Clarington

Soper Creek Subwatershed Study – Public Information Centre

December 6, 2022

Land Acknowledgement

The Municipality of Clarington is situated within the traditional and treaty territory of the Mississaugas and Chippewas of the Anishinabeg known today as the Williams Treaties First Nations.

Our work on these lands acknowledges their resilience and their longstanding contributions to the area now known as the Municipality of Clarington.

Our Team Presenting Tonight

Clarington Staff

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Alison Gingrich Regehr
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Paul Lowes
Principal
SGL

Welcome and Agenda Review

Agenda Review

- Welcome, Agenda Review and Introductions
- Overview of Project and Summary of Key Findings
- Next Steps
- Questions of Clarification / Facilitated Discussion

Purpose of PIC

- Introduce the study area
- Provide an overview of the Subwatershed Study purpose
- Review the Subwatershed Study process
- Provide an opportunity for the public to review the work completed to date as well as upcoming work
- Invite the public to provide input and ask questions about the study

Overview of Project

What is Watershed Planning?

"Watershed planning is an opportunity for municipalities and other planning authorities to work collaboratively towards watershed objectives by creating a framework for the management of human activities, land, water, aquatic life and resources within a watershed, and for the assessment of cumulative, cross-jurisdictional and cross-watershed impacts."

- Ministry of Environment, Conservation and Parks, 2018





Municipality of SUB-WATERSHED PLAN CLARINGTON

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How will this subwatershed plan impact our community?

- Create an environmental vision, with a set of goals, objectives and targets
- Identify areas to be protected, enhanced and rehabilitated as development occurs through the Secondary Planning Process
- Provide a stormwater management plan that respects natural hydrologic processes
- Detail the requirements for ongoing monitoring and verification for environmental protection






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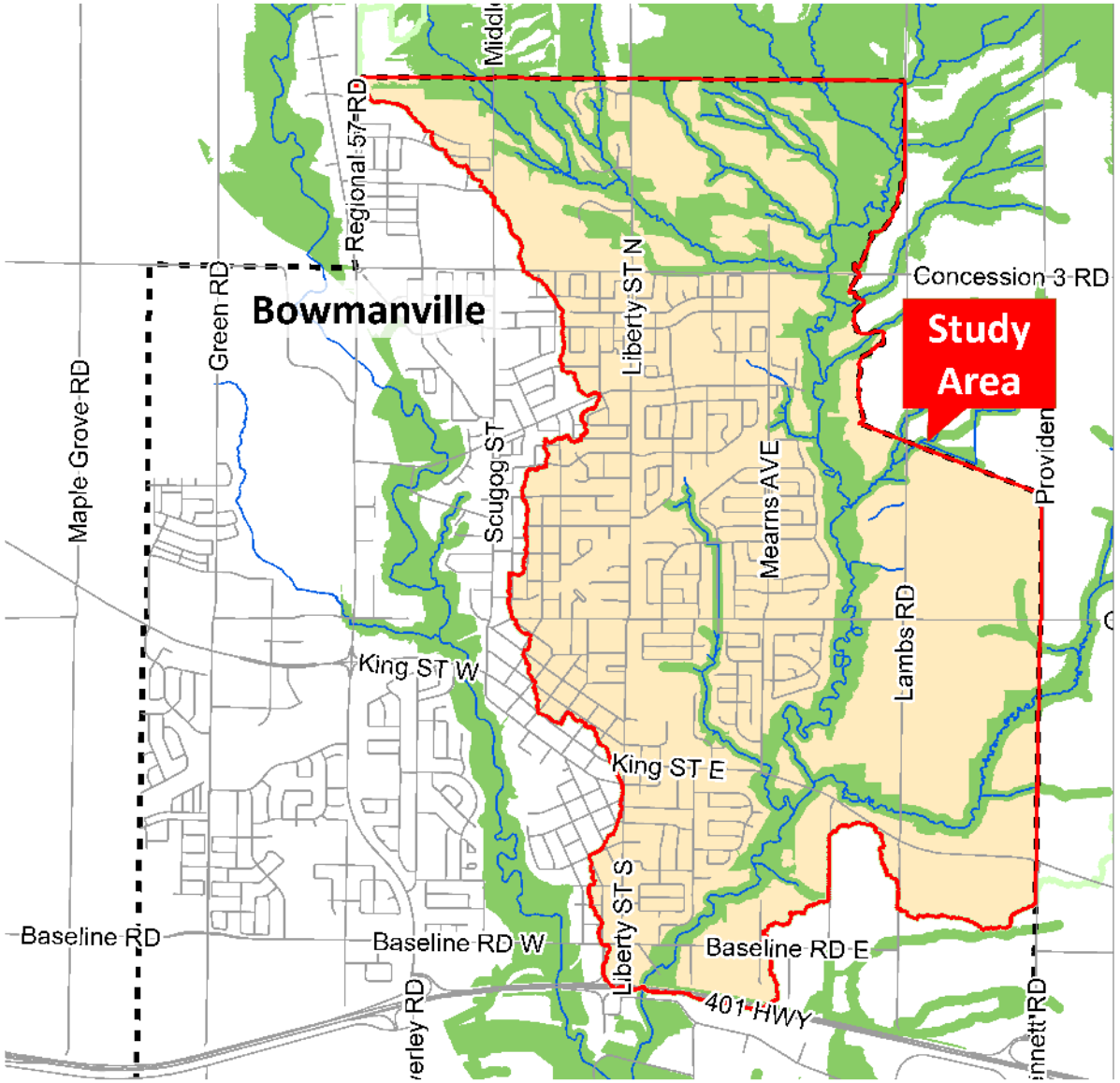
Study Area


Bowmanville
Study Area
Regional 57 RD
Concession 3 RD
Green RD
Maple Grove RD
Liberty ST N
Scugog ST
Mearns AVE
Lambs RD
King ST W
King ST E
Liberty ST S
Baseline RD
Baseline RD W
Baseline RD E
401 HWY

