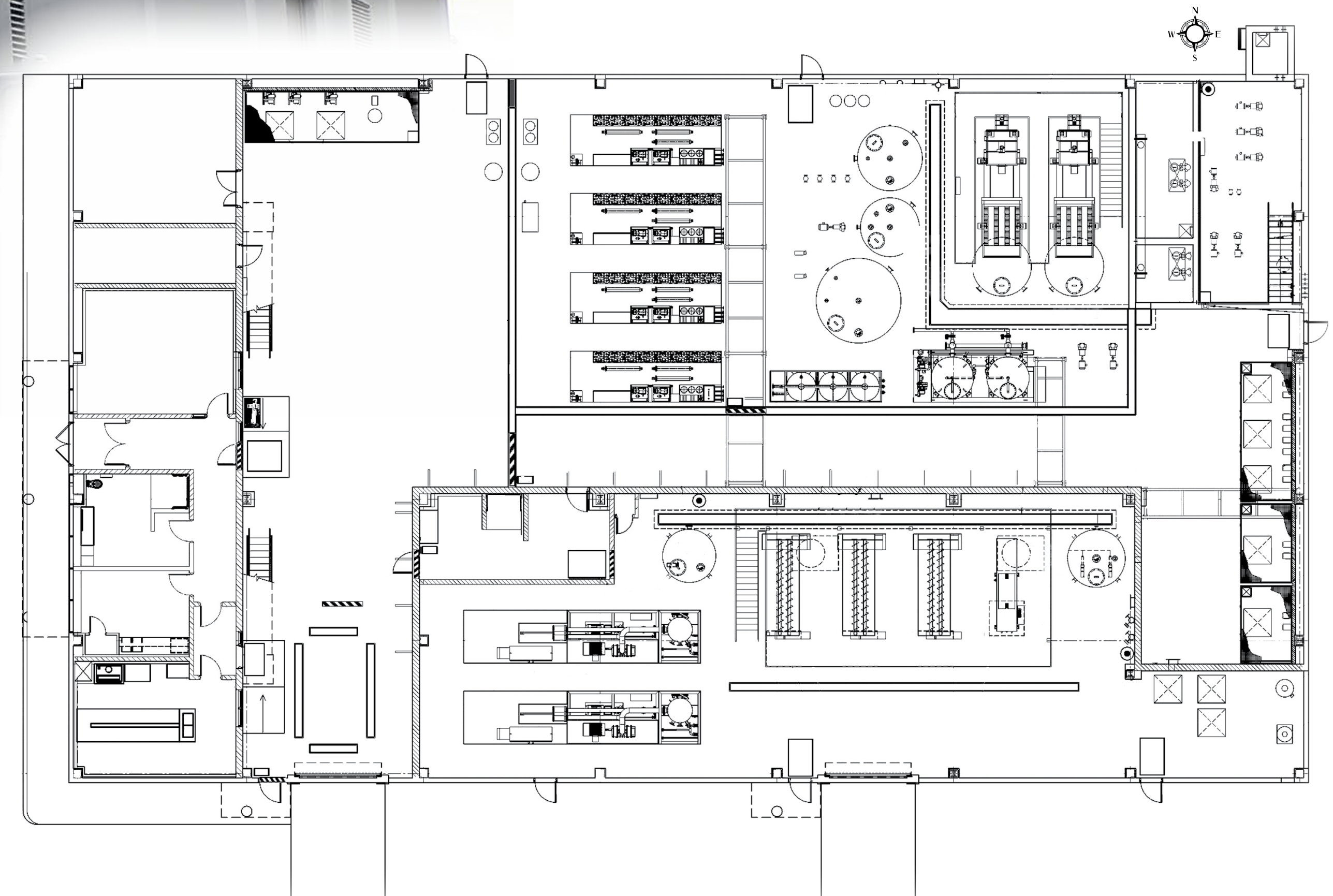




The waste water treatment plant will treat surface water and groundwater at the long-term waste management facility during waste placement in the engineered mound and groundwater and contaminated water from within the mound after it is capped and closed. The two-stage treatment process consists of chemical precipitation and clarification (Stage 1) followed by reverse osmosis (Stage 2).



The Port Hope Project involves the cleanup of approximately 1.2 million cubic metres of historic low-level radioactive waste (LLRW) from various sites in Port Hope, the construction of an engineered aboveground mound where the waste will be safely contained, and the long-term monitoring and maintenance of the new waste management facility.

The waste is primarily soil contaminated with residue ore from the former radium and uranium refining activities of Eldorado Nuclear Limited and its private sector predecessors.



## Waste Water Collection

Collected surface water and groundwater impacted by LLRW, leachate from within the mound and wash water collected from truck decontamination stations enters a collection pond at the northwest corner of the site before it is pumped to the waste water treatment plant.



