Appendix A

Existing Environmental Conditions Figures

AECOM

Hydrogeology

Legend

- Study Area
- Early Preliminary Construction Disturbance Area
- Active Permits to take Water

Water Well Record - Use 1

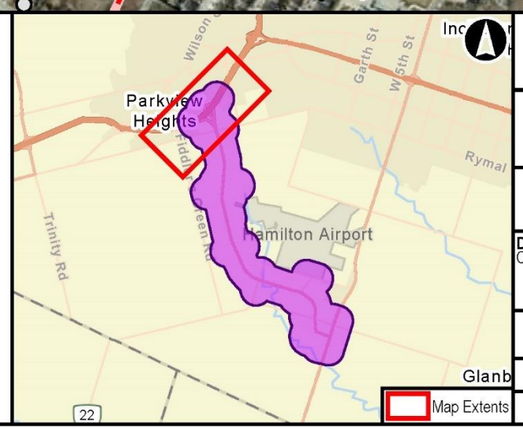
- Municipal
- Domestic
- Irrigation
- Monitoring
- Public
- Not Used or Test Hole

General Features

- Primary or 400 Series Highway
- Waterbody
- Watercourse
- Municipal Boundary

Wetland by Significance

- Unevaluated Wetland
- Provincially Significant Wetland



Highway 6 South Widening from Highway 403 to Upper James Street

Natural Environment and Built Features

0 50 100 200 300 400 500 600 700 M

NAD 1983 UTM Zone 17N

Data Sources:
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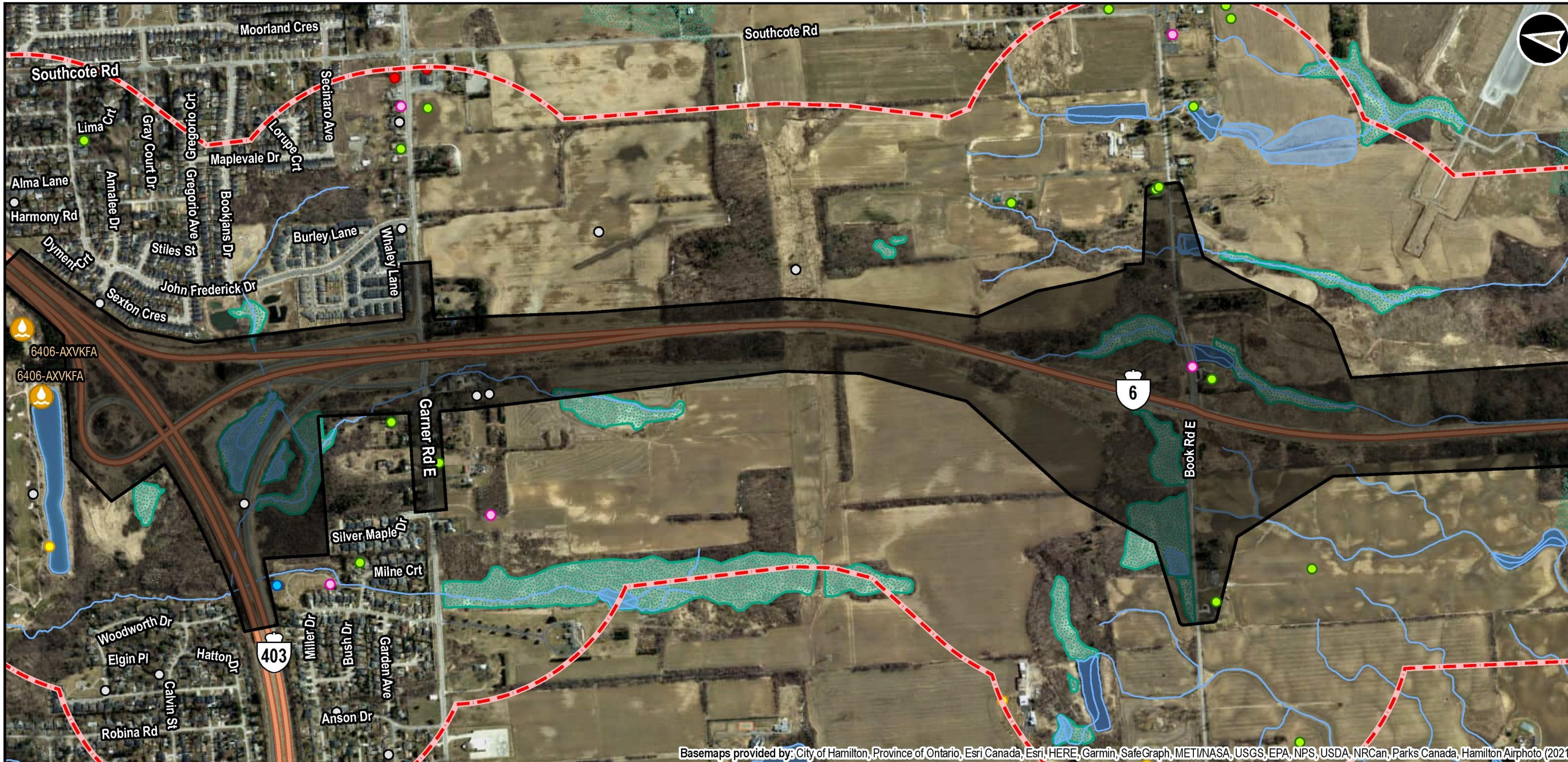
AECOM | Ontario

Jul, 2022	1:10,000
P#:60677652	Rev:00

Figure: A-1.1



Legend

- Study Area
- Early Preliminary Construction Disturbance Area
- Active Permits to take Water

Water Well Record - Use 1

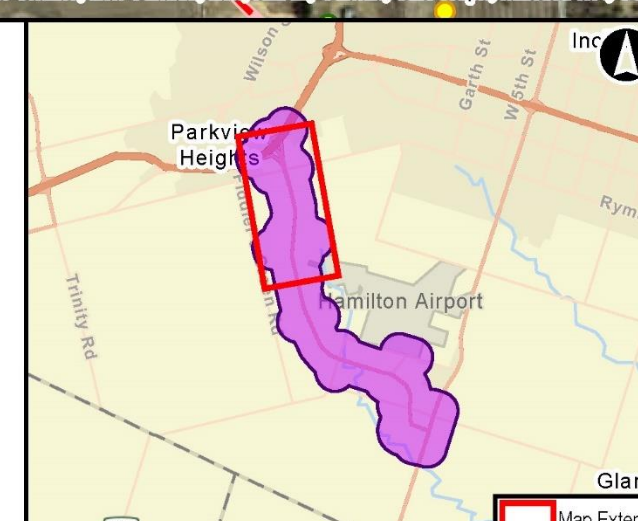
- Commerical
- Domestic
- Irrigation
- Monitoring
- Public
- Not Used or Test Hole

General Features

- Primary or 400 Series Highway
- Waterbody
- Watercourse
- Municipal Boundary

Wetland by Significance

- Unevaluated Wetland



Highway 6 South Widening from Highway 403 to Upper James Street

Natural Environment and Built Features

0 50 100 200 300 400 500 600 700 M

NAD 1983 UTM Zone 17N

Data Sources:
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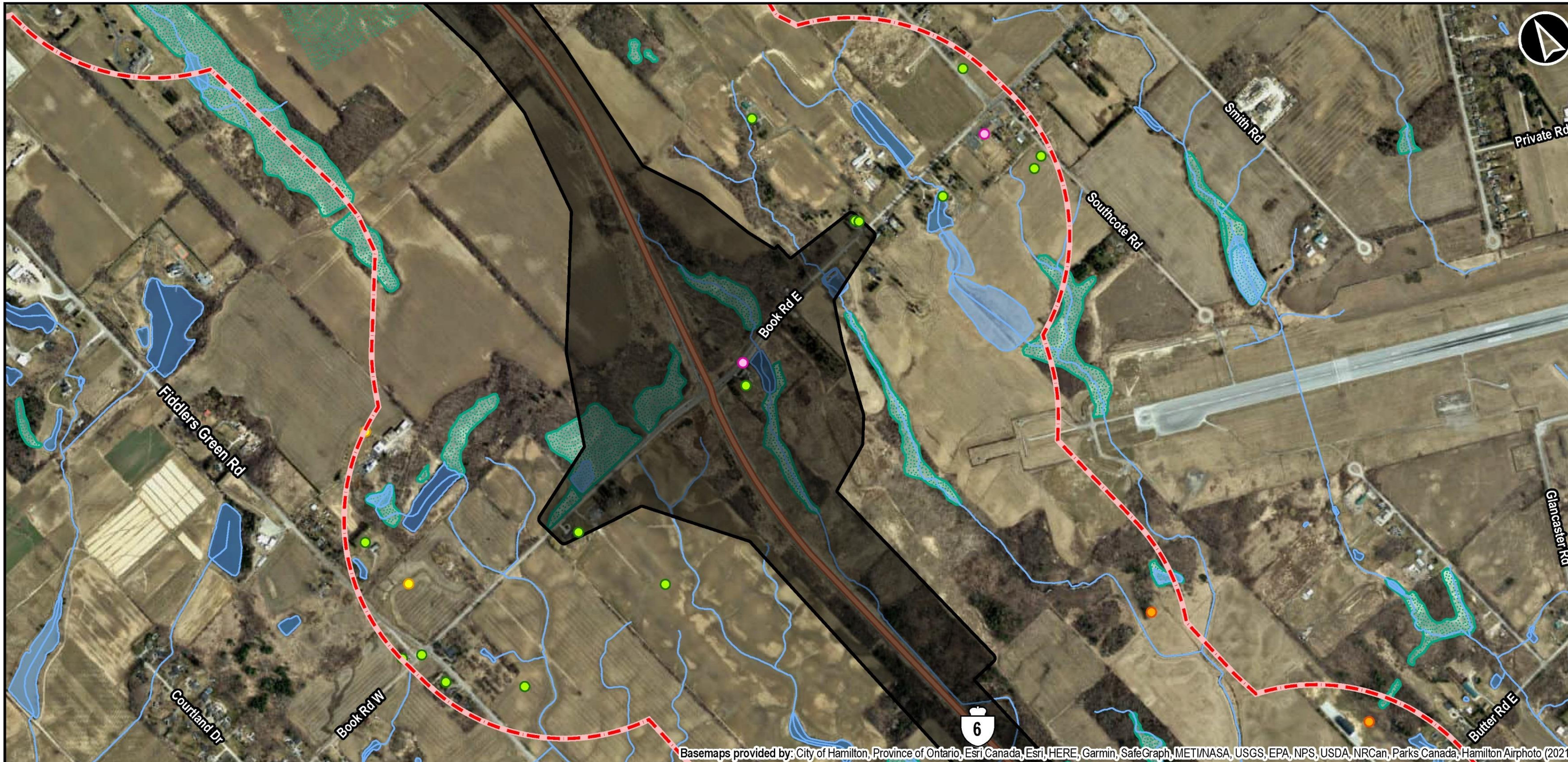
AECOM	Ontario

Jul, 2022	1:10,000	**Figure: A-1.2**
P#:60677652	Rev:00	



Legend

Study Area

Early Preliminary Construction Disturbance Area

Water Well Record - Use 1

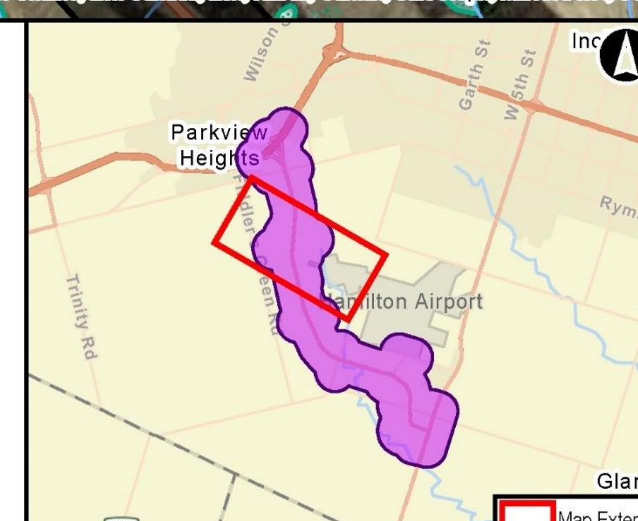
- Domestic
- Irrigation
- Livestock
- Monitoring
- Not Used or Test Hole

General Features

- Primary or 400 Series Highway
- Waterbody
- Watercourse
- Municipal Boundary

Wetland by Significance

- Unevaluated Wetland



Map Extents

Highway 6 South Widening from Highway 403 to Upper James Street

Natural Environment and Built Features

0 50 100 200 300 400 500 600 700 M

NAD 1983 UTM Zone 17N

Data Sources:
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Jul, 2022	1:10,000	**Figure: A-1.3**
P#:60677652	Rev:00	

Airport Rd W
Butter Rd E
Airport Rd
6651-AMAHSG
Glancaster Rd
Welland River Headwater Tributaries Wetland Complex
White Church Rd W
6
65
Butter Rd E
Carluke Rd E
Glancaster Rd
Fiddlers Green Rd

Basemaps provided by: City of Hamilton, Province of Ontario, Esri Canada, Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, NRCan, Parks Canada, Hamilton Airphoto (2021)

Legend

- Study Area
- Early Preliminary Construction Disturbance Area
- Active Permits to take Water

Water Well Record - Use 1

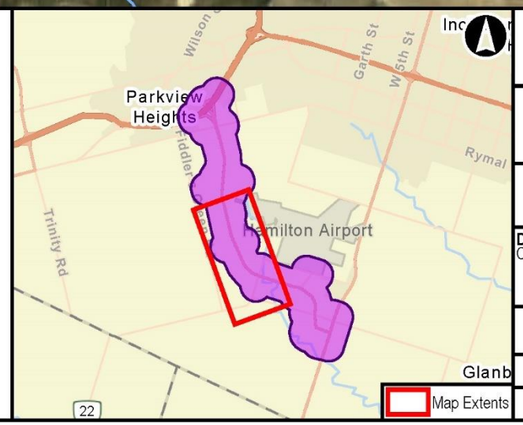
- Domestic
- Irrigation
- Livestock
- Monitoring
- Not Used or Test Hole

General Features

- Primary or 400 Series Highway
- District, County, or Regional Road
- Waterbody
- Watercourse
- Constructed Drain
- Municipal Boundary

Wetland by Significance

- Unevaluated Wetland
- Regionally Significant Wetland



Highway 6 South Widening from Highway 403 to Upper James Street

Natural Environment and Built Features

0 50 100 200 300 400 500 600 700 M

NAD 1983 UTM Zone 17N

Data Sources:
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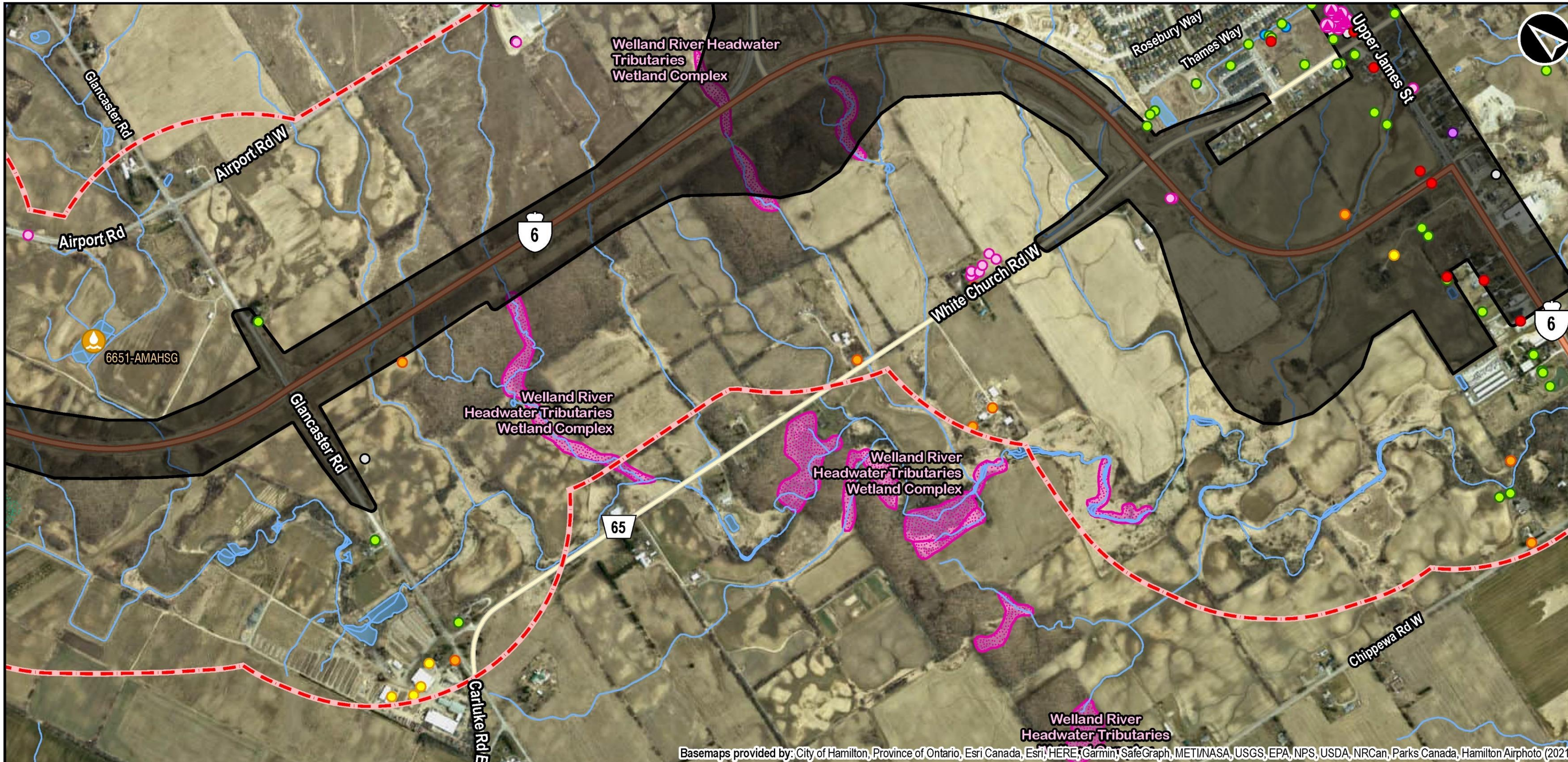
AECOM	Ontario
Jul, 2022	1:10,000
P#:60677652	Rev:00

Figure:A-1.4



Legend

- Study Area
- Early Preliminary Construction Disturbance Area
- Active Permits to take Water

Water Well Record - Use 1

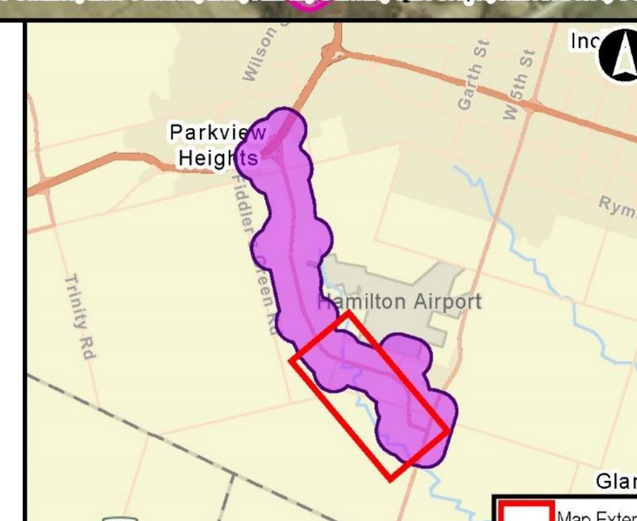
- Commerical
- Domestic
- Industrial
- Irrigation
- Livestock
- Monitoring
- Monitoring and Test Hole
- Public
- Not Used or Test Hole

General Features

- Primary or 400 Series Highway
- District, County, or Regional Road
- Waterbody
- Watercourse
- Constructed Drain
- Municipal Boundary

Wetland by Significance

- Regionally Significant Wetland



Highway 6 South Widening from Highway 403 to Upper James Street

Natural Environment and Built Features

0 50 100 200 300 400 500 600 700 M

NAD 1983 UTM Zone 17N

Data Sources:
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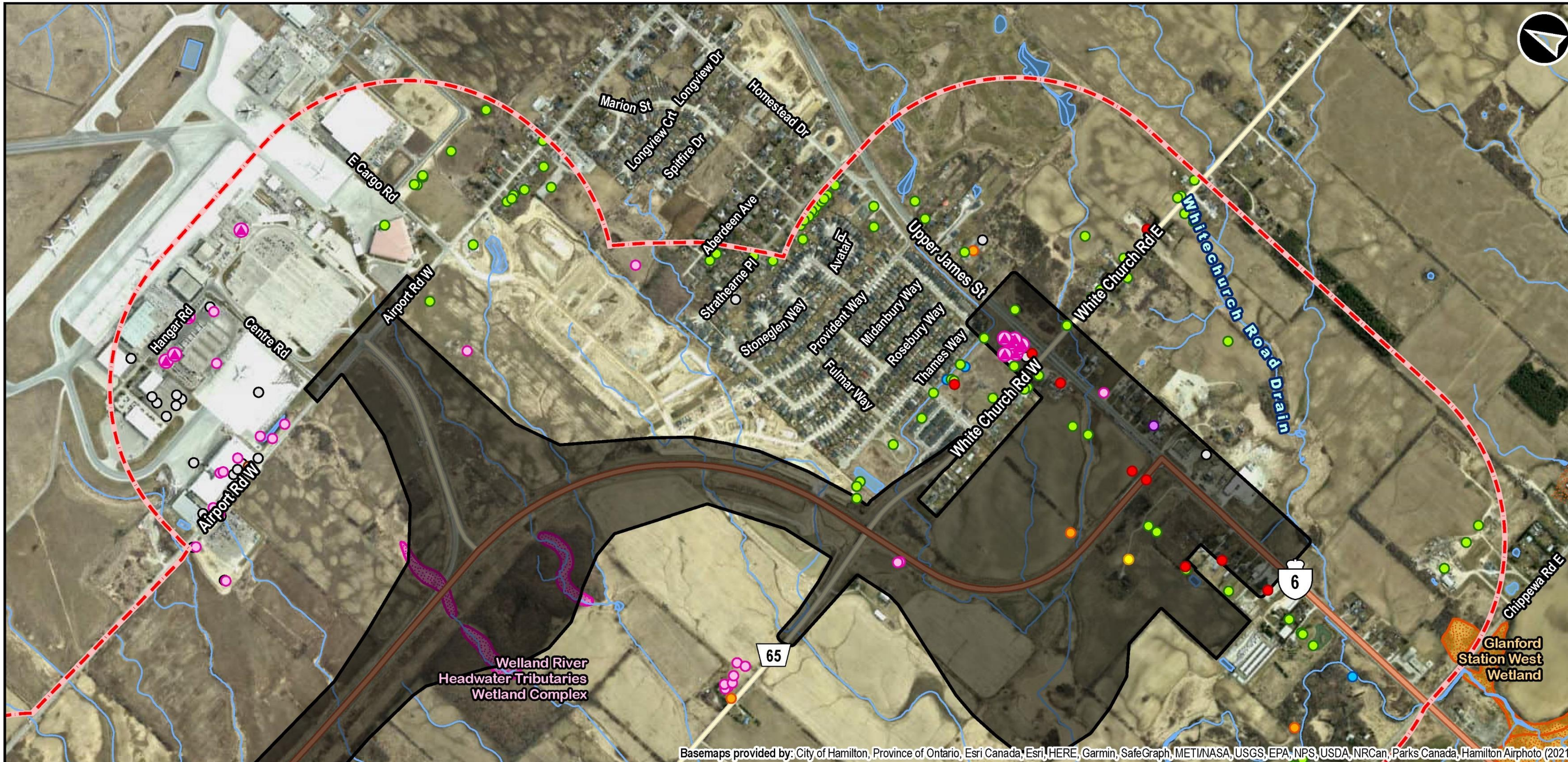
AECOM | Ontario
Jul, 2022 | 1:10,000
P#:60677652 | Rev:00