Study Purpose

- For the Subwatershed Study to:
  - Support future growth, development applications, and Secondary Plans for Bowmanville
  - Develop a plan that allows sustainable development while ensuring maximum benefits to the natural and human environments on a watershed basis

Municipality of Clarington Sub-Watershed Plan

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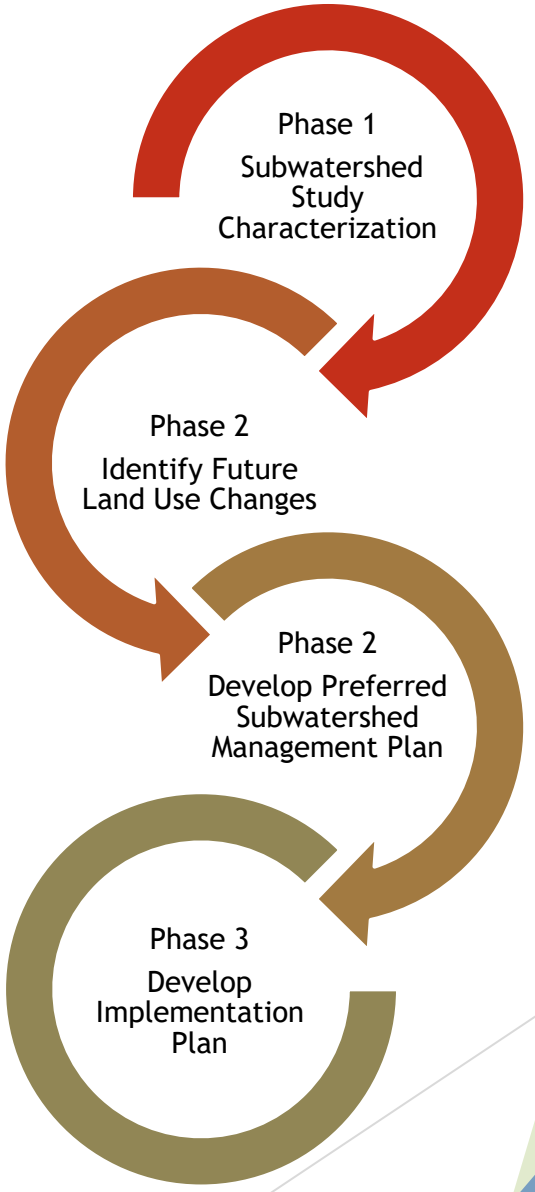
Subwatershed Study Process

- Study is being conducted in the spirit of a Master Plan Environmental Assessment Process
- The process includes:
  - Problem/opportunity identification
  - Evaluation of alternative solutions
  - Selection of a preferred solution
- Stakeholder consultation is an important component of the study
  - PIC #1 occurring now
  - PIC #2 will occur at the end of the study



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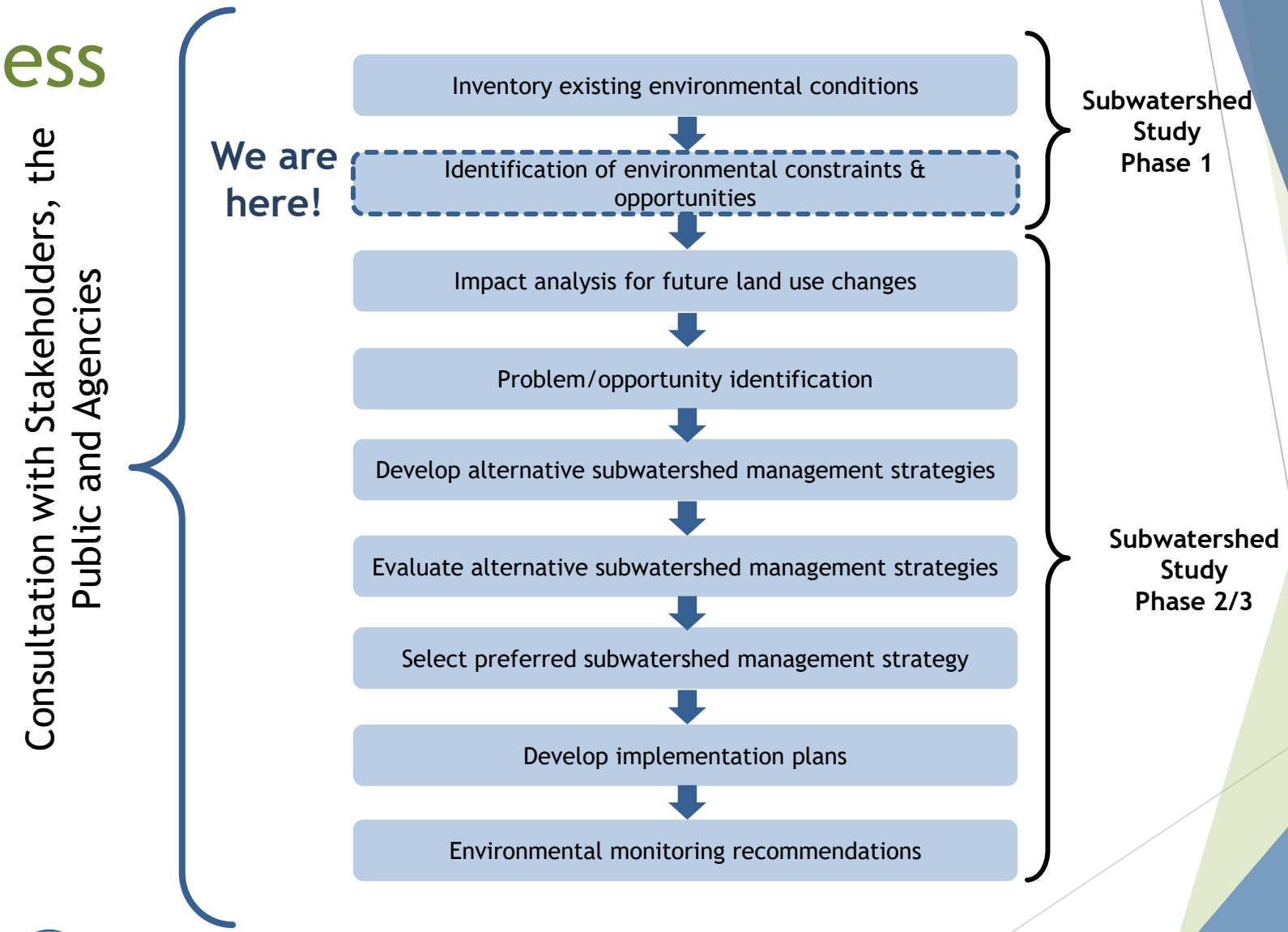
Subwatershed Study Process



