

# Phase 1

## General Information



### Lake Winnipeg Facts

- Red River accounts for 69% phosphorus loading in Lake Winnipeg
- Red River phosphorus concentration = 0.318 mg/L
- Lake Winnipeg South Basin closet to Red River delta phosphorus concentration = 0.15mg/L to 0.20 mg/L
- Lake Winnipeg South Basin average phosphorus concentration 0.104mg/L
- Phosphorus concentration is highest near lake bottom & nutrients and sediments constantly stirred up and redistributed into water column due to wave activity creating mixing action
- Water current velocity 4 cm/s
- Water currents in South Basin create a circular pattern traveling South along West shore, Eastward along South shore and Northward along the East shore with an overall direction of north towards the Narrows
- Volume of phosphorus per year
  - Lowest: 3,093 tonne
  - Average: 7,368 tone
  - Highest: 10,932 tonne
- Manitoba Government set limit of Phosphorus concentration in Lake Winnipeg South Basin at 0.05 mg/L or a 50% reduction from current average concentrations

### Container & Media Specifications

- 40 ft shipping container net maximum payload 59,000 lbs
- Media doubles in weight when wet and must be accounted for so not to overload the container
- 16 pallets per container each containing 1,793 lbs of media + specialized pallet

### Cycle Specifications

Placing the filter approximately 5 miles North of the Red River Delta in 20 to 30ft depth of water with a phosphorus concentration of 0.15 mg/L and a current of 4 cm/s, the filter would take 22 days to reach saturation.

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- 7 cycles per container per year
- 88 containers in circulation
- Retrieve/process/ deposit 4 containers per day
- 175 tonne phosphorus recovered per year
- Equal to 2.38% total phosphorus per year

### Primary resources of Data

- State of Lake Winnipeg Report 1999 to 2007
- State of Lake Winnipeg Report 2nd Edition
- Lake Winnipeg: Nutrients And Loads Status Report 2022

