
















**Appendix A:
Study Area**

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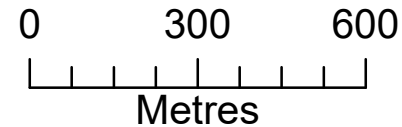
Reach Delineation
Alloa Secondary Plan Area
 Caledon, Ontario

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Legend

-  Reach Break and ID
-  Headwater Drainage Feature
-  Tile Drain
-  Watercourse
-  Not Field
-  Detailed Assessment
-  Wetlands
-  Woodlands
-  OHN Waterbody
-  Participating Properties
-  Non-Participating Properties, Access
-  Non-Participating Property, No Access
-  Phase 1 Lands
-  Phase 2 Lands
-  Alloa Secondary Plan Area and Primary Study Area

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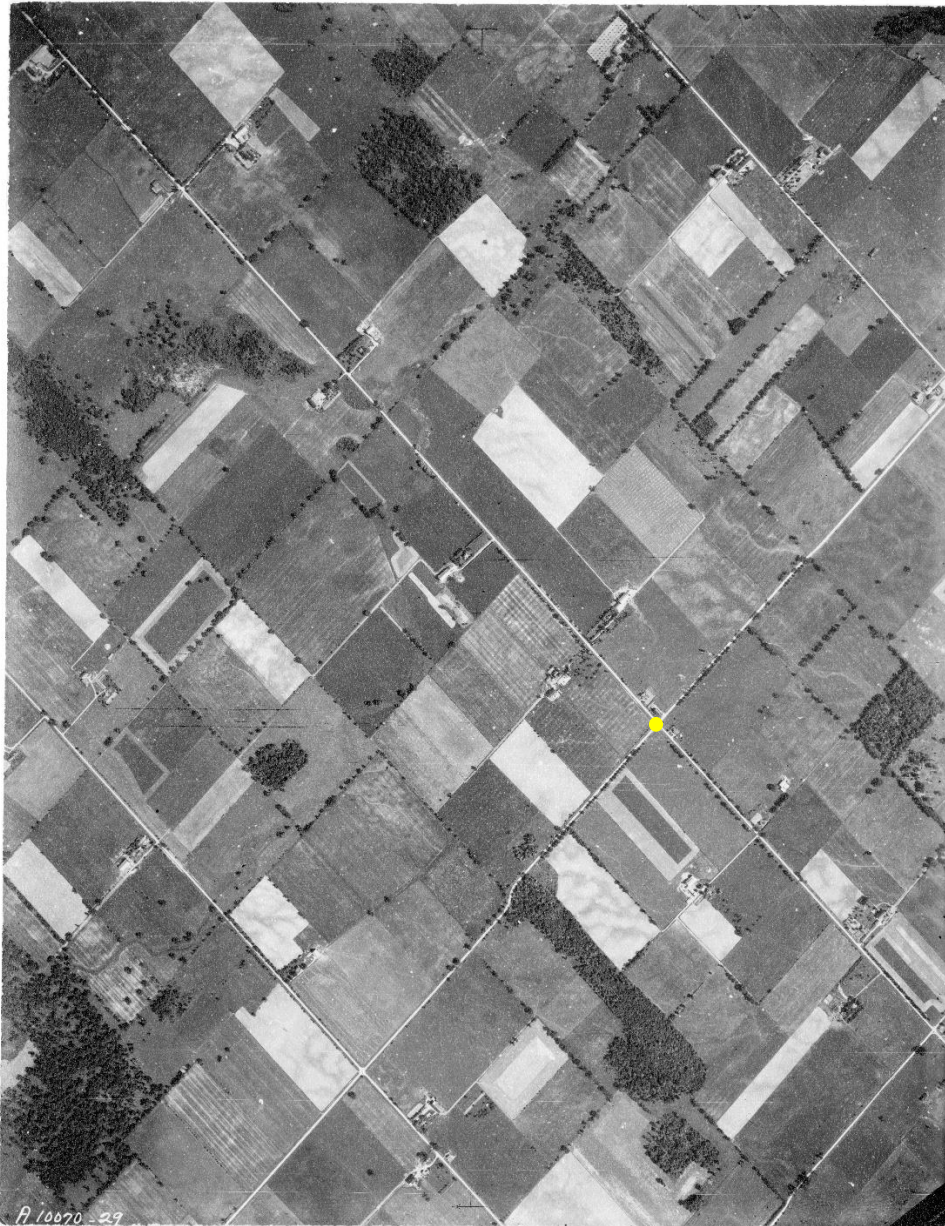


