Request for Proposal

For

Third Depot Dam – Hydrologic Analysis

In the Quinte Conservation Watershed

Requested by Quinte Conservation Authority
Friday, October 3, 2025

RFP Contact:
Mike Smith
msmith@quinteconservation.ca

Closing:
Wednesday, October 29, 2025 @ 12pm

Quinte Conservation
RR#2
2061 Old Highway 2
Belleville, ON
K8N 4Z2

Introduction

Quinte Conservation (QC) comprises the Moira River, Napanee Region and Prince Edward Region watersheds and owns and operates approximately 40 dams within the jurisdiction. One such dam is the Third Depot Lake Dam. Previous investigations have found that there is deterioration of the internal sheet pile, seepage through the structure, and insufficient freeboard for the inflow design flood.

The Quinte Conservation Authority (QCA) invites proposals from qualified firms for **Consulting Services to complete a Hydrologic Analysis as outlined in the scope below. The purpose of the analysis is to assess the high and low water impacts of the dam configuration options.**

Background

The Third Depot Lake Dam is located at the outlet of Third Depot Lake, in Lot 7, Concession 8, Township of Hinchinbrooke, Frontenac County, approximately 16 km northwest of Verona. Construction of the dam at the Third Depot Lake was completed to increase the upstream storage and the low flow augmentation in the Napanee River.

In the initial stage of construction (1970-71), the dam was constructed up to an elevation of 3 m below its current crest level. In the final stage (1974-75), the dam was raised to its current crest level, an overflow weir and a saddle dam were also completed.

The dam, owned and operated by Quinte Conservation (QC), is a rock-fill dam with central sheet pile cutoff. The dam has an integral bottom outlet at the right abutment looking downstream. About 88 m in length, the dam is approximately 15 m high with a crest width is approximately 8m.

The construction sequence comprised of constructing a rockfill cofferdam on the upstream side of the longitudinal axis, and grouting the bedrock along approximately 35 and 15 m lengths of the right and left abutments of the dam along its longitudinal axis. The 9.5 mm (3/8 inch) thick Larsen 31 sheet piles along the longitudinal axis were driven through the riverbed to refusal on the bedrock with the top of the sheet pile cut-off wall at elevation ±165.2 m CGVD28 (543.0 feet). Rockfill was then placed on either side of sheet pile wall to elevation 165.36 m (542.5 feet) during the initial construction period of 1970 / 1971. The sheet pile interlocks were made watertight by application of Flintseal No. 570-05 rubber asphalt caulking. A coating of Flintguard No. 410-11 was applied to the sheet pile wall. The rockfill dam was completed to its final elevation of 168.56 m (553.0 feet) during 1974 / 1975. During the final stage, an overflow weir and a saddle dam were also completed. In 2016 the main dam was widened to it's current width to prepare for a crest raising as suggested in the 2004 Dam Safety Review, a 2006 Seismicity and Stability Report, and a 2013 Hazard Classification and IDF Mitigation Report. In the same year the saddle dam was widened and heightened to its current state.

The main dam in its current state is known to have deteriorated sheet piles, up to 80% sheet pile material loss with leaking seams, seepage around the outlet structure, severely pitted concrete and an insufficient crest height.

Quinte Conservation is currently investigating different options to correct these issues through an Environmental Assessment process. The remedial measures being investigated include:

Option 1: Do Nothing

This scenario will serve as a baseline for the other scenarios.

Option 2: Dam Decommissioning

Option 2a - Complete Removal

The main dam will be completely removed. A natural grade will be made between Third Depot Lake and the downstream creek. The overflow weir and the saddle dam will also be removed.

Option 2b – Dam retirement

The main dam, saddle dam and overflow weir will remain in the as-is condition. The gate will remain fully open, and the dam will not be operated.

Option 3: Replace with Concrete Weir

The main dam will be replaced with a concrete weir of consistent elevation. The top elevation for the weir will be 163.36m CGVD28. The concrete weir will not be operable. The saddle dam and overflow weir will remain in place.

