

Tree and Forest Canopy Project

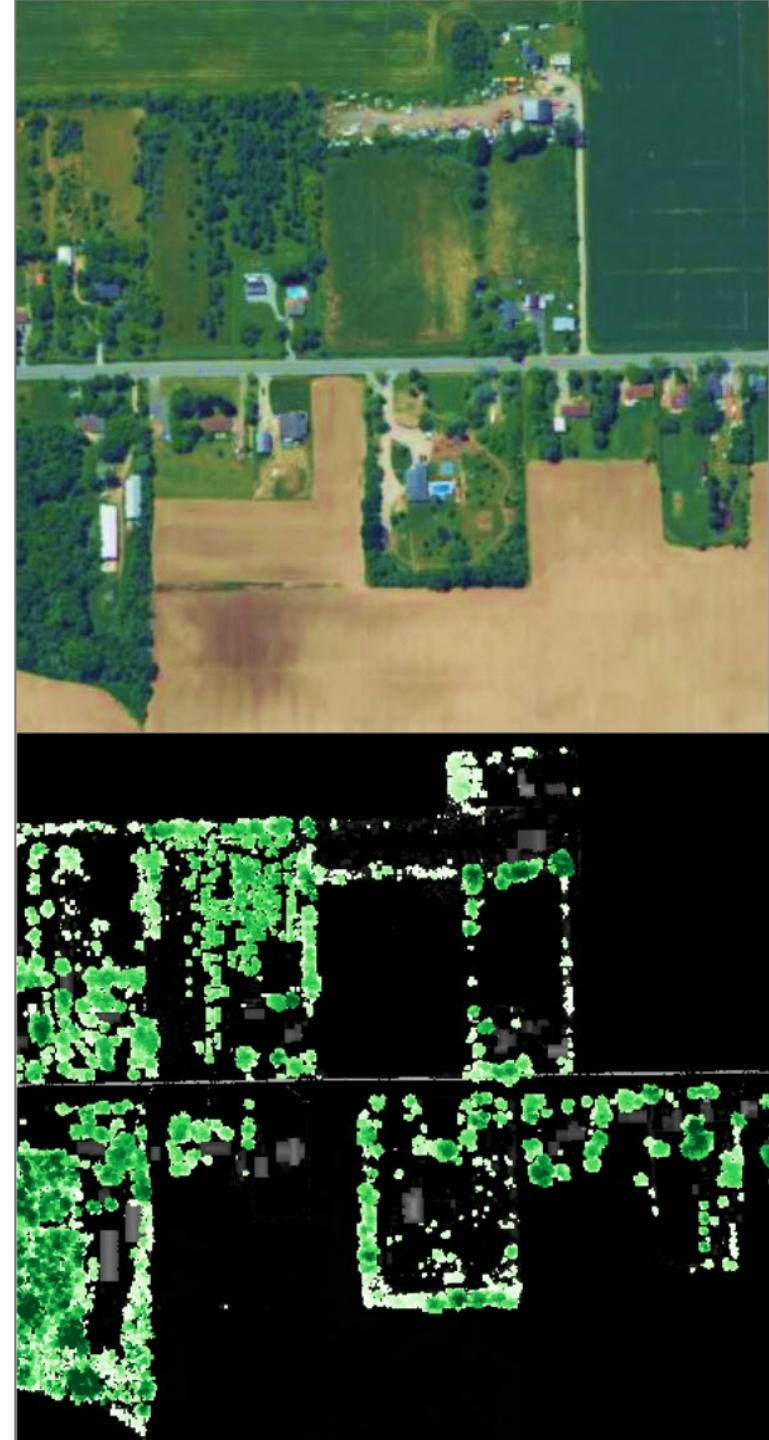
Report No. PDS 4-2024

Planning and Economic Development Committee

February 7, 2024

Overview

- The Niagara Region Tree and Forest Canopy (TFC) project is a quantified assessment of the regional TFC and additional landcover classes
- Provides a baseline for the Region's current TFC
- Will support and inform future direction and implementation of environmental projects and climate change initiatives
- Quantify high-level ecosystem benefits



