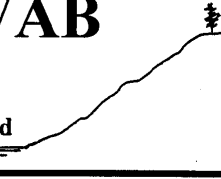


APPENDIX I
PUBLIC CONSULTATION

**Lake Major Watershed Advisory Board****Meeting Minutes****October 2, 2014 – 2:00 p.m.****Lake Major Water Treatment Plant****Attendees:**

Pearl Cain, North Preston.....Community Representative
Spencer Colley, East Preston.....Community Representative
Julie Ernst, Lake Major.....Community Representative
Andrew Faulkner, Development Officer.....Halifax Regional Municipality
Barry Geddes, Watershed Manager.....Halifax Water
Dawn MacNeill, Watershed Planner.....Nova Scotia Environment
Anna McCarron, Source Water Planner.....Halifax Water
Mack McMenemy, Lake Major (outgoing Chair).....Community Representative
Matt Nelson, Forest TechnicianNova Scotia Natural Resources
Garry Oxner, Superintendent of Water Supply Plants.....Halifax Water
Brenton Sparks, Lake Loon/Cherry Brook (incoming Chair).....Community Representative
Derrick Stoddard, Area Manager Halifax West.....Nova Scotia Natural Resources
Colin Waddell, Lake Major Treatment Plant Manager.....Halifax Water

Regrets:

Peter Bush, Protected Area CoordinatorNova Scotia Environment
Reid Campbell, Director of Water Services.....Halifax Water
Bernie Matlock, P. Eng.....Nova Scotia Environment

Guests:

Patrick Farrell, Project Manager.....MECO
Jonathan MacDonald, Project EngineerHalifax Water
Bonnie Miles-Dunn, Manager.....NSTIR
Bob Pett, Environmental Services.....NSTIR
Adam Osborne, P. Eng.....NSTIR

Table 1: Previous Minutes Action Items and Status				
Item #	Action Items	Date	Lead	Status
1	Invite Susan Corser or Richard Harvey or Austin French – start by asking Austin French (Manager, Planning Services now Kate Greene, Eastern Region Operations Manager or Bob Bjerke Chief Planner for HRM) to further explain the RMPS review process and implications for PWA.	October 3, 2013	Barry / Mack	Action required [Note: RMPS has been approved as of October 2014]
2	Barry Geddes to Contact John Brazner (now Krista Hilchie) for an update on wetlands in quarry.	October 3, 2013	Barry	Action required
3	Meet at a future date to discuss Riley Road area concerns further.	April 17, 2014	Reid / Brenton	Complete
4	Post approved Minutes on the website	April 17, 2014	Anna	Complete
5	NSTIR to provide a presentation to the Advisory Board on the extension of 107 at the Fall meeting	April 17, 2014	NSTIR / Barry	Complete
6	The Board will brainstorm ways to increase awareness of the Arnold D. Johnson Award at the next meeting.	April 17, 2014	All	Completed at Oct. 2 2014 meeting.
7	Send out information to Board seeking representatives for new appointments to the Board	April 17, 2014	Barry	Complete
8	Barry to forward scanned copy of Highway extension map to Board Members to share with Community members.	Oct. 2, 2014	Barry/Anna	Complete
9	Provide Hwy extension info to Board Members to share with community as it becomes available to Halifax Water by NSTIR	Oct. 2, 2014	NSTIR/ Barry	Action required
10	Mack McMenemy to remain on Board's information circulation list.	Oct. 2, 2014	Barry/Anna	Ongoing
11	Take Preston Area Trails item off the agenda until further notice.	Oct. 2, 2014	Barry/Anna	Complete
12	Board members are encouraged to bring the AD Johnson Award to their respective communities in various ways; e.g., through the church and ratepayers associations.	Oct. 2, 2014	All	Ongoing
13	Halifax Water to provide link to Arnold D. Johnson Award for Board members to distribute to local community.	Oct. 2, 2014	Barry/Anna	Complete.

Action**Presentations:**

Hwy 107 extension – NSTIR – Bob Pett, Bonnie Miles-Dunn, Adam Osbourne presenting:

- new 8.5 km section of 4 lane highway planned to connect Forest Hills Extension through Montague Mines near Lake Loon (shown on projected map) to #7 Highway near East Preston;
- no startup date identified yet, but proposed to be constructed in 2016-17 in the 5-year plan. Once funding is secured the project will go ahead in 12 months in one phase. Predicted funding is 2-3 years away;
- public consultation has begun;
- proposed Highway runs through the Lake Major Protected Water Area (shown on map); need to consult with Halifax Water and the Lake Major Advisory Board; and
- construction will involve a series of interchanges, flyovers, and fill and cut.

Q: What is the benefit of the new highway? – Board Members

A: The new extension is a controlled access highway which will reduce traffic flow into Main Street and reduce potential for highway accidents; and avoid traffic lights, merging traffic and shifting speeds.

Q: Are there any plans for off-ramps along the new extension? – Brenton Sparks

A: No. It will be a controlled access highway designed to carry vehicles at higher speeds.

Q: What will be the speed limit?- Garry Oxner

A: Designed for 100 km/hr; similar to the existing Forest Hills extension.

Q: Could an interchange be added to one of the overpasses for Halifax Water deliveries to redirect truck traffic away from Riley Road and its safety concerns? – Colin Waddell

A: No plan for interchange; however, NSTIR could investigate alternatives during the traffic study. – NSTIR Staff

Q: Is road salt an issue? – NSTIR

A: Yes. It is a major problem for aquatic life in other watersheds. Where this road is on the extreme edge of the watershed it may or may not be an issue for Lake Major but it should be considered in the Environmental Assessment.

- Halifax Water offered detailed water quality data (1999 to present) that could be beneficial to the study;
- Barry requested that Halifax Water be kept in loop regarding highway development progress and will forward such information to Board members as they become available; and

Action

- Board members requested copy of map to share with community.

Action Item #8: Barry to forward scanned copy of Highway extension information with the Minutes for Board Members to share with Community members.

NSTIR/Barry

Action Item #9: Barry to forward Hwy extension info to Board Members to share with Community members as made available to Halifax Water by NSTIR.

Barry

Lake Major Dam Replacement – Halifax Water/MECO – Jonathan MacDonald presenting:

- 2012 Dam safety review completed in 2012 by Mitchelmore Engineering Company Ltd. (MECO).
- Lake Major dam is a high priority to replace (shown on map displayed at meeting).
- MECO awarded contract (2014) to replace Lake Major dam:
 - Need to identify suitable locations for the new dam;
 - Site investigations planned for Jan-Feb. 2015; and
 - Meet NSE and DFO requirements.

Q: When will the dam be replaced?- Pearl Cain

A: Not before 2017. Not sure at this time. Depends on the findings from the study

Q: Where will the new dam go?- Board members

A: Not sure at this time. Depends on the findings from the study.

- Presenters excused themselves at the conclusions of the presentations.

Lake Major Watershed Advisory Board Business Meeting:

1. Attendance / Introductions

Meeting called to order by LMWAB Chair, Mack McMenemy

- Regrets noted (listed above).
- Round table introduction (many new board members).
- Quorum noted.
- Anna distributed meeting materials:
 - Agenda; and
 - April 17, 2014 Meeting Notes.

Action

- Prior to meeting, Mack McMenemy (out-going Chair) asked to speak privately with incoming community board members to discuss Board history and community involvement (10 min). Non-community members respected the request and stepped outside during the 10 minute briefing.

Action Item #10: Mack to remain on Board member information circulation list.**Barry/Anna**

Review and approval of April 17 minutes as circulated.

2. Business Arising from the April 17 Minutes**a) Wind Turbine Update, Reid Campbell.**

- A brief history of the wind turbine projects was given for the benefit of the new members by Reid Campbell and Barry Geddes:
 - met with Cherry Brook and Lake Loon Ratepayers Association;
 - project was well received there; and
 - an extension of the timeline has been requested by Halifax Water until the Pockwock Project is completed.

Q: Where are the turbines planned to be built? – Pearl Cain

A: The plan is to build them along an access road on Halifax Water lands up the west side of Lake Major.

- Board members pointed out that there were meetings held in North Preston 2-3 years ago where the community expressed they did not want the wind turbines. Halifax Water is aware of North Preston's concerns with regard to the wind turbine project that was proposed on lands around Eagle Lake, an area close to North Preston. The project Halifax Water is currently considering is on the opposite side (west side) of Lake Major.
- Reid Campbell noted that if plans move forward to pursue the Lake Major Wind Turbine Project that the project would be modeled after the Pockwock project and involve a community partnership.

b) HRM RP+5 Update

- Anna McCarron and Barry Geddes provided background on the RP+5 process to date for the benefit of the new members:
 - In the Lake Major PWA, there were 4 planning districts with inconsistent wording in terms of watershed protection.
 - Halifax Water recommended to HRM planning staff to add wording to include terms of watercourse setbacks and to consult with the Watershed Advisory Board.
- Andrew Faulkner added:
 - Council has adopted the Plan which is currently being reviewed

by Service Nova Scotia and Municipal Relations (SNSMR) – now Municipal Affairs. The RMPS is pending Municipal Affairs department approval based on the Statement of Provincial Interest for Drinking Water Supplies.

- At the next meeting there should be more to report and should be a specific item on the next agenda.

Action Item #1: Leave this item on the agenda.

Action

Barry/Anna

3. Preston and Area Trails Association (PATA)

- Reid Campbell and Barry Geddes provided a brief history to new Board members:
 - HRM owns trail and has a license agreement with Halifax Water; and
 - The Preston Area Trails Association (PATA) has the responsibility to maintain the trail.
- Board members commented that the trail is not being maintained to a high standard.
- Suggested that if Board members have concerns, they should bring them to HRM's attention since they hold the license agreement.
- This item to be removed from the agenda until further notice.

Action Item # 11: Take PAT item off the agenda until further notice.

Barry/Anna

4. Arnold D. Johnson Award

- No candidates came forward again.
- Reid Campbell briefed new members about the Award:
 - an NSCC program available for 5-6 years
 - one community member, Travis Fraser, won the award;
 - candidate requirements;
 - culture-based specific award;
 - Board members can find information on the NSCC website; and
 - Halifax Water is eager to give out this award.
- Board members are urged to promote the Award to their respective communities in various ways; e.g., through the church and ratepayers associations.

Action Item #12: Board members agreed to promote Award in their communities.

All

Action Item #13: Halifax Water to provide link to Arnold D. Johnson Award Board members to distribute to local community members.

Barry/ Anna

Meeting reconvened after community members met in-camera.

Andrew Faulkner excused himself from the meeting.

5. Other Business

a) Lake Major Newsletter

- Next issue scheduled for winter 2014/2015;
- Profile new Advisory Board members in upcoming newsletters
- Topics for Winter 2015 Newsletter:
 - Spencer Colley profile;
 - Lake Major Dam replacement project advisory; and
 - Notification that Brenton Sparks is the new Chair of the LMWAB.

b) Protected Areas Update

- Barry updated new Board members on proposed Protected Areas.
- Halifax Water and NSE Protected Areas Branch have reached an agreement in principle.
- Final details to be worked out.

6. New Business

No new business to report.

7. Landowner questions

Q: *Is Riley Road located within the watershed boundary?* – Brenton Sparks

A: No it lies outside of the boundary. – Barry Geddes.

8. Municipal Planning Update – Andrew Faulkner:

Andrew's update was provided with the RP+5 report previously in the Minutes:

- No new information to report since the last meeting.

9. Election of Officers / Welcome New Members

- Brenton was elected as the New Chair of the Lake Major Watershed Advisory Board.
- Barry Geddes remains Secretary of the LMWAB
- Mack advised the Board that:
 - He had advised Brenton Sparks, the incoming Chair in the in-camera meeting, that Brenton could ask the Vice Chair or any other member of the Board to Chair the meetings in his absence.

Action

- He would be happy to provide assistance to the Board whenever needed.
- Membership:
 - Pearl Cain needs information sent to her via hard copy.
 - Regarding Mack's retirement from the Board:
 - Barry and Reid individually expressed their gratitude and appreciation for Mack's longstanding service on the LMWAB and valuable contribution and guidance.
 - Mack expressed his gratitude and appreciation for the well wishes.
 - Reid expressed that Halifax Water will accommodate the needs of the community members in terms of meeting times; whatever is most convenient for the members' schedules; and
 - A tour of the watershed area and the plant is something that could be arranged if the Board is interested.

10. Next Meeting date:

Thursday, March 19, 2015 at 2:00 p.m.

