Town of SOUTH BRUCE PENINSULA

Municipal Class Environmental Assessment

Upgrade of the Wiarton Wastewater Treatment Plant

Public Open House

March 5, 2015

4:00 p.m. to 7:00 p.m.

Welcome!

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Welcome to Open House #2

- Please sign in and take a comment sheet.
- The **purpose** of this open house is to:
  - Review the project with the public
  - Present the alternative designs being considered
  - Present the preliminary preferred alternative design
  - Seek your input and comments
  - Explain next steps
- If you have questions, our team members are available to discuss the project with you.
- Please place your comment sheets in the “Comment Box” or send them before March 18, 2015 to:

Tom Gray, C.E.T.
Manager of Public Works
Town of South Bruce Peninsula
E-mail: tsbppwmanager@bmts.com

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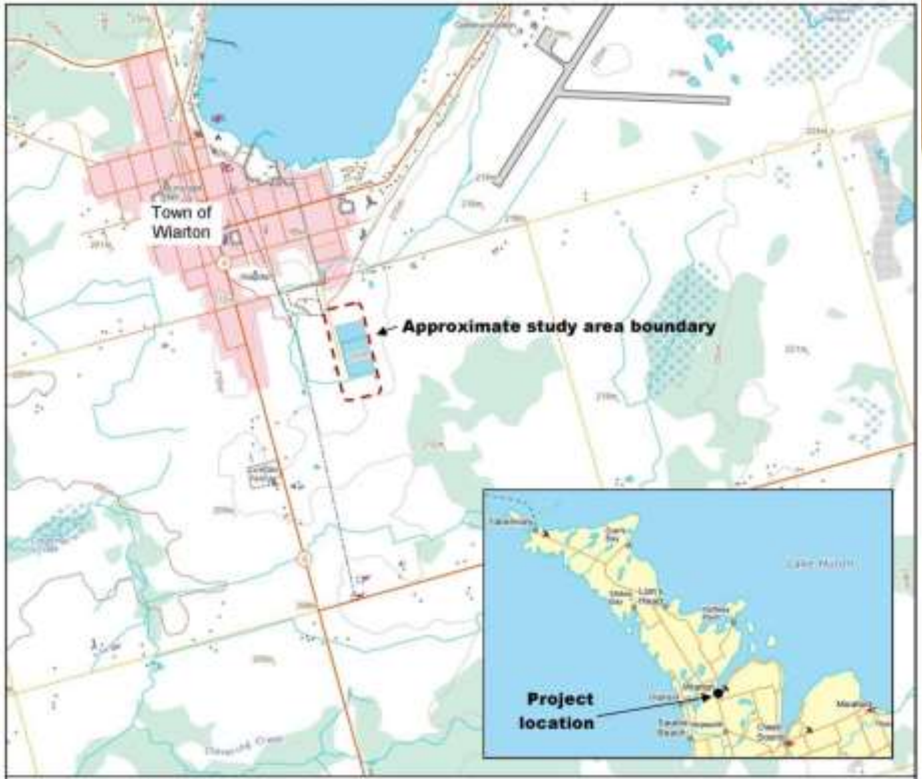
Problem Statement

- Project has three key issues to address:
  - Plant capacity - the current capacity of plant is not adequate to service the projected 2029 population
    - Future projected population, based on planned growth: 5,729
    - Estimated required average daily capacity: 4,400 cubic metres per day[a]
  - New federal standards for ammonia – new federal standards for ammonia limits have come into force, which the current facility does not meet
  - Septage – the facility will be required to better manage and treat increased amounts of septage

[a] *The estimated capacity required for Wiarton has been updated from Public Open House #1 based on findings from the Wiarton Master Servicing Study, which is taking place concurrently.*

About this Study

- **Study purpose**: To expand its capacity from the current average daily flow capacity of 2,500 cubic metres per day to 4,400 cubic metres per day[a].
- The project is being conducted as a Schedule C Municipal Class EA.



Town of South Bruce Peninsula
WIARTON WASTEWATER TREATMENT PLANT CLASS EA
Project Location Map

The property occupied by the Plant is located in the Township of Georgian Bluffs, along the boundary shared with the Town of South Bruce Peninsula. The lands are generally located within an existing agricultural area of Grey County, South East of the intersection of Elm Street and Taylor Street. The property address is Lot 2, Concession 21E, Georgian Bluffs Township, County of Grey.

September 30, 2014

[a] *The estimated capacity required for Wiarton has been updated from Public Open House #1 based on findings from the Wiarton Master Servicing Study, which is taking place concurrently.*

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Municipal Class EA Process

- A Class EA is a study to plan for a proposed project, which includes background and technical studies, a review and assessment of potential environmental, social and economic impacts and how they can be avoided, and an evaluation of possible alternatives.
- The result is an Environmental Study Report (ESR), which documents the process and lists the commitments made by the proponent.
- The Class EA process is completed in accordance with the *Environmental Assessment Act*.

Phase 1: Problem or Opportunity Statement

- Definition of Problem or Opportunity
- Identify Problem Statement

Phase 2: Alternative Solutions

- Identify, assess and evaluate alternative solutions
- Consult with public, government agencies, stakeholders
- Select a preferred solution

Phase 3: Alternative Design

- Alternative Design Concepts
- Identify, assess and evaluate alternative designs
- Consult with public, government agencies, stakeholders
- Select the preferred alternative design

Phase 4: Environmental Study Report

- Complete Environmental Study Report (ESR)
- Submit for 30-day public and agency review period
- Submit to Ministry for approval

Phase 5: Implementation

- Detailed design
- Construction
- Monitoring

we are here (Phase 3)

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Consultation Process

Class EA Phase 1 | Class EA Phase 2 | Class EA Phase 3 | Class EA Phase 4 | Class EA Phase 5

