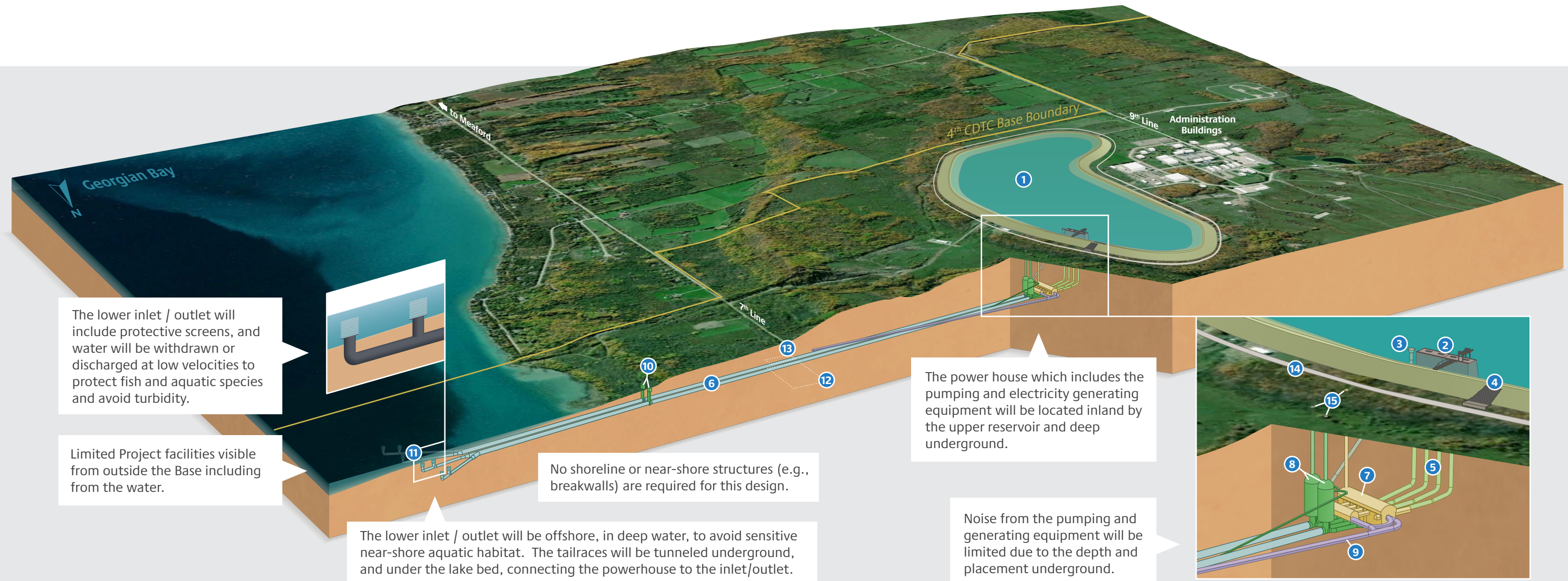


Ontario Pumped Storage Project May 2020 Conceptual Design

With Underground Features



The lower inlet / outlet will include protective screens, and water will be withdrawn or discharged at low velocities to protect fish and aquatic species and avoid turbidity.

Limited Project facilities visible from outside the Base including from the water.

The lower inlet / outlet will be offshore, in deep water, to avoid sensitive near-shore aquatic habitat. The tailraces will be tunneled underground, and under the lake bed, connecting the powerhouse to the inlet/outlet.

No shoreline or near-shore structures (e.g., breakwalls) are required for this design.

The power house which includes the pumping and electricity generating equipment will be located inland by the upper reservoir and deep underground.

Noise from the pumping and generating equipment will be limited due to the depth and placement underground.

- 1 Upper Reservoir: A new reservoir constructed adjacent to the Base administrative complex; approximate surface area of 375 acres, depth of 20 meters.
- 2 Upper Inlet/Outlet: Controls the flow of water in and out of the upper reservoir.
- 3 Primary Spillway: Essentially a large funnel-shaped drain; a failsafe in the unlikely event the upper reservoir is nearing capacity.
- 4 Secondary Spillway: a back-up drain for the upper reservoir which acts as an additional failsafe to the Primary spillway; engineered for a controlled release of flow.
- 5 Headraces: Connects the upper inlet/outlet to the inlets in the powerhouse.
- 6 Tailraces: Connects the surge chambers to Georgian Bay (lower reservoir).
- 7 Powerhouse: Includes the pump-turbine units and associated electrical and control facilities; in a cavern with major components deep underground.

- 8 Surge Chambers: Manages pressure variations due to changes in water velocity.
- 9 Access Tunnel: Provides personnel access to the powerhouse for construction, operations and maintenance.
- 10 Maintenance Access: Contains an access shaft to the tailraces and a divider that can be used to isolate the tailraces.
- 11 Lower Inlet/Outlet: A manifold used to divert water; each port would be screened and raised off the lakebed to avoid aquatic habitat and organisms, reducing the potential impacts on fish and turbidity.
- 12 Switchyard: The electrical connection between the pumped storage facility and the provincial electricity system.
- 13 Offices & Control Room: Workplace for day-to-day operations and maintenance of the facility.
- 14 Ring Road: A new roadway around the perimeter of the upper reservoir for safety and maintenance.
- 15 Ventilation Shafts: Enables air circulation.