Leachate pumped from within the aboveground mound



Waste water treatment plant collection pond



Surface water



Decontamination station wash water



Port Hope Project Waste Water Treatment Plant



Intake Pumps



### Heat Exchanger

A heat exchanger is used to heat the water before it enters Stage 1 of the treatment process. The water is heated to ensure optimal performance of the treatment equipment inside the plant.

➔  
To Stage 1:  
Pre-Treatment



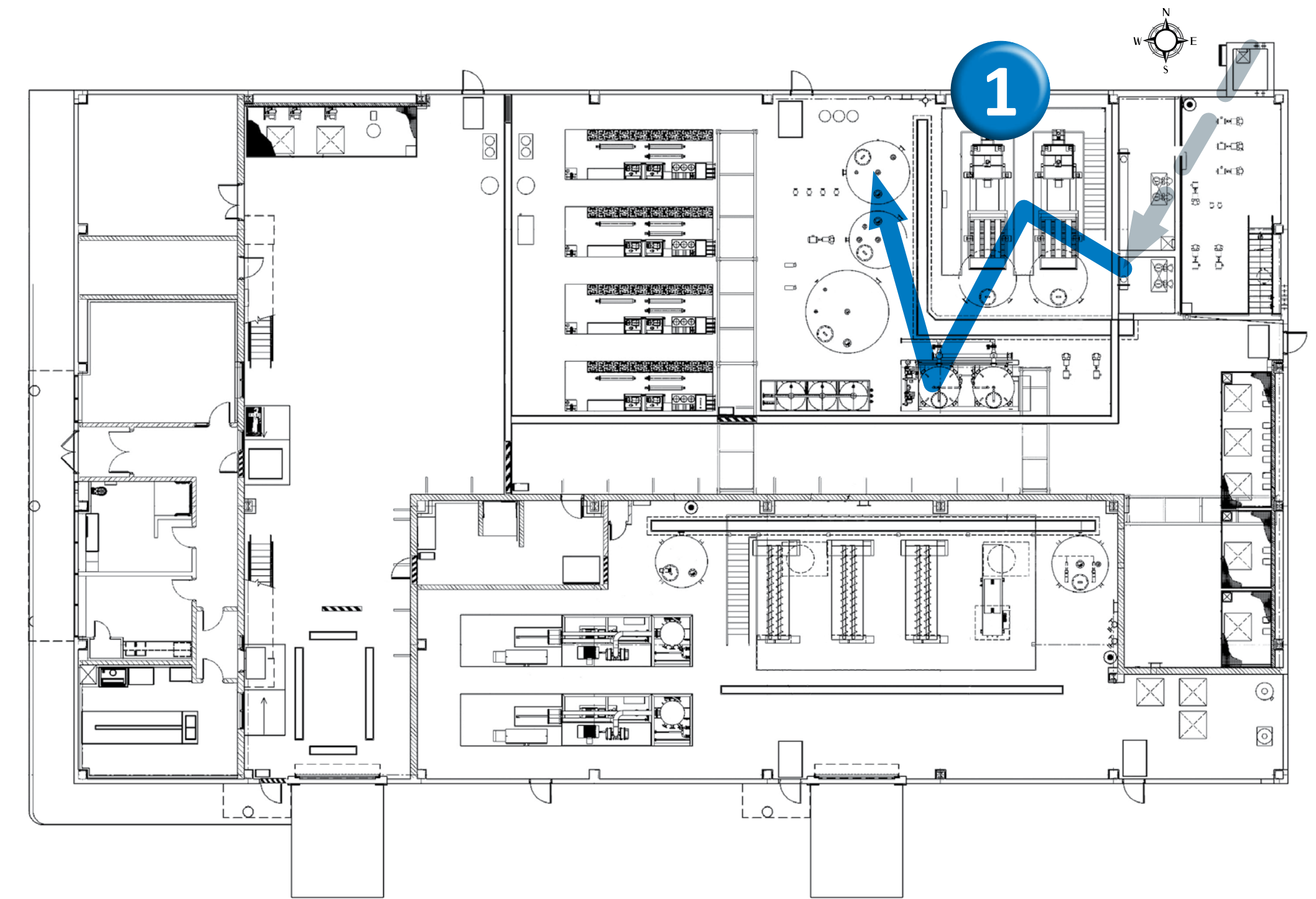
## Stage 1: Chemical precipitation and clarification

**1**



### Clarifier

The waste water enters a clarifier tank where a coagulant (ferric chloride) and a polymer are added and mixed to cause fine, suspended particles to clump together and settle. The clarifier then separates solid particles from the water.



### Sand Filters

Remaining suspended solids are filtered through sand before the water enters the reverse osmosis stage. The filters are periodically backwashed and the wash water and suspended solids are returned to the collection pond.



### Reverse Osmosis Feed Tank

Water is sent from the sand filter to a holding tank where it is pumped to the reverse osmosis system.



