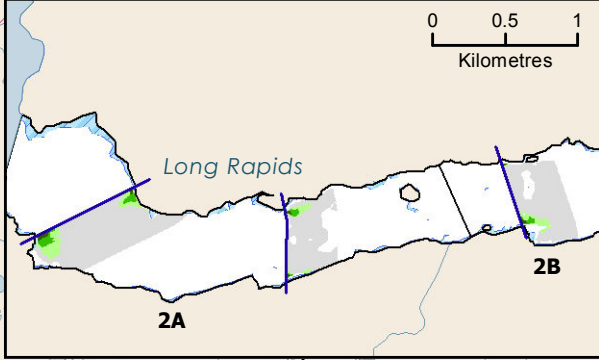
Projection: UTM Zone 15, NAD 83  
Data Source: NTS base 1:50 000

## Lake Sturgeon Floy-tag Movements 1995 and 1999-2008



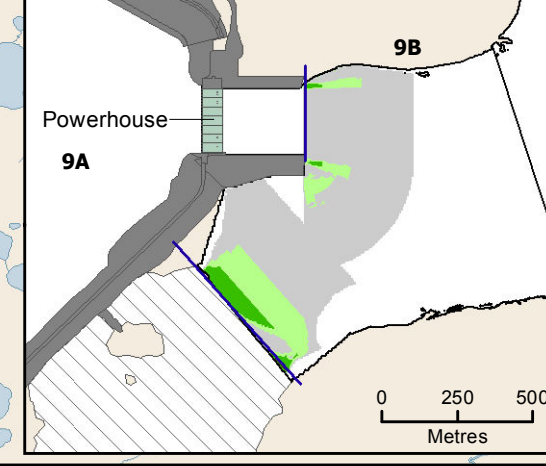
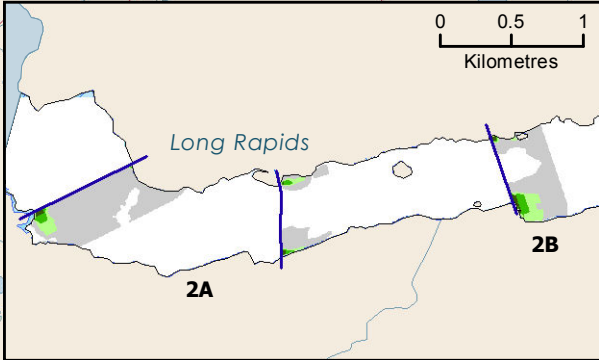


**Existing Environment**



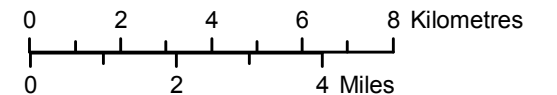
- Legend**
- Habitat Suitability Index**
- 0.00
  - 0.01 - 0.25
  - 0.25 - 0.50
  - 0.50 - 0.75
  - 0.75 - 1.00
- Intermittently Exposed Zone
  - Potential Dewatered Area
  - Keyask Principal Structures
  - Hydraulic Feature

**Post-Project**



Note: Existing Environment frame shows 5<sup>th</sup> percentile inflow and Stephens Lake level of 141.1m. Post-Project frame shows Year 30 shoreline, reservoir at 159 metres and 5<sup>th</sup> percentile inflow with 4 unit full gate plant operation with spill and Stephens Lake level of 141.1m. Mitigation measures are not shown. Extents of dewatered area are estimated based on the existing environment 95<sup>th</sup> percentile flow.

Projection: UTM Zone 15, NAD 83  
 Data Source: NTS base 1:50 000  
 Stephens Lake Shoreline - Quickbird@Digitalglobe, 2006  
 Nelson River Shoreline modelled by Manitoba Hydro

