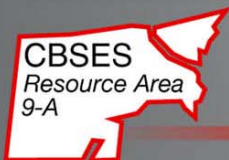


PUBLIC INFORMATION FORUM
January 25, 2007

STUDY FINDINGS PRESENTATION

PART A: CHARACTERIZATION



COMPREHENSIVE BROADER SCALE ENVIRONMENTAL STUDY

CALEDON AGGREGATE RESOURCE AREA 9-A

PRESENTATION OVERVIEW

- Provide context for work completed
- Summarize characterization findings
- Foundation/knowledge for further participation in CBSES development

CBSES STUDY COMPONENTS

- Components:
 - Work Plan
 - Part A – Characterization
 - Part B – Sensitivity Analysis
 - Part C – Implementation

- Part A findings – Focus of this presentation

- Revised Draft Part A Report was released to Agencies and Public on November 30, 2006

- Part A Report will be finalized at the end of the Study process

MULTI-DISCIPLINARY STUDY

- ❑ Comprehensive Study involving various fields of expertise:
 - ❑ Planning and Land Use - MHBC
 - ❑ Hydrology (Surface Water) - CRA
 - ❑ Hydrogeology (Groundwater) - CRA
 - ❑ Fluvial Geomorphology - JTBES
 - ❑ Water Quality - LGL/CRA
 - ❑ Aquatic Habitat and Fisheries - LGL/Ecoplans
 - ❑ Terrestrial Ecology - LGL/Goodban

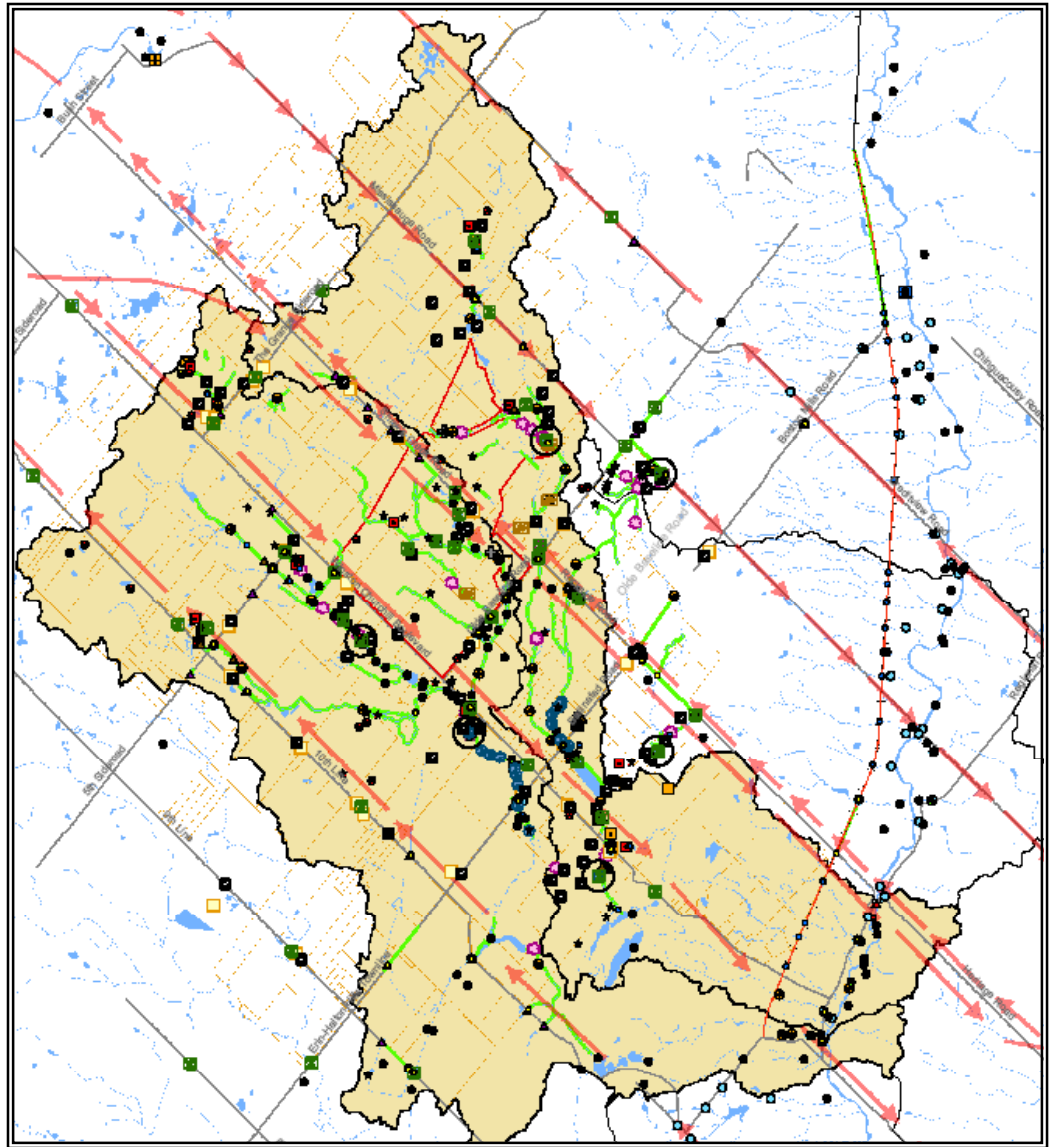
- ❑ In consultation with local agencies (& their experts)