11. Meeting adjourned: 4:10 p.m.

Mack McMenemy, Chair – outgoing Chair

Brenton Sparks – incoming Chair

Reid Campbell, Vice Chair

Barry Geddes, Secretary

**Lake Major Watershed Advisory Board
Meeting Minutes
April 23, 2015 – 2:00 p.m.
Lake Major Water Treatment Plant**

Attendees:

Pearl Cain, North Preston.....Community Representative
Spencer Colley, East Preston.....Community Representative
Julie Ernst, Lake Major.....Community Representative
Andrew Faulkner, Development Officer.....Halifax Regional Municipality
Barry Geddes, Watershed Manager.....Halifax Water
Anna McCarron, Source Water Planner.....Halifax Water
Matt Nelson, Forest TechnicianNova Scotia Natural Resources
Garry Oxner, Superintendent of Water Supply Plants.....Halifax Water
Brenton Sparks, Lake Loon/Cherry Brook (Chair).....Community Representative

Regrets:

Peter Bush, Protected Area Coordinator replaced by Heather Olivella, ..Nova Scotia Environment
Reid Campbell, Director of Water Services.....Halifax Water
Dawn MacNeill, Watershed Planner.....Nova Scotia Environment
Bernie Matlock, P. Eng.....Nova Scotia Environment
Derrick Stoddard, Area Manager Halifax West.....Nova Scotia Natural Resources
Heather Olivella, Protected Areas Coordinator.....Nova Scotia Environment
Colin Waddell, Lake Major Treatment Plant Manager.....Halifax Water

Guests:

Jonathan MacDonald, Project EngineerHalifax Water

Table 1: Previous Minutes Action Items and Status				
Item #	Action Items	Date	Lead	Status
1	Invite Susan Corser or Richard Harvey or Austin French – start by asking Austin French (Manager, Planning Services now Kate Greene, Eastern Region Operations Manager or Bob Bjerke Chief Planner for HRM) to further explain the RMPS review process and implications for PWA. Update: Andrew Faulkner assigned to arrange for someone from Planning Services to present. Paul Morgan to present.	October 3, 2013; Update: April 23, 2015	Updated: Andrew Faulkner	Complete
2	Barry Geddes to Contact John Brazner (now Krista Hilchey) for an update on wetlands in quarry.	October 3, 2013 Update: April 23, 2015	Barry	Action required Update: Deferred to September 30 2015
3	Promote Arnold D. Johnson Award to community	October 2, 2014	All	Ongoing
4	Halifax Water to provide NSCC link to Arnold D. Johnson Award Board members to distribute to local community members.	October 2, 2014	Anna/Barry	Ongoing
5	Post Approved October 2, 2014 Minutes on website.	April 23, 2015	Anna	Complete
6	Provide Hwy extension info to Board Members to share with community as it becomes available to Halifax Water by NSTIR	Oct. 2, 2014	NSTIR/ Barry	Ongoing as information becomes available
7	Barry to present water quality graphs to Board to show water quality trends and impacts.	April 23, 2015	Barry	Action required

Presentation:Lake Major Dam Replacement – Halifax Water/MECO – Jonathan MacDonald:

- Two projects to consider: i.e., stabilizing the fishway and replacing the dam (dam and fishway locations were displayed on a map).
 - Primary concerns are stabilizing the fishway portion of the dam:
 - during the January 2015 dam inspection some movement of the fishway was observed, indicating potential for failure;
 - mitigating that concern was immediately acted upon (January 17) by infilling the fishway;
 - infilling the fishway required an action plan to move fish past the dam structure involving:
 - creating an eddy or pool to attract the fish; and
 - creating a path – a siphon – to provide a way from the pool over the dam for the fish;
 - the fishway infilling is an interim measure until a new dam with fish passage is built;
 - The Dam Safety Review was completed in 2012 by Mitchelmore Engineering Company Ltd. (MECO):
 - The Lake Major dam replacement was determined to be high priority.
- MECO was awarded the contract (in 2014) to replace the Lake Major dam involving:
 - site investigations conducted in Jan-Feb. 2015 which determined;
 - six replacement sites would be considered;
 - more technical investigations are required;
 - creating a plan for a new fishway;
 - conducting archaeological tests for First Nation and early European activity:
 - a Special Places report was filed with the Nova Scotia Communities Culture and Heritage Department in this regard;
 - meeting NSE and DFO requirements regarding water flows, watershed area restrictions and maintenance of fish passage; and
 - completing a hydrological study of the watershed area for multi-future demand scenarios.
- Further requirements include:
 - conducting more geotechnical work; and
 - conducting public information meetings for feedback.

Q: *Is the pump for the fishway noisy?*

A: The pump is electric. Not sure how loud it is going to be.

Q: How and when will the Public Information Meeting (PIM) be announced?

A: Through the Board and to people who will be directly impacted, not to the broader community; and it depends on the timeline of the work. Propose to have a meeting later this year or after dam replacement location is determined.

Q: Does Halifax Water have a special permit to conduct the fishway infilling in the watercourse?

A: Yes, due to the emergency situation, a permit to do this was issued through the Emergency Management Office (EMO).

Q: When was the damage to the dam identified?

A: Monthly inspections are normally conducted. Because there was so much rainfall in December, monitoring was not conducted. The weakness in the structure was identified during the January inspection. When people were asked to be voluntarily evacuated, anyone who stayed was made aware of the risks.

Lake Major Watershed Advisory Board Business Meeting:

Attendance/Introductions

- Anna distributed copies of:
 - Agenda
 - October 2, 2014 Minutes
 - Annual Source Water Protection Report

Meeting called to order by LMWAB Chair, Brenton Sparks

- Regrets noted (listed above).
- Quorum noted.
- Review and approval of October 2, 2014 minutes as circulated.

Minutes were approved with changes:

- Moved by Barry; Andrew/Spencer seconded to approve the Minutes with changes to Andrew's correct title (i.e., from Planning and Development Officer to Development Officer).

Action Items reviewed and updated as indicated in *Table 1: Previous Minutes Action Items and Status* on page 2.

Q: Will there be community meetings about the proposed highway?

A: Yes. Nothing has been finalized. NSTIR said they will be in contact. **Consider this an Ongoing Action Item.**

1. Business Arising from the October 2, 2014 Minutes

a) Wind Turbine Update – Barry Geddes.

Action

- Nothing to report
- We still have a license to erect the turbines if that turns out to be a viable option

b) HRM RP+5 Update

- Anna updated the members regarding Halifax Water's input to the RMPS update:
 - After the review and update of the Lake Major Source Water Protection Plan, Halifax Water was compelled to recommend consistency between the Community Plans (MPS), with respect to water supply area policies. Currently, the Lake Major watershed area is governed by four municipal planning strategies and corresponding land use by-laws, the policies of which do not consistently consider the Lake Major watershed as a water supply.
 - Subsequently, significant additions were made to the RMPS including:
 - Map 12, which illustrates and corresponds to the RMPS wording associated with surface and well water supply areas;
 - consistency regarding the 30.5 m buffer recommended around water supply sources which translated into RMPS policy E-13: *"HRM shall, through an applicable land use – by-law establish a Protected Water Supply Zone which shall be applied to all publicly owned lands which serve as a water supply watershed including an emergency supply and wellheads and to private lands deemed necessary to protect the public water supply. And this zone shall establish a 30.5 m riparian buffer zone around water supply sources."*; and
 - attention to the Statement of Provincial Interest with respect to Drinking Water.
- Andrew Faulkner added explanations regarding the differences between the Regional (RMPS) and Community Plans (MPS) and Land Use By-laws, and what their policies dictate:
 - RMPS:
 - dictates what Council will consider when going into a development agreement;
 - dictates what is considered when the 18 community/municipal plans are updated and reviewed;
 - Community/Municipal Plans (MPS):
 - provide policies on transportation, rural land use, and other more community-specific policies for communities within

- smaller geographic areas;
 - are supposed to be reviewed every 5-10 years;
 - many of which need serious revision because they have not been revisited in 20 plus years and have had a lot of development pressure in those areas; e.g., St. Margaret's Bay and Tantallon; while other plans, despite the length of time since their last revision, may not need urgent revision as development pressure is not as substantial; and
 - in any case, when MPS' are revisited, the new Regional Plan policy amendments will be brought forward in the redevelopment of the MPS.
- Land Use By-laws (LUB):
 - Andrew works at the end of the land use planning road, administering the land-use by-laws – as-of right (by-right) development – which is set by the MPS or land use by-law (LUB); and
 - it takes time to focus down to the LUB level which is where proximity to watercourses, for example, is determined and carried out on the ground.

Q: *Are there four protected areas around the Lake Major area?*

A: No. The four areas that Anna referred to are the MPS areas described by Andrew which affect the land use activity permitted around and within the Lake Major watershed. The MPS areas within the Lake Major watershed include the Shubenacadie Lakes (District 14/17); North and East Preston, Lake Major, and Lake Loon/Cherry Brook; Lake Echo-Porter's Lake; and Cole Harbour/Westphal.

- Each MPS area is distinct when it is adopted.
- Not sure whether the MPS' will become consistent. The new Halifax Planning Director has an interest in consolidating some of the plans or at least their content, including the LUBs. But this would be a longer term project.
- Anna reminded the members, that of the four MPS' and LUB's governing the watershed area, the Lake Major/North and East Preston/Lake Loon/Cherry Brook MPS states that the LMWAB has the ability to recommend how development takes place within the Lake Major watershed. Specifically, Section 3.6 of the LUB states that: "...every application permit for lands situated within the Lake Major watershed shall be referred to the LMWAB and the Development Officer shall consider any reply from the Board to the extent permitted by the Planning Act or any other provincial Statute." (p. 15).
- Andrew has made land use technicians aware that any application, regardless of plan area inside the watershed area, would be forwarded to the Board.

Action

- Barry reminded the Board that it also has the ability through *Environment Act* legislation to prepare regulations governing water and land-based activities within the Lake Major watershed area:
 - Overall, Nova Scotia Environment legislation and regulations take precedence over Halifax's authority to regulate.
 - Through this legislation, the Board has the right to comment and make recommendations on activities impacting the watershed. However, as the regulator, NSE has the final say. For example, the 30.5 m setback is one of the provincial regulations inside the Lake Major watershed as opposed to 20 m in the LUB.
- Barry emphasized to the Board to ask if there is something they don't understand with regard to policy or anything – open communication is the purpose of the Board.
- Anna stressed that the important thing for the Board to remember is that its recommendations shall be considered by HRM development officers if there is a development proposed inside the watershed.
- Andrew will arrange to have HRM planning staff to consult with the Watershed Advisory Board as per **Action Item #1**.

c. Highway Expansion:

- It appears the Hwy 107 expansion could have more of an impact to the Lake Lemont watershed than the Lake Major watershed.
- The funding required to construct this highway could take up to 24 months to get into place.
- With respect to Halifax Water – still awaiting word from NSTIR.

2. Arnold D. Johnson Award

- No applications received for the 2015-2016 school year despite efforts to inform church and other community groups;
- Suggest targeting students at Auburn and Cole Harbour High Schools where candidates may come from;
- Not just open to students in the Lake Major areas; it is open to all African Nova Scotia students in the province;
- Suggest contacting the African Nova Scotian School Board as well; and
- Board members are urged to promote the Award to their respective communities in various ways; e.g., through the church and ratepayers associations.

Action
All

Ongoing Action Item #3: Board members are urged to promote the Award in their communities.

Ongoing Action Item #4: Halifax Water to provide link to Arnold D. Johnson Award Board members to distribute to local community members.

Anna

3. Other Business

a) Lake Major Newsletter

- Next issue scheduled for summer 2015 content:
 - Spencer Colley will be this issue's member profile;
 - Next member profiles will be Brenton Sparks and role as new Chairperson, Pearl Cain and Julie Earnst; and
 - Lake Major Dam replacement project update.

4. New Business

2014 Lake Major Annual Source Water Protection Report

- Barry reviewed SWP Report Updates and Accomplishments.
- As discussion was generated from the demolition of a Halifax Rental unit the following questions were asked:

Q: Does Halifax Water have rental units?

A: Yes. We have rental units at the bottom of Lake Major; many have been acquired through requests from owners. It is common practice for Halifax Water to purchase the properties and rent them out until they reach a state of repair that exceeds the cost to repair them.

Q: Are there any on Old German Road?

A: Yes. Presently there is one remaining. Two more were torn down 2 years ago.

Q: Do homeowners have to inform Halifax Water when they decide to sell?

A: No. They do not need to sell to Halifax Water. As they go up for sale, the owners tend to come to Halifax Water rather than Halifax Water chasing down the owner. We consider purchasing houses based on a scale of importance to the watershed area. Halifax Water approaches land purchases for watershed protection purposes in this order of priority:

1. Lakeshore inside a protected water area;
2. Non-lakeshore inside a protected water area;
3. Lakeshore in a non-protected water area; and
4. Non-lakeshore in a non-protected water area.

Halifax Water purchases lands based on fair market value which is established by an independent a third party property appraiser hired by Halifax Water.

Action

- Raw water quality monitoring:
 - Raw water quality is tested monthly. Overall water quality remains high, however changes can be seen in the water quality since the program was formalized in 2008. For example colour and turbidity trends affected by Hurricane Juan in 2003 can still be seen.

Action Item (#7): Barry to demonstrate how the water quality chemistry has been impacted inside the watershed area over the years through graphs and how the treatment process must be adjusted to accommodate water quality.

