



Coordinated Aquatic Monitoring Program

# The Coordinated Aquatic Monitoring Program:

Evolving Collaborations in Manitoba, Canada

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# Me and Manitoba Hydro



Coordinator of the Program



Manitoba Hydro:  
a Crown Corporation energy utility



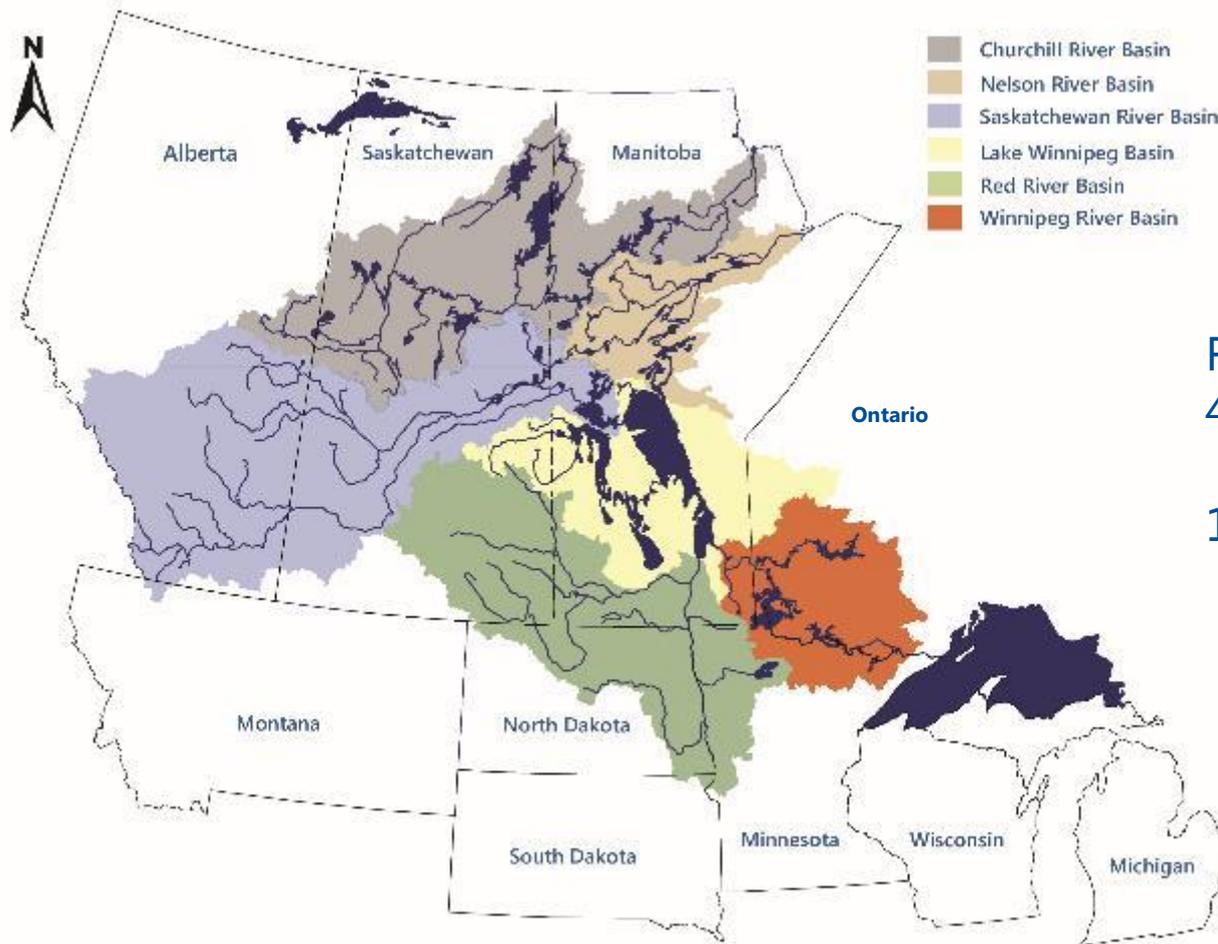
Pointe du Bois generating station on the Winnipeg River



