4.0 Project Terms of Reference

4.1 Project Summary

The Town of Halton Hills Recreation and Parks Department invites consulting firms to submit proposals for the preparation of an update to the Fairy Lake Water Quality Study for Fairy Lake in Acton, Ontario. Refer to Figure 1 for a context map of Fairy Lake and the adjacent Prospect Park (30 Park Avenue, Acton).

Fairy Lake is located in Acton near the headwaters of Black Creek adjacent to Prospect Park and Rotary Park, surrounded by residential properties. The man-made lake is also adjacent to rural lands, campground/trailer parks, and natural open spaces.

The lake originated in 1830 when the Adams brothers built a dam on Black Creek to create a mill pond in order to operate a flour mill and a saw mill. Prior to the creation of the lake, the area was a wetland.

Today, the dam remains in place and maintains the water levels creating the 'lake'. Fairy Lake is approximately 26 hectares and is used for boating, swimming and fishing providing scenic views from various vantage points.

The Town has undertaken various studies of the Lake over the years; most recently the Fairy Lake Water Quality Study approved in 2010. These studies including the most recent water quality study are included in the appendices.

There is one public beach in Prospect Park monitored by the Region of Halton Health Department referred to as "Old Beach". The water quality at this beach has degraded over the years, and for the majority of summers in recent years, the beach area has had sign postings noting it is unsafe. Beach Water Quality testing results are included in the Appendices. The Town recently replaced the dock by the Boathouse in Prospect Park, and this area is now used seasonally by Holy Cow Canoes who provide canoe and kayak rentals seasonally as a contract service. There is no official beach access at this location.

Fairy Lake is also part of a designated Provincially Significant Wetland (PSW) and the surrounding area also includes additional PSWs southwest of the lake

The ongoing management of Fairy Lake is handled by various Town departments, including Recreation and Parks (overall management directions, natural/recreation/trail capital design/construction, community outreach and projects); Transportation and Public Works/Park Operations (day to day operations and major infrastructure capital design/construction) as well as broad interest from the Town's Climate Change & Asset Management division with respect to one of the Town's key natural assets.

There is also significant interaction with Halton Region and Credit Valley Conservation Authority who both have interests in water quality issues surrounding the lake due to the Acton WWTP downstream on Black Creek, the Prospect Park WTP located in the Park, and the key location in the Black Creek Watershed. The Region's health department is also involved due to ongoing beach and water quality monitoring associated with existing recreational uses of the lake (beach access) and blue green algae. The appendices include the Black Creek Subwatershed Study, and the Black Creek Watershed Management, Implementation and Monitoring Plan prepared by CVC (2019).

Since the completion of the 2010 Water Quality Study, the Town's ongoing management has focused on creating or maintaining naturalized buffers to the lake, egg oiling, and education. Recently, the Town has worked to reduce use of fertilizers containing phosphorous for parks adjacent to Fairy Lake. An information gap since the completion of the 2010 study is that no ongoing testing has been conducted to determine

the effectiveness of these ongoing programs.

The Town has also worked with Halton Region on an overall phosphorous reduction program within the Black Creek watershed as part of the Acton WWTP expansion, which is likely to affect the nutrient levels in Fairy Lake. This work is ongoing in coordination with CVC who is testing water quality in association with the works. More information on that study can be found on the project board and at the link found in the Appendices.

Over the past two years, blue green algae has been identified in the lake, and there has been increasing public concern about the conditions in the lake both from an ecological standpoint and a recreational standpoint. Each year there are a variety of public complaints/concerns around topics from natural vegetation blocking the views, to presence of blue green algae, quality of the water, or concern with levels of aquatic vegetation in the lake. Climate change is expected to have a significant impact on the Lake which is one of the Town's key natural assets, and may make ongoing management more challenging.

The Credit Valley Conservation Authority, Region of Halton and the Town are also partnering with the University of Guelph on a project which would test and monitor blue green algae levels as well as other parameters related to inland lakes.

In February/March 2020, a public survey was undertaken and some educational information was assembled for the public. The results of the survey are included in the Appendices and a web page was set up to provide the public with general information about Fairy Lake. The pages can be viewed here at the Town's Let's Talk Page or on the Town's Website.

As identified in the 2020 survey, as well as previous public consultations for Prospect Park (See Appendix for 1999 Master Plan) and Fairy Lake, Fairy Lake is a unique resource in the Town with tremendous recreational and cultural potential. The challenge to address the issue of water quality is to identify specific issues that are manageable by the Town and their community partners.

The goal of the study is to provide an update to the 2010 Fairy Lake Water Quality Study, including to review/update the testing data/results, and evaluate the existing and future management strategies required to meet the Town's objectives.

The critical factors identified by the Town for this study are:

- Establish an updated baseline and an ongoing monitoring program for water quality data;
- Review and evaluate the current best practices being undertaken by the Town (i.e. egg oiling, buffers) and make recommendations for ongoing management;
- Review Recreational Water use (i.e. beach use, boating, fishing, trails/boardwalks, etc.) and impacts of Recreational Water use on the natural systems;
- Review rare or significant species in Fairy Lake, as well as invasive species impacts;
- Review considerations for Blue Green Algae in Fairy Lake;
- Consider the Town's climate change goals and initiatives, as well as integrating with the Town's Natural Asset Management strategy as related to Fairy Lake.

