March Road Pumping Station Class Environmental Assessment and Functional Design Study

Draft Report

Prepared for:
City of Ottawa

Prepared by:
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Sign-off Sheet

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Executive Summary

Stantec Consulting Ltd (Stantec) has been retained by the City of Ottawa (City) to complete this Class Environmental Assessment of the existing March Road Pump Station located at 305 Legget Drive. Stantec's scope of work concerning this pump station also includes a condition assessment, functional design, and various other environmental and site investigations (refer to attached appendices).

The March Road Pump Station is a one story control building over a wetwell constructed in 1972. The station currently accepts flow from the Marchwood Trunk Sewer and the East March Trunk Sewer, and dischargs through a 1.3km long forcemain. Much of the station's equipment is original and is in need of general repair and upgrade.

Changes identified in the City's West Urban Community Wastewater Collection System Master Servicing Plan (WUC WCSMSP) study confirmed the completion of the North Kanata Gravity Trunk Sewer. This sewer will divert flows from the Marchwood Trunk Sewer away from the pump station, and allow the station to be converted to a low-lift pump station and sized to handle future flows from only the East March Trunk Sewer.

Three viable alternatives were identified for the conversion and upgrade of the pump station: 1) Repair and retrofit the existing facility, 2) Construct an entirely new pump station, or 3) Construct a new control building while retrofitting the existing wetwell. These alternatives were developed out of consultation with government bodies, environmental agencies, and the public. A qualitative evaluation of the alternatives was completed using the level of impact on aspects of the natural environment, surrounding community, economy, and technical aspects of the design. Planning-level opinions of probable construction costs were also generated for each alternative.

The recommended alternative for the upgrade of the March Road Pump Station is to retain and retrofit the existing wet well structure and to construct a new control building. This alternative has the least negative impacts as determined by the evaluation described above. The earthworks and bypass pumping requirements for this alternative are minimal. This will lower the impacts on the environment and surrounding community. The opinion of probable cost for this alternative was not the lowest. However, the value in terms of the station's life span, serviceability, and flexibility are considered to be worthwhile. The potential environmental effects of constructing this alternative were also identified and mitigation measures were proposed.

The EA report will be placed on the public record including a Notice of Completion after City Council EA approval. A 30-day public review period begins following the publication of the Notice of Completion.

1.0 Introduction

Stantec Consulting Ltd. (Stantec) has been retained by the City of Ottawa (City) to undertake the Class Environmental Assessment (EA) and functional design for the March Road Pumping Station (the project). The City has identified that the March Road Pumping Station (PS) requires upgrades and/or replacement to meet future flows generated from development as well as modification to a low-lift pump station. In addition, due to the length of time that has elapsed from the last condition assessment of the pumping station (over ten years), another assessment is required.

1.1 EXISTING PUMP STATION

The existing March Road PS is located at 305 Legget Drive in the North Kanata Industrial Park in Ottawa, Ontario (refer to Figure 1). The property is surrounded by residential developments, industrial areas, and open green space. The property parcel to the east of the current site is also owned by the City of Ottawa. Access to the pump station is from Legget Drive via a dedicated asphalt laneway and a small parking lot. The laneway entrance is approximately where a future extension of Farrar Road would join Legget Drive.

Figure 1: Project Location

The pump station was constructed in 1972 and is comprised of a one story control building over a wetwell installation. The process pumps are dry-mounted in a below-grade, accessible area above the wetwell. The control building houses a diesel generator for backup power. An adjacent communications pole

provides a connection to the City's SCADA network. Selected as-built drawings of the pump station's original construction are included for reference in Appendix A.

Influent to the pump station is currently received from the Marchwood Trunk Sewer, which flows from the west along Legget Drive, and the East March Trunk Sewer, which conveys flow from the residential areas to the north. The PS discharges to a 600ømm, 1.3km long forcemain. The forcemain connects to a gravity sewer near the intersection of March Road and Highway 417 and finally discharges to the March Ridge Trunk Sewer.

1.2 FLOODING ISSUES

A culvert crossing is located approximately 55m northeast of the pump station to allow Kizell Drain, a local drainage channel constructed between 1999 and 2002, to pass beneath a gravel access road. During peak runoff conditions there is a risk of this culvert being restricted. There is at least one incident on record when this culvert crossing was blocked causing the Kizell Drain water level to rise to 0.7m above the pump station floor (floor elevation is approximately 1.3m above the drain channel bed). The pump station was flooded and unable to operate.

Since this event, the culvert crossing has been upsized and berms have been added on the west and north sides of the pump station. These measures were intended to mitigate the flooding risk to the pump station.

1.3 FUTURE PLANS

The West Urban Community Wastewater Collection System Master Servicing Plan (WUC WCSMSP) study was finalized in July 2012. This study confirmed that completing the North Kanata Gravity Trunk Sewer, connecting it to the Marchwood Trunk Sewer, and converting the March Road PS to low lift station is the preferred option for wastewater servicing of the Kanata North Development. This will allow the existing forcemain to be abandoned, the station to handle flows from only the East March Trunk Sewer, and discharge to the newly completed North Kanata Gravity Trunk Sewer. Construction of the North Kanata Gravity Trunk Sewer is currently underway and it is expected to be placed into service by the fall of 2014. Figure 2 below depicts the current connections to the March Road PS.

