

MNAI Preliminary Natural Assets Inventory

EAC Meeting
March 1st, 2022



MNAI & Project Background

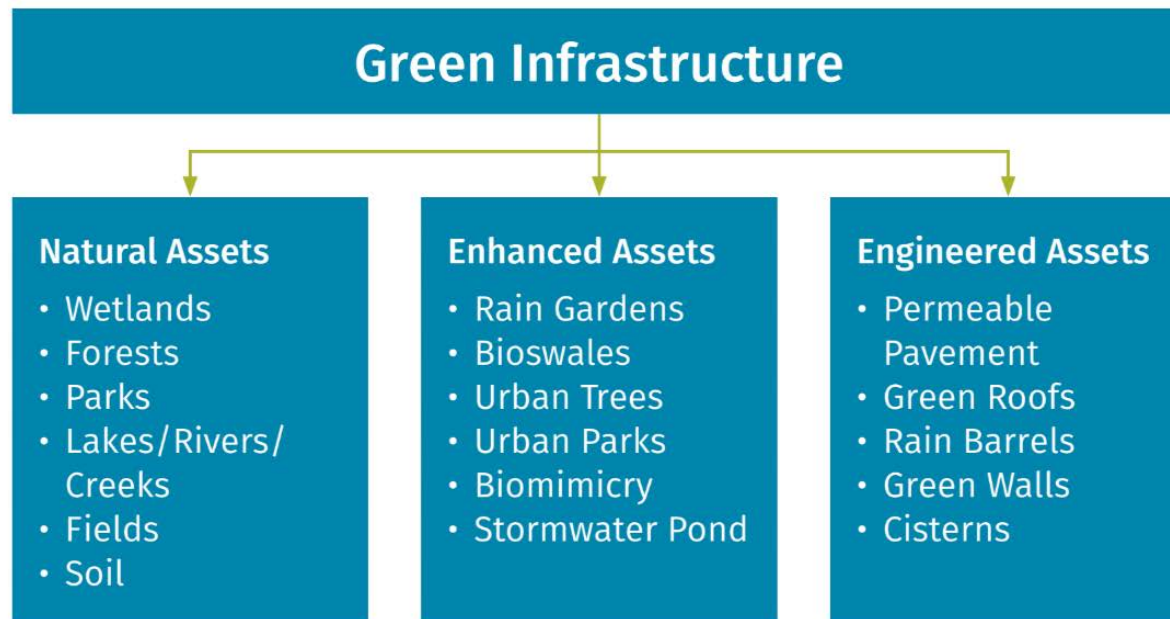
- MNAI supports municipalities seeking to identify, understand, measure and manage natural assets
- Methodology rooted in ISO-based asset management principles
- Funded through grant partnership with MNAI & Greenbelt Foundation – City provided ~\$2,500 of in-kind support
- Other participating municipalities include:
 - Surrey, BC; Langley, BC; Prince George, BC; West Kelowna, BC; Dufferin County, ON; Markham, ON; Lunenburg, NS; Charlottetown, PEI., etc.

Project Goals

- The **goal** of the project was to provide the City of Mississauga with a preliminary natural asset inventory that will inform long-term, natural asset management. The natural asset inventory includes:
 - A list of natural assets that provide services to the City, e.g. wetland, stream, forest;
 - The geographic boundaries of the natural assets;
 - Information about the **condition** the natural assets are in and **preliminary risks** (both natural and human-caused) they may face.

