

Once constructed, flood peaks and duration of flooding along the lakes and the Fairford and Dauphin Rivers will be reduced. The Outlet Channels Project is not expected to have any recognizable effect on Lake Winnipeg or further downstream. Manitoba Infrastructure recognizes that over time, changes in climate (example: larger flood events) may occur in the watershed that could result in a reduced flood protection benefit. However, even with climate change factored in, flood outcomes will always be better with the outlet channels than if they had never been built.

Manitoba's Flood Protection System

The outlet channels are being designed to provide enhanced flood protection to communities (Indigenous and non-Indigenous), agricultural producers and recreational users along Lake Manitoba, Lake St. Martin, the Fairford River, and the Dauphin River, without noticeably affecting water levels on Lake Winnipeg.

The two outlet channels are parts of an integrated flood mitigation network that is meant to work together:

- The Lake Manitoba Outlet Channel will work together with the existing Fairford River Water Control Structure to help regulate water levels and mitigate flooding on Lake Manitoba.
- The Lake St. Martin Outlet Channel will help restore a more natural fluctuation in water level to Lake St. Martin and will also reduce flooding on Lake St. Martin by mitigating increased inflows from the Fairford River Water Control Structure and inflows from the Lake Manitoba Outlet Channel.
- In addition to providing flood protection around Lake Manitoba and Lake St. Martin, the two proposed channels will allow for more flexibility in operating the provincial water control system, including the Shellmouth Dam and Reservoir, the Red River Floodway and the Portage Diversion.

Operating procedures for existing infrastructure, such as the Portage Diversion and Fairford River Water Control Structure, will continue to follow current operating guidelines.

The Outlet Channels Project will be owned and operated by Manitoba Infrastructure. The channels will work together as part of the entire system to reduce flooding using the Operations Strategy outlined below.

Overall Operations Strategy

Non-Operation: Outlet Channels Closed

During a normal year, lake levels stay within the desired range of 810.5 feet to 812.5 feet on Lake Manitoba and 797 to 800 feet on Lake St. Martin. The outlet channels will remain non-operation (gates closed)

when the lakes are not forecasted to rise above these ranges.

Both channels will allow a small amount of base flow through the control structures to protect fish and fish habitat (Figures 2 and 3).