PART A - CHARACTERIZATION

- ❑ Assess and document existing conditions for natural environment and related features, such as creeks, wetlands, fisheries, & forests
- ❑ Integrated Study based on existing information and extensive data collection
- ❑ Study process included both public and agency input

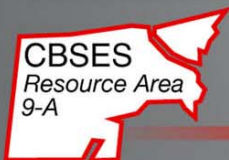
CBSES Field Program Monitoring Locations

- ❑ Historic data collection
- ❑ CBSES field program 2004 – 2006
- ❑ 100's of Data Collection Sites
- ❑ Six Nested Monitoring Stations



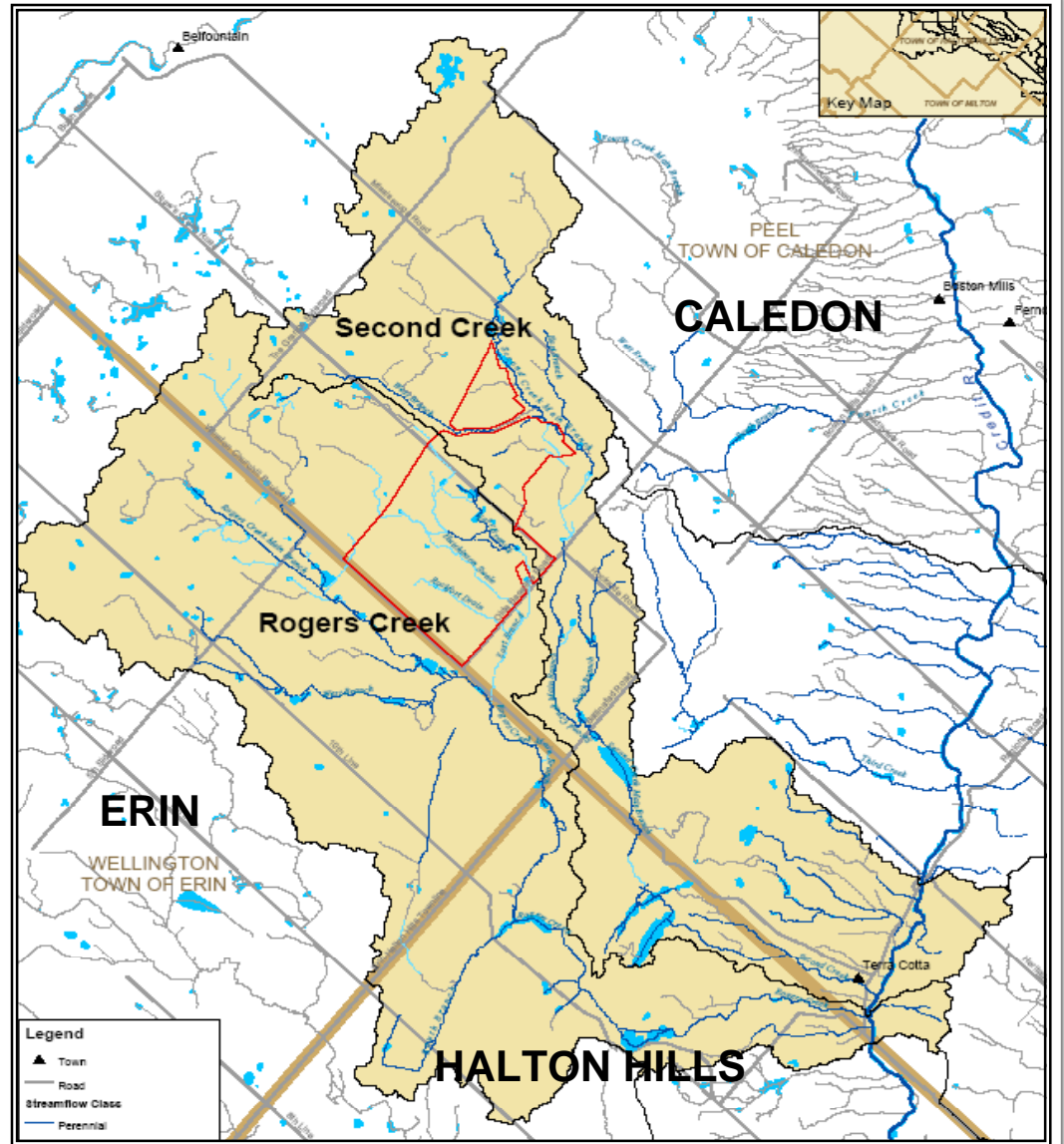
CBSES FIELD PROGRAM

- ❑ The 2004, 2005, and 2006 field data collection program included:
 - ❑ Site visits to 37 properties
 - ❑ Walked/mapped over 30 km of creeks, ponds wetlands, ditches
 - ❑ 34 surface flow & water level monitoring stations (measured monthly)
 - ❑ Water well survey & water level monitoring (23 wells monitored in the Spring & Fall of 2006))
 - ❑ Installation & monitoring of 18 wetland and streambed piezometers (monitored monthly over 2006 field season)
 - ❑ Stream morphology assessment
 - ❑ Water chemistry sampling & stream temperature monitoring
 - ❑ Macro-Benthics sampling
 - ❑ Aquatic habitat monitoring (8 sites)
 - ❑ Electrofishing sampling (28 sites)
 - ❑ Dip netting sampling (48 sites)
 - ❑ Brook Trout spawning surveys (within cold water reaches)
 - ❑ 12 wetland monitoring sites
 - ❑ 40 frog call monitoring sites
 - ❑ 45 bird point count sites
 - ❑ 18 breeding bird monitoring sites
 - ❑ Wildlife surveys
 - ❑ Numerous roadside observations



