Class Environmental Assessment for Expansion of the Bayfield STP

WELCOME

Public Information Meeting

October 31, 2015

Municipality of Bluewater

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MEETING AGENDA

- 10:00 AM – 10:30 AM - OPEN HOUSE
- 10:30 AM – 11:15 AM – PRESENTATION
- 11:15 AM – 12:00 PM – QUESTIONS
- 12:00 PM Onward – OPEN HOUSE

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Presentation

1. The Existing Sewage System
2. The Problem
3. The Class EA Process
4. Possible Solutions
5. Work to Date
6. Next Steps

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THE EXISTING BAYFIELD SEWAGE SYSTEM

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Service Area Details

- **Facilities were constructed in 1999/2000**
  - Constructed to Service the former Village of Bayfield.
  - Planned for existing (1999) development + 300 vacant lots.
  - Harbour Lights and Paul Bunyan were in the original service area.
- **Additions to Original Service Area**
  - Post-Amalgamation Capacity Granted to a number of Trailer Parks and Subdivision Development.

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General Details of System

- There are currently about 880 customers.
- Growing at approximately 20 per year.

- 22 km of Main Sewer
- 272 Maintenance Holes
- 4 sewage pumping stations
- 12 km of pressure forcemain

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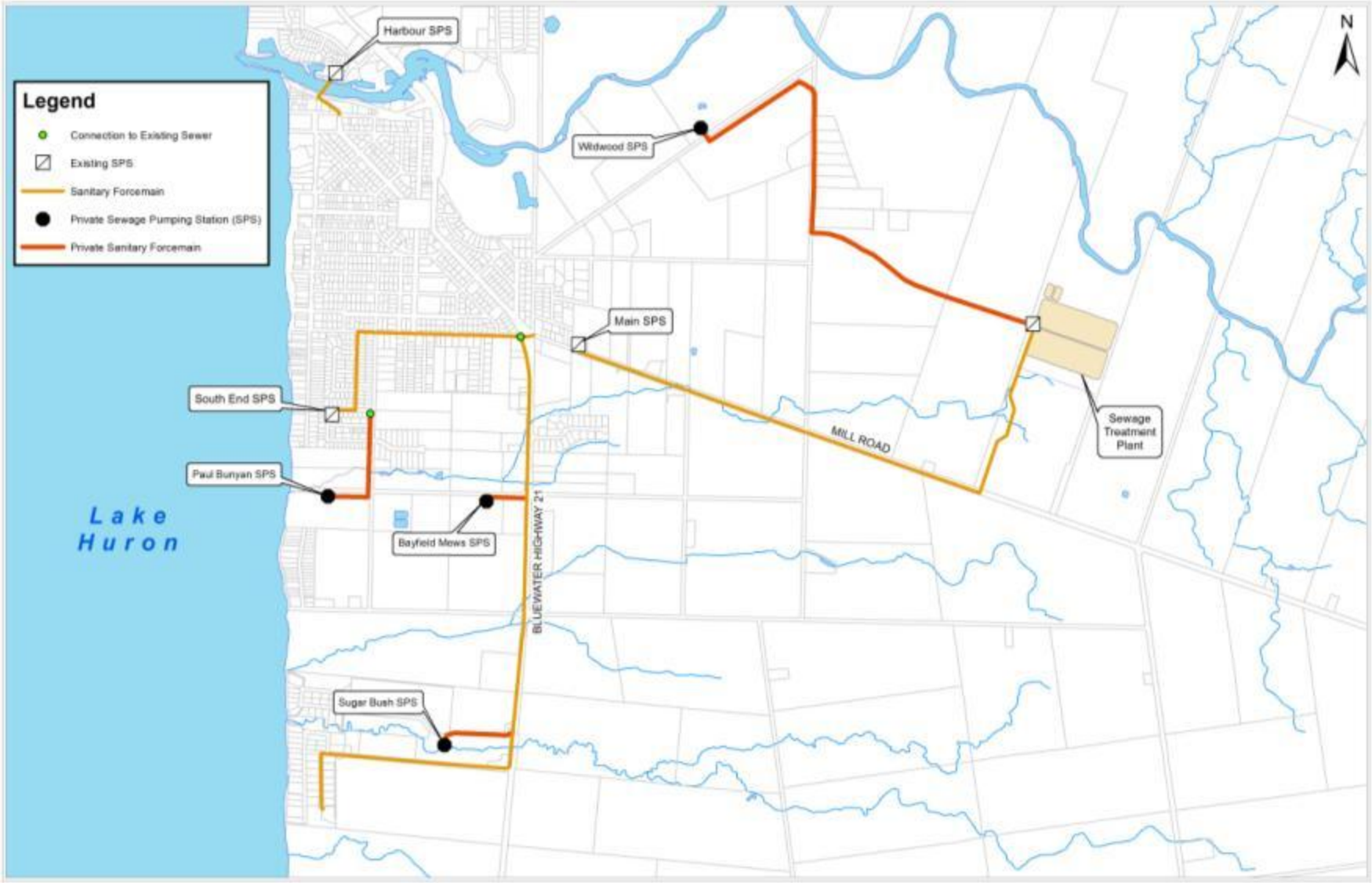
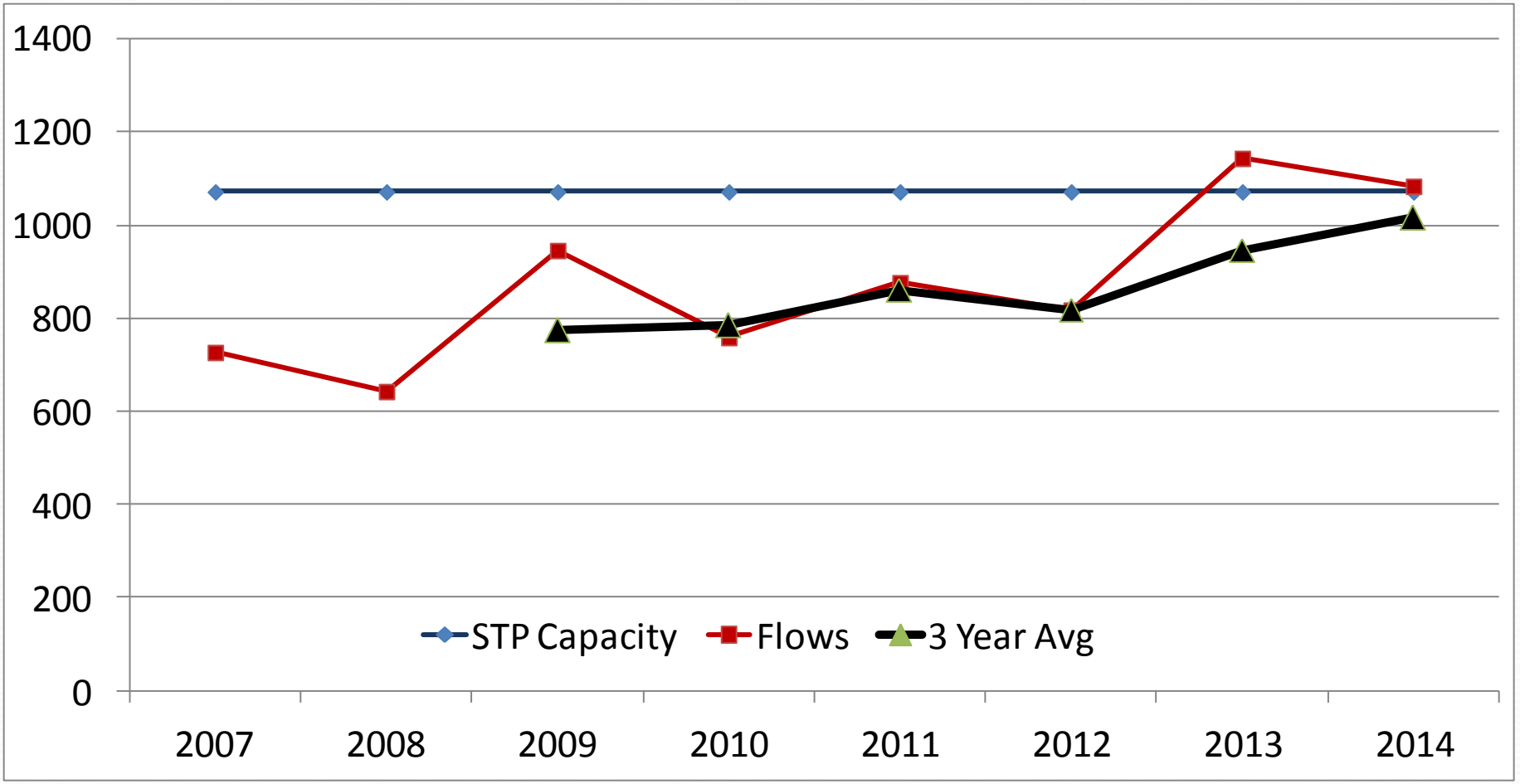
The Major Facilities