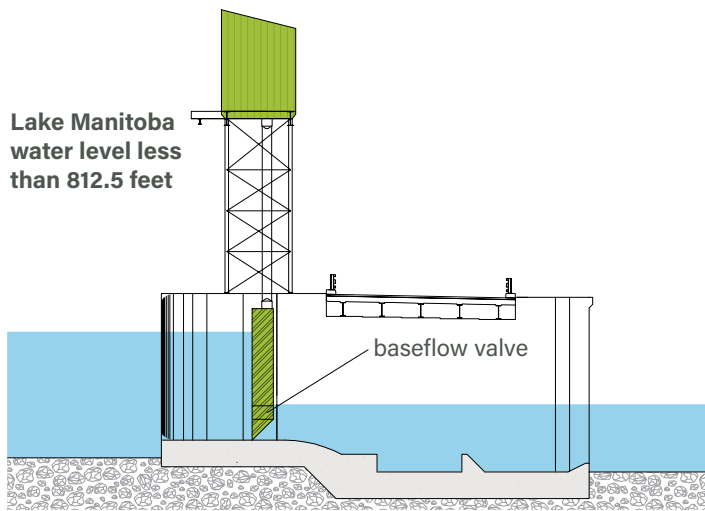


Figure 2: Lake Manitoba Outlet Channel Water Control Structure closed

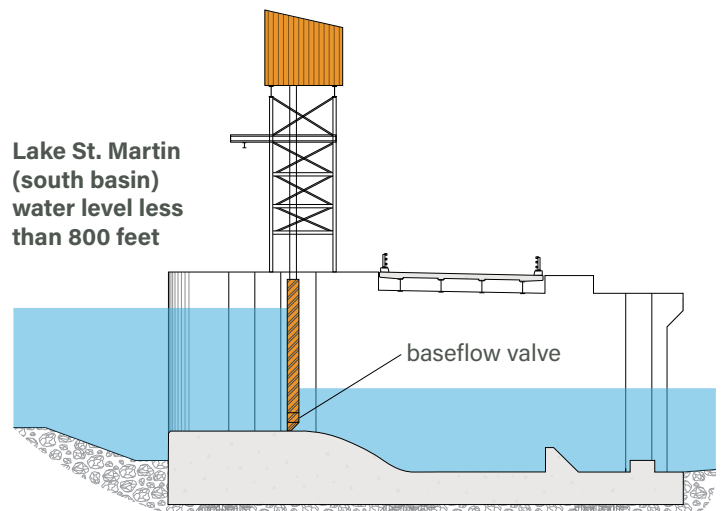


Figure 3: Lake St. Martin Outlet Channel Water Control Structure closed

Operations Initiated: Outlet Channels Opened

When Lake Manitoba reaches 812.5 feet, or prior to a forecasted major flood event, the Lake Manitoba Outlet Channel will be operated (gates opened).

The Lake St. Martin Outlet Channel will be operated (gates opened) when:

- Lake St. Martin water level in the south basin rises above 800 feet or when
- Lake Manitoba Outlet Channel is opened for initial operation, the south basin of Lake St. Martin is above 797 feet, and the south basin of Lake St. Martin is forecast to go above 800 feet without operation of the Lake St. Martin Outlet Channel

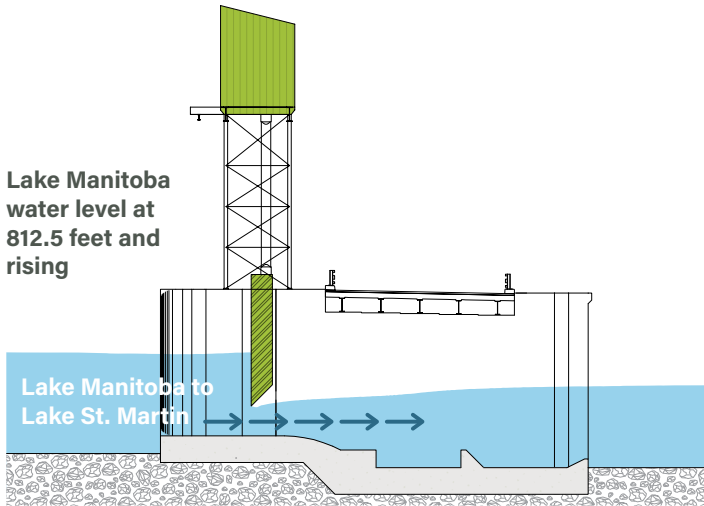


Figure 4: Lake Manitoba Outlet Channel Water Control Structure opens gradually to maximum capacity

Because the gates will be opened when lake levels are just beginning to exceed the desired range, the initial flows into the channel will be less than maximum flow capacity. The channel flow will continue to rise until the lake has reached its peak level for that flood event.

- The Lake St. Martin Outlet Channel may operate on its own without needing to operate the Lake Manitoba Outlet Channel if only Lake St. Martin water levels are forecast to go into flood stage

Both control structures will be opened gradually (Figures 4 and 5) to minimize sediment transport. Monitoring results will be used to inform future operation decisions. Gradual opening of the Lake St. Martin Outlet Channel will also help reduce the water level differences on the two basins in Lake St. Martin.