Imagery: Google Earth, 2022. Waterbody, Watercourse: MNR, 2023. Alloa Phase 1 & 2 Lands, Alloa Secondary Plan Area: Crozier, 2024. HDFs, Watercourse, Detailed Assessment: GEO Morphix Ltd., 2024. Participating Properties, Wetlands, Dripline, Woodland: Crozier, 2024. Print Date: June 2024. PN24009. Drawn By: R.A., M.O., S.S.O., K.W.



**Appendix B:
Historical Aerial Imagery**

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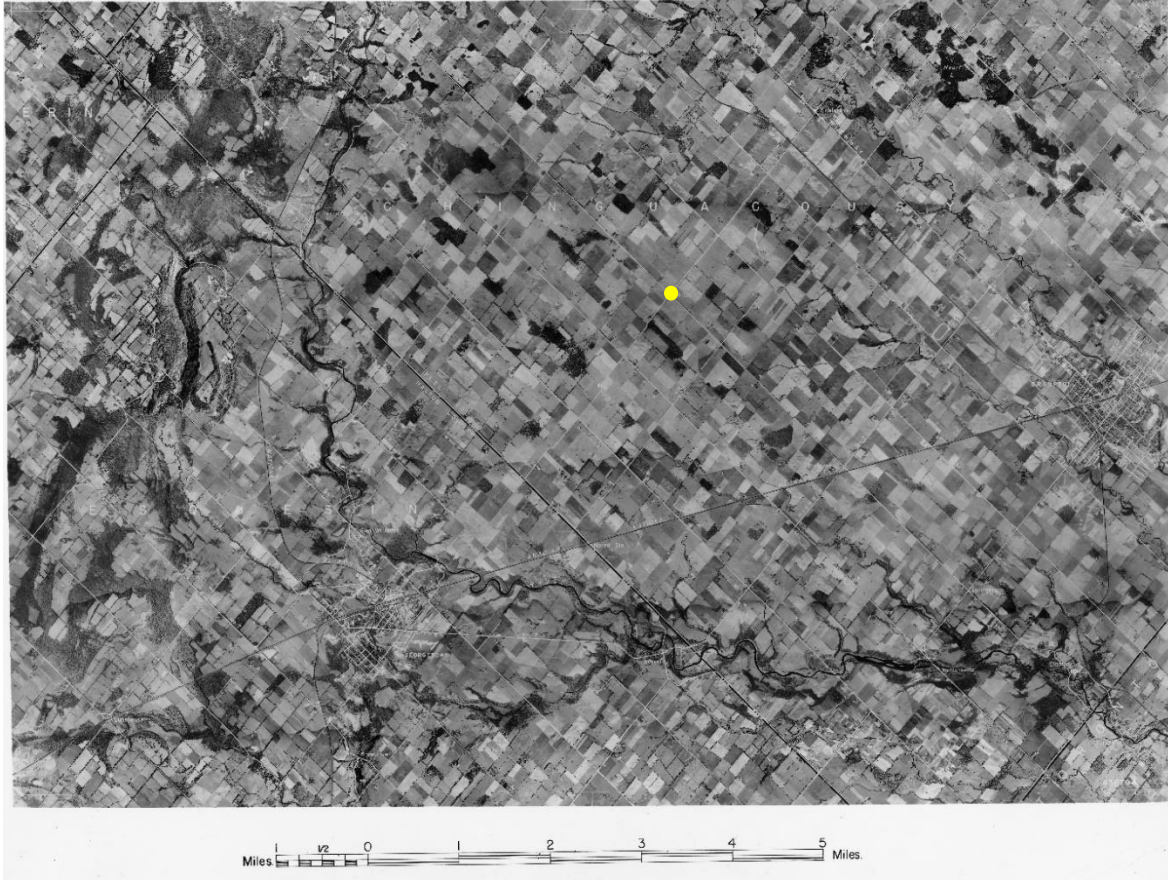
Location: Caledon, ON