Churchill



# Nelson/Churchill Rivers Watershed



Receives water from  
4 provinces & 6 states

1.2 Million km<sup>2</sup>

# Limestone Generating Station on the Nelson River - 1350 MW



1.2 km (.75 mile)



2 km (1.2 miles)



# The Partnership:

# CAMP



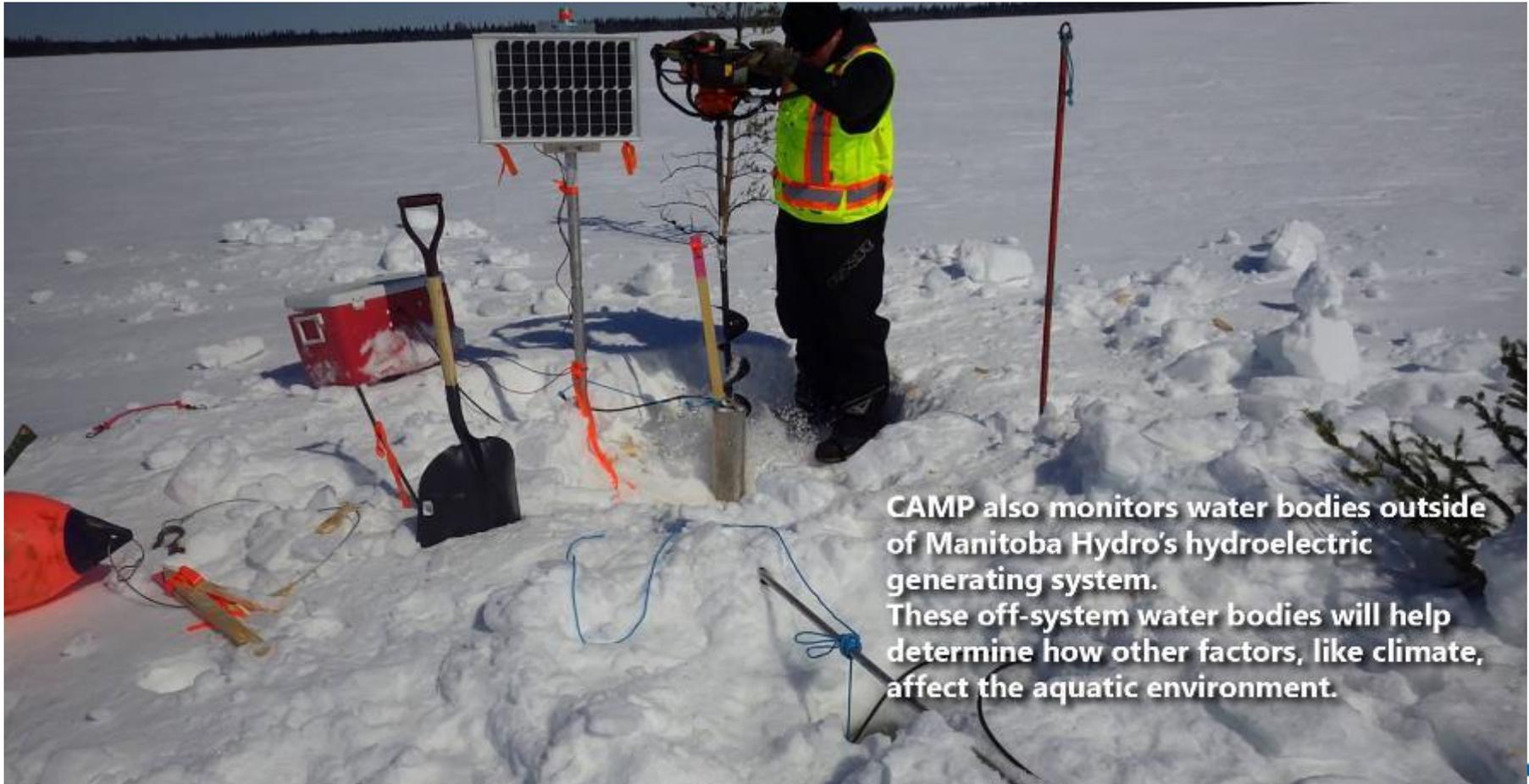
