

Technical Briefing

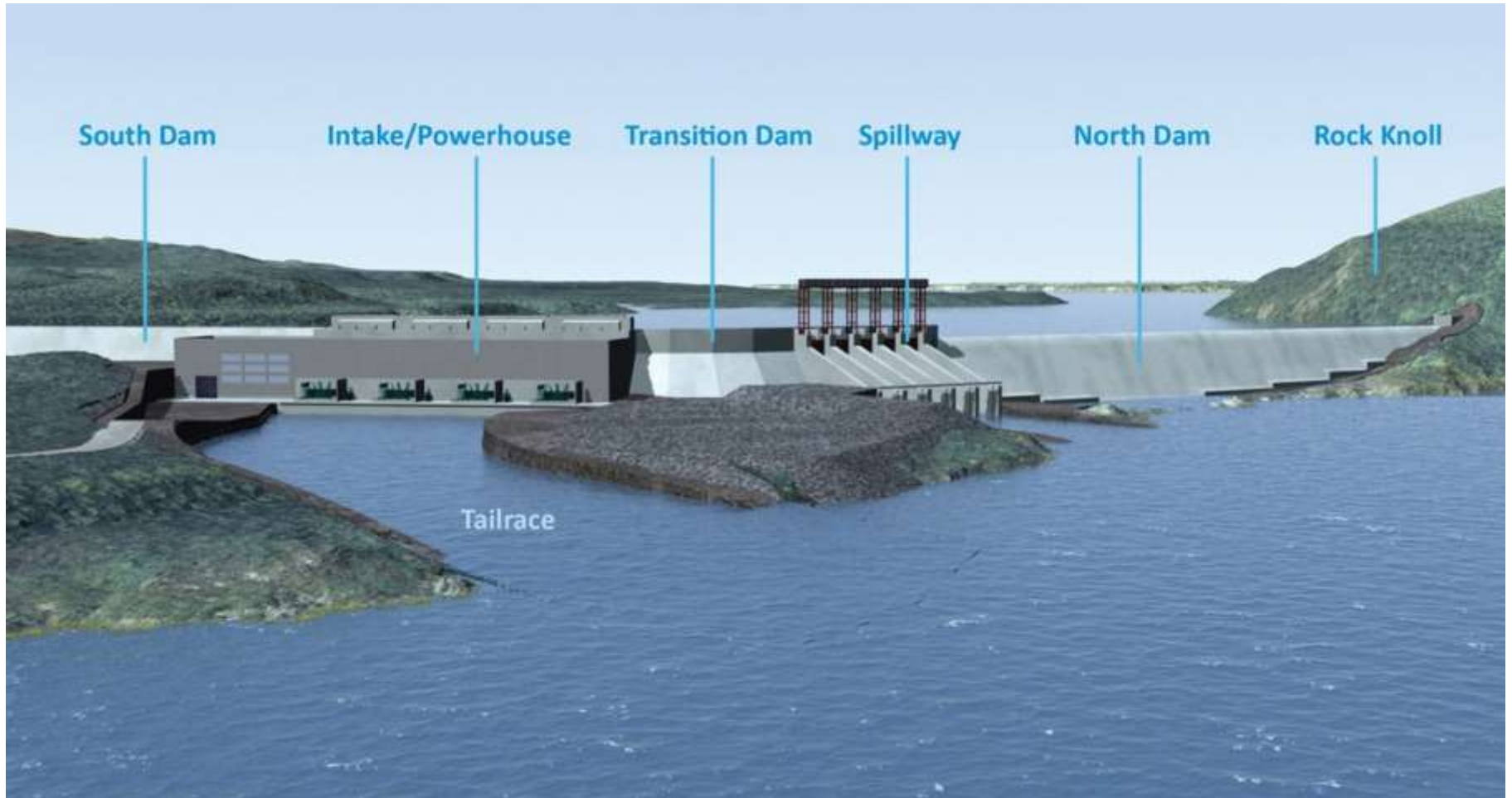
Muskrat Falls Project

October 19, 2016

Boundless Energy



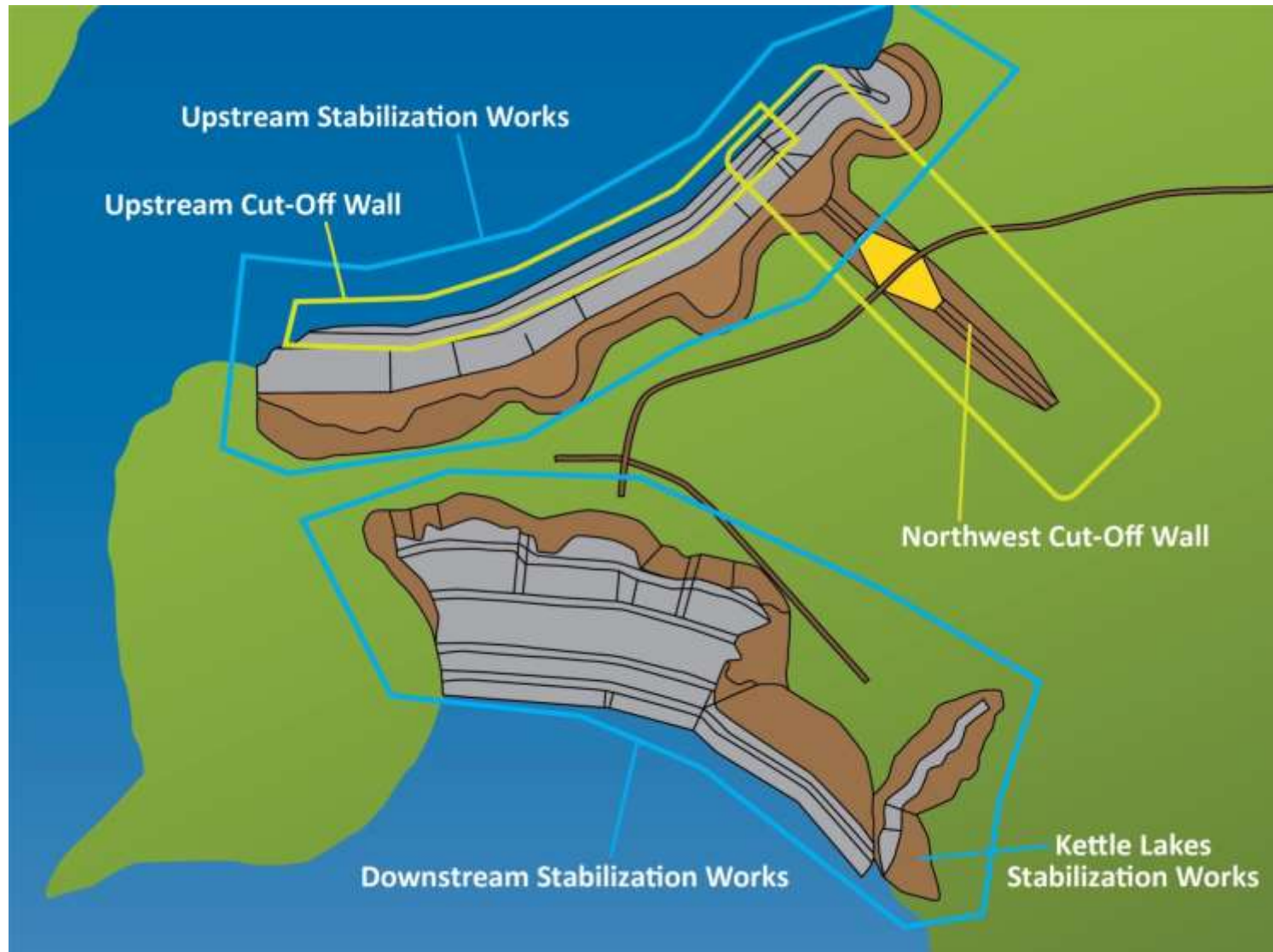