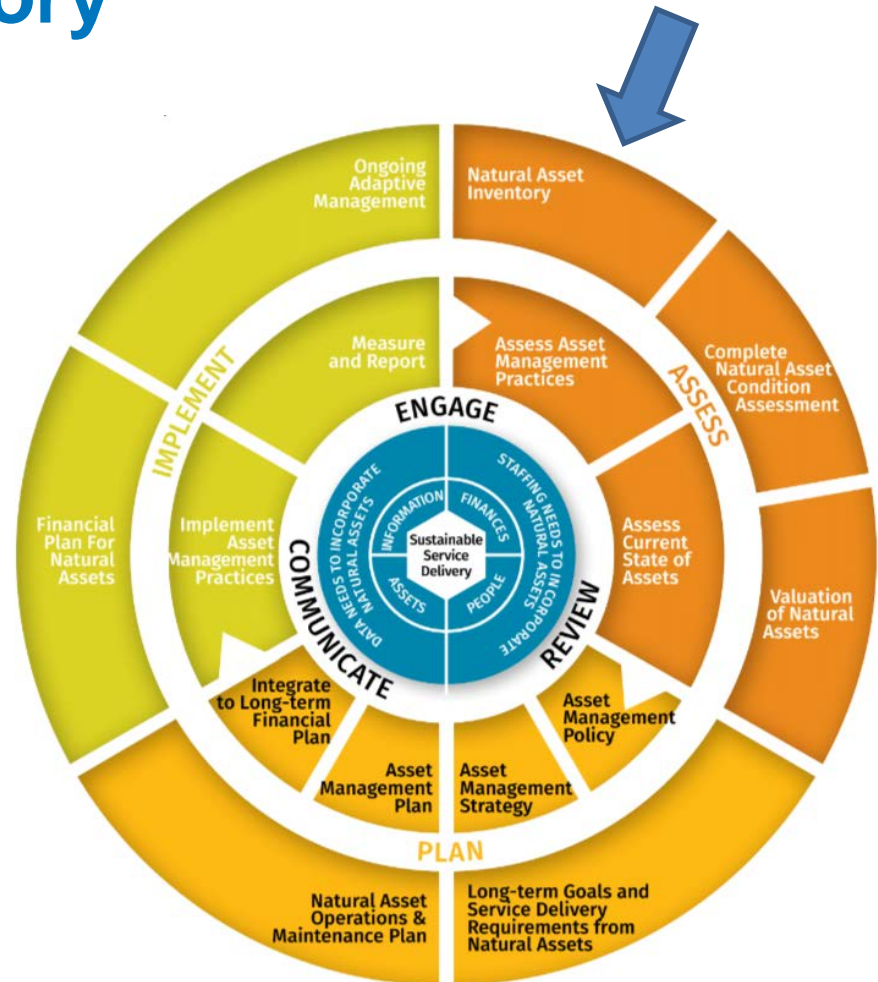
Municipal Natural Assets Definition

The term Municipal Natural Assets refers to the stocks of natural resources or ecosystems that contribute to the provision of one or more services required for the health, well-being, and long-term sustainability of a community and its residents.



Natural Asset Inventory

- Provides details on the type of natural assets local governments rely upon
- First step of the Assessment phase of the full natural asset management
- Does not provide a sense of asset value, but is an essential first step in the full natural asset management process



Inventory Datasets

- Data was collected from the City, Ontario Geohub, and Conservation Authorities
- Includes:
 - Municipal, watershed, or sub-watershed boundary
 - Detailed land cover (e.g. forests, wetlands, grasslands, etc) including:
 - Forest composition and canopy
 - Public/street trees
 - Wetlands and waterbodies
 - Road networks
 - Parks and protected areas
 - Trails and recreation sites
 - Land ownership (City-owned vs. other)

