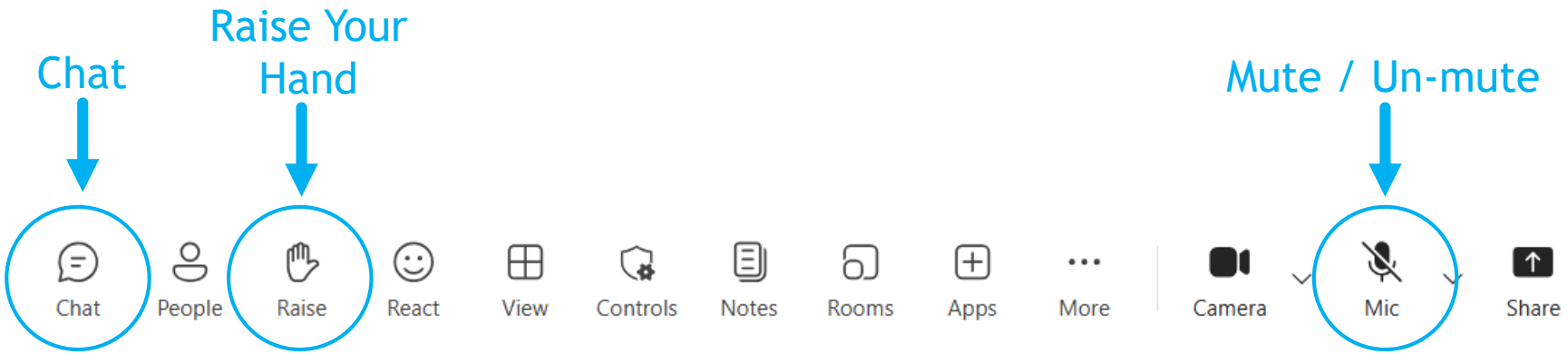
Cedar Island Schedule B Environmental Assessment
Public Information Centre

Date: June 16, 2026
Time: 7pm
Location: virtual presentation

Housekeeping Items

- Discussion at the end of the presentation
- Keep your microphone on mute during the presentation
- To ask a question:
  - Use the “raise your hand” feature and un-mute yourself when called on, or
  - Use the “chat” option



Agenda

1. Project Overview
   - Introduction
   - Project Overview & Project Context
   - Study Area & Study Timeline
2. Phase 1: Identification of Problems and Opportunities
   - Existing Conditions
3. Phase 2: Identification and Evaluation of Alternatives
   - Long List of Alternatives
   - Evaluation of Alternatives
4. Preferred Alternative and Implementation

Introduction

Project Background

- Study Area encompasses Cedar Island Rd and Davey Dr
- Historic issues with stormwater conveyance, standing water
  - High water levels in Lake Couchiching often exceed low points in the drainage system
- Previous solutions have been:
  - 2001 – Road reconstruction that raised the height of the Cedar Island Rd and Davey Dr
  - 2009 – Installation of stormwater pumping station at corner of Cedar Island Rd and Davey Dr