Option 4: Lower the Operating Plan

The operating plan will be lowered to minimize the forces applied to the deteriorating sheet pile and reduce seepage rates. The upper limit is set to 164.50 (CGVD28). The lower limit is 160.5 (CGVD28).

Option 5: Cement Bentonite Wall

A cement bentonite wall will be installed through the main dam downstream of the current deteriorating sheet pile. The main dam will be raised per the Third Depot Lake Dam Crest Raising Investigation (Hatch, 2022) to avoid overtopping and wave action over during the IDF.

Option 6: Secant Pile Wall

A Secant pile wall will be installed through the main dam downstream of the current deteriorating sheet pile. The main dam will be raised per the Third Depot Lake Dam Crest Raising Investigation (Hatch, 2022) to avoid overtopping and wave action over during the IDF.

The 6 options result in 5-6 hydraulic outlet configurations to model from a stage-storage-discharge perspective; the corresponding hydraulic configurations are provided in Table 1.

Table 1 - EA options and their corresponding hydraulic configurations

Option Number	Hydraulic Configuration
Option 1 – Do Nothing	A - Existing dam, outlet structure, spillway, and operations plan.
Option 2a – Complete Removal	B – Natural ground topography.
Option 2b – Dam Retirement	C - Existing dam, outlet structure, spillway, with valve fully open and not operated.
Option 3 – Replace with Concrete Weir	D – Main dam replaced with weir at an elevation of 163.36m (CGVD28). Spillway and saddle dam remain in place.
Option 4 – Lower the Operating Plan	E - Existing dam, outlet structure, and spillway. Operational range adjusted to 160.5 -164.50 CGVD28.
Option 5 – Cement Bentonite Wall	A' - Existing dam, outlet structure, spillway, and operations plan. Existing dam and saddle dam raised to extend the top end of the storage curve.
Option 6 – Secant Pile Wall	A' - Existing dam, outlet structure, spillway, and operations plan. Existing dam and saddle dam raised to extend the top end of the storage curve.

Scope of Work.

Consultants are responsible to scope the Project to determine appropriate additional investigations, additional analysis and documentation to ensure an appropriate structure geometry to facilitate a subsequent design and approval at the end of the study.

Notes:

Geospatial Reference Systems	Projection system: UTM Zone 18
	Geometric Reference System: NAD83 (CSRS)
Topographic Analysis	The most relevant and recent topographic information, including but not limited to Digital Elevation Models (DEM) and Digital Terrain Models (DTM), should be applied.
LIDAR Specifications	DTM Resolution: 0.5m LiDAR Density: ≥8 pls/m² Non-Vegetated Vertical Accuracy: <5 cm RMSE and ≤9.8 cm @ 95% confidence level Vegetation Vertical Accuracy: ≤15.1 cm (95th percentile) The **Eastern Ontario 2021-22 LiDAR** validation JUST slightly exceeds the "High" flood risk category as defined in the Federal Airborne LiDAR Data Acquisition Guideline Appendix 2 – Flood Mapping.

The specifications of the work are below.