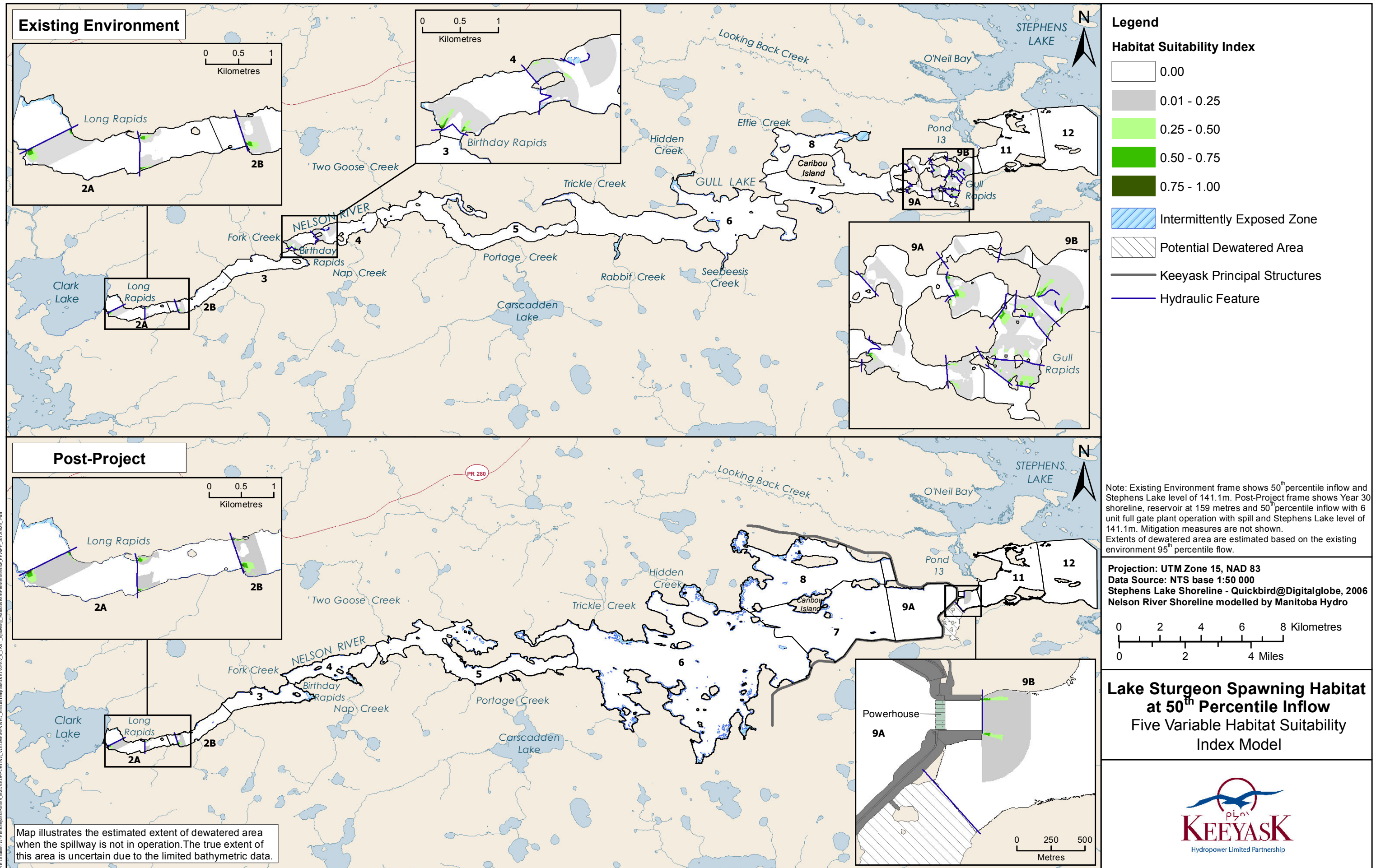


**Lake Sturgeon Spawning Habitat at 5<sup>th</sup> Percentile Inflow**  
 Five Variable Habitat Suitability Index Model

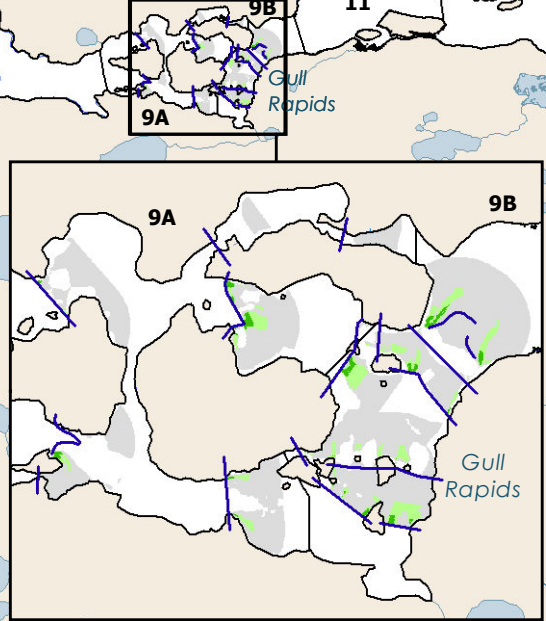
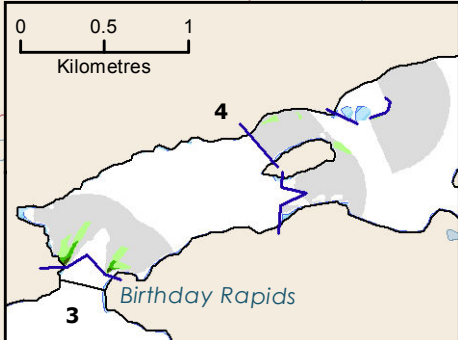
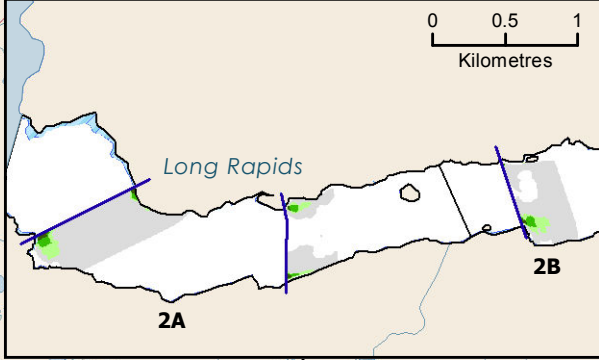
Map illustrates the estimated extent of dewatered area when the spillway is not in operation. The true extent of this area is uncertain due to the limited bathymetric data.





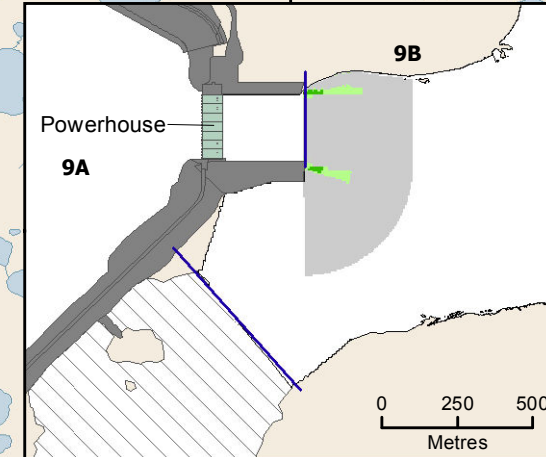
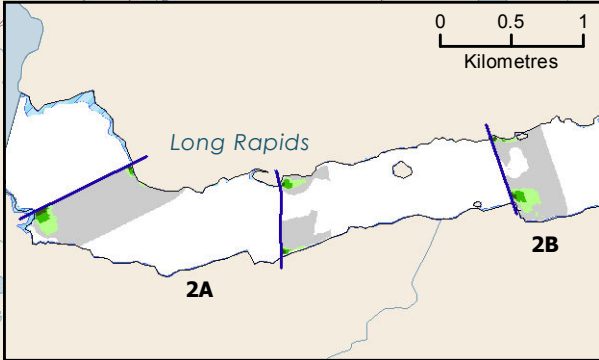


**Existing Environment**



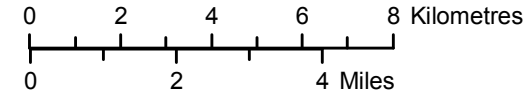
- Legend**
- Habitat Suitability Index**
- 0.00
  - 0.01 - 0.25
  - 0.25 - 0.50
  - 0.50 - 0.75
  - 0.75 - 1.00
- Intermittently Exposed Zone
  - Potential Dewatered Area
  - Keyask Principal Structures
  - Hydraulic Feature

**Post-Project**



Note: Existing Environment frame shows 50<sup>th</sup> percentile inflow and Stephens Lake level of 141.1m. Post-Project frame shows Year 30 shoreline, reservoir at 159 metres and 50<sup>th</sup> percentile inflow with 6 unit full gate plant operation with spill and Stephens Lake level of 141.1m. Mitigation measures are not shown. Extents of dewatered area are estimated based on the existing environment 95<sup>th</sup> percentile flow.