Figure:A-1.5



Legend

- Study Area
- Early Preliminary Construction Disturbance Area

Water Well Record - Use 1

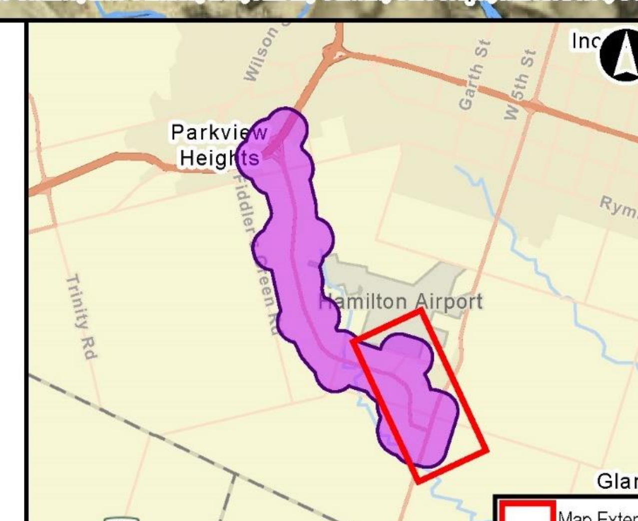
- Commerical
- Domestic
- Industrial
- Irrigation
- Livestock
- Monitoring
- Monitoring and Test Hole
- Other
- Public
- Not Used or Test Hole

General Features

- Primary or 400 Series Highway
- District, County, or Regional Road
- Waterbody
- Watercourse
- Constructed Drain
- Municipal Boundary

Wetland by Significance

- Regionally Significant Wetland
- Provincially Significant Wetland



Highway 6 South Widening from Highway 403 to Upper James Street

Natural Environment and Built Features

0 50 100 200 300 400 500 600 700 M

NAD 1983 UTM Zone 17N

Data Sources:
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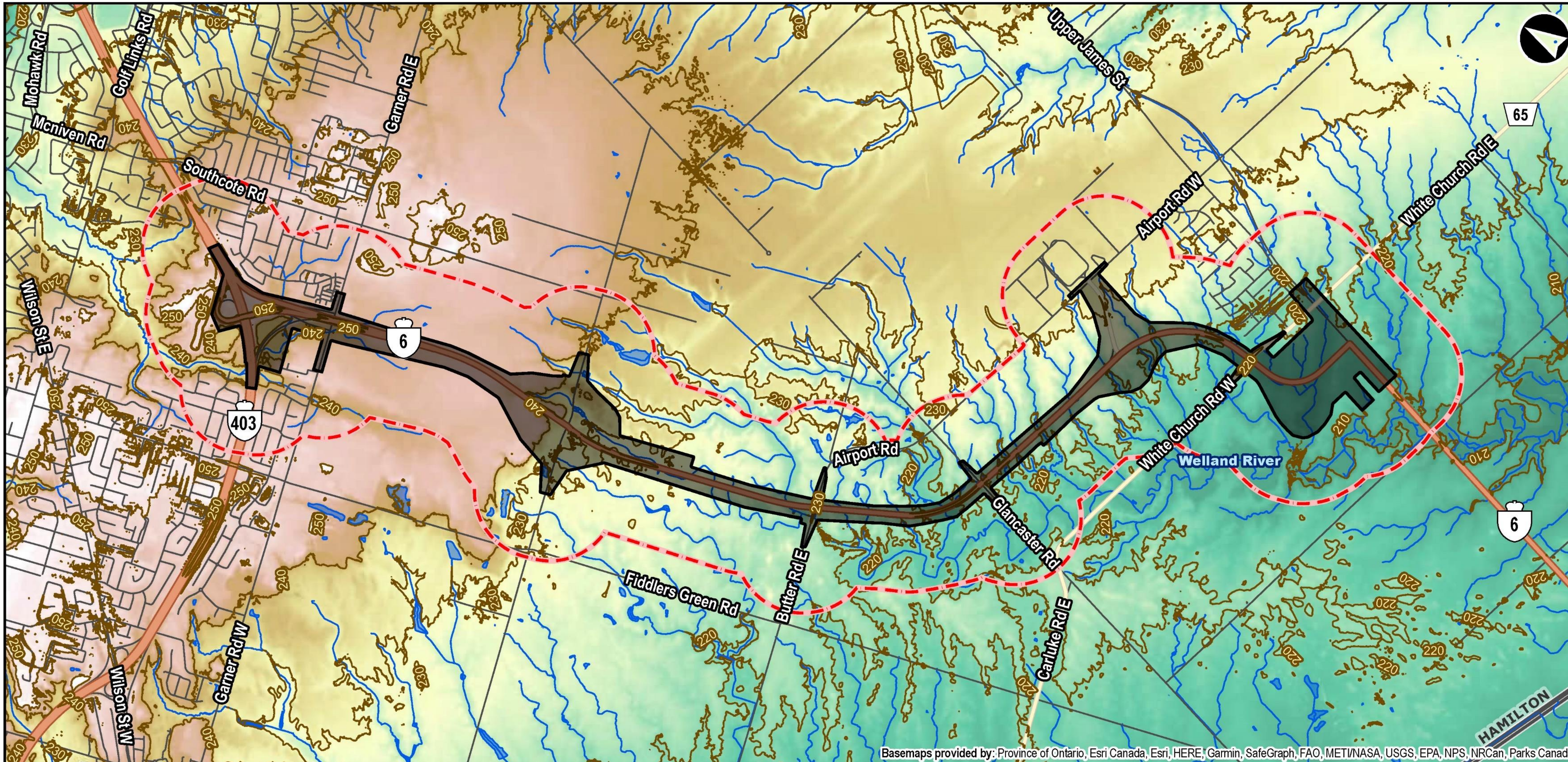
AECOM | Ontario

Jul, 2022	1:10,000	**Figure: A-1.6**
P#:60677652	Rev:00	



LEGEND

Study Area

Early Preliminary Construction Disturbance Area

Ontario Digitial Elevation Model

265 mASL

140 mASL

General Features

Contour (10 m internal)

Primary or 400 Series Highway

District, County, or Regional Road

Local Road

Waterbody

Watercourse

Municipal Boundary

Highway 6 South Widening from Highway 403 to Upper James Street

Topography

0 0.5 1 2 KM

NAD 1983 UTM Zone 17N

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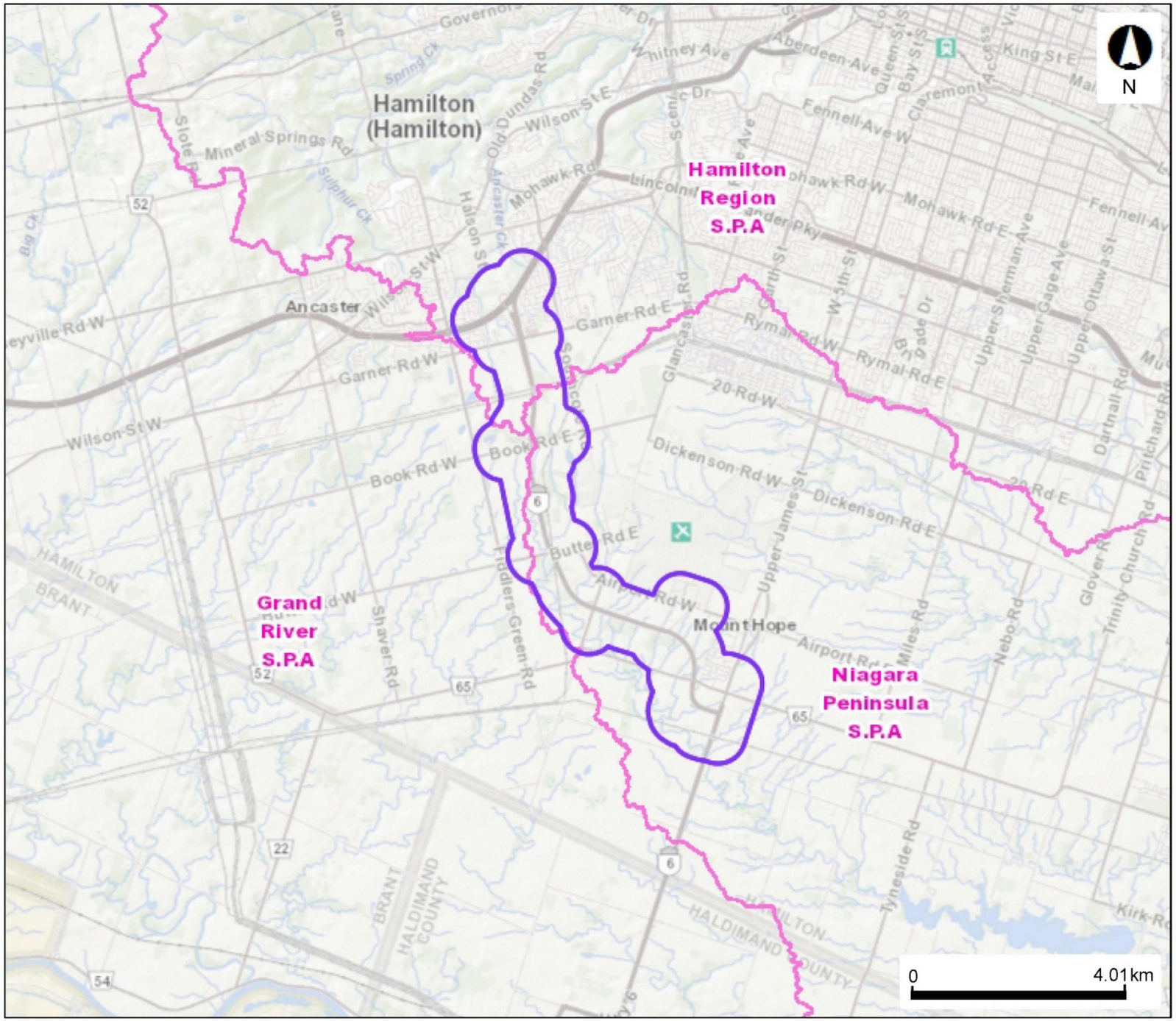
AECOM

Ontario

Jul, 2022	1:30,000
P#:60677652	Rev:00

Figure: A-1.7

Source Protection Areas



Legend

- Source Protection Areas

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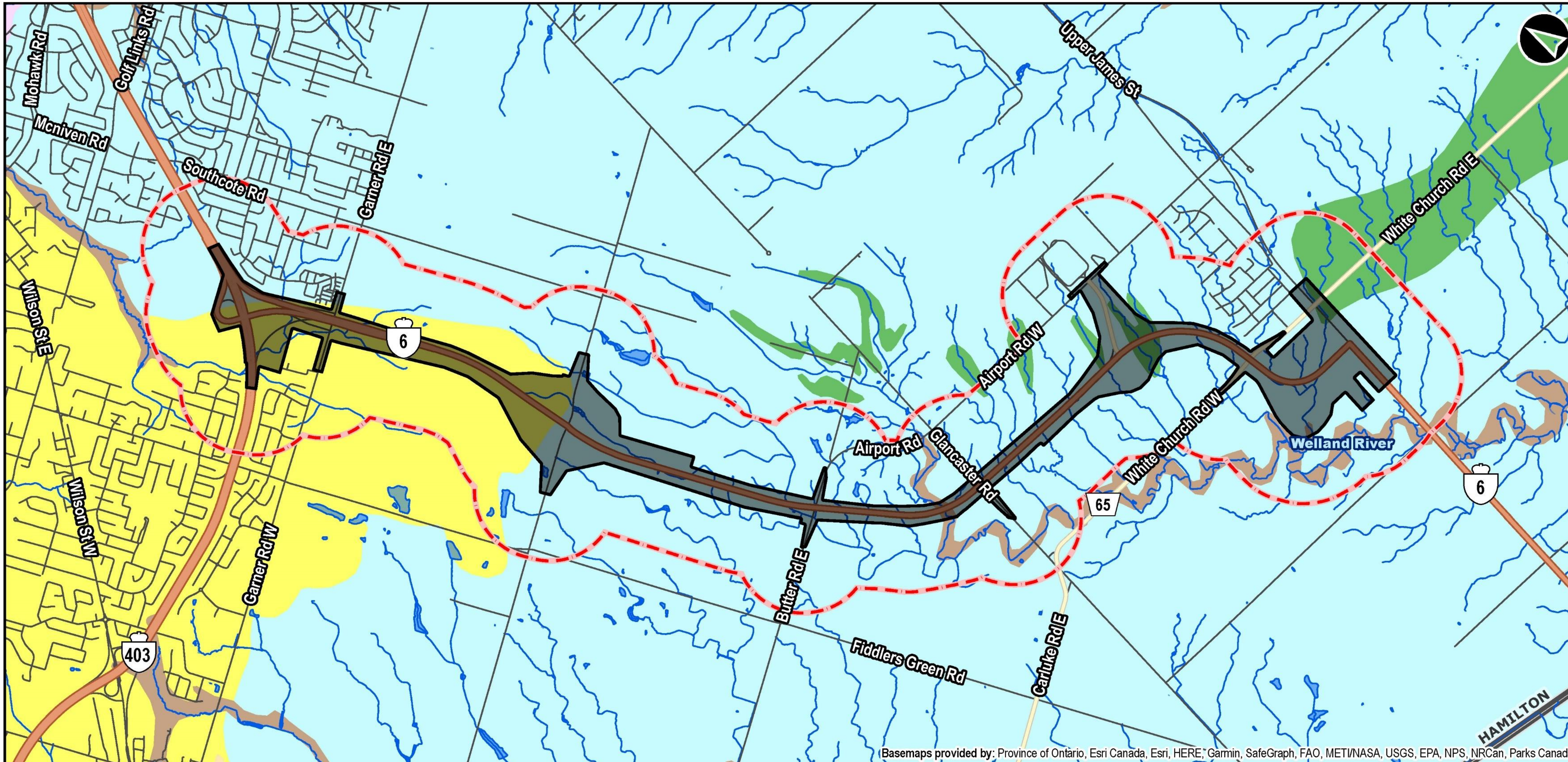
Ontario

Figure: A-1.8

Map Created: 7/21/2022
Map Center: 43.17532 N, -79.95161 W



LEGEND

Study Area

Early Preliminary Construction Disturbance Area

Surficial Geology of Southern Ontario

3: Paleozoic bedrock

5d: Clay to silt-textured till

7: Glaciofluvial deposits

8a: Fine-textured glaciolacustrine deposits (massive to well laminated)

9: Coarse-textured glaciolacustrine deposits

19: Modern alluvial deposits

General Features

Primary or 400 Series Highway

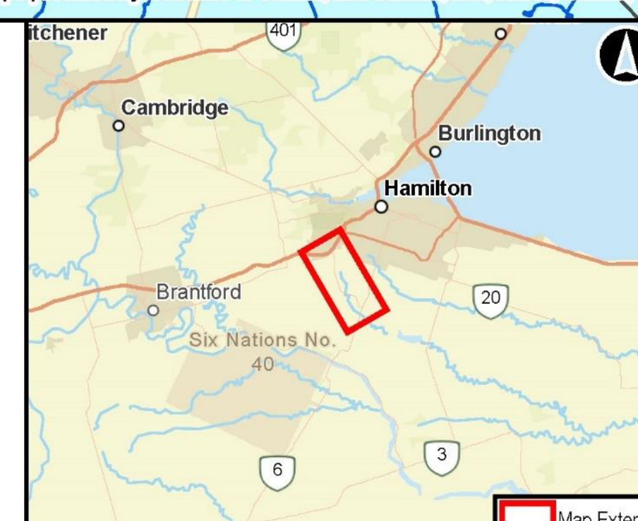
District, County, or Regional Road

Local Road

Waterbody

Watercourse

Municipal Boundary



Highway 6 South Widening from Highway 403 to Upper James Street

Surficial Geology

0 0.5 1 2 KM

NAD 1983 UTM Zone 17N

Data Sources:
Contains Information licensed under the Open Government License Ontario. Ontario Geological Survey 2010. Surficial geology of southern Ontario; Ontario Geological Survey, Miscellaneous Release—Data 128 – Revised.

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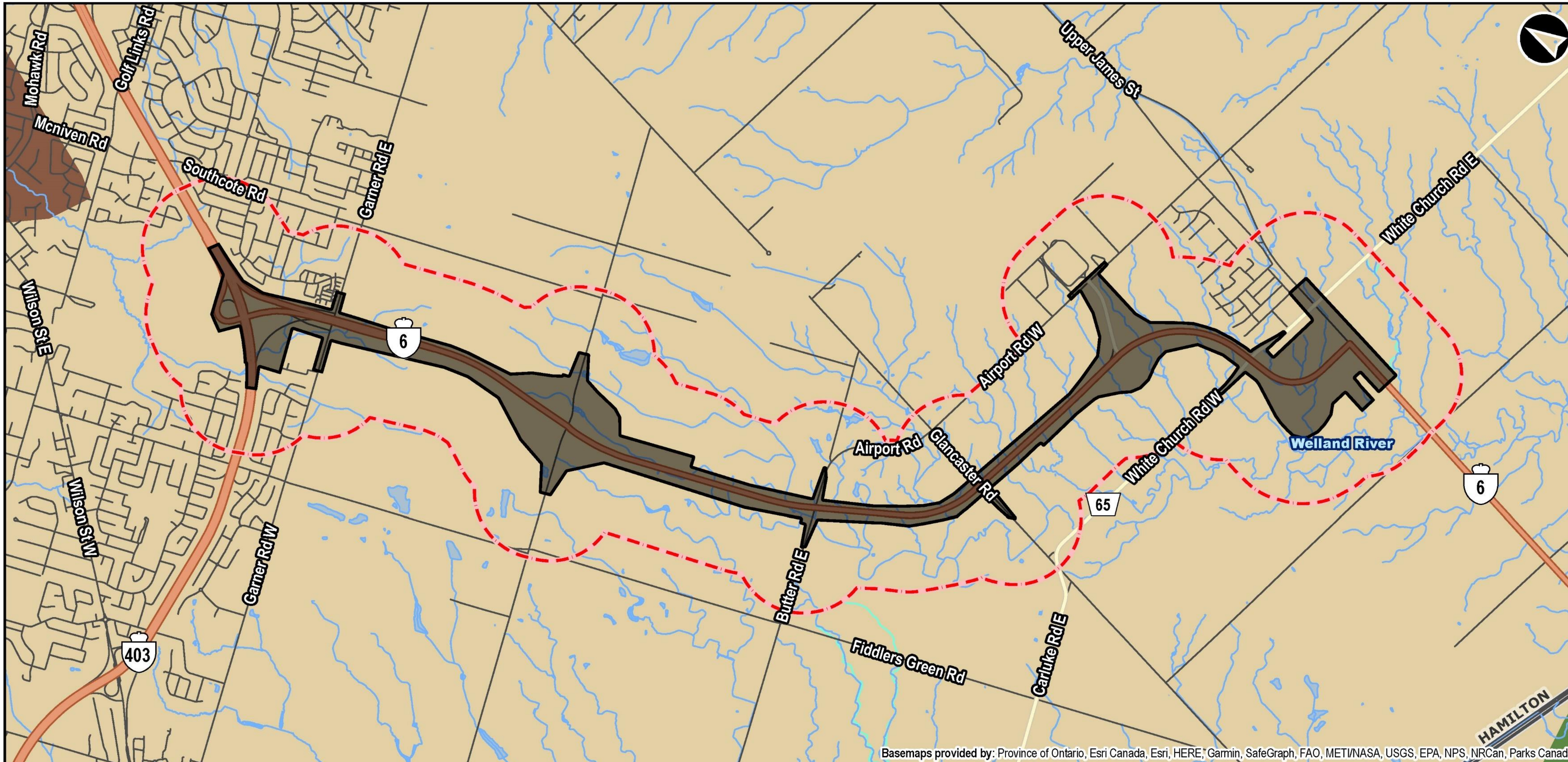
Ontario

Jul, 2022	1:30,000
P#:60677652	Rev:00

Figure: A-1.9



LEGEND

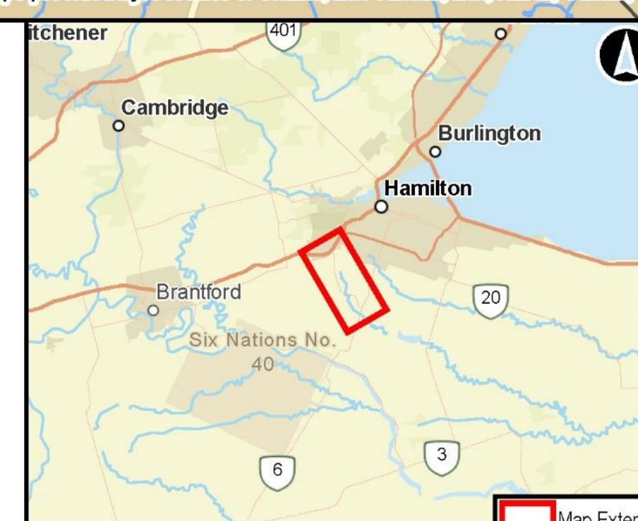
- Early Preliminary Construction Disturbance Area
- Study Area

Bedrock Geology of Southern Ontario

- 57c - Limestone, dolostone, shale, sandstone, gypsum, salt - Limestone, dolostone, shale, sandstone, gypsum, salt - Silurian Peroid (416.0 Ma to 443.7 Ma) - Salina Formation
- 56a - Sandstone, shale, dolostone, siltstone - Guelph Formation - Silurian Peroid (416.0 Ma to 443.7 Ma) - Guelph Formation
- 56b - Sandstone, shale, dolostone, siltstone - Guelph Formation - Silurian Peroid (416.0 Ma to 443.7 Ma) - Lockport Formation

General Features

- Primary or 400 Series Highway
- District, County, or Regional Road
- Local Road
- Waterbody
- Watercourse
- Constructed Drain
- Municipal Boundary



Highway 6 South Widening from Highway 403 to Upper James Street

Bedrock Geology of Southern Ontario

0 0.5 1 2 KM

NAD 1983 UTM Zone 17N

Data Sources:
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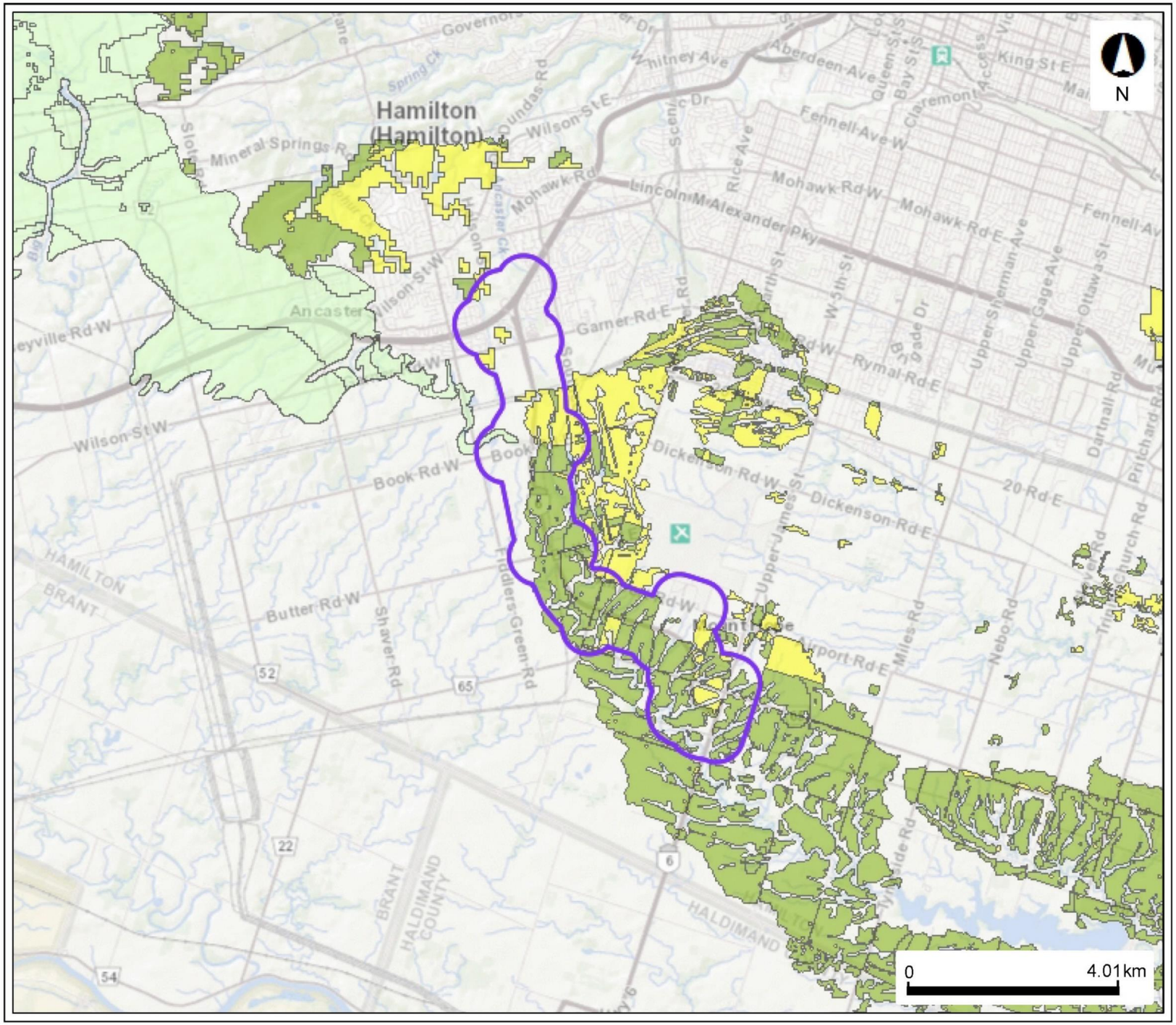
Ontario Geological Survey 2011. 1:250 000 scale bedrock geology of Ontario;
Ontario Geological Survey, Miscellaneous Release–Data 126 - Revision 1.