Scope	Requirement
EA Dam Configurations	For each EA Dam configuration option, provide general information on the geometry, elevations, location, construction, and operating range that will be used throughout the project.
Bathymetric Analysis	Quinte Conservation has completed bathymetric analysis as provided in the available data section. Additional bathymetric data collection is not part of the scope, should additional information be anticipated, this should be clearly stated and justified in the proposal. If applicable, professional surveyors and technicians will be employed for the collection of bathymetric data. If applicable a report detailing methods and results of any bathymetric surveys will be provided along with the processed data. All elevations shall be referenced to CGVD 2013. Information shall be provided on how to convert the data to CGVD28 since local surveyors continue to use the old datum.
Field Investigations	Field investigations are not part of the scope, should field investigations be recommended this should be stated, justified, and detailed within the proposal. If applicable a survey report detailing methods, and results of any topographic surveys will be provided, along with the processed data, and crossing data sheets. All elevations shall be referenced to CGVD 2013. Information shall be provided on how to convert the data to CGVD28 since local surveyors continue to use the old datum.
Hydrologic	Industry standard practices and hydrologic modelling software should be used to conduct required analysis. Hydrologic models shall be constructed from scratch to ensure any watershed changes have been incorporated. Old model information is available for reference only. Characterization of the watershed (including a description of existing land use, soils and topography). The selection, rationalization, and utilization of appropriate design storms. Snowmelt (with or without rain) and a rainfall driven event shall both be considered. The selection, rationalization, and utilization of an appropriate hydrologic model, sensitivity analysis for model parameters, and verification of hydrologic model using regional flood frequency analysis. Calibration and validation of the hydrologic model shall be completed and included. The following annual exceedance probabilities (“AEP”s) are required for modelling purposes: 50%, 10%, 1%, 0.1%, IDF (1/3 of the way between the 0.1% AEP and PMF) for natural conditions. The following scenarios should be run for configurations A, B, C, D, E, and A’. The modeling is to use regulated flows from the Depot Lake Dams.

	Provide a preliminary dam classification and associated IDF based on the suspected incremental losses anticipated for each dam configuration. Continuous modelling, and rationalization to model ongoing low flow augmentation capacity for configurations A, B, C, D, E, and A'. The low flow augmentation should be compared to the lowest summer month average flow, 7Q20 low flows, the ecological flow requirements for Depot Creek and the Napanee River, and the flowrates and restrictions for existing Permits to Take Water from Depot Creek and the Napanee River. At a minimum, flows to be provided for all AEP's, and low flow modelling at the outlet of Third Depot Lake, the outlet of Second Depot Lake, the inlet and outlet of First Depot Lake, Depot Creek at Bellrock Road, Napanee River at Petworth Road, Napanee River at Colebrook Road, Napanee River in Yarker at County Road 6, Napanee River in Camden East at County Road 4, Napanee River in Newburgh at Main Street, Napanee River at Highway 401, Napanee River at Springside Dam. The results shall be provided in a table and map format. Further, the methodology and results shall be detailed in the report.
Maps	Map showing the flow results for each AEP at each location of interest. All drawings submitted under this contract are to be prepared in AutoCAD. The owner will approve the following standards and conventions for drawing size (24"x36"); surround; layering; line weights; line colour; legend; semi-transparent, cloud-free aerial imagery, etc. Drawings shall include: • Title page with drawing number map, • Title block indicating the modelled events, • study limits, • key map, • a scale bar, • scale, • CGVD 2013 datum, • date of production, • benchmarks, • north arrow, • contours (5 metre major contours, 1 metre minor contours) • direction of flow arrow, • lot, concession, and ward • drawing match lines (indicating the adjoining drawing page numbers upstream and downstream), • aerial imagery and elevation data information, • cross-sections (lines delineating the cross-section, cross-section number, and associated return period elevations), • table of cross-sections and return period elevations, • table indicating flow change stations,

	• inline structures denoted on the maps, and bridge and culvert tables (denoting crossing name/number, bridge type/culvert material and shape, invert elevation, the lowest chord elevation/obvert, and the location of measurement). All maps, drawings and reports are to be provided in PDF format. All map/drawing project files can be submitted in .MXD, .APRX, or .DWG file format. QGIS is not a preferred project file format.
Final Report & Deliverables	Report should include the methodology and study results. A qualitative and quantitative assessment of each dam configuration's ability to provide flood management, low flow augmentation, and assessment of the potential impact of dam break. Determination and written documentation of which EA dam configurations provide a hydrologic net benefit, net neutral, or net negative outcome for high water, low water, and dam break scenarios. Provide a list of the other potential impacts that may be caused by the dam configuration and operating regime. Documentation of any unknowns and uncertainties with recommendations as needed.
	The provision of digital mapping, and one 24" x 36" paper copy map package of each of the scenarios.
	Digital, and One (1) hardcopy of the final report.
	Final engineering reports and maps signed and stamped by Project Engineer.

