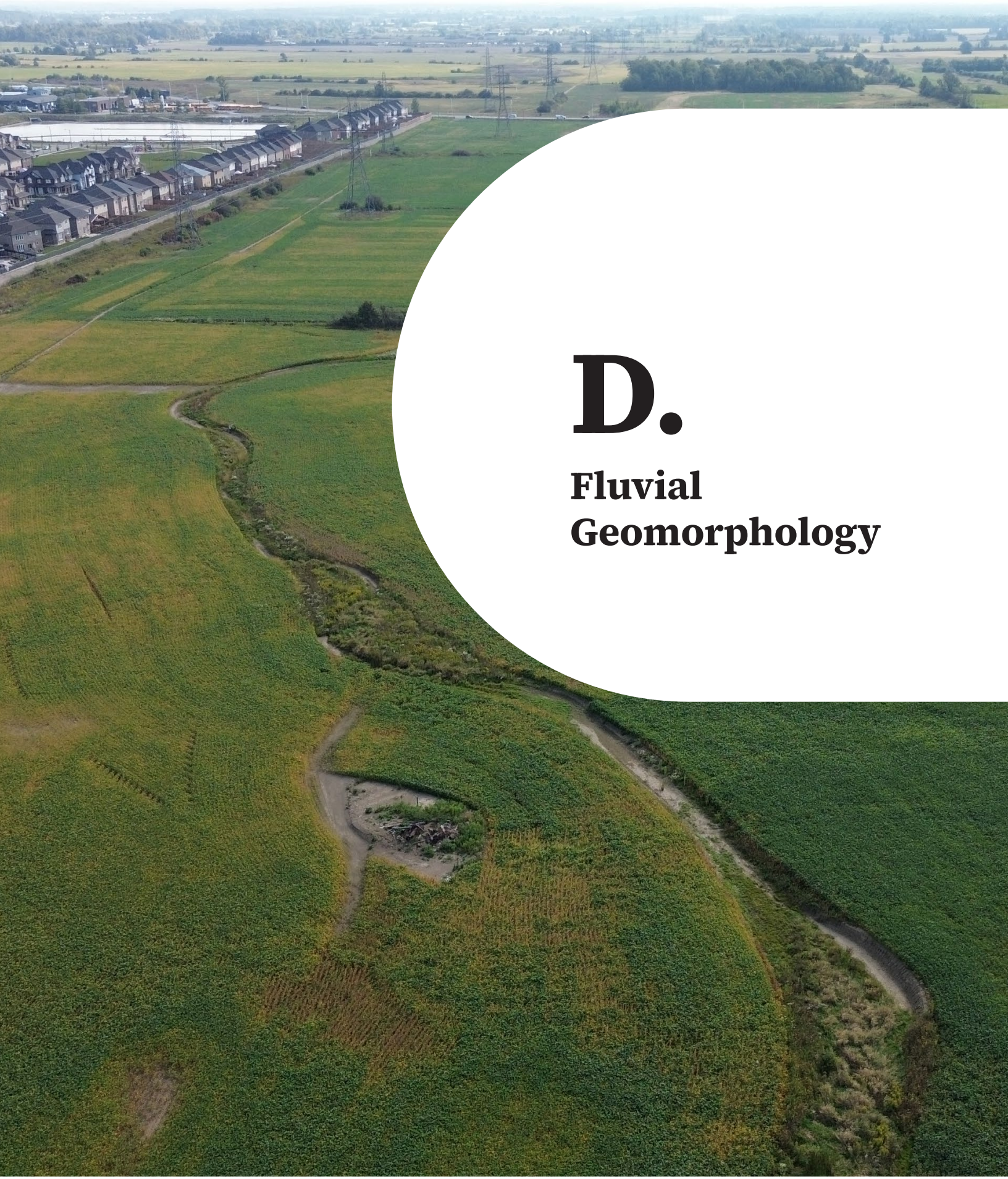


D.

Fluvial Geomorphology

APPENDIX D1

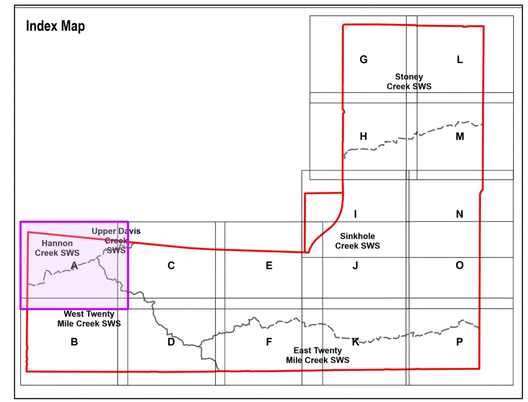
Fluvial Geomorphology – Detailed Maps of Meander Belts and Erosion Sites

LEGEND

- Study Area
- Additional Lands (Unsurveyed)
- Subject Property
- Subwatershed Boundary
- Drainage Feature[1]
- Evaluated Drainage Feature within Participating Land
- Confirmed Watercourse Verified Through Field Surveys

Headwater Drainage Feature (HDF)[2]

- Conservation
- Mitigation
- No Management Required



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METRE SCALE

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Meander Belts and Potential Erosion Sites Resulting from Fluvial Geomorphic Processes

