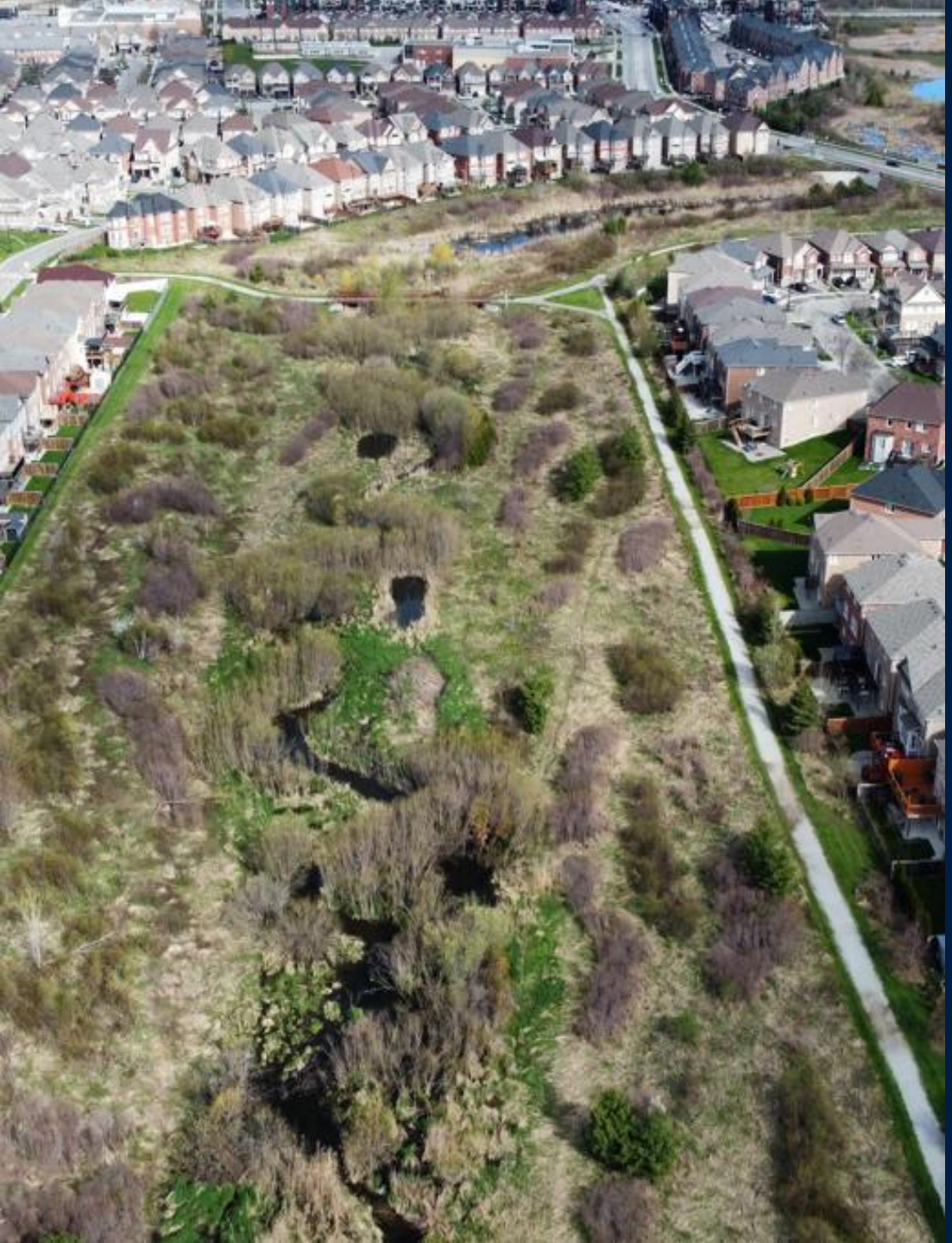

Reflection on Natural Channel Design over the Past 20 Years in the Credit Valley Watershed

The Good, the Bad & the Ugly: Lessons Learned

Rizwan Haq, Jon Nodwell

Date June 8, 2026

Credit Valley Conservation
inspired by nature

Presentation Outline

1. Context
2. Churchville Trib Case Study
3. Huttonville Creek Case Study
4. Lessons Learned

Context

1. Secondary Plan
2. East Huttonville Creek and Churchville Tributary
3. Flat Topography
4. Agricultural Landscape
5. Mostly Undefined Channels
6. Limited Riparian Vegetation
7. Natural Channel Design