Manitoba Sustainable Development



Manitoba Hydro

CAMP

# Program Objectives

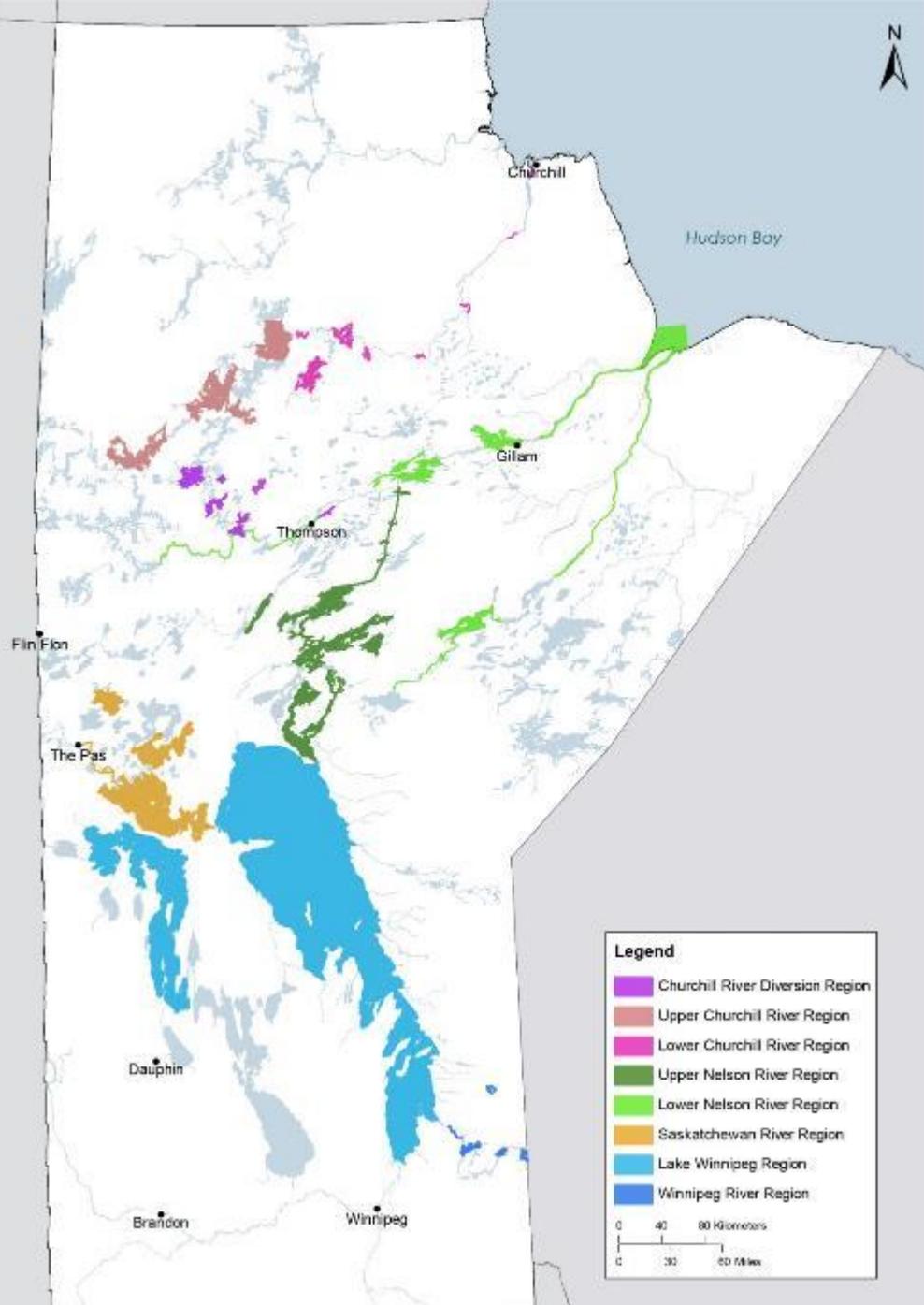


CAMP also monitors water bodies outside of Manitoba Hydro's hydroelectric generating system. These off-system water bodies will help determine how other factors, like climate, affect the aquatic environment.