Dialogue/Meetings with Review Agencies and other Stakeholders
- **Ontario Ministry of Environment –** meetings/correspondence to resolve key concerns, including upcoming changes to wastewater effluent standards (i.e., ammonia)
- **Saugeen Ojibway Nation (SON) –** meeting and correspondence with SON on project, including review of technical reports and potential for impacts on archaeological resources

Project Start – *Aug 2014*

Consultation Planning
Develop plan
Prepare contact list of agencies, First Nations, and other stakeholders
Aug 2014

Issue Notice of Commencement – *Sep 2014*

Conduct Open House #1 – *Nov 2014*

Respond to Comments

Conduct Open House #2 – *Mar 2015*

Respond to Comments

Prepare/ Finalize ESR – *Mar/Apr 2015*

Notice of Completion – *Mar /Apr 2015*

30 Day Public/ Agency Review of ESR – *Apr 2015*

Proceed to Design – *Spring 2015*
Construction – *Summer 2015 – Winter 2016*

Open House #1Topics
- Problem/Opportunity Statement
- Summary of Background Information
- Overview of Alternative Solutions
- Evaluation Criteria & Evaluation of Alternative Solutions
- Proposed Preferred Alternative Solution

Open House #2 Topics
- Summary of Work Completed to Date
- Review of Alternative Designs
- Evaluation Criteria & Evaluation of Design Alternatives
- Potential Impacts of Alternatives & Mitigation Measures
- Proposed Preferred Design Alternative

Notice of Completion
- Notice of Completion to be published in local newspapers, distributed to stakeholder contact list
- Copies of ESR to be forwarded to applicable review agencies, made available in public locations

Review and Coordinate all Comments Received, Respond to Part II Order Requests

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On-going Consultation Activities
- Responding to questions & comments from the general public, agencies and other interested stakeholders
- Tracking of questions, comments and project team responses

Consultation Process

- Consultation has included engagement of stakeholders to identify and address potential concerns, including:
  - Ontario Ministry of Environment – meetings/correspondence to resolve key concerns, including upcoming changes to wastewater effluent standards (i.e., ammonia).
  - Saugeen Ojibway Nation (SON) – meeting and correspondence with SON on project, including review of technical reports and potential for impacts on archaeological resources.
  - Bruce County – Engagement on land use planning/Zoning Bylaw amendment
  - Grey Sauble Conservation Authority and Niagara Escarpment Commission – discussions regarding potential environmental concerns and applicable permits
- EA study report will include commitments made by the Town to ensure issues are addressed during design/implementation.

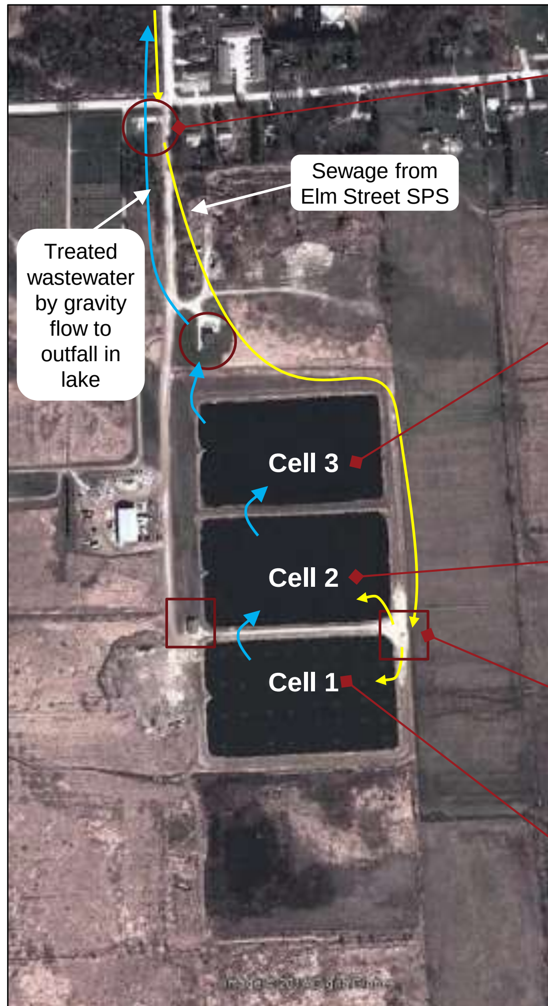
Consultation Process

- Project team is consulting with Grey Sauble Conservation Authority, Niagara Escarpment Commission and Ministry of Natural Resources on potential environmental concerns and required permits.
- Environmental issues will continue to be investigated and monitored though detailed design.

Natural Environment Inventory

Overview: Existing WWTP

- The current Wastewater Treatment Plant (WWTP) includes three consecutive waste stabilization lagoons (also called “cells”).
- Combined, the lagoons cover an area of 6 hectares, and each have a depth of about 1.5 m.
- Raw sewage is pumped from the Elm Street Sewage Pumping Station (SPS) to cell 1 via the Splitter Box (which can send sewage to cell 2 if needed).
- The system uses aeration (i.e., forced air bubbles) in its treatment of wastewater. Beneficial bacteria in the cells help to break down and process the sewage.