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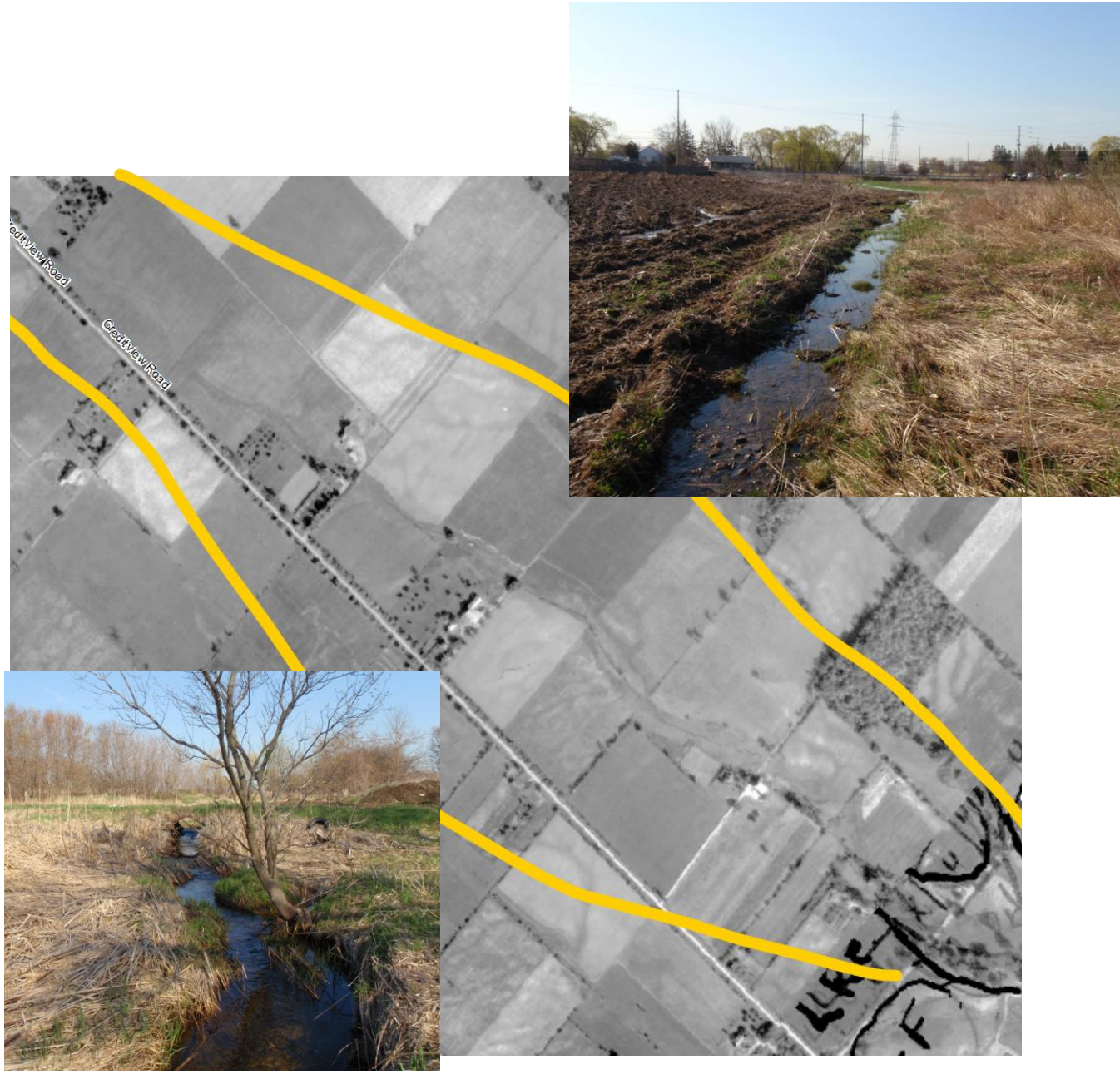
