Plympton-Wyoming Wastewater Servicing Master Plan

Project File

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Town of Plympton-Wyoming

Plympton-Wyoming Wastewater Servicing Master Plan

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Executive Summary

Introduction and Purpose of the Master Plan

The Town of Plympton-Wyoming (Town) retained CH2M HILL Canada Limited (Jacobs) to develop a Wastewater Servicing Master Plan (Master Plan) through the Municipal Engineers Association (MEA) Class Environmental Assessment (EA) process. This Schedule B Master Plan will recommend a roadmap for future capital investment relating to wastewater treatment and conveyance in the Town, enabling the Town to service long-term growth while improving its wastewater servicing reliability, sustainability, and resiliency.

The purpose of this Master Plan is to identify existing and future capacity constraints and other existing deficiencies within the Town's wastewater collection system, pumping stations and wastewater treatment plants, and to identify and evaluate alternatives to determine the preferred long-term solution to provide reliable wastewater servicing in the Town.

Problem and Opportunity Statement

The Town of Plympton-Wyoming is undertaking a Wastewater Servicing Master Plan to develop a plan that allows the Town's sanitary sewer collection systems have the capacity to convey current and future wastewater flows to the Town's Wastewater Treatment Plants (WWTPs) to 2039 based on the Town's growth plan. Wastewater Treatment Plant capacity is also being reviewed as part of this study.

The Master Plan is a plan that will investigate the Town's sanitary sewer system capacity and condition and will guide how the Town will continue to meet current and anticipated demands over the next 20 years. This plan will:

- Identify existing and future capacity constraints and other existing deficiencies within the Town's wastewater collection system, pumping stations and wastewater treatment plants.
- Identify and evaluate alternatives to determine the preferred long-term solution to provide reliable wastewater servicing in the Town.

Environmental Assessment Process

The Master Plan is being carried out as a Schedule B Class EA and will follow the Municipal Class EA process. Schedule B projects must proceed through the first two phases of the process. Proponents must identify and assess alternative solutions to the problem, inventory impacts, and select a preferred solution. They must also contact relevant agencies and affected members of the public. Master Plans are long range plans with broader scopes which integrate infrastructure requirements for existing and future land use with environmental assessment planning principles. These plans examine infrastructure systems or groups of related projects to define a framework for planning subsequent projects and/or developments.

Public and Review Agency Consultation

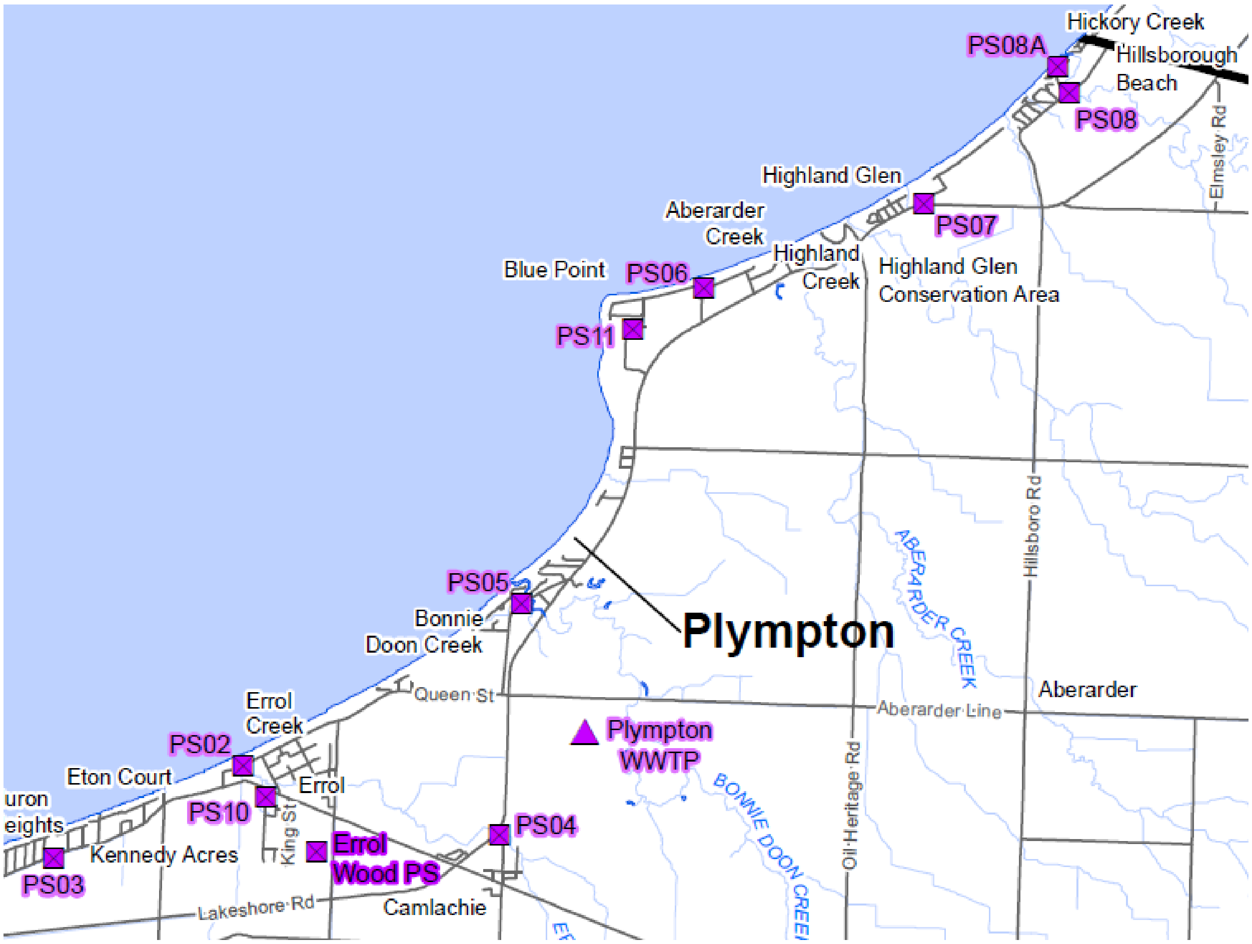
Consultation is a key feature of a successful environmental assessment. The Municipal Class EA process identifies mandatory consultation requirements. The Master Plan has provided several opportunities for participation to date including:

- Notice of Study Commencement advertised to public and issued to review agencies.
- A Public Information Session under Phase 2 of the Class EA process.
- Notice of Completion advertised to public and review agencies.

Existing Plympton Wastewater Servicing System

The Plympton wastewater servicing system includes sanitary sewers, forcemains, eleven pumping stations and the Plympton WWTP. The Plympton WWTP is an extended aeration plant rated for an average daily flow of 3,300 cubic metres per day and a peak flow of 10,500 cubic metres per day. The plant processes include screening, vortex grit removal, two two-pass aeration tanks, two secondary clarifiers, chemical phosphorous removal, and ultraviolet (UV) disinfection. Sludge management is provided by four aerobic digesters and one on-site sludge storage lagoon. The locations of the pumping stations and the Plympton WWTP are displayed on Figure ES- 1.

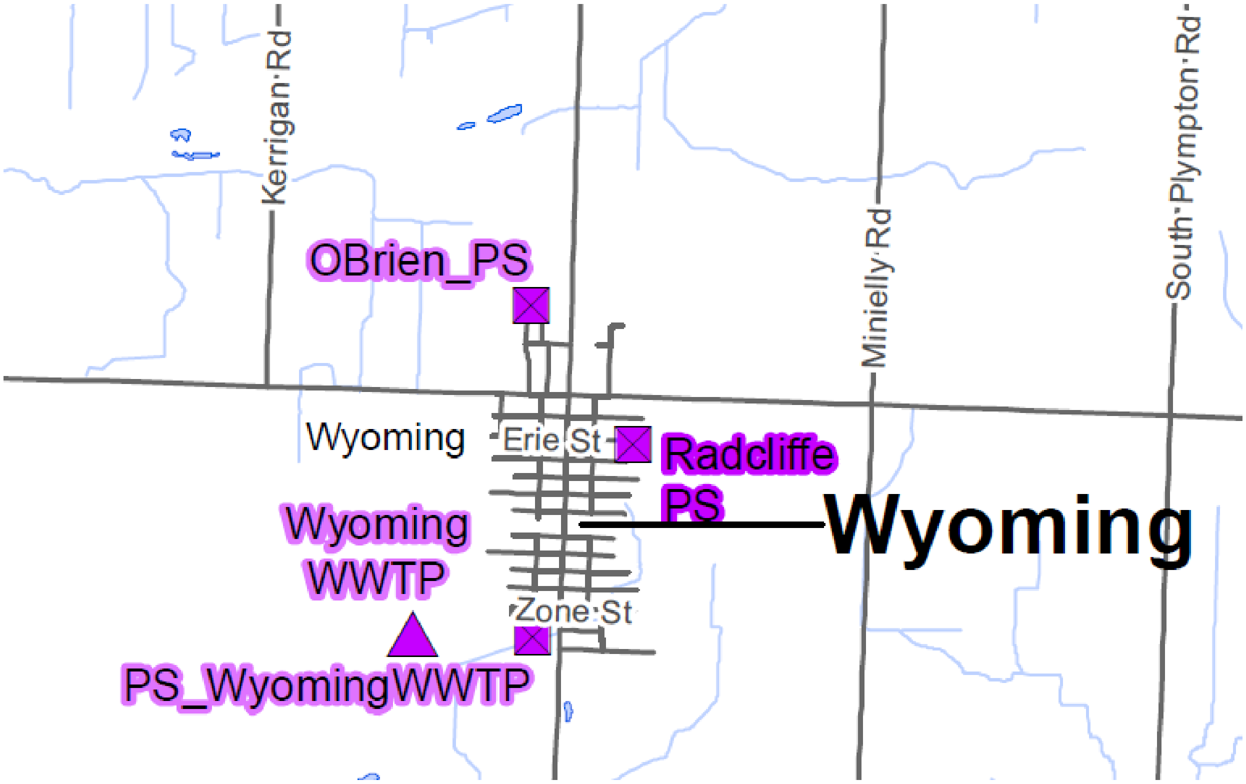
Figure ES-1. Plympton WWTP and Pumping Station Locations



Existing Wyoming Wastewater Servicing System

The Wyoming wastewater servicing system includes sanitary sewers, forcemains, two pumping stations and the Wyoming WWTP. The Wyoming WWTP is an extended aeration plant rated for an average daily flow of 1,128 cubic metres per day and a peak flow of 3,984 cubic metres per day. The plant processes include screening, aerated grit removal, two single-pass aeration tanks, two secondary clarifiers, sand filtration, chemical phosphorous removal and UV disinfection. The locations of the pumping stations and the Wyoming WWTP are displayed on Figure ES-2.

Figure ES-2. Wyoming WWTP and Pumping Station Locations



Growth and Wastewater Flow Projections

Plympton-Wyoming is part of the Lambton County census division. Ontario's Ministry of Finance projects that Lambton County will grow by 7.7 percent between 2020 and 2046 (Ministry of Finance 2021). However, the Town's planning department projects that the Town will grow by 20 percent every 5 years, which is a far higher growth rate than projected by the Ministry of Finance. This is likely due to the increased development in Plympton-Wyoming, compared to slower development in other parts of Lambton County. Therefore, the Town's growth rate of 20 percent every 5 years will be used for planning purposes in this Class EA. Separate projections were developed for Plympton and for Wyoming, as the areas are serviced by different wastewater systems.

Plympton

Projected future populations and flows in Plympton are displayed in Table ES-1. The average daily flow and peak daily flow (based on the design peaking factor of 3.2) in 2039 are projected to be 3,703 cubic metres per day and 11,850 cubic metres per day, respectively. Based on these projections, it is estimated that flows will exceed 85 percent of the plant's rated capacity in 2032. Jacobs recommends that the Town initiate the investigation and planning for a plant expansion recommended at this time (when 85 percent of rated capacity is reached). Based on these projections, it is estimated that the plant's rated capacity will be exceeded in 2036.

Table ES-1. Plympton WWTP Projected Future Population and Flows

Year	Projected Population	Projected Flows, m^3/day
2019	4,974	1,786
2024	5,969	2,143
2029	7,163	2,572
2034	8,595	3,086
2039	10,314	3,703

Notes:

m^3/day = cubic metre(s) per day

Peak flow projections were developed for each pumping station based on currently known development plans in Plympton. Projected peak flows in 2039 to the Plympton pumping stations are presented in Table ES-2, along with each pumping station's capacity as determined through drawdown testing completed by Jacobs.

Table ES-2. 2039 Peak Flow Projections for Plympton Pumping Stations

Pumping Station	Projected Peak Flows in 2039, L/s	Peak Capacity, L/s
PS-02	175.51	62.6
PS-03	48.58	37.4
PS-04	26.68	15.3
PS-05	74.98	95.8
PS-06	55.58	44.2
PS-07	23.39	39.7
PS-08	11.41	14.1
PS-08A	2.69	4.8
PS-10	7.13	19.9
PS-11	10.09	8.1
Errol Woods PS	13.37	17.0
Egremont Estates PS	3.31	4.0
Influent PS	241.91	60.0

Notes:

L/s = litre(s) per second

Wyoming

Projected future populations and flows are displayed in Table ES-3. The average daily flow and peak daily flow (based on the design peaking factor of 3.5) in 2039 are projected to be 1,161 cubic metres per day and 4,100 cubic metres per day, respectively. Based on these projections, it is estimated that flows will exceed 85 percent of the plant's rated capacity in 2034. Jacobs recommends that the Town initiate the investigation and planning for a plant expansion recommended at this time (when 85 percent of rated capacity is reached). Based on these projections, it is estimated that the plant's rated capacity will be exceeded in 2039.

Table ES-3. Wyoming WWTP Projected Future Population and Flows

Year	Projected Population	Projected Flows
2019	3,012	560
2024	3,614	672
2029	4,337	806
2034	5,205	968
2039	6,246	1,161

Peak flow projections were developed for each pumping station based on currently known development plans in Wyoming. Projected peak flows in 2039 to the Wyoming pumping stations are presented in Table ES-4, along with each pumping station's capacity as determined through drawdown testing completed by Jacobs.

Table ES-4. 2039 Peak Flow Projections for Wyoming Pumping Stations

Pumping Station	Projected Peak Flows in 2039, L/s	Peak Capacity, L/s
O'Brien	2.11	6
Influent PS	60.53	52.6

Future Needs

Table ES-5 summarizes the future capacity-based needs within the Plympton-Wyoming wastewater system. WWTP needs are based on capacity assessments completed for each unit process, and pumping station needs were developed by comparing peak flow projections against each station's peak capacity.

Table ES-5. Capacity-Based Needs for the Plympton-Wyoming Wastewater System

Component	Future Needs
Plympton WWTP	▪ The **screening system** requires an expansion to treat 11,800 m^3/day by 2039. ▪ The **grit removal system** requires an expansion to treat 11,800 m^3/day by 2039. ▪ The **UV disinfection** system requires an expansion to treat 11,800 m^3/day by 2039. ▪ The **aerobic digesters** require an additional 300 m^3 of volume to provide stabilization for the projected WAS flows in 2039.

Component	Future Needs
Plympton Pumping Stations	▪ **PS-02** is projected to have a capacity deficiency under existing conditions. ▪ **PS-03** is projected to have a capacity deficiency under future conditions. ▪ **PS-04** is projected to have a capacity deficiency under existing and future conditions. ▪ **PS-06** is projected to have a capacity deficiency under existing and future conditions. ▪ **PS-11** is projected to have a capacity deficiency under existing and future conditions. ▪ The **Influent PS** is projected to have a capacity deficiency under existing and future conditions.
Wyoming WWTP	▪ The **screening system** requires an expansion to treat 4,100 m^3/day by 2039. ▪ The **tertiary filtration system** requires an expansion to treat 4,100 m^3/day by 2039. ▪ The **UV disinfection** system requires an expansion to treat 4,100 m^3/day by 2039.
Wyoming Pumping Stations	▪ The **Influent PS** is projected to have a capacity deficiency under existing conditions.

Notes:

m^3 = cubic metre(s)

WAS = waste activated sludge

Table ES-6 summarizes the future non-growth-based needs within the Plympton-Wyoming wastewater system.

Table ES-6. Non-Growth-Based Needs for the Plympton-Wyoming Wastewater System

Component	Future Needs
Plympton WWTP	▪ The manual bypass valve requires upgrading to an automatic valve. ▪ The manual screen in the bypass channel requires replacement with an automatic screen. ▪ The grit removal system is in poor condition and requires replacement.
Wyoming WWTP	▪ The grit removal system is in poor condition and requires rehabilitation or replacement. ▪ The tertiary filtration system is in poor condition and requires rehabilitation or replacement.
Overall	▪ A wastewater system-wide condition assessment is recommended.

Identification of and Evaluation of Alternative Solutions

Alternative solutions were developed for each deficiency identified at the Town's WWTPs and pumping stations. For the Town's WWTPs, alternative solutions were generally developed as follows:

- Do Nothing
- Expand the process with the existing technology
- Expand the process with a new technology

For the Town's pumping stations, where possible, the alternative solution was to install pumps with increased capacity within the existing wet well. However, in the Plympton system, integrated alternative solutions were developed that considered multiple pumping stations, including the potential to redirect flows from one pumping station to another.

An evaluation framework was developed for the evaluation of alternative solutions based on the Municipal Class Environmental Assessment process, which requires that impacts to the natural, social/cultural, technical and economic environments be considered.

Each set of alternative solutions identified was evaluated against the evaluation criteria based on the defined performance measures. The scoring methodology is as follows:

- 10: provides the greatest benefit
- 5: provides a moderate benefit
- 0: provides little to no benefit

Each category (natural, social/cultural, technical and economic environments) was assigned a weighting of 25 percent. Then, the 25 percent for each category was distributed evenly between the identified criteria. For example, if the natural environment category has 10 criteria, then each criterion would be assigned 2.5 percent. The scoring for each alternative is then normalized to a total score out of 100. The alternative solutions that received the highest score for each deficiency identified were selected as the preferred solutions.

Recommendations

The recommended upgrades from this Master Plan for Plympton and Wyoming are summarized in Table ES-7 and Table ES-8, respectively.

Table ES-7. Plympton Preferred Solution

Process	Needs	Preferred Solution	Capital Cost Estimate
Headworks	Capacity-based (2036) Condition-based (Current)	Upgrade the existing headworks with a new automatic screen in the bypass channel, bypass channel automation and a new vortex grit removal system	$1,635,000
Disinfection	Capacity-based (2036)	Investigate re-rating the capacity of the existing UV disinfection system.	$116,000
Sludge Stabilization	Capacity-based (2035)	Expand the aerobic digesters	$1,615,000
PS-02 and PS-04 (integrated)	Near-term	Divert flows from PS-03, PS-04, PS-10, the Errol Woods PS and Egremont Estates PS to PS-04 via a new forcemain Construct a new PS-04 rated at 100 L/s adjacent to the existing PS-04 Construct a new forcemain from PS-04 to the new Regional PS at the intersection of Queen Street and Bonnie Doon Road Decommission the existing PS-04 Replace the pumps in PS-02 with pumps that have a rated capacity of 80 L/s when two pumps are running	$6,076,000
PS-02 and PS-05 (integrated)	Near-term	Construct a new Regional PS at the northwest intersection of Queen Street and Bonnie Doon Road, with a rated capacity of 140 L/s, which will receive flows from PS-02, PS-04 and PS-05 Construct a new equalization tank at the intersection of Queen Street and Bonnie Doon Road	$3,237,000
PS-03	Dependent on construction of nearby developments	Remove the existing pumps, reconfigure the discharge piping and valving and install two new pumps, each with a rated capacity of 50 L/s	$485,000
PS-06	Near-term	Remove the existing pumps and install two new pumps, each with a rated capacity of 60 L/s	$188,000
Total	**-**	**-**	**$13,352,000**

Table ES-8. Wyoming Preferred Solution

Process	Needs	Preferred Solution	Capital Cost Estimate
Screening	Capacity-based (2039)	Expand the screening system by replacing the existing screen with a larger screen or constructing a new channel adjacent to the existing channel with a new screen	$450,000
Grit Removal	Capacity-based (2039) Condition-based (current)	Rehabilitate the existing aerated grit removal system	$360,000
Tertiary Filtration	Condition-based (current)	Retrofit the existing sand filter with disk filters	$1,591,000
Disinfection	Capacity-based (2039)	Upgrade the UV disinfection system	$180,000
Sludge Storage	Operational flexibility	Implement closed tank sludge storage	$639,000
Influent PS	Capacity-based (current)	Remove the existing pumps and install three new pumps with a capacity of 61 L/s while any two are running	$250,000
Total	-	-	**$3,470,000**

In addition to the preferred solutions, Jacobs also recommends that the Town complete the following items:

- System-wide condition assessments (WWTPs, pumping stations and forcemains). This will provide a condition baseline for the Town's wastewater servicing assets, allowing the Town to prioritize condition-based upgrades and strengthen the overall value of the wastewater system.
- Additional wet weather flow monitoring for the purposes of hydraulic model calibration, confirming peak flow projection and refining the preferred solution design bases. This should be completed prior to design and construction of new pumping stations and forcemains. It is recommended that future flow monitoring be conducted for a minimum of 6 months, ideally initiated in the Spring (March/April) in order to capture both spring melt and rainfall conditions as well as the dryer summer periods. The previous flow monitoring efforts found that flow monitors were often impacted by upstream pumped flows which should be considered when selecting flow monitoring locations. Rain gauges should be within 5 kilometre of the flow monitoring locations in order to account for spatial differences in rainfall. Due to the geography of Plympton-Wyoming, multiple rain gauges will be required, therefore, performing flow monitoring in phases over several years may reduce program costs while enabling incremental model refinement.
- Investigate odour issues at PS-02 and along the Queen Street trunk sewer.
- Implementation of a public and private side inflow and infiltration (I/I) mitigation plan to reduce peak wet weather flows. This has the potential to reduce peak flows to the Plympton WWTP and Wyoming WWTP, potentially delaying plant expansions and associated capital expenditures.
- Update the Wastewater Servicing Master Plan every 5 to 8 years. With the recent increase in growth within the Town, updating the Master Plan will allow for the Town to adjust its capital expenditure plan based on an increased or decreased growth rate and continue to provide reliable wastewater servicing. The identified WWTP capacity expansions will require completion of a Schedule C Class EA, so Jacobs recommends that the next Master Plan update be completed as a Schedule C Class EA.
- Develop a risk mitigation plan. This, in conjunction with the system-wide condition assessment, will identify areas of high risk within the wastewater system and allow the Town to develop the necessary contingency plans, while also being proactive in addressing these high-risk components.
- Operations staff should review solids management practices to find efficiencies for solids handling, such as increased trucking, lagoon decanting, etc.

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Acronyms and Abbreviations

Acronym	Definition
BOD	biochemical oxygen demand
DFO	Fisheries and Oceans Canada
DMAF	Disaster Mitigation and Adaptation Fund
EA	Environmental Assessment
EAA	Environmental Assessment Act
ECA	Environmental Compliance Approval
END	endangered
EPA	U.S. Environmental Protection Agency
ESC	erosion and sediment control
F:M ratio	food to microorganism ratio
HRT	hydraulic retention time
I/I	inflow and infiltration
L/s	litre(s) per second
Lpcd	litre(s) per capita per day
m	metre(s)
m^2	square metre(s)
m^3	cubic metre(s)
m^3/day	cubic metre(s) per day
$m^3/m^2/d$	cubic metre(s) per square metre per day
masl	metre(s) above sea level
Master Plan	Plympton-Wyoming Wastewater Servicing Master Plan
MEA	Municipal Engineers Association
MECP	Ministry of Environment, Conservation and Parks

Acronym	Definition
mg/L	milligram(s) per litre
MLSS	mixed liquor suspended solids
MOE	Ontario Ministry of Environment
NHIC	Natural Heritage Information Centre
OBBA	Ontario Breeding Bird Atlas
POH	public open house
PS	pumping station
RAS	return activated sludge
SAR	species at risk
SC	special concern
SCADA	supervisory control and data acquisition
SCRCA	St. Clair Region Conservation Authority
SRT	solids retention time
SWD	side wall depth
THR	threatened
µm	micrometre(s)
UV	ultraviolet
VSS	volatile suspended solids
WAS	waste activated sludge
WWTP	wastewater treatment plant

1. Introduction

The Town of Plympton-Wyoming (Town) retained CH2M Hill Canada Limited (Jacobs) to develop a Wastewater Servicing Master Plan (Master Plan) through the Municipal Engineers Association (MEA) Class Environmental Assessment (EA) process. This Schedule B Master Plan will recommend a roadmap for future capital investment relating to wastewater treatment and conveyance in the Town, enabling the Town to service long-term growth while improving its wastewater servicing reliability, sustainability, and resiliency.

1.1 Study Purpose

The purpose of this Master Plan is to identify existing and future capacity constraints and other existing deficiencies within the Town's wastewater collection system, pumping stations and wastewater treatment plants, and to identify and evaluate alternatives to determine the preferred long-term solution to provide reliable wastewater servicing in the Town.

1.2 Class Environmental Assessment Process

Ontario's Environmental Assessment Act (EA Act) was passed in 1975 and was first applied to municipalities in 1981. The EA Act requires the study, documentation, and examination of the environmental effects that could result from projects or activities.

The objective of the EA Act is to consider the possible effects of these projects early in the planning process, when concerns may be most easily resolved, and to select a preferred alternative with the fewest identified impacts.

The EA Act defines "environment" very broadly as follows:

- Air, land, or water
- Plant and animal life, including human life
- Social, economic, and cultural conditions that influence the life of humans or a community
- Any building, structure machine, or other device or thing made by humans
- Any solid, liquid, gas, odour, heat, sound, vibration or radiation resulting directly or indirectly from human activities
- Any part or combination of the foregoing, and the interrelationships between any two or more of them, in or of Ontario

In applying the requirements of the EA Act to projects, two types of EA planning and approval processes are identified:

1) Individual EAs (Part II of the EA Act): Projects have terms of reference and individual EAs, which are carried out and submitted to the Ontario Ministry of the Environment, Conservation, and Parks (MECP) for review and approval.
2) Class EAs: Projects are approved subject to compliance with an approved Class EA process; provided that the appropriate Class EA approval process is followed, a proponent will comply with the requirements of the EA Act.

The MEA Class EA process is a decision-making framework that effectively meets the requirements of the EA Act. This study is being undertaken according to the five phases defined in the MEA's Municipal Class EA document (MEA 2019).

1) Identify the problem or opportunity
2) Identify alternative solutions and establish a preferred solution
3) Examine alternative methods of implementing the preferred solution that will minimize negative effects and maximize positive effects
4) Prepare an environmental study report
5) Implement the preferred solution

The Municipal Class EA process classifies projects in terms of the following schedules, based on the anticipated environmental impact of the proposed works:

- Schedule A projects are minor operational and upgrade activities and may go ahead without further assessment once Phase 1 of the Class EA process is complete (that is, the problem is reviewed, and a solution is confirmed).
- Schedule "A+" projects are pre-approved but still require public notification prior to implementation of the project. Projects categorized as Schedule A+ include activities such as municipal infrastructure plans previously approved by a municipal council (Phase 1).
- **Schedule B projects must proceed through the first two phases of the process. Proponents must identify and assess alternative solutions to the problem, inventory impacts, and select a preferred solution. They must also contact relevant agencies and affected members of the public. Provided that no significant impacts are identified and no requests are received to elevate the project to Schedule C or undertake the project as an Individual EA (Part II Order), the project may proceed to the next phase.**
- Schedule C projects require more detailed study, public consultation, and documentation, as they may have more significant impacts. Projects categorized as Schedule C must proceed through all five phases of an assessment. An environmental study report must be completed and available for a 30-day public review period prior to proceeding to implementation.

Proper scoping of Project activities and the environmental and socio-economic elements likely to be affected reduces the risk of including unimportant or irrelevant information in an assessment. Moreover, the depth of analysis should be commensurate with the nature of the Project and the potential for effects. Accordingly, pursuant to Chapter A.4.2.1 of the MEA Class EA (MEA 2019), the level of detail contained in this report corresponds to the nature and magnitude of the anticipated environmental and socio-economic impacts associated with the Project. The impacts are anticipated to be straightforward and is of a noncontroversial material and will be reasonably brief.

If there are major issues that cannot be resolved upon completion of the final project file, individuals may address concerns directly with the Town. If the concerns raised deal with treaty rights, the individuals can request the MECP to require the regions to comply with Part II of the EAA. Upon receiving an Order Request, the Minister reviews the request and study information, and makes one of the following decisions: deny the request, refer the matter to mediation, or require completion of an Individual EA. Many factors are considered by the Minister in making decisions, including the adequacy of the planning process, the potential for significant adverse environmental effects after mitigation measures are considered, the participation of the requester in the planning process, and the nature of the request (MEA 2000, as amended in 2007, 2011, 2015 and 2019).

The Master Plan is being carried out as a Schedule B Class EA and will follow the Municipal Class EA process. A Project File is required and will be filed for review by mandatory review agencies and the public. The Notice of Filing will be submitted to the MECP – Environmental Assessment and Approvals branch. The purpose of the Project File is to document the planning and decision-making process that was followed through Phases 1 and 2 of the Municipal Class EA process to identify the preferred solution.

1.3 Study Goals & Objectives

The goals and objectives of this Master Plan are as follows:

- Document existing conditions and develop future projections
- Identify constraints within the system based on capacity and condition
- Identify alternative solutions for the identified constraints
- Evaluate alternative solutions to identify the preferred solution for this Master Plan
- Develop an implementation plan for the identified upgrades, including a roadmap for capital investment

1.4 Previous Studies

Previous studies that have been completed for the Town and inform the development of this Master Plan are as follows, with brief descriptions of the findings.

1.4.1 Plympton Wastewater System Capacity Study (CH2M Hill 2015)

Due to continuous expansion of the service area in Plympton, a desktop study was completed to evaluate the available capacity at the Plympton WWTP and in the wastewater collection system to facilitate future planned development. The purpose of this study was to:

- Determine the uncommitted reserve capacity of the Plympton WWTP, and
- Identify potential areas of concern within the sanitary collection system for servicing future growth.

The following relevant conclusions and recommendations were made from this study:

- Some areas, specifically the catchment areas for PS-04 and PS-06, exhibit higher per capita flow rates during wet weather. This is likely due to high rates of I/I in these areas.
- An inflow and infiltration investigation was recommended.
- In-sewer flow monitoring was recommended.
- Drawdown tests were recommended for each pumping station to evaluate pump station performance. The scope of this study was a desktop study that evaluated system capacity relying on the as listed on the Environmental Compliance Approval (ECA) for each pumping station.

1.4.2 Plympton Inflow and Infiltration Investigations (CH2M 2019)

This study was completed based on the recommendations from the previously described Plympton Wastewater System Capacity Study (CH2M Hill 2015). The purpose of this study was to investigate potential sources of I/I at priority pumping stations identified in the previous capacity study (PS-04, PS-06 and PS-07). The following work was completed:

- Smoke testing
- CCTV inspections
- Desktop reviews of pumping station run times and capacities
- Flow monitoring

The following relevant conclusions and recommendations were made from this study:

- Flow responses during wet weather were indicative of clear water inflows into the sanitary collection system, as opposed to infiltration-type I/I
- Infiltration sources are present in the PS-04 and PS-06 catchment area
- Further I/I investigation was recommended in the PS-06 catchment area, as this area exhibited the highest levels of I/I.
- The PS-07 catchment area does not experience as high of I/I as previously estimated.
- It was recommended that the Town evaluate and consider upgrades to the supervisory control and data acquisition (SCADA) system for all pumping stations.
- Various collection system repairs were recommended based on investigation results.
- Drawdown tests were recommended to determine the actual capacity of each pumping station.
- The flow monitoring period for this study was brief, therefore additional wet weather flow monitoring was recommended throughout the Town to support subsequent I/I mitigation efforts and the development and calibration of a hydraulic model for the Town.

1.4.3 Wyoming WWTP Capacity Study (CH2M 2018)

This desktop review was completed due to changes to the Wyoming WWTP’s effluent limits and objective in its ECA, with the purpose being to confirm that the plant will maintain adequate performance (meeting effluent objectives) at design flows. Based on a review of past performance, it was determined that the Wyoming will be able to meet the effluent objectives at design flows.

1.5 Study Process

The MEA Master Plan process provides two common approaches for projects referred to as Approach 1 and Approach 2. Approach 1 completes phases 1 and 2 the Municipal Class EA process with the master plan completing a broad level assessment requiring more detailed investigations for specific projects identified within the master plan. Under Approach 1, the master plan document is made available to the public for 30 days and is approved by city Council. Approach 2 also completes phases 1 and 2 of the Municipal Class EA process but is executed at a level of detail to complete the requirements for Schedule B projects.

The Plympton-Wyoming Wastewater Servicing Master Plan was conducted using Approach #2 of the MEA’s Municipal Class EA process and meets the requirements for Phases 1 and 2 of the EA process. The level of investigation and documentation is sufficient to fulfill the requirements of a Schedule B project. The projects identified in this Master Plan can be taken forward to the next steps, involving design and construction.

1.6 Report Organization

This report is organized as follows:

- Section 1: Introduction
- Section 2: Problem and Opportunity Statement
- Section 3: Consultation and Engagement
- Section 4: Inventory of Existing Conditions
- Section 5: Future Conditions and Capacity Analysis
- Section 6: Non-Growth Needs
- Section 7: Identification and Evaluation of Alternative Solutions
- Section 8: Preferred Solution Detail Development and Costing
- Section 9: Recommendations
- Section 10: Implementation Plan
- Section 11: References

2. Problem and Opportunity Statement

The problem and opportunity statement for this Class EA is as follows:

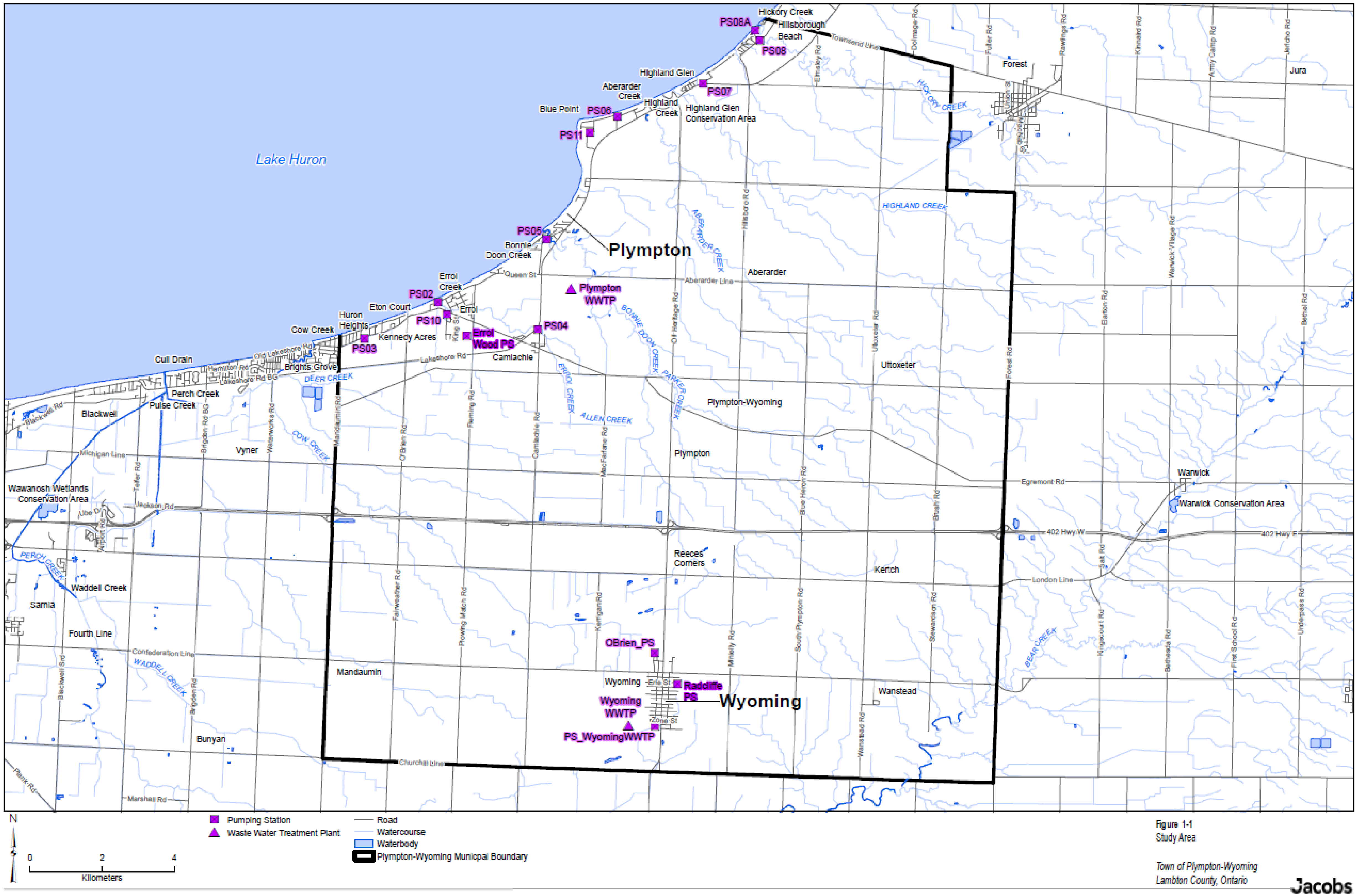
The Town of Plympton-Wyoming is undertaking a Wastewater Servicing Master Plan to develop a plan that allows the Town's sanitary sewer collection systems have the capacity to convey current and future wastewater flows to the Town's Wastewater Treatment Plants to 2039 based on the Town's growth plan. Wastewater Treatment Plant capacity is also being reviewed as part of this study.

The Master Plan is a plan that will investigate the Town's sanitary sewer system capacity and condition and will guide how the Town will continue to meet current and anticipated demands over the next 20 years. This plan will:

- Identify existing and future capacity constraints and other existing deficiencies within the Town's wastewater collection system, pumping stations and wastewater treatment plants.
- Identify and evaluate alternatives to determine the preferred long-term solution to provide reliable wastewater servicing in the Town.

Figure 2-1 presents the study area for this Class EA, which includes the area within the Plympton-Wyoming municipal boundary and all wastewater servicing infrastructure within the Town.

Figure 2-1. Study Area



3. Consultation and Engagement

Effective public consultation programs build and maintain community trust and credibility to improve decision making and identify community issues far enough in advance that they can be effectively addressed before final decisions are made.

The Town is committed to undertaking public consultation that provides a variety of opportunities for learning and sharing. As such, the Town has committed to a program that exceeds requirements of the Schedule B Class EA. Through the public consultation program, the proponent will conduct a consultation process that meets the following requirements:

- Is meaningful to those involved
- Facilitates open and transparent dialogue resulting in defendable and traceable decision making
- Provides opportunities for early public and stakeholder involvement
- Helps promote public learning regarding wastewater treatment and the environment

The objective of the public consultation component was to provide information in support of the Plympton-Wyoming Wastewater Servicing Master Plan and to provide the public and agencies (stakeholders) the opportunity to be involved in the Project in a meaningful way.

The Consultation Plan has the following objectives:

- Inform interested and potentially affected parties
- Solicit input
- Consider input in the selection and development of the preferred design concepts
- Consider input in the development of environmental mitigation strategies
- Earn support for the Project

3.1 Community Engagement and Communications Plan

As part of this Class EA, a community engagement and communications plan was developed. The Community Engagement and Communications Plan establishes a strategy for the project team to provide meaningful information about the project to the identified audiences and to give engagement opportunities over the course of the Master Plan development. This enabled the project team to capture, understand and manage input, and use input to appropriately influence the decision-making process.

The Community Engagement and Communication Plan focuses on two major components, as follows:

- **Communications:** The distribution of factual and topical information by the project team and the Town to the community and project contact list.
- **Engagement:** The process of seeking and receiving comments from the community, agencies, and First Nations.

Engagement strategies were developed for the following groups:

- Community members - including residents, businesses, and organizations (such as ratepayer and other special interest groups) in the community
- Indigenous peoples – First Nations, Indigenous, and Métis communities
- Municipal staff and elected officials (The Town)
- Review agencies

The full community engagement and communications plan is presented in Appendix A.

3.2 Project Mailing List

The mailing list was initiated based on the guidelines provided in Appendix 3-1 of the MEA manual (MEA 2015) and produced using the Environmental Assessment Government Review Team Master Distribution List (MECP 2018). Community members were encouraged to join the mailing list through public advertisements, as well as during the Public Open House (POH) presentation. The project mailing list and public consultation throughout the Master Plan are presented in Appendix B.

3.3 Notice of Commencement

The Notice of Commencement was distributed in June 2021, notifying stakeholders of Project initiation and an upcoming POH Number 1 (refer to Appendix B). The Notice of Commencement intended to accomplish the following:

- Provide a clear purpose for the study
- Notify the public that the Project is being initiated and that there will be opportunities for involvement
- Invite the public to join the mailing list
- Provide contact information, including website address and Project team member contact information

The Notice of Commencement was distributed by email to the project mailing list members and was posted as an advertisement in the local newspaper, which is presented in Appendix B.

3.4 Engagement with First Nations and Indigenous Communities

Potentially affected or interested Indigenous communities and organizations were identified based on past Project experience, existing relationships with the Town, and consultation with MECP, and include the following:

- Aamjiwnaang First Nation
- Chippewas of Kettle and Stoney Point
- Bkejwanong (Walpole Island First Nation)
- Chippewas of the Thames
- Oneida Nation of the Thames
- Caldwell First Nation
- Munsee-Delaware Nation

First Nations and Indigenous communities were sent an introductory letter about the project and the notice of commencement via registered mail, as well as contacted via phone by Town staff to establish a dialogue. The communications log is presented in Appendix C.

Ongoing consultation and engagement with First Nations and Indigenous communities will. To date, Jacobs and the Town are not aware of outstanding issues or concerns specific to the proposed study, identified alternatives, or the EA process.

3.5 Public Open House

One POH was held for this Class EA on August 11, 2021 at 6:00 pm. The POH was presented as special prestation as part of the Town's regularly scheduled council meeting and was held virtually due to restrictions resulting from the COVID-19 pandemic. The POH was held in the form of a live presentation by the project team, with a question period held after where Town councillors and community members were able to ask questions or raise any concerns. The presentation slides and the Town's meeting minutes for this council meeting are presented in Appendix B.

3.6 Notice of Completion

The Notice of Completion will be distributed to recipients on the project mailing list in 2022 and submitted to the MECP Environmental Assessment and Approvals Branch. It is presented in Appendix B. The Notice of Completion constitutes the third mandatory point of contact with the public and review agencies and includes provisions to request a Part II Order. The Notice of Completion marks the beginning of the 30-day public review period and advises the public, particularly those with an interest in the project, where the Project File may be reviewed and where public comments may be sent.

4. Inventory of Existing Conditions

4.1 Summary of Background Documents

The following background documents were reviewed in establishing the existing conditions within the study area for this Master Plan:

- Environmental Compliance Approval Number 7216-ABBPRD (Plympton WWTP and Sanitary Sewage Collection System)
- Environmental Compliance Approval Number 2260-AT6TJX (Wyoming WWTP)
- Town of Plympton-Wyoming Official Plan
- Town of Plympton-Wyoming Zoning By-Law 97 of 2003
- Plympton WWTP Annual Reports
- Plympton WWTP Operational Data
- Wyoming WWTP Annual Reports
- Wyoming WWTP Operational Data

4.2 Social/Cultural Environment

4.2.1 Land Use

The Town of Plympton-Wyoming is located on the southern side of Lake Huron and is beginning to experience significant growth. The land within the Town's municipal boundary largely consists of agricultural land and significant woodlots. The land that is currently serviced in the Town makes up a small portion of the total land within the municipal boundary.

Within Plympton and Wyoming, land is mainly zoned as either agricultural or residential, with significant woodlots scattered throughout. There are small areas zoned as institutional and commercial, mainly within the Camlachie area and Wyoming. There are also large portions of industrial zoned lands within Wyoming.

The Town is currently undergoing an Official Plan review, which is expected to re-zone many agricultural lands as residential lands. This is the main driver for this Master Plan, as this will allow for significant development in the future. Future development plans are discussed in Section 5 of this report.

4.2.2 Population and Future Growth Planning

The Town of Plympton-Wyoming was established in 2001 through the amalgamation of the Township of Plympton and the Village of Wyoming, and as of 2016 had a reported population of 7,795 (Statistics Canada, 2017). This represents a 2.89 percent increase from 2011, with an annual growth rate of 0.57 percent. The breakdown of population between Plympton and Wyoming was determined through analysis of sewer billing accounts, presented in Section 4.3.6 and Section 4.5.

Plympton-Wyoming is part of the Lambton County census division. Ontario's Ministry of Finance projects that Lambton County will grow by 7.7 percent between 2020 and 2046 (Ministry of Finance 2021). However, the Town's planning department projects that the Town will grow by 20 percent every 5 years, which is a far higher growth rate than projected by the Ministry of Finance. This is likely due to the increased development in Plympton-Wyoming, compared to slower development in other parts of Lambton County. Therefore, the Town's growth rate of 20 percent every 5 years will be used for planning purposes in this Class EA.

4.2.3 Archeological Environment

Stantec Consulting Ltd (Stantec) was retained to complete a Stage 1 archeological assessment for the study area. A representative from the Chippewas of the Thames First Nation was present during the field investigation, which was completed on September 8, 2021.

The Stage 1 assessment determined that approximately 11.3 percent of the study area retains the potential for identification and documentation of archaeological resources (Stantec 2021). While the majority of areas of potential construction occur in previously disturbed areas with low to no archaeological potential, the PS-03 site, PS-04 site and the land parcel at the northwest corner of the intersection of Queen Street and Bonnie Doon Road were identified as areas with archaeological potential, which will require a Stage 2 archeological assessment prior to any construction activities (Stantec 2021). These sites and potential construction impacts are discussed in more detail in Sections 7 and 8.

Where they are required, Stage 2 archeological assessments will be completed ahead of design phase. When reviewing the preferred solutions presented in Section 8, it was determined that the results of the Stage 2 assessments would not impact any of the preferred solutions. It may impact the exact siting, which has not been finalized for the preferred solutions at this stage. Therefore, the project team identified that it would be more beneficial to complete the Stage 2 assessments during design, where the exact siting for each preferred solution would be better defined.

4.2.4 Cultural Heritage Environment

Stantec Consulting Ltd (Stantec) was retained to complete a Heritage Checklist, which was submitted to the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI). The checklist identified that there are buildings or structures that are 40 or more years old within the project study area and as a result, the MHSTCI requires that a Cultural Heritage Report be completed as a next step (Stantec 2021). This will be completed before the design phase for the preferred solutions where necessary, when the exact siting for the preferred solutions is better defined.

4.3 Natural Environment

This section presents the natural heritage features within the Study Area. The Study Area (Figure 2-1) occurs within the Regional Municipality of Plympton-Wyoming within the county of Lambton, Ontario, located to the east of Sarnia, Ontario.

4.3.1 Physical Environment

The Study Area is dominated by agricultural lands and residential areas with inclusions of riparian areas and woodlands. There are minor forested areas located around the town of Errol and a woodland is noted at the Queen Street and Bonnie Doone Road. The riparian areas are located along the shoreline of Lake Huron and various watercourses. The Study area is within the Plympton Shoreline Tributaries subwatershed and the Cow and Perch Creeks subwatershed. Both subwatersheds drain into the St. Clair River (SCRCA 2018a). Soil type is predominantly silt and clay, with trace sand loams. Tile drainage now accounts for over 60% of the total land area withing these subwatersheds (SCRCA 2018a).

4.3.2 Terrestrial Systems

Based on a desktop review, the Study Area is dominated by agricultural lands, open fields, cultural woodlands, woodlands, disturbed areas and riparian areas. Online, detailed vegetation information is unavailable for the Study Area. Vegetation communities and flora inventories are carried out through field surveys adopting the Ecological Land Classification for Southern Ontario (Lee, et al. 1998) and have not been completed to date.

4.3.3 Wetlands

Based on review of the *Plympton Shoreline Tributaries Subwatershed Report Card* and the *Cow and Perch Creeks Subwatershed Report Card* (SCRCA 2018b) as well as the Map Your Property: St. Clair Region Conservation Authority (SCRCA) (2021), no wetlands occur within the Study Area or 120 metre adjacent lands. Review of Land Information Ontario data also confirmed that wetlands do not occur within the Study Area. Presence or absence of wetland habitat has not been field verified to date.

4.3.4 Wildlife

Based on a desktop review, the Study Area includes various ecological ecotones including open and disturbed areas, agricultural areas, and various watercourses. The combination of these natural features could provide suitable habitat for numerous fauna species, including Species at Risk (SAR) avifauna.

4.3.5 Aquatic Species and Habitat

Aquatic habitat within the Study area includes the southern shoreline of Lake Huron, Errol Creek, and proximal to Bonnie Coon Creek. The Study Area also contains numerous agricultural drains which may contain fish. According to Fisheries and Oceans Canada (DFO) Aquatic SAR map, SAR and critical habitat does not occur within the Study Area (Government of Canada 2021). However, based on consultation with the MECP SAR fish may occur within the Study Area (Appendix D).

Based on the desktop review and the Natural Heritage Information Centre (NHIC), Ontario Breeding Bird Atlas (OBBA) and DFO, SAR occur within or proximal to the Study Area. Table 4-1 provides the results of the desktop investigation:

Table 4-1. SAR Desktop Investigation Results based on the MNRF/NHIC, OBBA and DFO

Species	Common/Scientific Name	COSEWIC[a]	SARO[b]	Habitat Description[c]
Birds	Bobolink (Dolichonyx oryzivorus)	THR	THR	Tallgrass prairie and open meadows. In areas where meadows have been cleared for agriculture, it will nest in hayfields.
	Eastern Wood-pewee (Contopus virens)	SC	SC	Edges and clearings of both deciduous and mixed forests, predominantly in the mid-canopy layer

Species	Common/Scientific Name	COSEWIC[a]	SARO[b]	Habitat Description[c]
Birds	Chimney Swift (Chaetura pelagica)	THR	THR	Found around urban settlements where they will roost and nest on the walls and chimneys of buildings. Typically near water, as that is where they forage.
	Red-headed Woodpecker (Melanerpes erythrocephalus)	END	SC	Open forests and forest edges with abundant dead trees, used for nesting. Also found in parks.
	Acadian Flycatcher (Empidonax virescens)	END	END	Large, mature forests with ravines, or forested swamp areas with an abundance of maple and beech trees. Mostly found on the shore of Lake Erie.
	Bank Swallow (Riparia riparia)	THR	THR	Burrows into natural and man-made vertical faces, such as banks of rivers and lakes, and sand and gravel pits.
	Barn Swallow (Hirundo rustica)	THR	THR	Nests on man-made structures like barns and bridges. Forages in nearby open areas.
	Golden-winged Warbler (Vermivora chrysoptera)	THR	SC	Mature forests with shrubs, or recently disturbed locations such as field edges or logged areas
	Cerulean Warbler (Setophaga cerulea)	END	THR	Continuous tracts of deciduous forests with large trees and open under storey.
	Prothonotary Warbler (Protonotaria citrea)	END	END	Nests in holes in the trunks of dying trees in or near wetlands. Will also readily use man-made nest boxes.
	Yellow-breasted Chat (Icteria virens)	END	END	Overgrown clearings with thickets and scrub.
	Grasshopper Sparrow (Ammodramus savannarum)	SC	SC	Open, sparsely vegetated grasslands with sandy soil. Will also nest in hayfields as well as alvars.

Species	Common/Scientific Name	COSEWIC[a]	SARO[b]	Habitat Description[c]
Birds	Eastern Meadowlark (Sturnella magna)	THR	THR	Tall grasslands including pastures and hayfields. Also found in weedy borders of croplands, orchards, and overgrown fields.
	Horned Grebe (Podiceps auritus)	SC	SC	Ponds, marshes, and shallow bays containing open water and emergent vegetation.
	Red Knot (Calidris canutus)	END	END	Open beaches, mudflats, and coastal lagoons, primarily along the Great Lakes
	Wood Thrush (Hylocichla mustelina)	THR	SC	Mature deciduous and mixed forests with moist stands of trees with well-developed undergrowth and tall trees.
Fish	Lake Sturgeon (Acipenser fulvescens pop. 3) (Great Lakes - Upper St. Lawrence River population)	THR	THR	Freshwater lakes and rivers with soft bottoms of mud, sand, or gravel. They can spawn in both shallow, fast-flowing water, as well as deeper water.
	Silver Chub (Macrhybopsis storeriana)	END	THR	Only found in the Great Lakes in Ontario, at depth between 7 and 12 m.
Mussels	Mapleleaf Mussel (Quadrula quadrula)	SC	THR	Large rivers with slow to moderate currents with firmly packed sand, gravel, or clay and mud bottoms. Also found in lakes and reservoirs. Presence of the host fish Cannel Catfish is essential.
	Northern Riffleshell (Epioblasma rangiana)	END	END	Found in riffle areas within rivers with rocky, sandy, or gravel bottoms. Only found in Sydenham River and Ausable River.
	Salamander Mussel (Simpsonaias ambigua)	END	END	Waterbodies with a swift current and soft mud, sand, gravel bars, or silt bottoms. It uses the mudpuppy as a host.
	Wavy-rayed Lampmussel (Lampsilis fasciola)	SC	THR	Small rivers with clear water, in shallow riffle areas with gravel or sand bottoms.

Species	Common/Scientific Name	COSEWIC[a]	SARO[b]	Habitat Description[c]
Herptiles	Butler's Gartersnake (Thamnophis butleri)	END	END	Open, moist habitats, including dense grasslands and old fields, with small wetlands.
	Queensnake (Regina septemvittata)	END	END	Next to rivers, streams, and lakes with clear water, gravel bottoms, and plenty of places to hide.
Insects	Monarch (Danaus plexippus)	END	SC	Caterpillars feed on milkweeds in meadows and other open fields.
Plants	Butternut (Juglans cinerea)	END	END	Grows in moist, well-drained soil near streams in deciduous forests. Requires sunny opening and forest edges.
	Eastern False Rue-anemone (Enemion biternatum)	THR	THR	Deciduous forests and thickets with moist soil, often in valleys and floodplains. Found close to water courses.
	Eastern Flowering Dogwood (Cornus florida)	END	END	Grows in mid-age to mature deciduous or mixed forests, often on floodplains, slopes, and ravines.

Notes:

[a] Committee on the Status of Endangered Wildlife in Canada

[b] Species at Risk Ontario

[c] Information from Species at Risk in Ontario website

END = Endangered

SC = Special Concern

THR = Threatened

The Mussels noted within Table 4-1 are primarily known to occur within the Sydenham River, outside of the Study Area. The remaining species listed could occur within and/or proximal to the Study Area. The project was also screened with the MECP on April 20, 2021 for additional SAR which may occur within the Study Area. MECP responded with a list of SAR (Appendix D).

4.3.5.1 St. Clair Region Conservation Authority Regulated Area

Large parts of the Study Area are within the SCRCA Regulated Area (SCRCA 2021). This primarily occurs at the various water crossings associated with Errol Creek and the various agricultural drains. The SCRA Regulated Area also occurs within the property of the Plympton WWTP. As such, a permit will be required for the proposed works under O. Reg. 171/06, *Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses* may be required if site alterations are proposed within or proximal to the Regulated Area.

4.3.5.2 Recommendations and Conclusion

Based on a desktop review, the proposed alternatives occur within the SCRCA Regulated Area and cross Errol Creek and various agricultural drains. As such, impacts to fish bearing habitat could occur due the construction of Forcemain and upgrades to PS-04. As well, the Forcemain Alternatives cross natural areas such as riparian zones and minor woodland habitat. The proposed work could impact natural features and potentially SAR which may occur as noted within Table 4-1 and in consultation with the MECP. As such, the following recommendations are provided:

- Natural Environment field surveys should be completed at the detailed design stage to confirm the extents of natural features and provide for site specific mitigation. At the detailed design stage, a full and comprehensive Environmental Impact Study should be carried out once the Preferred Alternatives are chosen.
- Confirm the in-water and near water works permitted timing window for Errol Creek and require that contractors include these windows in their construction schedule.
- Avoid tree and vegetation removals between April 1 – August 31 to avoid impacts to nesting avifauna. If this timeline cannot be adhered to, retain a qualified avifauna biologist to carry out weekly nest sweeps. The biologist could then incorporate stop work orders and/or setback buffers from nests which are observed.
- Vegetation removal, grading, and heavy equipment use should only occur within the Study Area where these areas have been previously demarcated and approved to allow construction works. Silt fencing should be erected along the extremities of selected construction sites.
- Multibarrier erosion and sediment control (ESC) measures (i.e., silt soxx) should be erected in areas of any proposed near water works. Temporary multibarrier ESC measures and runoff conveyance structures should be installed as to further protect nearby water bodies and storm water management facilities from sedimentation. These measures and structures should be maintained and enhanced as needed until construction has been completed and the site has stabilized.
- An ESC plan should be developed by a qualified person and be site specific. The ESC plan should be treated as a live document and updated as required.
- A qualified environmental inspector should perform preconstruction, construction, and post-construction monitoring of ESC and near-water works.
- Weekly and within 24 hours following a rain event, sediment control structures will be inspected to verify structures are in good working condition and sedimentation is not occurring.
- Weekly monitoring should be conducted by an environmental inspector during construction to prevent disturbances occurring outside of the project location. If disturbances are observed, activities will be altered to avoid these impacts, and area will be restored as soon as possible.
- Stockpiled material should be covered to prevent erosion and potential sedimentation into natural features. Staging and access areas are planned to be located primarily within existing open and disturbed areas.
- If feasible, vegetation removal and grading activities should be scheduled to avoid times of high runoff volumes (spring and fall) to prevent erosion and potential sedimentation.
- Construction sites should be revegetated with native species as soon as possible following disturbance. A landscape design plan should be drafted to prescribe vegetation improvements within treed and thicket areas. Near-water plantings should focus on runoff retention and improvements for fish refuge.

- A designated and lined refueling area with appropriate spill containment should be established a minimum of 30 metres from water features. A spill response team member should be appointed as a point of contact in the case of an accident or spill to verify the proper and timely implementation of site response controls.
- Absorbent materials and equipment required to control and clean up spills of deleterious substances should be made available on-site. Spills and leaks of deleterious substances must be immediately contained and cleaned up in accordance with regulatory requirements and reported immediately to the Ontario Spills Action Centre (SAC) at 1.800.268.6060.
- Staging and access areas should be planned to be located within existing open and disturbed areas.

4.3.6 Climate Change

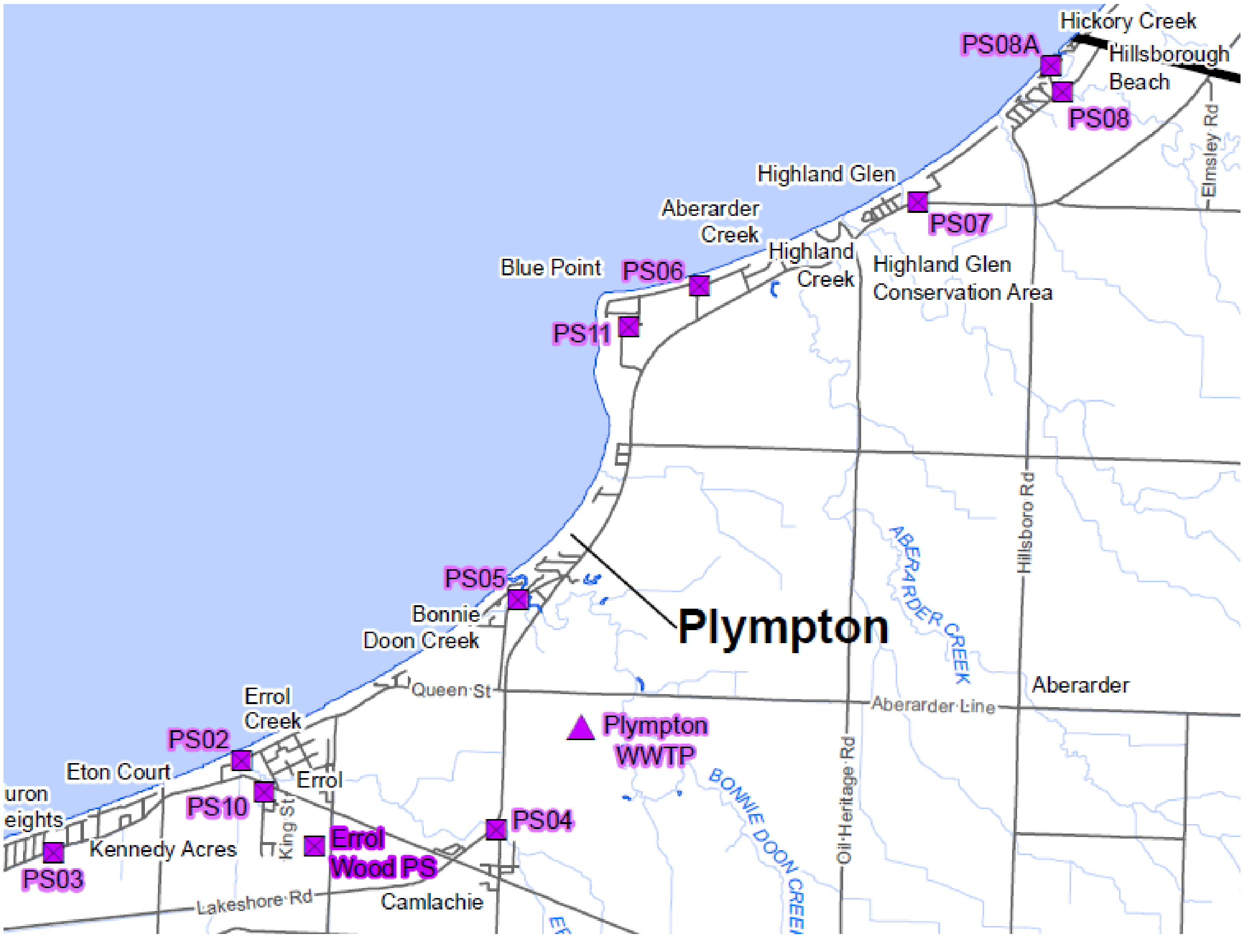
The closest climate station to Plympton-Wyoming is the Sarnia Airport Climate Station. Canadian Climate Normals were reviewed to establish the typical climate in the area. From 1980 to 2019, the average monthly precipitation was between 50 and 100 mm (Government of Canada 2021). The Town has been subject to extreme storms in recent years, which is indicated by the increased instances of flooding at the Plympton WWTP and pumping stations. A review of flow data indicates that the Plympton WWTP receives high peak instantaneous flows during wet weather events, which can cause backups at upstream pumping stations.

As climate change continues to occur, its impact on the Town's conveyance system will increase. The Town currently experiences a high degree of I/I (CH2M 2019), which would increase as intense storms become more frequent. Under climate change scenarios, more frequent higher return period rain events would be expected (i.e., 50-year storms). The conveyance system and WWTPs would experience higher peak flows, which could present issues related to treatment and pumping capacity. To prepare for the impacts of climate change, the Town should continue to monitor peak flows within the system so that mitigation measures can be taken proactively, and implement the recommendations from the I/I investigations report (CH2M 2019) to minimize the amount of rainfall-derived I/I that enters the sanitary sewer system.

4.4 Existing Plympton Wastewater Servicing System

The Plympton wastewater servicing system includes sanitary sewers, forcemains, eleven pumping stations and the Plympton WWTP. The locations of the pumping stations and the Plympton WWTP are displayed on Figure 4-1.

Figure 4-1. Plympton WWTP and Pumping Station Locations



4.4.1 Plympton WWTP

The Plympton WWTP is located on Aberarder Line, originally constructed as part of the Ontario Ministry of Environment sewage works projects in the 1990s. It is currently operated under amended ECA number 7216-ABBPRD (dated July 18, 2016). It is an extended aeration plant rated for an average daily flow of 3,300 cubic metres per day and a peak flow of 10,500 cubic metres per day. The plant processes include screening, vortex grit removal, two two-pass aeration tanks, two secondary clarifiers, chemical phosphorous removal, and ultraviolet (UV) disinfection. Sludge management is provided by four aerobic digesters and one on-site sludge storage lagoon. Influent concentrations at the Plympton WWTP are typical of those observed for residential wastewater. The effluent compliance limits at the Plympton WWTP are displayed in Table 4-2.

Table 4-2. Plympton WWTP Effluent Compliance Limits

Effluent Parameter	Monthly Average Concentration
$cBOD_5$	15 mg/L
Suspended Solids	15 mg/L
Total Phosphorous	1 mg/L
(Ammonia + Ammonium) Nitrogen – Non-freezing season (May 1 to November 31)	3 mg/L

Effluent Parameter	Monthly Average Concentration
(Ammonia + Ammonium) Nitrogen – Freezing season (December 1 to April 30)	5 mg/L
E. coli	100 organisms/100 mL

Notes:

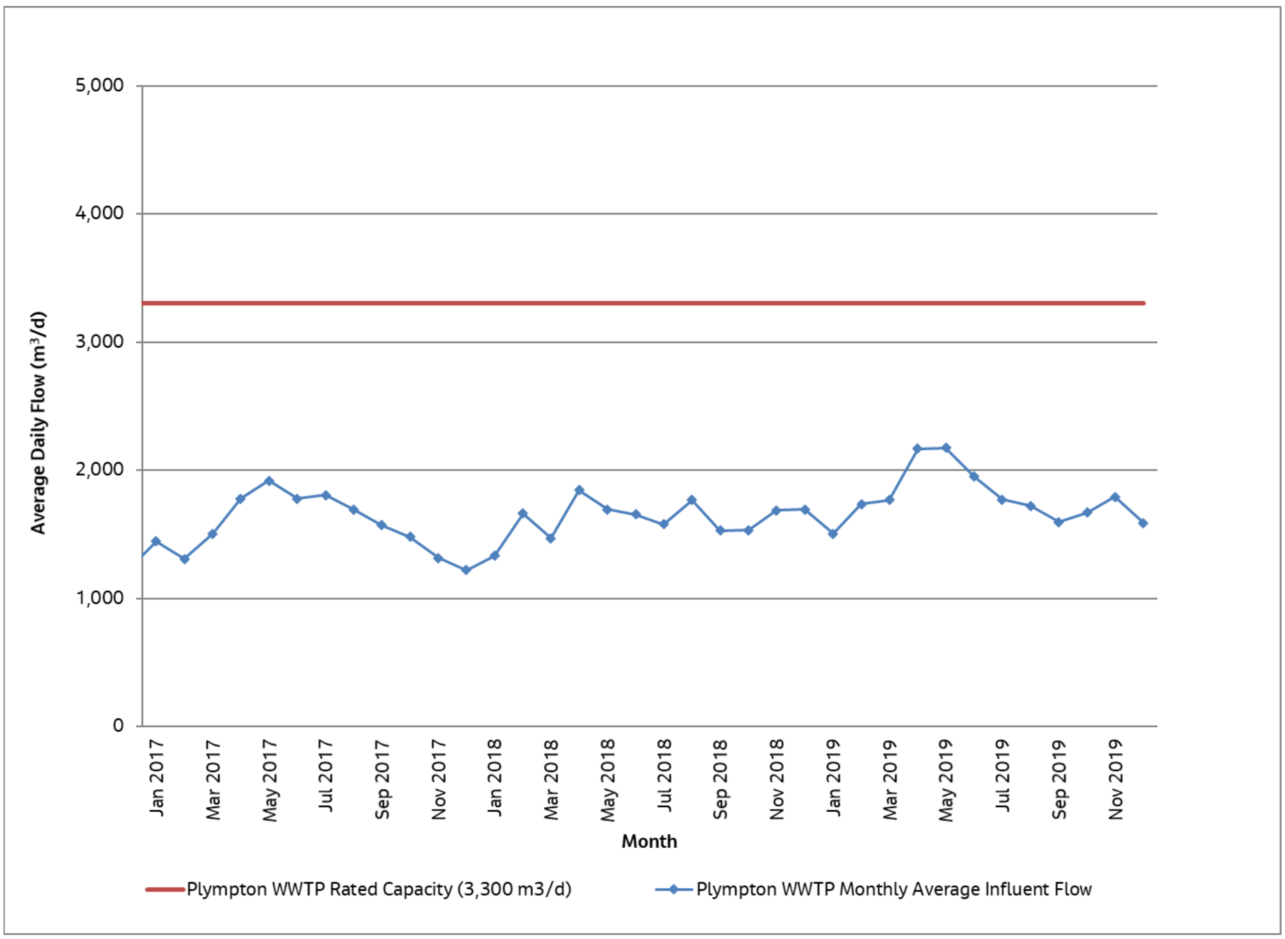
$cBOD_5$ = five-day carbonaceous biochemical oxygen demand

mg/L = milligram(s) per litre

4.4.1.1 Historical Flows

Historical flows from the Plympton WWTP were obtained from the 2017 to 2019 annual reports and are displayed on Figure 4-2.

Figure 4-2. Plympton WWTP Historical Flows



The three-year average daily flow (2017 to 2019) at the Plympton WWTP was 1,658 cubic metres per day. This represents 50 percent of the plant's rated capacity, with the plant having 1,786 cubic metres per day in hydraulic reserve capacity. The average annual increase in daily flows from 2017 to 2019 was 6.8 percent. The maximum daily flow during this period was 4,989 cubic metres per day, occurring in February 2018. This represents a peak factor of 2.79, which is similar to the design peak factor of 3.

4.4.1.2 Existing Connected Population

There was an estimated total of 1,687 sewer accounts serviced by the Plympton in 2019. Based on three (3) persons per sewer connection, this yields a serviced population of 5,061. Table 4-2 presents the sewer account breakdown by pumping station service area. It is noted that the number of billing accounts for each pumping station only includes accounts that flow directly to the pumping station by gravity; billing accounts from upstream pumping stations are not included.

Table 4-3. 2019 Plympton Sewer Billing Accounts

Service Area	Billing Accounts	Estimated Population
PS-02	353	1,059
PS-03	337	1,011
PS-04	208	624
PS-05	176	528
PS-06	164	492
PS-07	131	393
PS-08	93	279
PS-08A	36	108
PS-10	97	291
PS-11	92	276
Influent PS	**1,687**	**5,061**

4.4.1.3 Average Daily Per Capita Flow

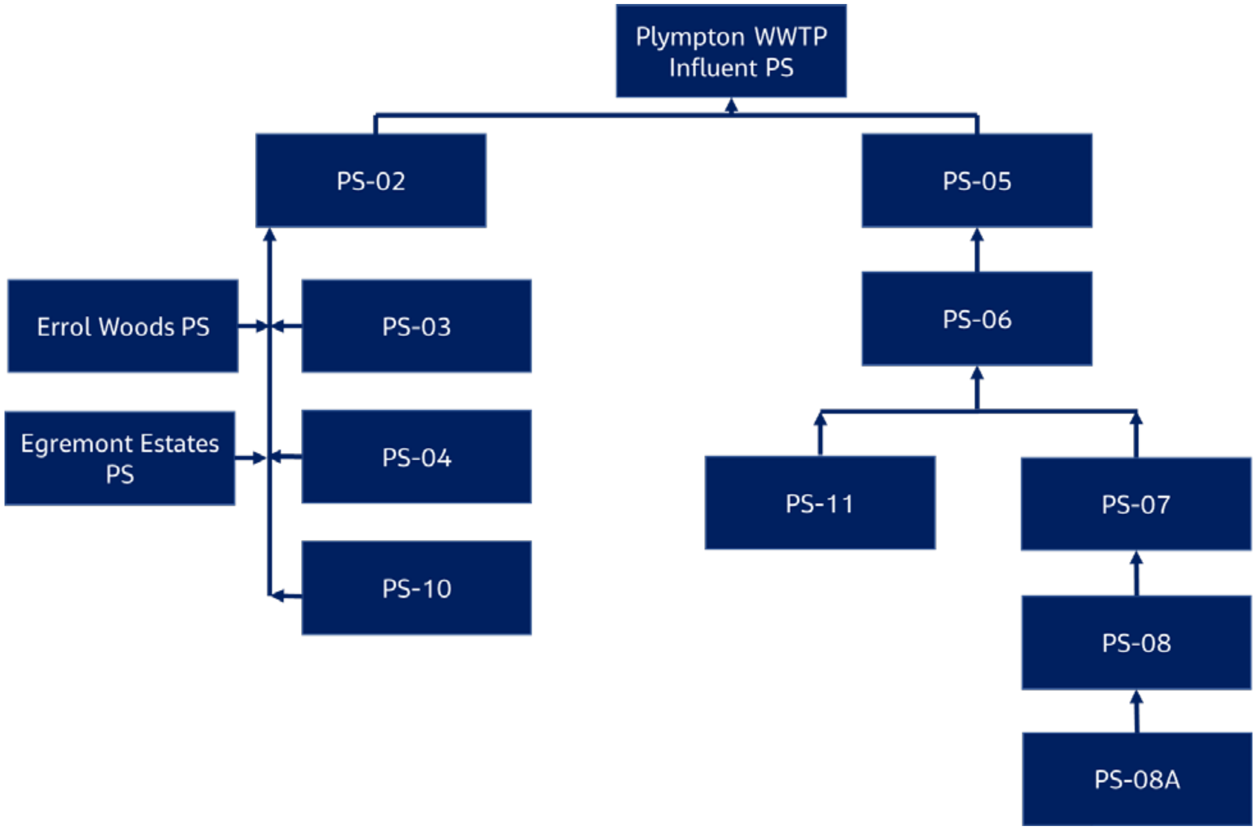
A household of three persons has a typical wastewater flow rate of 250 litres per capita per day (Lpcd) (Metcalf & Eddy 2015). The range provided for the three-person household is 194 to 335 Lpcd.

Dividing the 2019 average influent flow rate of 1,786 cubic metres per day by the existing connected population of 5,061 people yields an estimated average per capita daily flow of 353 litres per capita per day. While this value is higher than typical values in literature, it is noted that the Plympton system experiences inflow and infiltration that is greater than typical design allowances, as detailed in the Plympton Inflow and Infiltration Investigations (CH2M 2019). It is also similar to the values that have historically been used to complete developer capacity assessments.

4.4.2 Pumping Stations

The Plympton WWTP collection area is approximately 395 hectares. Two of the pumping stations pump directly to the Plympton WWTP (i.e. PS-02 and PS-05). The other pumping stations convey wastewater to these two pumping stations, as shown on Figure 4-3. PS-02, PS-03, PS-04, PS-05, PS-06, PS-07, PS-08, PS-08A, PS-10 and the Influent PS operate under ECA number 7216-ABBPRD. PS-11 operates under CofA Number 4672-7BZMMX. The Town is undertaking an application for consolidated ECAs for conveyance linear infrastructure in 2021. These ECA numbers may change as a result of that effort.

Figure 4-3. Plympton Sanitary System Block Flow Diagram



Drawdown tests were completed in December 2020 to determine the capacity of each pumping station within the Plympton system. The results of these tests will be detailed for each pumping station in the following sub-sections.

4.4.2.1 PS-02

PS-02 is located on Victoria Street approximately 120 meters west of Dalrymple Street. It contains an 8.8 meter by 5.7 meter wet well/dry well and is equipped with three (3) submersible pumps. The rated capacity of the station is 107 litres per second, which requires two (2) pumps to be operating in parallel. It is also equipped with a 600 mm diameter emergency overflow pipe from the pumping station that discharges approximately 90 meters west in Errol Creek. Along with the flows from its catchment area, PS-02 receives flows from PS-03, PS-04 and PS-10.

Results from the drawdown tests completed in December 2020 are presented in Table 4-4. This indicates that the peak capacity of PS-02 is 62.6 litres per seconds.

Table 4-4. PS-02 Drawdown Test Results

Pump Configuration	Capacity (L/s)
Pump 1	48.6
Pump 2	46.5
Pump 3	39.7
Pump 1 and Pump 2	62.6

Pump Configuration	Capacity (L/s)
Pump 1 and Pump 3	56.0
Pump 2 and Pump 3	60.3

Notes:

L/s = litre(s) per second

These results indicate that the capacity of PS-02 is far below its rated capacity of 107 liters per second. This is consistent with discussions with operations staff, which indicated flooding during wet weather events. These results will be considered when determining future needs for PS-02.

4.4.2.2 PS-03

PS-0 3 is located on the south side of Old Lakeshore Road (Egremont Road), approximately 126 meters east of Franklin Avenue. It is a 3.048 meter diameter precast concrete submersible type sewage pumping station equipped with two (2) 41 litre per second submersible pumps with a provision for a third pump. It contains a separate bypass valve chamber and control panel. The firm capacity of the station is 41 litres per second, with one pump operating at a time.

The results from the drawdown tests, completed in December 2020, are presented in Table 4-5. This indicates that the operating peak capacity of PS-03 is 37.4 litres per second.

Table 4-5. PS-03 Drawdown Test Results

Pump Configuration	Capacity (L/s)
Pump 1	31.0
Pump 2	30.4
Pump 1 and Pump 2	37.4

Notes:

L/s = litre(s) per second

These results indicate that the individual pumps are operating below their rated capacity of 41 liters per second. The drawdown test results also indicated there was significant head loss when both pumps are operating. These results will be considered when determining future needs for PS-03.

4.4.2.3 PS-04

PS-04 is located at the intersection of Lots 9/10 Sideroad (Camlachie Road) and County Road Number 7 (Lakeshore Road). It is a 2.4 metre precast concrete submersible type sewage pumping station. It was designed for an ultimate projected peak flow of 59.0 litres per second and is equipped with two (2) 30.8 litre per second submersible pumps. It contains a 250 mm diameter emergency overflow pipe that discharges approximately 22 meters north into a creek, and a 2.4 metre diameter precast concrete bypass chamber equipped with isolation, check, and relief valves.

The results from the drawdown tests, completed in December 2020, are presented in Table 4-6. This indicates that the peak capacity of PS-04 is 15.3 litres per second.

Table 4-6. PS-04 Drawdown Test Results

Pump Configuration	Capacity (L/s)
Pump 1	14.2
Pump 2	14.0
Pump 1 and Pump 2	15.3

Notes:

L/s = litre(s) per second

These results indicate that both pumps are operating below their rated capacity of 30.8 liters per second, with the station operating well below its rated capacity of 59.0 litres per second. This is consistent with observations provided by operations staff, which indicated frequent flooding at this pumping station. These results will be considered when determining future needs for PS-04.

4.4.2.4 PS-05

PS-05 is located east of the intersection of Old Lakeshore Road (Bonnie Doon Road) and Delmage Avenue. It is a 3.048 metre diameter precast concrete submersible type sewage pumping station equipped with three (3) submersible pumps (2 duty and 1 standby). PS-05 has a firm capacity of 65 litres per second with any two pumps operating in parallel. It contains a 3.0 metre x 2.4 metre precast concrete bypass chamber equipped with isolation and check vales, as well as a 450 millimetre diameter emergency overflow pipe discharging to Bonnie Doon Creek. Along with the flows from its catchment area, PS-05 receives flows from PS-06.

Results from the drawdown tests completed in December 2020 are presented in Table 4-7. This indicates that the peak capacity of PS-05 is 95.8 litres per second.

Table 4-7. PS-05 Drawdown Test Results

Pump Configuration	Capacity (L/s)
Pump 1	62.4
Pump 2	64.9
Pump 3	61.9
Pump 1 and Pump 2	89.6
Pump 1 and Pump 3	95.8
Pump 2 and Pump 3	94.8

Notes:

L/s = litre(s) per second

These results indicate that PS-05 is operating well above its firm capacity of 65 litres per second with any two pumps running and will be considered when determining the future needs.