The current pumping capacity is provided by five Gorman-Rupp self-priming pumps, each rated at 150L/s, installed in a dry pit within the station. The firm rated capacity of the station with one pump out of service is 490L/s. The 2014 City of Ottawa Wastewater Infrastructure Master Plan estimates that, after the gravity connection of the Marchwood Trunk Sewer to North Kanata Gravity Trunk Sewer, the March Road PS will need to be able to handle peak wet weather flows of 256L/s in 2031 and 586L/s in 2060. The total lift required from the inlet of the East March Trunk Sewer to an outlet into the North Kanata Gravity Trunk Sewer is approximately 3m.

Figure 2: Current Connections to March Road PS

1.4 PROBLEM AND OPPORTUNITY

The purpose of this project is to generate alternatives and recommend an option to provide adequate wastewater infrastructure for the March Road PS. The pump station will be required to service the existing and proposed future land developments in the North Kanata area that feed into the East March Trunk Sewer.

Notable references to the March Road PS and this upgrade were identified in the following City policy and planning documents:

- 2001 Class EA for the North Kanata Sewage Infrastructure Upgrade Study - Recommended building the North Kanata Gravity Trunk Sewer including the gravity connection to the Marchwood Trunk Sewer, bypassing the March PS, and conversion of the March PS to a low lift station;

- 2005 Equipment Inventory & Condition Assessment for Wastewater Pumping Stations – Identified overall condition of the March Road PS as fair with the mechanical systems rated poor and the structural integrity as good;
- 2009 City of Ottawa Infrastructure Master Plan; and
- 2012 WUC WCSMSP Study.

1.5 CLASS EA PLANNING AND DESIGN PROCESS

The Class EA process for Municipal Road, Water, and Wastewater Projects is an approved provincial planning and design procedure designed and prepared by the Municipal Engineer's Association in 2000, and amended in 2007 and 2011, to protect the environment and meet the requirements of the Ontario *Environmental Assessment Act*. The process provides the framework to ensure that the potential social, economic, and natural environment effects are considered in undertaking certain projects. The Class EA process is designed to address various aspects of municipal wastewater projects, including:

- Normal and/or emergency maintenance and operational activities;
- Expansion, reconstruction, and/or modification of existing facilities; and
- Construction of new facilities.

The Class EA process is self-directed, representing an alternative for municipalities to carry out individual assessments for most municipal wastewater projects in Ontario. The Class EA process recognizes that most projects will share similarities and can follow the same general EA planning framework.

There are five phases of assessment in the Class EA process. The five phases include:

- Phase 1: Definition of the Problem
- Phase 2: Identification and Assessment of Alternative Solutions and Selection of a Preferred Solution
- Phase 3: Identification and Assessment of Alternative Sites/Design Concepts and Selection of a Preferred Site/Design
- Phase 4: Preparation of an Environmental Study Report (ESR)
- Phase 5: Implementation

The Class EA planning and design process is shown in Figure 3.

