



NOTICE

MEETING: St Mary's Municipal Council
Committee of the Whole

DATE: Wednesday, September 17th, 2025

TIME: 6:15pm or immediately following Regular Council

PLACE: St. Mary's Municipality
Council Chambers, Sherbrooke, NS

Please advise if unable to attend



Municipality of the District of St. Mary's

Committee of the Whole Meeting Agenda
Wednesday, September 17th, 2025

We acknowledge that we are gathering in Mi'kmaqi the traditional unceded territory of the Mi'kmaq people.

1. Call to Order
2. Roll Call
3. Additions to the Agenda
4. Approval of the Agenda
5. Approval of Minutes: Committee of the Whole held Wednesday, September 3rd, 2025
6. Business Arising from Minutes
7. Correspondence:
 - a. Royal Canadian Mounted Police (RCMP) – 2024 Annual Review
 - b. Eastern Counties Regional Library (ECRL) – 2025-2026 Strategic Operational Plan
8. Other Matters of Business
 - a. Strait Engineering Water & Wastewater Feasibility Report
 - b. Staff Report - Priority Improvements from Water & Wastewater Study
 - c. Staff Report – Sewer Utility Cross Support – Capital Project

Adjournment



Municipality of the District of St. Mary's

Committee of The Whole (COTW) Meeting

Wednesday, September 3rd, 2025

We acknowledge that we are gathering in Mi'kma'ki the traditional unceded territory of the Mi'kmaq people.

1. Meeting, Date & Time:

Warden Fuller called the COTW Meeting of the St. Mary's Municipal Council to order on Wednesday, September 3rd, 2025, at 6:01pm. in the Council Chambers, Sherbrooke, N.S.

2. Attending:

Warden James Fuller
Deputy Warden Beulah Malloy
Councillor Dana O'Connell
Councillor Scott Beaver
Councillor Emma Tibbo

Also Attending:

Marian Fraser, Director of Finance/Acting CAO
Jadzia Rudolph, Municipal Clerk
Mallory Fraser, Director of Community Development & Recreation
Teddy Stevens, Director of Public Works
Keren Ruller, Director of Economic Development

3. Additions to the Agenda:

- Addition to #9. Other Matters of Business item F.) Drought Conditions

4. Approval of the Agenda:

On the motion of Councillor O'Connell and seconded by Councillor Tibbo, Council approved the agenda with the additions to #9 Other Matter of Business item f) Drought Conditions.

Motion approved.

5. Approval of Minutes:

The Warden called for errors, amendments or omissions to the previous minutes, hearing none, Council approved the minutes of the COTW Meeting held July 16th, 2025.

Motion approved.

6. Business Arising from the Minutes:

- a. Flag policy - At a previous COTW meeting, Council suggested making amendments to the Flag Policy. Amendments made were to Sections 4; adding a definition of a "First Responder", omitted section 5.4, Section 7; administrative non-substantive changes, Section 8; addition of "Special Days".

On recommendation of Councillor O'Connell seconded by Councillor Beaver, Council approve the Flag Policy with the removal of section 5.4 and the non-substantive changes to section 7.1.

Recommendation adopted.

7. Presentation: Rob Wolf, NS Health & Wellness – Access Wellness Program

Rob Wolf informed Council of Access Wellness, a mental wellness program that offers Nova Scotians quick access to a free, private counselling session and follow up action plan.

This program will help with stress, depression, anxiety, relationship issues, substance abuse, loss, and more. Residents looking to use the service can do so, by calling 1-833-691-2282 or visit www.AccessWellnessNovaScotia.ca.

8. Correspondence:

- a. 2024-2025 Annual Report - Property Valuation Services Corporation - Please see the agenda/package for the correspondence.
- b. Code of Conduct Training – Paul LaFleche, Deputy Minister Dept. of Municipal Affairs - Please see the agenda/package for the correspondence.
- c. Community Impact Report – Eastern Counties Regional Library - Please see the agenda/package for the correspondence.
- d. Provincial Heritage Property – Dept. of Communities, Culture, Tourism and Heritage - Please see the agenda/package for the correspondence.
- e. Value for Money Audit of NS Firefighters School – Hon. John Lohr, Minister of Dept. of Municipal Affairs - Please see the agenda/package for the correspondence.
- f. Thank You Email – Dr. Ackermann & Dr. McLean – Doctor Recruitment - Please see the agenda/package for the correspondence.
- g. Thank You Card – Ava Anderson – Financial Award Scholarship - Please see the agenda/package for the correspondence.

9. Other Matters of Business:

- a. Staff Report - Provincial Volunteer Awards Ceremony - Please see the agenda/package for the staff report.
- The Provincial Volunteer Awards Ceremony is an annual event hosted by the Province of Nova Scotia to recognize and celebrate the outstanding contributions of volunteers from across the province. This event brings together volunteers, community leaders, and elected officials to honour individuals and groups who have demonstrated exceptional dedication to their communities.
- Each year the Municipality of the District of St. Mary's nominates a local volunteer for recognition at this year's ceremony. Attendance by a member of Council would provide the opportunity to represent the Municipality, show appreciation to the honouree, and participate in the celebration of volunteerism in Nova Scotia.

On recommendation of Deputy Warden Malloy seconded by Councillor Beaver, Council approve the attendance of the Warden or designate at the 2025 Provincial Volunteer Awards Ceremony in Halifax, Nova Scotia, on September 29th, 2025, with related expenses to be funded from the Council Travel & Professional Development budget.

Recommendation adopted.

- b. Nova Scotia Federation of Municipalities - Fall Conference – Attendance
- The annual Nova Scotia Federation of Municipalities Fall Conference is November 4th – 7th, 2025 at the Westin Hotel in Halifax, NS. As per the mileage/expense policy Council may make a motion for council members to attend.

On recommendation of Councillor O'Connell seconded by Councillor Beaver, Council agree to send Warden Fuller, Deputy Warden Malloy, Councillor O'Connell, and Councillor Beaver to attend the NSFM Fall Conference on November 5th-7th, 2025 in Halifax NS.

Recommendation adopted.

- c. Department of Public Works – J Class Road Submissions
- The Department of Public Works sends out a request for paving, repaving, and/or double chipping of J-Class subdivision streets. Council may select which roads the Municipality applies for, in previous years Council applied to have Cameron Road, Bennetts loop and Restoration Drive submitted for paving.
- Submissions must be received by Department of Public Works no later than October 31st, 2025.

Councillor O'Connell declared Conflict of Interest and abstained from voting.

On recommendation of Councillor Beaver seconded by Deputy Warden Malloy, Council agree to submit Cameron Road, Bennetts Loop, and Restoration Drive to be double chipped for the 2025-2026 construction season as part of the NS Public Works Cost Share agreement 2023-020 on the paving of subdivision (J-Class streets).

Recommendation adopted.

- d. Staff Report – Recplex Flooring - Please see the agenda/package for staff report.
- During inspections in the warmer months, it has been observed that the current flooring expands drastically with the warmer temperatures. This results in the mats heaving and creating several tripping hazards within the buildings. Adversely, in the winter months while the ice plant is active and it is cold within the Recplex, the mats shrink causing gaps between the mats which lead to damaged skate blades for customers who step in the cracks. Dressing rooms remain heated in the winter therefore the expansion and contracting does not occur.

Option 1:

- Replace all of flooring through out the Recplex, dressing rooms, bathrooms, main floor area, (excluding kitchen area) etc. for the quoted price of \$73,000 plus HST. This includes materials, delivery & labour/installation of 5,400 square feet. Quote was provided by Monarch Enterprises upon a site visit with staff.

Option 2:

- Replace flooring in all areas of the Recplex excluding the dressing rooms and kitchen area for the quoted price of \$56,700 plus HST. This includes materials, delivery & labour/installation of 4,200 square feet. Quote was provided by Monarch Enterprises upon a site visit with staff.

Option 3:

- Contract a contractor to remove all interior trim within the St. Mary's Recplex, trim existing matting to allow for better expansion in the warmer months and install and paint new trim throughout the building. No estimated cost at this time.

On recommendation of Councillor Beaver seconded by Deputy Warden Malloy, Council agree to move forward with option 2, and award Monarch Enterprises with the contract to replace (materials and delivery) and install 4,200 square feet of Recplex flooring at the quoted price of \$56,700 plus HST.

Recommendation adopted.

The Warden called for a motion to recess:

*On motion of Deputy Warden Malloy, seconded by Councillor Tibbo, Council recessed at 6:51pm.
Council reconvened at 7:00pm.*

- e. Staff Report – ZZAP Housing Policy Recommendations - Please see the agenda/package for the staff report.
- On January 15th, 2025, a staff report was presented at the COTW to continue work with the company ZZAP that overviewed the following deliverables;
 - Summary report with research and examination/analysis of tools within various government acts including the MGA, *Municipal Government Act* and other Nova Scotia Acts to define municipal powers to encourage and incentivize housing development.
 - Working session with the municipality to present interim work for mid project direction.
 - Creation of a draft incentives policy for municipal long-term use.
 - Advice on development agreement terms and zoning/Land Use Bylaw potential updates to encourage Land Use Bylaw (LUB) support.
- ZZAP presented 30 housing recommendations based on the above deliverables that would assist in progressing housing and align with the HAF projects. Based on those recommendations, seven were chosen to advance. The first recommendation was drafting a new land disposal policy incorporating a land for housing program to support residential development through below market value sale of surplus land is being completed under the January 15th proposal from ZZAP. The quoted price to complete the work on the recommendation and advance the HAF initiatives are within the HAF budget and grant funding.

On recommendation of Councillor Tibbo seconded by Deputy Warden Malloy, Council approve the ZZAP Architecture & Planning to complete St. Mary's Housing Policy recommendations (2A, 2E, 4B, 4C, 4D AND 4E) as outlined in the quoted proposal for a cost of \$13,500 plus HST funded through the Housing Accelerator Fund (HAF).

Recommendation adopted.

f. Drought Conditions

- Councillor Beaver informed Council of the current drought conditions, such as the local lakes, rivers, and the source water for fire departments is very low, options for helping the residents receive safe quality of water during droughts, drilled wells for communities to have water distribution, potential use of facilities for the use of showers, and lastly the water donation from St. Barbara Gold Mine.
- Staff direction was given to research into how the municipality can support and develop a new program to provide drilled wells at central community locations to support residents with clean safe, and reliable drinking water during times of drought.
- Councillor Beaver also asked if the Municipality could research into opening the Recplex as a showering facility and to see if there is a need in the communities.
- Councillor Beaver informed Council that the latest press release issued on September 2nd, 2025, regarding the Municipality accepting a donation from the company St. Barbara Goldmine was concerning as the previous history this company has been involved in can be a major concern and may look like the Municipality is supporting their efforts. Council discussed that a donation does not mean the municipality is supporting the goldmine and that if a company would like to donate a basic need such as water the Municipality would be happy to accept.
- Marian Fraser, Director of Finance and Acting CAO informed Council that staff can take the information and research into a "Donation Acceptance Policy", Council agreed to direct staff to research and develop a draft "Donation Acceptance Policy".

On recommendation of Councillor Beaver seconded by Councillor O'Connell, that Council in the future do not take donations or sponsorships from St. Barbara without a discussion first, around the Council table.

(3 Nay votes: Warden Fuller, Deputy Warden Malloy, and Councillor Tibbo)

Recommendation defeated

10. In-Camera: Contract Negotiations

On motion of Councillor O'Connell seconded by Councillor Tibbo, Council agree to move In-Camera for Contract Negotiations at 7:35pm.

Motion approved.

On motion of Councillor Tibbo seconded by Deputy Warden Malloy, Council agree to reconvene to regular session at 8:01pm.

Motion approved.

Adjournment

On motion of Warden Fuller, there being no further matters of business, Council adjourned at 8:01pm.

Motion approved.

Recorded By
Jadzia Rudolph, Municipal Clerk

Approved By
Warden Fuller



Royal Canadian Mounted Police Gendarmerie royale du Canada

Commanding Officer Commandant divisionnaire

August 27, 2025

Dear Warden Fuller:

In 2024, the Nova Scotia RCMP responded to thousands of calls for service and launched hundreds of investigations across the province, laying charges in a wide range of serious crimes committed both within Nova Scotia and beyond its borders.

Many of our investigative efforts focused on gender-based violence, hate crimes, human trafficking, internet child exploitation, and serious and organized crime. Much of what we accomplished was made possible through strong partnerships with other agencies and organizations.

As Nova Scotia's provincial police service, we remain committed to serving and protecting Nova Scotians around the clock, every day of the year.

We recently released *Your Nova Scotia RCMP: 2024* – a web-based annual review that highlights key files, special initiatives, policing data, and our engagement in community events across the province: <https://rcmp.ca/en/nova-scotia/corporate-information/publications-and-manuals/your-nova-scotia-rcmp-2024>

While the report offers just a glimpse into the breadth of our daily policing work, it reflects our employees' unwavering dedication to building a safe Nova Scotia.

I hope you find the 2024 review interesting and informative.

Sincerely,

Assistant Commissioner Dennis Daley
Commanding Officer
Nova Scotia RCMP

Canada

September 5, 2025

For immediate release: ECRL Strategic Operational Plan Release

Eastern Counties Regional Library (ECRL) is pleased to share the **2025-2026 Strategic Operational Plan**. The 2025-2026 Strategic Operational Plan outlines ECRL's activities for the year, highlighting current projects and initiatives, as well as their funding sources. The plan was informed by the results of ECRL's strategic planning and community engagement process, which ATN Strategies conducted on behalf of the Library Board in late 2024 and early 2025.

With the release of the 2025-2026 Strategic Operational Plan, ECRL has adapted its strategic planning process to the current provincial funding environment. Library Boards across the province don't know what their funding will be in 2026-2027. Planning years in advance isn't feasible now, but communicating our current activities and projects to the community is possible and helpful. The key takeaway from what we heard is that ECRL needs to communicate its activities more widely. This plan will help achieve this change.

The 2025-2026 Strategic Operational Plan has a survey link for feedback to help build on the strategic planning work to date and increase community engagement. **We invite the public to participate in this survey.** This survey will be available online **until September 30** and paper copies are available at any branch location. The plan and accompanying documentation are available on ecrl's website.

For more information, please contact:

Michelle Greencorn- Director, Communications and Engagement
engagement@ecrl.ca
(902)227-7584

Our Service Locations

Canso | Chéticamp | Guysborough | Mabou | Margaree Forks | Mulgrave | Petit de Grat | Port Hawkesbury | Sherbrooke | St.Peter's

Old Road Hill Neighborhood Infrastructure Feasibility Study

Strait Engineering Ltd.

July 17th 2025



Figure 1 Conceptual Rendering of Old Road Hill Neighbourhood From ZZAP Concept Plan

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Appendices

A: A.1 Water Schematic, **A.2** Sanitary Schematic, **A.3** Neighborhood Concept Plan

B: B.1 Field Pump Tests, **B.2** WWTP Daily Readings, **B.3** WTP Daily Readings

C: C.1 Existing Sanitary System Flows, **C.2** Proposed Sanitary Flows

D: D.1 Projected Demands for Scenarios, **D.2** Conceptual Servicing

E: E.1 Cost Estimate of Upgrades

F: F.1 EXP. Geotechnical Report

1.0 Executive Summary

Strait Engineering Ltd. (SEL) conducted a feasibility study to assess the impact of the proposed Old Road Hill neighborhood expansion and other potential private developments on the municipal water and wastewater infrastructure. The new developments are projected to contribute an additional 150 to 230 equivalent residential units of demand. This will approximately double the current number of residents the utility serves. SEL reviewed municipal records, conducted field inspections, and analyzed infrastructure capacity to determine necessary upgrades. Below is the list for recommended upgrades for the Old Hill Road expansion (scenario 1).

