

**LAKE MANITOBA AND LAKE ST. MARTIN OUTLET CHANNELS PROJECT
RESPONSE TO IAAC TECHNICAL INFORMATION REQUESTS**

Question IAAC-11

Table of Contents

ABBREVIATIONS AND ACRONYMSII

QUESTION IAAC-11 1

LIST OF TABLES

Table IAAC-11-1 Summary of Pre-2011 Data Sources6

LIST OF APPENDICES

APPENDIX IAAC-11 DATA11.1

LAKE MANITOBA AND LAKE ST. MARTIN OUTLET CHANNELS PROJECT RESPONSE TO IAAC TECHNICAL INFORMATION REQUESTS

Question IAAC-11

Abbreviations and Acronyms

CCME	Canadian Council of Ministers of the Environment
CEAA	Canadian Environmental Assessment Agency
EIS	environmental impact statement
km	kilometre
LMRRC	Lake Manitoba Regulation Review Advisory Committee
MSD	Manitoba Sustainable Development
NSC	North South Consultants
RAA	regional assessment area
VC	valued component

LAKE MANITOBA AND LAKE ST. MARTIN OUTLET CHANNELS PROJECT RESPONSE TO IAAC TECHNICAL INFORMATION REQUESTS

Question IAAC-11

QUESTION IAAC-11

EIS Guideline Reference: 3.2.3 Spatial and temporal boundaries; 7.1 Project Setting and baseline conditions

EIS Reference: 6.4 Groundwater and surface water; 6.4.5.1, page 6.167

Context and Rationale

The EIS Guidelines require the proponent to describe spatial and temporal boundaries and to present information on baseline conditions that supports the assessment of the potential effects of the Project on VCs. For surface water, the EIS Guidelines require the proponent to present information necessary to understand baseline conditions prior to the 2011 floods in the Interlake Region.

In Section 6.4.5.1 of the EIS, the proponent provides a list of sources of data that was used to determine the RAA for surface water. On page 6.167, the proponent refers to “other published and unpublished literature relevant to the RAA and Project Activities”.

The EIS does not present baseline surface water data pre-2011 floods of the Interlake Region as required.

Clarity on the information used to inform the selection of RAA and baseline information on conditions is required to support a confident understanding of potential changes to surface water quality and related effects to the environment.

Information Requests

- a) Provide a specific reference list for published and unpublished sources of information relevant to the RAA. Provide any reference documents not yet submitted to the Agency and/or present a summary of relevant information.
- b) Describe pre-2011 flood baseline conditions, including a summary of baseline data and relevant references, for surface water quality, flow, and drainage.

Response IAAC-11

- a) The list of references used for Surface Water in the environmental impact statement (EIS) is provided below:

LITERATURE CITED

AAE Tech Services Inc. (AAE). 2016. Fisheries and Aquatic Habitat Baseline Assessment. Lake Manitoba Outlet Channel Route Options. Prepared for M. Forster Enterprises for Submission to Manitoba Infrastructure.

LAKE MANITOBA AND LAKE ST. MARTIN OUTLET CHANNELS PROJECT RESPONSE TO IAAC TECHNICAL INFORMATION REQUESTS

Question IAAC-11

Canadian Council of Ministers of the Environment (CCME). 1999 (Updated to 2018). Canadian Environmental Quality Guidelines. Canadian Council of Ministers of the Environment, Winnipeg.

Canadian Environmental Assessment Agency (CEAA). 2018. Guidelines for the Preparation of an Environmental Impact Statement pursuant to the Canadian Environmental Assessment Act, 2012. Lake Manitoba and Lake St. Martin Outlet Channels Project, Proposed by Manitoba Infrastructure. 45 pp.

Crowe, J. 1969. Lake St. Martin water quality tests in 1968. Unpublished report. Manitoba Department of Mines and Natural Resources Fisheries Branch. MS. Report. No. 68-14.

Derksen, A. 1988. An evaluation of the Fairford Dam fishway, May-June, 1987, with observations on fish movements and sport fishing in the Fairford River. Manitoba Department of Natural Resources, Fisheries Branch. MS Report No. 88-6.

Environment Canada and Manitoba Water Stewardship (EC and MWS). 2011. State of Lake Winnipeg, 1999 to 2007. Environment Canada Report.