Additional Sewage Infrastructure



Bayfield Sewage Treatment Facility

Annual Sewage Flows (m3/day)



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Effluent Quality Summary

			Year		
Parameter	**Objective Criteria**	**Unit**	**2012**	**2013**	**2014**
BOD_5	5.0	mg/L	2.7	2.1	3.6
TSS	5.0	mg/L	2.3	2.5	4
TP	0.3	mg/L	0.05	0.08	0.1
TAN	1.0	mg/L	0.55	0.12	0.86

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PROBLEM/OPPORTUNITY IDENTIFICATION

- Existing STP is operating near capacity.
- Facility currently over-committed.
- Possible infiltration issues within collection system.
- Central Huron is interested in sewage capacity.
- At the current rate of growth (± 20 units/year), facility will need to be expanded within next 3-5 years.

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CLASS EA PROCESS

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Problem/Opportunity Statement

The Bayfield Wastewater Treatment Plant is operating near its approved hydraulic design capacity. Existing servicing commitments to future developments within the community will produce flows that will result in an exceedance of the approved capacity. Additional treatment capacity is required to address the current deficiency, and ensure the Plant continues to produce high quality effluent and to allow for continued growth and development within Bayfield and the surrounding areas.

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Municipal Class Environmental Assessment (Class EA)

- Planning and Design Process for Municipal Water, Wastewater and Road Projects
- Conducted to Evaluate the Potential Impacts of Municipal Projects and Impact Mitigation
- Involves Consultation with the Public, Regulatory Agencies, First Nations, Adjacent Property Owners
- Requires Consideration of Natural, Social, Cultural, Economic and Built Environments

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CLASS EA STUDY PHASES

PROBLEM/OPPORTUNITY DEFINITION

IDENTIFICATION OF ALTERNATIVES

CONSULTATION WITH PUBLIC AND REVIEW AGENCIES

EVALUATION OF ALTERNATIVES

SELECTION OF PREFERRED ALTERNATIVE

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Possible Solutions

1) Reduce Sewage Flows within the Community
2) Limit Community Growth
3) Expand the Existing Treatment Facility
4) Construct a new Sewage Treatment Facility
5) Do Nothing

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WORK COMPLETED TO DATE

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Study Effort to Date

- Pre-consultation with MOECC.
- Aquatic studies of Bayfield River.
- Detailed review of existing sewage flows.
- Preliminary long-list and short list for expansion alternatives.
- On-going discussions with Central Huron regarding service.

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Evaluation of Alternatives

1) Reduce Sewage Flows within the Community
   - Flow Reductions are possible but not likely sufficient to address growth and commitments.
2) Limit Community Growth
   - Negative impact on Community and difficult given current commitments and growth pressure.
3) Expand the Existing Treatment Facility
   - Possible, however there are limited expansion options given that sand filters cannot operate in the winter and space issues.

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Evaluation of Alternatives

4) Construct a new Sewage Treatment Facility

- Possible, however utilizing portions of the existing facilities (Lagoons) would be preferred.

5) Do Nothing

- This alternative would only be implemented if other solutions were economically or technically impractical to implement.