4.2 Requirements

Project Team

The project team to complete the scope of work should include an ecologist (interrelationship of organisms and their environment), botanist (biologist specializing in study of plants), limnologist (specialist in the study of freshwater ponds and lakes) and engineers (experienced in surface water management or other related fields). The project team would be required to have proven experience in weed and waterfowl management methodologies. The project team should also have demonstrated experience in

projects which require balancing natural systems with recreational impacts and experience in facilitating and consulting with the public.

The project team must have an appreciation of Fairy Lake's tremendous natural assets, importance to the community, and the Town's clear desire to recognize the challenges and develop an action plan to approach them.

Scope of Work

The following preliminary scope of work has been identified by the Town's technical committee for this project, but the proponent may update and provide supplemental recommendations for the scope of work based on their review of the RFP.

1. Provide a comprehensive update to the findings of the 2009 Fairy Lake Water Quality Study.
2. Undertake water/sediment testing to reestablish the baseline of testing results from the original water quality study.
3. Design and provide an implementation strategy for ongoing testing and monitoring of the water quality, including estimates of costs. Confirm phosphorous testing methods and applications as outlined in original Water Quality Study (2009).
4. Review and evaluate the current best practices being undertaken by the Town (i.e. egg oiling, buffer effectiveness/health). Make recommendations for ongoing management practices to be continued or new practices to be implemented, including evaluation of order of magnitude costs for any potential practices.
5. Review the current levels of Canada Geese in comparison to the previous study, and evaluate/confirm actions related to Canada Geese.
6. Review the current level of aquatic vegetation compared to the original study and evaluate/confirm actions related to aquatic vegetation.
7. Review and identify the presence of invasive species in Fairy Lake and evaluate the impact on the lake. Include recommendations for options for managing invasive species on an ongoing basis if appropriate.
8. Identify generally any rare or significant species of plants or animals known to be present in Fairy Lake and the potential impacts of current and future water conditions. Does not include a full vertebrate/invertebrate field inventory.
9. Evaluate the impact and issues surrounding Recreational Use and compatibility with the current conditions of Fairy Lake, including but not limited to swimming, boating, fishing, trails/hiking.
10. Review considerations for Blue Green Algae in terms of analysis of the conditions conducive to Blue Green Algae, potential mitigation steps to reduce/eliminate Blue Green Algae, and comment on the feasibility of potential mitigation measures. Coordinate with CVC/University of Guelph project on Blue Green Algae Monitoring as needed.
11. Review and Confirm the lake bathymetry from the 2009 study. Provide a separate price for a comprehensive bathymetry survey if determined to be required.
12. Consult and Coordinate with CVC on the Black Creek Watershed Management, Implementation and Monitoring Plan completed by CVC (2019) and endorsed by Town Council.
13. Consult and Coordinate with the Town's Transportation and Public Works department and Halton Region to include a basic review of the broader phosphorous reduction actions being implemented to evaluate their effectiveness with relation to Fairy Lake Water quality, as well as any impacts arising from recent works on Fairy Lake Dam.
14. Consult with Halton Region Health Department on water quality standards and approaches for Recreational Water (i.e. Beach testing, BGA notifications),

including an assessment of the viability of continued beach operation.

15. Consult with the Public to identify opportunities, constraints, and priorities for the Town to consider when approaching the Management of Fairy Lake and surrounding lands (refer to 2020 Survey in Appendices). Make recommendations for an ongoing communication strategy (i.e. interpretive signs, homeowner guides, social media strategy) which could be implemented by the Town.
16. Review and identify Climate Change impacts on the ongoing management of Fairy Lake.
17. Work with a Cross Departmental Team including Transportation & Public Works, Recreation & Parks, Climate Change & Asset Management, as well as Credit Valley Conservation Authority and the Region of Halton. The Consultant should identify the quantity and frequency of meetings with the Cross Functional Team and approach to working with the committee.

The Town of Halton Hills will provide all available GIS base layers, and will coordinate all logistical requirements for Technical Committee and Public meetings, including an online platform for virtual engagements as required.

The Town acknowledges that COVID-19 may impact the completion of this Study. The Consultant should outline any assumptions to the scope of work due to COVID-19, including virtual meetings, etc. As the COVID situation may change over the course of the study, these assumptions will be the basis of any changes to the scope of work.

4.3 Time Frames

The Town preferred timeline would be to commence the project in Spring of 2021, to allow for a full 12 month of testing updates (if required) to adequately update the previous study. It is anticipated that the project would be completed by Summer of 2022. The Consultant should confirm or propose an alternate timeline based on their review of the RFP and understanding of the scope of work required. All prices shall be considered firm for the duration of the assignment.

4.4 Budget

The total budget allocated for this project is $50,000 including all taxes and disbursements.