



**THE CORPORATION OF THE
TOWNSHIP OF RAMARA**
Proud History - Progressive Future

**BAYSHORE VILLAGE
EFFLUENT SPRAY IRRIGATION
CLASS ENVIRONMENTAL ASSESSMENT
SCHEDULE B**

PUBLIC INFORMATION OPEN HOUSE

NOVEMBER 15, 2016



C.C. Tatham & Associates Ltd.
Consulting Engineers

Collingwood

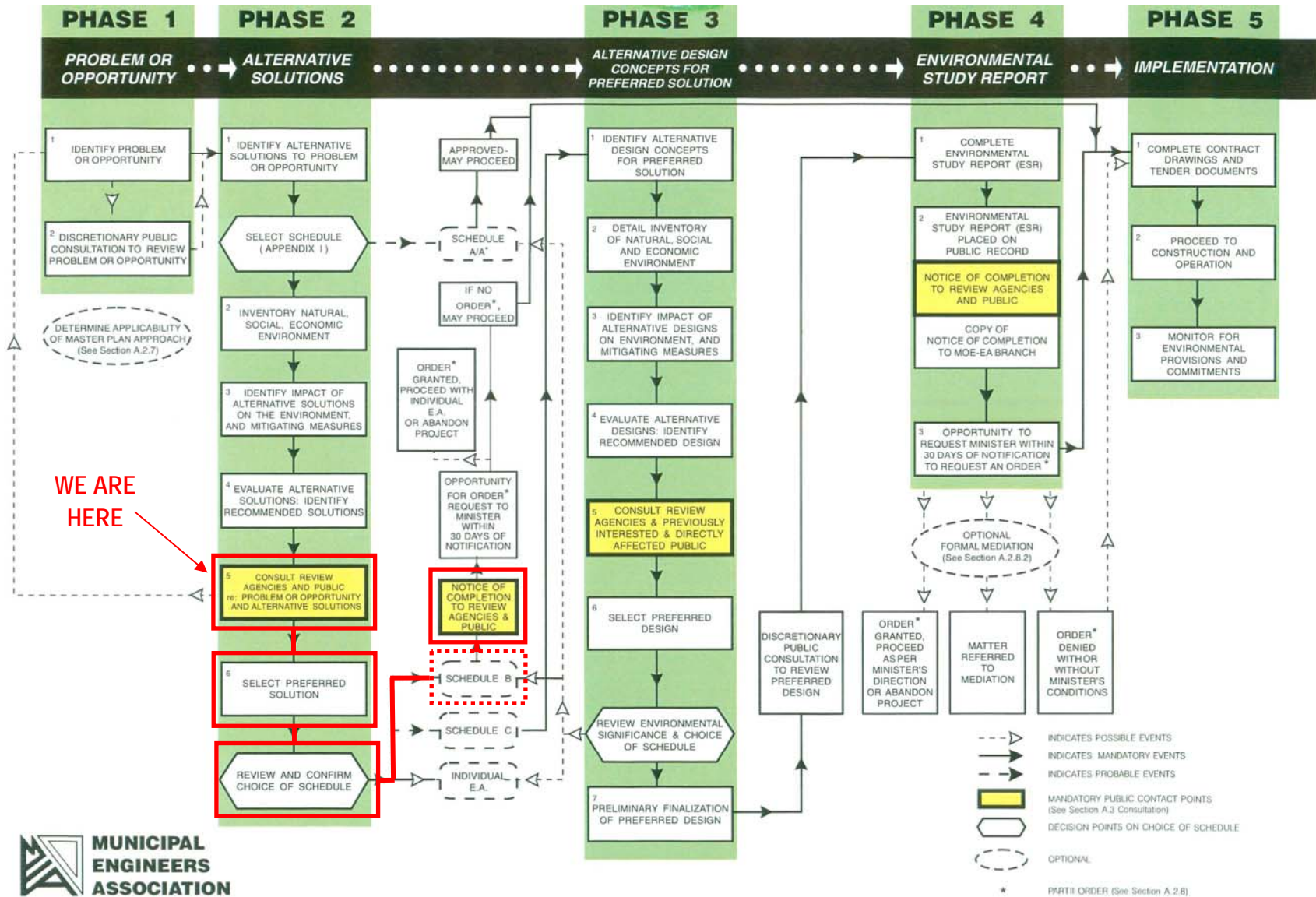
Bracebridge

Orillia

Barrie

Bayshore Village Effluent Spray Irrigation Class Environmental Assessment – PIC No. 2

MUNICIPAL CLASS EA PROCESS



**Bayshore Village Effluent Spray Irrigation
Class Environmental Assessment – PIC No. 2**

STUDY AREA



BACKGROUND

SEWAGE WORKS

- The Bayshore Village Sewage Works consist of two facultative waste stabilization ponds (lagoons) with a capacity of 399 m³/day, an effluent pumping station and spray irrigation system.
- The lagoons provide biological treatment and settling of the sewage from Bayshore Village.
- Treated effluent from the lagoons is spray irrigated from May to October on two fields near Concession Road 8 and Sideroad 20.
- The Sewage Works operate under a 1996 MOE Certificate of Approval.
- The Township monitors the performance of the lagoons as well as the soil, groundwater, and surface water quality at and near the spray fields.