Year: 1946

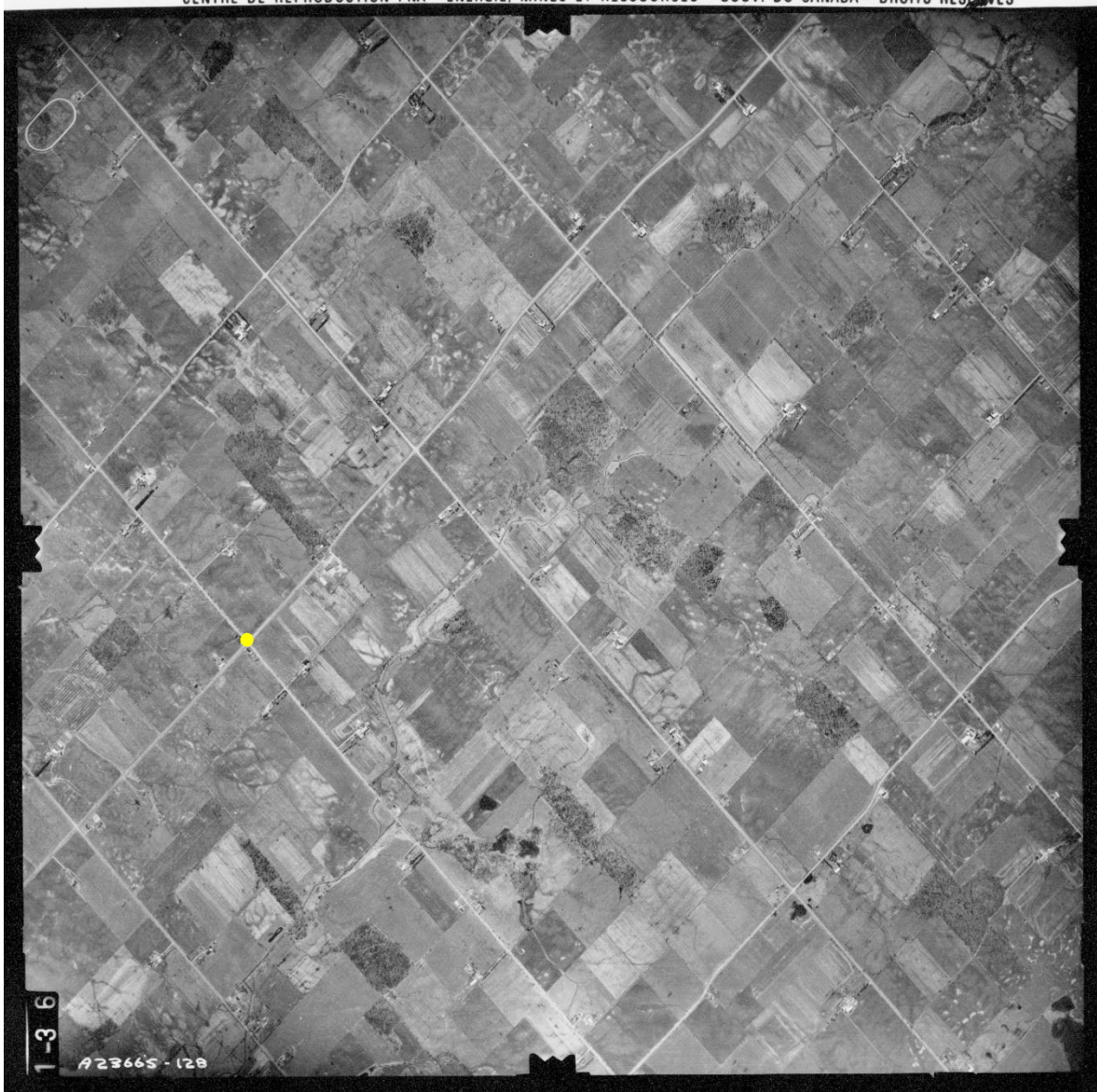
Scale: 1:20000

Source: NAPL

Yellow Point: Intersection of Mayfield Road and Creditview Road



Location: Caledon, ON
Year: 1954
Source: University of Toronto
Yellow Point: Intersection of Mayfield Road and Creditview Road