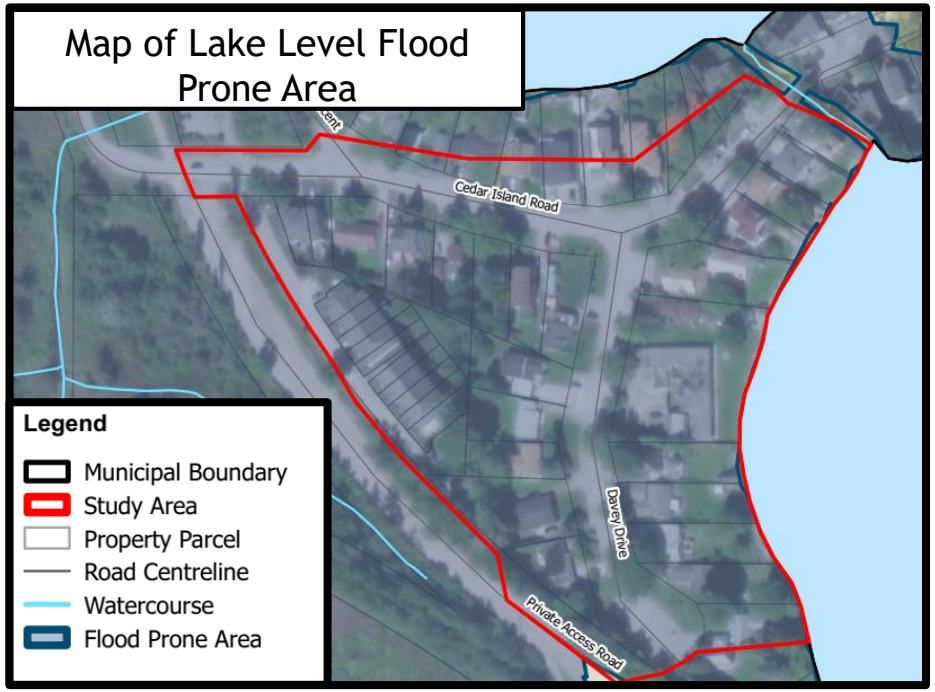
Map of Study Area

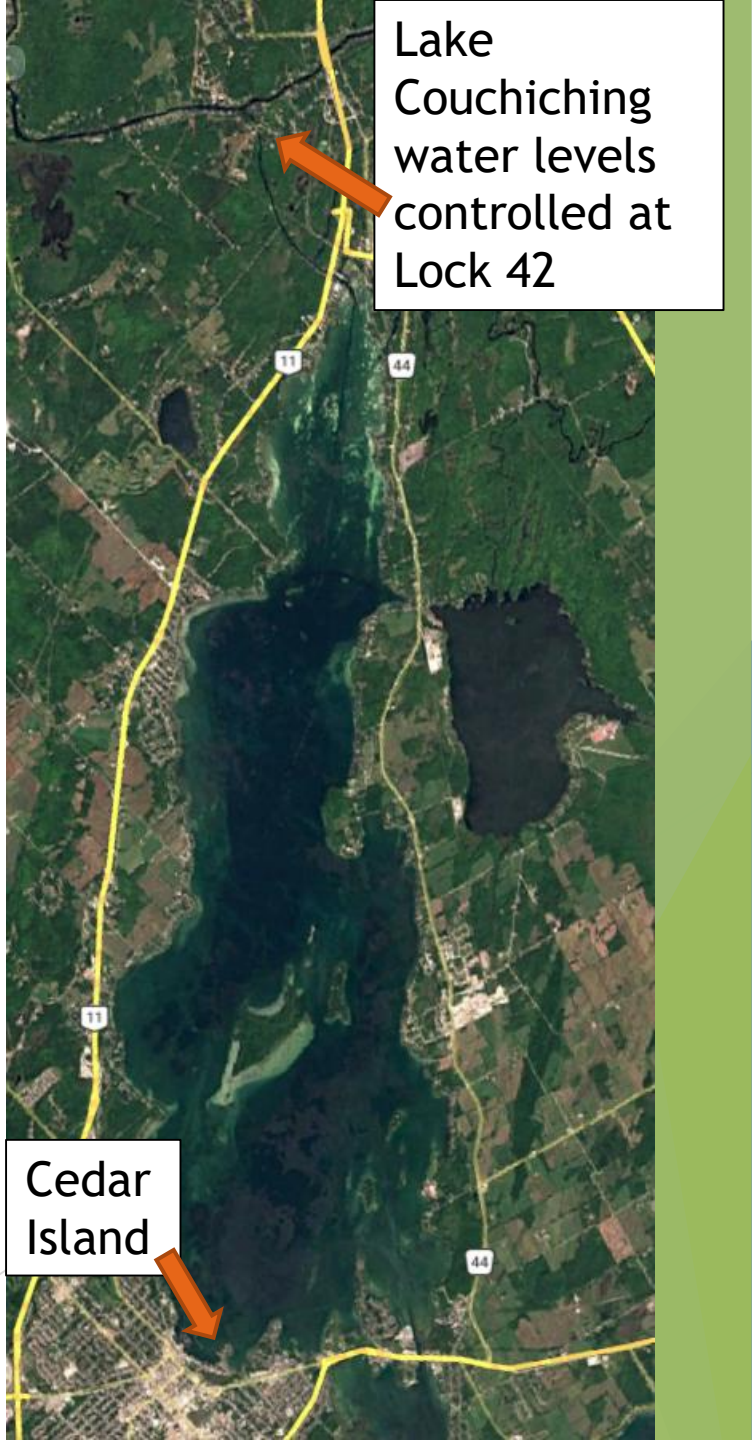
Project Purpose

- City's 2-year storm event conveyance target is not being met
- Seasonal Challenges
  - April to July, lake water levels exceed elevation of local ditches and catch basins
  - Winter freezing conditions inhibit operation of pumping station
- Goal of Environmental Assessment is to:
  - Determine current operational and legislative conditions
  - Identify stormwater solutions to mitigate frequent stormwater drainage issues in the study area

Urban vs Lake Flooding

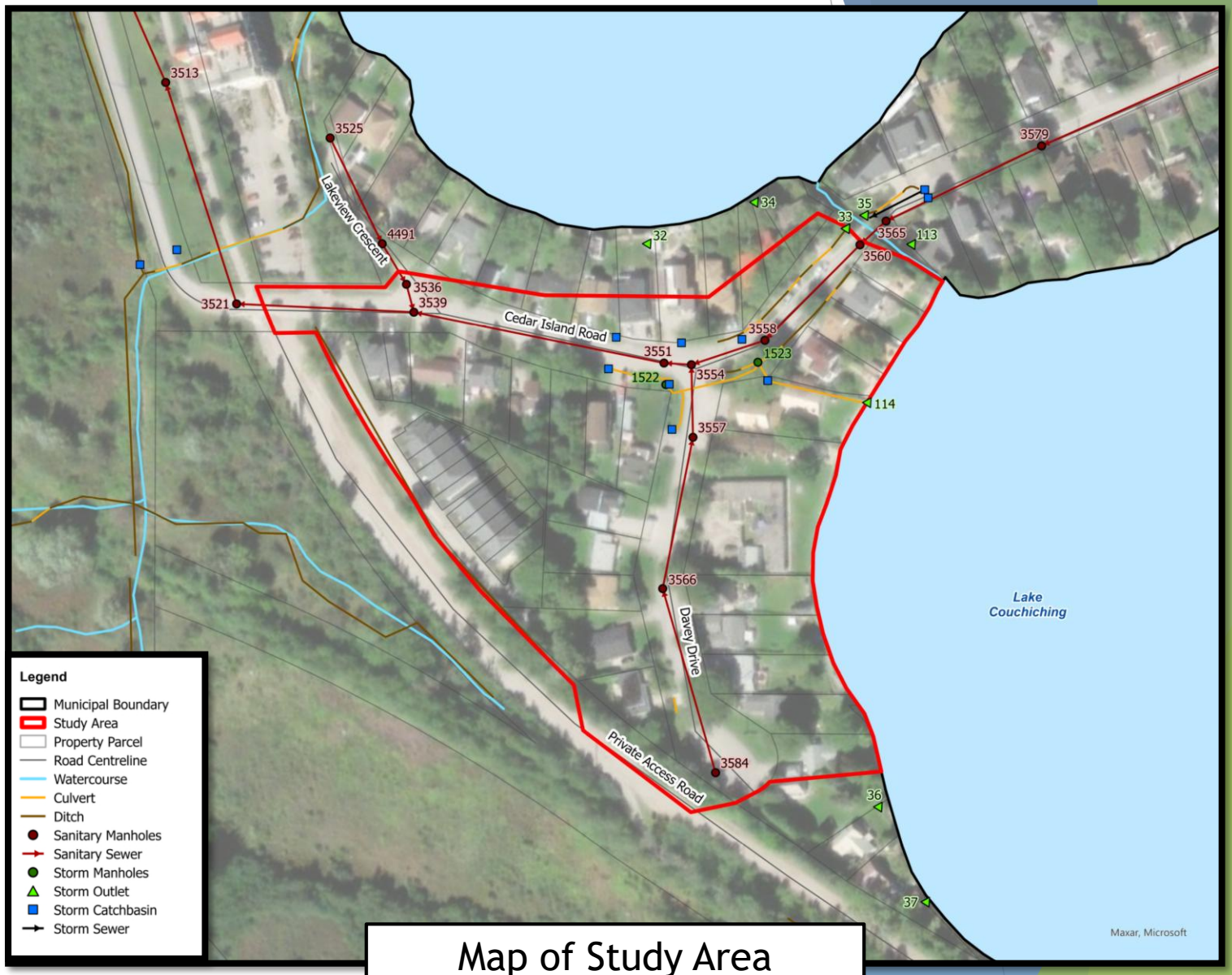
- **Lake Flooding:** Entire study area is prone to flooding from high water levels in Lake Couchiching
  - Parks Canada controls Lake Couchiching water levels at Lock 42
- **Urban Flooding:** Occurs when runoff overwhelms the storm sewer and road capacity
  - City is responsible for stormwater management to reduce urban flooding





Project Area

- Study Area bounded by:
  - Cedar Island Rd between Trans Canada Trail and channel
  - Davey Drive
  - Lakeview Crescent
- Study Area contains 26 homes



Map of Study Area

Class EA Process

Class EA Phase 1 | Class EA Phase 2 | Implementation

Identify Problem or Opportunity Consultation

- Identify need
- Initiate consultation with the public and agencies
- Notice of Commencement

Background Review

- Obtain and review background documentation and initiate agency contact
- Identify data gaps to be addressed during the site investigation

Site Investigations

- Undertake natural heritage investigations
- Undertake hydrology and hydraulics investigation
- Identify opportunities and constraints