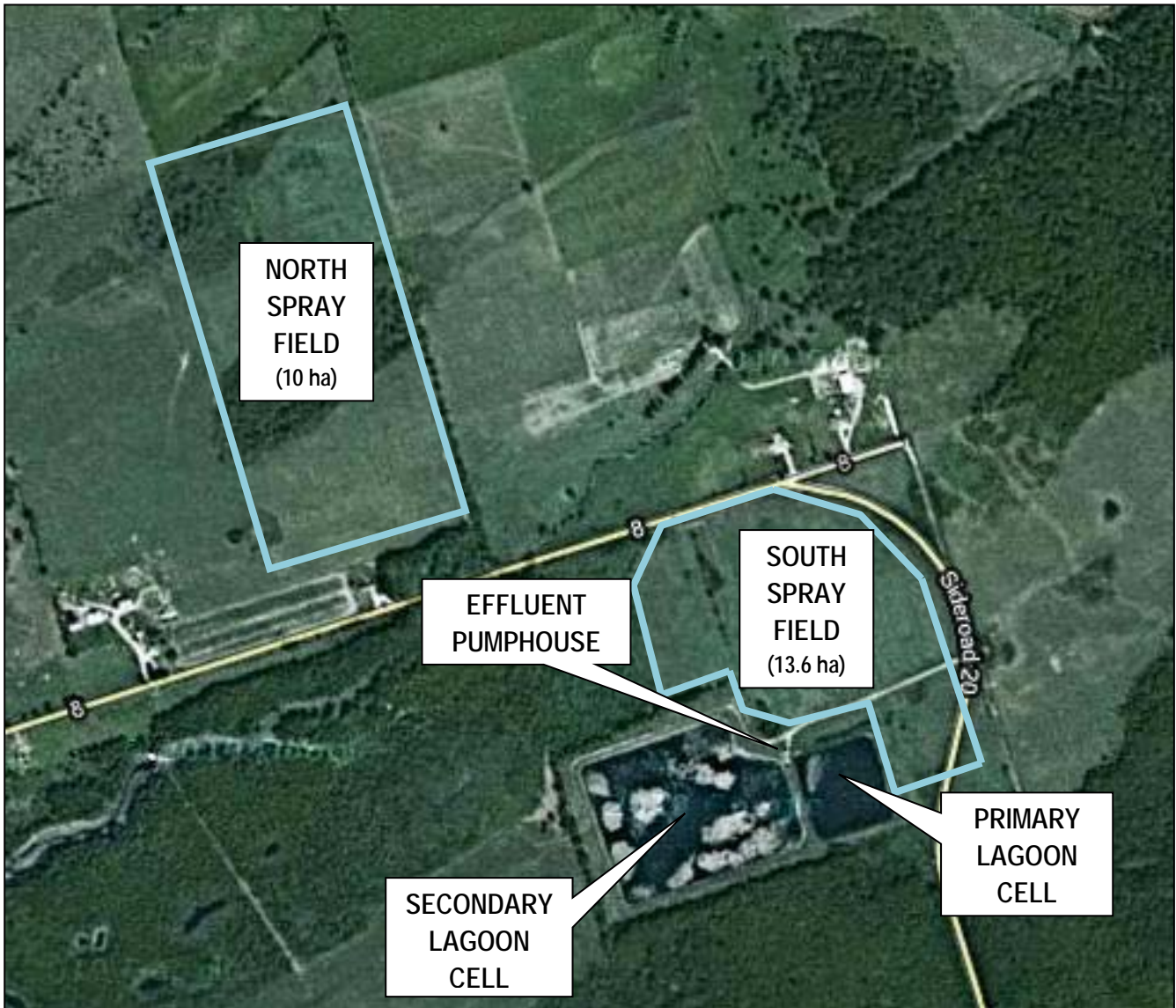
Lagoon Performance Summary

	Suspended Solids (mg/L)	BOD ₅ (mg/L)	Total Phosphorus (mg/L)	Total Kjeldahl Nitrogen (mg/L)
Raw Sewage	114	119	3	18
MOECC Design Guidelines Expected Effluent	30	25	6	N/A
Lagoon Effluent	13	11	1	3
Reduction	89%	91%	65%	83%