Methodology

- Comprehensive land cover classification on a 1metre grid
- Data sources: Ontario Road Network (2023), Hamilton-Niagara LiDAR DSM (2021), Hamilton-Niagara LiDAR DTM (2021), Bing imagery (2021), Southwestern Ontario Orthophotography Project (2020), Niagara Region Building Footprints (2018)
- 6 classes discretized: Tree and Forest Canopy, Grass and non-treed Vegetation, Soil and Bareland, Impervious Cover, Buildings, and Water
 - Top down perspective (canopy takes precedence)
 - Agricultural TFC (orchards) considered in TFC
 - 1.88 billion pixels in dataset

Land Classification Results

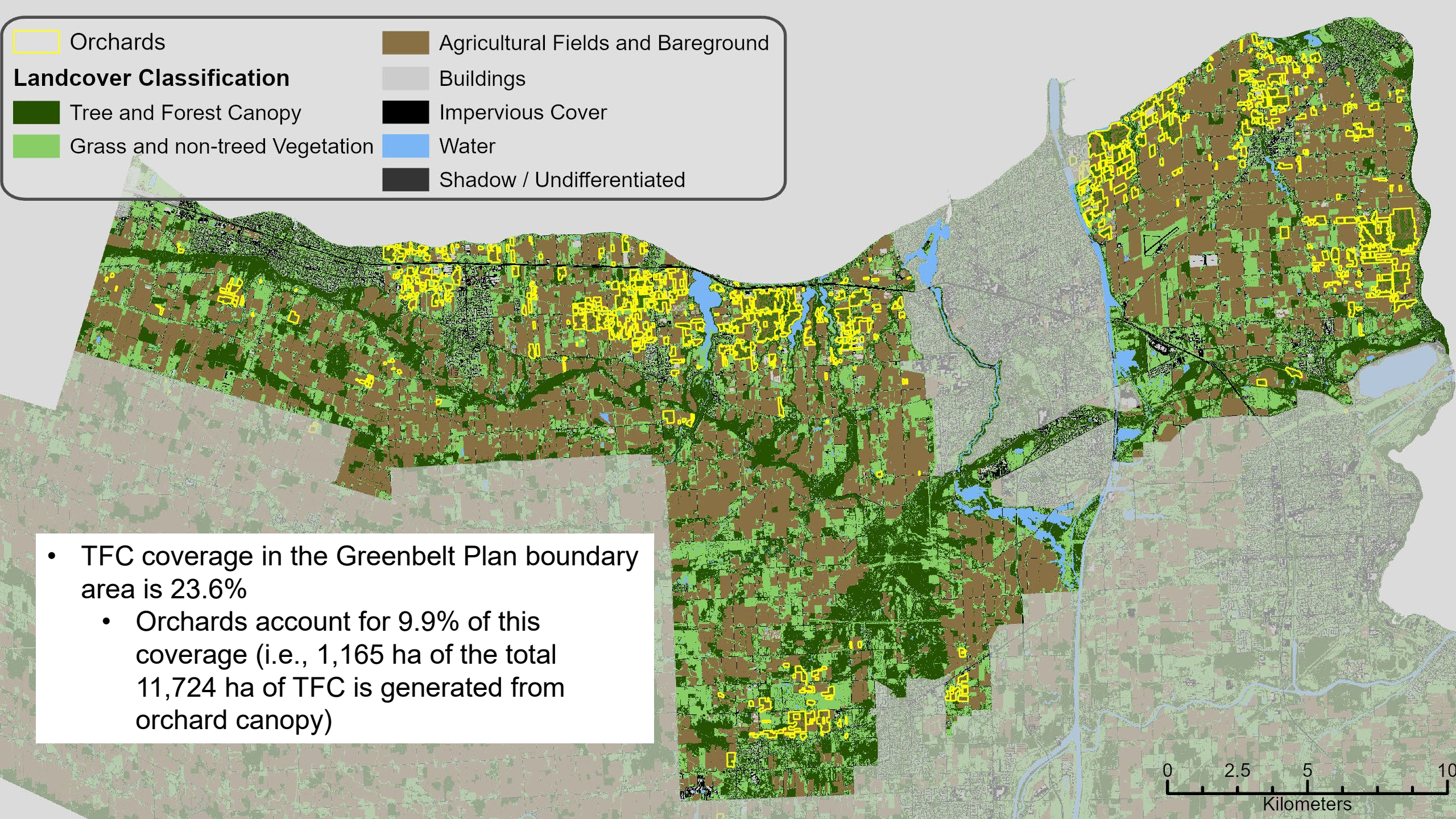


Regional Results

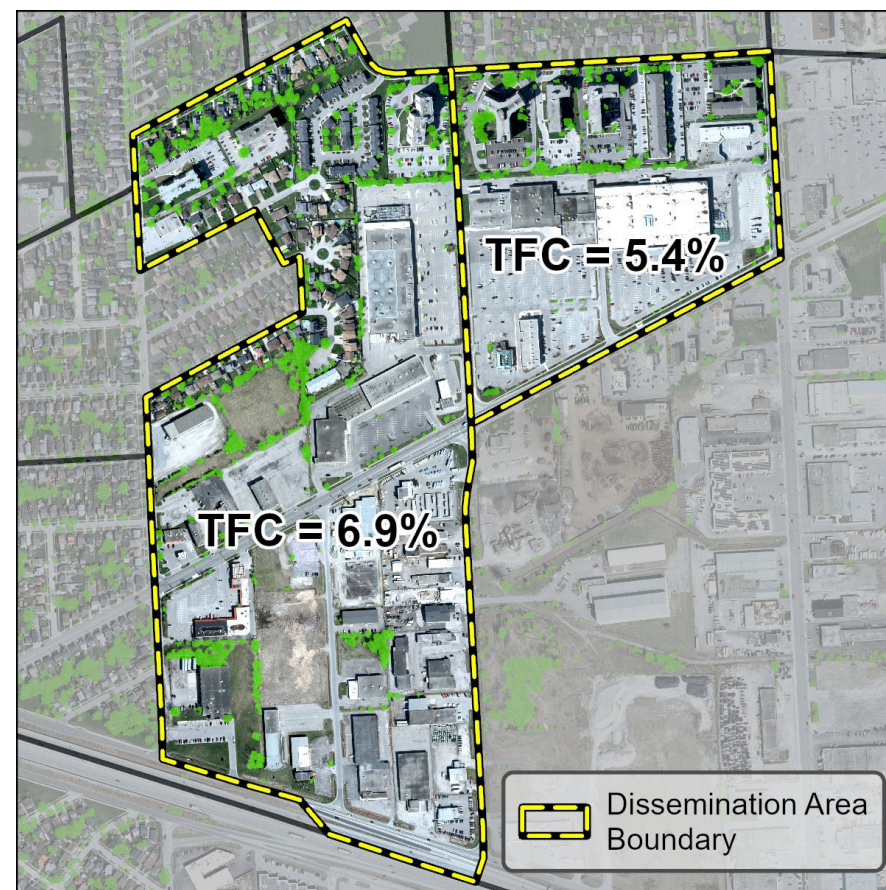
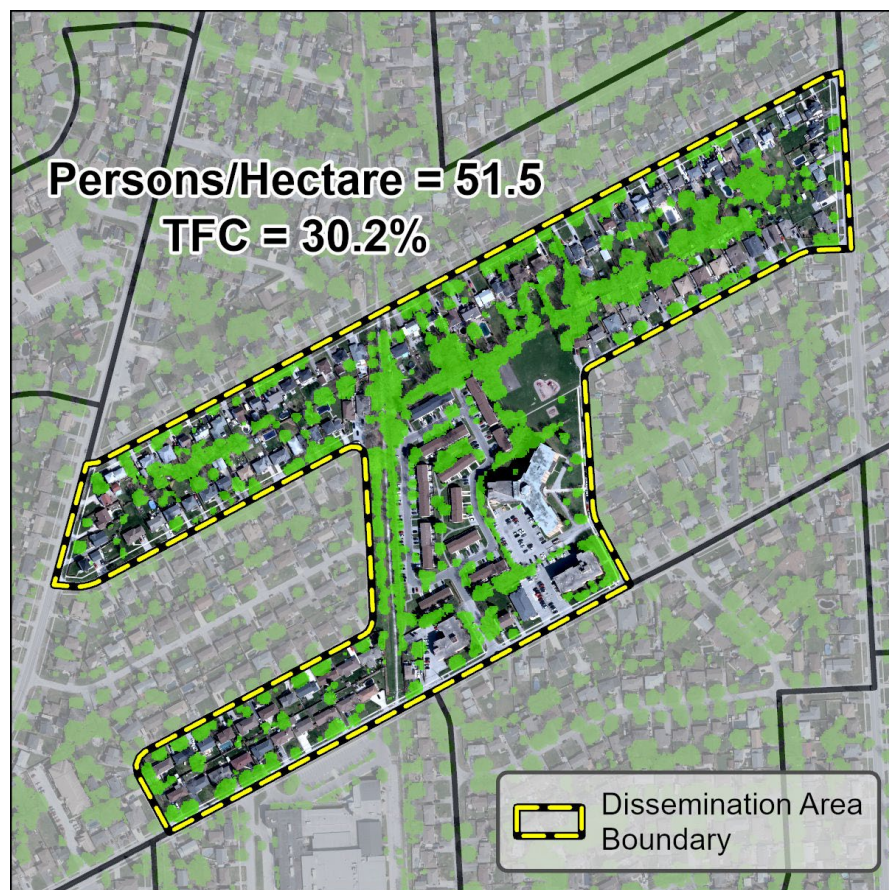
Land Classification	Total Hectares	% of Total Land
Tree and Forest Canopy	46789	25.4
Grass and non-treed Vegetation	49205	26.7
Soil and Bareland	72550	39.3
Buildings	4591	2.5
Impervious Cover	11314	6.1
Total:	184449	100%