Muskrat Falls Generating Facility



2016 Construction



North Spur Stabilization Works

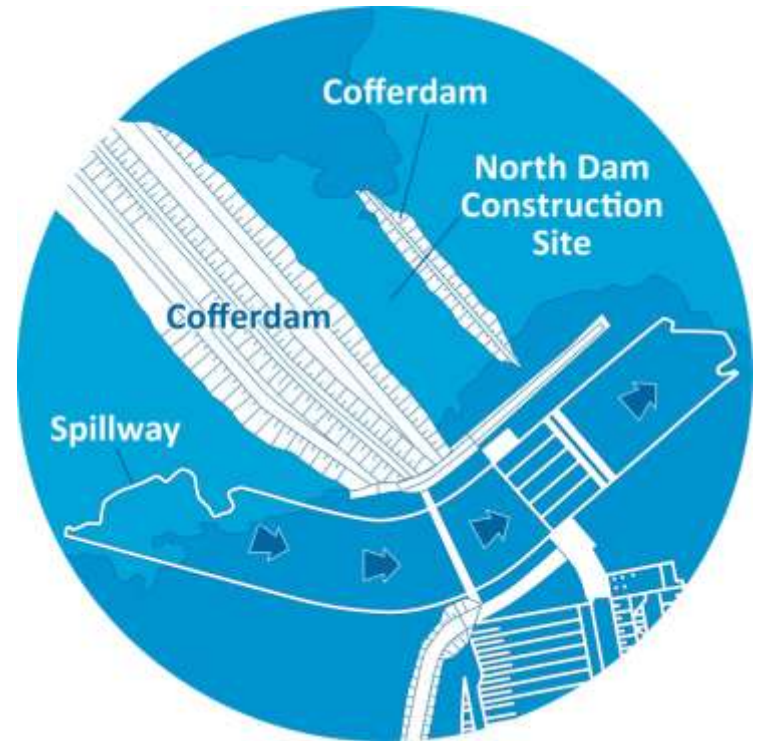