Evaluation of Alternatives

- Identify alternatives
- Complete impact assessments
- Evaluate alternatives
- Select preliminary preferred alternative
- Public open house

Preliminary Design / Project File Report

- Confirmation of preferred alternative
- Preliminary design of preferred alternative
- Recommend further study, if required
- Prepare project file report
- Notice of Completion

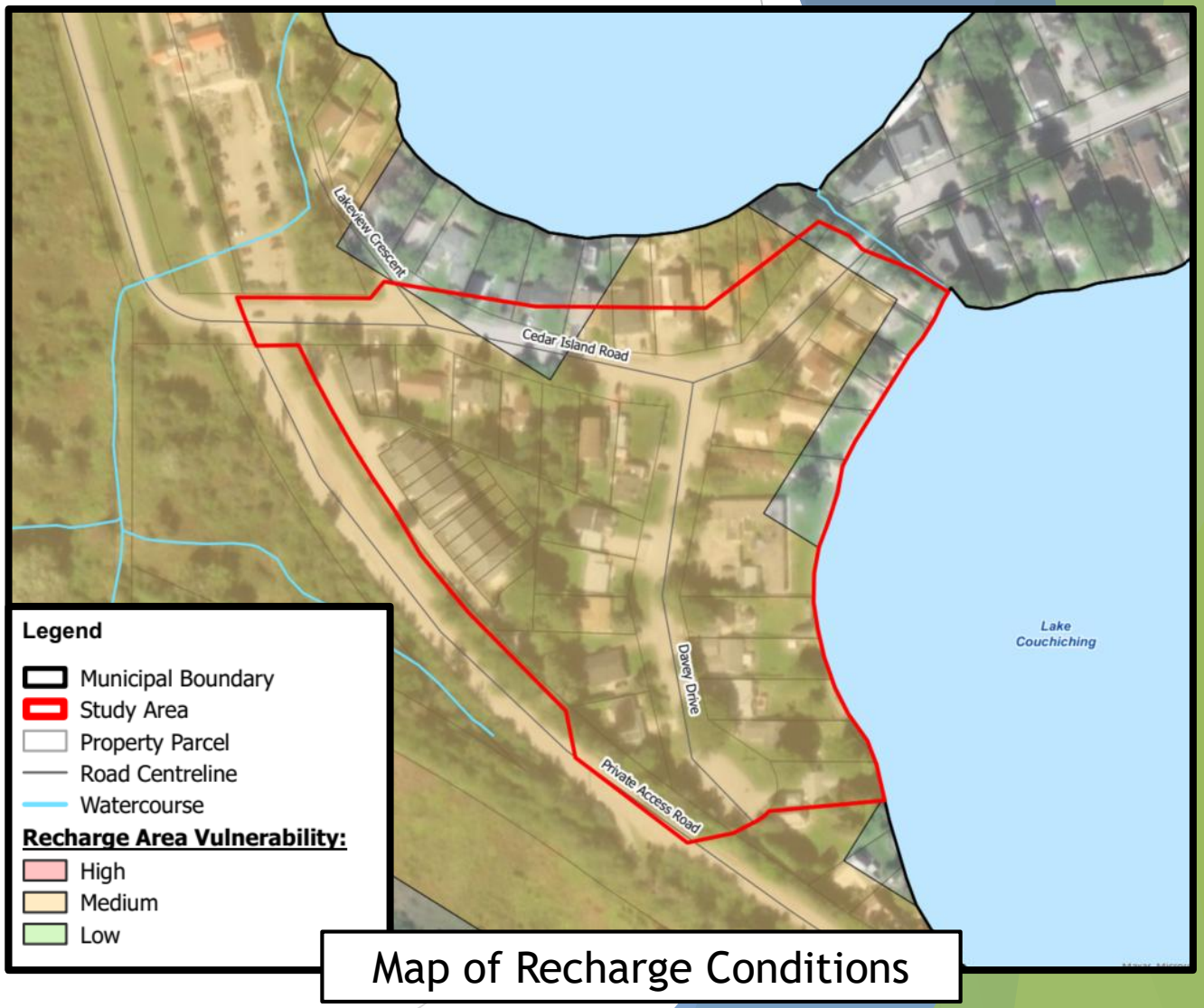
Final Design / Implementation

- Detailed design of the proposed works
- Obtain permits and approvals
- Prepare contract drawings and tender documents
- Construction and operation of the works
- Post-construction monitoring

Phase 1: Identification of Problems and Opportunities

Existing Conditions – Hydrogeology

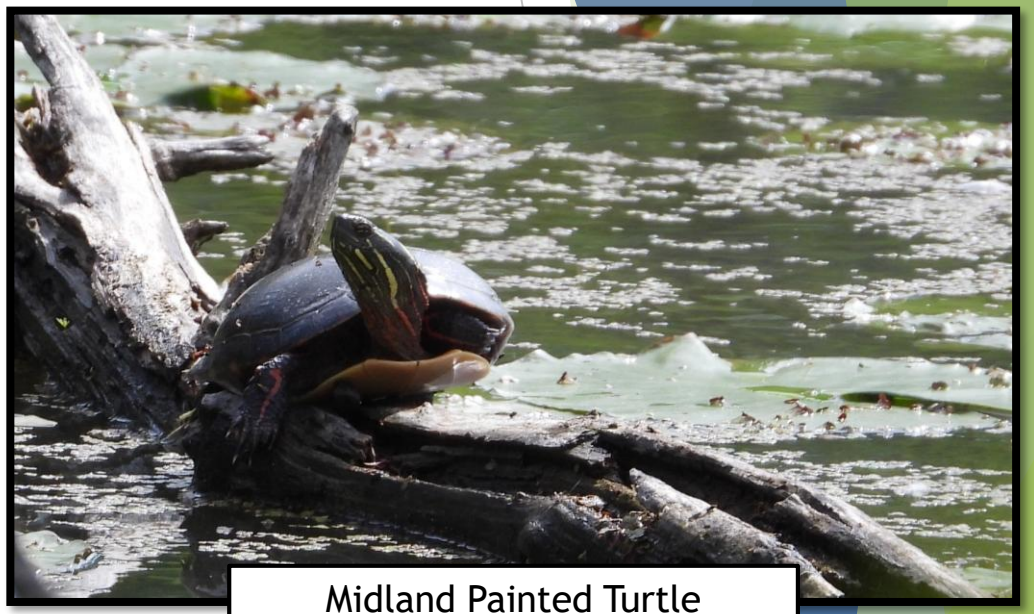
- Groundwater significantly influenced by Lake Couchiching's water levels
- Part of South Georgian Bay Lake Simcoe Source Protection Region
- Not a wellhead protection area
- Site is located within a Significant Groundwater Recharge Area