Projection: UTM Zone 15, NAD 83  
 Data Source: NTS base 1:50 000  
 Stephens Lake Shoreline - Quickbird@Digitalglobe, 2006  
 Nelson River Shoreline modelled by Manitoba Hydro

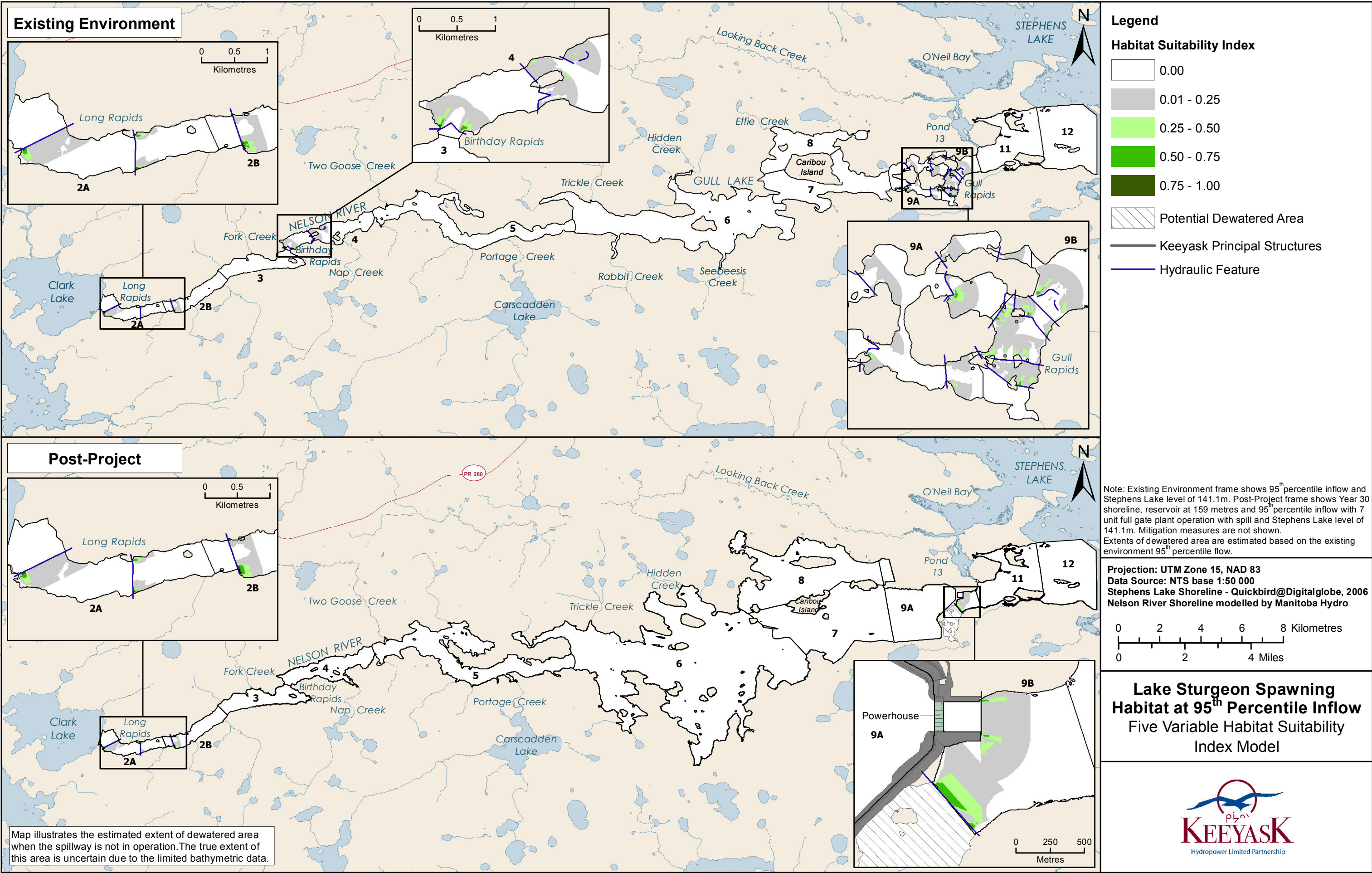


**Lake Sturgeon Spawning Habitat at 50<sup>th</sup> Percentile Inflow**  
**Five Variable Habitat Suitability Index Model**