Municipal Results

Municipality	Land Area (ha)	TFC	Grass and non-treed Vegetation	Soil and Bareland	Buildings	Impervious Cover
Fort Erie	16,535	34.8%	31.8%	24.8%	2.2%	6.5%
Pelham	12,580	31.4%	31.2%	31.5%	1.9%	4.0%
Niagara Falls	20,833	30.5%	35.0%	20.9%	3.7%	10.0%
Port Colborne	12,069	28.4%	29.1%	35.7%	1.8%	5.1%
Thorold	8,332	26.6%	32.1%	31.7%	2.3%	7.3%
Wainfleet	21,626	25.9%	19.3%	52.2%	0.6%	2.0%
Grimsby	6,854	23.9%	29.7%	34.5%	3.5%	8.4%
St. Catharines	9,598	22.4%	30.3%	15.7%	10.6%	21%
Welland	8,112	22.1%	43.3%	16.2%	5.5%	12.9%
Lincoln	16,217	21.9%	22.6%	48.1%	2.4%	5.0%
West Lincoln	38,628	20.7%	18.6%	58.1%	0.6%	1.9%
Niagara-on-the-Lake	13,108	18.0%	23.4%	49.5%	2.8%	6.2%
Regional Average:	184,492	25.4% (46789 ha)	26.7% (49205 ha)	39.3% (72550 ha)	2.5% (4591 ha)	6.1% (11314 ha)