Sanitary System:

Key Upgrades

- *Continued I & I improvements on wastewater collection system*
- *Upgraded Pump Station 2 (main street station)*
- *Upgraded Pump Station 4 (in Historic Village)*
- *Additional Wetwell Storage Pump Station 2 & 4*

New Infrastructure – **Estimated Cost (25% Contingency) \$ 1,460,000.00**

- *1.2 km of new 200mm Sanitary gravity sewer main*
- *18 new precast concrete manholes*
- *New Sewage Pumping Station and 120m of Forcemain*

Domestic Water System:

Key Upgrades

- *Continued leaking lateral replacement and monitoring*
- *Filter 1 in plant to be corrected for clogging issues (piping to be analyzed, a mirror of the functioning filter 2 piping should be considered)*

New Infrastructure - **Estimated Cost (25% Contingency) \$ 2,138,750.00**

- *1.2 km of new 100mm Watermain with bends and fittings*
- *1-2 new flushing hydrants*
- *New water reservoir approx. 250m³*

2.0 Existing Records Review

SEL reviewed records regarding wastewater and water distribution and treatment systems in the municipality to assess condition and functionality. Overall schematic plans with pipe sizing and connectivity were developed. The plans can be seen in Appendix A; A.1 Municipal Water Schematic, A.2 Municipal Sanitary Schematic. The as-built drawings SEL reviewed were provided by the municipality and included the following. The Concept Plan for the Old Road Hill Neighborhood developed by ZZAP is provided for clarity in appendix A. labelled A.3

1. *Sherbrooke Restoration Servies & Project Services – Errol D. MacDonald and Associates Consulting Engineers 1970 (Main St & Hwy 7)*
2. *Municipality of Saint Mary’s Sherbrooke Municipal Servies Plan, Profile Court and Third Street - Errol D. MacDonald and Associates Consulting Engineers 1971 (Court and Third Street)*
3. *Municipality of St. Mary’s Sherbrooke Municipal services- Plan & Profile Port Bickerton RD. Errol D. MacDonald and Associates Consulting Engineers 1972 (Old Road Hill)*
4. *N.S Department of Education Sherbrooke Village Project – Plan & Profile Second Street Sewer and Water - Errol D. MacDonald and Associates Consulting Engineers 1974 (Second Street)*
5. *Municipality of St. Mary’s Sherbrooke Municipal Services Fourth St. Watermain & Sewerage – Errol D. MacDonald and Associates Consulting Engineers 1976 (Sonora Road)*
6. *Nova Scotia Department of Municipal Affairs Community Planning Division – Provincial Sewer & Water Services Inventory 1979 (Overall)*
7. *Plan, Profile & Details – Sewer Line Replacement – J. Phillip Vaughn Engineering Associates Limited 1986 (Restoration Drive)*
8. *Municipality of the District of St. Mary’s Sherbrooke Village Sanitary Sewer Extension – Porter Dillon 1990 (West Side Sanitary Sewer Ext.)*
9. *Municipality of the District of St, Mary’s Sherbrooke Waterline Replacement EXP 2018*

SEL reviewed serval reports provided by the Municipality and included;

1. *CBCL - Sherbrooke Inflow and Infiltration Study Final Report April 2021*
2. *RVA - The Municipality of the District of St. Mary’s Sherbrooke Water Utility System Assessment Report –2023*
3. *NSE water withdrawal Approval - 2020*
4. *NSE Approval to Construct and Operate - Sewage Treatment Plant - 2015*
5. *CBCL - Sherbrooke Sewage Treatment Plant System Assessment report – 2018*

6. *Village of Sherbrooke Water Treatment and Distribution System Assessment Report – S.N.C Lavalin 2013*
7. *Phone interview with the main potential private developer in the Municipality Wilson's Cove for development of alternative Scenarios*

3.0 Field Review

SEL visited the site on May 29th and June 9th, 2025, to assess the municipal infrastructure. This included qualitative and quantitative testing on the four sewage pumping stations, inspection and flow verification at the wastewater treatment plant, and inspecting the water treatment plant.

The four pumping stations were tested for pumping rates making use of a laser level reader and stopwatch. The data for each station can be seen in appendix B; the pump station numbers refer to system schematics developed from the as-builts found in appendix A.

The wastewater treatment plant was inspected and reviewed for understanding and functionality. The daily recorded flow rates were formed into data base and analyzed for the months of January – May 2025. These results can be found in appendix B.2.

The water treatment plant and pump house were inspected and reviewed for understanding and functionality. The daily recorded flow rates were formed into data base and analyzed for the months of May – June 2025. These results can be found in appendix B.3.

4.0 Existing Sanitary System

The Municipalities' Sanitary system is made of approximately 70 manholes, 5 km of gravity sewer pipe and 200m of sewer force main. The system was originally constructed in the 1970's serving the downtown core area on the East side of the river with a significant expansion on the West side of the river in 1990. The distribution system contains 4 pumping stations to convey the sanitary flow to the wastewater treatment plant.

4.1 Collection Network

In order to determine the impacts of the various development scenarios the municipality is currently considering a database model of the sanitary system and its interconnectivity was developed. This entailed looking at each system component, its current usage, projected future usage and connectivity with the rest of the system. Manholes and Pumping stations are nodes in the model with the pipes being the conveyance links. Mannings Equation for open channel flow was applied to determine the capacity of the various links. The peaking factor was calculated at 3.93 based on the Villages population and a high value for I&I was used for the existing pipes. The capacity databases can be found in Appendix C, C.1,C.2

4.2 Existing Demand Development

To develop the current flows the system is conveying to the treatment plant SEL combined two sources. The first being using the data from the CBCL I&I report to provide point loading at the areas where the flow meters were installed. Flow meter #1 from the CBCL report was placed before pump station 1 on Hospital Road, Meter #2 was placed upstream of pump station #2. Secondly the Municipality provided detailed water usage rates for each customer, and this information was assumed to be an accurate representation for sanitary flows. Minus the extraneous I&I flows. This data was used to create the flow data for each street in the village

4.3 The Wastewater Treatment Plant

The Wastewater Treatment Plant was originally constructed in 1991 and has been in use since commissioning, serving a population of approx. 300 people. As noted in the CBCL Sherbrooke Sewage Treatment Plant assessment report, the design capacity of the plant is 80,000 USGPD (gallons per day) or 302 m³ per day, When the report was conducted in 2018 the average daily flow was reported at 68,400 USGPD or 259 m³ per day. Based on the daily recordings from the plant the heaviest flow month was in April this year with an average of 67,923 USGPD or 257 m³ per day. When looking at the average flow rates for the entire five-month period of 2025 SEL analyzed an average of 48,070 USGPD or 190 m³ per day was treated by the plant.

Wastewater Treatment Plant - Summary Table		
Plant Design Capacity m ³ /day	Average Dry Weather Flow m ³ /day	Average Wet Weather Flow m ³ /day
302	114	257

5.0 Existing Domestic Water System

The Sherbrooke Water Utility serves approximately 136 residential and commercial connections in the community of Sherbrooke. As of the 2021 Census, the Municipality's population is 2,161. The village serves approximately 300 residents with its water system.

5.1 Distribution Network

The District of St. Mary's Municipality services the village of Sherbrooke from the Sherbrooke Lake. The water is drawn from the Pump house just South of Restoration Drive. The water is then brought to the water treatment plant adjacent to the pump house treated and distributed throughout the village. The village distributes the water for domestic use through the existing 100mm, 75mm and 50mm PVC water main. The Municipality replaced the 75mm water main with 100mm water main along Old Road Hill and Main Street in 2018. The remainder of the water system was constructed in the 1970's.

5.2 Demand Development

The municipality provided detailed water usage rates for each customer, analyzed in the aggregate, an average of each of the three years was calculated and used to compare with plant reading and proposed demands. The demands were from the years 2024, 2023 and 2022.

5.3 The Water Treatment Plant

The Water treatment plant was constructed in 1999, seeing significant upgrades in 2008, and is generally in good shape. The plant is classified as a conventional filtration plant. The pumphouse provides water to the treatment facility. To maintain supply a 100mm pipe draws water from approximately 3.5 m below the average lake surface. The pump house contains 3 pumps which are used to deliver the water from the lake to the plant. They are cycled on a monthly basis. Each Pump is a Groundfos 7.5 HP, rated at 84 USGPM. The plant design capacity is 105,000 USGPD (397 m³) but is regulated to a maximum of 93,600 USGPD (354 m³) by a manually activated ball valve. The Clearwell that holds the water after treatment for distribution to the village residents is 25,600 USG (97 m³). The water is drawn from the clear well using three high lift pumps (activated by discharge pressure on at 50psi

dropping off at 70psi rising). There is no reservoir for the system. To avoid frequent pump cycling the plant is equipped with six (6) pressure tanks which hold the pressurized water ready for distribution, and pumps are not equipped with variable speed drives.

As per the 2020 NSE (Nova scotia Environment) Approval the allowable withdraw from the Lake shall not exceed a daily maximum of 440,000 lpd (440 m³/day)) with a monthly average of 300,000 lpd (300 m³/day).

SEL was provided with recent daily plant readings from the Municipality for the period of May 26th – June 7th, 2025. The average total amount of water drawn from the lake during this period was 131.9 m³ per day with a maximum of 189.9 m³ the maximum was on a day when filter 1 was being flushed. The municipality has informed SEL that there is an issue with this filter and they cannot get it to flush properly causing a large amount of wastewater (64.7 m³) on this day.

Water Treatment Plant – Summary Table			
NSE Allowable Withdrawal m ³ /day	Capacity m ³ /day	Average production m ³ /day	Clearwell Capacity m ³
300	354	131.9	97

6.0 Development Scenarios

The Municipalities goal of the study is to determine the impact of the proposed developments that are in consideration on the existing infrastructure systems. Two scenarios were developed with the Municipalities input. The proposed developments that are in current consideration by the municipality and other private parties are the following;

1. Old Road Hill Neighborhood Plan (150 Housing Units + Hospital + 1 commercial)
2. Private Old Road Hill Development (30 housing Units)
3. Private HWY 7 Development (50 Housing Units, 4-5 commercial units)

The development scenarios analyzed are as follows.

- **Scenario 1:** Old Road Hill Neighborhood Plan (150 Housing Units + Hospital + 1 commercial) (1)
- **Scenario 2:** Old Road Hill Neighborhood Plan (150 Housing Units + Hospital + 1 commercial), Private Old Road Hill Development (30 housing Units), Private HWY 7 Development (50 Housing Units, 5 commercial units) (1+2+3)

- **Scenario 3:** Private Development only (Private Old Road Hill Development (30 housing Units) + (Private HWY 7 Development (50 Housing Units, 4-5 commercial units) (2+3)

For this report, the Old Road Hill Development was examined in detail, and a conceptual layout of water and sewer services was prepared based on the ZZAP Concept Plan.

According to the concept plan package, the Old Road Hill Neighborhood is expected to be constructed in multiple phases. Phases 3 through 7 are the primary focus of this analysis, as they are most relevant to projected sanitary demands. The development is proposed to include a new hospital, long-term care facility, assisted living neighborhood, row housing, and detached single-family housing.

Using the *Atlantic Canada Wastewater System Guideline (2022)*, Strait Engineering Ltd. (SEL) projected the sanitary flows for each individual phase as well as for the overall full build-out of the development. A summary of the demands can be seen below.

For the other planned developments in the area, the same guidelines were used to estimate water and wastewater demand. A detailed breakdown of these projections can be found in Appendix C. Peak flow projections were calculated using the Harmon Equation to determine the appropriate peaking factor. For the new piping systems proposed in the development, inflow and infiltration (I&I) was calculated using the 2022 ACWSG guideline making use of a low 0.10 l/s / hectare of sewer shed and 0.4 l/s per manhole in a sag location. Sanitary flow projections were based on values from Table 3.1 of the Atlantic Canada Wastewater System Guideline (2022): Private dwellings: 380 L/person/day (0.380 m³/person/day), Commercial developments: 45 L/person/day (0.045 m³/person/day), Nursing homes: 450 L/resident day (0.450 m³/person/day), Hospital Bed: 950 L/ resident/ day (0.950m³/day)

Unit Type:	Commerical	Detached Dwellings	Hospital Beds	Attached	Nursing Home Beds	m3/ Day	I&I m3
ZZAP Dev	1	18	10	98	35	110.61	20
Wilson Dev 1	5	50	0	0		52.8	9
Wilson Dev 2	0	30	0	0		30.6	5
Total Scenario 1 ZZAP Development (Old Hill Neighbourhood)						111	20
Total Scenario 2 All Developments						194	34
Total Scenario 3 All Private Developments						83	14

*Projected flow values are taken from Atlantic Canada Wastewater Guidelines 2022

* Resedential Dwelling 340L/Person/Day

* Hospital Bed 950 L/ Day / bed

* Attached Dwelling assumed to have 2 residents

*Detached Dwelling assumed to have 3 residents

7.0 Geotechnical Investigation

EXP Services Inc. conducted a preliminary geotechnical investigation for the St. Mary's Municipality Feasibility Study at Old Road Hill in Sherbrooke, Nova Scotia, to assess subsurface conditions and provide geotechnical input for the proposed development. The envisioned project includes 20 apartment units, 32 supportive senior units, 36–72 duplexes and rowhouses, 18 single-family homes, a long-term care centre, hospital, care hub, and related infrastructure.

Fieldwork involved eight test pits excavated to depths ranging from 1.2 to 5.8 metres. However, a large portion of the western site, characterized by thick organics and peat, was inaccessible due to unsafe ground conditions. The subsurface profile generally comprises fill and organic materials overlying native glacial till, with inferred bedrock encountered at depths between 1.2 m and 5.0 m in several locations. Peat with extremely high moisture content was identified in one area, suggesting potential challenges for construction in those sections.

Groundwater was observed in four of the test pits at depths from 1.0 m to 3.0 m below ground surface, indicating that dewatering may be necessary for shallow excavations. Bedrock underlying the site is anticipated to be slate from the Goldenville Formation, potentially sulphide-bearing, which could necessitate regulated disposal procedures if excavated.

For site development, all organics must be removed, and proof rolling should be conducted to identify any soft or unstable zones requiring over-excavation and replacement with engineered fill. Excavations for infrastructure are generally expected to remain within the glacial till layer, though isolated areas of shallow bedrock may require mechanical rock removal or blasting. Construction activities will need to consider erosion control, groundwater management, and possible sulphide-bearing rock handling.

Further detailed geotechnical investigations will be required during the design phase to refine these preliminary recommendations and fully characterize the site conditions for the proposed development layout.

8.0 Sanitary System Capacity Analysis

8.1 Wastewater Treatment Plant

The wastewater treatment plant is operating as intended. During dry weather conditions, the plant functions well below its design capacity, treating an average of approximately 30,000 USGPD (114 m³/day), which represents about 40% of its total capacity of 80,000 USGPD (302 m³/day). However, during the spring season specifically April 2025 the average daily flow rose to 257 m³/day, reaching approximately 85% of the plant's capacity.

Municipal staff have indicated that inflow and infiltration (I&I) mitigation efforts are ongoing, with several upgrades already completed and others currently in progress. To effectively evaluate the impact of these measures, the installation of flow meters particularly at the key locations identified in the I&I study is strongly recommended. These meters would allow for accurate quantification of flow reductions achieved through I&I improvements.

Additionally, it is advised that the existing 60° weir within the plant be calibrated or replaced. Over time, the weir appears to have become deformed and corroded, potentially compromising the accuracy of daily flow measurements. Ensuring reliable flow data is essential for effective plant monitoring and capacity planning.

8.2 Pumping Stations

Pump Station 2 (as defined in the sanitary system schematic map - Old Hill Road & Highway 7 intersection) will be a critical component in conveying additional sewage flow from the expansion scenarios to the wastewater treatment plant. This station is currently operating at or near its original design capacity. Field inspections revealed indications of frequent overflows, as evidenced by staining at the invert of the overflow pipe within the station.

Based on findings from the I&I study, the station is required to handle a peak flow of 105 USGPM. However, field testing conducted by SEL measured actual peak flows of approximately 129 USGPM. The station, originally designed in 1990 for a capacity of 100 USGPM, is now operating beyond its intended limits.

With the added demand from the Old Road Hill development, the station would need to accommodate flows of approximately 200 USGPM. To manage this increased volume, Pump Station 2 will require additional storage to handle the projected peak flow while maintaining reliable operation. This will equate to an additional concrete wet well be

connected to the existing station providing additional volume. The overall wet well volume should provide 1.25 hours of peak flow in case of emergency.

Pump Station 4 (Historic Village Downtown), which is responsible for transferring all inflows from the collection system to the wastewater treatment plant, was observed during field testing to pump approximately 100 USGPM. Under Scenario 1, the peak inflow to this station is expected to increase to around 300 USGPM. The treatment plant will need to be assessed to determine its capacity to handle this peak load. While a pump station upgrade is likely necessary, SEL recommends a thorough evaluation of station and plant performance before proceeding with the upgrades.

To support ongoing monitoring and system optimization, elapsed time pump hour meters should be installed at both Pump Stations 2 and 4. This would enable accurate daily flow tracking at each station, providing essential data to inform future design and operational decisions. Before each expansion the designer should assess the wet well capacity of each pump station to ensure it has 120 minutes of emergency storage with the additional flows.

8.3 Collection System

The Collection System can deliver the anticipated flows under Scenario 1 (ZZAP Development). The analysis of the network with the additional proposed flows can be seen in Appendix C; C.2

To free up capacity of the plant and avoid the important bacterial cultures from being washed out, I&I upgrades should be continued and monitored for effectiveness. The CBCL I&I report outlined several action items and improvements for I&I reduction, these recommendations should be implemented and confirmed for effectiveness.

I&I upgrades in the short term should be focused on the Old Road Hill leading up to the station to reduce the amount of I&I that is being pumped by the station.

9.0 Water System Capacity Analysis

The Water Treatment Plant

The municipality supplied actual water usage demands, and a database was formed from the data. The database spans three years 2023, 2024 & 2025. The average daily demand for the three years was 82.15 m³, 80.80 m³, 81.10m³. This is well under the plant's capacity to treat water, when comparing this to the several weeks of data we have from the plant an average of 119.7 m³ excluding backwash, for a more direct comparison understanding

seasonal variation, SEL compared the June to October usage data with the plant readings. During the three-year period the average for the quarter was 84.4 m³. From this Analysis SEL believes there is some leakage in the system or un-monitored connections. Looking at the summer period compared to the late May/ Early June readings that were made available at the plant, SEL expects a 25%-30% loss of water through leaks or unmonitored connections.