Map of Recharge Conditions

Existing Conditions – Natural Heritage

- Aquatic Life
  - 14 fish species observed by MNR
  - Both warm and cool water species
  - Channel may be spawning habitat for Sunfishes and Basses
- Terrestrial Habitat and Wildlife
  - Area is fully developed
  - Shoreline of Lake Couchiching can be part of several species' habitat range
- Species At Risk
  - Potential for up to 16 Species at Risk
  - If the detailed design phase identifies construction impacts to the species or its habitat, then review by MECP would be required



Midland Painted Turtle

Existing Conditions – Engineering Environment

Map of Existing SWM Infrastructure

Map of Lake Level Flood Prone Area

Existing Conditions – Engineering Environment

- Several factors leading to current issues:
  1. Lake Couchiching's average maximum elevation is greater than ground elevation causing outlet to often be submerged
  2. Pump is underpowered for existing flows and volumes and cannot operate during freezing (winter) conditions
  3. Climate change is resulting in more intense and frequent storms
  4. Groundwater is anticipated to infiltrate into the storm sewers
  5. Debris and sediment clogging culverts and outlets
  6. Limited gradient from private properties to convey runoff
  7. No backflow valve caused lake water to flow back into sewer system until 2024 when vacuum release valve installed

Phase 2: Identification and Evaluation of Alternatives

Note: all figures are concepts of what the design could look like. Exact locations of infrastructure will be decided during the detailed design stage.

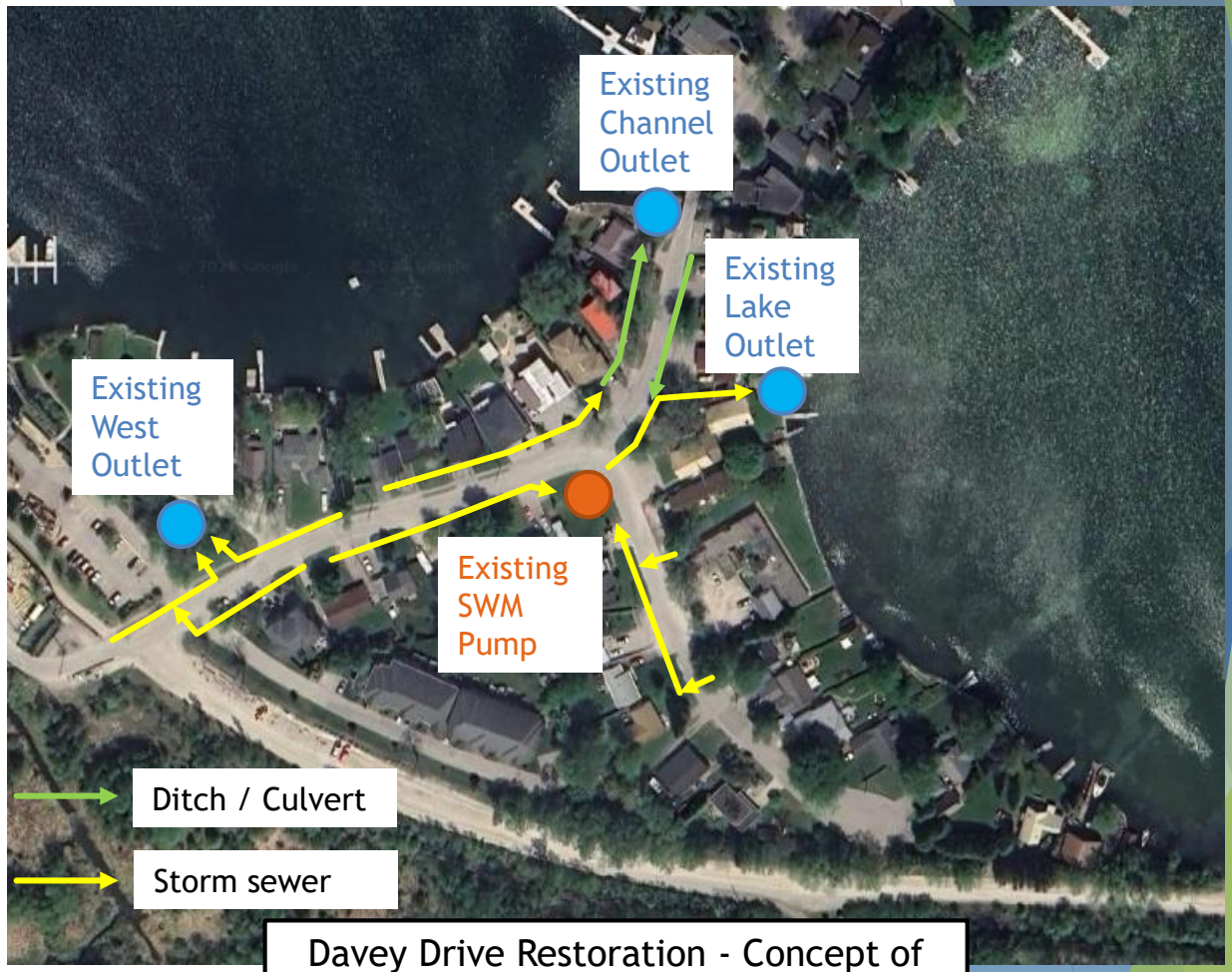
Alternative 1 – Do Nothing

- Benchmark for Environmental Assessment process
  - No changes have been applied
  - No capital costs

Alternative 1 – Map of Existing Conditions

Davey Drive Restoration (part of Alternatives 2-10)

- Restoration of stormwater conveyance system to 2009 conditions
  - Sealed storm sewer and catch basin along north sections
  - Maintenance of south swale
  - Minor regrading, as needed
- Cost - $140,000



Davey Drive Restoration - Concept of Proposed Design

Alternative 2 – Maintenance / Restoration

- Cleaning and minor repairs to existing storm sewers
- Local ditches cleaned and regraded
  - Includes restoration/replacement of culverts
- Debris and sediment flushed from the stormwater pipes, inlets, and outlet structures
- Restoration of Davey Drive
- Cost - $425,000

Alternative 2 – Concept of Proposed Design

Alternative 3 – Upgrade Pump with Backflow Valve

- Pumping station upgrade
  - Confirm pump rates
  - Winterizing pumphouse
- Backflow valve will replace vacuum break installed in 2024
  - Will prevent the siphon of lake water from occurring
- Restoration of Davey Drive
- Cost - $1,250,000

Alternative 3 – Concept of Proposed Design

Alternative 4 – Secondary Pumping Station

- Existing conveyance system will remain the same
- Secondary pumping station will be added at southeast corner of Davey Drive and Cedar Island Road
- All flow will be directed from original pump to the second pump then pumped to Channel Outlet
- Restoration of Davey Drive
- Cost - $2,400,000

