Crowe Valley Conservation Authority
Chandos Lake Gauge House Report
Agenda Item 13 - 16 September 2021

Overview

Chandos Lake is a large lake located in the northwest portion of the Crowe Valley watershed. It is one of the largest bodies of water located in the watershed. There are no water control structures on Chandos Lake, so the CVCA cannot directly manage water levels on the lake. The water level of the lake is influenced by the management of other lakes in the watershed, such as Paudash Lake to the north of Chandos. There is a gauge house located on Chandos Lake that the CVCA uses to monitor water levels.

Figure 1 Chandos Gauge House

The gauge house is located on the north tip of Chandos Lake on the north side of Highway 620. There have been some issues with the accuracy of the water level readings from this gauge house as it is located on a creek connecting to Chandos Lake and not on the lake itself. The creek that the gauge house is located on is known as Flat creek or Deer river. The location of the gauge house has led to some false readings, especially when the creek is flowing at a high rate. As a result of these false readings, CVCA staff occasionally have to go to the gauge house to take a manual water level reading and reset the data logging system. The construction of a new gauge house would eliminate this issue.

Furthermore, as development on Chandos lake has increased, it has placed pressure on the need to determine the floodplain surrounding the lake in order to determine the necessary setbacks for development around the lake. Unless an engineered floodplain is determined through a survey of the lake, which would be quite expensive, historical water level data will need to be used to determine the floodplain. Since the water level data on Chandos lake has not always been reliable, determining the floodplain becomes more difficult and potentially less accurate. A new gauge house would provide the CVCA with more accurate water level readings that could be used to determine the floodplain of the lake in the future.

Constructing a new gauge house in a better location on the lake would provide multiple benefits to the authority. It would eliminate the need for CVCA staff to manually check the water level and reset the data logging system in the gauge house. The improved accuracy in the readings would also aid with the development of a 1:100 year flood elevation for Chandos, thereby creating a reliable floodplain for the CVCA to implement Ontario Regulation 159/06. This would help to ensure the right development in the right location to protect residents and their assets from flooding. In conjunction, protecting the floodplain from future development would also help retain the natural shoreline of Chandos, reduce contaminants from entering the lake and help address erosion concerns.

New Gauge House Requirements

Constructing a new gauge house on Chandos Lake will require getting permission from the municipality to construct it on their land, having contractors construct the stilling well and gauge house, having an electrical company hook up the gauge house to a power source, and purchasing and installing new data logging equipment.

The CVCA has determined that the best location for the new gauge house would be on Chandos Public Beach, at the far western end of the beach along the shoreline just past where it turns from sand to grass. This location has been chosen due to its proximity to an electrical power line, its location on the lake, and the ability to easily access the location. However, permission would have to be given by the municipality of North Kawartha for this location to be used.

Location

Cost

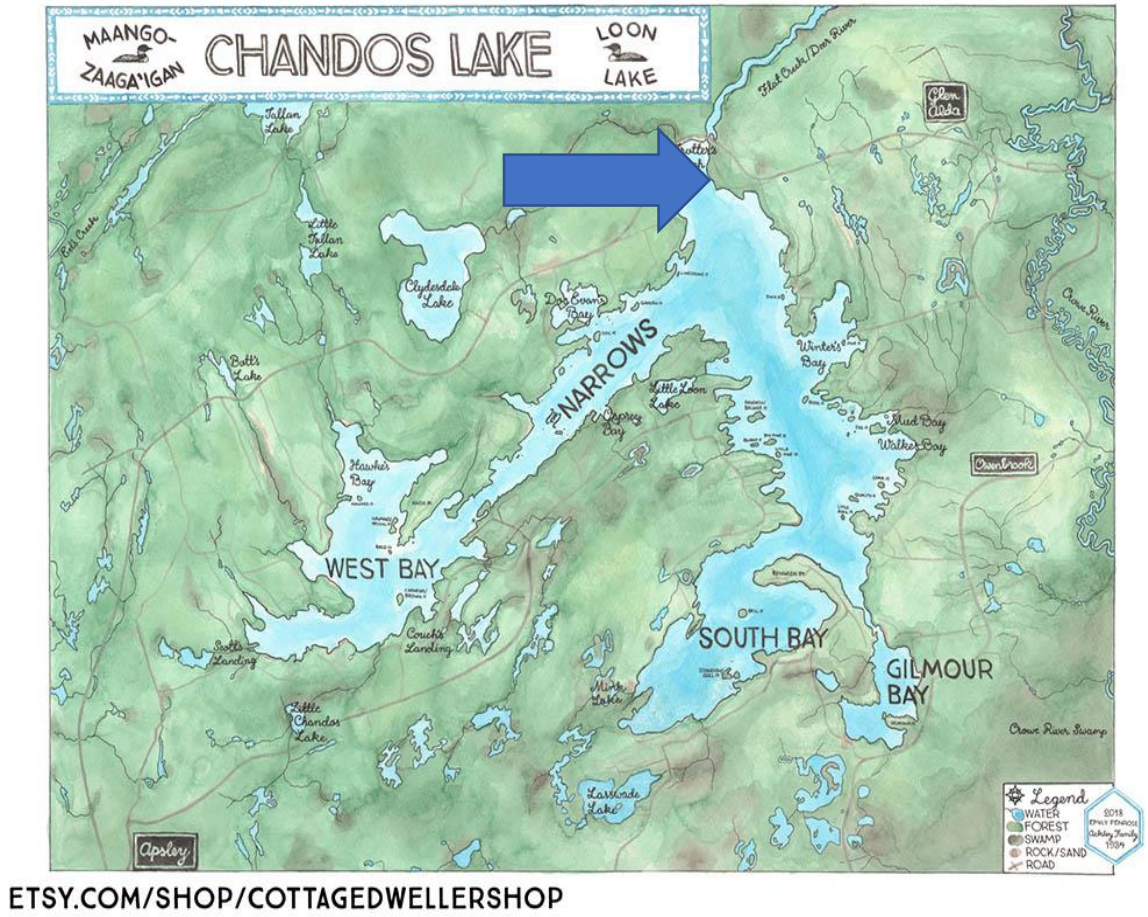

Figure 2 Proposed Location of New Gauge House

Estimates

Equipment	**Cost**
GOES Satellite Transmitter	$2,451.00
GOES Antenna	$688.00
Radar Sensor	$3,725.00
Mount	$85.00
Cables	$94.76
Encasing	$189.80
Total	$7,233.56

The purchasing of new data logging equipment will cost $7,233.56.

Investigations into the cost of the construction of a new gauge house building have found that it will cost approximately $5,000. The completion of outstanding quotes is required to determine the exact cost.

Investigations into the cost of the construction of a stilling well and pipe leading out to the lake have found that it will cost approximately $5,000. The completion of outstanding quotes is required to determine the exact cost.

Having the gauge house hooked up to electricity will cost approximately $4,766.56.

Description	Cost
Purchasing new data logging equipment	$7,233.56
Constructing gauge house building	$5,000.00
Constructing distilling well	$5,000.00
Installing hydro in gauge house	$4,766.56
Total	$22,000.12

The total cost of constructing a new gauge house on Chandos Lake will be approximately $22,000.12