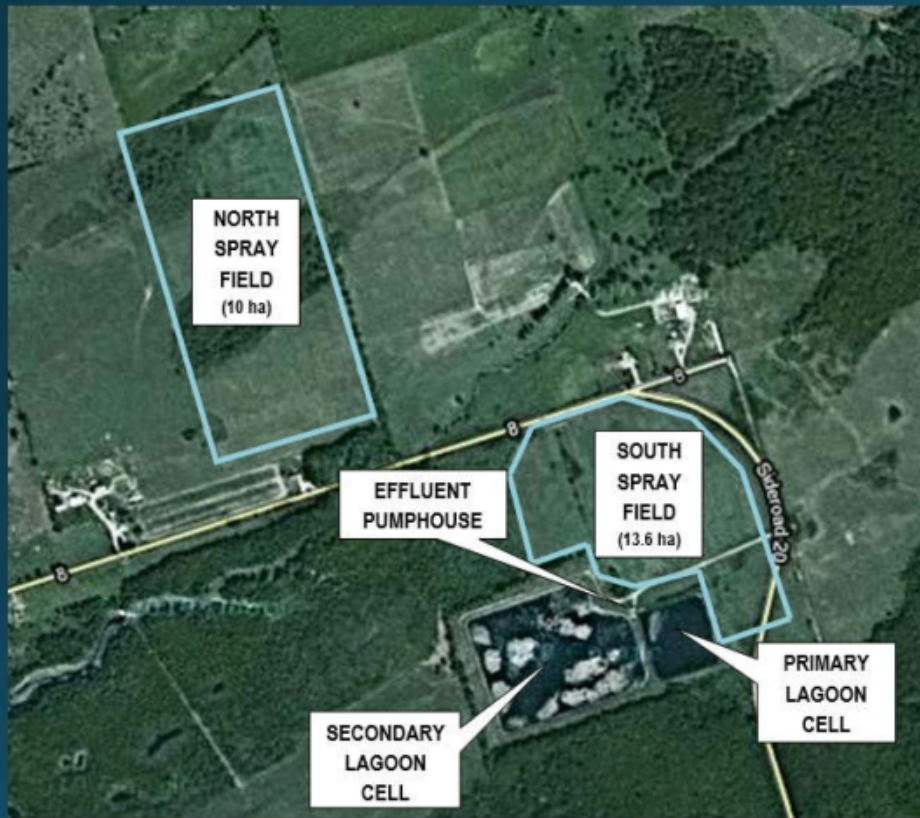




# Bayshore Village Effluent Spray Irrigation Class EA Update

December 11, 2023

# Existing Sewage Works



- Sewage from Bayshore Village is pumped to 2 stabilization and storage ponds (lagoons)
- Treated effluent is spray irrigated on the South and North fields from May to October
- Effluent disposal by evapotranspiration and infiltration

# Problem Statement

- The effluent is spray irrigated on fields that have been in continuous operation since the 1980s
- Soils have become compacted and have reduced infiltration capacity
- Increasingly difficult to dispose of effluent from May to October
- Public concerns with potential runoff and impacts on humans/farm animals, aerosols, drainage
- **Need to find the most appropriate solution for the disposal of the lagoon effluent**

# Main Considerations

## The preferred solution needs to:

- Provide the required effluent disposal capacity without runoff to ditches and Wainman Creek
- Provide some spare capacity for operational flexibility
- Involve reasonable level of effort for operation and maintenance
- Have reasonable capital costs for construction, equipment and land
- Address adjacent residents' concerns
- Be acceptable to the MECP so that an approval can be obtained

# Brief Project History

- Class EA Study Report issued in 2017
- **Preferred solutions were in 2017:**
  - **Immediate:** Establish one additional spray area on field west of lagoons
  - **Long Term:** Abandon spray irrigation, build tertiary STP with effluent discharged to Wainman Creek/Lake Simcoe
- MECP comments: EA cannot recommend solution that does not meet LSPP policies, and further analysis of spray irrigation option is required
- Over many years, Township discussed and argued project with provincial politicians and MECP staff
- In 2022, Township resolved to abandon the long term STP solution and asked Tatham to update and finalize the Class EA

# Updates

- **Bayshore Village inflow and infiltration study**
  - Sources of extraneous flows identified
  - Ongoing repairs
  - Inflow and infiltration currently under control
- **Spray irrigation days**
  - Fields designed for 100 spray days per season
  - Average number of spray days since 2014: 65 days
  - When spray season extended to end of October: 75 days
  - Allowable application rate: 55 m<sup>3</sup>/ha/day