AECOM | Ontario

Jul, 2022	1:30,000	**Figure: A-1.10**
P#:60677652	Rev:00	

Significant Groundwater Recharge Areas



Legend

Significant Groundwater Recharge Area

- 0
- 2
- 4
- 6

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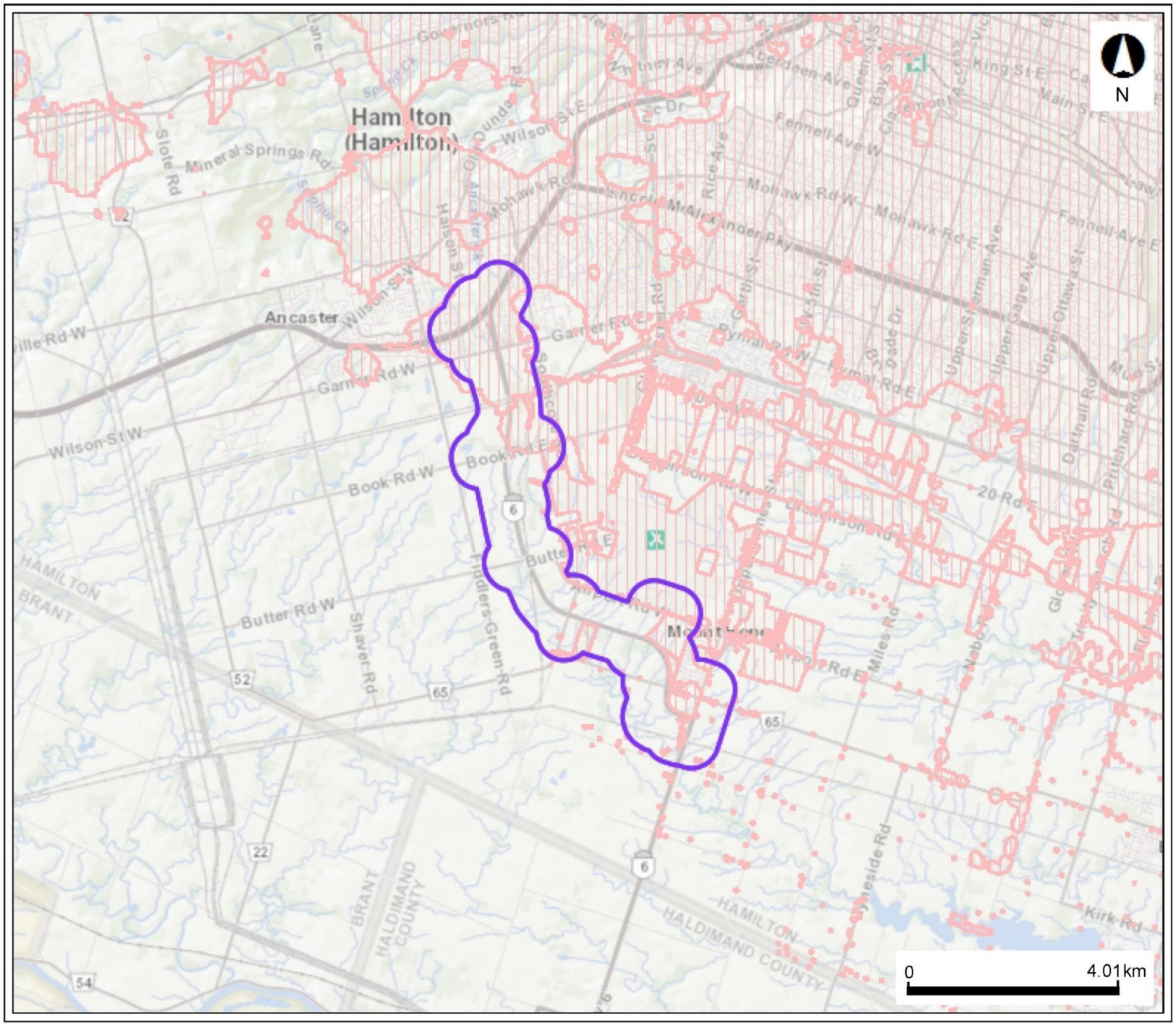
Ontario

Figure: A-1.11

Map Created: 7/21/2022
Map Center: 43.17532 N, -79.95161 W

Highly Vulnerable Aquifers



Legend

Highly Vulnerable Aquifers

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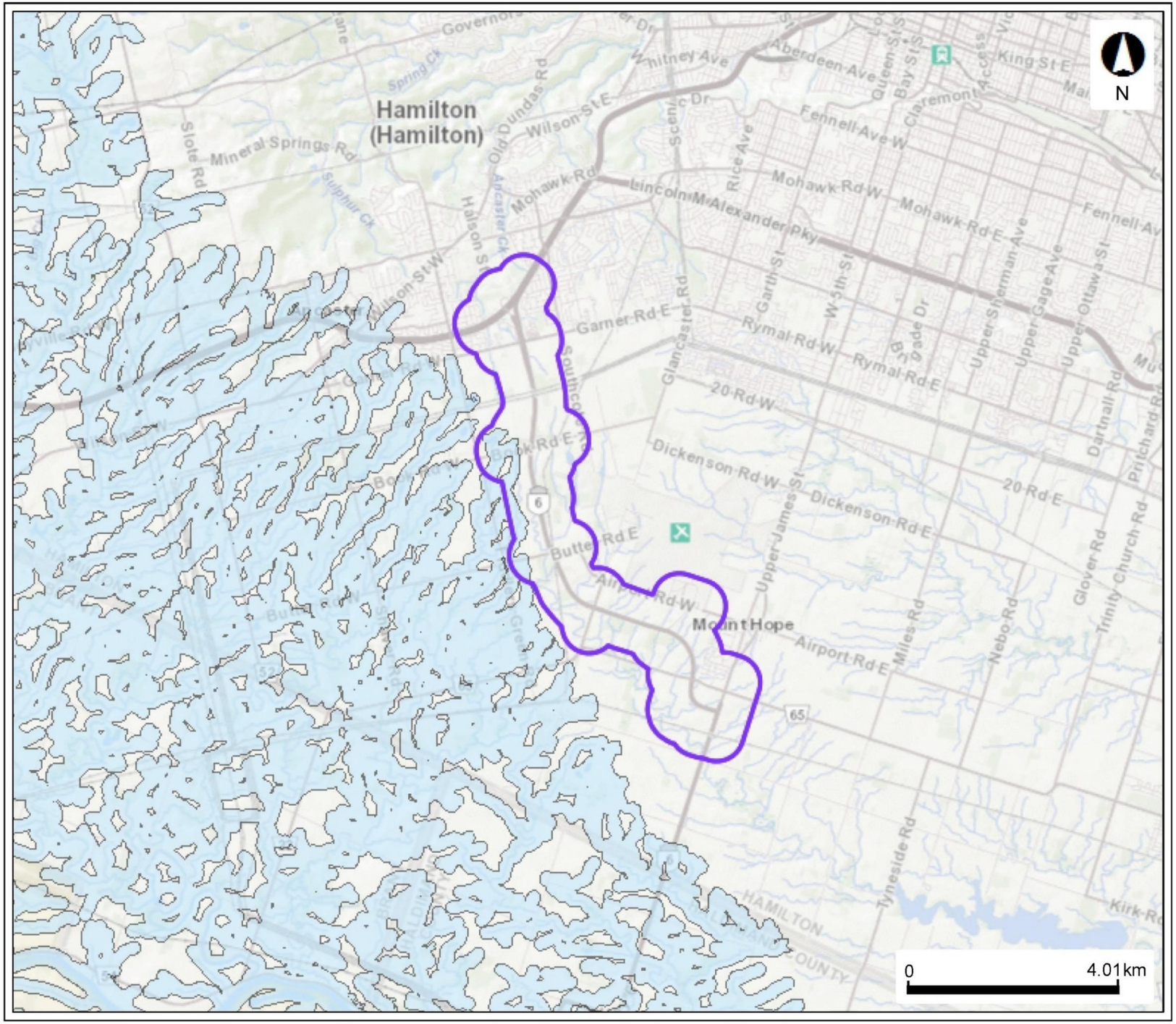
Ontario

Figure: A-1.12

Map Created: 7/21/2022
Map Center: 43.17632 N, -79.94577 W

Intake Protection Zones



Legend

- Intake Protection Zone 3

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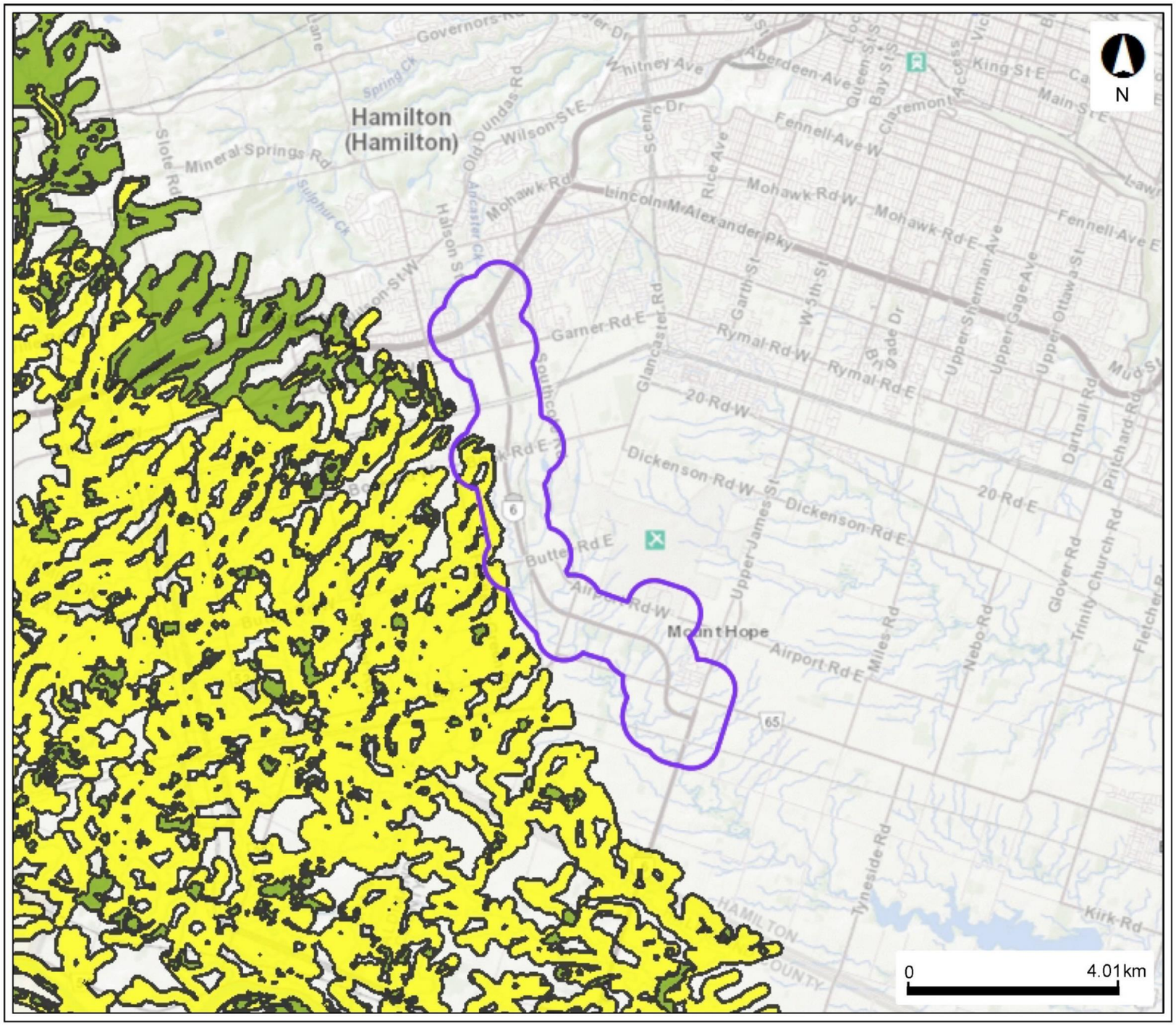
Figure: A-1.13

Map Created: 7/21/2022
Map Center: 43.17532 N, -79.95161 W

Vulnerability Scoring Area: Surface Water



Legend

Vulnerable Scoring Area - Surface Water

- 0 - 3.9
- 4 - 7.9
- 8 - 8.9
- 9 - 10

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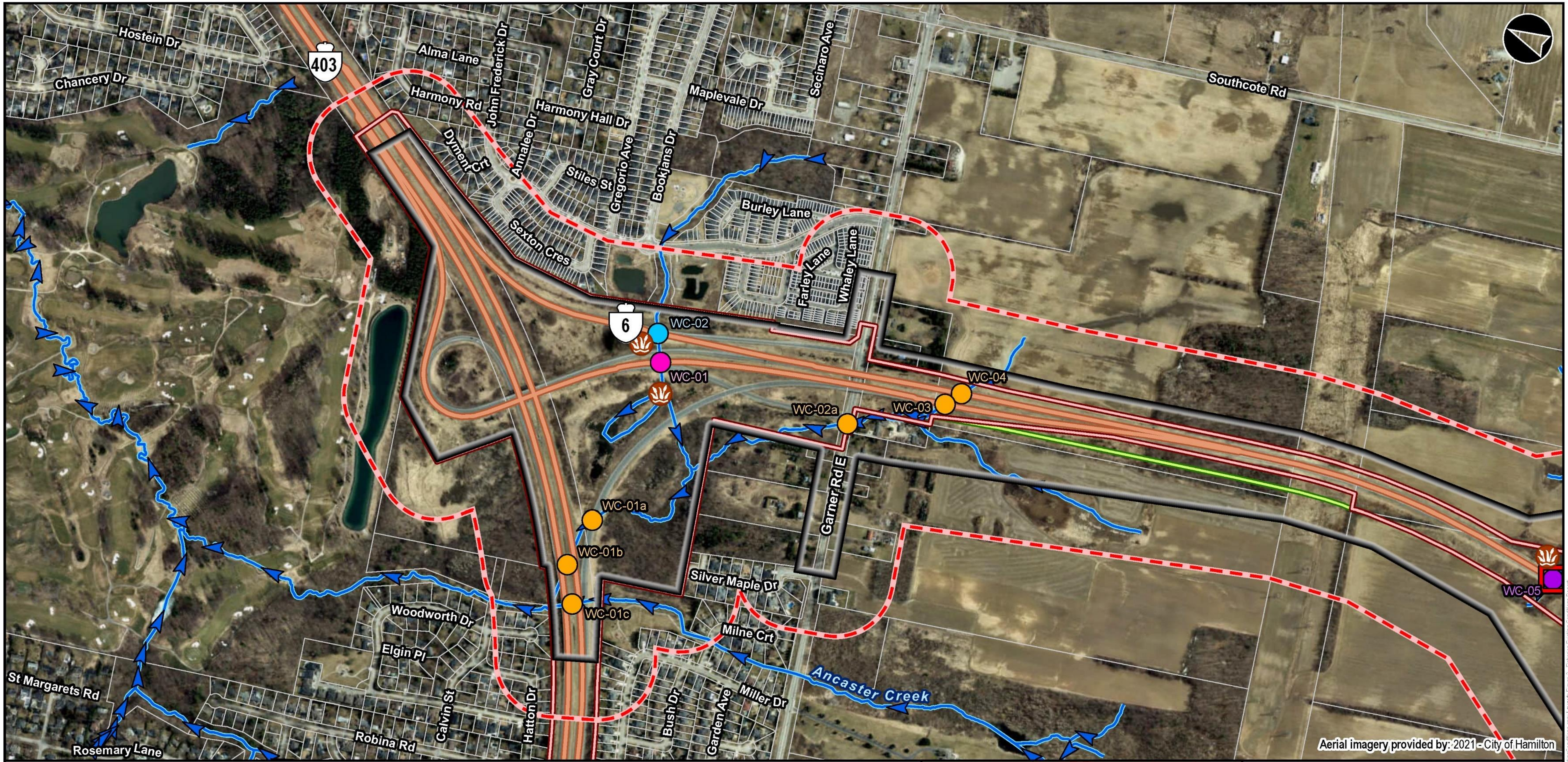
Ontario

Figure: A-1.14

Map Created: 7/21/2022
Map Center: 43.17632 N, -79.94577 W

AECOM

Fish



LEGEND

- Study Area - 120 m
- Preliminary Design Construction Disturbance Area

Right of Way Group

- 1987 E.A. Designated Right-of-Way
- Existing M.T.O. Right-of-Way

Aquatic Constraints and Opportunities

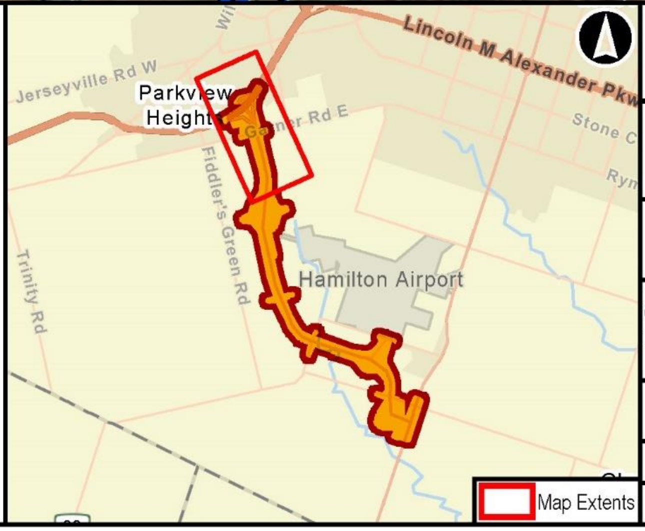
- Migratory Barrier
- Perched Culvert
- Invasive Species
- Groundwater Input

Watercrossing by Thermal Regime

- Warmwater - Ephemeral
- Warmwater - Intermittent
- Warmwater - Permanent
- Warmwater - Upstream: Ephemeral Downstream: Intermittent
- Warmwater - Upstream: Ephemeral Downstream: Permanent
- Warmwater - Upstream: Ephemeral Downstream: Permanent Constructed Pond

General Features

- Primary or 400 Series Highway
- Property Limit
- Watercourse and Flow Direction



Preliminary Design for Highway 6 South Widening from Highway 403 to Upper James Street

Fisheries Existing Conditions Report

0 100 200 400 600 M

NAD 1983 UTM Zone 17N

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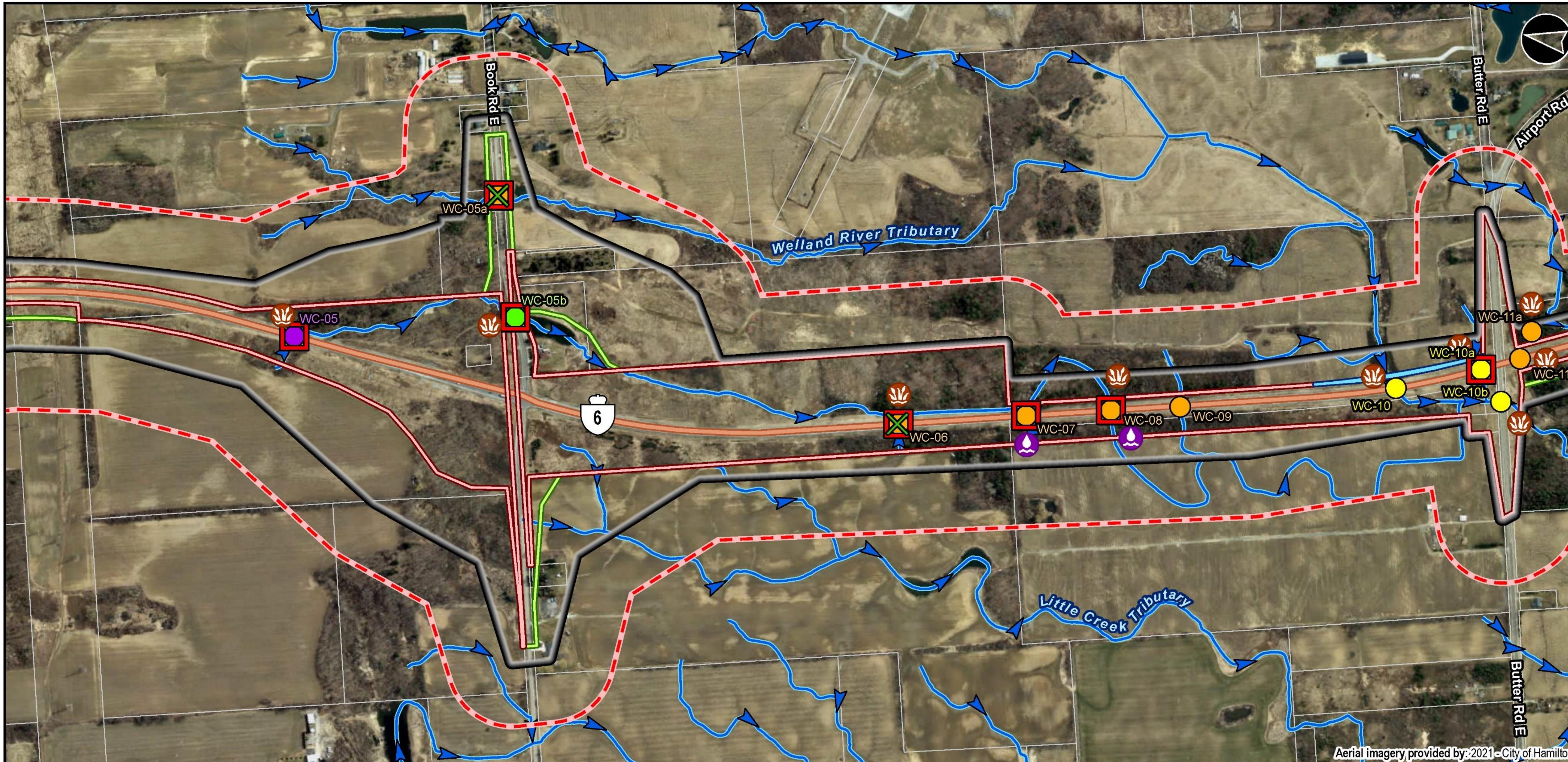
Ontario