REF. NO. 2306301-3.2.1A-1

Figure 3.2.1A

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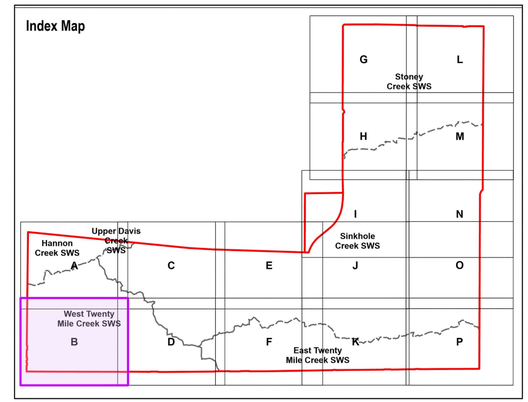
LEGEND

- Study Area
- Additional Lands (Unsurveyed)
- Subject Property
- Subwatershed Boundary
- Drainage Feature[1]
- Evaluated Drainage Feature within Participating Land
- Confirmed Watercourse Verified Through Field Surveys

Headwater Drainage Feature (HDF)[2]

- Mitigation
- No Management Required
- Meander Belt
- Erosion Site



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TITLE
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REF. NO. 2306301-3.2.1B-1

Figure 3.2.1B

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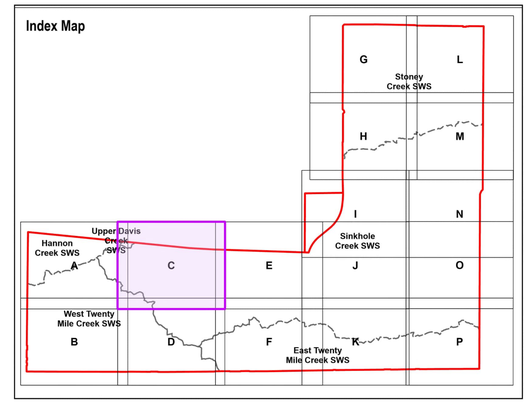
LEGEND

- Study Area
- Additional Lands (Unsurveyed)
- Subject Property
- Subwatershed Boundary
- Drainage Feature[1]
- Unevaluated Drainage Feature within Non-Participating Land
- Evaluated Drainage Feature within Participating Land
- Confirmed Watercourse Verified Through Field Surveys

Headwater Drainage Feature (HDF)[2]

- Protection
- Mitigation
- No Management Required
- Meander Belt



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REF. NO. 2306301-3.2.1C-1

Figure 3.2.1C

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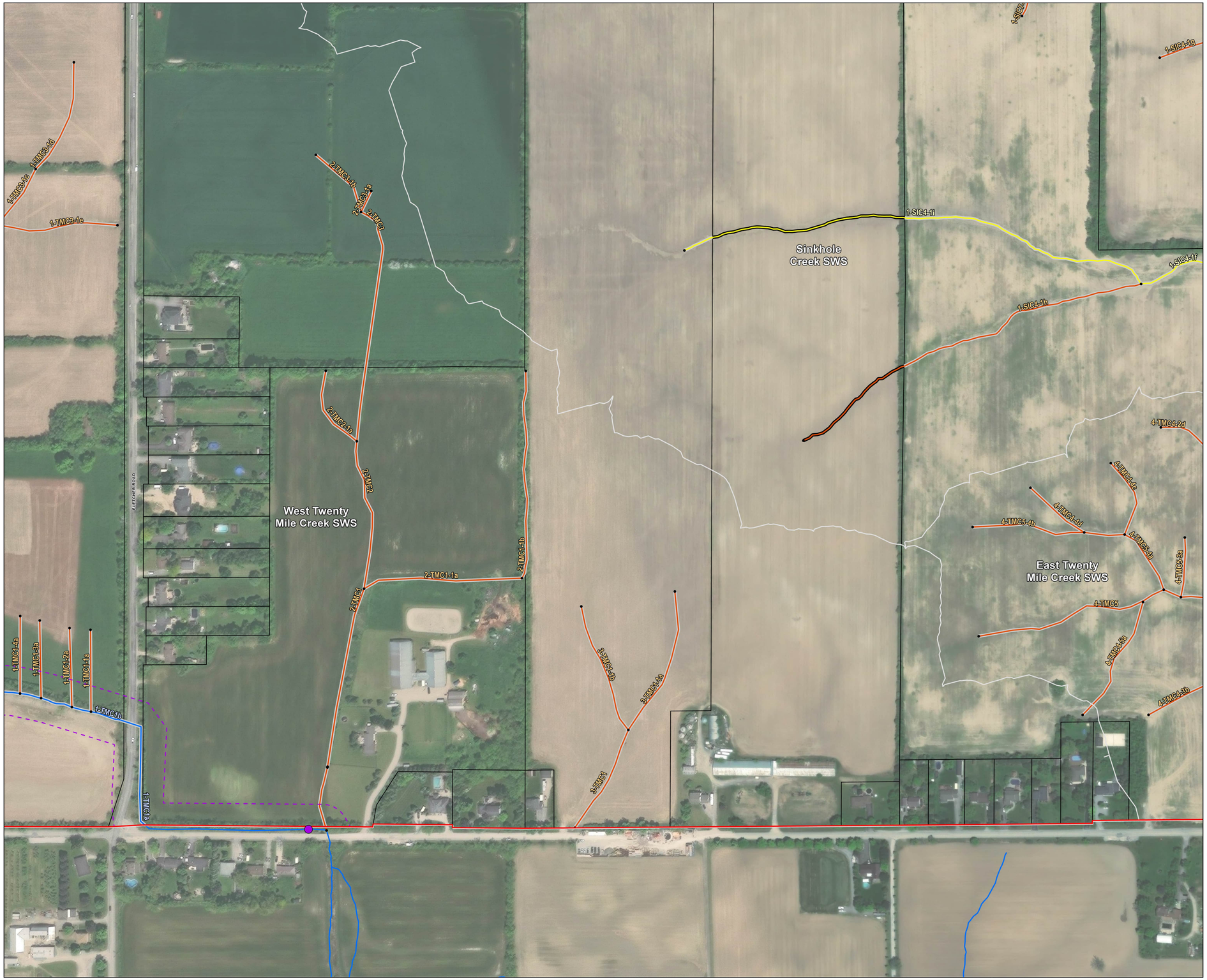
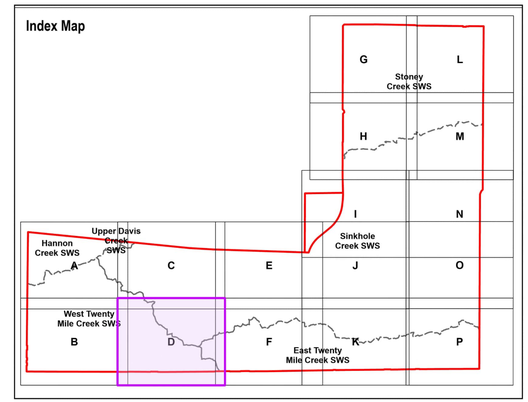