Overview of Phase 1

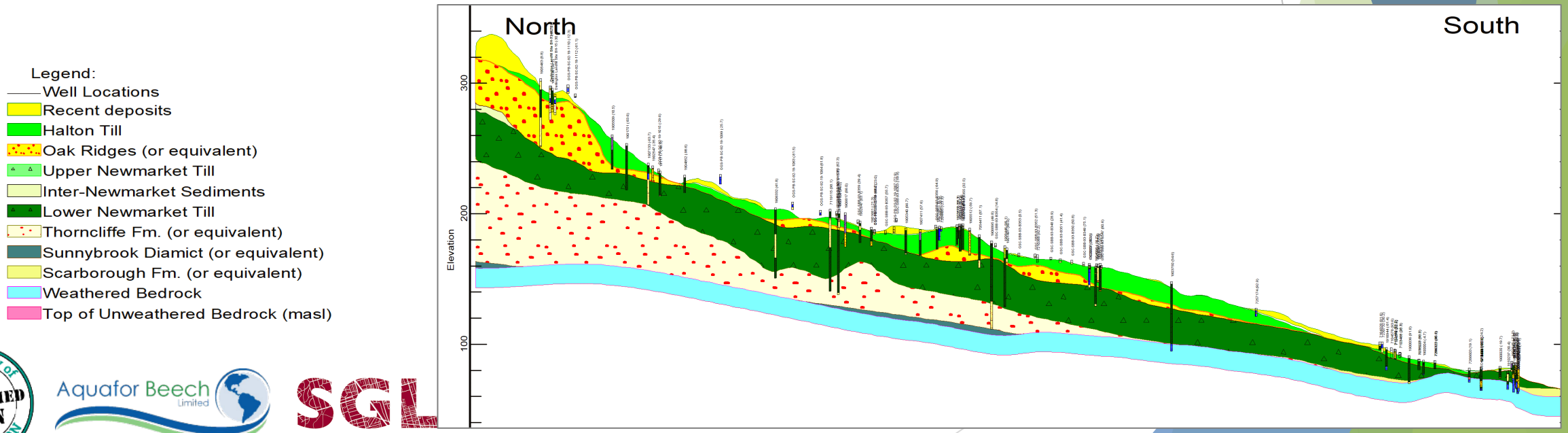
- Phase 1 Objective: Characterize the existing conditions in the Soper Creek Subwatershed and identify constraints and opportunities for development
- Phase 1 results provide guidance to develop the subwatershed management strategies in Phase 2

Existing Conditions

Task 1	Groundwater Resources
Task 2	Fluvial Geomorphology
Task 3	Headwater Drainage Features
Task 4	Hydrology and Hydraulics
Task 5	Natural Heritage
Task 6	Constraint Mapping

Existing Conditions – Groundwater Resources

- Objectives
  - Assemble existing information and data related to groundwater conditions
  - Identify information gaps and recommend next steps
- Study Tasks
  - Assess the existing groundwater conditions within the Soper Creek subwatershed
  - Review shallow and regional groundwater systems
  - Identify significant groundwater recharge and discharge areas