*Liquids to Stage 2:  
Reverse Osmosis Water  
Treatment*



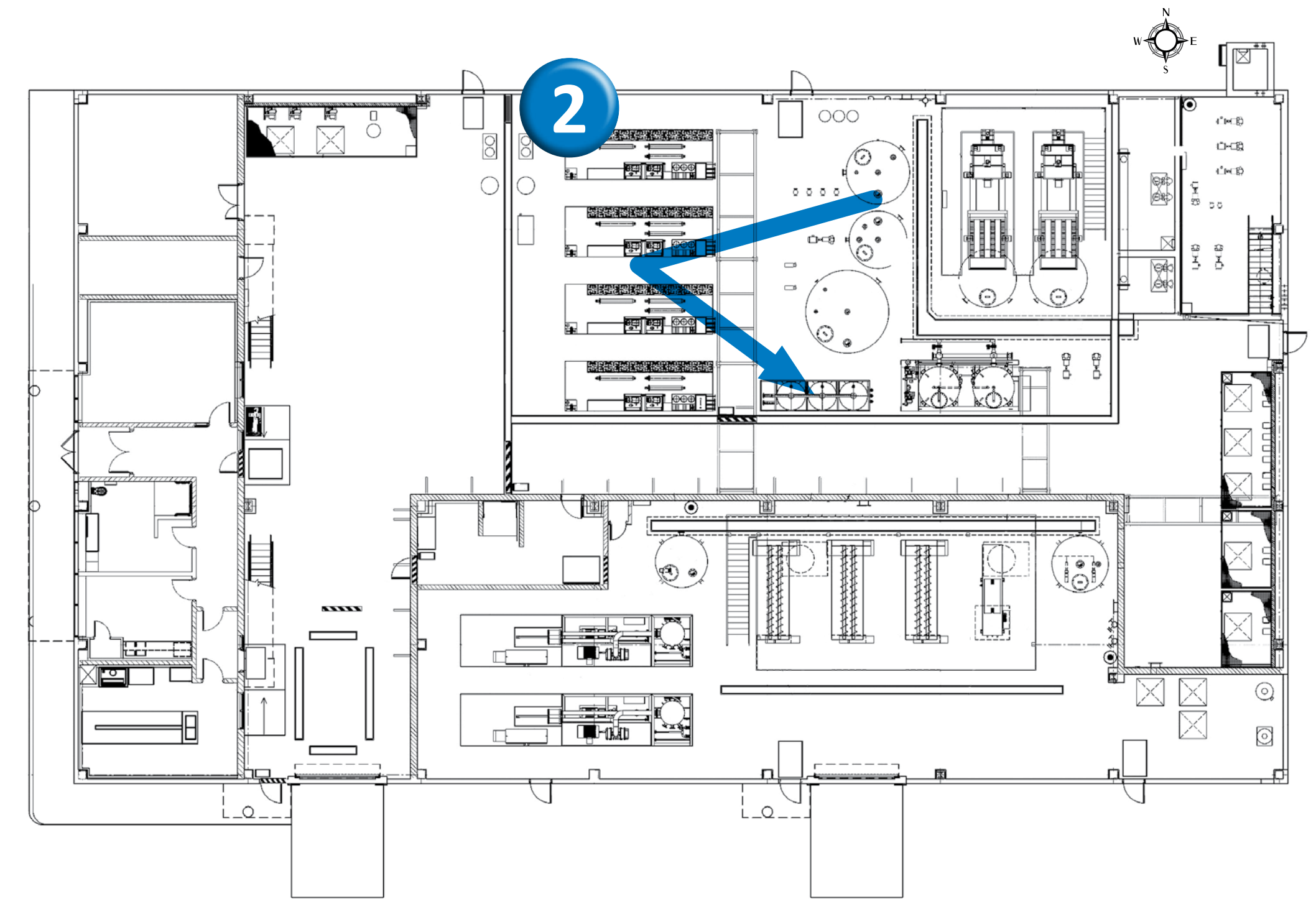
## Stage 2: Reverse Osmosis (RO) Water Treatment

2



### RO Units

The reverse osmosis system removes salts, heavy metals and contaminants such as radium and arsenic by forcing the water under high pressure through a membrane where the contaminants are filtered out.



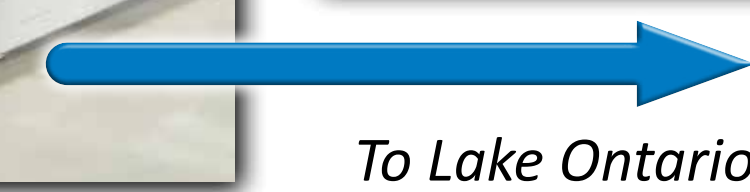
### Deacidification Tanks

Excess acid in the treated water is removed through filters and the pH level is adjusted before the final treated effluent is discharged through a 3 km long twin-pipeline which extends 70 metres into Lake Ontario.