LEGEND

- Study Area
- Additional Lands (Unsurveyed)
- Subject Property
- Subwatershed Boundary
- Drainage Feature[1]
- Unevaluated Drainage Feature within Non-Participating Land
- Evaluated Drainage Feature within Participating Land
- Confirmed Watercourse Verified Through Field Surveys

Headwater Drainage Feature (HDF)[2]

- Mitigation
- No Management Required
- Meander Belt
- Proposed Detailed Assessment Location



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REF. NO.
2306301-3.2.1D-1

Figure 3.2.1D

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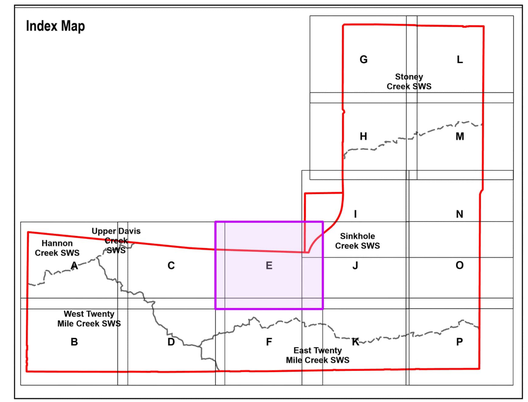
LEGEND

- Study Area
- Additional Lands (Unsurveyed)
- Subject Property
- Subwatershed Boundary
- Drainage Feature[1]
- Unevaluated Drainage Feature within Non-Participating Land
- Evaluated Drainage Feature within Participating Land
- Confirmed Watercourse Verified Through Field Surveys

Headwater Drainage Feature (HDF)[2]

- Protection
- Conservation
- Mitigation
- No Management Required
- Meander Belt
- Erosion Site



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REF. NO. 2306301-3.2.1E-1

Figure 3.2.1E

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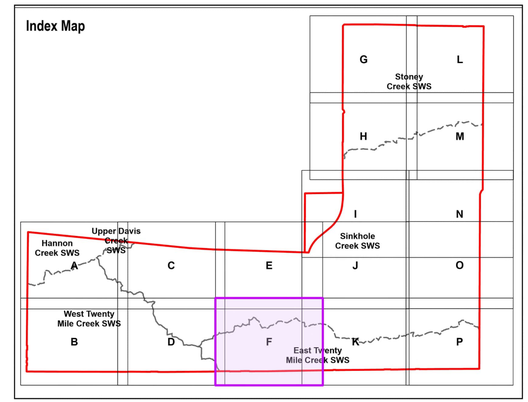
LEGEND

- Study Area
- Additional Lands (Unsurveyed)
- Subject Property
- Subwatershed Boundary
- Drainage Feature[1]
- Evaluated Drainage Feature within Participating Land
- Confirmed Watercourse Verified Through Field Surveys

Headwater Drainage Feature (HDF)[2]

- Mitigation
- No Management Required
- Meander Belt
- Proposed Detailed Assessment Location