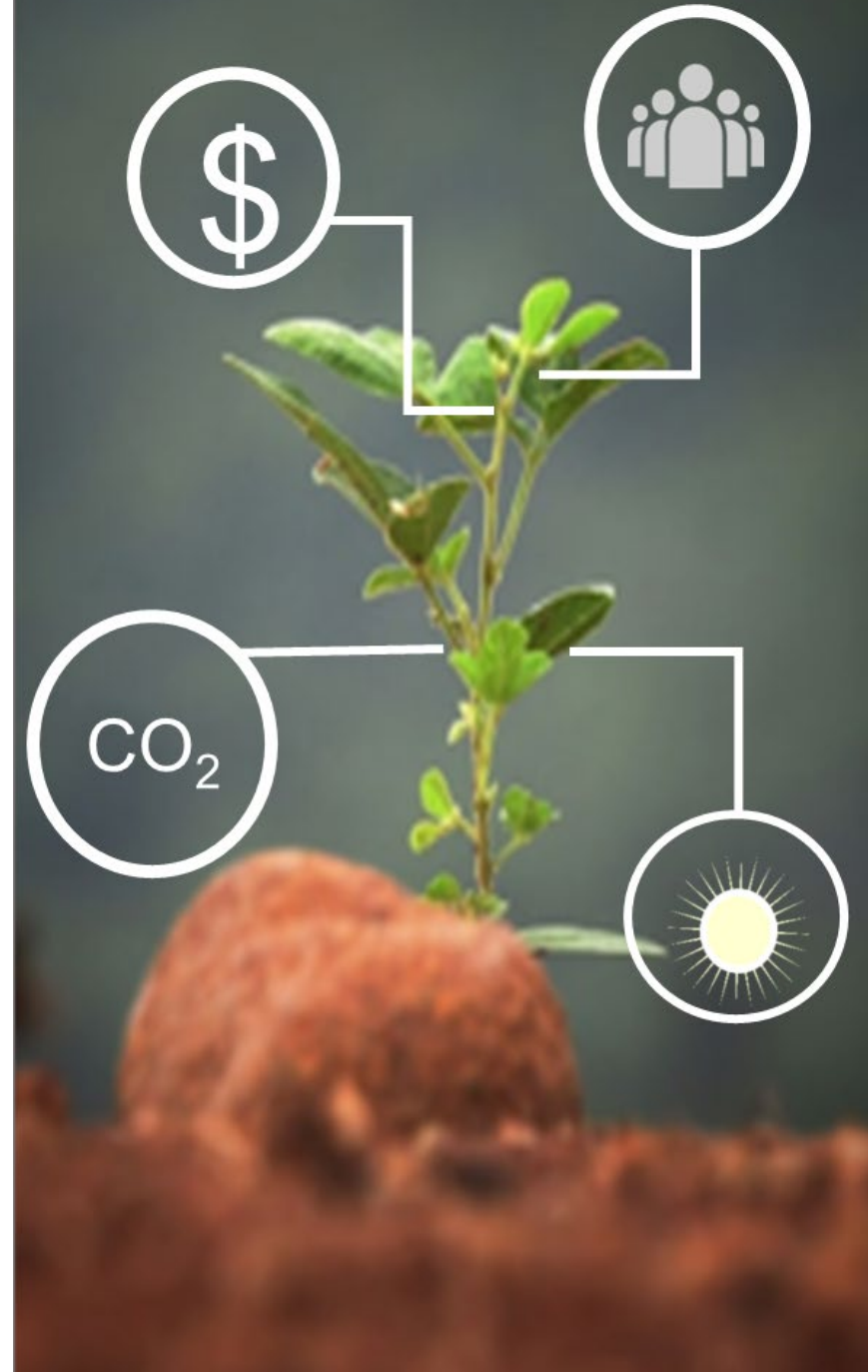


Analysis – Defined Areas



Ecosystem Services

- Carbon Storage and Sequestration
 - Capturing and storing atmospheric carbon dioxide
- Air Quality
 - Removal of metric tons/year of pollution
- Hydrology
 - Avoided surface runoff
- Oxygen
 - Production of metric kilotons/year of oxygen