Barry

- An optimization study of the water treatment plant is currently being conducted to determine how the water can be more cost-effectively treated considering the changes in raw water quality and its impact on the operation of the water treatment process.
- Outstanding Issues:
 - RMPS next stage is to make changes to the community plans as discussed above;
 - Source Water Protection Plan (SWPP); as Halifax Water's source water protection programs grew, there was not a lot of information – water quality or otherwise – regarding impacts to the watershed; therefore, the SWPP has expanded to reflect the information we have acquired;
 - Last SWPP was submitted in 2013 and is pending review.
 - Parks and Protected Areas
 - Barry showed which areas within the Lake Major PWA are being considered for Protected Areas by NSE.
- Source Water Quality Monitoring
 - Barry described different stages of eutrophication with respect to water quality – the more organics and nutrients that end up in the water, the more eutrophic the water system becomes. Lake Major is in an oligotrophic (nutrient poor/good) state:

Q: *Is there a state where water can get to be un-useable?*

A: The lakes here are quite pristine in comparison with the Mississippi area for example; turbidity is one parameter that reflects raw water quality, which in Lake Major measures about 1.0; in the Mississippi, readings can be over 3000. The lower the number the better the raw water quality.

Water quality detection limits are based on Canadian Council of the Ministers of Environment (CCME) parameters – Water Quality for the Protection of Aquatic Life. These standards, where applicable are higher than the Guidelines for Canadian Drinking Water Quality (GCDWQ) standards; e.g.; Phosphorus in the drinking water standard is 0.02 mg/L compared with the 0.0002 mg/L aquatic standard which helps us to monitor the system better before it gets to the limits of



drinking water quality.

Action**5. Landowner Questions*****Q: Stormwater Charges?***

A: This is a question best handled by the Environmental Services Department of Halifax Water. Barry gave the Board members Charles Lloyd's contact info to learn more about the stormwater charges.

6. Municipal Planning Update – Andrew Faulkner:

Andrew's update was provided previously in the Minutes with the RP+5 report:

- No new information to report since the last meeting.

7. Election of Officers / Welcome New Members

Next Election of Officers – September 2016

8. Next Meeting date proposed:

September 24, 2015

9. Meeting adjourned: 3:40 p.m.

Brenton Sparks – Chair

Reid Campbell – Vice Chair

Barry Geddes – Secretary

Lake Major Watershed Advisory Board
Meeting Minutes
September 30, 2015 – 2:00 p.m.
Lake Major Water Treatment Plant

ATTENDEES:

Pearl Cain, North Preston Residents Association.....Community Representative
 Reid Campbell, Director of Water Services.....Halifax Water
 Spencer Colley, East Preston Ratepayers Association.....Community Representative
 Julie Ernst, Lake Major.....Community Representative
 Andrew Faulkner, Development Officer.....Halifax Regional Municipality
 Barry Geddes, Watershed Manager.....Halifax Water
 Dawn MacNeill, Watershed Planner.....Nova Scotia Environment
 Anna McCarron, Source Water Planner.....Halifax Water
 Matt Nelson, Forest TechnicianNova Scotia Natural Resources
 Garry Oxner, Superintendent of Water Supply Plants.....Halifax Water
 Brenton Sparks, Lake Loon/Cherry Brook Development Association (Chair)Community Rep.
 Derrick Stoddard, Area Manager Halifax West.....Nova Scotia Natural Resources
 Colin Waddell, Lake Major Treatment Plant Manager.....Halifax Water

REGRETS:

Bernie Matlock, P. Eng.....Nova Scotia Environment
 Heather Olivella, Protected Areas Coordinator.....Nova Scotia Environment

GUESTS:

Jonathan MacDonald, Project EngineerHalifax Water
 Paul Morgan, Senior Planner.....Halifax Regional Municipality

Table 1: Previous Minutes Action Items and Status				
Item Page #	Action Items	Date	Lead	Status
Page 10	Barry Geddes to Contact John Brazner (now Krista Hilchey) for an update on wetlands in quarry.	October 3, 2013 Update: April 23, 2015	Barry	Action required Update: Deferred to September 30 2015
Page 10	Promote Arnold D. Johnson Award to community: Update: Leave on Agenda	October 2, 2014 Update Sept. 30 2015	All	Ongoing
Page 11	Halifax Water to provide NSCC link to Arnold D. Johnson Award Board members to distribute to local community members.	October 2, 2014	Anna/Barry	Ongoing
Page 11	Make corrections and post approved April 23, 2015 Minutes on website.	September 30, 2015	Anna	Complete
Page 11	Provide Hwy 107 extension info to Board Members to share with community as it becomes available to Halifax Water by NSTIR.	Oct. 2, 2014 Update: September 30, 2015	NSTIR/ Barry	Remove from Agenda until more information becomes available
Page 13	Barry to present water quality graphs to Board to show water quality trends and impacts.	April 23, 2015	Barry	Complete
Page 5	Circulate Jonathan MacDonald's presentation about the dam replacement to the members following the meeting.	Sept. 30, 2015	Anna	Complete
Page 8	Contact Cameron Deacoff about re-presenting the Preston Area watershed study to the Board.	Sept. 30, 2015	Anna	Action required
Page 10	Arrange a meeting between Halifax Water and the North Preston Ratepayers Association to discuss options for swimming in the North Preston Community.	Sept. 30, 2015	Barry	Action required
Page 11	Contact the BEA to promote the Arnold D. Johnson Award.	Sept. 30, 2015	Spencer	Action required
Page 11	Create a poster of the Newsletter item promoting the Arnold D. Johnson Award and circulate it to the members to post in their communities, to the BCC, BEC, NPCC and to any other organizations that may help spread the word.	Sept. 30, 2015	Anna	Complete
Page 11	Julie Ernst requests the name of the contact of the highway 107 extension project	Sept. 30, 2015	Barry	Action required

Action**MEETING CALLED TO ORDER BY LMWAB CHAIR, BRENTON SPARKS:**

- Anna distributed copies of:
 - Agenda;
 - April, 23 2015 Minutes;
 - Lake Major Watershed Advisory Board Terms of Reference; and
 - Lake Major Newsletter
- Colin Waddell reviewed emergency procedures and facilities location.
- Regrets noted (listed above).
- Quorum noted.
- Agenda Item 5b): Swimming in Long Lake requested to be brought forward immediately following the presentations.

PRESENTATIONS:***1. Lake Major Dam Replacement – Jonathan MacDonald presenting on behalf of Halifax Water/MECO***

- Jonathan conducted a PowerPoint (PP) presentation regarding:
 - Proposed dam locations
 - Progress completed to date
 - Next steps
 - Dam options
 - Fish pump and siphon update
- Four (4) borehole sites were drilled at potential dam site locations as shown on map (page 3 of the PP presentation):
 - Preliminary geotechnical investigation, in search of bedrock to support the dam, was completed in March 2015 at sites A&F;
 - At Site A: two boreholes were drilled to 6.7m and 12.6m, no bedrock found at either location; and
 - At Site F: bedrock was found at two boreholes sites at 3.8m and 4.2m respectively;
 - In June 2015, supplementary geotechnical investigation resulted in:
 - six (6) boreholes drilled at sites B&C, located between sites A&F; and
 - Bedrock was found at each site.
- Further study involves a “Wetted Perimeter Study” conducted by Envirosphere beginning August 13, 2015:
 - to show relationship between discharge and habitat;
 - whereby data collected will be used in maintenance flow discussions with the regulators, Nova Scotia Environment (NSE) and Fisheries and Oceans Canada (DFO);

Action

- Eleven (11) sites will be monitored, downstream of the dam to the point where the river enters the ocean during high, medium and low flow conditions, for:
 - distance downstream from dam;
 - stream width;
 - gradient;
 - average pool depth;
 - velocity; and
 - wetted perimeter;
- Wetted perimeter is the primary variable that will be used in the study analysis.
- Maintenance flow discussions (important for fish survival) conducted:
 - February 5, 2015 between Halifax Water/MECO and NSE/DFO:
 - DFO presented maintenance flow calculations;
 - MECO consultant determined that maintenance flow and withdrawal demand cannot meet numbers DFO presented;
 - July 29, 2015 meeting re: maintenance flow calculation methodology differences discussion between DFO and MECO:
 - DFO flow demands are too challenging to meet – flow conditions are higher now than in the past;
 - MECO currently working on modeling the requested maintenance flows based on two (2) scenarios: one by DFO and the other by Halifax Water in conjunction with the wetted perimeter study;
 - Goal to have actual flow data from Little Salmon River to use in discussions with DFO;
 - DFO is open to negotiate; and
 - next meeting with DFO scheduled for the near future.
- Two (2) Dam options:
 1. Build dam at location F, immediately upstream of Lake Major Dam location;
 2. Build a second dam structure at location B or C (located near “Narrows”) with capacity of raising water level 2-3 metres above current levels for 20 MGD (million gallons per day) capacity;
 - Raising water level 0.5m with operable dam to gain more storage;
 - Increased maintenance flows may dictate the need to raise water level more;
 - Future work – at least 10 years down the road – timing driven by demand in water system coinciding with relocation of the raw water pumping station and the building of a second dam.
 - Two-dam option greatly reduces public safety risk.
- Fish pump and siphon:

Action

- fish pump installed and began operating late May 2015;
- moved ~40,000 fish (mostly Gaspereau, Mud Suckers and Sea Trout) over the dam structure;
- siphon installed April 2015:
 - only way to get water over the dam structure;
 - purpose is to maintain minimum flow in Little Salmon River when Lake Major Dam is not spilling water; and
- downstream fish passage monitoring observed a few gaspereau.

Q: Is there any information that could be circulated for members to contemplate themselves?

A: The power point presentation can be circulated to the members.

Action: Anna to distribute the Dam Replacement PowerPoint presentation to members.

Anna

Q: Will there be a fish ladder when the dam is completed?

A: Yes. Currently we have temporary situation until the dam is complete.

Q: When will final construction of the first dam be completed, how long will it take and where will it be located?

A: Taking into consideration both options, there will be a dam built just upstream of the existing dam, scheduled to be completed by 2017. It should take 6-8 months to complete. If a second dam is built it will depend on demand.

Q: Will the new dam raise the water level?

A: The water level currently cannot be raised mainly because the pumping station is close to the existing water level. However, desktop calculations completed by DFO indicate that more water is required to pass through the new dam to improve base flow conditions for fish passage. Halifax Water's consultant, MECO, has been hired to investigate flow conditions and possible solutions to meet DFO requirements and Halifax Water's needs.

Q: Has there been a change in the aquatic species?

A: No one knew what species to expect. There was no baseline to compare with.

Q: Is the structural integrity of the current dam going to hold until 2017 when the new dam is in place?

A: No one can determine how long the current dam will hold although recent repairs were done in the last week. Halifax Water continues to monitor. The dam replacement project remains a high priority for Halifax Water.

Q: Will construction disrupt traffic?

A: No more than the road building traffic that existed this past summer.

- Next steps:
 - Update Bathymetric survey;

Action

- Environmental Assessment (EA):
 - probably need an EA to raise water level to full plant capacity;
 - working with NSE to see whether an EA is required; and
- Public consultation should happen later this year since we are closer to determining where we can build a replacement dam.

Q: *Will there be an environmental impact study when the construction of the dam is conducted?*

A: There probably will be since the permit is submitted to NSE. The study would be conducted over a few seasons. It is a bit of a process. For example: there was a two-season study for the wind turbine project to determine which species might be impacted as a result of the project. An *Approval to Operate* would be required.