4.4.2.5 PS-06

PS-06 is located on the south side of Blue Point Drive approximately 93 meters east of 1st Avenue (Harris Point Dr). It is a 2.4 metre diameter precast submersible type sewage pumping station equipped with two

(2) 42.8 litres per second submersible pumps. PS-06 has a firm capacity of 42.8 litres per second with one duty pump and one standby pump. It contains a 2.4 metre diameter precast concrete bypass chamber equipped with isolation and check valves, as well as a 300 mm diameter emergency overflow pipe that discharges from the sanitary manhole to the storm sewer approximately 140 metres west of 1st Avenue.

The results from the drawdown tests, completed in 2020, are presented in Table 4-8. This indicates that the peak capacity of PS-06 is 44.2 litres per second.

Table 4-8. PS-06 Drawdown Test Results

Pump Configuration	Capacity (L/s)
Pump 1	36.3
Pump 2	29.1
Pump 1 and Pump 2	44.2

Notes:

L/s = litre(s) per second

These results indicate that PS-06 is operating well below its firm capacity of 42.8 litres per second with one pump running and will be considered when determining the future needs. This capacity is only achieved with both pumps in operation.

4.4.2.6 PS-07

PS-07 is located on the north side of County Road Number 7 (Lakeshore Road) approximately 50 meters west of Gordon Road (formerly William). It is a 2.4 metre diameter precast concrete submersible type sewage pumping station equipped with two (2) 26.8 litres per second submersible pumps. PS-07 has a firm capacity of 26.8 litres per second with one duty pump and one standby pump. It contains a 2.4 metre diameter precast concrete bypass chamber equipped with isolation and check valves, as well as a 250 mm diameter emergency overflow pipe that discharge from the sanitary manhole to the storm sewer approximately 70 meters west of Easement “A”. Along with the flows from its catchment area, PS-07 receives flows from PS-08.

The results from the drawdown tests, completed in December 2020, are presented in Table 4-9. This indicates that the peak capacity of PS-07 is 39.7 litres per second.

Table 4-9. PS-07 Drawdown Test Results

Pump Configuration	Capacity (L/s)
Pump 1	31.4
Pump 2	20.6
Pump 1 and Pump 2	39.7

Notes:

L/s = litre(s) per second

These results indicate that Pump 1 is operating above its rated capacity, while Pump 2 is operating below its rated capacity. These results will be considered when determining the future needs.

4.4.2.7 PS-08

PS-08 is located on the south side of Hillsboro Road (formerly Lake Road) approximately 450 metres east of Norma Avenue or 100 meters northeast of Shirley Lane. It is a 2.4 meter diameter precast concrete submersible type sewage pumping station equipped with two (2) 12.2 litres per second submersible pumps. PS-08 has a firm capacity of 12.2 litres per second with one duty pump and one standby pump. It contains a 2.4 metre diameter precast concrete bypass chamber equipped with isolation and check valves, and a 250 millimetre emergency overflow pipe that discharges to the creek located approximately 16 meters east of the pumping station. Along with the flows from its catchment area, PS-08 receives flows from PS-08A.

The results from the drawdown tests, completed in December 2020, are presented in Table 4-10. This indicates that the peak capacity of PS-08 is 14.1 litres per second.

Table 4-10. PS-08 Drawdown Test Results

Pump Configuration	Capacity (L/s)
Pump 1	11.1
Pump 2	13.0
Pump 1 and Pump 2	14.1

Notes:

L/s = litre(s) per second

These results indicate that Pump 1 is operating below its rated capacity, while Pump 2 is operating above its rated capacity. These results also indicate significant head loss while both pumps are operating and will be considered when determining future needs.

4.4.2.8 PS-08A

PS-08A is located on the east side of Forsyth Trail. It is a 1.8 metre diameter precast concrete submersible type sewage pumping station equipped with two (2) 4.46 litres per second submersible pumps. PS-08A has a firm capacity of 4.46 litres per second with one duty pump and one standby pump. It contains a 1.8 metre diameter precast concrete bypass chamber equipped with isolation and check valves.

The results from the drawdown tests, completed in December 2020, are presented in Table 4-11. This indicates that the peak capacity of PS-08A is 4.8 litres per second.

Table 4-11. PS-08A Drawdown Test Results

Pump Configuration	Capacity (L/s)
Pump 1	4.5
Pump 2	4.7
Pump 1 and Pump 2	4.8

Notes:

L/s = litre(s) per second

These results indicate that both pumps are operating near their rated capacity. These results also indicate significant head loss while both pumps are operating and will be considered when determining future needs.

4.4.2.9 PS-10

PS-10 is located 87 meters south of Egremont Road on of Old Mill Road. It contains a 2.4 meter diameter wet well with two (2) submersible pumps, each rated at 12.6 litres per second, and a bypass chamber. PS-10 has a firm capacity of 12.6 litres per second with one duty pump and one standby pump.

The results from the drawdown tests, completed in December 2020, are presented in Table 4-12. It is noted that the tests were only completed while Pump 1 and Pump 2 were operating and not for each individual pump. This indicates that the peak capacity of PS-10 is 19.9 litres per second.

Table 4-12. PS-10 Drawdown Test Results

Pump Configuration	Capacity (L/s)
Pump 1 and Pump 2	19.9

Notes:

L/s = litre(s) per second

While the capacity of both pumps cannot be directly compared to individual capacities, results indicate that both pumps are operating near their rated capacity with a slight amount of head loss when both pumps are operating at the same time. These results will be considered when determining future needs.

4.4.2.10 PS-11

PS-11 is located on Cullen Drive about 90 meters west of Thomas Street and is operated under CofA Number 4672-7BZMMX. It contains a 2.4 metre diameter wet well equipped with two (2) 10.1 litres per second submersible pumps. PS-11 has a firm capacity of 10.1 litres per second with one duty pump and one standby pump.

The results from the drawdown tests, completed in December 2020, are presented in Table 4-13. This indicates that the peak capacity of PS-11 is 8.05 litres per second.

Table 4-13. PS-11 Drawdown Test Results

Pump Configuration	Capacity (L/s)
Pump 1	7.7
Pump 2	7.7
Pump 1 and Pump 2	8.05

Notes:

L/s = litre(s) per second

These results indicate that both pumps are operating slightly below their rated capacity. Test results also indicate significant head loss while both pumps are operating and will be considered when determining future needs.

4.4.2.11 Influent PS

The Influent PS is located at the Plympton WWTP on Aberarder Line. It is equipped with two (2) vertically mounted pumps, each rated at 60 litres per second according to the WWTP ECA. It has a firm capacity of 60 litres per second, with one duty pump and one standby pump. The Influent PS receives flows from PS-02 and PS-05 through a single forcemain. Pump curves for the 3.7 kilowatt Flygt pump indicates a rating of approximately 40 litres per second with the headloss at the plant. Flow monitors for each pump indicate the following maximum capacities:

- Flygt pump – 36 litres per second
- Fairbank Morse pump – 37.5 litres per second
- Both pumps running – 58 litres per second

Therefore, the peak rating of the influent pumping station is approximately 60 litres per second, with both pumps operating. This is approximately 50 percent of the peak rated capacity of the Plympton WWTP, which is approximately 120 litres per second.

4.4.2.12 Summary

Table 4-14 summarizes the capacity of each pumping station within the Plympton system as determined from the drawdown tests. Firm capacity is considered as the capacity of the pumping station with one pump available for standby, while peak capacity is considered as the capacity of the pumping station with the maximum number of pumps operating.

Table 4-14. Plympton Pumping Station Capacity Summary

Pumping Station	Firm Capacity (L/s)	Peak Capacity (L/s)
PS-02	62.6	62.6
PS-03	31.0	37.4
PS-04	14.2	15.3
PS-05	64.9	95.8
PS-06	36.3	44.2
PS-07	31.4	39.7
PS-08	13.0	14.3
PS-08A	4.7	4.8
PS-10	-	19.9
PS-11	7.7	8.1
Plympton Influent PS	37.5	58.0

Notes:

L/s = litre(s) per second

4.4.2.13 Existing Flows

The pumping stations are connected as displayed on Figure 4-3. As certain pumping stations are connected in series, the service areas for each are presented as Total Service Areas. When a pumping station is connected in series with another pumping station, it pumps wastewater to the second pumping station. For example, PS-03 is connected in series with PS-02, which means that it pumps wastewater into PS-02. This area includes the unique service area for each pumping station, defined as the area where wastewater flows directly from homes or businesses to the pumping station by gravity, and joins the wastewater from any upstream pumping stations. The serviced populations are presented in a similar manner, with the serviced population for each pumping station including the unique serviced population and the serviced population of any upstream pumping stations. As displayed in Table 4-3, it is estimated that there is an existing serviced population of 5,061 in the Plympton system. To determine whether there are any pumping stations that have insufficient capacity under current projected flows, the existing flows were estimated. Table 4-15 displays the existing conditions pumping station capacity analysis for the Plympton system. Flow projections were developed using the sewer account analysis presented in Section 4.4.1.2, with the following design values:

- Population Density: 3 persons per unit
- Per Capita Flow Rate: 340 litres per capita per day
- Inflow and Infiltration Rate: 0.2 litres per second per hectare

While pumping stations typically do not rely on standby pumps for capacity, operations staff have indicated that the standby pumps are typically operated during wet weather events at pumping stations with two pumps. PS-02 and PS-05 have three pumps and the firm capacity of these station is based on two pumps only, with the standby pump hardwired not to operate. Therefore, this evaluation was completed based on the peak capacity of each PS. It is recommended that the Town have spare pumps on standby under this operating methodology if a pump fails and there is insufficient capacity at the station.

Based on this capacity assessment, the following pumping stations do not have sufficient capacity for peak flows under existing conditions:

- PS-02
- PS-04
- PS-06
- PS-11
- Influent PS

Of note, PS-11 has not experienced any high-level alarms to date and there have been no associated operational issues. Flows to PS-11 should continue to be monitored prior to implementing any upgrades and design values should be confirmed through flow monitoring.

Future needs are presented in Section 5.

These findings are consistent with reports from operations staff. Alternative solutions will be developed to address these deficiencies, with the purpose of providing sufficient pumping capacity under peak flow events in the future.

4.5 Existing Wyoming Wastewater Servicing System

The Wyoming wastewater servicing system includes sanitary sewers, forcemains, two pumping stations and the Wyoming WWTP. The locations of the pumping stations and the Wyoming WWTP are displayed on Figure 4-4.

Table 4-15. Plympton Pumping Station Capacity Analysis - Existing Conditions

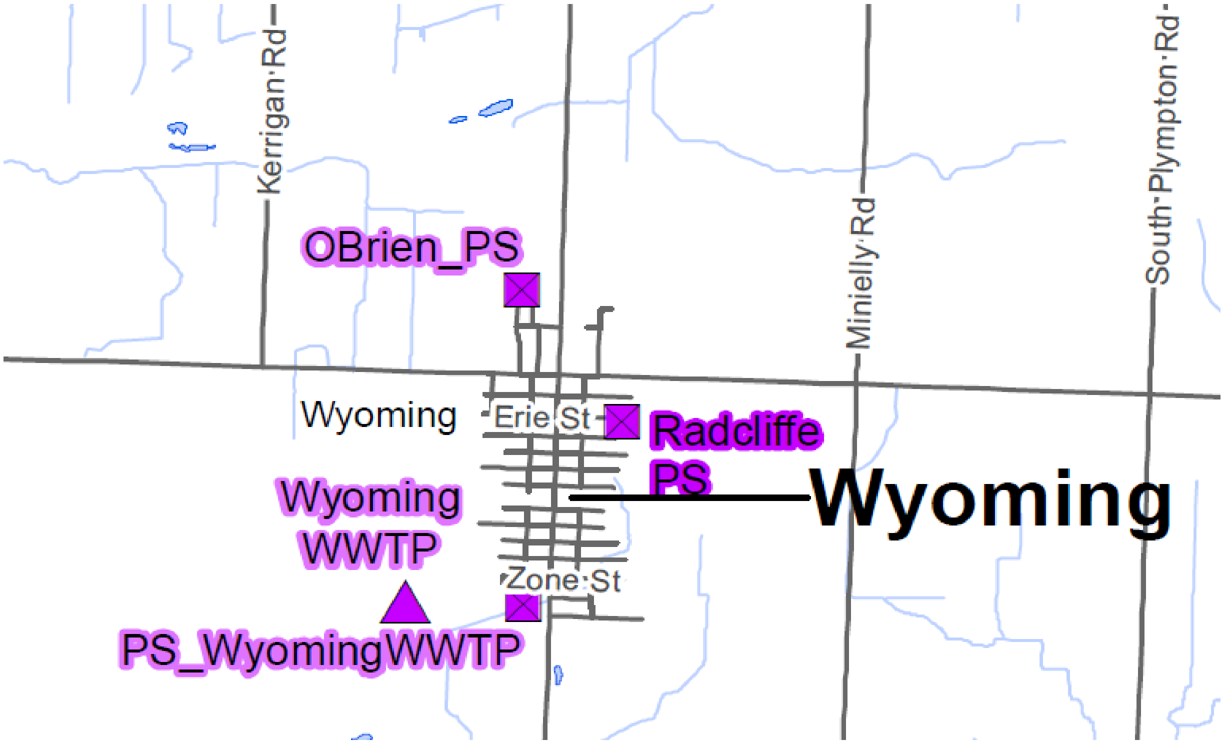
Pumping Station	Total Serviced Population	Total Serviced Area (ha)	Firm Capacity (L/s)	Peak Capacity (L/s)	Average Daily Flow (L/s)	Inflow and Infiltration (L/s)	Harmon PF	Peak Flow Rate (L/s)	Percent of Firm Capacity	Percent of Peak Capacity
PS-02	2,898	253.7	62.6	62.6	11.75	50.75	3.44	91.21	***146^***	***146^***
PS-03	1,011	83.5	31.0	37.4	3.98	16.70	3.80	31.81	***103^***	85
PS-04	624	53.2	14.2	15.3	2.46	10.64	3.92	20.27	***143^***	***133^***
PS-05	2,076	188.8	95.8	95.8	8.17	37.76	3.57	66.95	70	70
PS-06	1,548	126.1	36.3	44.2	6.09	25.22	3.67	47.58	***131^***	***108^***
PS-07	780	55.4	31.4	39.7	3.07	11.09	3.87	22.96	73	58
PS-08	387	24.1	13.0	14.1	1.52	4.82	4.03	10.95	84	78
PS-08A	108	4.4	4.7	4.8	0.43	0.89	4.23	2.69	57	56
PS-10	291	12.3	12.6	19.9	1.15	2.46	4.08	7.13	57	36
PS-11	84	28.2	7.7	8.1	1.09	5.65	4.09	10.09	***131^***	***125^***
Influent PS[a]	4,974	442.6	40.0	60.0	19.92	88.51	3.24	153.04	***383^***	***255^***

Notes:

Items denoted with ^ exceed the rated capacity of the PS

[a] The Influent PS is bypassed when flows exceed its peak capacity.

Figure 4-4. Wyoming WWTP and Pumping Station Locations



4.5.1 Wyoming WWTP

The Wyoming WWTP is located west of Broadway Street in the Town of Wyoming. It is operated under ECA number 2260-AT6TJX. It is an extended aeration plant rated for an average daily flow of 1,128 cubic metres per day and a peak flow of 3,984 cubic metres per day. The plant processes include screening, aerated grit removal, two single-pass aeration tanks, two secondary clarifiers, sand filtration, chemical phosphorous removal and UV disinfection. Influent concentrations at the Wyoming WWTP are typical of those observed for residential wastewater. The effluent compliance limits at the Wyoming WWTP are displayed in Table 4-16.

Table 4-16. Wyoming WWTP Effluent Compliance Limits

Effluent Parameter	Monthly Average Concentration
$cBOD_5$	15 mg/L
Suspended Solids	15 mg/L
Total Phosphorous	1 mg/L
(Ammonia + Ammonium) Nitrogen – Non-freezing season (May 1 to November 31)	3 mg/L
(Ammonia + Ammonium) Nitrogen – Freezing season (December 1 to April 30)	5 mg/L
E. coli	100 organisms/100 mL

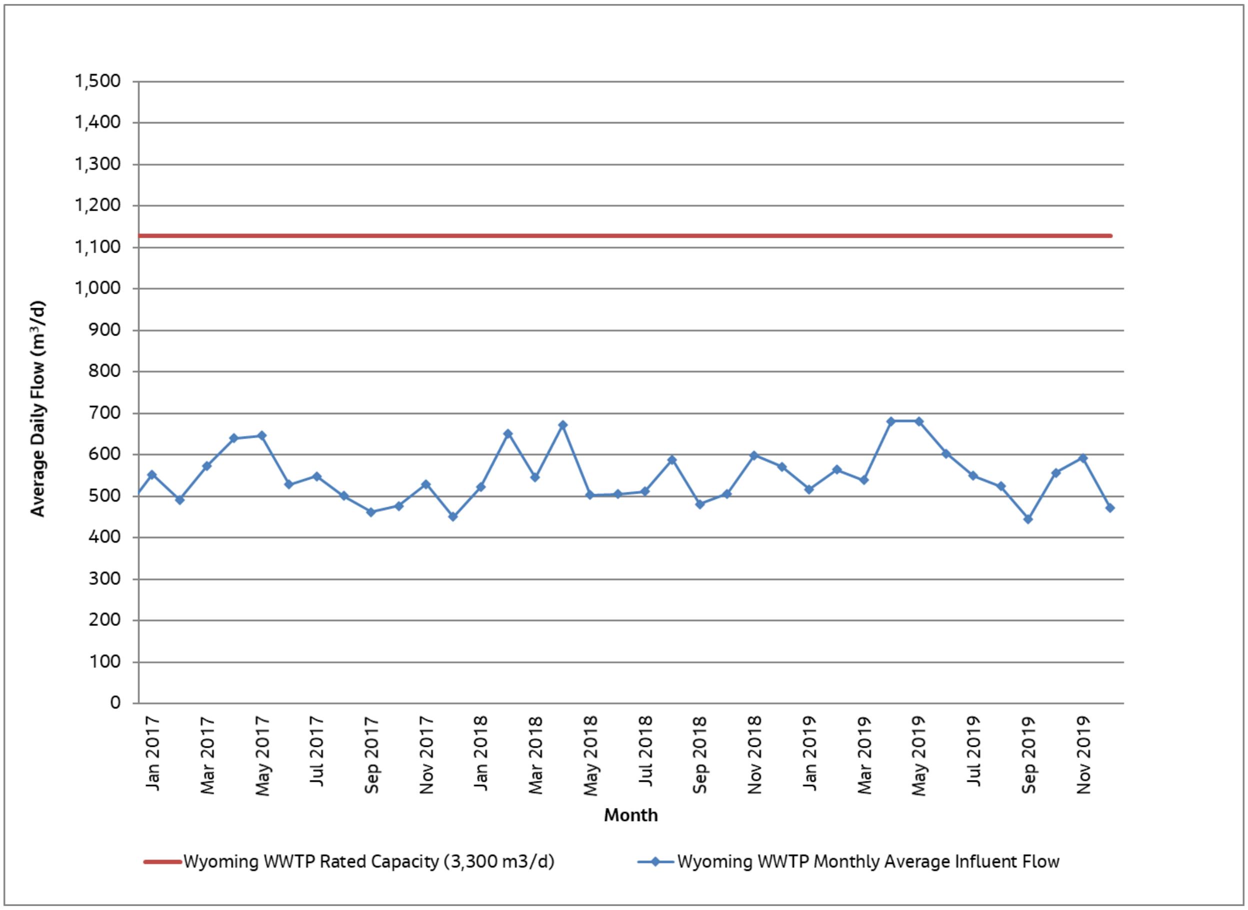
Notes:

$cBOD_5$ = five-day carbonaceous biochemical oxygen demand
mg/L = milligram(s) per litre

4.5.1.1 Historical Flows

Historical flow data from the Wyoming WWTP (January 2017 to December 2019) is displayed on Figure 4-5.

Figure 4-5. Historical Flows – Wyoming WWTP



The three-year average daily flow (2017 to 2019) at the Wyoming WWTP was 549 cubic metres per day. This represents 49 percent of the plant's rated capacity, with the plant having 579 cubic metres per day in hydraulic reserve capacity. The average annual increase in daily flows from 2017 to 2019 was 1.5 percent. The maximum daily flow during this period was 2,410 cubic metres per day, occurring in February 2018. This represents a peak factor of 4.16, which is higher than the design peak factor of 3.5.

4.5.1.2 Existing Connected Population

As displayed in Table 4-17, there was a total of 1,004 sewer accounts in the Wyoming system in 2019. Based on three persons per sewer connection, this yields a serviced population of 3,012.

Table 4-17. 2019 Wyoming Sewer Billing Accounts

Service Area	Billing Accounts	Estimated Population
O'Brien	45	135
Influent PS	**1,004**	**3,012**

4.5.1.3 Average Daily Per Capita Flow

A household of three persons has a typical wastewater flow rate of 250 Lpcd (Metcalf & Eddy 2015). The range provided for the three-person household is 194 to 335 Lpcd.

Dividing the 2019 average influent flow rate of 560 cubic metres per day by the existing connected population of 3,012 people yields an estimated average day flow per capita of 186 Lpcd. This value is low when compared with typical values in literature, as well as when compared to the per capita flow developed for Plympton. It is likely that Plympton's per capita flow rate is higher due to I/I, where Wyoming may not experience of the same inflow and infiltration.

4.5.2 Pumping Stations

The pumping station that pumps directly to the Wyoming WWTP is located on Broadway Street (Main PS). The second pumping in the northwest end of town at the top of Second Street (O'Brien PS). There is a third PS (Radcliffe PS) that has recently began pumping flows, intended to serve the Radcliffe subdivision that is under construction at the time of this report development. As this pumping station was recently constructed and its subdivision is not built out, its existing flows were not considered. This pumping station will be considered for future flows.

The Influent PS is equipped with three (3) pumps. Two (2) are duty pumps, one rated at 19.7 litres per second and one rated at 26.3 litres per second. The standby pump is rated at 26.3 litres per second. The pump station is designed for a firm capacity of 37.8 litres per second (3,260 cubic metres per day).

The O'Brien PS is equipped with two (2) submersible pumps, each rated at 6 litres per second.

The Radcliffe PS is equipped with two (2) submersible pumps, each rated at 7.88 litres per second.

Table 4-18 summarizes the capacity of each pumping station within the Wyoming sewershed. The capacity of the Influent PS was determined from drawdown tests completed in December 2020.

Table 4-18. Wyoming Sewershed Pumping Station Capacity Summary

Pumping Station	Firm Capacity (L/s)	Peak Capacity
Influent PS	40.2	52.6
O'Brien PS	6.0	6.0
Radcliffe PS	7.88	7.88

Notes:

L/s = litre(s) per second

4.5.2.1 Existing Flows

The O'Brien PS and Radcliffe PS pump wastewater into the gravity sewer located on Broadway Street, which flows to the Influent PS prior to being pumped to the Wyoming WWTP. Wastewater from the remainder of the Wyoming system flows by gravity to the Influent PS located at the WWTP. As certain pumping stations are connected in series, the service areas for each are presented as Unique Services Areas (those properties from which sewage flows by gravity to the pumping station) and Total Service Areas (Unique Service Area and upstream contributing pumping stations). As displayed in Table 4-17, it is estimated that there is an existing serviced population of 3,012 in the Wyoming system. The existing conditions were established to determine whether there are any pumping stations that currently have insufficient capacity within the study's planning horizon. Table 4-19 displays the existing conditions pumping station capacity analysis for the Wyoming system. As the Radcliffe subdivision is currently under construction, the Radcliffe PS was not included in this analysis. It will be considered for future conditions in Section 5 of this report. Flow projections were developed using the sewer account analysis presented in Section 4.5.1.2, with the following design values:

- Population Density: 3 persons per unit
- Per Capita Flow Rate: 180 litres per capita per day
- Inflow and Infiltration Rate: 0.2 litres per second per hectare

It is noted that the design per capita flow rate was adjusted from the value used for the Plympton system, based on historical flow data in Wyoming.

Similar to the Plympton pumping station capacity analysis, this analysis was completed on the basis of operating the standby pumps at each station during wet weather events, with peak capacity considered as the combined capacity of the duty and standby pumps.

Based on this capacity assessment, the Influent PS does not have sufficient capacity for peak flows under existing conditions. No other capacity deficiencies were identified under current conditions.

These findings are consistent with reports from operations staff. Alternative solutions will be developed to address this deficiency, providing sufficient capacity to convey future wastewater flows.

Table 4-19. Wyoming Pumping Station Capacity Analysis - Existing Conditions

Pumping Station	Total Serviced Population	Total Serviced Area (ha)	Firm Capacity (L/s)	Peak Capacity (L/s)	Average Daily Flow (L/s)	Inflow and Infiltration (L/s)	Harmon PF	Peak Flow Rate (L/s)	Percent of Firm Capacity	Percent of Peak Capacity
O'Brien PS	135	4.7	6	12	0.28	0.93	4.21	2.11	35	18
Influent PS	3,012	163.5	40.2	52.6	6.28	32.7	3.44	54.29	***135^***	***103^***

Notes:

Items denoted with ^ exceed the rated capacity of the PS

5. Future Conditions and Capacity Analysis

This section documents the future serviced population projections and corresponding flow projections to the year 2039 in the Town, as well as capacity assessments of the Town's WWTPs and pumping stations. These assessments identify capacity deficiencies within the Town's wastewater infrastructure, forming the basis for alternative solution development for this Master Plan.

5.1 Plympton WWTP

5.1.1 Methodology and Assumptions

Flow projections for the Plympton WWTP were developed as follows:

1) A services population baseline for the year 2019 was developed based on sewer billing information provided by the Town. Three (3) persons per sewer connection was assumed for the calculation.
2) The population growth rate provided by the Town was used for flow projections. A growth rate of 20 percent every 5 years is currently being used for planning purposes by the Town and as such, was used for this Master Plan. It is assumed that this growth will occur primarily in serviceable areas, consistent with the Town's Official Plan.
3) A per capita flow rate was calculated based on the 2019 average daily flow and estimated connected population (353 Lpcd). The per capita flow rate is equal to the amount of wastewater produced by one person per day. The calculated flow rate was then used to project future wastewater flows based on the estimated future serviced population. Peak flows were calculated using the design peak factor of 3.2.

A capacity assessment was completed for each process at the Plympton WWTP using the projected future flows. The capacity assessment was completed based on design values outlined in the Ontario Ministry of the Environment (MOE) Design Guidelines for Sewage Works (MOE 2008), with the purpose of identifying any future capacity deficiencies at the Plympton WWTP within the planning period. For example, if future flows were projected to be greater than the capacity of the secondary treatment system, this would be considered a deficiency. These deficiencies were then used as the basis for alternative solution development, further detailed in Section 7.

5.1.2 Future Connected Population and Flows

Projected future populations and flows are displayed in Table 5-1 and Figure 5-1. The average daily flow and peak daily flow (based on the design peaking factor of 3.2) in 2039 are projected to be 3,703 cubic metres per day and 11,850 cubic metres per day, respectively. Based on these projections, it is estimated that flows will exceed 85 percent of the plant's rated capacity in 2032. Jacobs recommends that the Town initiate the investigation and planning for a plant expansion recommended at this time (when 85 percent of rated capacity is reached). Based on these projections, it is estimated that the plant's rated capacity will be exceeded in 2036.

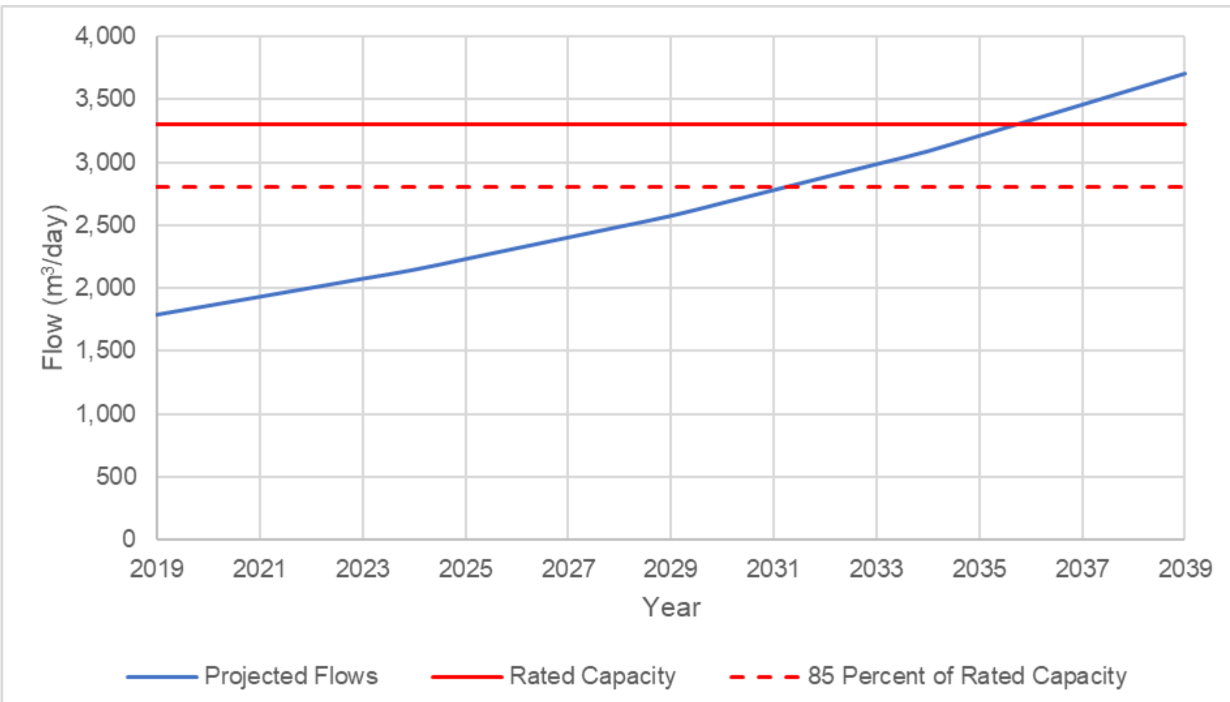
Table 5-1. Plympton WWTP Projected Future Population and Flows

Year	Projected Population	Projected Flows, m^3/day
2019	4,974	1,786
2024	5,969	2,143
2029	7,163	2,572
2034	8,595	3,086
2039	10,314	3,703

Notes:

m^3/day = cubic metre(s) per day

Figure 5-1. Plympton WWTP Flow Projections to 2039



5.1.3 Process Capacity Assessment

This section details the capacity assessment for each process at the Plympton WWTP.

The Plympton WWTP has a current rated capacity of 3,300 cubic metres per day and a peak capacity of 10,500 cubic metres per day. This corresponds to a peak factor of 3.2, which will be used for process capacity assessments. Instantaneous flow data was not available at the time of this Master Plan.

5.1.3.1 Screening and Grit Removal

The Plympton WWTP headworks, consisting of screening and grit removal, receives wastewater from the combined section of forcemain from PS-02 and PS-05. Screening is provided by an automatic bar screen. Following screening, wastewater flows to the influent PS, which pumps screened wastewater into the vortex grit tank. Following grit removal, wastewater is evenly distributed to the aeration tanks for secondary treatment.

Under high flow scenarios where the hydraulic capacity of the automatic screen is exceeded, the influent PS and grit removal may be bypassed, with wastewater flowing directly to the aeration tanks. When the high level is reached in the influent channel, operators must manually open the valve to the bypass channel, allowing wastewater to flow through the channel to the aeration tanks.

The screening system consists of one mechanical bar screen and one manual bar screen, each with a peak flow rate of 121.5 litres per second, or 10,500 cubic metres per day. The manual bar screen is located in the bypass channel and is only used when influent flows exceed the peak capacity of the mechanical bar screen.

The grit removal system consists of one vortex grit removal unit with a peak flow rate of 437.5 cubic metres per hour, or 10,500 cubic metres per day.

The capacity assessment is based on the firm capacity, considered to be the capacity of the system with the largest unit out of service. However, as there is only one grit vortex, the full capacity of the grit removal system was considered. The Plympton WWTP headworks capacity assessment is presented in Table 5-2. The firm peak capacity of the screening and grit removal systems is 10,500 cubic metres per day, which is 1,300 cubic metres per day less than the projected peak flow of 11,800 cubic metres per day in 2039 and is projected to be exceeded in 2036. The capacity of the Influent PS is discussed in Section 5.1.4

Table 5-2. Plympton WWTP Headworks Capacity Assessment

Parameter	Value
Number of Screens	2
Screening Capacity Each, m^3/day	10,500
Screening Firm Capacity, m^3/day	10,500
Screening Total Capacity, m^3/day	21,000
Grit Tank Capacity, m^3/day	10,500
Estimated Peak Flow in 2039, m^3/day[a]	**11,800**

Notes:

[a] Based on the design peak factor of 3.2.
m^3/day = cubic metre(s) per day

5.1.3.2 Secondary Treatment

Following preliminary treatment, flows are split into two secondary treatment trains. The secondary treatment system at the Plympton WWTP consists of activated sludge treatment in two 2-pass extended aeration tanks and two secondary clarifiers.

A large population of microorganisms (biomass) consumes the influent organic material in the aeration tanks. The concentrated solution in aeration tanks (mixed liquor) flows to secondary clarifiers for final settling where biomass is separated from the clear effluent. Each clarifier is equipped with a chain and flight collector mechanism for sludge and scum collection. A portion of the settled biomass in the clarifier underflow is recycled to the head of the aeration tanks to maintain a functional biomass concentration (return activated sludge [RAS]), while the remainder is wasted to solids treatment (WAS).

Air is supplied to the bioreactors to maintain biological activity for biochemical oxygen demand (BOD) and ammonia removal (nitrification), as well as to keep the biomass in suspension. Each aeration tank is equipped with fine bubble diffusers, with air supplied by three blowers.

The Plympton WWTP secondary treatment system details are displayed in Table 5-3 and Table 5-4.

Table 5-3. Plympton WWTP Aeration Tank Details

Parameter	Value
Aeration Tank Geometry	Rectangular
Aeration Tank Length, m	23.9
Aeration Tank Width, m	11.8
Aeration Tank SWD, m	4.6
Total Aeration Tank Volume	2,595

Notes:

SWD = side wall depth

Table 5-4. Plympton WWTP Secondary Clarifier Details

Parameter	Value
Number of Secondary Clarifiers	2
Secondary Clarifier Geometry	Rectangular
Secondary Clarifier Length, m	26.9
Secondary Clarifier Width, m	6
Secondary Clarifier SWD, m	4
Total Secondary Clarifier Surface Area, m^2	323

Notes:

m^2 = square metre(s)

The capacity assessment of the Plympton WWTP secondary treatment system is based on the MOE Design Guidelines (2008), including the following:

- Solids Retention Time (SRT): A minimum SRT of 15 days is recommended for extended aeration systems.
- Mixed Liquor Suspended Solids (MLSS): A MLSS concentration of 3,000 to 5,000 milligrams per litre is recommended for extended aeration systems.
- Food to microorganism (F:M) ratio: a F:M ratio of 0.05 to 0.15 grams of BOD per grams of volatile suspended solids (VSS) is recommended for extended aeration systems.
- Aeration Tank Hydraulic Retention Time (HRT): A minimum HRT of 15 hours is recommended for extended aeration systems.
- Secondary Clarifiers: Capacity is based on the surface overflow rate (SOR) and solids loading rate (SLR). For extended aeration, the recommended peak SOR is 40 cubic metres per square metre per day and the recommended peak SLR is 170 kilograms per square metre per day.

The secondary treatment capacity assessment is summarized in Table 5-5. A MLSS value of 3,500 milligrams per litre was selected for this analysis, as the Plympton WWTP has historically been able to operate at this concentration and this would achieve the desired F:M ratio based on the projected flows in 2039. Based on this capacity assessment, the Plympton WWTP has sufficient secondary treatment capacity for the projected flows within the planning period, with no growth-based secondary treatment capacity expansion required. However, future flows should be monitored and projections should be updated as required, as capacity only slightly exceeds the future flow projections within the planning period. The capacity of the secondary treatment system is 3,750 cubic metres per day for ADF or 12,000 cubic metres per day for peak flows.

Table 5-5. Plympton WWTP Secondary Treatment Capacity Assessment

Parameter	Based on Current Flows	Based on Rated Capacity	Based on Future Projections	Maximum Capacity	Design Guideline
Flow, m^3/day	1,786	3,300	3,700	3,750	Not applicable
Peak Factor	3.2	3.2	3.2	3.2	Design Peak Factor
Aeration Tanks: Aeration HRT, hours	35	19	17	17	>15 (MOE, 2008)
Aeration Tanks: MLSS, mg/L	3,500	3,500	3,500	3,500	3,000 to 5,000 mg/L (MOE, 2008)
Aeration Tanks: Aeration SRT, days	76	34	30	30	>15 days (MOE, 2008)
Aeration Tanks: F:M ratio, g BOD/g VSS	0.02	0.04	0.05	0.05	0.05 to 0.15 g BOD/g VSS (MOE, 2008)
Secondary Clarifiers: SOR at Peak Flow, $m^3/m^2/d$	18	33	37	37	<40 for extended aeration (MOE, 2008)
Secondary Clarifiers: SLR at Peak Flow and 100% RAS, $kg/m^2/d$	81	150	168	170	<170 for extended aeration (MOE, 2008)

Notes:

HRT = hydraulic retention time
m^3/day = cubic metre(s) per day
m^3/m^2/day = cubic metre(s) per square metre per day
mg/L = milligrams per litre
$kg/m^2/d$ = kilograms per square metre per day

5.1.3.3 UV Disinfection

Following secondary treatment, secondary effluent flows downstream for disinfection. Disinfection is achieved by the UV system, which deactivates bacteria, protozoa and viruses. The UV disinfection system consists of two banks of UV lamps, with a peak flow rate of 437.5 cubic metres per hour, or 10,500 cubic metres per day.

The UV disinfection system capacity assessment is summarized in Table 5-6. The UV disinfection system is projected to have a peak capacity deficiency of 1,300 cubic metres per day in 2039.

Table 5-6. Plympton WWTP UV Disinfection Capacity Assessment

Parameter	Value
UV Disinfection System Capacity, m^3/day	10,500
Estimated Peak Flow in 2039, m^3/day [a]	**11,800**

Notes:

[a] Based on the design peak factor of 3.2.
m^3/day = cubic metre(s) per day

5.1.3.4 Aerobic Digesters

Waste activated sludge from the aeration tanks is pumped to four aerobic digesters for sludge stabilization prior to being pumped to the sludge storage lagoons. Each aerobic digester is equipped with a coarse bubble aeration system.

The Plympton WWTP aerobic digester system details are displayed in Table 5-7.

Table 5-7. Plympton WWTP Aerobic Digester System Details

Parameter	Value
Number of Aerobic Digesters	4
Aerobic Digester Geometry	Rectangular
Aerobic Digester Length, m	5.9
Aerobic Digester Width, m	2.5
Aerobic Digester SWD, m	4.6

Notes:

SWD = side wall depth

The capacity assessment of the aerobic digesters is based on the SRT and is displayed in Table 5-8. The MOE recommends a minimum SRT of 45 days, which includes the SRT of the activated sludge treatment process as well. WAS flows were linearly projected within the planning period based on the reported average daily WAS flow rate and average daily plant flow rate in 2019. Based on the aerobic digester capacity assessment, the Plympton WWTP does not have sufficient digester capacity to maintain a 45-day SRT within the planning period, with. Based on the projected WAS flows approximately 280 m^3 of additional digester capacity is expected to be required to achieve a 45-day SRT in 2039. Projections indicate that the digester capacity will be exceeded in 2035. It is noted that the storage lagoon provides additional stabilization depending on the storage duration, however this is not considered in the capacity assessment. The additional stabilization provided would depend on multiple factors, including frequency of lagoon cleanout. Storage duration varies throughout the year, as sludge can only be applied to land for beneficial reuse from May to November. During the summer, storage durations depend on the sludge demand from farmers. Due to the unpredictability of storage duration, the storage lagoons should not be relied on to provide additional sludge stabilization.

Table 5-8. Plympton WWTP Aerobic Digester Capacity Assessment

Parameter	Based on Current Flows	Based on Rated Capacity	Based on Future Projections	Design Guideline
Flow, m^3/day	1,786	3,300	3,700	Not applicable
Peak Factor	3.2	3.2	3.2	Design Peak Factor
WAS Flow, m^3/day	15	34	38	Not applicable
SRT, days[a]	94	42	37	>45 days including aeration tank SRT (MOE, 2008).

Notes:

[a] Includes the projected aeration tank SRT
m^3/day = cubic metre(s) per day
SRT = solids retention time
WAS = waste activated sludge

5.1.4 Summary of Capacity Assessment

The Plympton WWTP has an existing rated capacity of 3,300 cubic metres per day. Based on population projections the average daily flow in 2039 is estimated to be 3,700 cubic metres per day. Table 5-9 provides a summary of the capacity assessment for the Plympton WWTP.

Table 5-9. Plympton WWTP Process Capacity Assessment Summary

Process	Available Peak Capacity	Projected Needs by 2039	Basis	Summary
Screening	10,500 m^3/day	11,800 m^3/day	Peak hour flow at design peak factor of 3.2	Insufficient capacity for projected 2039 peak flow. Projected to exceed capacity in 2036.
Grit Removal	10,500 m^3/day	11,800 m^3/day	Peak hour flow at design peak factor of 3.2	Insufficient capacity for projected 2039 peak flow. Projected to exceed capacity in 2036.
Secondary Treatment	12,000 m^3/day	11,800 m^3/day	Average day flow; capacity limited by the solids loading rate (SLR) at peak hour flow	Sufficient capacity for projected 2039 peak flow.
UV Disinfection	10,500 m^3/day	11,800 m^3/day	Peak hour flow at design peak factor of 3.2	Insufficient capacity for projected 2039 peak flow. Projected to exceed capacity in 2036.
Aerobic Digestion	271 m^3	570 m^3	Digester volume requirement based on providing a 45-day SRT (including the aeration tank SRT)	Insufficient capacity to provide a 45-day SRT in 2039 based on projected solids loadings. Projected to exceed capacity in 2035.

5.2 Plympton Pumping Stations

5.2.1 Methodology

Future development plans in Plympton, provided by the Town, were reviewed by Jacobs and used to project the future additional flows to each PS within the planning period. The developments that were considered in this Master Plan are presented in Table 5-10, with the projected number of units and the receiving pumping station.

Table 5-10. Developments Considered for Plympton PS Future Flow Projections

Name	Approximate Location	Number of Lots	Area (ha)	Receiving Pumping Station
Allan Developments	Bluepoint	127	13.2	PS-06
Blue Coast Horizons	Queen St/Ferne Ave	30	3.1	PS-02
The Elms	Egremont Rd/Schram Dr	14	3.0	PS-03
Errol Woods	Fleming Rd/Lakeshore Rd	189	26.0	PS-02
Egremont Estates	Egremont Rd/Lakeshore Rd	28	7.8	PS-02
Longo Holdings - Fleming	Fleming Rd	121	17.2	PS-02
Kountry Korners	Camlachie – Lakeshore Rd	30	1.3	PS-04
Sawmill	Egremont Rd/Lakeshore Rd	93	4.6	PS-04
JN Ventures - Hillsboro	Hillsboro Rd	7	0.7	PS-08
Rosehart	Douglas Ln	4	0.3	PS-05
Longo Holdings - Queen	Fleming Rd/Queen St	10	2.0	PS-02
Sundance Estates	Egremont Rd	202	34.0	PS-03
JN Ventures - Queen	Queen St	300	68.0	PS-02
JN Ventures – Egremont	Egremont Rd	12	1.0	PS-03
JN Ventures – Santa Monica	Queen St/Santa Monica Blvd	12	2.0	PS-02
Southside Lands	Beverly Glen	200	45.3	PS-02

The future conditions for each pumping were calculated based on typical design criteria used by the Town (similar to the existing conditions analysis in Section 4), as follows:

- Population Density: 3 persons per unit
- Per Capita Flow Rate: 340 litres per capita per day
- Inflow and Infiltration Rate: 0.2 litres per second per hectare

5.2.2 Future Flows

The future number of serviced accounts in each catchment area was determined by expanding on the existing conditions capacity analysis with the development plans presented in the previous section.

The projected number of billing accounts and estimated serviced population for each pumping station is displayed in Table 5-11. The estimated future population of 9,126 is based on currently known development plans in this section represents 88 percent of the overall future projected population based on 20 percent growth every 5 years (presented in Section 5.1.2). This means that 12 percent of the future projected population is not accounted for in the current development plans. Once the Town is aware of additional developments, pumping station capacities should be re-reviewed. The Town should conduct regular evaluations of current flows with respect to projections to understand available reserve capacities when reviewing development applications.

Table 5-11. 2039 Plympton Projected Sewer Billing Accounts

Service Area	Billing Accounts	Estimated Population
PS-02	2,212	6,636
PS-03	565	1,695
PS-04	331	993
PS-05	830	2,490
PS-06	650	1,950
PS-07	267	801
PS-08	136	408
PS-08A	36	108
PS-10	97	291
PS-11	92	276
Influent PS	**3,042**	9,126

Table 5-12 displays the Plympton pumping station capacity analysis under future conditions.

Table 5-12. Plympton Pumping Station Capacity Analysis - Future Conditions

Pumping Station	Total Serviced Population	Total Serviced Area (ha)	Firm Capacity (L/s)	Peak Capacity (L/s)	Average Daily Flow (L/s)	Inflow and Infiltration (L/s)	Harmon PF	Peak Flow Rate (L/s)	Percent of Firm Capacity	Percent of Peak Capacity
PS-02	6,636	469.0	62.6	62.6	26.11	93.80	3.13	175.51	280^	280^
PS-03	1,695	121.5	31.0	37.4	6.67	24.30	3.64	48.58	157^	130^
PS-04	993	59.1	14.2	15.3	3.91	11.82	3.80	26.68	188^	174^
PS-05	2,490	203.0	95.8	95.8	9.80	40.59	3.51	74.98	78	78
PS-06	1,950	140.0	36.3	44.2	7.67	28.00	3.59	55.58	153^	126^
PS-07	801	56.1	31.4	39.7	3.15	11.23	3.86	23.39	75	59
PS-08	408	24.8	13.0	14.1	1.61	4.96	4.02	11.41	88	81
PS-08A	108	4.4	4.7	4.8	0.43	0.89	4.23	2.69	57	56
PS-10	291	12.3	12.6	19.9	1.15	2.46	4.08	7.13	57	36
PS-11	276	28.2	7.7	8.1	1.09	5.65	4.09	10.09	131^	125^
Errol Woods PS	567	26.0	17.0	17.0	1.68	6.76	3.95	13.37	79	79
Egremont Estates PS	84	7.6	4.0	4.0	0.30	2.02	4.26	3.31	83	83
Influent PS[a]	8,463	607.5	40.0	60.0	35.91	134.39	3.03	241.91	605^	403^

Notes:

Items denoted with ^ exceed the rated capacity of the PS

[a] The Influent PS is bypassed when flows exceed its peak capacity.

Based on this capacity assessment, the following pumping stations do not have sufficient capacity for peak flows under future conditions:

- PS-02
- PS-03
- PS-04
- PS-06
- PS-11
- Influent PS

As discussed in Section 4.4.2, PS-11 has not experienced any high-level alarms to date and there have been no associated operational issues. Since there is no projected increase in future flows compared to current conditions, flows to PS-11 should continue to be monitored prior to implementing any upgrades.

Although the findings of the drawdown test found that PS-02's current performance is below the stated rated capacity, this pump station would require significant upgrades to convey current and projected flows even if PS-02 was performing at the maximum capacity outlined in its ECA.

5.3 Wyoming WWTP

5.3.1 Methodology and Assumptions

Flow projections for the Wyoming WWTP were developed as follows:

1) A population baseline for the year 2019 was developed based on sewer billing information provided by the Town. Three (3) persons per sewer connection was assumed for the calculation.
2) The population growth rate provided by the Town was used for flow projections. A growth rate of 20 percent every 5 years is currently being used for planning purposes by the Town and as such, was used for this Master Plan. It is assumed that this growth will occur primarily in serviceable areas, consistent with the Town's Official Plan.
3) A per capita flow rate was calculated based on the 2019 average daily flow and estimated connected population (186 Lpcd). The calculated flow rate was then used to project future wastewater flows based on the estimated future serviced population. Peak flow projections were developed using the design peak factor of 3.5.

Following development of flow projections, a capacity assessment was completed for each process at the Wyoming WWTP. The capacity assessment was completed based on design values outlined in the MOE Design Guidelines for Sewage Works (MOE 2008), with the purpose of identifying any future capacity deficiencies at the Wyoming WWTP within the planning period. These deficiencies were then used as the basis for alternative solution development, further detailed in Section 7.

5.3.2 Future Connected Population and Flows

Projected future populations and flows are displayed in Table 5-13 and Figure 5-2. The average daily flow and peak daily flow (based on the design peaking factor of 3.5) in 2039 are projected to be 1,161 cubic metres per day and 4,100 cubic metres per day, respectively. Based on these projections, it is estimated that flows will exceed 85 percent of the plant's rated capacity in 2034. Jacobs recommends that the Town initiate the investigation and planning for a plant expansion recommended at this time (when 85 percent of rated capacity is reached). Based on these projections, it is estimated that the plant's rated capacity will be exceeded in 2039.

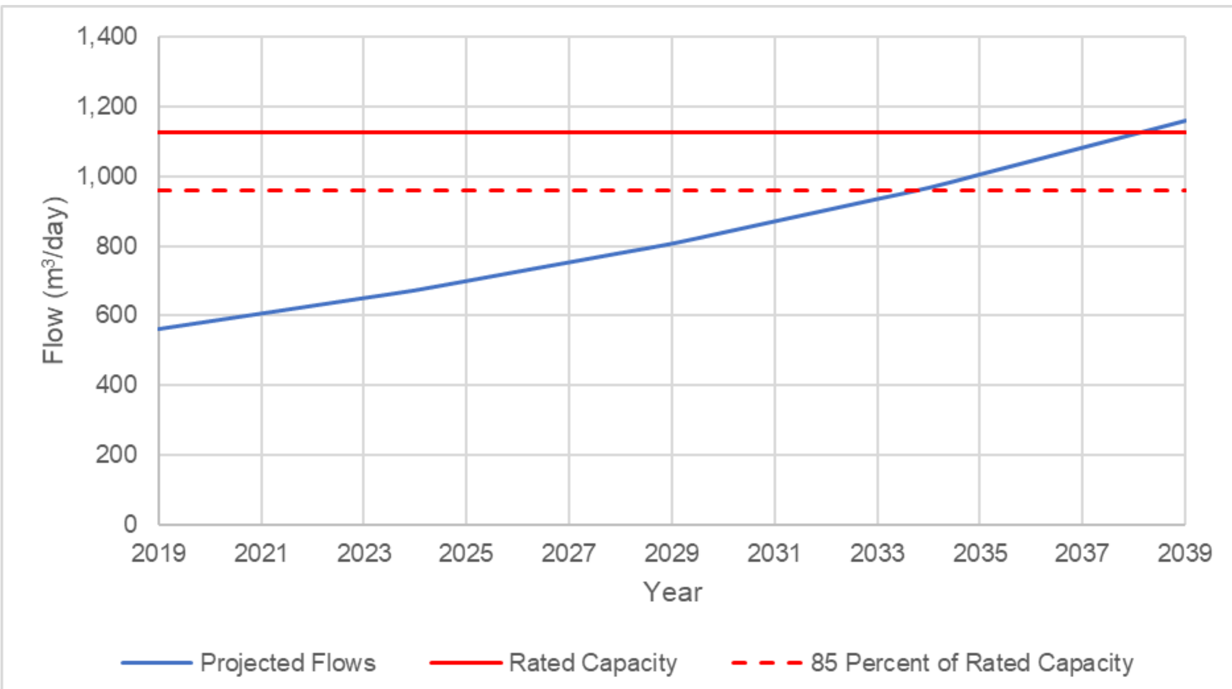
Table 5-13. Wyoming WWTP Projected Future Population and Flows

Year	Projected Population	Projected Flows, m^3/day
2019	3,012	560
2024	3,614	672
2029	4,337	806
2034	5,205	968
2039	6,246	1,161

Notes:

m^3/day = cubic metre(s) per day

Figure 5-2. Wyoming WWTP Flow Projections to 2039



5.3.3 Process Capacity Assessment

The Wyoming WWTP has a current rated capacity of 1,128 cubic metres per day and a peak capacity of 3,984 cubic metres per day. This corresponds to a peak factor of 3.5, which will be used for process capacity assessments.

5.3.3.1 Screening and Grit Removal

The Wyoming WWTP headworks, consisting of screening and grit removal, receives wastewater from the Influent PS. Under high flow scenarios, the headworks may be bypassed with wastewater flowing directly to the aeration tanks.

The screening system consists of one automatic bar screen with a peak flow rate of 166 cubic metres per hour, or 3,984 cubic metres per day.

The grit removal system consists of two aerated grit removal tanks, each with a rated peak flow rate of 83 cubic metres per hour, or 3,984 cubic metres per day of total peak capacity.

For aerated grit tanks, the MOE recommends a detention time of 3 to 5 minutes at peak flow (MOE 2008). For this assessment, a minimum detention time of 3 minutes was assumed. The Wyoming WWTP headworks capacity assessment is presented in Table 5-14. The peak capacity of the screening systems is 125 cubic metres per day less than the projected peak flows in 2039. While the grit removal system is rated at a peak capacity of 3,984 cubic metres per day, based on the MOE guidelines, the system can receive much higher flows. Under the MOE design guidelines, there is sufficient grit removal capacity for the projected flows within the planning period.

Table 5-14. Wyoming WWTP Headworks Capacity Assessment

Parameter	Value
Screening Capacity, m^3/day	3,984
Grit Tank Volume Each, m^3	46.5
Total Grit Tank Volume, m^3	93.1
Grit Tank Firm Capacity, m^3/day	22,340
Grit Tank Peak Capacity, m^3/day	44,680
Grit Tank Rated Capacity, m^3/day	3,984
Estimated Peak Flow in 2039, m^3/day[a]	**4,100**

Notes:

[a] Based on the design peak factor of 3.5.
m^3/day = cubic metre(s) per day

5.3.3.2 Secondary Treatment

Following preliminary treatment, flows are split into two secondary treatment trains. The secondary treatment system at the Wyoming WWTP consists of activated sludge treatment in two single-pass extended aeration tanks and two secondary clarifiers.

A large population of microorganisms (biomass) consumes the influent organic material in the aeration tanks. The concentrated solution in aeration tanks (mixed liquor) flows to secondary clarifiers for final settling where biomass is separated from the clear effluent. Each clarifier is equipped with a chain and flight collector mechanism for sludge and scum collection. A portion of the settled biomass in the clarifier underflow is recycled to the head of the aeration tanks to maintain a functional biomass concentration (return activated sludge), while the remainder is wasted to solids treatment (waste activated sludge).

Air is supplied to the bioreactors to maintain biological activity for BOD and ammonia removal (nitrification), as well as to keep the biomass in suspension. Each aeration tank is equipped with coarse bubble diffusers, with air supplied by three blowers.

The Wyoming WWTP secondary treatment system details are displayed in Table 5-15 and Table 5-16.

Table 5-15. Wyoming WWTP Aeration Tank Details

Parameter	Value
Number of Aeration Tanks	2
Aeration Tank Geometry	Rectangular
Aeration Tank Length, m	30.6
Aeration Tank Width, m	5.1
Aeration Tank SWD, m	3.65

Notes:

SWD = side wall depth

Table 5-16. Wyoming WWTP Secondary Clarifier Details

Parameter	Value
Number of Secondary Clarifiers	2
Secondary Clarifier Geometry	Rectangular
Secondary Clarifier Length, m	18.3
Secondary Clarifier Width, m	3.65
Secondary Clarifier SWD, m	3
Total Secondary Clarifier Surface Area, m^2	136

Notes:

m^2 = square metre(s)

The capacity assessment of the Wyoming WWTP secondary treatment system is based on the MOE Design Guidelines (MOE 2008), including the following:

- SRT: A minimum SRT of 15 days is recommended for extended aeration systems.
- MLSS: A MLSS concentration of 3,000 to 5,000 milligrams per litre is recommended for extended aeration systems.
- F:M ratio: A F:M ratio of 0.05 to 0.15 grams of BOD per grams of VSS is recommended for extended aeration systems.
- Aeration Tank HRT: A minimum HRT of 15 hours is recommended for extended aeration systems.
- Secondary Clarifiers: Capacity is based on the SOR and SLR. For extended aeration, the recommended peak SOR is 40 cubic metres per square metre per day and the recommended peak SLR is 170 kilograms per square metre per day.

The secondary treatment capacity assessment is summarized in Table 5-17. A MLSS value of 3,500 milligrams per litre was selected for this analysis, as the Wyoming WWTP has historically been able to operate at this concentration and this would achieve the desired F:M ratio based on the projected flows in 2039. Based on this capacity assessment, the Wyoming WWTP has sufficient secondary treatment capacity for the projected flows within the planning period, with no growth-based secondary treatment capacity expansion required. The maximum secondary treatment capacity at the Wyoming WWTP is 1,430 cubic metres per day at average daily flow and 5,050 cubic metres per day at peak flow.

Table 5-17. Wyoming WWTP Secondary Treatment Capacity Assessment

Parameter	Based on Current Flows	Based on Rated Capacity	Based on Future Projections	Maximum Capacity	Design Guideline
Flow, m^3/day	560	1,128	1,161	1,430	
Peak Factor	3.5	3.5	3.5	3.5	Design Peak Factor
Aeration Tanks: Aeration HRT, hours	49	24	24	19	>15 (MOE, 2008)
Aeration Tanks: MLSS, mg/L	3,500	3,500	3,500	3,500	3,000 to 5,000 mg/L (MOE, 2008)
Aeration Tanks: Aeration SRT, days	110	54	53	43	>15 days (MOE, 2008)
Aeration Tanks: F:M ratio, g BOD/g VSS	0.02	0.04	0.05	0.06	0.05 to 0.15 g BOD/g VSS (MOE, 2008)
Secondary Clarifiers: SOR at Peak Flow, m^3/m^2/d	15	30	31	38	<40 for extended aeration (MOE, 2008)
Secondary Clarifiers: SLR at Peak Flow and 100% RAS, kg/m^2/d	66	134	138	170	<170 for extended aeration (MOE, 2008)

Notes:

HRT = hydraulic retention time
m^3/day = cubic metre(s) per day
m^3/m^2/day = cubic metre(s) per square metre per day
mg/L = milligrams per litre
kg/m^2/d = kilograms per square metre per day

5.3.3.3 Tertiary Sand Filters

Following secondary treatment, secondary effluent flows to the tertiary sand filters for filtration. The Wyoming WWTP tertiary treatment system consists of one low head, automatic backwash type effluent sand filter that includes a travelling bridge, a backwash pump and a washwater pump. The Wyoming WWTP tertiary sand filter system details are displayed in Table 5-18.

Table 5-18. Wyoming WWTP Tertiary Sand Filter Details

Parameter	Value
Number of Sand Filters	1
Sand Filter Length, m	8.53
Sand Filter Width, m	2.74
Sand Filter Area, m^2	23.4

The MOE Design Guidelines (MOE 2008) recommend that tertiary filters be designed based on the peak hourly filtration rate and peak solids loading rate. A maximum peak hour filtration rate of 2 litres per square metre per second is recommended with one filter out of service. The recommended peak solids loading rate is 51 milligrams per square metre per second. Secondary effluent solids concentration data was not available for this Master Plan; the tertiary sand filter capacity assessment was completed based on the recommended peak hour filtration rate. The Wyoming WWTP tertiary sand filter capacity assessment is displayed in Table 5-19. The tertiary sand filter is projected to reach its capacity based on peak filtration rate in 2039. It is also noted that there is no standby tertiary sand filter capacity should the existing filter require maintenance.

Table 5-19. Wyoming WWTP Tertiary Sand Filter Capacity Assessment

Parameter	Based on Current Flows	Based on Rated Capacity	Based on Future Projections	Design Guideline
Flow, m^3/day	560	1,128	1,161	
Peak Factor	3.5	3.5	3.5	Design Peak Factor
Peak Filtration Rate, L/m^2s	0.98	1.97	2.03	<2 (MOE, 2008)

5.3.3.4 UV Disinfection

Following tertiary treatment, secondary effluent flows downstream for disinfection. Disinfection is achieved by the UV system, which deactivates bacteria, protozoa and viruses. The UV disinfection system consists of two banks of UV lamps, with a peak flow rate of 166 cubic metres per hour, or 3,984 cubic metres per day.

The UV disinfection system capacity assessment is summarized in Table 5-20. The peak capacity of the UV disinfection system is 115 cubic metres per day less than the projected peak flows in 2039.

Table 5-20. Wyoming WWTP UV Disinfection Capacity Assessment

Parameter	Value
UV Disinfection System Capacity, m^3/day	3,984
Estimated Peak Flow in 2039, m^3/day [a]	**4,100**

Notes:

[a] Based on the design peak factor of 3.5.
m^3/day = cubic metre(s) per day

5.3.3.5 Aerobic Digesters

Waste activated sludge from the aeration tanks is pumped to two aerobic digesters for sludge stabilization prior to being transported off site for land application. Each aerobic digester is equipped with a coarse bubble aeration system.

The Wyoming WWTP aerobic digester system details are displayed in Table 5-21.

Table 5-21. Wyoming WWTP Aerobic Digester Details

Parameter	Value
Number of Aerobic Digesters	2
Aerobic Digester Geometry	Rectangular
Aerobic Digester Length, m	4.8
Aerobic Digester Width, m	4.8
Aerobic Digester SWD, m	3.1

Notes:

SWD = side wall depth

The capacity assessment of the aerobic digesters is based on the SRT and is displayed in Table 5-22. The MOE recommends a minimum SRT of 45 days, which includes the SRT of the activated sludge treatment process in addition to the SRT of the digesters. WAS flows were linearly projected within the planning period based on the reported average daily WAS flow rate and average daily plant flow rate in 2019. Based on the aerobic digester capacity assessment, the Wyoming WWTP has sufficient digester capacity to maintain a 45-day SRT within the planning period. Sludge storage may be explored in the future to reduce the frequency that digested solids are required to be transported off site.

Table 5-22. Wyoming WWTP Aerobic Digester Capacity Assessment

Parameter	Based on Current Flows	Based on Rated Capacity	Based on Future Projections	Design Guideline
Flow, m^3/day	560	1,128	1,161	
Peak Factor	3.5	3.5	3.5	Design Peak Factor
WAS Flow, m^3/day	4.5	9.2	9.4	
SRT, days[a]	141	70	68	>45 days including aeration tank SRT (MOE, 2008)

Notes:

[a] Includes the projected aeration tank SRT
m^3/day = cubic metre(s) per day
SRT = solids retention time
WAS = waste activated sludge

5.3.4 Summary of Capacity Assessment

The Wyoming WWTP has an existing rated capacity of 1,128 cubic metres per day. Based on population projections, it is estimated that the average daily flow in 2039 will be 1,161 cubic metres per day. Table 5-23 provides a summary of the capacity assessment for the Wyoming WWTP.

Table 5-23. Wyoming WWTP Process Capacity Assessment Summary

Process	Available Peak Capacity	Projected Needs by 2039	Basis	Summary
Screening	3,984 m^3/day	4,100 m^3/day	Peak hour flow at design peak factor of 3.2	Insufficient capacity for projected 2039 peak flow. Projected to exceed capacity in 2036.
Grit Removal	22,340 m^3/day	4,100 m^3/day	Peak hour flow at design peak factor of 3.2. Based on a minimum detention time of 3 minutes, as per the MOE design guidelines.	Sufficient capacity for projected 2039 peak flow.
Secondary Treatment	5,050 m^3/day	4,100 m^3/day	Average day flow; capacity limited by the solids loading rate (SLR) at peak hour flow	Sufficient capacity for projected 2039 peak flow.
Tertiary Filtration	4,045 m^3/day	4,100 m^3/day	Average day flow; capacity limited by the peak hour filtration rate at peak hour flow	Insufficient capacity for projected 2039 peak flow. Projected to exceed capacity in 2039.
UV Disinfection	3,984 m^3/day	4,100 m^3/day	Peak hour flow at design peak factor of 3.2	Insufficient capacity for projected 2039 peak flow. Projected to exceed capacity in 2036.

5.4 Wyoming Pumping Stations

5.4.1 Methodology

Future development plans in Wyoming, provided by the Town, were reviewed by Jacobs and used to project the future additional flows to each pumping station within the planning period. The developments that were considered in this Master Plan are presented in Table 5-24, with the projected number of units and the receiving PS.

Table 5-24. Developments Considered for Wyoming PS Future Flow Projections

Name	Approximate Location	Number of Lots	Area (ha)	Receiving PS
JN Ventures	Plympton St West	10	2.0	Influent PS
Radcliffe	East Wyoming	114	12.3	Influent PS

The future conditions for each PS were calculated based on typical design criteria used by the Town, as follows:

- Population Density: 3 persons per unit
- Per Capita Flow Rate: 180 litres per capita per day
- Inflow and Infiltration Rate: 0.2 litres per second per hectare

5.4.2 Future Flows

The future number of serviced accounts in each catchment area was determined by analyzing future development plans provided by the Town. The development plans detailed future subdivisions, the number of proposed lots, their associated location, and serviced areas. This analysis was then used to expand on the existing conditions capacity analysis, providing future pumping station requirements to 2039.

The projected number of billing accounts and estimated serviced population for each PS is displayed in Table 5-25.

Table 5-25. 2041 Wyoming Sewershed Projected Billing Accounts

Service Area	Billing Accounts	Estimated Population
O'Brien	35	135
Influent PS	**1,124**	**3,372**

Table 5-26 displays the Wyoming pumping station capacity analysis under future conditions.

Table 5-26. Wyoming Pumping Station Capacity Analysis - Future Conditions

Pumping Station	Total Serviced Population	Total Serviced Area (ha)	Firm Capacity (L/s)	Peak Capacity (L/s)	Average Daily Flow (L/s)	Inflow and Infiltration (L/s)	Harmon PF	Peak Flow Rate (L/s)	Percent of Firm Capacity	Percent of Peak Capacity
O'Brien	135	4.7	6	12	0.28	0.93	4.21	2.11	35	18
Influent PS	3,372	182.5	40.2	52.6	7.08	36.50	3.40	60.53	***151^***	***115^***

Notes:

Items denoted with ^ exceed the rated capacity of the PS

Based on this capacity assessment, the Influent PS does not have sufficient capacity for peak flows under future conditions. No other capacity deficiencies were identified under future conditions.

The Influent PS does not have sufficient capacity under existing conditions. Therefore, it is recommended that upgrades be explored.

The projected flows to the Influent PS were also compared to the projected flows to the Wyoming WWTP based on the expected growth rate provided by the Town. The projected flows to the Influent PS based on known future developments represent 53 percent of the projected flows to the Wyoming WWTP based on the expected growth rate. This indicates that there will be additional future developments that the Town is not currently aware of. If the planned development is less than projected, the impact on the Influent PS will be reduced. Therefore, the design basis for future conditions should be confirmed prior to beginning upgrades, which can also be aided by wet weather flow monitoring.

5.5 Summary

Table 5-27 summarizes the future capacity-based needs within the Plympton-Wyoming wastewater system.

Table 5-27. Capacity-Based Needs for the Plympton-Wyoming Wastewater System

Component	Future Needs
Plympton WWTP	▪ The **screening system** requires an expansion to treat 11,800 m^3/day by 2039. ▪ The **grit removal system** requires an expansion to treat 11,800 m^3/day by 2039. ▪ The **UV disinfection** system requires an expansion to treat 11,800 m^3/day by 2039. ▪ The **aerobic digesters** require an additional 300 m^3 of volume to provide stabilization for the projected WAS flows in 2039.
Plympton Pumping Stations	▪ **PS-02** is projected to have a capacity deficiency under existing conditions. ▪ **PS-03** is projected to have a capacity deficiency under future conditions. ▪ **PS-04** is projected to have a capacity deficiency under existing and future conditions. ▪ **PS-06** is projected to have a capacity deficiency under existing and future conditions. ▪ **PS-11** is projected to have a capacity deficiency under existing and future conditions. ▪ The **Influent PS** is projected to have a capacity deficiency under existing and future conditions.
Wyoming WWTP	▪ The **screening system** requires an expansion to treat 4,100 m^3/day by 2039. ▪ The **tertiary filtration system** requires an expansion to treat 4,100 m^3/day by 2039. ▪ The **UV disinfection** system requires an expansion to treat 4,100 m^3/day by 2039.
Wyoming Pumping Stations	▪ The **Influent PS** is projected to have a capacity deficiency under existing conditions.

6. Non-Growth Needs

A high-level review of asset age was conducted to provide general estimates of replacement timelines for existing WWTP infrastructure within the Town. Typical service life guidelines as outlined in *Federal Register 40 CFR 35, September 1975, Appendix A – Cost Effective Analysis Guidelines* published by the U.S. Environmental Protection Agency (EPA) (shown in Table 6-1) were consulted to estimate the remaining useful life of WWTP assets. Additionally, operations staff were consulted regarding the condition and performance of various equipment.

Table 6-1. Typical Infrastructure Service Life

Infrastructure Component	Typical Service Life (EPA 1975)
Structures (includes plant buildings, concrete process tankage, basins, lift station structures, tunnels, outfalls)	30 to 50 years
Process equipment (includes major process equipment such as clarifier mechanisms, sludge thickeners, etc.; chemical storage facilities; chemical dosing systems; electrical generating facilities on standby service only)	15 to 30 years
Auxiliary equipment (includes pumps, motors, compressors, blowers)	30 to 40 years
Valves	20 to 25 years
Gates	25 to 30 years
Actuators	15 to 20 years
Piping (includes PVC, ductile iron, stainless steel)	40 to 120 years

6.1 Plympton WWTP

The age of the infrastructure components at the Plympton WWTP is summarized in Table 6-2.

Table 6-2. Plympton WWTP Infrastructure Age Summary

Infrastructure Component	Typical Service Life	Age (Year Built)
Screening	15 to 30 years	25 Years (1995)
Grit Removal	15 to 30 years	25 Years (1995)
Aeration Tanks	30 to 50 years	25 Years (1995)
Blowers [a]	30 to 40 years	5 Years (2016)
Secondary Clarifiers	30 to 50 years	25 Years (1995)
UV Disinfection	15 to 30 years	5 Years (2016)
Aerobic Digesters	15 to 30 years	25 Years (1995)
Outfall	40 to 120 years	25 Years (1995)

Notes:

Original blowers kept for backup

The following observations have been made related to the age and condition of various processes and equipment at the Plympton WWTP:

- Operations staff have indicated that during wet weather flows, the Plympton WWTP has experienced flooding due to high peak instantaneous flows. This is likely due to the capacity of the Influent PS and the peak flows due to I/I. As well, the gate to the bypass channel must be opened manually. Since the plant is not staffed 24/7, the gate is not always opened when required. To mitigate this issue, flow equalization and/or providing automatic valves for bypassing could be implemented. This will be considered during alternative development. The plant can bypass the pumping station and grit removal during peak flows and direct influent after screening directly to the aeration tanks.
- The screening system at the Plympton WWTP is reaching the end of its service life. Operations staff have not indicated any operational concerns with the system. However, there is space in the bypass channel to install additional screening which would increase the capacity. It is also recommended that the condition of the existing system be assessed to determine if a replacement is required.
- The grit removal system at the Plympton WWTP is reaching the end of its service life and operations staff have indicated plans to replace it in the short-term.
- The age of the aeration tanks at the Plympton WWTP is currently well below the typical service life, with no operational concerns raised by staff. The aeration tanks will be approaching the end of a typical service life in 2039. A condition assessment is recommended later in the planning period to determine condition and replacement needs. There are no growth-related needs anticipated.
- The age of the secondary clarifiers at the Plympton WWTP is currently well below the typical service life, with no operational concerns raised by staff. The secondary clarifiers will be approaching their end of a typical service life in 2039. A condition assessment is recommended towards the end of the planning period. There are no growth-related needs anticipated.
- The UV system at the Plympton WWTP was installed recently and is well below the typical service life, with no operational concerns raised by staff. The UV system will be approaching the end of a typical service life in 2039. A condition assessment is recommended towards the end of the planning period. There are no growth-related needs anticipated.
- The aerobic digesters at the Plympton WWTP are approaching the upper end of a typical service life. No operational concerns have been raised by staff. A condition assessment is recommended to determine any age-related needs.

As condition assessments have been recommended for a large amount of the plant components, Jacobs recommends that a plant-wide condition assessment be performed following the completion of this Master Plan.

6.2 Plympton Pumping Stations

6.2.1 Infrastructure

The ages of the pumping stations within the Plympton system are summarized in Table 6-3. All pumping stations in Plympton, except for PS-11, were constructed while the Plympton WWTP was being constructed.

Table 6-3. Plympton Pumping Station Age Summary

Pumping Station	Age (Year Built)
PS-02	25 Years (1995)
PS-03	25 Years (1995)
PS-04	25 Years (1995)
PS-05	25 Years (1995)
PS-06	25 Years (1995)
PS-07	25 Years (1995)
PS-08	25 Years (1995)
PS-08A	25 Years (1995)
PS-10	25 Years (1995)
PS-11	13 Years (2008)
Influent PS	25 Years (1995)

Many pumping station components will approach the end of their useful life during the planning period. The typical service lives for various pumping station components are as follows:

- Wet wells/dry wells: 30 to 50 years
- Pumps and motors: 30 to 40 years
- Valves: 20 to 35 years

Discussions were held with operations staff to identify near-term upgrade requirements at the pumping stations. The following pumping stations were identified as requiring replacements for brackets, stainless rails, chains, and grips:

- PS-03
- PS-06
- PS-07
- PS-08
- PS-10

Many of the pumps are performing well below their design capacity, which was determined during the drawdown tests completed during this Master Plan.

A review of the Town's sanitary sewers identified that PS-02 and PS-05 currently discharge into a common forcemain, which conveys the combined flow to the Plympton WWTP. This is an important consideration in this Master Plan as two pump stations discharging into a common forcemain can impact pumping capacity. Drawdown tests determined that when both pumping stations are operating, they reduce the capacity of the other pumping station. When developing alternative solutions, opportunities for decoupling these pumping stations will be investigated. This will allow for both pumping stations to provide consistent pumping capacities.

It is recommended that a condition assessment be performed for all the pumping stations within Plympton, potentially in conjunction with the Plympton WWTP condition assessment. This is recommended prior to any pump replacements in existing pumping stations due to capacity-based needs, so that any other rehabilitation and/or replacement needs are identified beyond those previously discussed. Condition assessments will also provide more detailed information related to the necessary capital expenditures.

6.2.2 Communications with Town Residents

In addition to the age and condition-based needs identified, there have also been communications between residents and Town staff about issues related to certain pumping stations, which are summarized in the following sections.

6.2.2.1 PS-02

The Town has received multiple complaints about odour issues along Queen Street, within the vicinity of the trunk sewer that flows to PS-02. Jacobs reviewed the dry weather flows in comparison to the sewer size and determined that wastewater velocities sometimes fall below the required scour velocity. When flows are below the minimum scour velocity solids can settle to the bottom of the sewer pipe, this can lead to odour issues. This type of odour complaint is more likely to emanate from nearby maintenance holes during dry weather. Often the simplest and most common method of mitigating this type of odour issue is scheduled flushing of the sewer with a flushing truck or using a nearby hydrant during periods of dry weather.

To date, the Town has installed an odour control unit at PS-02 and installed a valve at the bypass outlet to mitigate odours. Jacobs also recommends that operations staff perform sewer flushing upstream of this sewer section during extended periods of dry weather, which is expected to mitigate any odour issues.

As development increases in the Town, it is expected that wastewater flows will increase in this section, it can be reasonably expected that the associated increased flows will provide sufficient dry weather flow to achieve a consistent scour velocity. This could reduce the frequency of odour issues in the future and reduce the need for flushing to mitigate odours.

6.2.2.2 PS-07

The forcemain that PS-07 pumps into currently discharges into a gravity sewer at the intersection of Lambton Line and Lakeshore Road. The Town has received complaints from the resident immediately downstream of the discharge, indicating that they experience basement flooding during wet weather flows. The resident currently has two backflow prevention valves (one on the resident’s property and one on the Town’s property) between their home and the sanitary sewer.

Jacobs operations staff has investigated the infrastructure on the Town’s property and has not identified the cause of basement flooding. This Master Plan also investigated if the nearby forcemain could be a potential cause of this flooding, however, no definitive conclusions could be drawn with the information currently available. Other residents have not indicated that they experience this issue. Due to this, it appears that this is a localized issue unrelated to the Town’s forcemain and gravity sewer. However, this cannot be confirmed with the current hydraulic model, as it is not calibrated for wet weather flow. Wet weather flow monitoring is necessary to calibrate the Town’s hydraulic model. When additional flow monitoring and model calibration is completed, it is recommended that the Town investigate this issue again. A calibrated model will be able to determine if the basement flooding is due to sewer surcharging and provide stronger conclusions related to this matter. This further supports Jacobs’ recommendation for the Town to complete wet weather flow monitoring.

6.3 Wyoming WWTP

The age of the infrastructure at the Wyoming WWTP is summarized in Table 6-4.

Table 6-4. Wyoming WWTP Infrastructure Age Summary

Infrastructure Component	Typical Service Life	Age (Year Built)
Screening	15 to 30 years	1 Year (2019)
Grit Removal	15 to 30 years	39 Years (1981)
Aeration Tanks	30 to 50 years	39 Years (1981)
Blowers[a]	30 to 40 years	4 Years (2016) (1981)
Secondary Clarifiers	30 to 50 years	39 Years (1981)
Sand Filters	15 to 30 years	39 Years (1981)
UV Disinfection	15 to 30 years	1 Year (2019)
Aerobic Digesters	15 to 30 years	39 Years (1981)
Outfall	40 to 120 years	39 Years (1981)

Notes:

[a] Original blowers are 39 years old (1981) and are used as backup. One new blower was installed in 2016 and is the duty blower

The following observations have been made related to the age and condition of various processes and equipment at the Wyoming WWTP:

- The screening system was recently replaced at the Wyoming WWTP, therefore there are no non-growth related concerns.
- The grit tanks at the Wyoming WWTP are beyond the typical service life and operations staff have expressed concerns related to performance. Currently, the grit system is not in operation. Poor grit removal can reduce secondary treatment efficiency lead to inert solids build up in the digesters. Repairs and/or replacement of the grit removal system are expected to occur in the short-term. Alternative solutions will be developed for the grit removal system.
- The age of the aeration tanks at the Wyoming WWTP is currently below the upper range of a typical service life, with no operational concerns raised by staff. At the end of the planning period, the aeration tanks will be beyond the end of a typical service life. A condition assessment is recommended towards the planning period, with no other non-growth needs anticipated.
- The Wyoming WWTP aeration tanks are currently equipped with coarse bubble diffusers. While there have been no operational concerns with the existing diffusers, there are various diffuser technologies that could increase the oxygen transfer rate in the aeration tanks, increasing efficiency and reducing aeration requirements.
- The Wyoming WWTP currently has one turbo blower that was recently installed and two rotary positive displacement blowers that are original plant equipment, approaching the end of their service life. While there have been no operational concerns raised with the turbo blower, replacement of the rotary positive displacement blowers may be beneficial, as it would provide reliable standby blower capacity.

- The age of the secondary clarifiers at the Wyoming WWTP is currently below the typical service life, with no operational concerns raised by staff. At the end of the planning period, the secondary clarifiers will be beyond the end of a typical service life. A condition assessment is recommended, with no other non-growth needs anticipated.
- The sand filter at the Wyoming WWTP is currently beyond the typical service life. Additionally, operations staff have indicated that the filters are a bottleneck process at the plant. The capacity review in Section 5.3.3 indicated that the filter has sufficient capacity based on MOE design guidelines and the design parameters, so it is likely that the filter is in poor condition and is not performing to its full capacity. Alternative solutions will be developed to address this issue.
- The age of the UV system at the Wyoming WWTP is currently well below the typical service life, with no operational concerns raised by staff as it was installed recently. At the end of the planning period, the UV system will be approaching the end of a typical service life. A condition assessment is recommended near the end of the planning period, with no other non-growth needs anticipated.
- The aerobic digesters at the Wyoming WWTP are approaching the upper end of a typical service life. No operational concerns have been raised by staff. A condition assessment is recommended to determine any age-related needs.
- The Wyoming WWTP does not currently have a SCADA system, with local control used for many processes. A design is currently underway for implementation of a SCADA system and replacement of the plant's motor control centre.