Alternative 4 – Concept of Proposed Design

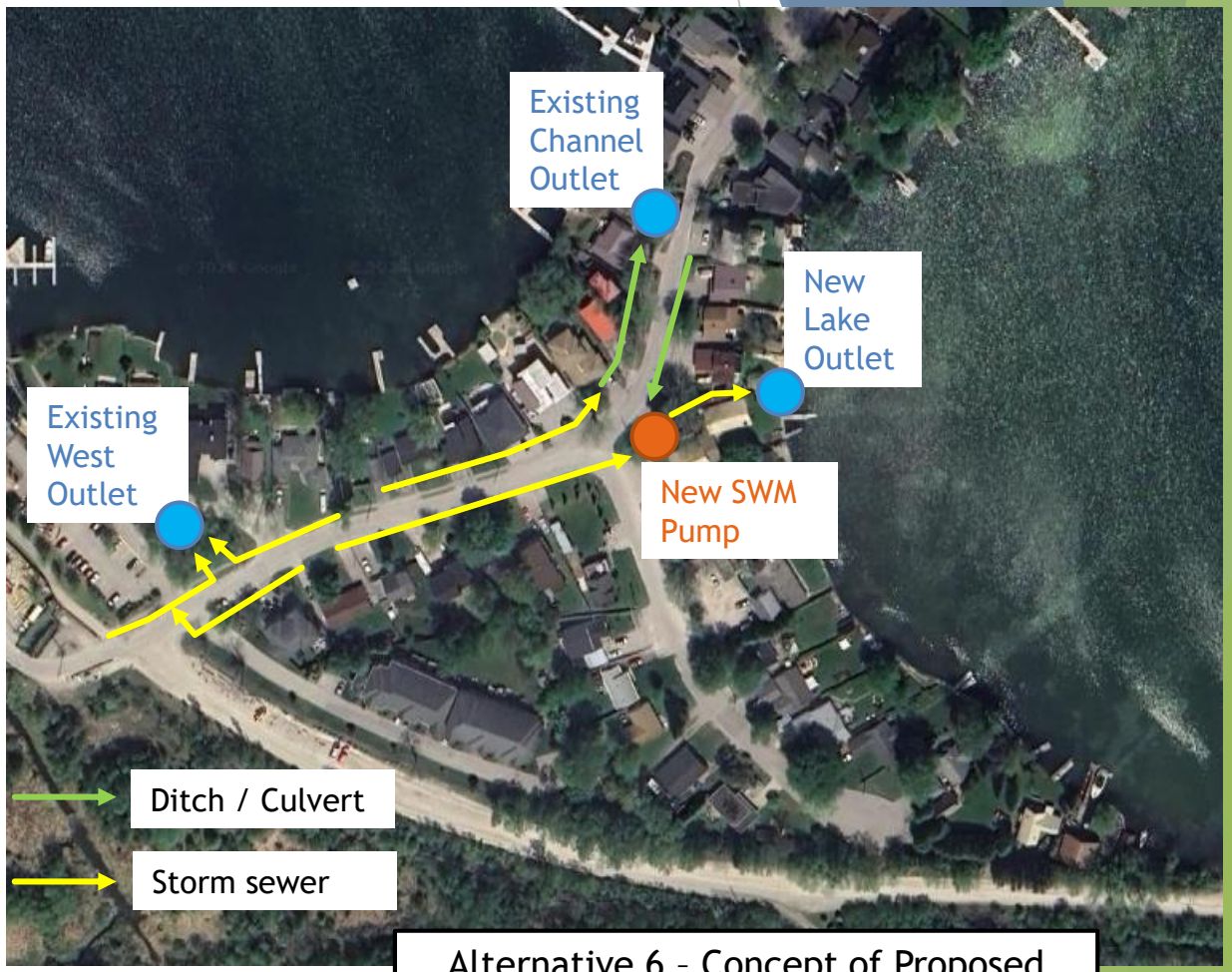
Alternative 5 – Regrade Road

- Re-grade and re-paving of Cedar Island Road and north section of Davey Drive
- Design assumes standing water is result of grading differences throughout the road and right-of-way
- Restoration of Davey Drive
- Cost - $1,670,000

Alternative 5 – Concept of Proposed Design

Alternative 6 – Local Works

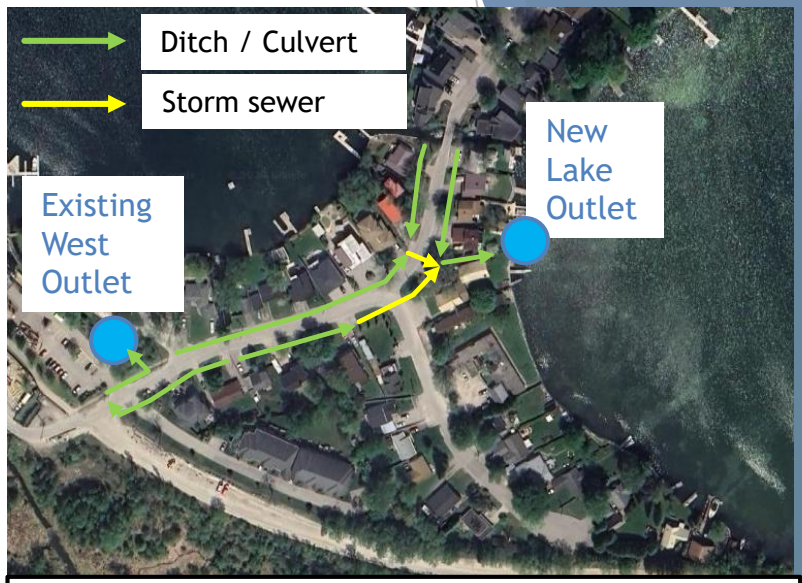
- Proposes relocating pumping station to allow for a shorter storm sewer
  - Shorter sewer requires smaller pump then one considered in Alternative 3
- Sealed pipes would replace perforated pipes to prevent groundwater inflow
- Some pipes may need to be replaced to provide sufficient grade
- Restoration of Davey Drive
- Cost - $2,114,000



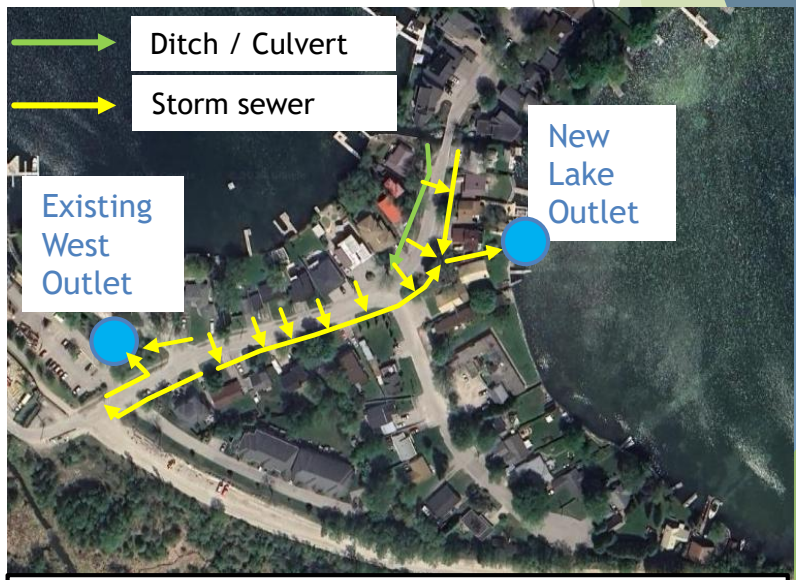
Alternative 6 – Concept of Proposed Design