Mar, 2023	1:8,000	Figure: A-2.1
P:60677652	Rev:00	



LEGEND

Study Area - 120 m

Preliminary Design Construction Disturbance Area

Right of Way Group

2022 Preliminary Design Additional Property Requirements

1987 E.A. Designated Right-of-Way

Existing M.T.O. Right-of-Way

Aquatic Constraints and Opportunities

Migratory Barrier

Perched Culvert

Invasive Species

Groundwater Input

Watercrossing by Thermal Regime

Warmwater - Ephemeral

Warmwater - Intermittent

Warmwater - Permanent

Warmwater - Upstream: Ephemeral Downstream: Intermittent

Warmwater - Upstream: Ephemeral Downstream: Permanent

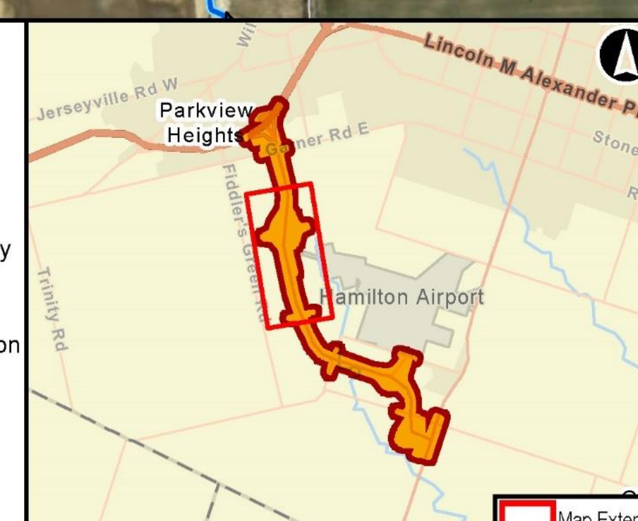
Warmwater - Upstream: Ephemeral Downstream: Permanent Constructed Pond

General Features

Primary or 400 Series Highway

Property Limit

Watercourse and Flow Direction



Preliminary Design for Highway 6 South Widening from Highway 403 to Upper James Street

Fisheries Existing Conditions Report

0 100 200 400 600 M

NAD 1983 UTM Zone 17N

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AECOM

Ontario

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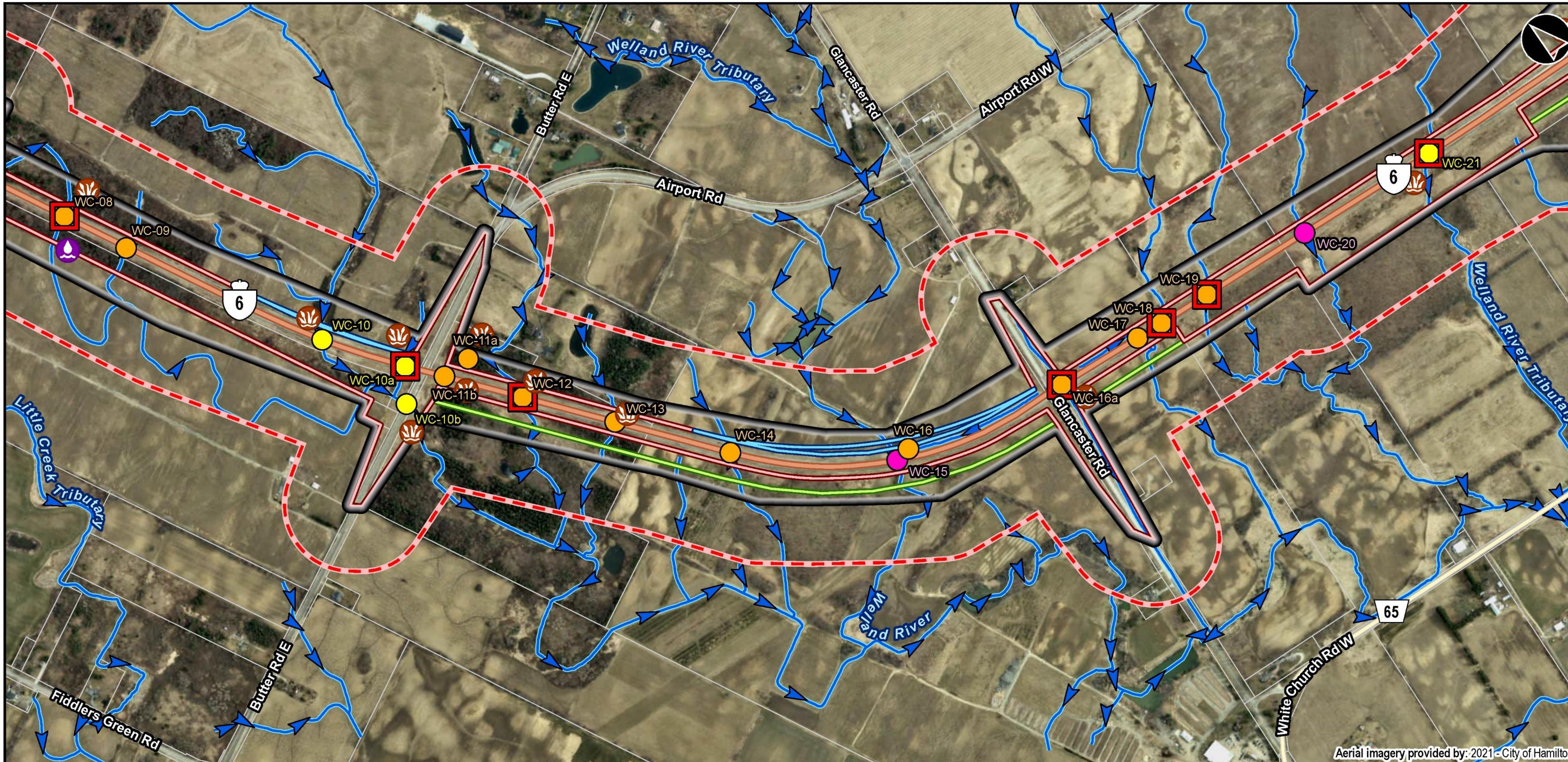
P:60677652	Rev:00

Figure: A-2.2



LEGEND

Study Area - 120 m

Preliminary Design Construction Disturbance Area

Right of Way Group

2022 Preliminary Design Additional Property Requirements

1987 E.A. Designated Right-of-Way

Existing M.T.O. Right-of-Way

Aquatic Constraints and Opportunities

Migratory Barrier

Perched Culvert

Invasive Species

Groundwater Input

Watercrossing by Thermal Regime

Warmwater - Ephemeral

Warmwater - Intermittent

Warmwater - Permanent

Warmwater - Upstream: Ephemeral Downstream: Intermittent

Warmwater - Upstream: Ephemeral Downstream: Permanent

Warmwater - Upstream: Ephemeral Downstream: Permanent Constructed Pond

General Features

Primary or 400 Series Highway

District, County, or Regional Road

Property Limit

Watercourse and Flow Direction

Preliminary Design for Highway 6 South Widening from Highway 403 to Upper James Street

Fisheries Existing Conditions Report

0 100 200 400 600 M

NAD 1983 UTM Zone 17N

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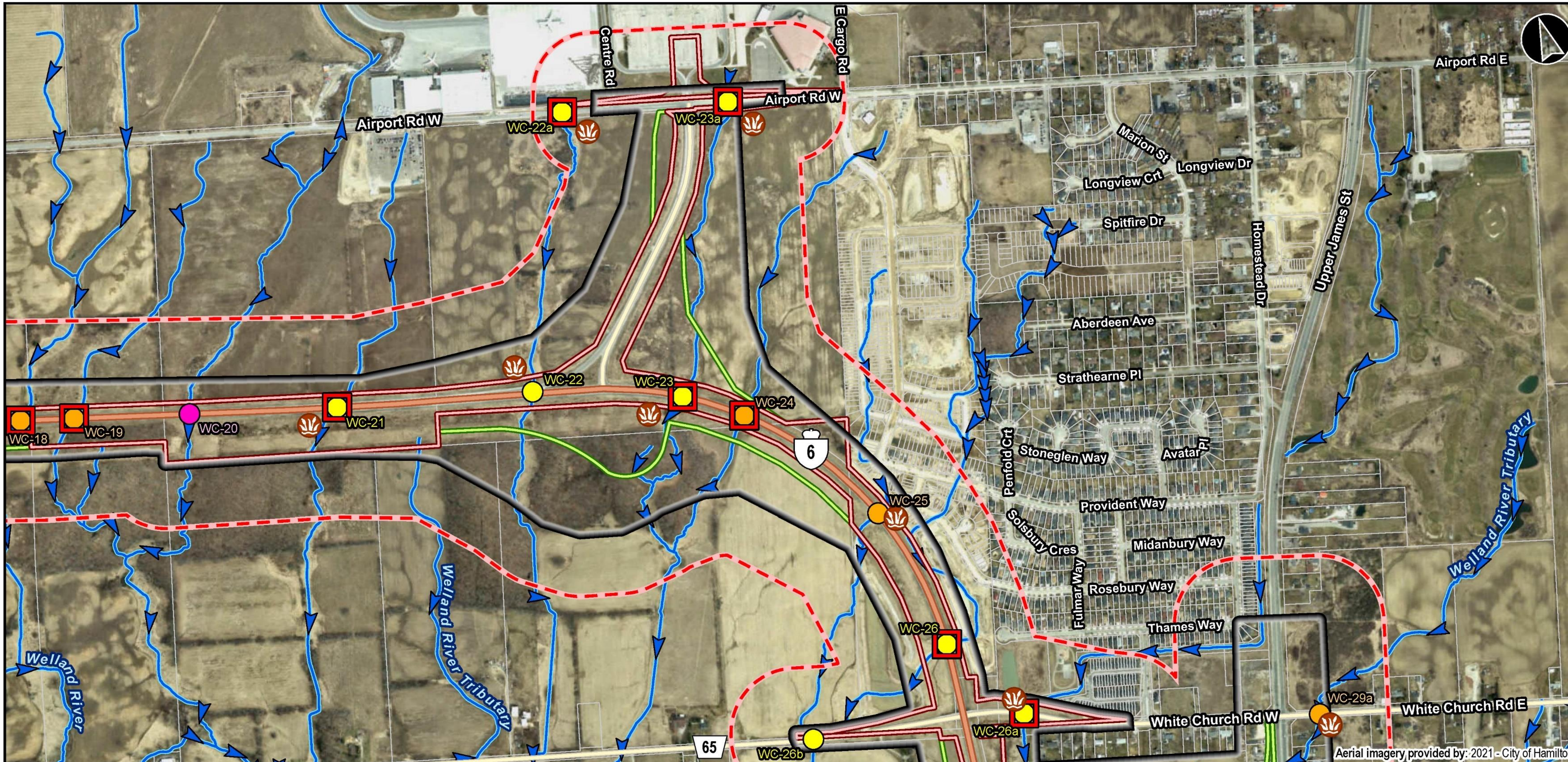
Figure: A-2.3



LEGEND

- Study Area - 120 m
- Preliminary Design Construction Disturbance Area

Right of Way Group

- 1987 E.A. Designated Right-of-Way
- Existing M.T.O. Right-of-Way

Aquatic Constraints and Opportunities

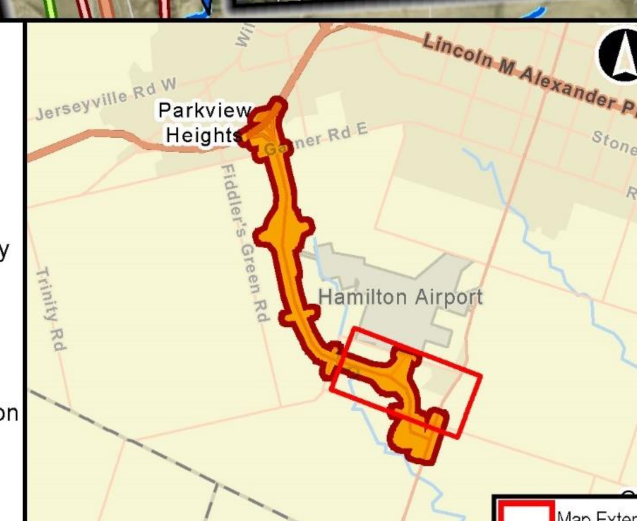
- Migratory Barrier
- Perched Culvert
- Invasive Species
- Groundwater Input

Watercrossing by Thermal Regime

- Warmwater - Ephemeral
- Warmwater - Intermittent
- Warmwater - Permanent
- Warmwater - Upstream: Ephemeral Downstream: Intermittent
- Warmwater - Upstream: Ephemeral Downstream: Permanent
- Warmwater - Upstream: Ephemeral Downstream: Permanent Constructed Pond

General Features

- Primary or 400 Series Highway
- District, County, or Regional Road
- Property Limit
- Watercourse and Flow Direction



Preliminary Design for Highway 6 South Widening from Highway 403 to Upper James Street

Fisheries Existing Conditions Report

0 100 200 400 600 M

NAD 1983 UTM Zone 17N

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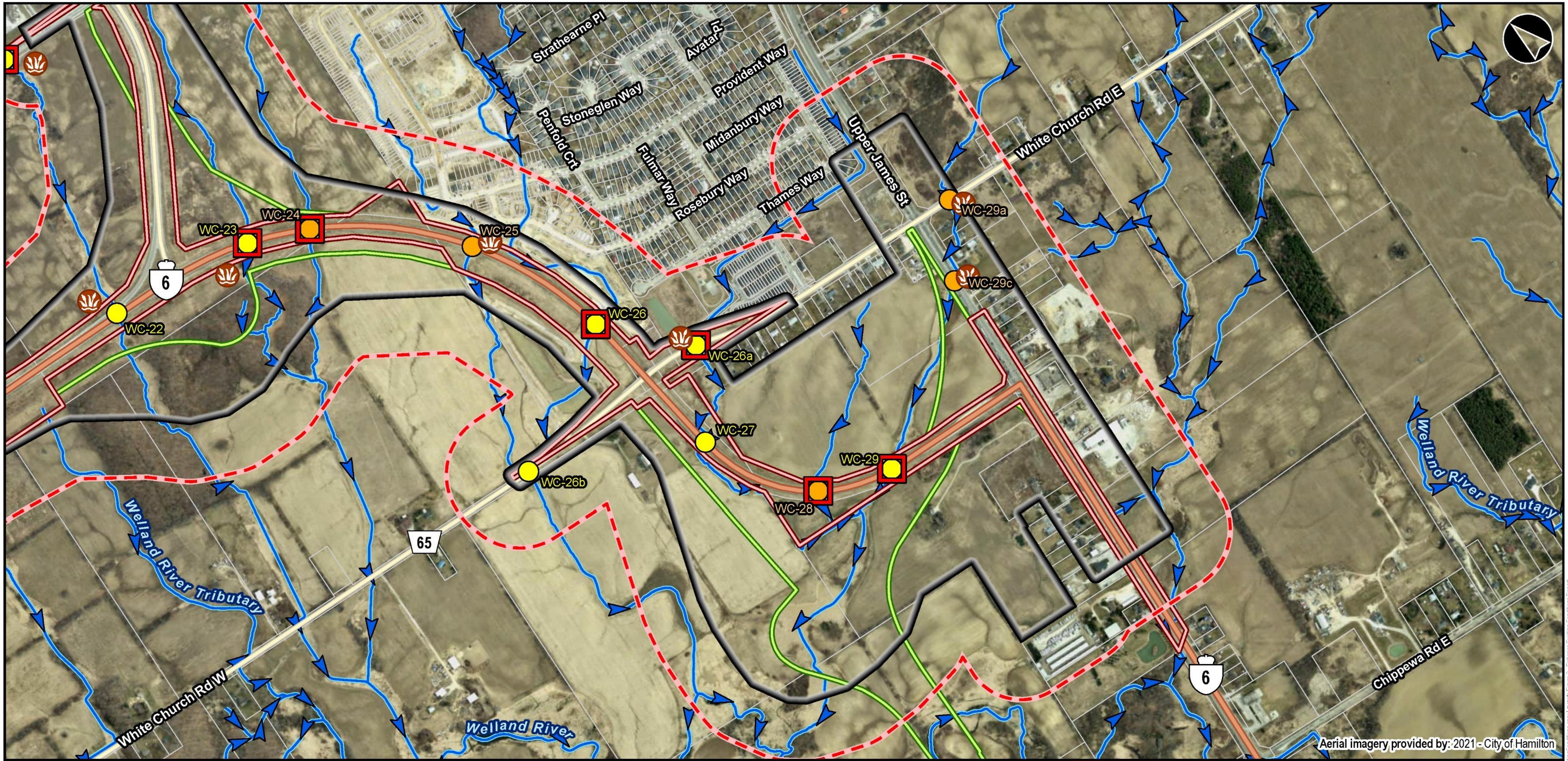
Ontario

Mar, 2023	1:8,000	Figure: A-2.4
P:60677652	Rev:00	



LEGEND

- Study Area - 120 m
- Preliminary Design Construction Disturbance Area

Right of Way Group

- 1987 E.A. Designated Right-of-Way
- Existing M.T.O. Right-of-Way

Aquatic Constraints and Opportunities

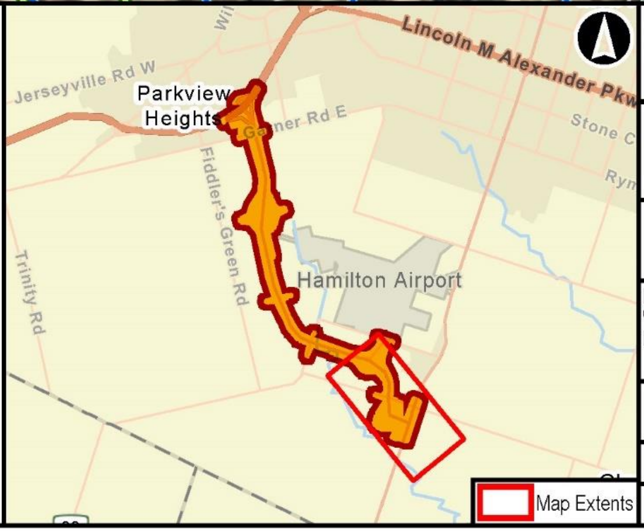
- Migratory Barrier
- Perched Culvert
- Invasive Species
- Groundwater Input

Watercrossing by Thermal Regime

- Warmwater - Ephemeral
- Warmwater - Intermittent
- Warmwater - Permanent
- Warmwater - Upstream: Ephemeral Downstream: Intermittent
- Warmwater - Upstream: Ephemeral Downstream: Permanent
- Warmwater - Upstream: Ephemeral Downstream: Permanent Constructed Pond

General Features

- Primary or 400 Series Highway
- District, County, or Regional Road
- Property Limit
- Watercourse and Flow Direction



Preliminary Design for Highway 6 South Widening from Highway 403 to Upper James Street

Fisheries Existing Conditions Report

0 100 200 400 600 M

NAD 1983 UTM Zone 17N

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AECOM | Ontario

Mar, 2023	1:8,000	**Figure: A-2.5**
P:60677652	Rev:00	

Terrestrial

Tiffany Creek Wetland Complex PSW
Tiffany Creek
Garner Rd E
Southcote Rd
6
Hamilton Golf and Country Club
Ancaster Creek
403
Amberly Blvd
Garner Rd W
Big Creek Tributary
Fiddlers Green Rd
Book Rd W
Glancaster Rd
Dickenson Rd W
Three Mile Creek
Three Mile Creek Tributary
Welland River Tributary
Southcote Rd
Book Rd E
Welland River
Butter Rd E
Airport Rd
Glancaster Rd
Little Creek Tributary
Butter Rd W
Butter Rd E
Homestead Dr
Upper James St
Airport Rd W
Airport Rd E
White Church Rd E
6
White Church Rd W
65
Glandford Station West Wetland
Glanford Station West Wetland PSW
Welland River Tributary
Welland River Headwater Tributaries Wetland Complex RSW
Carluke Rd E
North Seneca Swamp RSW
North Seneca Wetland
Aerial imagery provided by: 2021 - City of Hamilton

LEGEND

Project Components

- Study Area - 120 m
- Preliminary Design Construction Disturbance Area
- 2022 Preliminary Design Additional Property Requirements
- 1987 E.A. Designated Right-of-Way
- Existing M.T.O. Right-of-Way

Designated Natural Areas

- White-tailed Deer Wintering Area (Stratum 2 Overwintering Habitat) - M.N.R.F. - 2022
- Environmentally Sensitive Areas - Niagara Penninsula Conservation Authority - 2022
- Environmentally Sensitive Areas - City of Hamilton - 2022
- Provincially Significant Wetland (PSW) - M.N.R.F. - 2022
- Locally Significant Wetland (LSW) - M.N.R.F. - 2022
- Unevaluated Wetland - M.N.R.F. - 2022

Greenbelt Plan by Designation - M.N.R.F. - 2023

- Protected Countryside

General Features

- Primary or 400 Series Highway
- District, County, or Regional Road
- Watercourse

Preliminary Design for Highway 6 South Widening from Highway 403 to Upper James Street