North Spur Stabilization Works



River Diversion & Closure

- Rock placement across channel
- Construct cofferdam
- Water flow through spillway bays
- Creates dry environment for North Dam construction



Spillway Operational





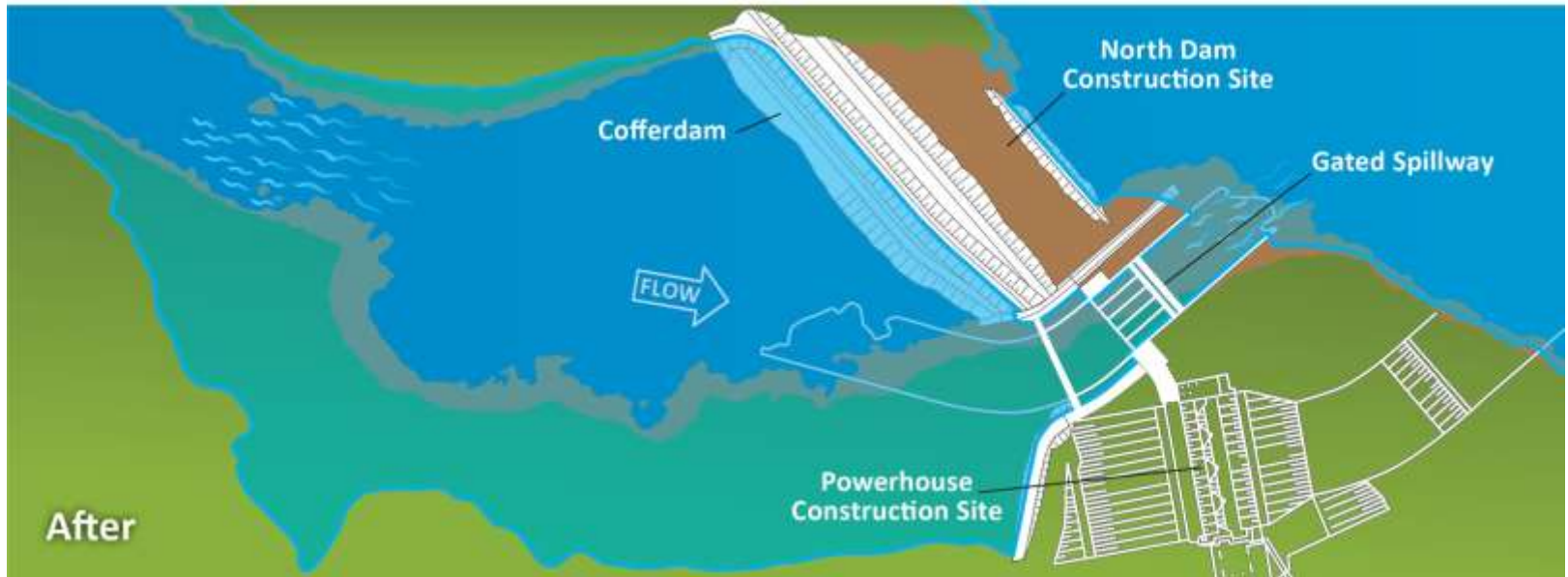
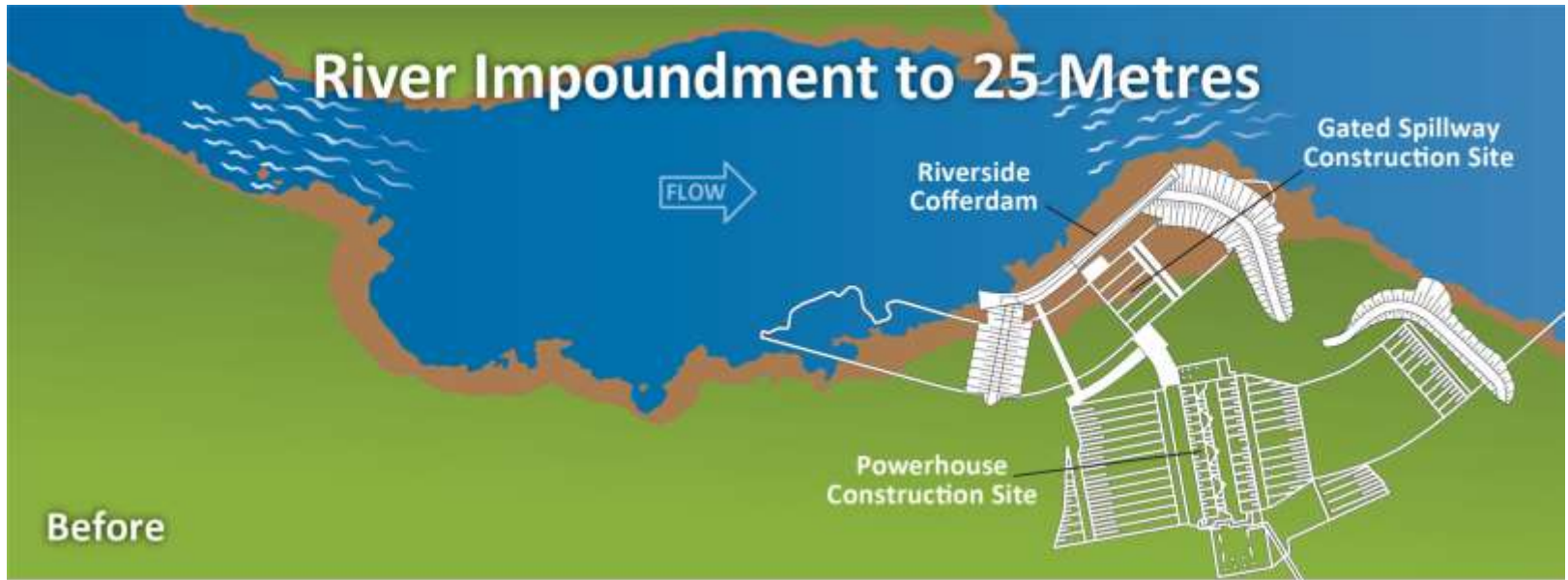