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REF. NO. 2306301-3.2.1F-1

Figure 3.2.1F

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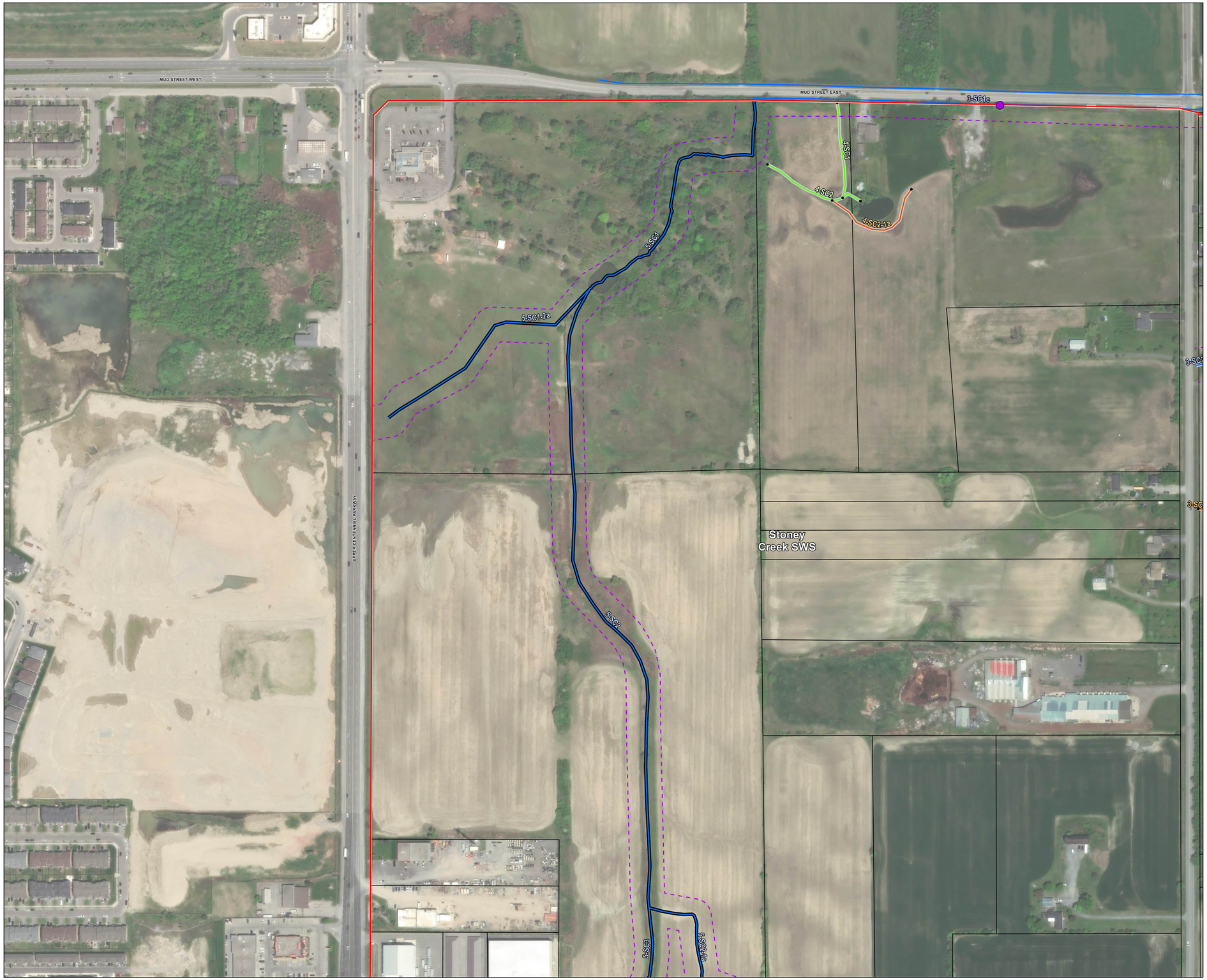
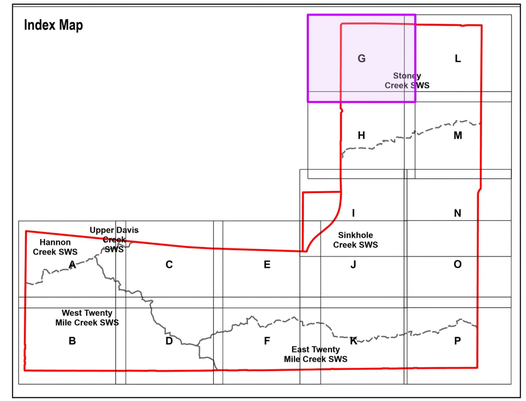


LEGEND

- Study Area
- Additional Lands (Unsurveyed)
- Subject Property
- Subwatershed Boundary
- Drainage Feature[1]
- Unevaluated Drainage Feature within Non-Participating Land
- Evaluated Drainage Feature within Participating Land
- Confirmed Watercourse Verified Through Field Surveys

Headwater Drainage Feature (HDF)[2]

- Conservation
- No Management Required
- Meander Belt
- Proposed Detailed Assessment Location



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Meander Belts and Potential Erosion Sites Resulting from Fluvial Geomorphic Processes

REF. NO. 2306301-3.2.1G-1

Figure 3.2.1G

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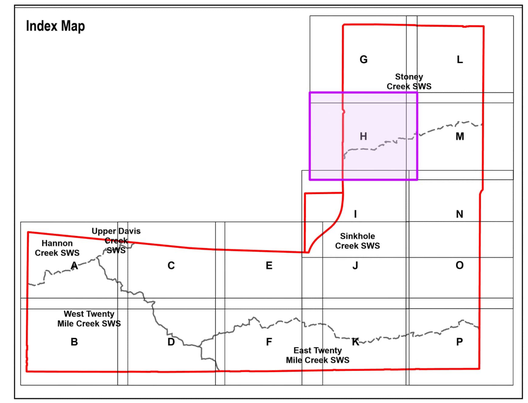
LEGEND

- Study Area
- Additional Lands (Unsurveyed)
- Subject Property
- Subwatershed Boundary
- Drainage Feature[1]
- Unevaluated Drainage Feature within Non-Participating Land
- Evaluated Drainage Feature within Participating Land
- Confirmed Watercourse Verified Through Field Surveys

Headwater Drainage Feature (HDF)[2]