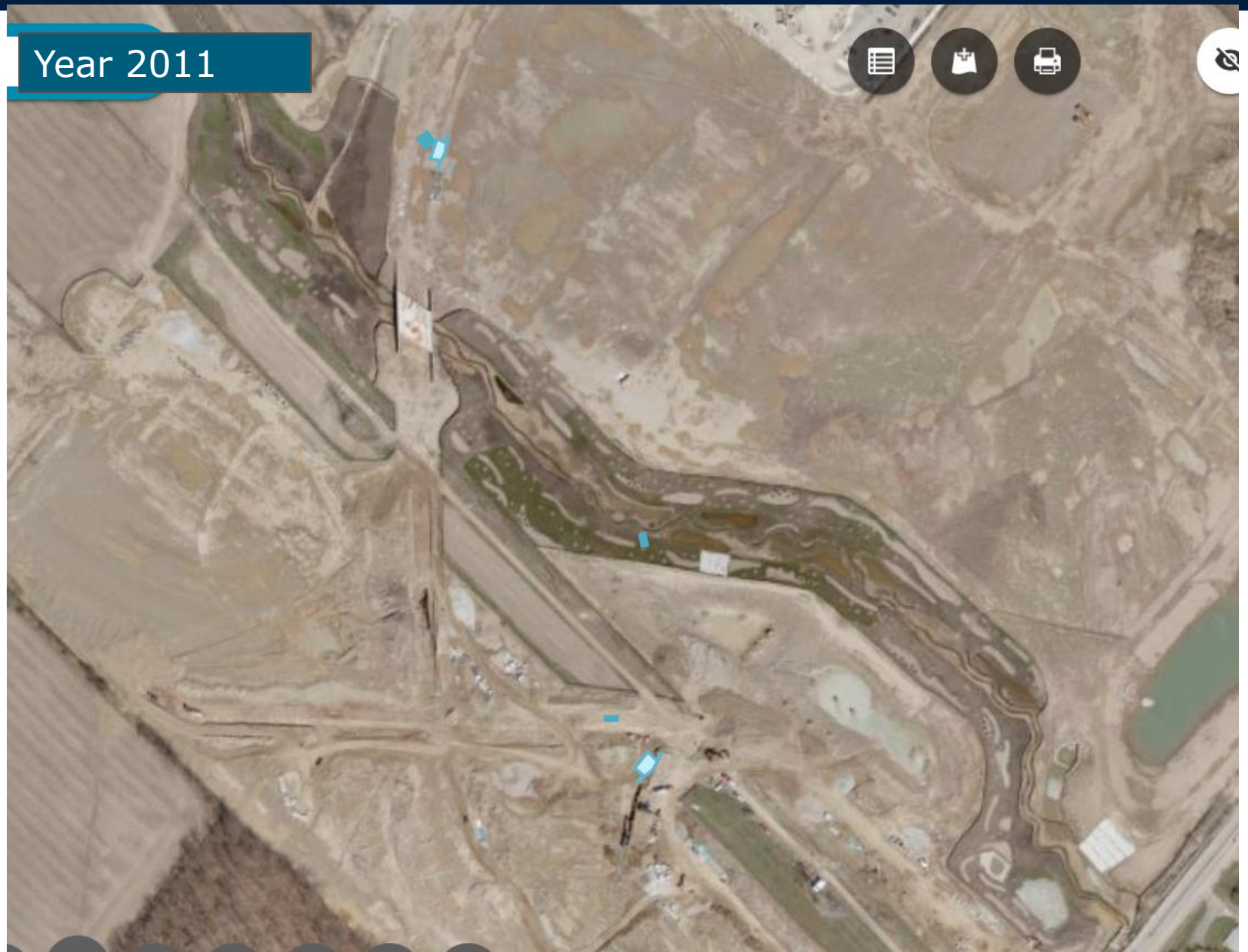
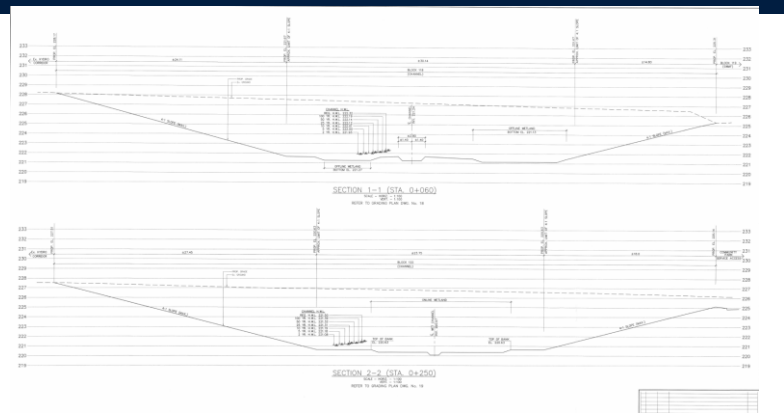
Churchville Tr