➢ **Preliminary Recommendation: Explore Alternatives 1, 3 & 4 in more detail.**

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Preliminary Growth Projections

Year	Households*	Population
2015	850	2135
2020	950	2330
2025	1050	2520
2030	1150	2715
2035	1250	2910
2040	1350	3120
Total Growth	+ 500 (59%)	+ 985 (46%)

***Average Growth Rate of 20 Units/Year**

Other Considerations

- Central Huron Involvement
- Seasonal Nature of Flows

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BAYFIELD RIVER WATER QUALITY STUDIES

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Benthic Analysis

- COMPLETED IN SPRING OF 2010
- ANALYSIS OF BUGS/ORGANISMS LIVING IN RIVER CHANNEL SUBSTRATES
- PROVIDES A MORE ACCURATE LONG-TERM ASSESSMENT OF WATER QUALITY

RESULTS

- SAMPLES COLLECTED AT 3 LOCATIONS IN RIVER (ONE UPSTREAM OF OUTFALL, TWO DOWNSTREAM)
- RESULTS INDICATE UNIMPAIRED WATER QUALITY AT ALL THREE SAMPLE LOCATIONS
- SPECIES RICHNESS GOOD, INDICATING HIGH QUALITY STREAM ENVIRONMENT
- STUDY WILL SERVE AS A BASELINE FOR FUTURE

STP Outfall at River

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Water Quality Analysis

ASSIMILATION STUDY

- COMPLETED IN SUMMER OF 2011
- CHEMICAL AND BACTERIOLOGICAL ANALYSIS OF BAYFIELD RIVER WATER QUALITY
- MIXING ZONE STUDY ALSO CONDUCTED TO SEE HOW STP EFFLUENT ASSIMILATES WITHIN THE RIVER CHANNEL

RESULTS

- SAMPLES COLLECTED AT 8 LOCATIONS (1 AT PLANT, 2 AT OUTFALL, 1 UPSTREAM , 4 DOWNSTREAM)
- EFFLUENT VERY HIGH QUALITY FOR PARAMETERS MEASURED
- NO NEGATIVE INDICES IN RIVER THAT ARE ATTRIBUTABLE TO THE PLANT EFFLUENT
- EFFLUENT STREAM IS EFFECTIVELY ASSIMILATED WITHIN 100 METRES