Available Data

Quinte Conservation will make available all the documentation pertinent to the dams. To this end we have completed a preliminary review of the documents and find the reports listed below may be of some assistance. The consultant is directed to include an allocation of one day for an engineer to review our files to determine if any further engineering reports may be available.

Known Reports or Data

- 1970 – Foundation Investigation – Kilborn Engineering Ltd
- 1970 – Construction As-Builts – Kilborn Engineering Ltd
- 1971 – Construction As-Builts - Kilborn Engineering Ltd
- 1974 – Construction Drawings - Kilborn Engineering Ltd
- 1991 – Seepage Analysis - Kilborn Engineering Ltd
- 1994 – Operations Manual – Napanee Region Conservation Authority
- 2004 – Dam Safety Review – International Acres
- 2004 – AutoCAD Dwgs – Quinte Conservation Authority (Created in 2019)
- 2006 – Seismicity and Stability – Hatch Acres
- 2009 – Dam Safety Review Update - Hatch
- 2013 – Dam Stability Under Max Flood Level - Hatch
- 2013 – Hazard Classification and IDF Mitigation - Hatch
- 2016 - Third Depot Lake Dam raising report and drawings - Hatch
- 2020 – Seepage Study - GHD

- 2022 – Test Pit Investigation - GHD
- 2022 – DRAFT Crest Raising Design – Hatch
- 2023 – DRAFT Alternative Development Report - D.M. Wills Associates Ltd.
- Photos - Historical, 1999, 2001, 2004, 2008, 2010, 2016 to 2024
- 1989, 1991, 2013, 2019, 2021 to 2024 – Inspection Reports - Various Authors
- 2025 – Bathymetry – Quinte Conservation
- 2025 – Low flow augmentation investigation – Quinte Conservation
- 1974 – present Hydrometric Data for Napanee River at Camden East (02HM007) – Water Survey of Canada
- 1957 – present Hydrometric Data for Depot Creek at Bellrock (02HM002) – Water Survey of Canada
- 1915 – 1974 Hydrometric Data for Napanee River near Napanee (02HM004) – Water Survey of Canada
- Manual lake/headpond level readings for Third Depot Lake, Second Depot Lake, and Bellrock Dam (2005 – present), continuous lake level readings for Third Depot Lake and Second Depot Lake (2021 – present), and dam operations logs for Third Depot Lake, Second Depot Lake, Bellrock Dam, and Varty Lake Dam (2005 – present) – Quinte Conservation
- Meteorologic and IDF data – ECCC
- Permit to take water database – MECP
- Well records - MECP

Format, size, and quantities

Reports, charts, tables, and other documents are to be provided in Microsoft Office format and in Adobe Acrobat portable document format (.pdf). Specifically, a PDF version of the complete report and a PDF version of the Executive Summary are required. Spreadsheets shall be provided in Microsoft Excel format.

All photographs documenting any field investigations shall be taken using a high-resolution digital camera. All photographs are to be provided both in an original unedited form and annotated with the photo description. The reports shall contain colour copies of the annotated photographs. Copies shall be printed with no more than two (2) photographs per page.

All drawings submitted under this contract are to be prepared in AutoCAD and comply with owner approved standards and conventions for drawing size, surround, layering, line weights, etc. The final drawings are to be provided in hard copy bound with the report and electronically in AutoCAD and Adobe Acrobat portable document format (pdf).

The data and electronic version of the report are to be organized into appropriate directories and subdirectories, and a "README" file(s) included to assist the reader in locating and using the data. A copy of this CD-ROM or USB mass storage device is appended to each bound copy of the report.

Dam Drawings

Drawings to be provided in AutoCAD and PDF format.

Meetings

Meetings shall be held with QC at key points throughout the study. More specifically, meetings will be required at the following junctures.