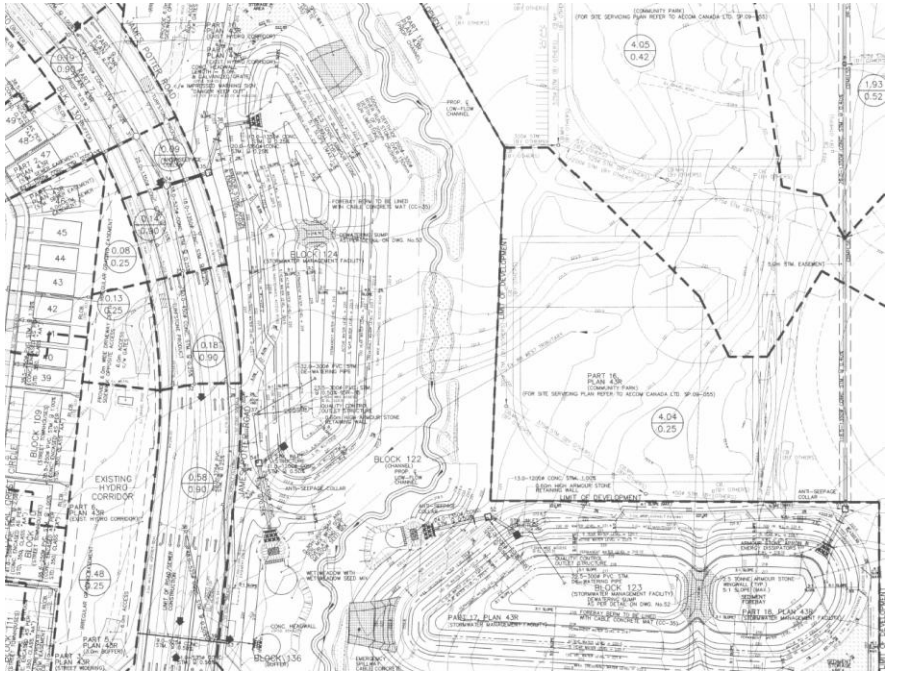
1944 Aerial Photograph



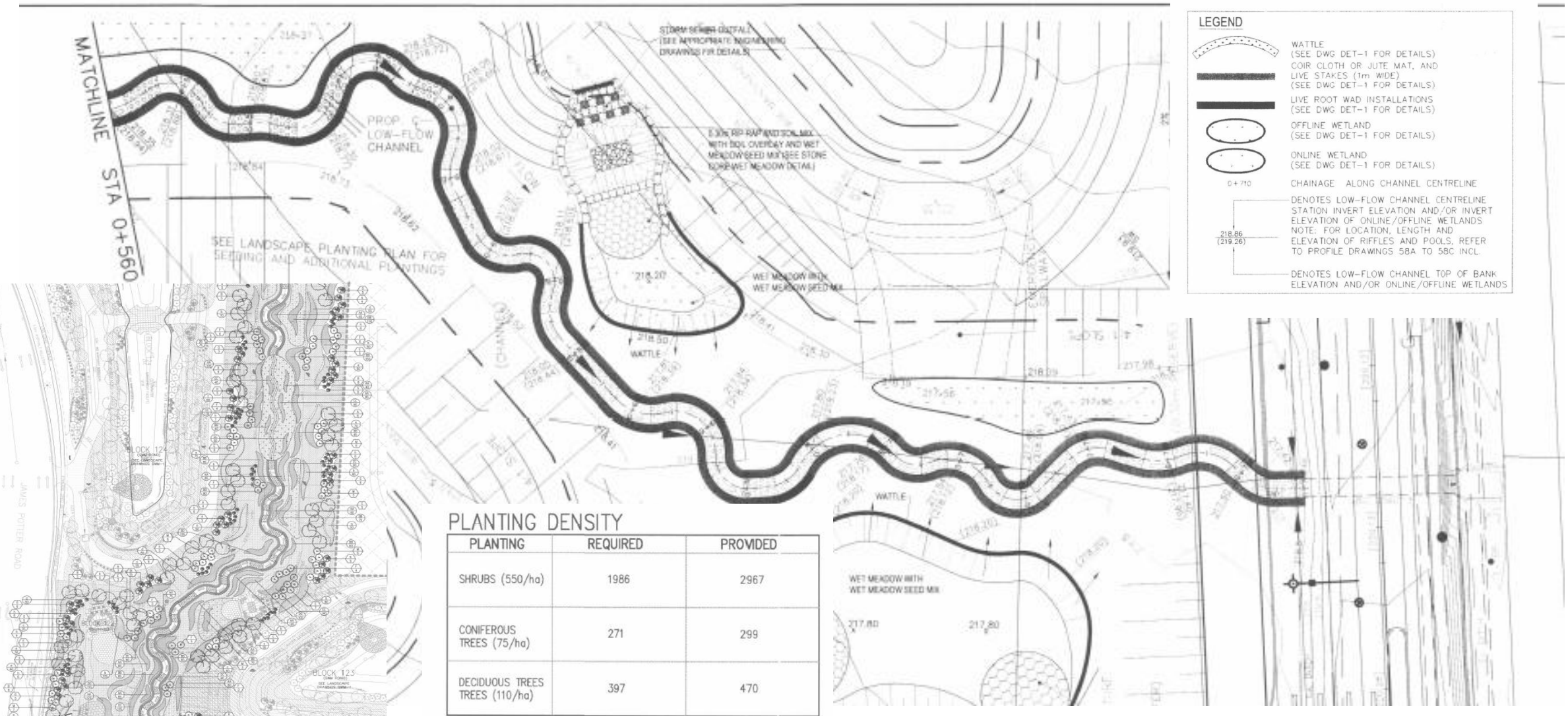
Churchville Tributary Post Development