Creating the Reservoir

- Phased process ongoing
- Initial increase to 25 m
 - Build up cofferdam
 - Finalize all work in spillway
 - Install log booms
- Water level expected to rise over 2-3 week period
- 0.5 to 1 m/day

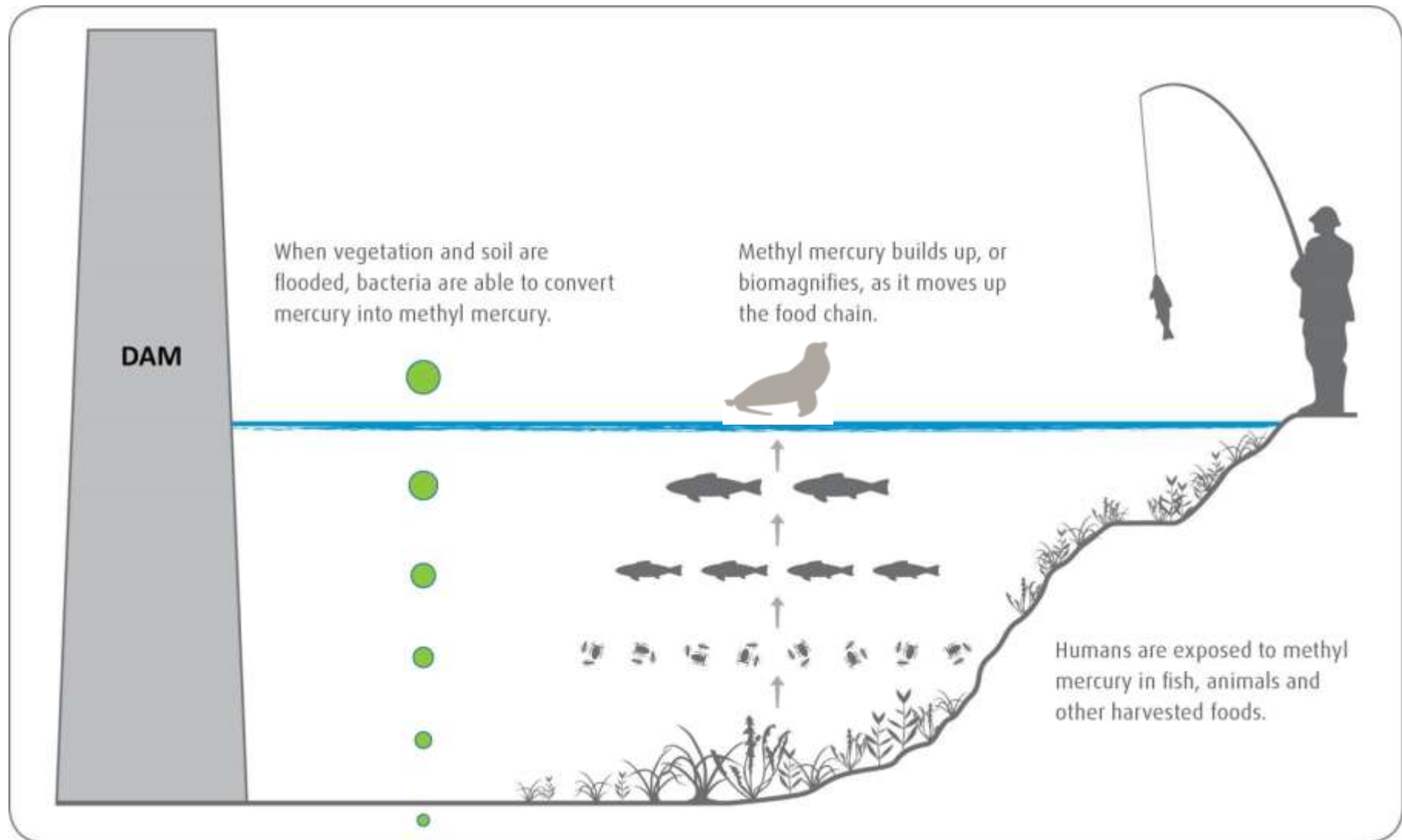


River Impoundment to 25 Metres

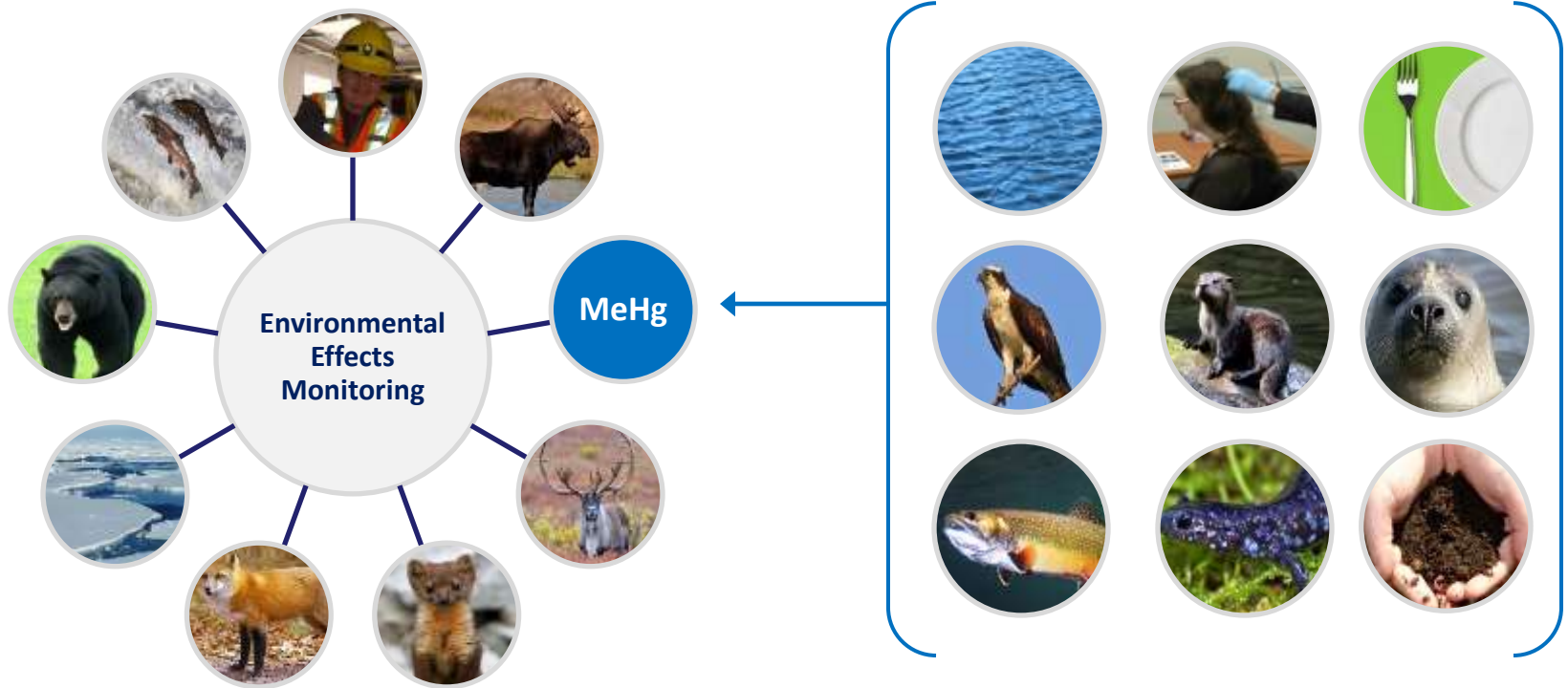


Churchill Falls - Muskrat Falls Reservoir Comparison





Environmental Monitoring



Environmental Monitoring

- Environmental components studied:
 - water, sediment, plankton, fish, seal, amphibians, osprey, otter, human hair
- Independent consultants completed baseline monitoring, assessments, scientific reports:
 - Dillon Consulting, Amec FW, Stantec-Stassinu, Golder, Reed Harris Environmental

Methylmercury Studies

- 6 component studies
- 4 annual Aquatic Baseline Reports (since 2012)
- Interim Human Health Risk Assessment (2011)