During the site visit and through review of SAR's water treatment plant assessment it was observed that one of the two filters in the water treatment plant is struggling with flushing and takes more water then the other filter to get flushed. The municipality replaced the filter media in both filters in March of 2024 as recommended by the report. However, this did not rectify the issues with Filter 1. It is in the opinion of the operator that the hydraulic arrangement of the backwash piping for the filter is causing the issue. This should be analyzed by a mechanical consultant familiar with the plumbing of water treatment filters to correct the issues with the filter system.

Storage

Currently the wet well in the plant is the only storage for the village. The 97m³ storage of the wet well is quite small even for the current demand.

Conveyance

The current distribution system consists of a variety of SDR 26 PVC watermains ranging from 50mm – 100mm in size. The water main that would be connected to with the new development was replaced and upgraded from a 75mm main to a 100mm main in 2018. Considering a maximum velocity in the water main of 2.5m/s the Utility could deliver flows far exceeding the plant's capacity around 2000m³ per day. From this we can determine that watermain will not be exceeded for velocity rating. It does not seem likely that the main would need to be upgraded for either scenario.

10.0 Conclusion

Scenario 1

Both the Wastewater Treatment Plant and the Water Treatment Plant, with some upgrades, can service Scenario 1. The key improvements that Strait Engineering Ltd. (SEL) recommends pursuing are inflow and infiltration (I&I) upgrades to the sanitary system and the construction of a reservoir for the water system.

To adequately service Scenario 1, the Wastewater Treatment Plant must either significantly reduce I&I entering the system during precipitation events or increase its treatment capacity. Currently, during dry weather, the plant treats an average of 114 m^3 per day. However, during wet weather, such as in April 2025, the plant experienced average daily flows of 257 m^3 , highlighting the impact of I&I. The current capacity of the wastewater treatment plant is $302 \text{ m}^3/\text{s}$.

For the plant to service the proposed development under Scenario 1, I&I must be reduced to 62 m^3 per day. This represents a required reduction of approximately 45% to ensure the plant remains below its design capacity.

Additionally, Pump Stations 2 and 4 would need to be upgraded to accommodate the increased flows associated with the development. This would require additional wet well storage of 120 minutes of the average daily proposed flows. Based on the projected flows the additional wet well storage would be approximately 11.50 m^3 .

In terms of domestic water servicing for Scenario 1, the projected total demand is 242.9 m^3 per day, comprising the existing demand of 131.9 m^3 plus an additional 111 m^3 from the new development. This combined volume remains within both the treatment plant's capacity and the Nova Scotia Environment (NSE) approval limits. However, this demand is approximately 1.5 times greater than the current Clearwell storage capacity. As a result, the system would be unable to maintain adequate service levels; the Clearwell would not retain sufficient volume, causing the high-lift pumps to cycle frequently and inefficiently. Additionally the Clearwell should not be the only source of storage on a domestic water system, although this is a common arrangement, having a reserve of water is recommended for emergencies and general use. If this is provided in an elevated tower water service can be maintained when the power goes out.

To address this, SEL recommends the construction of a water reservoir sized approximately to match the system's daily demand. This would ensure reliable service for both the new development at Old Road Hill and the existing village. Based on current demand, storage capacity could be increased threefold to approximately 300 m^3 , allowing treated water to be stored and delivered to customers within 72 hours of treatment.

SEL proposes the addition of a 250 m^3 water reservoir, ideally located at a higher elevation. This reservoir would be filled by the treatment plant and serve both the new and existing customers. The plant's wet well storage would then function as backup storage. The existing pressure tanks could likely be decommissioned, as the high-lift pumps would

deliver water directly from the Clearwell to the reservoir. The reservoir would be designed to maintain system pressure within the existing range of 50 to 70 psi.

It is strongly recommended that a hydraulic water model of the Utility's system be developed, along with a detailed design for the proposed water reservoir or water tower, to evaluate performance across the various development scenarios.

Scenario 2

For Scenario 2, where the municipality chooses to service the two private Wilson's development as well as the Old Road Hill Neighborhood, the wastewater treatment plant would have to be significantly upgraded or replaced.

For Scenario 2, the system would be expected to treat and deliver an additional 201 m³ considering the existing treatment rate of 131.9m³, bringing the total to 332.9m³ this would exceed the NSE approval of 300 m³ that the municipality currently has been approved for.

Scenario 3

For Scenario 3, where the municipality chooses to service the two Wilson's cove development and not proceed with the ZZAP, Old Road Hill development, the wastewater treatment plant would be able to service the new developments if a reduction of 48m³ in the existing I&I could be achieved through I&I improvements. This would equate to needing a 20% reduction in the current wet weather flows to ensure the new development didn't cause flows to exceed the wastewater treatment plants capacities.

Like Scenario 1, additional wet well storage would need to be provided on the sanitary pumping stations 4 and 2. The additional storage with the existing wet well volume should equal 2 hours of peak flow as per the 2022 ACWA standard. Based on the projected demands this would equate to 8.1m³ of required additional wet well storage for each station.

The water Treatment plant would be able to service the new demand based on the plant capacity. The storage which is currently undersized for current operations would be difficult to keep at a minimum level with the new demand. A small reservoir would be a good way to provide storage on the system. The reservoir could be placed in the new development proposed by Wilson's cove.

11.0 Alternative Solutions

Understanding that the full servicing of the development scenarios would overload the treatment plants for both the domestic water and wastewater systems, the municipality could consider the following alternatives.

- Downsize the construction of the Old Hill Neighborhood development to reduce anticipated flows. 50-75 housing units as opposed to 150.
- Reduce the amount of the lots that the Wilson developments that would be serviced by the municipality's systems and work with the developer to ensure lots are sized for on site systems.

12.0 Required Upgrades for Scenarios

Based on the analysis of Scenarios SEL recommends the following upgrades, the estimated cost can be found in appendix D; D.2

12.1 Sanitary System

1. Time lapse meters for Pump Stations
2. Pump Station 4 upgrade
3. Pump Station 2 upgrade
4. Continued I&I improvements
5. Sanitary Plant Upgrades – V-Notch Weir replacement, grating, support beams on EQ tank general building repairs, grating securing in plant.

12.2 Water System

1. Continuation of monitoring and replacing leaking laterals
2. Ensuring all connections are monitored
3. Replacement and correction of Filter 1 issues (likely caused due to piping arrangement of filter)
4. Water Reservoir to be constructed and brought online to be fed by the water treatment plant

12.3 Required new infrastructure for development Scenarios

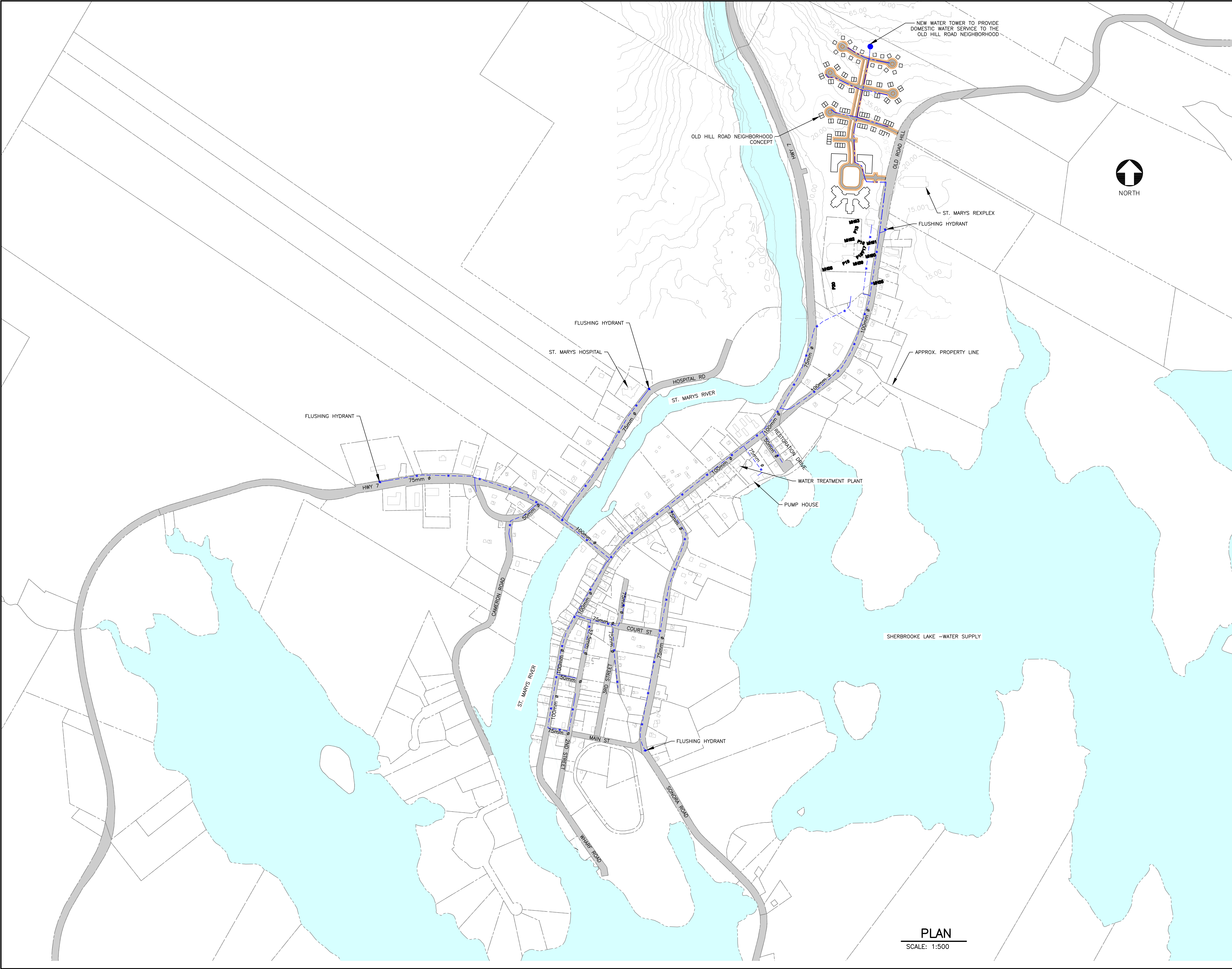
1. New Water Tower in Old Hill Neighborhood Development
2. Additional water distribution system piping and appurtenances
3. Additional Wastewater Gravity Sewer piping and Manholes

A conceptual plan of the anticipated municipal infrastructure and upgrades can be found in Appendix D; D.3.

12.4 Capital Cost Impacts

For the Scenario 1 (ZZAP Concept plan) upgrades and new infrastructure SEL developed a high-level cost analysis for the upgrades, due to the level of uncertainty in this stage of consideration a contingency of 25% was used. A rock removal rate of 15% was used for the water and sanitary mains in the new development was used, this was taken from the EXP Geotechnical report completed on of June. The new infrastructure water upgrades are estimated to cost \$ **2,138,750.00**, the sanitary system upgrades would be less around \$ **1,460,000.00** The conceptual Class “D” cost estimate can be found in Appendix D; D.2

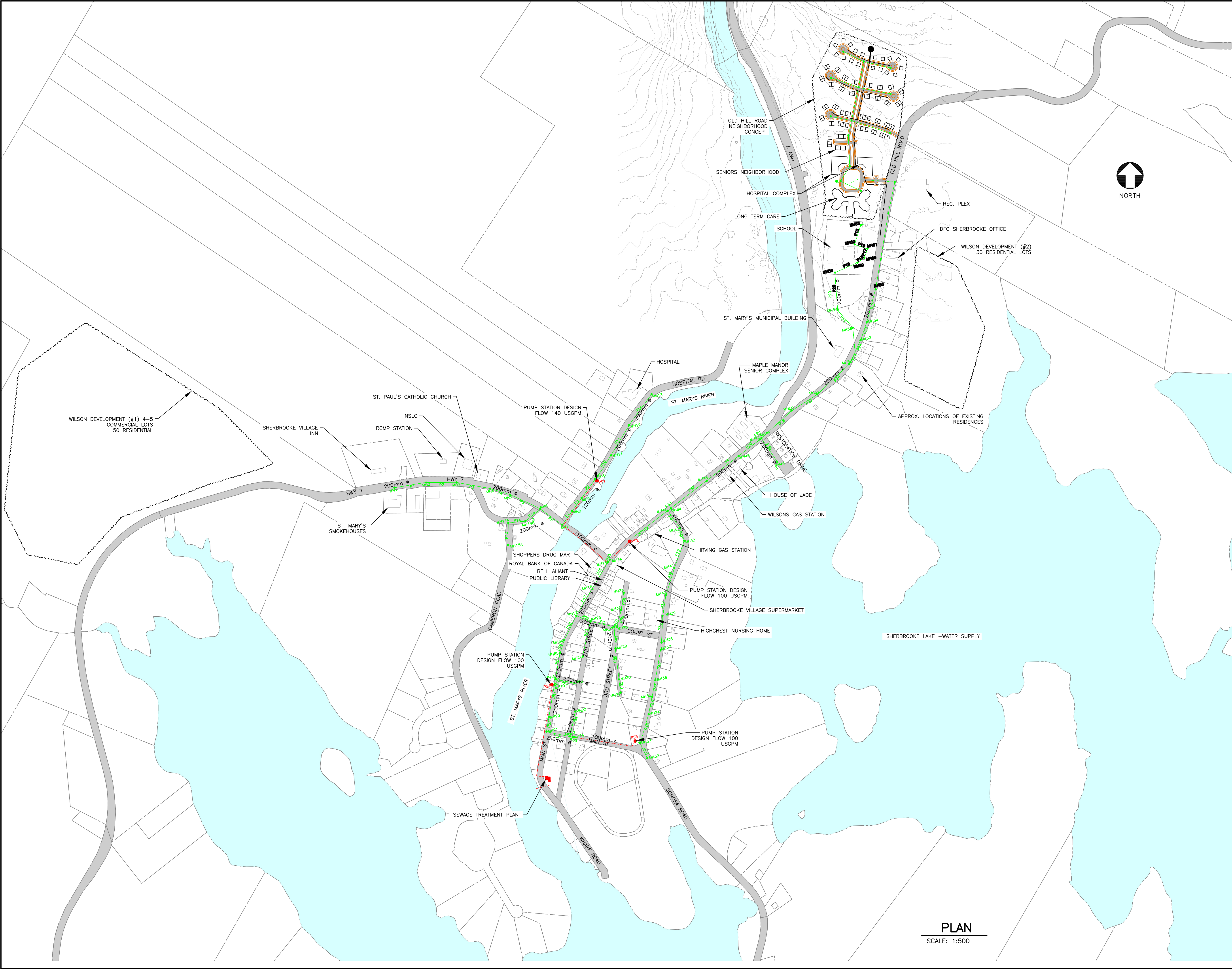
Appendix A



PLAN
SCALE: 1:500

1	yr/mm/dd	ISSUED FOR REPORT		
NO.	DATE	REVISIONS		DWG. CHK.
STRAIT ENGINEERING LIMITED				
PORT HAWKESBURY, NOVA SCOTIA				
CLIENT:				
DISTRICT OF THE MUNICIPALITY OF ST. MARY'S				
PROJECT:				
FEASIBILITY STUDY				
DWG. NP	WATER SCHEMATIC			PROJECT 25-23
CHKD. NP				DRAWING A.1
APP. DGM				
SCALE: AS-SHOWN				
DATE: .				

Autocad Drawing File: XXXXXX / Plot Date: XX-XX-XX



PLAN
SCALE: 1:500

1	25/05/03	ISSUED FOR REVIEW	NP
NO.	DATE	REVISIONS	DWG. CHK.