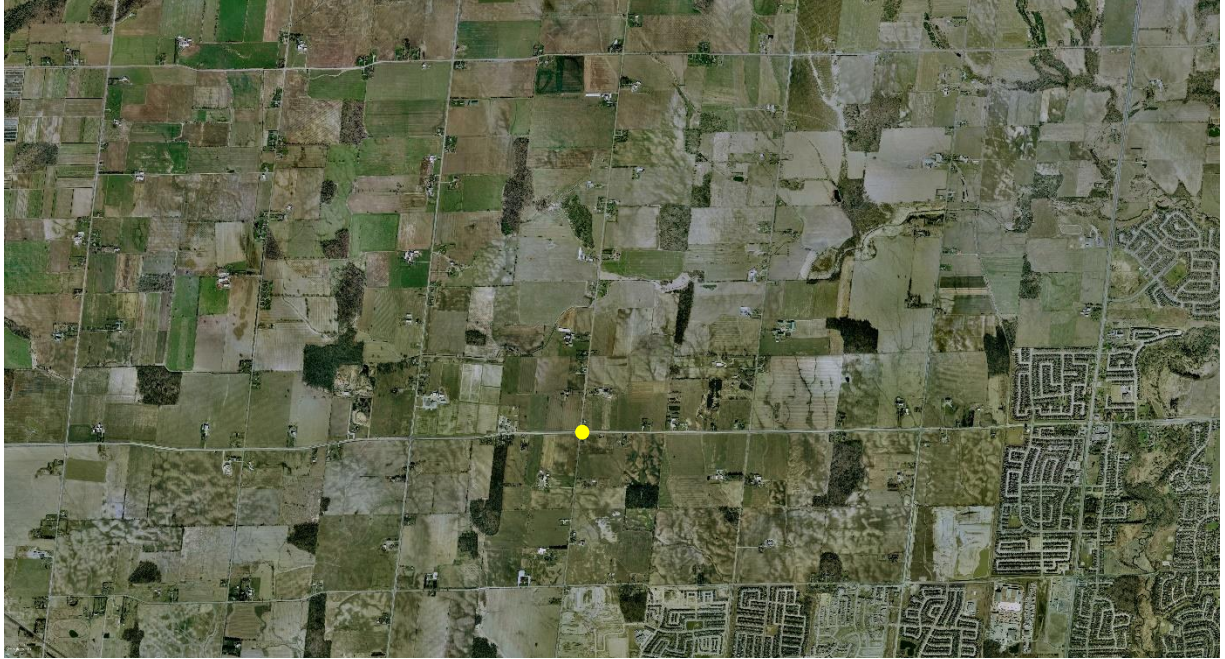
Location: Caledon, ON

Year: 1974

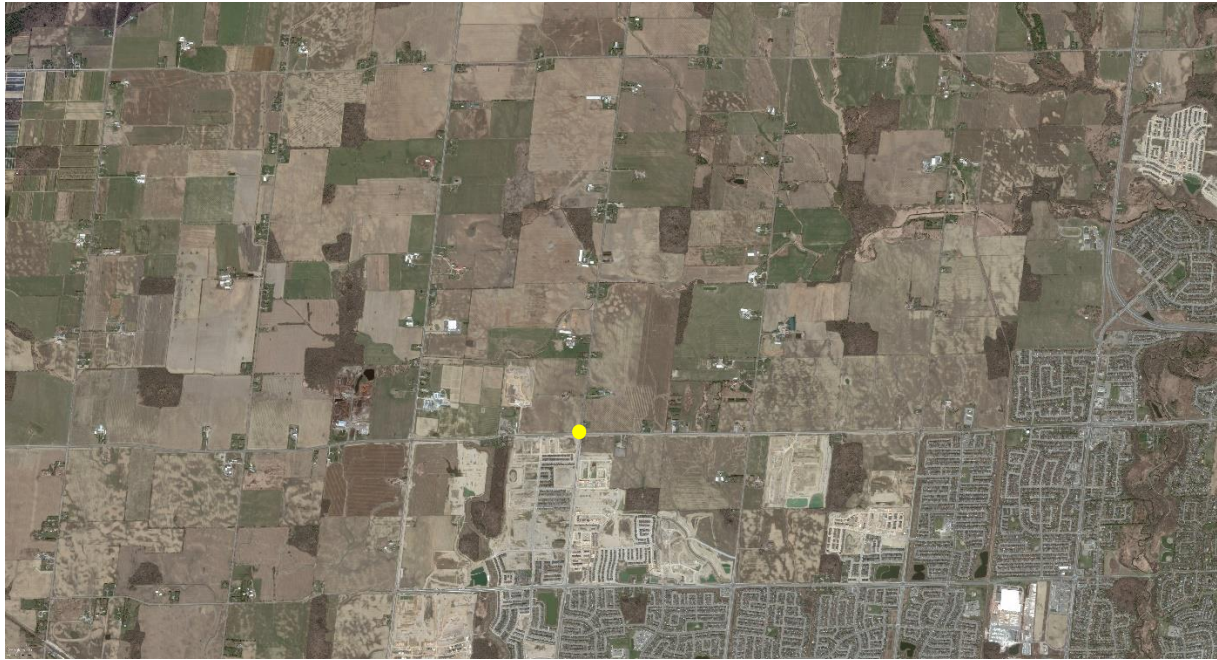
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Source: NAPL