1. A start-up meeting will be required to confirm the study methodology, schedule, etc.
2. A Meeting will be required to discuss the draft hydrologic analysis
3. A meeting will be required to discuss the draft final report

The consultant will be responsible for chairing the meetings, recording minutes of all meetings, and distributing meeting documents to QC in a timely fashion.

All meetings will be at a mutually agreed location (i.e. at the conservation authority office, dam site or at the consultant's office). The consultant will provide adequate meeting facilities and equipment if it is decided that the meeting is to be held at the offices of the consultant.

Schedule and Reporting

The consultant shall submit with their proposal a schedule demonstrating their ability to complete the project in a timely fashion according to the below schedule:

RFP Posted	Friday, October 3, 2025
Questions Deadline	Tuesday, October 21, 2025 @ 10am
Addendum Posted	Thursday, October 23, 2025
Tender Closes	Wednesday, October 29, 2025 @ 12pm
Contract Award	Wednesday, Nov 19, 2025
Completion of Work	Tuesday, March 31, 2026

The schedule shall account for 3 weeks for Quinte Conservation to review any required deliverable.

If the consultant feels the schedule as noted above cannot be reasonably met, an alternative schedule shall be submitted showing a new completion date.

Proposal Requirements

The proposal shall meet the following requirements:

- not exceed fifteen (15) pages in length, excluding experience records and references
- detail the proposed approach, and methodology.
- provide the primary contact person and phone number and people involved in the preparation of the proposal.
- a list of key staff, their related experience in Ontario and role on this project
- gantt chart schedule showing activities, meetings, deliverable submission, etc.
- corporate experience on similar projects in Ontario and elsewhere

- sub-consultants to be used, their role, corporate experience in Ontario, key personnel, per diem rates
- Three (3) references and their contact information for similar projects
- estimated project cost for each component, the time commitment and hourly rate for each staff assigned to the project, any disbursement, the total time allocated to each task, the total time allocated to each staff, and the total cost excluding HST.

Any questions regarding the Request for Proposal should be emailed to msmith@quinteconservation.ca by the above noted date and time. An addendum will be issued for all questions and their responses will be available on the Quinte Conservation website no later than the above time and date.

Quinte Conservation will not be liable nor reimburse any bidder for any costs incurred in the preparation of the proposal.

Those submitting a proposal must satisfy themselves with the conditions and requirements. There will be no consideration of any claim that there was a misunderstanding with respect to conditions and terms of reference.

Upon completion of evaluations, Quinte Conservation may select a consultant with whom it wishes to undertake negotiations regarding the work outlined in the Request for Proposal. Negotiations may take the form of adding, deleting, or modifying certain requirements based on that consultant's response to the Request for Proposal and adjusting pricing accordingly if required.

Proposal Closing

A copy of the proposal shall be submitted no later than the above noted date and time.

A digital copy of the proposals shall be delivered to Mike Smith at Msmith@quinteconservation.ca .

Evaluation Criteria

QC will select the successful consultant based on an assessment of the submitted proposals based on a consistent evaluation criterion. The proposal with the lowest bid may not necessarily be accepted.

Criterion	**Weighting**
Understanding and meeting project requirements	40%
Project team experience related to project, including reference checks	30%
Project cost	30%

General Terms and Conditions

Acceptance of Proposals

This RFP is not an offer to enter into any contract or Project Agreement of any kind whatsoever. This RFP is not intended to create a binding contract. This RFP process shall be governed by and construed in accordance with the laws of the Province of Ontario and the federal laws of Canada applicable therein.

This RFP document or addenda to the RFP document contains the entire requirements related to the RFP. Other information and/or documentation provided to the Proponent or obtained by the Proponent prior to the release of the RFP shall not have any force or effect.

Rejection of Proposals

The selection committee reserves the right to reject any or all proposals for failure to fully satisfy the specifications and requirements of the RFP.

Any award resulting from this RFP is subject to the successful completion of a contract between the consultant and QC.

Right to Amend

QC reserves the right to amend or supplement the RFP, giving equal opportunities to all consultants who have bid, by way of an issued addendum.