Designated Natural Areas

0 0.5 1 2 KM

NAD 1983 UTM Zone 17N

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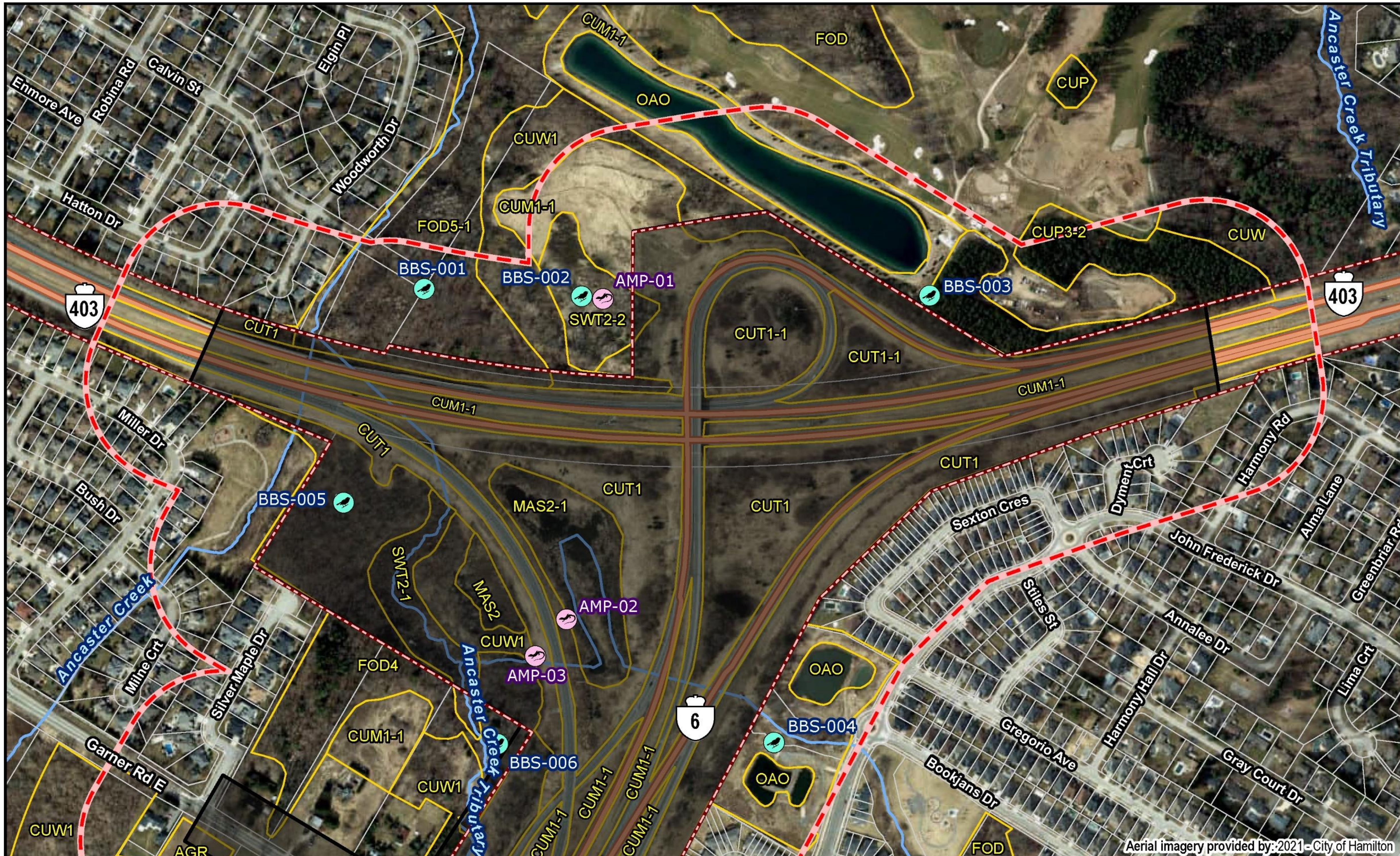
Figure: A-3.1



ELC DESCRIPTION

- **AGR:** Agricultural Field
- **CUM1-1:** Dry – Fresh Old Field Cultural Meadow
- **CUP3-2:** White Pine Coniferous Plantation
- **CUT1:** Mineral Cultural Thicket Ecosite
- **CUT1-1:** Sumac Cultural Thicket
- **CUW:** Cultural Woodland
- **CUW1:** Mineral Cultural Woodland Ecosite
- **FOD4:** Dry – Fresh Upland Deciduous Forest Ecosite
- **FOD5-1:** Dry - Fresh Sugar Maple Deciduous Forest
- **MAS2:** Mineral Shallow Marsh Ecosite
- **MAS2-1:** Cattail Mineral Shallow Marsh
- **OAO:** Open Aquatic Ecosite
- **SWT2-1:** Alder Mineral Thicket Swamp
- **SWT2-2:** Willow Mineral Thicket Swamp

LEGEND

Project Components

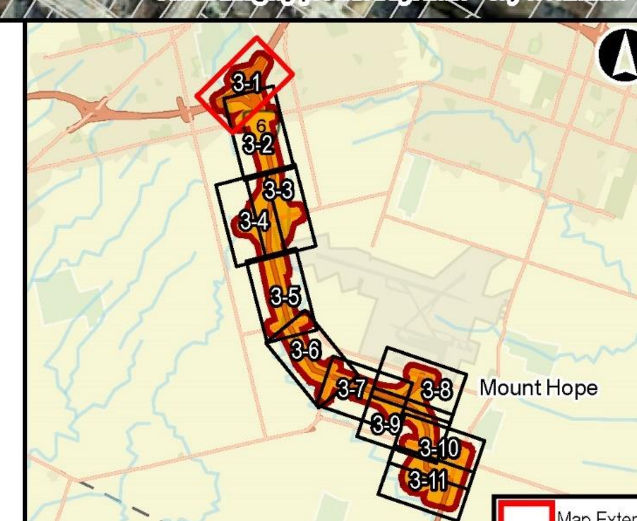
- Study Area - 120 m
- Preliminary Design Construction Disturbance Area
- 1987 E.A. Designated Right-of-Way
- Existing M.T.O. Right-of-Way

Survey Locations and Ecological Land Classifications

- Breeding Bird Survey Location
- Amphibian Call Survey Station
- Ecological Land Classification

General Features

- Primary or 400 Series Highway
- Property Limit
- Watercourse



Preliminary Design for Highway 6 South Widening from Highway 403 to Upper James Street

Ecological Land Classifications and Survey Locations

0 50 100 200 300 m

NAD 1983 UTM Zone 17N

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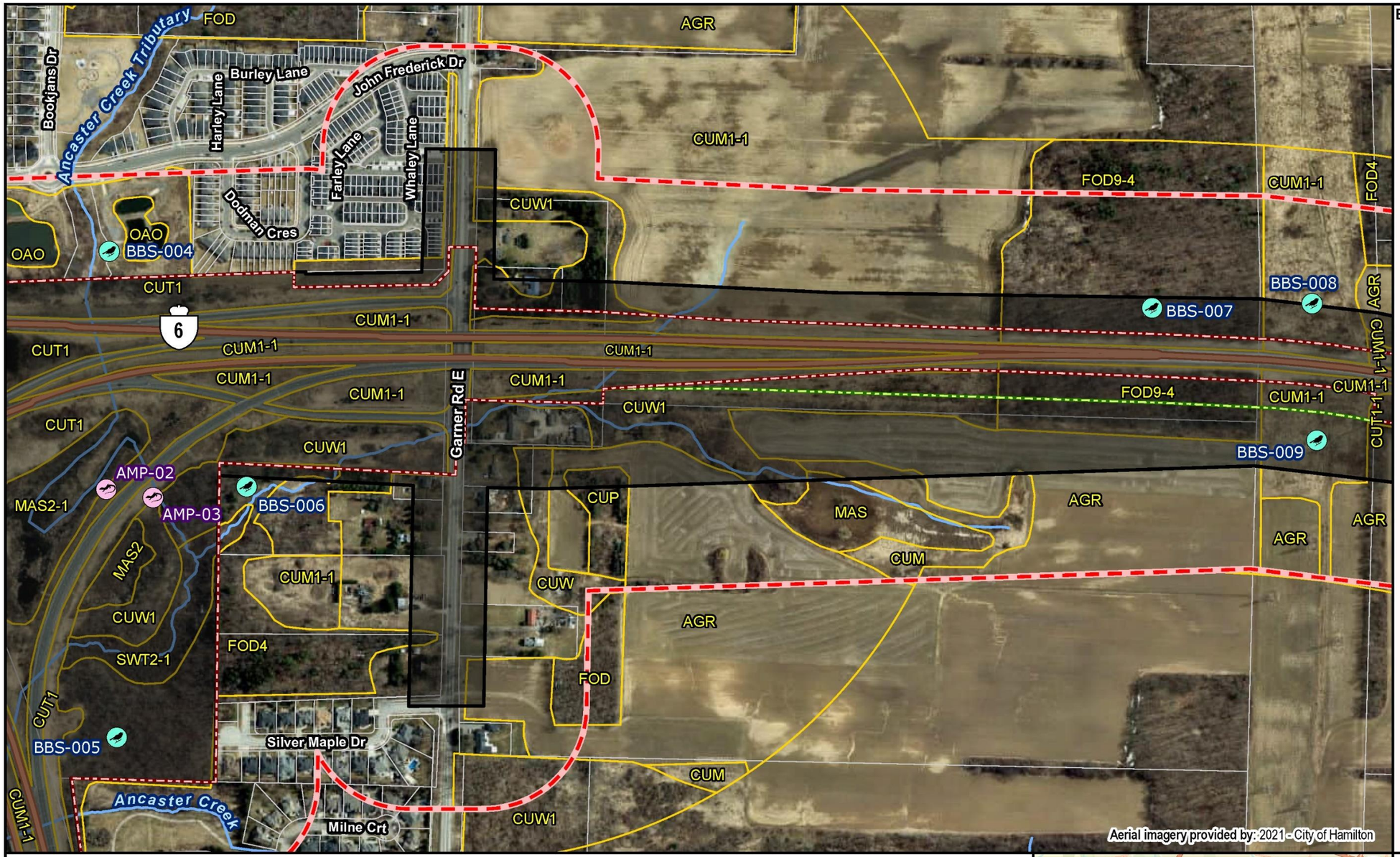


ELC DESCRIPTION

- **AGR:** Agricultural Field
- **CUM:** Cultural Meadow
- **CUM1-1:** Dry – Fresh Old Field Cultural Meadow
- **CUP:** Plantation
- **CUT1:** Mineral Cultural Thicket Ecosite
- **CUT1-1:** Sumac Cultural Thicket
- **CUW:** Cultural Woodland
- **CUW1:** Mineral Cultural Woodland Ecosite
- **FOD:** Deciduous Forest
- **FOD4:** Dry – Fresh Upland Deciduous Forest Ecosite
- **FOD5-1:** Dry - Fresh Sugar Maple Deciduous Forest
- **FOD9-4:** Fresh - Moist Shagbark Hickory Deciduous Forest
- **MAS:** Shallow Marsh
- **MAS2:** Mineral Shallow Marsh Ecosite
- **MAS2-1:** Cattail Mineral Shallow Marsh
- **OAO:** Open Aquatic Ecosite
- **SWT2-1:** Alder Mineral Thicket Swamp

LEGEND

Project Components

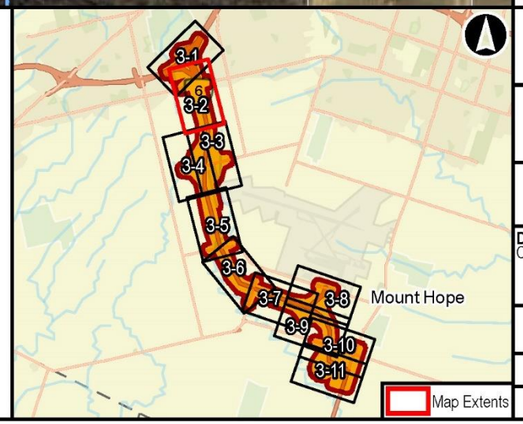
- Study Area - 120 m
- Preliminary Design Construction Disturbance Area
- 1987 E.A. Designated Right-of-Way
- Existing M.T.O. Right-of-Way

Survey Locations and Ecological Land Classifications

- Breeding Bird Survey Location
- Amphibian Call Survey Station
- Ecological Land Classification

General Features

- Primary or 400 Series Highway
- Property Limit
- Watercourse



Preliminary Design for Highway 6 South Widening from Highway 403 to Upper James Street

Ecological Land Classifications and Survey Locations

0 50 100 200 300 m

NAD 1983 UTM Zone 17N

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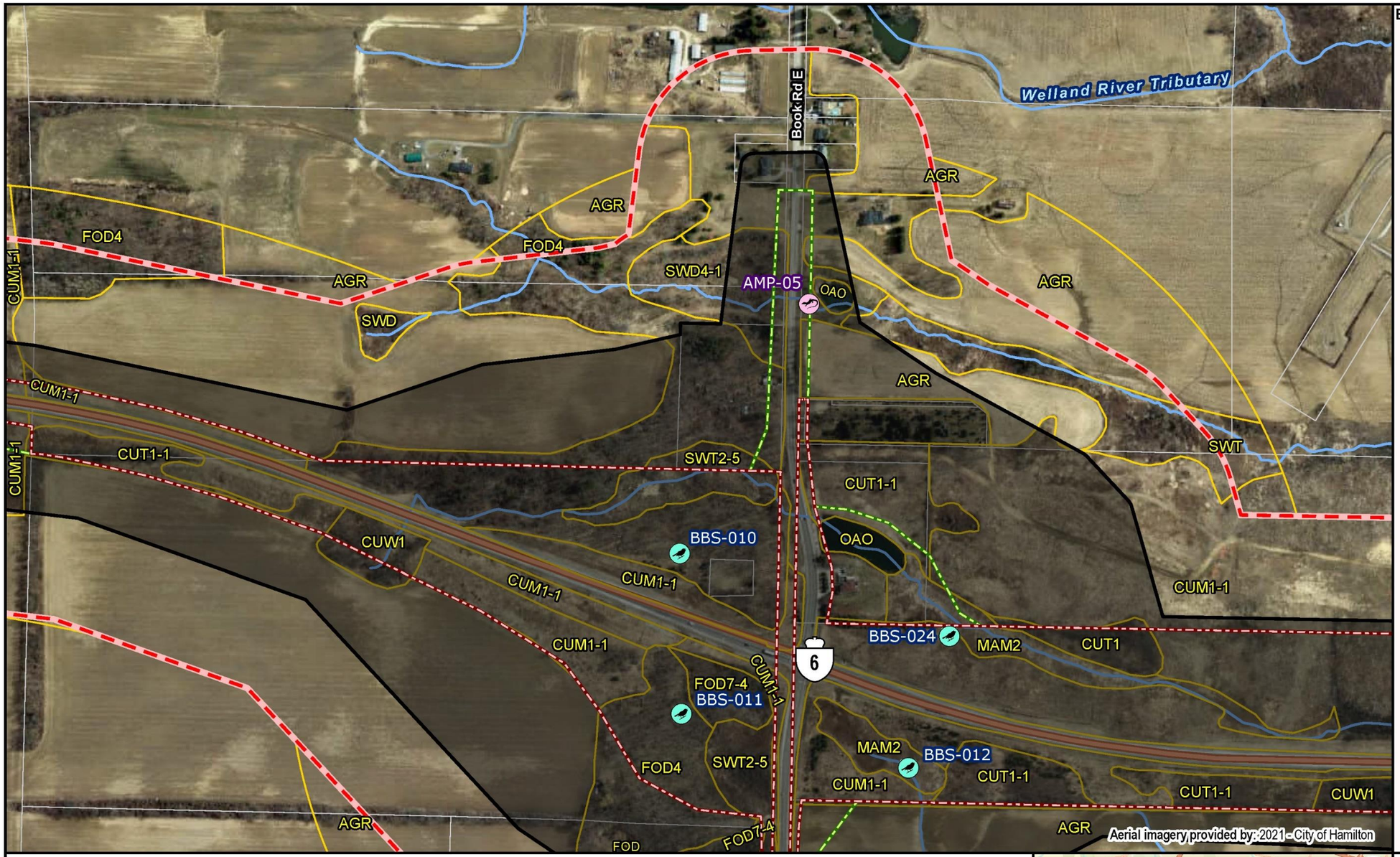
Figure: A-3.3



ELC DESCRIPTION

AGR: Agricultural Field

CUM1-1: Dry – Fresh Old Field Cultural Meadow

CUT1: Mineral Cultural Thicket Ecosite

CUT1-1: Sumac Cultural Thicket

CUW1: Mineral Cultural Woodland Ecosite

FOD: Deciduous Forest

FOD4: Dry – Fresh Upland Deciduous Forest Ecosite

FOD7-4: Fresh - Moist Black Walnut Lowland Deciduous Forest

MAM2: Mineral Meadow Marsh Ecosite

OAO: Open Aquatic Ecosite

SWD: Deciduous Swamp

SWD4-1: Willow Mineral Deciduous Swamp

SWT: Thicket Swamp

SWT2-5: Red-osier Mineral Thicket Swamp

LEGEND

Project Components

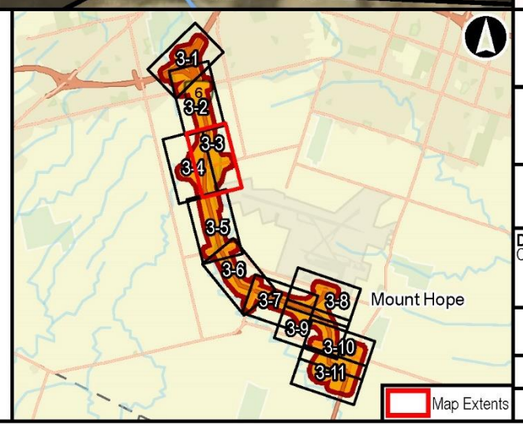
- Study Area - 120 m
- Preliminary Design Construction Disturbance Area
- 1987 E.A. Designated Right-of-Way
- Existing M.T.O. Right-of-Way

Survey Locations and Ecological Land Classifications

- Breeding Bird Survey Location
- Amphibian Call Survey Station
- Ecological Land Classification

General Features

- Primary or 400 Series Highway
- Property Limit
- Watercourse



Preliminary Design for Highway 6 South Widening from Highway 403 to Upper James Street

Ecological Land Classifications and Survey Locations

0 50 100 200 300 m

NAD 1983 UTM Zone 17N

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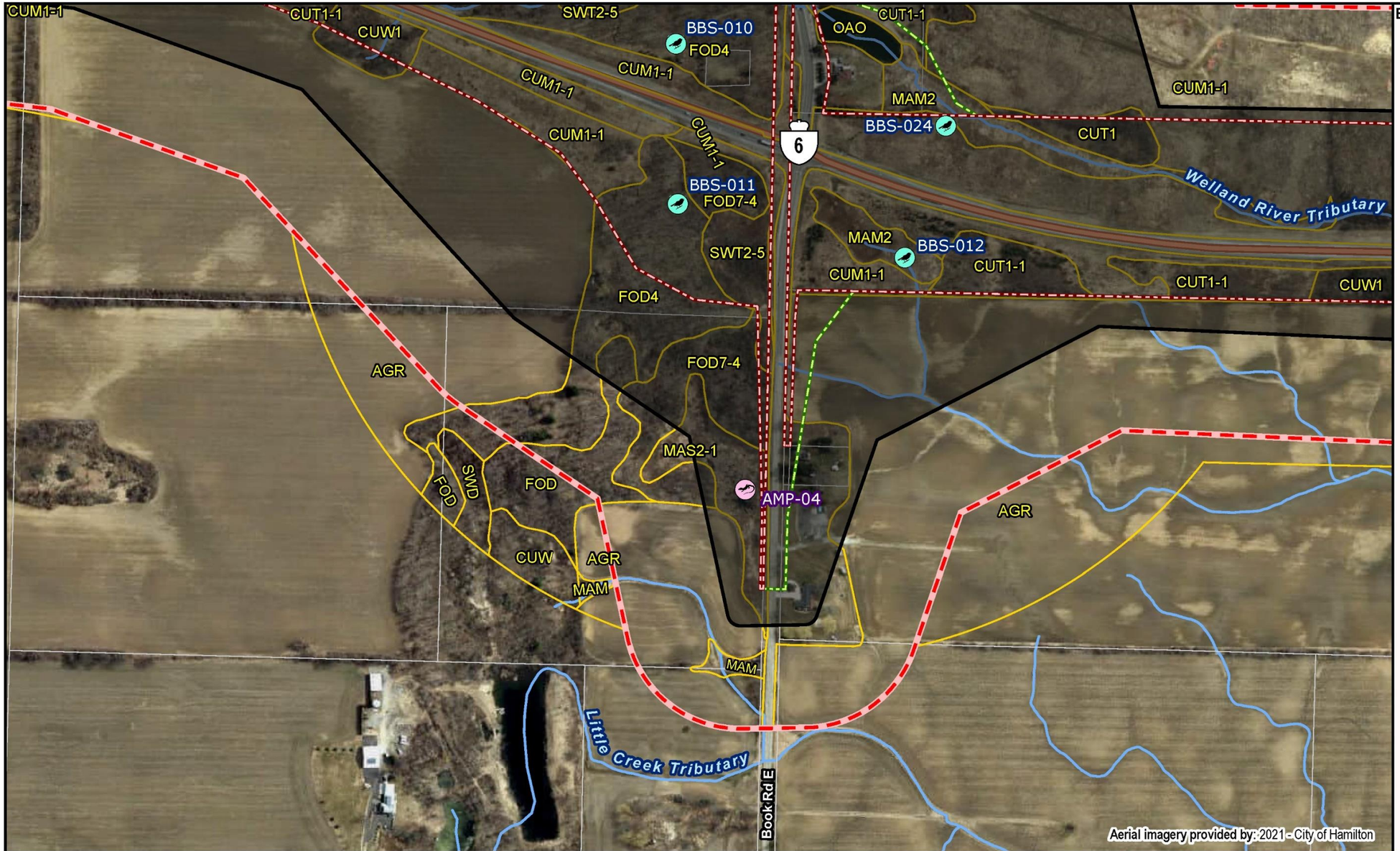
Figure: A-3.4



ELC DESCRIPTION

AGR: Agricultural Field

CUM1-1: Dry – Fresh Old Field Cultural Meadow

CUT1: Mineral Cultural Thicket Ecosite

CUT1-1: Sumac Cultural Thicket

CUW1: Mineral Cultural Woodland Ecosite

FOD: Deciduous Forest

FOD4: Dry – Fresh Upland Deciduous Forest Ecosite

FOD7-4: Fresh - Moist Black Walnut Lowland Deciduous Forest

MAM: Meadow Marsh

MAM2: Mineral Meadow Marsh Ecosite

MAS2-1: Cattail Mineral Shallow Marsh

OAO: Open Aquatic Ecosite

SWT2-5: Red-osier Mineral Thicket Swamp

LEGEND

Project Components

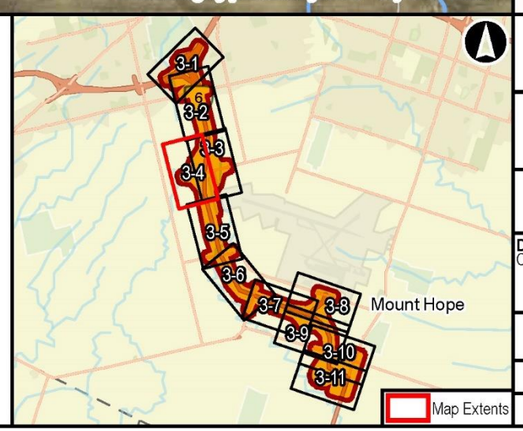
- Study Area - 120 m
- Preliminary Design Construction Disturbance Area
- 1987 E.A. Designated Right-of-Way
- Existing M.T.O. Right-of-Way

Survey Locations and Ecological Land Classifications

- Breeding Bird Survey Location
- Amphibian Call Survey Station
- Ecological Land Classification

General Features

- Primary or 400 Series Highway
- Property Limit
- Watercourse



Preliminary Design for Highway 6 South Widening from Highway 403 to Upper James Street