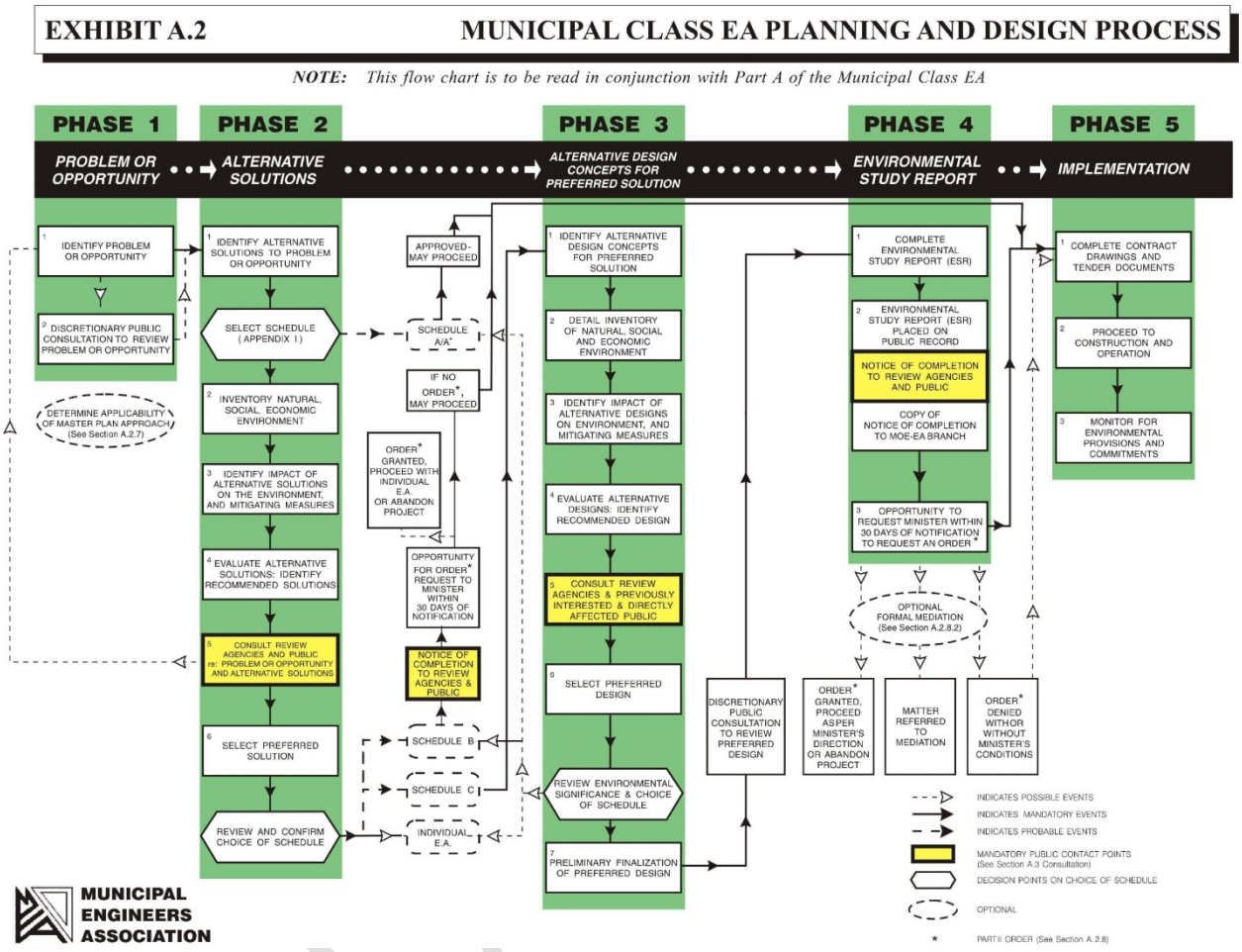

Figure 3: Municipal Class EA Planning and Design Process

The Class EA document places projects into three possible schedules, depending on their characteristics: Schedule A, B, or C projects. The schedule under which a project falls determines the planning and design phases that must be followed. This project is being planned as a Schedule B project

Upon completion of the planning process this report is placed on the public record and a Notice of Completion is published. A 30-day public review period begins following the publication of the Notice. This will be the last opportunity for stakeholders to make a request of the Minister for a Part II Order. If no request is made then the project will proceed to functional design.

1.6 CONSULTATION

A Consultation and Communications Plan was developed to assist the City of Ottawa with stakeholder and public consultation activities for the project. Consultation is a key component of the EA process and is a

mandatory requirement of a Municipal Class EA. The Consultation and Communications Plan is included in Appendix B.

1.6.1 Public

The public was notified about his Class EA by placing a Notice of Study Commencement in local newspapers in January 2014. Information about the project, including the recommended alternative, has been posted on the City website in the public consultation section asking for the public's involvement and comments. A Notice of Completion will be issued for the 30-day public record after Council Class EA study report approval. A public open house is currently not planned for this project due to the project's location in an industrial subdivision and its limited impact on the general public.

1.6.2 First Nations and Aboriginal Groups

The Notice of Commencement was emailed to the Algonquins of Ontario Consultation Office on April 11, 2014. A copy of the email correspondence can be found in Appendix B.

1.6.3 Technical Advisory Committee

The City of Ottawa Technical Advisory Committee (TAC) was composed of various City department representatives. This committee was responsible for advising on technical aspects of the project.

1.6.4 Agencies

An email introducing the project and the newspaper-published Notice of Study Commencement will be sent out to a list of identified agencies that may have interest in the project. Individual meetings to discuss the project further will be offered to all parties on the email distribution.

The Notice of Completion will also be distributed to agencies with the offer of receiving a hard copy of the report for review.

1.6.5 Ministry of Natural Resources

The Ministry of Natural Resources (MNR) was contacted on January 17, 2014 to obtain any information pertaining to species at risk and natural heritage features and values that may exist within the project property or nearby. A response was received February 3, 2014. A copy is included in Appendix B.

1.6.6 City of Ottawa

Planners at the City of Ottawa in the Planning and Growth Management department were contacted to obtain any information on the project property or adjacent areas. The City's Technical Advisory Committee (TAC) was also included in the consultation process.

On-going research by the City for Blanding's turtle presence in the Kanata area indicates that there is potential for the turtles to be passing through or present in the project area. No other sensitive species

were indicated or known to be present in the project area. The project area does not contain any lands known to be sensitive.

1.6.7 Mississippi Valley Conservation Authority

The Mississippi Valley Conservation Authority (MVCA) was contacted on January 17, 2014 to obtain any information pertaining to the aquatic environment and natural heritage features and values that may exist within the project property or nearby. The project area is located within the Conservation Authority's regulation limit. Their response, dated March 12, 2014, is included in Appendix B.

The MVCA confirmed their agreement with the proposed conversion of the March Road PS to a low lift station and the extension of the North Kanata Trunk Gravity Sewer. They advised that a permit would be required for any proposed watercourse crossings or any alteration of watercourses.

The MVCA also advised that they no longer perform reviews under the *Fisheries Act* and directed the proponent to contact the Department of Fisheries and Oceans (DFO) directly. Kizell Drain is considered to be a warm water fishery.

Under the *Fisheries Act*, work that is conducted in or near waterbodies that support fish (i.e. fish that are part of or support a commercial, recreational or Aboriginal fishery) must avoid serious harm to fish[1] unless authorized by DFO. DFO has established a self-assessment process for proponents to determine whether their project will result in serious harm to fish. DFO advises proponents to request authorization when it is not possible to avoid and mitigate the impacts of projects that are likely to cause serious harm to fish.

[1] "Serious harm to fish" is defined in the Fisheries Act as "the death of fish or any permanent alteration to, or destruction of, fish habitat".

2.0 Study Area and Existing Conditions

The information compiled from the site visits, background research, and reports noted below helped to develop the constraints to the proposed design for those potential impacts that are foreseen. Mitigation measures are proposed and discussed further in Section 7.0.