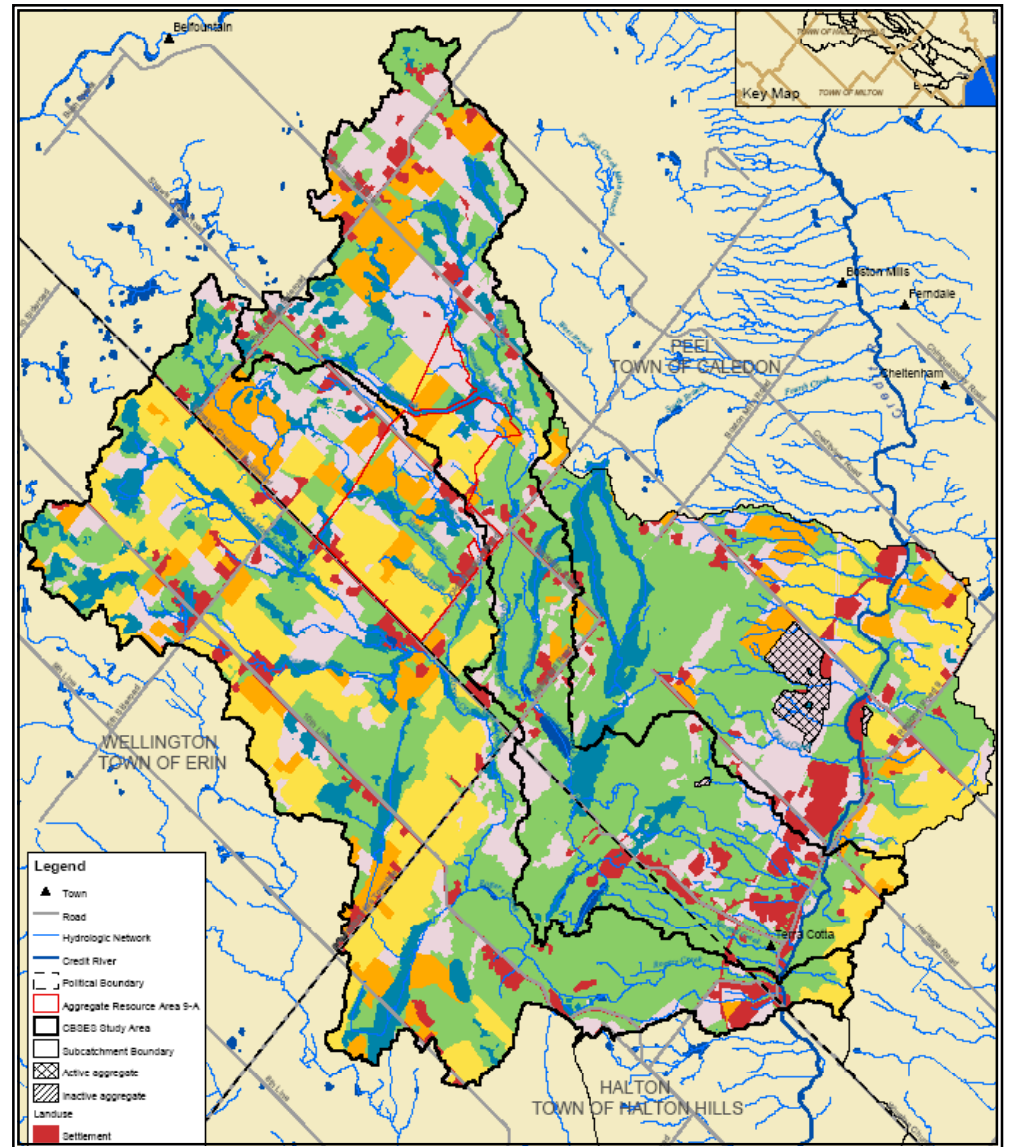
STUDY AREA

- ❑ Two subcatchments within Subwatershed 12:
 - ❑ Rogers Creek
 - ❑ Second Creek
- ❑ Additional work completed to the east