- No Management Required
- Meander Belt



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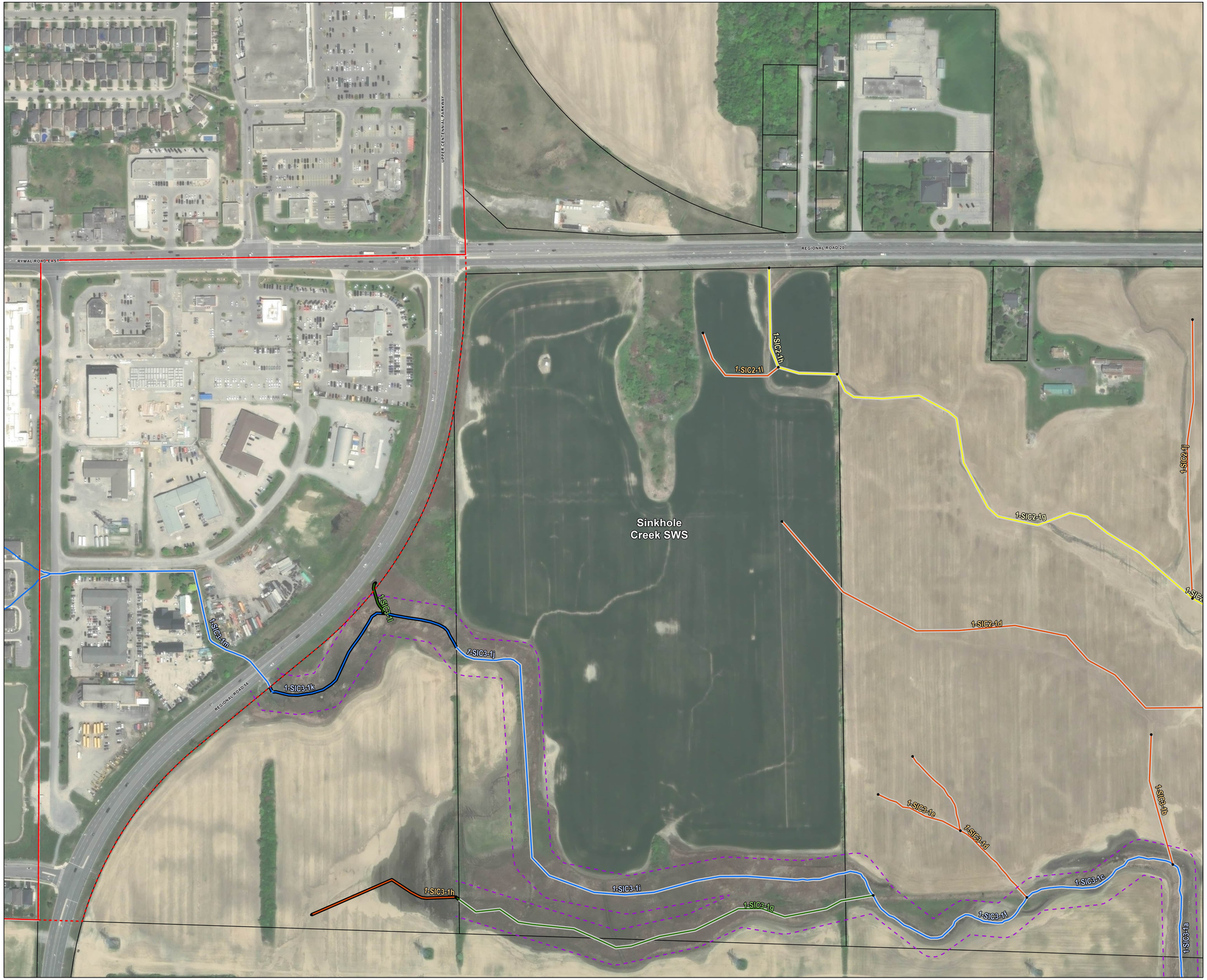
REF. NO. 2306301-3.2.1H-1

Figure 3.2.1H

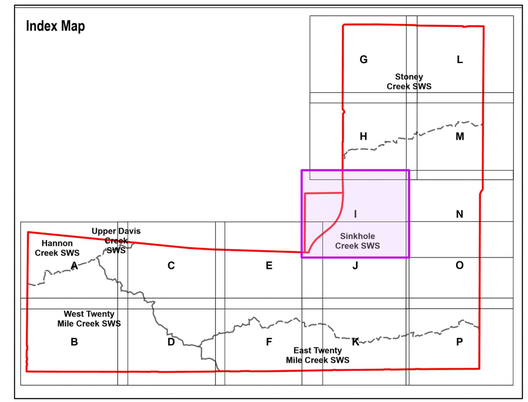


LEGEND

- Study Area
- Additional Lands (Unsurveyed)
- Subject Property
- Subwatershed Boundary
- Drainage Feature[1]
- Unevaluated Drainage Feature within Non-Participating Land
- Evaluated Drainage Feature within Participating Land
- Confirmed Watercourse Verified Through Field Surveys

Headwater Drainage Feature (HDF)[2]