As condition assessments have been recommended for a large amount of the plant components, it is recommended that a plant-wide condition assessment be performed following the completion of this Master Plan.

6.4 Wyoming Pumping Stations

The ages of the pumping stations in the Wyoming system are presented in Table 6-5.

Table 6-5. Wyoming Pumping Station Age Summary

Pumping Station	Age (Year Built)
O'Brien PS	18 Years (2002)
Radcliffe PS	1 Year (2020)
Influent PS	39 Years (1981)

While operations staff have not communicated any condition-related issues related to the Wyoming pumping stations, many components will approach the end of their useful life during the planning period. The typical service lives for various PS components are as follows:

- Wet wells/dry wells: 30 to 50 years
- Pumps and motors: 30 to 40 years
- Valves: 20 to 35 years

It is recommended that a condition assessment be performed at the Influent PS. This is recommended prior to any pump replacements due to capacity-based needs, so that any other rehabilitation/replacement needs are identified. While there are no capacity-based needs identified at the O'Brien PS, it would be beneficial to document the condition of this pumping as well. This condition assessment could be completed in conjunction with the Wyoming WWTP condition assessment and the

Plympton system-wide condition assessment as part of a Town-wide wastewater infrastructure condition assessment.

6.5 Summary

Table 6-6 summarizes the future non-growth-based needs within the Plympton-Wyoming wastewater system.

Table 6-6. Non-Growth-Based Needs for the Plympton-Wyoming Wastewater System

Component	Future Needs
Plympton WWTP	▪ The manual bypass valve requires upgrading to an automatic valve. ▪ The manual screen in the bypass channel requires replacement with an automatic screen. ▪ The grit removal system is in poor condition and requires replacement.
Wyoming WWTP	▪ The grit removal system is in poor condition and requires rehabilitation or replacement. ▪ The tertiary filtration system is in poor condition and requires rehabilitation or replacement.
Overall	▪ A wastewater system-wide condition assessment is recommended.

7. Identification and Evaluation of Alternative Solutions

7.1 Objectives

The MEA defines alternative solutions as feasible ways of solving an identified problem (deficiency) or addressing an opportunity (MEA 2019). The objective of this section is to identify alternative solutions to address the needs, or deficiencies, that were identified in Sections 5 and 6.

7.2 Description of Evaluation Process

An evaluation framework was developed for the evaluation of alternative solutions based on the Municipal Class Environmental Assessment process, which requires that impacts to the natural, social/cultural, technical and economic environments be considered.

Each set of alternative solutions identified in this section was evaluated against the criteria described in Section 7.3 based on the performance measures. The scoring methodology is as follows:

- 10: provides the greatest benefit
- 5: provides a moderate benefit
- 0: provides little to no benefit

Each category (natural, social/cultural, technical and economic environments) was assigned a weighting of 25 percent. Then, the 25 percent for each category was distributed evenly between the identified criteria. For example, if the natural environment category has 10 criteria, then each criterion would be assigned 2.5 percent. The scoring for each alternative is then normalized to a total score out of 100. The alternative solutions that received the highest score for each deficiency identified were selected as the preferred solutions.

7.3 Evaluation Criteria

Two sets of evaluation criteria were developed for this Master Plan: one for wastewater treatment and one for wastewater conveyance. The wastewater treatment criteria were applied to alternative solutions developed for the Plympton WWTP and Wyoming WWTP, while the wastewater conveyance criteria were applied to the alternative solutions developed for Plympton pumping stations. The evaluation criteria are presented in Table 7-1 and Table 7-2.

Table 7-1. Evaluation Criteria for Wastewater Treatment

Category	Criterion	Description	High Scoring Measure (10)	Moderate Scoring Measure (5)	Low Scoring Measure (0)
Natural Environment	Greenhouse Gas Emissions	The potential for the alternative to minimize GHG emissions.	The alternative will make a significant contribution to the Town's goal to reduce GHG emissions, with the potential to provide a net positive contribution.	The alternative will make a modest contribution to the Town's goal to reduce GHG emissions.	The alternative will not make a measurable contribution to the Town's goal to reduce GHG emissions.
	Groundwater Quality and Quantity	The potential to impact sensitive groundwater resources in the Town and protect overall groundwater quality and quantity.	The alternative provides the greatest level of protection to sensitive groundwater resources and to the overall groundwater quality and quantity.	The alternative provides an acceptable level of protection to sensitive groundwater resources and to overall groundwater quality and quantity. May require careful monitoring over the long-term to maintain protection. Contingency measure may be required.	The alternative poses unacceptable risks to the protection-sensitive groundwater resources and to the overall quality and quantity of groundwater.
	Terrestrial Habitats and Corridors	The potential impacts to terrestrial habitats and corridors.	The alternative provides the greatest level of protection to terrestrial habitats and corridors.	The alternative may require special measures to protect terrestrial habitats and corridors.	The alternative will result in an unacceptable loss of terrestrial habitats and corridors.
	Aquatic Habitats and Fisheries	The potential for the alternative to protect or enhance aquatic habitats and fisheries.	The alternative will protect aquatic habitats and fisheries and has the potential to provide enhancements.	The alternative may require special measures to protect aquatic habitats and fisheries.	The alternative will result in an unacceptable loss of aquatic habitat and fisheries.
	Floodplain Impacts	The potential impacts to existing flood plain and reduction of flood volume capacity in the receiving body.	The alternative will maintain the existing flood plan and flood volume capacity.	The alternative will require specials measures to maintain the existing flood plain and flood volume capacity.	The alternative will result in an unacceptable loss of floodplain and will require significant measures to replace lost flood volume capacity.
	Surface Water Quality	The potential impact to contaminant loadings in the receiving body.	The alternative will provide a high degree of protection to the water quality of the receiving bodies all year, and treated effluent can be readily assimilated.	The alternative will provide a high degree of protection to the water quality of the receiving bodies for most of the year, and treated effluent may require seasonal discharge conditions to meet assimilation requirements.	The alternative may present a threat to the water quality of the receiving bodies during low flow periods, and there may be significant restrictions to treated effluent discharge conditions.
	Air Quality	The potential impact to the quality of the air.	The alternative has the potential to improve the air quality.	The alternative provides for similar air quality.	The alternative has the potential to reduce the air quality.
	Wetlands	The potential for the alternative to protect and maintain wetlands.	The alternative will avoid wetlands.	The alternative may require special measures to maintain wetland protection.	The alternative will result in an unacceptable threat to wetlands.
Social/Cultural Environment	Community Health and Safety	The potential for the alternative to minimize risk to community health and safety	There are no risks to community health and safety.	There are minor risks to community health and safety that can be properly managed.	There are significant risks to community health and safety which require significant measures and risk management plans to minimize risks to acceptable levels.
	Occupational Health and Safety	The potential for the alternative to minimize risks to occupational health and safety (operations, maintenance and during construction).	There are no risks to occupational health and safety.	There are minor risks to occupation health and safety that can be properly managed.	There are significant risks to occupation health and safety which require significant training and or risk management plans to minimize risks to acceptable levels.
	Archaeological Impacts	The degree of impact that the alternative has on documented archaeologically significant features.	The alternative has little or no impact on documented archaeologically significant features.	The alternative has a moderate impact on documented archaeologically significant features.	The alternative has a large impact on documented archaeologically significant features.

Category	Criterion	Description	High Scoring Measure (10)	Moderate Scoring Measure (5)	Low Scoring Measure (0)
Social/Cultural Environment	Cultural Heritage Impacts	The degree of impact that the alternative has on areas with documented cultural heritage resources.	The alternative represents little or no potential for disturbance of documented cultural heritage features.	The alternative represents a moderate potential for disturbance of documented cultural heritage features.	The alternative represents a significant potential for disturbance of documented cultural heritage features.
	First Nations Cultural Heritage Impacts	The degree of impact that the alternative has on cultural heritage resources recognized by First Nations and Indigenous communities.	The alternative represents little or no potential for disturbance of cultural heritage resources recognized by First Nations and Indigenous communities.	The alternative represents a moderate potential for disturbance of cultural heritage resources recognized by First Nations and Indigenous communities.	The alternative represents a significant potential for disturbance of cultural heritage resources recognized by First Nations and Indigenous communities.
	Noise Impacts	The potential for the occurrence of noise events.	The alternative has little or no potential to produce noise.	The alternative has moderate potential to produce noise; noise control measures may be needed to prevent migration off site.	The alternative has a high potential to produce noise; significant mitigation would be needed to control migration off site.
	Odour Impacts	The potential of the occurrence of odour events.	The alternative has little or no potential to produce odour.	The alternative has moderate potential to produce odour; odour control measures may be needed to prevent migration off site.	The alternative has a high potential to produce odour; significant mitigation would be needed to control migration off site.
	Community Perception	The potential of the alternative to receive community support for wastewater treatment and biosolids management.	The alternative has the potential to receive a high level of support and endorsement from the public.	The alternative has the potential to receive a moderate level of support and endorsement from the public.	The alternative has the potential to receive little to no support and endorsement from the public.
	Transportation	The potential for the alternative to avoid increased demands on the transportation systems (patterns, volumes, and infrastructure requirements).	The alternative will reduce demands on the transportation system.	The alternative will place similar demands on the transportation system.	The alternative will increase demands on the transportation system.
Technical Environment	Risk/Reliability	The level of risk associated with the alternative relating to consequences of failure.	The alternative has a low level of risk, relative to other alternatives.	The alternative has a moderate level of risk, relative to other alternatives.	The alternative has a high level of risk, relative to other alternatives.
	Ability to Meet Pumping Capacity Requirements	The ability of the alternative to provide the wastewater treatment requirements for short-, medium-, and/or long-term needs.	The alternative can provide short-, medium-, and long-term treatment requirements.	The alternative can provide short-term and may provide medium-term requirements.	The alternative may only provide short-term requirements.
	Ease of Implementation (Constructability)	The ability of the alternative to be implemented with minimal disruption to existing wastewater treatment operations during implementation; minimal need to require system modifications.	The alternative can be implemented with no disruption to existing service.	The implementation of the alternative may result in minor disruptions to existing service.	The implementation of the alternative may require significant or periodic disruptions to existing service.
	Energy Requirements	The energy required from all sources (electricity, natural gas, fuel).	The alternative requires less energy than the existing system.	The alternative requires the same amount of energy as the existing system.	The alternative uses more energy than the existing system.
	Regulatory Constraints	The ability of the alternative to be approved with minimal, if any, conditions.	The alternative can be readily approved.	The alternative can be approved with minimal conditions.	The alternative can be approved with significant or onerous conditions.

Category	Criterion	Description	High Scoring Measure (10)	Moderate Scoring Measure (5)	Low Scoring Measure (0)
Technical Environment	Operational Compatibility	The alternative's compatibility with current existing process operations and its ability to integrate within the existing site.	The alternative is very compatible and compliments current processing units. It can be integrated into current plant operations with minimal impact.	The alternative is somewhat compatible and complimentary to current processing units; it can be integrated; but will have some impact.	The alternative is not compatible or complimentary to current processing units and integration may be difficult.
	Maintenance Complexity	The degree of maintenance complexity associated with implementation of the alternative.	The alternative will result in minor or no increase in maintenance complexity compared to the existing processes.	The alternative will result in a moderate increase in maintenance complexity compared to the existing processes.	The alternative will result in a significant increase maintenance complexity when compared to the existing processes.
Economic	Capital Costs	The relative costs of land, equipment, and facilities when compared to other alternatives.	The alternative has the lowest capital costs relative to other alternatives.	The alternative is in the mid-range of capital costs relative to other alternatives.	The alternative has the highest capital costs relative to other alternatives.
	O&M Costs	The relative Operations and Maintenance (O&M) when compared to other alternatives.	The alternative has the lowest O&M costs relative to other alternatives.	The alternative is in the mid-range of O&M costs relative to other alternatives.	The alternative has the highest O&M costs relative to other alternatives.

Table 7-2. Evaluation Criteria for Wastewater Conveyance

Category	Criterion	Description	High Scoring Measure (10)	Moderate Scoring Measure (5)	Low Scoring Measure (0)
Natural Environment	Greenhouse Gas Emissions	The potential for the alternative to minimize GHG emissions.	The alternative will make a significant contribution to the Town's goal to reduce GHG emissions, with the potential to provide a net positive contribution.	The alternative will make a modest contribution to the Town's goal to reduce GHG emissions.	The alternative will not make a measurable contribution to the Town's goal to reduce GHG emissions.
	Groundwater Quality and Quantity	The potential to impact sensitive groundwater resources in the Town and protect overall groundwater quality and quantity.	The alternative provides the greatest level of protection to sensitive groundwater resources and to the overall groundwater quality and quantity.	The alternative provides an acceptable level of protection to sensitive groundwater resources and to overall groundwater quality and quantity. May require careful monitoring over the long-term to maintain protection. Contingency measure may be required.	The alternative poses unacceptable risks to the protection-sensitive groundwater resources and to the overall quality and quantity of groundwater.
	Terrestrial Habitats and Corridors	The potential impacts to terrestrial habitats and corridors.	The alternative provides the greatest level of protection to terrestrial habitats and corridors.	The alternative may require special measures to protect terrestrial habitats and corridors.	The alternative will result in an unacceptable loss of terrestrial habitats and corridors.
	Aquatic Habitats and Fisheries	The potential for the alternative to protect or enhance aquatic habitats and fisheries.	The alternative will protect aquatic habitats and fisheries and has the potential to provide enhancements.	The alternative may require special measures to protect aquatic habitats and fisheries.	The alternative will result in an unacceptable loss of aquatic habitat and fisheries.
	Floodplain Impacts	The potential impacts to existing flood plain and reduction of flood volume capacity in the receiving body.	The alternative will maintain the existing flood plan and flood volume capacity.	The alternative will require specials measures to maintain the existing flood plain and flood volume capacity.	The alternative will result in an unacceptable loss of floodplain and will require significant measures to replace lost flood volume capacity.
	Surface Water Quality	The potential impact to contaminant loadings in the receiving body.	The alternative will provide a high degree of protection to the water quality of the receiving bodies all year, and treated effluent can be readily assimilated.	The alternative will provide a high degree of protection to the water quality of the receiving bodies for most of the year, and treated effluent may require seasonal discharge conditions to meet assimilation requirements.	The alternative may present a threat to the water quality of the receiving bodies during low flow periods, and there may be significant restrictions to treated effluent discharge conditions.

Category	Criterion	Description	High Scoring Measure (10)	Moderate Scoring Measure (5)	Low Scoring Measure (0)
Natural Environment	Air Quality	The potential impact to the quality of the air.	The alternative has the potential to improve the air quality.	The alternative provides for similar air quality.	The alternative has the potential to reduce the air quality.
	Wetlands	The potential for the alternative to protect and maintain wetlands.	The alternative will avoid wetlands.	The alternative may require special measures to maintain wetland protection.	The alternative will result in an unacceptable threat to wetlands.
Social/Cultural Environment	Community Health and Safety	The potential for the alternative to minimize risk to community health and safety.	There are no risks to community health and safety.	There are minor risks to community health and safety that can be properly managed.	There are significant risks to community health and safety which require significant measures and risk management plans to minimize risks to acceptable levels.
	Occupational Health and Safety	The potential for the alternative to minimize risks to occupational health and safety (operations, maintenance and during construction).	There are no risks to occupational health and safety.	There are minor risks to occupation health and safety that can be properly managed.	There are significant risks to occupation health and safety which require significant training and or risk management plans to minimize risks to acceptable levels.
Social/Cultural Environment	Archaeological Impacts	The degree of impact that the alternative has on documented archaeologically significant features.	The alternative has little or no impact on documented archaeologically significant features.	The alternative has a moderate impact on documented archaeologically significant features.	The alternative has a large impact on documented archaeologically significant features.
	Cultural Heritage Impacts	The degree of impact that the alternative has on areas with documented cultural heritage resources.	The alternative represents little or no potential for disturbance of documented cultural heritage features.	The alternative represents a moderate potential for disturbance of documented cultural heritage features.	The alternative represents a significant potential for disturbance of documented cultural heritage features.
	First Nations Cultural Heritage Impacts	The degree of impact that the alternative has on cultural heritage resources recognized by First Nations and Indigenous communities.	The alternative represents little or no potential for disturbance of cultural heritage resources recognized by First Nations and Indigenous communities.	The alternative represents a moderate potential for disturbance of cultural heritage resources recognized by First Nations and Indigenous communities.	The alternative represents a significant potential for disturbance of cultural heritage resources recognized by First Nations and Indigenous communities.
	Noise Impacts	The potential for the occurrence of noise events.	The alternative has little or no potential to produce noise.	The alternative has moderate potential to produce noise; noise control measures may be needed to prevent migration off site.	The alternative has a high potential to produce noise; significant mitigation would be needed to control migration off site.
	Odour Impacts	The potential of the occurrence of odour events.	The alternative has little or no potential to produce odour.	The alternative has moderate potential to produce odour; odour control measures may be needed to prevent migration off site.	The alternative has a high potential to produce odour; significant mitigation would be needed to control migration off site.
	Community Perception	The potential of the alternative to receive community support for wastewater treatment and biosolids management.	The alternative has the potential to receive a high level of support and endorsement from the public.	The alternative has the potential to receive a moderate level of support and endorsement from the public.	The alternative has the potential to receive little to no support and endorsement from the public.
	Transportation	The potential for the alternative to avoid increased demands on the transportation systems (patterns, volumes, and infrastructure requirements).	The alternative will reduce demands on the transportation system.	The alternative will place similar demands on the transportation system.	The alternative will increase demands on the transportation system.

Category	Criterion	Description	High Scoring Measure (10)	Moderate Scoring Measure (5)	Low Scoring Measure (0)
Technical Environment	Performance Record	The ability of the alternative to perform with a high degree of reliability and predictability in both process operations and effluent quality and/or biosolids quality.	The alternative includes proven technology with a high degree of reliable performance.	The alternative includes newer technology with a growing record of demonstrated performance reliability.	The alternative includes innovative technology with a limited performance record and unconfirmed reliability – requires further testing/demonstration to determine feasibility for the Town.
	Ability to Meet Treatment Capacity Requirements	The ability of the alternative to provide the wastewater treatment requirements for short-, medium-, and/or long-term needs.	The alternative can provide short-, medium-, and long-term treatment requirements.	The alternative can provide short-term and may provide medium-term requirements.	The alternative may only provide short-term requirements.
	Ease of Implementation (Constructability)	The ability of the alternative to be implemented with minimal disruption to existing wastewater treatment operations during implementation; minimal need to require system modifications.	The alternative can be implemented with no disruption to existing service.	The implementation of the alternative may result in minor disruptions to existing service.	The implementation of the alternative may require significant or periodic disruptions to existing service.
	Energy Requirements	The energy required from all sources (electricity, natural gas, fuel).	The alternative requires less energy than the existing system.	The alternative requires the same amount of energy as the existing system.	The alternative uses more energy than the existing system.
	Regulatory Constraints	The ability of the alternative to be approved with minimal, if any, conditions.	The alternative can be readily approved.	The alternative can be approved with minimal conditions.	The alternative can be approved with significant or onerous conditions.
	Operational Compatibility	The alternative's compatibility with current existing process operations and its ability to integrate within the existing site.	The alternative is very compatible and compliments current processing units. It can be integrated into current plant operations with minimal impact.	The alternative is somewhat compatible and complimentary to current processing units; it can be integrated; but will have some impact.	The alternative is not compatible or complimentary to current processing units and integration may be difficult.
	Maintenance Complexity	The degree of maintenance complexity associated with implementation of the alternative.	The alternative will result in minor or no increase in maintenance complexity compared to the existing processes.	The alternative will result in a moderate increase in maintenance complexity compared to the existing processes.	The alternative will result in a significant increase maintenance complexity when compared to the existing processes.
Economic	Capital Costs	The relative costs of land, equipment, and facilities when compared to other alternatives	The alternative has the lowest capital costs relative to other alternatives.	The alternative is in the mid-range of capital costs relative to other alternatives.	The alternative has the highest capital costs relative to other alternatives.
	O&M Costs	The relative Operations and Maintenance (O&M) when compared to other alternatives	The alternative has the lowest O&M costs relative to other alternatives.	The alternative is in the mid-range of O&M costs relative to other alternatives.	The alternative has the highest O&M costs relative to other alternatives.

7.4 Plympton WWTP

This section presents the alternative solutions that were developed to address the deficiencies identified at the Plympton WWTP, the alternatives evaluation, and selection of the preferred solution. Where technologies are described that are not currently in use at the Plympton WWTP or Wyoming WWTP, a more detailed technology description is provided.

7.4.1 Headworks

The Plympton WWTP screening and grit removal system capacities are projected to be exceeded in 2036. The peak daily flow is projected to be 11,850 cubic metres per day in 2039, while the current rated capacity of the screening and grit removal systems is 10,500 cubic metres per day. The valve to the bypass channel and bypass channel bar screen are currently manually operated. The grit removal system is also in poor condition and requires upgrades/replacement in the short-term. The feasible solution is to install additional screens at the Plympton WWTP and replace the grit removal system.

Alternative solutions for the Plympton WWTP headworks were investigated as part of the Green Stream Intake grant application that was submitted in January 2020. The selected upgrades include the following:

- Larger influent pumps.
- A new automatic screen in the bypass channel
- Replacement of the existing vortex grit removal process
- Replacement of the manual bypass valve with an automatic bypass valve

Modifications could be made such that the bypass channel has the option to feed the Influent PS rather than sending screened wastewater directly to the aeration tanks, effectively creating a second screening train for normal operation. This would increase the total screening and grit removal capacity of the Plympton WWTP provided that the grit removal capacity is also increased. The ability to bypass to the aeration tanks would still be maintained in this case, controlled by the level of the Influent PS wet well.

Rather than identify and evaluate alternatives for screening and grit removal, these upgrades were carried forward as the alternative solution and the headworks (including the Influent PS) was treated as one unit process for the Plympton WWTP. Upgrading the headworks was compared against the Do Nothing alternative.

The evaluation for the Plympton WWTP headworks is presented in Table 7-3. Detailed scoring and rationales are presented in Appendix E. Alternative 1 (upgrade the screening and grit removal system) was selected as the preferred solution because it would provide the Plympton WWTP with the required preliminary treatment capacity during the planning period, whereas the do-nothing alternative would not.

Table 7-3. Evaluation Results for Plympton WWTP Headworks

Category	Do Nothing	Alternative 1
Natural Environment	7.8	12.5
Social/Cultural Environment	19.4	23.6
Technical Environment	10.7	19.6
Economic	18.8	18.8
Total	**56.7**	**74.5**

7.4.2 Disinfection

The disinfection capacity at the Plympton WWTP is projected to be exceeded in 2036. The peak daily flow is projected to be 11,850 cubic metres per day in 2039, while the current rated capacity of the disinfection system is 10,500 cubic metres per day. However, from discussions with the system vendor (Trojan), the existing UV system is likely capable of treating flows upwards of 13,000 cubic metres per day. This is dependent on the secondary effluent UV transmittance (UVT), which is required to be greater than 65 percent. As this is the UVT value that the current system design was based on and there is sufficient upstream secondary treatment capacity, there are no concerns with maintaining a sufficient UVT. It is noted that this revised treatment capacity is also dependent on weir and channel hydraulics. The original plant drawings indicate that the UV channels can receive 13,100 cubic metres per day, although Jacobs recommends that this be confirmed prior to re-rating.

Therefore, rather than evaluating potential alternative solutions for disinfection, Jacobs recommends that the Town investigate re-rating the existing UV disinfection system. If the ability to re-rate the system is confirmed, no capacity-based upgrades will be required.

7.4.3 Sludge Stabilization

The Plympton WWTP aerobic digester capacity is projected to be exceeded in 2035 (SRT<45 days). The feasible solution is to expand the existing aerobic digesters or to install a new sludge stabilization process.

Both, aerobic digestion and anaerobic digestion were reviewed as potential technologies for implementation.

Anaerobic digestion is the most common solids stabilization process in municipal wastewater treatment plants. Biogas (primarily methane and carbon dioxide) is generated in the process, which offers significant energy recovery potential. Energy is required to heat the anaerobic digesters but there is the opportunity that this can be offset or provided completely by the biogas produced. Therefore, optimizing the digestion process to maximize the biogas production is key to achieving energy self-sufficiency at wastewater treatment plants.

The process of anaerobic digestion can be divided into three separate steps - hydrolysis, volatile acid fermentation, and methane formation. The rate of each step is influenced by the temperature and the amount of time the process is allowed to react. Hydrolysis of complex organics is the rate-limiting step of anaerobic digestion.

Most anaerobic digestion processes operate in the mesophilic range (i.e., between 35 and 39 °C), which is the most common configuration in North America, with sludge retention times in the 12 to 25-day range.

While anaerobic digestion is a commonly used process that recovers energy, the payback for the Town may not be worth the capital expenditure. As the Plympton WWTP is a smaller plant, biogas production will not be significant. To implement anaerobic digestion at the Plympton WWTP, a new digester would be required. The existing aerobic digesters could be decommissioned or repurposed as additional tankage for secondary treatment.

The following alternative solutions were developed to address the projected sludge stabilization capacity deficiencies:

- Do Nothing
- Alternative 1: Expand the existing aerobic digesters
- Alternative 2: Construct a new anaerobic digester

An expansion of the existing aerobic digesters would involve constructing additional digesters adjacent to the existing digesters, whereas a new anaerobic digester would be constructed separate from the existing system with all WAS piping re-routed and the existing aerobic digesters repurposed or decommissioned.

The evaluation for sludge stabilization at the Plympton WWTP is presented in Table 7-4. Detailed scoring and rationales are presented in Appendix E. Alternative 1 (expand the existing aerobic digesters) was selected as the preferred solution. The do-nothing alternative was eliminated, as it would not provide sufficient sludge stabilization capacity and could result in issues related to land application of the plant's sludge. Alternative 2 (construct a new anaerobic digester) was eliminated because it is much more complex and costly than expanding the existing digesters. The benefits of capturing biogas for energy generation would likely be insignificant given the size of the plant.

Table 7-4. Evaluation Results for Plympton WWTP Sludge Stabilization

Category	Do Nothing	Alternative 1	Alternative 2
Natural Environment	10.9	12.5	10.9
Social/Cultural Environment	19.4	23.6	23.6
Technical Environment	12.5	17.9	14.3
Economic	18.8	12.5	0.0
Total	**61.6**	**66.5**	**48.8**

7.4.4 Summary of Preferred Solution

Table 7-5 presents a summary of the preferred solution for the Plympton WWTP. Design details for the preferred solution are further developed in Section 7.7.

Table 7-5. Plympton WWTP Preferred Solution

Process	Needs	Preferred Solution
Headworks	Capacity-based (2036) Condition-based (Current)	Upgrade the existing headworks with a new automatic screen in the bypass channel, bypass channel automation and a new vortex grit removal system
Disinfection	Capacity-based (2036)	Investigate re-rating the capacity of the existing UV disinfection system.
Sludge Stabilization	Capacity-based (2035)	Expand the aerobic digesters

7.5 Wyoming WWTP

This section presents the alternative solutions that were developed to address the deficiencies identified at the Wyoming WWTP, the alternatives evaluation, and selection of the preferred solution. Where technologies are described that are not currently in use at the Plympton WWTP or Wyoming WWTP, a more detailed technology description is provided.

7.5.1 Screening

The Wyoming WWTP screening system capacity is projected to be exceeded in 2039. The peak daily flow is projected to be 4,100 cubic metres per day in 2039, while the current rated capacity of the screening system is 3,984 cubic metres per day. As the screening system was recently evaluated and replaced (2019), Jacobs recommends that this technology (screw conveyor screen) continue to be used in the future when expansion is required and therefore, was carried forward as an alternative solution for expanding the screening system.

An expansion could be completed by replacing the existing screen with a larger screen or by constructing an additional channel adjacent to the existing channel with a new screen. A hydraulic study would be required to determine if the existing channel could receive flows higher than the current rated capacity of the plant.

Table 7-6 presents the evaluation for the Wyoming WWTP screening system. Expanding the existing screening system was compared against the Do Nothing alternative, as required by the MEA Class EA process. Detailed scoring and rationales are presented in Appendix E. Alternative 1 (expanding the existing screening system) was selected as the preferred solution because it would provide the Wyoming WWTP with the required screening capacity during the planning period, whereas the do-nothing alternative would not.

Table 7-6. Evaluation Results for Wyoming WWTP Screening

Category	Do Nothing	Alternative 1
Natural Environment	7.8	12.5
Social/Cultural Environment	20.8	23.6
Technical Environment	12.5	19.6
Economic	25.0	18.8
Total	**66.1**	**74.5**

7.5.2 Grit Removal

The Wyoming WWTP grit removal system capacity is projected to have sufficient capacity within the planning period. However, based on discussions with plant operations staff, it is in poor condition and requires rehabilitation or replacement in the short-term.

The following alternative solutions were developed to address this deficiency:

- Do Nothing
- Alternative 1: Rehabilitation of the existing aerated grit removal system.
- Alternative 2: Installation of a vortex grit removal system.

A technology review was not completed for this section, as the Town has experience with both grit removal technologies that were identified.

It is projected that rehabilitating the existing system will provide the required grit removal capacity within the planning period, based on the MOE design guidelines (MOE 2008). Specific rehabilitation activities for the aerated grit removal system would be identified during the plant-wide condition assessment. Activities could include channel modifications. rehabilitation and modifications to the concrete structure and the aeration diffusers.

To install a new vortex grit removal system, the channel downstream of the screens would need to be re-routed and additional pumping may be required to achieve the head necessary for the system. The plant's hydraulic grade line would need to be reviewed to confirm these requirements if vortex grit removal is selected as the preferred alternative.

Table 7-7 presents the evaluation for the Wyoming WWTP grit removal system. Detailed scoring and rationales are presented in Appendix E. Alternative 1 (rehabilitation of the existing aerated grit removal system) was selected as the preferred solution. The do-nothing alternative was eliminated, as it would not provide the required grit removal capacity during the planning period. Installation of a new vortex grit removal system was eliminated because it is more costly and complex to integrate due to the additional pumping requirements that are likely required.

Table 7-7. Evaluation Results for Wyoming WWTP Grit Removal

Category	Do Nothing	Alternative 1	Alternative 2
Natural Environment	9.4	12.5	10.9
Social/Cultural Environment	19.4	23.6	23.6
Technical Environment	10.7	17.9	12.5
Economic	18.8	18.8	18.8
Total	**58.3**	**72.7**	**65.8**

7.5.3 Tertiary Filtration

Although tertiary filtration capacity is not projected to be exceeded until 2039 based on the MOE design guidelines (MOE 2008), operations staff at the Wyoming WWTP have indicated that the tertiary sand filter is in poor condition and represents a bottleneck at the plant. It requires an upgrade or replacement in the short-term. The feasible solution is to rehabilitate the existing sand filter or to retrofit the existing sand filter with an alternative technology.

In addition to sand filtration, the following technologies were identified as having the potential for implementation at the Wyoming WWTP.

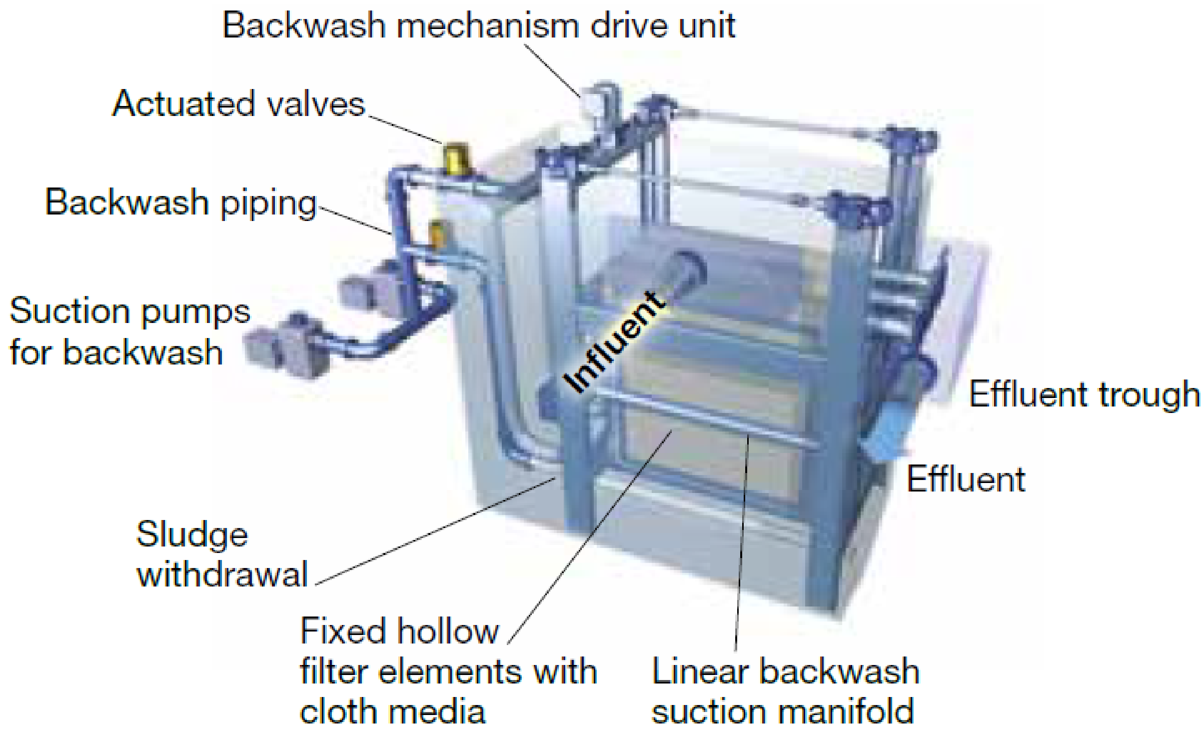
- Disk filtration
- Membrane filtration

7.5.3.1 Disk Filtration

Disk filtration is a tertiary treatment process in which wastewater flows through woven fabric media, or cloth, that is mounted on a series of disks or on a drum. A disk filter schematic is presented on Figure 7-1. Flow through the cloth media can either be inside-out or outside-in, and in common configurations, the disks or drums are completely or partially submerged. During a filtration sequence, the buildup of solids on the cloth media causes the headloss across the filter to increase, and consequently the level in the filter tank increases to a point that initiates backwashing.

Disk filters typically have a low capital cost when compared to other tertiary filtration technologies and require a smaller footprint than sand filters. This technology is considered feasible for retrofitting the existing tertiary filter at the Wyoming WWTP. Through discussions with vendors, the Aqua MiniDisk® has been identified as a technology that could be used to retrofit the existing filter, providing additional capacity within the existing footprint. To complete a retrofit, a temporary filtration unit would be required at the plant so that tertiary filtration continues to be provided, as the plant does not have standby filter capacity.

Figure 7-1. Disk Filter Schematic (Alfa Laval, 2020)



7.5.3.2 Membrane Filtration

Membrane filtration is a tertiary treatment process in which wastewater flows through a set of membranes in parallel, where particles with a size greater than the membrane pore size are captured and removed from the wastewater. Membranes require periodic flushing due to the buildup of captured solids.

There are two types of membrane filtration: ultrafiltration (UF) (0.01 – 0.02 um) and microfiltration (MF) (0.04 – 0.10 um). MF and UF are used to remove particulates including pathogens, organic matter, and nutrients. Particulates are filtered out based on their pore size. Typically, submersed tubular membranes are used, with effluent drawn under slight vacuum through the membrane.

Membrane filters typically have a high capital cost when compared to other tertiary filtration technologies. It is also noted that the membranes would provide a much higher quality effluent than is currently required in the plant's ECA.

This technology is considered feasible for implementation at the Wyoming WWTP, through a retrofit of the existing filter. As with a retrofit with disk filters, a temporary filtration unit would be required at the plant during construction.

7.5.3.3 Alternative Solutions

The following alternative solutions were identified to address the condition-related tertiary filtration deficiency:

- Do Nothing
- Alternative 1: Rehabilitate the existing sand filter
- Alternative 2: Retrofit the existing filter with disk filters
- Alternative 3: Retrofit the existing filter with membrane filters

It is assumed that the sand filter rehabilitation (including filter media replacement and replacement of process mechanical components will take place prior to the condition assessment recommended within this Master Plan.

Table 7-8 presents the evaluation for the Wyoming WWTP tertiary filtration system. Detailed scoring and rationales are presented in Appendix E. Alternative 2 (retrofit the existing sand filter with disk filters) was selected as the preferred solution. The do-nothing alternative would not address the condition-based needs identified and the tertiary filter would continue to act as a bottleneck. Disk filters were selected as the preferred technology because they are less expensive, provide more treatment capacity in the same footprint than the existing sand filter and are easier to maintain than sand filters and membrane filters, as one disk can be taken out of service at a time for maintenance.

Table 7-8. Evaluation Results for Wyoming WWTP Tertiary Filtration

Category	Do Nothing	Alternative 1	Alternative 2	Alternative 3
Natural Environment	9.4	12.5	12.5	10.9
Social/Cultural Environment	20.8	23.6	23.6	23.6
Technical Environment	12.5	17.9	21.4	12.5
Economic	25.0	18.8	18.8	0.0
Total	**67.7**	**72.7**	**76.3**	**47.0**

7.5.4 Disinfection

The disinfection capacity at the Wyoming WWTP is projected to be exceeded in 2039. The peak daily flow is projected to be 4,100 cubic metres per day in 2039, while the current rated capacity of the disinfection system is 3,984 cubic metres per day. The feasible solution is to expand the existing process or to install a new process, which would require a new facility.

As the UV disinfection system was recently upgraded at the Wyoming WWTP (2018) and the upgrades required within the planning period are minor and can be achieved with modifications to the existing system, alternative technologies (i.e., chlorine disinfection) were not evaluated. Implementing chlorination would require a new system, which would be significantly more costly than upgrading the existing system and is not considered a feasible solution. Minor upgrades to the existing UV disinfection to increase capacity are identified as a feasible solution for the capacity deficiency identified.

Upgrades to the existing system could occur through chlorine contact chamber modifications and installation of additional UV banks or by replacing the existing UV banks with banks that provide a higher dosage.

The evaluation for the Wyoming WWTP disinfection system is presented in Table 7-9. Upgrading the existing UV system was compared against the Do Nothing alternative. Detailed scoring and rationales are presented in Appendix E. Alternative 1 (upgrade the existing UV disinfection system) was selected as the preferred solution, as it would provide the Wyoming WWTP with the required disinfection capacity during the planning period, whereas the do-nothing alternative would not. Insufficient capacity could result in non-compliant effluent, which would raise significant regulatory issues.

Table 7-9. Evaluation Results for Wyoming WWTP Disinfection

Category	Do Nothing	Alternative 1
Natural Environment	7.8	10.9
Social/Cultural Environment	20.8	23.6
Technical Environment	12.5	19.6
Economic	18.8	18.8
Total	**56.7**	**72.9**

7.5.5 Sludge Storage

The Wyoming WWTP currently lacks standalone sludge storage, with stabilized sludge removed directly from the aerobic digesters. Implementing sludge storage onsite would significantly reduce the frequency that sludge removal is required at the plant.

The following alternative solutions were identified for sludge storage at the Wyoming WWTP:

- Do Nothing
- Alternative 1: Closed tank sludge storage
- Alternative 2: Open tank sludge storage with aeration
- Alternative 3: Lagoon storage

Through discussions with operations staff, the basis for sludge storage implementation was identified as providing one month's worth of sludge storage at the plant in 2039. One month of storage requires 300 m^3 of storage.

The evaluation for sludge storage at the Wyoming WWTP is presented in Table 7-10. Detailed scoring and rationales are presented in Appendix E. Alternative 1 (closed tank sludge storage) was selected as the preferred alternative. The do nothing alternative was eliminated, as it would increase truck traffic in Wyoming as plant flows increase and would reduce operational flexibility in the aerobic digesters. Lagoon storage was eliminated due to the limited footprint available on site; acquisition of additional farmland to the north would be required and the permitting requirements, terrestrial habitats, etc. are uncertain at this time. Closed tank storage was selected over open tank storage because it has a lower potential to produce odour and does not require aeration, therefore having lower energy requirements.

Table 7-10. Evaluation Results for Wyoming WWTP Sludge Storage

Category	Do Nothing	Alternative 1	Alternative 2	Alternative 3
Natural Environment	12.5	12.5	10.9	10.8
Social/Cultural Environment	16.7	25.0	23.4	20.8
Technical Environment	21.4	21.4	19.6	17.9
Economic	18.8	18.8	18.8	18.8
Total	**69.3**	**77.7**	**72.8**	**68.4**

7.5.6 Summary of Preferred Solution

Table 7-11 presents a summary of the preferred solution for the Wyoming WWTP. Design details for the preferred solution are further developed in Section 7.7.

Table 7-11. Wyoming WWTP Preferred Solution

Process	Needs	Preferred Solution
Screening	Capacity-based (2039)	Expand the screening system by replacing the existing screen with a larger screen or constructing a new channel adjacent to the existing channel with a new screen
Grit Removal	Capacity-based (2039) Condition-based (current)	Rehabilitate the existing aerated grit removal system
Tertiary Filtration	Condition-based (current)	Retrofit the existing sand filter with disk filters
Disinfection	Capacity-based (2039)	Upgrade the UV disinfection system
Sludge Storage	Operational flexibility	Implement closed tank sludge storage

7.6 Plympton Pumping Stations

As discussed in Section 5.2, the following pumping stations are projected to have capacity-based needs within the planning period:

- PS-02
- PS-03
- PS-04
- PS-06
- Influent PS

Minor condition-based upgrades have also been identified for PS-03, PS-06, PS-08 and PS-10. At this stage, the upgrades discussed with operations staff (brackets, stainless rails, chains, grips replacements) will be carried forward as part of the preferred solution until a detailed condition assessment is completed at each pumping station.

The first step in identifying alternative solutions to address capacity-based needs for the pumping stations was to determine which pumping stations could be upgraded by installing new, larger pumps within the existing wet wells to achieve the required future pumping capacity needs (identified in Section 5. Through a review of wet well sizes and proposed pump sizes, PS-06 can be upgraded by installing two 60 litre per second pumps in the existing wet well.

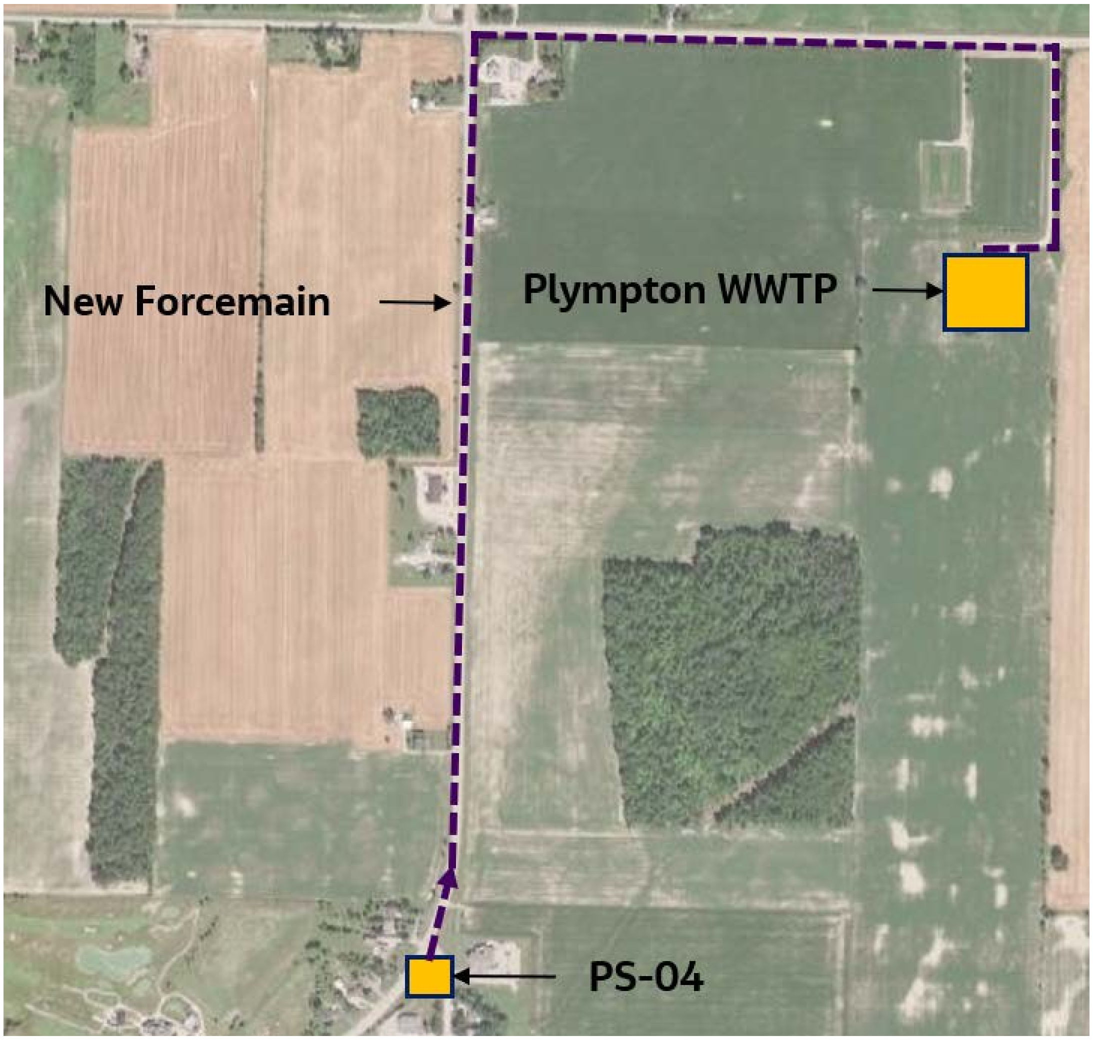
PS-02, PS-03, PS-04 and the Influent PS require more significant upgrades to address future capacity constraints. Upgrades to the Influent PS were described in Section 7.4.1 as part of the Plympton WWTP Headworks upgrades. Alternatives developed for pumping stations upstream of the Influent PS will also consider strategies to provide flow equalization. Flow equalization can mitigate flooding issues at the Plympton WWTP during wet weather events.

Review of the PS-02 wet well size (volume) determined that the future capacity requirements could not be addressed by installing new pumps within the existing wet well. PS-02 is a located on a small site with very limited space available for expansion. Any upgrades would require an expansion of the existing wet well, with temporary pumping required during construction. These upgrades would be highly complex and costly. PS-02 is also located near a regulated boundary governed by the Conservation Authority and expansion would have additional permitting requirements for implementation and during construction.

PS-02 is currently one of the “hub” pumping stations in Plympton, receiving flows from PS-03, PS-04, PS-10 and the Errol Woods PS prior to conveying flows directly to the Plympton WWTP. Rather than increasing the capacity of PS-02, it was identified that flows could be diverted away from PS-02 to another pumping station. PS-04 was identified as a prime candidate to receive flows that were redirected from PS-02, as there is space available at the site of PS-04 that could be used to construct a new pumping with a larger pumping capacity, as presented on Figure 7-2. With this alternative there is an opportunity to construct a new forcemain that conveys flow from PS-04 directly to the Plympton WWTP via Lakeshore Road to the north of PS-04 and Aberarder Line, as presented on Figure 7-3. This new pumping station would also address capacity constraints at the existing PS-04.

Figure 7-2. Available Footprint for New PS-04

Figure 7-3. Forcemain Alignment from PS-04 to Plympton WWTP



This concept was used as the basis for alternative solution development for PS-02 and PS-04. However, prior to investigating alternatives related to PS-02 and PS-04, it was necessary to develop alternative solutions for PS-03, as PS-03 is located upstream of PS-02. Therefore, the preferred solution for PS-03 could potentially impact the details of the alternative solutions developed for PS-02 and PS-04. Due to the interrelated potential impacts of identifying preferred pump station alternatives, the Plympton pumping station alternatives were developed in and evaluated in a stepwise process.

As discussed in Section 5, the capacity of PS-02 is also impacted by the common discharge point that it shares with PS-05 currently. Alternative solutions were developed to address this issue, centered around the concept of de-coupling PS-02 and PS-05. Detail development for these alternatives was impacted by the preferred solution for PS-02, which had to be determined prior to alternative development. The stepwise alternative solution development and evaluation for the Plympton pumping stations was as follows:

1) Develop and evaluate alternative solutions to address future capacity constraints at **PS-03**
2) Develop and evaluate alternative solutions to address future capacity constraints at **PS-02 and PS-04**
3) Develop and evaluate alternative solutions to de-couple **PS-02 and PS-05**

To address instantaneous capacity constraints at the Influent PS in the future (headworks upgrades will provide capacity for peak day flows but likely not for peak instantaneous flows due to I/I), it was identified that installing new influent pumps to receive peak instantaneous flows is not a feasible solution, as the Influent PS is located downstream of the screens and the screens do not have sufficient hydraulic capacity to receive the combined projected peak instantaneous flows from PS-02 and PS-05. This would result in flooding at the plant, which as discussed in Section 6.1, has been reported to be an issue in the past by operations staff. Instead, the feasible solution is to implement upstream equalization, which will limit flows to the Plympton WWTP (and therefore, Influent PS) to its peak rated capacity of 10,500 cubic metres per day (122 litres per second). To achieve this, new pumps are still required in the Influent PS, which are included in the Headworks upgrades described in Section 7.4.1. Equalization will be considered as part of the PS-02 and PS-05 alternative solutions.

The following sections describe the stepwise alternative solution development and evaluation process for the Plympton pumping station.

7.6.1 PS-03

PS-03 currently has two submersible pumps, with provisions for a third pump to be added for redundancy. The design intent is for two pumps to operate when necessary and a third pump available in the event of a pump failure. The future projected flow to PS-03 based on known planned developments is 48.6 litres per second, with most of the additional flow coming from one planned development. The drawdown tests completed in December 2021 determined the peak capacity of PS-03 is 37.4 litres per second (with both pumps running). Therefore, the capacity constraints cannot be addressed by installing a third pump. The current three-pump configuration provides limited space within the wet well to install three larger pumps.

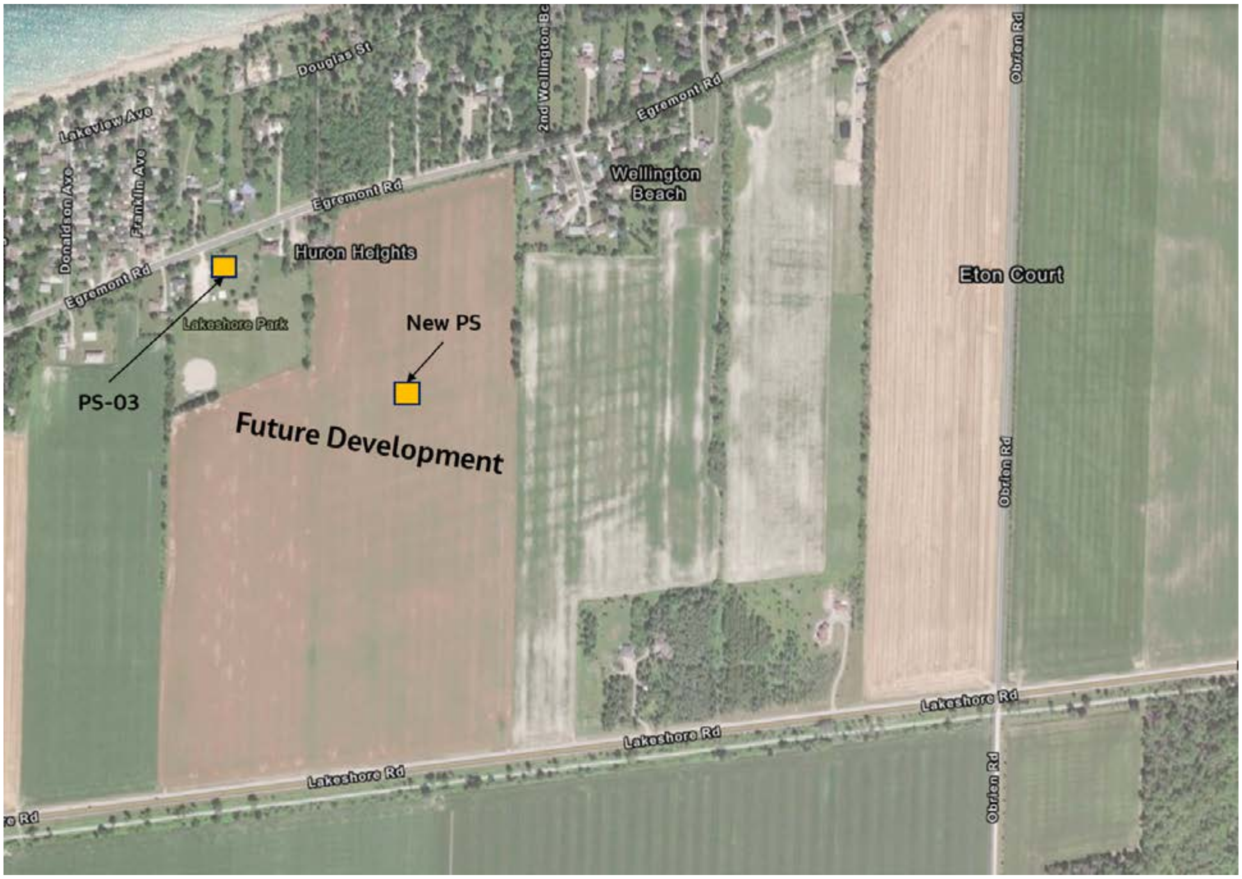
Three alternative solutions were developed to address future capacity constraints at PS-03, as described in the following sections. Timing for these upgrades depend on the construction timing of the benefitting development.

- Alternative 1: Construct a new pumping station to service planned developments in the area
- Alternative 2: Construct an equalization tank to limit future peak flows
- Alternative 3: Upgrade PS-03

7.6.1.1 PS-03 Alternative 1

Alternative 1 that was identified for PS-03 is to construct a new pumping station to service planned developments in the area, diverting flows from planned developments away from PS-03. Alternative 1 is presented on Figure 7-4.

Figure 7-4. PS-03 Alternative 1



This pumping station would be constructed by the benefitting developer and assumed by the Town for operation. The new pumping station would have to tie into the existing sanitary system at another point, which is currently unknown. A new forcemain along Egremont Road (to the north) leading to PS-02 or PS-04 would be required, or a new forcemain along Lakeshore Road (to the south) would be required.

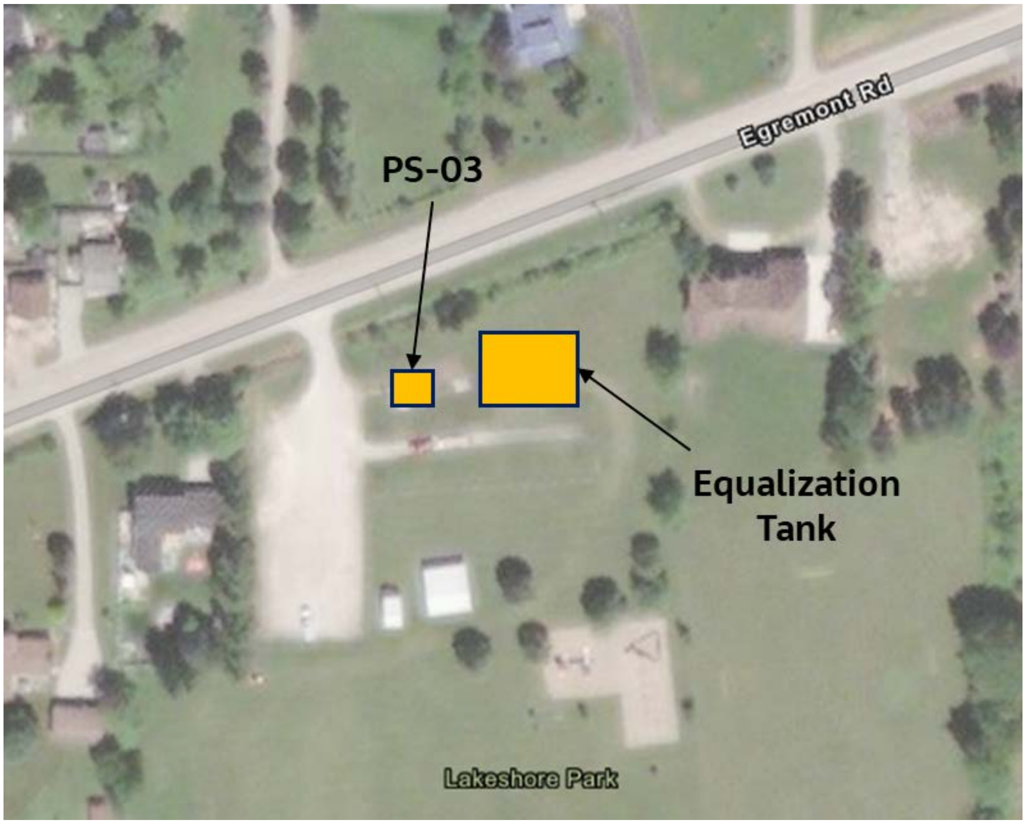
This alternative allows PS-03 to operate in the future with its current pumping configuration, with no capacity-based upgrades required. Upgrades would be limited to those that are condition-based.

However, the new PS and accompanying forcemain/sanitary sewer would represent new assets for the Town to operate and maintain, increasing the associated costs. Either of the forcemain alignments previously mentioned (along Egremont Road or Lakeshore Road) would be very disruptive to residents during construction. Due to the length of the additional forcemain or sewer required and the small amount of additional flow (~16 litres per second), this is not a cost-effective option.

7.6.1.2 PS-03 Alternative 2

Alternative 2 that was identified for PS-03 is to construct an equalization tank to limit future peak flows to the capacity of PS-03 (37.4 litres per second), allowing PS-03 to service planned developments in the area. Alternative 2 is presented on Figure 7-5.

Figure 7-5. PS-03 Alternative 2



The equalization tank would be sized to provide 4-hours of storage excess peak flows. At flows beyond 37.4 litres per second (the existing capacity of PS-03), the strategy would be for excess wastewater to flow by gravity into the equalization tank through a new bypass pipe constructed in the PS-03 wet well. Once flows to PS-03 are reduced, the equalization tank would pump wastewater back into the PS-03 wet well. This would allow for PS-03 to continue to operate under its current configuration and would prevent flooding under peak flows.

Record drawings of PS-03 were reviewed to investigate the feasibility of implementing an equalization tank. As Plympton has a very flat topography, gravity sewers are sometimes required to extend deep into the ground to facilitate gravity flow. This is the case at PS-03, with the sewer invert located at an elevation of 177.2 metres above sea level (masl), which is approximately 7 metres below the ground level (184 masl). This means that for the equalization tank to receive flow by gravity, it would have to be constructed very deep (>7 m), with a maximum operating level below the sanitary invert to facilitate flow by gravity into the tank. Due to the deep excavation required, this alternative would be prohibitively expensive. There is also limited geotechnical information available at this time for the site of PS-03.

7.6.1.3 PS-03 Alternative 3

Alternative 3 for PS-03 is to reconfigure the discharge piping and valving within the existing wet well to receive flow from two pumps instead of three and install two large pumps capable of pumping the future projected flow. It is projected that pumps with a rated capacity of 50 litres per second would be sufficient. All discharge piping would be replaced within the wet well, with two new discharge lines installed. The piping and valving within the bypass chamber would also be replaced. During these upgrades, there is an opportunity for new valving to be installed within the wet well rather than in the bypass chamber as there is currently.

This alternative would allow PS-03 to pump future projected flows with moderate upgrades. There is also an opportunity for the benefitting developer to provide funding for the upgrades, as these upgrades are only required for PS-03 to be able to service that new development

7.6.1.4 Evaluation

The evaluation for PS-03 alternatives is presented in Table 7-12. Detailed scoring and rationales are presented in Appendix E. Alternative 3 (reconfigure the discharge piping, valving, and pumps within the existing wet well) was selected as the preferred solution because it is the most cost-effective solution and addresses the issue by making use of existing infrastructure.

Table 7-12. Evaluation Results for PS-03 Alternatives

Category	Do Nothing	Alternative 1	Alternative 2	Alternative 3
Natural Environment	7.8	9.4	10.9	12.5
Social/Cultural Environment	12.5	15.3	18.1	20.8
Technical Environment	8.9	8.9	14.3	21.4
Economic	18.8	0.0	6.3	12.5
Total	**48.0**	**33.6**	**49.5**	**67.3**

7.6.2 PS-02 and PS-04

Following selection of Alternative 3 as the preferred solution for PS-03 and confirming that the projected future flow from PS-03 is 48.6 litres per second, the next step in the evaluation process was to identify alternative solutions to address capacity constraints at PS-02 and PS-04. As discussed previously, alternative solutions for PS-02 and PS-04 were developed based on the concept of constructing a new PS-04 adjacent to the existing PS-04 and redirecting flows upstream of PS-02 to PS-04.

Three alternative solutions were developed to address future capacity constraints at PS-02 and PS-04, as described in the following sections. Upgrades are needed in the near-term, as both PS-02 and PS-04 currently have capacity deficiencies.

Table 7-13 summarizes the future projected flows to PS-02, PS-04 and all pumping stations upstream of PS-02 (PS-03, PS-10 and the Errol Woods PS), which will be used to analyze the alternatives.

Table 7-13. Summary of Future Flows to PS-02 and Upstream Pumping Stations

Pump Station	Peak Capacity, L/s	Projected Future Flow, L/s	Capacity Deficiency, L/s
PS-02	62.6	175.5	113.0
PS-03	37.4	48.6	11.2 [a]
PS-04	15.3	26.7	11.4
PS-10	19.9	7.1	N/A
Errol Woods PS	17	13.4	N/A

Notes:

[a] To be addressed through PS-03 upgrades.
L/s = litre(s) per second

7.6.2.1 PS-02 and PS-04 Alternative 1

Alternative 1 for PS-02 and PS-04 is to redirect flows from PS-04 away from PS-02 by constructing a forcemain north of PS-04, conveying flows directly to the Plympton WWTP. Alternative 1 is presented on Figure 7-6.

Figure 7-6. PS-02 and PS-04 Alternative 1

Table 7-14 presents the adjusted future flows to PS-02 and PS-04 based on Alternative 1 being implemented.

Table 7-14. Future Flows with Alternative 1 Implemented

Pump Station	Peak Capacity, L/s	Projected Future Flow, L/s	Capacity Deficiency, L/s
PS-02	62.6	148.8	86.3
PS-04	15.3	26.7	11.4

Notes:

L/s = litre(s) per second

In this alternative, the capacity deficiency at PS-04 could be addressed by installing new pumps within the existing wet well, as the future flows to PS-04 would still be under its intended design capacity. However, there would still be a significant capacity deficiency at PS-02 that could not be addressed by installing new pumps; instead, significant upgrades to the entire pumping station would be required, which would be highly complex and costly.

7.6.2.2 PS-02 and PS-04 Alternative 2

Alternative 2 for PS-02 and PS-04 is to redirect flows from PS-04 and the Errol Woods PS away from PS-02, with flows directed to PS-04. A forcemain would be constructed to the north of PS-04, conveying flow directly to the Plympton WWTP. Flows from the Errol Woods PS would be conveyed to PS-04 via a new forcemain that would be constructed along Egremont Road and Lakeshore Road to PS-04. Alternative 2 is presented on Figure 7-7.

Figure 7-7. PS-02 and PS-04 Alternative 2

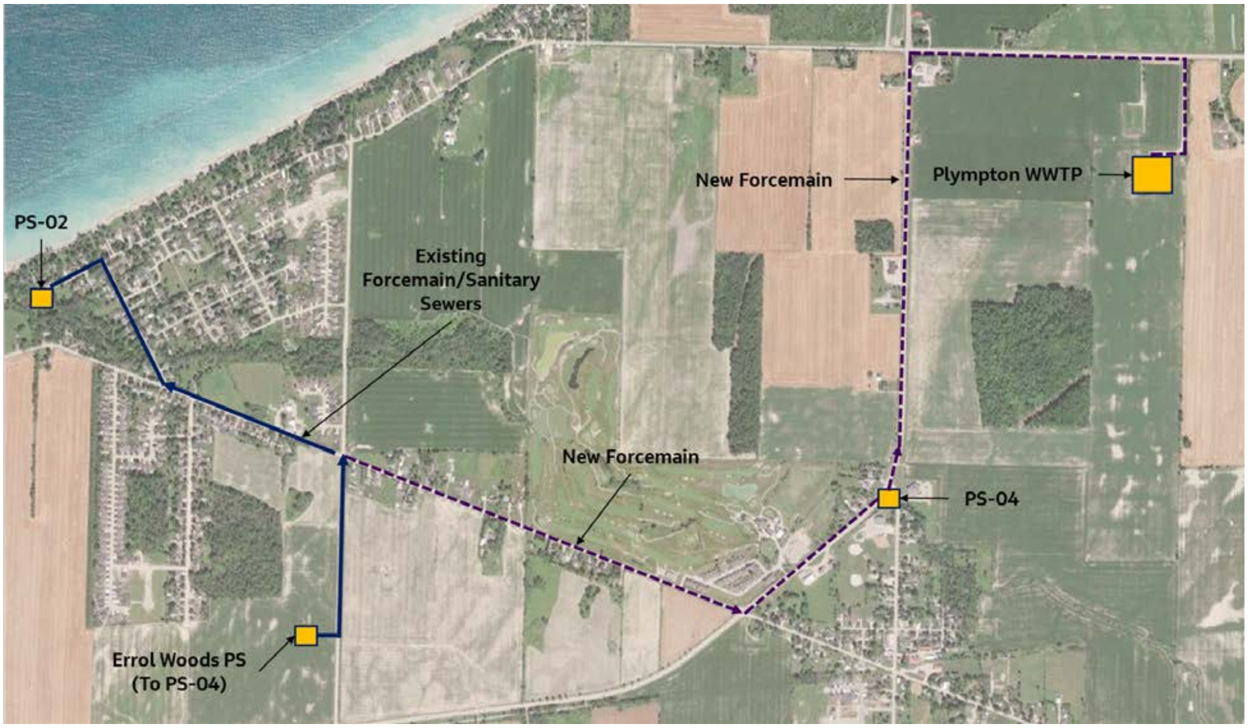


Table 7-15 presents the adjusted future flows to PS-02 and PS-04 based on Alternative 2 being implemented.

Table 7-15. Future Flows with Alternative 2 Implemented

Pump Station	Peak Capacity, L/s	Projected Future Flow, L/s	Capacity Deficiency, L/s
PS-02	62.6	135.4	72.9
PS-04	15.3	40.1	24.8

Notes:

L/s = litre(s) per second

In this alternative, the future flow to PS-04 would exceed its intended design capacity and a new pumping station would be constructed to convey these flows, rated at 41 litres per second. However, as with Alternative 1, there would still be a significant capacity deficiency at PS-02 that could not be addressed by installing new pumps. Complex and costly upgrades would be required.

7.6.2.3 PS-02 and PS-04 Alternative 3

Alternative 3 for PS-02 and PS-04 is to redirect flows from PS-03, PS-04, PS-10, the Errol Woods PS and the Egremont Estates PS away from PS-02, with flows directed to PS-04. As with the previous alternatives, a forcemain would be constructed to the north of PS-04, conveying flow directly to the Plympton WWTP. Flows from PS-03, PS-10 and the Errol Woods PS would be conveyed to PS-04 via a new forcemain that would be constructed along Egremont Road and Lakeshore Road to PS-04. Alternative 3 is presented on Figure 7-8.

Figure 7-8. PS-02 and PS-04 Alternative 3

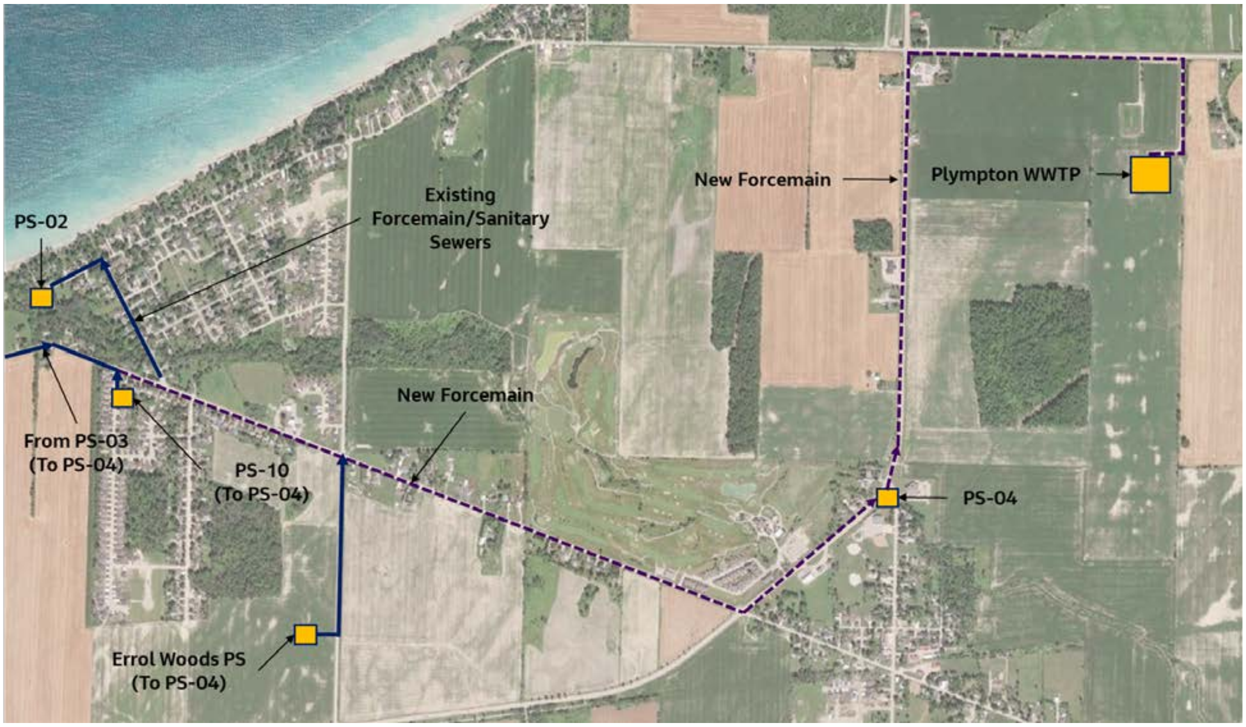


Table 7-16 presents the adjusted future flows to PS-02 and PS-04 based on Alternative 3 being implemented.

Table 7-16. Future Flows with Alternative 3 Implemented

Pump Station	Peak Capacity, L/s	Projected Future Flow, L/s	Capacity Deficiency, L/s
PS-02	62.6	79.7	17.2
PS-04	15.3	95.8	80.5

Notes:

L/s = litre(s) per second

In this alternative, a new PS-04 rated at 96 litres per second would be required. This alternative would also reduce the future projected flow to PS-02 such that it is below the intended design capacity. The remaining capacity deficiency at PS-02 could be addressed by installing new, larger pumps within the existing wet well, eliminating the need for complex and costly upgrades.

7.6.2.4 Evaluation

The evaluation for the integrated PS-02 and PS-04 alternatives is presented in Table 7-17. Detailed scoring and rationales are presented in Appendix E. Alternative 3 (redirect flows from PS-03, PS-04, PS-10, the Errol Woods PS and the Egremont Estates PS away from PS-02). The do-nothing alternative was eliminated because it would not address capacity constraints at PS-02 and PS-04. Alternatives 1 and 2 were eliminated because they have similar costs to Alternative 3 but would not sufficiently reduce the flow to PS-02 such that capacity constraints could be addressed via upgrades within the existing wet well.

Table 7-17. Evaluation Results for Integrated PS-02 and PS-04 Alternatives

Category	Do Nothing	Alternative 1	Alternative 2	Alternative 3
Natural Environment	7.8	6.3	3.6	9.4
Social/Cultural Environment	12.5	15.3	15.3	15.3
Technical Environment	7.1	8.9	8.9	16.1
Economic	18.8	6.3	6.3	6.3
Total	**46.2**	**36.7**	**36.7**	**47.0**

7.6.3 PS-02 and PS-05

Following selection of the preferred solution for PS-02 and PS-04, the next step in the process was to develop alternative solutions for PS-02 and PS-05 that would eliminate the issue of these pumping stations discharging into the same forcemain and potentially working against each other, reducing the total pumping capacity. If not addressed, this could provide uncertainty for the future pumping requirements at PS-02, as the required head would change based on the operation of PS-05.

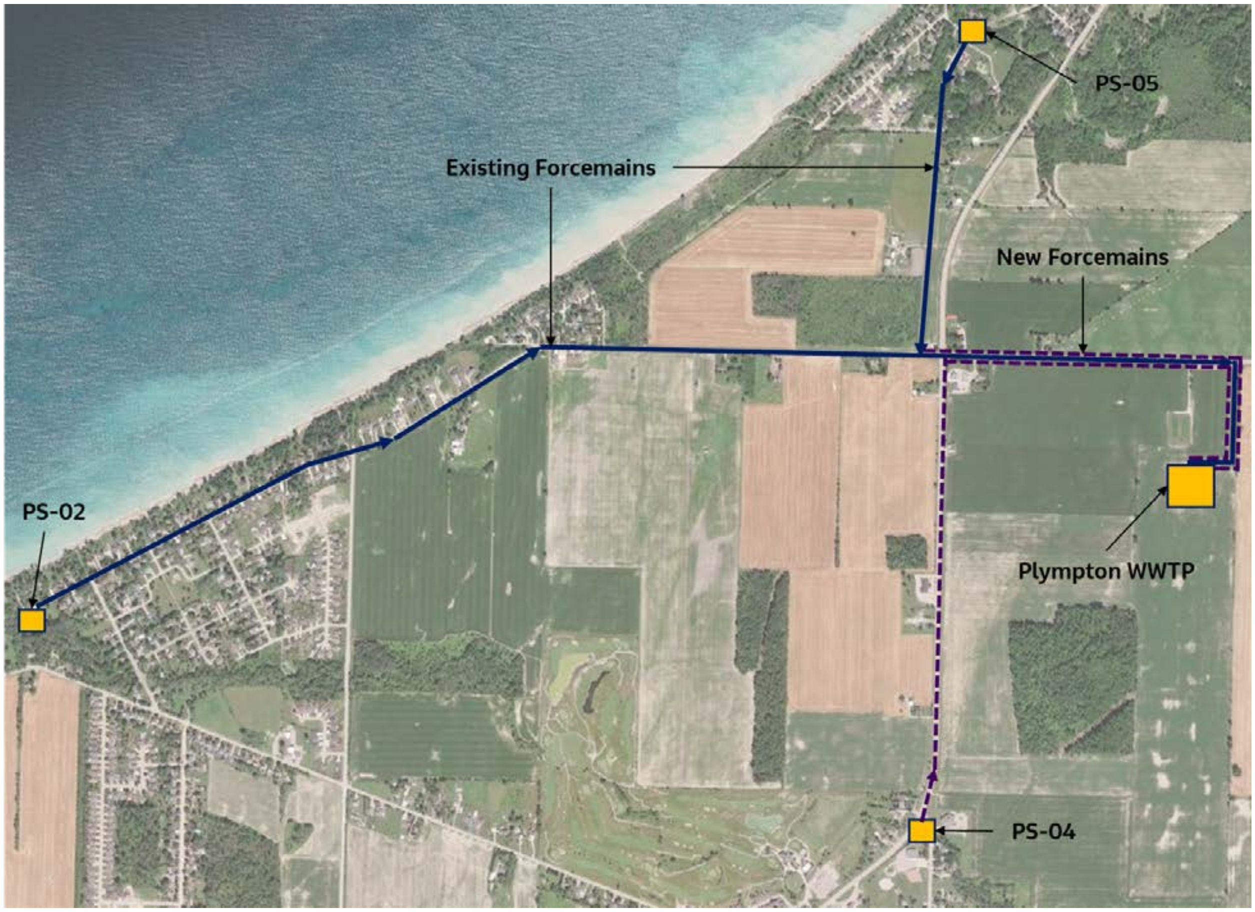
As well, the preferred solution for PS-04 introduces the requirement for an additional forcemain leading to the Plympton WWTP based on the current conveyance configuration. The feasibility of the forcemain portion along Aberarder Line leading to the Plympton WWTP will also be addressed during the development of these alternatives.

Opportunities to implement flow equalization were also investigated. Three alternative solutions were developed for PS-02 and PS-05, which are described in the following sections. Upgrades are required in the near term due to capacity constraints at PS-02 and flooding issues at the Plympton WWTP.

7.6.3.1 PS-02 and PS-05 Alternative 1

Alternative 1 for PS-02 and PS-05 is to twin the combined section of forcemain on Aberarder Line between Bonnie Doon Road and the Plympton WWTP, decoupling PS-02 and PS-05. In this scenario, the forcemain from PS-04 would lead directly to the Plympton WWTP, meaning that there would be three forcemains in the right-of-way along Aberarder Line. Alternative 1 is presented on Figure 7-9.

Figure 7-9. PS-02 and PS-05 Alternative 1



The length of open-cut required along Aberarder Line (approximately 1 kilometre) for this alternative means that it would be costly and disruptive to the local community. It is also noted that there are many utilities currently in this right of way including a large-diameter watermain from the Lambton Area Water Supply System, meaning that installing two additional forcemains may not be feasible. Should this alternative be selected as the preferred solution, available space within the right-of-way would have to be investigated further. Modifications to the Plympton WWTP inlet channel would also be required, as it is currently configured to receive flow from one forcemain.

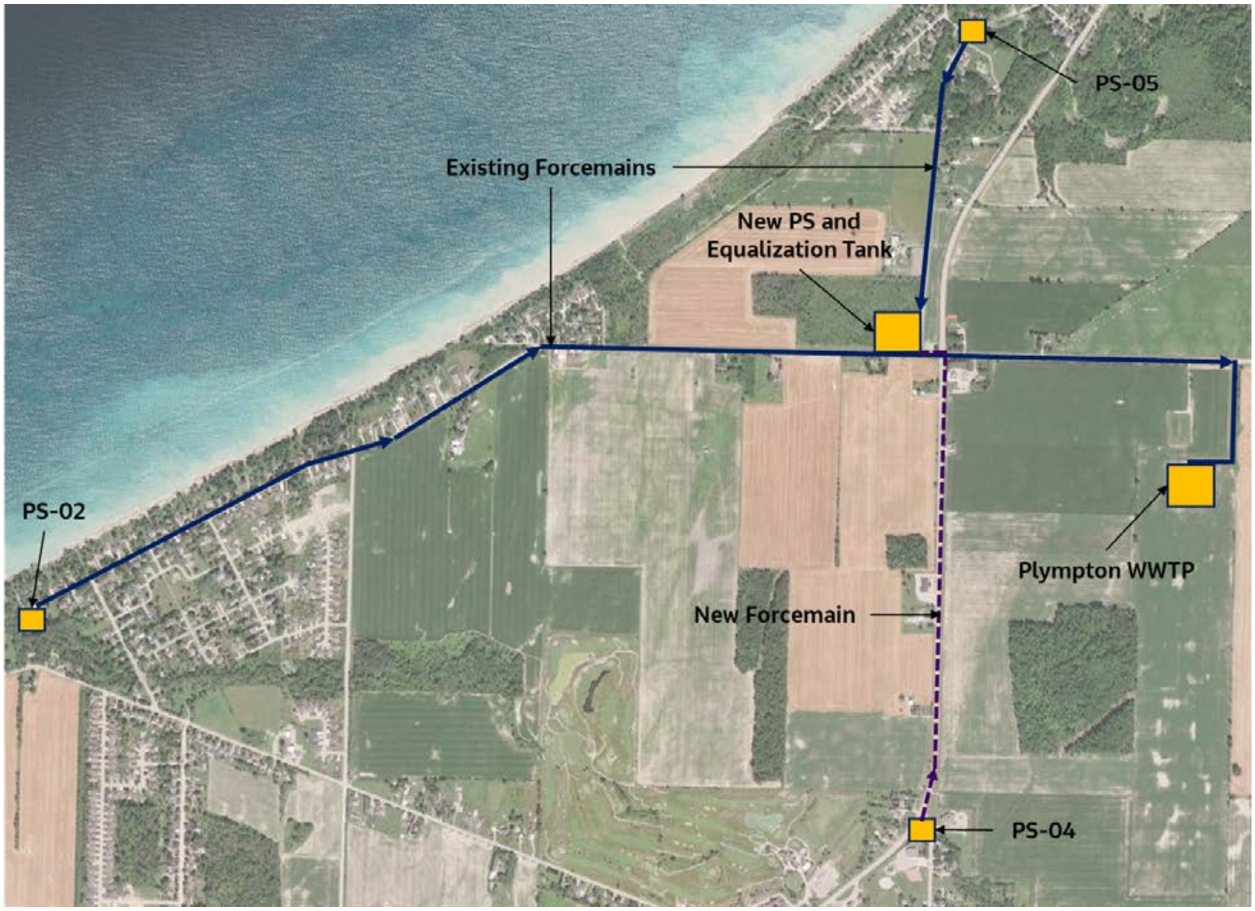
This alternative would not address the flooding issues that the Plympton WWTP currently experiences during wet weather, as equalization is not provided.