Online Dashboard

Mississauga Natural Asset Inventory

Summary

Tree Assets

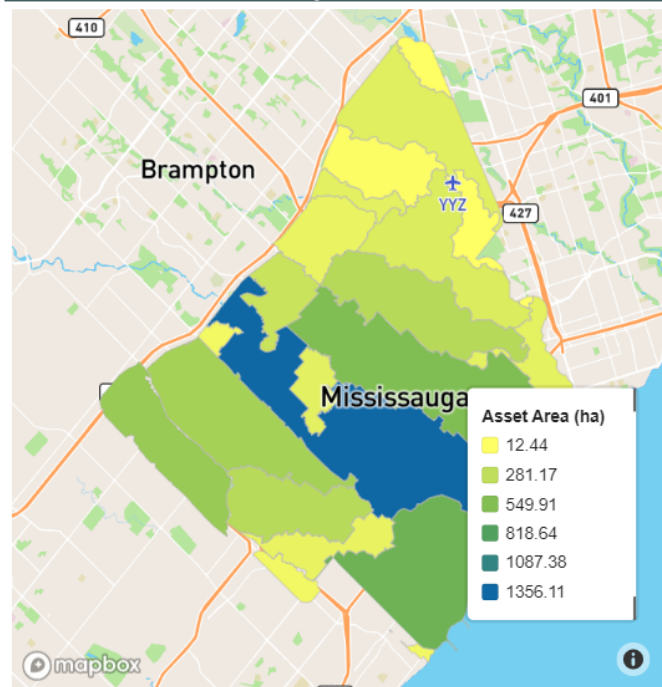
Asset Registry

Condition

Decomposition

This asset inventory summarizes natural assets within Mississauga, ON, by sub-watershed and asset type. A range of local/provincial datasets, and condition variables were incorporated into this inventory to further characterize the natural assets. [Click an area of interest on the map below to filter natural assets by sub-watershed.](#)

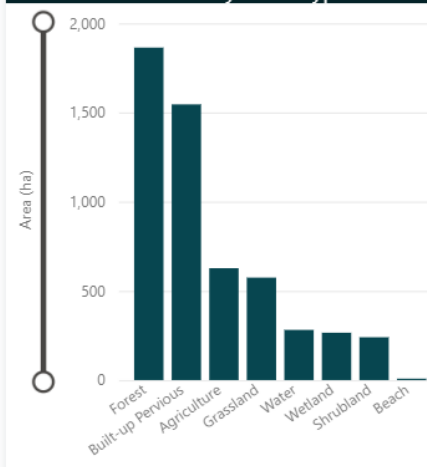
Asset Area by Sub-Watershed



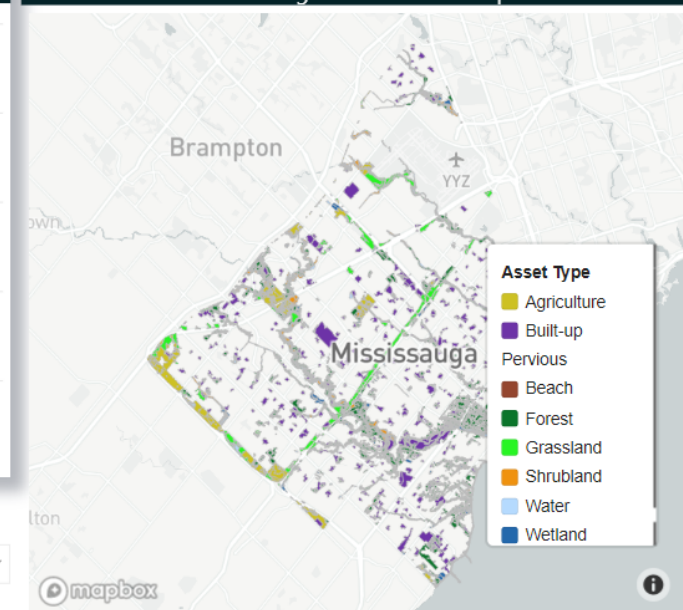
Summary of Natural Assets

Asset Type	Count	Asset Area (ha)	NAS Area (ha)	Trail Length (km)	CVC Regulation Area (ha)	HRCA Regulation Area (ha)	City Owned Area (ha)
Agriculture	256	627.11	0.00	10.94	100.87	126	114.33
Beach	20	2.12	2.12	0.12	1.23	0	0.55
Built-up Pervious	563	1,545.36	141.44	125.00	210.74	4	605.68
Forest	4000	1,863.65	1,418.76	75.24	989.16	2	803.66
Grassland	265	574.32	82.63	23.03	56.19	44	80.78
Total	8634	5,399.02	2,233.87	263.77	1,798.14	230	1,977.95