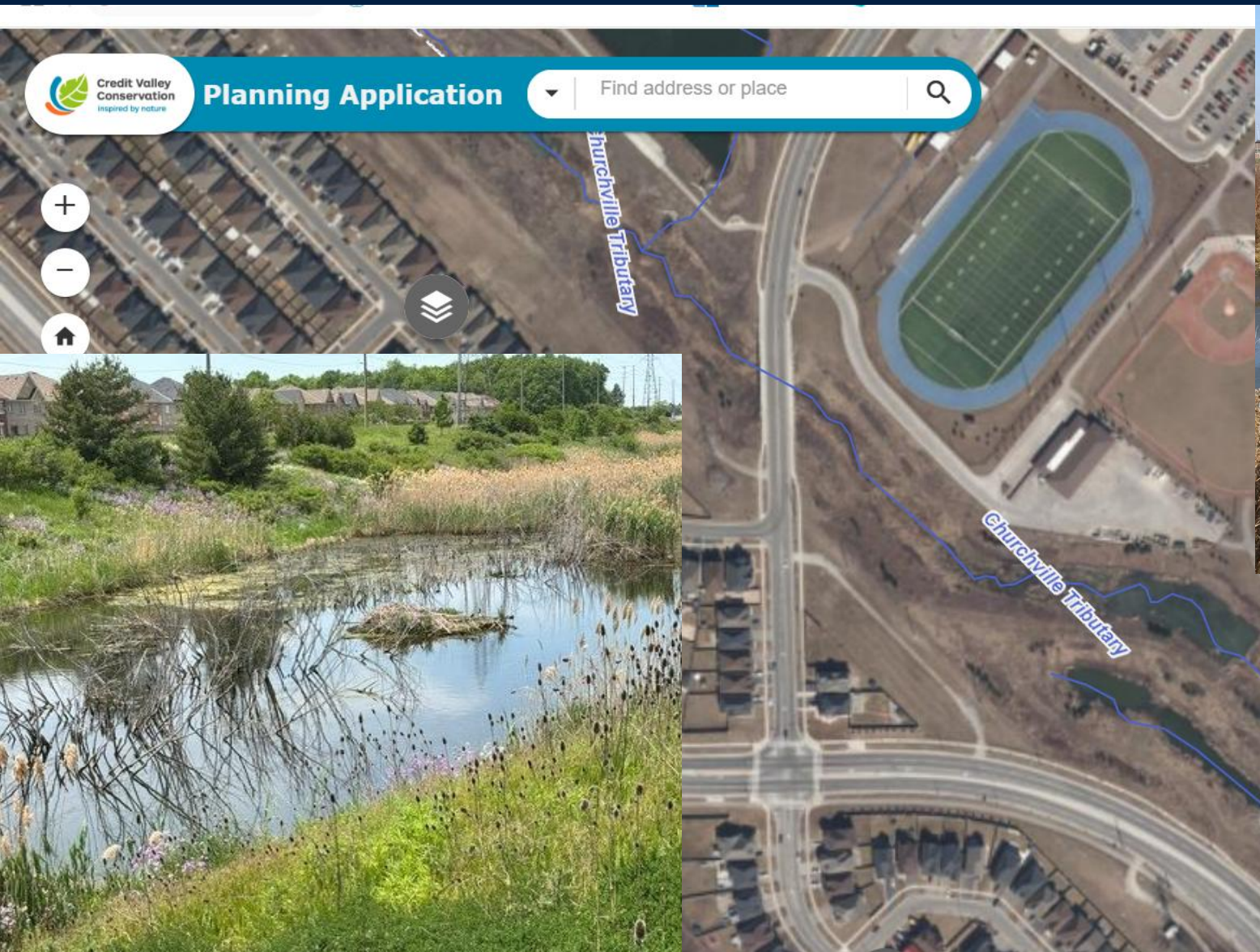
Churchville Tr. Channel Design

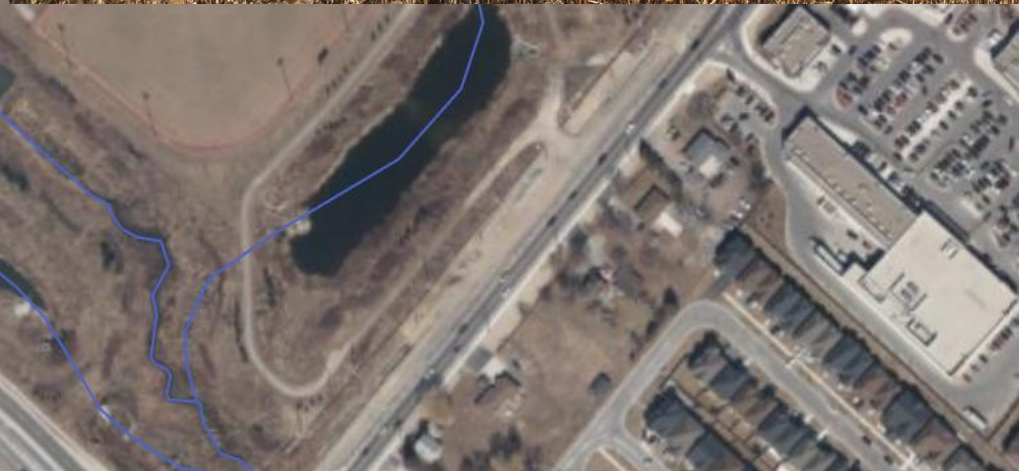


PLANTING DENSITY