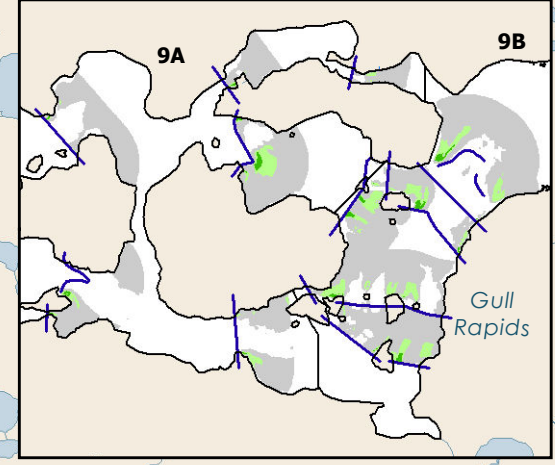
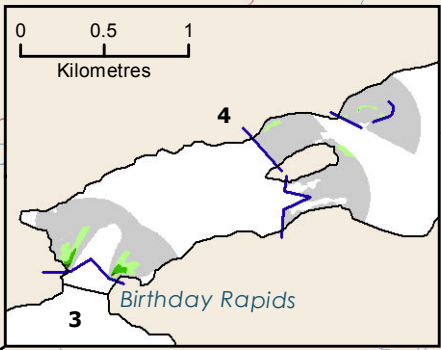
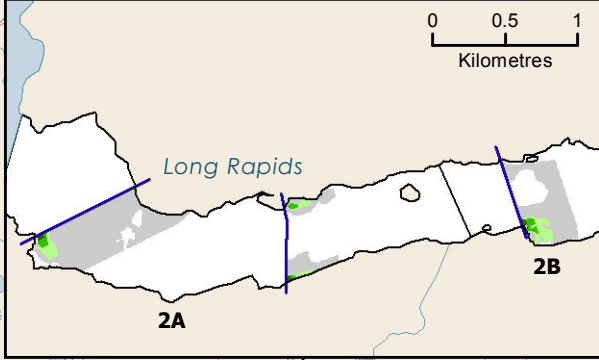
Map illustrates the estimated extent of dewatered area when the spillway is not in operation. The true extent of this area is uncertain due to the limited bathymetric data.







**Existing Environment**



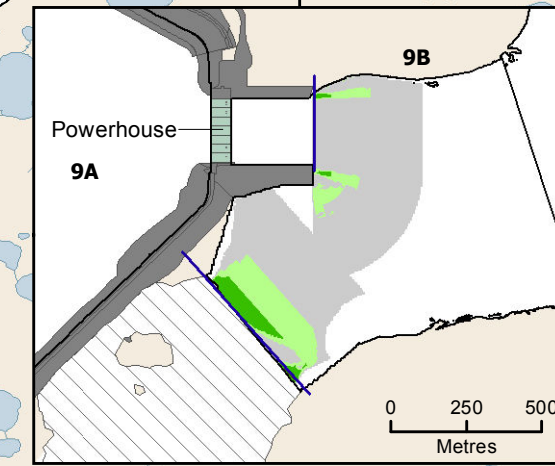
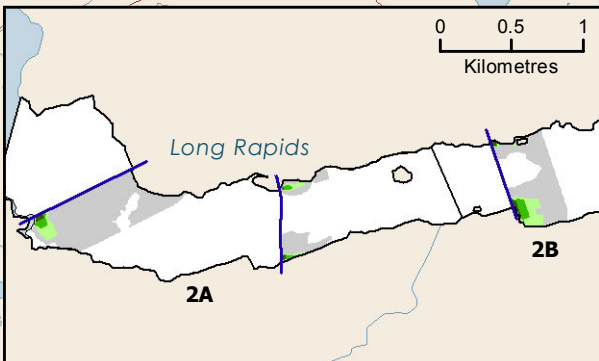
**Legend**

**Habitat Suitability Index**

- 0.00
- 0.01 - 0.25
- 0.25 - 0.50
- 0.50 - 0.75
- 0.75 - 1.00

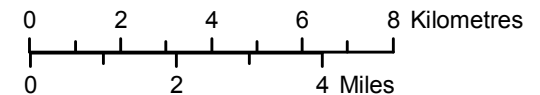
Potential Dewatered Area  
 Keyeyask Principal Structures  
 Hydraulic Feature

**Post-Project**



Note: Existing Environment frame shows 95<sup>th</sup> percentile inflow and Stephens Lake level of 141.1m. Post-Project frame shows Year 30 shoreline, reservoir at 159 metres and 95<sup>th</sup> percentile inflow with 7 unit full gate plant operation with spill and Stephens Lake level of 141.1m. Mitigation measures are not shown. Extents of dewatered area are estimated based on the existing environment 95<sup>th</sup> percentile flow.