2.1 NATURAL ENVIRONMENT

A natural environment inventory was conducted by a qualified biologist to document the existing conditions in the study area. The terrestrial and aquatic environments were detailed as well as the potential for any species at risk and/or habitat. The completed Terrestrial Inventory Memo can be found in Appendix C. No species at risk were observed at the site. However there is a potential to encounter turtle species at risk, migratory birds, and other wildlife during construction.

2.2 ARCHEOLOGICAL ASSESSMENT

A Stage I Archaeological Assessment was conducted to document the potential to uncover previously undiscovered archaeological resources within the study area. The completed Stage I report can be found in Appendix D. The assessment concluded that no further archeological work was required due to the extensive development disturbance of the area.

2.3 HYDROGEOLOGICAL ASSESSMENT

A Hydrogeological Assessment Report was completed to document the hydrogeological environment of the study area and identify any potential mitigation measures or follow-up actions. The complete report can be found in Appendix E. The assessment projected that unconfined steady-state inflow from an excavation in the local clay layer would be less than 1m^3/day. The inflow from incidental precipitation is expected to be higher and may necessitate a Permit to Take Water depending on the construction methods.

2.4 GEOTECHNICAL INVESTIGATION

A geotechnical investigation of the site was carried out on December 11-13, 2013. This investigation included establishing one borehole and one monitoring well in addition to various laboratory tests on the soil samples collected. The investigations revealed a soil structure of topsoil, over clay and till, with bedrock reached at a depth of 21.4m below surface. The full investigation report, including recommendations on foundation design options, is included in Appendix F.

2.5 PHASE 1 ENVIRONMENTAL SITE ASSESSMENT

A Phase 1 Environmental Site Assessment (ESA) was conducted to assess if evidence of potential or actual environmental contamination exists in connection to the site. This contamination may be the result of current or past activities at or neighboring the site. A review of the historical records revealed no evidence

of environmental contamination associated with the pump station site and no further environmental investigations were recommended. The complete draft ESA report is included in Appendix G.

2.6 CONDITION ASSESSEMENT

A previous condition assessment was completed by Ainley Group approximately ten years ago. The results were presented in a report titled, "Equipment Inventory & Condition Assessment for the Wastewater Pumping Stations," dated December 23, 2005. This report identified the overall condition of the March Road PS as fair with the mechanical systems rated poor and the structural integrity as good.

A more detailed site assessment of the March Road PS systems and components was completed by Stantec on January 10, 2014. This assessment included a walkthrough of the current facility with City Operations staff and Stantec discipline leads. The complete technical memorandum is included under separate cover.

The structural integrity of the pump station was found to be sound and suitable for continued use. Concrete repairs and replacement of metal fabrications located below-grade were recommended. Much of the mechanical, process, electrical, and instrumentation equipment was found to be original and in need of full replacement. Many components are considered to be near the end of their life cycle and no longer comply with City standards. There are certain pieces of non-critical equipment that the City does not use because it is either inoperable or its reliability is in question. Aside from the building structure the pump station was found to be in need of significant upgrades and replacements.

3.0 Proposed Alternatives

The following high-level alternatives are proposed for the upgrade of the March Road PS. All of the alternatives presented assume that the pump station upgrade would be completed following the North Kanata Gravity Trunk Sewer being placed into service and handling all flows from the Marchwood Trunk Sewer. The pump types and mounting (wet well submersible, dry-mount, etc.) will be determined during the functional design phase.

3.1 ALTERNATIVE 1 – DO NOTHING

No system upgrades or changes to existing infrastructure. Existing pump station is left as is.

3.2 ALTERNATIVE 2 – RETROFIT EXISTING

This alternative retains the existing control building, below-grade structure, and any other salvageable equipment. The pump station would be upgraded with any necessary structural repairs, and new pumps, piping, and control equipment to suit the much lower head required for the decreased hydraulic lift. Any equipment that no longer meets City standards, is near the end of its lifespan, is no longer serviceable, or is inoperable would also be replaced (refer to Condition Assessment under separate cover). An emergency overflow from the station to the new outlet North Kanata Trunk Sewer would be added.

Some method of additional flood protection (e.g. berming) around the existing building would be required to mitigate the risk of future flooding of the site.

Construction of this alternative would require an extensive bypass pumping operation. The existing station would need to be entirely removed from service and inflows from the East March Trunk Sewer bypassed for the duration of the upgrade. The bypass pumping operation would need to be in place until the refurbished station was commissioned.

3.3 ALTERNATIVE 3 – CONSTRUCT NEW FACILITY

This alternative involves the construction of an entirely new pump station. The new pump station would be situated in the open area to the east of the existing station. The new pump station would include a control building and wet well or other pump mounting configuration. The necessary inlet, outlet, and overflow connections would all be made to the same locations as Alternative 2. The new pump station could be set at a higher elevation to reduce the risk of future flooding.

The existing pump station would remain in service until the new station was commissioned. A brief bypass operation would allow the final inlet connections to be made and the new station placed into service. The existing pump station would then be decommissioned.

3.4 ALTERNATIVE 4 – RETAIN EXISTING WET WELL ONLY

This alternative makes use of only the below-grade structure of the existing pump station. A new control building would be constructed in the open, City-owned land to the east of the existing station. This building would house all of the new electrical, communications, and backup power equipment, as required, separate from the existing wet well. The control building would be completed with the existing pump station still in service.