(Average of 2004 to 2016 data)

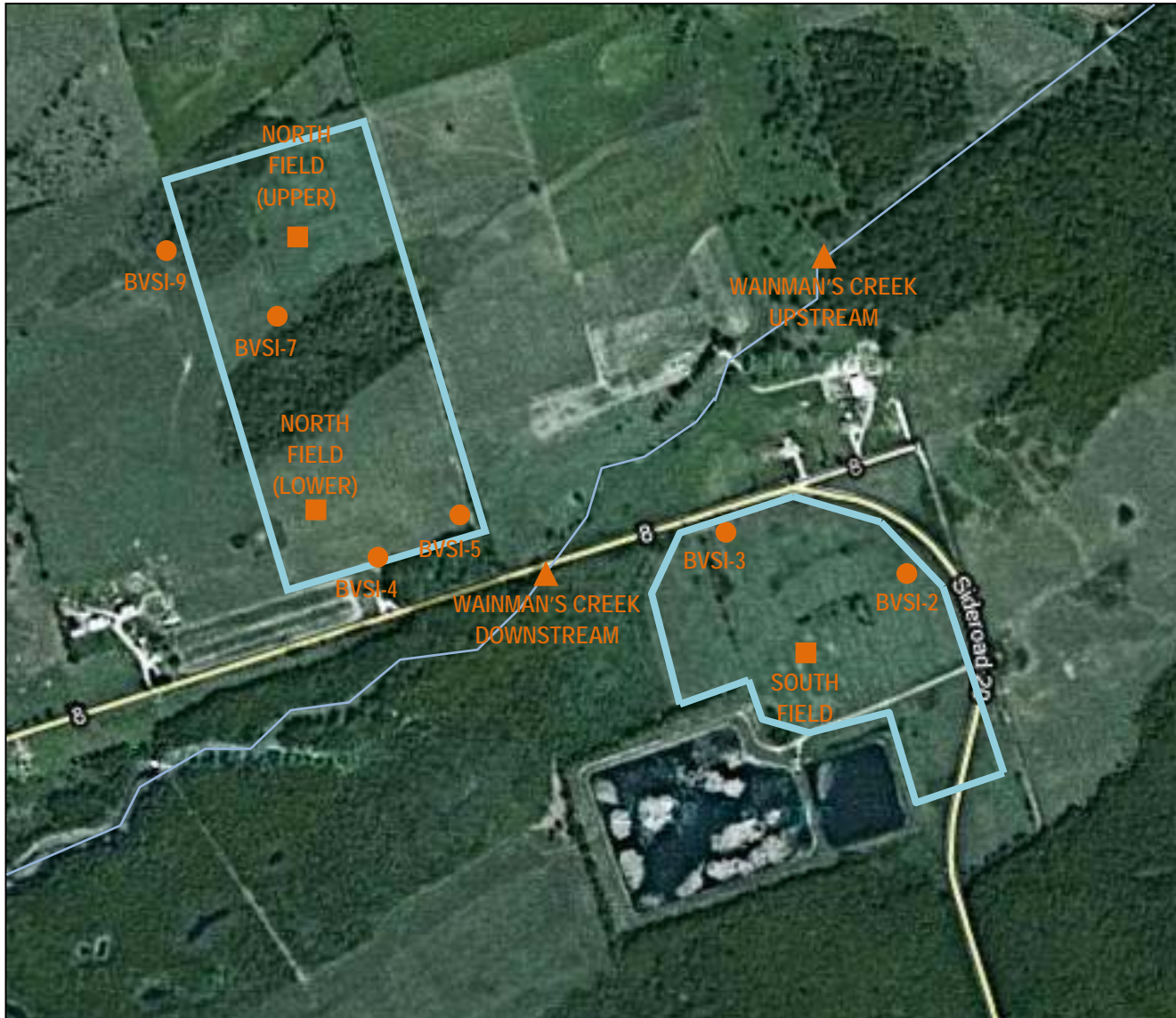
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EXISTING SEWAGE WORKS



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Class Environmental Assessment – PIC No. 2

SPRAY IRRIGATION SYSTEM MONITORING LOCATIONS



LEGEND

- GROUNDWATER
- ▲ SURFACE WATER
- SOIL

Samples are collected:

- In May, before the start of the spray irrigation season.
- In August, during the spray irrigation season.
- In November, after the spray irrigation season.