2. Regional Municipal Planning Strategy (RMPS) and how it might impact the watershed area – presented by Paul Morgan: Halifax Planning Services

- The HRM Regional Municipal Planning Strategy (RMPS), first ratified in 2006, went through a “5-year” review process (RP+5) and was approved October 2014.
- Halifax Water and HRM entered into an agreement on August 1, 2007 where Halifax Water assumed responsibility of the wastewater and stormwater systems. An entire chapter of the 2014 RMPS was re-written to reflect those changes.
- Statements of Provincial Interest (SPIs) were instated into the 2014 RMPS, which influenced some amendments in the RMPS including:
 - Municipalities must identify water supply areas per the [*Halifax Regional Municipality Charter*](#). HRM was not previously aware of all the water supply areas nor wellhead protection areas;
 - HRM received a map from Halifax Water in 2013 indicating the locations of the water supply areas (currently Map 12 of the RMPS 2014) – a new and required addition to the RMPS.
 - Lake Major is identified on this map as well as the wellhead areas e.g., Silver Sands near Cow Bay and smaller water supplies; e.g., Middle Musquodoboit, and those along the Shubenacadie system; i.e., Collins Park and Bomont.
- Other additions/changes to the RMPS were with respect to section 2.3.1: Potable Water Supply of the Environment, Energy and Climate Change Chapter (2) of the RMPS, made through cooperation with Halifax Water:
 - Policy E-13:
 - “and wellhead protection areas” added to wording respecting water supply areas – previously absent;
 - The PWS Zone shall establish a minimum 30.5m riparian buffer around water supply areas – up from 20m; and

Action

- use of the word “*may*” was added with respect to applying the PWS Zone to *private* land, whereas the PWS Zone “*shall* be applied to all *publically* owned lands which serve as a water supply...”;
 - During Nova Scotia Department of Municipal Relations’ review of the RMPS, Paul was asked why wording “*may*” rather than “*shall*” was used with respect to private land. Paul responded that HRM would need to show why private lands in water supply areas should not be developed at all, to justify the use of the word “*shall*”;
 - We have a lot of privately-owned land in water supply areas. If necessary, amendments could be put together to protect the water supply areas; and
 - Council may consider a land use by-law necessary through policy E-14; i.e., necessary to: a) protect the water supply; b) ensure a consistent regulatory approach within each watershed; or c) conform with any SPI Regarding Drinking Water;
- by-laws typically restrict uses that would limit the number of lots; and reduce the density in the PWS Zone; and
- Halifax Water owns about 42% of the Lake Major watershed.
- Also, HRM has embarked on a Green Network Priorities Plan:
 - a system of open spaces (for more details visit: <http://www.halifax.ca/HalifaxGreenNetwork/Themes.php>);
 - which concludes what we should be protecting, for a number of reasons including water supply, animal migration, environmentally sensitive areas, working landscapes; e.g., timberland, agriculture, and lands needed for aggregate supply – the latter due to expense in finding aggregate without having/ensuring a local supply;
 - Board members are encouraged to attend the public meetings about the **Green Network Priorities Plan** where more information about the water supply area may be learned. The State of the Landscape Report will be presented to Council including various recommendations as to how we should protect our green spaces within our municipality using subdivision regulations, etc. There will be more background information. For more information visit: <http://www.halifax.ca/HalifaxGreenNetwork/EngagementEvents.php>;
 - The state of the landscape report drafted and presented in October (found at: <http://www.halifax.ca/HalifaxGreenNetwork/Themes.php>) will lead to a report about how to protect green spaces.

Q: If that Plan results in something that would impact the Lake Major watershed will the Board be notified?

Action

A: It is not anticipated that anything proposed in this Plan would drastically impact this watershed. Rather, this Plan provides background information about how more might be done to protect the watershed.

- Watershed Studies, per the 2006 RMPS, provide other planning avenues to guide how land is managed and the activities that may be permitted:
 - watershed studies must be conducted to establish the water quality objectives to be considered in a community planning process;
 - the Preston Area Watershed Study (PAWS) was completed for the Preston Area watershed area and includes part of the Lake Major PWA;
 - the PAWS focuses on surface and ground water quality issues to provide the municipality and the related communities with current information that can be used for municipal and community planning. The report fulfills the requirements of a watershed study as defined in the Regional Plan (2006), Policy E-17; and
 - it is not known whether any of the recommendations have any bearing on the watershed areas.

Q: *Can someone come to the Board to present the Preston Area Watershed Study findings within the watershed area?*

A: Cameron Deacoff, Halifax RGM Environment and Energy Office presented the Draft Plan to this Board in September 2013, which provided an opportunity for input from this Board. Most of the current community (new) members were not at that meeting. Another meeting may be arranged.

Q: *Who provided input into the Study?*

A: Residents of the North Preston, East Preston, Lake Loon/Cherrybrook area were invited to the final public meeting about the PAWS on September 17, 2014. Residents had the opportunity to learn more about the study and ask questions about water protection measures for the area and next steps in the study. Comments on the draft final report were received until October 13, 2014.

Q: *Was there a final report where the communities were shown to have input?*

A: One of the recommendations was to acknowledge the Lake Major Watershed Advisory Board and that it can provide recommendations to any planning exercise. Cameron could be invited back to present the Study's impacts the watershed and watersheds in general.

Action: **Anna to contact Cameron Deacoff about presenting to the Board.**

Anna

Q: *When permitted activities conducted in the watershed have a potential environmental impact, are such impacts considered before permits are issued?*

A: From Halifax Water's perspective, it depends on whether the activity is inside the Protected Watershed Area (PWA), which is regulated under provincial legislation, or whether it falls outside the PWA boundary. Halifax Water does not have jurisdiction over activities outside the regulated boundary area.

Q: *How can the Shubenacadie Canal be used for recreational purposes in a*

drinking water supply watershed area? Why are those rules different from Lake Major's?

A: The Shubenacadie Canal system is not part of the Lake Major watershed. However, generally, water supply areas are managed according to scale of population use. Barry showed where the Lake Major watershed and the Shubenacadie watershed areas are: the Collin's Park water supply system, located on the Shubenacadie Canal has no provincial regulations associated with it, though there are some HRM policies and by-laws as described earlier. Also, the Collin's Park water supply source (Lake Fletcher) serves fewer than 100 people compared with the thousands who depend on the Lake Major water supply source. Collin's Park also has a more robust water treatment process so it can deal with the poorer water quality. If Lake Major were to have the same water quality problems as Lake Fletcher, then a water supply plant similar to Collin's Park would be required and would cost customers 10's of millions of dollars or more.

PRESENTATIONS CONCLUDED – BUSINESS MEETING:

1. Attendance and Introductions

Introductions were conducted for newcomers' benefit.

5 (b) Swimming in Long Lake (moved up in agenda)

Background:

The North Preston Ratepayers Association (NPRA) is interested in having a designated swimming area in Long Lake. The NPRA are under the impression that a study was done indicating it was alright to swim there now.

Request:

Could swimming be permitted in Long Lake by next summer?

Discussion:

Swimming inside the Lake Major watershed is restricted to within 800m of the Lake Major dam. Everywhere else in the PWA, including Long Lake, swimming is prohibited through provincial legislation. Halifax Water is unaware of any studies or changes to the regulations indicating it was OK to swim in Long Lake.

A number of years ago the community made a special request to Halifax Water, through a prior Board member, to allow a special Baptism to occur in Long Lake. Halifax granted the special request. The local detachment of the RCMP got involved for public safety and traffic control.

Long Lake runs into Lake Major. At one point, Long Lake was the potable water supply source for North Preston, which was why the regulations prohibited swimming there. When a new water line from the Lake Major system was extended into North Preston, the need to draw water from Long Lake was

Action

eliminated. From past experiences in other watersheds, changes to regulations may take years and would need to go through a public consultation process. Other considerations include whether changes in legislation would include the whole watershed or only part of it.

The LMWAB agreed to start the process by arranging a meeting between the regulatory authorities and the NPRA regarding the NPRA's desire for a place for the community to swim during the warmer summer months.

Reid suggested that the NPRA consider the land around the North Preston reservoir, which is larger than Halifax Water needs. About a year and a half ago there was a community meeting, attended by Councillor David Hendsbee, HRM parkland staff, Halifax Water staff, Ron David (Lake Major North Preston Advisory Board representative at the time), and members of the NPRA to discuss options for community use of this land. If the NPRA and HRM staff were to come up with options and get back to Halifax Water, the offer still stands. Halifax Water is interested in resuming talks regarding a possible end use incorporating a community pool.

Action: Barry will arrange a meeting between Halifax Water and the NPRA to discuss options for swimming in the North Preston Community.

Action

Barry

2. Review of the Previous Minutes

Action Items were reviewed:

- **Invite HRM to present:** Paul Morgan presented –remove from list.
- **Barry to look into the wetlands coordinator:** will contact Krista Hilchey.
 - Background: This action item was generated from 2012 release of the Wetland Policy. Inside a PWA, a wetland has Special Status whereby no development is permitted. There is a wetland adjacent to the quarry located on the boundary of the PWA. The Board is looking for direction from NSE regarding whether anyone has considered the implications that a potential/possible expansion of the quarry may have to the adjacent wetland inside the PWA.
- **Arnold D. Johnson Award:**

Q: Barry Geddes asked: Do any Board members have contacts within Nelson Whynder Elementary to drop off the information to help spread the word? The priority is for local African-Canadian communities. If no local candidates are identified, then other Nova Scotia African-Canadian communities are given the opportunity.

A: The goal is to promote the bursary within the Nova Scotia African–Canadian communities to create work opportunities at home [Nova Scotia].

A suggestion was made to create a poster promoting the bursary and sending it to the Black Cultural Centre (BCC), the Black Education Association (BEA) and the

North Preston Community Centre (NPCC). Community Services is another avenue to spread the word.

Action: Spencer will get the word out to the BEA.

Action: Anna will create a poster of the of the Arnold D. Johnson Sr. Award piece promoted in the Lake Major Newsletter and circulate it to the members to post in their communities: the BCC, BEC, NPCC and to any other organizations that may help spread the word.

Action: Leave Arnold D. Johnson Sr. Award as an ongoing Agenda item.

- **Post Minutes on website: Complete.**
- **Proposed Highway Extension: Remove from Agenda until there is progress.**

Action: Julie Ernst requested the name of the contact for the Hwy 107 extension project.

- The project is sitting in the queue until the province gives the project the green light.
- Construction is estimated to take 24 months to complete.

Motion to approve the Minutes:

- April 23, 2015 Minutes approved with minor changes:
 - the Date in the Heading (change to April 23, 2015 not 2014)
 - Derrick Stoddard is a regret – did not attend the last meeting

Minutes were approved with changes:

- Spencer and Andrew seconded.
- Motion carried.

3. Business Arising From the Minutes

See Action Items reviewed in previous section of these Minutes.

4. Old Business:

a) Lake Major Newsletter:

- Suggestions for the next newsletter to be directed to Anna.
- Brenton Sparks to be the next member profile.
- February 2016 is the deadline for the next issue.
- Changes are required to the newsletter about to be circulated: the date for the community BBQ, the number who attended and a typo.

Action

Spencer

Anna

Anna/Barry

Barry

Action

Agenda items 4b) and c) were discussed previously in the Minutes (see review of Action Items beginning on page 10).

d) Protected Areas Update:

- Candidate Protected Areas (PA) within the watershed area have been identified.
- Barry showed candidate PAs on a map and parcels that Halifax Water and NSE PA agreed to swap. By swapping lands it will consolidate infant parcels (parcels that are part of a larger parcel) which otherwise would have left a checkerboard pattern and management issues for both parties.
- DNR and Halifax Water have agreed to the terms of sale through a verbal agreement though there are still negotiations to work through with solicitors, which will take some time. It has taken three years to get to this point. Once the land swaps are complete, DNR lands will be transferred to NSE's PA branch, which is responsible for managing PAs.
- The PA land package involves a three way land deal that falls under one agreement that includes Pockwock and Bennery Lakes as well as Lake Major. Pockwock's and Bennery's PA statuses will be established by the end of 2015, while Lake Major's will take place sometime in 2016.
- Change in land status means an extra layer of regulations over the existing watershed regulations.

Q: *Is hunting allowed in the watershed?*

A: Yes, although there are signs saying no hunting, they refer to areas where discharge of a firearm is prohibited due to proximity to the residential dwellings and/or water facilities. The [hunting and furharvesting regulations](#)¹ are such that:

“Under the Protection of Property Act, permission is required to hunt or trap on private land which is managed for agricultural crops, pasture, orchard, vineyard, commercial berry production, garden, Christmas tree production, tree plantation, lawn, or a golf course; or woodlands in the immediate area of an active forest products harvesting operation. On other private lands such as forests, brush or barren lands, marsh and bogs, permission is not required, provided that no hunting, trapping, or discharge of weapons may occur within the distances prohibited in regulations pursuant to the Wildlife Act from schools, dwellings or other features specified in regulations, except with the permission of the owner or occupier...”

...such that no person shall at any time:

- hunt, take or kill, or attempt to hunt, take or kill wildlife with a weapon or discharge a weapon **within 804 m of a school**;

¹ 2015 Nova Scotia Hunting and Furharvesting: Summary of Regulations. Website accessed October 20, 2015 at: http://novascotia.ca/natr/hunt/pdf/Hunting_Summary_2015.pdf

Action

- discharge a firearm loaded with a rifle cartridge, single ball, or slug **within 402 m of** a dwelling, playground, golf course, athletic field, woods operation, place of business, agricultural building, or public building other than a school;
- discharge a shotgun loaded with shot, a crossbow or a bow **within 182 m of** a dwelling, playground, golf course, athletic field, woods operation, place of business, agricultural building, or public building other than a school;
- hunt, take or kill, or attempt to hunt, take or kill wildlife that is **within 182 m of** a dwelling, playground, golf course, athletic field, woods operation, place of business, agricultural building, or public building other than a school.