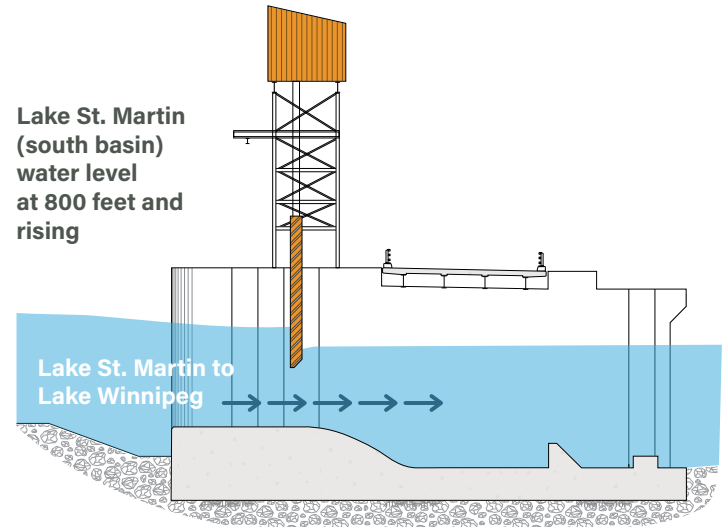


Figure 5: Lake St. Martin Outlet Channel Water Control Structure opens gradually to maximum capacity

If flood peaks are forecast to be slightly above the desired operating ranges for Lake Manitoba and Lake St. Martin for a short duration, Manitoba Infrastructure may decide not to operate the outlet channels in efforts to avoid short-term operations with limited benefit.

Operations: Outlet Channels Operate During a Flood Event

The gates of both outlet channels will remain fully open for the duration of the flood event (Figures 6 and 7).

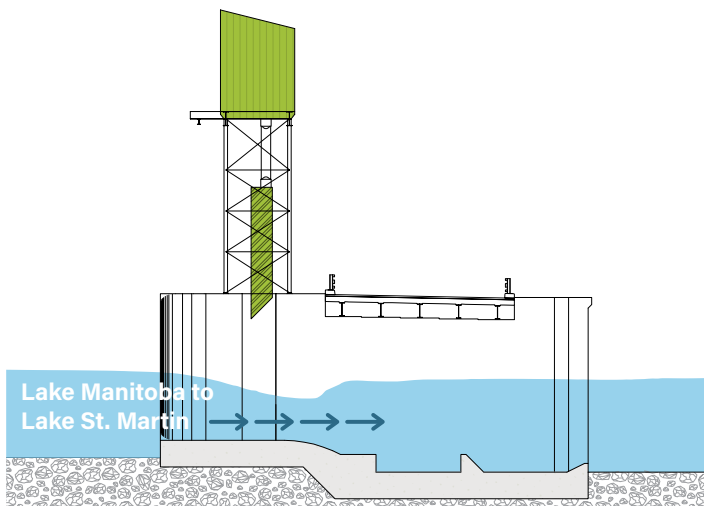


Figure 6: Lake Manitoba Outlet Channel Water Control Structure opened to maximum capacity for a flood event

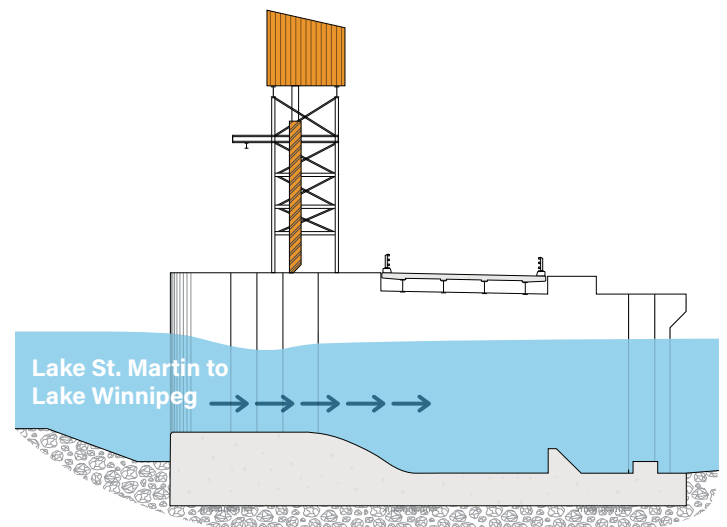


Figure 7: Lake St. Martin Outlet Channel Water Control Structure opened to maximum capacity for a flood event