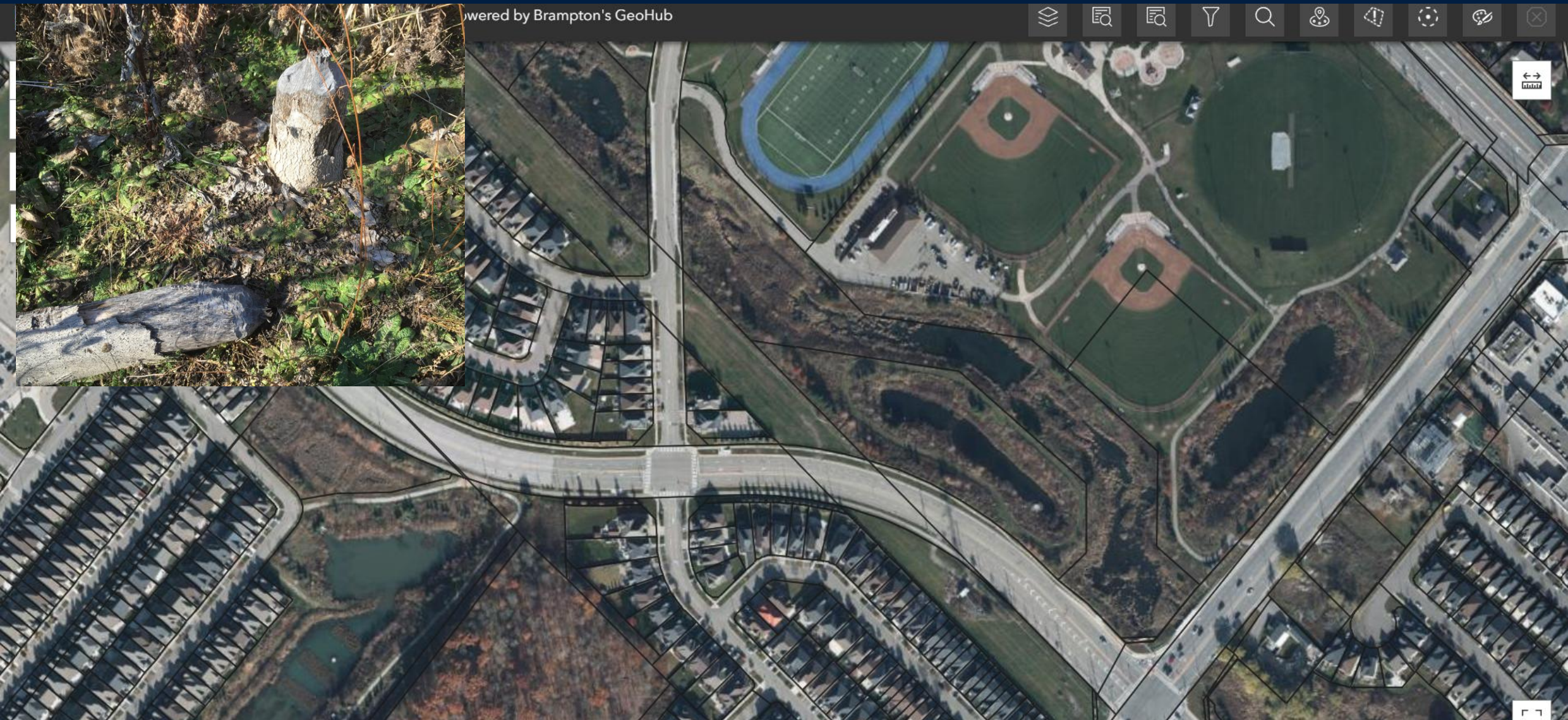
PLANTING	REQUIRED	PROVIDED
SHRUBS (550/ha)	1986	2967
CONIFEROUS TREES (75/ha)	271	299
DECIDUOUS TREES TREES (110/ha)	397	470