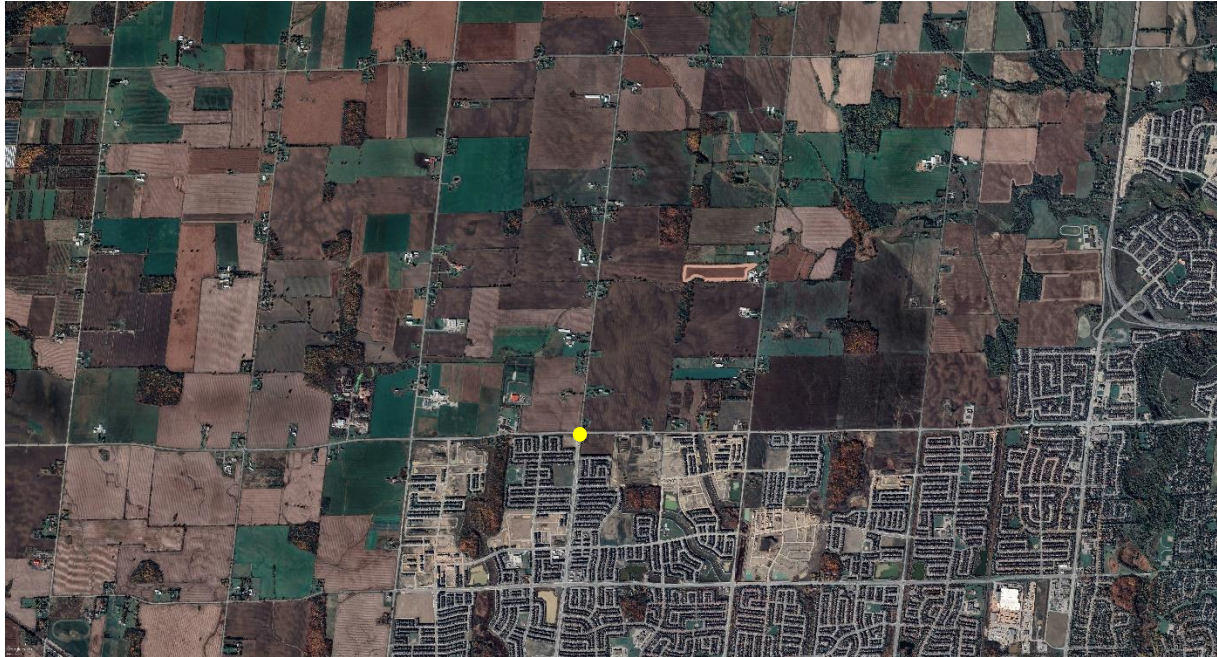
Yellow Point: Intersection of Mayfield Road and Creditview Road