7.6.3.2 PS-02 and PS-05 Alternative 2

Alternative 2 for PS-02 and PS-05 is to construct a new pumping station (the Regional PS) and equalization tank at the intersection of Queen Street and Bonnie Doon Road. The new PS would receive flow from PS-02, PS-04 and PS-05, decoupling PS-02 and PS-05 and shortening the length of forcemain required for PS-04. The Regional PS would be designed with the same rated capacity at the Influent PS and the equalization tank would receive any flows that exceed the rated capacity. This would resolve the flooding issues that are currently experienced at the Plympton WWTP during wet weather events.

The Regional PS would discharge into the existing forcemain along Aberarder Line (currently receiving flows from PS-02 and PS-05). From a preliminary review, the northwest corner of the intersection appears to be an appropriate location for the new infrastructure. This land is currently intended for use as part of the Southside Lands development, with negotiations required for the Town to construct a new pumping station and equalization tank on the land. Alternative 2 is presented on Figure 7-10.

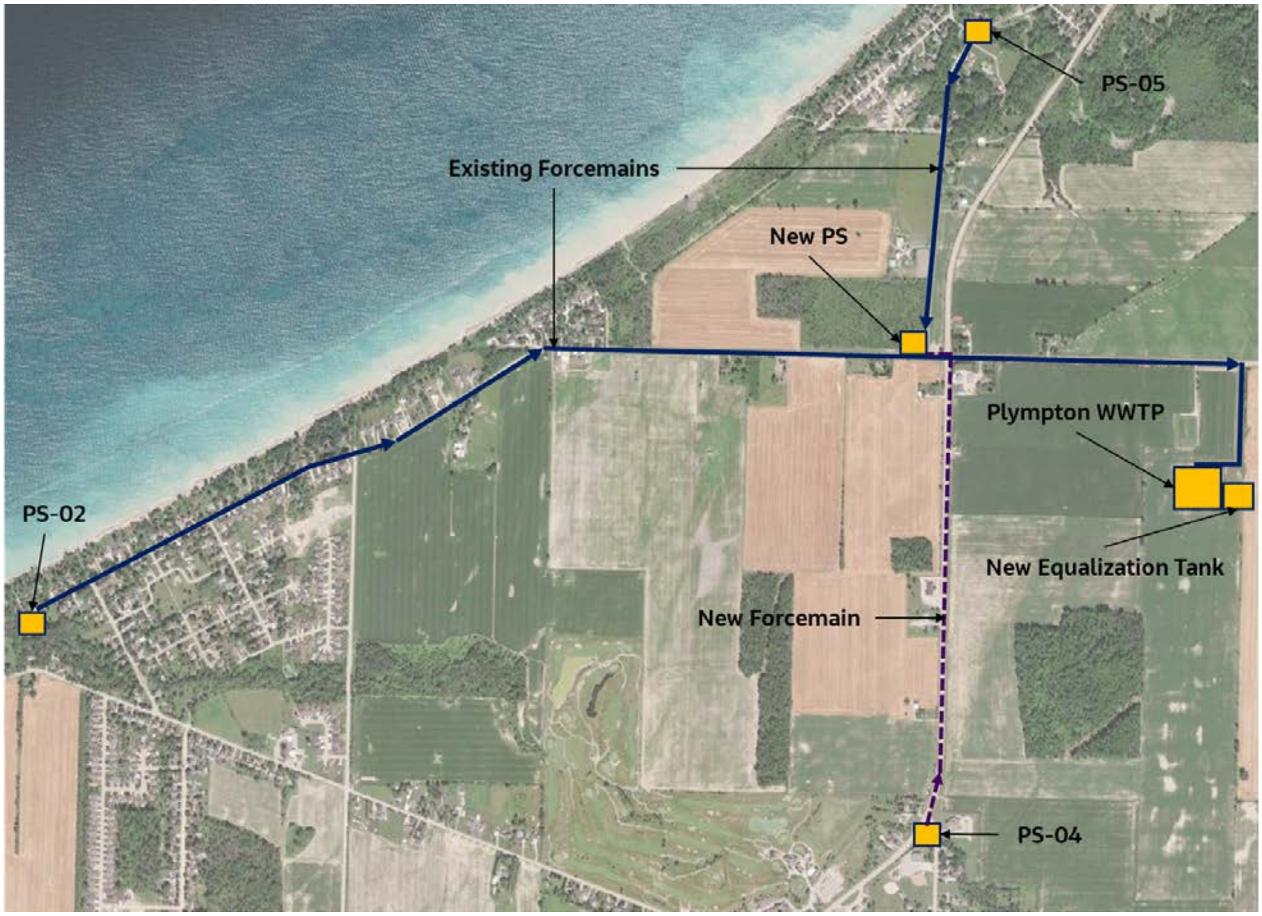
Figure 7-10. PS-02 and PS-05 Alternative 2



7.6.3.3 PS-02 and PS-05 Alternative 3

Alternative 3 for PS-02 and PS-05 is to construct a new pumping station (Regional PS) at the intersection of Queen Street and Bonnie Doon Road and to construct a new equalization tank at the Plympton WWTP. This alternative is like Alternative 2, except that it provides equalization downstream of the new PS rather than upstream. Therefore, the Regional PS must be designed with a rated capacity to pump the peak instantaneous flows projected from PS-02, PS-04 and PS-05, with any flows exceeding the rated capacity of the Influent PS diverted to the equalization tank upstream of the Plympton WWTP. The Regional PS would also discharge into the existing forcemain along Aberarder Line. This would resolve the flooding issues that are currently experienced at the Plympton WWTP during wet weather events. Alternative 3 is presented on Figure 7-11.

Figure 7-11. PS-02 and PS-05 Alternative 3



Compared to Alternative 2, the main benefit of Alternative 3 is that there is a large amount of land available at the Plympton WWTP site, which is owned by the Town. However, this alternative requires a much larger pumping station than Alternative 2 and therefore, would be more costly.

7.6.3.4 Evaluation

The evaluation for integrated PS-02 and PS-05 alternatives is presented in Table 7-18. Detailed scoring and rationales are presented in Appendix E. Alternative 2 (construct a new pumping station and equalization tank at the intersection of Queen Street and Bonnie Doon Road) was selected as the preferred solution. The do-nothing alternative was eliminated because it does not decouple PS-02 and PS-05. Alternative 1 was eliminated because it does not address the issue of flooding at the Plympton WWTP and is very costly and disruptive to the local community. Alternative 3 is like Alternative 2, except more costly because a larger pumping station is required and therefore, was eliminated.

Table 7-18. Evaluation Results for Integrated PS-02 and PS-05 Alternatives

Category	Do Nothing	Alternative 1	Alternative 2	Alternative 3
Natural Environment	7.8	7.8	9.4	9.4
Social/Cultural Environment	12.5	11.1	16.7	16.7
Technical Environment	7.1	8.9	16.1	16.1
Economic	18.8	6.3	12.5	6.3
Total	**46.2**	**34.1**	**54.6**	**48.4**

7.6.4 Summary of Preferred Solutions

Table 7-19 presents a summary of the preferred solutions for Plympton pumping stations, in addition to the minor upgrades that were previously identified (brackets, rails, chains and grips replacements).

7.7 Wyoming Influent PS

As presented in Section 5.4, the Wyoming Influent PS is projected to have a capacity deficiency under current conditions based on typical design criteria. Through a review of the wet well size and proposed pump sizes, the Influent PS can be upgraded by installing new pumps with a capacity of 61 litres per second with any two pumps running. This is carried forward as the preferred solution for the Wyoming Influent PS.

Table 7-19. Summary of Preferred Solutions for Plympton Pumping Stations

Pump Station	Timing	Preferred Solution
PS-02 and PS-04 (integrated)	Near-term (immediate)	▪ Divert flows from PS-03, PS-04, PS-10, the Errol Woods PS and Egremont Estates PS to PS-04 via a new forcemain ▪ Construct a new PS-04 rated at 100 L/s adjacent to the existing PS-04 ▪ Construct a new forcemain from PS-04 to the new Regional PS at the intersection of Queen Street and Bonnie Doon Road ▪ Decommission the existing PS-04 ▪ Replace the pumps in PS-02 with pumps that have a rated capacity of 80 L/s when two pumps are running
PS-02 and PS-05 (integrated)	Near-term (immediate)	▪ Construct a new Regional PS at the northwest intersection of Queen Street and Bonnie Doon Road, with a rated capacity of 140 L/s, which will receive flows from PS-02, PS-04 and PS-05 ▪ Construct a new equalization tank at the intersection of Queen Street and Bonnie Doon Road
PS-03	Dependent on construction of nearby developments	▪ Remove the existing pumps, reconfigure the discharge piping and valving and install two new pumps, each with a rated capacity of 50 L/s
PS-06	Near-term (immediate)	▪ Remove the existing pumps and install two new pumps, each with a rated capacity of 60 L/s

8. Preferred Solution Detail Development and Costing

This section presents the design details and capital cost estimates that were developed for the preferred solutions identified in Section 7.

8.1 Capital Cost Estimation Basis

Capital cost estimates were developed for each preferred solution were developed based on Jacobs' previous experience on similar projects and vendor quotations, as well as by using Jacobs' Conceptual and Parametric Engineering System (CPES) tool. CPES uses a database of project data and quantity take-offs to develop conceptual estimates. Unit process modules with in CPES are based on actual construction costs from Jacobs' projects and supplemented by Means and Richardson's cost data. The capital costs developed for this Master Plan are approximately +50 percent/-30 percent.

Additional mark ups for capital cost estimates include the following:

- Contractor profit and overhead – 20%
- Engineering – 20%
- Mobilization/demobilization, insurance and bonds – 5%
- Estimating contingency – 30%
- Inflation resulting from the COVID-19 pandemic – 15%

The capital cost estimates developed in this section can be used by the Town for budget planning purposes.

8.2 Plympton WWTP

8.2.1 Headworks

The peak flow to the Plympton WWTP headworks in 2039 is projected to be 11,850 cubic metres per day, or 137 litres per second. The design details for the recommended upgrades to the Plympton WWTP headworks include the following:

- Installation of new influent pumps capable of pumping a combined 11,850 cubic metres per day, or 137 litres per second, equipped with VFDs
- A new automatic screen in the bypass channel rated at 11,850 cubic metres per day, or 137 litres per second, providing firm screening capacity
- Installation of a new vortex grit removal process with a peak capacity of 11,850 cubic metres per day, or 137 litres per second. There is the option to decouple the influent pumps and install two parallel vortex grit removal processes or to continue with the current configuration (both influent pumps feed one vortex grit removal system)
- Replacement of the manual bypass valve with an automatic bypass valve

The proposed upgrades are presented on Figure 8-1 and Figure 8-2.

Figure 8-1. Plympton WWTP Screening and Grit Removal Upgrades

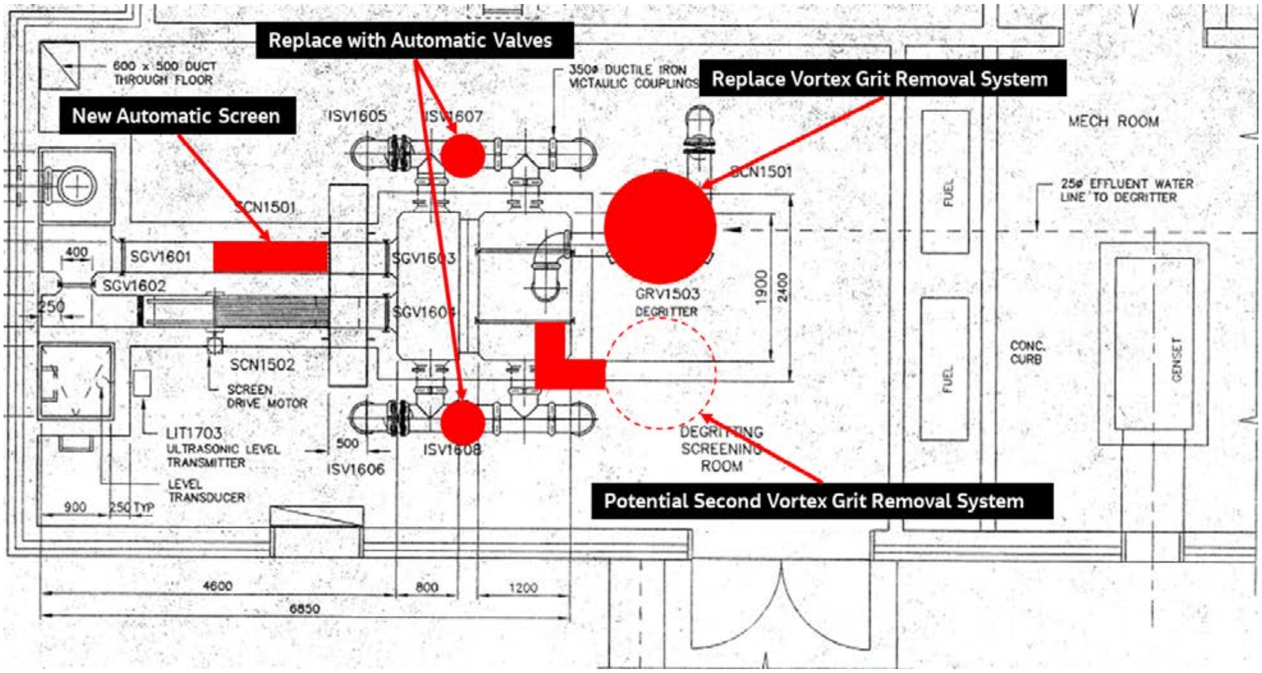


Figure 8-2. Plympton WWTP Influent PS Upgrades

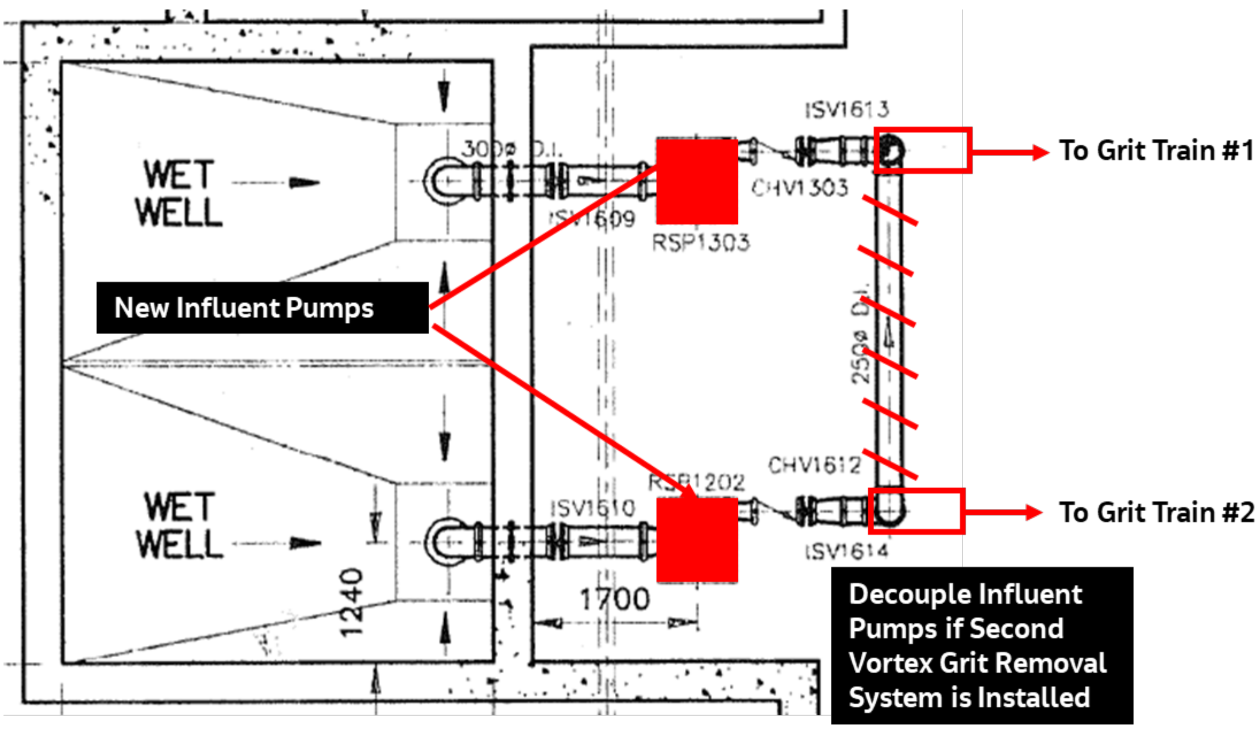


Table 8-1 presents the capital cost estimate for the Plympton WWTP headworks upgrades. At this stage, costing for only one vortex grit removal system has been included in the overall cost, with a provisional item added for the second system. The replacement is required due to the condition of the existing system, while the addition of a second system is recommended for operational flexibility and redundancy.

Table 8-1. Capital Cost Estimate for Plympton WWTP Headworks Upgrades

Component	Capital Cost Estimate
Influent PS Upgrades	$570,000
Screening Upgrades	$583,000
Grit Removal Upgrades (One System)	$482,000
Total	**$1,635,000**
Additional Grit Removal System (Provisional)	$430,000
Total with Provisional	**$2,065,000**

8.2.2 Disinfection

The peak flow to the Plympton WWTP UV system in 2039 is projected to be 11,850 cubic metres per day, with the existing rated capacity projected to be exceeded in 2036. However, from discussions with the system vendor (Trojan), the existing UV system is likely capable of treating flows upwards of 13,000 cubic metres per day, as discussed in Section 7.4.2. Therefore, re-rating the existing system was identified as the preferred solution pending an investigation into channel and weir hydraulics.

It is also noted that the weir is original to the plant and will likely reach the end of its useful life during the planning period, requiring replacement. Therefore, a provisional cost of $120,000 has been included for disinfection system upgrades, which include potential hydraulic improvements and weir replacement.

8.2.3 Sludge Stabilization

The Plympton WWTP aerobic digester capacity is projected to be exceeded in 2035. Based on the projected WAS flow of 38 cubic metres per day in 2039, an additional 280 m^3 of aerobic digester capacity is required. It is noted that this analysis does not include any additional stabilization that is achieved in the storage lagoons, as they are only intended for storage. To provide the additional digester volume, four additional digesters with similar dimensions to the existing digesters (5.9 metres x 2.5 metres x 4.6 metres) would be installed. As these upgrades are required late in the planning period (by 2035), sludge flow projections and the resulting design basis should be updated prior to beginning the upgrades.

The proposed upgrades are presented on Figure 8-3. It is noted that this figure is intended to present the footprint required for expansion, with the final location to be determined during design.

Figure 8-3. Plympton WWTP Aerobic Digester Upgrades - Footprint Required

Table 8-2 presents the capital cost estimate for the Plympton WWTP aerobic digester upgrades.

Table 8-2. Capital Cost Estimate for Plympton WWTP Aerobic Digester Upgrades

Component	Capital Cost Estimate
Sitework and Concrete	\$416,000
Equipment, Mechanical and Electrical	\$481,000
Subtotal	**\$897,000**
Contractor Profit and Overhead (10%)	\$90,000
Engineering (20%)	\$179,000
Mobilization/demobilization, bonds and insurance (3%)	\$45,000
Estimating Contingency (30%)	\$269,000
Inflation (15%)	\$135,000
Total	**\$1,615,000**

8.2.4 Summary of Capital Cost Estimates for Plympton WWTP Upgrades

Table 8-3 presents a summary of the capital cost estimates for the upgrades required at the Plympton WWTP.

Table 8-3. Capital Cost Estimate Summary – Plympton WWTP

Component	Capital Cost Estimate
Headworks	$1,635,000
Disinfection	$120,000
Sludge Stabilization	$1,615,000
Total	**$3,366,000**

8.3 Wyoming WWTP

8.3.1 Screening

The peak flow to the Wyoming WWTP screening system is projected to be 4,100 cubic metres per day in 2039. There is the potential to replace the existing screen with a new screen that has a higher capacity. To determine if this is possible, a hydraulic evaluation is required. To be conservative at this stage, Jacobs recommends that an additional screen channel be constructed adjacent to the existing screen channel with a peak rated capacity of 4,100 cubic metres per day. As these upgrades are required late in the planning period (by 2039), flow projections and the resulting design basis should be updated prior to beginning the upgrades.

The proposed upgrades are presented on Figure 8-4.

Figure 8-4. Wyoming WWTP Screening Upgrades

Table 8-4 presents the capital cost estimate for the Wyoming WWTP screening upgrades.

Table 8-4. Capital Cost Estimate for Wyoming WWTP Screening Upgrades

Component	Capital Cost Estimate
Screening Equipment and Electrical	$150,000
Channel (Concrete)	$100,000
Total	**$250,000**
Contractor Profit and Overhead (10%)	$25,000
Engineering (20%)	$50,000
Mobilization/demobilization, bonds and insurance (3%)	$13,000
Estimating Contingency (30%)	$175,000
Inflation (15%)	$38,000
Total	**$450,000**

8.3.2 Grit Removal

The Wyoming WWTP grit removal system is currently in poor condition and requires rehabilitation in the near term. Jacobs recommends that a condition assessment be completed to identify and confirm the required upgrades. In the interim, a placeholder cost of **$360,000** is recommended. Upgrades are anticipated to include channel modifications, concrete rehabilitation, and aeration diffuser replacement.

8.3.3 Tertiary Filtration

The Wyoming WWTP tertiary filtration system is currently in poor condition, with the process representing a bottleneck at the plant. The preferred solution is to retrofit the sand filter with disk filters. A vendor was consulted to develop a design concept for a retrofit with disk filters. The sand filter media will be replaced with two disk filter modules and backwash systems. The proposed design concept is to install the modules on the east and west end of the existing filter basin, with the middle of the basin converted into a pump room to house the backwash/solid waste pumps. The design concept is presented on Figure 8-5. During construction, a temporary filter unit would be required to maintain tertiary filtration so that the plant's effluent objectives continue to be met.

Table 8-5 presents the capital cost estimate for the Wyoming WWTP tertiary filter upgrades.

Table 8-5. Capital Cost Estimate for Wyoming WWTP Tertiary Filter Upgrades

Component	Capital Cost Estimate
Tertiary Filter Equipment	$432,000
Process and Building Upgrades	$297,000
Temporary Bypass Filter Equipment	$155,000
Subtotal	**$884,000**
Contractor Profit and Overheard (10%)	$88,000
Engineering (20%)	$177,000
Mobilization/demobilization, bonds and insurance (3%)	$44,000
Estimating Contingency (30%)	$265,000
Inflation (15%)	$133,000
Total	**$1,591,000**

8.3.4 Disinfection

The peak flow to the Wyoming WWTP disinfection system is projected to be 4,100 cubic metres per day in 2039, with a capacity deficiency of 125 cubic metres per day. The existing disinfection capacity is projected to be exceeded in 2039. The existing UV system was installed in the channel between the chlorine contact chamber overflow and the effluent flowmeter, with the chlorine contact chamber no longer used. To provide additional UV disinfection capacity, an additional UV bank could be installed upstream of the existing UV banks, rated to provide disinfection for an additional 125 cubic metres per day. This would provide the required disinfection capacity with any two UV banks operating at a time. In this configuration, tertiary effluent would flow through the chlorine contact chamber prior to disinfection, rather than through the bypass in the filter effluent channel. The design concept is presented on Figure 8-6. As these upgrades are required late in the planning period (by 2039), flow projections and the resulting design basis should be updated prior to beginning the upgrades.

Figure 8-5. Wyoming WWTP Tertiary Filter Retrofit Design Concept

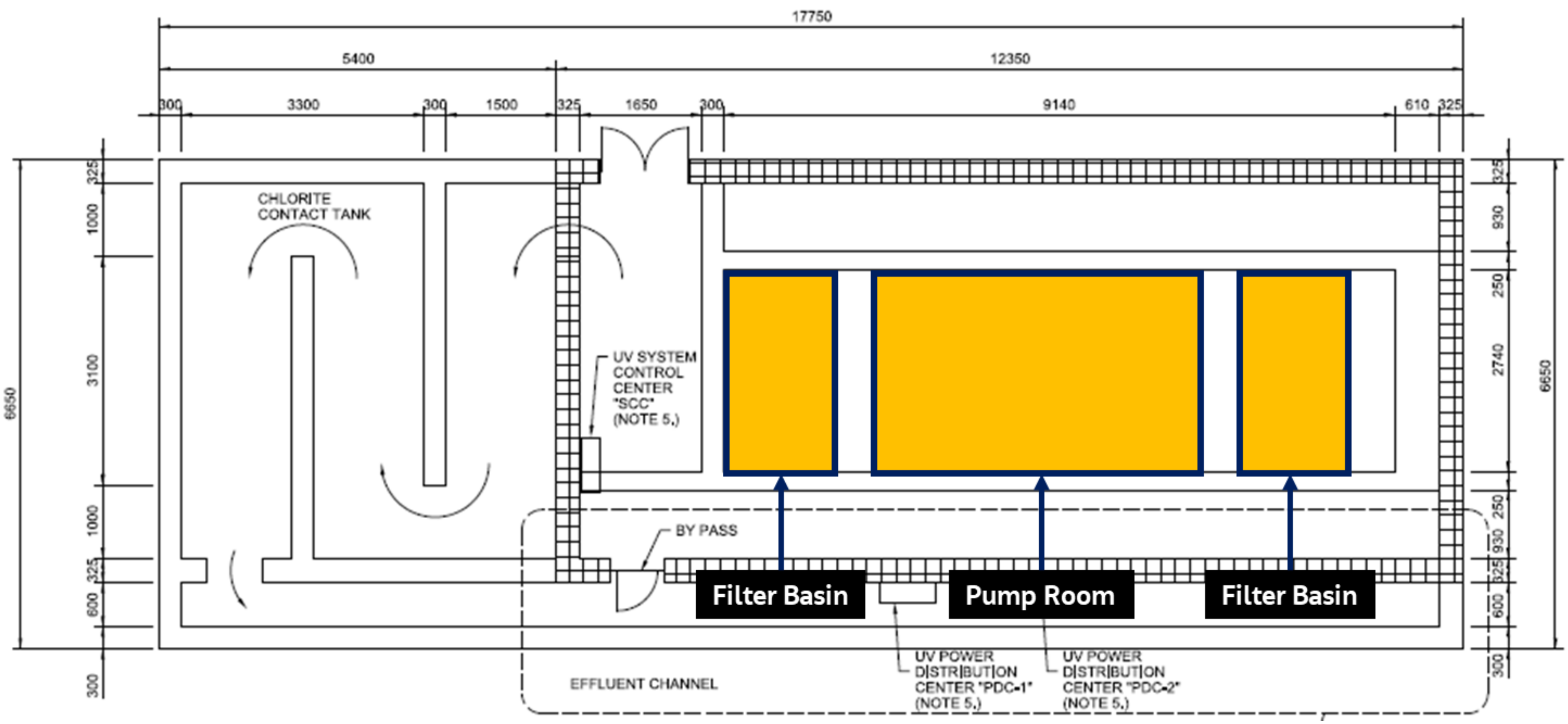


Figure 8-6. Wyoming WWTP Disinfection Upgrades

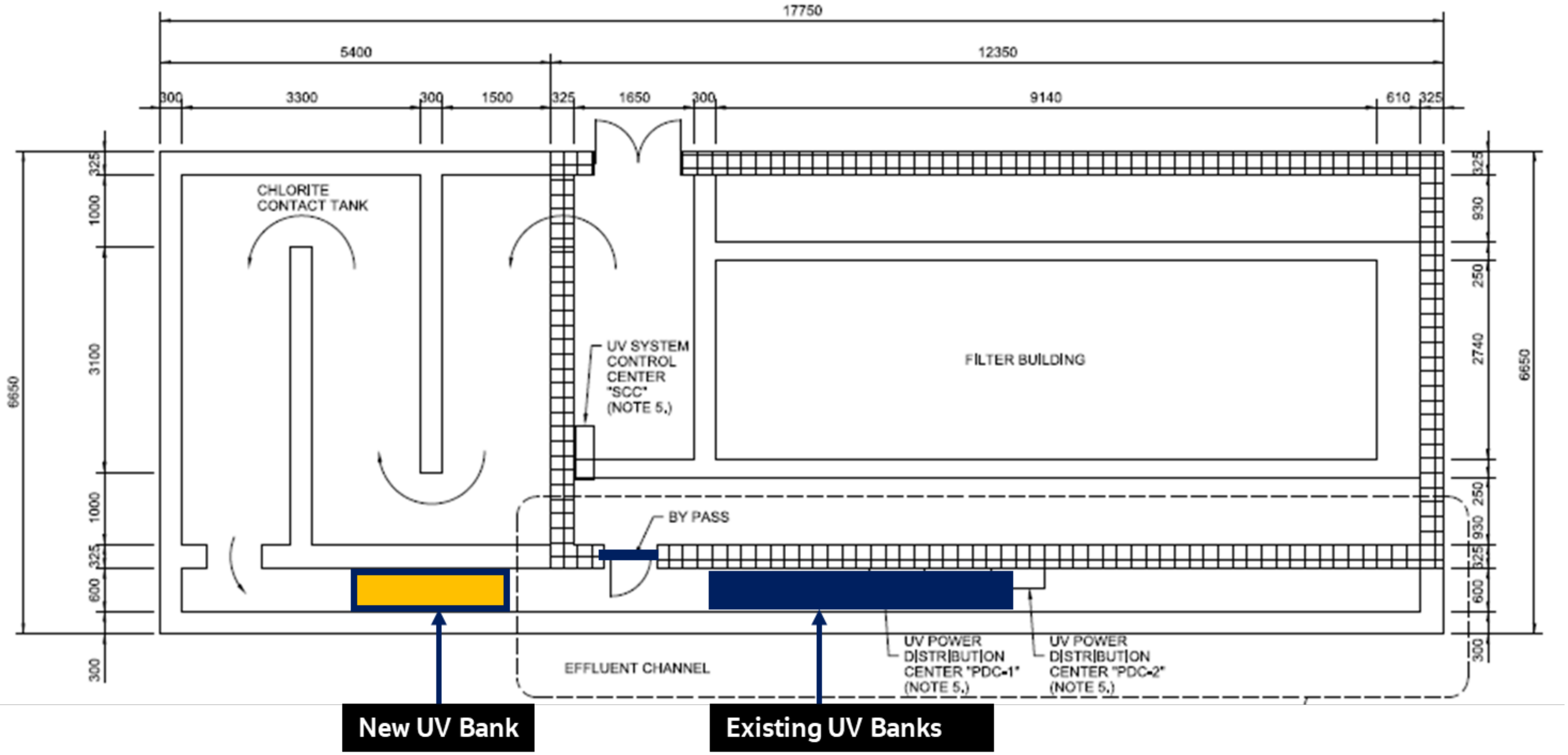


Table 8-6 presents the capital cost estimate for the Wyoming WWTP tertiary filter upgrades.

Table 8-6. Capital Cost Estimate for Wyoming WWTP Disinfection Upgrades

Component	Capital Cost Estimate
UV Equipment and Electrical	$100,000
Subtotal	**$100,000**
Contractor Profit and Overhead (10%)	$10,000
Engineering (20%)	$20,000
Mobilization/demobilization, bonds and insurance (3%)	$5,000
Estimating Contingency (30%)	$30,000
Inflation (15%)	$15,000
Total	**$180,000**

8.3.5 Sludge Storage

There is currently no standalone sludge storage at the Wyoming WWTP, with sludge removed directly from the aerobic digesters. Sludge removal is frequent, with weekly trucking traffic at the plant. To reduce truck traffic and provide operational flexibility, Jacobs recommends that a month's worth of storage be implemented via closed tanks. Based on the projected 2039 WAS flow of 9.4 cubic metres per day, 300 m^3 of storage is required. Through a review of the available footprint at the Wyoming WWTP, Jacobs recommends that a rectangular sludge storage tank be installed in the northeast corner of the site. The area is near the aerobic digesters and is accessible by truck. The proposed dimensions are 13 metres x 5 metres x 4.6 metres. A sludge line would be required from the existing truck loading fixture to the new sludge storage tank, fed by a new sludge pump. The storage tank would be equipped with a new truck loading station. The design concept is presented on Figure 8-7.

Figure 8-7. Wyoming WWTP Sludge Storage

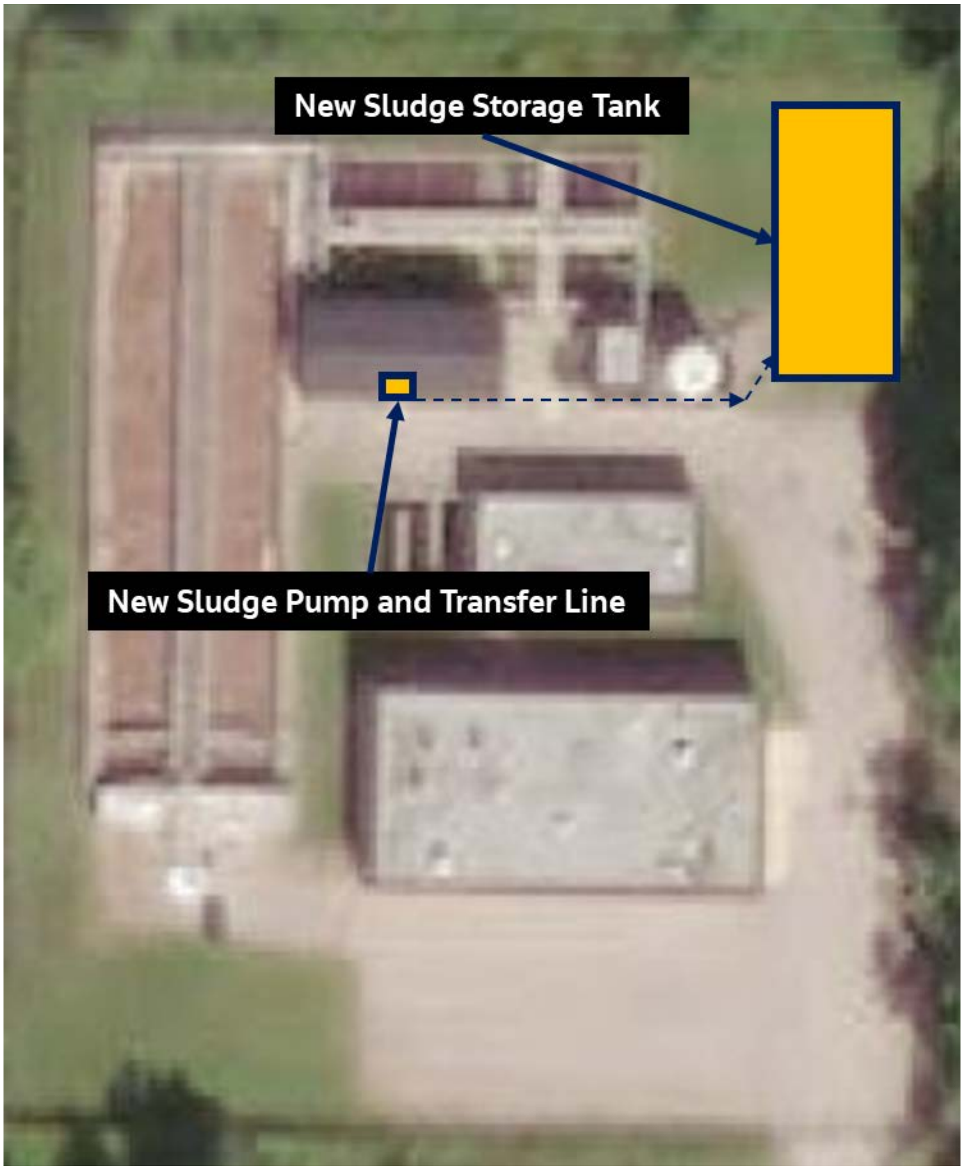


Table 8-7. Capital Cost Estimate for Wyoming WWTP Sludge Storage

Component	Capital Cost Estimate
Sludge Storage Tank and Equipment	$640,000
Total	**$640,000**

8.3.6 Summary of Capital Cost Estimates for Wyoming WWTP Upgrades

Table 8-8 presents a summary of the capital cost estimates for the upgrades required at the Wyoming WWTP.

Table 8-8. Capital Cost Estimate Summary – Wyoming WWTP

Component	Capital Cost Estimate
Screening	$450,000
Grit Removal	$360,000
Tertiary Filtration	$1,591,000
Disinfection	$180,000
Sludge Storage	$639,000
Total	**$3,220,000**

8.4 Plympton Pumping Stations

This section presents the design detail development and cost estimates for the preferred solutions identified for the Plympton pumping stations. Prior to implementing these projects, Jacobs recommends that the Town complete additional flow monitoring. The upgrades identified are based on typical design criteria for per capita flow rate and inflow and infiltration. Flow monitoring will provide more accurate data for per capita flow rate and inflow and infiltration within the Town, which will allow Jacobs to calibrate the Town's hydraulic model for wet weather flows and further refine the upgrade designs. For example, if inflow and infiltration is lower than projected in a catchment area using typical design criteria, the pumps required within a new pumping station may be smaller than identified in this section, potentially lowering the Town's capital expenditure.

8.4.1 PS-03

The peak flow projected to PS-03 in 2039 (based on known developments) is 48.6 litres per second. From the drawdown tests completed in December 2020, the peak capacity of PS-03 is currently 37.4 litres per second. There are currently two pumps in PS-03, with provisions for a third. To address the projected capacity deficiency, installing two larger pumps, each with a capacity of 50 litres per second at 12 metres of total dynamic head and reconfiguring the discharge piping and valving to accommodate the new pumps. The total dynamic head was calculated considering the preferred solution for PS-02 and PS-04 and does not account for any deterioration in existing forcemains. The wet well modification and valve chamber modification design concepts are presented on Figure 8-8 and Figure 8-9, respectively.

Figure 8-8. PS-03 Wet Well Modifications

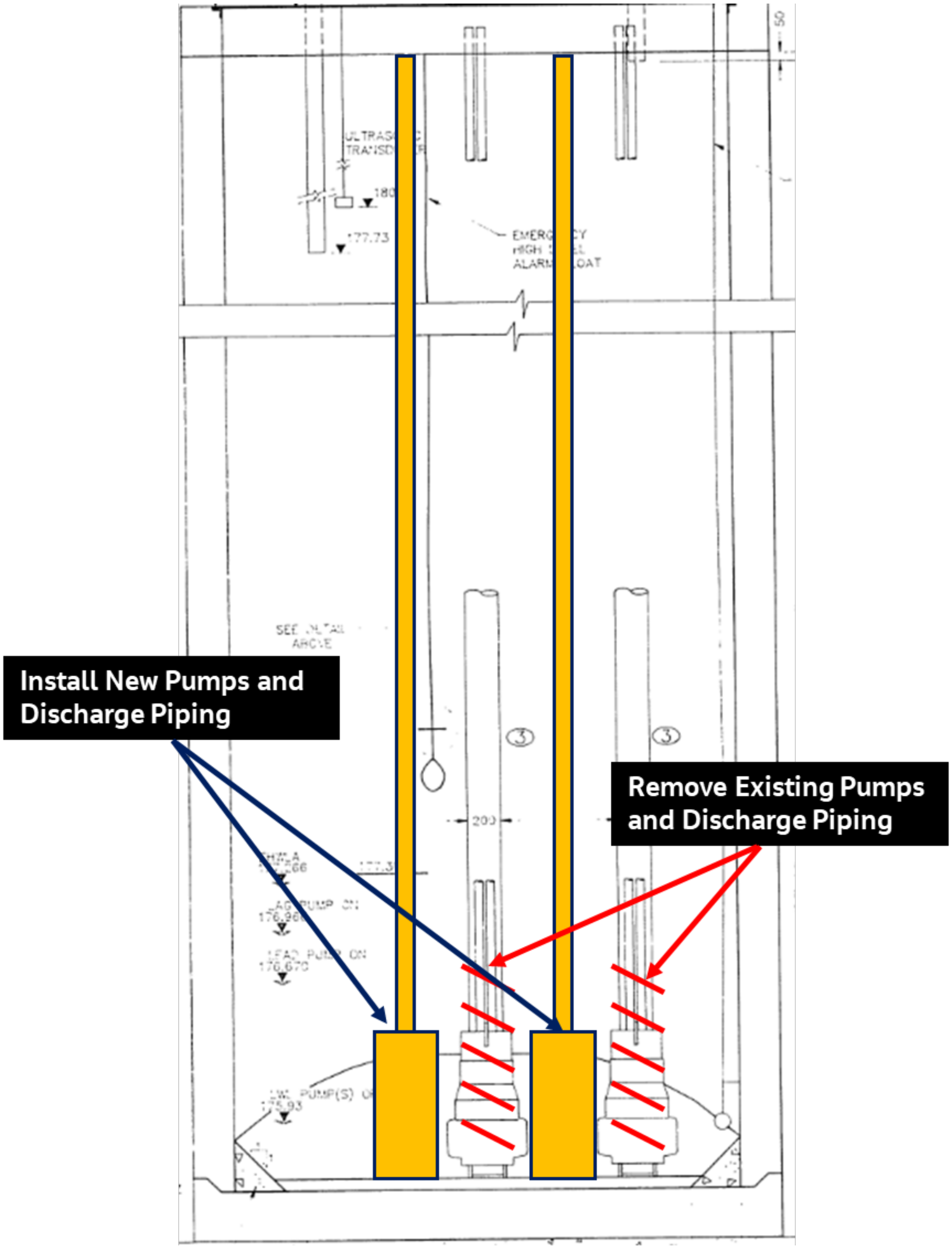


Figure 8-9. PS-03 Valve Chamber Modifications

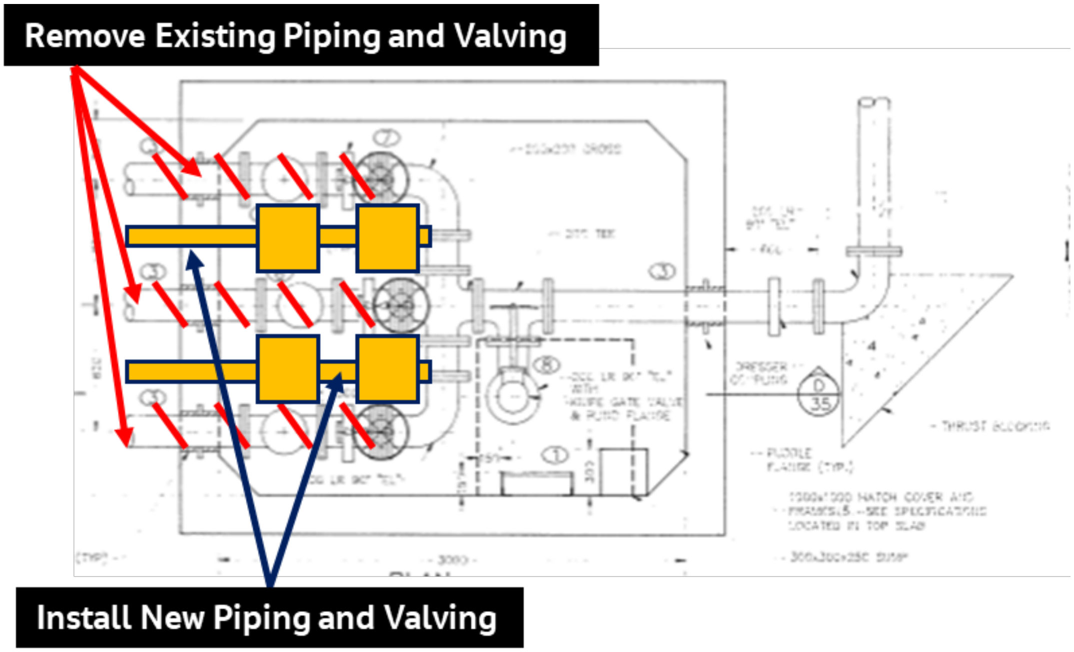


Table 8-9 presents the cost estimate for the PS-03 upgrades.

Table 8-9. Capital Cost Estimate for PS-03 Upgrades

Component	Capital Cost Estimate
Pumps	$135,000
Gate Valves	$37,500
Check Valves	$30,000
Discharge Piping	$25,000
Additional Mechanical	$15,000
Electrical/I&C	$25,000
Subtotal	**$268,000**
Contractor Profit and Overhead (10%)	$27,000
Engineering (20%)	$54,000
Mobilization/demobilization, bonds and insurance (3%)	$13,000
Estimating Contingency (30%)	$81,000
Inflation (15%)	$41,000
Total	**$485,000**

8.4.2 Integrated Solution for PS-02 and PS-04

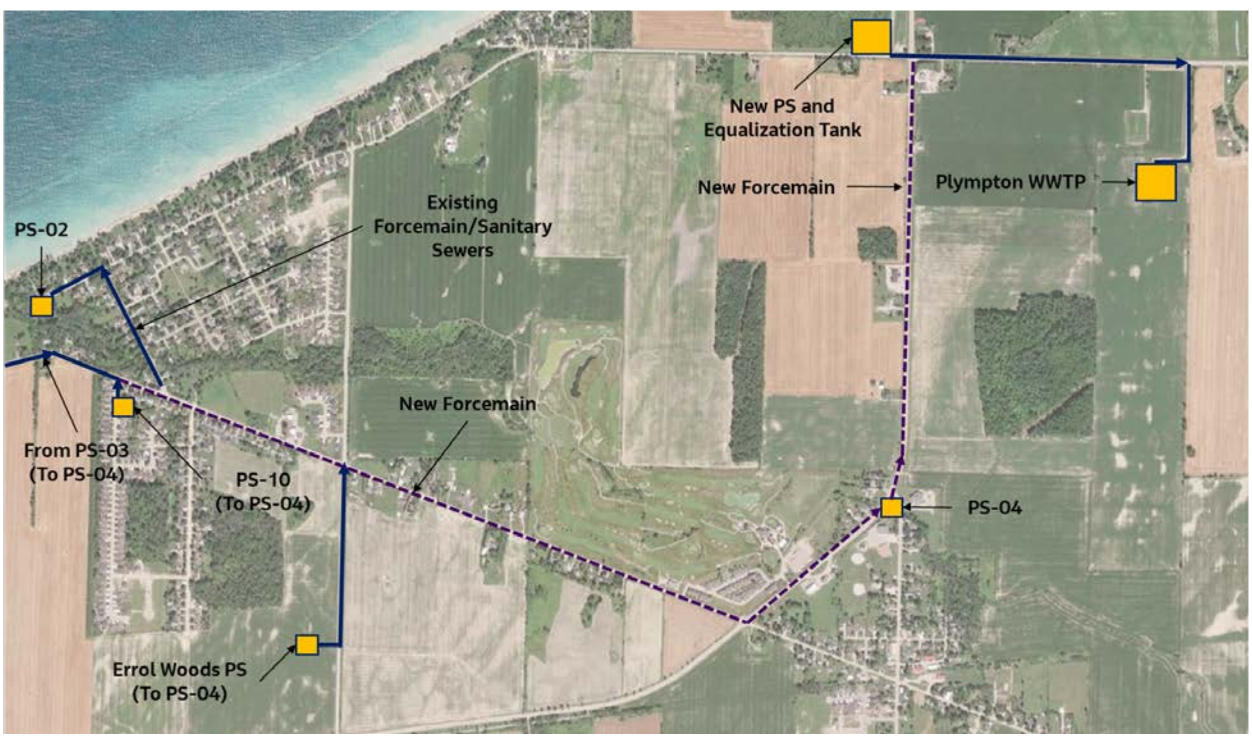
Based on the current conveyance configuration, the projected peak flows to PS-02 and PS-04 in 2039 (based on known developments) are 175.5 litres per second and 26.7 litres per second, respectively. The current peak capacities of PS-02 and PS-04 are 62.6 litres per second and 15.2 litres per second, respectively, based on the drawdown tests completed in December 2020.

The preferred solution identified to address these capacity deficiencies is to redirect flows from PS-03, PS-04, PS-10, the Errol Woods PS and the Egremont Estates PS away from PS-02. These flows will be directed to PS-04. With this solution implemented, the projected peak flows to PS-02 and PS-04 are 79.7 litres per second and 95.8 litres per second, respectively. Therefore, the new PS-04 will be constructed with a rated capacity of 100 litres per second.

The capacity deficiency in PS-02 can be addressed by installing larger pumps, with a capacity of 80 litres per second while any two pumps are operating.

A new forcemain will be constructed north of PS-04 along Lakeshore Road, conveying flows from PS-04 to a new Regional PS, which will be constructed as part of the preferred solution for PS-02 and PS-05. The new configuration is presented on Figure 8-10. The location of the new pump stations are approximate and are to be confirmed during design. The location of the Regional PS and equalization tank is shown on the northwest corner at the intersection of Queen Street and Bonnie Doon Road, however, final location is dependent on future land use plans and is anticipated to be finalized ahead of design. A Stage 2 archeological assessment may be required ahead of commencing design depending on the final location (Stantec 2021).

Figure 8-10. Integrated Solution for PS-02 and PS-04



Design details for the new PS-04 were developed based on the MOE Design Guidelines for Sewage Works (MOE 2008). It will operate with two submersible pumps in a duty/standby configuration, each rated at 100 litres per second and housed in a pre-cast wet well, similar to the existing pumping stations within Plympton-Wyoming. The design details are presented in Table 8-10.

Table 8-10. Design Details for the New PS-04

Parameter	Value
Peak Flow, L/s	95.8
Diameter, m	3.0
Surface Area, m^2	7.1
Wet Well Active Volume, m^3[a]	14.4
Active Depth, m	2.0
Ground Level Elevation, masl[a]	195.9
Existing Sanitary Invert, masl[b]	190.1
High-high level, masl[c]	189.6
Low-low level, masl[d]	187.6
Bottom of Wet Well, masl[e]	187.1
Total Wet Well Depth, m	8.8
Total Wet Well Volume, m^3	62.5

Notes:

[a] Equal to 0.15 x the peak flow in L/s (MOE 2008)
[b] From historical drawings
[c] Equal to the existing sanitary invert minus 0.5 m
[d] Equal to the high-high level minus the active depth
[e] Equal to the low-low level minus 0.5 m

Design details for the new forcemains are presented in Table 8-11. A minimum forcemain velocity of 0.9 m/s was selected for forcemain sizing (EPA 2000). The forcemains are broken into three sections:

- Section 1: PS-03/PS-10 discharge point to the Errol Woods PS discharge point (intersection of Fleming Road and Egremont Road)
- Section 2: Errol Woods PS discharge point to the new PS-04
- Section 3: New PS-04 to the new Regional PS

Table 8-11. Forcemain Design Details for Integrated PS-02 and PS-04 Preferred Solution

Parameter	Section 1	Section 2	Section 3
Flow, L/s	55.7	69.1	95.8
Minimum Velocity, m/s	0.9	0.9	0.9
Required Surface Area, m^2	0.067	0.077	0.106
Required Diameter, mm	281	313	368
Forcemain Diameter, mm	300	350	375
Length, m	800	2,000	1,650

Cost estimates for PS-02, the new PS-04 and the new forcemains are presented in, Table 8-12, Table 8-13 and Table 8-14, respectively.

Table 8-12. Capital Cost Estimate for PS-02 Upgrades

Component	Capital Cost Estimate
Pumps and Miscellaneous	$225,000
Subtotal	**$225,000**
Contractor Profit and Overhead (10%)	$23,000
Engineering (20%)	$45,000
Mobilization/demobilization, bonds and insurance (3%)	$11,000
Estimating Contingency (30%)	$68,000
Inflation (15%)	$34,000
Total	**$407,000**

Table 8-13. Capital Cost Estimate for New PS-04

Component	Capital Cost Estimate
General Items	$93,000
Excavation and Granular Fill	$25,000
Wet Well	$100,000
Pumps	$150,000
Process Mechanical (Piping, Valves)	$75,000
Instrumentation	$30,000
Electrical	$45,000
Miscellaneous (Rails, Hatches, etc.)	$25,000
Diesel Genset, Fuel Tank and Automatic Transfer Switch	$85,000

Component	Capital Cost Estimate
Sewer Connections/Modifications	$40,000
Subtotal	**$699,000**
Contractor Profit and Overhead (10%)	$67,000
Engineering (20%)	$134,000
Mobilization/demobilization, bonds and insurance (3%)	$34,000
Estimating Contingency (30%)	$201,000
Inflation (15%)	$101,000
Total	**$1,206,000**

Table 8-14. Capital Cost Estimate for New Forcemains

Component	Capital Cost Estimate
Forcemain – Section 1	$750,000
Forcemain – Section 2	$1,875,000
Forcemain – Section 3	$1,650,000
Air Release/Drain Chambers	$188,000
Total	**$4,463,000**

Table 8-15 summarizes the costs associated with this preferred solution.

Table 8-15. Capital Cost Estimate Summary – Integrated PS-02 and PS-04 Preferred Solution

Component	Capital Cost Estimate
PS-02 Upgrades	$407,000
New PS-04	$1,206,000
New Forcemains	$4,463,000
Total	**$6,076,000**

8.4.3 Integrated Solution for PS-02 and PS-05

PS-02 and PS-05 currently discharge into a common forcemain at the intersection of Queen Street and Bonnie Doon Road, which increases headloss and reduces their combined pumping capacity while both are operating at the same time. Decoupling these pumping stations will allow for more consistent pumping capacities from each. As well, this scenario presented an opportunity to address flooding issues at the Plympton WWTP, which are currently experienced during wet weather due to high instantaneous flows.

The preferred solution identified for PS-02 and PS-05 is to construct a new Regional PS at the intersection of Queen Street and Bonnie Doon Road, which will receive flows from PS-02, PS-04 and PS-05 prior to pumping directly to the Plympton WWTP through the existing forcemain on Aberarder Line. An equalization tank will also be constructed on site to provide buffering during wet weather events.

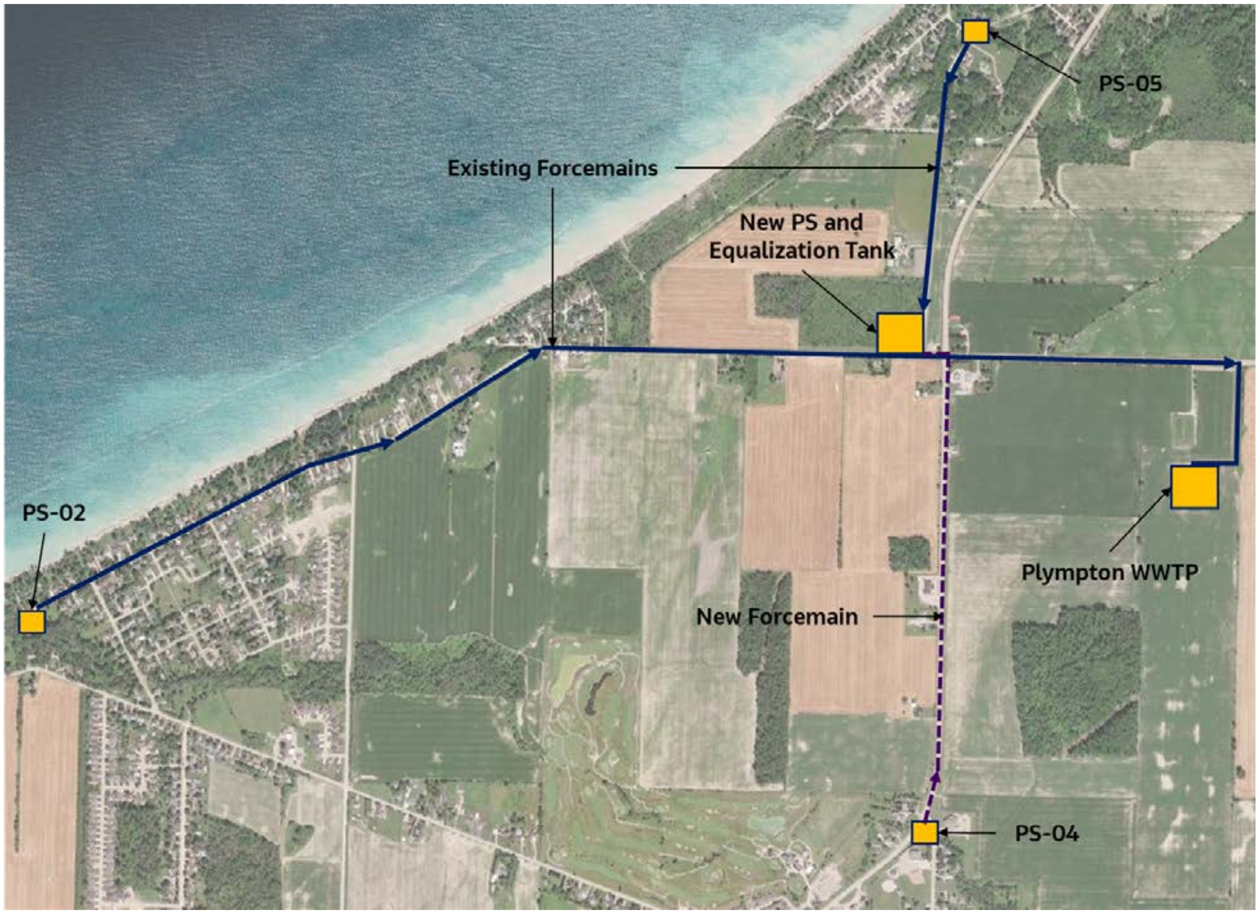
The new Regional PS will be sized with a rated capacity of 130 litres per second to match the future peak rated capacity of the Plympton WWTP headworks (129 litres per second or 11,850 cubic metres per day), with any flows exceeding this flow rate diverted to the equalization tank. There will also be adequate space in the wet well to install larger pumps in the future.

The initial design concept for the equalization tank is based on providing 4 hours' worth of storage when considering the projected peak instantaneous flow to the new Regional PS and the peak rated capacity of the Plympton WWTP headworks. Four hours of storage was selected as the design basis due to historical operations at the Plympton WWTP. While operations staff have indicated that the plant sometimes experiences overflows in the headworks during wet weather events, the maximum daily flow from 2017 to 2019 did not exceed the plant's peak rated capacity. This indicates that the Plympton system experiences high peak instantaneous flows that are short in duration, as maximum daily flows do not indicate any overflows. This design basis will be refined following completion of wet weather flow monitoring. To provide 4-hours of storage at the combined projected peak flow of 250 litres per second from PS-02, PS-04 and PS-05, 1,500 m^3 of storage volume is required.

In the unlikely event that the equalization tank experiences an overflow, an emergency connection to the Plympton WWTP outfall can be used, which runs adjacent to the forcemain that the Regional PS would discharge into.

The design concept is presented on Figure 8-11. The location of the new pump stations are approximate and are to be confirmed during design. The location of the Regional PS and equalization tank is shown on the northwest corner at the intersection of Queen Street and Bonnie Doon Road, however, final location is dependent on future land use plans and is anticipated to be finalized ahead of design. A Stage 2 archeological assessment may be required ahead of commencing design depending on the final location (Stantec 2021).

Figure 8-11. Integrated Solution for PS-02 and PS-05



Design details for the new Regional PS were developed based on the MOE Design Guidelines for Sewage Works (MOE 2008). It will operate with two submersible pumps in a duty/standby configuration, each rated at 130 litres per second and housed in a pre-cast wet well, like the existing pumping stations within Plympton-Wyoming. The design details are presented in Table 8-16.

Table 8-16. Design Details for the New Regional PS

Parameter	Value
Peak Flow, L/s	130
Diameter, m	3.0
Surface Area, m^2	7.1
Wet Well Active Volume, m^3 [a]	19.5
Active Depth, m	3.3
Ground Level Elevation, masl	196.0
Sanitary Invert, masl [b]	193.0
High-high level, masl [c]	192.5
Low-low level, masl [d]	189.2

Parameter	Value
Bottom of Wet Well, masl [e]	188.7
Total Wet Well Depth, m	7.3
Total Wet Well Volume, m^3	51.3

Notes:
[a] Equal to 0.15 x the peak flow in L/s (MOE 2008)
[b] From historical drawings
[c] Equal to the existing sanitary invert minus 0.5 m
[d] Equal to the high-high level minus the active depth
[e] Equal to the low-low level minus 0.5 m

Cost estimates for the equalization tank and Regional PS are presented in Table 8-17 and Table 8-18, respectively.

Table 8-17. Capital Cost Estimate for Equalization Tank

Component	Capital Cost Estimate
Excavation	$138,000
Granular Fill	$10,000
Concrete	$608,000
Flushing Device	$130,000
Fittings, Piping and Valving	$130,000
Instrumentation	$38,000
Pumps	$150,000
Valve Chamber	$50,000
SCADA	$150,000
Subtotal	**$1,268,000**
Contractor Profit and Overhead (10%)	$127,000
Engineering (20%)	$254,000
Mobilization/demobilization, bonds and insurance (3%)	$63,000
Estimating Contingency (30%)	$381,000
Inflation (15%)	$191,000
Total	**$1,966,000**

Table 8-18. Capital Cost Estimate for New Regional PS

Component	Capital Cost Estimate
General Items	$93,000
Excavation and Granular Fill	$26,000
Wet Well	$100,000
Pumps	$150,000
Process Mechanical (Piping, Valves)	$75,000
Instrumentation	$53,000
Electrical	$45,000
Miscellaneous (Rails, Hatches, etc.)	$25,000
Diesel Genset, Fuel Tank and Automatic Transfer Switch	$85,000
Sewer Connections/Modifications	$40,000
Subtotal	**$691,000**
Contractor Profit and Overhead (10%)	$70,000
Engineering (20%)	$139,000
Mobilization/demobilization, bonds and insurance (3%)	$35,000
Estimating Contingency (30%)	$208,000
Inflation (15%)	$104,000
Total	**$1,143,000**

Table 8-19 summarizes the costs associated with this preferred solution.

Table 8-19. Capital Cost Estimate Summary – Integrated PS-02 and PS-05 Preferred Solution

Component	Capital Cost Estimate
Equalization Tank	$2,094,000
New PS-04	$1,143,000
Total	**$3,237,000**

8.4.4 PS-06

The peak flow projected to PS-06 in 2039 (based on known developments) is 55.6 litres per second. From the drawdown tests completed in December 2020, the peak capacity of PS-06 is currently 44.2 litres per second. To address these deficiencies, Jacobs recommends that the existing pumps be replaced with two larger pumps, each rated at 55.6 litres per second. From a review of the wet well size, there is sufficient space for the larger pumps. A cost of **$190,000** is carried forward for pump replacement. There may also be other upgrades to PS-06 identified through the condition assessment.

8.4.5 Summary of Capital Cost Estimates for Plympton Pumping Stations

Table 8-20 presents a summary of the capital cost estimates for the Plympton PS upgrades.

Table 8-20. Capital Cost Estimate Summary – Plympton Pumping Stations

Component	Capital Cost Estimate
PS-03	$485,000
Integrated Solution for PS-02 and PS-04	$6,076,000
Integrated Solution for PS-02 and PS-05	$3,237,000
PS-06	$190,000
Total	**$9,985,000**

8.5 Wyoming Influent PS

The peak flow projected to the Wyoming Influent PS in 2039 (based on known developments) is 60.5 litres per second, while the current capacity with two of three pumps running is 52.6 litres per second. Jacobs recommends that the existing pumps be replaced with new pumps capable of pumping 60.5 litres per second with any two pumps running. A cost of **$250,000** is carried forward for pump replacement. There may also be other upgrades identified through the condition assessment.

9. Recommendations

The recommended upgrades from this Master Plan for Plympton and Wyoming are summarized in Table 9-1 and Table 9-2, respectively.

Table 9-1. Plympton Preferred Solution

Process	Needs	Preferred Solution
Headworks	Capacity-based (2036) Condition-based (Current)	Upgrade the existing headworks with a new automatic screen in the bypass channel, bypass channel automation and a new vortex grit removal system
Disinfection	Capacity-based (2036)	Investigate re-rating the capacity of the existing UV disinfection system.
Sludge Stabilization	Capacity-based (2035)	Expand the aerobic digesters
PS-02 and PS-04 (integrated)	Near-term	Divert flows from PS-03, PS-04, PS-10, the Errol Woods PS and Egremont Estates PS to PS-04 via a new forcemain Construct a new PS-04 rated at 100 L/s adjacent to the existing PS-04 Construct a new forcemain from PS-04 to the new Regional PS at the intersection of Queen Street and Bonnie Doon Road Decommission the existing PS-04 Replace the pumps in PS-02 with pumps that have a rated capacity of 80 L/s when two pumps are running
PS-02 and PS-05 (integrated)	Near-term	Construct a new Regional PS at the northwest intersection of Queen Street and Bonnie Doon Road, with a rated capacity of 140 L/s, which will receive flows from PS-02, PS-04 and PS-05 Construct a new equalization tank at the intersection of Queen Street and Bonnie Doon Road
PS-03	Dependent on construction of nearby developments	Remove the existing pumps, reconfigure the discharge piping and valving and install two new pumps, each with a rated capacity of 50 L/s
PS-06	Near-term	Remove the existing pumps and install two new pumps, each with a rated capacity of 60 L/s

Table 9-2. Wyoming Preferred Solution

Process	Needs	Preferred Solution
Screening	Capacity-based (2039)	Expand the screening system by replacing the existing screen with a larger screen or constructing a new channel adjacent to the existing channel with a new screen
Grit Removal	Capacity-based (2039) Condition-based (current)	Rehabilitate the existing aerated grit removal system
Tertiary Filtration	Condition-based (current)	Retrofit the existing sand filter with disk filters
Disinfection	Capacity-based (2039)	Upgrade the UV disinfection system
Sludge Storage	Operational flexibility	Implement closed tank sludge storage
Influent PS	Capacity-based (current)	Remove the existing pumps and install three new pumps with a capacity of 61 L/s while any two are running

In addition to the preferred solutions, Jacobs also recommends that the Town complete the following items:

- System-wide condition assessments (WWTPs, pumping stations and forcemains). This will provide a condition baseline for the Town's wastewater servicing assets, allowing the Town to prioritize condition-based upgrades and strengthen the overall value of the wastewater system.
- Additional wet weather flow monitoring for the purposes of hydraulic model calibration, confirming peak flow projection and refining the preferred solution design bases. This should be completed prior to design and construction of new pumping stations and forcemains. It is recommended that future flow monitoring be conducted for a minimum of 6 months, ideally initiated in the Spring (March/April) in order to capture both spring melt and rainfall conditions as well as the dryer summer periods. The previous flow monitoring efforts found that flow monitors were often impacted by upstream pumped flows which should be considered when selecting flow monitoring locations. Rain gauges should be within 5 kilometres of the flow monitoring locations in order to account for spatial differences in rainfall. Due to the geography of Plympton-Wyoming, multiple rain gauges will be required, therefore, performing flow monitoring in phases over several years may reduce program costs while enabling incremental model refinement.
- Investigate odour issues at PS-02 and along the Queen Street trunk sewer.
- Implementation of a public and private side I/I mitigation plan to reduce peak wet weather flows. This has the potential to reduce peak flows to the Plympton WWTP and Wyoming WWTP, potentially delaying plant expansions and associated capital expenditures.
- Update the Wastewater Servicing Master Plan every 5 to 8 years. With the recent increase in growth within the Town, updating the Master Plan will allow for the Town to adjust its capital expenditure plan based on an increased or decreased growth rate and continue to provide reliable wastewater servicing. The identified WWTP capacity expansions will require completion of a Schedule C Class EA, so Jacobs recommends that the next Master Plan update be completed as a Schedule C Class EA.
- It is recommended that the Town update the cost estimates presented in this Class EA as each project is undertaken. The COVID-19 pandemic has resulted in significant escalation of capital project costs throughout Ontario due to supply chain issues and increasing material costs. It is unknown at this time

if these issues will continue in the future and as such, it is expected that cost estimates will need to be revised.

- Develop a risk mitigation plan. This, in conjunction with the system-wide condition assessment, will identify areas of high risk within the wastewater system and allow the Town to develop the necessary contingency plans, while also being proactive in addressing these high-risk components.
- Operations staff should review solids management practices to find efficiencies for solids handling, such as increased trucking, lagoon decanting, etc.

10. Implementation Plan

10.1 Construction Considerations and Sequencing

When implementing new infrastructure and developing a construction sequence, it is important to consider the interdependencies between projects to allow the Town to maintain reliable wastewater servicing during construction. The following sections detail the construction considerations and sequencing for each project identified.

10.1.1 Plympton WWTP Headworks

The proposed upgrades to the Plympton WWTP Headworks include the following:

- Installation of new influent pumps capable of pumping a combined 11,850 cubic metres per day, or 137 litres per second, equipped with VFDs
- A new automatic screen in the bypass channel rated at 11,850 cubic metres per day, or 137 litres per second, providing firm screening capacity
- Installation of a new vortex grit removal process with a peak capacity of 11,850 cubic metres per day, or 137 litres per second. There is the option to decouple the influent pumps and install two parallel vortex grit removal processes or to continue with the current configuration (both influent pumps feed one vortex grit removal system)
- Replacement of the manual bypass valve with an automatic bypass valve

To maintain adequate influent pumping during construction, one influent pump should be replaced at a time and, if possible, during a period of low flow. Each wet well cell must be isolated while its associated influent pump is replaced.

Service interruption is not required to install a new automatic screen in the bypass channel or to replace the manual bypass valves with automatic valves. These activities should be completed during periods of dry weather, where a bypass is not expected to occur.

To replace the existing grit removal system, the entire grit removal process must be taken out of service. During this period, the plant must be operated such that the influent pumps and grit removal system are bypassed, with screened influent proceeding directly to the aeration tanks. The influent pumps could also be replaced during this period. Jacobs recommends that this component of the project occur following installation of the new automatic screen, as this would provide reliable screening for all influent and eliminate the need for operations staff to clean the existing manual bar screen in the bypass channel during installation of the new grit removal system.

The proposed construction sequence is as follows:

1) Install a new automatic screen in the bypass channel and replace the manual bypass valves with automatic valves.

4) Replace the influent pumps.

5) Replace the grit removal system.

10.1.2 Plympton WWTP Sludge Stabilization

To provide the required sludge stabilization capacity, an additional 280 m^3 of digester volume is required.

To connect the new aerobic digesters to the existing system, a portion of the WAS line must be isolated. Once isolated, the existing WAS line can be connected to the new WAS line that will feed the new digesters. This activity should be coordinated with the plant's sludge wasting schedule; once constructed, connection of the new digesters can occur during a period where the plant is returning all of its sludge to the aeration tanks.

Aeration would be supplied by new, dedicated blowers, so connection with the existing system is not required.

The new digesters also need to be connected to the sludge line that feeds the storage lagoons. To do this, sludge pumping from the existing digesters would need to be paused during connection.

The proposed construction sequence is as follows:

1) Construct the new digesters.
2) Connect the digesters to the sludge line that feeds the storage lagoons.
3) Connect the digesters to the existing WAS line.

10.1.3 Wyoming WWTP Screening and Grit Removal

Constructing the new screening channel would not require a service interruption. Bypass pumping would be required briefly during connection of the new channel to the existing influent channel and grit removal system.

When rehabilitating the grit removal process, one train must be completed at a time to maintain service during construction.

10.1.4 Wyoming WWTP Tertiary Filtration

To retrofit the existing sand filter with a new disk filter, the tertiary filter facility must be taken out of service. A temporary filter unit will be required to maintain filtration during construction and continue to meet the effluent limits stipulated in the plant's ECA. This unit may be provided by the filter vendor. Maintaining the construction schedule will be important in minimizing costs associated with temporary unit rental. The secondary effluent piping would be connected to the temporary unit and then isolated from the tertiary filter building. The temporary unit would then discharge tertiary effluent into the old chlorine contact chamber, where it would flow through the UV channel for disinfection.

10.1.5 Wyoming WWTP Disinfection

Service interruption is not required to install a new UV bank upstream of the existing UV bank. Following installation, tertiary effluent will be re-routed so that it flows through the old chlorine contact chamber and passes through both banks, rather than bypassing the chlorine contact chamber as it does currently.

10.1.6 Plympton Pumping Stations

The proposed upgrades to the Plympton pumping stations and conveyance networks are as follows:

- Install larger pumps in PS-02
- Construct a new PS-04
- Redirect flows from PS-03, PS-10, the Errol Woods PS and Egremont Estates PS to PS-04 via a new forcemain on Egremont Road
- Construct a new Regional PS that will receive flows from PS-02, PS-04 and PS-05 and pump directly to the Plympton WWTP
- Construct a new equalization tank at the site of the Regional PS

As the preferred solutions for the Plympton pumping stations are complex and impact each other, careful sequencing is required. The PS-06 upgrades do not impact other pumping stations, as they are direct replacements.

Construction sequencing was developed based on providing adequate downstream capacity for each subsequent upgrade. For example, the Regional PS must be constructed before PS-04, as PS-04 will discharge into the Regional PS.

The following construction sequence was developed for the Plympton PS and conveyance system upgrades:

1) Construct the new Regional PS and equalization tank
2) Connect the Regional PS to the existing forcemain that discharges to the Plympton WWTP
3) Connect the PS-02 and PS-05 forcemains to the Regional PS and begin operating the Regional PS
4) Replace the pumps in PS-02 with new pumps
5) Construct the new PS-04 and forcemain, connecting to the Regional PS
6) Connect the existing PS-04 sanitary sewer to the new PS-04 and begin pumping flows from the new PS-04 to the Regional PS.
7) Connect the Egremont Estates PS to PS-04
8) Construct the new forcemain along Egremont Road that will connect PS-03, PS-10 and the Errol Woods PS to PS-04
9) Connect the Errol Woods PS forcemain to the new forcemain on Egremont Road, disconnecting it from the existing sanitary sewer on Egremont Road
10) Connect the PS-10 forcemain to the new forcemain on Egremont Road, disconnecting it from the existing sanitary sewer on Egremont Road
11) Connect the PS-03 forcemain to the new forcemain on Egremont Road, disconnecting it from the existing sanitary sewer on Egremont Road

10.1.7 Wyoming Pumping Stations

As the upgrades to the Wyoming Influent PS involve direct pump replacements, there are no issues anticipated relating to maintaining service.

10.2 Project Schedule

Table 10-1 presents the projected start and end date for each project identified in the Master Plan.

Table 10-1. Plympton-Wyoming Wastewater Servicing Master Plan Project Schedule

Project	Start Year	End Year
Flow Monitoring	2022	2022
Plympton WWTP Headworks Upgrades	2022	2023
PS-02 Odour Investigation	2023	2023
Risk Mitigation Plan	2023	2023
New Regional PS	2023	2025
New Equalization Tank	2023	2025
I/I Mitigation Plan	2024	2024
PS-06 Upgrades	2024	2024
New PS-04	2024	2025
PS-03 Upgrades	2025	2025
New Forcemains connecting upstream pumping stations to PS-04	2025	2028
PS-02 Upgrades	2025	2026
Wyoming WWTP Grit Removal Upgrades	2026	2027
Wyoming WWTP Tertiary Filtration Upgrades	2026	2027
Wyoming WWTP Influent PS Upgrades	2027	2027
Wyoming WWTP Sludge Storage	2028	2029
Master Plan Update	2029	2029
Plympton WWTP Aerobic Digester Upgrades	2033	2034
Plympton WWTP Disinfection Upgrades	2035	2035
Master Plan Update	2037	2037
Wyoming WWTP Screening Upgrades	2039	2039
Wyoming WWTP Disinfection Upgrades	2039	2039

10.3 Capital Spending Plan

A yearly capital spending plan has been developed for budgeting purposes based on the estimated capital cost, schedule and timing of each project. The plan is presented in Table 10-2.

Table 10-2: Capital Expenditure Plan

Project	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	Total
General Recommendations																			
Flow Monitoring	$100,000																		$100,000
PS-02 Odour Investigation		$20,000																	$20,000
I/I Mitigation Plan			$30,000																$30,000
Master Plan Update								$100,000								$100,000			$200,000
Risk Mitigation Plan		$50,000																	$50,000
Plympton WWTP																			
Influent Pumping	$40,000	$277,000	$253,000																$570,000
Screening	$41,000	$283,000	$259,000																$583,000
Grit Removal	$34,000	$235,000	$214,000																$483,000
Aerobic Digesters												$112,000	$785,000	$718,000					$1,615,000
Disinfection														$116,200					$116,200
Wyoming WWTP																			
Screening																		$450,000	$450,000
Grit Removal					$25,000	$175,000	$160,000												$360,000
Tertiary Filtration					$111,000	$773,000	$707,000												$1,591,000
Disinfection																		$180,000	$180,000
Sludge Storage							$44,000	$311,000	$284,000										$639,000
PS-03 Upgrades				$485,000															$485,000
Integrated Solution for PS-02 and PS-04																			
Forcemain			$84,000	$335,000	$2,148,000	$1,897,000													$4,464,000
PS-04			$84,000	$586,000	$536,000														$1,206,000
PS-02				$226,000	$181,000														$407,000
Integrated Solution for PS-02 and PS-05																			
Regional PS		$87,000	$554,000	$502,000															$1,143,000
EQ Tank		$159,000	$1,015,000	$920,000															$2,094,000
PS-06 Upgrades			$187,500																$187,500
Wyoming Influent PS							$250,000												$250,000
TOTAL	**$215,000**	**$1,111,000**	**$2,681,000**	**$3,054,000**	**$3,001,000**	**$2,845,000**	**$1,161,000**	**$411,000**	**$284,000**	**$0**	**$0**	**$112,000**	**$785,000**	**$834,000**	**$0**	**$100,000**	**$0**	**$630,000**	**$17,224,000**

10.4 Funding Sources

The Disaster Mitigation and Adaptation Fund (DMAF) was launched in 2018 by the Canadian federal government to invest in structural and natural infrastructure projects to increase the resiliency of communities that are impacted by climate change (Government of Canada 2021). $2 billion was initially committed over 10 years, with an additional $1.375 billion committed over 12 years in the 2021 budget. The types of projects that qualify for funding include stormwater management infrastructure, pumping station upgrades to reduce overflows and wastewater treatment upgrades to protect against flooding. DMAF funding is separated into two streams; small-scale projects with eligible costs between $1 million and $20 million, and large-scale projects with eligible costs greater than $20 million. $670 million of the funding is committed to small-scale projects, which the recommendations from this Master Plan would qualify as.

The next application deadline for DMAF funding is on July 20, 2022. Recommendations from this Master Plan that may be eligible for DMAF funding include:

- Plympton WWTP Headworks upgrades
- Construction of a new PS-04 and associated forcemains
- Construction of the new Regional PS and equalization tank

Jacobs recommends that the Town begin preparing DMAF funding applications for the noted projects following completion of this Master Plan. The Town should also continue to monitor any new applicable funding programs that are announced by the federal and provincial governments in the future.