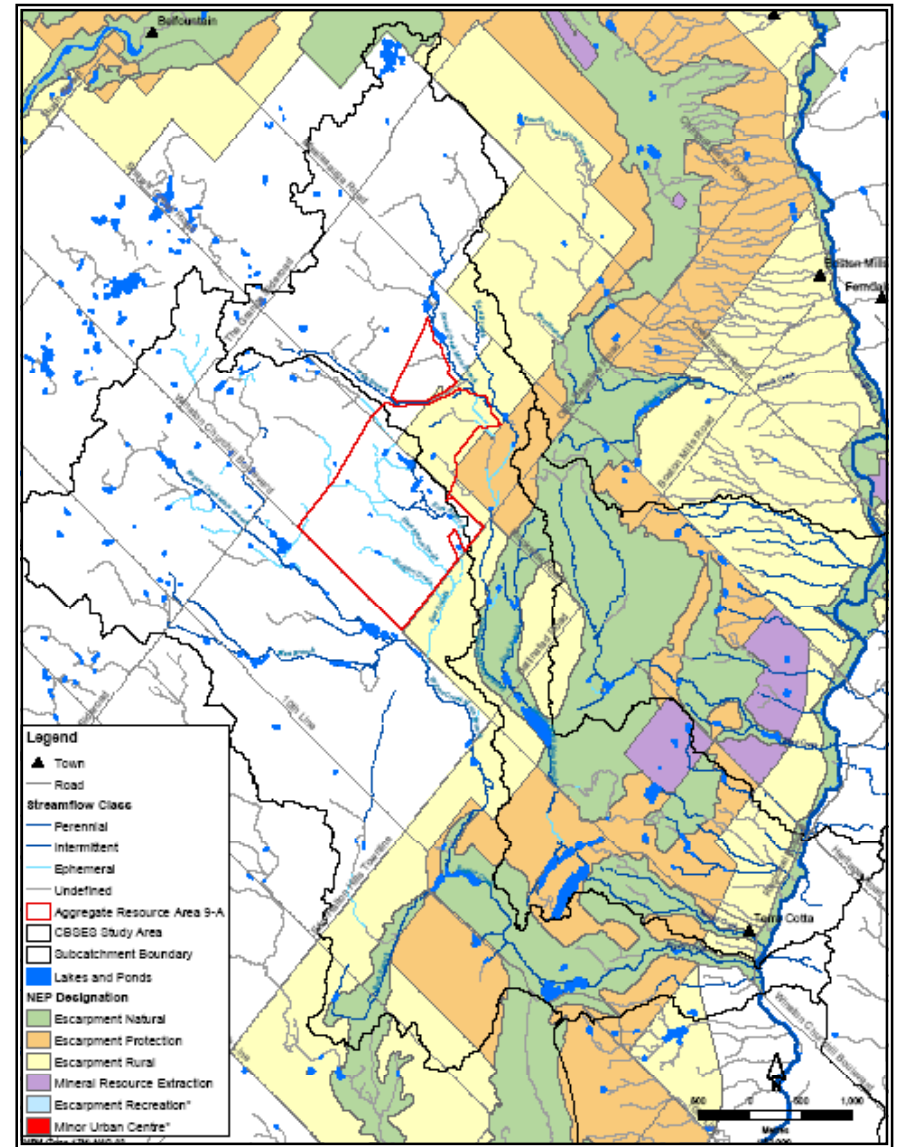
STUDY AREA

- ❑ Land use typical of rural Ontario (e.g., agriculture, recreation, and rural residential)
 - ❑ Low level of lot fragmentation
 - ❑ Low population density
- ❑ Quality of life and recreational opportunities linked to natural resources