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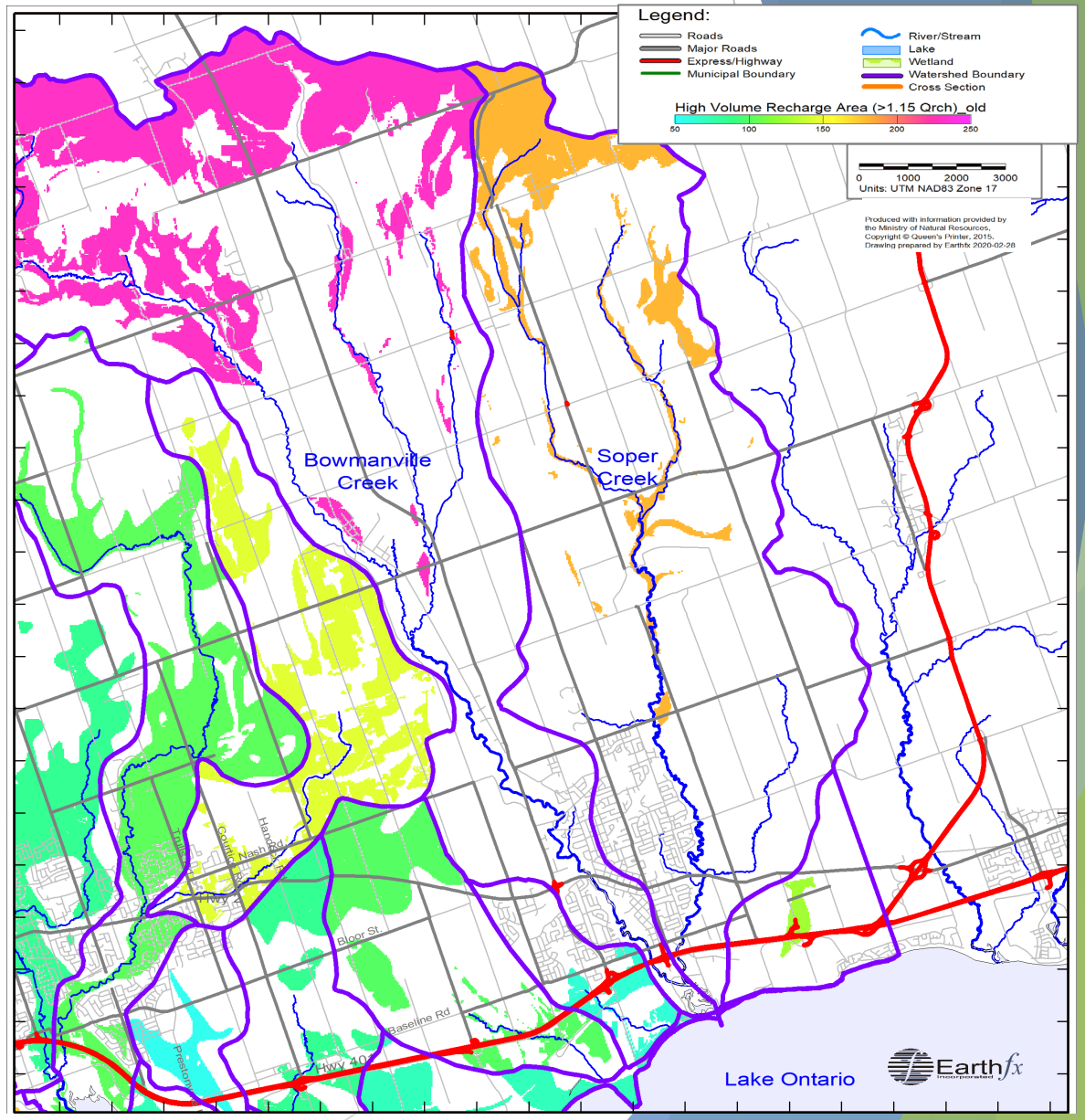
Existing Conditions – Groundwater Resources

- Key findings
  - Regional groundwater flows from Oak Ridges Moraine to Lake Ontario
  - Significant groundwater flows beneath the watersheds, as discharge is limited by tight surface soils
  - High volume recharge areas are mostly in sand and gravel, but some silty areas are also locally important
  - Preserving infiltration is key in all development areas
    - Especially true in Soper Springs Secondary Plan area to support Natural Heritage System