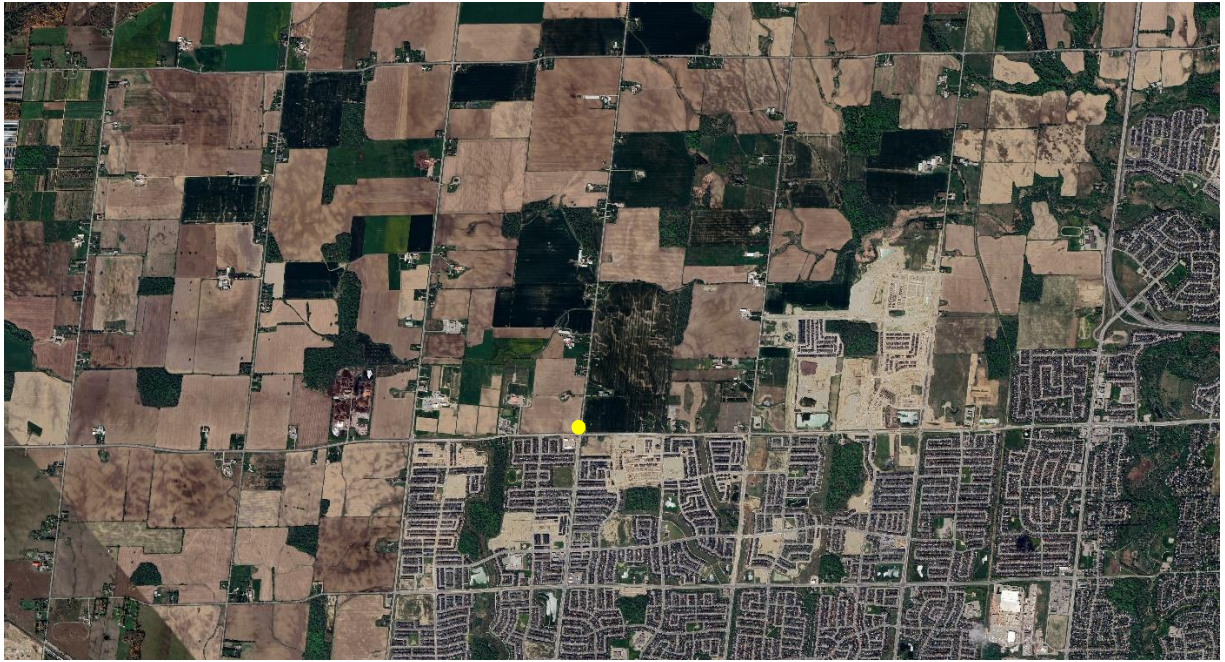
Location: Caledon, ON
Year: 2005
Scale: Digital Orthoimagery
Source: Google Earth Pro
Yellow Point: Intersection of Mayfield Road and Creditview Road



Location: Caledon, ON
Year: 2016
Scale: Digital Orthoimagery
Source: Google Earth Pro
Yellow Point: Intersection of Mayfield Road and Creditview Road



Location: Caledon, ON
Year: 2019
Scale: Digital Orthoimagery
Source: Google Earth Pro
Yellow Point: Intersection of Mayfield Road and Creditview Road



Location: Caledon, ON
Year: 2022
Scale: Digital Orthoimagery
Source: Google Earth Pro
Yellow Point: Intersection of Mayfield Road and Creditview Road

**Appendix C:
Photographic Record**

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Photo 1
Alloa Drain - Reach AD2, Caledon, Ontario



The bed and bank substrate consisted of clay/silt and sand. The reach was run-dominant, with very few riffles and pools.

Photo 2
Alloa Drain - Reach AD2, Caledon, Ontario



An exposed tile drain that was previously buried was observed at an outer bank of a meander bend and was in poor condition.

Photo 3
Alloa Drain - Reach AD2, Caledon, Ontario



Minimal erosion was observed within the reach, with localized undercutting in the downstream extent. Undercuts of up to 0.30 m were measured.

Photo 4
Alloa Drain - Reach AD2, Caledon, Ontario



The channel was straight, flowed between agricultural fields and was moderately entrenched.

Photo 5
Alloa Drain - Reach AD3, Caledon, Ontario



Generally, the reach was run-dominant; however, approximately 25% of the reach contained riffles.

Photo 6
Alloa Drain - Reach AD3, Caledon, Ontario



Poor longitudinal sorting of bed materials was observed throughout the reach, with bed substrate ranging from clay/silt to cobbles. A few boulders were also present.

Photo 7
Alloa Drain - Reach AD3, Caledon, Ontario



One localized area in the downstream portion of the reach showed evidence of recent dredging (sloped bare banks).

