



Crowe Valley Conservation Authority

Cordova Lake Fact Sheet

Background

A coordinated approach to watershed management for the Crowe River watershed was established in 1958 with the creation of the Crowe Valley Conservation Authority (CVCA). This was vital to manage the Crowe River system through the lens of one agency, rather than each of the dam operators in the watershed making independent decisions which could negatively impact residents.

The CVCA's primary mandate, has remained unchanged since 1958. It is to mitigate flood damage by protecting people and their property through flood forecasting and warning and the operation of existing water control structures throughout the watershed. In conjunction, the CVCA has in recent years, implemented a regulation program and reviews municipal planning documents to ensure people are aware of the flooding and erosion hazards and then guide development away from these areas. As well, after spring freshet and flooding concerns, the CVCA focuses on maintaining summer recreational water levels.

The Crowe Valley Conservation Authority watershed management strategy/approach is based primarily on the Crowe River Water Management Study – Dam Operation Manual, and the Crowe River Water Management Study – Flood Forecast Manual. The two studies give the CVCA greater understanding of lakes, watercourses and water control structures within the Crowe Valley watershed, providing guidance for dam operations and water resource management. Using these studies coupled with a history of over 60 years of watershed management experience, the CVCA strives to balance the environmental, social and economic objectives for the entire watershed.

Currently, there are 14 water control structures in the CVCA watershed which are either owned and/or operated by the Authority. There are also two hydro generation structures on the Crowe River, one of which is directly operated by the CVCA, while the second is operated independently. Neither hydro station is owned by the CVCA, but both are dependent on the direction from the CVCA which is based on primarily water level and flow data and other considerations.

Cordova Lake Dam

The Cordova Lake Dam owned by the Ministry of Northern Development and Mines, Natural Resources and Forestry is located on the Crowe River upstream of Belmont Lake in Havelock-Belmont-Methuen Township, Concession II, Lot 25.

The primary purpose of the dam is to control summer and winter water levels on Cordova Lake and mitigate the affects of upstream and downstream flooding.

The existing concrete-gravity dam was rebuilt in 1956. The outlet at the dam site is through two channels, separated by a small island. The flow through the west channel is controlled by an overflow weir. The main control dam is 3.66m high and 13.41m long and located on the east channel, consists of two 4.88m wide spillways. The stop logs used in the spillways are .30m x .30m.

In addition, there exist outlet channels on the south-east side of the lake, approximately .8km northeast of the dam. There are no controls at these outlet channels and therefore, discharge will occur naturally pending the water level of Cordova Lake.

The daily operational decisions whether to conduct stop log adjustments or not is made by the CVCA duty forecaster, who during the work week is the Water Resources Technician. All other holidays and weekend decisions are made by the assigned duty forecaster. These decisions are then carried out by CVCA staff on site to make the adjustments.

The operation of the dam in the spring primarily focuses on the removal of the stop logs to discharge the spring freshet as part of the overall water management strategy for the Crowe River watershed. Stop logs are then replaced based on the current lake level, weather conditions, how quickly the water flows are receding, water conditions throughout the watershed, especially lakes north and south of the dam, forecasted short and long term weather forecasts and other various factors.

Since there are a number of variables influencing CVCA staff's decisions and many factors are obviously out of CVCA control, there is typically a period where there will be ongoing fluctuations in water levels in the spring that could be fairly significant. Eventually though, once the freshet is over and seasonal weather patterns subside, the lake will be maintained as soon as possible at the targeted summer lake level elevation. This summer water elevation has been determined by an engineered study completed for the CVCA.

After the summer recreational season has drawn to a close, the CVCA removes stop logs in the fall to lower the Cordova Lake level to a winter target level, which has also been calculated in the same engineered study. This drawdown of the lake is to create as much storage capacity for the following spring freshet as possible without negative impacts on the environment of the lake and human requirements. In effect, the drawdown mimics the natural lowering of the lake, just not to the extent it would if the dam was not present.

The lake level targeted elevations are:

Summer elevation – 216.500 metres above sea level

Winter elevation – 216.200 m

Water levels are monitored remotely via a staff gauge located at the Cordova Lake dam. There is also a manual gauge installed at the dam in the event the remote gauge fails. Staff check the water levels on Cordova Lake (and all monitored lakes in the watershed) 365 days a year.

In addition to the above noted conditions and factors, CVCA staff are also in constant communication with the operators of the Cordova Lake power generating station. This is vital in order to coordinate the management of the Crowe River and Cordova Lake levels. Although the agreement to use water flowing through the dam is between the owner and the Ministry of Northern Development and Mines, Natural Resources and Forestry, as previously noted, the CVCA is responsible for the regulated levels.

The Cordova Lake dam is one of the key outlets along the Crowe River and is essentially an indicator lake the CVCA uses to determine how the watershed in general is reacting to extreme storm events or the spring freshet. Since the Cordova Dam is located within the lower end of the watershed, the drainage basin for this control point is quite large. As a result, the 1:100 year flood elevation is quite significant at 217.58 m. In comparison to the summer elevation, the floodplain is 1.08 metres higher.

Quick Facts for Cordova Lake

- Cordova Lake is approximately 3.2 km long.
 - Cordova Lake has a water surface area of approximately 219 ha – roughly equivalent to 410 football fields.
 - The volume of water (at the summer regulated level) is approximately 950 hectare meters or 9,500,000 cubic metres which is enough water to fill 3,800 Olympic size swimming pools.
 - During the spring freshet, flows have exceeded 80 cubic meters per second moving through the dam and over the weir – if this water was collected in a 12 hour period, it would be more than enough water for the requirements of an entire day for Mexico City's 8.8 million people.
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