Churchville Tr. 2015





Churchville Tr. Fall 2025



Churchville Tr. Fall 2025

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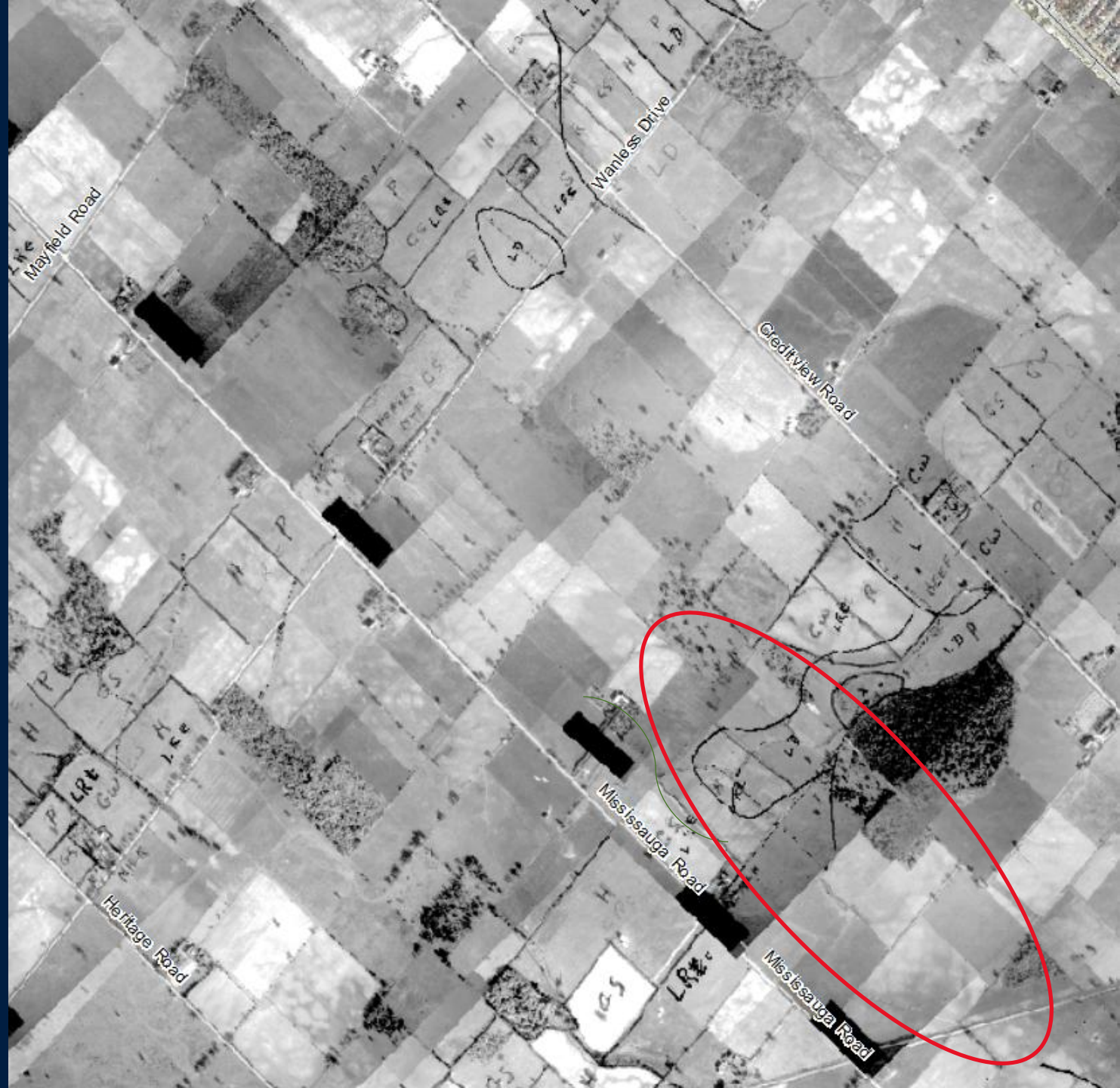
East Huttonville Creek

1944 Aerial Photograph



East Huttonville Creek Design


CNR Rail


Sandalwood Pkwy
Veterans Dr

Reverse Grade Floodplain in E. Huttonville Creek

Downstream of Sandalwood Pkwy

Upstream of Veterans Drive

Downstream Veterans Drive

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Lessons Learned

Looking back at the Churchville Trib and East Huttonville Creek Case Studies

The Good: What Worked

- Converted agricultural drains into functional, connected natural heritage systems that contain natural hazards and limit risk to infrastructure
- Substantially increased the amount of natural cover
- Improved terrestrial and aquatic connectivity
- Created conditions that support natural ecological processes and increase biodiversity
- Ultimately, these systems behaved like “natural systems” — which includes being dynamic and biologically driven