Government of Canada. 2018. Historical Hydrometric Data Search. Available at: https://wateroffice.ec.gc.ca/search/historical_e.html. Accessed May 31, 2018.

Government of Canada 2018. Treasury Board of Canada Secretariat. Federal Contaminated Sites Inventory. Available at: <https://tbs-sct.gc.ca/fcsi-rscf/home-accueil-eng.aspx>. Accessed June 12, 2018.

Government of Manitoba. 2017. Sturgeon Bay Provincial Park Management Plan. Available at: http://www.gov.mb.ca/sd/parks/pdf/sturgeon_bay_mp.pdf. Accessed February 27, 2018.

Health Canada. 2017. Guidelines for Canadian Drinking Water Quality—Summary Table. Water and Air Quality Bureau, Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario.

KGS Group. 2013. Emergency Reduction of Lake Manitoba and Lake St. Martin Water Levels. Dauphin River Bathymetric Survey Investigation - Final. Prepared for Manitoba Infrastructure and Transportation. January 2013.

KGS Group. 2014. Emergency Reduction of Lake Manitoba and Lake St. Martin Water Levels. Analysis & Monitoring of Discharges & Ice Processes. Prepared for Manitoba Infrastructure and Transportation. File# 11-0300-018. March 2014.

KGS Group. 2016a. Assiniboine River and Lake Manitoba Basins - Flood Mitigation Study LMB & LSM Outlet Channels Conceptual Design - Stage 2. KGS Group Project 12-0300-011. Final Report. January 2016.

LAKE MANITOBA AND LAKE ST. MARTIN OUTLET CHANNELS PROJECT RESPONSE TO IAAC TECHNICAL INFORMATION REQUESTS

Question IAAC-11

KGS Group. 2016b. Lake St. Martin Emergency Relief Channel Monitoring and Development of Habitat Compensation: Physical Processes. DRAFT / MIT-009-13_002_REV B. KGS Group 13-0431-001. March 2016.

KGS Group. 2017a. Investigations and Preliminary Engineering for LMB Outlet Channels Options C and D Summary Report. KGS Group Project 16-0300-006. Final - Rev 0. May 2017.

KGS Group. 2017b. Preliminary Design for Reach 2 of the Lake St. Martin Outlet Channel. KGS Group Project 16-0300-005 Final - Rev 0. June 2017.

KGS Group. 2018. Investigations and Preliminary Engineering for Lake Manitoba Outlet Channels Options C and D Deliverable D3, Annual Monitoring Report to July 01, 2018. KGS Group Project 16-0300-006. Final - Rev 0. August 2018.

Lake Manitoba and Lake St. Martin Regulation Review Committee Report (LM&LSMRRRC). 2013. Finding the Right Balance: A Report to the Minister of Infrastructure and Transportation. Volume 1: Main Report. February 2013.

Lake Manitoba Regulation Review Advisory Committee (LMRRC). 2003. Regulation of Water Levels on Lake Manitoba and Along the Fairford River, Pineimuta Lake, Lake St. Martin and Dauphin River and Related Issues. A Report to the Manitoba Minister of Conservation Volume 2: Main Report. July 2003.

Lake Manitoba Water Stewardship Board (LMWSB). 2016. Lake Manitoba and its Watershed: Knowledge Gaps & Next Steps. Available at: <http://news-centre.uwinnipeg.ca/wp-content/uploads/2016/03/Lake-Manitoba-Workshop-Final-Report.pdf>. Accessed June 12, 2018.

Manitoba Conservation and Water Stewardship (MCWS). 2011. Manitoba Water Quality Standards, Objectives, and Guidelines. Manitoba Water Stewardship -Water Science and Management Branch. Manitoba Water Stewardship Report 2011-01. November 28, 2011.

Manitoba Infrastructure. 2018. Lake Manitoba and Lake St. Martin Outlet Channels Project Environmental Assessment Scoping Document. Prepared for Environmental Approvals Branch, Manitoba Sustainable Development. Submitted by Manitoba Infrastructure. 20 pp.