Acceptance or Non-Acceptance of Proposal

Neither the lowest priced nor any proposal shall necessarily be accepted, and the decision of the selection committee is final. If the selection committee decides to accept a proposal, then this acceptance and the making of an award will be in writing. Unless and until such written notification has been given, there is no successful consultant and no award has been made.

Associated Costs

There will be no payment to consultants for the work related to and material supplied in the preparation of responses to this RFP.

Confidentiality & Ownership of Documents

The consultant is advised that confidentiality issues may arise with respect to this project and will need to be cognizant of these issues.

The IP “Intellectual Property” contained in this RFP is confidential and proprietary. This RFP and any supplemental IP made available by QC to facilitate the proposal scoping is provided for the exclusive use of the Respondent (potential “Contractor”) and copies shall not be made available to any other party, without written consent from QC. No other distribution of submissions or proposals is to be made by the Respondent. All proposals and supporting documentation shall become the property of QC and will not be returned.

It is acknowledged and agreed by the Respondent that QC owns and retains all right, title, and interest in and to all IP rights therein, including, without limitation, all copyright, patent, trade-mark and trade secret rights. This RFP does not constitute a sale of the IP provided during the course of the RFP process. The Respondent acquires no right in or to the IP except the right to use the IP in accordance with the RFP guidelines.

IP arising as a result of a successful RFP and a subsequent contract, including reports and drawings, will be the property of QC.

The Respondent shall indemnify and save QC and Licensor partners harmless from and against any and all liabilities, damages, costs, or expenses awarded against, or incurred, or suffered by the Consultant, arising out of any action or proceeding commenced or maintained by any customer, or any other person, firm, corporation, or other entity, in respect of the use of the IP by the Respondent, or a third party, to whom the Respondent has been permitted by QC to disclose the IP, pursuant to the provisions hereof.

Information Ownership

"All information collected and produced in report or digital form by the respondent shall become the property of Quinte Conservation and subject to the provisions of the Municipal Freedom of Information and Protection of Privacy Act. All public reports approved by the Full Authority Board will become public information."

Insurance

The successful bidder shall carry and maintain insurance written by an insurance company licensed to do business in Ontario for the term of the contract and must provide for the following:

1. Workplace Safety & Insurance Board (WSIB) clearance certificate
2. General Liability Insurance – minimum $2 million coverage with Quinte Conservation Authority as an additional insured
3. Automobile Liability – minimum $2 million coverage
4. Professional Liability - minimum $2 million coverage

All policies and certificates shall provide for 30 days notification to Quinte Conservation Authority in the event of cancellation, reduction in limits or changes in coverage.

Previous Communications

This RFP document and attachments and any addenda contain the entire requirements relating to this RFP. Other information and/or documentation provided to a prospective consultant or obtained by a prospective consultant prior to the release of this RFP or any other time shall not have any force or effect.

Conflict of Interest

Each Proponent representative, on behalf of the team members must declare and continue to be under an obligation to declare all Conflicts of Interests or any situation that may be reasonably perceived as a Conflict of Interest that exists now or may exist in the future.

In connection with its RFP Submission, each Proponent shall:

i avoid any Conflict of Interest in relation to the Project;

ii disclose to QC without delay any actual or potential Conflict of Interest that arises during the RFP process; and

iii comply with any requirements prescribed by QC to resolve a Conflict of Interest.

In addition to all contractual or other rights or rights available at law or in equity or legislation, QC may immediately exclude a Proponent from further consideration or remove the Proponent from the RFP process if:

i the Proponent fails to disclose an actual or potential Conflict of Interest;

ii the Proponent, or any Team member fails to comply with any requirements prescribed by QC to resolve a Conflict of Interest; or

iii the Proponent's Conflict of Interest issue cannot be resolved.

Upon receipt of the Proponent's submission, QC shall, in its discretion, decide as to whether they consider there to be a real, perceived or potential Conflict of Interest and whether such a Conflict of Interest can be mitigated. The proponent shall be notified of QC's decision. Attachment #2 – Declaration of Conflict of Interest must be signed and included with the Proposal.