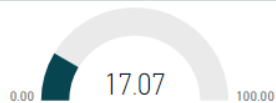
Total Area by Asset Type



Mississauga Natural Asset Map



Percent Natural Asset



City Owned

All

Ward

All

Conservation Authority

All

Condition Rating

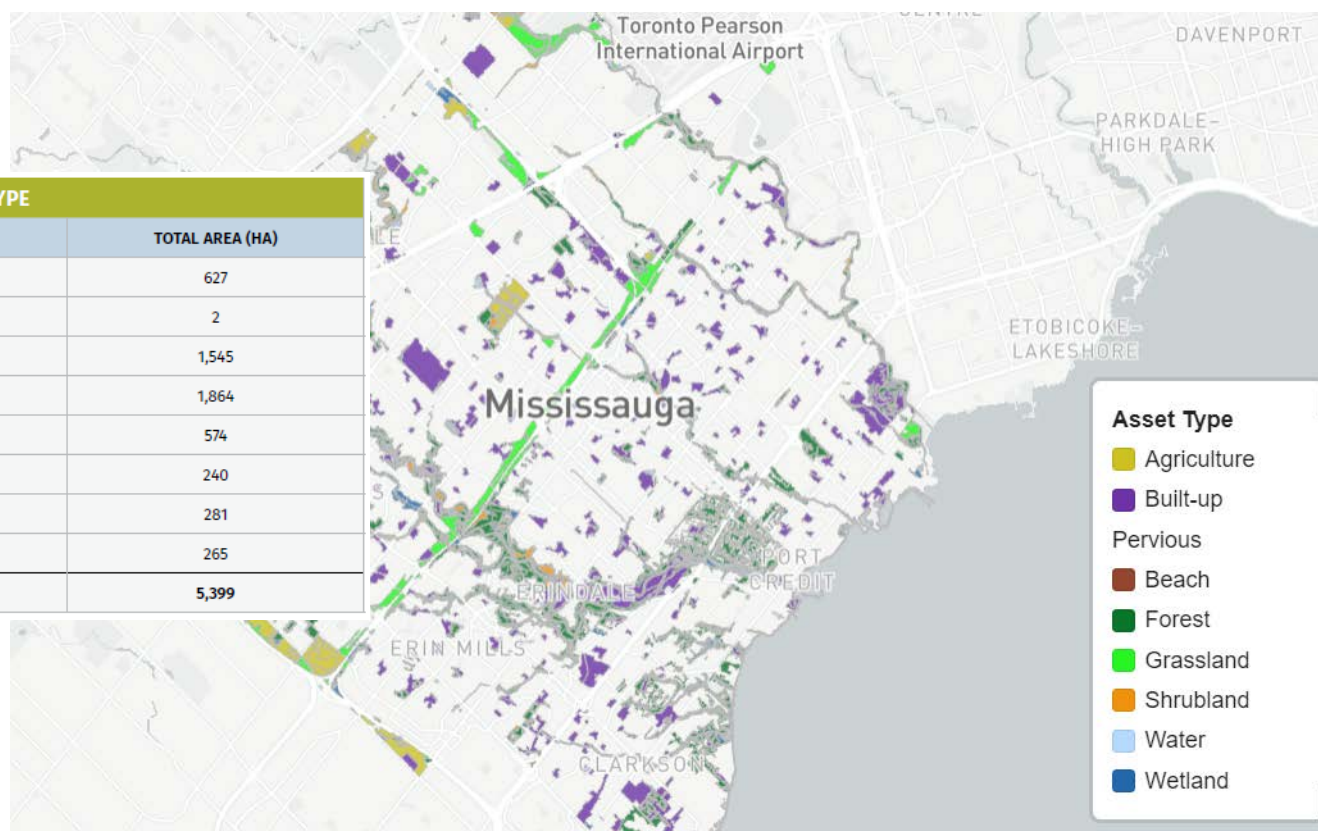
All

Natural Assets Map

- The inventory project defined a total of 8,634 individual assets, covering
- 5,399 hectares

TABLE 2: SUMMARY OF NATURAL ASSETS BY TYPE

NATURAL ASSET TYPE	NUMBER OF ASSETS	TOTAL AREA (HA)
Agriculture	256	627
Beach	20	2
Built-up Pervious	563	1,545
Forest	4,000	1,864
Grassland	265	574
Shrubland	220	240
Water	1,979	281
Wetland	1,331	265
Total	8,634	5,399



Asset Registry

- Each asset within the inventory has a unique identification number that allows users to select and analyze individual assets and manipulate corresponding data as required