Ecological Land Classifications and Survey Locations

0 50 100 200 300 m

NAD 1983 UTM Zone 17N

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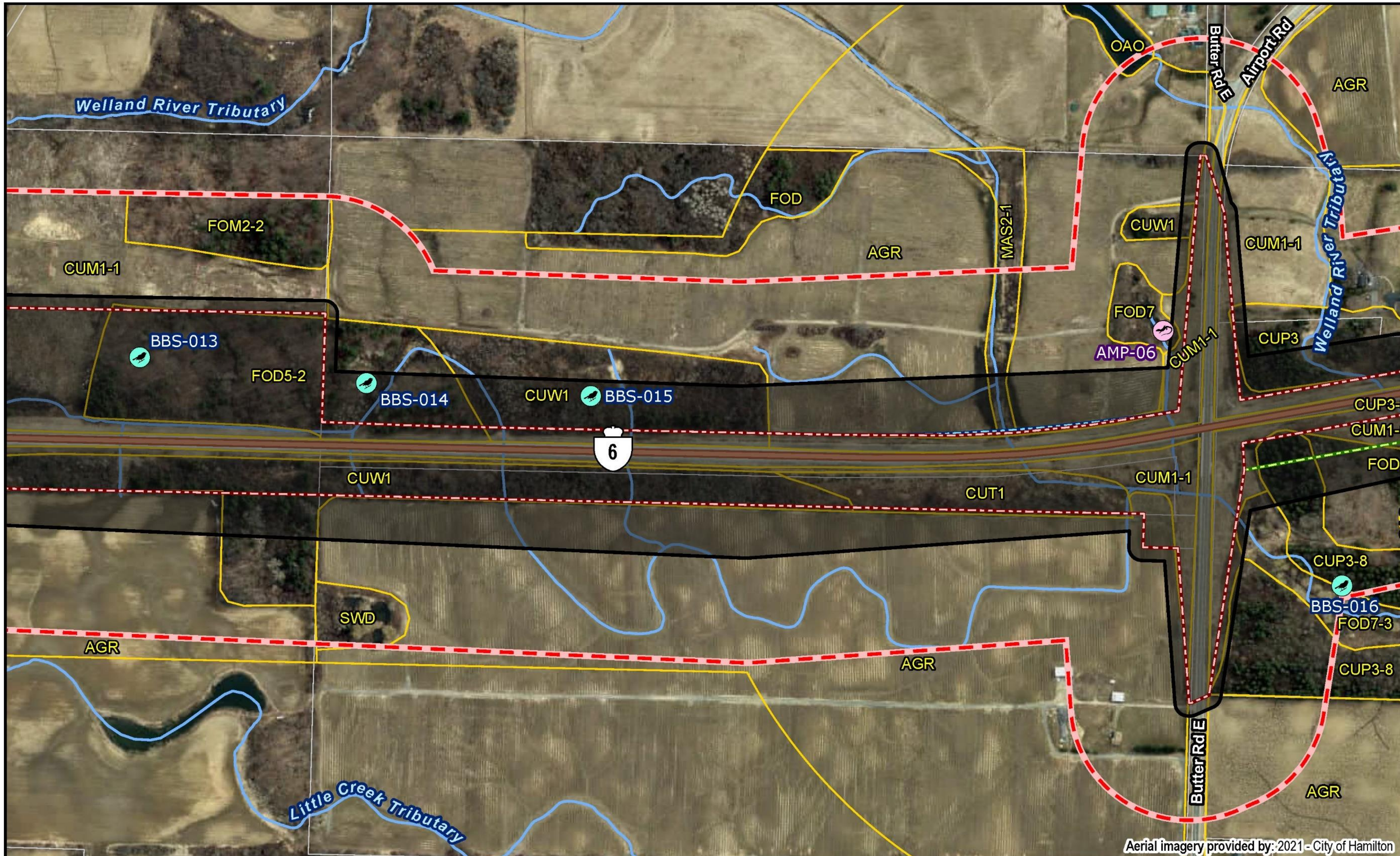
Figure: A-3.5



ELC DESCRIPTION

- **AGR:** Agricultural Field
- **CUM1-1:** Dry – Fresh Old Field Cultural Meadow
- **CUP3:** Coniferous Plantation Ecosite
- **CUP3-8:** White Spruce Coniferous Plantation
- **CUT1:** Mineral Cultural Thicket Ecosite
- **CUW1:** Mineral Cultural Woodland Ecosite
- **FOD4:** Dry – Fresh Upland Deciduous Forest Ecosite
- **FOD5-2:** Dry - Fresh Sugar Maple - Beech Deciduous Forest
- **FOD7:**Fresh - Moist Lowland Deciduous Forest
- **FOD7-3:** Fresh - Moist Willow Lowland Deciduous Forest
- **FOM2-2:** Dry - Fresh White Pine - Oak Mixed Forest
- **MAS2-1:** Cattail Mineral Shallow Marsh
- **OAO:** Open Aquatic Ecosite
- **SWD:** Deciduous Swamp

LEGEND

Project Components

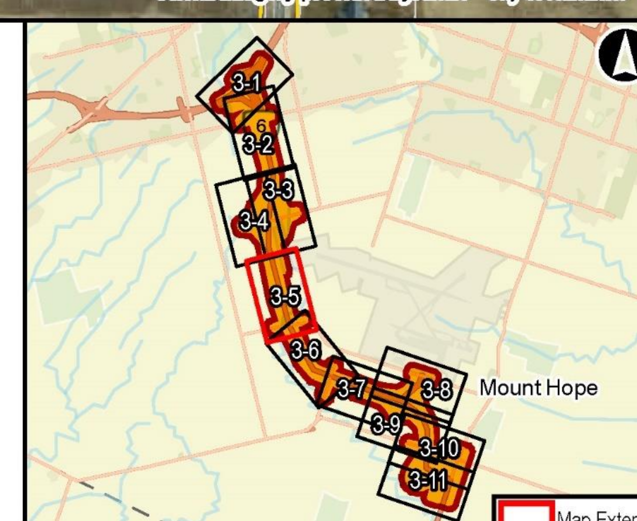
- Study Area - 120 m
- Preliminary Design Construction Disturbance Area
- 2022 Preliminary Design Additional Property Requirements
- 1987 E.A. Designated Right-of-Way
- Existing M.T.O. Right-of-Way

Survey Locations and Ecological Land Classifications

- Breeding Bird Survey Location
- Amphibian Call Survey Station
- Ecological Land Classification

General Features

- Primary or 400 Series Highway
- Property Limit
- Watercourse



Preliminary Design for Highway 6 South Widening from Highway 403 to Upper James Street

Ecological Land Classifications and Survey Locations

0 50 100 200 300 m

NAD 1983 UTM Zone 17N

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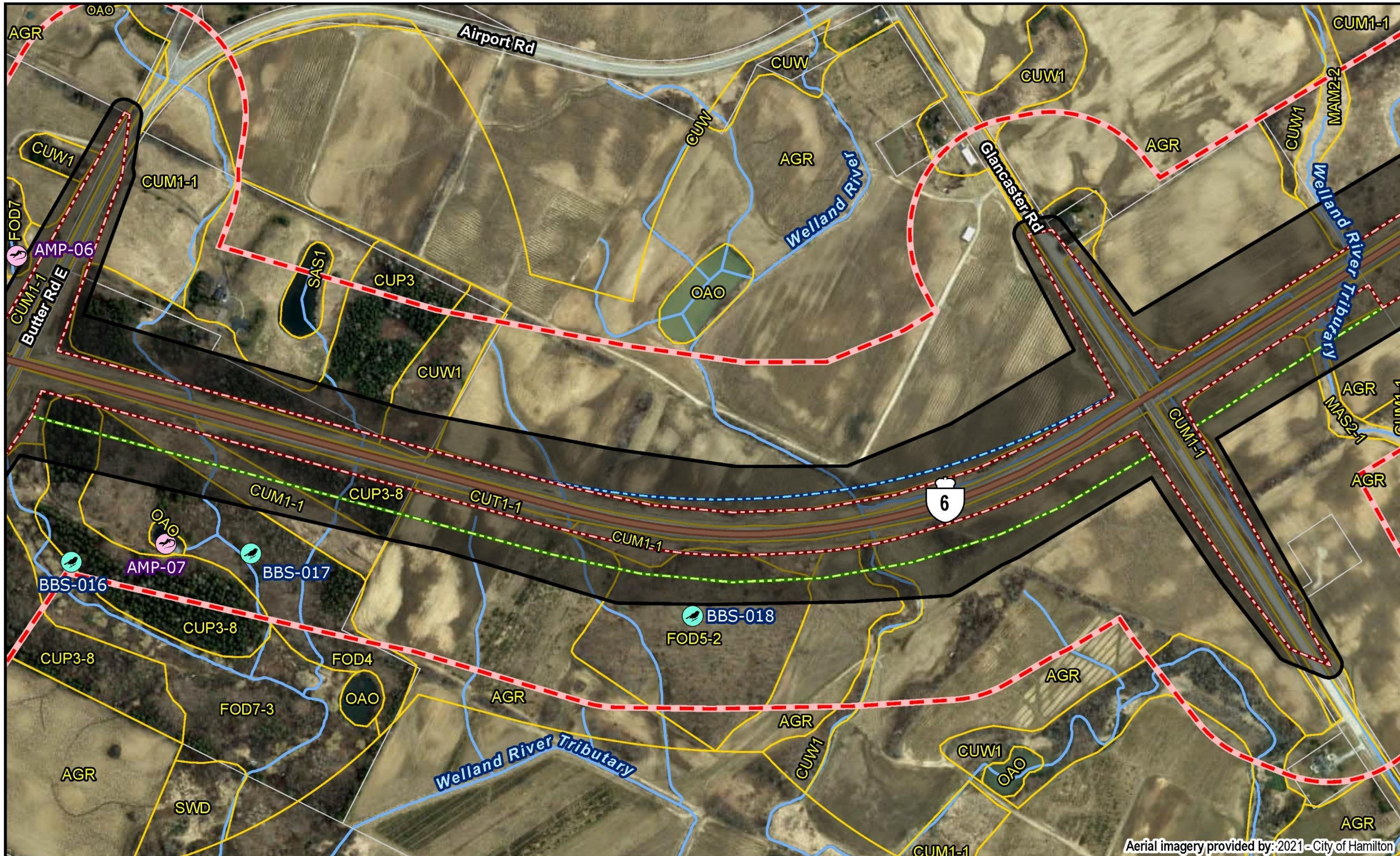


ELC DESCRIPTION

AGR: Agricultural Field

CUM1-1: Dry – Fresh Old Field Cultural Meadow

CUP3: Coniferous Plantation Ecosite

CUP3-8: White Spruce Coniferous Plantation

CUT1-1: Sumac Cultural Thicket

CUW1: Mineral Cultural Woodland Ecosite

FOD4: Dry – Fresh Upland Deciduous Forest Ecosite

FOD5-2: Dry - Fresh Sugar Maple - Beech Deciduous Forest

FOD7: Fresh - Moist Lowland Deciduous Forest

FOD7-3: Fresh - Moist Willow Lowland Deciduous Forest

MAM2-2: Reed-canary Grass Mineral Meadow Marsh

MAS2-1: Cattail Mineral Shallow Marsh

OAO: Open Aquatic Ecosite

SAS1: Shallow Aquatic Ecosite

LEGEND

Project Components

Study Area - 120 m

Preliminary Design Construction Disturbance Area

2022 Preliminary Design Additional Property Requirements

1987 E.A. Designated Right-of-Way

Existing M.T.O. Right-of-Way

Survey Locations and Ecological Land Classifications

Breeding Bird Survey Location

Amphibian Call Survey Station

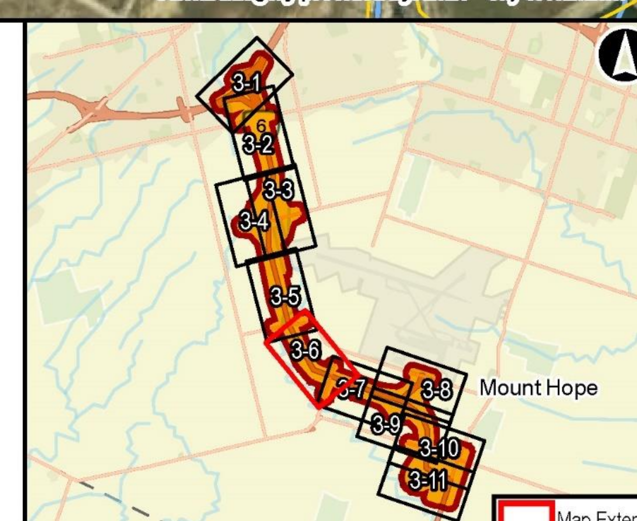
Ecological Land Classification

General Features

Primary or 400 Series Highway

Property Limit

Watercourse



Preliminary Design for Highway 6 South Widening from Highway 403 to Upper James Street

Ecological Land Classifications and Survey Locations

0 50 100 200 300 m

NAD 1983 UTM Zone 17N

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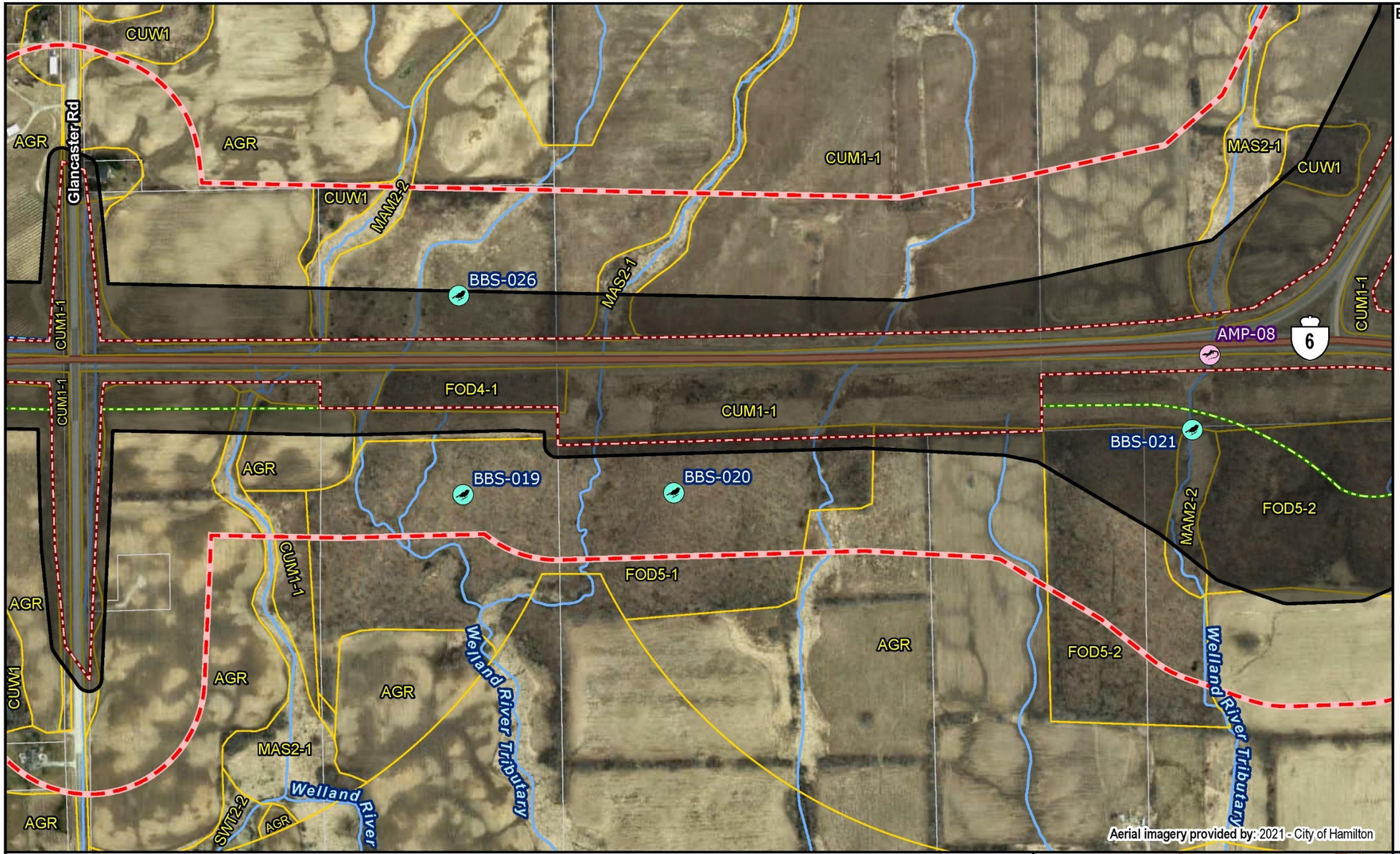


ELC DESCRIPTION

AGR: Agricultural Field

CUM1-1: Dry – Fresh Old Field Cultural Meadow

CUW1: Mineral Cultural Woodland Ecosite

FOD4-1: Dry - Fresh Beech Deciduous Forest

FOD5-1: Dry - Fresh Sugar Maple Deciduous Forest

FOD5-2: Dry - Fresh Sugar Maple - Beech Deciduous Forest

MAM2-2: Reed-canary Grass Mineral Meadow Marsh

MAS2-1: Cattail Mineral Shallow Marsh

LEGEND

Project Components

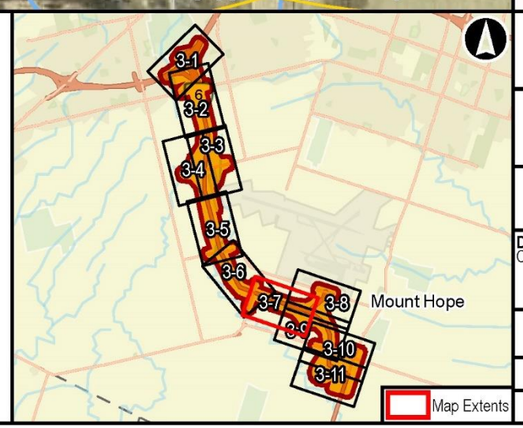
- Study Area - 120 m
- Preliminary Design Construction Disturbance Area
- 2022 Preliminary Design Additional Property Requirements
- 1987 E.A. Designated Right-of-Way
- Existing M.T.O. Right-of-Way

Survey Locations and Ecological Land Classifications

- Breeding Bird Survey Location
- Amphibian Call Survey Station
- Ecological Land Classification

General Features

- Primary or 400 Series Highway
- District, County, or Regional Road
- Property Limit
- Watercourse



Preliminary Design for Highway 6 South Widening from Highway 403 to Upper James Street

Ecological Land Classifications and Survey Locations

0 50 100 200 300 m

NAD 1983 UTM Zone 17N

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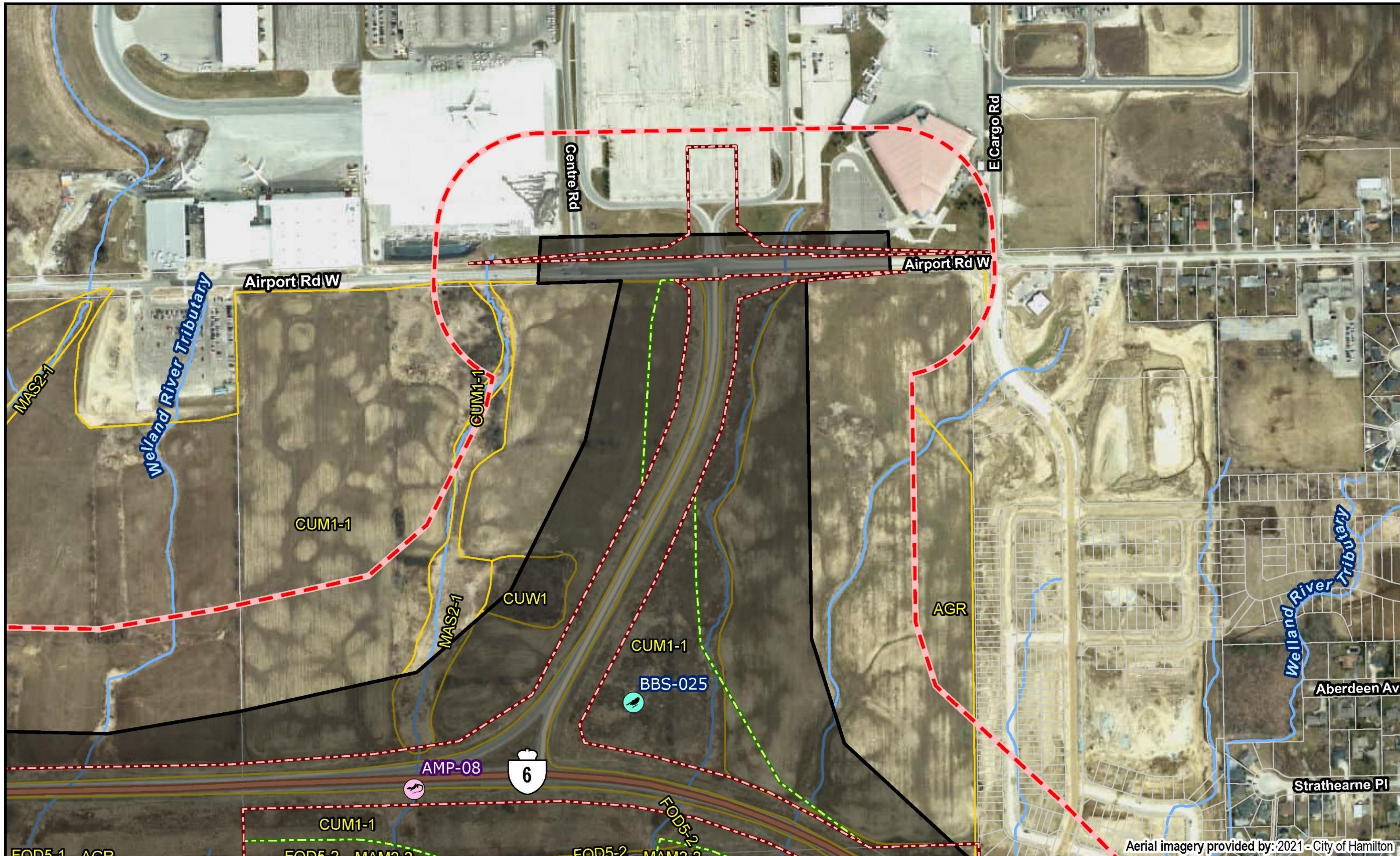
Figure: A-3.8



ELC DESCRIPTION

- **AGR:** Agricultural Field
- **CUM1-1:** Dry – Fresh Old Field Cultural Meadow
- **CUW1:** Mineral Cultural Woodland Ecosite
- **FOD5-1:** Dry - Fresh Sugar Maple Deciduous Forest
- **FOD5-2:** Dry - Fresh Sugar Maple - Beech Deciduous Forest
- **MAM2-2:** Reed-canary Grass Mineral Meadow Marsh
- **MAS2-1:** Cattail Mineral Shallow Marsh

LEGEND

Project Components

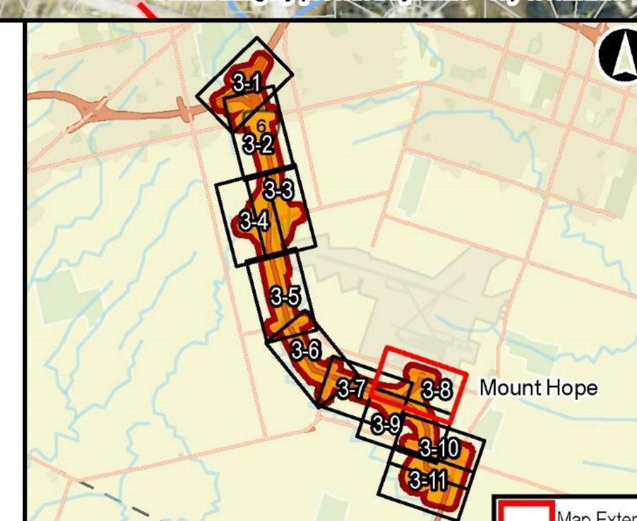
- Study Area - 120 m
- Preliminary Design Construction Disturbance Area
- 1987 E.A. Designated Right-of-Way
- Existing M.T.O. Right-of-Way