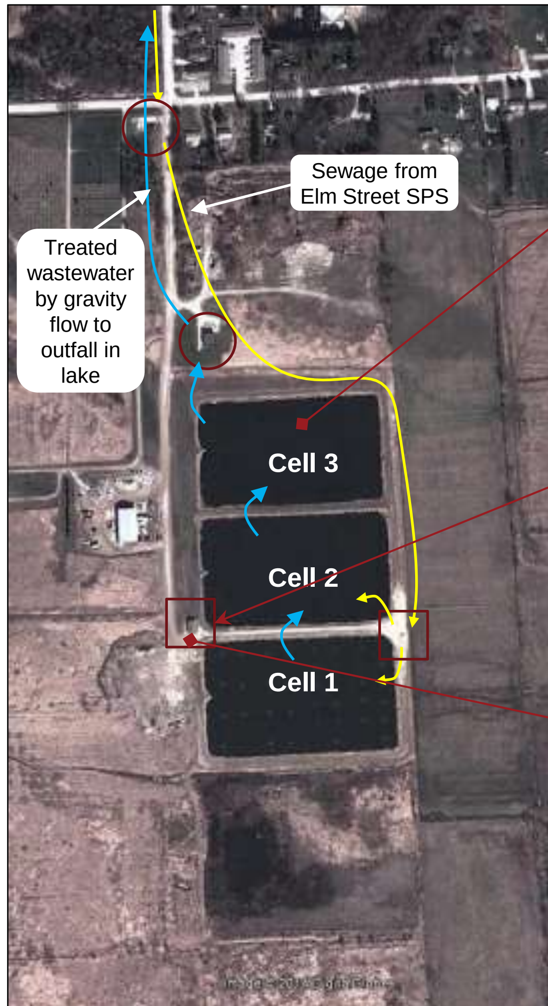


Elm Street Sewage Pumping Station (SPS)

Splitter Box

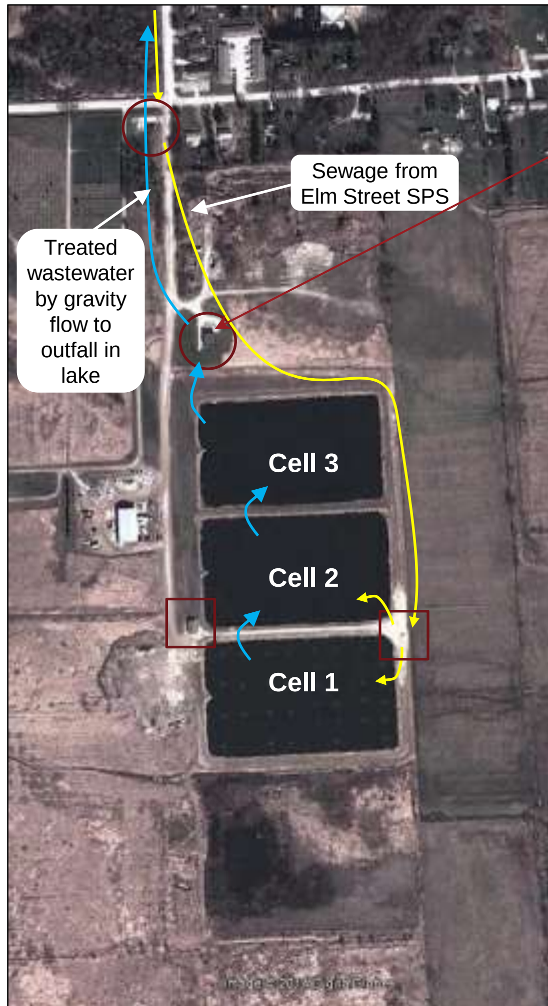
Overview: Existing WWTP

- The Lagoon Facility Control Building (also called the “Blower Building”) includes two blowers that pump air into the cells to aerate them. The building also houses the motor control center and other equipment.
- Chlorine is added to cell 3 during May to September to help control algae growth.



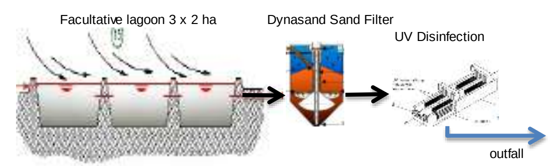
Overview: Existing WWTP

- As wastewater moves from cell 3 to the UV/filtration building, a chemical treatment system is used to help remove phosphorus.
- After being treated with chemicals, the wastewater is piped through the DynaSand Rapid Sand Filter, which removes the solids and phosphorous from the wastewater.
- The filtered wastewater is then disinfected by the UV light system, which has a peak design capacity of 8,000 cubic metres per day.
- The treated wastewater is then safely discharged to the lake.



* SPS = sewage pumping station

Current WWTP Treatment Schematic



Current Plant Performance

- Overall, the WWTP performs well and meets all applicable standards.
- Currently, there are no applicable standards for ammonia. However, as of January 2015, the federal government has introduced a new federal standard of 1.25 mg/l of un-ionized ammonia.
- The Ontario Ministry of Environment and Climate Change (MOECC) is currently reviewing its ammonia discharge requirements for WWTPs.

	Average Daily Flow	Maximum Annual Peak Flow	Effluent BOD	Effluent S.S.	Effluent Total Phosphorus	Effluent Ammonia	Septage Volume
Current Approved Limits for WWTP	2.500 cubic m/d	N/A	20 mg/l	24 mg/l	0.5 mg/l	N/A	N/A
Range for 2011 to 2013	1,430 to 1,992 cubic m/d	5,851 to 11,158 cubic m/d	2.6 to 5 mg/l	4.6 to 13 mg/l	0.17 to 0.18 mg/l	2.3 to 4.4 mg/l	Approx. 4 to 5 cubic m/d
Standard Met?	✓	**N/A**	✓	✓	✓	**N/A**	**N/A**

- *Average Day Flow – the average flow of incoming sewage/wastewater per day*
- *Effluent BOD – The Biological Oxygen Demand of the treated outgoing effluent*
- *Effluent S.S. – The amount of suspended solids in the treated outgoing effluent*
- *Effluent Total Phosphorous – The amount of total phosphorous in the treated outgoing effluent*
- *Effluent Ammonia – the concentration of ammonia in the treated outgoing effluent*
- *Septage Volume – the amount of tanked-in sewage per day (e.g., sewage from portable toilets, RV's, septic tanks, etc.)*

Evaluation Process

Alternative Solutions

- Pre-screening of alternative solution categories conducted, based on problem statement
- Treatment approaches for primary, secondary and tertiary treatment considered
- Long list of three alternative solutions considered for improving the Wiarton WWTP, including:
  1. Add an Integrated fixed-film system (IFS)[1], with nitrification.
  2. Deepen one of the lagoon cells, with nitrification.
  3. Convert to an activated sludge system.
- Three alternatives screened to determine if they would be carried forward to short list.
- A short list of alternatives (2) were carried forward and evaluated.
- Alternative 1 (IFS) was selected as the preferred solution.