S

TRAIT

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ENGINEERING

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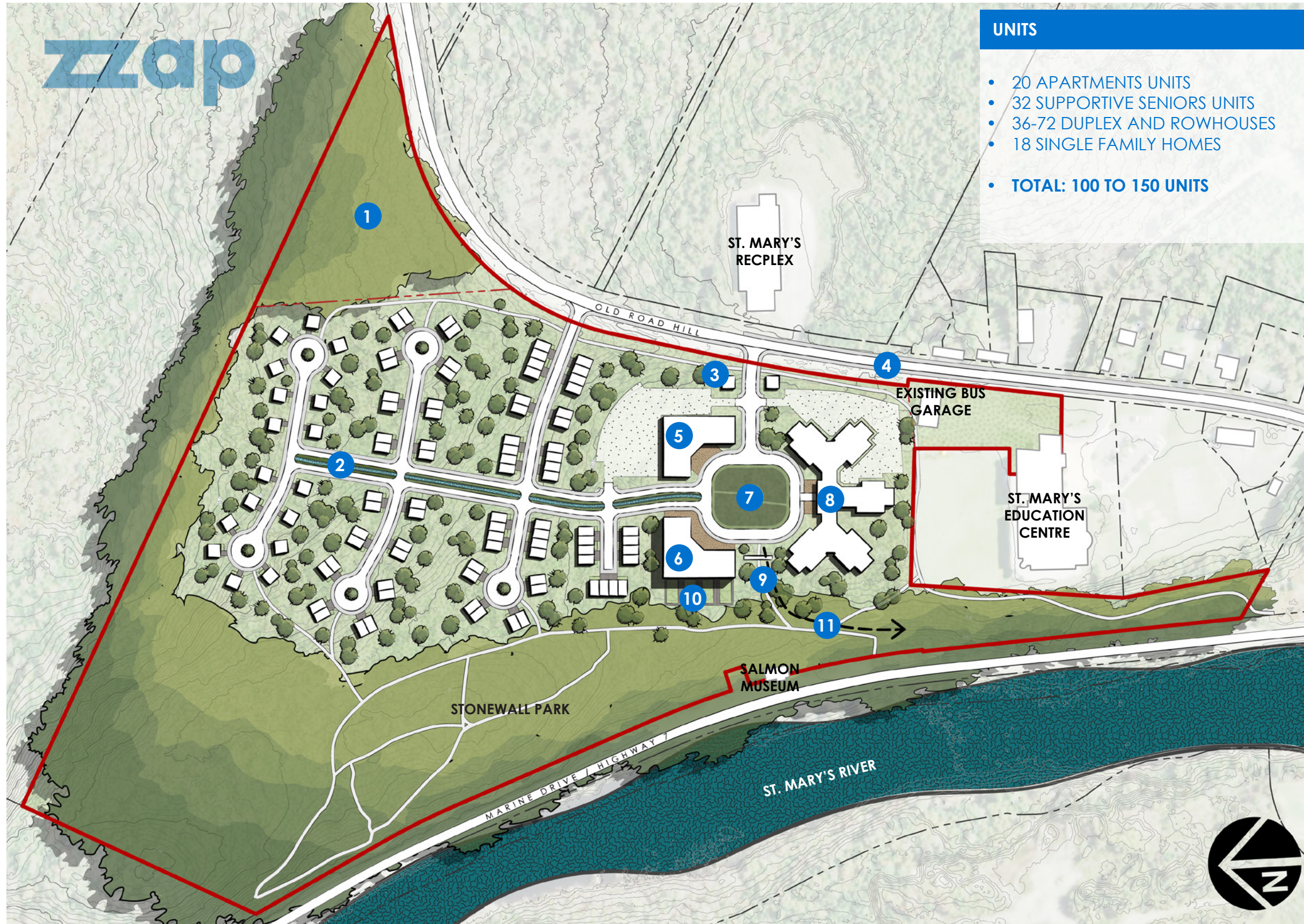
PORT HAWKESSBURY, NOVA SCOTIA

CLIENT:
DISTRICT OF THE MUNICIPALITY OF ST. MARY'S

PROJECT:
FEASIBILITY STUDY

DWG. :	SANITARY SYSTEM SCHEMATIC	PROJECT
CHKD. :		25-23
APP. DGM		DRAWING
SCALE: AS-SHOWN		A.2
DATE: .		

Autocad Drawing File: XXXXXX / Plot Date: XX-XX-XX



LEGEND

- 1 WATERSHED PROTECTION AREA
- 2 CENTRAL BOULEVARD WITH STORMWATER MANAGEMENT AND MULTI-USE PATH
- 3 FLEXIBLE COMMERCIAL BUILDINGS
- 4 MULTI-USE PATH ON OLD ROAD HILL
- 5 HOSPITAL
- 6 APARTMENT WITH GROUND FLOOR COMMUNITY CARE HUB
- 7 INTERGENERATIONAL PARK
- 8 LONG-TERM CARE
- 9 STONEWALL PARK ENTRANCE
- 10 COMMUNITY GARDEN
- 11 EMERGENCY ACCESS

Appendix B

B.1 PUMP STATION TESTING RESULTS



298 Reeves Street, Unit 9, Port Hawkesbury, Nova Scotia B9A 2B4

Tel (902) 625-3631
Fax (902) 625-3634
email: strait@straiteng.com

Pump Station 1 -8.50' - Hospital Road							
Pump Off							
Time	level reading (inchs)	Time Interval	Depth Change	Volumne Change ft ³	Volumne Change ft ³ /min	Average inflow Rate	Average inflow USGPM
0.00	126						
1.00	124	1.00	2.00	2.68	2.68		
2.00	123	1.00	1.00	1.76	1.76		
3.00	123	1.00	0.00	0.71	0.71		
4.50	122	1.50	1.00	1.76	3.52	2.17	16.21
Pump On							
Time	Level Reading (inchs)	Time Interval	Depth Change	Volumne Change ft ³	Volumne Change ft ³ /min	Average Pump Rate ft ³ /s	Average Pump Rate USGPM
0:00	122						
0:20	123	0:20	1	1.76	5.28		
0:53	124	0:33	1	1.76	3.20		
2:58	126	2:05	2	2.81	1.35		
3:44	127	0:46	1	1.76	2.30		
4:00	128	0:16	1	1.76	6.60		
4:30	129	0:30	1	1.76	3.52		
5:42	130	1:12	1	1.76	1.47		
6:45	131	1:03	1	1.76	1.68		
7:30	132	0:45	1	1.76	2.35		
9:06	133	1:36	1	1.76	1.10		
9:51	134	0:45	1	1.76	2.35	2.83	37.41

Pump Station 2 - 11.5'x11.5'							
Pump Off							
Time	Level Reading (inchs)	Time Interval	Depth Change	Volumne Change ft ³	Volumne Change ft ³ /min	Average inflow Rate	Average Pump Rate USGPM
0:00	86.25						
0:30	85.5625	0:30	0.6875	6.93	13.86		
1:00	85.0625	0:30	0.5	5.04	10.08		
2:30	84.9375	1:30	0.125	1.26	0.84		
4:30	84.5	2:00	0.4375	4.41	2.21		
7:10	84.25	2:40	0.25	2.52	0.95		
9:03	82.6875	1:53	1.5625	15.76	8.37	6.05	45.26
Pump On							
Time	Level Reading (inchs)	Time Interval	Depth Change	Volumne Change ft ³	Volumne Change ft ³ /min	Average Pump Rate ft ³ /s	Average Pump Rate USGPM
0:00	82.0625						
0:30	83.09375	0:30	1.03125	8.59	17.19		
1:00	84.375	0:30	1.28125	10.68	21.35		
1:30	85.84375	0:30	1.46875	12.24	24.48		
2:00	86.0526	0:30	0.20885	1.74	3.48		
2:30	86.28125	0:30	0.22865	1.91	3.81		
3:00	86.53125	0:30	0.25	2.08	4.17		
3:30	87.5	0:30	0.96875	8.07	16.15		
4:30	88.875	1:00	1.375	11.46	11.46		
5:00	89.40625	0:30	0.53125	4.43	8.85		
5:30	89.90625	0:30	0.5	4.17	8.33		
6:00	90.625	0:30	0.71875	5.99	11.98		
6:30	90.9375	0:30	0.3125	2.60	5.21		
7:00	91.875	0:30	0.9375	7.81	15.63		
7:30	92.375	0:30	0.5	4.17	8.33		
8:00	93.0625	0:30	0.6875	5.73	11.46		
8:30	93.4375	0:30	0.375	3.13	6.25		
9:00	94.25	0:30	0.8125	6.77	13.54	11.27	129.60

Pump Station 3 - 6' - Sonora Road							
Pump Off							
Time	Level Reading (inchs)	Time Interval	Depth Change	Volumne Change ft ³	Volumne Change ft ³ /min	Average inflow Rate	Average Pump Rate USGPM
0:00	91.25						
0:30	91.25	0:30	0	0	0		
1:00	91.25	0:30	0	0	0		
1:30	91.25	0:30	0	0	0		
2:00	91.25	0:30	0	0	0		
2:30	91.25	0:30	0	0	0		
3:00	91.25	0:30	0	0	0		
3:30	91.25	0:30	0	0	0		
4:00	91.25	0:30	0	0	0		
4:30	91.25	0:30	0	0	0		
5:00	91.25	0:30	0	0	0		
Pump On							
Time	Level Reading (inchs)	Time Interval	Depth Change	Volumne Change ft ³	Volumne Change ft ³ /min	Average Pump Rate ft ³ /s	Average Pump Rate USGPM
0:00	91.25						
0:30	93.4375	0:30	2.1875	1.57	3.15		
1:00	94.25	0:30	0.8125	0.58	1.17		
1:30	95.78125	0:30	1.53125	1.10	2.20		
2:00	96.78125	0:30	1	0.72	1.44		
2:30	98.625	0:30	1.84375	1.33	2.65		
3:00	99.53125	0:30	0.90625	0.65	1.30		
3:30	101.34375	0:30	1.8125	1.30	2.61		
4:00	103.34375	0:30	2	1.44	2.88		
4:30	104.875	0:30	1.53125	1.10	2.20		
5:00	105.78125	0:30	0.90625	0.65	1.30		
5:30	108.96875	0:30	3.1875	2.29	4.59		
6:00	112	0:30	3.03125	2.18	4.36		
6:30	114.25	0:30	2.25	1.62	3.24		
7:00	117.75	0:30	3.5	2.52	5.04		
7:30	120.75	0:30	3	2.16	4.32	2.83	21.18

Pump Station 4- 7' ** very dark in pump house hard to read decimal places							
Pump Off							
Time	Level Reading (inchs)	Time Interval	Depth Change	Volumne Change ft ³	Volumne Change ft ³ /min	Average inflow Rate	Average Pump Rate USGPM
0:00	135.1875						
1:00	134.5	1:00	0.6875	0.58	0.58		
2:00	133.25	1:00	1.25	1.06	1.06		
3:30	133	1:30	0.25	0.21	0.14		
4:30	131	1:00	2	1.70	1.70		
5:30	130.5	1:00	0.5	0.43	0.43		
6:00	130	0:30	0.5	0.43	0.85		
7:00	129.75	1:00	0.25	0.21	0.21		
7:30	129.5	0:30	0.25	0.21	0.43		
8:00	129.125	0:30	0.375	0.32	0.64		
9:00	128	1:00	1.125	0.96	0.96	0.70	5.24
Pump 1 On - leak through check valve							
Time	Level Reading (inchs)	Time Interval	Depth Change	Volumne Change ft ³	Volumne Change ft ³ /min	Average Pump Rate ft ³ /s	Average Pump Rate USGPM
0:00	127						
0:15	130	0:15	3	2.55	10.21		
0:30	133	0:15	3	2.55	10.21	10.21	81.62
Pump 2 On - very noisy							
Time	Level Reading (inchs)	Time Interval	Depth Change	Volumne Change ft ³	Volumne Change ft ³ /min	Average Pump Rate ft ³ /s	Average Pump Rate USGPM
0:00	125						
0:10	127	0:10	2	1.70	10.21		
0:20	132	0:10	5	4.25	25.53		
0:50	135	0:30	3	2.55	5.11		
1:00	137	0:10	2	1.70	10.21	12.76	100.71

B.2 WWTP Daily Readings



298 Reeves Street, Unit 9, Port Hawkesbury, Nova Scotia B9A 2B4

Tel: (902) 625-3631
Fax: (902) 625-3634
email: strait@straiteng.com

Average Daily Flow for Period Recorded (USGPD)	48,070 (182 m3)
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Sewage Treatment Plant Readings		
Date	Daily Flow (USGPD)	Average Flows (USGPD)
21-Jan	52,800	34,061
22-Jan	33,893	
23-Jan	40,196	
24-Jan	34,942	
25-Jan	34,955	
26-Jan	29,931	
27-Jan	27,454	
28-Jan	30,183	
29-Jan	28,738	
30-Jan	37,203	
31-Jan	24,374	
01-Feb	24,374	
02-Feb	21,571	
03-Feb	28,577	
04-Feb	24,331	
05-Feb	25,701	
06-Feb	26,363	
07-Feb	36,418	
08-Feb	33,775	
09-Feb	30,834	
10-Feb	43,021	
11-Feb	24,226	
12-Feb	28,502	
13-Feb	49,245	
14-Feb	26,311	
15-Feb	31,350	
16-Feb	30,868	
17-Feb	47,925	
18-Feb	29,391	
19-Feb	34,426	
20-Feb	28,476	
21-Feb	33,995	
22-Feb	26,444	
23-Feb	24,725	
24-Feb	30,725	

25-Feb	30,708	
26-Feb	40,802	
27-Feb	141,621	
28-Feb	144,953	39,274
01-Mar	90,125	
02-Mar	80,637	
03-Mar	79,642	
04-Mar	46,841	
05-Mar	43,821	
06-Mar	173,773	
07-Mar	75,704	
08-Mar	79,541	
09-Mar	64,359	
10-Mar	50,196	
11-Mar	57,564	
12-Mar	46,761	
13-Mar	47,474	
14-Mar	41,064	
15-Mar	33,707	
16-Mar	36,007	
17-Mar	41,121	
18-Mar	49,853	
19-Mar	52,828	
20-Mar	45,004	
21-Mar	48,930	
22-Mar	46,896	
23-Mar	38,002	
24-Mar	53,087	
25-Mar	70,011	
26-Mar	60,683.50	
27-Mar	60,683.50	
28-Mar	51,829	
29-Mar	57,357	
30-Mar	55,774	59,309
03-Apr	103,395	
04-Apr	102,891	
05-Apr	104,801	
06-Apr	94,420	
07-Apr	109,372	
08-Apr	63,189	
09-Apr	97,441	
10-Apr	78,937	
11-Apr	52,682	
12-Apr	57,762	

13-Apr	54,260	
14-Apr	66,054	
15-Apr	37,991	
16-Apr	50,287	
17-Apr	55,801	
18-Apr	43,942	
19-Apr	45,500	
20-Apr	54,393	
21-Apr	56,115	
22-Apr	42,016	
23-Apr	28,145	
24-Apr	35,318	
25-Apr	31,610	
26-Apr	84,973	
27-Apr	113,976	
28-Apr	110,436	
29-Apr	48,242	
30-Apr	77,905	67,923
01-May	60,080	
02-May	58,453	
03-May	42,161	
04-May	35,667	
05-May	38,589	
06-May	38,006	
07-May	42,966	
08-May	49,130	
09-May	49,130	
10-May	49,760	
11-May	30,550	
12-May	40,473	
13-May	40,629	
14-May	27,023	
15-May	34,348	
16-May	29,235	
17-May	34,650	
18-May	34,947	
19-May	34,016	
20-May	34,003	
21-May	32,558	
22-May	32,993	
23-May	73,089	
24-May	43,348	
25-May	39,143	
26-May	52,570	

27-May	21,417	
28-May	27,343	
29-May	27,393	39,782

B.3 WTP DAILY READINGS



298 Reeves Street, Unit 9, Port Hawkesbury, Nova Scotia B9A 2B4

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Water Treatment Plant Readings			
Date	Dist Total (m3)	Raw Total (m3)	Backwash Total (m3)
20-May	111.1	111.6	0.5
21-May	133.8	138.5	4.7
22-May	119.2	130.9	11.7
23-May	118.5	130.3	11.8
24-May	104.9	109.5	4.6
25-May	107.1	126.4	19.3
26-May	124.9	136.2	11.3
27-May	125.1	189.8	64.7
28-May	139.8	159.5	19.7
29-May	110.4	110.5	0.1
30-May	125.4	127.9	2.5
31-May	135.8	161.2	25.4
01-Jun	126.8	130.4	3.6
02-Jun	108.5	108.5	0.0
03-Jun	129.3	153.1	23.8
04-Jun	125.9	126.3	0.4
05-Jun	106.5	111.2	4.7
06-Jun	106.5	126.7	20.2
07-Jun	114.8	116.8	2.0
Averages			
	119.7	131.9	12.2

Appendix C

C.1 Existing Flows

SEL

STRAIT

ENGINEERING Ltd.