# Long List of Alternative Solutions

## Do nothing – Status quo

1. Reduce inflow and infiltration in sewers
2. Increase spray irrigation rate on existing spray fields
3. Establish 1 new spray irrigation field (West)
4. Establish 1 new spray irrigation field (West) and decommission North field
5. Establish 2 new spray irrigation fields and decommission North field
6. Build effluent disposal bed on the West field and continue spray irrigation on the South field
7. Build effluent disposal bed on the South field and establish new spray irrigation field (West)
8. Build effluent disposal bed and discontinue spray irrigation
9. Pump effluent from lagoons to Lagoon City STP and expand STP
10. Upgrade lagoons with tertiary STP and discharge effluent to Wainman Creek (Lake Simcoe)

# Alternative Solutions Screening

- **Criteria for Screening:**
  - Must meet the Problem Statement
  - Must meet current MECP guidelines and LSPP policies
  - Must be financially viable
- **Screened out**
  - Do Nothing and six alternatives in the long list





## Do Nothing/ Status Quo

- Continue with spray irrigation on existing fields
- Cannot dispose of annual effluent volume on existing fields in 65 or 75 spray days at MECP allowed spray irrigation rate
- Cannot meet the Problem Statement
- **SCREENED OUT**

### **Alternative 1: Reduce Inflow and Infiltration**

- Continue with I/I monitoring and control
- Helps but cannot, on its own, address the Problem Statement

### **Alternative 2: Increase Spray Irrigation Application Rate**

- Seek MECP approval to apply effluent at higher rate on existing spray fields
- May cause runoff
- **SCREENED OUT**

### Alternative 3: Use the South & North Fields and Add the West Field

- 41 ha is sufficient to dispose of annual volume in 65 spray days
- Estimated project cost: \$1.6M

### Alternative 4: Use the South Field Only and Add the West Field

- Insufficient spray area to dispose of annual volume in less than 75 days
- **SCREENED OUT**





## Alternative 5: Establish Two New Spray Irrigation Fields

- Continue spray on the South Field; decommission the North Field
- Add 2 spray fields: West Field (16 ha) and 13 ha field TBD
- Shortest distance to area outside of EP lands: 3-4 km
- Estimated project cost: \$11.3 M
- **SCREENED OUT**

## Alternative 6: Build Effluent Disposal Bed on West Field and Keep Spray Irrigation on South Field

- Continue spray on the South Field; decommission the North Field
- Build 292 m<sup>3</sup>/day effluent disposal bed on West field used year-round
- Estimated project cost: \$6.2 M





## Alternative 7: Build Effluent Disposal Bed on South Field and Spray Irrigate on West Field

- Establish spray irrigation on West field
- Decommission spray irrigation on South and North fields
- Build 274 m<sup>3</sup>/day effluent disposal bed on South field used year-round
- Phased project
- Estimated project cost: \$8.3 M

## Alternative 8: Build Effluent Disposal Bed and Discontinue Spray Irrigation

- Decommission all spray fields
- Build 399 m<sup>3</sup>/day effluent disposal bed on West field used year-round
- Estimated project cost: \$7.3M



## Alternative 9: Pump Lagoon Effluent to Lagoon City STP

- Decommission all spray fields
- Pump lagoon effluent to Lagoon City STP
- Expand Lagoon City STP
- 2 routes considered
- Project costs:
  - Short route: \$20M
  - Long route: \$36 M
- **SCREENED OUT**





## **Alternative 10: Tertiary STP with Discharge to Lake Simcoe**

- Does not meet Lake Simcoe Protection Plan policies
- Will not be approved by MECP
- **SCREENED OUT**

# Preliminary Assessment

- Continue with spray irrigation on existing fields and add a new field to the west (Alt. 3)
  - Lowest cost solution
  - Risk that weather prevents disposal of all effluent each year
- Adding a large effluent disposal bed and keeping a spray irrigation field (Alt 6. or Alt. 7)
  - Significantly higher cost than Alt. 3
  - Very low risk of insufficient disposal capacity
  - Reduces risk of potential impacts to environment and residents
  - Operation and maintenance of 2 systems
  - Spray irrigation could be replaced with disposal bed in a second phase
- Abandoning spray irrigation and building a large effluent disposal bed (Alt. 8)
  - Higher cost than Alt 3 and Alt 6
  - Eliminates risk of insufficient capacity due to weather
  - Reduces O&M requirements
  - Reduces risk of potential impacts to environment and residents

# Next Steps

- Air quality assessment of existing and proposed spray irrigation fields
- Archaeological assessment of West field
- Additional geotechnical investigation of West field
- Consultation with residents and review agencies
  - Information package
  - PIC early in 2024
- Final evaluation of alternatives
- Class EA Report



# Bayshore Village Effluent Spray Irrigation Class EA Update