BACKGROUND

CLASS EA STUDY TO DATE

- PIC No. 1 was held in February 2011, presenting two alternatives:
 - Status quo
 - Establish an additional spray field
- Comments received expressed concerns with the spray irrigation operation: runoff, potential impacts on humans and farm animals, aerosols, and local drainage.
- Drainage improvements were completed in 2011 and 2012.
- The Problem Statement was broadened and additional alternatives were developed.
- Soil aeration pilot tests were conducted in 2016 using deep tining and shattertine techniques.
- Consultation meetings were held with MOECC and LSRCA.

REVISED PROBLEM STATEMENT

- Bayshore Village effluent spray irrigation fields have been in continuous operation for 25 to 38 years.
- Soils have become compacted and have reduced absorption capacity. A longer spray irrigation period is often required.
- There is no spare capacity in the spray irrigation system to temporarily take spray irrigation fields out of service for aerating and/or tilling the soils as needed to restore and maintain their original effluent absorption capacity.
- The effluent disposal system must have sufficient capacity to adequately dispose of the effluent from the Bayshore Village lagoons.
- The effluent disposal system should minimize impacts on the environment and on adjacent residents and farms, meet current regulatory requirements, satisfy the Township's operational needs, and be affordable.

ALTERNATIVE SOLUTIONS

CONSIDERED IN DETAIL:

- 1 Do Nothing – Status quo
- 2 Alter spray irrigation practices (reduced spray frequency and application rates); add effluent UV disinfection
- 3 Establish new spray irrigation field(s); add tree buffers; add effluent UV disinfection
- 4 Build an effluent disposal bed and maintain spray irrigation on one field
- 5 Build a larger effluent disposal bed and discontinue spray irrigation
- 6 Upgrade the lagoons to tertiary treatment and discharge effluent to Wainman Creek/Lake Simcoe; discontinue spray irrigation

SCREENED OUT:

- Pump lagoon effluent to the Lagoon City STP
- Plant poplars or willows on the spray fields to increase nutrient absorption and evapotranspiration

MAIN CONSIDERATIONS

The preferred solution needs to:

- Provide the required effluent disposal capacity without runoff.
- Provide some spare capacity for operational flexibility.
- Involve reasonable level of effort for operation and maintenance.
- Address adjacent residents' concerns.
- Have a reasonable capital cost for construction, equipment and land.
- Be acceptable to the MOECC and meet the policies of the Lake Simcoe Protection Plan so that an MOECC approval can be obtained.

The preferred solution(s) may be considered in a phased approach, for the short-term, and/or for the long term.

ALTERNATIVE 1: DO NOTHING

DESCRIPTION

- Continue with current spray irrigation operation on existing fields.

ADVANTAGES

- No significant changes to existing operation, equipment and facilities.
- No capital costs or increase in operating and maintenance costs.

DISADVANTAGES

- Does not provide spare effluent disposal capacity.
- Labour-intensive setup and maintenance of above-ground irrigation piping and spray nozzles.
- Likely to result in deteriorating soil conditions and reduced effluent disposal capacity, leading to:
 - increased potential for ponding and runoff;
 - increased potential for contamination of ditches, Wainman's Creek and Lake Simcoe.
- Potential for dispersion of microbiological aerosols.
- Some negative visual impacts.

- Ongoing costs for the maintenance and repairs to the existing equipment



ALTERNATIVE 2: ALTER SPRAY IRRIGATION PRACTICES

DESCRIPTION

- Maintain existing spray irrigation fields.
- Modify spray irrigation rates and scheduling to provide one week drying period between irrigation events.
- Add UV disinfection of effluent before spray irrigation.

ADVANTAGES

- Utilizes existing equipment and facilities.
- Likely to decrease potential for ponding/runoff and contamination of ditches, Wainman's Creek and Lake Simcoe.
- Reduces potential impact of aerosols on residents.
- Low capital costs

DISADVANTAGES

- Provides only 60% of required effluent disposal capacity.
- Labour-intensive set-up and maintenance of above-ground irrigation piping and spray nozzles.
- More difficult operation, requiring additional piping and fittings, to isolate fields for variable spray irrigation rates.
- Some negative visual impacts.

- Estimated project cost: \$220,000
- Ongoing costs for the maintenance and repairs to the existing equipment



ALTERNATIVE 3: ESTABLISH NEW SPRAY IRRIGATION FIELD

DESCRIPTION

- Establish additional field(s) with spray irrigation equipment.
- Modify spray irrigation rates and scheduling to provide one week drying period between spray irrigation events.
- Add UV disinfection of effluent before spray irrigation.
- Add tree buffers.