5. New Business:***a) Water Quality Results Demonstration – Presented by Barry Geddes:***

- In 2008-2009 to get the desired representation of water quality changes, water quality sampling frequency was increased from quarterly to monthly.
- Very recent observations show an interesting upward trend of pH levels (less acidic) in the water across North America.
- Further, this upward trend of pH levels in water corresponds to a decrease in sulphur (SO₂) emissions since 2003.
- Research is being conducted to test the theory that water treatment plants are not working as intended when they were first built, at a time when pH was trending downwards.
- Many water treatment plants were built during heavy industrialization (post WWII) when Sulphur (SO₂) emissions were high. In theory, water treatment processes were designed for a downward-trending type of raw water quality. With recent (last 10yrs) reductions in SO₂ emissions, water quality is trending upwards. It is believed that the recent upward shift in water quality and the more stringent regulations since treatment plants were first built are creating a negative impact on water treatment plant capabilities.

Q: What are the implications to the plant?

A: There is no risk to public health. Halifax Water only wants to improve plant efficiencies. Halifax Water has hired CBCL, industry leaders in assessing and evaluating the function of water treatment plants, to assess what can be done to help our plants make a better product more efficiently.

- Halifax Water's Source Water sampling program provides a baseline and a means of continuous monitoring to assess changes in water quality trends from persistent activities.

Action

- Conducting water sampling helps to identify and understand problems and how or whether they might be rectified. Before we sampled we did not know where contamination sources were coming from.
- For example Halifax Water was able to demonstrate to the Department of Transportation and Infrastructure Renewal (NSTIR) and HRM Transportation that chloride levels in the Chain Lakes watershed during winter road maintenance programs exceeded the CCME guidelines for the Protection of Aquatic Life. By meeting with NSTIR and HRM it was found that some of the routes within the watershed were being double-salted when salt trucks from both agencies crossed over the same area. The practice of doubling-up salt applications was subsequently curbed.

Q: *What are some of the other potential water contaminants e.g., arsenic and mercury?*

A: The Lake Major watershed is a sub-watershed of the Little Salmon River watershed. The Montague Gold Mines area, contained within the Lake Major watershed is a significant gold mining district so samples are collected at tributaries running through this area. Although the samples show higher levels of arsenic in that area than in other areas, the levels are greatly reduced – to a non-detectable limit – once the tributaries reach Lake Major and are diluted in the lake water. However, it is in Halifax Water's best interest to ensure minimal disturbance of the land in these areas to avoid stirring up the minerals that are currently lying dormant in the soil.

Q: *What is the impact on an area based on past historical and current land use activities; e.g., mining?*

A: If we disturb such areas it could disturb any settled contaminants. Therefore, recognizing impacts is paramount. Sampling helps to determine what those impacts might be and whether they are being disturbed. We also monitor areas where there is the potential for a spill and other known risks.

6. Landowner Questions:

Q: *Landowners are concerned about whether the lake level will rise when the Lake Major Dam is replaced.*

A: Once it is determined how high the water levels should be for the new dam, the consultation process will begin. Expect that the water level will rise to approximately 0.5m – which will probably be the highest water level.

Q: *Has there been any development in the watershed area in 2015?*

A: The only development inside the watershed area for 2015 was a communications tower which was erected at the water treatment plant and contained within the parking lot.

7. Municipal Development Update

Nothing to report

Action**8. Election of Officers – September 2016**

- This item is being left on the agenda to remind us when it is due for consideration.
- The Terms of Reference were provided to the Board to inform them of the working policies of the Board.

9. Next Meeting Date:

- March 10 (prior to March Break); March 24 proposed snow date.

10. Meeting adjourned:

4:30 p.m.

Brenton Sparks – Chair

Reid Campbell – Vice Chair

Barry Geddes – Secretary

Lake Major Watershed Advisory Board**Meeting Notes****March 10, 2016 – 2:00 p.m.****Lake Major Water Treatment Plant****ATTENDEES:**

Pearl Cain, North Preston Residents Association.....Community Representative
Reid Campbell, Director of Water Services.....Halifax Water
Julie Ernst, Lake Major.....Community Representative
Andrew Faulkner, Development Officer.....Halifax Regional Municipality
Barry Geddes, Watershed Manager.....Halifax Water
Dawn MacNeill, Watershed Planner.....Nova Scotia Environment
Anna McCarron, Source Water Planner.....Halifax Water
Derrick Stoddard, Area Manager Halifax West.....Nova Scotia Natural Resources
Colin Waddell, Lake Major Treatment Plant Manager.....Halifax Water

REGRETS:

Spencer Colley, East Preston Ratepayers Association.....Community Representative
Bernie Matlock, P. Eng.....Nova Scotia Environment
Matt Nelson, Forest TechnicianNova Scotia Natural Resources
Brenton Sparks, Lake Loon/Cherry Brook Development Association (Chair)Community Rep.
Garry Oxner, Superintendent of Water Supply Plants (no longer on Board).....Halifax Water
Heather Olivella, Protected Areas Coordinator.....Nova Scotia Environment

Table 1: Previous Minutes Action Items and Status

Item Page #	Action Items	Date	Lead	Status
Page 3	Barry Geddes to Contact Krista Hilchey for an update on wetlands in quarry. Update: message left for Krista Hilchey on Mar 7, 2016 – awaiting response.	October 3, 2013 Update: April 23, 2015	Barry	Pending response.
Page 3	Promote Arnold D. Johnson Award to community: Update: Leave on Agenda but remove from Action Item List.	October 2, 2014 Update March 10, 2016	All	Complete
Page 3 and 8	Halifax Water to provide NSCC link to Arnold D. Johnson Award Board members to distribute to local community members. Update: Add promotion of Award as reminder on agenda.	October 2, 2014	Anna/Barry	Complete
Page 4	Make corrections and post approved September 30, 2015 Minutes on website. Update; Not approved due to lack of quorum at Mar 10, 2016 meeting.	September 30, 2015	Anna	Pending
Page 2	Contact Cameron Deacoff about presenting the Preston Area Watershed Study results to the Board. Update: Presentation arranged for October 6, 2016	Sept. 30, 2015	Anna	In progress.
Page 5	Arrange a meeting between Halifax Water and the North Preston Ratepayers Association (NPRPA) to discuss options for swimming in the North Preston Community. Update: Barry Geddes contacted Pearl Cain March 4, 2016 to arrange discussion time. No response to date from NPRPA.	Sept. 30, 2015	Barry/Pearl	In progress
Page 3	Contact the BEA to promote the Arnold D. Johnson Award. Update: Spencer to update.	Sept. 30, 2015	Barry / Spencer	In progress.
Page 3	Julie Ernst requests the name of the contact of the Highway 107 extension project	Sept. 30, 2015	Barry	Complete
Page 6	Send out the most recent letter regarding Bramco subdivision application.	March 10, 2016	Barry	Complete
Page 7	Provide a copy of final draft of the Lake Major SWPP to the LMWA Board for review.	March 10, 2016	Halifax Water	Action required
Page 8	Have educational opportunities, and tour of plant/watershed area.	March 10, 2016	Barry/Anna/Colin	Action required

Action

- Anna distributed copies of:
 - March 10, 2016 Agenda;
 - September 30, 2015 Meeting Minutes;
 - Letter Regarding LMWAB comments on Bramco Holding Inc. subdivision application for PID 40168353;
 - Resource Guide for African Nova Scotian Students; and
 - Annual Source Water Protection Report.
- Barry provided an electronic interactive connection to the Lake Major watershed area map to aid in watershed area discussions.
- Colin Waddell reviewed emergency procedures and facilities location.

BUSINESS MEETING:

Meeting called to order by Barry Geddes in Brenton Sparks' absence.

1. Attendance and Introductions.

- Regrets noted (listed on page 1).
- Lack of Quorum noted (ToR requires 3 of 4 community members); therefore, "Information Meeting Notes" rather than "Minutes" will be recorded.

2. Review of the Previous Minutes

Action Items were reviewed:

- **Wetland Area in close proximity to Quarry area – permit questions:** still waiting response from Krista Hilchey Wetland Program Coordinator for NSE.
- **Promote Arnold D Johnson Sr. award to the community:** Remove from action item in Minutes, add as a reminder to agenda.
- **Proposed Highway Extension:** Remove from Agenda until there is development progress.
- **Swimming in North Preston:** Halifax Water has informed the North Preston Ratepayers Association through Pearl Cain that it is prepared to discuss options; however, there has been no further progress beyond the initial discussion.
- **Spencer Colley's involvement in Arnold D. Johnson Sr. Award promotion through Black Educator's Association:** deferred due to Spencer's absence.
- **Julie Earnst's request for contact name for the Hwy 107 extension project:** Complete.

Action

- **Circulation of Dam PowerPoint presentation to members:** Complete.

Motion to approve the Minutes:

- September 30, 2015 Minutes approval pending next meeting with a quorum.

3. Business Arising From the Minutes

See Action Items reviewed in section 2. of these Minutes.

4. Old Business:a) Lake Major Newsletter:

- Ready for distribution within 2 weeks.
- Brenton Sparks is the Member Profile for this issue – Brenton has provided information and pictures for other newsletter topics as well.
- This issue also includes information on water quality and testing.
- There is also an update on the Lake Major dam water quality testing efforts.

b) Protected Areas (PA) Update:

- In Heather Olivella's absence, Dawn MacNeill shared an update: The addition to the Waverley Salmon River Long Lake Wilderness Area, which is partially located inside the Lake Major Watershed Protected Water Area, has not been approved yet. Still working on some boundary details. Not aware of any specific date for this to happen.
- Halifax Water is still waiting for a decision on a possible land swap with the province.
- The Pockwock Wilderness Area and Bennery Lake Nature Reserve PAs have both been approved by Cabinet; however, a License to Operate for Halifax water within the Pockwock Wilderness Area is still being developed (legal process). Bennery's PA is a Nature Reserve and does not allow a License to Operate.
- The difference between Nature Reserves and Wilderness Areas is that no disturbance is permitted in a Nature Reserve while some activities such as hunting and fishing are permitted in a Wilderness Area.
- A License to Operate is required to allow Halifax Water to conduct its utility needs, even regarding such things as culvert repairs within a Wilderness Area. There is currently an agreement in principle; it's now a matter of creating the documentation.

Action**c) Lake Major Dam Replacement Project Update:**

- The negotiation phase regarding maintenance flow will soon be finished.
 - Maintenance flow in summer is 6m²
 - Maintenance flow in the other 9 months is 20m²
- Next steps:
 - Archeological assessment;
 - Dam design; and
 - Public meetings, targeted in the spring or summer of 2017:
 - Halifax Water is open to advice as to how the public information meeting information will be posted.
- The proposed new dam location was indicated on a map by Barry Geddes.
- The new dam is proposed to be half a metre higher than the existing one, subject to approvals and investigation.
- Last year over 40,000 fish (mainly gaspereaux, but included minor populations of sea trout and suckers) were carried over the dam by the fish pump.

Q: When will construction start?

A: Construction is scheduled to begin in Spring of 2017; however, it depends on timing around when we are permitted to work in the water and validation of the chosen area (based on bedrock and narrows).

Q: Where will the placement of second dam be?

A: Lake levels determine the feasibility and location of the second dam. The long term strategy is to potentially build a second dam 10-50 years down the road, depending on water consumption practices and conservation efforts.

d) Swimming in Long Lake:

- Halifax Water has attempted to contact the NPRA through Pearl Cain. No response from the NPRA to date.

5. New Business:**a) Bramco Holdings Ltd. Subdivision Application**

- November 2015 subdivision application.
- The application area falls partially inside the Lake Major Protected Water Area (PWA).
- Halifax Water provided a map and comments to the membership based on the Source Water Protection Plan and the provincial Wetland Conservation Policy. Under the Wetland Conservation Policy, the

Action

province considers wetlands within a PWA as “Wetlands of Special Significance”, which require further protection. Following the specifications of the Wetland Policy and knowing there are wetland areas within the Lake Major PWA that were not identified on the application, the original application was not recommended for approval because they were considered to be at risk.

- The week prior to the LMWA Board meeting, a second application was submitted by Bramco, indicating the presence and location of the wetlands; therefore, Halifax Water recommends that the application be approved.

Action: Barry to circulate most recent letter.

Barry

b) 69 Bundy Lane

- A single lot was subdivided into 3 lots, of which two, situated in the back, fell within the Protected Water Area (PWA). Halifax Water provided comment to HRM including:
 - Site visits indicated that there were no wetlands or watercourses to be concerned about.
 - The 2 back lots require wastewater service by private on-site septic systems. Halifax Water would like to see a more robust approval process for on-site septic systems within the PWA which may require amending the PWA regulations.
- Communications between Halifax Water and HRM have greatly improved with respect to the development application review process, especially within Protected Water Supply zones. Halifax Water is working with NSE to develop a similar review process whereby Halifax Water is recognized within the PWA when it comes to permit approvals within the PWA.
- The resulting recommendation to the membership was: there were no concerns by Halifax Water with respect to watercourse/wetland issues except for on-site septic concerns which needed to be, and were addressed.

c) 2016 Annual Source Water Protection Plan (SWPP) Report

- Barry explained the **review process to the Board for the annual SWPP**, which is that the report must be reviewed by the Board for review and comment, prior to being submitted to NSE.
 - The report is a “tell-all” to NSE on accomplishments and outstanding issues for the previous year and how to improve and build upon source water protection initiatives for upcoming years.
 - Pages 2 – 8, inclusive describe the general SWPP overall.
- **Section 2.2 Emergency Response and First Responders:**
 - Incidence Command System (ICS), a management system, began in 2012, which improved communications and allowed Halifax

Action

Water to learn about spill sites and accidents within the watershed in a timelier manner.