Projection: UTM Zone 15, NAD 83  
 Data Source: NTS base 1:50 000  
 Stephens Lake Shoreline - Quickbird@Digitalglobe, 2006  
 Nelson River Shoreline modelled by Manitoba Hydro

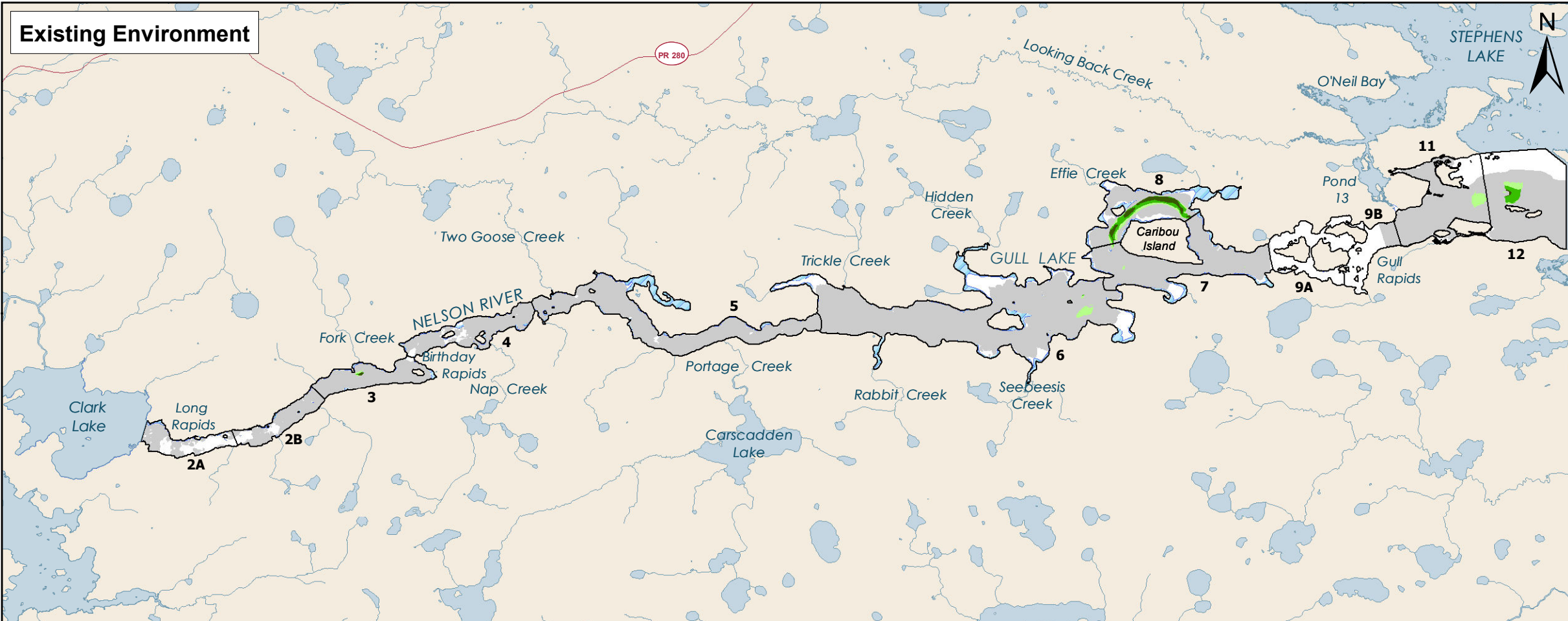


**Lake Sturgeon Spawning Habitat at 95<sup>th</sup> Percentile Inflow**  
**Five Variable Habitat Suitability Index Model**