TABLE 3: EXCERPT FROM THE REGISTRY

Natural Asset Registry

Asset ID	Asset Type	Sub Asset ID	Asset Area (ha)	Area in Subwatershed (ha)	Sub-Watershed	Ward	Conservation Authority	Count of Park Trees	Count of Street Trees	RIC Name	Existing Land Use	NAS Area (ha)	City Owned Area (ha)	Interior Forest Area (ha)	Mean Canopy Height (m)	Adjacent Land Use Score	Remediability Score	Relative Size Score	Road Density Score	Total Score
AGR10	Agriculture	AGR10-1	0.23	0.23	Mimico Creek	3	Toronto and Region Conservation Authority	0	0		Open Space / Greenlands	0.00		0.00	0.10	3	3	1	1	10
AGR104	Agriculture	AGR104-4	0.06	0.00	Tibbicoche Main Branch	3	Toronto and Region Conservation Authority	0	0		Open Space / Greenlands	0.00		0.00	0.30	6	5	1	1	13
AGR106	Agriculture	AGR106-1	3.44	3.44	Little Tibbicoche Creek	3	Toronto and Region Conservation Authority	0	2		Vacant	0.00		0.00	0.05	6	5	1	1	13
AGR11	Agriculture	AGR11-1	0.06	0.06	Mimico Creek	5	Toronto and Region Conservation Authority	0	0		Open Space / Greenlands	0.00		0.00	0.34	3	3	1	1	10
AGR111	Agriculture	AGR111-1	0.12	0.12	6	11	Credit Valley Conservation	0	1		Residential Detached	0.00		0.00	0.62	6	5	1	1	13
AGR112	Agriculture	AGR112-1	0.12	0.12	6	11	Credit Valley Conservation	0	0		Open Space / Greenlands	0.00		0.00	0.62	8	5	1	1	15
AGR113	Agriculture	AGR113-1	0.39	0.39	6	11	Credit Valley Conservation	0	0		Open Space / Greenlands	0.00		0.00	0.12	7	5	1	1	14
AGR114	Agriculture	AGR114-1	6.70	0.02	6	11	Credit Valley Conservation	0	0		Open Space / Greenlands	0.00		0.00	0.51	7	5	1	10	23
AGR114	Agriculture	AGR114-2	6.70	0.00	6	11	Credit Valley Conservation	0	0		Open Space / Greenlands	0.00		0.00	1.83	8	5	1	10	24
AGR114	Agriculture	AGR114-3	6.70	6.66	9	11	Credit Valley Conservation	0	0		Open Space / Greenlands	0.00		0.00	0.62	8	5	1	1	15
AGR115	Agriculture	AGR115-1	1.01	1.01	9	11	Credit Valley Conservation	0	0		Open Space / Greenlands	0.00		0.00	0.61	7	5	1	1	14
AGR117	Agriculture	AGR117-1	0.01	0.01	6	11	Credit Valley Conservation	0	0		Open Space / Greenlands	0.00		0.00	1.65	8	5	1	10	24
AGR117	Agriculture	AGR117-2	0.01	0.00	9	11	Credit Valley Conservation	0	0		Open Space / Greenlands	0.00		0.00	0.21	8	5	1	10	24
AGR118	Agriculture	AGR118-1	0.38	0.20	6	11	Credit Valley Conservation	0	0		Open Space / Greenlands	0.00		0.00	1.69	7	5	1	10	23