- Protection
- Mitigation
- No Management Required
- Meander Belt



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REF. NO.
2306301-3.2.1I-1

Figure 3.2.1I

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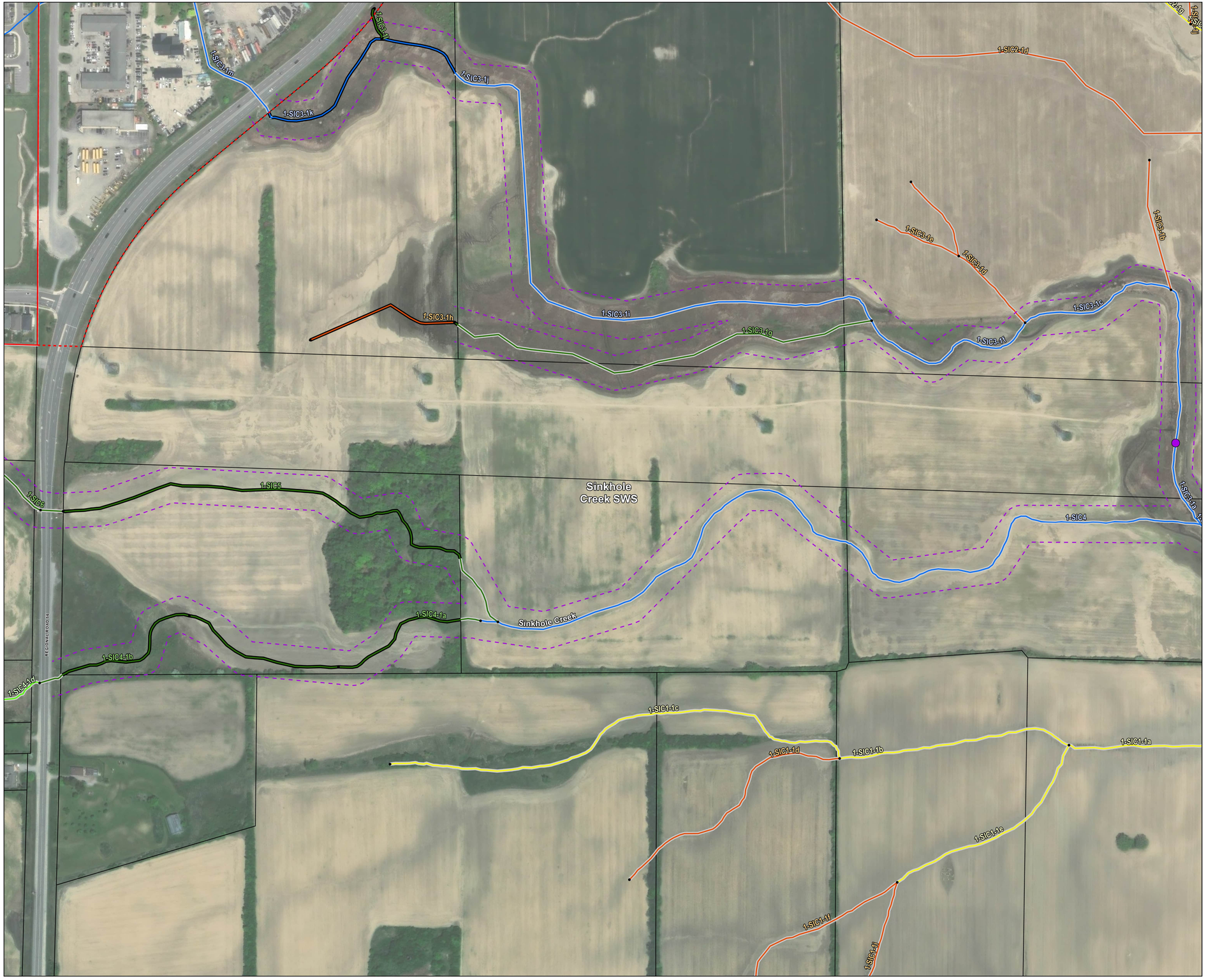

LEGEND

- Study Area
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- Subject Property
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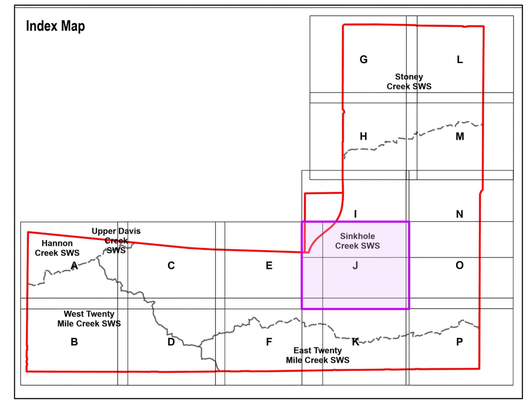
- Drainage Feature[1]
- Unevaluated Drainage Feature within Non-Participating Land
- Evaluated Drainage Feature within Participating Land
- Confirmed Watercourse Verified Through Field Surveys

Headwater Drainage Feature (HDF)[2]

- Protection
- Conservation
- Mitigation
- No Management Required
- Meander Belt
- Proposed Detailed Assessment Location



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REF. NO. 2306301-3.2.1J-1

Figure 3.2.1J

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LEGEND

- Study Area
- Additional Lands (Unsurveyed)
- Subject Property
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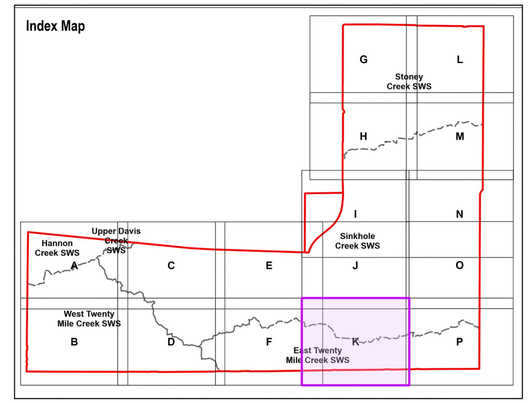
- Drainage Feature[1]
- Evaluated Drainage Feature within Participating Land
- Confirmed Watercourse Verified Through Field Surveys

Headwater Drainage Feature (HDF)[2]

- Protection
- Mitigation
- No Management Required
- Meander Belt
- Proposed Detailed Assessment Location



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METRE SCALE

North American Datum 1983
Universal Transverse Mercator Projection Zone 17

Scale: 1:2,000
Page Size: ANSI D (22 x 34 inches)