- **Partnerships** (Page 8 of Annual SWPP Report)
 - Halifax Water was approached in 2014 by the Mountain Bike Association to put in a trail system in the Spider Lake area. Halifax Water met with the Mountain Bike Association to establish guidelines and criteria for mountain biking in the area, similar to the Geocaching Policy developed for that group in 2012. No response to date from the Mountain Biking Association.
 - The Geocaching Policy referred to above was created in Partnership with the Atlantic Canada Geocaching Society and Halifax Water, which provides strict guidelines regarding geocaching activity. As long as the guidelines are followed, they are permitted.
- The Board reviewed Section 3.1.1: Lake Major Watershed accomplishments/update in the Annual SWPP Report.
- Every 7 years, a **draft review of the SWPP** is completed and sent to NSE.
 - Currently in the process of reviewing the Lake Major SWPP.
 - The SWPP is a detailed plan which includes land-use history, identification and management of current activity, and water quality monitoring which takes place within the watershed area.
 - Dawn MacNeill indicated that the Board should be provided with an opportunity to review and provide input to the SWPP.
 - Barry indicated that the SWPP will be made available for the Board to review.

Action: Barry to provide the SWPP final draft for the Board's review.

- **House demolitions:** Pearl suggested relocating or salvaging houses slated for demolition if possible; i.e., if they are in good condition and in a good environmental state. This could be considered, if cost efficient and the work tender is conducted through a public process.
- **SWP Brochure.**
 - The draft brochure was circulated to the members for information purposes and comment.
- Dawn suggested that **Education** be a standing Agenda item (like Landowners and Municipal updates), to raise awards and events, etc., newsletter, brochure, any BBQs, tree planting events and other public relations information items.

Action: Provide educational opportunities, e.g., tour of plant and the watershed area.

Barry

**Barry/Anna/
Colin**

Action**6. Landowner Questions:**

No questions were raised.

7. Arnold D. Johnson Sr. Water Resources Award Update:

African Canadian Student Services Resource Guide circulated:

- The Guide contains information on the Arnold D. Johnson Sr. Award.
- Copies of the Guide were circulated amongst the members to be posted at the Church and North Preston Community Centre.
- The Guide may be found online at <http://www.nsc.ca/docs/student-services/africancanadianguide.pdf>.

8. Municipal Development Update:

Nothing to report

9. Election of Officers – September 2016:

Remains on Agenda as a reminder when it is due for consideration.

10. Next Meeting Date:

October 6, 2016.

11. Meeting adjourned:

4:30 p.m.

Brenton Sparks – Chair

Reid Campbell – Vice Chair

Barry Geddes – Secretary – Acting Chair at this meeting

Lake Major Watershed Newsletter



Volume 9 Issue 1

Summer 2015

Lake Major Dam to be Replaced



The existing Lake Major Dam is a rock-filled timber crib structure originally built for a private milling operation in the 1940s. It is located just off Lake Major Road in North Preston. The former City of Dartmouth took ownership of the Lake Major dam in 1960 during improvements to the Dartmouth water supply system, when Lake Major became the primary water source for Dartmouth and area communities. Halifax Water assumed ownership of the dam during amalgamation of the municipality in 1996.

Halifax Water carried out a Dam Safety Review in 2012 which recommended that consideration be given to the replacement or upgrade of the dam. Based on that recommendation, a consultant has been retained to study viable locations for a replacement structure.

During a routine inspection, Halifax Water crews discovered issues with the fish ladder adjoining the Lake Major dam. It was determined that the fishway structure required stabilization. Although the dam is structurally sound, immediate repairs to the fish ladder were required. An emergency repair was conducted on January 17, 2015 which involved a mandatory evacuation of approximately 135 homes near Little Salmon River, downstream of the Lake Major dam.

The work to replace the dam is currently in the conceptual design phase. The location of the new structure will be based on a number of key items including:

- minimizing environmental impacts;
- allowing fish passage through the structure; and
- satisfying current and future water supply demands.

As part of the design process, Halifax Water will be conducting public consultation on the concept designs.

Water Protection: A Multi-Barrier Approach

From the source to the tap, Halifax Water ensures top quality water is delivered to our customers. To protect its water supplies, including Lake Major, Halifax Water uses a multi-barrier approach (see www.halifax.ca/hrwc/WaterQualityManagement.php) which involves a system of checks and balances from the source to the tap, guided by the step process outlined in *Developing a Municipal Source Water protection Plan: A Guide for Water Utilities and Municipalities* found at www.novascotia.ca/nse/water/docs/WaterProtectionPlanSummary.pdf. This step process achieves the goals set out in the *Drinking Water Strategy for Nova Scotia* (see <https://novascotia.ca/nse/water/docs/NSWaterStrategy.pdf>).

These systems and processes are illustrated and described in more detail in previous issues of the Lake Major Newsletter found at www.halifax.ca/hrwc/Publications.php#LMNews.

The previous issue of this newsletter explained the third step in Halifax Water's multi-barrier approach – **Cross-Connection Control and Backflow Prevention**.

This issue and next will focus on the second-last step of Halifax Water's multi-barrier approach; i.e.: **Continuous Monitoring and Water Quality Testing**.

Please turn to the back page to learn how Halifax Water monitors and tests the raw source water before it reaches the water treatment processing plant.

Lake Major Community News

Halifax Water provided funding towards the Cherry Brook BBQ and clean-up held on June 6, 2015. Approximately 40 community members participated.



In the last issue of this newsletter we reported the fundraising efforts by the Lake Loon-Cherry Brook Development Association (LLCBDA) to acquire the abandoned community centre, an historical landmark, pictured above.

In April 2015, Halifax Regional Council declared the community centre property at 220 Lake Loon Road, Cherry Brook and a portion of the adjacent property at 266 Lake Loon Road (for septic and parking), as "surplus to municipal purposes". These properties have been categorized as "Community Interest" under Administrative Order 50 (see details at http://www.halifax.ca/surplusproperties/communityinterest/documents/CherryBrookCommunityCentre_PosterBoard.pdf). They may now be purchased by a not for profit group at less than market value. Council's decision has opened the door a little wider for the LLCBDA to pursue its goal to restore the community centre for the benefit of the community.

Attention

African Nova Scotian Students!

Halifax Water, through the Nova Scotia Community College, is offering a

\$7200 bursary through the Arnold D. Johnson Award

to an African Nova Scotian Student enrolled or enrolling full-time in the

NSCC Waterfront Campus Environmental Engineering Technology Program!

Application deadline is

Wednesday October 21, 2015

For more information please visit http://www.nsc.ca/admissions/scholars_hips_and_bursaries/student-awards/default.aspx

Halifax Water on Screen

To see the work we do at Halifax Water and some of the faces of the dedicated staff who perform this work, we invite you to visit our

YouTube Channel link at:

<https://www.youtube.com/channel/UC4SuO2XqgECbp2qNFK7f7kKQ>

The Lake Major Watershed Newsletter is a Halifax Water publication.

Visit: www.halifaxwater.ca

Phone: Customer Service at 490-4820

Email: Cust_Inq@halifaxwater.ca

Fax: 490-4749

Write: P.O. Box 8388 RPO CSC, Halifax, NS B3K 5M1

**24 hr Emergency Phone:
(902) 490-6940**

LMWAB Member Profile: Spencer Colley



Spencer Colley is among our newest members of the Lake Major Watershed Advisory Board (LMWAB) representing the East Preston Ratepayers Association. Spencer was born, raised and educated in East Preston and married Rose Glasgow. Together they raised two sons and a daughter. Spencer worked for the Halifax Regional Police Department and retired in 1997 after approximately 26 years of service.

Although Spencer grew up in a Progressive Conservative home, he embraced the ideals of the Liberal party and joined their ranks in 1995. His enthusiasm for the Party was instrumental in securing a victory for Wayne Adams who was elected to the provincial legislature under the John Savage government that same year. Adams holds the distinction of being the first Nova Scotia black MLA and Cabinet Minister and held the Environment portfolio from 1996 – 1998. Prior to becoming an MLA and while councillor for the area, Adams sat as a member of the Lake Major Joint Action Committee, from which evolved the LMWAB.

After holding many positions within the Preston Liberal Association, Spencer became President in 2000 and held that position for more than two terms. While President, Spencer helped Liberal MLA, Keith Caldwell, become elected for the Preston Constituency. Keith is serving his second term.

Spencer is now Past-President and one of the most involved and active members in the Association, heading all fundraising endeavours, special projects and often assisting the MLA in preparing presentations.

In addition to supporting the Federal and Provincial Liberal Associations, Spencer's community service extends to the East Preston Ratepayers Association, which has led to his membership on the LMWAB.

Spencer places high importance on keeping himself and others informed which is demonstrated by his volunteer position on the LMWAB, to create more awareness in the watershed community about keeping clean water clean and safe for those served by Lake Major. Welcome to the Board, Spencer!

Watershed Monitoring

Watershed monitoring consists of maintaining a presence in the watershed area by way of patrolling, encouraging public reporting of unauthorized or suspicious activities, conducting raw and treated water sampling, and liaising with various governing agencies and stakeholders to ensure a clean and safe drinking water supply. Effective monitoring of the Lake Major watershed area also highly depends on maintaining good relationships between the authorities responsible for regulating and protecting the drinking water supply and the source water area community representatives.

The key mechanism for effective monitoring of the Lake Major watershed lies within the **Lake Major Watershed Advisory Board (LMWAB)** which consists of representatives from the Lake Major, North Preston, East Preston, and Lake Loon /Cherry Brook communities and the regulatory authorities for the water supply and area. Development of the LMWAB was the first step in the multi-barrier approach for source water protection in the Lake Major watershed.

Raw Source Water Quality Testing

Raw source water quality testing for the Lake Major water supply begins at the water supply source, that is, Lake Major. Raw (source) water samples are collected and/or parameters measured at strategic points inside the watershed area.

While some source water quality testing parameters are measured with hand-held instruments in the field (*in-situ*), other parameters are measured by collecting water samples in specialized bottles which are delivered to an independent lab for assessment.

Source water samples are measured against available [Water Quality Guide-lines for the Protection of Aquatic Life \(WQGPAL\)](http://st-ts.ccme.ca/en/index.html) (<http://st-ts.ccme.ca/en/index.html>) set by the Canadian Council of Ministers of the Environment (CCME). In many instances, these WQGPAL are more stringent than the "[Guidelines for Canadian Drinking Water Quality](#)", (GCDWQ) as established by Health Canada. When WQGPAL are not available, GCDWQ are used.

Raw water is also sampled at the water supply treatment plant where continuous testing is an integral part of the **operational treatment process**, part II of the *Water Management Program*, to be described in the next issue of this newsletter.

Prior to 2009, source water quality monitoring consisted of collecting raw water samples at the water treatment plant and/or in response to emergencies to fulfill regulatory obligations. In September 2009, Halifax Water updated and formalized its raw water sampling program to include a proactive *five-part Source Water Quality Monitoring Program (SWQMP)* to measure watershed health at established sample sites (described above) with respect to baseline, risks, activities, targets and operations.

Baseline sampling is used to set water quality parameter baselines within the watershed area. *In-situ* baseline sampling parameters include Dissolved Oxygen, pH, Temperature, Specific Conductivity, and Turbidity. Lab tested parameters include Total Suspended Solids, *E. coli*, Total Phosphorus, Nitrate-Nitrogen, Total Organic Carbons, Total Chlorides and a metals scan. All baseline parameters are measured monthly except for the metals scan which is measured twice per year.

Deep Lake baseline monitoring and testing is also collected, in season, for similar testing parameters at 1m intervals along the water column.

Subsequent water quality sample data results are compared with baseline measurements to determine whether any changes in water quality parameters require an investigation and whether they are associated with land use activities.

Risk-based sampling is scheduled and testing parameters are specifically linked to probable risk(s) (e.g., petroleum-hydrocarbons in association with highways). Test results may prompt changes in water quality management, protection efforts, regulations and/or restrictions of certain activities.

Activity-based sampling is scheduled based on known events including forestry, road de-icing, construction and other known activities. The parameters tested for are determined by the activity and the impact it may present to the water supply source. Activity-based sampling test results help determine cause-and-effect relationships and short and long-term effects of impacts on the watershed area; how to best manage land-use activities; and the frequency with which physical patrols and water quality monitoring need to be conducted.

Target-based sampling is done in response to incidents or unplanned events such as a fuel or environmental spill, significant weather events, vandalism or malicious intent. Such sampling monitors the impacts of events with the potential to shut down the pumping station and provides a warning system that helps to protect customers.