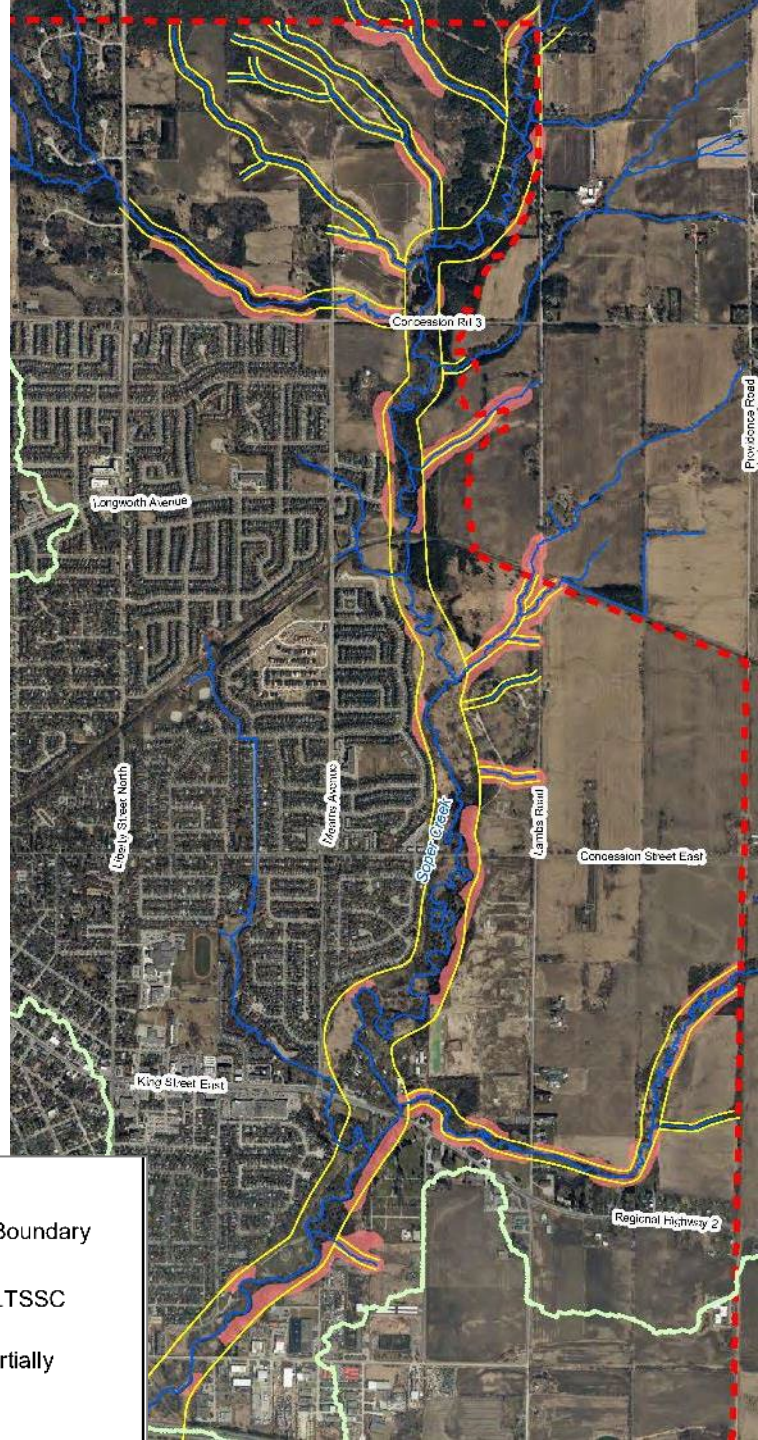


Existing Conditions – Fluvial Geomorphology

- Objectives
  - Characterize existing channel morphology for Soper Creek
  - Identify where geomorphology prevents development around watercourses
  - Estimate stream erosion potential
  - Recommend stream restoration opportunities
- Study Tasks
  - Delineate and characterize reaches for Soper Creek
  - Classify geomorphic stability through use of Rapid Geomorphic Assessments
  - Assess erosion potential
  - Outline the meander belt
  - Outline the long-term stable slope setback
  - Identify in-stream restoration opportunities

Existing Conditions – Fluvial Geomorphology

- Findings
  - 26 erosion sites and 9 maintenance issues were identified
  - Assessed reaches were in transitional state of geomorphic stability
  - Erosion hazard needs to be finalized through a combination of meander belt assessment and geotechnical stable slope hazard assessment



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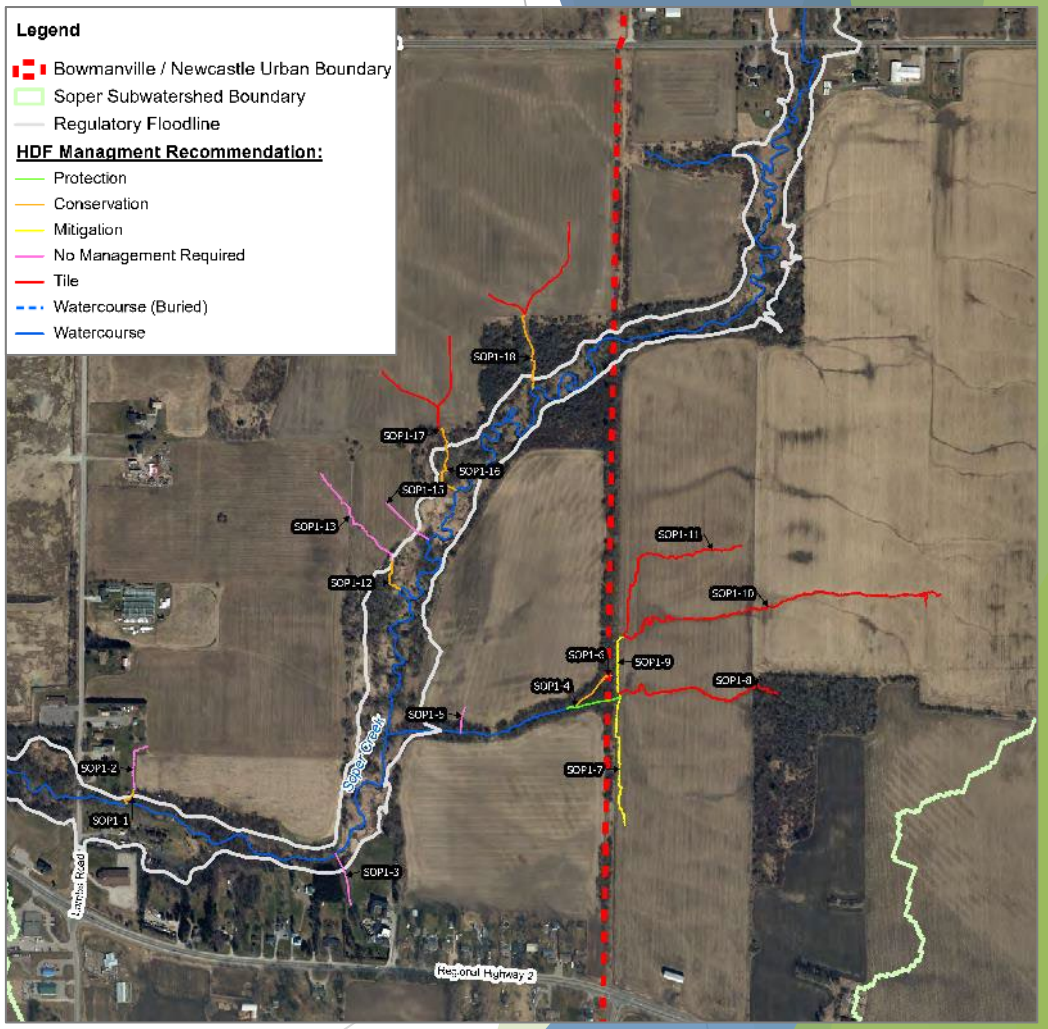
Existing Conditions – Headwater Drainage Features

- Protection – retain, enhance and protect, maintaining hydroperiod and direct connection to downstream
- Conservation – relocation possible but needs Fish Habitat, Riparian Corridor, and Vegetation Protection Zones
- Mitigation – replicate function using low impact development or constructed wetlands
- No Management Required



Existing Conditions – Hydrology and Hydraulics

- Objectives
  - Model runoff during significant rainfall events
  - Identify development constraints from regulatory floodplain limits
  - Model flow rates in key streams to use to set stormwater management targets
- Study Tasks
  - Review existing modelling for Soper Creek
  - Update models to include new development areas (Phase 2)
  - Update models with stormwater management solutions to determine mitigation strategies for flooding and erosion (Phase 2)