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PROJECT
Elfrida Subwatershed Plan

Stantec
SLR
GeoProcess RESEARCH ASSOCIATES
LANDTEK

TITLE
Meander Belts and Potential Erosion Sites Resulting from Fluvial Geomorphic Processes

REF. NO. 2306301-3.2.1K-1

Figure 3.2.1K

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- Evaluated Drainage Feature within Participating Land
- Confirmed Watercourse Verified Through Field Surveys

Headwater Drainage Feature (HDF)[2]

- Mitigation
- No Management Required
- Meander Belt
- Proposed Detailed Assessment Location

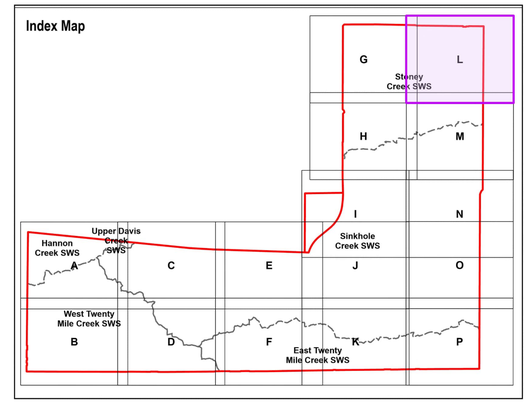

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Figure 3.2.1L

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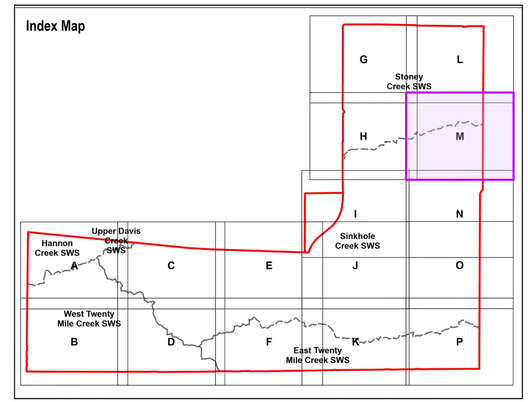
Headwater Drainage Feature (HDF)[2]

- Protection
- Mitigation
- No Management Required



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REF. NO. 2306301-3.2.1M-1

Figure 3.2.1M

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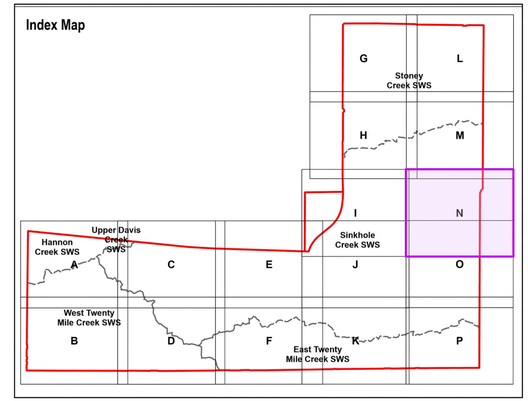
Headwater Drainage Feature (HDF)[2]

- Protection
- Mitigation
- No Management Required
- Meander Belt

Index Map



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REF. NO.
2306301-3.2.1N-1

Figure 3.2.1N

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- Mitigation
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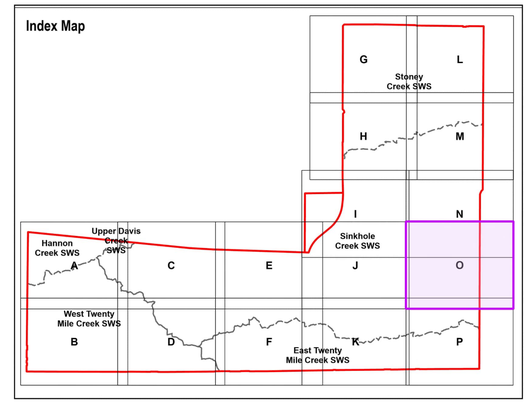

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REF. NO. 2306301-3.2.1O-1

Figure 3.2.1O

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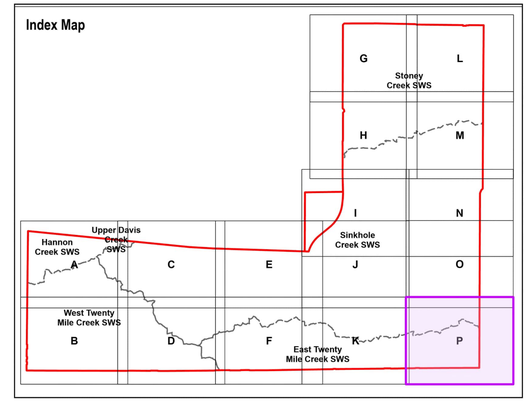

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APPENDIX D2

Fluvial Geomorphology – Photographic Record

Photo 1 Reach 1-TMC1d October 16, 2023	
	Typical view, facing downstream.
Photo 2 Reach 1-TMC1d October 16, 2023	
	Typical view, facing upstream.
Photo 3 Reach 1-TMC1c October 16, 2023	
	Typical view.

Photo 4 Reach 1-TMC1c October 16, 2023	
	Upstream view from culvert. Watercourse banks appear to have been impacted by crossing of agricultural machinery.
Photo 5 Reach 1-TMC1c October 16, 2023	
	Upstream face of culvert
Photo 6 Reach 1-TMC1c October 16, 2023	
	Headcut formed where surfaced water flows down into broken tile drain. Downstream of this headcut, baseflow is conveyed subsurface through the tile drain.