Where developers directly benefit from the upgrades proposed in this Master Plan, the Town may seek some compensation through development charges.

11. References

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Appendix A
Community Engagement and Communications Plan

Plympton-Wyoming Wastewater Servicing Master Plan

Community Engagement Plan

CE761200-CEP | Final

June 24, 2021

Town of Plympton-Wyoming

Plympton-Wyoming Wastewater Servicing Master Plan

Project No:	CE761200
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Document No.:	CE761200-CEP
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Project Manager:	Project Manager
Author:	Jared Philpott
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Document history and status

Revision	Date	Description	Author	Checked	Reviewed	Approved
1	06/18/2021	Draft Issued for Client Review	J. Philpott J. Schmitter	J. Schmitter	J. Schmitter	J. Schmitter
1	06/24/2021	Final	J. Philpott J. Schmitter	J. Schmitter	J. Schmitter	J. Schmitter

Contents

1. Introduction

Jacobs Engineering Group (as the legal entity CH2M Hill Canada Limited) was retained by the Town of Plympton-Wyoming (the Town) to complete a Wastewater Servicing Master Plan, which includes stakeholder and community engagement and communications.

Primary contacts for the project are as follows:

Town of Plympton-Wyoming
Adam Sobanski, CET, CRS.
Director of Public Works
546 Niagara Street P.O. Box 250
Wyoming, Ontario N0N 1T0
Telephone: 519-845-3939
Email: asobanski@plympton-wyoming.ca

Jacobs Engineering Group
Jillian Schmitter
Project Manager
72 Victoria Street South, Suite 300
Kitchener, Ontario N2G 4Y9
Telephone: 519-514-1622
Email: jillian.schmitter@jacobs.com

2. Background

2.1 Project Goals

The Town initiated a Municipal Class Environmental Assessment (EA) study to develop a Master Plan (MP) for wastewater servicing in the Town. The MP will recommend a long-term sustainable plan to support growth consistent with the Town's Official Plan. The MP will reflect the latest projections for development and growth, local initiatives and studies, Official Plan amendments, and legislation and guidelines. The outcome of the MP will be recommended projects and a phased implementation schedule to achieve the Town's objectives for wastewater servicing for the next 20 years.

Due to the nature of this MP project and the level of development in the Town, community interest is anticipated for this project. It is in the Town's best interest to carefully manage input in a strategic, organized and steadfast manner, so that issues or concerns are identified and considered during the MP development.

This Community Engagement and Communications Plan establishes a strategy for the project team to provide meaningful information about the project to all identified audiences and to give engagement opportunities to stakeholders over the course of the MP development. This will enable the project team to capture, understand and manage input, and use input to influence decisions, in a way that does not interfere with the project schedule.

The Community Engagement and Communication Plan focuses on two major components, as follows:

- **Communications**: The distribution of factual and topical information by the project team and the Town to project stakeholders.
- **Engagement**: The process of seeking and receiving comments from the project stakeholders.

This Community Engagement Plan is a living document and will be revised as required.

2.2 Areas of Engagement

- **Community members -** including residents, businesses, and organizations (such as ratepayer and other special interest groups) in the community
- **Indigenous peoples – First Nations, Indigenous, and Métis**
- **Municipal staff and elected officials** (The Town)
- **Review agencies**

2.3 Regulated Requirements to Engage

The scope of community engagement and communication will exceed the requirements for Master Plans and outline in the Municipal Engineers Association (MEA) Class EA document (October 2000, as amended in 2007, 2011, 2015, 2019, and 2020). The MEA Class EA document stresses the importance of effective consultation: "Consultation early in and throughout the process is a key feature of environmental assessment planning".

The Municipal Class EA Master Planning process includes the following points of contact:

- One (1) discretionary consultation point early in the project to notify stakeholders and enable their involvement
- One (1) mandatory point of contact with stakeholders to enable their review and to obtain their input on the preliminary preferred solution

- One (1) stakeholder review period, once the Master Plan is completed, to provide opportunity for Stakeholders to review the Master Plan and resolve any outstanding concerns with the project team

The communication and consultation approach for this MP project will include one (1) public meeting, to be held at a key point during the study.

2.4 Preliminary List of Issues and Concerns

The communications for this MP will reflect the Town’s commitment to providing reliable wastewater servicing capacity to the existing population and planned growth, consistent with the Town’s Official Plan. In addition, the communications will be developed in anticipation of stakeholder issues and concerns, and to address the need for a clear decision-making process that demonstrates how issues and concerns will be considered in developing recommendations.

Potential considerations specific to the project may include:

- Climate change
- Capacity to service development
- Odour and noise
- Capital and operating costs.

Other stakeholder considerations will be identified as the project progresses.

3. Key Messaging

3.1 Overview

This Community Engagement and Communications Plan has been developed to obtain meaningful input from community stakeholders, so that issues of importance are considered in the decision-making and development of recommendations, and the Town has stakeholder support for the implementation of the recommendations. The key objectives of the engagement and communications strategy are as follows:

- To inform community stakeholders about the project, providing information that is timely and factual.
- To facilitate and communicate opportunities for stakeholder engagement and input, and to provide feedback, in a way that stakeholders feel that their input is valued and can influence project decisions.
- To tailor communications and engagement approaches to the specific needs of the various stakeholder groups.

3.2 Message Focus

Consistent messaging about the Wastewater Servicing Master Plan is important to achieve community understanding and trust in the Town's project team delivering the project. Messages will be formulated with the following objectives:

- To resonate with community stakeholders, elected officials and other target audiences.
- To provide sufficient information such that community stakeholders understand the project and why it is required, and have the ability to reach their own conclusions. While providing unbiased information on alternative solutions, including benefits and impacts.
- To achieve stakeholder trust that the overall goal of the project is through the direction of improving benefits to the community (e.g., sustainability) while minimizing impacts.

Messages to achieve the above objectives will be formulated using the following approaches to build public trust and confidence:

- Focusing on the similarity of the mutual values of the Town's project team and the community stakeholders, to assure the stakeholders that transparency throughout the decision-making process of the project.
- Creating public understanding that the project team is technically competent, such that community stakeholders will trust that that the project team will listen to input and make the right decisions.
- Achieving stakeholder understanding that the Master Planning process is fair and unbiased, through transparency and honesty.
- Communicating that the MP is not only focused on solving a problem, but represents an opportunity to realize community benefits, for example, through sustainability and cost-effectiveness.
- Reinforcing the need for this project to make decisions to provide reliable wastewater servicing into the future.

4. Communication and Engagement Strategies

4.1 Level of Community Engagement

The level of community stakeholder engagement is presented in Table 4-1. The following sections provide more detail on activities identified in the table.

Table 4-1: Level of Community Engagement for each Phase of the Master Plan

Project Steps	**Communications and Consultation**
Define the Problem or Opportunity	Background information and rationale for project are provided to the public, initial Project Contact List (identified stakeholders and review agencies) through Notice of Project Commencement and project web page.
Gather Information	Project web page will request input from community stakeholders on factors that are important to project decisions.
Establish Decision Criteria	Decision-making process is developed by project team, informed by input from stakeholders through Public Open House No. 1 and the project web page.
Develop Alternatives	Benefits and impacts of alternative wastewater servicing solutions are developed by project team, and mitigation strategies are identified, informed by input from stakeholders through Public Open House No. 1, the project web page and contact with review agencies.
Evaluate Alternatives	Alternative wastewater servicing solutions are evaluated by the project team using the decision-making process. Input on the evaluation process, potential impacts and mitigation requirements provided by stakeholders through Public Open House No. 1, as well as through the project web page. The project team will use input from consultation to inform final decisions on preferred solutions and mitigation strategies, and to develop implementation plan.
Final Decision	Additional input will be requested through the Notice of Project Completion and the 30-day review period. Input will be considered in finalizing the Master Plan.

4.2 Communications and Engagement Strategies

4.2.1 Project Notices

The following notices will be prepared:

- Notice of Study Commencement
- Notices of Open House
- Notice of Study Completion

All notices will be published in the local newspapers, The Forest Standard, The Sarnia Observer and Petrolia Independent, in two (2) consecutive publications. Notices will also be posted on the Town's website and emailed to all stakeholders on the Project Contact List.

The Notice of Project Commencement will:

- Provide a clear overview of the Master Plan rationale and objectives

- Describe the MP process
- Advise stakeholders to look for future project updates regarding public open houses and website postings
- Invite community stakeholders to be on the Project Contact List
- Provide direct contact information for the project team contacts

The Notice of Public Open House will include the same information described above, as well as the information on the topic, location, time and date for the upcoming Public open house.

The Notice of Study Completion will be published to advertise that the MP has been completed and provide dates for a 30-day review period. The Notice will indicate locations and times when the MP will be available for review.

4.2.2 Project Web Page and Online Engagement

A project web page will be developed as part of the Town's website that will be launched with when the Notice of Project Commencement is issued. The following details will be posted on the project web page:

- A brief description of the project
- Current progress, project milestones and schedule of upcoming Public Open Houses (and other events)
- Direction on how to submit comments or get onto the Project Contact List
- All Notices, Public Open House information and Comment Sheets (per Section 4.2.3), and Comment/Response Summaries (per Section 4.2.4), and Project Newsletters (per Section **Error! Reference source not found.**).

4.2.3 Public Open House

The Public Open House will be held using a virtual drop-in format, hosted on the Town's website via Go To Meeting, to communicate detailed study information to council, stakeholders, and the public and seek input on the project and decision-making process. The Public Open House will include:

- Attendees joining the Go To Meeting will be tracked by the Town
- An electronic survey, which will offer opportunity for people to provide feedback and to request to be on the Project Contact List
- A presentation of project information will provide information on the project will be presented by Jacobs.

The content for each open house is as follows:

- **Public Open House No. 1:** Materials will introduce the MP including project background, rationale and objectives, present the preliminary decision-making process including evaluation criteria, and present preliminary alternative solutions. Materials will also present information on the alternative solutions evaluated, the evaluation process and recommended solutions and the proposed mitigation measures.

Project team members at the Public Open House will also log comments and questions from the meeting. All of the comments received, either in Comment Sheets, through written notes taken by project team members, or submitted after the meeting via web site, email or mail, will be logged in the Engagement Log. Through the Open House and web page, stakeholders will be asked to have comment sheets submitted by 2 weeks after the Open House.

4.2.4 Comment/Response Summaries

All comments received via the electronic surveys and web page, up to two (2) weeks after the Open House, will be grouped into common topic areas, and the project team will prepare responses. The comments and responses will be documented in the Comment/Response Summary, which will be posted on the project web page.

4.2.5 Special Interest Groups Meetings

Separate meetings with special interest groups will take place at the request of the groups themselves at their request.

Meeting notes will be prepared by the project team and distributed to participants after each meeting.

4.2.6 Communication with Review Agencies

Several federal and provincial agencies, conservation authorities and environmental groups will be included in the MP project contact list. The list will be modified as the project develops based the initial response to the Notice of Project Commencement, and additional communications throughout the MP.

The purpose of review agency consultation is to confirm information about legislative or policies that must be considered in developing the MP, including those that will need to be considered in subsequent Class Environmental or implementation phases. Through consultation with the agencies, the project team will confirm information required by the agencies to complete the MP.

The need to hold individual meetings with specific agencies will be identified as the project evolves.

The Draft MP Report will be submitted to the MECP District Office for review and comment before the report is finalized and made available for the 30-day Public Review Period.

4.2.7 Communication with Elected Officials

Project updates will be provided directly to Town Councillors, and Open House materials will be provided for review by Committee of the Whole and Town Council prior to being displayed at Public Open Houses.

4.2.8 Communication with First Nations, Indigenous, and Métis Peoples

Communication with the First Nation, Indigenous and Métis groups will follow the Town’s policy for communication for Class EA projects. In addition, Indigenous and Northern Affairs Canada will be notified of the project and requested to provide advice regarding additional First Nations and Métis groups to be included on the Project Contact List.

First Nations & Indigenous group engagement is based on a relationship between the municipality and each of the individual groups rather than between the consultant and the groups. This way, that relationship is in place in the future where there are other projects underway. Understanding that the Town does not have an existing relationship with local First Nations and Indigenous Rights Holders, consultation will include the following steps:

1. **Introduction.** An initial conversation between the Town and each group which serves as an introduction and expression of interest in beginning to build an ongoing relationship. The purpose of this call would not be to introduce this specific project, but rather that there is some work coming up and a heads up that they will receive a notice and that the project team is interested to know more about how they’d like to be engaged.

2. **Notice of Commencement**. Cover letters will be developed for each group, restating the Town's desire to foster a relationship, and inviting them to participate in the study and inform the project team of how they would like to be consulted.

3. **Open House.** Invitation to participate in the Open House, or request consultation/information on the study in a different format. (Unless a group requests a specific mode of consultation in step 2).

4. **Notice of Completion.** The project team will send the notice of completion when the master plan report goes for 30-day public comment, under a cover letter reinforcing similar sentiments outlined in the earlier steps.

5. **Log.** All communications with First Nation and Indigenous groups will be logged and documented and appended to the Master Plan Report. See Attachment A for a sample contact log.

Following the Town's introduction engagement this Engagement Plan will be updated to reflect the engagement preferences stated by the relevant First Nations and Indigenous groups.

5. Project Team Roles

Establishing clear lines of communication will keep all project team members up to date on the project information and project development and will promote consistent messaging from the project team to stakeholders. The Master Plan team for this project includes Town staff and Jacobs staff.

5.1 Town of Plympton-Wyoming

The Town Project Manager and main contact person for the project is Adam Sobanski. All communication to the Town from the Jacobs team will be directed to Adam. Adam will also have sole responsibility for communications with other Town staff and elected officials. All media inquiries and information requests will be directed to Adam.

Adam will be identified as project contact on stakeholder communications materials. Official responses in the form of letters or emails provided to stakeholders will come directly from Adam.

5.2 Jacobs Team

Jillian Schmitter is the Project Manager and primary contact for the consulting team. Jillian will be identified as project contact on stakeholder communications materials.

Jillian will lead all consultation and communication activities with review agencies, with the technical support from other team members.

5.3 Communications Tracking

All correspondence received by any member of the project team from stakeholders will be directed to Adam Sobanski and Jillian Schmitter.

Thorough documentation of stakeholder input, project team responses and how issues were addressed through the development of the MP, are critical to the project. The Jacobs team will develop and maintain an Engagement Log to track the following:

- Issue Tracking Number (ID)
- Stakeholder Contact Name and Organization
- Description or comment or question, in addition to actual text
- Date Received
- Contact info (how to contact the respondent)
- Type of Communication e.g., email (e), letter (l), meeting (m), or phone (p)
- If response is required, assigned to/Responsible Person for addressing input and responding
- Response Actions
- Input to MP
- Status (e.g., New, Open, In Process, Resolved, Closed, Deferred, etc.)
- Comments

6. Summary of Project Engagement and Communication

Table 6-1 presents a summary of the engagement and communications activities planned for the Plympton-Wyoming Wastewater Servicing Master Plan and preliminary timelines.

Table 6-1: Summary of Communication Activities and Preliminary Timeline

Master Plan Phase	Activity	Preliminary Timeline
1 Problem and Opportunity Statement 2 Identification and Evaluation of Alternative Solutions	Notice of Project Commencement	June 2021
	Initiation of project web page	June 2021
	Public Open House No. 1	July 2021
	Public Open House No. 1 Comments/Response Summary posted on web page	August 2021
Master Plan (draft)	Submission to MECP	September 2021
Master Plan	Notice of Project Completion	October 2021
	30-day Public Review Period	November 2021

Appendix A. Additional Information

Subject

Project Name Town of Plympton Wyoming **Project No.** CE761200

From

Date June 2021

Revision

Copies to

First Nations Community Name	Point of Contact	Date/Time of Contact	Form of contact (ie. Registered mail, email, phone call)	Comments

Notes:

a) Communities identified by the MECP for mandatory consultation (MECP, 2019)

b) If there is potential for archeological resources to be impacted. (MECP, 2019)

Appendix B
Public Consultation

Town of Whitby/CLOCA Lynde Creek MDPU Stakeholder Contact List

Project Name: Town of Plympton-Wyoming Wastewater Servicing Master Plan

Project Manager: Adam Sobanski (Town) / Jillian Schmitter (Jacobs)

Category	Agency/Organization	Contact Name	Title/Department	Address	Email	Phone	Comments	Notice of Commencement and Public Open House sent by:
Conservation Authority	St. Clair Region Conservation Authority	Melissa Deisley	Regulations Coordinator	205 Mill Pond Cres. Strathroy, ON N7G 3P9	mdeisley@scrca.on.ca	519-245-3710		Email
Conservation Authority	St. Clair Region Conservation Authority	Michelle Gallant	Regulations Officer	205 Mill Pond Cres. Strathroy, ON N7G 3P9	mgallant@scrca.on.ca	519-245-3710		Email
Conservation Authority	St. Clair Region Conservation Authority	Emily De Cloet	Water Resources Specialist	205 Mill Pond Cres. Strathroy, ON N7G 3P9	edecloet@scrca.on.ca	519-245-3710		Email
Conservation Authority	St. Clair Region Conservation Authority	Steve Clark	Risk Management Official/Inspector	205 Mill Pond Cres. Strathroy, ON N7G 3P9	sclark@scrca.on.ca	519-245-3710		Email
Conservation Authority	St. Clair Region Conservation Authority	Girish Sankar	Director of Water Resources	205 Mill Pond Cres. Strathroy, ON N7G 3P9	gsankar@scrca.on.ca	519-245-3710		Email
Conservation Authority	St. Clair Region Conservation Authority	Brian McDougall	General Manager / Secretary Treasurer	205 Mill Pond Cres. Strathroy, ON N7G 3P9	bmcdougall@scrca.on.ca	519-245-3710		Email
Conservation Authority	St. Clair Region Conservation Authority	Sarah Hodgkiss	Planning Ecologist	205 Mill Pond Cres. Strathroy, ON N7G 3P9	shodgkiss@scrca.on.ca	519-245-3710		Email
Federal	Canadian Heritage	Brian MacKay	Ontario Regional Advisor	15 Rue Eddy Gatineau, QC K1A 0M5	brian.mackay@canada.ca	819-997-7788		Email
Federal	Impact Assessment Agency of Canada	Emilie St-Onge	Coordinator, CEAA Registry	Place Bell Canada 160 Elgin Street, 22nd Flr Ottawa, ON K1A 0H3	emilie.st-onge@canada.ca	343-961-1449		Email
Federal	Transport Canada	David E. Zeit	Regional Senior Environmental Supervisor	4900 Yonge Street Unit 300 North York, ON M2N 6A5	david.zeit@tc.gc.ca	416-952-0491		Email
Federal	Transport Canada	Tera Yochim Hope	Regional Senior Environmental Advisor	4900 Yonge Street Unit 300 North York, ON M2N 6A5	tera.yochimhope@tc.gc.ca	416-952-0501		Email
Federal	Indigenous and Northern Affairs Canada	Jody Knibbs	Director, Major Projects Implementation Office	100 Anemki Place, Suite 101 Thunder Bay, ON P7J 1A5	jody.knibbs@canada.ca	807-624-5932		Email
Federal	Indigenous and Northern Affairs Canada	Roy Angelow	Sr. Environmental Specialist	655 Bay Street, Suite 700, 8th Floor Toronto, ON M5G 2K4	roy.angelow@canada.ca	416-973-6225		Email
Federal	Indigenous and Northern Affairs Canada	Afshineh Pasha	Socio-Economic Program Officer	655 Bay Street, Suite 700, 8th Floor Toronto, ON M5G 2K4	afshineh.pasha@canada.ca	416-973-7319		Email
Federal	Indigenous and Northern Affairs Canada	Lina Letiecq	Regional Environment Managervironment Manager	655 Bay Street, Suite 700, 8th Floor Toronto, ON M5G 2K4	lina.letiecq@canada.ca	416-973-6208		Email
First Nations	Aamjiwnaang First Nation	Chris Plain	Chief	978 Tashmoo Ave. Sarnia, ON N7T 7H5	chief@aamjiwnaang.ca	519-336-8410		Registered Mail
First Nations	Aamjiwnaang First Nation	Sharilyn Johnston	Environment Coordinator	978 Tashmoo Ave. Sarnia, ON N7T 7H5	sjohnston@aamjiwnaang.ca	519-336-8410		Registered Mail
First Nations	Aamjiwnaang First Nation	June Simon	Band Manager	978 Tashmoo Ave. Sarnia, ON N7T 7H5	jsimon@aamjiwnaang.ca	519-336-8410		Registered Mail
First Nations	Aamjiwnaang First Nation	Lynn Rosales	Band Council Clerk	978 Tashmoo Ave. Sarnia, ON N7T 7H5	lrosales@aamjiwnaang.ca	519-336-8410		Registered Mail
First Nations	Caldwell First Nation	Julia Ierullo	Consultation Coordinator	14 Orange Street Leamington, ON N8H 1P5	consultation@caldwellfirstnation.ca	519-322-1766 x1243		Registered Mail
First Nations	Caldwell First Nation	Mary Duckworth	Chief	14 Orange Street Leamington, ON N8H 1P5	chief@caldwellfirstnation.ca	519-322-1766		Registered Mail
First Nations	Caldwell First Nation	Brianna Sands	Environment & Consultation Coordinator	14 Orange Street Leamington, ON N8H 1P5	ecc@caldwellfirstnation.ca	519-329-2296	primary contact for Caldwell First Nation per Oct 22, 2021 conversation	Registered Mail
First Nations	Chippewas of Kettle and Stony Point	Jason Henry	Chief	6247 Indian Lane Kettle & Stony Point FN, ON N0N 1J0	KPAssistant@kettlepoint.org	(519) 786-2125		Registered Mail
First Nations	Chippewas of the Thames	Fallon Burch	Consultation Coordinator	320 Chippewa Road Muncey, ON N0L 1Y0	consultation@cottfn.com	519-289-5555 x251		Registered Mail
First Nations	Munsee-Delaware Nation	Roger Thomas	Chief	289 Jubilee Road Muncey, ON N0L 1Y0	chief@munsee.ca	519-289-5396		Registered Mail
First Nations	Munsee-Delaware Nation	Carla Noah	Reception/Membership	289 Jubilee Road Muncey, ON N0L 1Y0	reception@munsee.ca	519-289-5396		Registered Mail

Town of Whitby/CLOCA Lynde Creek MDPU Stakeholder Contact List

Project Name: Town of Plympton-Wyoming Wastewater Servicing Master Plan

Project Manager: Adam Sobanski (Town) / Jillian Schmitter (Jacobs)

Category	Agency/Organization	Contact Name	Title/Department	Address	Email	Phone	Comments	Notice of Commencement and Public Open House sent by:
First Nations	Munsee-Delaware Nation	Glenn Forrest	Director of Operations	289 Jubilee Road Muncey, ON N0L 1Y0	glenn@munsee.ca	519-289-5396		Registered Mail
First Nations	Oneida Nation of the Thames	Adrian Chrisjohn	Chief	2210 Elm Ave. Southwold, ON N0L 2G0	adrian.chrisjohn@oneida.on.ca	519-318-4598		Registered Mail
First Nations	Oneida Nation of the Thames	Holly Elijah	Council Assistant	2210 Elm Ave. Southwold, ON N0L 2G0	holly.elijah@oneida.on.ca	519-652-6161		Registered Mail
First Nations	Oneida Nation of the Thames	Cherilyn Hill	Political Office Manager	2210 Elm Ave. Southwold, ON N0L 2G0	cherilyn.hill@oneida.on.ca	519-652-6161		Registered Mail
First Nations	Oneida Nation of the Thames	Angie George	Council Assistant	2210 Elm Ave. Southwold, ON N0L 2G0	ccounciltemp@oneida.on.ca	519-652-6161		Registered Mail
First Nations	Walpole Island First Nation (Bkejwanong Territory)	Dan Miskokomon	Chief in Council	117 Tahgahoning, R.R. 3 Walpole Island, ON N8A 4K9	dan.miskokomon@wifn.org	519-627-1481		Registered Mail
First Nations	Walpole Island First Nation (Bkejwanong Territory)	Allen Deleary	Director of Operations	117 Tahgahoning, R.R. 3 Walpole Island, ON N8A 4K9	allen.deleary@wifn.org	519-628-5700		Registered Mail
First Nations	Walpole Island First Nation (Bkejwanong Territory)	Dean Jacobs	Consultation Manager	117 Tahgahoning, R.R. 3 Walpole Island, ON N8A 4K9	dean.jacobs@wifn.org	519-627-1475 ext 104		Registered Mail
First Nations	Walpole Island First Nation (Bkejwanong Territory)	Harold Pinnance	Enforcement Officer	117 Tahgahoning, R.R. 3 Walpole Island, ON N8A 4K9	harold.pinnance@wifn.org	519-627-1475 ext 111		Registered Mail
First Nations	Walpole Island First Nation (Bkejwanong Territory)	Janet Macbeth	Project Review Coordinator	117 Tahgahoning, R.R. 3 Walpole Island, ON N8A 4K9	janet.macbeth@wifn.org	519-627-1475 ext 108		Registered Mail
First Nations	Walpole Island First Nation (Bkejwanong Territory)	Rex Isaac	Business Development Coordinator	117 Tahgahoning, R.R. 3 Walpole Island, ON N8A 4K9	rex.isaac@wifn.org	519-627-1475 ext 109		Registered Mail
Local	Plympton-Wyoming Fire and Emergency Services	Darryl Thompson	Fire Chief	546 Niagara Street P.O.Box 250 Wyoming, ON N0N 1T0	dthompson@plympton-wyoming.ca	519-331-0535		Email
Local	Plympton-Wyoming Police Services	Chris Avery	Detachment Commander	4224 Oil Heritage Road Petrolia, ON N0N 1R0		519-882-1011		Email
Local	Plympton-Wyoming Health and Wellness Centre	Carolyn Tripp	Chief Administrative officer	546 Niagara Street P.O.Box 250 Wyoming, ON N0N 1T0	ctripp@plympton-wyoming.ca	519-845-3939		Email
Local	HydroOne				secondarylanduse@hydroone.com			Email
Local	Lambton Area Water Supply System	Clinton Harper	General Manager	1215 Fort Street Sarnia, ON N7V 1M1	clinton.harper@lawss.org	519 344-7429		Email
Local	US St. Clair River Restriction on Drinking Water	Paulette Duhaime	US Vice Chair of BPAC	St. Clair County Administration Building Auditorium 200 Grand River Avenue Port Huron, Michigan	scrbpac@att.net			Email
Local	UTRCA	Jenna Allain	Source Protection CoordinatorThames-Sydenham and Region Drinking Water Source Protection	Upper Thames River Conservation Authority 1424 Clarke Road London, Ontario, N5V 5B9	allainj@thamesriver.on.ca	519.451.2800 Ext. 223		Email
Developers	Southside Group (London) Limited	Vito Frijia	Southside (Errol, Camlachie)		vito@southsidegroup.ca	(519) 433-0643		Email
Developers	Zelinka Priamo Ltd	Dave Hannam	Senior Associate		dave.h@zpplan.com	519-474-7137		
Developers	Longo Holdings Inc	Lou Longo	Longo Subdivision		llongo3@cogeco.ca	(519) 331-8335		Email
Developers	Elite Homes	Nelson Peters	Arie Court		nelsonpeters1@hotmail.com	(519) 339-6743		Email
Developers	Bluewater Developments Inc	Carlo Cimetta, for Gilles Gagnon	Blue Coast Horizon		ccimetta@sarnialaw.com	(519) 336-8770		Email
Developers	2200911 Ontario Inc.	Francis DeSena, for Kevin Bacchus	Egremont Estates		francis@desenalaw.com kbacchussarnia@gmail.com	(519) 336-9999		Email
Developers	Errol Woods Inc	Paul Van Bree	Errol Woods		paul@vanbree.ca	(519) 521-4141		Email
Developers	Key Homes/Professional Group	Doug Bain	Trails Edge		dougbain@royallepage.ca	(519) 381-7560		Email
Developers	2407028 Ontario Inc	Mike Radcliffe	Silver Springs		jmichaelradcliffe@gmail.com	(519) 281-3534		Email
Developers	1950745 Ontario Ltd	Brad Zantingh	Plympton St		brad@bradz.ca	(519) 490-4128		Email

Town of Whitby/CLOCA Lynde Creek MDPU Stakeholder Contact List

Project Name: Town of Plympton-Wyoming Wastewater Servicing Master Plan

Project Manager: Adam Sobanski (Town) / Jillian Schmitter (Jacobs)

Category	Agency/Organization	Contact Name	Title/Department	Address	Email	Phone	Comments	Notice of Commencement and Public Open House sent by:
Developers	JN Ventures Inc	Brad Zantingh	Sundance Estates		brad@bradz.ca	(519) 490-4128		Email
Municipal	Town of Plympton-Wyoming	Lonny Napper	Mayor	546 Niagara Street, Box 250 Wyoming, ON N0N 1T0	lnapper1@cogeco.ca	226-307-0523 (home number)		Email
Municipal	Town of Plympton-Wyoming	Muriel Wright	Deputy Mayor	5174 Egremont Road Plympton-Wyoming, ON, N0N 1E0	bawright@xcelco.on.ca	519-899-2345		Email
Municipal	Town of Plympton-Wyoming	Netty McEwen	Councillor	3859 Egremont Road Plympton-Wyoming, ON, N0N 1E0	nettymcewen2010@gmail.com	519-899-4030		Email
Municipal	Town of Plympton-Wyoming	Gary Atkinson	Councillor	771 Broadway Street Plympton-Wyoming, ON, N0N 1T0	gla1@execulink.com	519-845-0302		Email
Municipal	Town of Plympton-Wyoming	Tim Wilkins	Councillor	6407 Oil Heritage Rd, Plympton-Wyoming, ON, N0N 1E0	tim@wyomingtreeservice.ca	519-899-4148		Email
Municipal	Town of Plympton-Wyoming	Bob Woolvett	Councillor	4016 Hillcrest Road Plympton-Wyoming, ON, N0N 1J6	bobs.gonefishin@hotmail.com	519-899-2903		Email
Municipal	Town of Plympton-Wyoming	Mike Vasey	Councillor	Address: 572 Sarnia Street Plympton-Wyoming, ON, N0N 1T0	mvasey@plympton-wyoming.ca	519-402-1761		Email
Municipal	Town of Plympton-Wyoming	Sarah Baldwin	Planner	546 Niagara Street P.O. Box 250 Wyoming, ON N0N 1T0	Sarah.Baldwin@county-lambton.on.ca	519-845-3939		Email
Municipal	County of Lambton	Stephane Thiffeault	Clerk	789 Broadway Street Box 3000	Stephane.Thiffeault@county-lambton.on.ca	519-845-0801		Email
Municipal	County of Lambton	Corrine Nauta	Chief Building Official	789 Broadway Street – Box 3000 Wyoming, ON N0N 1T0	cnauta@county-lambton.on.ca	519-845-0801		Email
Municipal	County of Lambton	Kevin Marriott	Warden	4465 Rokeby Line, RR 1 Petrolia, ON N0N 1R0	kevin.marriott@county-lambton.on.ca	519-882-2490		Email
Municipal	County of Lambton	Bev Hand	Deputy Warden	135 Kendall Street Point Edward, ON N7V 4G6	bhand@villageofpointedward.com	519-337-3021		Email
Municipal	County of Lambton	Dave Ferguson	Councillor	3236 River Street, Box 28 Alvinston, ON N0N 1A0	mayor@brookealvinston.com	519-898-2173		Email
Municipal	County of Lambton	Alan Broad	Councillor	4591 Lambton Line, RR 4 Dresden, ON N0P 1M0	mayor@dawneuphemia.on.ca	519-692-5148		Email
Municipal	County of Lambton	Bill Weber	Councillor	7883 Amtelecom Parkway, Box 610 Forest, ON N0N 1J0	bill.weber@county-lambton.on.ca	519-243-1400		Email
Municipal	County of Lambton	Doug Cook	Councillor	7883 Amtelecom Parkway, Box 610 Forest, ON N0N 1J0	dcook@lambtonshores.ca	519-243-1400		Email
Municipal	County of Lambton	Ian Veen	Councillor	4591 Oil Springs Line, Box 22 Oil Springs, ON N0N 1P0	ianveen1@hotmail.com	519-834-2939		Email
Municipal	County of Lambton	Brad Loosley	Councillor	411 Greenfield Street, Box 1270 Petrolia, ON N0N 1R0	bradloosley@gmail.com	519-882-2350		Email
Municipal	County of Lambton	Mike Bradley	Councillor	255 North Christina Street, Box 3018 Sarnia, ON N7T 7N2	mike.bradley@sarnia.ca	519-336-8092		Email
Municipal	County of Lambton	Margaret Bird	Councillor	255 North Christina Street, Box 3018 Sarnia, ON N7T 7N2	margaret@margaretbird.ca	519-332-0330		Email
Municipal	County of Lambton	Dave Boushy	Councillor	255 North Christina Street, Box 3018 Sarnia, ON N7T 7N2	d.boushy@cogeco.ca	519-332-0330		Email
Municipal	County of Lambton	mike stark	Councillor	255 North Christina Street, Box 3018 Sarnia, ON N7T 7N2	mike.stark@sarnia.ca	519-542-2054		Email
Municipal	County of Lambton	Brian White	Councillor	255 North Christina Street, Box 3018 Sarnia, ON N7T 7N2	brian.white@sarnia.ca	519-332-0330		Email
Municipal	County of Lambton	Steve Arnold	Councillor	1155 Emily Street Mooretown, ON N0N 1M0	steve.arnold1@outlook.com	519-867-2021		Email
Municipal	County of Lambton	Steve Miller	Councillor	1155 Emily Street Mooretown, ON N0N 1M0	smiller@stclairtownship.ca	519-867-2021		Email

Project Name: Town of Plympton-Wyoming Wastewater Servicing Master Plan

Project Manager: Adam Sobanski (Town) / Jillian Schmitter (Jacobs)

Category	Agency/Organization	Contact Name	Title/Department	Address	Email	Phone	Comments	Notice of Commencement and Public Open House sent by:
Municipal	County of Lambton	Jackie Rombouts	Councillor	6332 Nauvoo Road, RR 8 Watford, ON N0M 2S0	Jackie_rombouts@hotmail.com	519-849-3926		Email
Provincial	Ministry of Heritage, Sport, Tourism and Culture Industries	Karla Barboza	Team Lead - Heritage (Acting)	401 Bay Street Toronto, ON M7A 0A7	karla.barboza@ontario.ca	416-314-7120		Email
Provincial	Ministry of Agriculture, Food and Rural Affairs	Sarah Kielek-Caster	Planner	667 Exeter Road London, ON N6E 1L3	sarah.kielek-caster@ontario.ca	519-317-4493		Email
Provincial	Ministry of Agriculture, Food and Rural Affairs	Dave Marriott	Rural Planner - Western Ontario	6484 Wellington Road 7 - Unit 10 Elora, ON N0B 1S0	david.marriott@ontario.ca	519-766-5990		Email
Provincial	Ministry of Agriculture, Food and Rural Affairs	Michele Doncaster	Manager of Land Use Policy & Stewardship	1 Stone Road Guelph, ON N1G 4Y2	michele.doncaster@ontario.ca	226-979-1552		Email
Provincial	Ministry of Environment, Conservation and Parks	Lee Bradshaw	Agricultural Environmental Officer	Unit 620 4510 Rhodes Drive Windsor, ON N8W 5K5	lee.bradshaw@ontario.ca	519-980-0045		Email
Provincial	Ministry of Environment, Conservation and Parks	Stephanie Francis	Senior Environmental Officer	Unit 620 4510 Rhodes Drive Windsor, ON N8W 5K5	stephanie.francis@ontario.ca	519-259-5226		Email
Provincial	Ministry of Environment, Conservation and Parks	Annamaria Cross	Director, EA Modernization	14th Flr, 135 St Clair Avenue W Toronto, ON M4V 1P5	annamaria.cross@ontario.ca	416-314-7967		Email
Provincial	Ministry of Environment, Conservation and Parks	Kathleen O'Neill	Director, Environmental Assessment	135 St Clair Avenue W Toronto, ON M4V 1P5	kathleen.oneill@ontario.ca	647-287-5664		Email
Provincial	Ministry of Environment, Conservation and Parks	This is the EA mailbox for SW Ontario EAs	Regional MECP Email Address	In SW Ontario	eanotification.swregion@ontario.ca			Email
Provincial	Ministry of Indigenous Affairs	Matt Garrow	Director, Strategic Planning and Economic Policy Branch	4th Flr, 160 Bloor Street E Toronto, ON M7A 2E6	matt.garrow@ontario.ca	416-314-1607		Email
Provincial	Ministry of Indigenous Affairs	Heather Levecque	Director, Indigenous Relations Branch	Suite 400, 160 Bloor Street E Toronto, ON M7A 2E6	heather.levecque@ontario.ca	416-325-7032		Email
Provincial	Ministry of Infrastructure	Wendy Ren	Director, Policy and Planning Branch	College Park 4th Flr, Suite 425 777 Bay Street Toronto, ON M5G 2E5	wendy.ren@ontario.ca	416-325-7966		Email
Provincial	Ministry of Municipal Affairs and Housing	Sean Fraser	Director, Provincila Planning and Policy	College Park 13th Flr 777 Bay Street Toronto, ON M7A 2J3	sean.fraser@ontario.ca	416-585-6072		Email
Provincial	Ministry of Natural Resources and Forestry	Jim Boothby	Senior Environmental Planning Analyst	Whitney Block Rm 5520 99 Wellesley Street W Toronto, ON M7A 1W3	jim.boothby@ontario.ca	705-772-8873		Email
Provincial	Ministry of Natural Resources and Forestry	Aisha Sayles	Project and Issues Coordinator	Whitney Block 5th Flr Rm 5540, 99 Wellesley Street W Toronto, ON M7A 1W3	aisha.sayles@ontario.ca	437-224-4082		Email
Provincial	Ministry of the Attorney General	Joseph Hillier	Chief of Staff	McMurtry-Scott Bldg 11th Flr 720 Bay Street Toronto, ON M7A 2S9	joseph.hillier@ontario.ca	416-326-2220		Email
Provincial	Ministry of Transportation	Dawn Irish	Manager, Environmental Policy Office - Transportation Planning Branch	Garden City Tower 2nd Flr 301 St. Paul Street St. Catharines, ON L2R 7R4	dawn.irish@ontario.ca	905-704-3179		Email

Town of Plympton-Wyoming
Wastewater Servicing Master Plan
Notice of Study Commencement

The Town of Plympton-Wyoming (the Town) is undertaking a Wastewater Servicing Master Plan to see that the Town's sanitary sewer collection systems have the capacity to convey current and future wastewater flows to the Town's Wastewater Treatment Plants to 2039 based on the Town's growth plan. Wastewater Treatment Plant capacity is also being reviewed as part of this study.

The Master Plan is a plan that will investigate the Town's sanitary sewer system capacity and condition and will guide how the Town will continue to meet current and anticipated demands over the next 20 years. This plan will:

- Identify existing and future capacity constraints and other existing deficiencies within the Town's wastewater collection system, pumping stations and wastewater treatment plants.
- Identify and evaluate alternatives to determine the preferred long-term solution to provide reliable wastewater servicing in the Town.

We want to hear from you

Wastewater management affects the Town's citizens and natural environment. Feedback is an important aspect of the planning process and we encourage you to participate.

- Stay up to date on project progress and find opportunities to provide feedback by visiting the website.
- Join our mailing list by sending us your name and let us know how you'd like to be contacted.

A public open house for this Master Plan will be held virtually on **August 11th, 2021 at 6:00 pm**, using the GoTo Meetings platform. The meeting link will be posted on the website closer to the date of the meeting and a reminder will be sent out to those who request to be part of the mailing list. Any person wishing to speak at the meeting must pre-register a minimum of 24 hours prior to the meeting. Following the public open house, the presentation slides will be available on the website in an accessible format for two weeks (until August 26th).

The Process.
The Master Plan will be carried out according to the Municipal Engineers Association Municipal Environmental Assessment (2019, as amended), which is an approved Class of Environmental Assessment under the Environmental Assessment Act. This Master Plan will be completed as a Schedule B Class EA under Approach 2. Results from this Master Plan will be documented in a project file that will be made available for public review. At that time, residents, businesses, Indigenous communities and other interested persons or groups will be informed of when and where the environmental assessment can be reviewed.

To provide your comments, request more information or if you require this notice to be provided in an alternative format as per the Accessibility for Ontarians with Disabilities Act (2005), please contact:

Jillian Schmitter, P.Eng.
Project Manager Jacobs Engineering
72 Victoria Street South, Suite 300
Kitchener, Ontario N2G 4Y9
Telephone: 519-514-1622
Email: Jillian.Schmitter@jacobs.com

Adam Sobanski, CET, CRS.
Director of Public Works
Town of Plympton-Wyoming
546 Niagara Street P.O Box 250
Wyoming, Ontario N0N 1T0
Telephone: 519-845-3939
Email: asobanski@plympton-wyoming.ca

All personal information included in a submission, such as name, address, telephone number, and property location, is collected, maintained, and disclosed by the Ministry of the Environment, Conservation and Parks for the purpose of transparency and consultation. The information is collected under the authority of the *Environmental Assessment Act* or is collected and maintained for the purpose of creating a record that is available to the general public as described in Section 37 of the *Freedom of Information and Protection of Privacy Act*. Personal information you submit will become part of a public record that is available to the general public unless you request that your personal information remain confidential. For more information, please contact the Project Officer or the Ministry of the Environment's Freedom of Information and Privacy Coordinator at 416 819 5148.

This notice was first issued on June 30th, 2021.

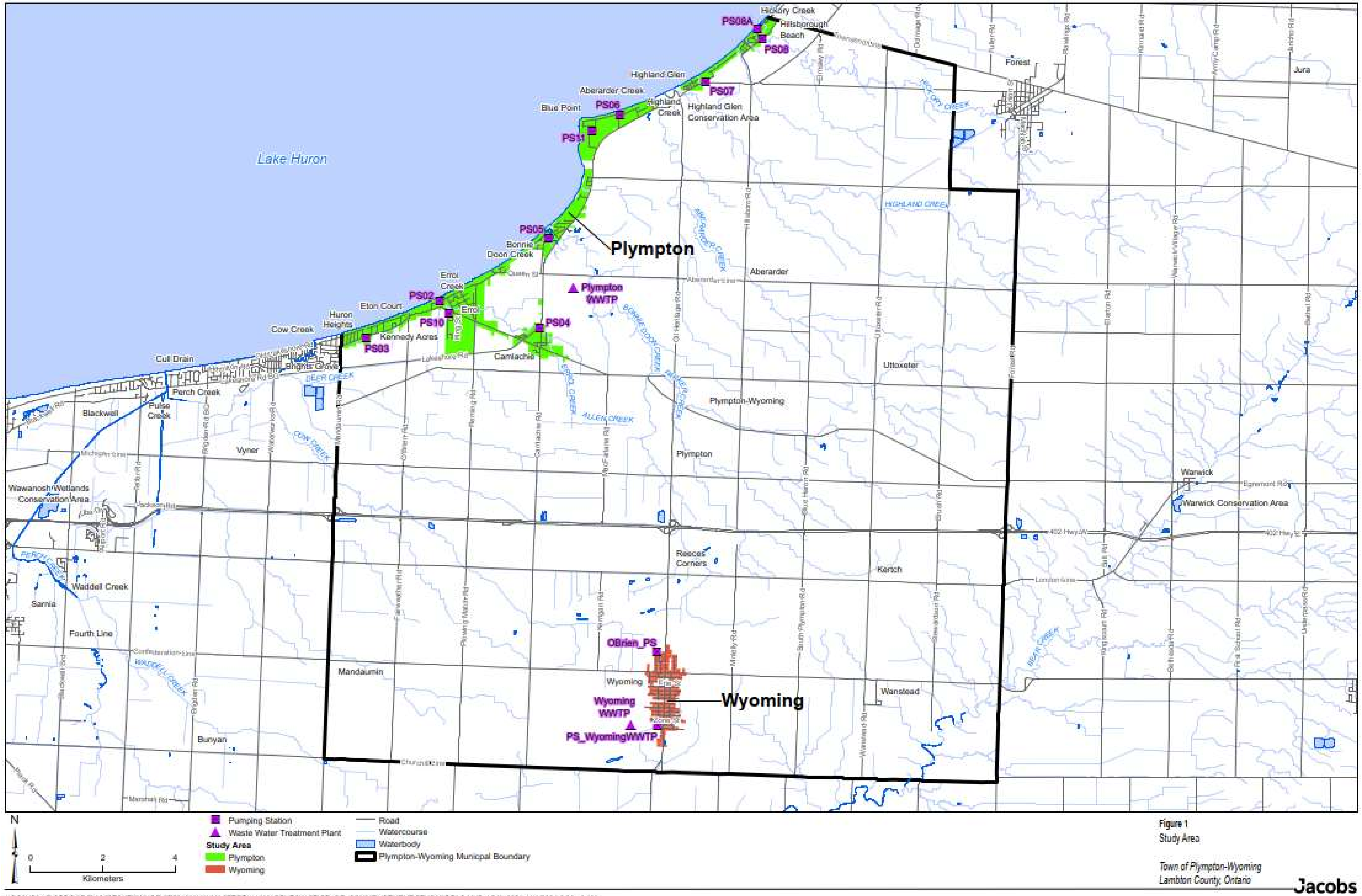

Figure 1. Study Area

From:	Philpott, Jared/KWO
Cc:	Schmitter, Jillian/KWO; Adam Sobanski
Bcc:	mdeisley@scrca.on.ca; mgallant@scrca.on.ca; edecloet@scrca.on.ca; sclark@scrca.on.ca; gsankar@scrca.on.ca; bmcdougall@scrca.on.ca; shodgkiss@scrca.on.ca; brian.mackay@canada.ca; rob.dobos@canada.ca; dave.gibson@dfo-mpo.gc.ca; emilie.st-onge@canada.ca; steven.begg@canada.ca; david.zeit@tc.gc.ca; tera.yochimhope@tc.gc.ca; jody.knibbs@canada.ca; roy.angelow@canada.ca; afshineh.pasha@canada.ca; lina.letiecq@canada.ca; dthompson@plympton-wyoming.ca; ctripp@plympton-wyoming.ca; secondarylanduse@hydroone.com; clinton.harper@lawss.com; scrbpac@att.net; allainj@thamesriver.on.ca; vito@southsidegroup.ca; llongo3@cogeco.ca; nelsonpeters1@hotmail.com; ccimetta@sarnialaw.com; francis@desenalaw.com; kbacchussarnia@gmail.com; paul@vanbree.ca; dougbain@royallepage.ca; jmichaelradcliffe@gmail.com; brad@bradz.ca; karla.barboza@ontario.ca; katherine.kirzati@ontario.ca; drew.crinklaw@ontario.ca; david.marriott@ontario.ca; michele.doncaster@ontario.ca; lee.bradshaw@ontario.ca; stephanie.francis@ontario.ca; annamaria.cross@ontario.ca; kathleen.oneill@ontario.ca; craig.newton@ontario.ca; rebecca.quach@ontario.ca; matt.garrow@ontario.ca; heather.levecque@ontario.ca; wendy.ren@ontario.ca; sean.fraser@ontario.ca; paula.dill@ontario.ca; heather.riddell@ontario.ca; jim.boothby@ontario.ca; aisha.sayles@ontario.ca; joseph.hillier@ontario.ca; amanda.larusso@ontario.ca; dawn.irish@ontario.ca
Subject:	Notice of Commencement - Plympton-Wyoming Wastewater Servicing Master Plan
Date:	Wednesday, June 30, 2021 9:20:00 AM
Attachments:	CE761200_PlymptonWyomingMP_[illegible]_Final_2021.06.24_Newspaper.pdf

Hello,

Please see the attached Notice of Commencement for the Plympton-Wyoming Wastewater Servicing Master Plan. The Master Plan is a long-term plan that will investigate the Town's sanitary sewer system capacity and condition and will guide how the Town will continue to meet current and anticipated demands over the next 20 years. This plan will:

- Identify existing and future capacity constraints and other existing deficiencies within the Town's wastewater collection system, pumping stations and wastewater treatment plants.
- Identify and evaluate alternatives to determine the preferred long-term solution to provide reliable wastewater servicing in the Town.

Project information is available and will continue to be updated at https://www.plympton-wyoming.com/en/my-plympton-wyoming/utilities-sewer-and-water.aspx?_mid_=12829. A public open house for this Master Plan will be held virtually on **August 11th, 2021 at 6:00 pm**, using the GoTo Meetings platform. The meeting link will be posted on the website closer to the date of the meeting and a reminder will be sent out to those who request to be part of the mailing list. Any person wishing to speak at the meeting must pre-register a minimum of 24 hours prior to the meeting. Following the public open house, the presentation slides will be available on the website in an accessible format for two weeks (until August 26th).

Should you have any questions or concerns regarding the Master Plan, please see the contact information included in the attached notice or reply to this email. Thank you for your participation.

Best regards,

Jared Philpott, EIT | Jacobs | Water/Wastewater Design Specialist
O: 1.519.579.3500 x73224 | M: 905.520.8781 | jared.philpott@jacobs.com
72 Victoria Street South, Suite 300 | Kitchener, ON N2G 4Y9 | Canada

From:	Philpott, Jared/KWO
To:	eanotification.swregion@ontario.ca
Cc:	Schmitter, Jillian/KWO; Adam Sobanski
Subject:	Town of Plympton-Wyoming - MEA Class EA - Wastewater Servicing Master Plan
Date:	Wednesday, June 30, 2021 8:52:00 AM
Attachments:	CE761200_PlymptonWyomingMP_NoC_Final_2021.06.24_Newspaper.pdf PIF_PlymptonWyomingWWSMP.xlsx

Hello,

Please see the attached notice of commencement and PIF regarding the Town of Plympton-Wyoming Wastewater Servicing Master Plan.

Best regards,

Jared Philpott, EIT | Jacobs | Water/Wastewater Design Specialist
O: 1.519.579.3500 x73224 | M: 905.520.8781 | jared.philpott@jacobs.com
72 Victoria Street South, Suite 300 | Kitchener, ON N2G 4Y9 | Canada

From:	Badali, Mark (MECP)
To:	asobanski@plympton-wyoming.ca
Cc:	Adrien, Pierre (MECP); Bechard, Marc (MECP); Schmitter, Jillian/KWO; Philpott, Jared/KWO
Subject:	[EXTERNAL] RE: Town of Plympton-Wyoming - MEA Class EA - Wastewater Servicing Master Plan
Date:	Wednesday, July 14, 2021 5:01:17 PM
Attachments:	Letter of Acknowledgement - Notice of Commencement - MCEA - Plympton-Wyoming WWSMP.pdf Supporting Attachment - Species at Risk Proponents Guide to Preliminary Screening (Draft May 2019).pdf

Good afternoon,

Please find the attached letter of acknowledgement and supporting attachments in response to the Notice of Commencement for the Town of Plympton-Wyoming's Wastewater Servicing Master MCEA project.

Best regards,

Mark Badali (he/him)
Regional Environmental Planner (REP) – Southwest Region
Project Review Unit | Environmental Assessment Branch
Ontario Ministry of the Environment, Conservation and Parks
Mark.Badali1@ontario.ca | (416) 457-2155

From: Philpott, Jared/KWO <Jared.Philpott@jacobs.com>
Sent: June 30, 2021 8:53 AM
To: EA Notices to SWRegion (MECP) <eanotification.swregion@ontario.ca>
Cc: Schmitter, Jillian/KWO <Jillian.Schmitter@jacobs.com>; Adam Sobanski <ASobanski@plympton-wyoming.ca>
Subject: Town of Plympton-Wyoming - MEA Class EA - Wastewater Servicing Master Plan

Hello,

Please see the attached notice of commencement and PIF regarding the Town of Plympton-Wyoming Wastewater Servicing Master Plan.

Best regards,

Jared Philpott, EIT | Jacobs | Water/Wastewater Design Specialist
O: 1.519.579.3500 x73224 | M: 905.520.8781 | jared.philpott@jacobs.com
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Ontario

Ministry of the Environment, Conservation and Parks

Ministère de l'Environnement, de la Protection de la nature et des Parcs

Environmental Assessment Branch

Direction des évaluations environnementales

1st Floor
135 St. Clair Avenue W
Toronto ON M4V 1P5
Tel.:   416 314-8001
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Rez-de-chaussée
135, avenue St. Clair Ouest
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Téléc. : 416 314-8452

July 14, 2021

Adam Sobanski
Director of Public Works
Town of Plympton-Wyoming

Re: **Wastewater Servicing Master Plan**
Town of Plympton-Wyoming
Municipal Class EA
Response to Notice of Commencement

Dear Adam Sobanski,

This letter is in response to the Notice of Commencement for the above noted project. The Ministry of the Environment, Conservation and Parks (MECP) acknowledges that the Town of Plympton-Wyoming (proponent) has indicated that the study is following the approved environmental planning process for a Master Plan under the Municipal Class Environmental Assessment (Class EA).

The **updated (February 2021)** attached "Areas of Interest" document provides guidance regarding the ministry's interests with respect to the Class EA process. Please address all areas of interest in the EA documentation at an appropriate level for the EA study. Proponents who address all the applicable areas of interest can minimize potential delays to the project schedule. **Further information is provided at the end of the Areas of Interest document relating to recent changes to the Environmental Assessment Act through Bill 197, Covid-19 Economic Recovery Act 2020.**

The Crown has a legal duty to consult Aboriginal communities when it has knowledge, real or constructive, of the existence or potential existence of an Aboriginal or treaty right and contemplates conduct that may adversely impact that right. Before authorizing this project, the Crown must ensure that its duty to consult has been fulfilled, where such a duty is triggered. Although the duty to consult with Aboriginal peoples is a duty of the Crown, the Crown may delegate procedural aspects of this duty to project proponents while retaining oversight of the consultation process.

The proposed project may have the potential to affect Aboriginal or treaty rights protected under Section 35 of Canada's *Constitution Act* 1982. Where the Crown's duty to consult is triggered in relation to the proposed project**, the MECP is delegating the procedural aspects of rights-based consultation to the proponent through this letter.** The Crown intends to rely on the delegated consultation process in discharging its duty to consult and maintains the right to participate in the consultation process as it sees fit.

Based on information provided to date and the Crown`s preliminary assessment the proponent is required to consult with the following communities who have been identified as potentially affected by the proposed project:

- Aamjiwnaang First Nation
- Chippewas of Kettle and Stoney Point
- Bkejwanong
- Chippewas of the Thames
- Oneida Nation of the Thames

Steps that the proponent may need to take in relation to Aboriginal consultation for the proposed project are outlined in the "Code of Practice for Consultation in Ontario's Environmental Assessment Process". Additional information related to Ontario's Environmental Assessment Act is available online at: www.ontario.ca/environmentalassessments.

Please also refer to the attached document "A Proponent's Introduction to the Delegation of Procedural Aspects of consultation with Aboriginal Communities" for further information, including the MECP's expectations for EA report documentation related to consultation with communities.

The proponent must contact the Director of Environmental Assessment Branch (EABDirector@ontario.ca) under the following circumstances subsequent to initial discussions with the communities identified by MECP:

- Aboriginal or treaty rights impacts are identified to you by the communities
- You have reason to believe that your proposed project may adversely affect an Aboriginal or treaty right
- Consultation with Indigenous communities or other stakeholders has reached an impasse
- A Part II Order request is expected on the basis of impacts to Aboriginal or treaty rights

The MECP will then assess the extent of any Crown duty to consult for the circumstances and will consider whether additional steps should be taken, including what role you will be asked to play should additional steps and activities be required.

A draft copy of the report should be sent directly to me prior to the filing of the final report, allowing a minimum of 30 days for the ministry's technical reviewers to provide comments.

Please also ensure a copy of the final notice is sent to the ministry's Southwest Region EA notification email account (eanotification.swregion@ontario.ca) after the draft report is reviewed and finalized.

Should you or any members of your project team have any questions regarding the material above, please contact me at mark.badali1@ontario.ca.

Yours truly,

Mark Badali
Regional Environmental Planner – Southwest Region

Cc: Pierre Adrien, Manager, Sarnia District Office, MECP
Marc Bechard, Water Compliance Supervisor, Sarnia District Office, MECP
Jillian Schmitter, Project Manager, Jacobs Engineering
Jared Philpott, Water/Wastewater Design Specialist, Jacobs Engineering

Encl. Areas of Interest
A Proponent's Introduction to the Delegation of Procedural Aspects of Consultation with Aboriginal Communities

AREAS OF INTEREST (v. February 2021)

It is suggested that you check off each section after you have considered / addressed it.

Planning and Policy

- Projects located in MECP Central Region are subject to **A Place to Grow: Growth Plan for the Greater Golden Horseshoe (2020).** Parts of the study area may also be subject to the Oak Ridges Moraine Conservation Plan (2017), Niagara Escarpment Plan (2017), Greenbelt Plan (2017) or Lake Simcoe Protection Plan (2014). Applicable plans and the applicable policies should be identified in the report, and the proponent should describe how the proposed project adheres to the relevant policies in these plans.

- The **Provincial Policy Statement (2020)** contains policies that protect Ontario's natural heritage and water resources. Applicable policies should be referenced in the report, and the proponent should describe how the proposed project is consistent with these policies.

- In addition to the provincial planning and policy level, the report should also discuss the planning context at the municipal and federal levels, as appropriate.

Source Water Protection

The *Clean Water Act*, 2006 (CWA) aims to protect existing and future sources of drinking water. To achieve this, several types of vulnerable areas have been delineated around surface water intakes and wellheads for every municipal residential drinking water system that is located in a source protection area. These vulnerable areas are known as a Wellhead Protection Areas (WHPAs) and surface water Intake Protection Zones (IPZs). Other vulnerable areas that have been delineated under the CWA include Highly Vulnerable Aquifers (HVAs), Significant Groundwater Recharge Areas (SGRAs), Event-based modelling areas (EBAs), and Issues Contributing Areas (ICAs). Source protection plans have been developed that include policies to address existing and future risks to sources of municipal drinking water within these vulnerable areas.

Projects that are subject to the Environmental Assessment Act that fall under a Class EA, or one of the Regulations, have the potential to impact sources of drinking water if they occur in designated vulnerable areas or in the vicinity of other at-risk drinking water systems (i.e. systems that are not municipal residential systems). MEA Class EA projects may include activities that, if located in a vulnerable area, could be a threat to sources of drinking water (i.e. have the potential to adversely affect the quality or quantity of drinking water sources) and the activity could therefore be subject to policies in a source protection plan. Where an activity poses a risk to drinking water, policies in the local source protection plan may impact how or where that activity is undertaken. Policies may prohibit certain activities, or they may require risk management measures for these activities. Municipal Official Plans, planning decisions, Class EA projects (where the project includes an activity that is a threat to drinking water) and prescribed instruments must conform with policies that address significant risks to drinking water and must have regard for policies that address moderate or low risks.

- In October 2015, the MEA Parent Class EA document was amended to include reference to the Clean Water Act (Section A.2.10.6) and indicates that proponents undertaking a Municipal Class EA project must identify early in their process whether a project is or could potentially be occurring with a vulnerable area. **Given this requirement, please include a section in the report on source water protection.**

  - The proponent should identify the source protection area and should clearly document how the proximity of the project to sources of drinking water (municipal or other) and any delineated vulnerable areas was considered and assessed. Specifically, the report should discuss whether or not the project is located in a vulnerable area and provide applicable details about the area.

  - If located in a vulnerable area, proponents should document whether any project activities are prescribed drinking water threats and thus pose a risk to drinking water (this should be consulted on with the appropriate Source Protection Authority). Where an activity poses a risk to drinking water, the proponent must document and discuss in the report how the project adheres to or has regard to applicable policies in the local source protection plan. This section should then be used to inform and be reflected in other sections of the report, such as the identification of net positive/negative effects of alternatives, mitigation measures, evaluation of alternatives etc.

- While most source protection plans focused on including policies for significant drinking water threats in the WHPAs and IPZs it should be noted that even though source protection plan policies may not apply in HVAs, these are areas where aquifers are sensitive and at risk to impacts and within these areas, activities may impact the quality of sources of drinking water for systems other than municipal residential systems.

- In order to determine if this project is occurring within a vulnerable area, proponents can use this mapping tool: http://www.applications.ene.gov.on.ca/swp/en/index.php. Note that various layers (including WHPAs, WHPA-Q1 and WHPA-Q2, IPZs, HVAs, SGRAs, EBAs, ICAs) can be turned on through the "Map Legend" bar on the left. The mapping tool will also provide a link to the appropriate source protection plan in order to identify what policies may be applicable in the vulnerable area.

- For further information on the maps or source protection plan policies which may relate to their project, proponents must contact the appropriate source protection authority. **Please consult with the local source protection authority to discuss potential impacts on drinking water. Please document the results of that consultation within the report and include all communication documents/correspondence.**

More Information
For more information on the *Clean Water Act*, source protection areas and plans, including specific information on the vulnerable areas and drinking water threats, please refer to Conservation Ontario's website where you will also find links to the local source protection plan/assessment report.

A list of the prescribed drinking water threats can be found in section 1.1 of Ontario Regulation 287/07 made under the *Clean Water Act*. In addition to prescribed drinking water threats, some source protection plans may include policies to address additional "local" threat activities, as approved by the MECP.

Climate Change

The document "Considering Climate Change in the Environmental Assessment Process" (Guide) is now a part of the Environmental Assessment program's Guides and Codes of Practice. The Guide sets out the MECP's expectation for considering climate change in the preparation, execution and documentation of environmental assessment studies and processes. The guide provides examples, approaches, resources, and references to assist proponents with consideration of climate change in EA. Proponents should review this Guide in detail.

- **The MECP expects proponents of Class EA projects to:**

    1. Consider during the assessment of alternative solutions and alternative designs, the following:
        a. the project's expected production of greenhouse gas emissions and impacts on carbon sinks (climate change mitigation); and
        b. resilience or vulnerability of the undertaking to changing climatic conditions (climate change adaptation).
    2. Include a discrete section in the report detailing how climate change was considered in the EA.

How climate change is considered can be qualitative or quantitative in nature and should be scaled to the project's level of environmental effect. In all instances, both a project's impacts on climate change (mitigation) and impacts of climate change on a project (adaptation) should be considered.

- The MECP has also prepared another guide to support provincial land use planning direction related to the completion of energy and emission plans. The "Community Emissions Reduction Planning: A Guide for Municipalities" document is designed to educate stakeholders on the municipal opportunities to reduce energy and greenhouse gas emissions, and to provide guidance on methods and techniques to incorporate consideration of energy and greenhouse gas emissions into municipal activities of all types. We encourage you to review the Guide for information.

Air Quality, Dust and Noise

- If there are sensitive receptors in the surrounding area of this project, a quantitative air quality/odour impact assessment will be useful to evaluate alternatives, determine impacts and identify appropriate mitigation measures. The scope of the assessment can be determined based on the potential effects of the proposed alternatives, and typically includes source and receptor characterization and a quantification of local air quality impacts on the sensitive receptors and the environment in the study area. The assessment will compare to all applicable standards or guidelines for all contaminants of concern. **Please contact this office for further consultation on the level of Air Quality Impact Assessment required for this project if not already advised.**

- If a quantitative Air Quality Impact Assessment is not required for the project, the MECP expects that the report contain a qualitative assessment which includes:

    - A discussion of local air quality including existing activities/sources that significantly impact local air quality and how the project may impact existing conditions;
    - A discussion of the nearby sensitive receptors and the project's potential air quality impacts on present and future sensitive receptors;
    - A discussion of local air quality impacts that could arise from this project during both construction and operation; and
    - A discussion of potential mitigation measures.

- As a common practice, "air quality" should be used an evaluation criterion for all road projects.

- Dust and noise control measures should be addressed and included in the construction plans to ensure that nearby residential and other sensitive land uses within the study area are not adversely affected during construction activities.

- The MECP recommends that non-chloride dust-suppressants be applied. For a comprehensive list of fugitive dust prevention and control measures that could be applied, refer to *Cheminfo Services Inc. Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities* report prepared for Environment Canada. March 2005.

- The report should consider the potential impacts of increased noise levels during the operation of the completed project. The proponent should explore all potential measures to mitigate significant noise impacts during the assessment of alternatives.

Ecosystem Protection and Restoration

- Any impacts to ecosystem form and function must be avoided where possible. The report should describe any proposed mitigation measures and how project planning will protect and enhance the local ecosystem.

- Natural heritage and hydrologic features should be identified and described in detail to assess potential impacts and to develop appropriate mitigation measures. The following sensitive environmental features may be located within or adjacent to the study area:
  - Key Natural Heritage Features: Habitat of endangered species and threatened species, fish habitat, wetlands, areas of natural and scientific interest (ANSIs), significant valleylands, significant woodlands; significant wildlife habitat (including habitat of special concern species); sand barrens, savannahs, and tallgrass prairies; and alvars.
  - Key Hydrologic Features: Permanent streams, intermittent streams, inland lakes and their littoral zones, seepage areas and springs, and wetlands.
  - Other natural heritage features and areas such as: vegetation communities, rare species of flora or fauna, Environmentally Sensitive Areas, Environmentally Sensitive Policy Areas, federal and provincial parks and conservation reserves, Greenland systems etc.

We recommend consulting with the Ministry of Natural Resources and Forestry (MNRF), Fisheries and Oceans Canada (DFO) and your local conservation authority to determine if special measures or additional studies will be necessary to preserve and protect these sensitive features. In addition, you may consider the provisions of the Rouge Park Management Plan if applicable.

Species at Risk

- The Ministry of the Environment, Conservation and Parks has now assumed responsibility of Ontario's Species at Risk program. Information, standards, guidelines, reference materials and technical resources to assist you are found at https://www.ontario.ca/page/species-risk.

- The Client's Guide to Preliminary Screening for Species at Risk (Draft May 2019) has been attached to the covering email for your reference and use. Please review this document for next steps.

- For any questions related to subsequent permit requirements, please contact SAROntario@ontario.ca.

Surface Water

- The report must include enough information to demonstrate that there will be no negative impacts on the natural features or ecological functions of any watercourses within the study area. Measures should be included in the planning and design process to ensure that any impacts to watercourses from construction or operational activities (e.g. spills, erosion, pollution) are mitigated as part of the proposed undertaking.

- Additional stormwater runoff from new pavement can impact receiving watercourses and flood conditions. Quality and quantity control measures to treat stormwater runoff should be considered for all new impervious areas and, where possible, existing surfaces. The ministry's Stormwater Management Planning and Design Manual (2003) should be referenced in the report and utilized when designing stormwater control methods. **A Stormwater Management Plan should be prepared as part of the Class EA process** that includes:

    - Strategies to address potential water quantity and erosion impacts related to stormwater draining into streams or other sensitive environmental features, and to ensure that adequate (enhanced) water quality is maintained
    - Watershed information, drainage conditions, and other relevant background information
    - Future drainage conditions, stormwater management options, information on erosion and sediment control during construction, and other details of the proposed works
    - Information on maintenance and monitoring commitments.

- Ontario Regulation 60/08 under the *Ontario Water Resources Act* (OWRA) applies to the Lake Simcoe Basin, which encompasses Lake Simcoe and the lands from which surface water drains into Lake Simcoe. If the proposed sewage treatment plant is listed in Table 1 of the regulation, the report should describe how the proposed project and its mitigation measures are consistent with the requirements of this regulation and the OWRA.

- Any potential approval requirements for surface water taking or discharge should be identified in the report. A Permit to Take Water (PTTW) under the OWRA will be required for any water takings that exceed 50,000 L/day, except for certain water taking activities that have been prescribed by the Water Taking EASR Regulation – *O. Reg. 63/16*. These prescribed water-taking activities require registration in the EASR instead of a PTTW. Please review the Water Taking User Guide for EASR for more information. Additionally, an Environmental Compliance Approval under the OWRA is required for municipal stormwater management works.

Groundwater

- The status of, and potential impacts to any well water supplies should be addressed. If the project involves groundwater takings or changes to drainage patterns, the quantity and quality of groundwater may be affected due to drawdown effects or the redirection of existing contamination flows. In addition, project activities may infringe on existing wells such that they must be reconstructed or sealed and abandoned. Appropriate information to define existing groundwater conditions should be included in the report.

- If the potential construction or decommissioning of water wells is identified as an issue, the report should refer to Ontario Regulation 903, Wells, under the OWRA.

- Potential impacts to groundwater-dependent natural features should be addressed. Any changes to groundwater flow or quality from groundwater taking may interfere with the ecological processes of streams, wetlands or other surficial features. In addition, discharging contaminated or high volumes of groundwater to these features may have direct impacts on their function. Any potential effects should be identified, and appropriate mitigation measures should be recommended. The level of detail required will be dependent on the significance of the potential impacts.

- Any potential approval requirements for groundwater taking or discharge should be identified in the report. A Permit to Take Water (PTTW) under the OWRA will be required for any water takings that exceed 50,000 L/day, with the exception of certain water taking activities that have been prescribed by the Water Taking EASR Regulation – *O. Reg. 63/16*. These prescribed water-taking activities require registration in the EASR instead of a PTTW. Please review the Water Taking User Guide for EASR for more information.

- Consultation with the railroad authorities is necessary wherever there is a plan to use construction dewatering in the vicinity of railroad lines or where the zone of influence of the construction dewatering potentially intercepts railroad lines.

Excess Materials Management

- In December 2019, MECP released a new regulation under the Environmental Protection Act, titled "On-Site and Excess Soil Management" (O. Reg. 406/19) to support improved management of excess construction soil. This regulation is a key step to support proper management of excess soils, ensuring valuable resources don't go to waste and to provide clear rules on managing and reusing excess soil. New risk-based standards referenced by this regulation help to facilitate local beneficial reuse which in turn will reduce greenhouse gas emissions from soil transportation, while ensuring strong protection of human health and the environment. The new regulation is being phased in over time, with the first phase in effect on January 1, 2021. For more information, please visit https://www.ontario.ca/page/handling-excess-soil.

- The report should reference that activities involving the management of excess soil should be completed in accordance with O. Reg. 406/19 and the MECP's current guidance document titled "Management of Excess Soil – A Guide for Best Management Practices" (2014).

- All waste generated during construction must be disposed of in accordance with ministry requirements

Contaminated Sites

- Any current or historical waste disposal sites should be identified in the report. The status of these sites should be determined to confirm whether approval pursuant to Section 46 of the EPA may be required for land uses on former disposal sites. We recommend referring to the MECP's D-4 guideline for land use considerations near landfills and dumps.
    - Resources available may include regional/local municipal official plans and data; provincial data on large landfill sites and small landfill sites; Environmental Compliance Approval information for waste disposal sites on Access Environment.

- Other known contaminated sites (local, provincial, federal) in the study area should also be identified in the report (Note – information on federal contaminated sites is found on the Government of Canada's website).

- The location of any underground storage tanks should be investigated in the report. Measures should be identified to ensure the integrity of these tanks and to ensure an appropriate response in the event of a spill. The ministry's Spills Action Centre must be contacted in such an event.

- Since the removal or movement of soils may be required, appropriate tests to determine contaminant levels from previous land uses or dumping should be undertaken. If the soils are contaminated, you must determine how and where they are to be disposed of, consistent with *Part XV.1 of the Environmental Protection Act* (EPA) and Ontario Regulation 153/04, Records of Site Condition, which details the new requirements related to site assessment and clean up. Please contact the appropriate MECP District Office for further consultation if contaminated sites are present.

Servicing, Utilities and Facilities

- The report should identify any above or underground utilities in the study area such as transmission lines, telephone/internet, oil/gas etc. The owners should be consulted to discuss impacts to this infrastructure, including potential spills.

- The report should identify any servicing infrastructure in the study area such as wastewater, water, stormwater that may potentially be impacted by the project.

- Any facility that releases emissions to the atmosphere, discharges contaminants to ground or surface water, provides potable water supplies, or stores, transports or disposes of waste must have an Environmental Compliance Approval (ECA) before it can operate lawfully. Please consult with MECP's Environmental Permissions Branch to determine whether a new or amended ECA will be required for any proposed infrastructure.

- We recommend referring to the ministry's environmental land use planning guides to ensure that any potential land use conflicts are considered when planning for any infrastructure or facilities related to wastewater, pipelines, landfills or industrial uses.

Mitigation and Monitoring

- Contractors must be made aware of all environmental considerations so that all environmental standards and commitments for both construction and operation are met. Mitigation measures should be clearly referenced in the report and regularly monitored during the construction stage of the project. In addition, we encourage proponents to conduct post-construction monitoring to ensure all mitigation measures have been effective and are functioning properly.

- Design and construction reports and plans should be based on a best management approach that centres on the prevention of impacts, protection of the existing environment, and opportunities for rehabilitation and enhancement of any impacted areas.

- The proponent's construction and post-construction monitoring plans must be documented in the report, as outlined in Section A.2.5 and A.4.1 of the MEA Class EA parent document.

Consultation

- The report must demonstrate how the consultation provisions of the Class EA have been fulfilled, including documentation of all stakeholder consultation efforts undertaken during the planning process. This includes a discussion in the report that identifies concerns that were raised and **describes how they have been addressed by the proponent** throughout the planning process. The report should also include copies of comments submitted on the project by interested stakeholders, and the proponent's responses to these comments (as directed by the Class EA to include full documentation).

- Please include the full stakeholder distribution/consultation list in the documentation.

Class EA Process

- If this project is a Master Plan: there are several different approaches that can be used to conduct a Master Plan, examples of which are outlined in Appendix 4 of the Class EA. **The Master Plan should clearly indicate the selected approach for conducting the plan**, by identifying whether the levels of assessment, consultation and documentation are sufficient to fulfill the requirements for Schedule B or C projects. Please note that any Schedule B or C projects identified in the plan would be subject to Part II Order Requests under the Environmental Assessment Act, although the plan itself would not be. **Please include a description of the approach being undertaken (use Appendix 4 as a reference).**

- If this project is a Master Plan: Any identified projects should also include information on the MCEA schedule associated with the project.

- The report should provide clear and complete documentation of the planning process in order to allow for transparency in decision-making.

- The Class EA requires the consideration of the effects of each alternative on all aspects of the environment (including planning, natural, social, cultural, economic, technical). The report should include a level of detail (e.g. hydrogeological investigations, terrestrial and aquatic assessments, cultural heritage assessments) such that all potential impacts can be identified, and appropriate mitigation measures can be developed. Any supporting studies conducted during the Class EA process should be referenced and included as part of the report.

- Please include in the report a list of all subsequent permits or approvals that may be required for the implementation of the preferred alternative, including but not limited to, MECP's PTTW, EASR Registrations and ECAs, conservation authority permits, species at risk permits, MTO permits and approvals under the *Impact Assessment Act*, 2019.

- Ministry guidelines and other information related to the issues above are available at http://www.ontario.ca/environment-and-energy/environment-and-energy. We encourage you to review all the available guides and to reference any relevant information in the report.

Amendments to the EAA through the Covid-19 Economic Recovery Act, 2020

Once the EA Report is finalized, the proponent must issue a Notice of Completion providing a minimum 30-day period during which documentation may be reviewed and comment and input can be submitted to the proponent. The Notice of Completion must be sent to the appropriate MECP Regional Office email address (for projects in MECP Southwest Region, the email is eanotification.swregion@ontario.ca).

The public has the ability to request a higher level of assessment on a project if they are concerned about potential adverse impacts to constitutionally protected Aboriginal and treaty rights. In addition, the Minister may issue an order on his or her own initiative within a specified time period. The Director (of the Environmental Assessment Branch) will issue a Notice of Proposed Order to the proponent if the Minister is considering an order for the project within 30 days after the conclusion of the comment period on the Notice of Completion. At this time, the Director may request additional information from the proponent. Once the requested information has been received, the Minister will have 30 days within which to make a decision or impose conditions on your project.

Therefore, the proponent cannot proceed with the project until at least 30 days after the end of the comment period provided for in the Notice of Completion. Further, the proponent may not proceed after this time if:

- a Part II Order request has been submitted to the ministry regarding potential adverse impacts to constitutionally protected Aboriginal and treaty rights, or
- the Director has issued a Notice of Proposed order regarding the project.

Please ensure that the Notice of Completion advises that outstanding concerns are to be directed to the proponent for a response, and that in the event there are outstanding concerns regarding potential adverse impacts to constitutionally protected Aboriginal and treaty rights, Part II Order requests on those matters should be addressed in writing to:

Minister Jeff Yurek
Ministry of Environment, Conservation and Parks
777 Bay Street, 5th Floor
Toronto ON M7A 2J3
minister.mecp@ontario.ca

and

Director, Environmental Assessment Branch
Ministry of Environment, Conservation and Parks
135 St. Clair Ave. W, 1st Floor
Toronto ON, M4V 1P5
EABDirector@ontario.ca

A PROPONENT'S INTRODUCTION TO THE DELEGATION OF PROCEDURAL ASPECTS OF CONSULTATION WITH ABORIGINAL COMMUNITIES

DEFINITIONS

The following definitions are specific to this document and may not apply in other contexts:

Aboriginal communities – the First Nation or Métis communities identified by the Crown for the purpose of consultation.

Consultation – the Crown's legal obligation to consult when the Crown has knowledge of an established or asserted Aboriginal or treaty right and contemplates conduct that might adversely impact that right. This is the type of consultation required pursuant to s. 35 of the *Constitution Act, 1982*. Note that this definition does not include consultation with Aboriginal communities for other reasons, such as regulatory requirements.

Crown – the Ontario Crown, acting through a particular ministry or ministries.

Procedural aspects of consultation – those portions of consultation related to the process of consultation, such as notifying an Aboriginal community about a project, providing information about the potential impacts of a project, responding to concerns raised by an Aboriginal community and proposing changes to the project to avoid negative impacts.

Proponent – the person or entity that wants to undertake a project and requires an Ontario Crown decision or approval for the project.

I. PURPOSE

The Crown has a legal duty to consult Aboriginal communities when it has knowledge of an existing or asserted Aboriginal or treaty right and contemplates conduct that may adversely impact that right. In outlining a framework for the duty to consult, the Supreme Court of Canada has stated that the Crown may delegate procedural aspects of consultation to third parties. This document provides general information about the Ontario Crown's approach to delegation of the procedural aspects of consultation to proponents.

This document is not intended to instruct a proponent about an individual project, and it does not constitute legal advice.

II. WHY IS IT NECESSARY TO CONSULT WITH ABORIGINAL COMMUNITIES?

The objective of the modern law of Aboriginal and treaty rights is the *reconciliation* of Aboriginal peoples and non-Aboriginal peoples and their respective rights, claims and interests. Consultation is an important component of the reconciliation process.

The Crown has a legal duty to consult Aboriginal communities when it has knowledge of an existing or asserted Aboriginal or treaty right and contemplates conduct that might adversely impact that right. For example, the Crown's duty to consult is triggered when it considers issuing a permit, authorization or approval for a project which has the potential to adversely impact an Aboriginal right, such as the right to hunt, fish, or trap in a particular area.

The scope of consultation required in particular circumstances ranges across a spectrum depending on both the nature of the asserted or established right and the seriousness of the potential adverse impacts on that right.

Depending on the particular circumstances, the Crown may also need to take steps to accommodate the potentially impacted Aboriginal or treaty right. For example, the Crown may be required to avoid or minimize the potential adverse impacts of the project.

III. THE CROWN'S ROLE AND RESPONSIBILITIES IN THE DELEGATED CONSULTATION PROCESS

The Crown has the responsibility for ensuring that the duty to consult, and accommodate where appropriate, is met. However, the Crown may delegate the procedural aspects of consultation to a proponent.

There are different ways in which the Crown may delegate the procedural aspects of consultation to a proponent, including through a letter, a memorandum of understanding, legislation, regulation, policy and codes of practice.