CONSULTING ENGINEERS

298 Reeves Street, Unit 9, Port Hawkesbury, Nova Scotia B9A 2B4

Tel (902) 625-3631

Fax (902) 625-3634

email: strait@straiteng.com

By: Nelson Purcell

Date: June 12-2025

Notes:

1. Mannings Equation used to calculate Flow Rates

2. Inflows collected from CBCL I&I Study and Water Usage Data supplied by Municiaolity

3. I&I coeffiecint of .48 (High I&I factor from Atlantic Canada Wastewater Guideline

4. Harmon formula for Peaking Factor used to calculate peak flows

coeffiecnts :mannings n (PVC)

0.013

I&I coefficient

0.48

Peaking Factor

3.9322

Street	Up MH	Down MH	Pipe ID	Pipe Material	Pipe Size (mm)	Length (m)	Slope	Pipe Area (m2)	Pipe Capacity (m3/s)	Assumed Cumlative I&I (m3/S)	Flow (m3/DAY)	Peak Flow (m3/s)	Capacity %
HWY 7	MH1	MH2	P1	PVC	200	96	0.0075	0.031	0.028	0.0000106667	3.2549	0.0002	0.53%
HWY 7	MH2	MH3	P2	PVC	200	91	0.0075	0.031	0.028	0.0000207778	6.0501	0.0003	0.99%
HWY 7	MH3	MH4	P3	PVC	200	103	0.0288	0.031	0.056	0.0000322222	9.0564	0.0004	0.75%
HWY 7	MH4	MH5	P4	PVC	200	64	0.0454	0.031	0.070	0.0000393333	12.5659	0.0006	0.83%
HWY 7	MH5	MH6	P5	PVC	200	103	0.0423	0.031	0.067	0.0000507778	19.7420	0.0009	1.35%
HWY7	MH6	MH7	P6	PVC	200	78	0.076	0.031	0.090	0.0000787778	26.5484	0.0012	1.36%
CAMERON RD.	MH15A	MH14	P13	PVC	200	67	0.01	0.031	0.033	0.0000074444	1.4321	0.0001	0.20%
BENNETTS LOOP	MH14A	MH14B	P14B	PVC	200	51	0.0082	0.031	0.030	0.0000131111	1.5661	0.0001	0.24%
BENNETTS LOOP	MH14B	MH6	P14	PVC	200	56	0.0317	0.031	0.058	0.0000193333	4.4032	0.0002	0.35%
HOSPITAL RD	MH7	MH8	P7	PVC	200	51	0.0569	0.031	0.078	0.0000056667	31.4412	0.0015	1.86%
HOSPITAL RD	MH8	MH9	P8	PVC	200	47	0.01	0.031	0.033	0.0000108889	32.4856	0.0015	4.59%
HOSPITAL RD	MH9	MH10	P9	PVC	200	69	0.01	0.031	0.033	0.0000185556	50.1032	0.0023	7.07%
HOSPITAL RD	MH13	MH12	P12	PVC	200	115	0.008	0.031	0.029	0.0000313333	6.9850	0.0003	1.10%
HOSPITAL RD	MH12	MH11	P11	PVC	200	105	0.0106	0.031	0.034	0.0000430000	7.5850	0.0004	1.04%
HOSPITAL RD	MH11	MH10	P10	PVC	200	86	0.0108	0.031	0.034	0.0000525556	12.3591	0.0006	1.68%
HOSPITAL RD	MH10	PS1	OUT -1	PVC	200	3	0.005	0.031	0.023	0.0001316667	62.4623	0.0029	
OLD ROAD HILL	MH63	MH62	P15	PVC	200	63	0.005	0.031	0.023	0.0000070000	7.3159	0.0003	1.46%
OLD ROAD HILL	MH62	MH61	P16	PVC	200	40	0.005	0.031	0.023	0.0000114444	7.6999	0.0004	1.54%
OLD ROAD HILL	MH61	MH60	P17	PVC	200	29	0.005	0.031	0.023	0.0000146667	7.9783	0.0004	1.59%
OLD ROAD HILL	MH60	MH59	P18	PVC	200	26	0.005	0.031	0.023	0.0000175556	8.2279	0.0004	1.64%
OLD ROAD HILL	MH59	MH58	P19	PVC	200	73	0.005	0.031	0.023	0.0000256667	8.9287	0.0004	1.78%
OLD ROAD HILL	MH58	MH57	P20	PVC	200	113	0.005	0.031	0.023	0.0000382222	10.0135	0.0005	2.00%
OLD ROAD HILL	MH57	MH56	P21	PVC	200	71	0.005	0.031	0.023	0.0000461111	10.6951	0.0005	2.13%
OLD ROAD HILL	MH56	P24-P25	P25	PVC	200	71	0.005	0.031	0.023	0.0000540000	11.3767	0.0005	2.27%
OLD ROAD HILL	MH55	MH54	P22	PVC	200	102	0.006	0.031	0.025	0.0000113333	0.9792	0.0000	0.18%
OLD ROAD HILL	MH54	MH53	P23	PVC	200	58	0.062	0.031	0.082	0.0000177778	1.5360	0.0001	0.09%
OLD ROAD HILL	MH53	P24-P25	P24	PVC	200	37	0.006	0.031	0.025	0.0000218889	1.8912	0.0001	0.34%
OLD ROAD HILL	P24-P25	MH52	P25	PVC	200	44	0.006	0.031	0.025	0.0000267778	11.3767	0.0005	2.07%
OLD ROAD HILL	MH52	MH51	P26	PVC	200	132	0.005	0.031	0.023	0.0000954444	25.2284	0.0012	5.04%
OLD ROAD HILL	MH51	MH50	P27	PVC	200	92	0.004	0.031	0.021	0.0001056667	39.0800	0.0018	8.72%

HWY 7	MH50	MH48	P28	PVC	200	123	0.005	0.031	0.023	0.0001193333	52.9316	0.0025	10.57%
HWY 7	MH48	MH47	P29	PVC	200	7	0.005	0.031	0.023	0.0001296667	66.7833	0.0031	13.33%
HWY 7	MH47	MH46	P30	PVC	200	81	0.005	0.031	0.023	0.0001386667	80.6349	0.0037	16.10%
HWY 7	MH46	MH45	P31	PVC	200	121	0.005	0.031	0.023	0.0001521111	94.4866	0.0044	18.86%
HWY 7	MH45	MH64	P32	PVC	200	136	0.005	0.031	0.023	0.0001672222	108.3382	0.0050	21.63%
HWY 7	MH64	MH44	P33	PVC	200	12	0.005	0.031	0.023	0.0002153333	122.1899	0.0057	24.39%
HWY 7	MH44	PS2	OUT-2	PVC	200	150	0.005	0.031	0.023	0.0002320000	163.7448	0.0076	32.69%
RESTORATION DR	MH49	MH48	P35	PVC	200	86	0.01	0.031	0.033	0.0000095556	3.4256	0.0002	0.48%
SONORA ROAD	MH38	MH39	P36	PVC	200	81	0.008	0.031	0.029	0.0000090000	11.9665	0.0006	1.89%
SONORA ROAD	MH39	MH40	P37	PVC	200	63	0.005	0.031	0.023	0.0000160000	13.7822	0.0006	2.75%
SONORA ROAD	MH40	MH41	P38	PVC	200	85	0.005	0.031	0.023	0.0000254444	16.4140	0.0008	3.28%
SONORA ROAD	MH41	MH42	P39	PVC	200	87	0.013	0.031	0.037	0.0000351111	20.9253	0.0010	2.59%
SONORA ROAD	MH42	MH43	P40	PVC	200	40	0.008	0.031	0.029	0.0000395556	26.2540	0.0012	4.14%
SONORA ROAD	MH43	MH44	P41	PVC	200	65	0.007	0.031	0.027	0.0000467778	32.2068	0.0015	5.43%
SONORA ROAD	MH 37	MH36	P42	PVC	200	93	0.0132	0.031	0.038	0.0000103333	1.3891	0.0001	0.17%
SONORA ROAD	MH36	MH35	P43	PVC	200	51	0.0132	0.031	0.038	0.0000160000	3.2678	0.0002	0.40%
SONORA ROAD	MH35	MH34	P44	PVC	200	53	0.025	0.031	0.052	0.0000218889	5.6553	0.0003	0.50%
SONORA ROAD	MH34	MH33	P45	PVC	200	91	0.03	0.031	0.057	0.0000320000	8.9164	0.0004	0.73%
SONORA ROAD	MH32	MH33	P36	PVC	200	51	0.01	0.031	0.033	0.0000376667	12.6671	0.0006	1.79%
SONORA ROAD	MH33	PS3	OUT-3	PVC	200	15	0.005	0.031	0.023	0.0000393333	16.5618	0.0008	3.31%
MAIN STREET	MH14	MH15	P45	PVC	250	10	0.004	0.049	0.038	0.0003650556	258.4139	0.0120	31.81%
MAIN STREET	MH15	MH16	P46	PVC	250	93	0.0035	0.049	0.035	0.0003779722	260.8482	0.0121	34.33%
MAIN STREET	MH16	MH17	P47	PVC	250	94	0.0035	0.049	0.035	0.0003910278	263.2826	0.0122	34.65%
MAIN STREET	MH17	MH64	P48	PVC	250	81	0.005	0.049	0.042	0.0004506111	265.7170	0.0123	29.26%
MAIN STREET	MH64	MH65	P49	PVC	250	122	0.005	0.049	0.042	0.0004675556	268.1513	0.0124	29.52%
MAIN STREET	MH65	MH18	P64	PVC	250	79	0.006	0.049	0.046	0.0004785278	270.5857	0.0125	27.20%
MAIN STREET	MH18	MH19	P50	PVC	250	18	0.013	0.049	0.068	0.0004810278	273.0201	0.0126	18.64%
MAIN STREET	MH66	MH18	P65	PVC	200	50	0.005	0.031	0.023	0.0004865833	275.4544	0.0128	54.99%
MAIN STREET	MH19	PS4	OUT-4	PVC	250	4	0.005	0.049	0.042	0.0004871389	277.8888	0.0129	30.60%
2ND STREET	MH23	MH22	P54	PVC	200	77	0.007	0.031	0.027	0.0000085556	0.8725	0.0000	0.15%
MAIN STREET	MH24	MH22	P55	PVC	200	10	0.005	0.031	0.023	0.0000096667	0.9685	0.0000	0.19%
MAIN STREET	MH22	MH21	P53	PVC	200	73	0.005	0.031	0.023	0.0000177778	1.6693	0.0001	0.33%
MAIN STREET	MH21	MH20	P52	PVC	200	45	0.005	0.031	0.023	0.0000227778	2.1013	0.0001	0.42%
MAIN STREET	MH20	MH19	P51	PVC	200	97	0.003	0.031	0.018	0.0000335556	3.0325	0.0001	0.78%
3RD STREET	MH31	MH30	P55	PVC	200	41	0.01	0.031	0.033	0.0000045556	0.7825	0.0000	0.11%
3RD STREET	MH30	MH29	P56	PVC	200	95	0.06	0.031	0.080	0.0000151111	1.6945	0.0001	0.10%
3RD STREET	MH29	MH27	P57	PVC	200	64	0.0552	0.031	0.077	0.0000222222	2.3089	0.0001	0.14%

3RD STREET	MH33	MH32	P59	PVC	200	52	0.05	0.031	0.073	0.0000057778	3.5770	0.0002	0.23%
3RD STREET	MH32	MH28	P58	PVC	200	54	0.144	0.031	0.124	0.0000117778	4.6724	0.0002	0.17%
COURT STREET	MH28	MH27	P60	PVC	200	9	0.008	0.031	0.029	0.0000010000	0.7420	0.0000	0.12%
COURT STREET	MH27	MH25	P61	PVC	200	74	0.008	0.031	0.029	0.0000092222	2.8721	0.0001	0.45%
COURT STREET	MH25	MH17	P62	PVC	200	46	0.008	0.031	0.029	0.0000143333	4.1105	0.0002	0.65%
2ND STREET	MH26	MH25	P63	PVC	200	107	0.007	0.031	0.027	0.0000118889	8.7050	0.0004	1.47%

C.2 Proposed Flows (Scenario 1)

SEL

STRAIT

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298 Reeves Street, Unit 9, Port Hawkesbury, Nova Scotia B9A 2B4

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By: Nelson Purcell

Date: June 12-2025

Notes:

1. Mannings Equation used to calculate Flow Rates
2. Inflows collected from CBCL I&I Study and Water Usage Data supplied by Municiaolity
3. I&I coeffiecint of .48 (High I&I factor from Atlantic Canada Wastewater Guideline
4. Harmon formula for Peaking Factor used to calculate peak flows

coeffiecnts :mannings n (PV

0.013

I&I coeficient

0.48

Peaking Factor

3.9322

Street	Up MH	Down MH	Pipe ID	Pipe Material	Pipe Size (mm)	Length (m)	Slope	Pipe Area (m2)	Pipe Capacity (m3/s)	Assumed Cumlative I&I (m3/S)	Flow (m3/DAY)	Peak Flow (m3/s)	Capacity %
HWY 7	MH1	MH2	P1	PVC	200	96	0.0075	0.031	0.028	0.0000106667	3.2549	0.0002	0.53%
HWY 7	MH2	MH3	P2	PVC	200	91	0.0075	0.031	0.028	0.0000207778	6.0501	0.0003	0.99%
HWY 7	MH3	MH4	P3	PVC	200	103	0.0288	0.031	0.056	0.0000322222	9.0564	0.0004	0.75%
HWY 7	MH4	MH5	P4	PVC	200	64	0.0454	0.031	0.070	0.0000393333	12.5659	0.0006	0.83%
HWY 7	MH5	MH6	P5	PVC	200	103	0.0423	0.031	0.067	0.0000507778	19.7420	0.0009	1.35%
HWY7	MH6	MH7	P6	PVC	200	78	0.076	0.031	0.090	0.0000787778	26.5484	0.0012	1.36%
CAMERON RD.	MH15A	MH14	P13	PVC	200	67	0.01	0.031	0.033	0.0000074444	1.4321	0.0001	0.20%
BENNETTS LOOP	MH14A	MH14B	P14B	PVC	200	51	0.0082	0.031	0.030	0.0000131111	1.5661	0.0001	0.24%
BENNETTS LOOP	MH14B	MH6	P14	PVC	200	56	0.0317	0.031	0.058	0.0000193333	4.4032	0.0002	0.35%
HOSPITAL RD	MH7	MH8	P7	PVC	200	51	0.0569	0.031	0.078	0.0000056667	31.4412	0.0015	1.86%
HOSPITAL RD	MH8	MH9	P8	PVC	200	47	0.01	0.031	0.033	0.0000108889	32.4856	0.0015	4.59%
HOSPITAL RD	MH9	MH10	P9	PVC	200	69	0.01	0.031	0.033	0.0000185556	50.1032	0.0023	7.07%
HOSPITAL RD	MH13	MH12	P12	PVC	200	115	0.008	0.031	0.029	0.0000313333	6.9850	0.0003	1.10%
HOSPITAL RD	MH12	MH11	P11	PVC	200	105	0.0106	0.031	0.034	0.0000430000	7.5850	0.0004	1.04%
HOSPITAL RD	MH11	MH10	P10	PVC	200	86	0.0108	0.031	0.034	0.0000525556	12.3591	0.0006	1.68%
HOSPITAL RD	MH10	PS1	OUT -1	PVC	200	3	0.005	0.031	0.023	0.0001316667	62.4623	0.0029	
OLD ROAD HILL	MH63	MH62	P15	PVC	200	63	0.005	0.031	0.023	0.0000070000	7.3159	0.0003	1.46%
OLD ROAD HILL	MH62	MH61	P16	PVC	200	40	0.005	0.031	0.023	0.0000114444	7.6999	0.0004	1.54%
OLD ROAD HILL	MH61	MH60	P17	PVC	200	29	0.005	0.031	0.023	0.0000146667	7.9783	0.0004	1.59%
OLD ROAD HILL	MH60	MH59	P18	PVC	200	26	0.005	0.031	0.023	0.0000175556	8.2279	0.0004	1.64%
OLD ROAD HILL	MH59	MH58	P19	PVC	200	73	0.005	0.031	0.023	0.0000256667	8.9287	0.0004	1.78%
OLD ROAD HILL	MH58	MH57	P20	PVC	200	113	0.005	0.031	0.023	0.0000382222	10.0135	0.0005	2.00%
OLD ROAD HILL	MH57	MH56	P21	PVC	200	71	0.005	0.031	0.023	0.0000461111	10.6951	0.0005	2.13%
OLD ROAD HILL	MH56	P24-P25	P25	PVC	200	71	0.005	0.031	0.023	0.0000540000	11.3767	0.0005	2.27%
OLD ROAD HILL	MH55	MH54	P22	PVC	200	102	0.006	0.031	0.025	0.0000113333	0.9792	0.0000	0.18%
OLD ROAD HILL	MH54	MH53	P23	PVC	200	58	0.062	0.031	0.082	0.0000177778	1.5360	0.0001	0.09%
OLD ROAD HILL	MH53	P24-P25	P24	PVC	200	37	0.006	0.031	0.025	0.0000218889	1.8912	0.0001	0.34%
OLD ROAD HILL	P24-P25	MH52	P25	PVC	200	44	0.006	0.031	0.025	0.0000267778	129.3767	0.0060	23.58%
OLD ROAD HILL	MH52	MH51	P26	PVC	200	132	0.005	0.031	0.023	0.0000954444	143.2284	0.0066	28.59%