Photo 8
Alloa Drain - Reach AD3, Caledon, Ontario



The riparian vegetation consisted of primarily grasses and shrubs. The grasses encroached into the channel in various locations throughout the reach. A few trees were also present, located primarily in the upstream portion of the reach.

Photo 9
Alloa Drain - Reach AD4, Caledon, Ontario



In the upstream portion of the reach a localized row of trees was present along the banks, some of which were leaning or had fallen into the channel.

Photo 10
Alloa Drain - Reach AD4, Caledon, Ontario



The constructed channel was straightened and flowed between agricultural fields. The channel was entrenched, had a low gradient and lacked canopy cover.

Photo 11
Alloa Drain - Reach AD4, Caledon, Ontario



Multiple farm crossings were observed throughout the reach. The crossings were generally heavily armored and in poor condition. Scour pools were observed along the downstream sides of the culverts.

Photo 12
Alloa Drain - Reach AD4, Caledon, Ontario



Riparian vegetation generally consisted of grasses, which encroached on the channel. Along approximately 20% of the reach, instream vegetation consisted of cattails.

Photo 13
Alloa Drain - Reach AD5, Caledon, Ontario



The banks throughout the reach were generally steep, with angles ranging from 60 – 90 degrees.

Photo 14
Alloa Drain - Reach AD5, Caledon, Ontario



Cattails were observed along 25% of the reach, with the highest concentration immediately downstream of the culvert at Mississauga Road.

Photo 15
Alloa Drain - Reach AD5, Caledon, Ontario



The reach was run-dominant, with the bed and bank substrates consisting of clay/silt and sand.

Photo 16
Alloa Drain - Reach AD5, Caledon, Ontario



A leaning fence crossed the channel. Leaning trees were also present in this portion of the reach.

Photo 17
Alloa Drain - Reach AD6, Caledon, Ontario



Rooted emergent instream vegetation was observed along 45% of the reach. Woody debris was not present in the channel or cutbank.

Photo 18
Alloa Drain - Reach AD6, Caledon, Ontario



The channel flowed through agricultural fields and multiple tile drains were observed throughout the reach.

Photo 19
Alloa Drain - Reach AD6, Caledon, Ontario



The channel was straight, with minimal erosion present.

Photo 20
Alloa Drain - Reach AD6, Caledon, Ontario



The bed was heavily silted and run-dominant. Bar forms were absent throughout the reach.

Photo 21
Alloa Drain - Reach AD7, Caledon, Ontario



The reach flowed through a mature forest containing trees and shrubs.

Photo 22
Alloa Drain - Reach AD7, Caledon, Ontario



The reach was run-dominant and lacked riffle-pool morphology. The channel bed was highly silted and organic debris was present. The bed and bank substrate consisted of clay/silt, and sand.

Photo 23
Alloa Drain - Reach AD7, Caledon, Ontario



Standing water was present that had a strong organic odour.

Photo 24
Alloa Drain - Reach AD7, Caledon, Ontario



Woody debris was present in moderate density, as well as multiple fallen and leaning trees.

Photo 25
Tributary of the Alloa Drain - Reach AD1-2, Caledon, Ontario



The downstream portion of the reach had rooted emergent instream vegetation. This vegetation was present from the forest edge to the downstream reach break.

Photo 26
Tributary of the Alloa Drain - Reach AD1-2, Caledon, Ontario



The channel banks were defined, with low bank angles of up to 30 degrees.

Photo 27
Tributary of the Alloa Drain - Reach AD1-2, Caledon, Ontario



The upstream portion of the reach had multiple leaning and fallen trees that contributed woody debris to the channel.

Photo 28
Tributary of the Alloa Drain - Reach AD1-2, Caledon, Ontario



The bed and bank substrates consisted of clay/silt and sand, with organic debris on the channel bed.

Photo 29
Fraser Drain - Reach FD1, Caledon, Ontario



The riparian vegetation consisted of mature forest on both banks in the upstream portion and along one bank in the downstream portion of the reach.

Photo 30
Fraser Drain - Reach FD1, Caledon, Ontario



Gullies were often observed along the banks but were dry at the time of the assessment.

Photo 31
Fraser Drain - Reach FD1, Caledon, Ontario



Organic and woody debris were present throughout the reach.