Survey Locations and Ecological Land Classifications

- Breeding Bird Survey Location
- Amphibian Call Survey Station
- Ecological Land Classification

General Features

- Primary or 400 Series Highway
- District, County, or Regional Road
- Property Limit
- Watercourse



Preliminary Design for Highway 6 South Widening from Highway 403 to Upper James Street

Ecological Land Classifications and Survey Locations

0 50 100 200 300 m

NAD 1983 UTM Zone 17N

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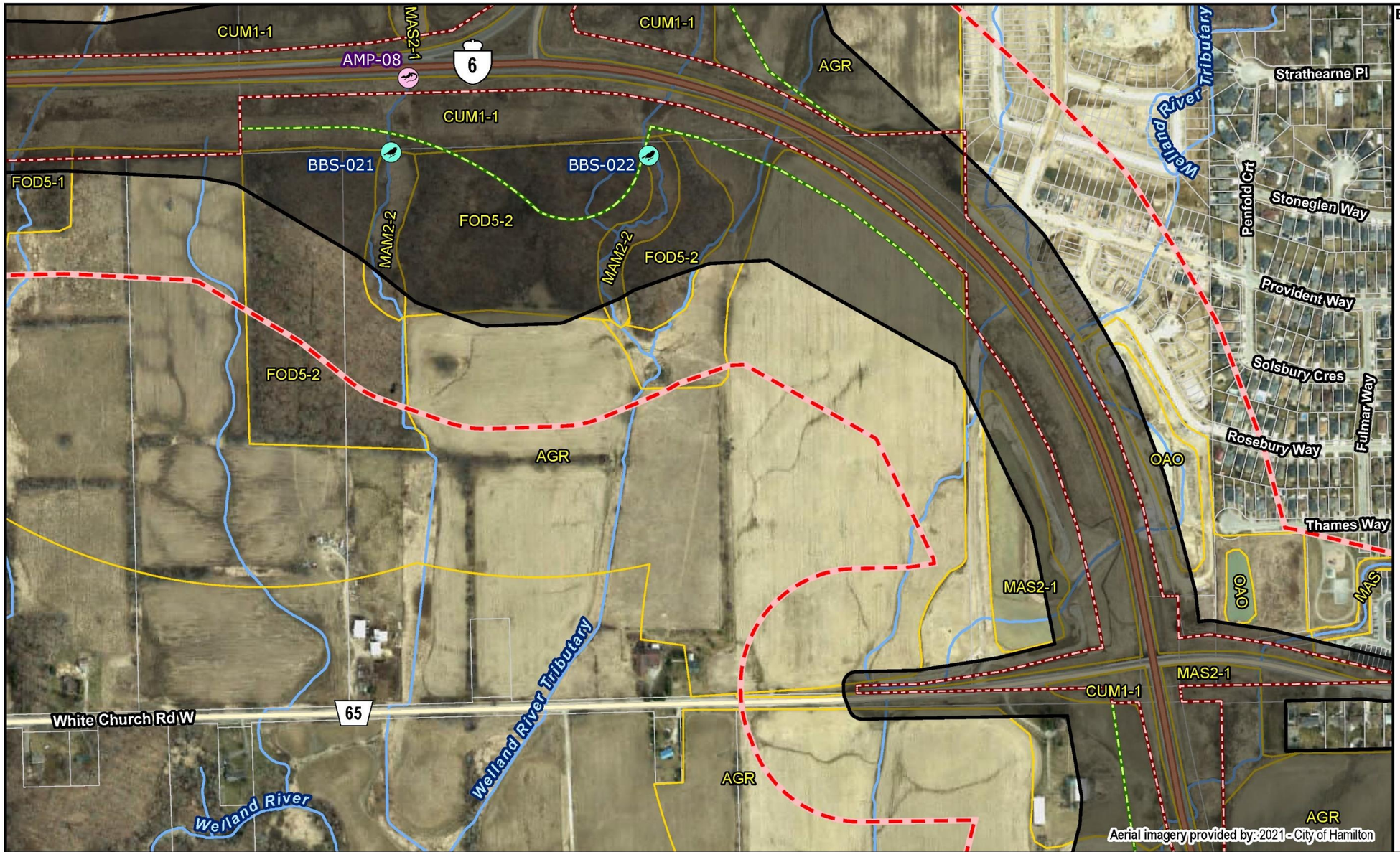


ELC DESCRIPTION

AGR: Agricultural Field

CUM1-1: Dry – Fresh Old Field Cultural Meadow

FOD5-1: Dry - Fresh Sugar Maple Deciduous Forest

FOD5-2: Dry - Fresh Sugar Maple - Beech Deciduous Forest

MAM2-2: Reed-canary Grass Mineral Meadow Marsh

MAS: Shallow Marsh

MAS2-1: Cattail Mineral Shallow Marsh

OAO: Open Aquatic Ecosite

LEGEND

Project Components

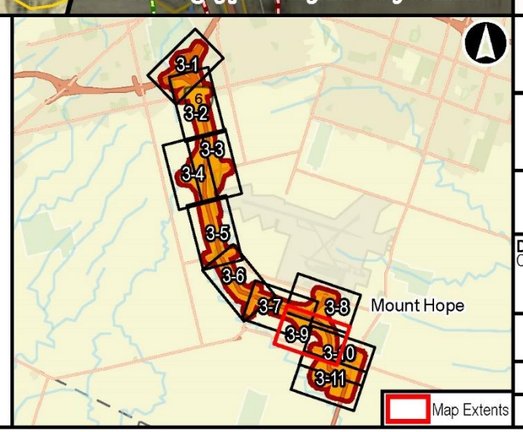
- Study Area - 120 m
- Preliminary Design Construction Disturbance Area
- 1987 E.A. Designated Right-of-Way
- Existing M.T.O. Right-of-Way

Survey Locations and Ecological Land Classifications

- Breeding Bird Survey Location
- Amphibian Call Survey Station
- Ecological Land Classification

General Features

- Primary or 400 Series Highway
- District, County, or Regional Road
- Property Limit
- Watercourse



Preliminary Design for Highway 6 South Widening from Highway 403 to Upper James Street

Ecological Land Classifications and Survey Locations

0 50 100 200 300 m

NAD 1983 UTM Zone 17N

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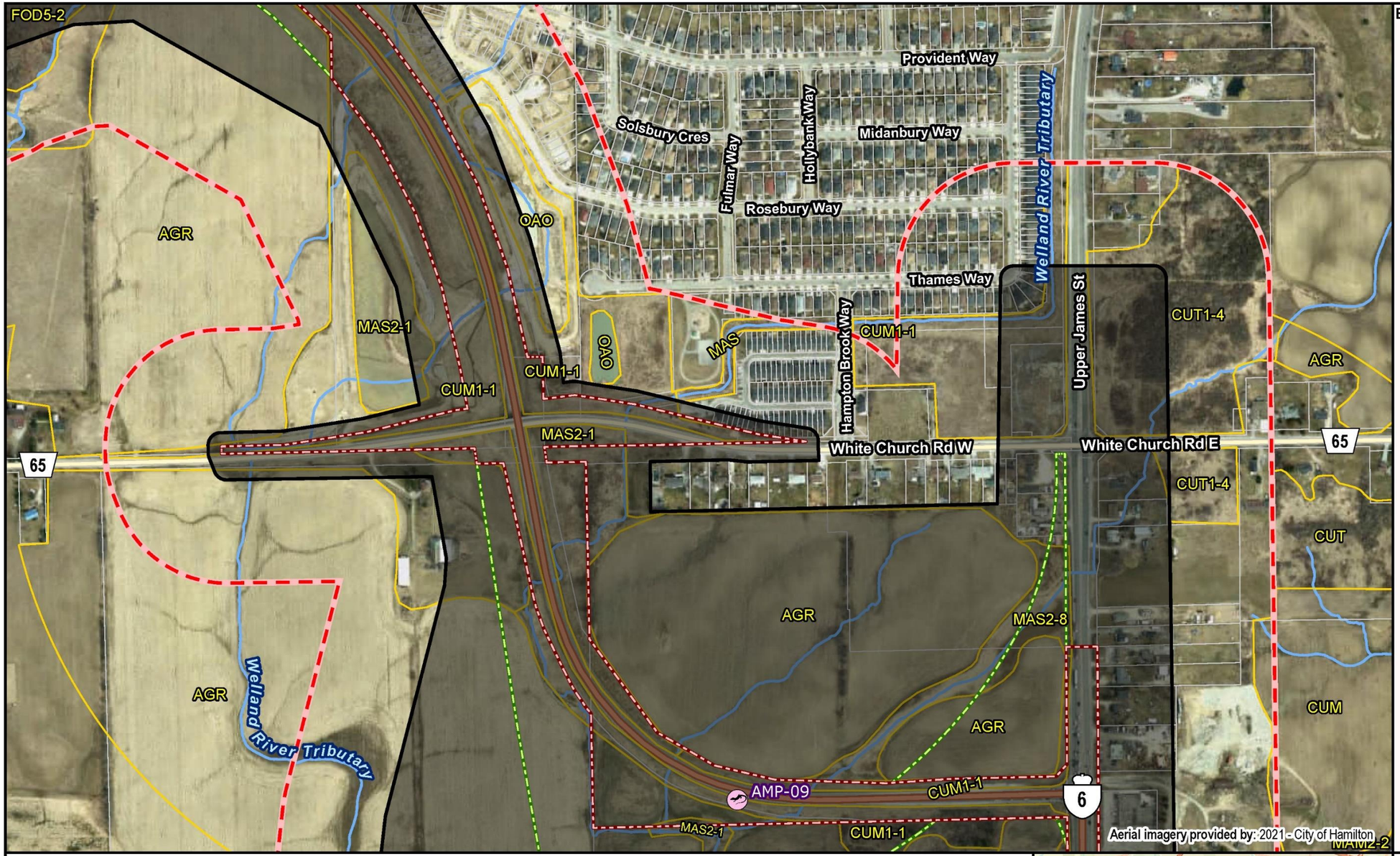
Figure: A-3.10



ELC DESCRIPTION

AGR: Agricultural Field

CUM: Cultural Meadow

CUM1-1: Dry – Fresh Old Field Cultural Meadow

CUT: Cultural Thicket

CUT1-4: Gray Dogwood Cultural Thicket

FOD5-2: Dry - Fresh Sugar Maple - Beech Deciduous Forest

MAS: Shallow Marsh

MAS2-1: Cattail Mineral Shallow Marsh

MAS2-8: Rice Cut-grass Mineral Shallow Marsh

OAO: Open Aquatic Ecosite

LEGEND

Project Components

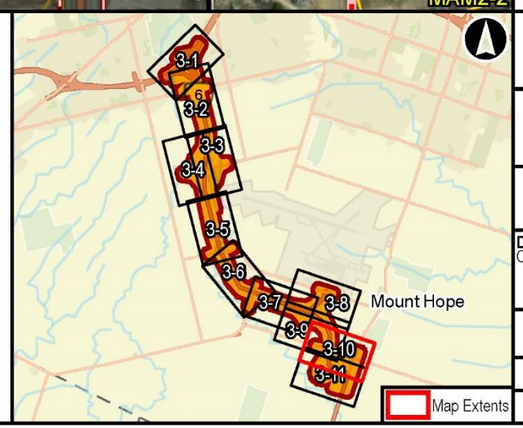
- Study Area - 120 m
- Preliminary Design Construction Disturbance Area
- 1987 E.A. Designated Right-of-Way
- Existing M.T.O. Right-of-Way

Survey Locations and Ecological Land Classifications

- Amphibian Call Survey Station
- Ecological Land Classification

General Features

- Primary or 400 Series Highway
- District, County, or Regional Road
- Property Limit
- Watercourse



Preliminary Design for Highway 6 South Widening from Highway 403 to Upper James Street

Ecological Land Classifications and Survey Locations

0 50 100 200 300 m

NAD 1983 UTM Zone 17N

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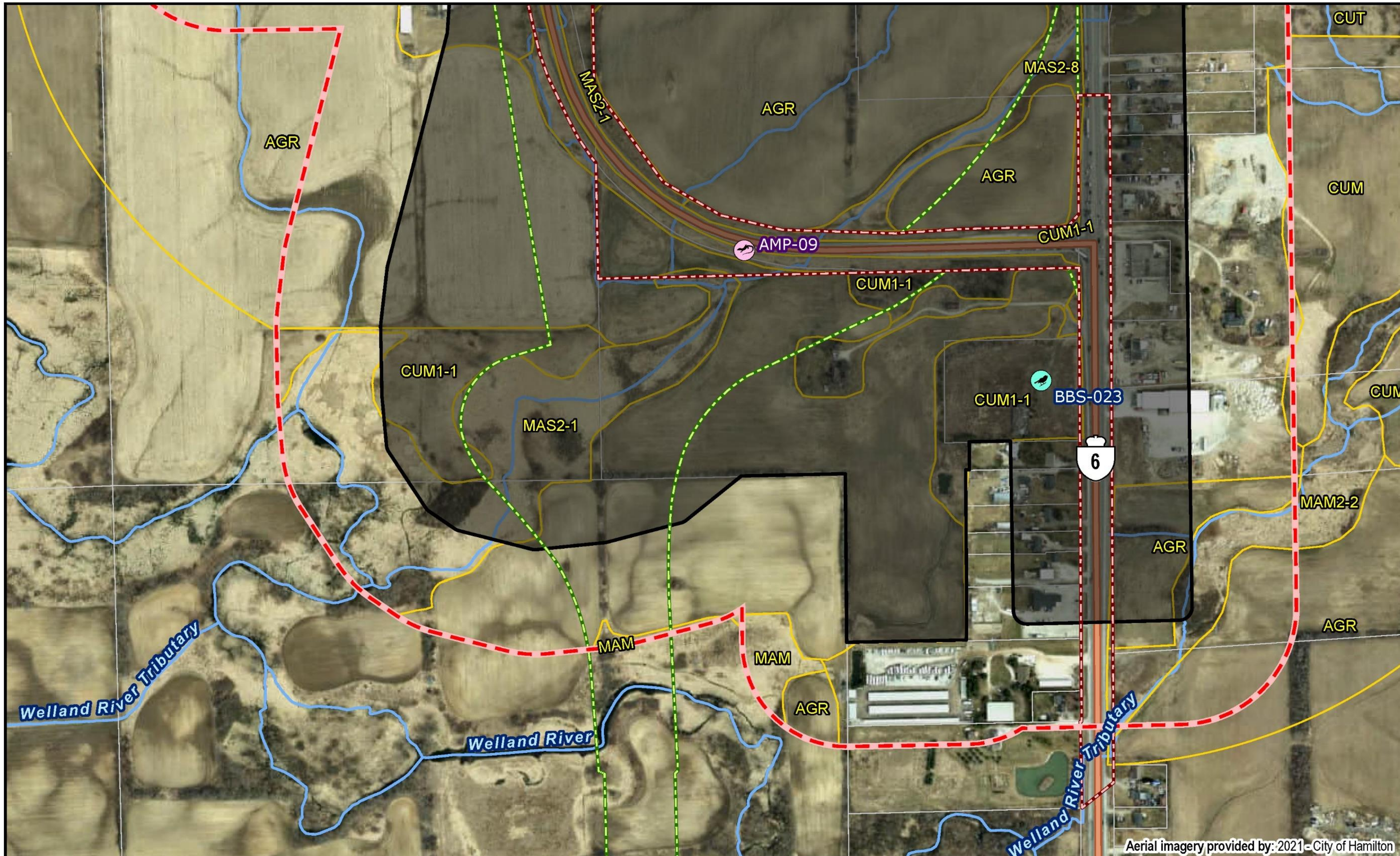
Figure: A-3.11



ELC DESCRIPTION

AGR: Agricultural Field
CUM: Cultural Meadow
CUM1-1: Dry – Fresh Old Field Cultural Meadow
MAM: Meadow Marsh
MAM2-2: Reed-canary Grass Mineral Meadow Marsh
MAS2-1: Cattail Mineral Shallow Marsh
MAS2-8: Rice Cut-grass Mineral Shallow Marsh

LEGEND

Project Components

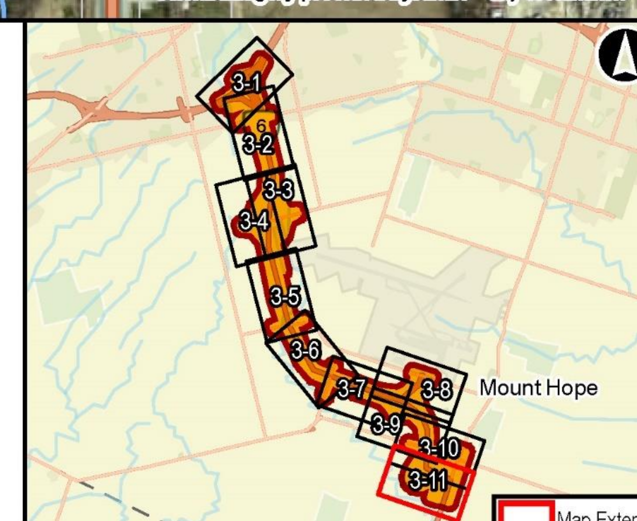
Study Area - 120 m
Preliminary Design Construction Disturbance Area
1987 E.A. Designated Right-of-Way
Existing M.T.O. Right-of-Way

Survey Locations and Ecological Land Classifications

Breeding Bird Survey Location
Amphibian Call Survey Station
Ecological Land Classification

General Features

Primary or 400 Series Highway
Property Limit
Watercourse



Preliminary Design for Highway 6 South Widening from Highway 403 to Upper James Street

Ecological Land Classifications and Survey Locations

0 50 100 200 300 m
NAD 1983 UTM Zone 17N

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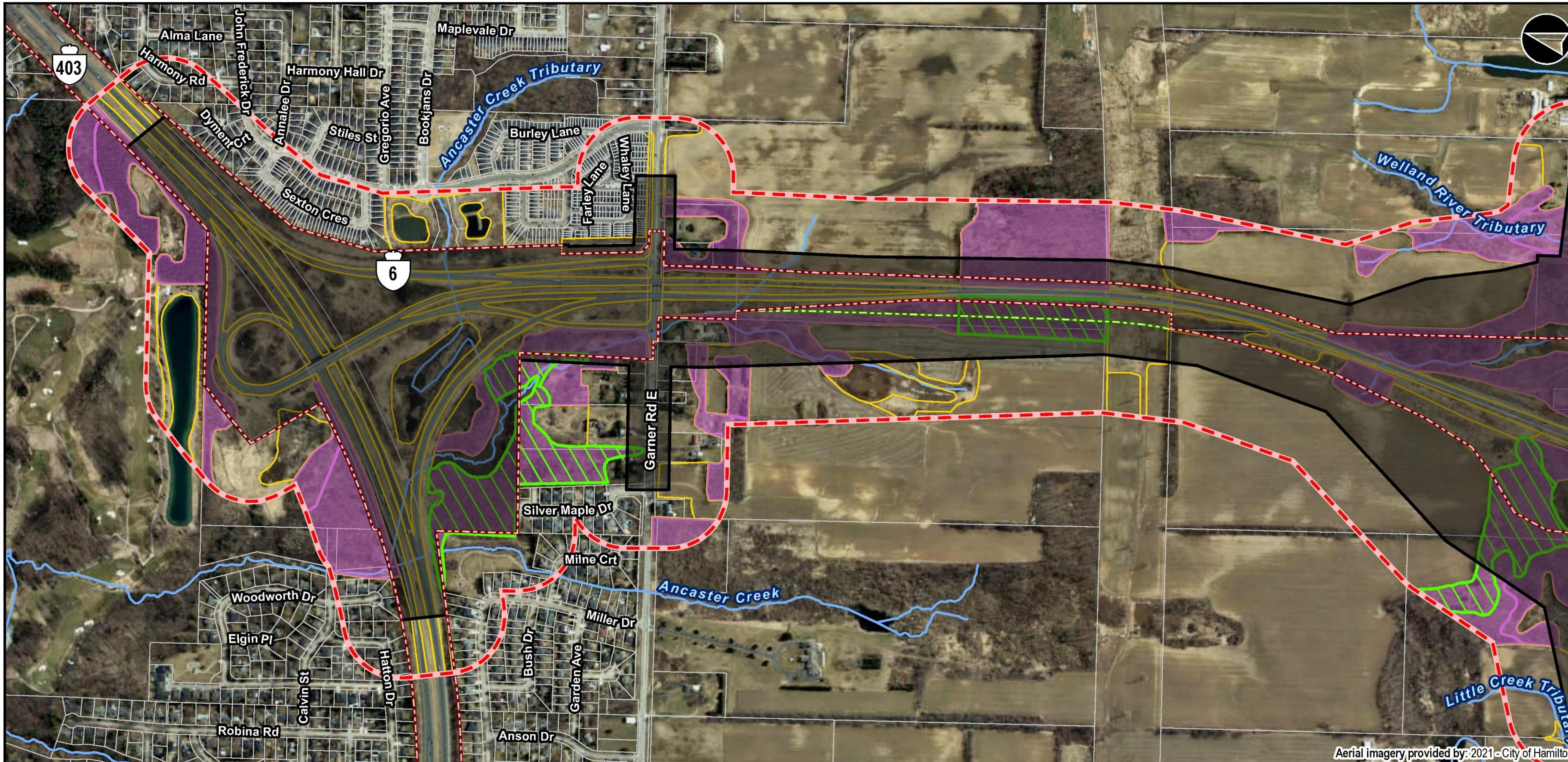


LEGEND

Project Components

- Study Area - 120 m
- Preliminary Design Construction Disturbance Area
- Existing M.T.O. Right-of-Way
- 1987 E.A. Designated Right-of-Way

Species at Risk Habitat

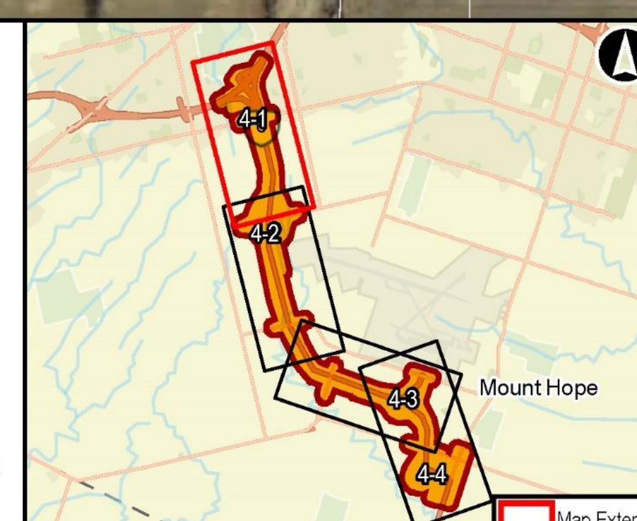
- Confirmed Butternut Habitat
- Candidate Bat Species at Risk Habitat

General Features

- Watercourse
- Property Limit

Note:

- All agricultural fields within the Study Area may provide suitable habitat for Bobolink or Eastern Meadowlark depending on the crops planted that year (i.e. wheat).
- As a detailed tree inventory was not completed for the ROW, any moist forest (FOD6, FOD7, FOD8 and FOD9), swamp or swamp thicket community where black ash was not observed is considered candidate habitat for black ash. Additionally, any cultural thicket, cultural woodland or forest community where butternut or American chestnut was not observed is considered candidate habitat.