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





**Legend**

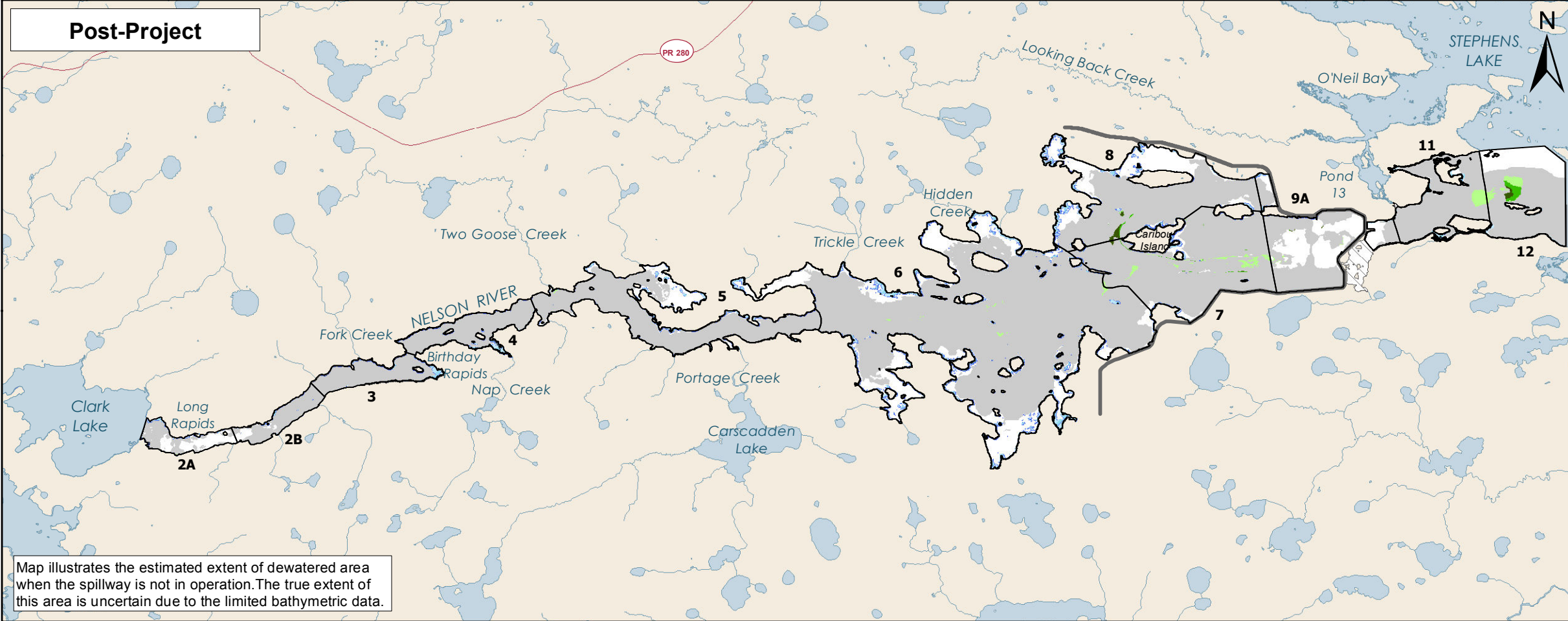
**Habitat Suitability Index**

- 0.00
- 0.01 - 0.25
- 0.25 - 0.50
- 0.50 - 0.75
- 0.75 - 1.00

Intermittently Exposed Zone

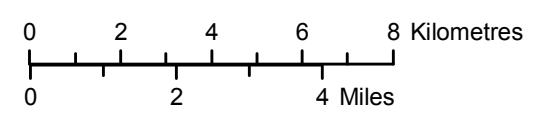
Potential Dewatered Area

Keyask Principal Structures



Note: Existing Environment frame shows 5<sup>th</sup> percentile inflow and Stephens Lake level of 141.1m. Post-Project frame shows Year 30 shoreline, reservoir at 159 metres and 5<sup>th</sup> percentile inflow with 4 unit full gate plant operation with spill and Stephens Lake level of 141.1m. Mitigation measures are not shown. Extents of dewatered area are estimated based on the existing environment 95<sup>th</sup> percentile flow.

Projection: UTM Zone 15, NAD 83  
 Data Source: NTS base 1:50 000  
 Stephens Lake Shoreline - Quickbird@Digitalglobe, 2006  
 Nelson River Shoreline modelled by Manitoba Hydro



**Young-of-the-Year Lake Sturgeon  
 Habitat at 5<sup>th</sup> Percentile Inflow  
 Habitat Suitability Index Model**

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