Operational raw water sampling is routinely performed as per regulatory requirement to uphold operation permits. Such sampling is the responsibility of all water quality supervisors and managers.

Raw water compliance monitoring is also conducted at the water supply plant intake and reported back to Nova Scotia Environment.

Water quality data gathered for both operational and raw water sampling programs may be used as supplemental data for either program if necessary.



Halifax Regional Water Commission

450 Cowie Hill Road, P.O. Box 8388 RPO CSC, Halifax, Nova Scotia B3K 5M1 phone 902 490-4820 fax 902 490-4808

October 27, 2016

Lake Major Watershed Newsletter Recipients

Re: Lake Major Dam Replacement

This letter is to inform you of the upcoming public information session for the Lake Major Dam Replacement Project. Halifax Water staff, along with representatives of their consultants will be available to provide information on the project and answer questions between 7:00pm and 9:00pm on Thursday, November 10th, 2016 at the Graham Creighton Junior High Cafeteria, located at 72 Cherry Brook Road.

The existing dam was built in the 1940's and is at the end of its service life and in need of replacement. Halifax Water is currently seeking regulatory approval for this project, which includes public consultation. The session will be to provide general information about the studies that have been completed to obtain approval for construction from the Nova Scotia Department of Environment.

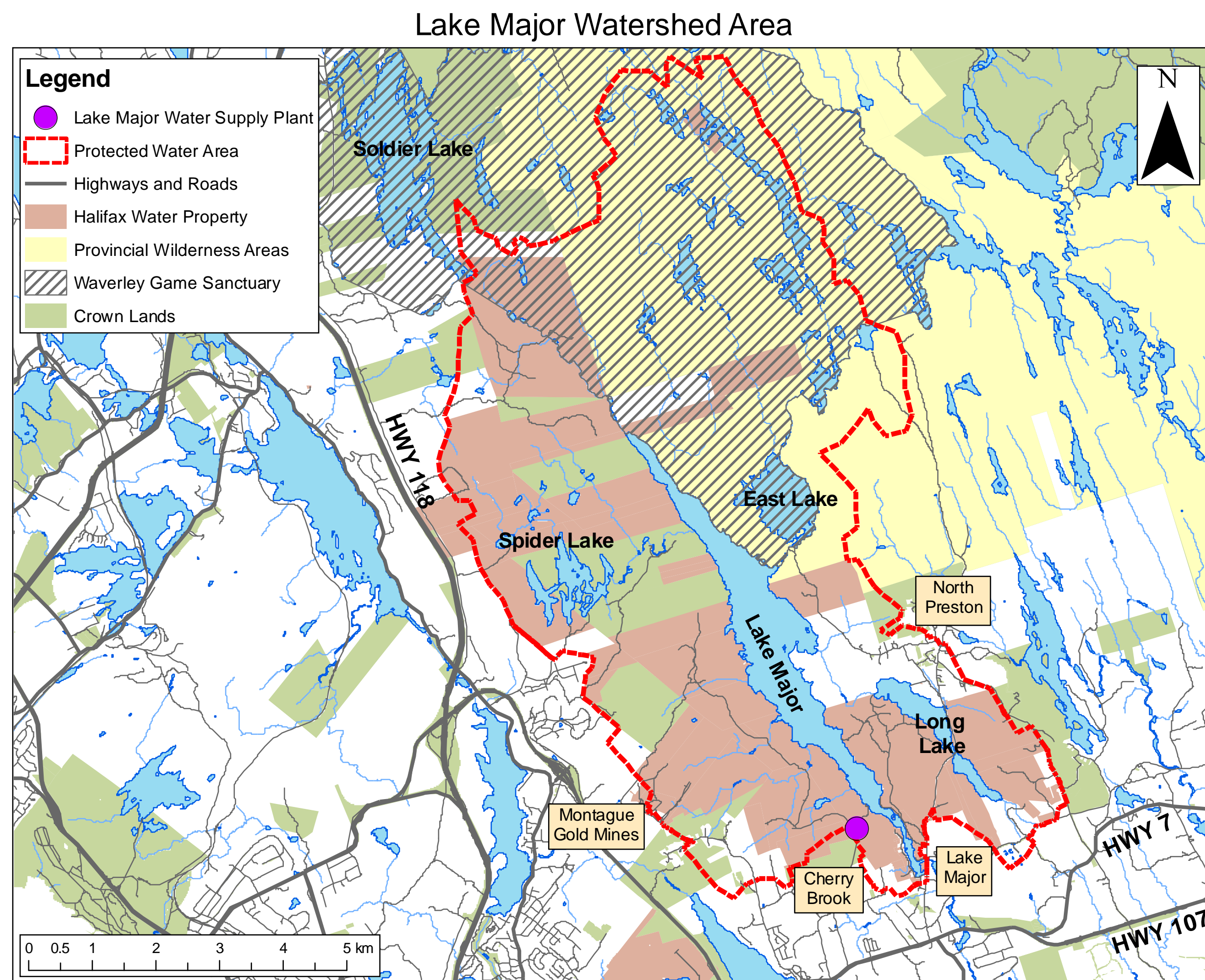
If you have any questions or concerns about this project you can attend the session or contact me at the number below.

Sincerely,

Jonathan MacDonald, P.Eng
Project Engineer
Cell: 902-818-0913
jonathanm@halifaxwater.ca

LAKE MAJOR DAM REPLACEMENT

GENERAL INFORMATION - LAKE MAJOR DAM



CONTEXT

- The Lake Major Watershed provides water to Dartmouth, Cole Harbour, Eastern Passage, Westphal and North Preston.
- It encompasses about 7,000 hectares (70 km²) and is designated as a protected water area under the Nova Scotia Environment Act and Lake Major Protected Water Area Regulations.

LAKE MAJOR DAM

- The lake/reservoir level, and therefore water supply, is controlled by the Lake Major dam, located near the south end of the lake.
- The Water Utility assumed ownership of the Lake Major dam in 1960. Lake Major took over from Lake Lamont as the primary source of water for the Dartmouth System.
- The Lake Major Water Supply Plant was constructed in 1999.



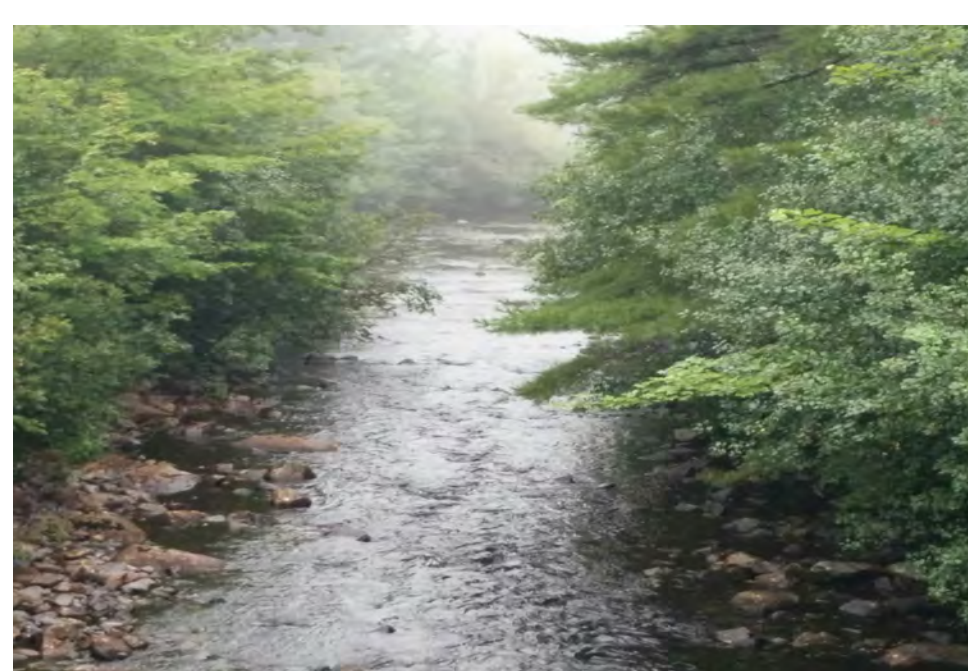
IMAGE OF DAM FROM BRIDGE
Credit: Google Earth

LAKE MAJOR DAM REPLACEMENT PROJECT

- The existing dam is a rock-filled timber crib structure and was built for a private milling operation in the late 1940's.
- Lake Major dam is reaching the end of its useful life and needs to be replaced.
- The timber fish ladder was taken out of service in 2015 and replaced with a fish pump for upstream migration and steel overflow chute for downstream migration.
- The existing rock-filled timber crib dam will be replaced with a concrete structure.
- Current water level in Lake Major is at an elevation of about 19.0 m. The new dam will allow for water levels of 19.5 m. This is slightly lower than the maximum historical water levels.