Flows will be lower during an average flood event. As a historic example, an average flood event would be similar to 1986, 1997 and 2010. During an average flood event, water levels on Lake Manitoba would range from 812.8 and 813.0 feet and flows in the channel would range from 6,600 and 6,800 cfs. Water levels in the south basin of Lake St. Martin would range from 800.7 and 800.9 feet and flows in the channel would range from 10,500 and 11,400 cfs.

Flows will be higher during an extreme flood event. As a historic example, an extreme flood event would be similar to 2011 and 2014. During an extreme flood event, water levels on Lake Manitoba would be above 814.0 feet and flows in the channel would be 8,800 cfs or more. Water levels in the south basin of Lake St. Martin would be above 804.0 feet and flows in the channel would be 17,000 cfs or more.

Operations End: Outlet Channels Flow Reduced

Once lake levels have returned to their operating ranges, the flows through each channel will be reduced as lake inflow decreases until operation is no longer required.

For the Lake Manitoba Outlet Channel, flows will be reduced once Lake Manitoba reaches the middle of its operating range (811.5 feet) (Figure 8). The intention is that the combined outflow from Lake Manitoba through the Lake Manitoba Outlet Channel and the Fairford River Water Control Structure matches the inflow into Lake Manitoba. This is managed by gradually closing the Lake Manitoba Outlet Channel until operation of the channel is no longer required for the lake inflow

and outflows to match. Transitioning too rapidly to non-operation can cause lake levels to fluctuate in an undesirable manner.

The outflow from the Lake St. Martin Outlet Channel will be reduced when the lake level decreases below 800.0 feet (Figure 9) and the lake level will gradually be drawn down to 798.0 feet. Outflows from the channel will be further reduced with the intention that the combined outflow from Lake St. Martin through the Lake St. Martin Outlet Channel and the Dauphin River matches the inflow into Lake St. Martin. This is managed by gradually closing the Lake St. Martin Outlet Channel until operation of the channel is no longer required for the lake inflow and outflows to match.

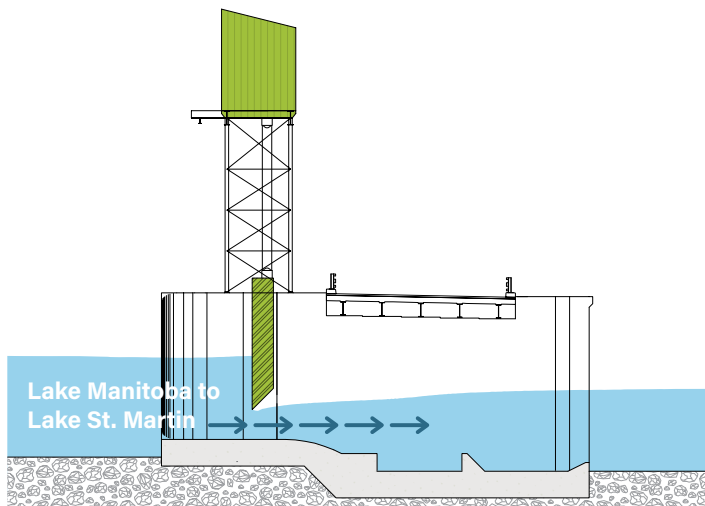


Figure 8: Lake Manitoba Outlet Channel Water Control Structure closes gradually until operations end