# Study Area

## Eight study regions:

1. Winnipeg River
2. Lake Winnipeg
3. Saskatchewan River
4. Upper Nelson River
5. Lower Nelson River
6. Churchill River Diversion
7. Upper Churchill River
8. Lower Churchill River



# Winnipeg River



# Cormorant Lake





## Little Churchill River



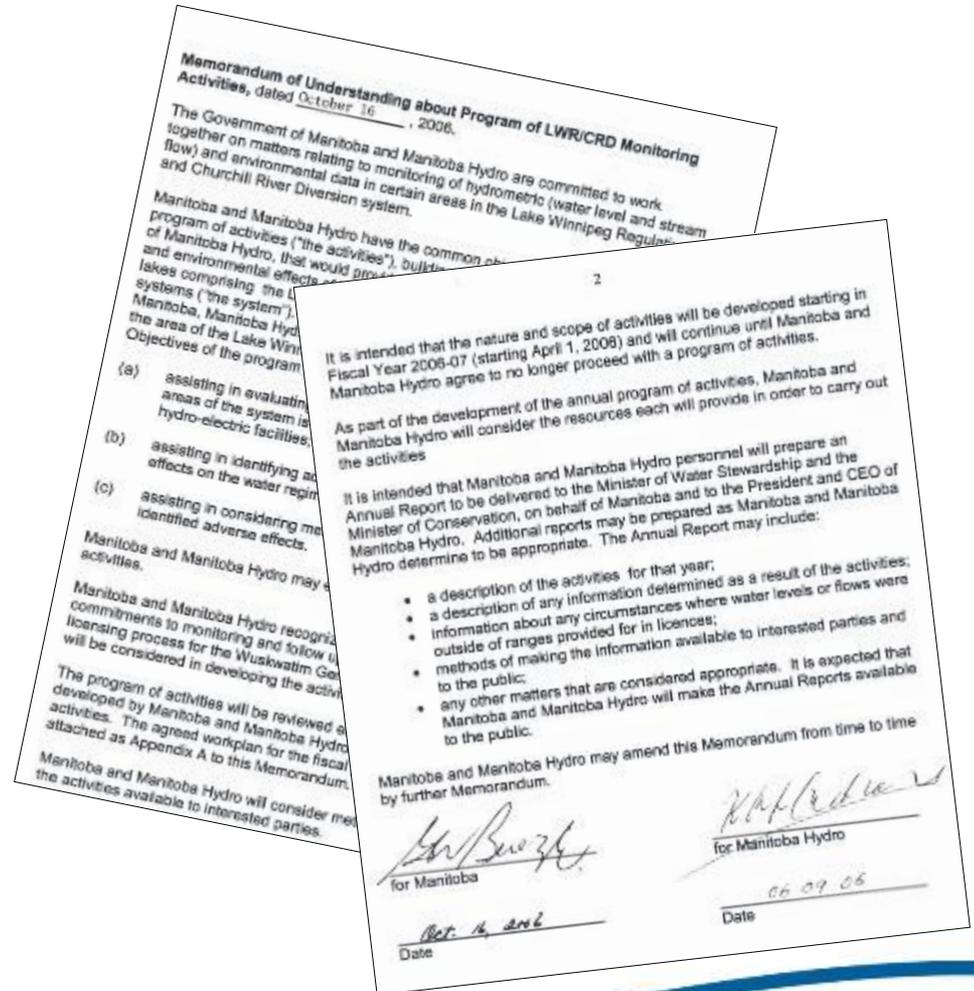
# Current Monitoring Components

- Hydrology
- Water & Sediment Quality
- Aquatic Habitat
- Primary Productivity & Lower Trophic Levels
- Fish Community
- Mercury in Fish