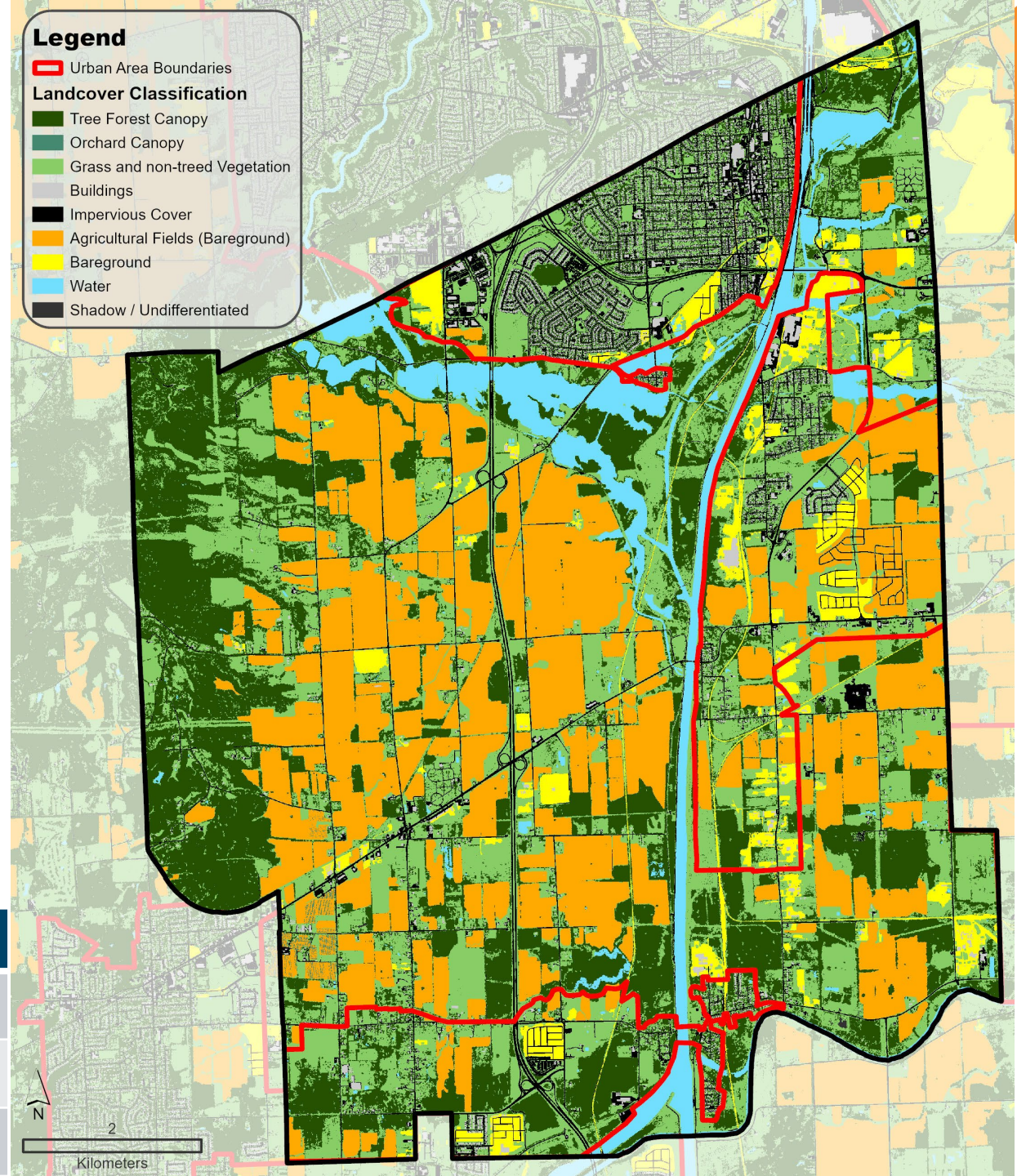
Thorold - Insights

- Land Area 8,332 ha
- Population (2021): 23,816
- Private dwellings (2021): 9,856
- Total TFC Coverage: 26.6% (2214 ha)
 - % of Regional TFC: 4.7%

Land Classification Results

General TFC: 26.5% (2207 ha)
 Orchard Canopy: 0.1% (7 ha)
 Grass and non-treed Vegetation: 32.1% (2675 ha)
 Soil and Bareland: 31.7 % (2639 ha)
 Buildings: 2.3% (191 ha)
 Impervious Cover: 7.3% (607 ha)

Urban Area	TFC	PPA
Port Robinson	34.0% (238.9 ha)	285.7 ha (40.3%)
Thorold North ¹⁰	13.1% (101.3ha)	282.5 ha (36.3%)
Thorold South	12.8% (134.5 ha)	363.0 ha (34%)



Additional Project Items

- Public report with enhanced analysis
 - Municipal statistics
- Data sharing
- Health impacts review
- Planting scenarios
- Regional Greening Initiative
 - Regional property analysis and department consultations