OLD ROAD HILL	MH51	MH50	P27	PVC	200	92	0.004	0.031	0.021	0.0001056667	157.0800	0.0073	35.06%
HWY 7	MH50	MH48	P28	PVC	200	123	0.005	0.031	0.023	0.0001193333	170.9316	0.0079	34.12%
HWY 7	MH48	MH47	P29	PVC	200	7	0.005	0.031	0.023	0.0001296667	184.7833	0.0086	36.89%
HWY 7	MH47	MH46	P30	PVC	200	81	0.005	0.031	0.023	0.0001386667	198.6349	0.0092	39.65%
HWY 7	MH46	MH45	P31	PVC	200	121	0.005	0.031	0.023	0.0001521111	212.4866	0.0098	42.42%
HWY 7	MH45	MH64	P32	PVC	200	136	0.005	0.031	0.023	0.0001672222	226.3382	0.0105	45.18%
HWY 7	MH64	MH44	P33	PVC	200	12	0.005	0.031	0.023	0.0002153333	240.1899	0.0111	47.95%
HWY 7	MH44	PS2	OUT-2	PVC	200	150	0.005	0.031	0.023	0.0002320000	281.7448	0.0130	56.24%
RESTORATION DR	MH49	MH48	P35	PVC	200	86	0.01	0.031	0.033	0.0000095556	3.4256	0.0002	0.48%
SONORA ROAD	MH38	MH39	P36	PVC	200	81	0.008	0.031	0.029	0.0000090000	11.9665	0.0006	1.89%
SONORA ROAD	MH39	MH40	P37	PVC	200	63	0.005	0.031	0.023	0.0000160000	13.7822	0.0006	2.75%
SONORA ROAD	MH40	MH41	P38	PVC	200	85	0.005	0.031	0.023	0.0000254444	16.4140	0.0008	3.28%
SONORA ROAD	MH41	MH42	P39	PVC	200	87	0.013	0.031	0.037	0.0000351111	20.9253	0.0010	2.59%
SONORA ROAD	MH42	MH43	P40	PVC	200	40	0.008	0.031	0.029	0.0000395556	26.2540	0.0012	4.14%
SONORA ROAD	MH43	MH44	P41	PVC	200	65	0.007	0.031	0.027	0.0000467778	32.2068	0.0015	5.43%
SONORA ROAD	MH 37	MH36	P42	PVC	200	93	0.0132	0.031	0.038	0.0000103333	1.3891	0.0001	0.17%
SONORA ROAD	MH36	MH35	P43	PVC	200	51	0.0132	0.031	0.038	0.0000160000	3.2678	0.0002	0.40%
SONORA ROAD	MH35	MH34	P44	PVC	200	53	0.025	0.031	0.052	0.0000218889	5.6553	0.0003	0.50%
SONORA ROAD	MH34	MH33	P45	PVC	200	91	0.03	0.031	0.057	0.0000320000	8.9164	0.0004	0.73%
SONORA ROAD	MH32	MH33	P36	PVC	200	51	0.01	0.031	0.033	0.0000376667	12.6671	0.0006	1.79%
SONORA ROAD	MH33	PS3	OUT-3	PVC	200	15	0.005	0.031	0.023	0.0000393333	16.5618	0.0008	3.31%
MAIN STREET	MH14	MH15	P45	PVC	250	10	0.004	0.049	0.038	0.0003650556	98.5251	0.0046	12.13%
MAIN STREET	MH15	MH16	P46	PVC	250	93	0.0035	0.049	0.035	0.0003779722	135.6955	0.0063	17.86%
MAIN STREET	MH16	MH17	P47	PVC	250	94	0.0035	0.049	0.035	0.0003910278	172.8660	0.0080	22.75%
MAIN STREET	MH17	MH64	P48	PVC	250	81	0.005	0.049	0.042	0.0004506111	210.0365	0.0097	23.12%
MAIN STREET	MH64	MH65	P49	PVC	250	122	0.005	0.049	0.042	0.0004675556	247.2069	0.0114	27.22%
MAIN STREET	MH65	MH18	P64	PVC	250	79	0.006	0.049	0.046	0.0004785278	284.3774	0.0132	28.58%
MAIN STREET	MH18	MH19	P50	PVC	250	18	0.013	0.049	0.068	0.0004810278	321.5479	0.0149	21.96%
MAIN STREET	MH66	MH18	P65	PVC	200	50	0.005	0.031	0.023	0.0004865833	358.7183	0.0166	71.61%
MAIN STREET	MH19	PS4	OUT-4	PVC	250	4	0.005	0.049	0.042	0.0004871389	395.8888	0.0183	43.59%
2ND STREET	MH23	MH22	P54	PVC	200	77	0.007	0.031	0.027	0.0000085556	0.8725	0.0000	0.15%
MAIN STREET	MH24	MH22	P55	PVC	200	10	0.005	0.031	0.023	0.0000096667	0.9685	0.0000	0.19%
MAIN STREET	MH22	MH21	P53	PVC	200	73	0.005	0.031	0.023	0.0000177778	1.6693	0.0001	0.33%
MAIN STREET	MH21	MH20	P52	PVC	200	45	0.005	0.031	0.023	0.0000227778	2.1013	0.0001	0.42%
MAIN STREET	MH20	MH19	P51	PVC	200	97	0.003	0.031	0.018	0.0000335556	3.0325	0.0001	0.78%
3RD STREET	MH31	MH30	P55	PVC	200	41	0.01	0.031	0.033	0.0000045556	0.7825	0.0000	0.11%
3RD STREET	MH30	MH29	P56	PVC	200	95	0.06	0.031	0.080	0.0000151111	1.6945	0.0001	0.10%

3RD STREET	MH29	MH27	P57	PVC	200	64	0.0552	0.031	0.077	0.0000222222	2.3089	0.0001	0.14%
3RD STREET	MH33	MH32	P59	PVC	200	52	0.05	0.031	0.073	0.0000057778	3.5770	0.0002	0.23%
3RD STREET	MH32	MH28	P58	PVC	200	54	0.144	0.031	0.124	0.0000117778	4.6724	0.0002	0.17%
COURT STREET	MH28	MH27	P60	PVC	200	9	0.008	0.031	0.029	0.0000010000	0.7420	0.0000	0.12%
COURT STREET	MH27	MH25	P61	PVC	200	74	0.008	0.031	0.029	0.0000092222	2.8721	0.0001	0.45%
COURT STREET	MH25	MH17	P62	PVC	200	46	0.008	0.031	0.029	0.0000143333	4.1105	0.0002	0.65%
2ND STREET	MH26	MH25	P63	PVC	200	107	0.007	0.031	0.027	0.0000118889	8.7050	0.0004	1.47%

Appendix D

Projected Sanitary Demands for Proposed Development

Unit Type:	Commerical	Detached Dwellings	Hospital Beds	Attached	Nursing Home Beds	m3/ Day	I&I m3
ZZAP Dev	1	18	10	98	35	110.61	20
Wilson Dev 1	5	50	0	0		52.8	9
Wilson Dev 2	0	30	0	0		30.6	5
Total Scenario 1 ZZAP Development (Old Hill Neighbourhood)						111	20
Total Scenario 2 All Developments						194	34
Total Scenario 3 All Private Developments						83	14

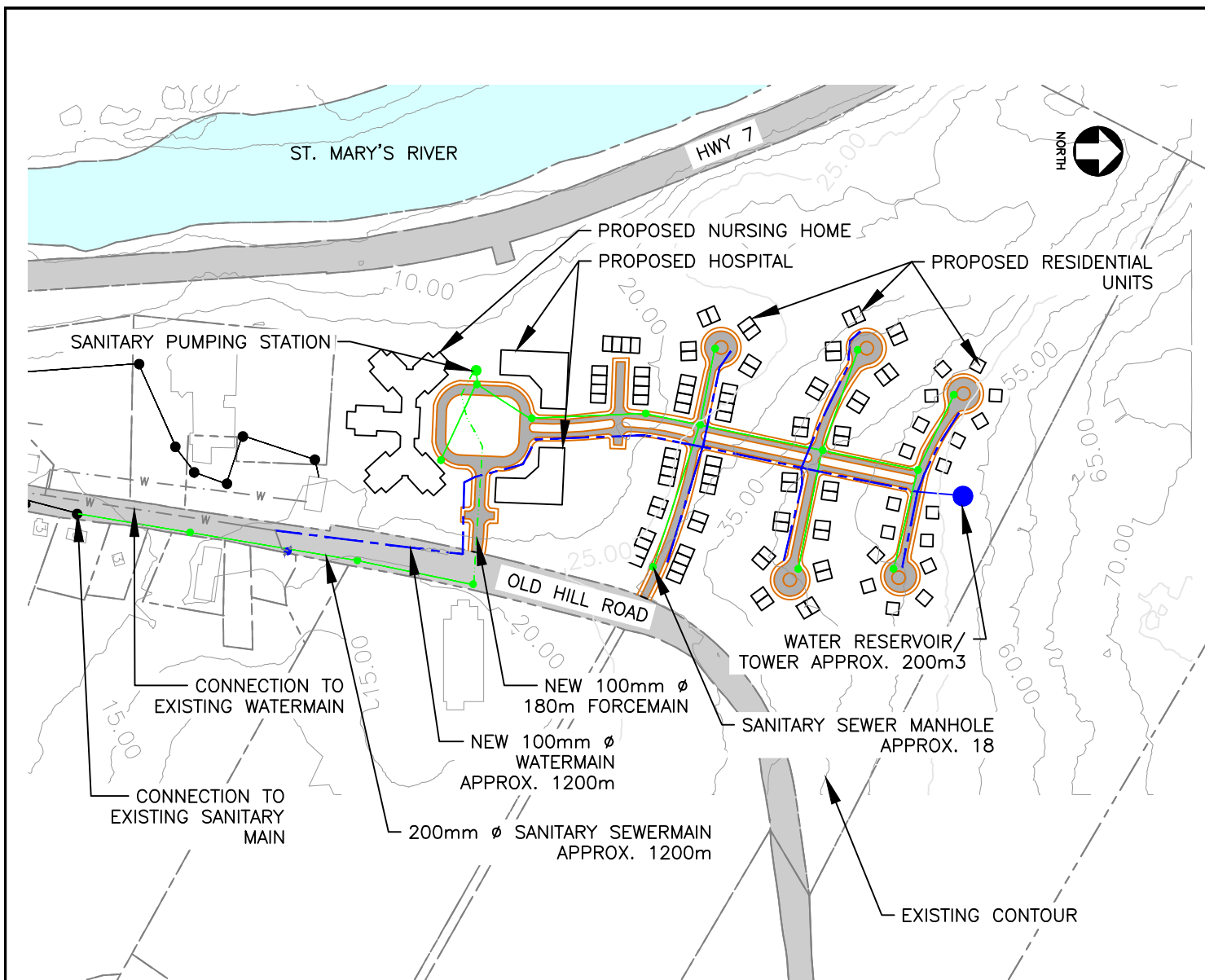
*Projected flow values are taken from Atlantic Canada Wastewater Guidelines 2022

* Resedential Dwelling 340L/Person/Day

* Hospital Bed 950 L/ Day / bed

* Attached Dwelling assumed to have 2 residents

*Detached Dwelling assumed to have 3 residents



CONCEPTUAL SERVICES FOR OLD HILL ROAD DEVELOPMENT

SCALE: 1:5000

NOTE: LOW WATER TOWER LEVEL SHOULD BE
24.5m ABOVE HIGHEST HOUSE ELEVATION TO
MAINTAIN 35PSI

1	25/06/06	ISSUED FOR REPORT	NP	RBL
NO.	DATE	REVISIONS	DWG.	CHK.

SEL STRAIT
ENGINEERING LTD.
CONSULTING ENGINEERS

PORT HAWKESBURY, NOVA SCOTIA

DATE: JUNE 06, 2025

CLIENT:

THE MUNICIPALITY OF ST. MARY'S

PROJECT:

FEASIBILITY STUDY

PROJECT No.:

25-23

DRAWING NO.

SK-1

Appendix E

St. Mary's Water and Sewer System Expansions - Feasibility Study Conceptual Cost Estimate

Date: 2025/07-17

By: Nelson Purcell

Scenario 1 Conceptual Costing

Project Number: 25-23

Sanitary Upgrades				
Item	Quantity	Units	Unit Price	Total
Sanitary Main (15% rock removal)	1200	m	\$ 500	\$ 600,000
1050mm Conc. Manhole	17	Each	\$ 15,000	\$ 255,000
Lateral Connections	53	Each	\$ 2,000	\$ 106,000
Additional Wetwell Storage	2	Each	\$ 40,000	\$ 80,000
Pump Station	1	Each	\$ 80,000	\$ 80,000
Forcemain	120	m	\$ 350	\$ 42,000
Connection to Existing	1	Each	\$ 5,000	\$ 5,000
			Sub-Total	\$ 1,168,000

Water Upgrades				
Item	Quantity	Units	Unit Price	Total
Water Main (15% rock removal)	1200	m	\$ 500	\$ 600,000
Water Reservoir Tower	1	Each	\$ 1,000,000	\$ 1,000,000
Lateral Connections	53	Each	\$ 2,000	\$ 106,000
Connection to Existing	1	Each	\$ 5,000	\$ 5,000
			Sub-Total	\$ 1,711,000

Total	\$ 2,879,000
25% Contingency	\$ 719,750
Total with Contingency	\$ 3,598,750

Appendix F

July 15, 2025

HFX-25009066-A0

Mr. Nelson Purcell, P.Eng.
Strait Engineering Limited
Via email: npurcell@straiteng.com

**Subject: Preliminary Geotechnical Investigation
St. Mary's Municipality Feasibility Study, Old Road Hill, Sherbrook, NS**

1.0 INTRODUCTION

EXP Services Inc. (EXP) was retained by Strait Engineering Limited (SEL) to carry out a preliminary geotechnical investigation for the proposed St. Mary's Municipality Feasibility Study at Old Road Hill in Sherbrook, Nova Scotia. We understand the proposed development will consist of 20 apartment units, 32 supportive senior's units, 36-72 duplexes and rowhouses, 18 single family homes, a long-term care centre, hospital, care hub, and associated utilities and roadways.

This preliminary geotechnical investigation was carried out to determine the subsurface conditions at the site and to provide geotechnical information and recommendations as part of the feasibility study to support design of municipal infrastructure for the development, including water and wastewater and solid waste. Geotechnical recommendations are provided based on available information and our current understanding of the proposed development.

A detailed geotechnical investigation would be required during detailed design once locations of buildings and infrastructure are known and to provide full cover of the site area.

2.0 SITE DESCRIPTION

The subject site is located along Old Road Hill in Sherbrook, Nova Scotia, between Old Road Hill and Highway 7 (Marine Drive). The site is bordered by Old Road Hill to the east, Highway 7 to the west, St. Marys Education Centre to the south, and undeveloped treed areas to the north. Stonewall Park is located within the west portion of the site.

The majority of the proposed development area is undeveloped and tree covered. Remnants of previous development/structures are visible within the eastern portion of the site along Old Road Hill. During the geotechnical investigation, the western portion of the site appeared to consist of thick organics/peat. The excavator was sinking in this area and was unable to conduct test pit excavations safely. Bedrock outcrops were visible within the eastern portion of the site.

3.0 FIELD WORK

The fieldwork for the geotechnical investigation consisted of advancing eight (8) test pits (TP25-01 to TP25-08), with depths extending from 1.2 m to 5.8 m below existing ground surface (BGS). The investigation was carried out using a SANY 135C excavator, supplied, and operated by Wilsons Cove Excavation and Trucking Inc. The investigation took place on July 2, 2025.

EXP was responsible for service clearances to confirm that underground utilities were not present at the test pit locations. Local utilities were contacted to identify the location of services. This is provided as general information only. Third parties should make their own inquiries with local authorities to confirm the presence or absence of utilities on the site.

The proposed locations of the test pits were determined by EXP based on excavator access. The test pits were scattered throughout the proposed site and within the proposed development area where possible. Due to swampy areas and standing water, the western portion of the site was inaccessible.

The test pit investigation was conducted in the presence of EXP geotechnical staff, who logged the subsurface stratigraphy and collected representative soil samples. A preliminary assessment of particle size, density, moisture, and colour was visually assessed and recorded for each soil layer encountered in the field. All test pits were backfilled using the excavated material.

The locations and elevation of the ground surface at the test pit locations were surveyed by EXP staff using GPS in the NAD83 (CSRS 2010.0 V6) MTM coordinate system and Ortho_CGVD2013 vertical reference frame.

The general site arrangement and location of the test pits are shown on Figure 1, attached. Visible bedrock outcrops are also shown on Figure 1.

4.0 SUBSURFACE CONDITIONS

The general stratigraphy encountered on the site included the following:

- Fill
- Organics (Rootmat, Topsoil, or Peat)
- Cobbles and Boulders
- Glacial Till
- Inferred Bedrock

In general, the site is underlain by fill and organics overlying native glacial till and inferred bedrock. A summary of the thickness of the various strata encountered during the investigation is provided below in Table 2. Detailed test pit records and select test pit photos are attached. The laboratory testing summary is attached in Table 1 and the grain size testing results are attached.

It should also be noted that the soil stratigraphy detailed on the test pit records is only valid at the location where the test pits were conducted. Soil stratigraphy can be expected to vary between test pit locations.

Table 2: Summary of Subsurface Stratigraphy

Test Pit ID	Thickness of Organics, Fill, & Cobbles/Boulders (m)	Depth to Glacial Till (m)	Depth to Inferred Bedrock (m)
TP25-01	1.3	1.3	--
TP25-02	1.5	1.5	--
TP25-03	1.0	1.0	--
TP25-04	2.1	2.1	5.0
TP25-05	1.2	1.2	3.3

Test Pit ID	Thickness of Organics, Fill, & Cobbles/Boulders (m)	Depth to Glacial Till (m)	Depth to Inferred Bedrock (m)
TP25-06	0.6	0.6	1.8
TP25-07	0.1	0.1	2.4
TP25-08	0.6	0.6	1.2

4.1 Fill

Fill was encountered below the surficial organics in TP25-01, TP25-03 to TP25-05, and TP25-08. The fill generally consisted of reworked till and ranged in thickness from 0.4 m to 1.9 m. The fill was generally described as reworked soil consisting of silty sand with gravel. Some organics (rootlets), cobbles, and boulders were encountered within the fill. The fill was generally moist and brown in colour.

4.2 Organics

A layer of rootmat was encountered at existing ground surface at six test pit locations (TP25-01, TP25-03 to TP25-08) and ranged in thickness from 0.1 m to 0.3 m. A layer of topsoil was encountered below the rootmat in TP25-06 and was approximately 0.4 m thick.