Condition Scores

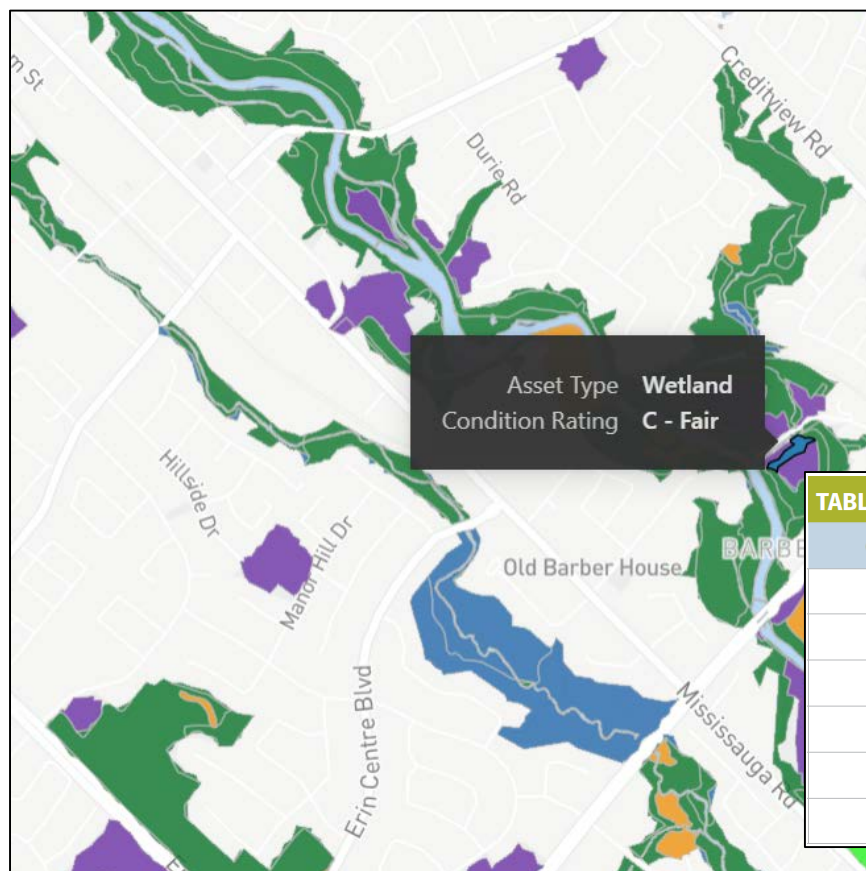
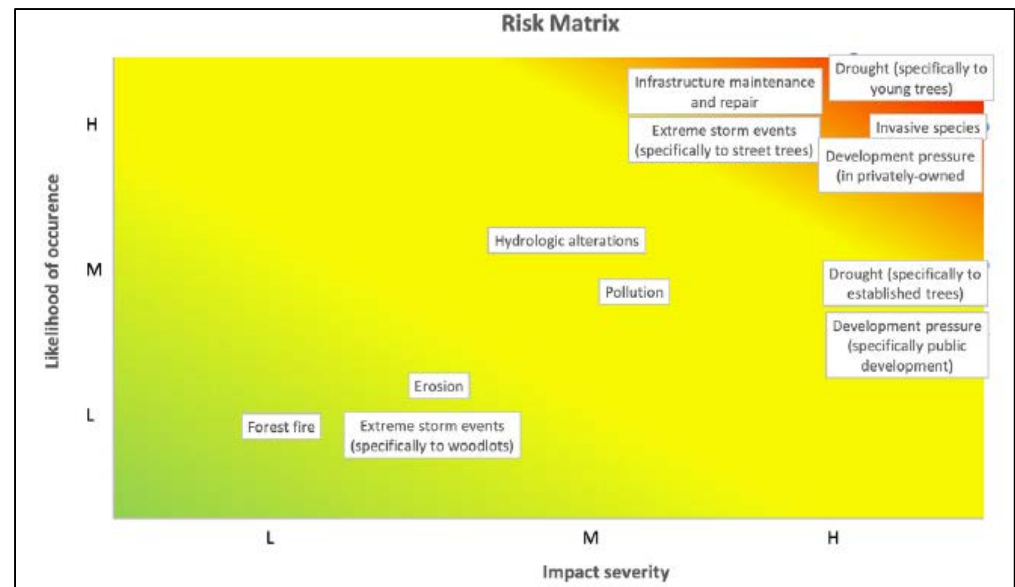


TABLE 5: SUMMARY OF NATURAL ASSET CONDITION RATINGS

Condition Rating	Number of Assets	Total Area (ha)	Average Condition Score
Very Good	187	237	35
Good	2,003	1,165	29
Fair	5,049	2,479	19
Poor	1,118	1,112	14
Very Poor	277	406	7
Total	8,634	5,399	21