Bayfield River at Mixing Zone

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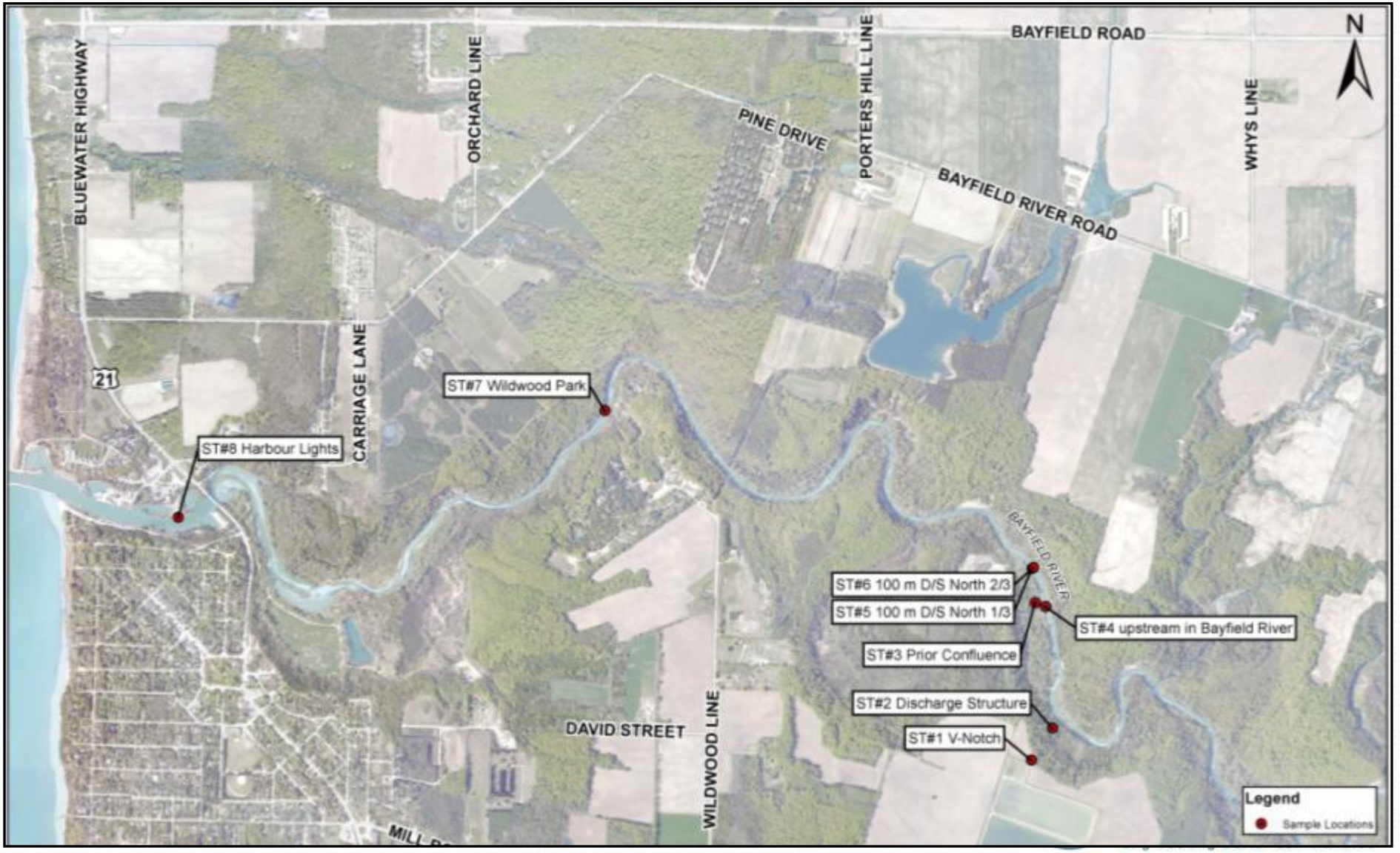
Water Quality Analysis



STP Treatment Technology Alternatives

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Treatment Alternatives

- Key considerations:
  - Develop a winter discharge.
  - Maximize use of existing
  - Work within site footprint.
  - Expand in stages rather than for a long design period.
  - Consider both capital and operating costs.

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NEXT STEPS

- Continue to investigate flow reduction and treatment options.
- Collect Additional Public and Agency input
- Finalize Class EA recommendations and present to Municipal Council.
- Complete Environmental Study Report (ESR)
- Publish Notice of Study Completion

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Questions?