The existing below-grade structure would then be refurbished during a bypass pumping operation. The existing control building would be removed, any necessary structural repairs made, and the pumps, piping, and other equipment removed and replaced as necessary (refer to Condition Assessment under separate cover). The height of the below-grade structure walls would be increased to reduce flooding risk. A new concrete floor slab and the necessary hatches would be constructed, as well as any necessary modifications to the interior below-grade structure. An overflow from the below-grade structure to the new outlet North Kanata Trunk Sewer would also be added.

4.0 Opinion of Probable Cost

The opinion of probable cost for each of the proposed alternatives is presented below in Table 1. The figures presented are preliminary planning-level construction estimates.

Table 1: Opinion of Probable Cost for Proposed Alternatives

Division	Alternative 2: Retrofit Existing	Alternative 3: Construct New Facility	Alternative 4: Retain Ex. Wet Well
Division 1 • Flow Management Plans • Erosion & Sediment Control Plans • Documentation • Project Overheads	$225,000	$130,000	$130,000
Division 2 • Demolition • Excavation and Dewatering • Restoration	$75,000	$500,000	$195,000
Division 3 – Concrete: New and Repairs	$90,000	$1,265,000	$195,000
Division 5 – Metal Fabrications	$65,000	$65,000	$65,000
Division 6 to 9 – Building Envelope	n/a	$250,000	$250,000
Division 11 • Sewage Handling Equipment • Process Piping and Valves • Slide Gates	$700,000	$700,000	$700,000
Division 13 – Instrumentation and Control	$105,000	$105,000	$105,000
Division 15 • HVAC Systems • Standby Generator System	$165,000	$165,000	$155,000
Division 16 – Electrical	$360,000	$375,000	$400,000
TOTAL	***$1,815,000***	***$3,555,000***	***$2,190,000***

5.0 Evaluation of Criteria and Alternatives

The process for evaluating the alternatives is outlined in the Municipal Engineer's Class EA document under Phase 2. The evaluation process begins with the development of a list of relevant criteria that help to differentiate between the alternative options. Certain criteria from this list have been excluded on the grounds that their evaluation resulted in no meaningful differentiation between alternatives. The excluded criteria included:

- Natural Environment: Impact on aquatic systems; Impacts on ecological functions.
- Caring and Healthy Communities: Functional ability to meet current and future supply demands and needs of growing communities; Impacts to businesses; Impacts to communities; Impacts on archaeological resources.

The remaining criteria were used to evaluate the generated alternatives. The criteria and evaluation are included in Table 2 below.

Alternative 1 was not carried forward for evaluation since it does not solve the identified problem and opportunity as stated in Section 1.4. To alleviate flooding and meet future demands, some measure of infrastructure upgrade and/or replacement at the March Road PS is required. Alternatives 2, 3, and 4 were carried forward for evaluation.

This study primarily considered a qualitative evaluation. A qualitative evaluation approach develops comparisons by providing a narrative to rank the alternatives. The alternative with the best evaluation is the favored alternative and is presented as the recommended alternative in Section 5. The proposed alterative solutions were ranked under the following system:

Most Preferred	**Neutral**	**Least Preferred**
Alternative adds value to or results in the least impact for the given criteria.	Alternative maintains criteria status quo, or does not positively or negatively impact the given criteria	Alternative negatively impacts the value, or causes the greatest amount of impact for the given criteria.
Score: +2	**Score: +1**	**Score: -2**

Table 2: Evaluation Criteria

Criteria	Indicators	Alternative 2: Retrofit Existing	Alternative 3: Construct New Facility	Alternative 4: Retain Ex. Wet Well
Natural Environment				
Impact on Terrestrial Systems	• Area of natural vegetation disturbed • Quality of habitat disturbed • Ability to mitigate impacts	**Most Preferred:** No additional construction, and minimal disturbance to terrestrial environment.	**Least Preferred:** Will disturb the most natural vegetation by constructing all new infrastructure and demolition of old infrastructure.	**Neutral:** Construction of an adjacent building will result in minimal disturbance to the natural environment.
Impact on Surface Water Quality	• Change in surface water quality • Ability to mitigate impacts	**Least Preferred:** No direct impact on surface water quality, but long duration bypass pumping increases risk of pump failure and overflow.	**Least Preferred:** Greatest impact due to a deep excavation for construction of new below-grade chamber.	**Neutral:** No change to surface water quality
Impact on the Physical Environment	• Area of disturbance to the soil/ subsurface • Change in soil quality • Ability to mitigate impacts	**Neutral:** Some cut/fill would be required resulting from the conversion to the lift station. Additional berming would be required.	**Least Preferred:** Greatest amount of cut/fill to construct required new infrastructure.	**Most Preferred:** Requires the least impact to the physical environment with minimal cut/fill.

Criteria	Indicators	Alternative 2: Retrofit Existing	Alternative 3: Construct New Facility	Alternative 4: Retain Ex. Wet Well
Caring and Healthy Communities				
Disruption to residents, community/recreation features	• Traffic/noise impacts • Duration of construction • Long-term visual effects • Long-term O&M impacts • Ability to mitigate impacts	**Most Preferred:** Minimal external works as most work is completed indoors; Noise from backup generator required for long-term bypass pumping operation.	**Least Preferred:** Greatest impact because it requires deep excavation, and therefore more construction-related noise and disturbance.	**Neutral:** Results in minimal disruption due to minimal construction requirements.
Economy				
Capital cost	• Opinion of Probable Cost presented in Section 4.0	**Most Preferred:** Lowest cost by reusing existing infrastructure.	**Least Preferred:** Most costly to construct.	**Neutral:** Moderate construction costs.
Operation and Maintenance cost	• Present value of O&M cost	**Least Preferred:** Highest ongoing O&M costs for maintenance of converted existing infrastructure.	**Most Preferred:** Completely new infrastructure would result in the least O&M cost requirements.	**Neutral:** O&M costs would be moderate; Future repairs to the old below-grade structure maybe required but O&M costs will be minimized by the addition of the new control building and equipment.