Photo 32
Fraser Drain - Reach FD1, Caledon, Ontario



Rooted emergent and submergent instream vegetation was observed, particularly in the downstream portion of the reach.

Photo 33
Fraser Drain - Reach FD2, Caledon, Ontario



Multiple features (yellow arrows) outlet into the reach, including tile drains and HDF Reach FD2-1.

Photo 34
Fraser Drain - Reach FD2, Caledon, Ontario



The bank substrate consisted of clay/silt and sand. Bank angles ranged from 60 – 90 degrees.

Photo 35
Fraser Drain - Reach FD2, Caledon, Ontario



The reach was a straight channel with moderate entrenchment and lacked bar forms.

Photo 36
Fraser Drain - Reach FD2, Caledon, Ontario



The reach was run-dominant, with riffles observed along approximately 20% of the reach. The substrate within the riffles was primarily composed of gravel and cobbles.

Photo 37
Lyons Drain - Reach LD1, Caledon, Ontario



Some leaning and fallen trees were observed throughout the reach.

Photo 38
Lyons Drain - Reach LD1, Caledon, Ontario



There were few bar forms along the reach, but where present, were accreting.

Photo 39
Lyons Drain - Reach LD1, Caledon, Ontario



The reach was run-dominated and lacked riffle-pool morphology. One artificial riffle was identified at the culvert at Creditview Road.

Photo 40
Lyons Drain - Reach LD1, Caledon, Ontario



The reach was short and contained a straight channel that had minimal erosion and moderate entrenchment.

Photo 41
Lyons Drain - Reach LD2, Caledon, Ontario



The reach was generally run-dominant with riffles present along approximately 30% of the reach. The riffles substrate was composed of clay, silt, gravel, and cobbles.

Photo 42
Lyons Drain - Reach LD2, Caledon, Ontario



Undercutting was observed throughout the reach and measured up to 0.55 m.

Photo 43
Lyons Drain - Reach LD2, Caledon, Ontario



Multiple flow paths were observed in some locations.

Photo 44
Lyons Drain - Reach LD2, Caledon, Ontario



A scour pool was present downstream of the culvert at the upstream reach break.

Photo 45
Lyons Drain - Reach LD3, Caledon, Ontario



The riparian vegetation consisted of a mature forest on both banks in the downstream portion and along one bank in the upstream portion of the reach.

Photo 46
Lyons Drain - Reach LD3, Caledon, Ontario



A few riffles were present and were composed primarily of gravel and cobbles; however, runs were dominant.

Photo 47
Lyons Drain - Reach LD3, Caledon, Ontario



Localized areas of erosion and undercutting were present primarily mid-reach. Undercuts measured up to 0.54 m.

Photo 48
Lyons Drain - Reach LD3, Caledon, Ontario



The channel banks were steep and high in the upstream portion of the reach. Lower bank angles were present in the downstream portion of the reach.

Photo 49
Lyons Drain - Reach LD4, Caledon, Ontario



This reach was relatively short and contained a straight channel with a low gradient and was moderately entrenched.

Photo 50
Lyons Drain - Reach LD4, Caledon, Ontario



Rooted emergent and submergent instream vegetation was present along approximately 35% of the reach.

Photo 51
Lyons Drain - Reach LD4, Caledon, Ontario



The riparian vegetation primarily consisted of grasses with some trees. The grasses were moderately encroaching into the channel.

Photo 52
Lyons Drain - Reach LD4, Caledon, Ontario



A tile drain (Reach LD5) was observed to discharge at the upstream extent of the reach.

Photo 53
Lyons Drain - Reach LD4-1, Caledon, Ontario



The upstream portion of the reach had multiple leaning and fallen trees, contributing woody debris to the channel.

Photo 54
Lyons Drain - Reach LD4-1, Caledon, Ontario



Poor longitudinal sorting of bed materials was noted, with bed substrate ranging from clay/silt to cobbles. Accretion on point bars was also observed.

Photo 55
Lyons Drain - Reach LD4-1, Caledon, Ontario



Erosion was commonly observed along 30 – 60% of the reach, with minimal undercutting (up to 0.32 m) present.

Photo 56
Lyons Drain - Reach LD4-1, Caledon, Ontario



The downstream portion of the reach was less defined, with lower bank angles ranging up to 30 degrees. Bank materials consisted of clay, silt, sand, and gravel.