- Baseline Dietary Survey and Human Biomonitoring Report (2015)
- Final Baseline Human Health Risk Assessment Report (2016)
- Ecorisk Environmental Effects Monitoring Program for amphibians, osprey and otter

Monitoring Locations



Species	Annual means Hg (mg/kg) and range	
	2011-2014	2015
Lake whitefish	0.05 - 0.06 (<0.05 – 0.06)	0.06 (<0.05 – 0.07)
Longnose sucker	0.06 - 0.05 (0.03 – 0.21)	0.05 (<0.05 – 0.09)
Rainbow smelt	0.06 – 0.07 (<0.05 – 0.14)	0.05 (<0.05 – 0.06)
Tomcod	0.05 – 0.06 (0.04 – 0.09)	0.05 (all <0.05)
White sucker	0.05 – 0.06 (<0.05 – 0.14)	0.05 (<0.05 – 0.09)
Atlantic salmon	-	0.09 (<0.05 – 0.16)
Brook trout	0.05 – 0.06 (<0.05 – 0.10)	0.07 (<0.05 – 0.32)
Ringed Seal	0.13 – 0.32 (<0.05 – 6.3)	0.20 (<0.05 - 0.87)

- Conservatively assume total Hg is MeHg
- Concentrations relatively low
- Atlantic salmon and brook trout