Alternative 7 – New Gravity System to Existing Outlet

- Upgrade existing gravity system on Cedar Island Road
  - Gravity system relies on elevation gradients to convey water runoff
- Two options were considered
  - 7a – New gravity storm ditch paired with culverts ($797,000)
  - 7b – Storm sewers part of new gravity system ($1,855,000)
    - Local regrading in the boulevard would be required. West section of existing perforated pipe will be directed to the Lakeview Crescent outlet channel (West Outlet).
- Restoration of Davey Drive



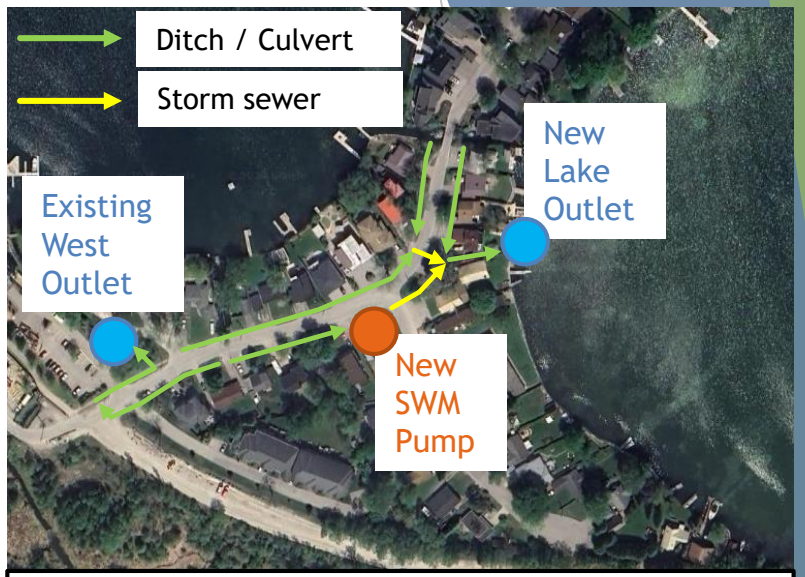
Alternative 7a – Concept of Proposed Design



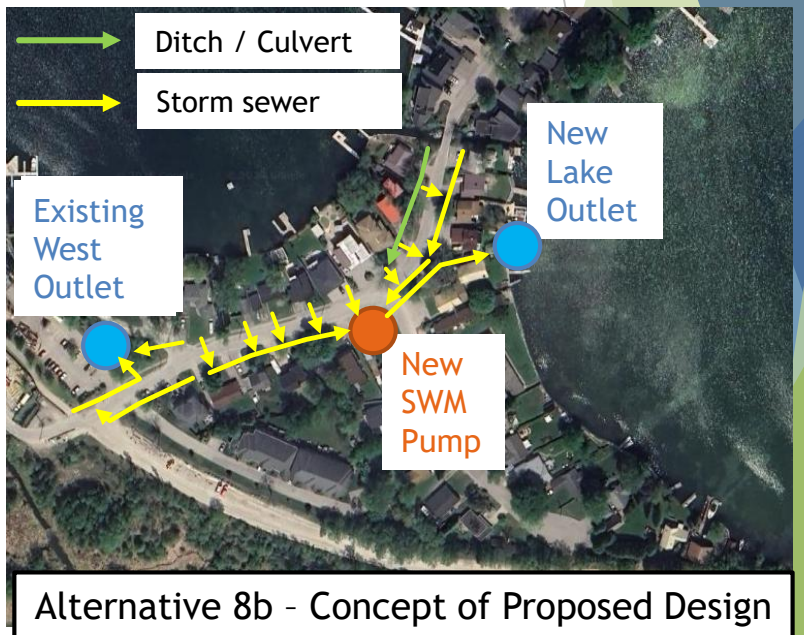
Alternative 7b – Concept of Proposed Design

Alternative 8 – New Gravity System with Pump Station to Existing Outlet

- Construction of new gravity system with a Pump Station
- Backflow valve will be installed to prevent lake siphoning
- Two options considered
  - 8a – New storm ditch within new gravity system with a pumping station ($1,627,000)
  - 8b – Sealed storm sewer within new gravity system with a pumping station ($2,188,000)
    - Local regrading in the boulevard would be required. West section of existing perforated pipe will be directed to the Lakeview Crescent outlet channel (West Outlet).
- Restoration of Davey Drive



Alternative 8a – Concept of Proposed Design



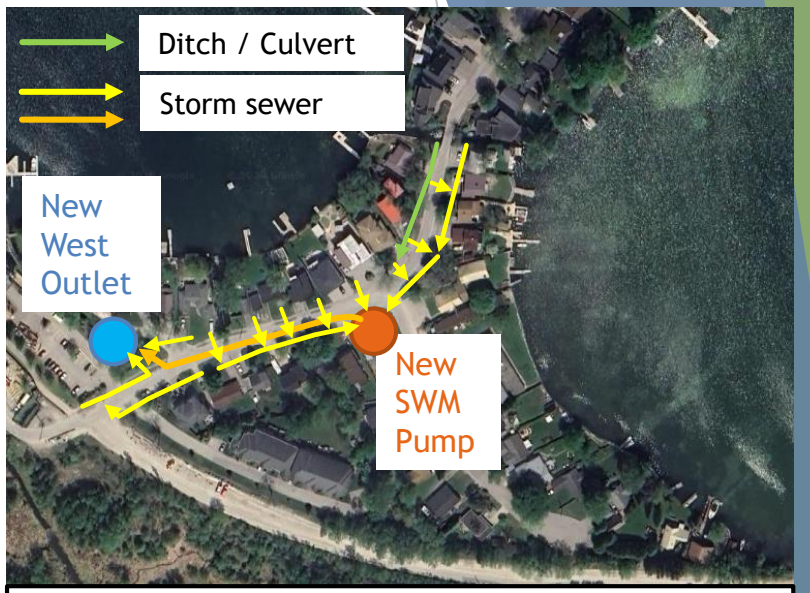
Alternative 8b – Concept of Proposed Design

Alternative 9 – New Gravity System with Pump Station with Diversion to New Outlet