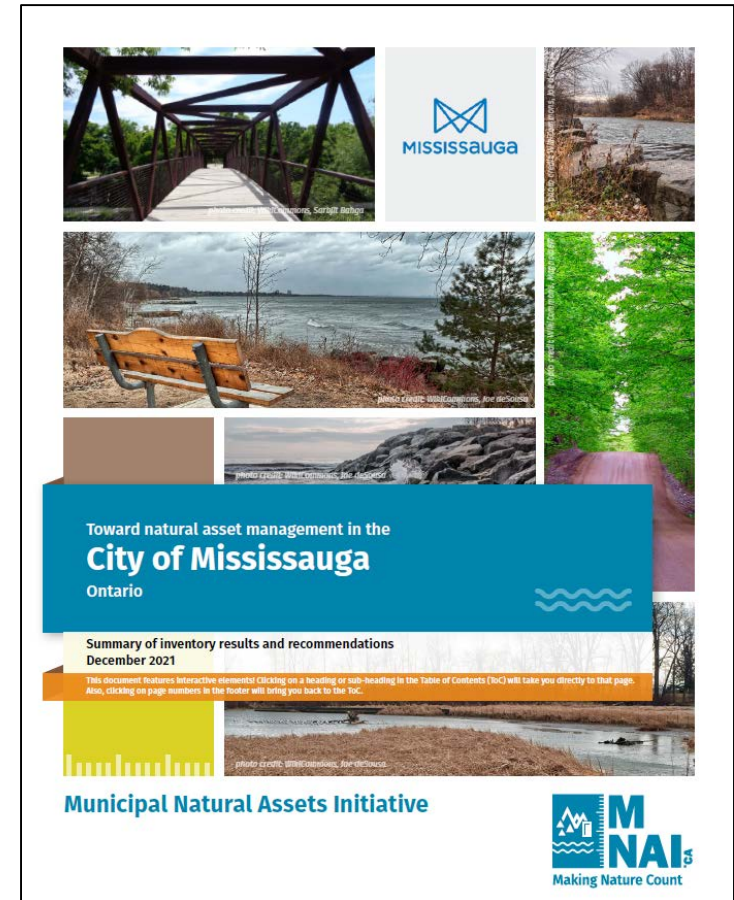
Preliminary Risk Assessment

- Purpose - assess likelihood and consequences of failure of natural assets in response to natural and human-made risks
- Preliminary in nature
- Focused on trees, wetlands, and watercourses
- First attempt to develop and applying a risk assessment framework for natural assets



Next Steps & Looking Ahead

- Adding GIS files to the enterprise geotadatabase
- Integrating data and findings into ongoing AMPs for natural assets (Forestry, SWM, etc.)
- Updating inventory to align with City methods and processes



Thank you!

MNAI Preliminary Inventory – What's in and what's out

NATURAL ASSET MANAGEMENT STEP	PRELIMINARY INVENTORY	FULL MNAI PROJECT WITH A MORE COMPREHENSIVE INVENTORY ^{7.2}
1 Common understanding of natural asset management	✓	✓
2 Readiness Assessment	✓	✓
3 Competency Review	✓	✓
4 Scoping inventory needs	✓	✓
5a Data gathering and processing (preliminary) Focus on existing, easy-to-obtain data, often from provincial datasets	✓	
5b Data gathering and processing (comprehensive) Seek out and utilize more localized or specialized datasets		✓
6a Structuring your inventory (preliminary) Default structure defined by MNAI	✓	
6b Structuring your inventory (comprehensive) Inventory structured to match community input		✓
7a Condition assessment (preliminary) Desktop exercise using a limited number of readily available, pre-established indicators	✓	
7b Condition assessment (comprehensive) Includes additional local data, expands number of indicators via discussion with community		✓
8a Risk Identification (preliminary) High-level exercise that identifies risks to NAs and associated services, with a H-M-L ranking	✓	
8b Risk Identification (comprehensive) Facilitated workshop to identify probability of impacts and magnitude of consequences to arrive at more nuanced rankings. Where possible, scope of impact(s) to NA incorporated into dashboard maps		✓
9 Modelling of Current Conditions		✓
10 Economic Valuation (current status)		✓
11 Scenario Modelling		✓
12 Lifecycle Costing		✓
13 Implementation: early indication of actions or analysis		✓