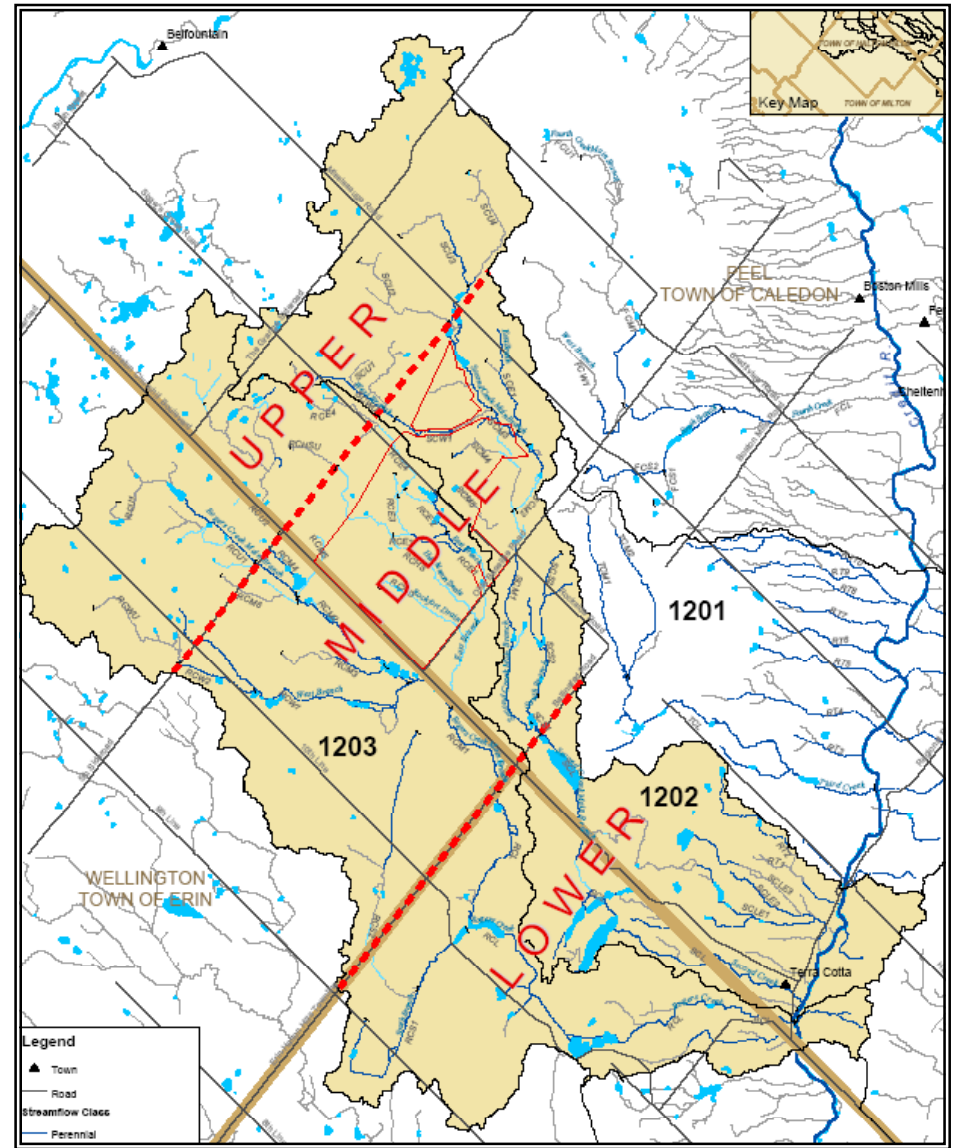
STUDY AREA

- ❑ Planning policies restrict development
- ❑ 39% of Study Area within Niagara Escarpment Plan area
- ❑ Niagara Escarpment, associated features & policies influence land use
- ❑ Study Area also located within the Greenbelt Plan