### Verification

The treated water is regularly sampled to verify its quality.



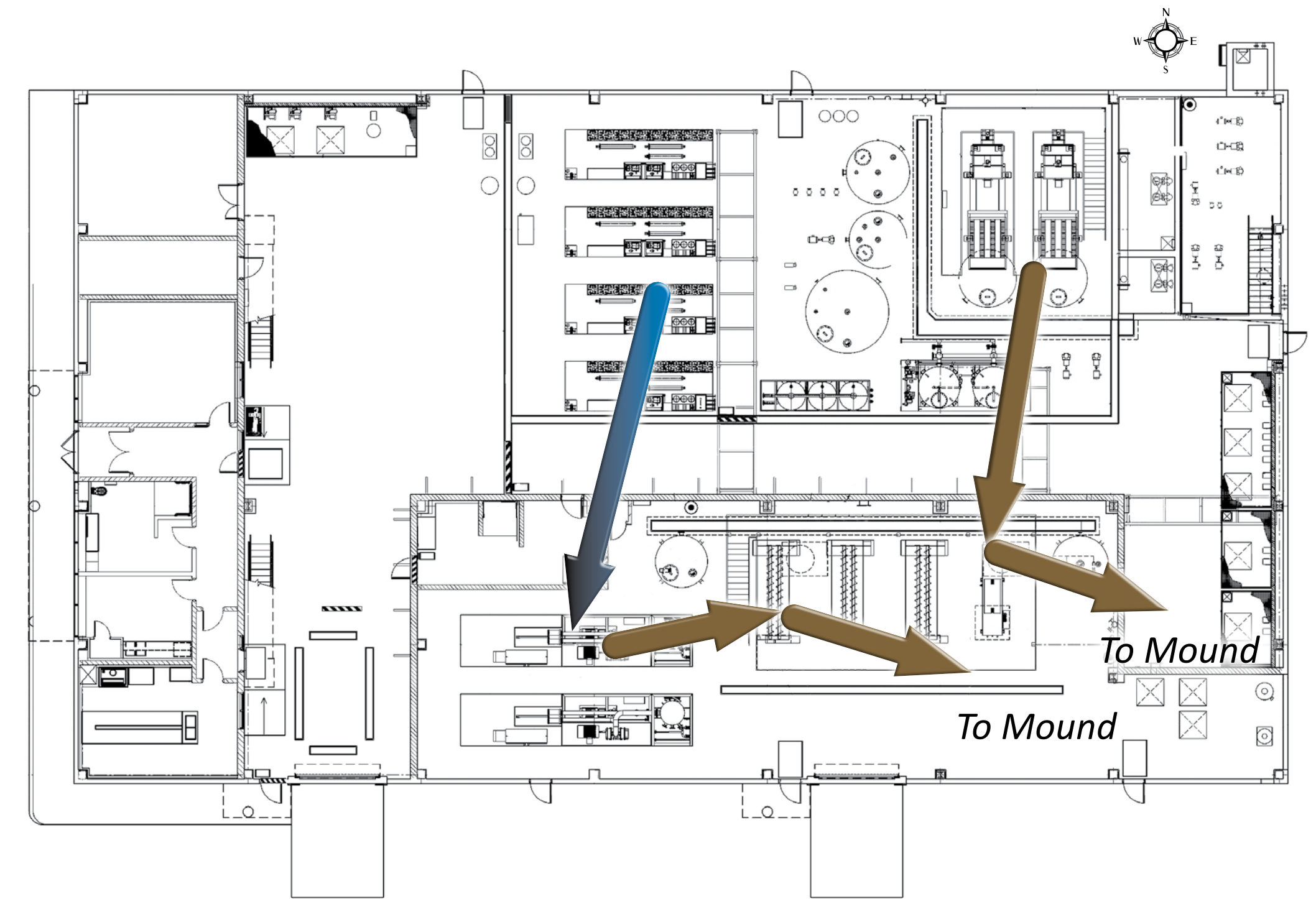
To Lake Ontario



## Residuals Management

### Belt Press

Solid material from the clarifier is fed through a mechanical belt to drain out the remaining water. The final compacted solid material is discharged into specially designed bags for placement in the engineered aboveground mound. The water extracted through this process is recycled back to the collection pond.



### Evaporator

Contaminated water from the reverse osmosis system is fed into an evaporator where heat boils the water, turning it into vapour that is recycled back into the treatment process. The remaining contaminated matter is converted into a paste-like substance called slurry.



### Slurry Dryer

Slurry is fed to dryers, where it is dried through a boiling process. The dried product is discharged into specially designed bags for placement in the mound. Vapour generated through this process is recycled back to the treatment process.