Criteria	Indicators	Alternative 2: Retrofit Existing	Alternative 3: Construct New Facility	Alternative 4: Retain Ex. Wet Well
Impact on nearby businesses	• Long-term issues • Short-term issues • Ability to mitigate impacts	**Most Preferred:** Minimal external works as most work is completed indoors; Noise from backup generator required for long-term bypass pumping operation.	**Least Preferred:** Increased construction traffic, disruptions and noise that might affect nearby businesses.	**Neutral:** Moderate disturbance with the construction of the adjacent control building that might affect nearby businesses.
Technical				
Reliability	• Level of risk of system failure over short and long term • Level of risk during implementation • Ability to mitigate risk through O&M practices and contingency planning	**Least Preferred:** More risk during construction because of extended bypass operation and installations done within existing infrastructure.	**Most Preferred:** Lowest duration of bypass pumping and greatest reliability from completely brand-new infrastructure.	**Neutral:** Moderate bypass pumping required; All new electrical and process equipment; Relatively easy switch to new infrastructure.
Life Cycle	• Ability to meet the needs of the community for the longest duration	**Least Preferred:** Life cycle of existing structure is already in progress	**Most Preferred:** Greatest longevity because of brand new infrastructure.	**Neutral:** Mix of old and new infrastructure.
Results				
Count: Most Preferred / Neutral / Least Preferred Total Score		**4 / 1 / 4** **+1**	**3 / 0 / 6** **-6**	**1 / 8 / 0** **+10**

6.0 Recommended Alternative

Alternative 4, to retain the existing below-grade structure and to construct a new control building, is the recommended option. This alternative did not have the highest number of "Most Preferred" evaluations, but nearly all of the evaluated criteria were designated as "Neutral." The overall result is that this alternative is expected to have the least negative impacts.

The largest construction costs and negative impacts are avoided by repairing and continuing to utilize the existing below-grade structure. This eliminates significant earthworks from the upgrade scope of work thereby reducing construction traffic, environmental disturbances, noise, and social impacts. The refurbished below-grade space is expected to provide adequate room for new sewage handling equipment and instrumentation. Additional investigations may be required to confirm the extent of the structural rehabilitation required. This will largely depend on the final sewage-handling approach to be determined in the functional design stage.

The addition of a separate control building will also minimize the bypass pumping required during the construction process. The existing pump station can remain in service until the control building is completed and commissioned. This building can be configured to efficiently house new electrical, instrumentation, backup power generation, and heating and ventilation equipment. It also makes the floor slab of the below-grade chamber accessible which will decrease the amount of effort required for removals and installations.

The overall result is a reduction in construction costs, risks, and environmental and social impacts while providing new critical equipment. The new equipment will allow the station to meet City standards, provide reliability, and allow for future upgrades without major replacements.

7.0 Potential Impacts and Proposed Mitigation Measures

Impacts and the associated mitigation measures have been identified for all phases of the project (i.e. construction and operation).

Most of the potential environmental impacts resulting from the project are expected to be small in size and temporary in nature. Numerous mitigation measures have been proposed in Table 3 to reduce or eliminate impacts on the listed Valued Environmental Components (VECs). The VECs were determined based on consultation, standard EA scoping methods, and derived from the criteria used for evaluating alternatives in Table 2.

Table 3: Potential Environmental Effects and Proposed Mitigation Measures

Valued Environmental Component (VEC)	Potential Environmental Impacts	Proposed Mitigation Measures
Physical Environment		
Air Quality / Dust	• Increased vehicle emissions and dust generation during construction	• Stockpiles of excavated material and/or infill material will be properly shaped and covered or stabilized to avoid dust generation. • A dust suppressant (e.g. water) will be applied to areas of exposed soil as necessary. • Activities with potential to generate dust will be restricted during windy conditions. • Unnecessary idling of vehicles will be avoided. Heavy equipment used during the project will be in good operating condition. • Aggregate material transported to and from the project will be properly secured and covered.
Ambient Noise	• Construction may cause increased noise levels	• All equipment used during the project will meet applicable standards and regulations regarding noise emissions where noise may cause potential disruptions (e.g. Occupational Health and Safety Act, local by-laws). • In order to limit the effects of noise during construction, when possible, work will be restricted to hours that adhere to applicable City of Ottawa by-laws (e.g. No. 2004-253).

Valued Environmental Component (VEC)	Potential Environmental Impacts	Proposed Mitigation Measures
Soil Quality	• Spread of contaminated soils	• Phase 1 ESA did not identify area of contaminated soils • Any contaminated soils that may be encountered will be handled and sent to a licensed disposal facility in accordance with federal and provincial regulations. • The Contractor will ensure that a suitable spill kit is kept and maintained at all staging areas and within the immediate construction areas.
Surface Water	• Construction will require excavation and possibly the temporary stockpiling of fill material, both of which may cause sediments to wash offsite during storm events. • Release of deleterious substances	• Sediment/erosion control measures will be implemented and monitored to prevent runoff of sediment-laden storm water. • All equipment and associated materials will be operated, stored, and maintained (e.g. re-fueled, lubricated) in a manner that prevents the entry of any deleterious substance into nearby waterways. • Nearby storm water catchbasins will be sealed within projected construction areas. • Measures will be in place to minimize impacts of spills. All measures and procedures will adhere to provincial and federal regulations. • Chemicals and cleaning agents will not be discharged into nearby waterways. • Measures will be implemented to prevent concrete, timber waste, aggregate, or other debris from entering nearby waterways.