If the Crown decides to delegate procedural aspects of consultation, the Crown will generally:

- Ensure that the delegation of procedural aspects of consultation and the responsibilities of the proponent are clearly communicated to the proponent;
- Identify which Aboriginal communities must be consulted;
- Provide contact information for the Aboriginal communities;
- Revise, as necessary, the list of Aboriginal communities to be consulted as new information becomes available and is assessed by the Crown;
- Assess the scope of consultation owed to the Aboriginal communities;
- Maintain appropriate oversight of the actions taken by the proponent in fulfilling the procedural aspects of consultation;
- Assess the adequacy of consultation that is undertaken and any accommodation that may be required;
- Provide a contact within any responsible ministry in case issues arise that require direction from the Crown; and
- Participate in the consultation process as necessary and as determined by the Crown.

IV. THE PROPONENT'S ROLE AND RESPONSIBILITIES IN THE DELEGATED CONSULTATION PROCESS

Where aspects of the consultation process have been delegated to a proponent, the Crown, in meeting its duty to consult, will rely on the proponent's consultation activities and documentation of those activities. The consultation process informs the Crown's decision of whether or not to approve a proposed project or activity.

A proponent's role and responsibilities will vary depending on a variety of factors including the extent of consultation required in the circumstance and the procedural aspects of consultation the Crown has delegated to it. Proponents are often in a better position than the Crown to discuss a project and its potential impacts with Aboriginal communities and to determine ways to avoid or minimize the adverse impacts of a project.

A proponent can raise issues or questions with the Crown at any time during the consultation process. If issues or concerns arise during the consultation that cannot be addressed by the proponent, the proponent should contact the Crown.

a) What might a proponent be required to do in carrying out the procedural aspects of consultation?

Where the Crown delegates procedural aspects of consultation, it is often the proponent's responsibility to provide notice of the proposed project to the identified Aboriginal communities. The notice should indicate that the Crown has delegated the procedural aspects of consultation to the proponent and should include the following information:

- a description of the proposed project or activity;
- mapping;
- proposed timelines;
- details regarding anticipated environmental and other impacts;
- details regarding opportunities to comment; and
- any changes to the proposed project that have been made for seasonal conditions or other factors, where relevant.

Proponents should provide enough information and time to allow Aboriginal communities to provide meaningful feedback regarding the potential impacts of the project. Depending on the nature of consultation required for a project, a proponent also may be required to:

- provide the Crown with copies of any consultation plans prepared and an opportunity to review and comment;
- ensure that any necessary follow-up discussions with Aboriginal communities take place in a timely manner, including to confirm receipt of information, share and update information and to address questions or concerns that may arise;

- as appropriate, discuss with Aboriginal communities potential mitigation measures and/or changes to the project in response to concerns raised by Aboriginal communities;
- use language that is accessible and not overly technical, and translate material into Aboriginal languages where requested or appropriate;
- bear the reasonable costs associated with the consultation process such as, but not limited to, meeting hall rental, meal costs, document translation(s), or to address technical & capacity issues;
- provide the Crown with all the details about potential impacts on established or asserted Aboriginal or treaty rights, how these concerns have been considered and addressed by the proponent and the Aboriginal communities and any steps taken to mitigate the potential impacts;
- provide the Crown with complete and accurate documentation from these meetings and communications; and
- notify the Crown immediately if an Aboriginal community not identified by the Crown approaches the proponent seeking consultation opportunities.

b) What documentation and reporting does the Crown need from the proponent?

Proponents should keep records of all communications with the Aboriginal communities involved in the consultation process and any information provided to these Aboriginal communities.

As the Crown is required to assess the adequacy of consultation, it needs documentation to satisfy itself that the proponent has fulfilled the procedural aspects of consultation delegated to it. The documentation required would typically include:

- the date of meetings, the agendas, any materials distributed, those in attendance and copies of any minutes prepared;
- the description of the proposed project that was shared at the meeting;
- any and all concerns or other feedback provided by the communities;
- any information that was shared by a community in relation to its asserted or established Aboriginal or treaty rights and any potential adverse impacts of the proposed activity, approval or disposition on such rights;
- any proposed project changes or mitigation measures that were discussed, and feedback from Aboriginal communities about the proposed changes and measures;
- any commitments made by the proponent in response to any concerns raised, and feedback from Aboriginal communities on those commitments;
- copies of correspondence to or from Aboriginal communities, and any materials distributed electronically or by mail;

- information regarding any financial assistance provided by the proponent to enable participation by Aboriginal communities in the consultation;
- periodic consultation progress reports or copies of meeting notes if requested by the Crown;
- a summary of how the delegated aspects of consultation were carried out and the results; and
- a summary of issues raised by the Aboriginal communities, how the issues were addressed and any outstanding issues.

In certain circumstances, the Crown may share and discuss the proponent's consultation record with an Aboriginal community to ensure that it is an accurate reflection of the consultation process.

c) Will the Crown require a proponent to provide information about its commercial arrangements with Aboriginal communities?

The Crown may require a proponent to share information about aspects of commercial arrangements between the proponent and Aboriginal communities where the arrangements:

- include elements that are directed at mitigating or otherwise addressing impacts of the project;
- include securing an Aboriginal community's support for the project; or
- may potentially affect the obligations of the Crown to the Aboriginal communities.

The proponent should make every reasonable effort to exempt the Crown from confidentiality provisions in commercial arrangements with Aboriginal communities to the extent necessary to allow this information to be shared with the Crown.

The Crown cannot guarantee that information shared with the Crown will remain confidential. Confidential commercial information should not be provided to the Crown as part of the consultation record if it is not relevant to the duty to consult or otherwise required to be submitted to the Crown as part of the regulatory process.

V. WHAT ARE THE ROLES AND RESPONSIBILITIES OF ABORIGINAL COMMUNITIES' IN THE CONSULTATION PROCESS?

Like the Crown, Aboriginal communities are expected to engage in consultation in good faith. This includes:

- responding to the consultation notice;
- engaging in the proposed consultation process;
- providing relevant documentation;

- clearly articulating the potential impacts of the proposed project on Aboriginal or treaty rights; and
- discussing ways to mitigates any adverse impacts.

Some Aboriginal communities have developed tools, such as consultation protocols, policies or processes that provide guidance on how they would prefer to be consulted. Although not legally binding, proponents are encouraged to respect these community processes where it is reasonable to do so. Please note that there is no obligation for a proponent to pay a fee to an Aboriginal community in order to enter into a consultation process.

To ensure that the Crown is aware of existing community consultation protocols, proponents should contact the relevant Crown ministry when presented with a consultation protocol by an Aboriginal community or anyone purporting to be a representative of an Aboriginal community.

VI. WHAT IF MORE THAN ONE PROVINCIAL CROWN MINISTRY IS INVOLVED IN APPROVING A PROPONENT'S PROJECT?

Depending on the project and the required permits or approvals, one or more ministries may delegate procedural aspects of the Crown's duty to consult to the proponent. The proponent may contact individual ministries for guidance related to the delegation of procedural aspects of consultation for ministry-specific permits/approvals required for the project in question. Proponents are encouraged to seek input from all involved Crown ministries sooner rather than later.

Client's Guide to Preliminary Screening for Species at Risk

Ministry of the Environment, Conservation and Parks

Species at Risk Branch, Permissions and Compliance

DRAFT - May 2019

Table of Contents

1.0 Purpose, Scope, Background and Context

1.1 Purpose of this Guide

This guide has been created to:

- help clients better understand their obligation to gather information and complete a preliminary screening for species at risk before contacting the ministry,
- outline guidance and advice clients can expect to receive from the ministry at the preliminary screening stage,
- help clients understand how they can gather information about species at risk by accessing publicly available information housed by the Government of Ontario, and
- provide a list of other potential sources of species at risk information that exist outside the Government of Ontario.

It remains the client's responsibility to:

- carry out a preliminary screening for their projects,
- obtain best available information from all applicable information sources,
- conduct any necessary field studies or inventories to identify and confirm the presence or absence of species at risk or their habitat,
- consider any potential impacts to species at risk that a proposed activity might cause, and
- comply with the *Endangered Species Act* (ESA).

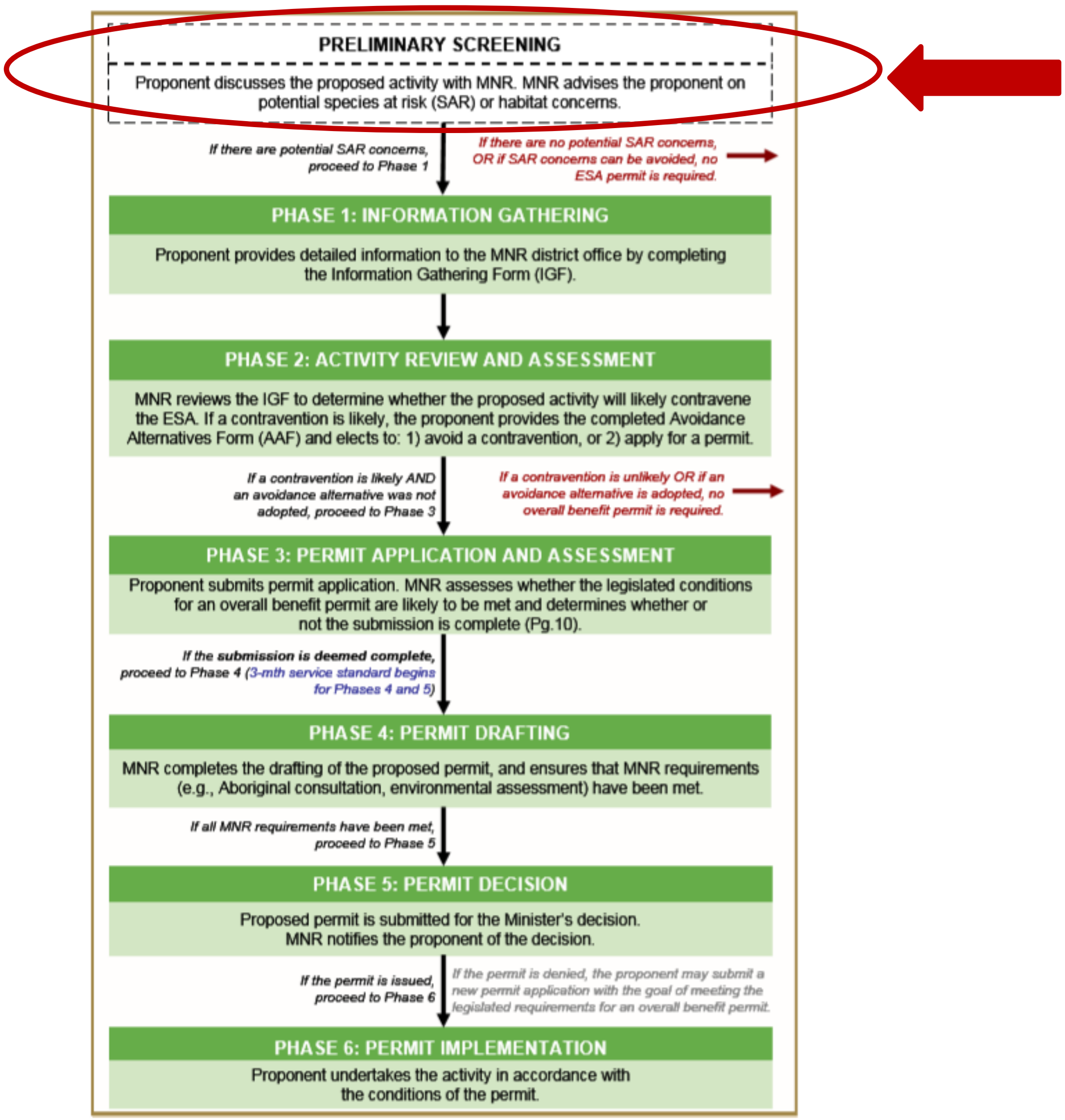
To provide the most efficient service, clients should initiate species at risk screenings and seek information from all applicable information sources identified in this guide, at a minimum, <u>prior to</u> contacting Government of Ontario ministry offices for further information or advice.

1.2 Scope

This guide is a resource for clients seeking to understand if their activity is likely to impact species at risk or if they are likely to trigger the need for an authorization under the ESA. It is not intended to circumvent any detailed site surveys that may be necessary to document species at risk or their habitat nor to circumvent the need to assess the impacts of a proposed activity on species at risk or their habitat. This guide is not an exhaustive list of available information sources for any given area as the availability of information on species at risk and their habitat varies across the province. This guide is intended to support projects and activities carried out on Crown and private land, by private landowners, businesses, other provincial ministries and agencies, or municipal government.

1.3 Background and Context

To receive advice on their proposed activity, clients must first determine whether any species at risk or their habitat exist or are likely to exist at or near their proposed activity, and whether their proposed activity is likely to contravene the ESA. Once this step is complete, clients may contact the ministry at SAROntario@ontario.ca to discuss the main purpose, general methods, timing and location of their proposed activity as well as information obtained about species at risk and their habitat at, or near, the site. At this stage, the ministry can provide advice and guidance to the client about potential species at risk or habitat concerns, measures that the client is considering to avoid adverse effects on species at risk or their habitat and whether additional field surveys are advisable. This is referred to as the "Preliminary Screening" stage. For more information on additional phases in the diagram below, please refer to the *Endangered Species Act Submission Standards for Activity Review and 17(2)(c) Overall Benefit Permits* policy available online at https://www.ontario.ca/page/species-risk-overall-benefit-permits



2.0 Roles and Responsibilities

To provide the most efficient service, clients should initiate species at risk screenings and seek information from all applicable information sources identified in this guide prior to contacting Government of Ontario ministry offices for further information or advice.

Step 1: Client seeks information regarding species at risk or their habitat that exist, or are likely to exist, at or near their proposed activity by referring to all applicable information sources identified in this guide.

Step 2: Client reviews and consider guidance on whether their proposed activity is likely to contravene the ESA (see section 3.4 of this guide for guidance on what to consider).

Step 3: Client gathers information identified in the checklist in section 4 of this guide.

Step 4: Client contacts the ministry at SAROntario@ontario.ca to discuss their preliminary screening. Ministry staff will ask the client questions about the main purpose, general methods, timing and location of their proposed activity as well as information obtained about species at risk and their habitat at, or near, the site. Ministry staff will also ask the client for their interpretation of the impacts of their activity on species at risk or their habitat as well as measures the client has considered to avoid any adverse impacts.

Step 5: Ministry staff will provide advice on next steps.

Option A: Ministry staff may advise the client they can proceed with their activity without an authorization under the ESA where the ministry is confident that:

- no protected species at risk or habitats are likely to be present at or near the proposed location of the activity; or
- protected species at risk or habitats are known to be present but the activity is not likely to contravene the ESA; or
- through the adoption of avoidance measures, the modified activity is not likely to contravene the ESA.

Option B: Ministry staff may advise the client to proceed to Phase 1 of the overall benefit permitting process (i.e. Information Gathering in the previous diagram), where:

- there is uncertainty as to whether any protected species at risk or habitats are present at or near the proposed location of the activity; or
- the potential impacts of the proposed activity are uncertain; or
- ministry staff anticipate the proposed activity is likely to contravene the ESA.

3.0 Information Sources

Land Information Ontario (LIO) and the Natural Heritage Information Centre (NHIC) maintain and provide information about species at risk, as well as related information about fisheries, wildlife, crown lands, protected lands and more. This information is made available to organizations, private individuals, consultants, and developers through online sources and is often considered under various pieces of legislation or as part of regulatory approvals and planning processes.

The information available from LIO or NHIC and the sources listed in this guide should not be considered as a substitute for site visits and appropriate field surveys. Generally, this information can be regarded as a starting point from which to conduct further field surveys, if needed. While this data represents best available current information, it is important to note that a lack of information for a site does not mean that species at risk or their habitat are not present. There are many areas where the Government of Ontario does not currently have information, especially in more remote parts of the province. The absence of species at risk location data at or near your site does not necessarily mean no species at risk are present at that location. On-site assessments can better verify site conditions, identify and confirm presence of species at risk and/or their habitats.

Information on the location (i.e. observations and occurrences) of species at risk is considered sensitive and therefore publicly available only on a 1km square grid as opposed to as a detailed point on a map. This generalized information can help you understand which species at risk are in the general vicinity of your proposed activity and can help inform field level studies you may want to undertake to confirm the presence, or absence of species at risk at or near your site.

Should you require specific and detailed information pertaining to species at risk observations and occurrences at or near your site on a finer geographic scale; you will be required to demonstrate your need to access this information, to complete data sensitivity training and to obtain a Sensitive Data Use License from the NHIC. Information on how to obtain a license can be found online at https://www.ontario.ca/page/get-natural-heritage-information.

Many organizations (e.g. other Ontario ministries, municipalities, conservation authorities) have ongoing licensing to access this data so be sure to check if your organization has this access and consult this data as part of your preliminary screening if your organization already has a license.

3.1 Make a Map: Natural Heritage Areas

The Make a Natural Heritage Area Map (available online at http://www.gisapplication.lrc.gov.on.ca/mamnh/Index.html?site=MNR_NHLUPS_NaturalHeritage&viewer=NaturalHeritage&locale=en-US provides public access to natural heritage information, including species at risk, without the user needing to have Geographic Information System (GIS) capability. It allows users to view and identify generalized species at risk information, mark areas of interest, and create and print a custom map directly from the web application. The tool also shows topographic information such as roads, rivers, contours and municipal boundaries.

Users are advised that sensitive information has been removed from the natural areas dataset and the occurrences of species at risk has been generalized to a 1-kilometre grid to mitigate the risks to the species (e.g. illegal harvest, habitat disturbance, poaching).

The web-based mapping tool displays natural heritage data, including:

- Generalized Species at risk occurrence data (based on a 1-km square grid),
- Natural Heritage Information Centre data.

Data cannot be downloaded directly from this web map; however, information included in this application is available digitally through Land Information Ontario (LIO) at https://www.ontario.ca/page/land-information-ontario.

3.2 Land Information Ontario (LIO)

Most natural heritage data is publicly available. This data is managed in a large provincial corporate database called the LIO Warehouse and can be accessed online through the LIO Metadata Management Tool at https://www.javacoeapp.lrc.gov.on.ca/geonetwork/srv/en/main.home. This tool provides descriptive information about the characteristics, quality and context of the data. Publicly available geospatial data can be downloaded directly from this site.

While most data are publicly available, some data may be considered highly sensitive (i.e. nursery areas for fish, species at risk observations) and as such, access to some data maybe restricted.

3.3 Additional Species at Risk Information Sources

- The Breeding Bird Atlas can be accessed online at http://www.birdsontario.org/atlas/index.jsp?lang=en
- eBird can be accessed online at https://ebird.org/home
- iNaturalist can be accessed online at https://www.inaturalist.org/
- The Ontario Reptile and Amphibian Atlas can be accessed online at https://ontarionature.org/programs/citizen-science/reptile-amphibian-atlas
- Your local Conservation Authority. Information to help you find your local Conservation Authority can be accessed online at https://conservationontario.ca/conservation-authorities/find-a-conservation-authority/

  Local naturalist groups or other similar community-based organizations
- Local Indigenous communities
- Local land trusts or other similar Environmental Non-Government Organizations
- Field level studies to identify if species at risk, or their habitat, are likely present or absent at or near the site.
- When an activity is proposed within one of the continuous caribou ranges, please be sure to consider the caribou Range Management Policy. This policy includes figures and maps of the continuous caribou range, can be found online at https://www.ontario.ca/page/range-management-policy-support-woodland-caribou-conservation-and-recovery

3.4 Information Sources to Support Impact Assessments

- Guidance to help you understand if your activity is likely to adversely impact species at risk or their habitat can be found online at https://www.ontario.ca/page/policy-guidance-harm-and-harass-under-endangered-species-act and https://www.ontario.ca/page/categorizing-and-protecting-habitat-under-endangered-species-act
- A list of species at risk in Ontario is available online at https://www.ontario.ca/page/species-risk-ontario. On this webpage, you can find out more about each species, including where is lives, what threatens it and any specific habitat protections that apply to it by clicking on the photo of the species.

4.0 Check-List

Please feel free to use the check list below to help you confirm you have explored all applicable information sources and to support your discussion with Ministry staff at the preliminary screening stage.

- ✓ Land Information Ontario (LIO)
- ✓ Natural Heritage Information Centre (NHIC)
- ✓ The Breeding Bird Atlas
- ✓ eBird
- ✓ iNaturalist
- ✓ Ontario Reptile and Amphibian Atlas
- ✓ List Conservation Authorities you contacted:____________________________________

  ____
- ✓ List local naturalist groups you contacted:______________________________________

  ____
- ✓ List local Indigenous communities you contacted:_______________________________

  ____
- ✓ List any other local land trusts or Environmental Non-Government Organizations you contacted:____

  ____
- ✓ List and field studies that were conducted to identify species at risk, or their habitat, likely to be present or absent at or near the site: _________________________________

  ____
- ✓ List what you think the likely impacts of your activity are on species at risk and their habitat (e.g. damage or destruction of habitat, killing, harming or harassing species at risk):____

  ____

Ontario

Ministry of the Environment, Conservation and Parks

Ministère de l'Environnement, de la Protection de la nature et des Parcs

Environmental Assessment Branch

Direction des évaluations environnementales

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135 St. Clair Avenue W
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January 21, 2022

Adam Sobanski
Director of Public Works
Town of Plympton-Wyoming
asobanski@plympton-wyoming.ca

Re: Plympton-Wyoming Wastewater Servicing Master Plan
Town of Plympton-Wyoming
Municipal Class Environmental Assessment – Master Plan (Approach #2)
Project Review Unit Comments – Draft Report

Dear Adam Sobanski,

Thank you for providing the ministry with an opportunity to comment on the draft Master Plan report (Report) for the above noted Class Environmental Assessment (EA) project. Our understanding is that in order to meet current and anticipated demands for reliable wastewater servicing, the Town of Plympton-Wyoming (the proponent) has determined that the preferred alternatives include various upgrades to the Plympton Wastewater Treatment Plant (WWTP) and pumping stations and the Wyoming WWTP and pumping stations. The Ministry of the Environment, Conservation and Parks (ministry) provides the following comments for your consideration.

General

1) In Table 4-18 in Section 4.5.2 of the Report, the proponent should either include "*Peak Capacity*" data for the O'Brien Pumping Station (PS) and Radcliffe PS, if available, or include an explanatory comment for why this information has not been provided. Table 4-19 in Section 4.5.2.1 seems to indicate that Peak Capacity for the O'Brien PS is 12 L/s.

2) As is indicated in the Report, the Class EA Master Plan Approach #2 involves a level of investigation, consultation, and documentation sufficient to fulfill the requirements for Schedule B projects. Please be advised that a Notice of Completion for this approach should identify/list the specific Schedule B projects for which Class EA requirements have been fulfilled. To improve clarity of the Class EA process, the proponent should consider specifying whether each preferred solution is considered a Schedule B project, and is therefore subject to requirements of the *Environmental Assessment Act* (EAA), including provisions for Section 16 order requests (formerly referred to as Part II order requests), or whether it is exempt from EAA requirements (i.e. considered a Schedule A or A+ project), or considered a Schedule C project, if applicable. For example, identification of which preferred solutions are considered Schedule B projects could be included in Section 7 and/or Section 9 of the Report.

Planning and Policy

3) A discussion on the provincial planning and policy context, particularly of the Provincial Policy Statement (PPS), 2020, is missing from the Report. As noted in Section C.1.1.1 of the Municipal Class EA document (https://municipalclassea.ca/manual/page45.html), the PPS is a key consideration for identifying land-use planning objectives and evaluating alternative solutions in Phase 2 of the Class EA process. The ministry notes that the Town of Plympton-Wyoming's Official Plan, referred to throughout the Report, is expected to be kept up-to-date with the PPS in order to protect provincial interests, as per section 4.6 of the PPS, 2020 (www.ontario.ca/page/provincial-policy-statement-2020). Regardless, the ministry notes that policies of the PPS continue to apply even after adoption and approval of an official plan.

Indigenous Consultation

4) The proponent should continue to provide regulatory notices to the identified communities as they move though the planning stages of the Class EA.

5) If the proponent has difficulty contacting Caldwell First Nation, they can also try to email the consultation coordinator at consultation@caldwellfirstnation.ca for future notices.

Air Quality

6) The ministry recommends that non-chloride dust suppressants be applied during construction.

Excess Materials and Waste

7) In December 2019, the ministry released a new regulation under the Environmental Protection Act, titled *On-Site and Excess Soil Management* (O. Reg. 406/19) to support improved management of excess construction soil. For more information, please visit www.ontario.ca/page/handling-excess-soil. Activities involving the management of excess soil should be completed in accordance with O. Reg. 406/19 and the ministry's current guidance document titled "Management of Excess Soil – A Guide for Best Management Practices" (2014). All waste generated during construction must be disposed of in accordance with ministry requirements.

Noise and Vibration

8) Construction mitigation plans should incorporate noise control measures to mitigate adverse noise impacts to nearby residential land uses in the study area during construction activities.

Source Water Protection

9) In October 2015 the Municipal Engineers Association Parent Class EA document was amended to include reference to the *Clean Water Act* in Section A.2.10.6 (available online at https://municipalclassea.ca/manual/page19.html), which indicates that proponents of a Class EA project must identify early in their process whether a project is or could potentially be occurring within a vulnerable area. The ministry recommends that the proponent include a section on source water protection in the main body of Report in order to clearly document how the proximity of the study area to any delineated vulnerable areas was considered and assessed.

Surface Water

10) The Report notes that the Plympton WWTP is expected to reach 85% capacity in 2032, while the Wyoming WWTP is expected to reach 85% capacity in 2039. The Report recommends that the proponent initiate the investigation for plant expansion when 85% capacity is reached. The ministry recommends that the proponent discuss with a consultant the requirements for plant expansion moving forward. Further to the relevant bullet in Section 9 of the Report, there maybe be requirements for an assimilative capacity study and data collection prior to the submission of a Schedule C Class EA to expand a plant beyond existing rated capacity. These requirements can be discussed with the ministry in advance.

Thank you for circulating this draft Report for the ministry's consideration. Please document the provision of the draft Report to the ministry as well as this Project Review Unit Comments letter in the final report, and please provide an accompanying response letter to support our review of the final report. A copy of the final Notice should be sent to the ministry's Southwest Region EA notification email account (eanotification.swregion@ontario.ca).

Should you or any members of your project team have any questions regarding the material above, please contact me at mark.badali1@ontario.ca.

Sincerely,

Mark Badali

Mark Badali, Regional Environmental Planner, Project Review Unit, MECP

cc Sean Morrison, Manager, Sarnia District Office, MECP
Marc Bechard, Water Compliance Supervisor, Sarnia District Office, MECP
Jillian Schmitter, Water Resources Engineer, Jacobs
Jared Philpott, Water/Wastewater Design Specialist, Jacobs

Plympton-Wyoming Wastewater Servicing Master Plan Schedule B Class EA - MECP Comment Response Matrix

Comment No.	Comment Category	Comment	Responder	Response
1	General	In Table 4-18 in Section 4.5.2 of the Report, the proponent should either include “Peak Capacity” data for the O’Brien Pumping Station (PS) and Radcliffe PS, if available, or include an explanatory comment for why this information has not been provided. Table 4-19 in Section 4.5.2.1 seems to indicate that Peak Capacity for the O’Brien PS is 12 L/s.	J. Philpott	This table has been revised to include the peak capacities for the O'Brien and Radcliffe PSs.
2	General	As is indicated in the Report, the Class EA Master Plan Approach #2 involves a level of investigation, consultation, and documentation sufficient to fulfill the requirements for Schedule B projects. Please be advised that a Notice of Completion for this approach should identify/list the specific Schedule B projects for which Class EA requirements have been fulfilled. To improve clarity of the Class EA process, the proponent should consider specifying whether each preferred solution is considered a Schedule B project, and is therefore subject to requirements of the Environmental Assessment Act (EAA), including provisions for Section 16 order requests (formerly referred to as Part II order requests), or whether it is exempt from EAA requirements (i.e. considered a Schedule A or A+ project), or considered a Schedule C project, if applicable. For example, identification of which preferred solutions are considered Schedule B projects could be included in Section 7 and/or Section 9 of the Report.	J. Philpott	A column indicating the EAA requirements for each of the preferred solutions has been added to Table 9-1.
3	Planning and Policy	A discussion on the provincial planning and policy context, particularly of the Provincial Policy Statement (PPS), 2020, is missing from the Report. As noted in Section C.1.1.1 of the Municipal Class EA document (https://municipalclassea.ca/manual/page45.html), the PPS is a key consideration for identifying land-use planning objectives and evaluating alternative solutions in Phase 2 of the Class EA process. The ministry notes that the Town of Plympton-Wyoming’s Official Plan, referred to throughout the Report, is expected to be kept up-to-date with the PPS in order to protect provincial interests, as per section 4.6 of the PPS, 2020 (www.ontario.ca/page/provincial-policy-statement-2020). Regardless, the ministry notes that policies of the PPS continue to apply even after adoption and approval of an official plan.	J. Philpott	A section discussing the Provincial Policy Statement has been added to Section 4 of the report.
4	Indigenous Consultation	The proponent should continue to provide regulatory notices to the identified communities as they move though the planning stages of the Class EA.	J. Philpott	This comment has been noted.
5	Indigenous Consultation	If the proponent has difficulty contacting Caldwell First Nation, they can also try to email the consultation coordinator at consultation@caldwellfirstnation.ca for future notices.	J. Philpott	This comment has been noted.
6	Air Quality	The ministry recommends that non-chloride dust suppressants be applied during construction.	J. Philpott	This comment has been noted and will be considered during the design and construction phase for relevant projects.
7	Excess Materials and Waste	In December 2019, the ministry released a new regulation under the Environmental Protection Act, titled On-Site and Excess Soil Management (O. Reg. 406/19) to support improved management of excess construction soil. For more information, please visit www.ontario.ca/page/handling-excess-soil. Activities involving the management of excess soil should be completed in accordance with O. Reg. 406/19 and the ministry’s current guidance document titled “Management of Excess Soil – A Guide for Best Management Practices” (2014). All waste generated during construction must be disposed of in accordance with ministry requirements.	J. Philpott	This comment has been noted and will be considered during the design and construction phase for relevant projects.
8	Noise and Vibration	Construction mitigation plans should incorporate noise control measures to mitigate adverse noise impacts to nearby residential land uses in the study area during construction activities.	J. Philpott	This comment has been noted and will be considered during the design and construction phase for relevant projects.
9	Source Water Protection	In October 2015 the Municipal Engineers Association Parent Class EA document was amended to include reference to the Clean Water Act in Section A.2.10.6 (available online at https://municipalclassea.ca/manual/page19.html), which indicates that proponents of a Class EA project must identify early in their process whether a project is or could potentially be occurring within a vulnerable area. The ministry recommends that the proponent include a section on source water protection in the main body of Report in order to clearly document how the proximity of the study area to any delineated vulnerable areas was considered and assessed.	J. Philpott	A section discussing source water protection has been added to Section 4.3 of the report.
10	Surface Water	The Report notes that the Plympton WWTP is expected to reach 85% capacity in 2032, while the Wyoming WWTP is expected to reach 85% capacity in 2039. The Report recommends that the proponent initiate the investigation for plant expansion when 85% capacity is reached. The ministry recommends that the proponent discuss with a consultant the requirements for plant expansion moving forward. Further to the relevant bullet in Section 9 of the Report, there maybe be requirements for an assimilative capacity study and data collection prior to the submission of a Schedule C Class EA to expand a plant beyond existing rated capacity. These requirements can be discussed with the ministry in advance.	J. Philpott	Additional information regarding the requirement for an assimilative capacity study has been added to the bullet referenced in this comment.

From:	MNRF Ayl Planners (MNRF)
To:	Schmitter, Jillian/KWO; ASobanski@plympton-wyoming.ca
Cc:	Philpott, Jared/KWO
Subject:	[EXTERNAL] RE: Notice of Commencement - Plympton-Wyoming Wastewater Servicing Master Plan
Date:	Wednesday, July 7, 2021 1:36:52 PM
Attachments:	image001.emz image002.png image003.png CE761200_PlymptonWyomingMP_NoC_Final_2021.06.24_Newspaper.pdf NHGuide_MNRF_2019-04-01.pdf

Ministry of Northern Development, Mines, Natural Resources and Forestry

615 John Street North
Aylmer, ON N5H 2S8
Tel: 519-773-9241
Fax: 519-773-9014

Ministère du Développement du Nord, des Mines, des Richesses naturelles et des Forêts

615, rue John Nord
Aylmer ON N5H 2S8
Tél: 519-773-9241
Téléc: 519-773-9014

July 7, 2021

Subject: Notice of Commencement - Plympton-Wyoming Wastewater Servicing Master Plan

The Ministry of Northern Development, Mines, Natural Resources and Forestry (NDMNRF) received the notice for the Plympton-Wyoming Wastewater Servicing Master Plan. Thank you for circulating this information to our office, however, please note that we have not completed a screening of natural heritage or other resource values for the project at this time. Please also note that it is your responsibility to be aware of and comply with all relevant federal or provincial legislation, municipal by-laws or other agency approvals.

This response provides information to guide you in identifying and assessing natural features and resources as required by applicable policies and legislation, and engaging with the Ministry for advice as needed.

<u>Natural Heritage & Endangered Species Act</u>

In order to provide the most efficient service possible, the attached Natural Heritage Information Request Guide has been developed to assist you with accessing natural heritage data and values from convenient online sources.

It remains the proponent's responsibility to complete a preliminary screening for each project, to obtain available information from multiple sources, to conduct any necessary field studies, and to consider any potential environmental impacts that may result from an activity. We wish to emphasize the need for the proponents of development activities to complete screenings prior to contacting the Ministry or other agencies for more detailed technical information and advice.

The Ministry continues to work on updating data housed by Land Information Ontario and the Natural Heritage Information Centre, and ensuring this information is accessible through online resources. Species at risk data is regularly being updated. To ensure access to reliable and up to date information, please contact the Ministry of the Environment, Conservation and Parks at SAROntario@ontario.ca.

Petroleum Wells & Oil, Gas and Salt Resource Act

There may be petroleum wells within the proposed project area. Please consult the Ontario Oil, Gas and Salt Resources Library website (www.ogsrlibrary.com) for the best known data on any wells recorded by NDMNRF. Please reference the 'Definitions and Terminology Guide' listed in the publications on the Library website in order to better understand the well information available. Any oil and gas wells in your project area are regulated by the *Oil, Gas and Salt Resource Act*, and the supporting regulations and operating standards. If any unanticipated wells are encountered during development of the project, or if the proponent has questions regarding petroleum operations, the proponent should contact the Petroleum Operations Section at POSRecords@ontario.ca or 519-873-4634.

Public Lands Act & Lakes and Rivers Improvement Act

Some projects may be subject to the provisions of the *Public Lands Act* or the *Lakes and Rivers Improvement Act*. Please review the information on NDMNRF's web pages provided below regarding when an approval is required or not. Please note that many of the authorizations issued under the *Lakes and Rivers Improvement Act* are administered by the local Conservation Authority.

- For more information about the *Public Lands Act*: https://www.ontario.ca/page/crown-land-work-permits
- For more information about the *Lakes and Rivers Improvement Act*: https://www.ontario.ca/document/lakes-and-rivers-improvement-act-administrative-guide

After reviewing the information provided, if you have not identified any of NDMNRF's interests stated above, there is no need to circulate any subsequent notices to our office.

If you have any questions or concerns, please feel free to contact me.

Sincerely,
Karina

Karina Černiavskaja | District Planner
Ministry of Northern Development, Mines, Natural Resources and Forestry
Email: MNRF.Ayl.Planners@ontario.ca

As part of providing accessible customer service, please let me know if you have any accommodation needs or require communication supports or alternate formats.

From: Philpott, Jared/KWO <Jared.Philpott@jacobs.com>

Sent: June 30, 2021 9:21 AM
Cc: Schmitter, Jillian/KWO <Jillian.Schmitter@jacobs.com>; Adam Sobanski <ASobanski@plympton-wyoming.ca>
Subject: Notice of Commencement - Plympton-Wyoming Wastewater Servicing Master Plan

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Hello,

Please see the attached Notice of Commencement for the Plympton-Wyoming Wastewater Servicing Master Plan. The Master Plan is a long-term plan that will investigate the Town's sanitary sewer system capacity and condition and will guide how the Town will continue to meet current and anticipated demands over the next 20 years. This plan will:

- Identify existing and future capacity constraints and other existing deficiencies within the Town's wastewater collection system, pumping stations and wastewater treatment plants.
- Identify and evaluate alternatives to determine the preferred long-term solution to provide reliable wastewater servicing in the Town.

Project information is available and will continue to be updated at https://www.plympton-wyoming.com/en/my-plympton-wyoming/utilities-sewer-and-water.aspx?_mid_=12829. A public open house for this Master Plan will be held virtually on **August 11th, 2021 at 6:00 pm**, using the GoTo Meetings platform. The meeting link will be posted on the website closer to the date of the meeting and a reminder will be sent out to those who request to be part of the mailing list. Any person wishing to speak at the meeting must pre-register a minimum of 24 hours prior to the meeting. Following the public open house, the presentation slides will be available on the website in an accessible format for two weeks (until August 26th).

Should you have any questions or concerns regarding the Master Plan, please see the contact information included in the attached notice or reply to this email. Thank you for your participation.

Best regards,

Jared Philpott, EIT | Jacobs | Water/Wastewater Design Specialist
O: 1.519.579.3500 x73224 | M: 905.520.8781 | jared.philpott@jacobs.com
72 Victoria Street South, Suite 300 | Kitchener, ON N2G 4Y9 | Canada

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From:	Crinklaw, Drew (OMAFRA)
To:	Philpott, Jared/KWO
Cc:	Schmitter, Jillian/KWO; Adam Sobanski; Kielek-Caster, Sarah (OMAFRA)
Subject:	[EXTERNAL] RE: Notice of Commencement - Plympton-Wyoming Wastewater Servicing Master Plan
Date:	Wednesday, June 30, 2021 12:20:56 PM
Attachments:	OMAFRA Rural Planner Coverage Map (May, 2021).pdf

Thank-you for this circulation.

Please be advised that I am currently on an acting assignment and would suggest that you contact Sarah Kielek-Caster as per the attached map.

In the future, to help avoid misdirection with staffing changes at OMAFRA, you can also send correspondence for all EA notices generated by your company to the Ministry's centralized email address: omafra.eanotices@ontario.ca.

Please update your mailing and distribution lists accordingly.

Kind regards,

Drew Crinklaw
Policy Advisor (A)
Land Use Policy & Stewardship Unit
Ontario Ministry of Agriculture, Food & Rural Affairs
667 Exeter Road, London, ON N6E 1L3
Phone: 519-317-4493
drew.crinklaw@ontario.ca

Please Note: As part of providing accessible customer service, please let me know if you have any accommodation needs or require communication supports or alternate formats.

From: Philpott, Jared/KWO <Jared.Philpott@jacobs.com>
Sent: Wednesday, June 30, 2021 9:21 AM
Cc: Schmitter, Jillian/KWO <Jillian.Schmitter@jacobs.com>; Adam Sobanski <ASobanski@plympton-wyoming.ca>
Subject: Notice of Commencement - Plympton-Wyoming Wastewater Servicing Master Plan

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wastewater servicing in the Town.

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Best regards,

Jared Philpott, EIT | Jacobs | Water/Wastewater Design Specialist
O: 1.519.579.3500 x73224 | M: 905.520.8781 | jared.philpott@jacobs.com
72 Victoria Street South, Suite 300 | Kitchener, ON N2G 4Y9 | Canada

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From: Office of the Provincial Land and Development Facilitator
To: Philpott, Jared/KWO
Subject: [EXTERNAL] RE: Notice of Commencement - Plympton-Wyoming Wastewater Servicing Master Plan
Date: Wednesday, June 30, 2021 1:07:33 PM

Hello,

This request is to have Paula Dill removed from the distribution list as she has no involvement with this matter.

Thanks,
Office of the Provincial Land and Development Facilitator

From: Philpott, Jared/KWO <Jared.Philpott@jacobs.com>
Sent: Wednesday, June 30, 2021 9:20:50 AM
Cc: Schmitter, Jillian/KWO <Jillian.Schmitter@jacobs.com>; Adam Sobanski <ASobanski@plympton-wyoming.ca>
Subject: Notice of Commencement - Plympton-Wyoming Wastewater Servicing Master Plan

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Hello,

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Best regards,

Jared Philpott, EIT | Jacobs | Water/Wastewater Design Specialist
O: 1.519.579.3500 x73224 | M: 905.520.8781 | jared.philpott@jacobs.com

72 Victoria Street South, Suite 300 | Kitchener, ON N2G 4Y9 | Canada

---

From: Emily De Cloet
To: Laura Biancolin
Cc: Schmitter, Jillian/KWO; Adam Sobanski; Philpott, Jared/KWO
Subject: [EXTERNAL] RE: Notice of Commencement - Plympton-Wyoming Wastewater Servicing Master Plan
Date: Wednesday, June 30, 2021 1:04:40 PM
Attachments: image001.png

Hi Laura,

I received the below email re: Plympton-Wyoming Master Plan. Please circulate within your department as you see fit.

Regards,

Emily De Cloet, BES
Water Resources Specialist
St. Clair Region Conservation Authority
519-245-3710 ext. 258
edecloet@scrca.on.ca

Due to COVID-19, I am working remotely until further notice and will be monitoring emails and voicemails as time permits. Thank you for your patience in allowing extra time in receiving a response to your inquiry.

From: Philpott, Jared/KWO [mailto:Jared.Philpott@jacobs.com]
Sent: June 30, 2021 9:21 AM
Cc: Schmitter, Jillian/KWO <Jillian.Schmitter@jacobs.com>; Adam Sobanski <ASobanski@plympton-wyoming.ca>
Subject: Notice of Commencement - Plympton-Wyoming Wastewater Servicing Master Plan

Hello,

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Best regards,

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O: 1.519.579.3500 x73224 | M: 905.520.8781 | jared.philpott@jacobs.com
72 Victoria Street South, Suite 300 | Kitchener, ON N2G 4Y9 | Canada

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From:	Begg, Steven (IAAC/AEIC)
To:	Philpott, Jared/KWO
Subject:	[EXTERNAL] RE: Notice of Commencement - Plympton-Wyoming Wastewater Servicing Master Plan
Date:	Wednesday, June 30, 2021 11:17:54 AM

Hello, I do not know why I am receiving this email. Pleas remove me from your distribution list.

From: Philpott, Jared/KWO <Jared.Philpott@jacobs.com>
Sent: Wednesday, June 30, 2021 9:21 AM
Cc: Schmitter, Jillian/KWO <Jillian.Schmitter@jacobs.com>; Adam Sobanski <ASobanski@plympton-wyoming.ca>
Subject: Notice of Commencement - Plympton-Wyoming Wastewater Servicing Master Plan

Hello,

Please see the attached Notice of Commencement for the Plympton-Wyoming Wastewater Servicing Master Plan. The Master Plan is a long-term plan that will investigate the Town's sanitary sewer system capacity and condition and will guide how the Town will continue to meet current and anticipated demands over the next 20 years. This plan will:

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Best regards,

Jared Philpott, EIT | Jacobs | Water/Wastewater Design Specialist
O: 1.519.579.3500 x73224 | M: 905.520.8781 | jared.philpott@jacobs.com
72 Victoria Street South, Suite 300 | Kitchener, ON N2G 4Y9 | Canada

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From: Adam Sobanski
To: Schmitter, Jillian/KWO; Philpott, Jared/KWO
Subject: [EXTERNAL] FW: WWMP MCEA Comment
Date: Wednesday, June 30, 2021 9:35:25 AM

FYI

From: Adam Sobanski
Sent: Wednesday, June 30, 2021 9:35 AM
To: 'Brad Zantingh'
Subject: RE: [EXTERNAL] ???

It is just a study are map it is not to be used for any other purpose! The notice has already been mailed and emailed out. I will ensure the maps in the plan its self are representative of existing and potential conditions!

From: Brad Zantingh [mailto:brad@bradz.ca]
Sent: Wednesday, June 30, 2021 9:32 AM
To: Adam Sobanski
Subject: Re: [EXTERNAL] ???

Is there any reason we cant use correct maps then?

Maps like this confuse residents, and planners?

I also think you have lands included that are not zoned residential? I need to check that…. But do not think you need to study non designated lands?

Sent from my iPhone

On Jun 30, 2021, at 9:27 AM, Adam Sobanski <ASobanski@plympton-wyoming.ca> wrote:

> yes
>
> **From:** Brad Zantingh [mailto:brad@bradz.ca]
> **Sent:** Wednesday, June 30, 2021 9:26 AM
> **To:** Adam Sobanski
> **Subject:** Re: [EXTERNAL] ???
>
> My wyoming lands as well?
>
> They dont show on the map is all?
>
> Sent from my iPhone
>
> On Jun 30, 2021, at 9:25 AM, Adam Sobanski <ASobanski@plympton-wyoming.ca> wrote:

Your lands have been included as well as others. The master plan is as much about existing conditions as future conditions.

Sincerely,
Adam Sobanski, CET, CRS.
Director of Public Works
Town of Plympton-Wyoming
546 Niagara Street P.O. Box 250
Wyoming, ON N0N 1T0
Phone: 519-845-3939
Toll Free (Ontario): 1-877-313-3939
Fax: 519-845-0597
E-mail: asobanski@plympton-wyoming.ca
Website: www.plympton-wyoming.ca

Sent from my iPhone

On Jun 30, 2021, at 9:14 AM, Brad Zantingh <brad@bradz.ca> wrote:

There appears to be missing designated residential land on this map?

<IMG_1486.PNG>

Sent from my iPhone

From:	Dave Hannam - Zelinka Priamo Ltd.
To:	Philpott, Jared/KWO
Subject:	[EXTERNAL] FW: Notice of Commencement - Plympton-Wyoming Wastewater Servicing Master Plan
Date:	Monday, July 19, 2021 2:02:31 PM
Attachments:	CE761200_PlymptonWyomingMP_NoC_Final_2021.06.24_Newspaper.pdf

Hi Jared, we are the planning consultants for the Southside Group, and request that you please add me to the notification list for all future correspondence pertaining to the Plympton-Wyoming Wastewater Servicing Master Plan. **Please confirm receipt of this request by return email.**

Thanks and regards

Dave Hannam MCIP, RPP
Senior Associate

Zelinka Priamo Ltd.
London Office
318 Wellington Road
London, ON N6C 4P4
(519) 474-7137 office
(416) 312-1412 cell
dave.h@zpplan.com
www.zpplan.com

From: Philpott, Jared/KWO [mailto:Jared.Philpott@jacobs.com]
Sent: June 30, 2021 9:21 AM
Cc: Schmitter, Jillian/KWO; Adam Sobanski
Subject: Notice of Commencement - Plympton-Wyoming Wastewater Servicing Master Plan

Hello,

Please see the attached Notice of Commencement for the Plympton-Wyoming Wastewater Servicing Master Plan. The Master Plan is a long-term plan that will investigate the Town's sanitary sewer system capacity and condition and will guide how the Town will continue to meet current and anticipated demands over the next 20 years. This plan will:

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Should you have any questions or concerns regarding the Master Plan, please see the contact information included in the attached notice or reply to this email. Thank you for your participation.

Best regards,

Jared Philpott, EIT | Jacobs | Water/Wastewater Design Specialist
O: 1.519.579.3500 x73224 | M: 905.520.8781 | jared.philpott@jacobs.com
72 Victoria Street South, Suite 300 | Kitchener, ON N2G 4Y9 | Canada

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From:	Schmitter, Jillian/KWO
To:	Philpott, Jared/KWO
Cc:	Bauman, Evan
Subject:	FW: PW Master Wastewater Plan
Date:	Monday, July 12, 2021 8:51:45 AM

Jared & Evan,

Can you file this in the EA project file and add Mike and J to the project mailing list?

Thanks,

Jillian

From: mike hanki <mike.hanki@sympatico.ca>
Sent: Thursday, July 8, 2021 9:24 PM
To: Schmitter, Jillian/KWO <Jillian.Schmitter@jacobs.com>
Cc: mike hanki <mike.hanki@sympatico.ca>; J Hanki <jehanki@yahoo.com>
Subject: [EXTERNAL] PW Master Wastewater Plan

I would like a " reminder will be sent out to those who request to be part of the mailing list "
My mailing address is Box 346, Wyoming On. N0N 1T0 and by email please use both
mike.hanki@sympatico.ca and jehanki@yahoo.com
Thanks, mike hanki

Sent from Mail for Windows 10

From: Schmitter, Jillian/KWO
To: Philpott, Jared/KWO
Subject: FW: Hydro One Response: Plympton-Wyoming Wastewater Servicing Master Plan
Date: Wednesday, August 18, 2021 12:27:04 PM
Attachments: 20210818-NoticeOfPIC1-Plympton-Wyoming Wastewater Servicing Master Plan.pdf

---

Can you file this?

From: Susan.SUN@HydroOne.com <Susan.SUN@HydroOne.com> **On Behalf Of** Department.SecondaryLandUse@hydroone.com
Sent: Wednesday, August 18, 2021 11:39 AM
To: Schmitter, Jillian/KWO <Jillian.Schmitter@jacobs.com>
Subject: [EXTERNAL] Hydro One Response: Plympton-Wyoming Wastewater Servicing Master Plan

Please see the attached for Hydro One's Response.

Hydro One Networks Inc
SecondaryLandUse@HydroOne.com

Hydro One Networks Inc
483 Bay St
Toronto, ON

August 18, 2021

Re: Plympton-Wyoming Wastewater Servicing Master Plan

Attention:
Jillian Schmitter, P.Eng.
Project Manager Jacobs Engineering

Thank you for sending us notification regarding (Plympton-Wyoming Wastewater Servicing Master Plan). In our preliminary assessment, we confirm there are no existing Hydro One Transmission assets in the subject area. Please be advised that this is only a preliminary assessment based on current information.

If plans for the undertaking change or the study area expands beyond that shown, please contact Hydro One to assess impacts of existing or future planned electricity infrastructure.

Any future communications are sent to Secondarylanduse@hydroone.com.

Be advised that any changes to lot grading and/or drainage within proximity to Hydro One transmission corridor lands must be controlled and directed away from the transmission corridor.

Sent on behalf of,

Secondary Land Use
Asset Optimization
Strategy & Integrated Planning
Hydro One Networks Inc.

From:	Philpott, Jared/KWO
Cc:	Adam Sobanski; Schmitter, Jillian/KWO
Bcc:	mdeisley@scrca.on.ca; mgallant@scrca.on.ca; edecloet@scrca.on.ca; sclark@scrca.on.ca; gsankar@scrca.on.ca; bmcdougall@scrca.on.ca; shodgkiss@scrca.on.ca; brian.mackay@canada.ca; emilie.st-onge@canada.ca; david.zeit@tc.gc.ca; tera.yochimhope@tc.gc.ca; jody.knibbs@canada.ca; roy.angelow@canada.ca; afshineh.pasha@canada.ca; lina.letiecq@canada.ca; dthompson@plympton-wyoming.ca; ctripp@plympton-wyoming.ca; secondarylanduse@hydroone.com; clinton.harper@lawss.org; scrbpac@att.net; allainj@thamesriver.on.ca; vito@southsidegroup.ca; llongo3@cogeco.ca; nelsonpeters1@hotmail.com; ccimetta@sarnialaw.com; francis@desenalaw.com; kbacchussarnia@gmail.com; paul@vanbree.ca; dougbain@royallepage.ca; jmichaelradcliffe@gmail.com; brad@bradz.ca; karla.barboza@ontario.ca; sarah.kielek-caster@ontario.ca; david.marriott@ontario.ca; michele.doncaster@ontario.ca; lee.bradshaw@ontario.ca; stephanie.francis@ontario.ca; annamaria.cross@ontario.ca; kathleen.oneill@ontario.ca; matt.garrow@ontario.ca; heather.levecque@ontario.ca; wendy.ren@ontario.ca; sean.fraser@ontario.ca; jim.boothby@ontario.ca; aisha.sayles@ontario.ca; joseph.hillier@ontario.ca; amanda.larusso@ontario.ca; dawn.irish@ontario.ca; goldcoast56@icloud.com; mike.hanki@sympatico.ca; jehanki@yahoo.com; dave.h@zpplan.com
Subject:	Plympton-Wyoming Wastewater Servicing Master Plan - Public Open House Reminder
Date:	Monday, August 9, 2021 9:13:00 AM

Hello,

This email is being sent as a reminder of the Plympton-Wyoming Wastewater Servicing Master Plan Public Open House that will be taking place virtually on **Wednesday, August 11th at 6:00 pm**, using the GoTo Meetings platform. The public open house can be joined from your computer, smartphone or tablet at https://global.gotomeeting.com/join/285392957. If you wish to speak at the meeting, you must register a minimum of 24 hours prior to the meeting. Following the public open house, the presentation slides will be available on the website in an accessible format for two weeks (until August 26th).

Wastewater management affects the Town's citizens and natural environment. Feedback is an important aspect of the planning process and we encourage you to participate in this public open house.

Best regards,

Jared Philpott, EIT | Jacobs | Water/Wastewater Design Specialist
O: 1.519.579.3500 x73224 | M: 905.520.8781 | jared.philpott@jacobs.com
72 Victoria Street South, Suite 300 | Kitchener, ON N2G 4Y9 | Canada

Jacobs
Challenging today.
Reinventing tomorrow.

Plympton-Wyoming Wastewater Servicing Master Plan

Public Open House #1 – August 11th, 2021

Master Plan Purpose Statement

The Town of Plympton-Wyoming is undertaking a Wastewater Servicing Master Plan to see that the Town's sanitary sewer collection systems have the capacity to convey current and future wastewater flows to the Town's Wastewater Treatment Plants to 2039 based on the Town's growth plan. Wastewater Treatment Plant capacity is also being reviewed as part of this study.

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Study Area

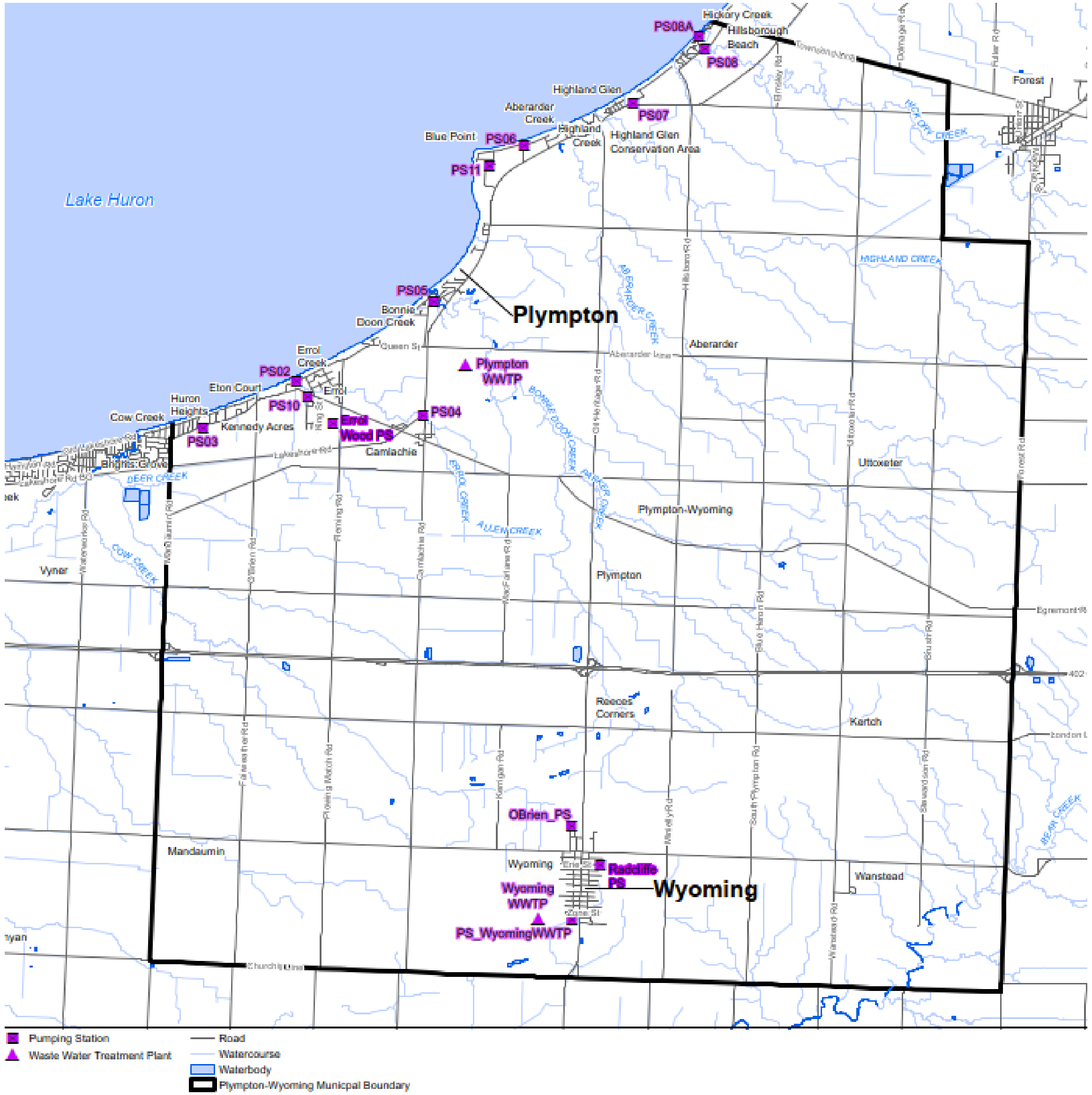
The Town of Plympton-Wyoming contains two separate sanitary sewer networks, one in Plympton and one in Wyoming.

The Plympton sanitary sewer network consists of:

- Plympton WWTP
- Eleven sanitary pumping stations

The Wyoming sanitary sewer network consists of:

- Wyoming WWTP
- Two sanitary pumping stations



Class Environmental Assessment Process

The Master Plan will be completed as a Schedule B Class EA. It will follow the Municipal Class EA process to meet, at a minimum, Phases 1 and 2 of the process.

Phase 1

- Identify the problem or opportunity; Notice of Commencement

Phase 2 – We are Here

- Identify and Assess Alternative solutions
- Consult with Public, Agencies, First Nations and Indigenous communities, and other stakeholders
- Select a preferred solution based on evaluation criteria and identify proposed timing for implementation
- Public Consultation **We are here**

Project File Report

- Prepare Project File Report documenting Phases 1-2 for public review

Implementation

- Conceptual design of preferred solution
- Implement the preferred solution

Community Engagement Plan

The Town of Plympton-Wyoming is seeking suggestions, comments and ideas for the Master Planning Process. The Town is interested in feedback from Plympton-Wyoming community members, Town staff, First Nations and Indigenous communities, and Provincial Agencies.

This public open house is the second of three points of public contact for this Master Plan. The Notice of Commencement was issued in June 2021, and the Notice of Completion will be issued following completion of the Master Plan Report.

The Town's website shares specific information about the Master Plan and can be accessed at: https://www.plympton-wyoming.com/en/my-plympton-wyoming/utilities-sewer-and-water.aspx?_mid_=12829

Following the completion of the Master Plan Report, it will be posted to the project website for a 30-day public review.

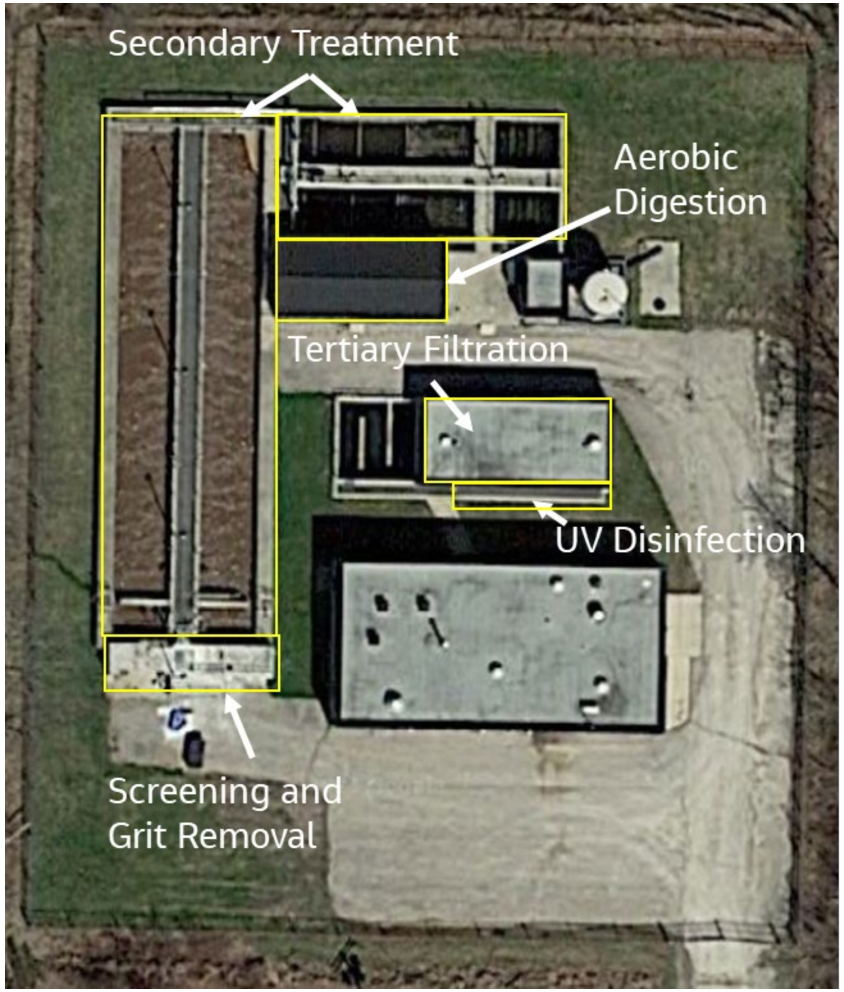
Background and Existing Conditions – Wyoming WWTP

The Wyoming WWTP is an extended aeration plant that is rated to treat an average daily flow of 1,128 m^3/day and a peak daily flow of 3,984 m^3/day. Plant processes include:

- Influent Pumping, Screening and Aerated Grit Removal
- Secondary Treatment – Extended Aeration
- Tertiary Filtration
- UV Disinfection
- Aerobic Digestion

The average daily flow from 2017 to 2019 was 549 m^3/day, with a 2.5 percent increase from 2017 to 2019. This represents 49 percent of the plant's rated capacity.

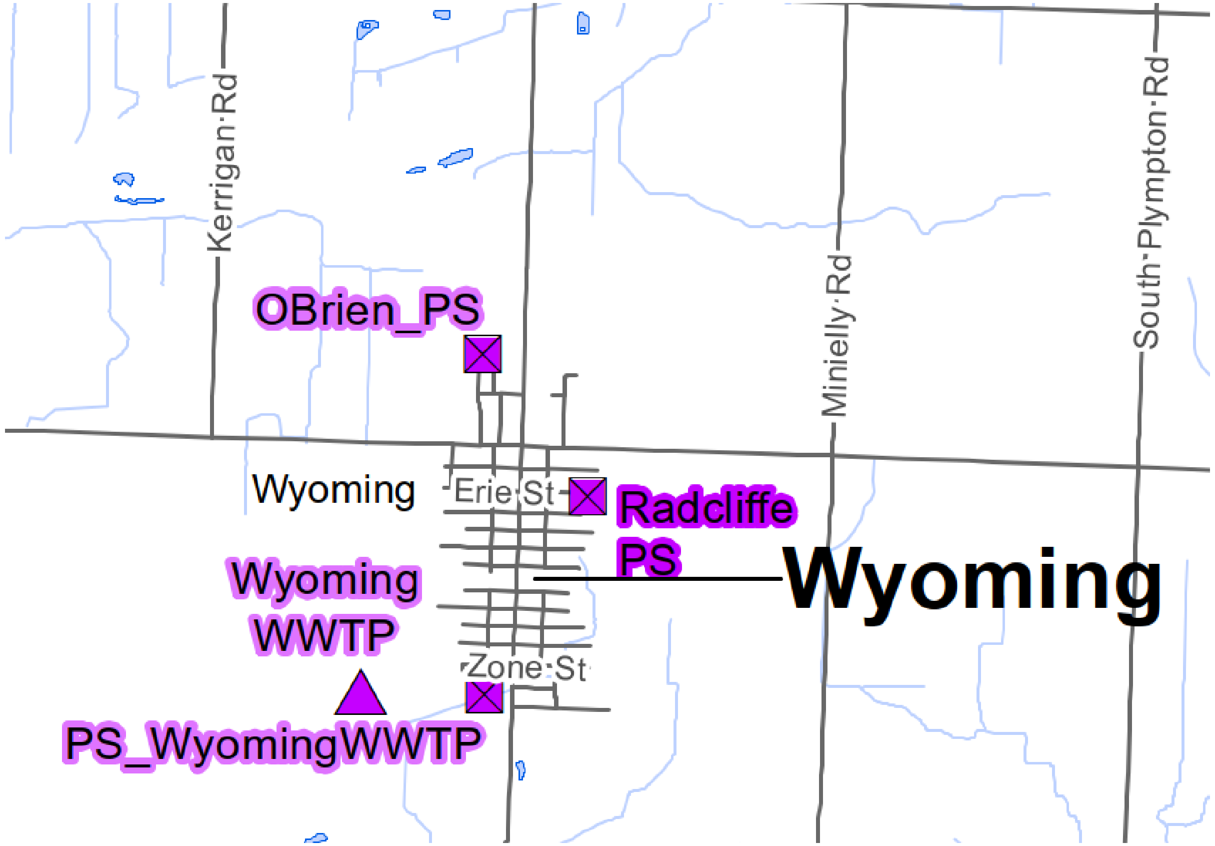
The estimated population serviced by the Wyoming WWTP in 2019 was 3,012 persons. This corresponds to a per capita flow rate of 186 Lpcd.



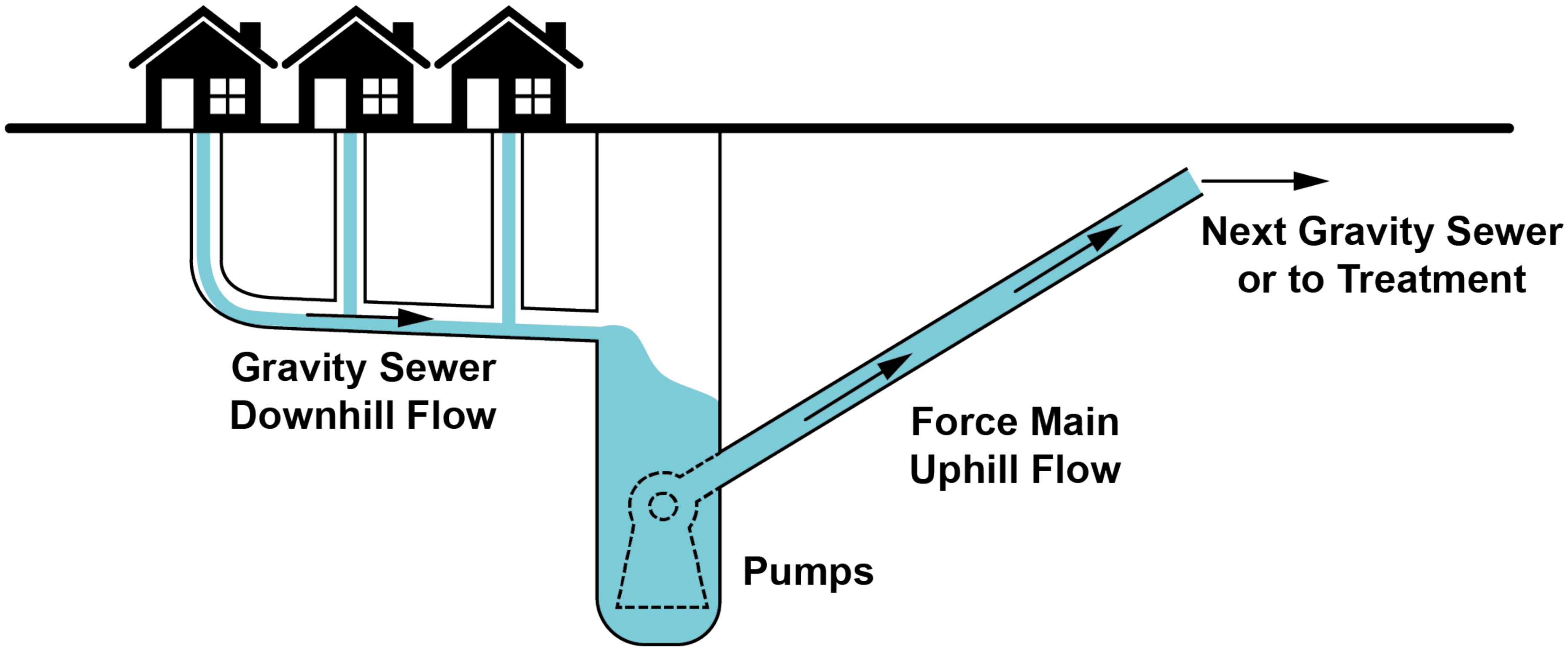
Background and Existing Conditions – Wyoming Pumping Stations

Wyoming is currently serviced by two sanitary pumping stations:

- O'Brien PS
- Radcliffe PS



Typical Components of a Pumping Station



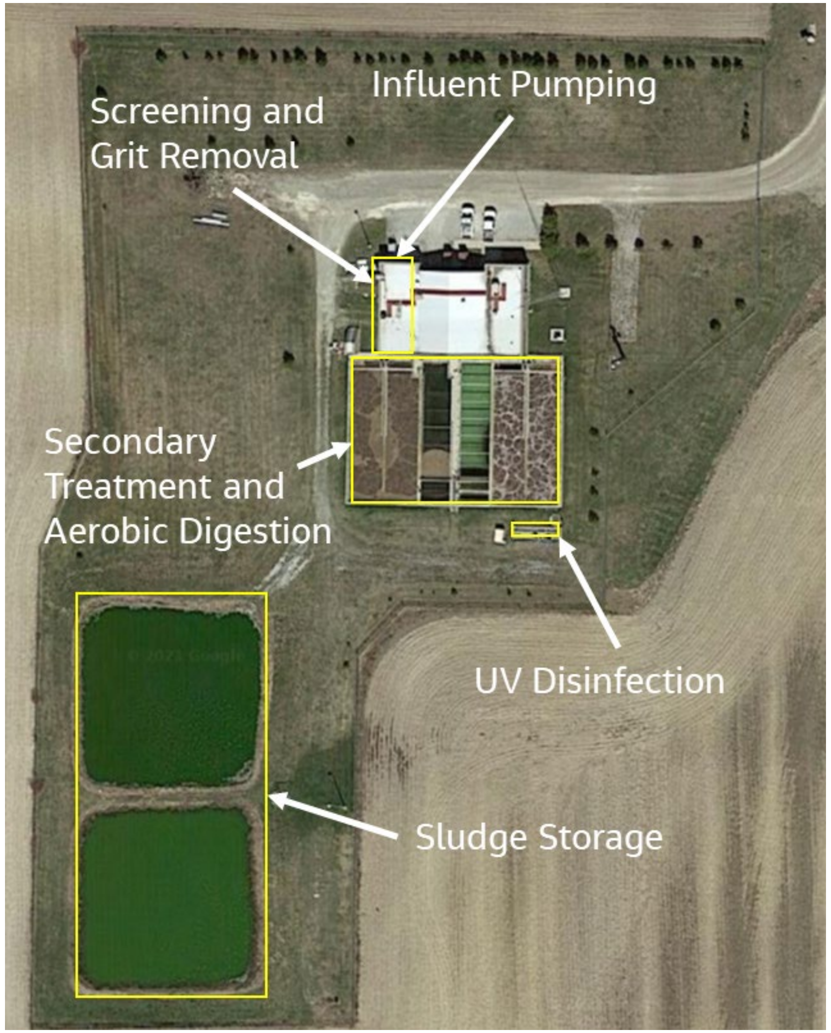
Background and Existing Conditions – Plympton WWTP

The Plympton WWTP is an extended aeration plant that is rated to treat an average daily flow of 3,300 m^3/day and a peak daily flow of 10,500 m^3/day. Plant processes include:

- Influent Pumping, Screening and Vortex Grit Removal
- Secondary Treatment – Extended Aeration
- UV Disinfection
- Aerobic Digestion and On-Site Sludge Storage

The average daily flow from 2017 to 2019 was 1,658 m^3/day, with a 6.8 percent increase from 2017 to 2019. This represents 50 percent of the plant's rated capacity. It is noted that the Influent PS is operating at 100 percent of its capacity.

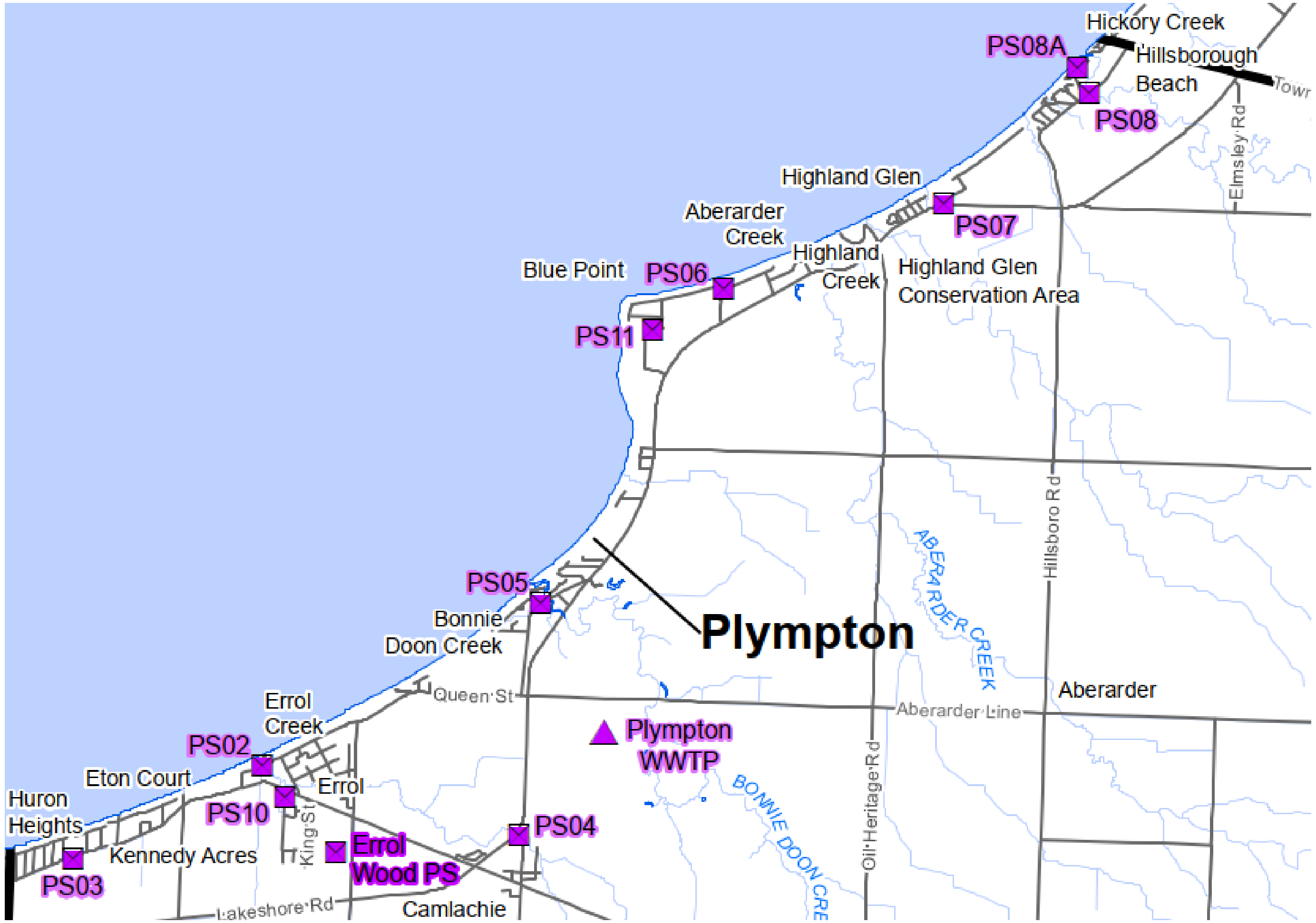
The estimated population serviced by the Plympton WWTP in 2019 was 5,061 persons. This corresponds to a per capita flow rate of 353 Lpcd.



Background and Existing Conditions – Plympton Pumping Stations

Plympton is currently serviced by eleven sanitary pumping stations:

- PS-02
- PS-03
- PS-04
- PS-05
- PS-06
- PS-07
- PS-08
- PS-08A
- PS-10
- PS-11
- Errol Woods PS



Future Needs Basis

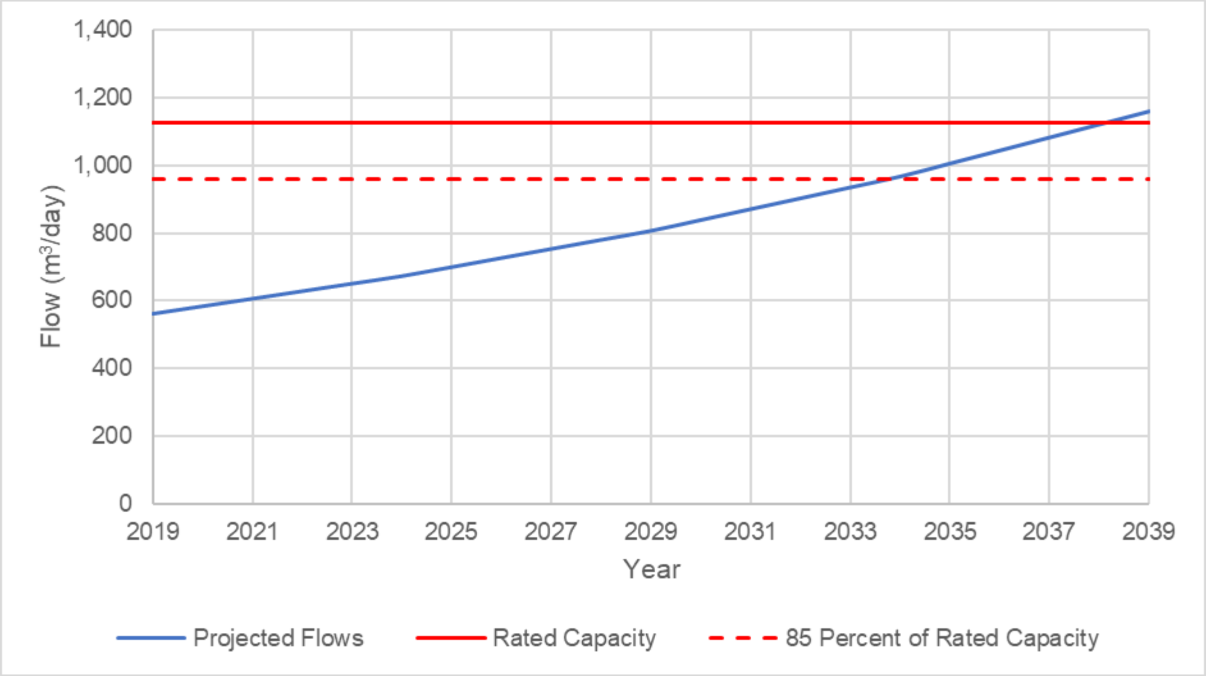
The following methodology was used to develop the future population in the Town and to determine future needs:

- Population baselines for Plympton and Wyoming were developed based on sewer billing information.
- A population growth rate of 20 percent every 5 years was used to project the population 20 years into the future
- Per capita wastewater flow rates were developed for Plympton and Wyoming based on historical data. These per capita flow rates and the projected populations were used to project future wastewater flows in the Town.
- Development plans provided by the Town were used to project the impact of future wastewater flows on each sanitary pumping station.