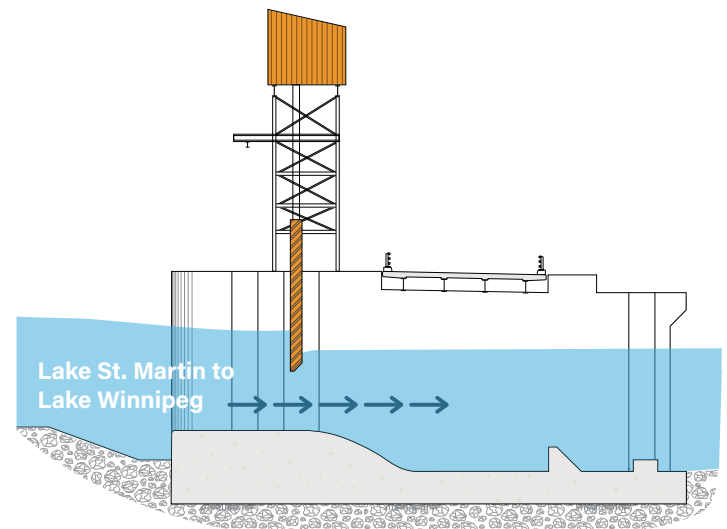


Figure 9: Lake St. Martin Outlet Channel Water Control Structure closes gradually until operations end

End of Operation: Outlet Channels Closed

Once the lakes are back to their desired ranges and the outlets channels are not required to maintain lake levels, both Lake Manitoba and Lake St. Martin Outlet Channels will be closed and remain non-operational until the next flood event, while still permitting a small amount of base flow through the channels to protect fish and fish habitat.

The Lake Manitoba Outlet Channel will be closed (Figure 10) when water levels on Lake Manitoba have receded to approximately the

middle of its operating range (811.5 feet), and the outflow from the Fairford River Water Control Structure is equal to or greater than the total inflow into Lake Manitoba.

The Lake St. Martin Outlet Channel will be closed (Figure 11) when water levels on Lake St. Martin have receded to approximately the middle of its operating range (798 feet), and the outflow from the Dauphin River is equal to or greater than the total inflow into Lake St. Martin.