ADVANTAGES

- Utilizes existing equipment and facilities.
- Provides 20% spare effluent disposal capacity.
- Likely to improve soil conditions and decrease potential for ponding/runoff and contamination of Wainman's Creek and Lake.
- Reduces potential impact of runoff, aerosols and visual impacts.

DISADVANTAGES

- Labour-intensive set-up and maintenance of above-ground irrigation piping and spray nozzles.
- More difficult operation, requiring additional irrigation piping and fittings, to isolate fields for variable spray irrigation rates.
- Increases operation and maintenance costs.

- Estimated project cost \$1.0M
- Ongoing costs for the maintenance and repairs to the existing equipment.



ALTERNATIVE 4: BUILD EFFLUENT DISPOSAL BED AND MAINTAIN SOUTH FIELD

DESCRIPTION

- Maintain spray irrigation on South field only.
- Construct a fully raised effluent disposal bed (4.8 ha) on a new field.
- Modify spray irrigation rates and scheduling to provide one week drying period between spray irrigation events.
- Add UV disinfection of effluent before spray irrigation.
- Add tree buffers.

ADVANTAGES

- Replaces fields that have less capacity and are not frequently used.
- Provides 17% spare effluent disposal capacity.
- Likely to improve soil conditions and decrease potential for ponding/runoff and contamination of Wainman's Creek and Lake Simcoe.
- Reduces potential impact of aerosols and visual impacts on residents.
- Utilizes existing equipment and facilities; eliminates road and creek crossing with irrigation piping.

DISADVANTAGES

- Maintains labour-intensive setup and maintenance of above-ground irrigation piping and spray nozzles.
- Potential for effluent breakout from raised bed on poor soils.
- Increases operation and maintenance for dosing systems to ensure even distribution of effluent to large disposal bed.
- Tile bed cannot be used for crops. Grass must be cut regularly to maintain tile bed performance.
- Estimated project cost \$4.1M.
- Ongoing costs for the maintenance and repairs to the existing equipment.



ALTERNATIVE 5: BUILD LARGER EFFLUENT DISPOSAL BED AND DISCONTINUE SPRAY IRRIGATION

DESCRIPTION

- Abandon spray irrigation.
- Construct a fully raised effluent disposal bed (5.6 ha) on a new field.

ADVANTAGES

- Discontinuing spray irrigation eliminates potential for runoff, aerosols, and negative aesthetic impacts.
- Eliminates labour-intensive setup and maintenance of above-ground irrigation piping and spray nozzles.

DISADVANTAGES

- Potential for effluent breakout from fully raised disposal bed on poor soils.
- Increases operation and maintenance for dosing systems to ensure even distribution of effluent to large tile beds.
- Tile bed cannot be used for crops. Grass must be cut regularly to maintain tile bed performance.
- Estimated project cost \$4.4M



**ALTERNATIVE 6: DISCONTINUE SPRAY IRRIGATION,
UPGRADE SEWAGE TREATMENT AND DISCHARGE EFFLUENT TO WAINMAN CREEK/LAKE SIMCOE**

DESCRIPTION

- Discontinue spray irrigation.
- Upgrade sewage lagoons with tertiary phosphorus removal and ultraviolet disinfection, and discharge effluent to Wainman Creek.

ADVANTAGES

- Eliminates potential for runoff, aerosols, and negative aesthetic impacts.
- Provides a higher level of sewage treatment before disposal.
- Well defined effluent point source that can be easily controlled and monitored.

DISADVANTAGES

- Lake Simcoe Protection Plan policies prohibit the construction of a new municipal STP that discharges to Lake Simcoe. MOECC approval will be difficult to obtain without changes to LSPP.
- High capital and operating costs (power, chemicals, labour) of a mechanical STP.
- Estimated project cost: \$3M.



NEXT STEPS

- Respond to questions and review all comments received from public and review agencies.
- Finalize evaluation of alternative solutions and determine preferred solution.
- Prepare study report and present to Township Council.
- Issue Notice of Completion of Class EA study and request public comments (30-day review period).
- Design of preferred solution.

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COMMENTS



Please fill out a comment sheet and either leave it with us today or send it to the address provided.

FREEDOM OF INFORMATION ACT

Comments and information regarding this project are being collected to assist the project team in meeting the requirements of the *Environmental Assessment Act*. These comments will be maintained for reference throughout the project and, with the exception of personal information, will be used in the Environmental Project File and become part of the public record.

ACCESSIBILITY FOR ONTARIANS WITH DISABILITIES ACT

The Township of Ramara continues to enhance accessibility that is inclusive of all ages and abilities. The information presented at today's Public Information Open House can be provided in alternative formats upon request. Such a request should be submitted to:

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