Valued Environmental Component (VEC)	Potential Environmental Impacts	Proposed Mitigation Measures
Hydrogeology	• Release of deleterious substance • Decrease in groundwater level • Change in or reduced quality of the hydrogeological environment	• Implement measures to minimize impacts and/or response to spills. All measures and procedures are to adhere to provincial and federal regulations. • The Contractor will ensure that a suitable spill kit is kept and maintained at all staging areas and within the immediate construction areas. • Mitigation through design to minimize dewatering effects and provide recharge. • Sediment/erosion control measures will be implemented and monitored to prevent runoff of sediment-laden storm water • The quality of groundwater removed during construction will be assessed prior to and during dewatering activities according to the requirements that would be established under a Sewer Use Permit to determine if the water may be disposed directly to the local sanitary sewer without treatment. The contractor may also consider other disposal options (discharge to the natural environment or to Kizell Drain) depending on the quality of groundwater and approval from relevant agencies (Mississippi Valley Conservation, Ontario Ministry of the Environment, etc.). • Excavation during the wet spring months should be cautioned as project-related activities may cause flooding.

Valued Environmental Component (VEC)	Potential Environmental Impacts	Proposed Mitigation Measures
Terrestrial Environment		
Vegetation	• Introduction of invasive species • Loss of vegetation • Transfer of pests/disease	• As much vegetation as possible will be retained. • Trees will be inspected for pests and disease by a qualified arborist prior to removal and disposed of accordingly. • Trees that will be preserved will be demarcated to protect them during construction. • Trees removed will be replaced in greater numbers. • Native non-invasive species will be used for replacement plantings and restorations. • Vegetation will be restored as soon as possible.
Terrestrial Animals	• Disturbance • Avoidance of construction areas	• Sedentary wildlife occurring at construction areas will be humanely trapped and relocated. • Targeted surveys will be completed to identify potential for Species at Risk or their habitat prior to construction. Appropriate mitigation measures will be developed following the surveys.
Avifauna	• Disturbance • Avoidance of construction areas • Contravention of the *Migratory Birds Convention Act, 1994*	• Removal of vegetation will be completed outside the migratory bird breeding season (April 15 to July 31). Should any vegetation removal occur within this window, qualified personnel should conduct a breeding bird nest survey no more than three days in advance of the proposed vegetation removal. • If migratory birds or Species at Risk are identified actively nesting in the project area additional mitigation measures will be required.

Valued Environmental Component (VEC)	Potential Environmental Impacts	Proposed Mitigation Measures
Species at Risk	• *The Endangered Species Act* prohibits the killing, harming, harassing, capturing or taking of extirpated, endangered or threatened species. • Uncovering of hibernating species at risk turtles in wetter areas.	• Ensure that perimeter fencing, if used, does not prevent wildlife from leaving the site. Once the work area has been cleared it should be securely fenced to keep wildlife from returning. • Inspect the project area daily and remove any turtles that have become trapped within the enclosure. • Prior to construction have a qualified biologist check for indicator plant species favored by Mottled duskywing. If any of these plants are found the identified area(s) should be demarcated to protect potential species at risk habitat.
Aquatic Environment		
Fish and Fish Habitat	• Alteration of fish habitat • Increased sediment loading to wet areas • Unnecessary overland flow • Erosion of nearby wet areas	• Nearby watercourses should be protected by installation of erosion and sediment control fencing prior to winter to also deter any potential over-wintering turtles from hibernating within the project limits. • Erosion and sediment controls should be placed to limit sediment from entering surface waters.
Socio-Economic Environment		
Archaeology	• Disturbance or destruction of previously undiscovered archaeological resources	• Stage 1 Archaeological Assessment did not reveal any areas of potential archaeological significance.

Valued Environmental Component (VEC)	Potential Environmental Impacts	Proposed Mitigation Measures
Economy	• Disruption of access to nearby businesses • Disruption/impediment to normal traffic flow	• Schedule project activities and future maintenance to minimize conflict with local commercial use and traffic flows. • A Traffic Control Plan including public notifications and proper signage will be implemented. • Communication with nearby businesses and land owners regarding any temporary road closures. • Measures will be put in place to ensure that every home and business has emergency access to the street. • Site access will be established so as not to conflict with normal traffic flows. • Construction activities will be kept separate and away from local roadways as much as possible.
Safety	• Construction traffic could be a safety issue for the local community • Safety risk to public and users of areas near construction	• Installation of proper signage. • Limiting access to construction areas. • Fencing and barricades to keep non-construction workers out of hazardous areas.

8.0 Realignment of East March Trunk Sewer

Concurrent with the March Road PS upgrades the City may wish to realign the East March Trunk Sewer (EMTS) to the Farrar Road right-of-way. The existing location of the East March Trunk Sewer and its potential realignment are shown below in Figure 4.