Manitoba Infrastructure. 2019a. Development of Operating Rules for Lake Manitoba and Lake St. Martin Outlet Channels with Recommended Revisions. Draft Technical Memorandum. Prepared by Manitoba Infrastructure Hydrologic Operations Section. Dated February 04, 2019.

Manitoba Infrastructure. 2019b. Lake Manitoba and Lake St. Martin Outlet Channels Impacts on Lake Manitoba and Lake St. Martin. Technical Memorandum. Prepared by Manitoba Infrastructure Hydrologic Operations Section. Dated June 14, 2019.

Manitoba Hydro. 2019. Impacts of Lake Manitoba and Lake St. Martin Outlet Channels Project on Downstream Water Levels. Technical Memorandum provided to Manitoba Infrastructure. Dated May 27, 2019.

LAKE MANITOBA AND LAKE ST. MARTIN OUTLET CHANNELS PROJECT RESPONSE TO IAAC TECHNICAL INFORMATION REQUESTS

Question IAAC-11

Manitoba Sustainable Development (MSD). 2017. Water Stewardship Division. Water Quality Management. Available at: http://gov.mb.ca/waterstewardship/water_quality/index.html. Accessed April 30, 2018.

MSD. 2018. Water Stewardship Division. Beach Monitoring Information. Available at: http://www.gov.mb.ca/sd/waterstewardship/quality/beach_table.html. Accessed September 22, 2018.

National Hydro Network (NHN). 2018. GeoBase Series Index of Available kml Files. Natural Resources Canada. Available at: <https://open.canada.ca/data/en/dataset/a4b190fe-e090-4e6d-881e-b87956c07977>. Accessed February 08, 2018.

North/South Consultants Inc. (NSC). 2012. Emergency Reduction of Lake Manitoba and Lake St. Martin Water Levels: Existing Aquatic Environment, Potential Impacts, and Work Plan. Prepared for Manitoba Infrastructure and Transportation. December 2012.

NSC. 2013a. Emergency Reduction of Lake Manitoba and Lake St. Martin Water Levels: Aquatic Environment Monitoring - Fall 2011. Prepared for Manitoba Infrastructure and Transportation. August 2013.

NSC. 2013b. Emergency Reduction of Lake Manitoba and Lake St. Martin Water Levels. Aquatic Environment Monitoring January - August 2012. Draft Report Prepared for Manitoba Infrastructure and Transportation. March 2013.

NSC and KGS Group. 2015a. Lake St. Martin Emergency Outlet Channel Assessment of Effects and Development of Offsetting. Physical Environment Supporting Volume (PESV). Prepared for Manitoba Infrastructure and Transportation. May 2015.

NSC and KGS Group. 2015b. Lake St. Martin Emergency Outlet Channel Assessment of Effects and Development of Offsetting Aquatic Habitat Supporting Volume (AHSV). Prepared for Manitoba Infrastructure and Transportation. May 2015.

NSC and KGS Group. 2016. Lake St. Martin Emergency Relief Channel Monitoring and Development of Habitat Compensation 2011-2015. Volume 3 – Water Quality. Draft Report Prepared for Manitoba Infrastructure and Transportation. November 2016.

Stone, D. 1965. Winter surveys of Lake St. Martin. Unpublished report. Manitoba Dep. Mines. Nat. Res. Fish. Br.

PERSONAL COMMUNICATIONS

Bernhardt, W. 2018. Senior Aquatic Biologist/Principal. North/South Consultants Inc.

LAKE MANITOBA AND LAKE ST. MARTIN OUTLET CHANNELS PROJECT RESPONSE TO IAAC TECHNICAL INFORMATION REQUESTS

Question IAAC-11

- b) The surface water assessment was conducted using data available from the sources that are provided in the EIS in Volume 2, Section 6.5.1. These sources included flow records and lake level records obtained from federal databases, and surface water quality data collected in the Project area by the Province of Manitoba and Manitoba Infrastructure. These data were not separated into “pre-2011 flood” and “post-2011 flood” as the 2011 flood is part of the period of record, in the same way as the 1950, 1997, 2014 and other high flow events are part of the period of record.