Alternative Designs

- Three design alternatives were prepared that considered different configurations of the preferred solution.
- These design alternatives were evaluated and a preliminary preferred design alternative was selected.

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1. *IFS is also commonly referred to as Moving Bed Biofilm Reactor (MBBR). The term MBBR was used in the previous public open house.*

Alternatives Pre-screening

Category	Will solution allow facility to increase its capacity?	Will solution allow for an increased intake of septage?	Will solution allow facility to meet new federal ammonia standards?	Conclusion
Do Nothing	No. WWTP would exceed approved & design capacity with increased population growth.	No. Will not allow for better handling of the septage and will have limited capacity to handle additional septage.	No. WWTP currently does not comply with new ammonia standard.	"Do nothing" would not allow WWTP to address problem statement.
Control Infiltration/Inflow	Infiltration/inflow control measures may reduce wet weather inflow improving hydraulic load handling at the plant. However, it will not provide additional treatment capacity.	No. Will not impact septage handling and treatment in any way.	No. Controlling inflow and infiltration would not have any impact on WWTP's ability to meet ammonia standards.	While "Infiltration and inflow control" measures would likely be beneficial and may improve the WWTP hydraulic loadings, it would only partially address the problem statement.
Additional Treatment Capacity	Yes. Providing additional capacity through upgrades or replacement would allow WWTP to meet capacity requirements and adequately manage increased loads in wastewater contaminants.	Yes. The new treatment scheme can be designed to handle additional septage.	Yes. Additional treatment would address new ammonia requirements.	Providing community with additional wastewater treatment capacity (either by upgrading the plant or replacing it) would address problem statement.

Conclusion: Additional treatment capacity is required to address the problem statement, as neither "do nothing" nor infiltration/inflow control will adequately do so.

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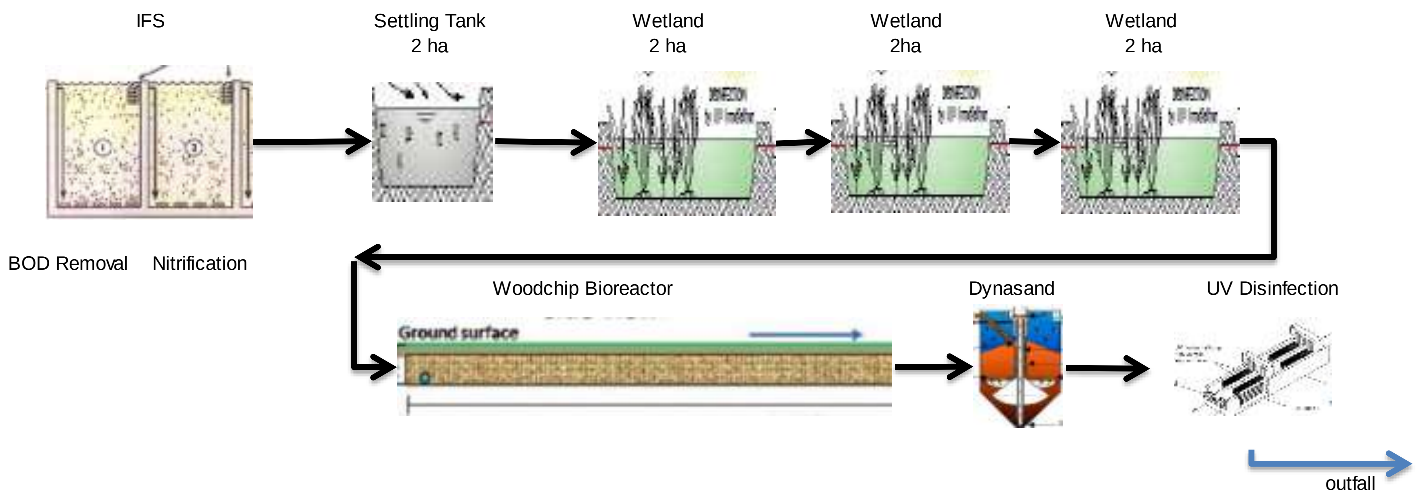
Alternative Solutions

Alternative # 1: Add Integrated Fixed-film System (IFS) with Nitrification

- The system could be reinforced by adding a IFS with nitrification.
- An IFS reactor (or tank) is filled with small plastic carriers that increase microbial action in the tank by maximizing the surface area where the beneficial bacteria grow.
- Nitrification is a biological process where bacteria convert ammonia in wastewater to nitrate.
- One of the existing lagoon cells could be used as a settling tank and for sludge storage.

IFS Plastic Carriers (examples)