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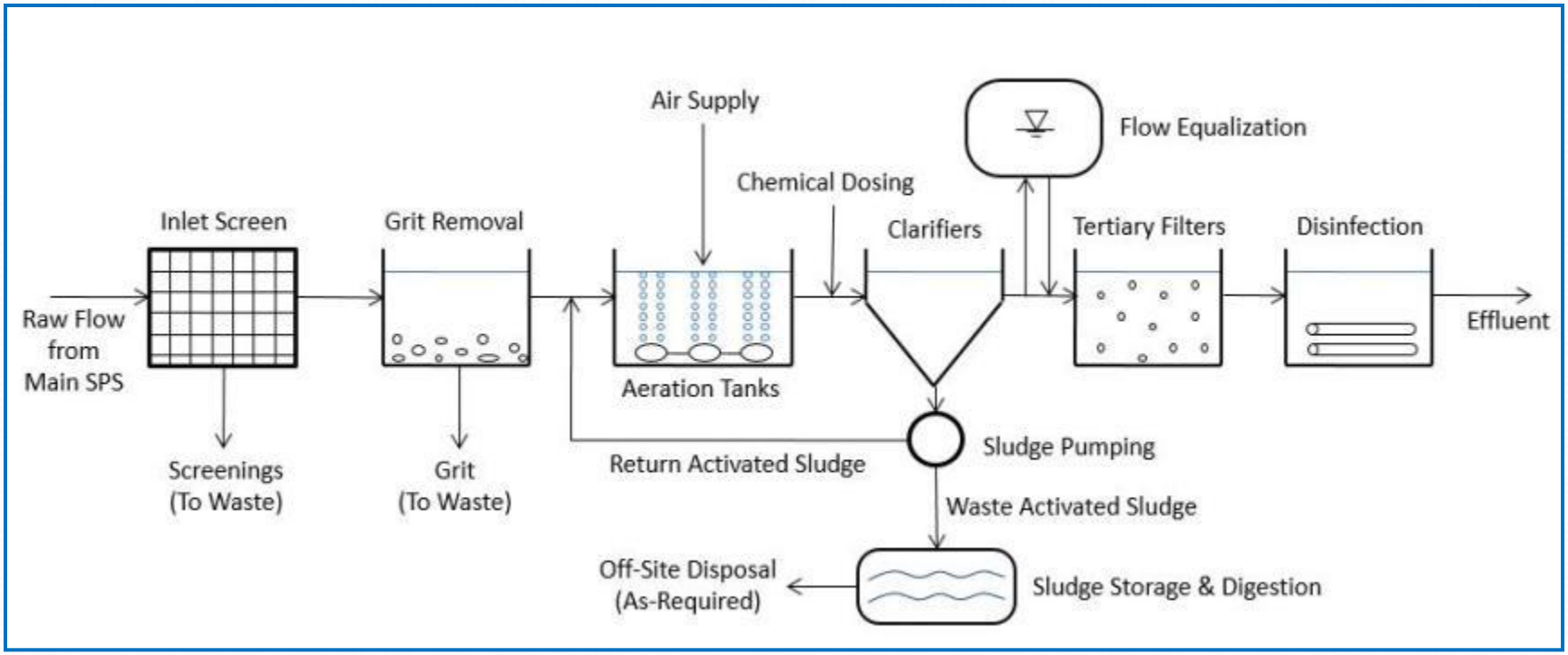
Extended Aeration



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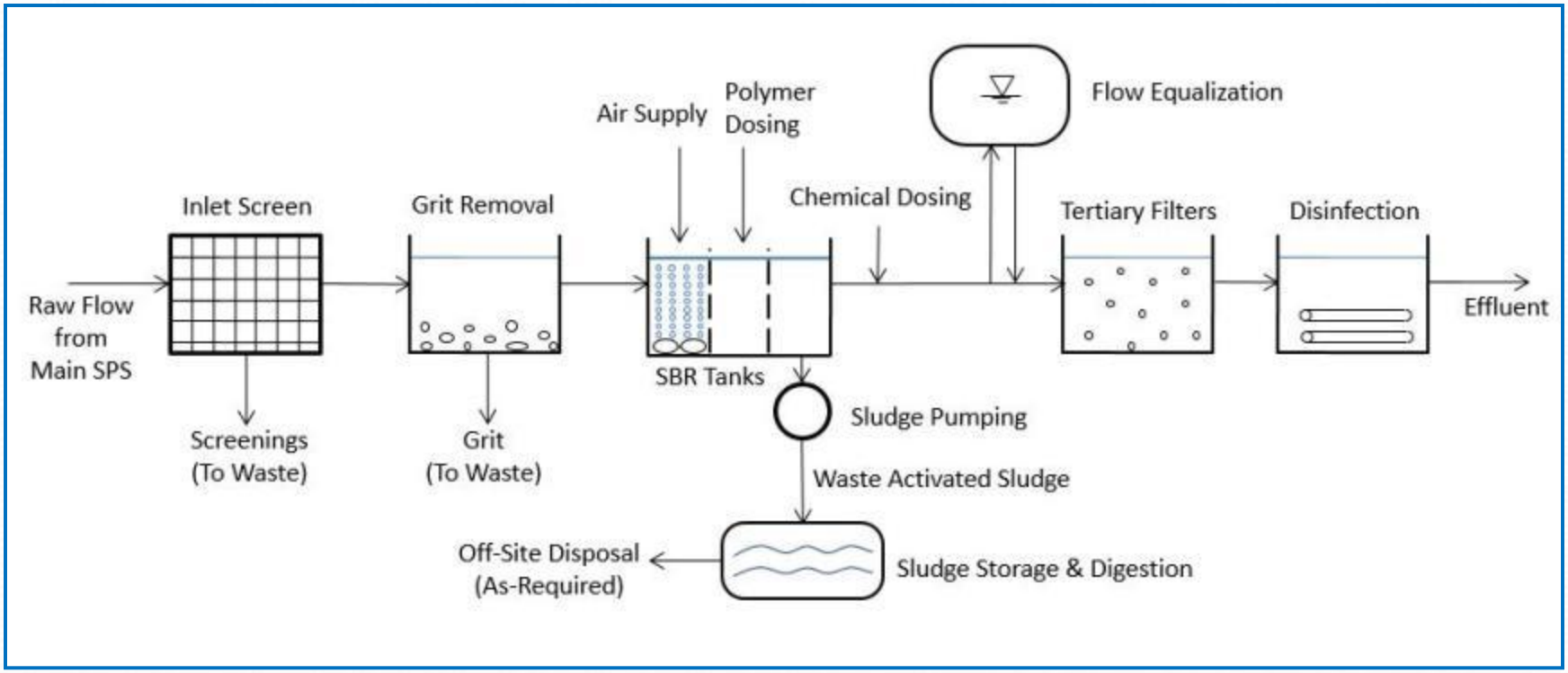
Sequencing Batch Reactor