Cancellation of RFP

Due to unanticipated expenditure constraints, this RFP may be cancelled at any time without liability by QC to prospective consultants or to any other entity.

Authorization

To be considered a valid response, a consultant's submission must be completed and signed by an authorized company official.

Irrevocable

Bid submissions will be irrevocable for a period of sixty days from the closing date.

Accessibility

The supplier covenants and agrees to ensure that the Deliverables provided hereunder are consistent with the Ontario Human Rights Code ("OHRC"), the Ontarians Disabilities Act, 2001 ("ODA") and the Accessibility for Ontarians with Disabilities Act, 2005 ("AODA") and their respective regulations in order to achieve accessibility for Ontarians with disabilities. Without limiting the generality of the foregoing, the Supplier covenants and agrees to comply with QC's and the Township's accessibility standards, policies, practices and procedures, as same may be in effect during the term of the Agreement and apply to the Deliverables to be provided hereunder by the Supplier.

Appendix A: Photos of Dam

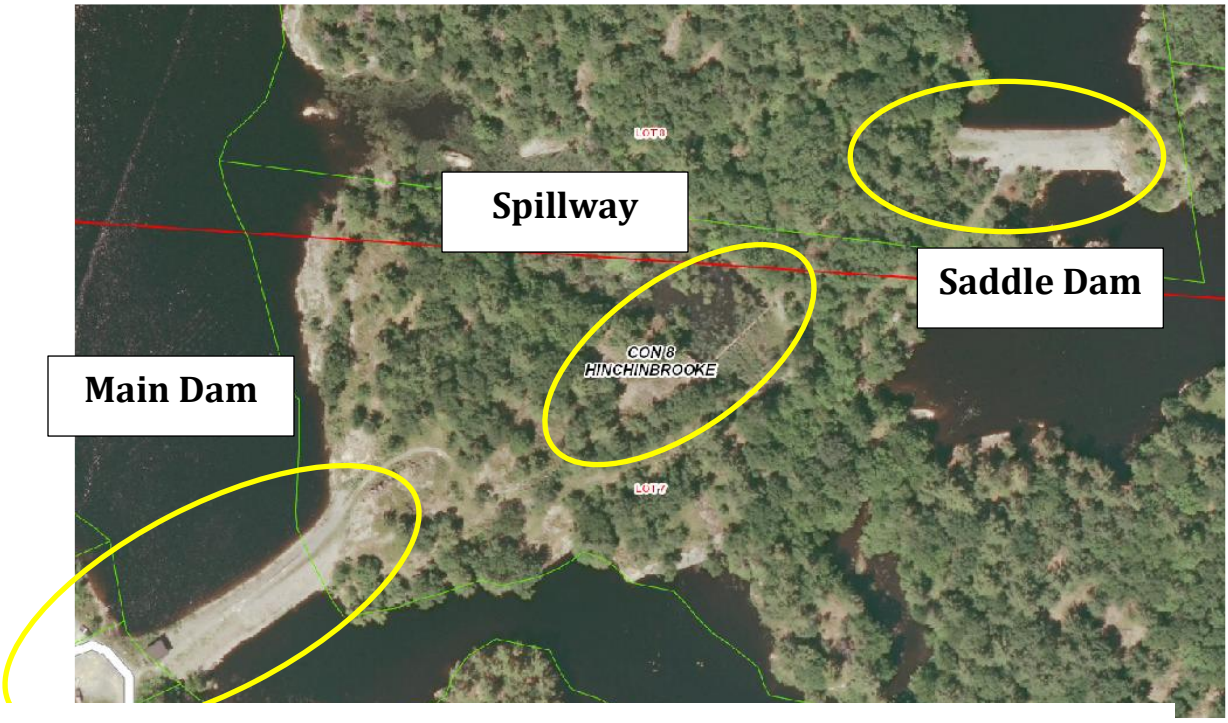

Figure 1: Configuration of Third Depot Lake Dam

Appendix B: Location of Dam

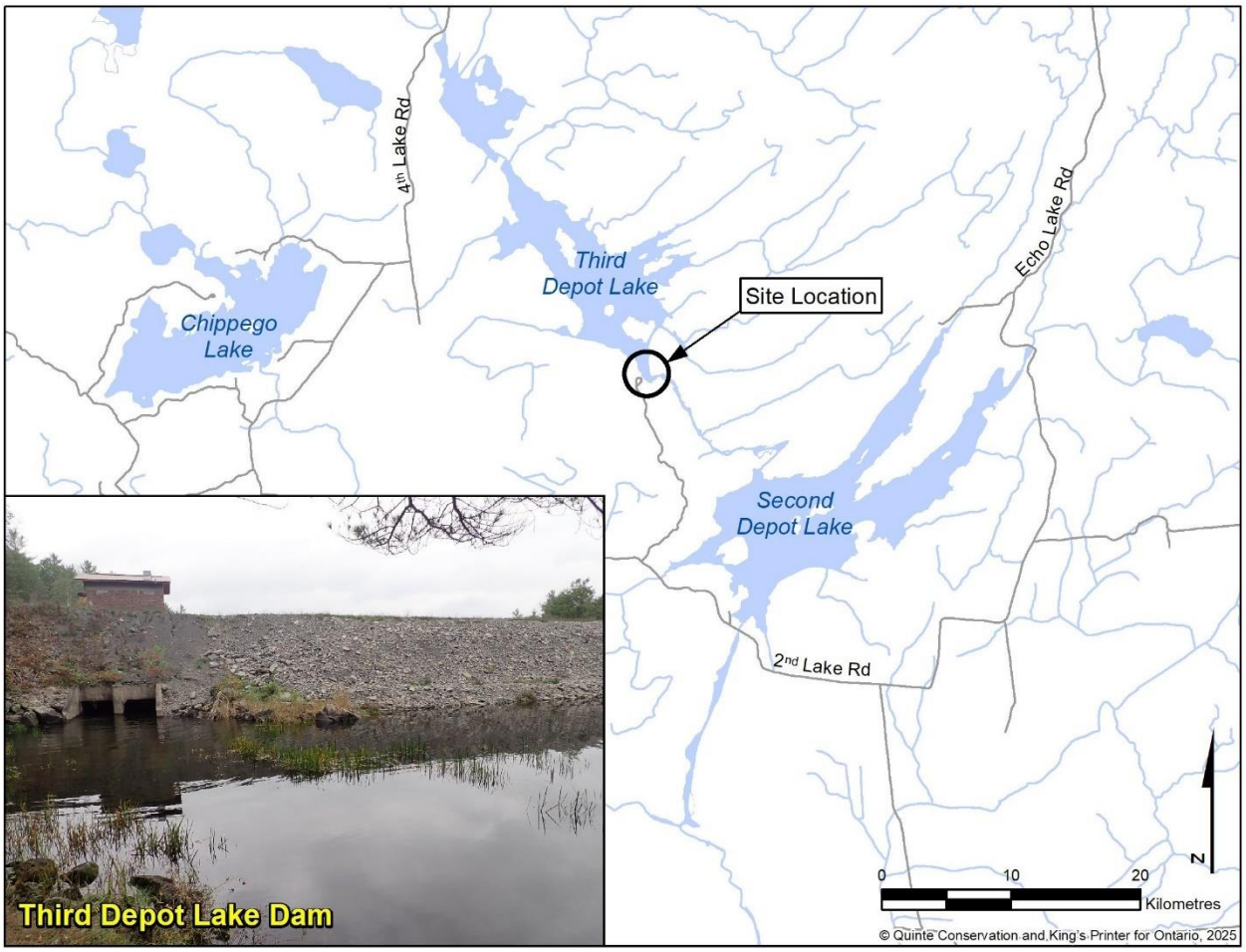

Figure 3: Location of Third Depot Lake Dam