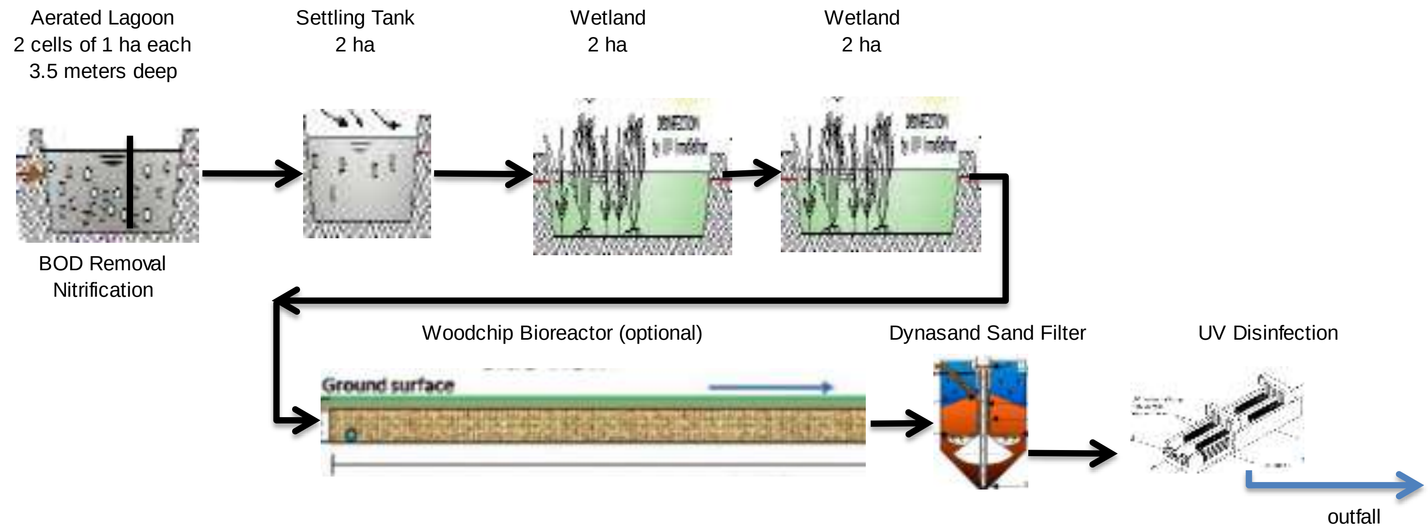
- The remaining cells could be converted to engineered wetlands to further treat the wastewater effluent.
- An optional denitrification ditch could be used to remove the nitrate from the wastewater effluent. The denitrification ditch uses a carbon source (e.g., woodchips) to convert nitrate to nitrogen gas.
- The treated wastewater would then continue through the UV/Filtration building before being discharged.



Alternative Solutions

Alternative # 2: Deepen Lagoon Cell, with Nitrification

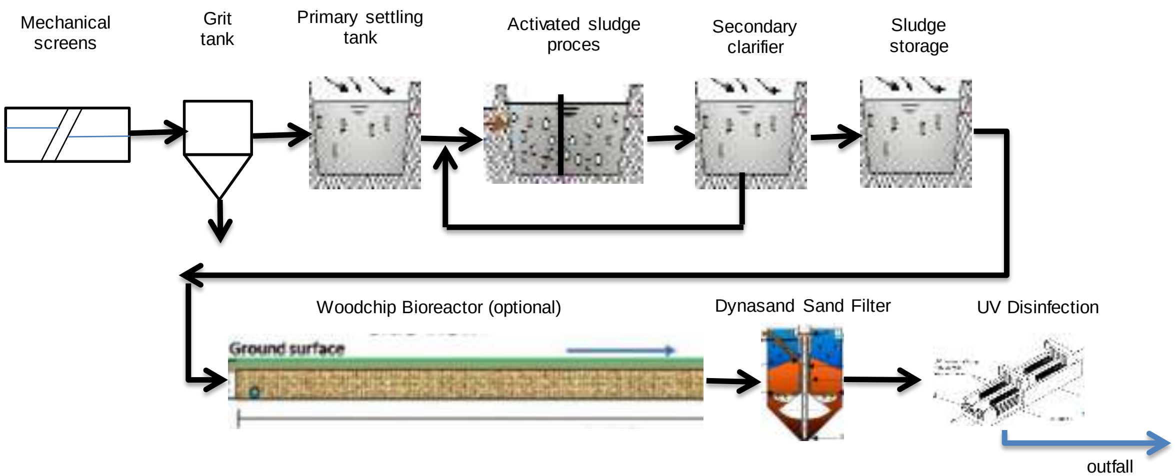
- Alternative 2 would see the exiting system reinforced by deepening one of the lagoon cells and adding nitrification. This would include:
  - Deepening one of the cells and creating two compartments for BOD removal and nitrification.
  - Using another cell for settling solids and sludge storage.
  - Converting a third cell into an engineered wetland.
- The engineered wetland would be used in conjunction with a natural wetland in close proximity.
- An optional denitrification ditch could be used to remove the nitrate from the wastewater effluent. The denitrification ditch uses a carbon source (e.g., woodchips) to convert nitrate to nitrogen gas.
- The treated wastewater would then continue through the UV/Filtration building before being discharged.



Alternative Solutions

Alternative #3: Conventional Activated Sludge Treatment

- In Alternative 3, the raw sewage first undergoes "Primary Treatment," as grit and solids are mechanically removed.
- The sifted sewage then flows into a sedimentation tank modified from an existing cell. Solids settle in the tank, and the liquid waste flows on to aeration cells. Pipe realignment, new valves and other engineering would be needed to modify the cell.
- Two new aeration tanks would be installed to help speed up biodegradation of wastewater solids.
- The next cell would be converted into a secondary clarifier, where wastewater would be aerated and more solids allowed to settle. Sludge removed from the wastewater (also called Waste Activated Sludge, or WAS) would be sent to a third cell for storage until it can be sent offsite for disposal or land application.
- Some sludge (called Return Activated Sludge, or RAS) from the secondary clarifier would be piped back into the first cell to inoculate new sewage entering the Plant. This helps activate the process. New piping and pumps would need to be installed.
- An optional denitrification ditch could be used to remove the nitrate from the wastewater effluent. The denitrification ditch uses a carbon source (e.g., woodchips) to convert nitrate to nitrogen.
- The treated wastewater would then continue through the UV/Filtration building before being discharged.



Screening of Alternatives

Screening Criteria

- **Hydraulic Loading**: the flexibility of the alternative to accommodate variable flow rates.
- **Pre-treatment**: the amount of pre-treatment required for the effluent before entering the treatment process
- **Sludge Production**: the amount of sludge produced by the process, which would require further treatment/management.
- **Sludge Recirculation**: whether recirculation of sludge is required for the treatment process (a portion of the sludge would be put back into cell 1 in order to inoculate the system with the beneficial bacteria).
- **Resistance to Temperature Fluctuations**: the ability of the technology to function in a range of temperatures.
- **Capital Cost**: The cost to build/install the system.
- **Operating cost**: The annual cost to operate the system.