A 100 mm layer of buried organics (tree roots) was encountered in TP25-01 between the fill and glacial till and is likely the original ground surface.

A 1.2 m thick layer of peat was encountered at ground surface in TP25-02. A moisture content from a sample of the peat was approximately 675.4%.

4.3 Cobbles and Boulders

A layer of cobbles and boulders was encountered in TP25-01 and TP25-02 above the glacial till and was approximately 0.4 m and 0.3 m thick.

4.4 Glacial Till

Native glacial till was encountered below the organics and fill at all test pit locations at depths ranging from 0.1 m to 2.1 m BGS (Elevation 13.1 m to 34.9 m). Under the Unified Soil Classification System (USCS), the glacial till was classified as 'Clayey Sand with Gravel (SC)' and 'Clayey Gravel with Sand (GC)'. Trace to some cobbles and boulders were encountered in the glacial till. The glacial till was generally moist to wet and grey or brown in colour. Moisture contents from samples of glacial till ranged from approximately 8.0% to 12.1%.

4.5 Inferred bedrock

Five of the test pits (TP25-04 to TP25-08) were terminated on inferred bedrock, based on practical excavator refusal. The depth to inferred bedrock ranged from 1.2 m to 5.0 m BGS (Elevation 13.0 m to 32.6 m).

Although bedrock samples could not be retrieved from the test pits for testing, slate bedrock of the Goldenville Formation is anticipated to be underlying the site based on geological mapping and experience in the area. Slate in this area is anticipated to be classified as a "Sulphide Bearing Material". However, testing should be conducted during construction or detailed design to confirm. If required, we recommend that the excavated sulphide bearing bedrock be managed in accordance with NSE's Sulphide Bearing Materials Disposal Regulations.

4.6 Groundwater

Groundwater seepage was encountered during test pit excavation in four of the test pits (TP25-01, TP25-02, TP25-03, and TP25-06) and ranged in depths from 1.0 m to 3.0 m BGS. The groundwater seepage was generally described as moderate and is shown on the attached Test Pit Records. It should be noted that groundwater conditions vary seasonally and in response to recent precipitation events. The test pits conducted during this investigation represent a limited sampling of the site.

5.0 DISCUSSION AND RECOMMENDATIONS

We understand this preliminary geotechnical investigation was carried out as part of the feasibility study to support design of municipal infrastructure for the development, including water and wastewater and solid waste. Based on our preliminary findings we anticipate excavations for municipal infrastructure would encounter organics, existing fill, and glacial till. Some isolated areas of high bedrock is also anticipated.

The key geotechnical considerations for the proposed work are summarized in the following points. Additional commentary and recommendations are provided in subsequent sections.

- Based on the subsurface conditions encountered within the test pits, the development area consists of organics and existing fill over native glacial till.
- All organics should be stripped and removed from within the proposed development areas and all areas should be proof rolled. Any local loose or wet areas that exhibit excessive displacement during proof rolling will require over-excavation and replacement with approved fill to achieve a competent base for compaction of structural fill.
- The burial depths for the municipal infrastructure are expected to vary along the alignments but are not expected to exceed 3.0 m. Given the burial depths required for the proposed infrastructure, the majority of the subgrade is anticipated to consist of glacial till. Some isolated areas of high bedrock should also be anticipated.
- Groundwater seepage was encountered during test pit excavation at depths varying from 1.0 m to 3.0 m BGS. Dewatering will be required during shallow excavations. Typical dewatering methods including gravity drainage from interceptor/diversion trenches or pumping from sumps should be effective in typical shallow excavations.
- A large portion of the proposed development area, along the west side, could not be investigated due to apparent thick organics/peat preventing excavator. Development in this area may require extensive excavation of organics.

5.1 Site Preparation and Excavation Considerations

Based on the findings of our investigation, the site preparations would consist of organics, existing fill, and glacial till removal to design grades, and placement of approved fill for construction as required.

Where encountered, all organics should be stripped and removed from municipal infrastructure areas. After excavation to design subgrade elevations, the exposed surface should be compacted and proof rolled prior to the placement of any backfill or piping. This work should be done in the presence of a qualified geotechnical inspector.

Any local soft or wet areas that exhibit excessive displacement during proof-rolling will require over-excavation and replacement with approved fill to achieve a competent base for pipe works and backfills. The excavations should be advanced to the depths directed by the geotechnical inspector and backfilled in compacted lifts with approved fill to the satisfaction of the geotechnical inspector.

Although not anticipated, the use of coarse rock fill or Clear Stone with a separator fabric may be required in any areas with large quantities of groundwater to effectively replace the over-excavated areas. This type of fill would be helpful in providing a competent base for subsequent backfilling and compaction, where fills may be placed below water and large lift thicknesses are required before compaction can be done above groundwater levels.

Trenches and excavations should be excavated in accordance with the requirements of the Nova Scotia Occupational Health and Safety Division. Excavations in soils extending to a depth greater than 1.2 m should be sloped at a maximum grade of 1 H:1 V. Although not anticipated, deep excavations, or those that encounter sandy soils or groundwater, will require flatter slopes for stability, or the use of trench boxes or an engineered shoring system.

Slopes in bedrock should be stable at 1 H:4 V but should be reviewed at the time of construction. Bedrock anchors or shoring system will be required for the deep bedrock excavations.

Any loose rock debris will require over-excavation to achieve a competent bearing surface. The excavations should be advanced to the depths directed by the geotechnical inspector.

Removal of competent bedrock will require mechanical rock breaking techniques or blasting. It should be noted that specific direction regarding suitable methods of excavation cannot be given. The information provided above is intended as factual, general information only and third parties must make their own judgements on the equipment required to perform the required cut and fill operations.

The slate bedrock at this site is expected to be above guidelines for provincial Sulphide Bearing Materials Disposal Regulations under the Environment Act. If required, the excavated bedrock will require disposal as per regulations at an approved disposal facility.

5.3 Re-Use of Existing Soils

Portions of the existing fill and glacial till could be considered for reuse in landscape areas. Third parties must make their own assessment of the potential re-use of existing site materials for new construction.

5.4 Erosion Prevention and Protection of Work

The soils that will be exposed during construction on this site may be erodible. Temporary erosion prevention measures and sedimentation control features should be included in construction, in accordance with NSDEL's "Erosion and Sedimentation Control Handbook For Construction Sites". Hydro-seeding, the installation of sod or other erosion control measures, should also be constructed on permanent excavated slopes and stripped non-traffic areas to combat soil erosion.

Constructed works should be sealed and sloped to prevent the infiltration of surface water. The grade of the completed ground surface on the site should be sloped such that surface water is diverted to surface water control features.

5.5 Groundwater Control

Typical dewatering methods including gravity drainage from interceptor/diversion trenches or pumping from sumps should be effective in typical shallow excavations. More aggressive dewatering systems may be needed for deep excavations, if required. Groundwater control plans should be developed prior to construction and should include measures to continuously control groundwater during construction. Dewatering plans should be submitted to the Engineer as part of the submittal process prior to construction and reviewed to confirm their adequacy.

The ground surface around excavations should be sloped to divert surface water from flowing into excavations. Any soil softened from exposure to water or freezing should be over-excavated before the placement of any additional backfill or concrete.

It is important to note that groundwater levels vary seasonally, with location across a site, and in response to recent precipitation events and other factors. Further, the requirements for groundwater control will be a function of the approach selected for construction.

5.6 Structural Fill

Where required for development, structural fill should consist of well graded, sand and gravel with less than 10% fines (% passing the 0.080 mm sieve size). The particles comprising the fill should be durable and it should be free of organics, flat or elongated particles and all other deleterious materials. Examples of suitable structural fill for infrastructure backfill, pavement and hardscape areas would be a 'Type 1' or 'Type 2' Gravel meeting Nova Scotia Department of Public Works (NSPW) Standard Specifications.

In wet areas or areas of locally perched groundwater, surge rock or clear stone could be considered for use as structural fill. This can be reviewed during construction.

5.7 Backfill Considerations

All backfill should be placed in lifts, not to exceed 300 mm in thickness, and compacted to the following percentage of the optimum dry density, determined by Standard Proctor test (ASTM D698).

- Subgrade fill - 95%
- Structural fill for pipe bedding, haunch, and cover – 95%
- Structural fill beneath hardscape elements (sidewalks, curb, etc.) – 98%
- Base and Subbase courses beneath asphalt pavement – proof roll and 98%

Where possible, each lift of fill should be tested to confirm compaction prior to placing the next lift of fill. Thicker lifts may be used where it can be shown that adequate compactive effort is being achieved.

5.8 Winter Construction Considerations

Placing frozen fill or engineered fill on frozen subgrade is not recommended. If work is to be undertaken during freezing conditions, care should be taken to heat and/or insulate the fill prior to and after placement to keep it from freezing. Some typical measures include heated box trucks, insulated tarps, or bales of hay. Frozen subgrade soil and/or previously placed fill must be thawed or removed prior to placement of any engineered fill.

Any service trenches should be opened for as short a time as practical and the excavations should be carried out only in lengths which allow the construction operations, including backfilling, to be fully completed in one working day.

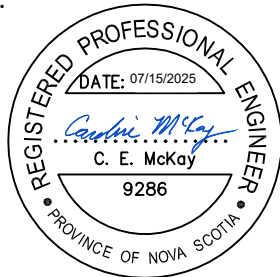
Cast-in-place concrete should be protected during colder weather conditions as per CSA A23.1.

6.0 CLOSING

This letter has been prepared to assist with the proposed St. Mary's Municipality Feasibility Study at Old Road Hill in Sherbrook, Nova Scotia. We trust this information meets your requirements at this time. Please contact us if you have any questions.

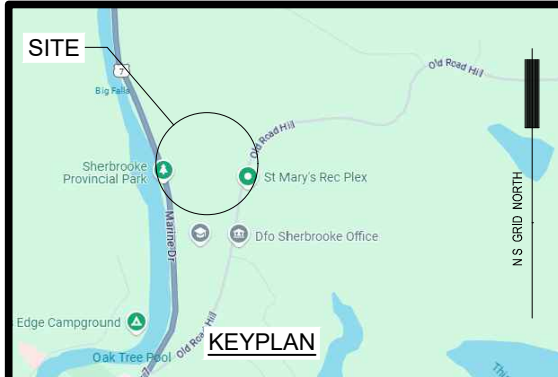
Sincerely,


Caroline McKay, P.Eng.
Geotechnical Engineer
EXP Services Inc.




Jamie Harper, P.Eng.
Geotechnical Engineer
EXP Services Inc.

Attachments



LEGEND

 TEST PIT LOCATION
 TP25-01
 BEDROCK OUTCROP
 CONCRETE PAD

EXP Services Inc. t: +1.902.453.5555 f: +1.902.429.5457 90 Lovett Lake Court, Suite 401 Halifax, NS, B3S 0H6 CANADA www.exp.com  BUILDINGS • EARTH & ENVIRONMENT • ENERGY • INDUSTRIAL • INFRASTRUCTURE • SUSTAINABILITY	Project Title ST. MARY'S MUNICIPALITY FEASABILITY STUDY	Dwg. Title: TEST PIT LOCATION PLAN	<table><tr><td>Drawn By:</td><td colspan="2">BM</td></tr><tr><td>Dwg Standards</td><td colspan="2">Ckd By:</td></tr><tr><td>Designed By:</td><td colspan="2">CM</td></tr><tr><td>Design Checked By:</td><td colspan="2"></td></tr></table> <table><tr><td>Project No.</td><td colspan="2">HFX-25009066-A0</td></tr><tr><td>Dwg. No.</td><td>FIG.1</td><td>Rev. No.</td></tr></table>	Drawn By:	BM		Dwg Standards	Ckd By:		Designed By:	CM		Design Checked By:			Project No.	HFX-25009066-A0		Dwg. No.	FIG.1	Rev. No.
Drawn By:	BM																				
Dwg Standards	Ckd By:																				
Designed By:	CM																				
Design Checked By:																					
Project No.	HFX-25009066-A0																				
Dwg. No.	FIG.1	Rev. No.																			



Table 1- SUMMARY OF LABORATORY TEST RESULTS

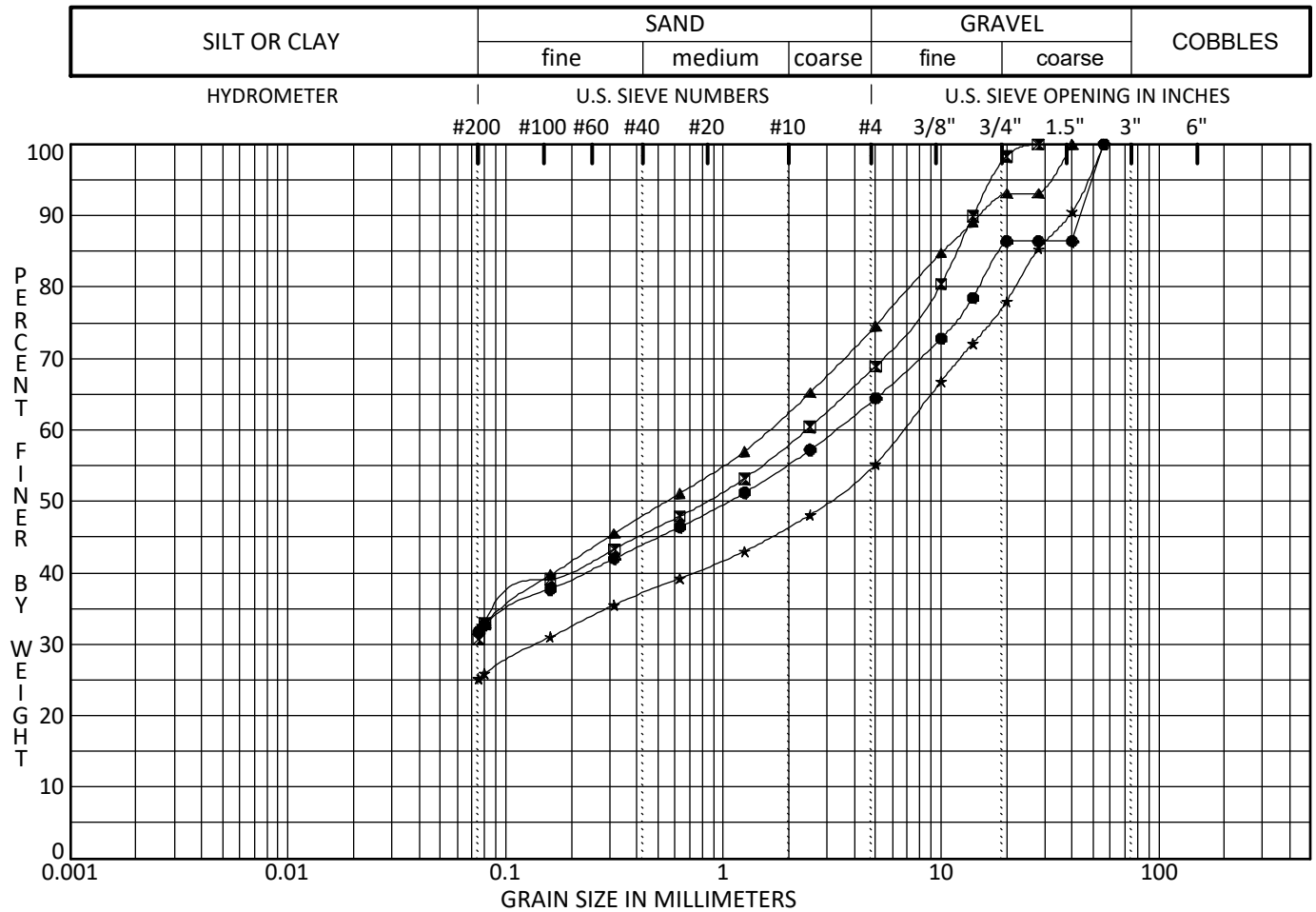
CLIENT Strait Engineering Limited
LOCATION St. Mary's Municipality Feasibility Study, Old Road Hill, NS
PROJECT No. HFX-25009066-A0

TESTING:
Moisture Content: 5
Atterberg Limits: 0
Sieve Analysis: 4
Hydrometer Test: 0
UCS: 0

Soil Deposit	Borehole/Sample	Depth (m)	Water Content (%)	Atterberg Limits			Sieve Analysis			UCS (MPa)
				Liquid Limit	Plastic Limit	Plasticity Index	Gravel (%)	Sand (%)	Fines (%)	
Glacial Till	TP25-01/BK - 1	2.1	12.1				36.1	32.2	31.7	
Glacial Till	TP25-03/BK - 1	3.8	8.0				31.7	37.6	30.7	
Glacial Till	TP25-05/BK - 1	1.8	11.1				26.1	41.8	32.1	
Glacial Till	TP25-07/BK - 1	0.9	7.0				45.3	29.5	25.2	
Peat	TP25-02/BK - 1	0.3	675.4							