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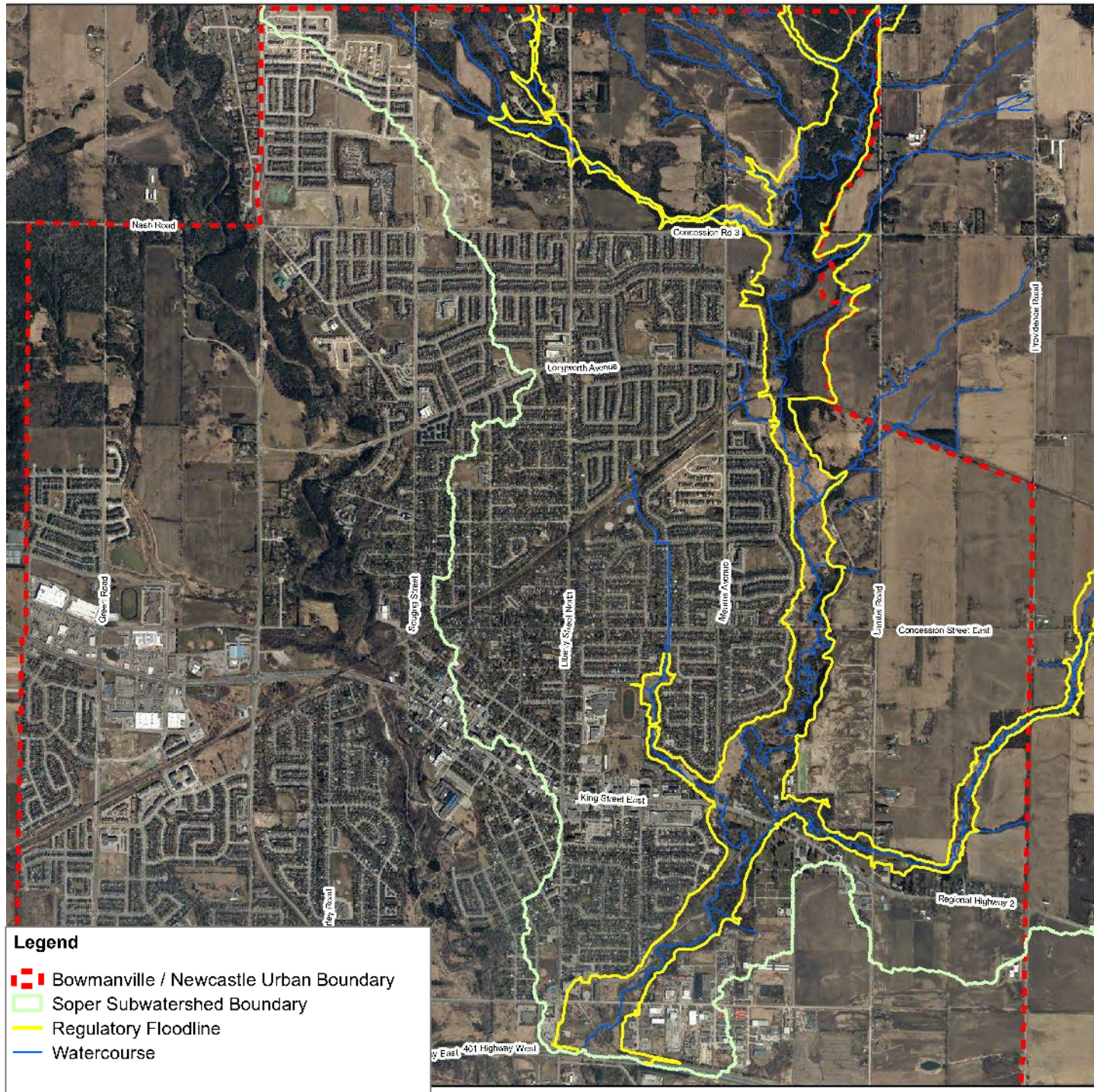
Existing Conditions – Floodplain

- Central Lake Ontario Conservation Authority developed regulatory floodplain mapping
- Per the Municipality of Clarington's Official Plan, no development shall be permitted on lands identified as natural hazard lands



Existing Conditions – Natural Heritage

- Objectives
  - Define and characterize natural heritage features and functions using Municipality of Clarington Official Plan policies and definitions
  - Use Natural Heritage System (NHS) mapping to develop land use plans and provide basis for future site-specific studies
- Study Tasks
  - Review background information and resources
  - Botanical inventory and Ecological Land Classification vegetation community assessment
  - Breeding bird and frog surveys
  - Aquatic habitat assessment using the Ontario Stream Assessment Protocol
  - Benthic macroinvertebrate collection and analysis
  - Fish community assessment (electrofishing)
  - Identification of barriers to fish movement and online ponds
  - Species at Risk screening and significant wildlife habitat review

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Existing Conditions – Terrestrial Resources

- Findings
  - Plant and animal Species at Risk (SAR) were found including Butternut, Bobolink, Barn Swallow, Bank Swallow, Chimney Swift, Eastern Meadowlark, Eastern Wood-pewee, Wood Thrush, Monarch, and Snapping Turtle
  - 49 natural vegetation community types were mapped, generally following watercourse corridors with the exception of some woodlands in the northern study area
  - 408 plant species were identified, including 35 locally significant plant species
  - 82 bird species identified during breeding bird surveys, including SAR noted above
  - Four amphibian species recorded in low numbers