The surface water quality data provided by the Province of Manitoba covers a period of record from 1973 to 2018. These data were used in the format in which they were provided to establish existing conditions in the Project area, and were also not separated into “pre-2011” or “post-2011” or any other time periods. The Project area lies within the Interlake region of Manitoba where surface waters experience a range of flows and lake levels that are both controlled through the use of dams, spillways and other structures (e.g., Lake Manitoba) and uncontrolled with no water control structures (e.g., Waterhen River); therefore, the description of the existing conditions included this range of variability, using the referenced data. As such, the surface water quality assessment provided in the EIS was conducted using several years of data collected from a number of engineering studies, baseline investigations, provincial surface water quality sampling and monitoring programs, and historical reports and databases, in keeping with applicable environmental assessment practice and guidelines.

Appendix 6D in the EIS provides a general description of the existing conditions for surface water hydrology and surface water quality for the watercourses and waterbodies that may be affected in the RAA, including information on hydraulic and sediment transport studies and ice processes. Volume 2, Table 6.4-9 in the EIS provides an overview of existing conditions for surface water quality in the RAA waterways. Surface water quality data provided by Manitoba Sustainable Development (MSD, now Manitoba Conservation and Climate) to Manitoba Infrastructure have been incorporated in the summary. A list of the data sources used in the EIS that describe pre-2011 conditions for flow, water quality and drainage are provided in Table IAAC-11-1 below. However, restricting the description of existing/baseline conditions in the Project area to only “pre-2011” data sources would exclude a number of valuable data sources for the area from 2011 to 2018, and would not provide an accurate overview of existing conditions in the Project area.

LAKE MANITOBA AND LAKE ST. MARTIN OUTLET CHANNELS PROJECT RESPONSE TO IAAC TECHNICAL INFORMATION REQUESTS

Question IAAC-11

Table IAAC-11-1 Summary of Pre-2011 Data Sources

Pre-2011 Data Sources	Data Source Location
Pre-2011 data are provided in the monthly mean discharge data for the Fairford River as measured at the Environment Canada station near Fairford (Station 05LM001) for the period of record from 1912 to 2017	https://wateroffice.ec.gc.ca/report/historical_e.html?stn=05LM001&dataType=Monthly&parameterType=Level&year=2011&mode=Table&page=historical
Pre-2011 data are provided in the monthly mean discharge data for the Dauphin River near Dauphin River (Station 05LM006) for the period of record from 1977 to 2018	https://wateroffice.ec.gc.ca/report/historical_e.html?stn=05LM006&dataType=Monthly&parameterType=Flow&year=2018&mode=Table&page=historical
Pre-2011 data are provided in the monthly water level data for Lake Manitoba at Steep Rock (Station 05LK002) for the period of record from 1923 to 2018	https://wateroffice.ec.gc.ca/report/historical_e.html?stn=05LK002&dataType=Monthly&parameterType=Level&year=2018&mode=Table
Pre-2011 data are provided in the monthly water level data for Lake St. Martin near Hilbre (Station 05LM005) for the period of record from 1966 to 2018	https://wateroffice.ec.gc.ca/report/historical_e.html?stn=05LM005&dataType=Monthly&parameterType=Level&year=2018&mode=Table
Pre-2011 data are provided in the monthly water level data for Lake Winnipeg at Matheson Island Landing (Station 05SD002) for the period of record from 1959 to 2018	https://wateroffice.ec.gc.ca/report/historical_e.html?stn=05SD002&dataType=Monthly&parameterType=Level&year=2018&mode=Table&page=historical
Pre-2011 surface water quality data for Lake Manitoba are provided in the surface water chemistry data collected from 1973 to 2017 by MSD	See Appendix IAAC-11
Pre-2011 pesticide data for Lake Manitoba are provided in the surface water data collected from 1987 to 2013 by MSD	See Appendix IAAC-11

**LAKE MANITOBA AND LAKE ST. MARTIN OUTLET CHANNELS PROJECT
RESPONSE TO IAAC TECHNICAL INFORMATION REQUESTS**

Question IAAC-11

Appendix IAAC-11 DATA

Manitoba Sustainable Development Pre-2011 Surface Water Quality Data for Lake Manitoba, 1973-2017 provided via USB

Manitoba Sustainable Development Pre-2011 Pesticide Data for Lake Manitoba, 1987 to 2013 provided via USB