Photo 7 Reach 1-TMC1c October 16, 2023	
	Downstream of headcut. Channel is dry; baseflow is conveyed subsurface through tile drain.
Photo 8 Reach 1-TMC1c October 16, 2023	
	Channel confinement at hedgerow. Some exposed banks visible.

Photo 9 Reach 1-TMC1b October 16, 2023	
	Typical view, facing upstream. Heavily vegetated reach.
Photo 10 Reach 1-TMC1b October 16, 2023	
	Downstream backwatered section, facing upstream. Heavily vegetated banks
Photo 11 Reach 1-TMC1b October 16, 2023	
	Exposed tree root along outer bend of channel near downstream extent, indicating minimal local erosion.

Photo 12 Reach 1-TMC1a October 16, 2023	
	Typical view, facing downstream. Ditched channel with planted trees bordering agricultural field.
Photo 13 Reach 1-TMC1a October 16, 2023	
	Typical view of channel bottom, showing dense in-channel vegetation (grasses/sedges).

Photo 14 Reach 1-TMC2 October 16, 2023	
	Typical view, facing upstream. Majority of reach is recently excavated.
Photo 15 Reach 1-TMC2 October 16, 2023	
	Backwatered section of reach at downstream extent (facing downstream).
Photo 16 Reach 1-TMC2 October 16, 2023	
	Exposed tree root at downstream end of reach, indicating minor local erosion.

Photo 17 Reach 4-TMC1a October 16, 2023	
	Box culvert at Highway 56 (upstream extent of reach).
Photo 18 Reach 4-TMC1a October 16, 2023	
	Corrugated steel culverts connecting Golf Club Road to a private residence near upstream end of reach.
Photo 19 Reach 4-TMC1a October 16, 2023	
	Typical section of reach. Roadside ditch bordering agricultural fields.

Photo 20 Reach 4-TMC1a October 16, 2023	
	Culvert connecting Golf Club Road to a private residence near downstream end of reach.
Photo 21 Reach 3-SC1c October 17, 2023	
	Corrugated steel culvert connecting Mud Street East to agricultural field near upstream extent of reach (facing downstream).
Photo 22 Reach 3-SC1c October 17, 2023	
	Concrete culvert connecting Mud Street East to private residence (facing downstream).

Photo 23 Reach 3-SC1c October 17, 2023	
	Typical section of reach upstream of First Road East, facing downstream. The reach section upstream of First Road has dense in-channel vegetation.
Photo 24 Reach 3-SC1c October 17, 2023	
	Corrugated steel culvert connecting Mud Street East to private residence (facing upstream).
Photo 25 Reach 3-SC1c October 17, 2023	
	Concrete box culvert under First Road East (facing downstream).

Photo 26 Reach 3-SC1c October 17, 2023	
	Typical section of reach downstream of First Road East (facing downstream).
Photo 27 Reach 3-SC1b October 17, 2023	
	Typical view of upstream portion of the reach, showing dense emergent vegetation.
Photo 28 Reach 3-SC1b October 17, 2023	
	Typical view of downstream portion of the reach, showing trees in riparian zone and moderate density of in-channel vegetation.

Photo 29 Reach 3-SC1b October 17, 2023	
	Exposed tree roots in downstream portion of the reach, indicating minor local erosion.
Photo 30 Reach 3-SC2 October 17, 2023	
	Concrete culvert connecting agricultural fields (facing upstream).
Photo 31 Reach 3-SC2 October 17, 2023	
	Typical view (facing upstream).

Photo 32 Reach 1-SIC1 October 5, 2023	
	Facing upstream from the concrete box culvert at Hendershot Road.
Photo 33 Reach 1-SIC1 May 9, 2025	
	Facing upstream along Reach 1-SIC1 (curving channel on the right) at the confluence with HDF 1-SIC3-1a (straight swale on the left).
Photo 34 Reach 1-SIC1 October 5, 2023	
	Dense vegetation and an intermittently defined channel characterize Reach 1-SIC1.

Photo 35 Reach 1-SIC2 May 9, 2025	
	Facing upstream along the sharp bends within Reach 1-SIC2.
Photo 36 Reach 1-SIC2 May 9, 2025	
	Facing upstream along Reach 1-SIC2. Channel definition is poor and multiple flow paths are observable upstream of the sharp westward bend.
Photo 37 Reach 1-SIC3 October 5, 2023	
	Facing downstream along Reach 1-SIC3. Hedgerow right of the channel is visible across the middle of the following photo.

Photo 38 Reach 1-SIC3 May 9, 2025	 Facing upstream along Reach 1-SIC3 at the confluence between Reach 1-SIC4 (coming from the top left/west) and HDF 1-SIC3-1a (coming from the right/north).
Photo 39 Reach 1-SIC4 September 26, 2023	 Facing downstream along Reach 1-SIC4 during dry conditions, towards the confluence with HDF 1-SIC3-1a.
Photo 40 Reach 1-SIC4 May 9, 2025	 Facing southwest at the upstream end of Reach 1-SIC4 (left) and the confluence between HDFs 1-SIC5 (flowing from the woodlot) and 1-SIC4-1a (upper centre).

Photo 41 HDF 1-SIC6 July 30, 2025	 Facing upstream along HDF 1-SIC6 during dry conditions. Unconsolidated sediments with uprooted grassy vegetation piled along the feature edge provide evidence of recent modifications.
Photo 42 HDF 1-SIC6 July 30, 2025	 Facing upstream along HDF 1-SIC6 during dry conditions. Additional piled unconsolidated sediments and tracks along the HDF provide evidence of recent modifications.