# 1. Collaborative Foundation

- Some previous, separate monitoring existed
- But the **MOU** created the opportunity to bring it together in a coordinated program
- Equal partnership between Manitoba and Manitoba Hydro



## 2. Collaborative Program Development



- MOU: “provide objective information about hydrometric and environmental effects of hydro-electric development”
- “The information from the activities could be of benefit to Manitoba, Manitoba Hydro and other interested parties, including communities in the area...”
- Collaboration to develop the program through workshops





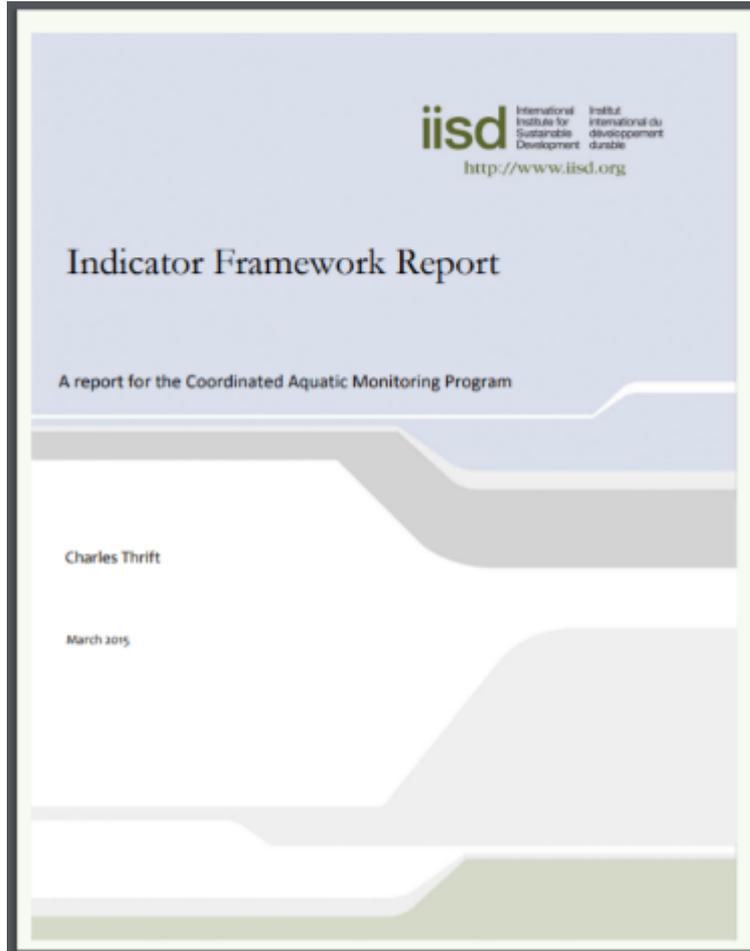
# 2018/2019 Sampling Schedule Coordinated Aquatic Monitoring Program

Division of Labour for Sampling:  
Manitoba Hydro  
MSD - Water Quality Section  
MSD - Fisheries Branch  
Consultant