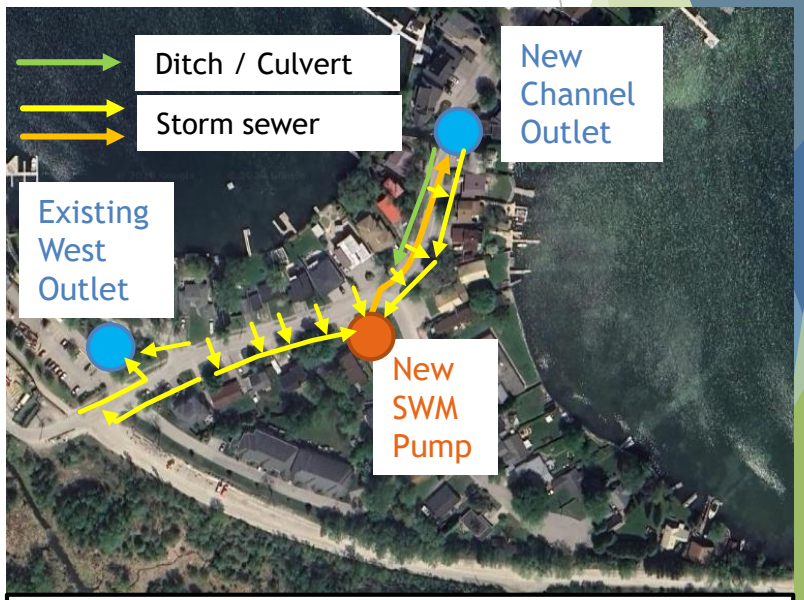
- Runoff conveyed to SW corner of Davey Drive and Cedar Island Road with sealed gravity storm sewer
- Flow then will be redirected with a pumping station to a higher outlet
  - Local regrading in the boulevard would be required as a new catch basin system in between each property will capture and convey runoff to the new storm sewer system
  - West section of existing perforated pipe will be directed to the Lakeview Crescent outlet channel (West Outlet)
- Restoration of Davey Drive
- Two variants proposed

Alternative 9 – New Gravity System with Pump Station with Diversion to New Outlet

- 9a – Diversion South ($2,320,000)
  - Diverts stormwater southwest to the ditch adjacent to Lakeview Crescent (West Outlet) discharging into Lake Couchiching
- 9b – Diversion North ($2,192,000)
  - Diverts stormwater north to the front of 179 Cedar Island Road
  - Municipal land on southeast corner of bridge provides space for an outfall into Lake Couchiching
  - This area will have to be regraded to allow for sealed storm pipe outlet
  - Force main constructed under east side of road to avoid utility conflict



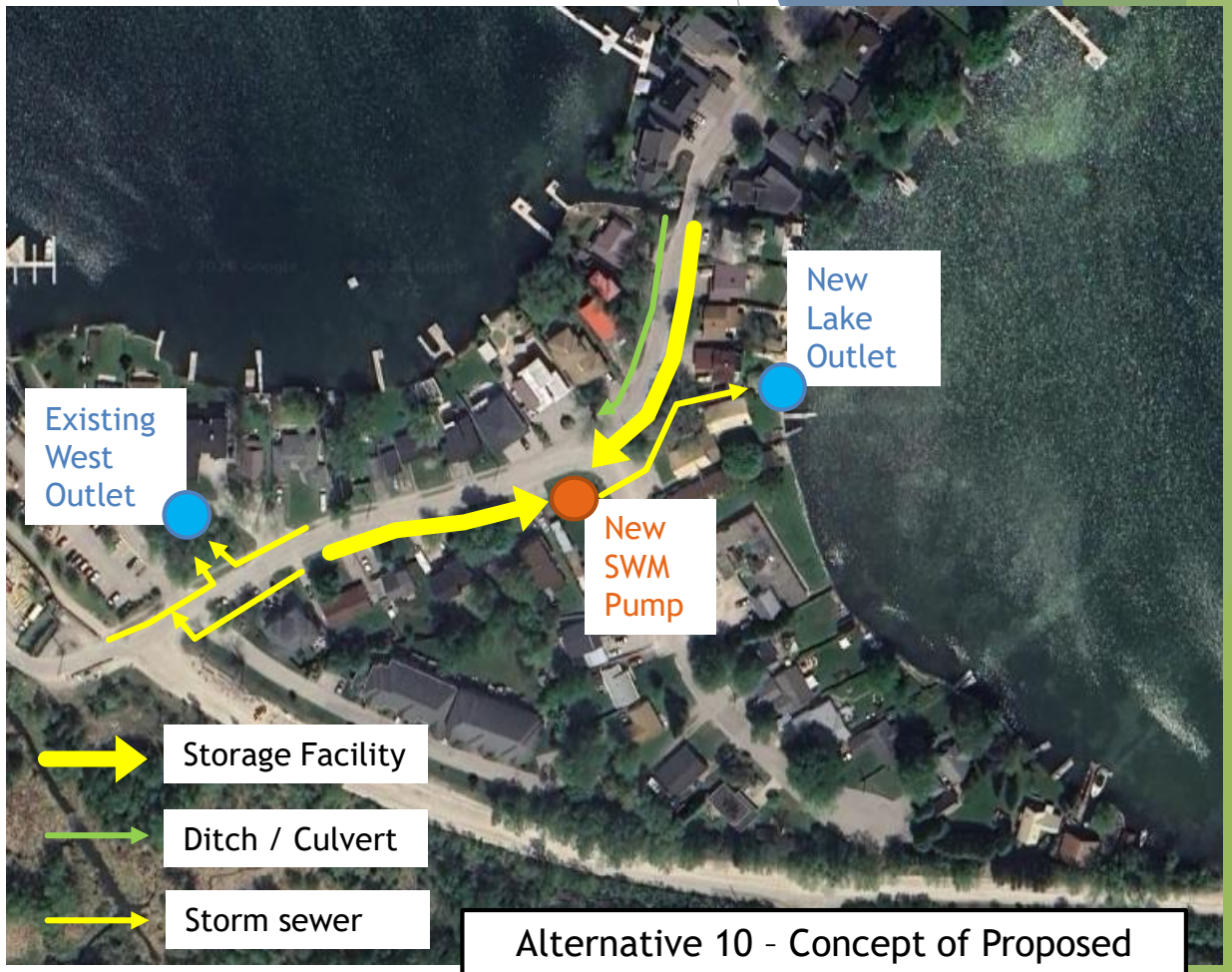
Alternative 9a – Concept of Proposed Design



Alternative 9b – Concept of Proposed Design

Alternative 10 – Inline Storage with Pump Station

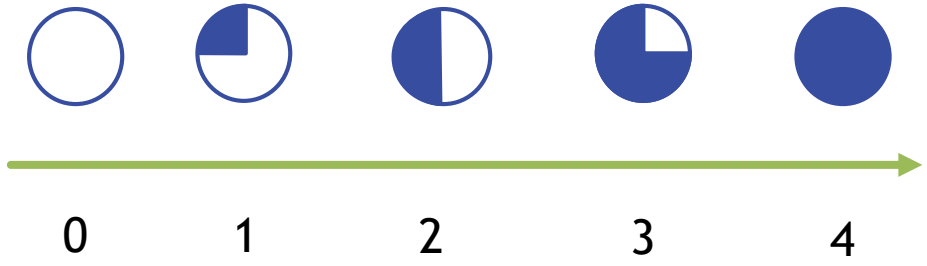
- Implementation of subsurface storage facility to retain runoff
- Facility is integrated with new sealed gravity storm sewer with pumping station and force main
- Local regrading in the boulevard would be required. West section of existing perforated pipe will be directed to the Lakeview Crescent outlet channel.
- Restoration of Davey Drive
- Cost - $2,548,000