DAM INSPECTION 2014



TYPICAL LOW FLOW
DOWNSTREAM OF BRIDGE



ORIGINAL FISHWAY IN
OPERATION



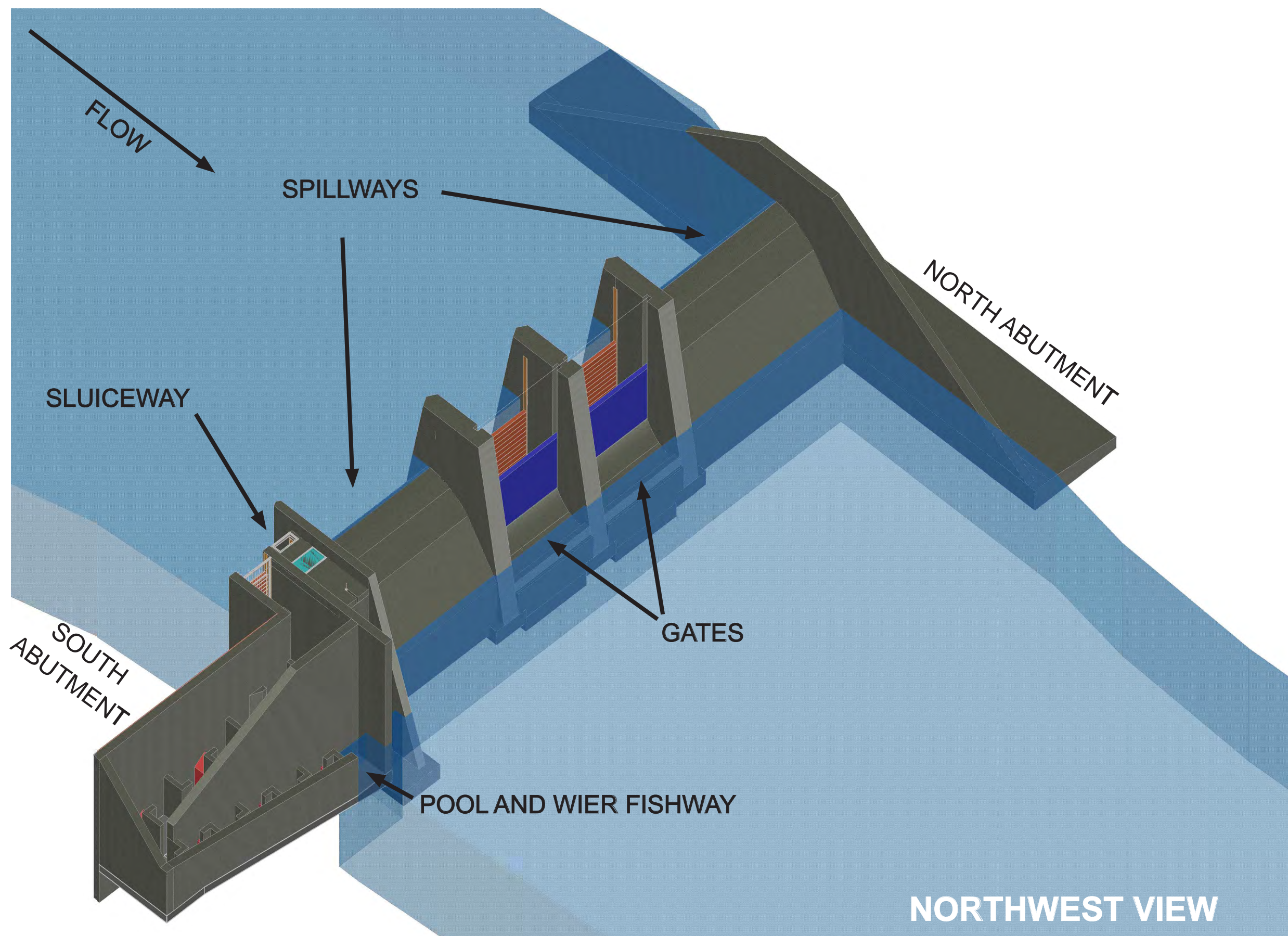
CURRENT CANAVAC FISH
TRANSFER SYSTEM



EXISTING SYSTEM ENCLOSURE AND
SIPHON

LAKE MAJOR DAM REPLACEMENT

THE NEW DAM

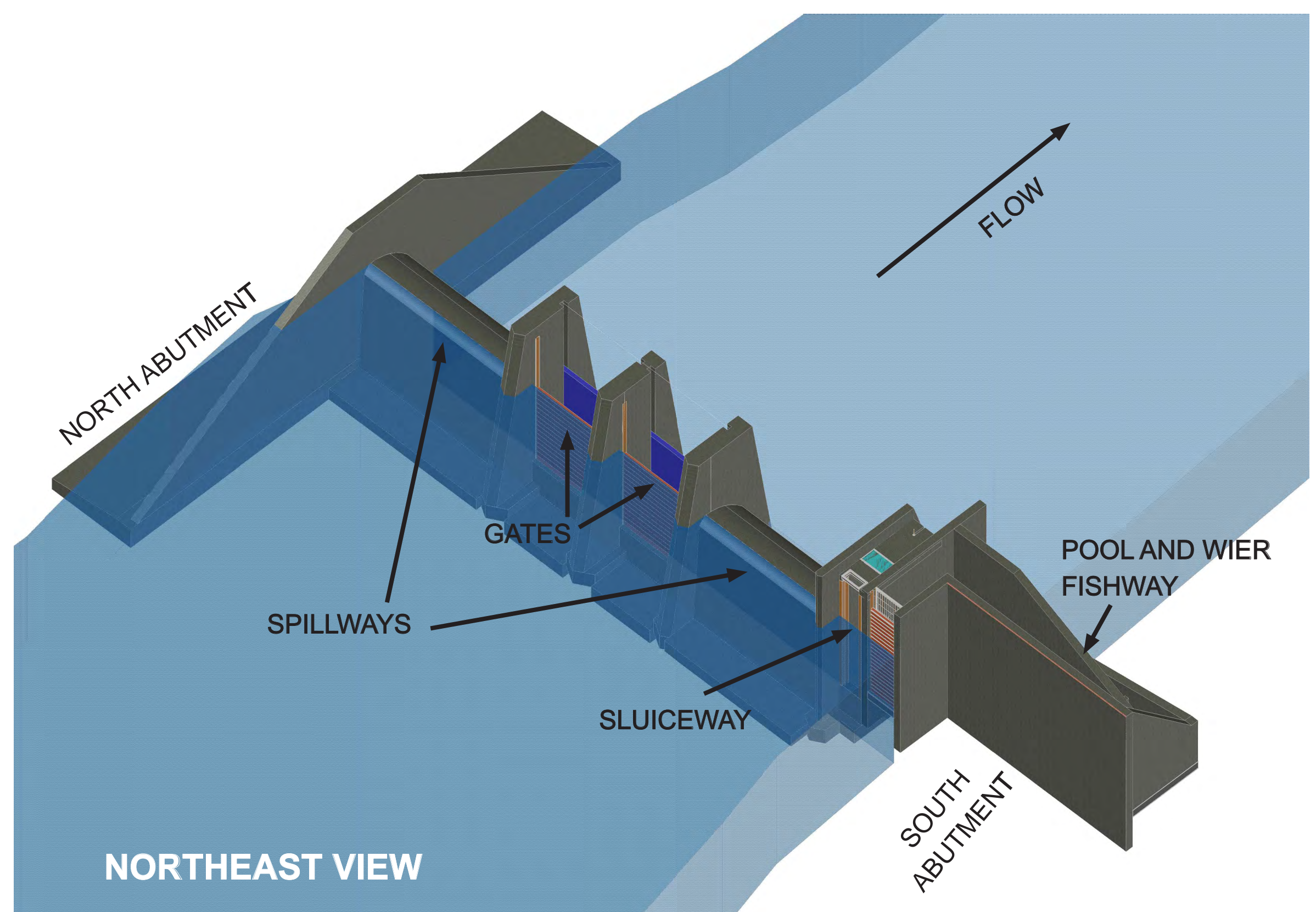


THE DAM INCLUDES

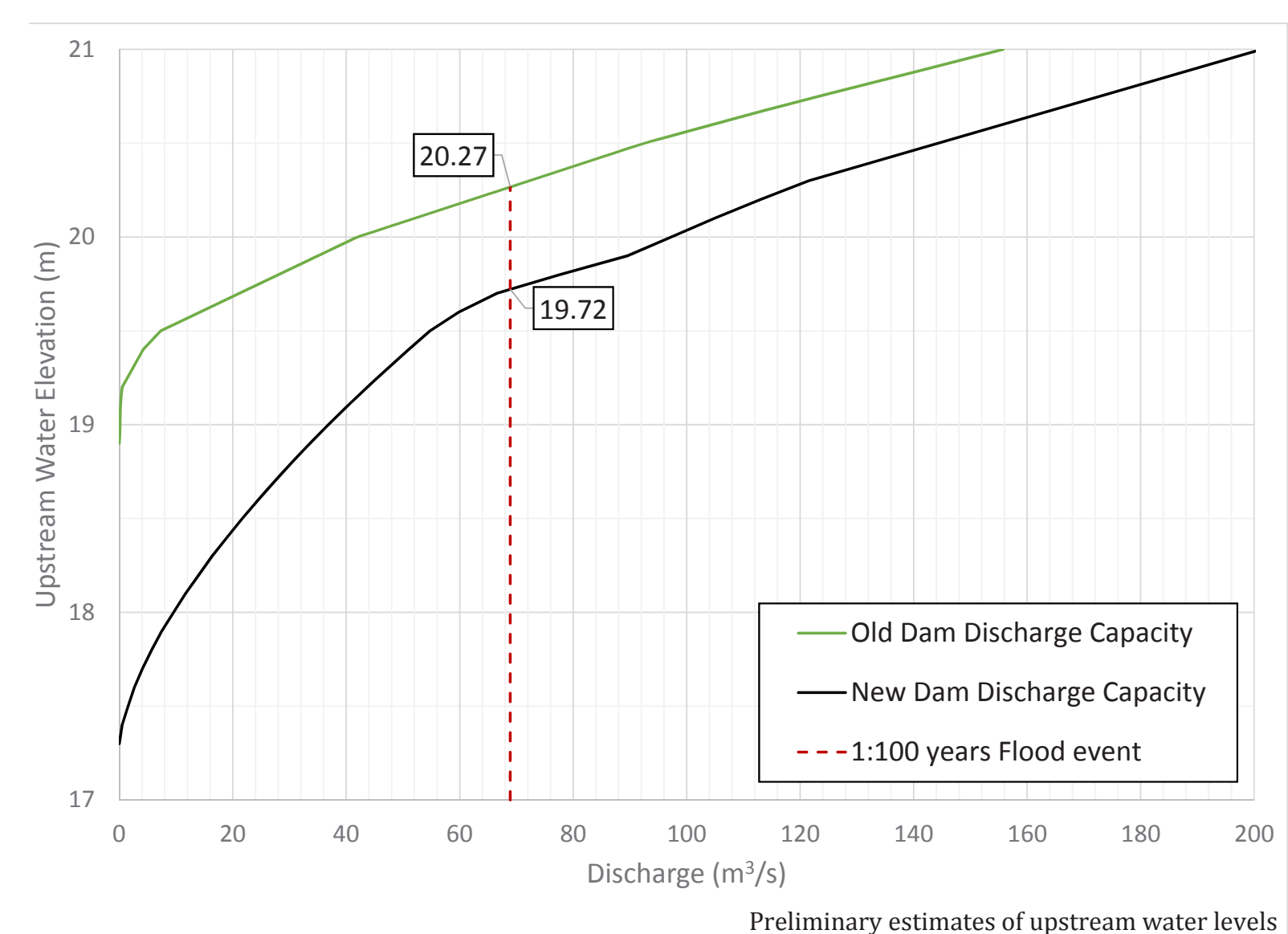
- The proposed new concrete structure will consist of:
 - 2 gates to help regulate flow over the dam;
 - 2 spillway sections to help mitigate flood risk;
 - A sluice gate to provide maintenance flows to support downstream aquatic life;
 - New “pool and weir” fishway (Fisheries and Oceans Canada approved) to support the migration of fish;
 - Retaining walls and earth filled abutments on each side.

FEATURES

- The new dam will provide significantly more flexibility to manage water levels upstream and downstream of the dam.
- More storage in the reservoir to mitigate periods of drought.
- The fishway is designed in accordance with Department of Fisheries requirements and past studies to improve the fish migration past the Lake Major Dam.
- Provides more reliability and a longer life span (50+ years).
- Reduces flood related risks upstream and downstream of the dam.



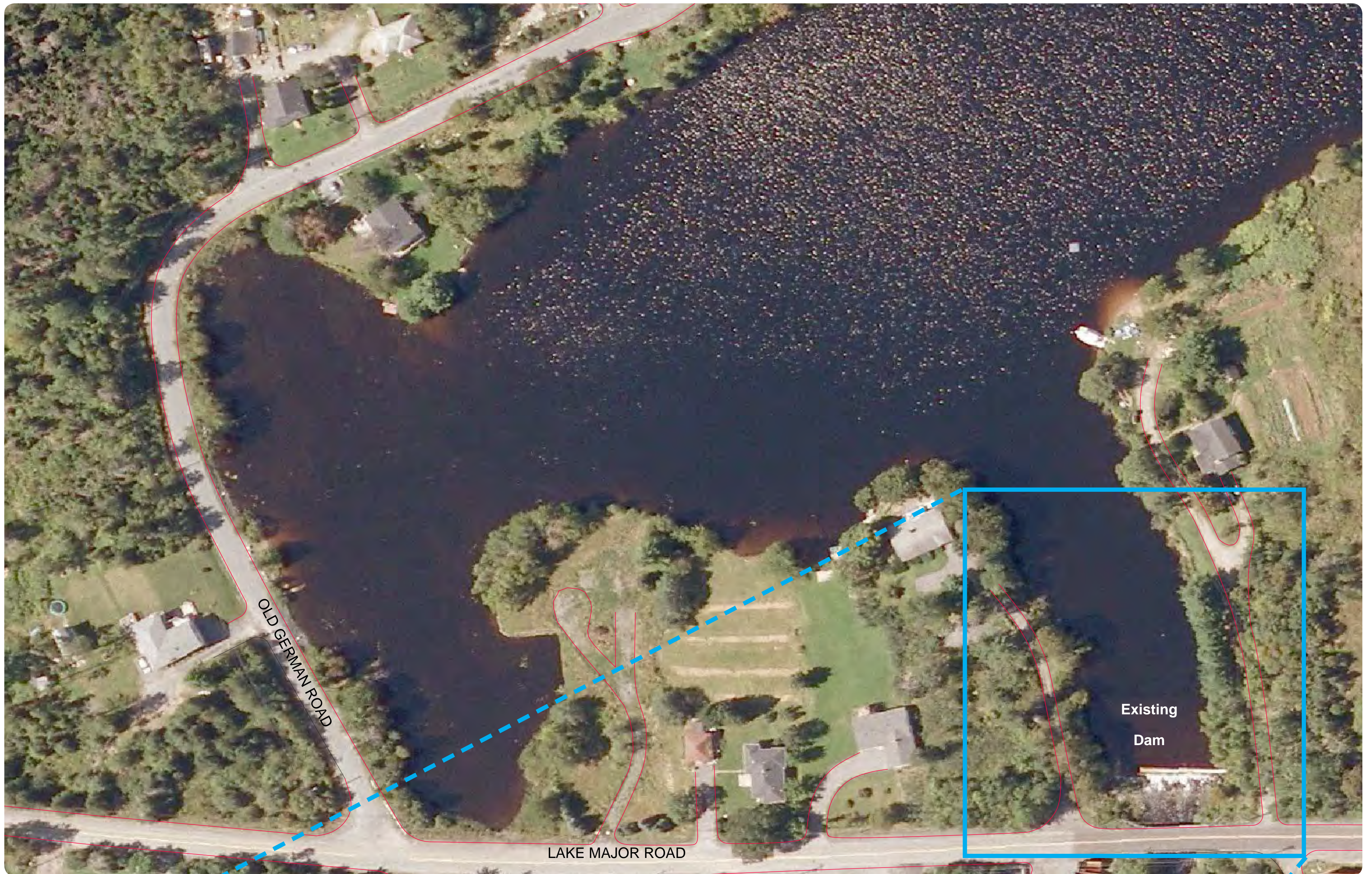
EXAMPLE POOL AND WEIR FISH LADDER AT SANDY LAKE DAM



APPROXIMATE UPSTREAM WATER LEVELS FOR A 1:100 YEAR FLOOD EVENT

LAKE MAJOR DAM REPLACEMENT

NEW DAM LOCATION AND LAYOUT



These aerial views show the area of Lake Major in the immediate vicinity of the project.



Above, the existing dam can be seen at the bottom right hand side, adjacent to the bridge.

The image to the left shows the new dam location with fishway and a representation of how the new stream bed will look.