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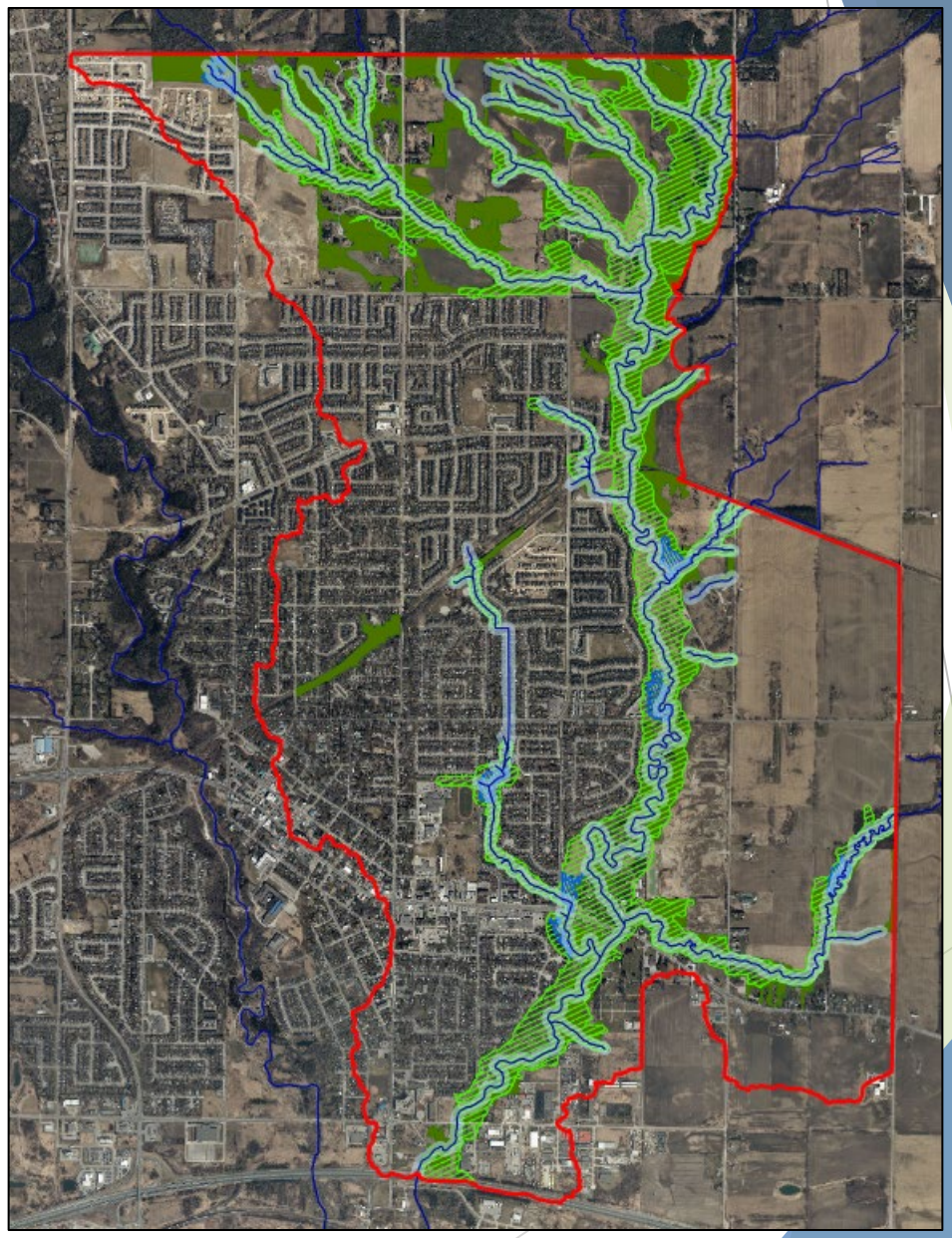
Existing Conditions – Aquatic Resources

- Findings
  - Soper Creek and its contributing tributaries have varied aquatic habitat features and functions
  - Highest-quality habitat was observed in upstream reaches
  - The entire system was associated with sensitive fish communities (e.g., Rainbow Trout, Brown Trout)
  - Minimal fish barriers were observed throughout the system
  - Benthic invertebrate analysis indicated Fair to Good water quality

Preliminary Natural Heritage System

- Application of Municipality of Clarington NHS criteria to existing data:
  - Significant Woodlands
  - Valleylands (based on stable top of bank)
  - Wetlands >0.5 ha in size
  - Watercourses/fish habitat and riparian corridors



Overview of Constraints

High Constraint:

- Development is generally not allowable
- Natural hazards (Meander Belt, Floodplain, Stable Slope Setback), Natural Heritage features (Significant Woodlands, Wetlands over 0.5 ha, Fish Habitat and Riparian Corridors), “Protection”-level Headwater Drainage Features

Moderate Constraint:

- Some development intrusion may be allowable pending the results of further study
- Most often applied to features known to require further study to accurately define feature boundaries and/or confirm sensitivity
- Also applied to: Linkages, Vegetation Protection Zones, “Conservation” and “Mitigation”-level Headwater Drainage Features

Low Constraint:

- Development intrusion is not restricted by existing policies and regulations
- Natural heritage features that did not meet criteria for inclusion in the Natural Heritage System (e.g., isolated hedgerows, small woodlands, successional meadows) but still have value and are encouraged to be retained as parks, stormwater management blocks, etc.