Alternative 10 – Concept of Proposed Design

Evaluation Criteria

- Criteria reflects broad definition of the environment from Municipal Class EA
  - Flood Mitigation
  - Physical/Natural Environment
  - Social/Cultural Environment
  - Economic Environment
  - Technical Environment
- Score ranked accordingly:



Environmental Assessment Categories	Criteria	Measure for Assigning Scores
Flood Mitigation (6)	• Conveyance Capacity – 2-year storm • Conveyance Capacity –5-year storm • Conveyance Capacity (Major System – R.O.W & Ditches) - 100-year • Groundwater/lake level Impacts to Conveyance System (Water Volume Reduction) • Standing Water • Winter Operation	0 – negative impacts 1 – Does not convey 2 – Conveys under LWL 3 – Conveys under NWL 4 – Conveys under HWL
Physical/ Natural Environment (6)	• Potential Aquatic Habitat Benefit • Potential to Reduce Erosion • Potential to Improve Terrestrial Habitat • Integration with Existing Environment • Potential Impact on Surface and Groundwater • Receiving Water Quality	0 - detrimental 1 – no change 2 – some change 3 – moderate change 4 – highest change
Social/ Cultural (5)	• Aesthetic/Recreational Benefits • Compatibility with Adjacent Land Use • Community Disruption / Landowner Impacts • Public Health and Safety Objectives • Potential Archaeological and Cultural Impacts	0 – Significant negative impact 1 – Moderate negative impact 2 – No impact 3 – Slight improvement 4 – Major improvement Scores
Economic (3)	• Capital Costs • City Liability • Operation & Maintenance Costs	0 – Significant cost 1 – Moderate cost 2 – Low Cost 3 – Minimal Cost

Criteria used in Evaluation

Evaluation of Alternatives

Evaluation Criteria		Alternative #1 – Do Nothing	Alternative #2 – Maintenance/Restoration	Alternative #3 – Upgrade Pump	Alternative #4 – Secondary Pump	Alternative #5 – Regrade Road	Alternative #6 – Local Works	Alternative #7a – Gravity Ditch	Alternative #7b - Gravity Storm	Alternative #8a Gravity Ditch Pump	Alternative #8b – Gravity Storm Pump	Alternative #9a – Diversion South	Alternative #9b – Diversion North	Alternative #10 – Inline Storage
Flood Mitigation	Conveyance Capacity – 2-year													
	Conveyance Capacity – 5-year													
	Conveyance Capacity – 100-year													
	Lake Level Impacts to Conveyance													
	Standing Water													
	Winter Operation													
Physical / Natural Environment	Potential Aquatic Habitat Benefit													
	Potential to Reduce Erosion													
	Potential to Impact Terrestrial Habitat													
	Integration with Existing Environment													
	Potential Surface/Groundwater Impacts													
	Receiving Water Quality													
Social / Cultural Environment	Aesthetic/Recreational Benefits													
	Compatibility with Adjacent Land Use													
	Community Disruption / Landowner Impacts													
	Public Health and Safety Objectives													
	Potential Archaeological and Cultural Impacts													
Economic Environment	Capital Costs													
	City Liability													
	Operation and Maintenance Costs													
Technical / Engineering Environment	Agency Acceptance													
	Technical Feasibility													
	Lifespan of Works													
	Easement Access													
	Integration with Existing Infrastructure													
	Integration with Davey Drive													
	Policy/By-law Requirements													
Total Score														

Preferred Alternative and Implementation

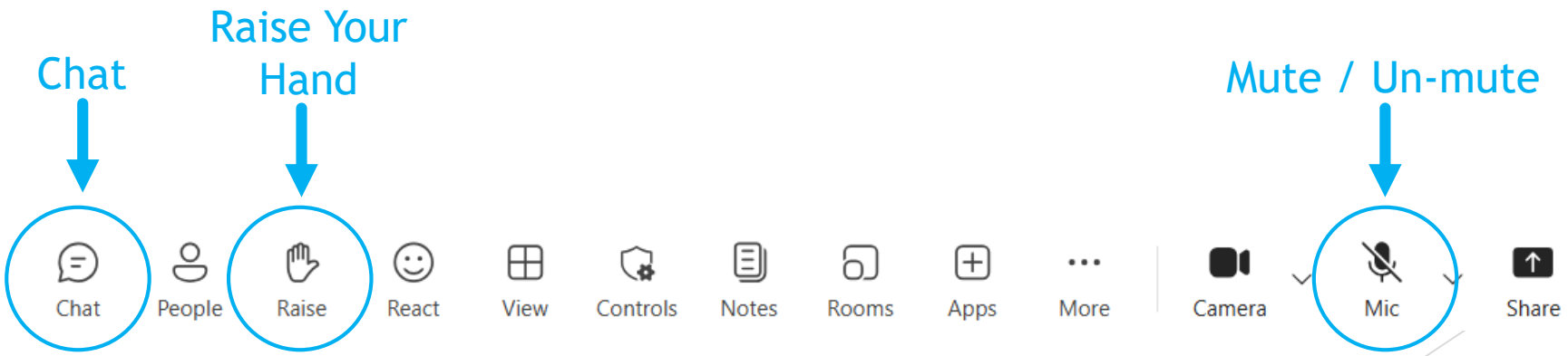
Implementation Considerations

- Additional studies required for detailed design:
  - Topographic survey
  - Hydrogeological and geotechnical assessments
  - Utility mapping
  - Environmental monitoring to confirm species at risk
  - Arborist report, tree inventory, and tree protection plan
  - Refining models and analysis after additional studies concluded
  - Ongoing public consultations
- Construction Scheduling
  - No in-water work between March 15th – July 15th
  - Tree and shrub pruning/removal done outside of bird breeding window (April 1 to August 31)

Questions

We welcome your questions and feedback!

- To ask a question:
  - Use the “raise your hand” feature and un-mute yourself when called on, or
  - Use the “chat” option
- Please complete the survey by July 16:
  - www.surveymonkey.com/r/S33HJND



Thank-you

Patrick MacDonald, P.Eng.
City of Orillia
T: 705-558-9538
PMacDonald@orillia.ca

Chris Denich, M.Sc., P.Eng., CAN-CISEC
Project Manager
AQUAFOR BEECH LTD.
denich.c@aquaforbeech.com

Alison Gingrich Regehr, MASc, P.Eng., CAN-CISEC
Project Coordinator
AQUAFOR BEECH LTD.
gingrichregehr.a@aquaforbeech.com