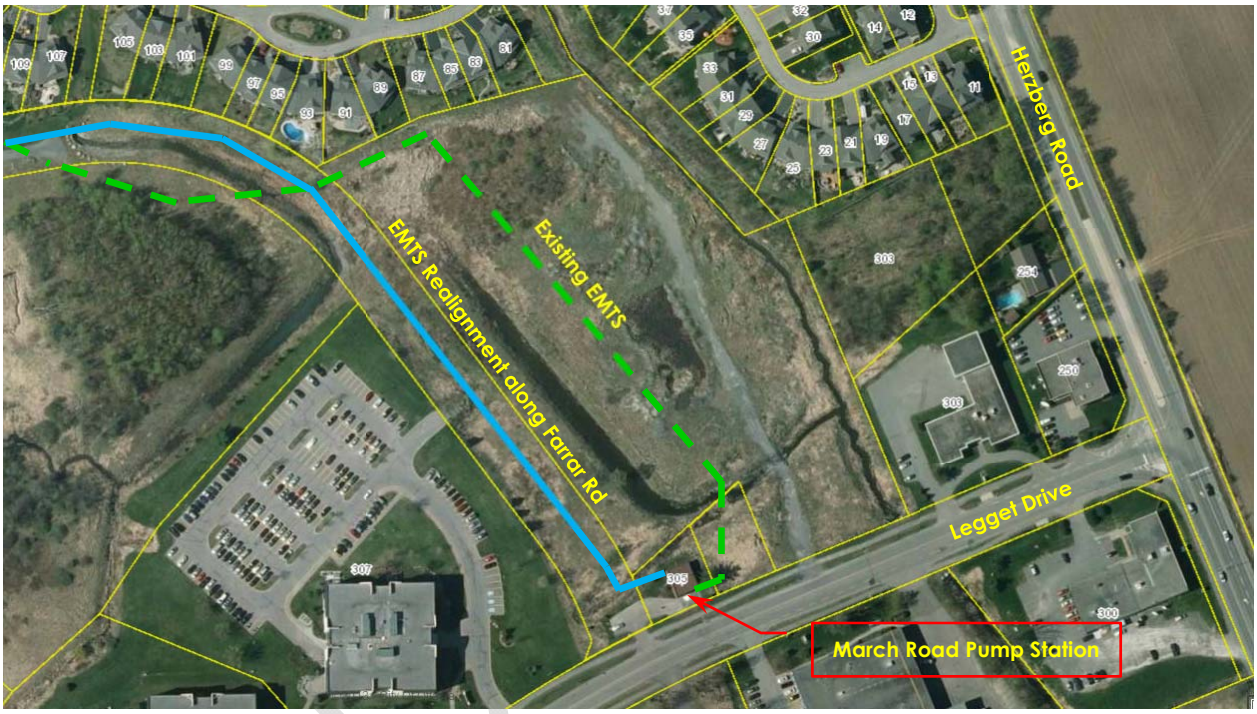

Figure 4: Project Location

This option will involve the abandonment of approximately 470m of the existing trunk sewer and the construction of about 380m of new 750mm diameter sanitary sewer. The invert of the existing trunk sewer is 8.5m to 6.5m below surface at this location.

The opinion of probable cost for this realignment is $473,000. This cost includes concrete filling and abandonment of the existing trunk sewer and the construction of the new sewer alignment.

The potential impacts and mitigation measures presented above in Section 7 also apply to this scope of work.

9.0 Thirty-Day Public Review

A Notice of Completion will be published in local newspapers and the City website after City Council approval. It will also be distributed to all individuals and stakeholders on the project contact list indicating an interest in the study. This report will be made available to the public on the City website for a 30-day review period.

During the 30-day review period, the public will have the opportunity to review this report and provide additional comments and input. If concerns cannot be addressed through discussions with the City of Ottawa, a person or party may request the Minister of the Environment to order the project to comply with Part II of the EA Act. If Part II Order requests are received then the proponent and the concerned parties will work together to help resolve conflicts. In the event that conflicts cannot be resolved the Minister of the Environment will make a decision as to whether or not the Part II Order should be granted and an Individual Environmental Assessment completed. If there are no Part II Order requests during the 30-day review period the proponent may proceed with the project.

Requests for a Part II Order can be submitted by a written request to the Minister at the following address:

Minister of the Environment
77 Wellesley Street West
11th Floor, Ferguson Block
Toronto ON
M7A 2T5

10.0 Conclusion

The findings of this report were based on the application of the Municipal Class EA process as outlined in the full reference document. The principles and methodology of the EA process assisted the project team in the analysis and evaluation of alternatives and in the final selection of the recommended alternative.

This EA report will be available on the City website or by contacting the City project manger. If public concerns regarding this project cannot be resolved any person may request a Part II Order. If no concerns are expressed within 30 days of filing the report and notification thereof then the project may proceed in accordance with the recommendations of the EA.

Appendix A As-Built Drawings of the Existing Pump Station – Selected Pages

Appendix B Public and Agency Communication and Consultation Process

Includes:

- Consultation and Communication Plan;
- Notice of Commencement Correspondence to Algonquins of Ontario Consultation Office;
- Ministry of Natural Resources Consultation Response; and
- Mississippi Valley Conservation Authority Consultation Response

Appendix C Terrestrial Inventory Memo – January 17, 2014

Appendix D Stage I Archaeological Assessment Report

Appendix E Draft Hydrogeological Assessment Report – March 12, 2014

Appendix F Functional Design Geotechnical Report – April 2014

Appendix G Draft Phase 1 Environmental Site Assessment – January 24, 2014