Flow Projections – Wyoming WWTP

The population serviced by the Wyoming WWTP in 2039 is projected to be 6,246. Based on the per capita flow rate of 186 Lpcd, the projected flow in 2039 is 1,161 m^3/day. It is estimated that 85 percent of the plant's rated capacity will be exceeded in 2034 and the plant's rated capacity will be exceeded in 2039. Expansions are typically triggered when flows reach 85 percent of the plant's rated capacity, so that additional treatment capacity is available by the time that the plant's rated capacity is reached.

Year	Projected Population	Projected Flow, m^3/day
2019	3,012	560
2024	3,614	672
2029	4,337	806
2034	5,205	968
2039	6,246	1,161



Future Needs – Wyoming WWTP

Based on the future flow projections and a process capacity assessment of the Wyoming WWTP, the following processes require upgrades within the planning period:

- Influent Pumping (current)
- Screening (2039)
- UV Disinfection (2039)

There are also condition-based needs for the following processes:

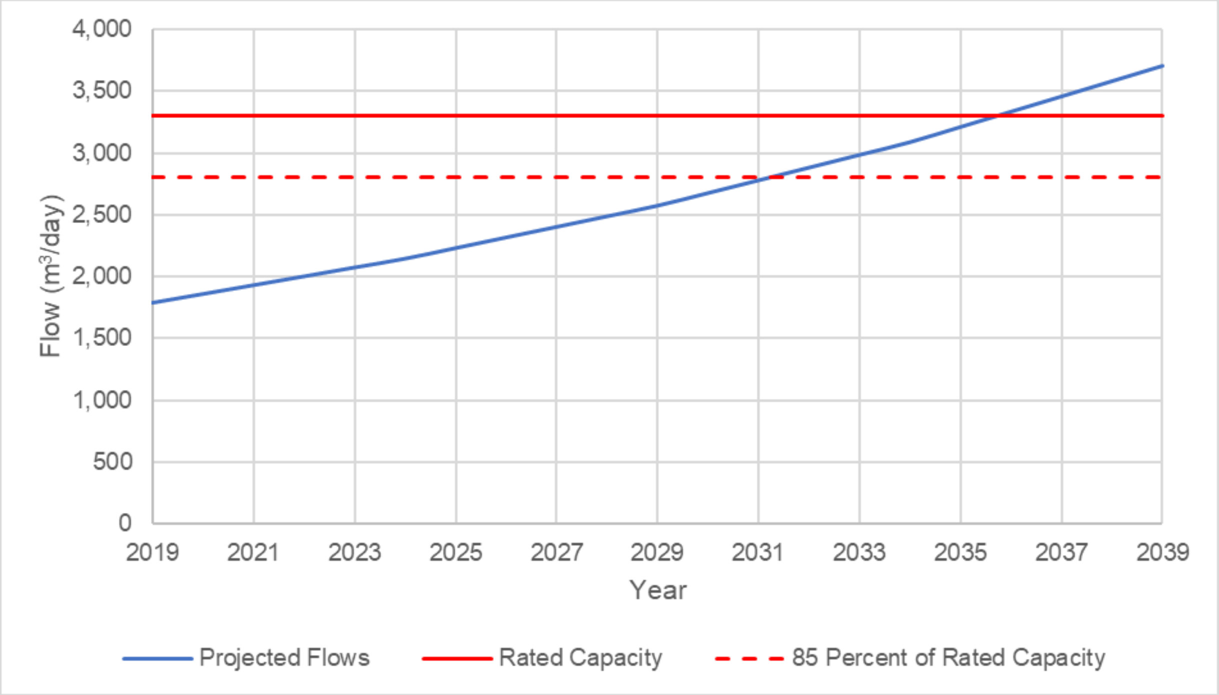
- Grit Removal
- Tertiary Filtration
- Sludge Storage

Based on the future flows projected to the O'Brien and Radcliffe Pumping Stations, no upgrades are required within the planning period.

Flow Projections – Plympton WWTP

The population serviced by the Plympton WWTP in 2039 is projected to be 10,314. Based on the per capita flow rate of 353 Lpcd, the projected flow in 2039 is 3,700 m^3/day. It is estimated that 85 percent of the plant's rated capacity will be exceeded in 2032 and the plant's rated capacity will be exceeded in 2036.

Year	Projected Population	Projected Flow, m^3/day
2019	5,061	1,786
2024	5,969	2,143
2029	7,163	2,572
2034	8,595	3,086
2039	10,314	3,703



Future Needs – Plympton WWTP

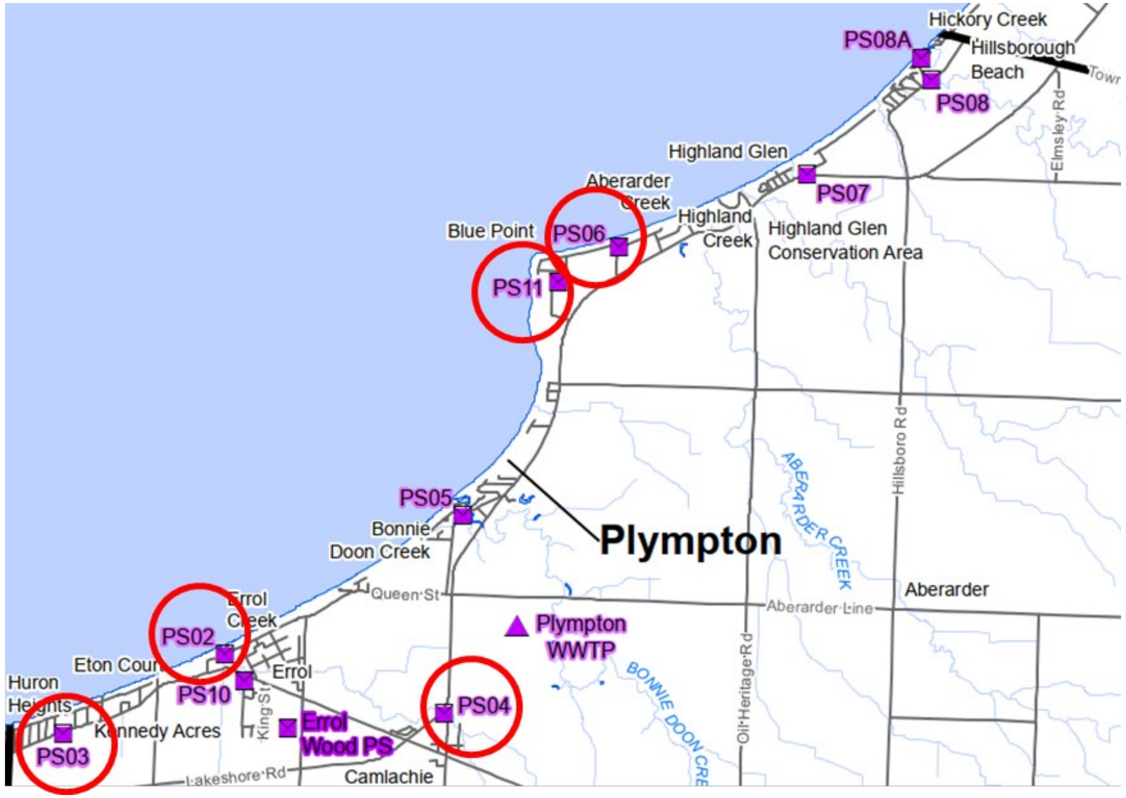
Based on the future flow projections and a process capacity assessment of the Plympton WWTP, the following processes require upgrades within the planning period, with the year that upgrades are required presented in brackets:

- Influent Pumping (current, can be addressed through pump replacement and bypass valve automation)
- Screening (2036)
- Grit Removal (currently based on condition)
- UV Disinfection (2036)
- Aerobic Digesters (2035)

Future Needs – Plympton Pumping Stations

Future development plans provided by the Town were used to project the future flows to each pumping station. Drawdown tests were completed in December 2020 and June 2021 to confirm the peak capacity of each station. Based on the future flows and peak capacities, the following pumping stations required upgrades within the planning period:

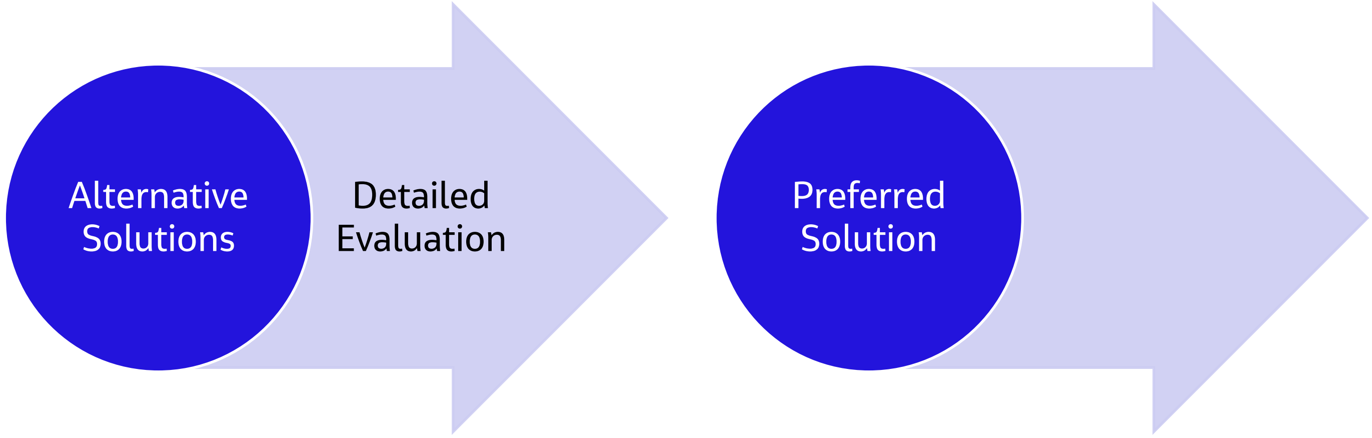
- PS-02 (under current conditions)
- PS-03 (under future conditions)
- PS-04 (under current conditions)
- PS-06 (under current conditions)
- PS-11 (under current conditions)



Alternative Solutions and Evaluation Framework

The Municipal Engineers Association defines alternative solutions as feasible ways of solving an identified problem (deficiency) or addressing an opportunity, from which a preferred solution is selected (Municipal Class Environmental Assessment, 2020).

Alternative solutions will be developed for each deficiency (previously identified) and opportunity and subjected to a detailed evaluation to identify the preferred solution.



Evaluation Criteria

An evaluation framework was developed for the detailed evaluation based on the Municipal Class EA process, which considers impacts to the natural, technical, social/cultural and economic environments. Evaluation criteria were tailored to each set of alternatives. Examples of the evaluation criteria include:

Technical Environment

- Integration Complexity
- Operating Complexity
- Energy Efficiency

Natural Environment

- Impact to Terrestrial Systems
- Impact to Effluent Quality
- Climate Change Considerations

Social/Cultural Environment

- Odour Control
- Noise Impacts
- Impact to Archaeological/Cultural Heritage Resources

Economic

- Capital Cost
- Operations and Maintenance Costs

Alternative Solutions – Wyoming WWTP

Alternative technologies were reviewed for each process that upgrades are required for, described below.

Grit Removal

- Install a new vortex grit removal process
- Rehabilitate the existing aerated grit removal process

Tertiary Filtration

- Rehabilitate the existing sand filtration process
- Retrofit the existing filter with a disk filtration system

Sludge Storage

- Closed-tank storage
- Open-tank storage
- Lagoon Storage

Preferred Solution – Wyoming WWTP

The preferred solution for the Wyoming WWTP is as follows, with a rationale provided for each:

Grit Removal

- Rehabilitate the existing aerated grit tanks. This is the least complex alternative and makes use of the existing equipment and footprint.

Tertiary Filtration

- Retrofit the existing filter with a disk filtration system. This alternative makes use of existing infrastructure and footprint, is less expensive and is easier to maintain.

Sludge Storage

- Closed-tank storage. This item requires a small footprint, has moderate costs and eliminates the potential for odour.

Item	Budgetary Capital Cost Estimate
Grit Removal	$200,000 - $300,000
Tertiary Filtration	$1,100,000 - $1,700,000
Sludge Storage	$370,000 - $550,000

Alternative Solutions – Plympton WWTP

Alternative technologies were reviewed for each process that upgrades are required for, described below. Upgrades were previously identified for the Headworks (influent pumping, screening and grit removal) and were carried forward for this Master Plan.

Influent Pumping and Screening

- Install larger influent pumps, a new screen in the bypass channel and valve automation

Grit Removal

- Install a new vortex grit removal process

Sludge Digestion

- Expand the existing aerobic digesters
- Construct an anaerobic digester

Preferred Solution – Plympton WWTP

The preferred solution for the Plympton WWTP is as follows, with a rationale provided for the preferred solution for sludge digestion:

Influent Pumping and Screening

- Install larger influent pumps, a new screen in the bypass channel and valve automation

Grit Removal

- Install a new vortex grit removal process

Sludge Digestion

- Expand the existing aerobic digesters – less complex to integrate and operate, more cost-effective.

Item	Budgetary Capital Cost Estimate
Influent Pumping and Screening	\$360,000 - \$540,000
Grit Removal	\$390,000 - \$580,000
Sludge Digestion	\$840,000 - \$1,260,000

Alternative Solutions – Plympton Pumping Stations

Some of the pumping stations (PS-06, PS-11) only require minor upgrades, such as the installation of higher capacity pumps. However, as PS-02, PS-03 and PS-04 are interconnected, an integrated set of alternatives was developed and evaluated in a step-wise process, allowing for all impacts to be considered. As well, PS-02 and PS-05 discharge into a common forcemain, impacting each other’s capacity. Alternatives were developed for this as well.

The order of alternatives evaluation is as follows:

1. PS-03
2. PS-02 and PS-04
3. PS-02 and PS-05

PS-03

PS-03 is expected to have a capacity deficiency in the future based on current development plans. Alternative solutions to address future capacity constraints at PS-03 were developed as follows:

Alternative Solutions – PS-03

PS-03 is expected to have a capacity deficiency in the future based on current development plans. Alternative solutions to address future capacity constraints at PS-03 were developed as follows:

- **Alternative 1:** Construct a new pumping station to service new large developments in the area.
  - Not feasible, as this alternative does not provide a servicing strategy for new developments near PS-03. A new pumping station would still need to connect to the Town's sanitary system.
- **Alternative 2:** Construct an equalization tank to limit peak flows to the capacity of PS-03, allowing PS-03 to service new large developments in the area.
  - Due to the depth of the wet well in PS-03, an equalization tank would be prohibitively expensive.
- **Alternative 3:** Install two larger pumps and reconfigure the discharge piping in the wet well.
  - **Selected as the preferred solution.** This allows large developments near PS-03 to be serviced with moderate upgrades to PS-03.

As these improvements are related to requirements for future developments, the Town could seek compensation through the development process or require the benefiting developer to carry out improvements.

Alternative Solutions – PS-02 and PS-04

PS-02, which receives flow from PS-04, has a current capacity deficiency due to pump underperformance resulting from its forcemain configuration and condition. Alternative solutions to address future capacity constraints at PS-02 were developed based on the concept of redirecting flows from PS-04 and other pumping stations away from PS-02.

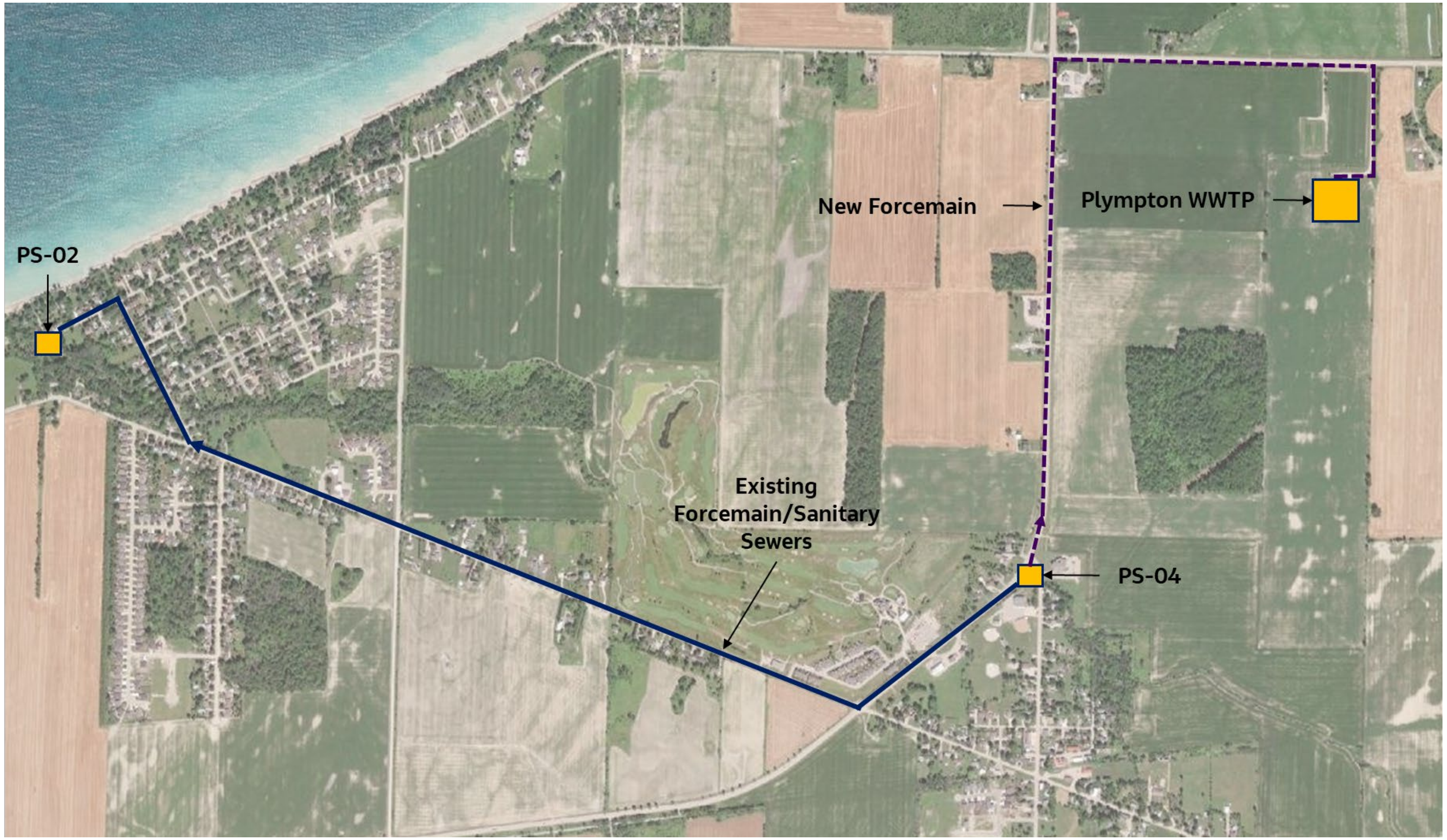
- **Alternative 1:** Construct a forcemain north of PS-04 to convey wastewater directly to the Plympton WWTP.
- **Alternative 2:** Construct a forcemain north of PS-04 to convey wastewater directly to the Plympton WWTP. Redirect flows from the Errol Woods PS from PS-02 to PS-04.
- **Alternative 3:** Construct a forcemain north of PS-04 to convey wastewater directly to the Plympton WWTP. Redirect flows from the Errol Woods PS, PS-03 and PS-10 from PS-02 to PS-04.

PS-02 and PS-04 Alternative 1

Construct a forcemain north of PS-04 to convey wastewater directly to the Plympton WWTP.

- Reduces the future flow to PS-02 by approximately 27 L/s.

- PS-02 would still have a large capacity deficiency (68 L/s) under this scenario that cannot be addressed by installing new pumps.

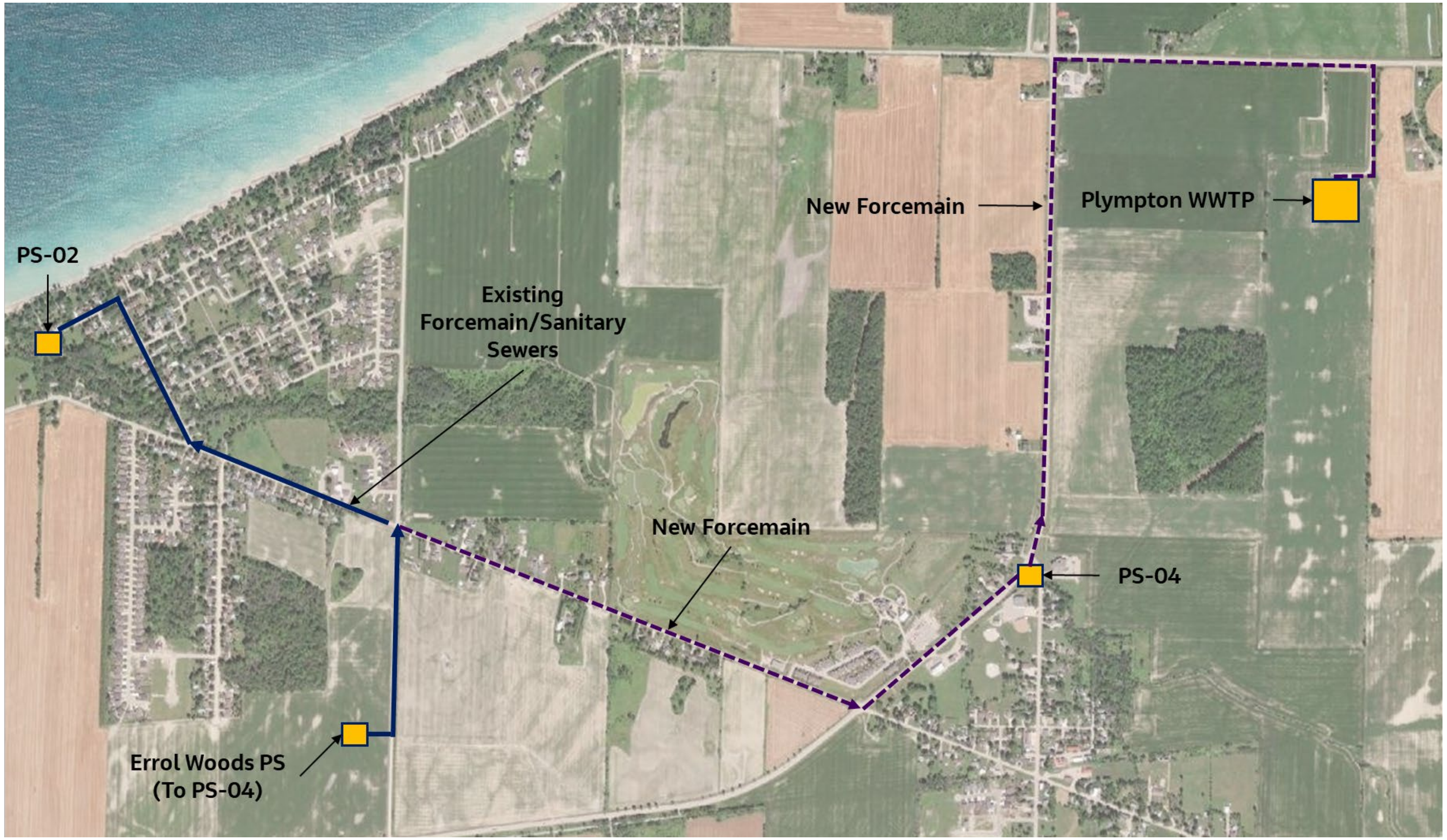


PS-02 and PS-04 Alternative 2

Construct a forcemain north of PS-04 to convey wastewater directly to the Plympton WWTP. Redirect flows from the Errol Woods PS from PS-02 to PS-04.

- Reduces the future flow to PS-02 by approximately 40.7 L/s.

- PS-02 would still have a large capacity deficiency (54 L/s) under this scenario that cannot be addressed by installing new pumps.



PS-02 and PS-04 Alternative 3

Construct a forcemain north of PS-04 to convey wastewater directly to the Plympton WWTP. Redirect flows from the Errol Woods PS, Egremont Estates PS, PS-03 and PS-10 from PS-02 to PS-04.

- Reduces the future flow to PS-02 by approximately 85 L/s.
- PS-02 would still have a capacity deficiency (10 L/s), but this can be addressed by installing larger pumps.
- A new PS-04 is required for this alternative with a rated capacity of 85 L/s.

PS-02 and PS-04 Alternatives – Evaluation Summary

Alternative No.	Description	Evaluation	Rationale
1	Construct a forcemain north of PS-04 to convey wastewater directly to the Plympton WWTP.	Eliminated	Extensive upgrades to PS-02 would still be required, which would be costly and complex due to the limited footprint available.
2	Construct a forcemain north of PS-04 to convey wastewater directly to the Plympton WWTP. Redirect flows from the Errol Woods PS from PS-02 to PS-04.	Eliminated	Extensive upgrades to PS-02 would still be required, which would be costly and complex due to the limited footprint available.
3	Construct a forcemain north of PS-04 to convey wastewater directly to the Plympton WWTP. Redirect flows from the Errol Woods PS, PS-03 and PS-10 from PS-02 to PS-04.	**Preferred Solution**	PS-02's capacity deficiency can be addressed by installing larger pumps. A new PS-04 is required for this alternative with a rated capacity of 85 L/s.

Alternative Solutions – PS-02 and PS-05

PS-02 and PS-05 currently discharge into a common forcemain, reducing their pumping capacity when operating at the same time. Alternative solutions were developed to decouple these pumping stations. This also provided an opportunity to implement flow equalization, as the Plympton WWTP experiences flooding on occasion during wet weather. Flow conveyance from PS-04 was also taken into consideration.

- **Alternative 1:** Twin the section of combined forcemain to the Plympton WWTP.

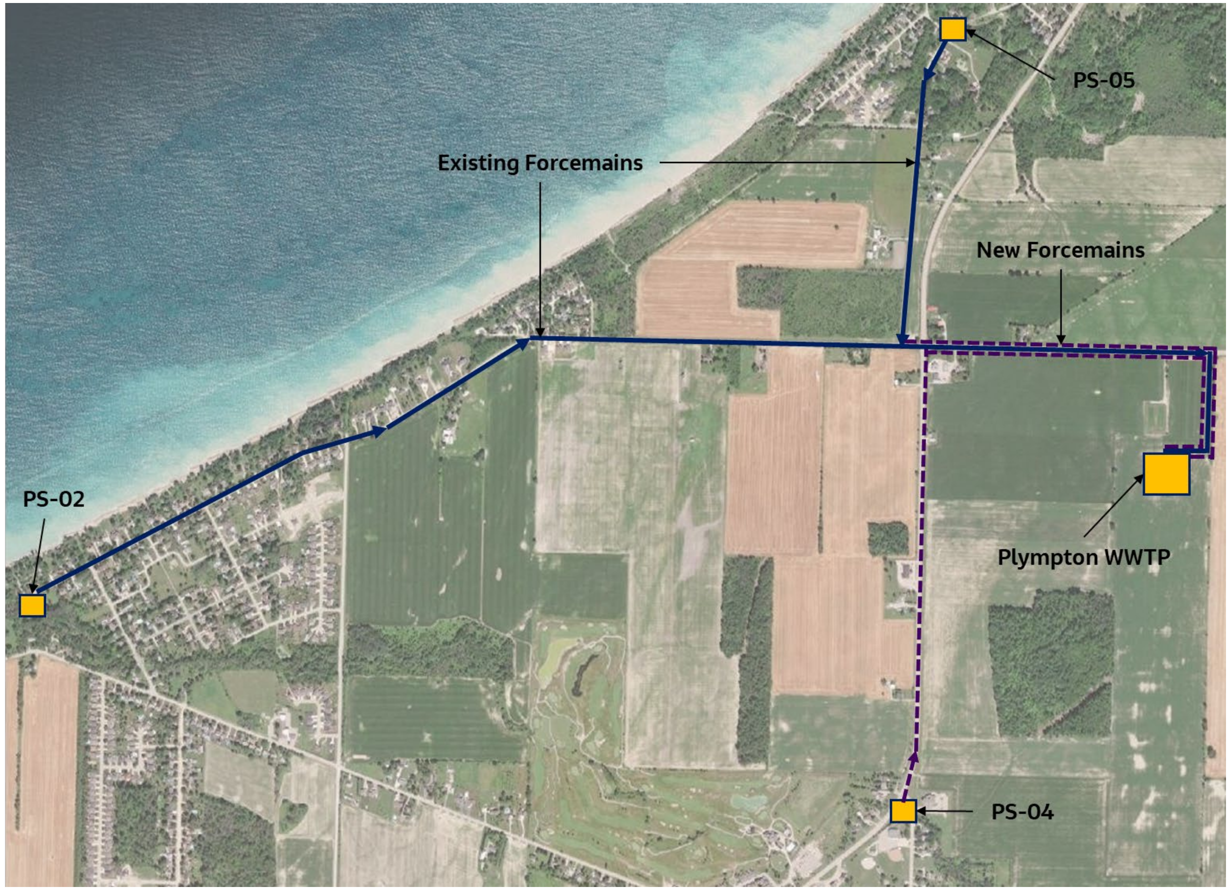
- **Alternative 2:** Construct a new PS and equalization tank at the intersection of Queen Street and Bonnie Doon Road that will convey wastewater from PS-02, PS-04 and PS-05.

- **Alternative 3:** Construct a new PS at the intersection of Queen Street and Bonnie Doon Road that will convey wastewater from PS-02, PS-04 and PS-05 and construct a new equalization tank at the Plympton WWTP.

PS-02 and PS-05 Alternative 1

Twin the section of combined forcemain to the Plympton WWTP.

- This alternative is very costly, as it requires 1.5 km of open cut forcemain installation.
- The right-of-way currently contains many underground utilities.
- While PS-02 and PS-05 would be decoupled, it does not address the issue of flooding at the Plympton WWTP.

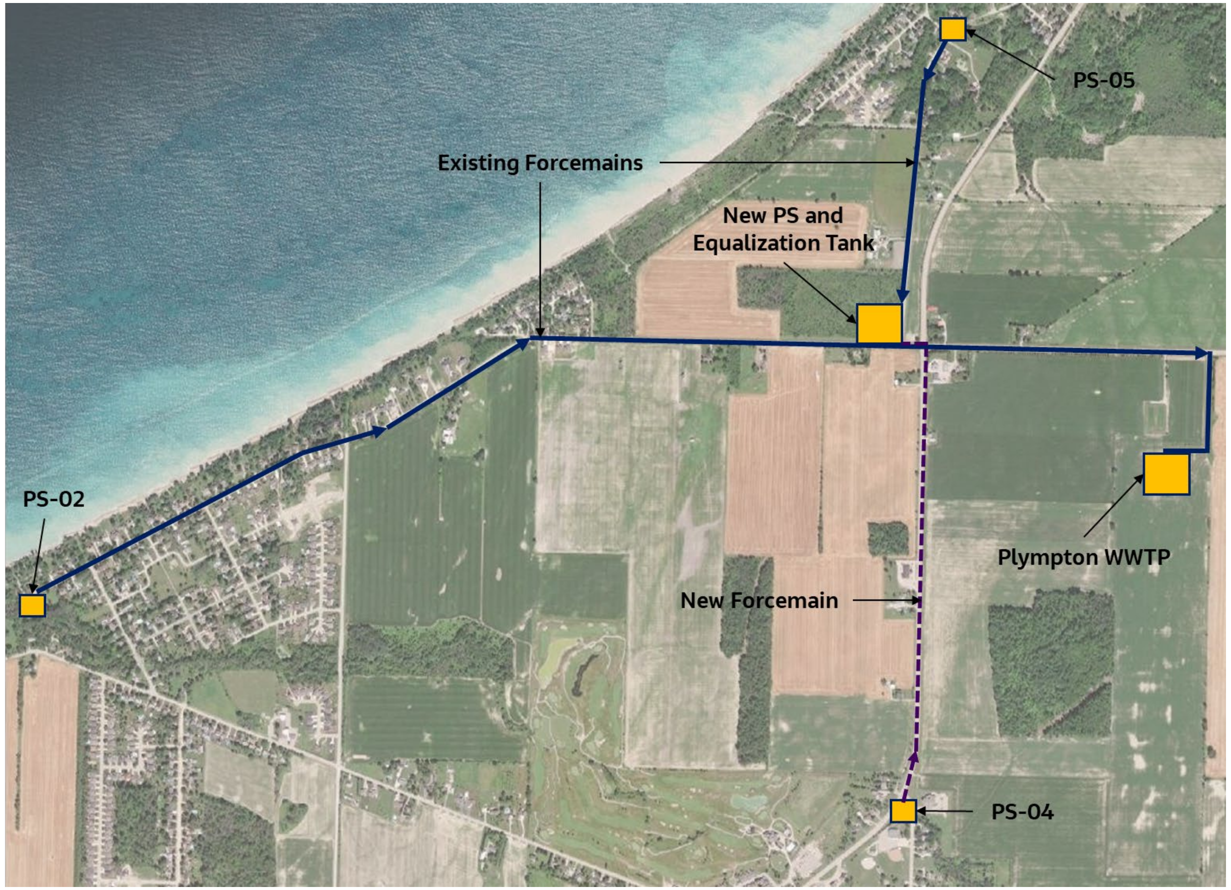


PS-02 and PS-05 Alternative 2

Construct a new PS and equalization tank at the intersection of Queen Street and Bonnie Doon Road that will convey wastewater from PS-02, PS-04 and PS-05.

- The new PS at the intersection of Queen Street and Bonnie Doon Road would be rated at 120 L/s, with any flows higher than this redirected to the equalization tank.

- This alternative would limit flows to the Plympton WWTP to its rated capacity, preventing future flooding.

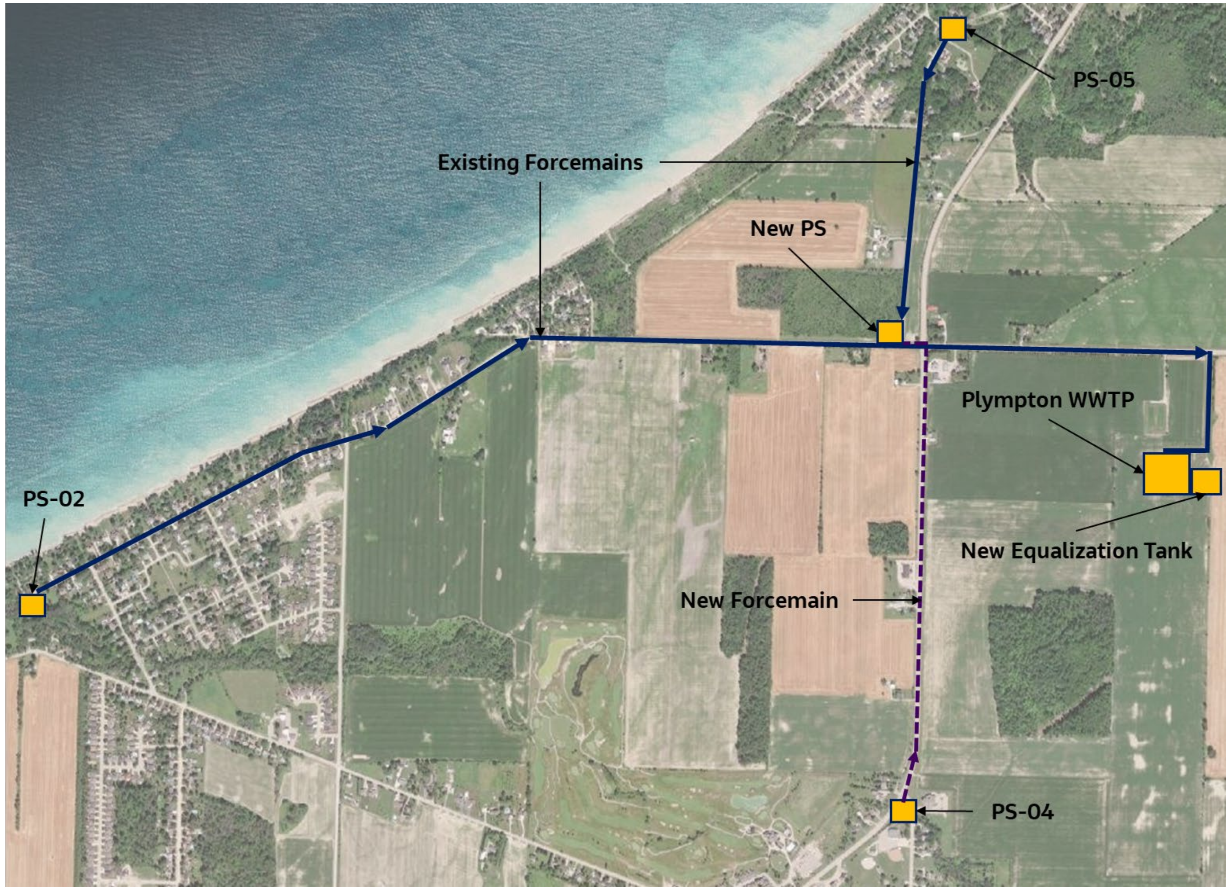


PS-02 and PS-05 Alternative 3

Construct a new PS at the intersection of Queen Street and Bonnie Doon Road that will convey wastewater from PS-02, PS-04 and PS-05 and construct a new equalization tank at the Plympton WWTP.

- The new PS at the intersection of Queen Street and Bonnie Doon Road would be rated at 235 L/s, with any flows higher than this redirected to the equalization tank.

- This alternative would limit flows to the Plympton WWTP to its rated capacity, preventing future flooding.



PS-02 and PS-05 Alternatives – Evaluation Summary

Alternative No.	Description	Evaluation	Rationale
1	Twin the section of combined forcemain to the Plympton WWTP.	Eliminated	Very costly, disruptive to the local community and does not provide flow equalization at the Plympton WWTP.
2	Construct a new PS and equalization tank at the intersection of Queen Street and Bonnie Doon Road that will convey wastewater from PS-02, PS-04 and PS-05.	**Preferred Solution**	Provides buffering to prevent flooding at the Plympton WWTP. Requires a much smaller PS than Alternative 3 and therefore, is less costly.
3	Construct a new PS at the intersection of Queen Street and Bonnie Doon Road that will convey wastewater from PS-02, PS-04 and PS-05 and construct a new equalization tank at the Plympton WWTP.	Eliminated	Provides buffering to prevent flooding at the Plympton WWTP. Requires a much larger PS than Alternative 3 and therefore, is more costly.

Capital Cost Estimate for the Plympton PS Preferred Solution

Pumping Station	Preferred Solution	Budgetary Capital Cost Estimate
PS-03	Install two larger pumps and reconfigure the discharge piping in the wet well.	$170,000 - $260,000
PS-02 and PS-04	Construct a forcemain north of PS-04 to convey wastewater directly to the Plympton WWTP. Redirect flows from the Errol Woods PS, PS-03 and PS-10 from PS-02 to PS-04.	$4,200,000 - $6,400,000
PS-02 and PS-05	Construct a new PS and equalization tank at the intersection of Queen Street and Bonnie Doon Road that will convey wastewater from PS-02, PS-04 and PS-05.	$2,800,000 - $4,200,000

General Recommendations

- System-wide condition assessments (WWTPs, pumping stations, forcemains)
- Additional wet weather flow monitoring
- Implement a public and private side I/I mitigation plan
- Investigation of odour issues at PS-02 and along the Queen St trunk sewer
- Update the Master Plan every 5 to 8 years
- Develop a Risk Mitigation Plan

Implementation Plan

Timing	Projects	Budgetary Capital Costs
0 to 5 years (2021-2026)	Plympton WWTP Influent PS, Screening and Grit Removal	$1,030,000 - $1,547,000
	PS-02 and PS-04 Upgrades	$4,200,000 - $6,400,000
	PS-02 and PS-05 Upgrades	$2,800,000 - $4,200,000
5 to 12 years (2026-2033)	Wyoming WWTP Grit Removal Upgrades	$200,000 - $300,000
	Wyoming WWTP Tertiary Filtration Upgrades	$1,100,000 - $1,700,000
	Wyoming WWTP Sludge Storage	$370,000 - $550,000
	PS-03 Upgrades*	$170,000 - $260,000
12 to 18 years (2033-2039)	Plympton WWTP Aerobic Digester Upgrades	$840,000 - $1,260,000

*PS-03 upgrades depend on the timing of flow projection realization

Next Steps

Thank you for your interest in the Town's Wastewater Servicing Master Plan. The next step of this Master Plan is to complete the draft Master Plan report in Fall 2021. Following council endorsement, the Master Plan will be available for 30-day public review. This is the next point of public contact.

Your feedback is an important part of the Master Plan process.

- Project information will continue to be updated on the Project website at https://www.plympton-wyoming.com/en/my-plympton-wyoming/utilities-sewer-and-water.aspx?_mid_=12829.
- Join the project mailing list to receive project updates. Please provide your contact information (name and email) to the contacts below.

Please contact the project team with any additional comments or questions that you may have:

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Jacobs Engineering Group
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jillian.schmitter@jacobs.com

Adam Sobanski, CET, CRS.
Director of Public Works
Town of Plympton-Wyoming
519-845-3939
asobanski@plympton-wyoming.ca

The Town Of

PLYMPTON-WYOMING

ONTARIO CANADA

Special Council Meeting Minutes

DATE:	Wednesday, August 11, 2021
TIME:	6:00 PM
PLACE:	Council Chambers

Council Members Present:	Bob Woolvett, Councillor Gary Atkinson, Councillor Lonny Napper, Mayor Muriel Wright, Deputy Mayor Netty McEwen, Councillor Mike Vasey, Councillor Tim Wilkins, Councillor
Council Members Absent:	
Staff Members Present:	Erin Kwarciak, Clerk Adam Sobanski, Director of Public Works Carolyn Tripp, CAO Norma Roddick-Preece, Treasurer Sarah Baldwin, Senior Planner Rebecca Vandenberk, Executive Assistant - Corporate Services Kailyn King, Executive Assistant - Finance Department
Staff Members Absent:	

CALL TO ORDER

At 6 p.m. Mayor Napper called the meeting to order.

Attending electronically:

Kailyn King, Executive Assistant - Finance Department

All others attended in Council Chambers.

EXPLANATION OF THE OPEN HOUSE

Mayor Napper read the explanation of the purpose of the meeting.

The Town of Plympton-Wyoming (the Town) is undertaking a Wastewater Servicing Master Plan to see that the Town's sanitary sewer collection systems have the capacity to convey current and future wastewater flows to the Town's Wastewater Treatment Plants to 2039 based on the Town's growth plan. Wastewater Treatment Plant capacity is also being reviewed as part of this study.

Wastewater management affects the Town's citizens and natural environment. Feedback is an important aspect of the planning process and we encourage you to participate in the meeting.

Any person wishing to speak at the open house must pre-register a minimum of 24 hours prior to the meeting by calling the office at 519-845-3939 and speaking with Nicole.

INTRODUCTION OF STAFF PRESENT

Mayor Napper introduced Council & Staff in attendance.

Jillian Schmitter and Jared Philpott were in attendance virtually from Jacobs to make a presentation and receive feedback from members of the Public and Council.

CONFIRMATION OF NOTIFICATION PROCESS

Ms. Schmitter confirmed the notice of commencement was distributed in June and confirmed all notice requirements were met.

PRESENTATIONS

Ms. Schmitter advised that this is the first and only planned open house for this process.

Ms. Schmitter and Mr. Philpott provided an overview of the presentation included in the Agenda, highlighting the purpose of the study, the area of the study, the requirements of the study and the process that is taking place including the next steps.

Mr. Philpott provided background and existing conditions of the Wyoming WWTP and Plympton WWTP as well as pump stations, and provided information about how they calculate the future needs and what the needs may be.

Information was provided regarding the preferred and alternative solutions that were reviewed and the evaluation framework. Further, consideration and information was provided regarding potential costs associated with the solutions.

Mr. Philpott provided information and solutions for the pump stations that require upgrades and the potential solutions and associated costs.

The presentation provided general recommendations and provided an implementation plan including the timing for the projects and budgetary considerations.

QUESTIONS OR COMMENTS FROM MEMBERS OF THE PUBLIC

No advance registration to speak had been received from members of the Public by the beginning of the meeting. Mr. Sobanski, Director of Public Works did open it up to the Public for questions or comments. No comments or questions were received. Mr. Sobanski advised that any members of the Public could contact himself or Ms. Schmitter if they had questions or required further information.

QUESTIONS OR COMMENTS FROM COUNCIL MEMBERS

Councilor Vasey had no comments.

Councillor Atkinson noticed that the testing was completed in 2018 and inquired if the numbers shown are reflective of the current situation and going forward. Ms. Schmitter stated that the current growth matches the current recommendation and the master plan will include guidance on modifying the timing of recommendations based on future growth. Councilor Atkinson also inquired about the financials around the master plan and it was noted that the Town can include these costs in capital budgets as well as apply for appropriate funding for the upgrades when available. The final report will show the total dollar figures.

Deputy Mayor Wright also inquired about the financials regarding this report. Feels these are significant and ambitious upgrades and questioned if the Town has enough reserves to cover the costs. Mr. Sobanski noted that preparations have been made for a long time in anticipation and he does not expect significant increases to the water and sewer rates as presented to date. Mr. Sobanski plans to bring a report to Council in 2022 to develop a financial plan for wastewater to give Council a clear mechanism to fund appropriately and maintain appropriate rates.

Mayor Napper asked if money could be recovered in different avenues including grants. Mr. Sobanski stated that the Town has not been successful with grants to date for wastewater but after this plan he feels the Town will be successful. Further, he noted the plan is an excellent tool and the amount of assets the Town has is positive. Mayor Napper congratulated the Water and Sewer Committee and staff.

Councillor McEwen inquired about the timing and when the final plan will be presented to Council. Mr. Sobanski plans to have the draft plan submitted for Council endorsement in the early fall for comments and the final plan in time for the 2022 budget considerations. Councilor McEwen noted the timing wouldn't work out for the new development charges by-law and would be nice to have this reflected in the development charges by-law. Councillor McEwen's concern is that the current development charges by-law does not account for water and wastewater. It was noted that the development charges study does not include drinking or wastewater. This plan, the financial plan and existing reserves will be relied on.

Councillor Wilkins questioned if a resolution had been made for the concerns that had been submitted at the Water and Sewer Committee Meeting; it was advised they would be addressed in the report.

Further he noted the main line in the Plympton area is the only line and if it were to burst there would be a major issue and wondered about an alternate or back up plan. Mr. Sobanski noted that discussions are taking place with engineers and they are looking into options. Additionally he noted twinning lines is very expensive so they are looking at redundancies for further consideration.

Ms. Schmitter noted that there will be a recommendation looking at redundancies and addressed in the the final solutions. Councillor Wilkins asked about the pressure on Camlachie's pump station and it was noted that the pumps are appropriate for the current use.

Councillor Woolvett noted that the infiltration areas in the Plympton area do not have any storm water system for sub pumps. It was discussed that there are no storm water drains in many locations and could have water going into the sanitary sewer system and this needs to be considered.

Councillor Woolvett inquired about planning for future development on Confederation Line and if Jacobs had looked at that area. Mr. Sobanski noted that all areas that were known as development properties were included, however this is a high level study so it did not look at specifically how a each development would be serviced.

Mr. Sobanski stated that Jacobs operations is looking at quick and easy ways to mitigate infiltration concerns. Future capital budgets will include further testing and mitigation measures for the install and stop up infiltration sanitary man hole plans.

Mayor Napper noted it is excellent to have long term planning for the future.

CONCLUDING STATEMENTS

Mr. Sobanski concluded the question and comment section of the meeting and stated that all comments will be taken into consideration and incorporated into the master plan and brought back to Council for endorsement.

ADJOURNMENT

Mayor Napper thanked Jacobs staff members for their presentation and everyone that was in attendance at the meeting.

MOTION1
Moved by Councillor Tim Wilkins
Seconded by Councillor Netty McEwen

(6:54 p.m.) That the special meeting be adjourned.

Carried

Mayor

Clerk

Appendix C
First Nations and Indigenous Consultation Log

Jacobs

Memorandum

72 Victoria Street South
Suite 300
Kitchener, ON N2G 4Y9
Canada
T +1.519.579.3500

www.jacobs.com

Subject	**First Nation Communications Log**	**Project Name**	Plympton-Wyoming Wastewater Servicing Master Plan
Date	October 26, 2021	**Project No.**	**CE761200**

First Nations Community Name	Point of Contact	Date/Time of Contact	Form of contact (ie. Registered mail, email, phone call)	Comments
Caldwell First Nation	Chief Duckworth	July 13, 2021	Registered Mail	Mail included an introductory letter and the Notice of Commencement. Registered mail returned undelivered
Oneida Nation of the Thames	Chief Chrisjohn	July 13, 2021	Registered Mail	Mail included an introductory letter and the Notice of Commencement.
Chippewas of Kettle and Stony Point	Chief Henry	July 13, 2021	Registered Mail	Mail included an introductory letter and the Notice of Commencement.
Walpole Island First Nation	Chief Miskokomon	July 13, 2021	Registered Mail	Mail included an introductory letter and the Notice of Commencement.
Aamjiwnaang First Nation	Chief Plain	July 13, 2021	Registered Mail	Mail included an introductory letter and the Notice of Commencement.
Munsee-Delaware Nation	Chief Thomas	July 13, 2021	Registered Mail	Mail included an introductory letter and the Notice of Commencement.
Walpole Island First Nation	Mr. Jacobs	July 13, 2021	Registered Mail	Mail included an introductory letter and the Notice of Commencement.
Chippewas of the Thames First Nation	Fallon Burch	July 15, 2021	Voicemail left for Adam Sobanski	Introductory voicemail left in advance of sending the registered mail.

First Nations Community Name	Point of Contact	Date/Time of Contact	Form of contact (ie. Registered mail, email, phone call)	Comments
Chippewas of the Thames First Nation	Fallon Burch	July 21, 2021	Registered Mail	Mail included an introductory letter and the Notice of Commencement.
Chippewas of the Thames First Nation	Fallon Burch	August 9th, 2021	Email to Adam Sobanski	Response received from COTTFN regarding the Notice of Commencement. The COTTFN indicated their interest in attending the archaeological survey.
Chippewas of the Thames First Nation	Fallon Burch	September 8th, 2021	Attendance for the Stage 1 Archaeological Assessment	A COTTFN representative attended the Stage 1 archaeological assessment field survey completed by Stantec
Aamjiwnaang First Nation	Chief Plain	October 22nd, 2021	Phone Call by Demetri Poulakas (Jacobs)	Left a voicemail requesting that a representative call Jacobs back to discuss the Master Plans and any comments, concerns or preferences regarding future engagement.
Chippewas of Kettle and Stony Point	Chief Henry	October 20th-22nd, 2021	Phone Call by Demetri Poulakas (Jacobs)	Called twice to discuss the Master Plans and any comments, concerns or preferences regarding future engagement. There was no answer and no option to leave a message.
Walpole Island First Nation	Chief Miskokomon	October 20th-22nd, 2021	Phone Call by Demetri Poulakas (Jacobs)	Called twice to discuss the Master Plans and any comments, concerns or preferences regarding future engagement. There was no answer and no option to leave a message.
Munsee-Delaware Nation	Chief Thomas	October 20th-22nd, 2021	Phone Call by Demetri Poulakas (Jacobs)	Called twice to discuss the Master Plans and any comments, concerns or preferences regarding future engagement. There was no answer and no option to leave a message.

First Nations Community Name	Point of Contact	Date/Time of Contact	Form of contact (ie. Registered mail, email, phone call)	Comments
Caldwell First Nation	Breanna Sands	October 22, 2021	Phone Call by Demetri Poulakas (Jacobs)	Spoke with Breanna Sands who identified that they are the primary contact for this type of project. They requested that the project team complete the online submission tool for the project at (consultwithcaldwell.ca). She requested that we send her an email letting her know we have completed the process and they will initiate the review.
Caldwell First Nation	N/A	October 26, 2021	consultwithcaldwell.ca by Jillian Schmitter (Jacobs)	Completed the online consultation tool.
Caldwell First Nation	Brianna Sands	October 26, 2021	Email by Jillian Schmitter (Jacobs)	As requested, emailed to inform Brianna that the online consultation tool has been completed and submitted. Received written acknowledgement that this email was received from Brianna.
Oneida Nation of the Thames	Chief Chrisjohn	October 29th, 2021	Phone Call by Demetri Poulakas (Jacobs)	Left a voicemail requesting that a representative call Jacobs back to discuss the Master Plans and any comments, concerns or preferences regarding future engagement.

July 7, 2021

Oneida Nation of the Thames
2210 Elm Ave
Southwold, ON N0L 2G0

Dear Chief Chrisjohn and Council,

RE: Town of Plympton-Wyoming Wastewater Master Plan

The Town of Plympton-Wyoming is initiating a Wastewater Servicing Master Plan to see that the Town's sanitary sewer collection systems have the capacity to convey current and future wastewater flows to the Town's Wastewater Treatment Plants to 2039, based on the Town's growth plan. The Notice of Commencement for this Master Plan is attached to this letter and contains some additional information about the project and the Master Plan process. The investigations completed to date have identified the need to consider the construction of a new pump station and forcemains.

A stage 1 archeological investigation is included within the scope of this Master Plan. Where archeological potential is identified through this (or subsequent) investigations, archaeological monitoring will be completed by a registered archaeologist and with participation of local First Nations and Indigenous Groups.

As part of this Master Plan, we would like to conduct meaningful engagement with you to inform our decision-making process. To do so, we are reaching out to receive preliminary feedback on if you'd like to be engaged throughout this project and if so, how you would prefer to be engaged and receive information as the project progresses.

I would like to invite you to contact me with any questions, concerns, or comments regarding the project or the Master Plan process. Thank you for your time and consideration.

Sincerely,
Adam Sobanski

Encl.

- Notice of Commencement

July 7, 2021

Caldwell First Nation
14 Orange St
Leamington, ON N8H 1P5

Dear Chief Duckworth and Council,

RE: Town of Plympton-Wyoming Wastewater Master Plan

The Town of Plympton-Wyoming is initiating a Wastewater Servicing Master Plan to see that the Town's sanitary sewer collection systems have the capacity to convey current and future wastewater flows to the Town's Wastewater Treatment Plants to 2039, based on the Town's growth plan. The Notice of Commencement for this Master Plan is attached to this letter and contains some additional information about the project and the Master Plan process. The investigations completed to date have identified the need to consider the construction of a new pump station and forcemains.

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Sincerely,
Adam Sobanski

Encl.

- Notice of Commencement

July 7, 2021

Chippewas of Kettle and Stony Point
6247 Indian Lane
Kettle & Stony Point FN, ON N0N 1J0

Dear Chief Henry and Council,

RE: Town of Plympton-Wyoming Wastewater Master Plan

The Town of Plympton-Wyoming is initiating a Wastewater Servicing Master Plan to see that the Town's sanitary sewer collection systems have the capacity to convey current and future wastewater flows to the Town's Wastewater Treatment Plants to 2039, based on the Town's growth plan. The Notice of Commencement for this Master Plan is attached to this letter and contains some additional information about the project and the Master Plan process. The investigations completed to date have identified the need to consider the construction of a new pump station and forcemains.

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Sincerely,
Adam Sobanski

Encl.

- Notice of Commencement

July 7, 2021

Walpole Island First Nation (Bkejwanong Territory)
117 Tahgahoning, RR 3
Walpole Island, ON N8A 4K9

Dear Chief Miskokomon and Council,

RE: Town of Plympton-Wyoming Wastewater Master Plan

The Town of Plympton-Wyoming is initiating a Wastewater Servicing Master Plan to see that the Town's sanitary sewer collection systems have the capacity to convey current and future wastewater flows to the Town's Wastewater Treatment Plants to 2039, based on the Town's growth plan. The Notice of Commencement for this Master Plan is attached to this letter and contains some additional information about the project and the Master Plan process. The investigations completed to date have identified the need to consider the construction of a new pump station and forcemains.

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Sincerely,
Adam Sobanski

Encl.

- Notice of Commencement

July 7, 2021

Aamjiwnaang First Nation
978 Tashmoo Ave
Sarnia, ON N7T 7H5

Dear Chief Plain and Council,

RE: Town of Plympton-Wyoming Wastewater Master Plan

The Town of Plympton-Wyoming is initiating a Wastewater Servicing Master Plan to see that the Town's sanitary sewer collection systems have the capacity to convey current and future wastewater flows to the Town's Wastewater Treatment Plants to 2039, based on the Town's growth plan. The Notice of Commencement for this Master Plan is attached to this letter and contains some additional information about the project and the Master Plan process. The investigations completed to date have identified the need to consider the construction of a new pump station and forcemains.

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I would like to invite you to contact me with any questions, concerns, or comments regarding the project or the Master Plan process. Thank you for your time and consideration.

Sincerely,
Adam Sobanski

Encl.

- Notice of Commencement

July 7, 2021

Munsee-Delaware Nation
289 Jubilee Rd
Muncey, ON N0L 1Y0

Dear Chief Thomas and Council,

RE: Town of Plympton-Wyoming Wastewater Master Plan

The Town of Plympton-Wyoming is initiating a Wastewater Servicing Master Plan to see that the Town’s sanitary sewer collection systems have the capacity to convey current and future wastewater flows to the Town’s Wastewater Treatment Plants to 2039, based on the Town’s growth plan. The Notice of Commencement for this Master Plan is attached to this letter and contains some additional information about the project and the Master Plan process. The investigations completed to date have identified the need to consider the construction of a new pump station and forcemains.

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Sincerely,
Adam Sobanski

Encl.

- Notice of Commencement

July 7, 2021

Walpole Island First Nation (Bkejwanong Territory)
117 Tahgahoning, RR 3
Walpole Island, ON N8A 4K9

Dear Mr. Jacobs,

RE: Town of Plympton-Wyoming Wastewater Master Plan

The Town of Plympton-Wyoming is initiating a Wastewater Servicing Master Plan to see that the Town's sanitary sewer collection systems have the capacity to convey current and future wastewater flows to the Town's Wastewater Treatment Plants to 2039, based on the Town's growth plan. The Notice of Commencement for this Master Plan is attached to this letter and contains some additional information about the project and the Master Plan process. The investigations completed to date have identified the need to consider the construction of a new pump station and forcemains.

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Sincerely,
Adam Sobanski

Encl.

- Notice of Commencement

July 15, 2021

Chippewas of the Thames First Nation
320 Chippewa Road
Muncey, ON N0L 1Y0

Dear Chief Jacqueline French and Council,

RE: Town of Plympton-Wyoming Wastewater Master Plan

The Town of Plympton-Wyoming is initiating a Wastewater Servicing Master Plan to see that the Town's sanitary sewer collection systems have the capacity to convey current and future wastewater flows to the Town's Wastewater Treatment Plants to 2039, based on the Town's growth plan. The Notice of Commencement for this Master Plan is attached to this letter and contains some additional information about the project and the Master Plan process. The investigations completed to date have identified the need to consider the construction of a new pump station and forcemains.

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I would like to invite you to contact me with any questions, concerns, or comments regarding the project or the Master Plan process. Thank you for your time and consideration.

Sincerely,
Adam Sobanski

Encl.

- Notice of Commencement

From:	Schmitter, Jillian/KWO
To:	Philpott, Jared/KWO
Subject:	FW: Town of Plympton-Wyoming Wastewater Servicing Master Plan Notice of Study Commencement
Date:	Thursday, July 22, 2021 12:04:03 PM
Attachments:	Letter to Chief French.pdf CE761200_PlymptonWyomingMP_NoC_Final_2021.06.24_Email.pdf

From: Adam Sobanski <ASobanski@plympton-wyoming.ca>
Sent: Thursday, July 22, 2021 11:56 AM
To: consultation@cottfn.com
Cc: Schmitter, Jillian/KWO <Jillian.Schmitter@jacobs.com>; Nicole Campbell <NCampbell@plympton-wyoming.ca>
Subject: [EXTERNAL] Town of Plympton-Wyoming Wastewater Servicing Master Plan Notice of Study Commencement

Good day,

As per my recent voicemails please see the attached letter and notice. The letter and notice has also been sent by registered mail to your attention.

If you have any questions or comments please feel free to contact me via email or my cell phone at 519-331-0311.

Thank you and have a great day.

Sincerely,
Adam Sobanski, CET, CRS.
Director of Public Works
Town of Plympton-Wyoming
546 Niagara Street P.O. Box 250
Wyoming, ON N0N 1T0
Phone: 519-845-3939
Toll Free (Ontario): 1-877-313-3939
Fax: 519-845-0597
E-mail: asobanski@plympton-wyoming.ca
Website: www.plympton-wyoming.ca

From:	Schmitter, Jillian/KWO
To:	Philpott, Jared/KWO
Subject:	FW: Town of Plympton-Wyoming Wastewater Servicing Master Plan
Date:	Monday, August 9, 2021 9:41:10 AM
Attachments:	image001.png LTR_Consultation _Town of Plympton-Wyoming_WWMP.pdf image003.png

---

From: Fallon Burch <fburch@cottfn.com>
Sent: Friday, August 6, 2021 2:20 PM
To: asobanski@plympton-wyoming.ca
Cc: Schmitter, Jillian/KWO <Jillian.Schmitter@jacobs.com>
Subject: [EXTERNAL] Town of Plympton-Wyoming Wastewater Servicing Master Plan

Good afternoon Mr. Sobanski,

Thank you for the notification for the proposed project. Please find attached a response on behalf of Chippewas of the Thames First Nation. If you have any questions, please feel free to contact me.

Thank you,

Fallon Burch

Fallon Burch
Consultation Coordinator, Chippewas of the Thames First Nation
320 Chippewa Rd Muncey, ON N0L 1Y0 | 519-289-5555 |
www.cottfn.com/consultation

CHIPPEWAS OF THE THAMES FIRST NATION

August 6, 2021

VIA EMAIL

Adam Sobanski
Director of Public Works
Town of Plympton-Wyoming
546 Niagara Street, P.O. Box 250
Wyoming, ON N0N 1T0

RE: Town of Plympton-Wyoming Wastewater Master Plan

Dear Mr. Sobanski,

We have reviewed information concerning the aforementioned project. The proposed Wastewater Master Plan falls within Chippewas of the Thames First Nation (COTTFN) Big Bear Creek Additions to Reserve Land Selection Area as well as COTTFN's Traditional Territory.

After reviewing the project information, we have identified minimal concerns with the information that you have presented to us at this time. I ask that if there are changes to the project that are of a substantive nature that you keep us informed by sending an electronic notification to consultation@cottfn.com. If there is an Archeology Assessment, we require notification with an invitation to actively participate by sending a First Nations representative on behalf of COTTFN. I kindly recommend that you engage with First Nations in closer proximity to your project.

We look forward to continuing this open line of communication. To implement meaningful consultation, COTTFN has developed its own protocol - a document and a process that will guide positive working relationships. We would be happy to meet with you to review COTTFN's Consultation Protocol. The protocol is available on our website at www.cottfn.com/consultation.

Sincerely,

Fallon Burch
Consultation Coordinator
Chippewa of the Thames First Nation
consultation@cottfn.com

c: Jillian Schmitter, Project Manager, Jacobs Engineering

From: CFN Consultation Coordinator
To: Schmitter, Jillian/KWO
Subject: [EXTERNAL] consultwithcaldwell.ca - Project Submission
Date: Tuesday, October 26, 2021 10:40:27 AM

Brianna Sands
Consultation Coordinator
Caldwell First Nation
14 Orange Street
Leamington | ON | N8H 1P5

Your project has been submitted for review

Thank you for using the CFN Community Consultation Tool. We will respond with next steps **within 60 days of receipt**.

If you have questions, please contact CFN's Consultation Coordinator: ecc@caldwellfirstnation.ca or 519-322-1766 ext. #1243.

*Please note that simply sending an email to the Consultation Coordinator or to a Chief and Council member does not constitute consultation.

*Please be advised that an administrative fee will be charged for a meeting with Chief and Council.

From:	Schmitter, Jillian/KWO
To:	"ecc@caldwellfirstnation.ca"
Cc:	Poulakas, Demetri/TOR; Adam Sobanski (asobanski@plympton-wyoming.ca)
Bcc:	Philpott, Jared/KWO
Subject:	Town of Plympton-Wyoming Wastewater Servicing Master Plan
Date:	Tuesday, October 26, 2021 11:29:00 AM

Hello Brianna,

I believe you spoke with Demetri last week. I understand that we missed completing the online consultation tool for the Plympton-Wyoming Wastewater Servicing Master Plan, I have now completed the online submission for review.

Thank you,

Jillian Schmitter, P.Eng. (she/her) | Jacobs | Water Resources Engineer
O:+01.519.514.1622 | M:+01.519.580.4749 | Jillian.Schmitter@jacobs.com
300-72 Victoria Street South | Kitchener, ON N2G 4Y9 | Canada
CH2M HILL Canada Limited

I continue to work remotely and can be reached by phone on my Office Number.

From:	Adam Sobanski
To:	Schmitter, Jillian/KWO; Philpott, Jared/KWO
Subject:	[EXTERNAL] FW: Registered Letter
Date:	Friday, August 13, 2021 2:54:07 PM
Attachments:	Scanned from a Xerox Multifunction Printer.pdf

FYI

Sincerely,
Adam Sobanski, CET, CRS.
Director of Public Works
Town of Plympton-Wyoming
546 Niagara Street P.O. Box 250
Wyoming, ON N0N 1T0
Phone: 519-845-3939
Toll Free (Ontario): 1-877-313-3939
Fax: 519-845-0597
E-mail: asobanski@plympton-wyoming.ca
Website: https://urldefense.com/v3/__http://www.plympton-wyoming.com__;!!B5cixuoO7ltTeg!WgueR_e9UzT300OqGgtf1IpIp5AtMweNbIfvi5ZTw4YkUSBiu1pnwyVdctsAZSbv8NfY$

-----Original Message-----
From: Nicole Campbell
Sent: Thursday, August 12, 2021 2:20 PM
To: Adam Sobanski
Subject: Registered Letter

Adam,

We received the registered letter back that we had sent to Chief Duckworth at Caldwell First Nation in Leamington. Attached is a scanned copy of the returned envelope.

Thanks

Nicole Campbell
Administrative Assistant - Public Works
Town of Plympton-Wyoming
546 Niagara Street, P.O. Box 250
Wyoming, Ontario N0N 1T0
Phone: 519-845-3939
Toll Free (Ontario): 1-877-313-3939
Fax: 519-845-0597
Email: ncampbell@plympton-wyoming.ca
Website: https://urldefense.com/v3/__http://www.plympton-wyoming.com__;!!B5cixuoO7ltTeg!WgueR_e9UzT300OqGgtf1IpIp5AtMweNbIfvi5ZTw4YkUSBiu1pnwyVdctsAZSbv8NfY$

Notice of Confidentiality:
The information transmitted is intended only for the person or entity to which it is addressed and may contain confidential and/or privileged material. Any review, re-transmission, dissemination or other use of, or taking of any action in reliance upon, this information by persons or entities other than the intended recipient is prohibited. If you received this in error, please contact the sender immediately by return electronic transmission and then immediately delete this transmission, including all attachments, without copying, distributing or disclosing same.

P please don't print this e-mail unless you really need to.

Return to Sender
Renvoi à l'expéditeur

This item is being returned because:
Envoi retourné pour la raison suivante :

- [x] Unclaimed — Non réclamé
- [ ] No such Address — Adresse inexistante
- [ ] Address Incomplete — Adresse incomplète
- [ ] Moved/Unknown — Déménagé / Inconnu
- [ ] No such Post Office — Bureau inexistant
- [ ] Refused — Refusé

Amount Due Montant dû $
Initials/Initiales

33-086-648 (08-04)

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Chief Duckworth
Caldwell First Nation
14 Orange St
Leamington, ON N8H 1P5

103380

103380 815 303 530

ERIE PLAZA PO
SHOPPERS DRUG MART #1117
269 ERIE ST S
LEAMINGTON ON N8H 3C0

CANADA POSTES
POST CANADA

CANADA POSTES
POST CANADA

REGISTERED RECOMMANDÉ R

CPC Tracking Number | Numéro de repérage de la SCP

RN 326 920 208 CA

RN 326 920 208 CA

Sender warrants that this shipment does not contain dangerous goods.
L'expéditeur garantit que cet envoi ne contient pas de matières dangereuses.

X Signature Required
Signature requise

33-086-584 (14-06)

Appendix D
MECP Species at Risk Screening Report

From:	Zarkovich, Aide (MECP)
To:	Chen, Helen
Subject:	[EXTERNAL] SARBBio_Response-07-23-2021: SAR Screening
Date:	Friday, July 23, 2021 3:38:32 PM
Attachments:	image002.jpg

Hi Helen,

SARB has conducted review of the red highlighted areas provided in your email, and the areas adjacent to it for Species at Risk (SAR) occurrences and have detected additional the following SAR occurrences:

- American Eel (*Anguilla rostrate*) – END
- Blanding's Turtle (*Emydoidea blandingii*) – THR

- Green Dragon (*Arisaema dracontium*) – SC
- Riddell's Goldenrod (*Solidago riddellii*) – SC
- Snapping Turtle (*Chelydra serpentina*) – SC
- Wood Thrush (*Hylocichla mustelina*) – SC

While this review represents MECP's best currently available information, it is important to note that a lack of information for a site does not mean that SAR or their habitat are not present. There are many areas where the Government of Ontario does not currently have information, especially in areas not previously surveyed. On-site assessments will better verify site conditions, identify and confirm presence of species at risk and/or their habitats.

It is the responsibility of the proponent to ensure that SAR are not killed, harmed, or harassed, and that their habitat is not damaged or destroyed through the proposed activities to be carried out on the site. If the proposed activities can not avoid impacting protected species and their habitats then the proponent will need to apply for a authorization under the ESA.

Regards,

Aide Zarkovich
A/Management Biologist - Permissions & Compliance
Species at Risk Branch
Land & Water Division
Ministry of the Environment, Conservation & Parks
aide.zarkovich@ontario.ca
T: 705-492-7452

From: Chen, Helen <Helen.Chen@jacobs.com>
Sent: July 22, 2021 10:56 AM
To: Zarkovich, Aide (MECP) <Aide.Zarkovich@ontario.ca>
Subject: RE: SARBBio_Response-07-21-2021: SAR Screening - Plympton-Wyoming Wastewater Servicing

Hello,

I've attached a picture with the proposed work areas in red. Please let me know if you need more information.

Thank you,
Helen

From: Zarkovich, Aide (MECP) <Aide.Zarkovich@ontario.ca>
Sent: Wednesday, July 21, 2021 2:18 PM
To: Chen, Helen <Helen.Chen@jacobs.com>
Subject: [EXTERNAL] SARBBio_Response-07-21-2021: SAR Screening - Plympton-Wyoming Wastewater Servicing

Hi Helen,

Could you please provide the location that would encompass the future work?

Thank you,

Aide

Aide Zarkovich
A/Management Biologist - Permissions & Compliance
Species at Risk Branch
Land & Water Division
Ministry of the Environment, Conservation & Parks
aide.zarkovich@ontario.ca
T: 705-492-7452

From: Chen, Helen <Helen.Chen@jacobs.com>
Sent: July 14, 2021 4:03 PM
To: Species at Risk (MECP) <SAROntario@ontario.ca>
Cc: Flesher, Chris/TOR <Chris.Flesher@jacobs.com>
Subject: SAR Screening - Plympton-Wyoming Wastewater Servicing

Good afternoon,

The Town of Plympton-Wyoming (the Town) is undertaking a Wastewater Servicing Master Plan to see that the Town's sanitary sewer collection systems have the capacity to convey current and future wastewater flows to the Town's Wastewater Treatment Plants to 2039 based on the Town's growth plan. Wastewater Treatment Plant capacity is also being reviewed as part of this study. Jacobs will be supporting the Town by completing a Schedule B Class EA for the Master Plan. We have screened the project for SAR utilizing the NHIC, OBBA, DFO and iNaturalist, see below. Could you please let us know if there are any additional SAR to add?

Common Name	Scientific Name	S Rank	SARO	COSEWICK	SARA
Bobolink	*Dolichonyx oryzivorus*	*S4B*	*THR*	*THR*	*THR*
Eastern Wood-pewee	*Contopus virens*	*S4B*	*SC*	*SC*	*SC*
Chimney Swift	*Chaetura pelagica*	*S3B*	*THR*	*THR*	*THR*
Red-headed Woodpecker	*Melanerpes erythrocephalus*	*S3*	*SC*	*END*	*THR*
Acadian Flycatcher	*Empidonax virescens*	*S1B*	*END*	*END*	*END*
Bank Swallow	*Riparia riparia*	*S4*	*THR*	*THR*	*THR*

Barn Swallow	*Hirundo rustica*	*S4B*	*THR*	*THR*	*THR*
Golden-winged Warbler	*Vermivora chrysoptera*	*S3B*	*SC*	*THR*	*THR*
Cerulean Warbler	*Setophaga cerulea*	*S2B*	*THR*	*END*	*END*
Prothonotary Warbler	*Protonotaria citrea*	*S1B*	*END*	*END*	*END*
Yellow-breasted Chat	*Icteria virens*	*S1B*	*END*	*END*	-
Grasshopper Sparrow	*Ammodramus savannarum*	*S4B*	*SC*	*SC*	-
Eastern Meadowlark	*Sturnella magna*	*S4B, S3N*	*THR*	*THR*	*THR*
Horned Grebe	*Podiceps auritus*	*S1B, S3N, S4M*	*SC*	*SC*	-
Red Knot	*Calidris canutus*	*S1M*	*END*	*END*	-
Wood Thrush	*Hylocichla mustelina*	*S4B*	*SC*	*THR*	*THR*
Lake Sturgeon (Great Lakes - Upper St. Lawrence River population)	*Acipenser fulvescens pop. 3*	*S2*	*THR*	*THR*	-
Silver Chub	*Macrhybopsis storeriana*	*S2*	*THR*	*END*	*SC*
Butler's Gartersnake	*Thamnophis butleri*	*S2*	*END*	*END*	*END*
Queensnake	*Regina septemvittata*	*S2*	*END*	*END*	*END*
Mapleleaf Mussel	*Quadrula quadrula*	*S2*	*THR*	*SC*	-
Northern Riffleshell	*Epioblasma rangiana*	*S1*	*END*	*END*	*END*
Salamander Mussel	*Simpsonaias ambigua*	*S1*	*END*	*END*	*END*
Wavy-rayed Lampmussel	*Lampsilis fasciola*	*S2*	*THR*	*SC*	*SC*
Butternut	*Juglans cinerea*	*S2?*	*END*	*END*	*END*
Eastern False Rue-anemone	*Enemion biternatum*	*S2*	*THR*	*THR*	*THR*
Eastern Flowering Dogwood	*Cornus florida*	*S2?*	*END*	*END*	*END*
Monarch	*Danaus plexippus*	*S2N,S4B*	*SC*	*END*	*SC*

Thank you,
Helen Chen

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Appendix E
Detailed Alternatives Evaluations

Plympton-Wyoming Wastewater Servicing Master Plan - Detailed Evaluation Criteria for WWTP Upgrades

Category	Criterion	Description	High (10)	Medium (5)	Low (0)
Natural Environment	Greenhouse Gas Emissions	The potential for the alternative to minimize GHG emissions	The alternative will make a significant contribution to the Town's goal to reduce GHG emissions, with the potential to provide a net positive contribution	The alternative will make a modest contribution to the Town's goal to reduce GHG emissions.	The alternative will not make a measurable contribution to the Town's goal to reduce GHG emissions.
	Groundwater Quality and Quantity	The potential to impact sensitive groundwater resources in the Town and protect overall groundwater quality and quantity.	The alternative provides the greatest level of protection to sensitive groundwater resources and to the overall groundwater quality and quantity.	The alternative provides an acceptable level of protection to sensitive groundwater resources and to overall groundwater quality and quantity. May require careful monitoring over the long-term to maintain protection. Contingency measure may be required.	The alternative poses unacceptable risks to the protection-sensitive groundwater resources and to the overall quality and quantity of groundwater.
	Terrestrial Habitats and Corridors	The potential impacts to terrestrial habitats and corridors.	The alternative will avoid terrestrial habitats and corridors.	The alternative may require special measures to protect terrestrial habitats and corridors.	The alternative will result in an unacceptable loss of terrestrial habitats and corridors.
	Aquatic Habitats and Fisheries	The potential for the alternative to protect or enhance aquatic habitats and fisheries.	The alternative will protect aquatic habitats and fisheries and has the potential to provide enhancements.	The alternative may require special measures to protect aquatic habitats and fisheries.	The alternative will result in an unacceptable loss of aquatic habitat and fisheries.
	Floodplain Impacts	The potential impacts to existing flood plain and reduction of flood volume capacity in the receiving body.	The alternative will maintain the existing flood plan and flood volume capacity.	The alternative will require specials measures to maintain the existing flood plain and flood volume capacity.	The alternative will result in an unacceptable loss of floodplain and will require significant measures to replace lost flood volume capacity.
	Surface Water Quality	The potential impact to contaminant loadings in the receiving body.	The alternative will provide a high degree of protection to the water quality of the receiving bodies all year, and treated effluent can be readily assimilated.	The alternative will provide a high degree of protection to the water quality of the receiving bodies for most of the year, and treated effluent may require seasonal discharge conditions to meet assimilation requirements.	The alternative may present a threat to the water quality of the receiving bodies during low flow periods, and there may be significant restrictions to treated effluent discharge conditions.
	Air Quality	The potential impact to the quality of the air.	The alternative has the potential to improve the air quality	The alternative provides for similar air quality	The alternative has the potential to reduce the air quality
	Wetlands	The potential for the alternative to protect and maintain wetlands	The alternative will avoid wetlands.	The alternative may require special measures to maintain wetland protection.	The alternative will result in an unacceptable threat to wetlands.
Social/Cultural Environment	Community Health and Safety	The potential for the alternative to minimize risk to community health and safety	There are no risks to community health and safety.	There are minor risks to community health and safety that can be properly managed.	There are significant risks to community health and safety which require significant measures and risk management plans to minimize risks to acceptable levels.
	Occupational Health and Safety	The potential for the alternative to minimize risks to occupational health and safety (operations, maintenance and during construction)	There are no risks to occupational health and safety.	There are minor risks to occupation health and safety that can be properly managed.	There are significant risks to occupation health and safety which require significant training and or risk management plans to minimize risks to acceptable levels.
	Archaeological Impacts	The degree of impact that the alternative has on documented archaeologically significant features.	The alternative has little or no impact on documented archaeologically significant features.	The alternative has a moderate impact on documented archaeologically significant features.	The alternative has a large impact on documented archaeologically significant features.
	Cultural Heritage Impacts	The degree of impact that the alternative has on areas with documented culural heritage resources.	The Aternative represents little or no potential for disturbance of documented cultural heritage features.	The Aternative represents a moderate potential for disturbance of documented cultural heritage features.	The Aternative represents a significant potential for disturbance of documented cultural heritage features.
	First Nations Cultural Heritage Impacts	The degree of impact that the alternative has on culural heritage resources recognized by First Nations.	The Aternative represents little or no potential for disturbance of culural heritage resources recognized by First Nations.	The Aternative represents a moderate potential for disturbance of culural heritage resources recognized by First Nations.	The Aternative represents a significant potential for disturbance of culural heritage resources recognized by First Nations.
	Noise Impacts	The potential for the occurrence of noise events.	The alternative has little or no potential to produce noise.	The alternative has moderate potential to produce noise; noise control measures may be needed to prevent migration off site.	The alternative has a high potential to produce noise; significant mitigation would be needed to control migration off site.
	Odour Impacts	The potential of the occurrence of odour events.	The alternative has little or no potential to produce odour.	The alternative has moderate potential to produce odour; odour control measures may be needed to prevent migration off site.	The alternative has a high potential to produce odour; significant mitigation would be needed to control migration off site.
	Community Perception	The potential of the alternative to receive community support for wastewater treatment and biosolids management	The alternative has the potential to receive a high level of support and endorsement from the public.	The alternative has the potential to receive a moderate level of support and endorsement from the public.	The alternative has the potential to receive little to no support and endorsement from the public.
	Transportation	The potential for the alternative to avoid increased demands on the transportation systems (patterns, volumes, and infrastructure requirements)	The alternative will reduce demands on the transportation system.	The alternative will place similar demands on the transportation system.	The alternative will increase demands on the transportation system.
Technical Environment	Performance Record	The ability of the alternative to perform with a high degree of reliability and predictability in both process operations and effluent quality and/or biosolids quality.	The alternative includes proven technology with a high degree of reliable performance.	The alternative includes newer technology with a growing record of demonstrated performance reliability.	The alternative includes innovative technology with a limited performance record and unconfirmed reliability – requires further testing/demonstration to determine feasibility for the Town.
	Ability to Meet Treatment Capacity Requirements	The ability of the alternative to provide the wastewater treatment requirements for short-, medium-, and/or long-term needs.	The alternative can provide short-, medium-, and long-term treatment requirements.	The alternative can provide short-term and may provide medium-term requirements.	The alternative may only provide short-term requirements.
	Ease of Implementation (Constructability)	The ability of the alternative to be implemented with minimal disruption to existing wastewater treatment operations during implementation; minimal need to require system modifications.	The alternative can be implemented with no disruption to existing service.	The implementation of the alternative may result in minor disruptions to existing service.	The implementation of the alternative may require significant or periodic disruptions to existing service.
	Energy Requirements	The energy required from all sources (electricity, natural gas, fuel)	The alternative requires less energy than the existing system.	The alternative requires the same amount of energy as the existing system.	The alternative uses more energy than the existing system
	Regulatory Constraints	The ability of the alternative to be approved with minimal, if any, conditions.	The alternative can be readily approved.	The alternative can be approved with minimal conditions.	The alternative can be approved with significant or onerous conditions.
	Operational Compatibility	The alternative's compatibility with current existing process operations and its ability to integrate within the existing site.	The alternative is very compatible and compliments current processing units. It can be integrated into current plant operations with minimal impact.	The alternative is somewhat compatible and complimentary to current processing units; it can be integrated; but will have some impact.	The alternative is not compatible or complimentary to current processing units and integration may be difficult.
	Maintenance Complexity	The degree of maintenance complexity associated with implementation of the alternative	The alternative will result in minor or no increase in maintenance complexity compared to the existing processes.	The alternative will result in a moderate increase in maintenance complexity compared to the existing processes.	The alternative will result in a significant increase maintenance complexity when compared to the existing processes.
Economic	Capital Costs	The relative costs of land, equipment, and facilities when compared to other alternatives	The alternative has the lowest capital costs relative to other alternatives.	The alternative is in the mid-range of capital costs relative to other alternatives.	The alternative has the highest capital costs relative to other alternatives.
	O&M Costs	The relative Operations and Maintenance (O&M) when compared to other alternatives	The alternative has the lowest O&M costs relative to other alternatives.	The alternative is in the mid-range of O&M costs relative to other alternatives.	The alternative has the highest O&M costs relative to other alternatives.