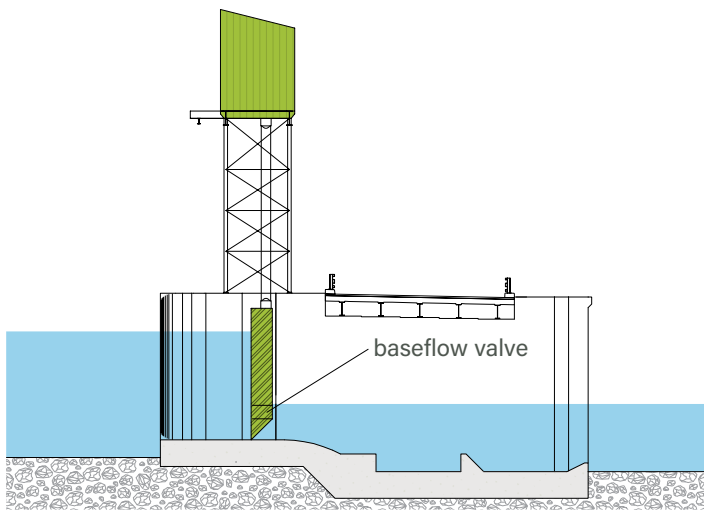


Figure 10: Lake Manitoba Outlet Channel Water Control Structure closed

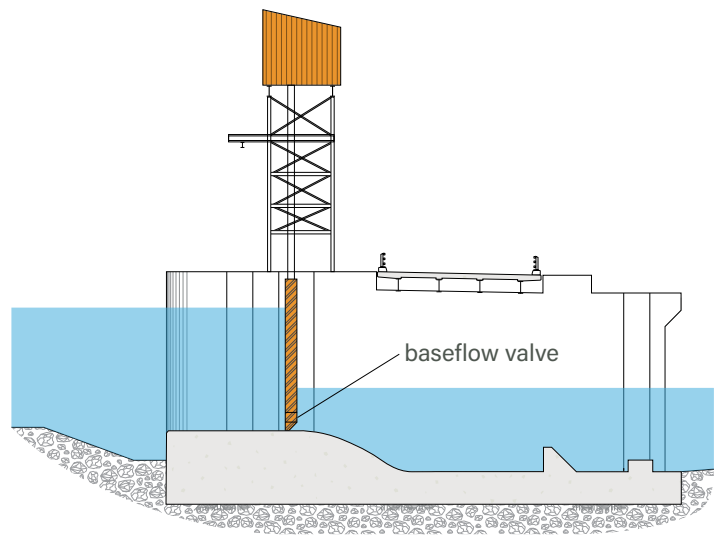


Figure 11: Lake St. Martin Channel Water Control Structure closed

These flow reductions aim to match the total lake inflow to outflow, while reducing the channel flows until the discharge through the natural water courses matches the lake inflow. Transitioning too rapidly to non-operation can cause lake levels to fluctuate in an undesirable manner.

Outlet Channel Operations During Winter and Ice Conditions

The initial opening of the outlet channels will not typically occur in the winter because of the potential risk of destabilizing the existing ice cover on the channels and on the lakes. If severe flooding is forecast for the following spring, winter operation may be considered.

The outlet channels will be constructed so they are able to operate throughout the winter. If operation is required to continue through the winter, the Lake Manitoba Outlet Channel will close during initial freeze-up to promote the formation of a stable ice cover and limit frazil ice formation. Following the formation of stable ice cover in the channel, the Lake Manitoba Outlet Channel will be fully opened and remain that way until channel operation is shut down or ice breakup in spring. This is to prevent the possibility of mobilized ice damaging the water control structure gates.

In winter, when operation of the Lake St. Martin Outlet Channel is required, the water control structure gates will be operated (gates opened), through the use of partial gate openings, to limit flows to promote the formation of a stable ice cover in the channel and reduce the volume of frazil ice produced.

Outlet Channel Base Flows During Drought Conditions

When not operating, the outlet channels will remain closed with the exception of a small continuous riparian flow. The Lake St. Martin Outlet Channel requires a year-round base flow of 50 cubic feet per second (cfs) to sustain pools below the drop structures that may harbour fish. This flow is adequate to ensure oxygenation of the water in the pools. During extreme drought conditions, this base flow will be cut off to maximize the water available to supply the Dauphin River. Because the Lake St. Martin Outlet Channel drop structures were not designed to provide upstream fish passage, it is unlikely that large numbers of large-bodied fish would be present in the pools at this time. However, a fish salvage would be conducted prior to shutting down the base flow in the channel.

Public and Indigenous Communications

Information related to the operations of the Outlet Channels Project will be shared with Indigenous communities, the Rural Municipality of Grahamdale, stakeholders and the public:

- Environmental Advisory Committee – prior to construction of the Outlet Channels Project, a Committee will be established to work with Indigenous communities and the Rural Municipality of Grahamdale to manage communications. This may include operation notifications.
- Indigenous Community Liaison – during a flood, a Liaison will be appointed to meet with Indigenous communities to disseminate flood information, including operations of the Outlet Channels Project.
- Website – once construction is complete, information about the operations of the Outlet Channels Project will be posted to the Hydrologic Forecast Centre webpage.
- Email Notification – once construction is complete, an email notification process will be established so Indigenous communities, stakeholders and the public can sign up to receive an email prior to operations of the Outlet Channels Project.
- News Releases – during a flood, news releases are issued prior to operations of flood mitigation infrastructure in Manitoba.

Operating Guidelines

A draft version of the operating guidelines for the Lake Manitoba and Lake St. Martin Outlet Channels is posted to the Project [website](#).

This fact sheet will be updated if changes to the operating guidelines occur, and as detailed design and Indigenous consultation continues.

We Want To Hear From You

Please share your comments on the potential effects of the project by participating in meetings, or by contacting your local project Community Coordinator, band office, government office, or association. You can also email outletchannels@gov.mb.ca or visit the Outlet Channels Project [website](#).