Rotational Sites to be sampled in future

Region	Site	On-system	Off-system	Fish Community 3 Year Rotation	Water Quality 3 Year Rotation	Benthic Invertebrate 3 Year Rotation	Hg in Fish 3 Year Rotation	Sediment Quality 6 Year Rotation	Phytoplankton Community	Continuous Sedimentation
Winnipeg River	Upstream of Pointe du Bois	X		Annual	Annual	Annual	19/20	20/21		
	Lac du Bonnet	X		Annual	Annual	Annual		20/21		
	Manigotagan Lake		X	Annual	Annual	Annual	19/20	20/21		
	Eaglenest Lake		X	19/20	19/20	19/20				
	Pine Falls Reservoir	X		20/21	20/21	20/21				
Saskatchewan River	Cedar Lake - southeast	X		Annual	Annual	Annual	19/20	20/21		
	Cormorant Lake		X	Annual	Annual	Annual	19/20	20/21		
	Moose Lake	X		18/19	18/19	18/19				
	Cedar Lake - west	X		20/21	20/21	20/21				
Lake Winnipeg	Saskatchewan River	X		19/20	19/20	19/20				
	Lake Winnipeg - Mossy Bay	X		Annual	Annual	Annual	19/20	20/21		
	Lake Winnipeg - Site 22	X			Annual					
	Lake Winnipeg - Grand Rapids	X		Annual	Annual	Annual		20/21		
	Lake Winnipeg - Sturgeon Bay	X		Annual						
Upper Churchill River	Lake Winnipegosis		X	Annual	Annual	Annual				
	Southern Indian Lake (Area 4)	X		Annual	Annual	Annual	19/20	20/21		Missi CS
	Granville Lake		X	Annual	Annual	Annual	19/20	20/21		
	Southern Indian Lake (Area 1)	X		18/19	18/19	18/19				
	Southern Indian Lake (Area 6)	X		19/20	19/20	19/20	19/20			
Lower Churchill River	Opachuanau Lake	X		20/21	20/21	20/21				
	Northern Indian Lake	X		Annual	Annual	Annual	19/20	20/21		
	Churchill R. at Little Churchill R.	X		Annual	Annual	Annual	19/20	20/21		
	Gauer Lake		X	Annual	Annual	Annual	19/20	20/21		
	Partridge Breast Lake	X		18/19	18/19	18/19				
	Billard Lake	X		19/20	19/20	19/20				
	Fidler Lake	X		20/21	20/21	20/21				
Churchill River Diversion	Churchill R. at Churchill Weir	X		20/21	20/21	20/21	20/21			
	Threepoint Lake	X		Annual	Annual	Annual	Annual	20/21		
	Leftrook Lake		X	Annual	Annual	Annual	Annual	20/21		
	Notigi Lake	X		18/19	18/19	18/19				
	Rat Lake	X		19/20	19/20	19/20	19/20			
	West/Central Mynarski Lake	X		20/21	20/21	20/21				
	Apussigamasi Lake	X		18/19	18/19	18/19				
	Wuskwatim	X								Wuskwatim GS
Upper Nelson River	Footprint Lake	X		19/20	19/20	19/20				
	Cross Lake - West basin	X		Annual	Annual	Annual	19/20	20/21	Annual	
	Setting Lake		X	Annual	Annual	Annual	19/20	20/21	Annual	
	Playgreen Lake	X		18/19	18/19	18/19	18/19			Jenpeg GS
	Little Playgreen	X		19/20	19/20	19/20	19/20			
	Walker Lake		X	19/20	19/20	19/20				
	Sipiwesk Lake	X		20/21	20/21	20/21	20/21			
	Nelson R: d/s Sipiwesk Lake to Kelsey GS	X		20/21	20/21	20/21				
Lower Nelson River	2-Mile Channel	X			Annual	20/21				
	Warren Landing	X			Annual					
	Split Lake	X		Annual	Annual	Annual	19/20	20/21	Annual	
	Assean Lake		X	Annual	Annual	Annual	19/20	20/21	Annual	
	Nelson R. Mainstem - d/s Limestone GS	X		Annual	Annual	Annual	19/20	20/21		
	Hayes River		X	Annual	Annual	Annual	19/20	20/21		
	Stephens Lake - north arm	X		18/19	18/19	18/19				
Stephens Lake - south	X		18/19	18/19	18/19	18/19				
Limestone Forebay	Limestone Forebay	X		19/20	19/20	19/20	19/20			Limestone
	Burntwood R. - First Rapids to Split Lake	X		20/21	Annual	20/21				

# 3. Collaborative Indicator Development



- Reporting indicators were developed collaboratively
- Workshops and the process were led by the IISD
- Workshop participants included, the Working Group, provincial and federal regulators, Manitoba Hydro, academics, NGOs, and consultants

# 4. Collaborative Development of Shoreline Monitoring

Southern Indian Lake



- Sediment plume

# Southern Indian Lake



# Southern Indian Lake



# Shoreline Monitoring Development



Workshop: February 20, 2019

# Questions & Feedback