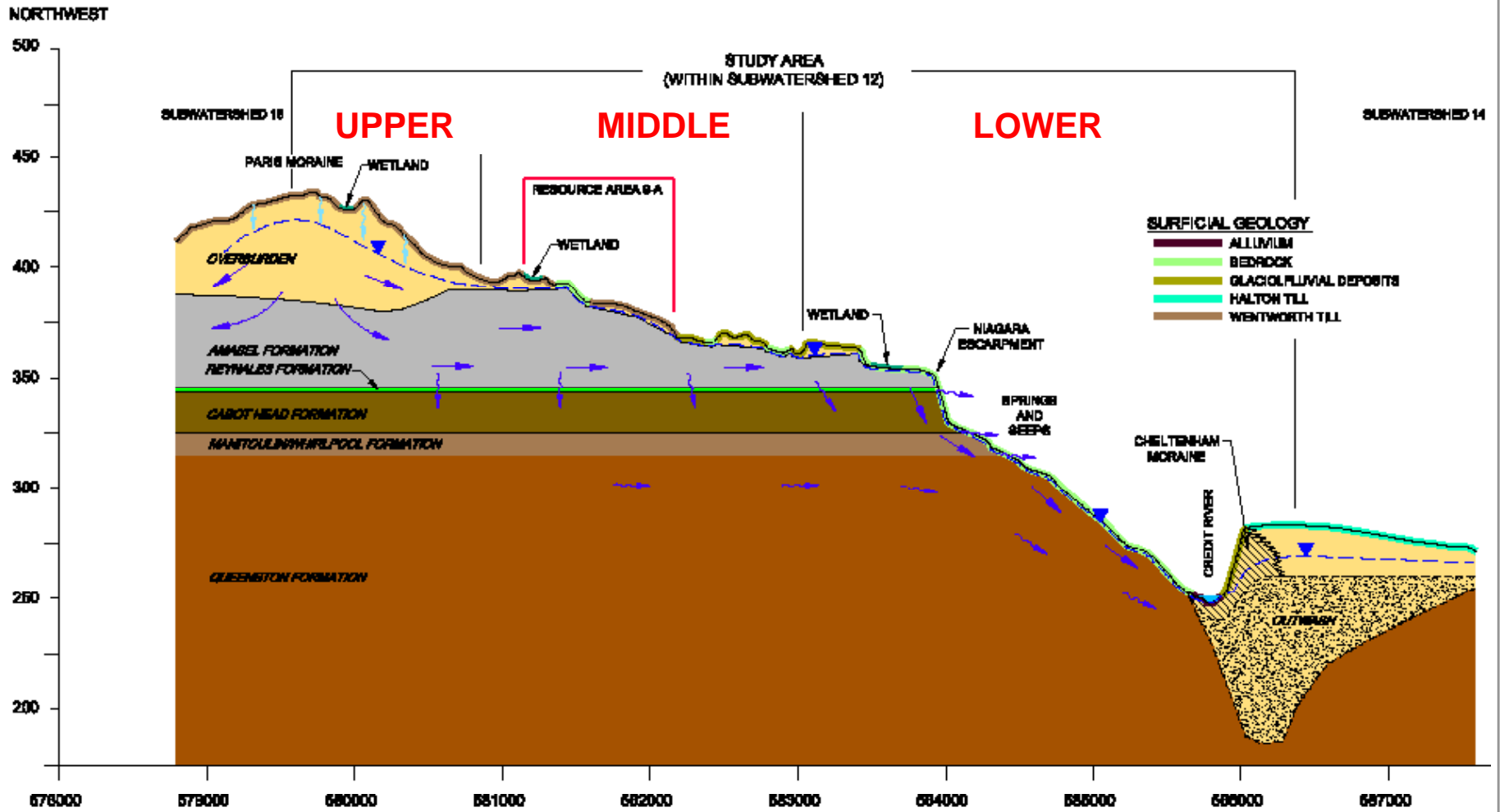


STUDY AREA REGIONS

- ❑ Study Area subdivided into three general regions based physical and ecological characteristics:
 - ❑ Upper Region: Headwaters of the Paris Moraine
 - ❑ Middle Region: Area between Paris Moraine and Escarpment
 - ❑ Lower Region: Niagara Escarpment (above, below and Escarpment itself)



STUDY AREA PROFILE



COMPREHENSIVE BROADER SCALE ENVIRONMENTAL STUDY

CALEDON AGGREGATE RESOURCE AREA 9-A

UPPER REGION

- ❑ Major landform is the Paris Moraine
- ❑ Predominantly agricultural land use
- ❑ Mostly outside the Niagara Escarpment Plan Area

UPPER REGION

- ❑ Headwater region of the Study Area
- ❑ Primary water functions: groundwater recharge & storage
- ❑ Most watercourses are intermittent (flow part of the year)
- ❑ Some springs/seeps occur
- ❑ Limited perennial (flow all year) reaches – intermittent flow downstream
- ❑ Water quality is good, but “hard”

UPPER REGION

- ❑ Small channels with limited fluvial processes
- ❑ Generally fine-grained stream substrate
- ❑ Limited natural riparian / streamside vegetation
- ❑ Number of small on-stream ponds
- ❑ Fish communities dominated by warm water forage species - seasonal