Screening Results

Alternative	Hydraulic Loading Flexibility	Pre-Treatment	Sludge Production	Sludge Recirculation	Temperature Resistance	Operating Cost	Capital Cost	Carried Forward to Short List?
1. IFS	**High** Alternative is flexible	**Moderate** Fine screening, grit chamber	**Low** Relatively low volumes generated	Not required	**Moderate** Has good resistance to temperature variations	**Low** Relatively less operating cost	**Medium** $4M to $5M	✓
2. Deep Lagoon/ Nitrification	**High** Alternative is flexible	None required	**Low** Relatively low volumes generated	Not required	**Low** Protection required	**Low** Relatively less operating cost	**Medium** $3.5M to $4.5M	✓
3. Activated Sludge	**Low** Alternative is not very flexible	**Moderate** Optional screens, grit chamber	**High** Relatively high volumes generated	Required	**High** High resistance, protection not required	**High** Relatively more operating cost	**High** $5M to $6M	✗

Evaluation of Short List

Proposed Evaluation Criteria

Technical

- ★ Ability to meet effluent quality objectives
- Impacts on existing operations
- Ease of implementation
- Flexibility to meet long-term objectives
- Maintainability of plant equipment and processes
- Ease of operation

Natural Environment

- Impact on aquatic resources
- Impact on terrestrial environment, such as woodlots, parks or habitats

Social/Cultural

- Land availability
- Archaeological

Financial

- Capital costs
- Operating and maintenance costs

"★" *indicates a key evaluation criterion*

Evaluation of Short List

Evaluation Criteria	Alternative 1: IFS with Nitrification	Alternative 2: Deep Lagoon with Nitrification
TECHNICAL		
★ **Ability to meet Effluent Quality Objectives**	**Excellent** Better effluent quality can be achieved more reliably	**Good** Better effluent quality is achievable
Impacts on Existing Operations	**Excellent** No impact on existing operation is expected	**Good** Moderate impacts expected due to deepening of the lagoon
Ease of Implementation	**Excellent** Alternative can be very easily implemented	**Good** Some disruption in plant operation expected while deepening one lagoon.
Flexibility to Meet Long Term Objectives	**Good** Can handle additional *organic loading* better	**Good** Can handle additional *hydraulic loading* better
Maintainability of Plant Equipment and Process	**Good** Some maintenance of the IFS required	**Excellent** Little maintenance required
Ease of Operation	**Good** The process is easy to operate	**Excellent** Ranked highest in ease of operation

Evaluation Summary – Technical

Alternative 1 is preferred from a technical perspective because it is better able to meet Effluent Quality objectives (resulting in cleaner effluent) and can be implemented quite easily with little impact to existing operations.

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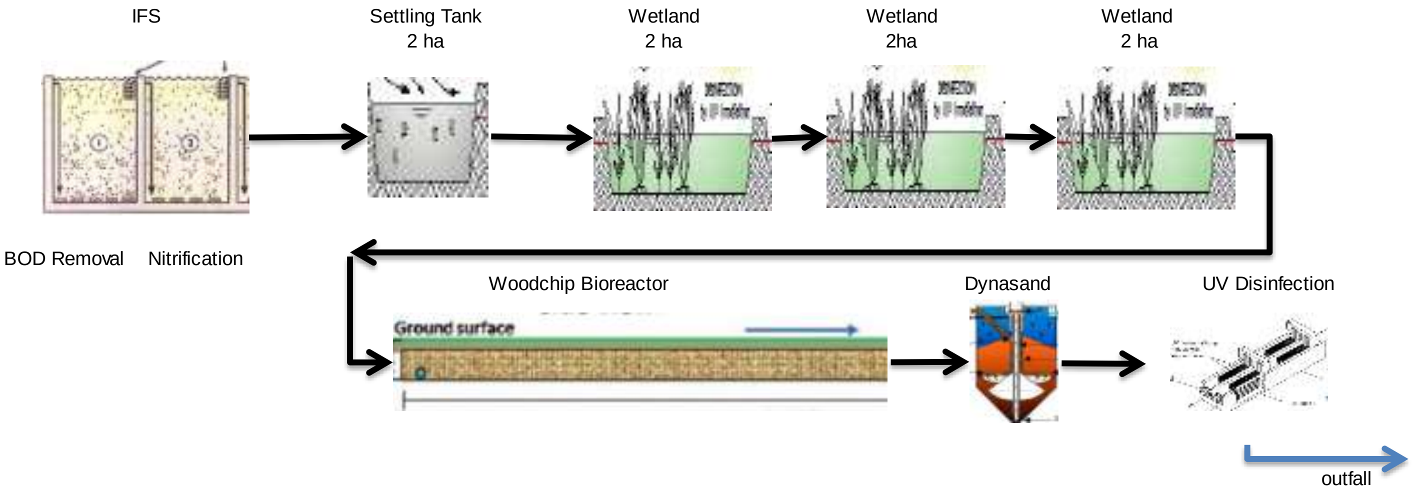
"★" *indicates a key evaluation criterion*

Evaluation of Short List

Evaluation Criteria	Alternative 1: IFS with Nitrification	Alternative 2: Deep Lagoon with Nitrification
NATURAL ENVIRONMENT		
Impact on Aquatic Resources	**Excellent** Will meet effluent standards most reliably	**Good** Will meet effluent standards reliably
Impact on Terrestrial Environment	**Excellent** No additional land required; therefore no impacts	**Excellent** No additional land required; therefore no impacts
Evaluation Summary – Natural Environment Alternative 1 is preferred in this category as it is best able to meet effluent standards, thereby minimizing risk to aquatic resources.		
SOCIAL/CULTURAL		
Land Availability	**Excellent** No additional property required	**Excellent** No additional property required
Archaeological	**Excellent** Archeological review indicates no potential for impacts	**Excellent** Archeological review indicates no potential for impacts
Evaluation Summary – Social/Cultural Both alternatives are equally is preferred in this category.		
FINANCIAL		
Capital Cost	**Good** $4M to $5M	**Excellent** $3M to $4M
Annual Operating Cost	**Excellent** Approx. $300,000	**Excellent** Approx. $300,000
Evaluation Summary – Financial Alternative 2 is preferred in this category, as the capital costs are lower than in Alternative 1. The estimated operating costs are similar for both alternatives.		