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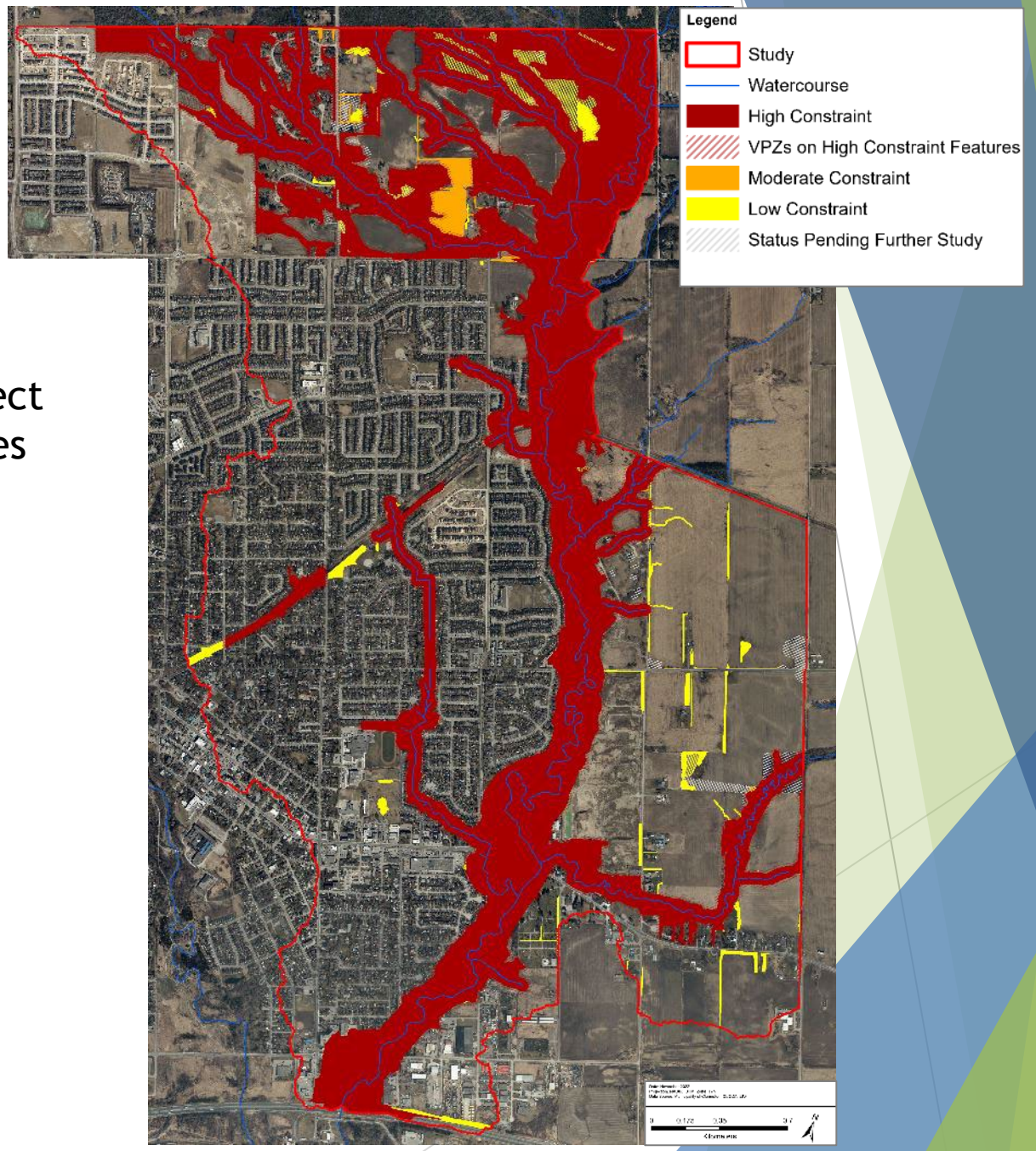
Overview of Constraints

- Preliminary assessment of developmental constraints within the study area are subject to refinement following site-specific studies and consultation with the Municipality of Clarington and CLOCA



Next Steps

- Finalized Phase 1 Subwatershed Study Report (December 2022)
- Preferred land use strategy to be developed (Winter 2023)

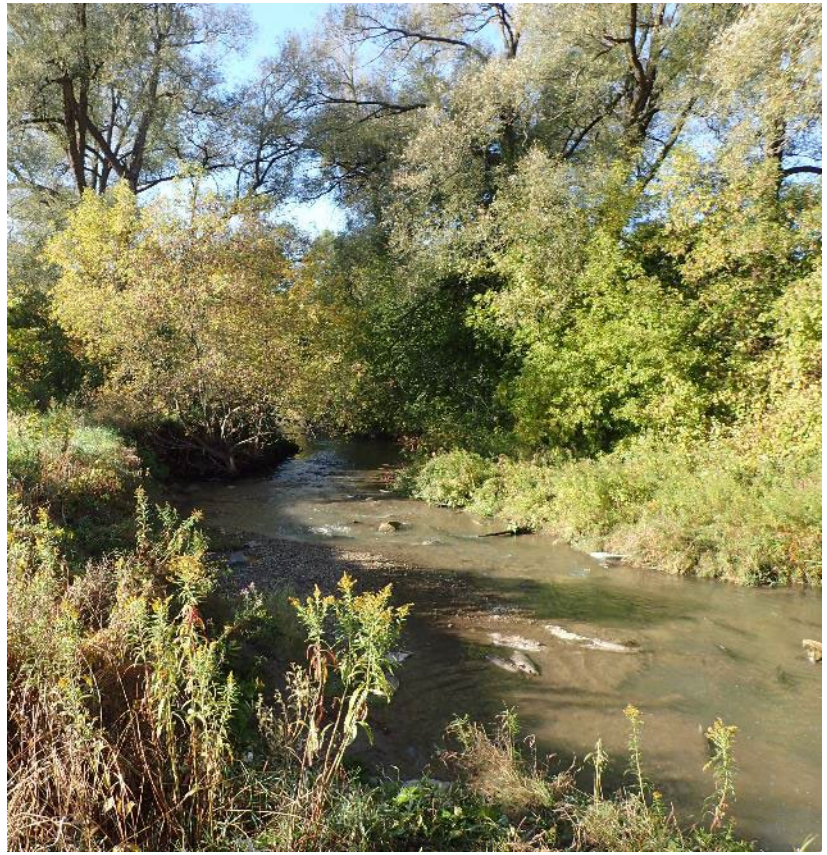
- SWS Phase 2
  - Evaluation of potential impacts of land uses on the Natural Heritage System
  - Development and evaluation of preferred subwatershed management strategies
  - Selection of preferred subwatershed management strategy
  - Present preferred strategy to the public (PIC #2)
  - Implementation

Discussion & Questions

Have your say!

- Provide comments to the study team at SoperCreeksubwatershed@clarington.net
- Visit www.clarington.net/SoperCreek

- Comments will be accepted until December 23, 2022



Thank You

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