UPPER REGION

- ❑ Vegetation dominated by cultural and successional communities
 - ❑ Often on abandoned agricultural lands
- ❑ Larger wetland & woodland blocks:
 - ❑ Deciduous forest, conifer plantation & wetland
 - ❑ Headwaters for Second Creek and Rogers Creek
 - ❑ Ballinafad Ridge & Belfountain PSWs
- ❑ Some rare/sensitive species identified (e.g. Red-Headed Woodpecker)
- ❑ Paris Moraine forms part of regional natural corridor

MIDDLE REGION

- ❑ Flatter topography between Paris Moraine & Escarpment
- ❑ Thin soils with bedrock outcrops
- ❑ Predominantly agricultural land use
- ❑ High potential mineral aggregate area
- ❑ Niagara Escarpment has some influence on land use, but not as great as within Lower Region

MIDDLE REGION

- ❑ Groundwater & surface water flow through region
- ❑ Local discharge & recharge interactions – varying seasonally
- ❑ Seasonal and permanent springs
- ❑ Watercourses predominantly intermittent
- ❑ Discontinuous reaches of perennial flow - associated with groundwater discharge areas & local topography
- ❑ Water quality is good, but “hard”

MIDDLE REGION

- ❑ Variety of stream forms with varying fluvial processes & flow - defined channels, wetland flow
- ❑ Relatively diverse substrates, including cobbles & gravel
- ❑ Generally limited riparian/streamside vegetation
- ❑ Numerous small on-stream & off-stream ponds
- ❑ Fish community dominated by cool and warm water forage species – seasonal and perennial reaches
- ❑ Brook Trout in downstream areas – near Ballinifad Road

MIDDLE REGION

- ❑ Vegetation includes mix of cultural and natural communities
- ❑ Variety of wetland & woodland blocks - vary in age, size, shape, and connectivity
 - ❑ Some larger blocks
 - ❑ Mix of swamp and marsh wetlands
 - ❑ Caledon Mountain Wetland Complex
- ❑ Some rare/sensitive species (e.g. Eastern Milk Snake)
- ❑ More continuous vegetation and habitat near Escarpment

LOWER REGION

- ❑ Major landform is the Niagara Escarpment
- ❑ Thin soils with bedrock outcrops
- ❑ Predominant land use is forested areas
- ❑ Large blocks of publicly-owned land
- ❑ Location of the only settlement area - Terra Cotta
- ❑ Land use is controlled/limited by the Niagara Escarpment Plan throughout the Lower Region

LOWER REGION

- ❑ Regional area of groundwater discharge
- ❑ Local discharge and recharge interactions – varying seasonally
- ❑ Seasonal and permanent springs
- ❑ More perennial flow in watercourses, especially below Escarpment
- ❑ Water quality exhibits increased mineralization from shale bedrock

LOWER REGION

- ❑ Defined channels supporting fluvial processes
 - ❑ Well-developed physical habitat – pools, “riffles”
- ❑ Diverse substrates with cobble, gravel, some bedrock
- ❑ Several large on-stream ponds or groups of ponds
- ❑ Generally well-developed natural riparian / streamside vegetation
- ❑ Fish community includes cool and cold water (brook trout) species

LOWER REGION

- ❑ Extensive areas of deciduous forest with wetland areas
- ❑ Caledon Mountain Slope Forest ANSI/ESA
- ❑ Terra Cotta Forest ANSI/ESA
- ❑ High diversity of species
- ❑ More rare/sensitive species (e.g. Red-Shouldered Hawk, Louisiana Water Thrush, Ginseng)
- ❑ Escarpment forms part of regional natural corridor

NEXT STEPS

- ❑ Comprehensive characterization work has been undertaken in consultation with the Agencies
- ❑ Characterization is described in detail in the Draft Part A Report (November 2006)
- ❑ Part B modelling and sensitivity analysis utilizing this characterization
- ❑ Upcoming Workshop to help define direction for Study Area planning – public participation is invited