Evaluation Summary

- Based on the evaluation, **Alternative 1 (IFS with Nitrification)** is the preferred alternative, for the following reasons:
  - Alternative 1 is best able to meet effluent quality objectives (i.e., discharge a cleaner effluent), which is a key criterion. This will provide the greatest level of environmental protection for our aquatic resources.
  - Alternative 1 can be implemented easily and with no impact on the Plant's existing operation. This minimizes any possible disruption of municipal wastewater treatment.
- In addition to IFS with Nitrification, Inflow and Infiltration Control measures should also be implemented.



Alternative Designs

Alternative #1: Future Pre-Treatment Building and IFS Tanks Located by Existing Cell 1; flow orientation reversed

1
- Cell converted to fully aerated lagoon
- Receives sewage from pretreatment building/IFS tanks
- Potentially reuses aeration equipment current Cell

2
- Current Cell 2 would be divided
- Half becomes settling lagoon, where solids settle out of treated water
- Other half becomes engineered wetland, for further treatment of effluent

3
- Converted to a natural wetland

4
- Treated effluent would flow from wetland (or the denitrification ditch, if built) to filtration/UV building
- Effluent filtered through sand filter and then treated with ultra-violet disinfection before draining to outfall

5
- Blower building to remain and pump air required for aeration lagoon
- New piping required to connect blowers to new aerated lagoon

6
- Structure required to house pretreatment screens , degritter and IFS tanks.
- Screened wastewater to flow by gravity to aerated lagoon
- Includes new Septage receiving station

7
- Optional denitrification ditch could be installed to assist with reduction of nitrogen in treated effluent
- Treated wastewater would flow by gravity from wetland through denitrification ditch to filtration/UV building

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Alternative Designs

Alternative #2: Future Pre-Treatment Building and IFS Tanks Located by UV/Filtration Building; flow orientation reversed

1
- Main difference between alternatives 1 and 2: UV/filtration structure expanded to house the pretreatment screens, degritter and IFS tanks.
- Single structure would assist with operations.

2
- Current Cell 2 divided.
- Half becomes settling lagoon, where solids settle out of treated water.
- Other half becomes engineered wetland, for further treatment of effluent.

3
- Converted to a natural wetland

4
- Reduced costs compared to alternative 1 due to less new piping required

5
- Blower building to remain and pump air required for aeration lagoon.
- New piping required to connect blowers to new aerated lagoon

6
- Optional denitrification ditch could be installed to assist with reduction of nitrogen in treated effluent.
- Treated wastewater would flow by gravity from wetland through denitrification ditch to filtration/UV building

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Alternative Designs

Alternative #3: Future Pre-Treatment Building and IFS Tanks Located by UV/Filtration Building; flow orientation remains same

1
- UV/filtration structure expanded to house the pretreatment screens, degritter and IFS tanks
- Single structure would assist with operations

2
- Direction of flow of wastewater through lagoon system not reversed
- Construction costs reduced by maintaining existing aerated lagoon, allows continued use of existing piping

3
- Septage receiving station built on or near pre-treatment building

4
- Current Cell 2 divided
- Half becomes settling lagoon, where solids settle out of treated water
- Other half becomes engineered wetland, for further treatment of effluent

5
- The blower building would remain and continue to pump air required for aeration lagoon
- Existing piping would continue to connect the blowers to aerated lagoon

6
- Optional denitrification ditch could be installed to assist with the reduction of nitrogen in treated effluent
- Treated wastewater would flow by gravity from the wetland through the denitrification ditch to the filtration/UV building

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Evaluation of Alternative Designs

Evaluation Criteria for Alternative Designs

Natural Environment

- Impact on terrestrial environment

Social/Cultural

- Archaeological

Financial

- Capital costs

Technical

- Ease of implementation
- Approvals required

Possible Evaluation Results

- **More preferred**: is the alternative that has the best performance or result based on the criterion
- **Preferred**: performance or result for the alternative is not as good as the most preferred alternative but is better than the least preferred
- **Less Preferred**: does not perform or have as good a result as the other alternatives

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Evaluation of Alternative Designs

Natural Environment

Criteria and Description	Guidelines	Alternative 1 Future Pre-Treatment Building and IFS Tanks Located by Existing Cell 1; flow orientation reversed	Alternative 2 Future Pre-Treatment Building and IFS Tanks Located by UV/Filtration Building; flow orientation reversed	Alternative 3 Future Pre-Treatment Building and IFS Tanks Located by UV/Filtration Building; flow orientation remains same
Terrestrial Systems • Potential of the alternative to minimize impact to terrestrial habitats or systems, including possible effects on the shoreline and wildlife (including mammals, reptiles, and birds) and terrestrial features/functions	**More preferred**: No risk of adverse effects on terrestrial systems **Preferred**: Some risk of adverse effects on terrestrial systems **Less preferred**: High risk of adverse effects on terrestrial systems	**More Preferred** • Construction activities for the lagoon upgrade will not extend beyond the study area, and therefore will not pose any adverse effect on terrestrial habitats or systems. • Partial conversion of existing cells to wetland treatment cells will allow for increased biodiversity within study area.	**More Preferred** • Construction activities for the lagoon upgrade will not extend beyond the study area, and therefore will not pose any adverse effect on terrestrial habitats or systems. • Partial conversion of existing cells to wetland treatment cells will allow for increased biodiversity within study area.	**More Preferred** • Construction activities for the lagoon upgrade will not extend beyond the study area, and therefore will not pose any adverse effect on terrestrial habitats or systems. • Partial conversion of existing cells to wetland treatment cells will allow for increased biodiversity within study area.