The Bad & The Ugly: Where Design Met Reality

- Beavers altered channel form and function from its intended design
- This altered sediment composition and transport dynamics
- Resulted in riparian vegetation shifts, including localized die-offs
- Planting choices contributed to channel braiding
- Dams created barriers for small-bodied fish
- Thermal impacts emerged from combined beaver activity and stormwater inputs

Lessons Learned: working with beavers, not against them

- Anticipate ecological succession, including beaver activity
- Design with beavers in mind: channel confinement and floodplain grading influence how the system responds to disturbance
- Is a single-thread threshold system appropriate for such large corridors?
- Consider alternative planting plans and species selection
- Avoid planting preferred forage species (e.g., poplar, aspen)
- Build flexibility and uncertainty into performance expectations

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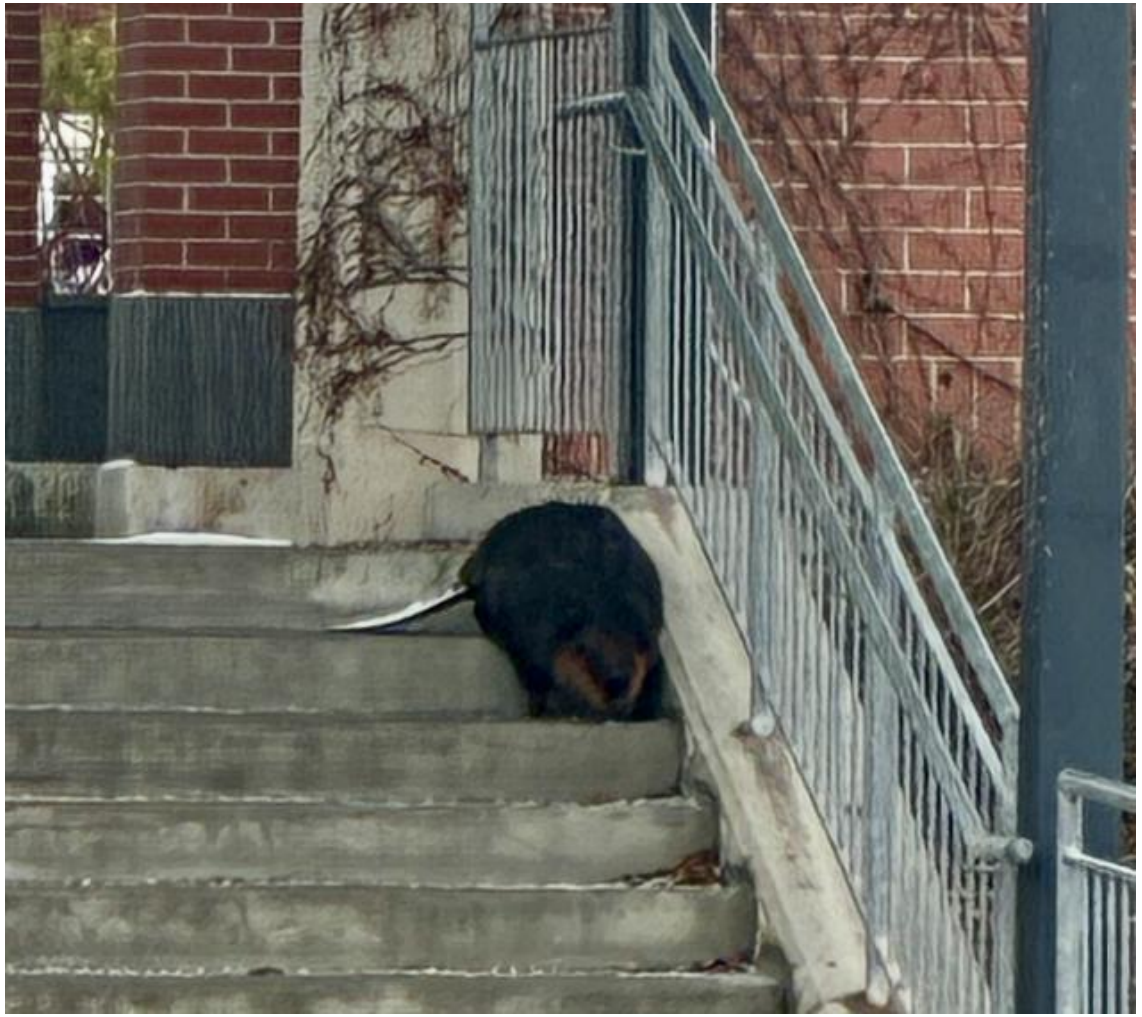
When should we expect beavers?



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Questions?