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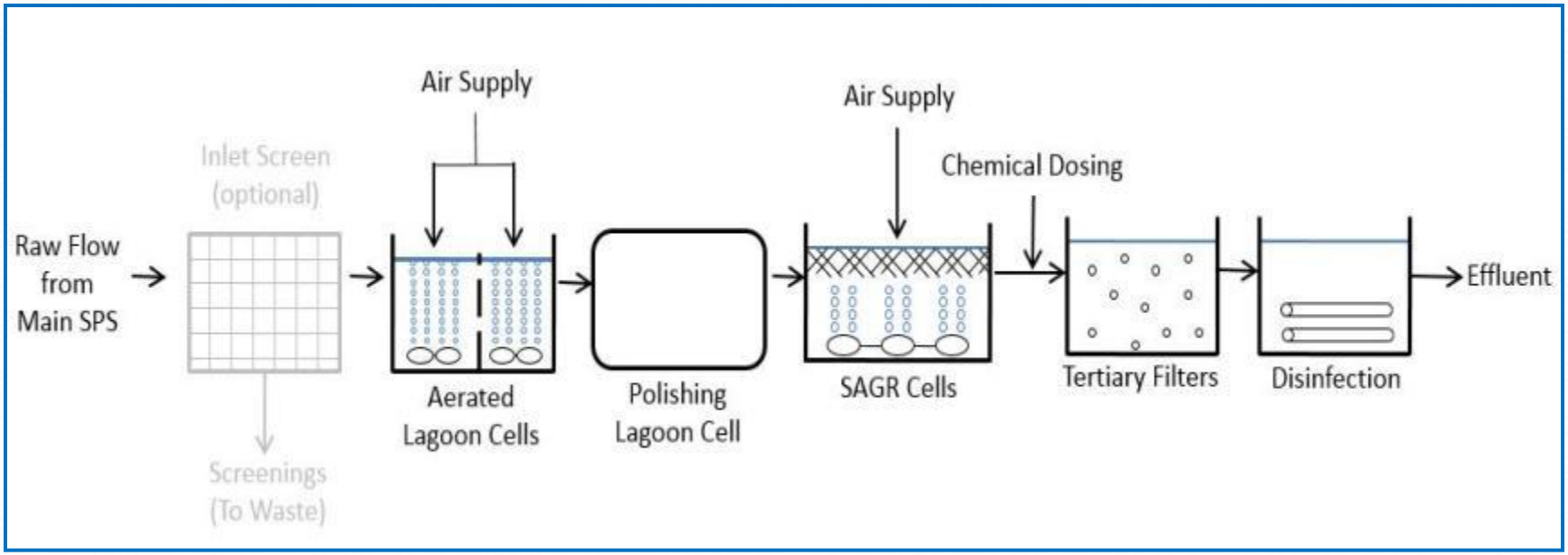
Submerged Attached Growth Reactors (SAGR)



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