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Evaluation of Alternative Designs

Social/Cultural

Criteria and Description	Guidelines	Alternative 1 Future Pre-Treatment Building and IFS Tanks Located by Existing Cell 1; flow orientation reversed	Alternative 2 Future Pre-Treatment Building and IFS Tanks Located by UV/Filtration Building; flow orientation reversed	Alternative 3 Future Pre-Treatment Building and IFS Tanks Located by UV/Filtration Building; flow orientation remains same
Archaeology • Potential of the alternative to not affect any archaeologically significant findings on the site	**More preferred**: There is no risk of the alternative affecting archaeologically significant findings on the site **Preferred**: There is no significant risk of the alternative affecting archaeologically significant findings on the site **Less preferred**: There is a high risk of the alternative affecting archaeologically significant findings on the site	**More Preferred** • A stage 2 archaeological assessment has concluded that there are no archeological resources within the study area.	**More Preferred** • A stage 2 archaeological assessment has concluded that there are no archeological resources within the study area.	**More Preferred** • A stage 2 archaeological assessment has concluded that there are no archeological resources within the study area.

Evaluation of Alternative Designs

Economic

Criteria and Description	Guidelines	Alternative 1 Future Pre-Treatment Building and IFS Tanks Located by Existing Cell 1; flow orientation reversed	Alternative 2 Future Pre-Treatment Building and IFS Tanks Located by UV/Filtration Building; flow orientation reversed	Alternative 3 Future Pre-Treatment Building and IFS Tanks Located by UV/Filtration Building; flow orientation remains same
Capital Costs • Comparative costs for capital works	**More preferred**: The lowest overall capital costs **Preferred:** Proportionately higher costs than the alternative ranked "excellent" **Less preferred**: The highest overall capital costs	**Less Preferred** • The estimated capital costs for Alternative 1 is approximately $4.8M to 5.3M. • This alternative will cost more than the other alternatives because it will require a new aeration system and more new piping than either of the other two alternatives.	**Preferred** • The estimated capital costs for Alternative 2 is approximately $4.6M to $5.0M • This alternative will be more expensive than Alternative 3 as it will require a new aeration system and some new piping.	**More Preferred** • The estimated capital costs for Alternative 3 is approximately $4.4M to $5.0M. • Alternative 3 allows for cost savings by using the existing aeration system for the aerated lagoon and existing piping.

Evaluation of Alternative Designs

Technical

Criteria and Description	Guidelines	Alternative 1 Future Pre-Treatment Building and IFS Tanks Located by Existing Cell 1; flow orientation reversed	Alternative 2 Future Pre-Treatment Building and IFS Tanks Located by UV/Filtration Building; flow orientation reversed	Alternative 3 Future Pre-Treatment Building and IFS Tanks Located by UV/Filtration Building; flow orientation remains same
Ease of Implementation • Ease with which the alternative can be constructed on a technical, regulatory, and practical basis.	**More Preferred**: The treatment alternative is easiest to implement **Preferred**: The treatment alternative can be implemented, but will require more effort than the most preferred alternative. **Less Preferred**: The treatment alternative is the least easiest to implement	**Less Preferred** • New construction will not interfere with existing process. • Construction of the pre-treatment building would take place alongside or near the existing blower building. • New piping required to connect sewage forcemain to pre-treatment building and to deliver sewage from IFS tanks to new location for the aerated lagoon. • Aeration equipment from current aerated lagoon will need to be removed and reinstalled in new aerated lagoon.	**Less Preferred** • New construction will not interfere with existing process. • Construction of the pre-treatment building could be completed as upgrade of the UV/filtration building. This will help simplify future operations and maintenance. • New piping required to deliver sewage from IFS tanks to aerated lagoon. • Aeration equipment from current aerated lagoon will need to be removed and reinstalled in new aerated lagoon.	**More Preferred** • New construction will not interfere with the existing process. • Construction of pre-treatment building could be completed as upgrade of UV/filtration building. This will help simplify future operations and maintenance. • Aeration equipment in first lagoon can remain in place.

Evaluation of Alternative Designs

Technical

Criteria and Description	Guidelines	Alternative 1 Future Pre-Treatment Building and IFS Tanks Located by Existing Cell 1; flow orientation reversed	Alternative 2 Future Pre-Treatment Building and IFS Tanks Located by UV/Filtration Building; flow orientation reversed	Alternative 3 Future Pre-Treatment Building and IFS Tanks Located by UV/Filtration Building; flow orientation remains same
Approvals Required	**More Preferred**: The treatment alternative least arduous in terms of approvals **Preferred**: The treatment alternative is less arduous than the least preferred in terms of approvals **Less Preferred**: The treatment alternative most arduous in terms of approvals	**Preferred** • Same level of approvals required for all three alternatives	**Preferred** • Same level of approvals required for all three alternatives	**Preferred** • Same level of approvals required for all three alternatives

Evaluation Summary

- Based on the evaluation, Alternative #3 is the preferred alternative.
- Alternative #3 allows for cost savings in the its construction by reusing existing equipment.
- The environmental performance of the site would be similar for all three alternatives.

Next Steps

Step	Timing
Complete/Submit EA Report for Review and Approval	March / April 2015
Complete Design	Spring 2015
Tendering	Summer 2015
Construction	Summer 2015 - Winter 2016

We want to hear from You!

Please send us your thoughts, comments and suggestions by March 18, 2015.

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