GRAIN SIZE DISTRIBUTION



	TEST PIT	SAMPLE	DEPTH(m)	Classification (USCS)	WC%	LL	PL	PI	Cc	Cu
●	TP25-01	BK - 1	2.1	CLAYEY GRAVEL with SAND GC	12.1					
☒	TP25-03	BK - 1	3.8	CLAYEY SAND with GRAVEL SC	8.0					
▲	TP25-05	BK - 1	1.8	CLAYEY SAND with GRAVEL SC	11.1					
★	TP25-07	BK - 1	0.9	CLAYEY GRAVEL with SAND GC	7.0					

	TEST PIT	SAMPLE	DEPTH(m)	D60	D30	D10	%Gravel	%Sand	%Fines	Soil Deposit
●	TP25-01	BK - 1	2.1	3.27			36.1	32.2	31.7	Glacial Till
☒	TP25-03	BK - 1	3.8	2.41			31.7	37.6	30.7	Glacial Till
▲	TP25-05	BK - 1	1.8	1.61			26.1	41.8	32.1	Glacial Till
★	TP25-07	BK - 1	0.9	6.66	0.140		45.3	29.5	25.2	Glacial Till



t: +1.902.453.5555 | f: +1.902.429.5457
 90 Lovett Lake Court, Suite 401
 Halifax, NS B3S 0H6
 CANADA
<http://www.exp.com>

CLIENT Strait Engineering Limited
 LOCATION St. Mary's Municipality Feasibility Study, Old Road Hill, NS
 PROJECT No. HFX-25009066-A0

Descriptive Terms - Borehole and Test Pit Logs

Soils	Grain Size	0.010.11.0101001000 (mm)					
		Clay&Silt Sand Gravel Cobble Boulder					
		0.0750.4252.04.7676.4200 (mm)					
Soils	Compactness (gravel, sand, tills)	N, Range	0 - 4	4 - 10	10 - 30	30 - 50	>50
		Density	V. Loose	Loose	Compact	Dense	V. Dense
Soils	Consistency (silt, clay)	S, KPa	< 12.5	12.5 - 25	25 - 50	50 - 100	100 - 200
		Consistency	V. Soft	Soft	Firm	Stiff	V. Stiff

Rock	RQD	Overall Quality			Fracture Spacing		
		0 - 25			< 50 mm Very Close		
		25 - 50			50 - 300 mm Close		
		50 - 75			0.3 - 1 m Moderate		
		75 - 90			1 - 3 m Wide		
		90 - 100			> 3 m Very Wide		
	Comp. Str., MPa	0.25 - 1	1 - 5	5 - 25	25 - 50	50 - 100	100 - 250
		Extremely Weak	Very Weak	Weak	Medium Strong	Strong	Very Strong
	Description	Extremely Weak	Very Weak	Weak	Medium Strong	Strong	Very Strong
		Extremely Weak	Very Weak	Weak	Medium Strong	Strong	Very Strong

Sample Types (location to scale on log)

SS	Split Spoon	B	Shovel (bulk)
T	Shelby Tube	H	Carved Block
P	Piston	V	In Situ Vane
F	Auger	NR	No Recovery
W	Wash		

Rock Cores: BQ (36.5mm), NQ (47.6mm), HQ (63.5mm)

Notation and Symbols

N	- N-value from standard penetration test; blows by 475 J drop hammer to advance std. 50mm O.D. split spoon sampler 0.3m		
RQD	- percent of core consisting of hard, sound pieces in excess of 100mm long (excluding machine breaks)		
Recovery	- sample recovery expressed as percent or length		
S	- shear strength, kPa	PL	- plastic limit, percent
Sr	- shear strength, remoulded	LL	- liquid limit, percent
Dd	- dry density, t/m ³		- groundwater level
W	- natural moisture content, percent		- seepage

SYMBOLS AND TERMS USED ON THE BOREHOLE AND TEST PIT RECORDS

Soil Description

Behavioral properties (i.e., plasticity, permeability) take precedence over particle gradation in describing soils.

Terminology Describing Soil Structure

Desiccated	Having visible signs of weathering by oxidation of clay minerals, shrinkage cracks, etc.
Fissured	Having cracks and, hence, a blocky structure
Varved	Composed of regular alternating layers of silt and clay
Stratified	Composed of alternating layers of different soil type, e.g., silt and sand or silt and clay
Well Graded	Having wide range in grain size and substantial amounts of all intermediate particle sizes
Uniformly Graded	Predominantly of one grain size

Terminology used for describing soil strata based upon the proportion of individual particle sizes present:

Trace, or occasional	Less than 10%
Some	10–20%
Adjective (e.g., silty or sandy)	20–35%

The standard terminology to describe cohesionless soils includes the relative density, as determined by laboratory test or by the Standard Penetration Test “N”-value: the number of blows of 140 pound (64 kg) hammer falling 30 inches (760 mm), required to drive a 2-inch (50.8 mm) O.D. splitspoon sampler one foot (305 mm) into the soil.

Relative Density	“N” Value	Relative Density %
Very Loose	<4	<15
Loose	4–10	15–35
Compact	10–30	35–65
Dense	30–50	65–85
Very Dense	50	>85

The standard terminology to describe cohesive soils includes the consistency, which is based on undrained shear strength as measured by in-situ vane tests, penetrometer tests, unconfined compression tests, or occasionally by standard penetration tests.

Undrained Shear Strength

Consistency	kips/sq. ft.	kPa	“N” Value
Very Soft	<0.25	<12.5	<2
Soft	0.25–.50	12.5–25	2–4
Firm	0.5–1.0	25–50	4–8
Stiff	1.0–2.0	50–100	8–15
Very Stiff	2.0–4.0	100–200	15–30
Hard	>4.0	>200	>30



TEST PIT RECORD

CLIENT Strait Engineering Limited

PROJECT No. HFX-25009066-A0

LOCATION St. Mary's Municipality Feasibility Study, Old Road Hill, NS

TEST PIT No. TP25-01

DATES DUG Jul 2, 2025 WATER LEVEL

DATUM CVGD2013

DEPTH (m)	ELEV. (m)	DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES			Undrained Shear Strength, kPa										
					TYPE	NUMBER	OTHER TESTS	20	40	60	80	Water Content & Atterberg Limits						
0	17.2																	
	17.0	ROOTMAT - grass at surface																
		FILL Silty Sand with Gravel, some cobbles, some organics (rootlets), moist, brown.																
	16.4																	
	16.3	ORGANICS - trees roots																
1		COBBLES AND BOULDERS																
	15.9	GLACIAL TILL Clayey Gravel with Sand, trace cobbles, moist to wet, grey to light brown.																
2					BK	1	WC SVE											
3																		
4																		
5																		
6																		
	11.4	End of Test Pit at 5.8 m Depth - moderate groundwater seepage at 1.0 m depth																
7																		



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TEST PIT RECORD

CLIENT Strait Engineering Limited

PROJECT No. HFX-25009066-A0

LOCATION St. Mary's Municipality Feasibility Study, Old Road Hill, NS

TEST PIT No. TP25-02

DATES DUG Jul 2, 2025 WATER LEVEL

DATUM CVGD2013

DEPTH (m)	ELEV. (m)	DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES			Undrained Shear Strength, kPa									
					TYPE	NUMBER	OTHER TESTS	20	40	60	80	Water Content & Atterberg Limits					
0	16.4	PEAT			BK	1	WC										
1	15.2	COBBLES AND BOULDERS															
2	14.9	GLACIAL TILL Sandy Clay with Gravel, moist to wet, grey.															
3	13.1	End of Test Pit at 3.3 m Depth - moderate groundwater seepage at 1.2 m depth			BK	2											
4																	
5																	
6																	
7																	



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TEST PIT RECORD

CLIENT Strait Engineering Limited

PROJECT No. HFX-25009066-A0

LOCATION St. Mary's Municipality Feasibility Study, Old Road Hill, NS

TEST PIT No. TP25-03

DATES DUG Jul 2, 2025 WATER LEVEL

DATUM CVGD2013

DEPTH (m)	ELEV. (m)	DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES			Undrained Shear Strength, kPa									
					TYPE	NUMBER	OTHER TESTS	20	40	60	80	Water Content & Atterberg Limits					
0	18.2	ROOTMAT						10	20	30	40	50	60	70	80	90	
	17.9	FILL Silty Sand with Gravel, some organics (rootlets), moist, brown.															
1	17.2	GLACIAL TILL Clayey Sand with Gravel, some cobbles and boulders, moist to wet, grey.															
2																	
3																	
4					BK	1	WC SVE										
5																	
	12.8	End of Test Pit at 5.4 m Depth - moderate groundwater seepage at 3.0 m depth															
6																	
7																	



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TEST PIT RECORD

CLIENT Strait Engineering Limited

PROJECT No. HFX-25009066-A0

LOCATION St. Mary's Municipality Feasibility Study, Old Road Hill, NS

TEST PIT No. TP25-04

DATES DUG Jul 2, 2025

WATER LEVEL

DATUM CVGD2013

DEPTH (m)	ELEV. (m)	DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES			Undrained Shear Strength, kPa									
					TYPE	NUMBER	OTHER TESTS	20	40	60	80	Water Content & Atterberg Limits					
0	18.0																
	17.8	ROOTMAT															
		FILL Clayey Sand with Gravel (reworked till), some cobbles and boulders, some organics (rootlets), dry to moist, light brown.															
1																	
2	15.9																
		GLACIAL TILL Clayey Sand with Gravel, some cobbles, moist, grey.															
3																	
4																	
5	13.0																
		End of Test Pit at 5.0 m Depth - Refusal on Inferred Bedrock - groundwater seepage not encountered															
6																	
7																	

EXP GEOTECHNICAL-ENVIRONMENTAL LOG Rev: 6/27/19 ST. MARY'S TEST PITS.GPJ DATA ENTRY GDT 7/14/25 Printed by: McKayC



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TEST PIT RECORD

CLIENT Strait Engineering Limited

PROJECT No. HFX-25009066-A0

LOCATION St. Mary's Municipality Feasibility Study, Old Road Hill, NS

TEST PIT No. TP25-05

DATES DUG Jul 2, 2025 WATER LEVEL _____

DATUM CVGD2013

DEPTH (m)	ELEV. (m)	DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES			Undrained Shear Strength, kPa																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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TEST PIT RECORD

CLIENT Strait Engineering Limited

PROJECT No. HFX-25009066-A0

LOCATION St. Mary's Municipality Feasibility Study, Old Road Hill, NS

TEST PIT No. TP25-06

DATES DUG Jul 2, 2025 WATER LEVEL

DATUM CVGD2013

DEPTH (m)	ELEV. (m)	DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES			Undrained Shear Strength, kPa									
					TYPE	NUMBER	OTHER TESTS	20	40	60	80	Water Content & Atterberg Limits					
0	21.5							10	20	30	40	50	60	70	80	90	
	21.3	ROOTMAT															
		TOPSOIL															
	20.9	Clayey Sand with Gravel, some cobbles, trace organics (rootlets), moist, brown.			BK	1											
1		GLACIAL TILL															
		Clayey Sand with Gravel, some cobbles and boulders, moist to wet, grey.															
	19.7																
2		End of Test Pit at 1.8 m Depth - Refusal on Inferred Bedrock - minor groundwater seepage encountered at 1.7 m depth															
3																	
4																	
5																	
6																	
7																	



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TEST PIT RECORD

CLIENT Strait Engineering Limited

PROJECT No. HFX-25009066-A0

LOCATION St. Mary's Municipality Feasibility Study, Old Road Hill, NS

TEST PIT No. TP25-07

DATES DUG Jul 2, 2025 WATER LEVEL

DATUM CVGD2013

DEPTH (m)	ELEV. (m)	DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES			Undrained Shear Strength, kPa									
					TYPE	NUMBER	OTHER TESTS	20	40	60	80	Water Content & Atterberg Limits					
0	35.0 34.9	ROOTMAT GLACIAL TILL Clayey Gravel with Sand, some cobbles and boulders, moist, brown to grey.															
1					BK	1	WC SVE										
2																	
2.4	32.6	End of Test Pit at 2.4 m Depth - Refusal on Inferred Bedrock - groundwater seepage not encountered															
3																	
4																	
5																	
6																	
7																	



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TEST PIT RECORD

CLIENT Strait Engineering Limited

PROJECT No. HFX-25009066-A0

LOCATION St. Mary's Municipality Feasibility Study, Old Road Hill, NS

TEST PIT No. TP25-08

DATES DUG Jul 2, 2025 WATER LEVEL

DATUM CVGD2013

DEPTH (m)	ELEV. (m)	DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES			Undrained Shear Strength, kPa									
					TYPE	NUMBER	OTHER TESTS	20	40	60	80	Water Content & Atterberg Limits					
0	31.7							10	20	30	40	50	60	70	80	90	
	31.5	ROOTMAT															
		FILL			BK	1											
	31.1	Clayey Sand with Gravel (reworked till), some organics (rootlets), moist, brown.															
1		GLACIAL TILL															
	30.5	Clayey Sand with Gravel, some cobbles, moist, grey.															
		End of Test Pit at 1.2 m Depth - Refusal on Inferred Bedrock - groundwater seepage not encountered															
2																	
3																	
4																	
5																	
6																	
7																	



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Photo 1: Test pit TP25-01.



Photo 2: Test pit TP25-02.



EXP Services Inc.
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T: 902.453.5555 F: 902.429.5457

PROJECT TITLE AND LOCATION

St. Mary's Municipality Feasibility Study,
Old Road Hill, Sherbrook, NS

PROJECT NO.:

HFX-25009066-A0

DATE:

July 2025



Photo 3: Test pit TP25-04.



Photo 4 Test pit TP25-06.

 EXP Services Inc. 90 Lovett Lake Court, Suite 401 Halifax, NS B3S 0H6 T: 902.453.5555 F: 902.429.5457	PROJECT TITLE AND LOCATION St. Mary's Municipality Feasibility Study, Old Road Hill, Sherbrook, NS	PROJECT NO.: HFX-25009066-A0
		DATE: July 2025

Priority Improvements from Water & Wastewater Study

SUMMARY

Strait Engineering was awarded the tender to complete a feasibility study on the Water and Wastewater systems within the village of Sherbrooke.

BACKGROUND

Strait Engineering has completed the feasibility study on the capability of the Water and Wastewater systems/utilities to promote and support housing efforts within the community of Sherbrooke serviced by the Municipal Water and Wastewater utilities.

Below is the list of priority improvements recommended by Strait Engineering.

Water Utility

1. Continuation of monitoring and replacing leaking laterals (purchase of leak detection equipment)
2. Water reservoir (water tower) to be constructed and brought online to be fed the Water Utility
3. Ensuring all connections are monitored – efficient operation of water meters
4. Replacement and correction of filter #1 backwash piping

Wastewater Utility (Sewer)

1. Time lapse meters for Pump Stations
2. Pump Station 4 (Village Lift Station) complete upgrade
3. Pump Station 2 (Main Street) complete upgrade
4. Continued Inflow and Infiltration improvements and continue monitoring for non approved connections discharging to the sewer utility
5. Sanitary Plant Upgrades- V-Notch Weir Replacement, grating, support beams on EQ tank, general building repairs, grating securing in plant.

CONSIDERATIONS

Staff have identified the continuation of monitoring and replacing leaking laterals an achievable first step to completing the priority improvements as presented by Strait Engineering. To aid in detection of leaking laterals staff have obtained a quote from Cameron Instruments of \$13,513.48 plus HST to purchase a new leak detection device. Funds for this priority improvement can be expensed from the Housing Accelerator Fund budget.

Staff Report



Staff are currently researching additional grant opportunities to aid in the completion of additional priority improvements. Based on the report the next recommended improvement would be to increase treated water storage capacity by constructing a water reservoir tower. Staff would like to proceed and obtain engineer design quotes for this project, the engineer design would be funded through the housing accelerator fund budget.

RECOMMENDATIONS

Recommend that Municipal Council approve the quote from Cameron Instruments Inc. for the purchase of the Sewerin Aquaphon A200 Pro Canada Kit at a cost of \$13,513.48 plus HST funded through the Housing Accelerator Fund budget.

Sewer Plant Cross Support Replacement Capital Project

SUMMARY

It was identified by Public Works staff that the cross supports of the equalization tank at the Sewer Treatment Plant requires replacement.

BACKGROUND

Public Works staff routinely monitor and operate all equipment within the Wastewater Treatment and Collection System.

During recent inspections, Public Works has discovered that the cross supports in the equalization tanks have deteriorated and need to be replaced. The equalization tank is the first to receive the wastewater at the wastewater treatment plant. If this was to fail completely, there would be no flow through the wastewater treatment facility.

CONSIDERATIONS

Public Works staff have tendered the replacement of the cross supports with the assistance of Strait Engineering Ltd who provided engineered drawings for this project. Public Works has received two bids for this work to be completed which includes the full scope of work and deliverables as set out in the request for quotations. Divcon Diversified Construction Inc submitted a bid for \$48,880+HST. MacGregors Industrial Group submitted a bid for \$127,994 +HST.

This project is part of the 2025-2026 Capital Budget and will be funded through federal grants (Canada Community Building Fund). At the current quote the project is within budget.

RECOMMENDATIONS

Recommend that Municipal Council approve Divcon Diversified Construction to complete the replacement of cross supports of the equalization tank at the Sewer Treatment Plant as specified in their quote at a cost of \$48,880 plus HST funded through the capital grants.