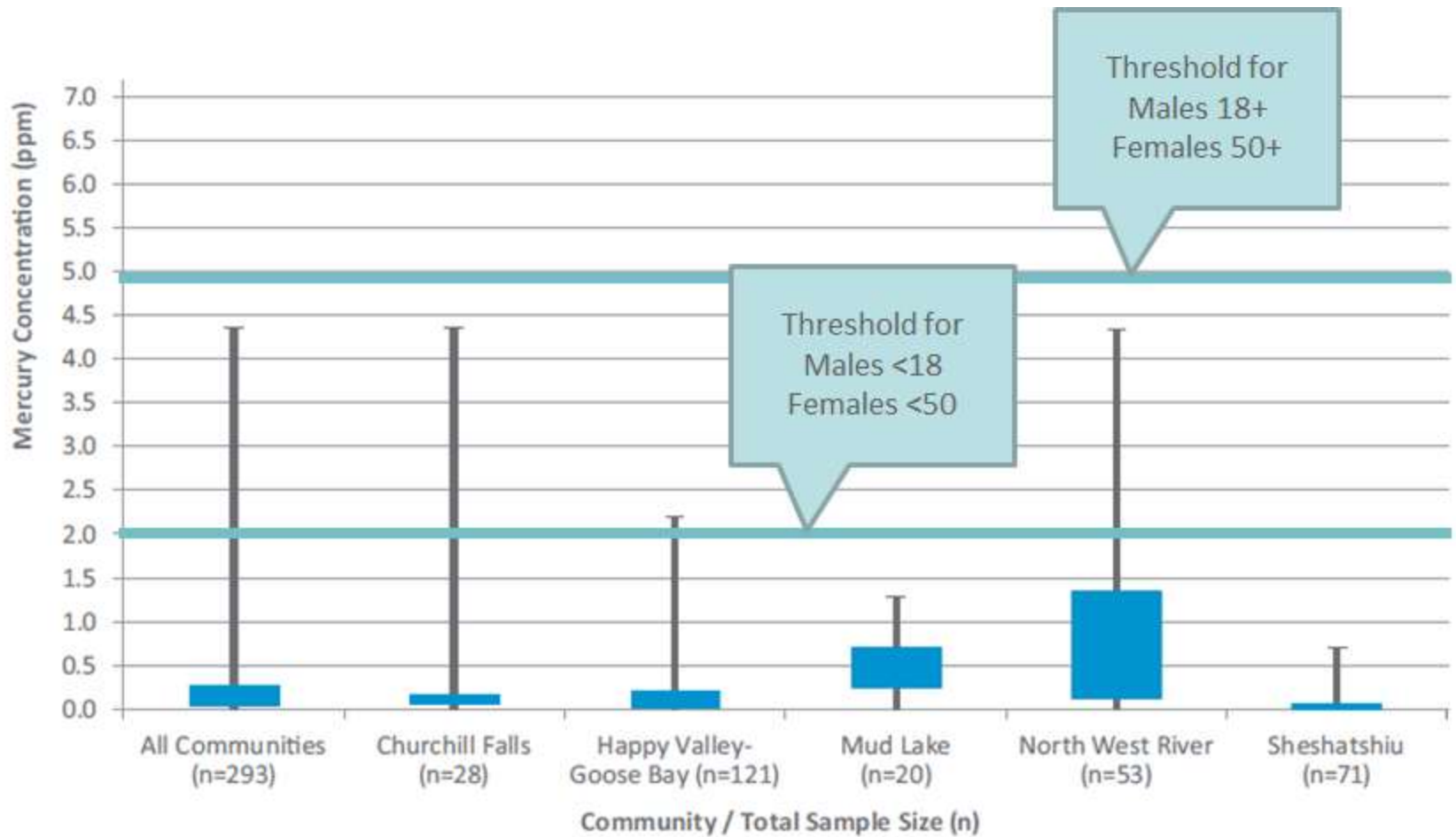
Human Health Risk Assessment (HHRA)

- HHRA baseline dietary study and human hair sampling program conducted fall 2014 and winter 2015
- Prior to conducting the study, Nalcor consulted with government agencies, Aboriginal groups, and provincial research authority for approval
- Public information sessions were advertised and held in Happy Valley - Goose Bay, Mud Lake, North West River, Sheshatshiu and Churchill Falls to discuss the HHRA baseline survey

HHRA

- 293 people from HVGB, Mud Lake, North West River, Sheshatshiu and Churchill Falls participated
- Participants of all ages, male and female; almost 200 participants identified as Aboriginal
- Nalcor sent personal results of the hair sampling test and a copy of the report to participants who requested the information
- The full report and a summary are available on the project website

Current Levels



Inputs into Consumption Advisory

- Stakeholder input (Aboriginal groups and public)
- Regulatory guidance (HC, DHCS, Labrador - Grenfell Health)
- Dietary survey information
- Aquatic monitoring data (various fish species, seals)
- Human health risk assessment
- Health benefits of the food
- CA approach used by other regulatory authorities in North America
- Review of existing science and policy that underlies the issuance of CAs

Commitment to Long-term Monitoring

- Committed to long-term monitoring after construction
- Continue until levels return to baseline, before reservoir created