Plympton-Wyoming Wastewater Servicing Master Plan - Detailed Evaluation Criteria for Pumping Stations

Category	Criterion	Description	High (10)	Medium (5)	Low (0)
Natural Environment	Greenhouse Gas Emissions	The potential for the alternative to minimize GHG emissions	The alternative will make a significant contribution to the City's goal to reduce GHG emissions, with the potential to provide a net positive contribution	The alternative will make a modest contribution to the City's goal to reduce GHG emissions.	The alternative will not make a measurable contribution to the City's goal to reduce GHG emissions.
	Groundwater Quality and Quantity	The potential to impact sensitive groundwater resources in the Town and protect overall groundwater quality and quantity.	The alternative provides the greatest level of protection to sensitive groundwater resources and to the overall groundwater quality and quantity.	The alternative provides an acceptable level of protection to sensitive groundwater resources and to overall groundwater quality and quantity. May require careful monitoring over the long-term to maintain protection. Contingency measure may be required	The alternative poses unacceptable risks to the protection-sensitive groundwater resources and to the overall quality and quantity of groundwater.
	Terrestrial Habitats and Corridors	The potential impacts to terrestrial habitats and corridors.	The alternative will avoid terrestrial habitats and corridors.	The alternative may require special measures to protect terrestrial habitats and corridors.	The alternative will result in an unacceptable loss of terrestrial habitats and corridors.
	Aquatic Habitats and Fisheries	The potential for the alternative to protect or enhance aquatic habitats and fisheries.	The alternative will protect aquatic habitats and fisheries and has the potential to provide enhancements.	The alternative may require special measures to protect aquatic habitats and fisheries.	The alternative will result in an unacceptable loss of aquatic habitat and fisheries.
	Floodplain Impacts	The potential impacts to existing flood plain and reduction of flood volume capacity in the receiving body.	The alternative will maintain the existing flood plan and flood volume capacity.	The alternative will require specials measures to maintain the existing flood plain and flood volume capacity.	The alternative will result in an unacceptable loss of floodplain and will require significant measures to replace lost flood volume capacity.
	Surface Water Quality	The potential impact to contaminant loadings in the receiving body.	The alternative will provide a high degree of protection to the water quality of the receiving bodies all year, and treated effluent can be readily assimilated.	The alternative will provide a high degree of protection to the water quality of the receiving bodies for most of the year, and treated effluent may require seasonal discharge conditions to meet assimilation requirements.	The alternative may present a threat to the water quality of the receiving bodies during low flow periods, and there may be significant restrictions to treated effluent discharge conditions.
	Air Quality	The potential impact to the quality of the air.	The alternative has the potential to improve the air quality	The alternative provides for similar air quality	The alternative has the potential to reduce the air quality
	Wetlands	The potential for the alternative to protect and maintain wetlands	The alternative will avoid wetlands.	The alternative may require special measures to maintain wetland protection.	The alternative will result in an unacceptable threat to wetlands.
Social/Cultural Environment	Community Health and Safety	The potential for the alternative to minimize risk to community health and safety	There are no risks to community health and safety.	There are minor risks to community health and safety that can be properly managed.	There are significant risks to community health and safety which require significant measures and risk management plans to minimize risks to acceptable levels.
	Occupational Health and Safety	The potential for the alternative to minimize risks to occupational health and safety (operations, maintenance and during construction)	There are no risks to occupational health and safety.	There are minor risks to occupation health and safety that can be properly managed.	There are significant risks to occupation health and safety which require significant training and or risk management plans to minimize risks to acceptable levels.
	Noise Impacts	The potential for the occurrence of noise events.	The alternative has little or no potential to produce noise.	The alternative has moderate potential to produce noise; noise control measures may be needed to prevent migration off site.	The alternative has a high potential to produce noise; significant mitigation would be needed to control migration off site.
	Odour Impacts	The potential of the occurrence of odour events.	The alternative has little or no potential to produce odour.	The alternative has moderate potential to produce odour; odour control measures may be needed to prevent migration off site.	The alternative has a high potential to produce odour; significant mitigation would be needed to control migration off site.
	Community Perception	The potential of the alternative to receive community support for wastewater treatment and biosolids management	The alternative has the potential to receive a high level of support and endorsement from the public.	The alternative has the potential to receive a moderate level of support and endorsement from the public.	The alternative has the potential to receive little to no support and endorsement from the public.
	Transportation	The potential for the alternative to avoid increased demands on the transportation systems (patterns, volumes, and infrastructure requirements)	The alternative will reduce demands on the transportation system.	The alternative will place similar demands on the transportation system.	The alternative will increase demands on the transportation system.
Technical Environment	Risk/Reliability	The level of risk associated with the alternative relating to consequences of failure.	The alternative has a low level of risk, relative to other alternatives.	The alternative has a moderate level of risk, relative to other alternatives.	The alternative has a high level of risk, relative to other alternatives.
	Ability to Meet Pumping Capacity Requirements	The ability of the alternative to provide the wastewater treatment requirements for short-, medium-, and/or long-term needs.	The alternative can provide short-, medium-, and long-term treatment requirements.	The alternative can provide short-term and may provide medium-term requirements.	The alternative may only provide short-term requirements.
	Ease of Implementation (Constructability)	The ability of the alternative to be implemented with minimal disruption to existing wastewater treatment operations during implementation; minimal need to require system modifications.	The alternative can be implemented with no disruption to existing service.	The implementation of the alternative may result in minor disruptions to existing service.	The implementation of the alternative may require significant or periodic disruptions to existing service.
	Energy Requirements	The energy required from all sources (electricity, natural gas, fuel)	The alternative requires less energy than the existing system.	The alternative requires less energy than the existing system.	The alternative uses more energy than the existing system
	Regulatory Constraints	The ability of the alternative to be approved with minimal, if any, conditions.	The alternative can be readily approved.	The alternative can be approved with minimal conditions.	The alternative can be approved with significant or onerous conditions.
	Operational Compatibility	The alternative's compatibility with current existing process operations and its ability to integrate within the existing site.	The alternative is very compatible and compliments current processing units. It can be integrated into current plant operations with minimal impact.	The alternative is somewhat compatible and complimentary to current processing units; it can be integrated; but will have some impact.	The alternative is not compatible or complimentary to current processing units and integration may be difficult.
	Maintenance Complexity	The degree of maintenance complexity associated with implementation of the alternative	The alternative will result in minor or no increase in maintenance complexity compared to the existing processes.	The alternative will result in a moderate increase in maintenance complexity compared to the existing processes.	The alternative will result in a significant increase maintenance complexity when compared to the existing processes.
Economic	Capital Costs	The relative costs of land, equipment, and facilities when compared to other alternatives	The alternative has the lowest capital costs relative to other alternatives.	The alternative is in the mid-range of capital costs relative to other alternatives.	The alternative has the highest capital costs relative to other alternatives.
	O&M Costs	The relative Operations and Maintenance (O&M) when compared to other alternatives	The alternative has the lowest O&M costs relative to other alternatives.	The alternative is in the mid-range of O&M costs relative to other alternatives.	The alternative has the highest O&M costs relative to other alternatives.

Plympton-Wyoming Wastewater Servicing Master Plan - Detailed Evaluation for Plympton Headworks

Category	Weighting	Criterion	Score	Do Nothing	Score	Alternative 1: Upgrade the Screening and Grit Removal Systems
Natural Environment	25%	Greenhouse Gas Emissions	0	The alternative will have little to no impact on greenhouse gas emissions.	5	The alternative could reduce greenhouse gas emissions if a more energy efficient system is installed.
		Groundwater Quality and Quantity	5	The alternative will have little to no impact on groundwater quality and quantity	5	The alternative will have little to no impact on groundwater quality and quantity
		Terrestrial Habitats and Corridors	5	The alternative will have little to no impact on terrestrial habitats and corridors	5	The alternative will have little to no impact on terrestrial habitats and corridors, as construction would be within existing buildings.
		Aquatic Habitats and Fisheries	0	The alternative could negatively impact aquatic habitats and fisheries in the receiving body due to lower effluent quality as a result of flows being higher than the rated capacity of the process.	5	The alternative will have little to no impact on aquatic habitats and fisheries.
		Floodplain Impacts	5	The alternative will have little to no impact on the floodplain.	5	The alternative will have little to no impact on the floodplain.
		Surface Water Quality	0	The alternative could negatively impact surface water quality due to lower effluent quality as a result of flows being higher than the rated capacity of the process.	5	The alternative will have little to no impact on surface water quality.
		Air Quality	5	The alternative will have little to no impact on air quality.	5	The alternative will have little to no impact on air quality.
		Wetlands	5	The alternative will have little to no impact on wetlands.	5	The alternative will have little to no impact on wetlands.
		SUBTOTAL	**7.8**		**12.5**	
Social/Cultural Environment	25%	Community Health and Safety	10	The alternative will have little to no impact on community health and safety.	10	The alternative will have little to no impact on community health and safety.
		Occupational Health and Safety	5	The alternative has some risks to occupational health and safety, as more frequent maintenance would be required due to grit accumulation in downstream processes.	10	The alternative will have little to no impact on occupational health and safety.
		Archaeological Impacts	10	There is little to no potential of archaeological resources being disturbed.	10	There is little to no potential of archaeological resources being disturbed, as construction would be within an existing building.
		Cultural Heritage Impacts	10	There is little to no potential of cultural heritage resources being disturbed.	10	There is little to no potential of cultural heritage resources being disturbed, as construction would be within an existing building.
		First Nations Cultural Heritage Impacts	10	There is little to no potential of First Nations resources being disturbed.	10	There is little to no potential of First Nations resources being disturbed, as construction would be within an existing building.
		Noise Impacts	10	The alternative will have little to no noise impact.	10	The alternative will have little to no noise impact.
		Odour Impacts	10	The alternative has little to no potential to produce odour.	10	The alternative has little to no potential to produce odour.
		Community Perception	0	The alternative may not be acceptable to the community, as the rated capacity of the existing system would be insufficient to treat flows within the planning period.	10	The alternative would be acceptable to the community, as it would allow the Plympton WWTP to treat the flows projected within the planning period.
		Transportation	5	The alternative will have little to no impact on transportation.	5	The alternative will have little to no impact on transportation.
		SUBTOTAL	**19.4**		**23.6**	
Technical Environment	25%	Performance Record	10	The existing technology has a proven performance record.	10	The proposed upgrades are with technologies that have a proven performance record.
		Ability to Meet Treatment Capacity Requirements	0	The existing capacity is insufficient to meet treatment capacity requirements in the planning period.	10	The upgrades would be sufficient to meet treatment capacity requirements within the planning period.
		Ease of Implementation (Constructability)	10	There is no implementation associated with this alternative.	5	The upgrades are somewhat complex.
		Energy Requirements	5	Energy requirements would not change.	10	A more energy efficient system could be installed, decreasing energy usage.
		Regulatory Constraints	0	This alternative may result in non-compliant effluent in the future, creating regulatory issues.	10	No regulatory constraints are anticipated with this alternative.
		Operational Compatibility	5	The operational requirements would remain the same.	5	The proposed upgrades are compatible with current processes.
		Maintenance Complexity	0	This alternative would increase maintenance requirements due to grit accumulation downstream.	5	Maintenance requirements would remain similar as they currently are.
		SUBTOTAL	**10.7**		**19.6**	
Economic	25%	Capital Costs	10	There are no capital costs associated with this alternative.	5	There are moderate capital costs associated with this alternative.
		O&M Costs	5	O&M costs would increase in the future due to more frequent equipment maintenance.	10	O&M costs would remain similar as they are currently.
			18.8		**18.8**	
TOTAL SCORE			**56.7**		**74.5**	

Plympton-Wyoming Wastewater Servicing Master Plan - Detailed Evaluation for Plympton Disinfection

Category	Weighting	Criterion	Score	Do Nothing	Score	Alternative 1: Upgrade the Disinfection System
Natural Environment	**25%**	Greenhouse Gas Emissions	0	The alternative will have little to no impact on greenhouse gas emissions.	0	The alternative will have little to no impact on greenhouse gas emissions.
		Groundwater Quality and Quantity	5	The alternative will have little to no impact on groundwater quality and quantity	5	The alternative will have little to no impact on groundwater quality and quantity
		Terrestrial Habitats and Corridors	5	The alternative will have little to no impact on terrestrial habitats and corridors	5	The alternative will have little to no impact on terrestrial habitats and corridors, as construction would be within existing buildings.
		Aquatic Habitats and Fisheries	0	The alternative could negatively impact aquatic habitats and fisheries in the receiving body due to lower effluent quality as a result of flows being higher than the rated capacity of the process.	5	The alternative will have little to no impact on aquatic habitats and fisheries.
		Floodplain Impacts	5	The alternative will have little to no impact on the floodplain.	5	The alternative will have little to no impact on the floodplain.
		Surface Water Quality	0	The alternative could negatively impact surface water quality due to lower effluent quality as a result of flows being higher than the rated capacity of the process.	5	The alternative will have little to no impact on surface water quality.
		Air Quality	5	The alternative will have little to no impact on air quality.	5	The alternative will have little to no impact on air quality.
		Wetlands	5	The alternative will have little to no impact on wetlands.	5	The alternative will have little to no impact on wetlands.
		SUBTOTAL	**7.8**		**10.9**	
Social/Cultural Environment	**25%**	Community Health and Safety	10	The alternative will have little to no impact on community health and safety.	10	The alternative will have little to no impact on community health and safety.
		Occupational Health and Safety	10	The alternative will have little to no impact on occupational health and safety.	10	The alternative will have little to no impact on occupational health and safety.
		Archaeological Impacts	10	There is little to no potential of archaeological resources being disturbed.	10	There is little to no potential of archaeological resources being disturbed, as construction would be within an existing building.
		Cultural Heritage Impacts	10	There is little to no potential of cultural heritage resources being disturbed.	10	There is little to no potential of cultural heritage resources being disturbed, as construction would be within an existing building.
		First Nations Cultural Heritage Impacts	10	There is little to no potential of First Nations resources being disturbed.	10	There is little to no potential of First Nations resources being disturbed, as construction would be within an existing building.
		Noise Impacts	10	The alternative will have little to no noise impact.	10	The alternative will have little to no noise impact.
		Odour Impacts	10	The alternative has little to no potential to produce odour.	10	The alternative has little to no potential to produce odour.
		Community Perception	0	The alternative may not be acceptable to the community, as the rated capacity of the existing system would be insufficient to treat flows within the planning period.	10	The alternative would be acceptable to the community, as it would allow the Plympton WWTP to treat the flows projected within the planning period.
		Transportation	5	The alternative will have little to no impact on transportation.	5	The alternative will have little to no impact on transportation.
		SUBTOTAL	**20.8**		**23.6**	
Technical Environment	**25%**	Performance Record	10	The existing technology has a proven performance record.	10	The proposed upgrades are with technologies that have a proven performance record.
		Ability to Meet Treatment Capacity Requirements	0	The existing capacity is insufficient to meet treatment capacity requirements in the planning period.	10	The upgrades would be sufficient to meet treatment capacity requirements within the planning period.
		Ease of Implementation (Constructability)	10	There is no implementation associated with this alternative.	5	The upgrades are somewhat complex.
		Energy Requirements	5	Energy requirements would not change.	10	A more energy efficient system could be installed, decreasing energy usage.
		Regulatory Constraints	0	This alternative may result in non-compliant effluent in the future, creating regulatory issues.	10	No regulatory constraints are anticipated with this alternative.
		Operational Compatibility	5	The operational requirements would remain the same.	5	The proposed upgrades are compatible with current processes.
		Maintenance Complexity	5	Maintenance requirements would remain similar as they currently are.	5	Maintenance requirements would remain similar as they currently are.
		SUBTOTAL	**12.5**		**19.6**	
Economic	**25%**	Capital Costs	10	There are no capital costs associated with this alternative.	5	There are moderate capital costs associated with this alternative.
		O&M Costs	5	O&M costs would increase in the future due to more frequent equipment maintenance.	10	O&M costs would remain similar as they are currently.
		SUBTOTAL	**18.8**		**18.8**	
TOTAL			**59.9**		**72.9**	

Plympton-Wyoming Wastewater Servicing Master Plan - Detailed Evaluation for Plympton Sludge Stabilization

Category	Weighting	Criterion	Score	Do Nothing	Score	Alternative 1: Expand the Aerobic Digesters	Score	Alternative 2: Construct a new Anaerobic Digester
Natural Environment	**25%**	Greenhouse Gas Emissions	0	The alternative will increase greenhouse gas emissions, as non-stabilized sludge cannot be beneficially reused via land application without additional treatment, and the Town would not receive GHG reduction credits.	5	The alternative will have little to no impact on greenhouse gas emissions.	0	The alternative will increase greenhouse gas emissions due to the energy required for digester heating
		Groundwater Quality and Quantity	5	The alternative will have little to no impact on groundwater quality and quantity	5	The alternative will have little to no impact on groundwater quality and quantity	5	The alternative will have little to no impact on groundwater quality and quantity
		Terrestrial Habitats and Corridors	5	The alternative will have little to no impact on terrestrial habitats and corridors, as construction would be within existing buildings.	5	The alternative will have little to no impact on terrestrial habitats and corridors, as construction would be within existing buildings.	5	The alternative will have little to no impact on terrestrial habitats and corridors, as construction would be within existing buildings.
		Aquatic Habitats and Fisheries	5	The alternative will have little to no impact on aquatic habitats and fisheries.	5	The alternative will have little to no impact on aquatic habitats and fisheries.	5	The alternative will have little to no impact on aquatic habitats and fisheries.
		Floodplain Impacts	5	The alternative will have little to no impact on the floodplain.	5	The alternative will have little to no impact on the floodplain.	5	The alternative will have little to no impact on the floodplain.
		Surface Water Quality	5	The alternative will have little to no impact on surface water quality.	5	The alternative will have little to no impact on surface water quality.	5	The alternative will have little to no impact on surface water quality.
		Air Quality	5	The alternative will have little to no impact on air quality.	5	The alternative will have little to no impact on air quality.	5	The alternative will have little to no impact on air quality.
		Wetlands	5	The alternative will have little to no impact on wetlands.	5	The alternative will have little to no impact on wetlands.	5	The alternative will have little to no impact on wetlands.
		SUBTOTAL	**10.9**		**12.5**		**10.9**	
Social/Cultural Environment	**25%**	Community Health and Safety	10	The alternative will have little to no impact on community health and safety.	10	The alternative will have little to no impact on community health and safety.	10	The alternative will have little to no impact on community health and safety.
		Occupational Health and Safety	5	The alternative has some risks to occupational health and safety, as staff would be around non-stabilized sludge.	10	The alternative will have little to no impact on occupational health and safety.	10	The alternative will have little to no impact on occupational health and safety.
		Archaeological Impacts	10	There is little to no potential of archaeological resources being disturbed.	10	There is little to no potential of archaeological resources being disturbed, as construction would be within an existing building.	10	There is little to no potential of archaeological resources being disturbed, as construction would be within an existing building.
		Cultural Heritage Impacts	10	There is little to no potential of cultural heritage resources being disturbed.	10	There is little to no potential of cultural heritage resources being disturbed, as construction would be within an existing building.	10	There is little to no potential of cultural heritage resources being disturbed, as construction would be within an existing building.
		First Nations Cultural Heritage Impacts	10	There is little to no potential of First Nations resources being disturbed.	10	There is little to no potential of First Nations resources being disturbed, as construction would be within an existing building.	10	There is little to no potential of First Nations resources being disturbed, as construction would be within an existing building.
		Noise Impacts	10	The alternative will have little to no noise impact.	10	The alternative will have little to no noise impact.	10	The alternative will have little to no noise impact.
		Odour Impacts	10	The alternative has little to no potential to produce odour.	10	The alternative has little to no potential to produce odour.	10	The alternative has little to no potential to produce odour.
		Community Perception	0	The alternative may not be acceptable to the community, as the rated capacity of the existing system would be insufficient to treat flows within the planning period.	10	The alternative would be acceptable to the community, as it would allow for all sludge to be stabilized within the planning period.	10	The alternative would be acceptable to the community, as it would allow for all sludge to be stabilized within the planning period.
		Transportation	5	The alternative will have little to no impact on transportation.	5	The alternative will have little to no impact on transportation.	5	The alternative will have little to no impact on transportation.
		SUBTOTAL	**19.4**		**23.6**		**23.6**	
Technical Environment	**25%**	Performance Record	10	The existing technology has a proven performance record.	10	The existing technology has a proven performance record.	10	The proposed upgrades are with technologies that have a proven performance record.
		Ability to Meet Treatment Capacity Requirements	0	The existing capacity is insufficient to meet treatment capacity requirements in the planning period.	10	The upgrades would be sufficient to meet treatment capacity requirements within the planning period.	10	The upgrades would be sufficient to meet treatment capacity requirements within the planning period.
		Ease of Implementation (Constructability)	10	There is no implementation associated with this alternative.	5	The upgrades are moderately complex.	0	The upgrades are complex.
		Energy Requirements	5	Energy requirements would not change.	5	Energy requirements would be similar as they are currently.	5	Energy requirements would be similar as they are currently.
		Regulatory Constraints	0	There would be regulatory issues associated with disposal of unstabilized sludge.	10	No regulatory constraints are anticipated with this alternative.	10	No regulatory constraints are anticipated with this alternative.
		Operational Compatibility	5	The operational requirements would remain the same.	5	The operational requirements would remain the same.	5	The proposed upgrades are compatible with current processes.
		Maintenance Complexity	5	Maintenance complexity would remain the same.	5	Maintenance complexity would remain the same.	0	Maintenance complexity would increase.
		SUBTOTAL	**12.5**		**17.9**		**14.3**	
Economic	**25%**	Capital Costs	10	There are no capital costs associated with this alternative.	5	There are moderate capital costs associated with this alternative.	0	There are high capital costs associated with this alternative.
		O&M Costs	5	O&M costs would remain the same.	5	O&M costs would be similar as they are currently.	0	O&M costs would increase.
		SUBTOTAL	**18.8**		**12.5**		**0.0**	
Total			**61.6**		**66.5**		**48.8**	

Plympton-Wyoming Wastewater Servicing Master Plan - Detailed Evaluation for Wyoming Screening

Category	Weighting	Criterion	Score	Do Nothing	Score	Alternative 1: Upgrade the Screening System
Natural Environment	**25%**	Greenhouse Gas Emissions	0	The alternative will have little to no impact on greenhouse gas emissions.	5	The alternative will have little to no impact on greenhouse gas emissions.
		Groundwater Quality and Quantity	5	The alternative will have little to no impact on groundwater quality and quantity	5	The alternative will have little to no impact on groundwater quality and quantity
		Terrestrial Habitats and Corridors	5	The alternative will have little to no impact on terrestrial habitats and corridors	5	The alternative will have little to no impact on terrestrial habitats and corridors, as construction would be within existing buildings.
		Aquatic Habitats and Fisheries	0	The alternative could negatively impact aquatic habitats and fisheries in the receiving body due to lower effluent quality as a result of flows being higher than the rated capacity of the process.	5	The alternative will have little to no impact on aquatic habitats and fisheries.
		Floodplain Impacts	5	The alternative will have little to no impact on the floodplain.	5	The alternative will have little to no impact on the floodplain.
		Surface Water Quality	0	The alternative could negatively impact surface water quality due to lower effluent quality as a result of flows being higher than the rated capacity of the process.	5	The alternative will have little to no impact on surface water quality.
		Air Quality	5	The alternative will have little to no impact on air quality.	5	The alternative will have little to no impact on air quality.
		Wetlands	5	The alternative will have little to no impact on wetlands.	5	The alternative will have little to no impact on wetlands.
		SUBTOTAL	**7.8**		**12.5**	
Social/Cultural Environment	**25%**	Community Health and Safety	10	The alternative will have little to no impact on community health and safety.	10	The alternative will have little to no impact on community health and safety.
		Occupational Health and Safety	10	The alternative will have little to no impact on occupational health and safety.	10	The alternative will have little to no impact on occupational health and safety.
		Archaeological Impacts	10	There is little to no potential of archaeological resources being disturbed, as construction would be within an existing building.	10	There is little to no potential of archaeological resources being disturbed, as construction would be within an existing building.
		Cultural Heritage Impacts	10	There is little to no potential of cultural heritage resources being disturbed, as construction would be within an existing building.	10	There is little to no potential of cultural heritage resources being disturbed, as construction would be within an existing building.
		First Nations Cultural Heritage Impacts	10	There is little to no potential of First Nations resources being disturbed, as construction would be within an existing building.	10	There is little to no potential of First Nations resources being disturbed, as construction would be within an existing building.
		Noise Impacts	10	The alternative will have little to no noise impact.	10	The alternative will have little to no noise impact.
		Odour Impacts	10	The alternative has little to no potential to produce odour.	10	The alternative has little to no potential to produce odour.
		Community Perception	0	The alternative may not be acceptable to the community, as the rated capacity of the existing system would be insufficient to treat flows within the planning period.	10	The alternative would be acceptable to the community, as it would allow the Plympton WWTP to treat the flows projected within the planning period.
		Transportation	5	The alternative will have little to no impact on transportation.	5	The alternative will have little to no impact on transportation.
		SUBTOTAL	**20.8**		**23.6**	
Technical Environment	**25%**	Performance Record	10	The existing technology has a proven performance record.	10	The proposed upgrades are with technologies that have a proven performance record.
		Ability to Meet Treatment Capacity Requirements	0	The existing capacity is insufficient to meet treatment capacity requirements in the planning period.	10	The upgrades would be sufficient to meet treatment capacity requirements within the planning period.
		Ease of Implementation (Constructability)	10	There is no implementation associated with this alternative.	5	The upgrades are somewhat complex.
		Energy Requirements	5	Energy requirements would not change.	10	A more energy efficient system could be installed, decreasing energy usage.
		Regulatory Constraints	0	This alternative may result in non-compliant effluent in the future, creating regulatory issues.	10	No regulatory constraints are anticipated with this alternative.
		Operational Compatibility	5	The operational requirements would remain the same.	5	The proposed upgrades are compatible with current processes.
		Maintenance Complexity	5	Maintenance requirements would remain similar as they currently are.	5	Maintenance requirements would remain similar as they currently are.
		SUBTOTAL	**12.5**		**19.6**	
Economic	**25%**	Capital Costs	10	There are no capital costs associated with this alternative.	5	There are moderate capital costs associated with this alternative.
		O&M Costs	10	O&M costs would remain similar as they are currently.	10	O&M costs would remain similar as they are currently.
		SUBTOTAL	**25.0**		**18.8**	
TOTAL			**66.1**		**74.5**	

Plympton-Wyoming Wastewater Servicing Master Plan - Detailed Evaluation for Wyoming Grit Removal

Category	Weighting	Criterion	Score	Do Nothing	Score	Alternative 1: Rehabilitate the Aerated Grit Removal System	Score	Alternative 2: Install a new Vortex Grit Removal System
Natural Environment	**25%**	Greenhouse Gas Emissions	5	The alternative will have little to no impact on greenhouse gas emissions.	5	The alternative will have little to no impact on greenhouse gas emissions.	0	The alternative will increase greenhouse gas emissions due to additional pumping requirements.
		Groundwater Quality and Quantity	5	The alternative will have little to no impact on groundwater quality and quantity	5	The alternative will have little to no impact on groundwater quality and quantity	5	The alternative will have little to no impact on groundwater quality and quantity
		Terrestrial Habitats and Corridors	5	The alternative will have little to no impact on terrestrial habitats and corridors	5	The alternative will have little to no impact on terrestrial habitats and corridors, as construction would be within existing buildings.	5	The alternative will have little to no impact on terrestrial habitats and corridors, as construction would be within existing buildings.
		Aquatic Habitats and Fisheries	0	The alternative could negatively impact aquatic habitats and fisheries in the receiving body due to lower effluent quality as a result of flows being higher than the rated capacity of the process.	5	The alternative will have little to no impact on aquatic habitats and fisheries.	5	The alternative will have little to no impact on aquatic habitats and fisheries.
		Floodplain Impacts	5	The alternative will have little to no impact on the floodplain.	5	The alternative will have little to no impact on the floodplain.	5	The alternative will have little to no impact on the floodplain.
		Surface Water Quality	0	The alternative could negatively impact surface water quality due to lower effluent quality as a result of flows being higher than the rated capacity of the process.	5	The alternative will have little to no impact on surface water quality.	5	The alternative will have little to no impact on surface water quality.
		Air Quality	5	The alternative will have little to no impact on air quality.	5	The alternative will have little to no impact on air quality.	5	The alternative will have little to no impact on air quality.
		Wetlands	5	The alternative will have little to no impact on wetlands.	5	The alternative will have little to no impact on wetlands.	5	The alternative will have little to no impact on wetlands.
		SUBTOTAL	**9.4**		**12.5**		**10.9**	
Social/Cultural Environment	**25%**	Community Health and Safety	10	The alternative will have little to no impact on community health and safety.	10	The alternative will have little to no impact on community health and safety.	10	The alternative will have little to no impact on community health and safety.
		Occupational Health and Safety	5	The alternative has some risks to occupational health and safety, as more frequent maintenance would be required due to grit accumulation in downstream processes.	10	The alternative will have little to no impact on occupational health and safety.	10	The alternative will have little to no impact on occupational health and safety.
		Archaeological Impacts	10	There is little to no potential of archaeological resources being disturbed.	10	There is little to no potential of archaeological resources being disturbed, as construction would be within an existing building.	10	There is little to no potential of archaeological resources being disturbed, as construction would be within an existing building.
		Cultural Heritage Impacts	10	There is little to no potential of cultural heritage resources being disturbed.	10	There is little to no potential of cultural heritage resources being disturbed, as construction would be within an existing building.	10	There is little to no potential of cultural heritage resources being disturbed, as construction would be within an existing building.
		First Nations Cultural Heritage Impacts	10	There is little to no potential of First Nations resources being disturbed.	10	There is little to no potential of First Nations resources being disturbed, as construction would be within an existing building.	10	There is little to no potential of First Nations resources being disturbed, as construction would be within an existing building.
		Noise Impacts	10	The alternative will have little to no noise impact.	10	The alternative will have little to no noise impact.	10	The alternative will have little to no noise impact.
		Odour Impacts	10	The alternative has little to no potential to produce odour.	10	The alternative has little to no potential to produce odour.	10	The alternative has little to no potential to produce odour.
		Community Perception	0	The alternative may not be acceptable to the community, as the rated capacity of the existing system would be insufficient to treat flows within the planning period.	10	The alternative would be acceptable to the community, as it would allow the Plympton WWTP to treat the flows projected within the planning period.	10	The alternative would be acceptable to the community, as it would allow the Plympton WWTP to treat the flows projected within the planning period.
		Transportation	5	The alternative will have little to no impact on transportation.	5	The alternative will have little to no impact on transportation.	5	The alternative will have little to no impact on transportation.
		SUBTOTAL	**19.4**		**23.6**		**23.6**	
Technical Environment	**25%**	Performance Record	10	The existing technology has a proven performance record.	10	The proposed upgrades are with technologies that have a proven performance record.	10	The proposed upgrades are with technologies that have a proven performance record.
		Ability to Meet Treatment Capacity Requirements	0	The existing capacity is insufficient to meet treatment capacity requirements in the planning period.	10	The upgrades would be sufficient to meet treatment capacity requirements within the planning period.	10	The upgrades would be sufficient to meet treatment capacity requirements within the planning period.
		Ease of Implementation (Constructability)	10	There is no implementation associated with this alternative.	5	The upgrades are somewhat complex.	0	The upgrades are highly complex due to additional pumping requirements.
		Energy Requirements	5	Energy requirements would not change.	5	Energy requirements would not change.	0	Energy requirements would increase due to the increased pumping requirements.
		Regulatory Constraints	0	This alternative may result in non-compliant effluent in the future, creating regulatory issues.	10	No regulatory constraints are anticipated with this alternative.	10	No regulatory constraints are anticipated with this alternative.
		Operational Compatibility	5	The operational requirements would remain the same.	5	The proposed upgrades are compatible with current processes.	0	The proposed upgrades are somewhat compatible with current processes, but have additional pumping requirements.
		Maintenance Complexity	0	This alternative would increase maintenance requirements due to grit accumulation downstream.	5	Maintenance requirements would remain similar as they currently are.	5	Maintenance requirements would remain similar as they currently are.
		SUBTOTAL	**10.7**		**17.9**		**12.5**	
Economic	**25%**	Capital Costs	10	There are no capital costs associated with this alternative.	5	There are moderate capital costs associated with this alternative.	5	There are moderate capital costs associated with this alternative.
		O&M Costs	5	O&M costs would increase in the future due to more frequent equipment maintenance.	10	O&M costs would remain similar as they are currently.	10	O&M costs would remain similar as they are currently.
		SUBTOTAL	**18.8**		**18.8**		**18.8**	
TOTAL			**58.3**		**72.7**		**65.8**	

Plympton-Wyoming Wastewater Servicing Master Plan - Detailed Evaluation for Wyoming Tertiary Filtration

Category	Weighting	Criterion	Score	Do Nothing	Score	Alternative 1: Rehabilitate the Sand Filter	Score	Alternative 2: Retrofit with Disk Filters	Score	Alternative 3: Retrofit with Membrane Filters
Natural Environment	**25%**	Greenhouse Gas Emissions	5	The alternative will have little to no impact on greenhouse gas emissions.	5	The alternative will have little to no impact on greenhouse gas emissions.	5	The alternative will have little to no impact on greenhouse gas emissions.	0	The alternative will increase greenhouse gas emissions, as additional pumping is required.
		Groundwater Quality and Quantity	5	The alternative will have little to no impact on groundwater quality and quantity	5	The alternative will have little to no impact on groundwater quality and quantity	5	The alternative will have little to no impact on groundwater quality and quantity	5	The alternative will have little to no impact on groundwater quality and quantity
		Terrestrial Habitats and Corridors	5	The alternative will have little to no impact on terrestrial habitats and corridors	5	The alternative will have little to no impact on terrestrial habitats and corridors, as construction would be within existing buildings.	5	The alternative will have little to no impact on terrestrial habitats and corridors, as construction would be within existing buildings.	5	The alternative will have little to no impact on terrestrial habitats and corridors, as construction would be within existing buildings.
		Aquatic Habitats and Fisheries	0	The alternative could negatively impact aquatic habitats and fisheries in the receiving body due to lower effluent quality as a result of flows being higher than the rated capacity of the process.	5	The alternative will have little to no impact on aquatic habitats and fisheries.	5	The alternative will have little to no impact on aquatic habitats and fisheries.	5	The alternative will have little to no impact on aquatic habitats and fisheries.
		Floodplain Impacts	5	The alternative will have little to no impact on the floodplain.	5	The alternative will have little to no impact on the floodplain.	5	The alternative will have little to no impact on the floodplain.	5	The alternative will have little to no impact on the floodplain.
		Surface Water Quality	0	The alternative could negatively impact surface water quality due to lower effluent quality as a result of flows being higher than the rated capacity of the process.	5	The alternative will have little to no impact on surface water quality.	5	The alternative will have little to no impact on surface water quality.	5	The alternative will have little to no impact on surface water quality.
		Air Quality	5	The alternative will have little to no impact on air quality.	5	The alternative will have little to no impact on air quality.	5	The alternative will have little to no impact on air quality.	5	The alternative will have little to no impact on air quality.
		Wetlands	5	The alternative will have little to no impact on wetlands.	5	The alternative will have little to no impact on wetlands.	5	The alternative will have little to no impact on wetlands.	5	The alternative will have little to no impact on wetlands.
		SUBTOTAL	**9.4**		**12.5**		**12.5**		**10.9**	
Social/Cultural Environment	**25%**	Community Health and Safety	10	The alternative will have little to no impact on community health and safety.	10	The alternative will have little to no impact on community health and safety.	10	The alternative will have little to no impact on community health and safety.	10	The alternative will have little to no impact on community health and safety.
		Occupational Health and Safety	10	The alternative will have little to no impact on occupational health and safety.	10	The alternative will have little to no impact on occupational health and safety.	10	The alternative will have little to no impact on occupational health and safety.	10	The alternative will have little to no impact on occupational health and safety.
		Archaeological Impacts	10	There is little to no potential of archaeological resources being disturbed.	10	There is little to no potential of archaeological resources being disturbed, as construction would be within an existing building.	10	There is little to no potential of archaeological resources being disturbed, as construction would be within an existing building.	10	There is little to no potential of archaeological resources being disturbed, as construction would be within an existing building.
		Cultural Heritage Impacts	10	There is little to no potential of cultural heritage resources being disturbed.	10	There is little to no potential of cultural heritage resources being disturbed, as construction would be within an existing building.	10	There is little to no potential of cultural heritage resources being disturbed, as construction would be within an existing building.	10	There is little to no potential of cultural heritage resources being disturbed, as construction would be within an existing building.
		First Nations Cultural Heritage Impacts	10	There is little to no potential of First Nations resources being disturbed.	10	There is little to no potential of First Nations resources being disturbed, as construction would be within an existing building.	10	There is little to no potential of First Nations resources being disturbed, as construction would be within an existing building.	10	There is little to no potential of First Nations resources being disturbed, as construction would be within an existing building.
		Noise Impacts	10	The alternative will have little to no noise impact.	10	The alternative will have little to no noise impact.	10	The alternative will have little to no noise impact.	10	The alternative will have little to no noise impact.
		Odour Impacts	10	The alternative has little to no potential to produce odour.	10	The alternative has little to no potential to produce odour.	10	The alternative has little to no potential to produce odour.	10	The alternative has little to no potential to produce odour.
		Community Perception	0	The alternative may not be acceptable to the community, as the rated capacity of the existing system would be insufficient to treat flows within the planning period.	10	The alternative would be acceptable to the community, as it would allow the Plympton WWTP to treat the flows projected within the planning period.	10	The alternative would be acceptable to the community, as it would allow the Plympton WWTP to treat the flows projected within the planning period.	10	The alternative would be acceptable to the community, as it would allow the Plympton WWTP to treat the flows projected within the planning period.
		Transportation	5	The alternative will have little to no impact on transportation.	5	The alternative will have little to no impact on transportation.	5	The alternative will have little to no impact on transportation.	5	The alternative will have little to no impact on transportation.
		SUBTOTAL	**20.8**		**23.6**		**23.6**		**23.6**	
Technical Environment	**25%**	Performance Record	10	The existing technology has a proven performance record.	10	The proposed upgrades are with technologies that have a proven performance record.	10	The proposed upgrades are with technologies that have a proven performance record.	10	The proposed upgrades are with technologies that have a proven performance record.
		Ability to Meet Treatment Capacity Requirements	0	The existing capacity is insufficient to meet treatment capacity requirements in the planning period.	10	The upgrades would be sufficient to meet treatment capacity requirements within the planning period.	10	The upgrades would be sufficient to meet treatment capacity requirements within the planning period.	10	The upgrades would be sufficient to meet treatment capacity requirements within the planning period.
		Ease of Implementation (Constructability)	10	There is no implementation associated with this alternative.	5	The upgrades are somewhat complex. Temporary filtration would be required.	5	The upgrades are somewhat complex. Temporary filtration would be required.	0	The upgrades are highly complex. Temporary filtration would be required.
		Energy Requirements	5	Energy requirements would not change.	5	Energy requirements would not change.	10	A more energy efficient system could be installed, decreasing energy usage.	0	Energy requirements would increase due to additional pumping and cleaning.
		Regulatory Constraints	0	This alternative may result in non-compliant effluent in the future, creating regulatory issues.	10	No regulatory constraints are anticipated with this alternative.	10	No regulatory constraints are anticipated with this alternative.	10	No regulatory constraints are anticipated with this alternative.
		Operational Compatibility	5	The operational requirements would remain the same.	5	The proposed upgrades are compatible with current processes.	5	The proposed upgrades are compatible with current processes.	5	The proposed upgrades are compatible with current processes.
		Maintenance Complexity	5	Maintenance requirements would remain similar as they currently are.	5	Maintenance requirements would remain similar as they currently are.	10	Maintenance would be simpler relative to the current technology.	0	Maintenance requirements would increase.
		SUBTOTAL	**12.5**		**17.9**		**21.4**		**12.5**	
Economic	**25%**	Capital Costs	10	There are no capital costs associated with this alternative.	5	There are moderate capital costs associated with this alternative.	5	There are moderate capital costs associated with this alternative.	0	There are high capital costs associated with this alternative.
		O&M Costs	10	O&M costs would remain similar as they are currently.	10	O&M costs would remain similar as they are currently.	10	O&M costs would remain similar as they are currently.	0	O&M costs would be higher than they are currently.
		SUBTOTAL	**25.0**		**18.8**		**18.8**		**0.0**	
TOTAL			**67.7**		**72.7**		**76.3**		**47.0**	

Plympton-Wyoming Wastewater Servicing Master Plan - Detailed Evaluation for Wyoming Disinfection

Category	Weighting	Criterion	Score	Do Nothing	Score	Alternative 1: Upgrade the Disinfection System
Natural Environment	**25%**	Greenhouse Gas Emissions	0	The alternative will have little to no impact on greenhouse gas emissions.	0	The alternative will have little to no impact on greenhouse gas emissions.
		Groundwater Quality and Quantity	5	The alternative will have little to no impact on groundwater quality and quantity	5	The alternative will have little to no impact on groundwater quality and quantity
		Terrestrial Habitats and Corridors	5	The alternative will have little to no impact on terrestrial habitats and corridors	5	The alternative will have little to no impact on terrestrial habitats and corridors, as construction would be within existing buildings.
		Aquatic Habitats and Fisheries	0	The alternative could negatively impact aquatic habitats and fisheries in the receiving body due to lower effluent quality as a result of flows being higher than the rated capacity of the process.	5	The alternative will have little to no impact on aquatic habitats and fisheries.
		Floodplain Impacts	5	The alternative will have little to no impact on the floodplain.	5	The alternative will have little to no impact on the floodplain.
		Surface Water Quality	0	The alternative could negatively impact surface water quality due to lower effluent quality as a result of flows being higher than the rated capacity of the process.	5	The alternative will have little to no impact on surface water quality.
		Air Quality	5	The alternative will have little to no impact on air quality.	5	The alternative will have little to no impact on air quality.
		Wetlands	5	The alternative will have little to no impact on wetlands.	5	The alternative will have little to no impact on wetlands.
		SUBTOTAL	**7.8**		**10.9**	
Social/Cultural Environment	**25%**	Community Health and Safety	10	The alternative will have little to no impact on community health and safety.	10	The alternative will have little to no impact on community health and safety.
		Occupational Health and Safety	10	The alternative will have little to no impact on occupational health and safety.	10	The alternative will have little to no impact on occupational health and safety.
		Archaeological Impacts	10	There is little to no potential of archaeological resources being disturbed.	10	There is little to no potential of archaeological resources being disturbed, as construction would be within an existing building.
		Cultural Heritage Impacts	10	There is little to no potential of cultural heritage resources being disturbed.	10	There is little to no potential of cultural heritage resources being disturbed, as construction would be within an existing building.
		First Nations Cultural Heritage Impacts	10	There is little to no potential of First Nations resources being disturbed.	10	There is little to no potential of First Nations resources being disturbed, as construction would be within an existing building.
		Noise Impacts	10	The alternative will have little to no noise impact.	10	The alternative will have little to no noise impact.
		Odour Impacts	10	The alternative has little to no potential to produce odour.	10	The alternative has little to no potential to produce odour.
		Community Perception	0	The alternative may not be acceptable to the community, as the rated capacity of the existing system would be insufficient to treat flows within the planning period.	10	The alternative would be acceptable to the community, as it would allow the Plympton WWTP to treat the flows projected within the planning period.
		Transportation	5	The alternative will have little to no impact on transportation.	5	The alternative will have little to no impact on transportation.
		SUBTOTAL	**20.8**		**23.6**	
Technical Environment	**25%**	Performance Record	10	The existing technology has a proven performance record.	10	The proposed upgrades are with technologies that have a proven performance record.
		Ability to Meet Treatment Capacity Requirements	0	The existing capacity is insufficient to meet treatment capacity requirements in the planning period.	10	The upgrades would be sufficient to meet treatment capacity requirements within the planning period.
		Ease of Implementation (Constructability)	10	There is no implementation associated with this alternative.	5	The upgrades are somewhat complex.
		Energy Requirements	5	Energy requirements would not change.	10	A more energy efficient system could be installed, decreasing energy usage.
		Regulatory Constraints	0	This alternative may result in non-compliant effluent in the future, creating regulatory issues.	10	No regulatory constraints are anticipated with this alternative.
		Operational Compatibility	5	The operational requirements would remain the same.	5	The proposed upgrades are compatible with current processes.
		Maintenance Complexity	5	Maintenance requirements would remain similar as they currently are.	5	Maintenance requirements would remain similar as they currently are.
		SUBTOTAL	**12.5**		**19.6**	
Economic	**25%**	Capital Costs	10	There are no capital costs associated with this alternative.	5	There are moderate capital costs associated with this alternative.
		O&M Costs	5	O&M costs would increase in the future due to more frequent equipment maintenance.	10	O&M costs would remain similar as they are currently.
		SUBTOTAL	**18.8**		**18.8**	
TOTAL			**59.9**		**72.9**	

Plympton-Wyoming Wastewater Servicing Master Plan - Detailed Evaluation for Wyoming Sludge Storage

Category	Weighting	Criterion	Score	Do Nothing	Score	Alternative 1: Closed Tank Storage	Score	Alternative 2: Open Tank Sludge Storage with Aeration	Score	Alternative 3: Lagoon Storage
Natural Environment	**25%**	Greenhouse Gas Emissions	5	The alternative will have little to no impact on greenhouse gas emissions.	5	The alternative will have little to no impact on greenhouse gas emissions.	0	The alternative would increase greenhouse gas emissions due to increased energy requirements from additional aeration.	5	The alternative will have little to no impact on greenhouse gas emissions.
		Groundwater Quality and Quantity	5	The alternative will have little to no impact on groundwater quality and quantity	5	The alternative will have little to no impact on groundwater quality and quantity	5	The alternative will have little to no impact on groundwater quality and quantity	5	The alternative will have little to no impact on groundwater quality and quantity
		Terrestrial Habitats and Corridors	5	The alternative will have little to no impact on terrestrial habitats and corridors	5	The alternative will have little to no impact on terrestrial habitats and corridors, as construction would be within the existing site footprint.	5	The alternative will have little to no impact on terrestrial habitats and corridors, as construction would be within the existing site footprint.	0	The alternative has the potential to negatively impact terrestrial habitats and corridors, as it would require additional land beyond the site limits.
		Aquatic Habitats and Fisheries	5	The alternative will have little to no impact on aquatic habitats and fisheries.	5	The alternative will have little to no impact on aquatic habitats and fisheries.	5	The alternative will have little to no impact on aquatic habitats and fisheries.	5	The alternative will have little to no impact on aquatic habitats and fisheries.
		Floodplain Impacts	5	The alternative will have little to no impact on the floodplain.	5	The alternative will have little to no impact on the floodplain.	5	The alternative will have little to no impact on the floodplain.	5	The alternative will have little to no impact on the floodplain.
		Surface Water Quality	5	The alternative will have little to no impact on surface water quality.	5	The alternative will have little to no impact on surface water quality.	5	The alternative will have little to no impact on surface water quality.	5	The alternative will have little to no impact on surface water quality.
		Air Quality	5	The alternative will have little to no impact on air quality.	5	The alternative will have little to no impact on air quality.	5	The alternative will have little to no impact on air quality.	5	The alternative will have little to no impact on air quality.
		Wetlands	5	The alternative will have little to no impact on wetlands.	5	The alternative will have little to no impact on wetlands.	5	The alternative will have little to no impact on wetlands.	5	The alternative will have little to no impact on wetlands.
		SUBTOTAL	**12.5**		**12.5**		**10.9**		**10.9**	
Social/Cultural Environment	**25%**	Community Health and Safety	5	The alternative will have some risks to community health and safety due to increased transportation over time.	10	The alternative will have little to no impact on community health and safety.	10	The alternative will have little to no impact on community health and safety.	10	The alternative will have little to no impact on community health and safety.
		Occupational Health and Safety	5	The alternative has some risks to occupational health and safety, as transportation would increase on site.	10	The alternative will have little to no impact on occupational health and safety.			10	The alternative will have little to no impact on occupational health and safety.
		Archaeological Impacts	10	There is little to no potential of archaeological resources being disturbed.	10	There is little to no potential of archaeological resources being disturbed.	10	There is little to no potential of archaeological resources being disturbed.	5	While no resources have been identified in the area, there is some potential for the disturbance of resources that are currently unknown at this stage.
		Cultural Heritage Impacts	10	There is little to no potential of cultural heritage resources being disturbed.	10	There is little to no potential of cultural heritage resources being disturbed.	10	There is little to no potential of cultural heritage resources being disturbed.	5	While no resources have been identified in the area, there is some potential for the disturbance of resources that are currently unknown at this stage.
		First Nations Cultural Heritage Impacts	10	There is little to no potential of First Nations resources being disturbed.	10	There is little to no potential of First Nations resources being disturbed.	10	There is little to no potential of First Nations resources being disturbed.	5	While no resources have been identified in the area, there is some potential for the disturbance of resources that are currently unknown at this stage.
		Noise Impacts	10	The alternative will have little to no noise impact.	10	The alternative will have little to no noise impact.	10	The alternative will have little to no noise impact.	10	The alternative will have little to no noise impact.
		Odour Impacts	10	The alternative has little to no potential to produce odour.	10	The alternative has little to no potential to produce odour.	5	The alternative has some potential to produce odour.	10	The alternative has some potential to produce odour.
		Community Perception	0	The alternative may not be acceptable to the community due to increased truck traffic in Wyoming	10	The alternative may be acceptable to the community due to the decreased truck traffic in Wyoming.	10	The alternative may be acceptable to the community due to the decreased truck traffic in Wyoming.	10	The alternative may be acceptable to the community due to the decreased truck traffic in Wyoming.
		Transportation	0	Transportation would continue to increase.	10	The alternative would decrease transportation.	10	The alternative would decrease transportation.	10	The alternative would decrease transportation.
		SUBTOTAL	**16.7**		**25.0**		**23.4**		**20.8**	
Technical Environment	**25%**	Performance Record	10	The existing technology has a proven performance record.	10	Closed-tank storage has a proven performance record.	10	Open-tanked storage has a proven performance record.	10	Lagoon storage has a proven performance record.
		Ability to Meet Treatment Capacity Requirements	10	The alternative has no impact on treatment capacity.	10	The alternative has no impact on treatment capacity.	10	The alternative has no impact on treatment capacity.	10	The alternative has no impact on treatment capacity.
		Ease of Implementation (Constructability)	10	There is no implementation associated with this alternative.	10	Implementation is relatively simple.	10	Implementation is relatively simple.	5	Implementation is somewhat complex due to the footprint required.
		Energy Requirements	5	Energy requirements would not change.	5	Energy requirements would not change.	0	Energy requirements would slightly increase due to the additional aeration.	10	A more energy efficient system could be installed, decreasing energy usage.
		Regulatory Constraints	10	No regulatory constraints are anticipated.	10	No regulatory constraints are anticipated.	10	No regulatory constraints are anticipated.	0	There is the potential for some regulatory constraints related to additional land acquisition and usage.
		Operational Compatibility	5	The operational requirements would remain the same.	5	Storage is compatible with upstream processes.	5	Storage is compatible with upstream processes.	5	Storage is compatible with upstream processes.
		Maintenance Complexity	10	Maintenance complexity would not change.	10	Maintenance would be relatively simple.	10	Maintenance would be relatively simple.	10	Maintenance would be relatively simple.
		SUBTOTAL	**21.4**		**21.4**		**19.6**		**17.9**	
Economic	**25%**	Capital Costs	10	There are no capital costs associated with this alternative.	5	There are moderate capital costs associated with this alternative.	5	There are moderate capital costs associated with this alternative.	5	There are moderate capital costs associated with this alternative.
		O&M Costs	5	Trucking costs would continue to increase over time.	10	O&M costs would remain similar as they are currently.	10	O&M costs would remain similar as they are currently.	10	O&M costs would remain similar as they are currently.
		SUBTOTAL	**18.8**		**18.8**		**18.8**		**18.8**	
Total			**69.3**		**77.7**		**72.8**		**68.4**	

Plympton-Wyoming Wastewater Servicing Master Plan - Detailed Evaluation for PS-03

Category	Weighting	Criterion	Score	Do Nothing	Score	Alternative 1: New Developments to be Serviced by other PS	Score	Alternative 2: Construct an Equalization Tank	Score	Alternative 3: Upgrade PS-03
Natural Environment	25%	Greenhouse Gas Emissions	0	The alternative will have little to no impact on greenhouse gas emissions.	0	The alternative will have little to no impact on greenhouse gas emissions.	0	This alternative would increase greenhouse gas emissions due to the additional pumping requirements.	5	This alternative could reduce greenhouse gas emissions if more energy-efficient pumps are selected.
		Groundwater Quality and Quantity	5	The alternative will have little to no impact on groundwater quality and quantity	5	The alternative will have little to no impact on groundwater quality and quantity	5	The alternative will have little to no impact on groundwater quality and quantity	5	The alternative will have little to no impact on groundwater quality and quantity
		Terrestrial Habitats and Corridors	5	The alternative will have little to no impact on terrestrial habitats and corridors	0	This alternative could negatively impact terrestrial habitats and corridors due to the potential for additional forcemain requirements.	5	The alternative will have little to no impact on terrestrial habitats and corridors	5	The alternative will have little to no impact on terrestrial habitats and corridors
		Aquatic Habitats and Fisheries	0	This alternative would negatively impact aquatic habitats and fisheries due to the increased probability of wastewater overflows.	5	The alternative will have little to no impact on aquatic habitats and fisheries.	5	The alternative will have little to no impact on aquatic habitats and fisheries.	5	The alternative will have little to no impact on aquatic habitats and fisheries.
		Floodplain Impacts	5	The alternative will have little to no impact on the floodplain.	5	The alternative will have little to no impact on the floodplain.	5	The alternative will have little to no impact on the floodplain.	5	The alternative will have little to no impact on the floodplain.
		Surface Water Quality	0	This alternative would negatively impact surface water quality due to the increased probability of wastewater overflows.	5	The alternative will have little to no impact on surface water quality.	5	The alternative will have little to no impact on surface water quality.	5	The alternative will have little to no impact on surface water quality.
		Air Quality	5	The alternative will have little to no impact on air quality.	5	The alternative will have little to no impact on air quality.	5	The alternative will have little to no impact on air quality.	5	The alternative will have little to no impact on air quality.
		Wetlands	5	The alternative will have little to no impact on wetlands.	5	The alternative will have little to no impact on wetlands.	5	The alternative will have little to no impact on wetlands.	5	The alternative will have little to no impact on wetlands.
		SUBTOTAL	**7.8**		**9.4**		**10.9**		**12.5**	
Social/Cultural Environment	25%	Community Health and Safety	0	This alternative would have risks to community health and safety due to the potential negative impact to surface water.	5	The alternative has the potential to have some risks to community health and safety during construction due to the likely requirement for a significant amount of forcemain installation.	10	The alternative will have little to no impact on community health and safety.	10	The alternative will have little to no impact on community health and safety.
		Occupational Health and Safety	0	This alternative would have risks to occupational health and safety due to the increased frequency of overflows.	10	The alternative has little to no impact on documented archaeologically significant features. It is noted that the some area is previously disturbed and requires further investigation.	10	The alternative will have little to no impact on occupational health and safety.	10	The alternative will have little to no impact on occupational health and safety.
		Archaeological Impacts	10	There is little to no potential of archaeological resources being disturbed.	10	The alternative has little to no impact on documented archaeologically significant features. It is noted that some of the potential construction area is previously disturbed and requires further investigation.	10	The alternative has little to no impact on documented archaeologically significant features. It is noted that some of the potential construction area is previously disturbed and requires further investigation.	10	There is little to no potential of archaeological resources being disturbed.
		Cultural Heritage Impacts	10	There is little to no potential of cultural heritage resources being disturbed.	10	The alternative has little to no impact on documented cultural heritage resources, as infrastructure can be routed to avoid those identified in the area.	10	The alternative has little to no impact on documented cultural heritage resources, as infrastructure can be routed to avoid those identified in the area.	10	There is little to no potential of cultural heritage resources being disturbed.
		First Nations Cultural Heritage Impacts	10	There is little to no potential of First Nations resources being disturbed.	5	This alternative has little potential to disturb First Nations or Indigenous cultural heritage resources, however, there is some potential for disturbance within the study area where previously disturbed land is present.	5	This alternative has little potential to disturb First Nations or Indigenous cultural heritage resources, however, there is some potential for disturbance within the study area where previously disturbed land is present.	10	There is little to no potential of First Nations resources being disturbed, as construction will occur within the existing PS.
		Noise Impacts	5	The alternative will have little to no noise impact.	5	The alternative will have little to no noise impact.	5	The alternative will have little to no noise impact.	5	The alternative will have little to no noise impact.
		Odour Impacts	5	The alternative has little to no potential to produce odour.	5	The alternative has little to no potential to produce odour.	5	The alternative has little to no potential to produce odour.	5	The alternative has little to no potential to produce odour.
		Community Perception	0	This alternative will not be acceptable to the community, as it does not provide sufficient pumping capacity.	0	This alternative will not be acceptable to the community, as there will likely be significant disruption during construction.	5	This alternative would be acceptable to the public.	10	This alternative would be most acceptable to the public, as it is the least costly and causes the least amount of disruption.
		Transportation	5	The alternative will have little to no impact on transportation.	5	The alternative will have little to no impact on transportation.	5	The alternative will have little to no impact on transportation.	5	The alternative will have little to no impact on transportation.
		SUBTOTAL	**12.5**		**15.3**		**18.1**		**20.8**	
Technical Environment	25%	Risk/Reliability	0	There is a high level of risk for this alternative related to the increased potential for overflows.	5	There is a moderate level of risk associated with this alternative due to the potential length of forcemain required, raising the number of potential failure points.	10	There is a low level of risk associated with this alternative.	10	There is a low level of risk associated with this alternative.
		Ability to Meet Pumping Capacity Requirements	0	This alternative does not meet pumping capacity requirements.	10	This alternative would meet long-term pumping requirements.	10	This alternative would meet long-term pumping requirements.	10	This alternative would meet long-term pumping requirements.
		Ease of Implementation (Constructability)	10	There is no construction associated with this alternative.	0	Implementation would be complex due to the significant amount of forcemain required.	5	Implementation would be somewhat complex, as the equalization tank would need to be constructed very deep into the ground.	10	Implementation would be relatively simple.
		Energy Requirements	5	Energy requirements would remain the same.	0	Energy requirements would increase due to additional pumping requirements, mainly due to the additional forcemain length.	0	Energy requirements would increase due to additional pumping requirements, mainly due to the additional forcemain length.	10	Energy requirements could decrease if more energy-efficient pumps are selected.
		Regulatory Constraints	0	Regulatory constraints are anticipated due to the increased potential for overflows.	5	Regulatory constraints are uncertain, as the new forcemain alignment is unknown.	10	There are no regulatory constraints anticipated.	10	There are no regulatory constraints anticipated.
		Operational Compatibility	5	Operational compatibility would not change.	5	The alternative is compatible with existing operations.	5	The alternative is compatible with existing operations.	5	The alternative is compatible with existing operations.
		Maintenance Complexity	5	Maintenance requirements would not change.	0	Maintenance requirements would be increased due to the additiona pumping station	0	Maintenance requirements would be increased due to the equalization tank.	5	Maintenance requirements would not change.
		SUBTOTAL	**8.9**		**8.9**		**14.3**		**21.4**	
Economic	25%	Capital Costs	10	There are no associated capital costs.	0	Capital costs would be high relative to other alternatives.	5	Moderate capital costs.	5	Moderate capital costs.
		O&M Costs	5	O&M costs would remain the same.	0	O&M costs would increase.	0	O&M costs would increase.	5	O&M costs would be similar as they are currently.
		SUBTOTAL	**18.8**		**0.0**		**6.3**		**12.5**	
TOTAL			**48.0**		**33.6**		**49.5**		**67.3**	

Plympton-Wyoming Wastewater Servicing Master Plan - Detailed Evaluation Criteria for PS-02 and PS-04 Integrated Alternatives

Category	Weighting	Criterion	Score	Do Nothing	Score	Alternative 1	Score	Alternative 2	Score	Alternative 3
Natural Environment	**25%**	Greenhouse Gas Emissions	0	The alternative will have little to no impact on greenhouse gas emissions.	0	The alternative will have little to no impact on greenhouse gas emissions.	0	The alternative will have little to no impact on greenhouse gas emissions.	0	The alternative will have little to no impact on greenhouse gas emissions.
		Groundwater Quality and Quantity	5	The alternative will have little to no impact on groundwater quality and quantity	5	The alternative will have little to no impact on groundwater quality and quantity	5	The alternative will have little to no impact on groundwater quality and quantity	5	The alternative will have little to no impact on groundwater quality and quantity
		Terrestrial Habitats and Corridors	5	The alternative will have little to no impact on terrestrial habitats and corridors	0	This alternative could negatively impact terrestrial habitats and corridors due to additional forcemain requirements.	0	This alternative could negatively impact terrestrial habitats and corridors due to additional forcemain requirements.	0	This alternative could negatively impact terrestrial habitats and corridors due to additional forcemain requirements.
		Aquatic Habitats and Fisheries	0	This alternative would negatively impact aquatic habitats and fisheries due to the increased probability of wastewater overflows from PS-02.	0	This alternative would negatively impact aquatic habitats and fisheries due to the increased probability of wastewater overflows from PS-02.	0	This alternative would negatively impact aquatic habitats and fisheries due to the increased probability of wastewater overflows from PS-02.	5	The alternative will have little to no impact on aquatic habitats and fisheries.
		Floodplain Impacts	5	The alternative will have little to no impact on the floodplain.	5	The alternative will have little to no impact on the floodplain.	5	The alternative will have little to no impact on the floodplain.	5	The alternative will have little to no impact on the floodplain.
		Surface Water Quality	0	This alternative would negatively impact surface water quality due to the increased probability of wastewater overflows from PS-02.	0	This alternative would negatively impact surface water quality due to the increased probability of wastewater overflows from PS-02.	0	This alternative would negatively impact surface water quality due to the increased probability of wastewater overflows from PS-02.	5	The alternative will have little to no impact on surface water quality.
		Air Quality	5	The alternative will have little to no impact on air quality.	5	The alternative will have little to no impact on air quality.	5	The alternative will have little to no impact on air quality.	5	The alternative will have little to no impact on air quality.
		Wetlands	5	The alternative will have little to no impact on wetlands.	5	The alternative will have little to no impact on wetlands.	5	The alternative will have little to no impact on wetlands.	5	The alternative will have little to no impact on wetlands.
		SUBTOTAL	**7.8**		**6.3**		**6.3**		**9.4**	
Social/Cultural Environment	**25%**	Community Health and Safety	0	This alternative would have risks to community health and safety due to the potential negative impact to surface water.	5	The alternative has the potential to have some risks to community health and safety during construction due to the likely requirement for a significant amount of forcemain installation.	5	The alternative has the potential to have some risks to community health and safety during construction due to the requirement for forcemain installation.	5	The alternative has the potential to have some risks to community health and safety during construction due to the requirement for forcemain installation.
		Occupational Health and Safety	0	This alternative would have risks to occupational health and safety due to the increased frequency of overflows from PS-02.	10	There are no risks to occupational health and safety with this alternative.	10	There are little to no risks to occupational health and safety with this alternative.	10	There are little to no risks to occupational health and safety with this alternative.
		Archaeological Impacts	10	There is little to no potential of archaeological resources being disturbed.	10	The alternative has little to no impact on documented archaeologically significant features. It is noted that some of the potential construction area is previously disturbed and requires further investigation.	10	The alternative has little to no impact on documented archaeologically significant features. It is noted that some of the potential construction area is previously disturbed and requires further investigation.	10	The alternative has little to no impact on documented archaeologically significant features. It is noted that some of the potential construction area is previously disturbed and requires further investigation.
		Cultural Heritage Impacts	10	There is little to no potential of cultural heritage resources being disturbed.	10	The alternative has little to no impact on documented cultural heritage resources, as infrastructure can be routed to avoid those identified in the area.	10	The alternative has little to no impact on documented cultural heritage resources, as infrastructure can be routed to avoid those identified in the area.	10	The alternative has little to no impact on documented cultural heritage resources, as infrastructure can be routed to avoid those identified in the area.
		First Nations Cultural Heritage Impacts	10	There is little to no potential of First Nations resources being disturbed.	5	This alternative has little potential to disturb First Nations or Indigenous cultural heritage resources, however, there is some potential for disturbance within the study area where previously disturbed land is present.	5	This alternative has little potential to disturb First Nations or Indigenous cultural heritage resources, however, there is some potential for disturbance within the study area where previously disturbed land is present.	5	This alternative has little potential to disturb First Nations or Indigenous cultural heritage resources, however, there is some potential for disturbance within the study area where previously disturbed land is present.
		Noise Impacts	5	The alternative will have little to no noise impact.	5	The alternative will have little to no noise impact.	5	The alternative will have little to no noise impact.	5	The alternative will have little to no noise impact.
		Odour Impacts	5	The alternative has little to no potential to produce odour.	5	The alternative has little to no potential to produce odour.	5	The alternative has little to no potential to produce odour.	5	The alternative has little to no potential to produce odour.
		Community Perception	0	This alternative will not be acceptable to the community, as it does not provide sufficient pumping capacity.	0	This alternative will not be acceptable to the community, as there will likely be significant disruption during construction.	0	This alternative will not be acceptable to the community, as there will likely be significant disruption during construction.	0	This alternative will not be acceptable to the community, as there will likely be significant disruption during construction.
		Transportation	5	The alternative will have little to no impact on transportation.	5	The alternative will have little to no impact on transportation.	5	The alternative will have little to no impact on transportation.	5	The alternative will have little to no impact on transportation.
		SUBTOTAL	**12.5**		**15.3**		**15.3**		**15.3**	
Technical Environment	**25%**	Risk/Reliability	0	There is a high level of risk associated with this alternative, as PS-02 and PS-04 would have insufficient pumping capacity and overflows are likely.	0	There is a high level of risk associated with this alternative, as PS-02 would have insufficient pumping capacity and overflows are likely.	0	There is a high level of risk associated with this alternative, as PS-02 would have insufficient pumping capacity and overflows are likely.	10	There is a low level of risk associated with this alternative, as flows would be more evenly distributed between pumping stations.
		Ability to Meet Pumping Capacity Requirements	0	This alternative cannot meet short-term pumping requirements at PS-02.	0	This alternative cannot meet short-term pumping requirements at PS-02.	0	This alternative cannot meet short-term pumping requirements at PS-02.	10	This alternative can meet all long-term pumping requirements.
		Ease of Implementation (Constructability)	10	There is no construction required.	0	Implementation would be complex.	0	Implementation would be complex.	0	Implementation would be complex.
		Energy Requirements	5	Energy requirements would remain the same.	10	Energy requirements could decrease if more energy-efficient pumps are selected.	10	Energy requirements could decrease if more energy-efficient pumps are selected.	10	Energy requirements could decrease if more energy-efficient pumps are selected.
		Regulatory Constraints	0	Regulatory constraints are anticipated due to the increased potential for overflows.	5	Some regulatory constraints are anticipated due to forcemain permitting.	5	Some regulatory constraints are anticipated due to forcemain permitting.	5	Some regulatory constraints are anticipated due to forcemain permitting.
		Operational Compatibility	5	Operational compatibility would not change.	5	Operational compatibility would not change.	5	Operational compatibility would not change.	5	Operational compatibility would not change.
		Maintenance Complexity	0	Maintenance requirements would increase related to more frequent overflows.	5	Maintenance requirements would remain similar as they are currently.	5	Maintenance requirements would remain similar as they are currently.	5	Maintenance requirements would remain similar as they are currently.
		SUBTOTAL	**7.1**		**8.9**		**8.9**		**16.1**	
Economic	**25%**	Capital Costs	10	There are no associated capital costs.	0	Capital costs would be relatively high.	0	Capital costs would be relatively high.	0	Capital costs would be relatively high.
		O&M Costs	5	O&M costs would remain the same.	5	O&M costs would remain similar as they are currently.	5	O&M costs would remain similar as they are currently.	5	O&M costs would remain similar as they are currently.
		SUBTOTAL	**18.8**		**6.3**		**6.3**		**6.3**	
TOTAL			**46.2**		**36.7**		**36.7**		**47.0**	

Plympton-Wyoming Wastewater Servicing Master Plan - Detailed Evaluation for PS-02 and PS-05 Integrated Alternatives

Category	Weighting	Criterion	Score	Do Nothing	Score	Alternative 1	Score	Alternative 2	Score	Alternative 3
Natural Environment	**25%**	Greenhouse Gas Emissions	0	The alternative will have little to no impact on greenhouse gas emissions.	0	The alternative will have little to no impact on greenhouse gas emissions.	0	The alternative will have little to no impact on greenhouse gas emissions.	0	The alternative will have little to no impact on greenhouse gas emissions.
		Groundwater Quality and Quantity	5	The alternative will have little to no impact on groundwater quality and quantity	5	The alternative will have little to no impact on groundwater quality and quantity	5	The alternative will have little to no impact on groundwater quality and quantity	5	The alternative will have little to no impact on groundwater quality and quantity
		Terrestrial Habitats and Corridors	5	The alternative will have little to no impact on terrestrial habitats and corridors	5	The alternative will have little to no impact on terrestrial habitats and corridors	0	This alternative could negatively impact terrestrial habitats and corridors due to additional forcemain requirements.	0	This alternative could negatively impact terrestrial habitats and corridors due to additional forcemain requirements.
		Aquatic Habitats and Fisheries	0	This alternative would negatively impact aquatic habitats and fisheries due to the increased probability of wastewater bypasses from the Plympton WWTP during wet weather events, resulting from high peak instantaneous flows.	0	This alternative would negatively impact aquatic habitats and fisheries due to the increased probability of wastewater bypasses from the Plympton WWTP during wet weather events, resulting from high peak instantaneous flows.	5	The alternative will have little to no impact on aquatic habitats and fisheries.	5	The alternative will have little to no impact on aquatic habitats and fisheries.
		Floodplain Impacts	5	The alternative will have little to no impact on the floodplain.	5	The alternative will have little to no impact on the floodplain.	5	The alternative will have little to no impact on the floodplain.	5	The alternative will have little to no impact on the floodplain.
		Surface Water Quality	0	This alternative would negatively impact surface water quality due to the increased probability of wastewater bypasses from the Plympton WWTP during wet weather events, resulting from high peak instantaneous flows.	0	This alternative would negatively impact surface water quality due to the increased probability of wastewater bypasses from the Plympton WWTP during wet weather events, resulting from high peak instantaneous flows.	5	The alternative will have little to no impact on surface water quality.	5	The alternative will have little to no impact on surface water quality.
		Air Quality	5	The alternative will have little to no impact on air quality.	5	The alternative will have little to no impact on air quality.	5	The alternative will have little to no impact on air quality.	5	The alternative will have little to no impact on air quality.
		Wetlands	5	The alternative will have little to no impact on wetlands.	5	The alternative will have little to no impact on wetlands.	5	The alternative will have little to no impact on wetlands.	5	The alternative will have little to no impact on wetlands.
		SUBTOTAL	**7.8**		**7.8**		**9.4**		**9.4**	
Social/Cultural Environment	**25%**	Community Health and Safety	0	This alternative would have risks to community health and safety due to the potential negative impact to surface water.	0	This alternative would have risks to community health and safety due to the potential negative impact to surface water.	5	The alternative has the potential to have some risks to community health and safety during construction due to the requirement for forcemain installation.	5	The alternative has the potential to have some risks to community health and safety during construction due to the requirement for forcemain installation.
		Occupational Health and Safety	0	This alternative would have risks to occupational health and safety due to the increased potential for flooding at the Plympton WWTP.	0	This alternative would have risks to occupational health and safety due to the increased potential for flooding at the Plympton WWTP.	10	There are little to no risks to occupational health and safety with this alternative.	10	There are little to no risks to occupational health and safety with this alternative.
		Archaeological Impacts	10	There is little to no potential of archaeological resources being disturbed.	10	The alternative has little to no impact on documented archaeologically significant features. It is noted that some of the potential construction area is previously disturbed and requires further investigation.	10	The alternative has little to no impact on documented archaeologically significant features. It is noted that some of the potential construction area is previously disturbed and requires further investigation.	10	The alternative has little to no impact on documented archaeologically significant features. It is noted that some of the potential construction area is previously disturbed and requires further investigation.
		Cultural Heritage Impacts	10	There is little to no potential of cultural heritage resources being disturbed.	10	The alternative has little to no impact on documented cultural heritage resources, as infrastructure can be routed to avoid those identified in the area.	10	The alternative has little to no impact on documented cultural heritage resources, as infrastructure can be routed to avoid those identified in the area.	10	The alternative has little to no impact on documented cultural heritage resources, as infrastructure can be routed to avoid those identified in the area.
		First Nations Cultural Heritage Impacts	10	There is little to no potential of First Nations resources being disturbed.	5	This alternative has little potential to disturb First Nations or Indigenous cultural heritage resources, however, there is some potential for disturbance within the study area where previously disturbed land is present.	5	This alternative has little potential to disturb First Nations or Indigenous cultural heritage resources, however, there is some potential for disturbance within the study area where previously disturbed land is present.	5	This alternative has little potential to disturb First Nations or Indigenous cultural heritage resources, however, there is some potential for disturbance within the study area where previously disturbed land is present.
		Noise Impacts	5	The alternative will have little to no noise impact.	5	The alternative will have little to no noise impact.	5	The alternative will have little to no noise impact.	5	The alternative will have little to no noise impact.
		Odour Impacts	5	The alternative has little to no potential to produce odour.	5	The alternative has little to no potential to produce odour.	5	The alternative has little to no potential to produce odour.	5	The alternative has little to no potential to produce odour.
		Community Perception	0	This alternative will not be acceptable to the community, as it does not provide sufficient pumping capacity.	0	This alternative will not be acceptable to the community, as it does not provide sufficient pumping capacity.	5	The alternative would be acceptable to the community, as it addresses pumping capacity concerns by de-coupling PS-02 and PS-05 and would also reduce the risk of flooding at the Plympton WWTP.	5	The alternative would be acceptable to the community, as it addresses pumping capacity concerns by de-coupling PS-02 and PS-05 and would also reduce the risk of flooding at the Plympton WWTP.
		Transportation	5	The alternative will have little to no impact on transportation.	5	The alternative will have little to no impact on transportation.	5	The alternative will have little to no impact on transportation.	5	The alternative will have little to no impact on transportation.
		SUBTOTAL	**12.5**		**11.1**		**16.7**		**16.7**	
Technical Environment	**25%**	Risk/Reliability	0	There is a higher level of risk for this alternative, related to the potential for flooding at the Plympton WWTP.	0	There is a higher level of risk for this alternative, related to the potential for flooding at the Plympton WWTP.	10	There is a low level of risk associated with this alternative, as the equalization tank would reduce the risk of flooding at the Plympton WWTP.	10	There is a low level of risk associated with this alternative, as the equalization tank would reduce the risk of flooding at the Plympton WWTP.
		Ability to Meet Pumping Capacity Requirements	0	This alternative would result in flows to the influent SPS that are above its rated capacity on occasion.	10	This alternative would meet pumping capacity requirements.	10	This alternative would meet pumping capacity requirements.	10	This alternative would meet pumping capacity requirements.
		Ease of Implementation (Constructability)	10	There is no construction required.	0	The alternative is highly complex to integrate.	5	The alternative is moderately complex.	5	The alternative is moderately complex.
		Energy Requirements	5	Energy requirements would remain the same.	5	Energy requirements would be similar as they are currently.	5	Energy requirements would be similar as they are currently.	5	Energy requirements would be similar as they are currently.
		Regulatory Constraints	0	Regulatory constraints are anticipated related to flooding at the Plympton WWTP.	5	Some regulatory constaints could arise related to the additional forcemains.	10	No regulatory constraints are anticipated.	10	No regulatory constraints are anticipated.
		Operational Compatibility	5	Operational requirements would remain the same.	5	The alternative is compatible with current operations.	5	The alternative is compatible with current operations.	5	The alternative is compatible with current operations.
		Maintenance Complexity	0	Additional maintenance would be required as flows increase due to flooding at the plant.	0	Maintenance requirements would increase due to the additional forcemains.	0	Maintenance requirements would increase due to the additional pumping station.	0	Maintenance requirements would increase due to the additional pumping station.
		SUBTOTAL	**7.1**		**8.9**		**16.1**		**16.1**	
Economic	**25%**	Capital Costs	10	There are no associated capital costs.	0	Capital costs would be relatively high.	5	Capital costs would be lower than in alternative 3 due to the decreased pumping station size.	0	Capital costs would be relatively high.
		O&M Costs	5	O&M costs would remain the same.	5	O&M costs would remain similar as they are currently.	5	O&M costs would remain similar as they are currently.	5	O&M costs would remain similar as they are currently.
		SUBTOTAL	**18.8**		**6.3**		**12.5**		**6.3**	
TOTAL			**46.2**		**34.1**		**54.6**		**48.4**	