Preliminary Design for Highway 6 South Widening from Highway 403 to Upper James Street

Species at Risk (S.A.R.) Habitat

0 100 200 400 600 M

NAD 1983 UTM Zone 17N

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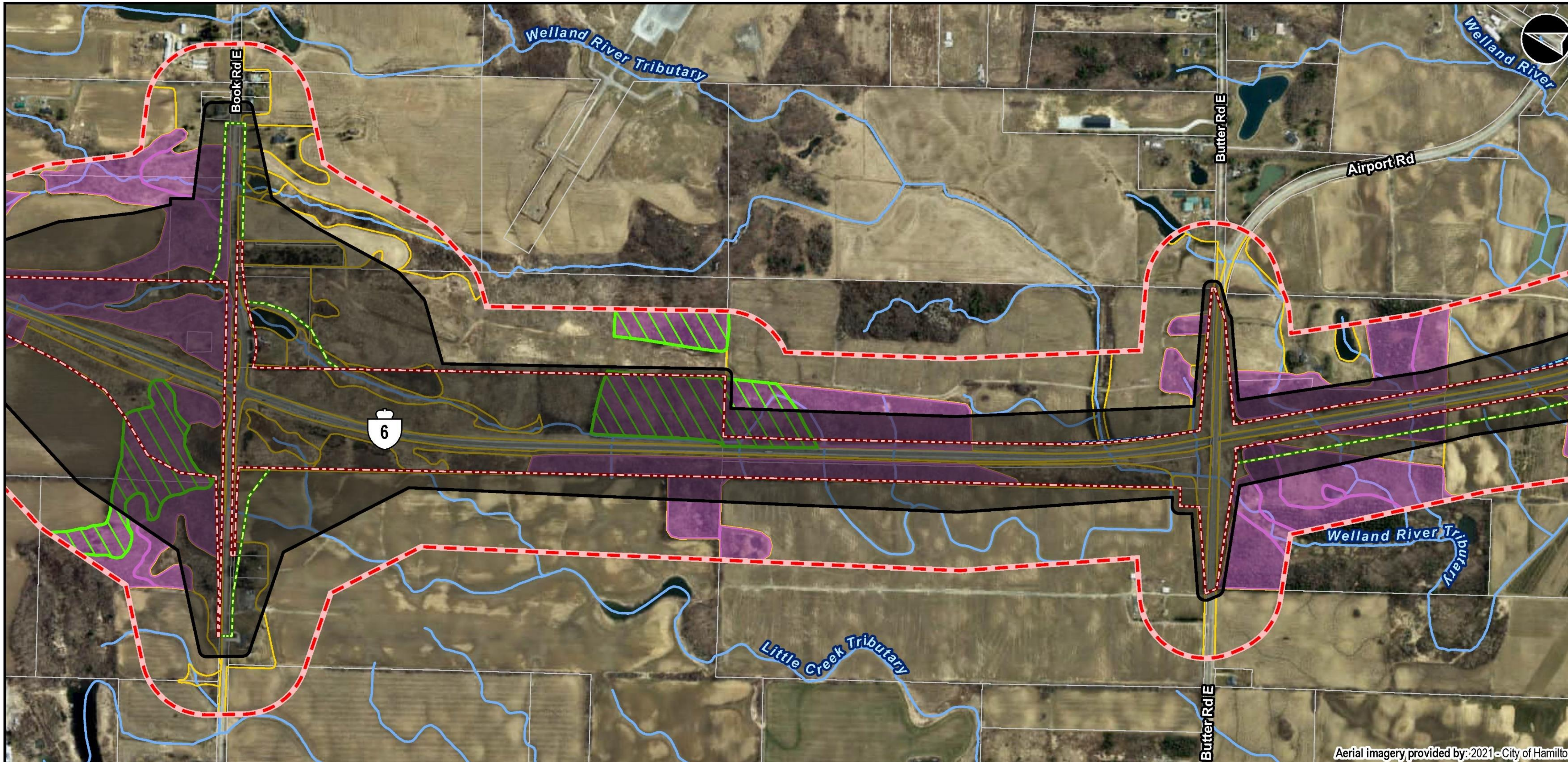
Figure: A-3.13



LEGEND

Project Components

- Study Area - 120 m
- Preliminary Design Construction Disturbance Area
- Existing M.T.O. Right-of-Way
- 2022 Preliminary Design Additional Property Requirements
- 1987 E.A. Designated Right-of-Way

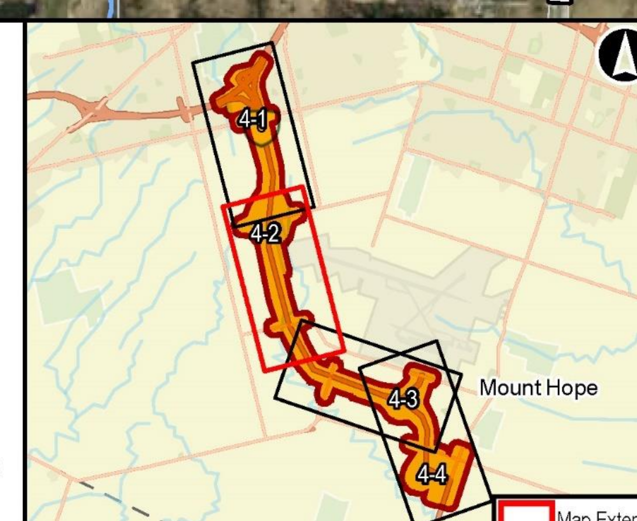
Species at Risk Habitat

- Confirmed Butternut Habitat
- Candidate Bat Species at Risk Habitat

General Features

- Watercourse
- Property Limit

Note:
- All agricultural fields within the Study Area may provide suitable habitat for Bobolink or Eastern Meadowlark depending on the crops planted that year (i.e. wheat).
- As a detailed tree inventory was not completed for the ROW, any moist forest (FOD6, FOD7, FOD8 and FOD9), swamp or swamp thicket community where black ash was not observed is considered candidate habitat for black ash. Additionally, any cultural thicket, cultural woodland or forest community where butternut or American chestnut was not observed is considered candidate habitat.



Preliminary Design for Highway 6 South Widening from Highway 403 to Upper James Street

Species at Risk (S.A.R.) Habitat

0 100 200 400 600 M

NAD 1983 UTM Zone 17N

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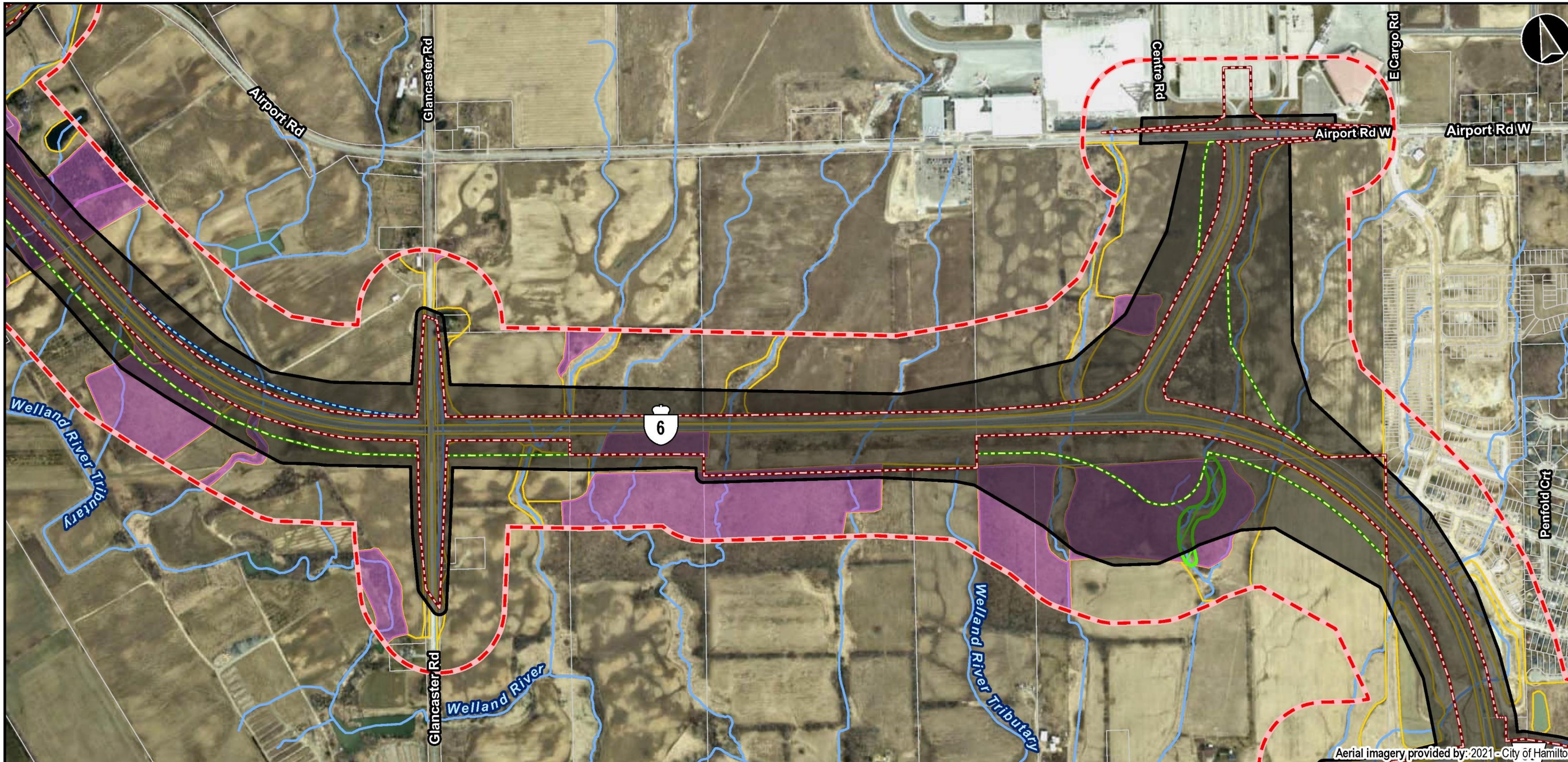


LEGEND

Project Components

- Study Area - 120 m
- Preliminary Design Construction Disturbance Area
- Existing M.T.O. Right-of-Way
- 2022 Preliminary Design Additional Property Requirements
- 1987 E.A. Designated Right-of-Way

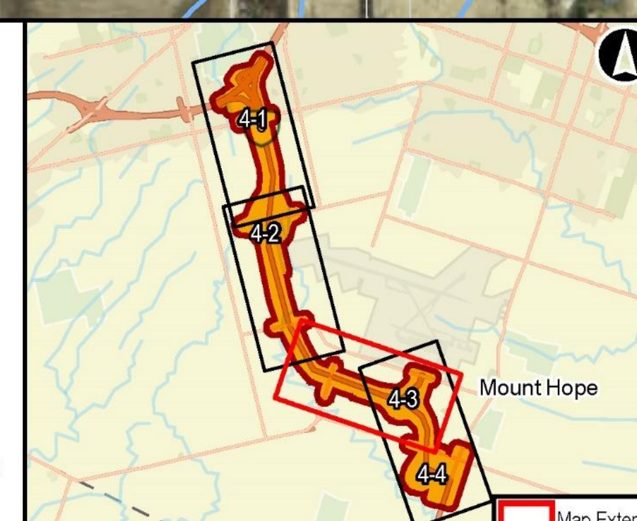
Species at Risk Habitat

- Confirmed Butternut Habitat
- Candidate Bat Species at Risk Habitat

General Features

- Watercourse
- Property Limit

Note:
- All agricultural fields within the Study Area may provide suitable habitat for Bobolink or Eastern Meadowlark depending on the crops planted that year (i.e. wheat).
- As a detailed tree inventory was not completed for the ROW, any moist forest (FOD6, FOD7, FOD8 and FOD9), swamp or swamp thicket community where black ash was not observed is considered candidate habitat for black ash. Additionally, any cultural thicket, cultural woodland or forest community where butternut or American chestnut was not observed is considered candidate habitat.



Preliminary Design for Highway 6 South Widening from Highway 403 to Upper James Street

Species at Risk (S.A.R.) Habitat

0 100 200 400 600 M

NAD 1983 UTM Zone 17N

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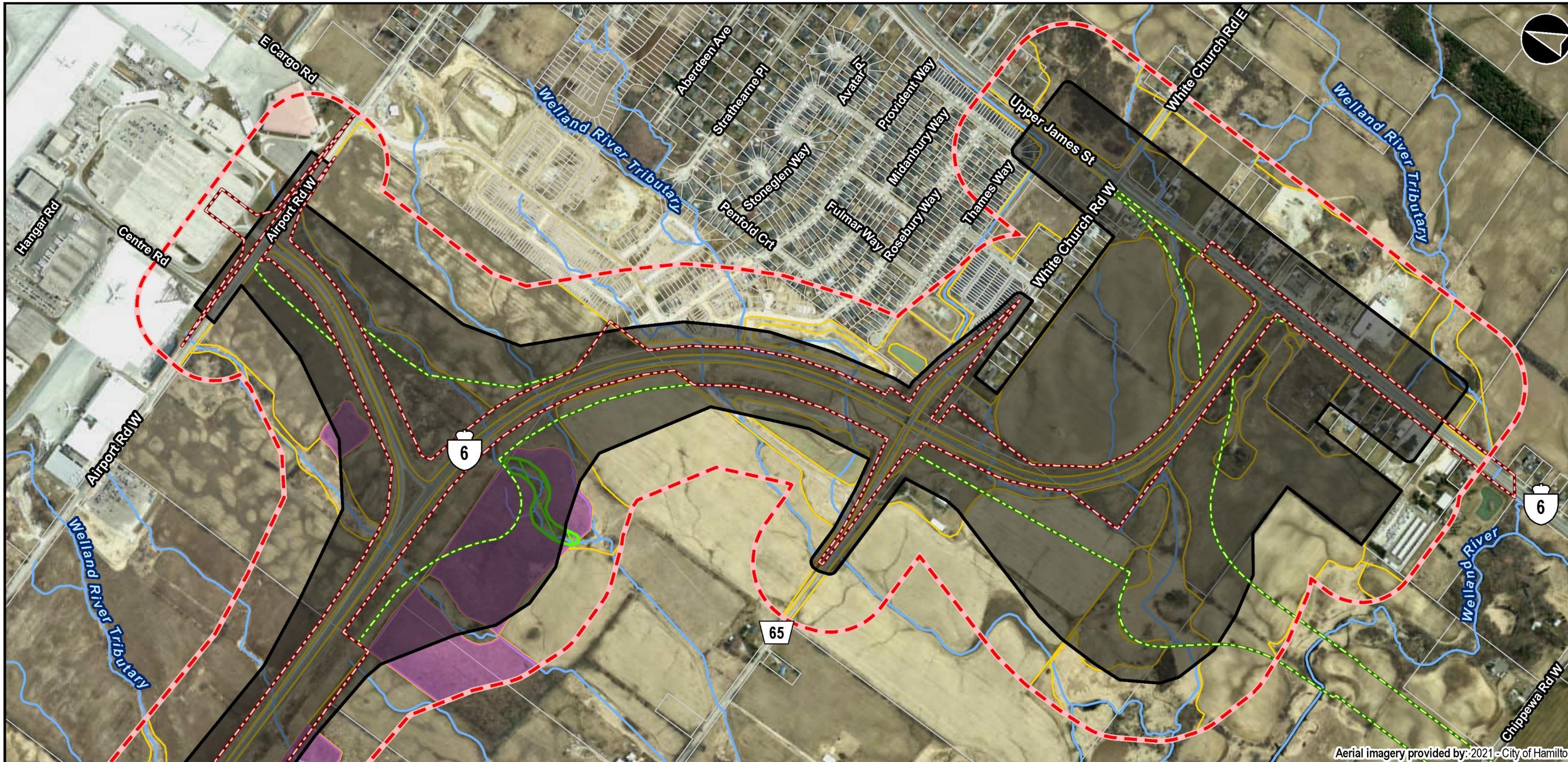
Figure: A-3.15



LEGEND

Project Components

- Study Area - 120 m
- Preliminary Design Construction Disturbance Area
- Existing M.T.O. Right-of-Way
- 1987 E.A. Designated Right-of-Way

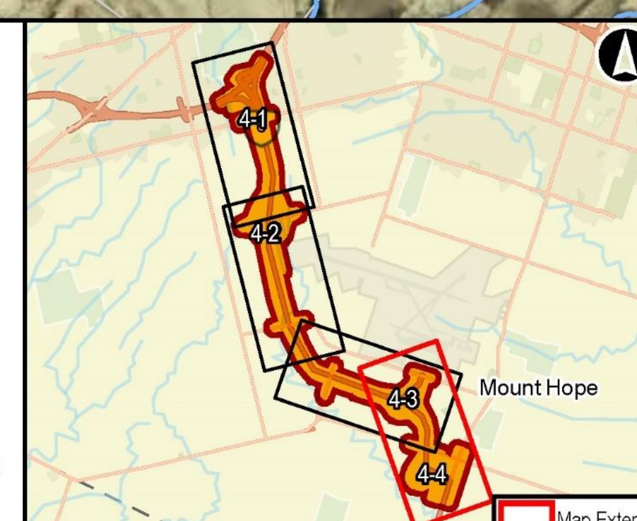
Species at Risk Habitat

- Confirmed Butternut Habitat
- Candidate Bat Species at Risk Habitat

General Features

- Watercourse
- Property Limit

Note:
- All agricultural fields within the Study Area may provide suitable habitat for Bobolink or Eastern Meadowlark depending on the crops planted that year (i.e. wheat).
- As a detailed tree inventory was not completed for the ROW, any moist forest (FOD6, FOD7, FOD8 and FOD9), swamp or swamp thicket community where black ash was not observed is considered candidate habitat for black ash. Additionally, any cultural thicket, cultural woodland or forest community where butternut or American chestnut was not observed is considered candidate habitat.



Preliminary Design for Highway 6 South Widening from Highway 403 to Upper James Street

Species at Risk (S.A.R.) Habitat

0 100 200 400 600 M

NAD 1983 UTM Zone 17N

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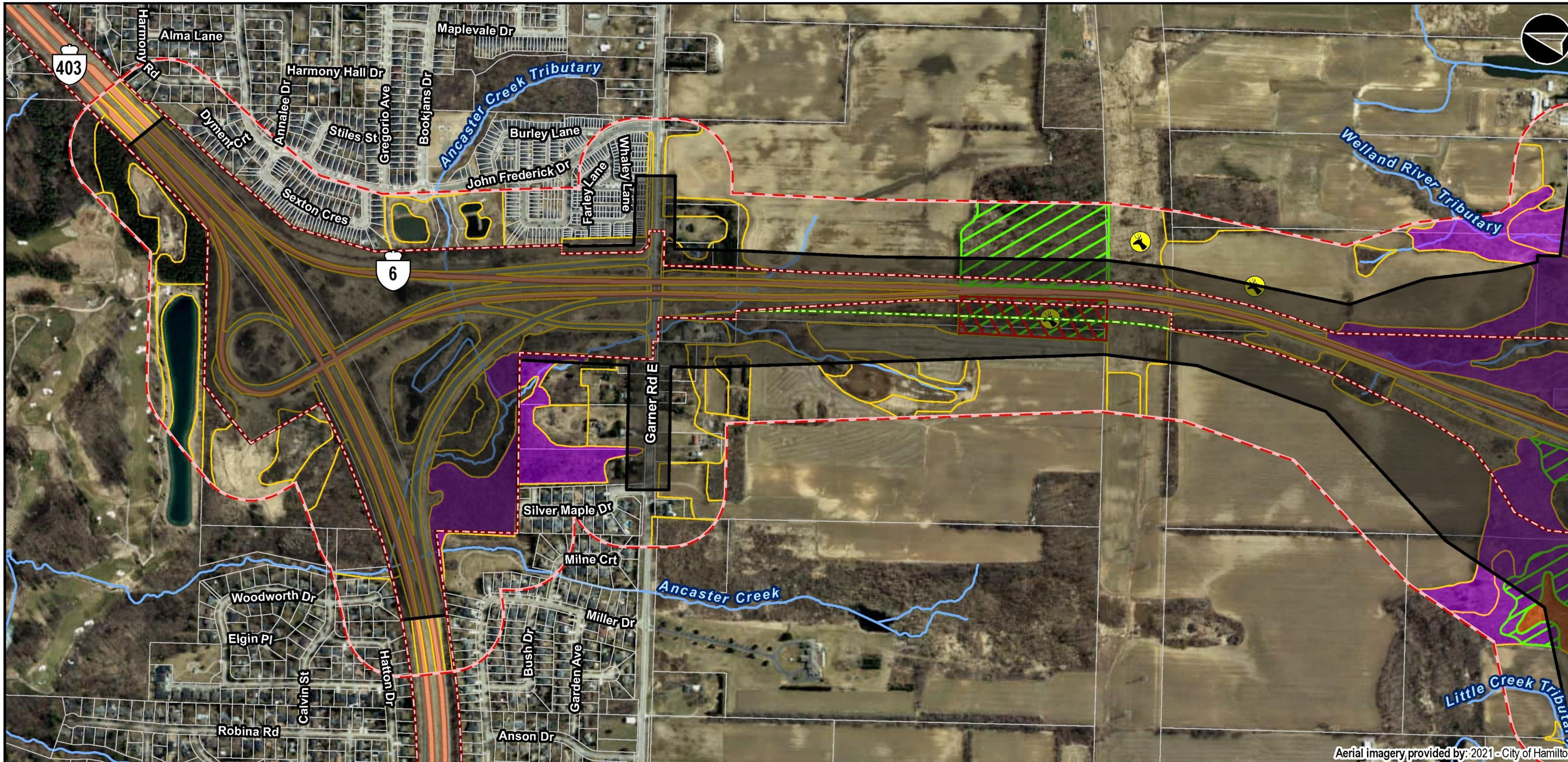
Figure: A-3.16



LEGEND

Study Area - 120 m

Preliminary Design Construction Disturbance Area

1987 E.A. Designated Right-of-Way

Existing M.T.O. Right-of-Way

General Features

Primary or 400 Series Highway

Property Limit

Watercourse

Ecological Land Classifications

Confirmed Significant Wildlife Habitat (S.W.H.)

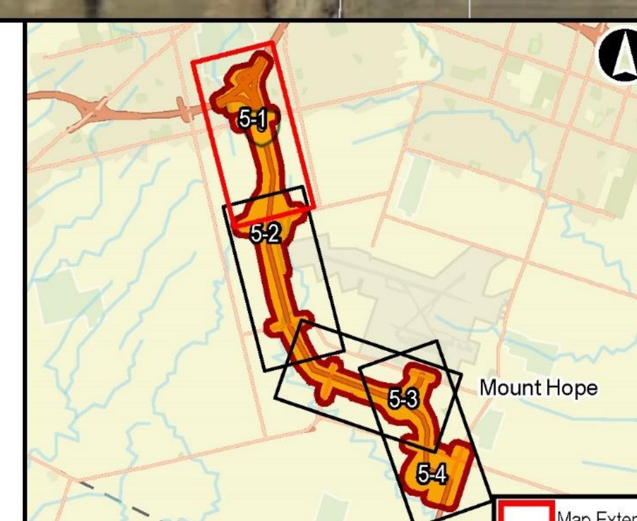
Evidence of White-tailed Deer

Spined Micrathena (S3S4)

Rare Vegetation Community

Eastern Wood-pewee (SC)

Amphibian Breeding - Wetlands



Preliminary Design for Highway 6 South Widening from Highway 403 to Upper James Street

Confirmed Significant Wildlife Habitat (S.W.H.)

0 100 200 400 600 M

NAD 1983 UTM Zone 17N

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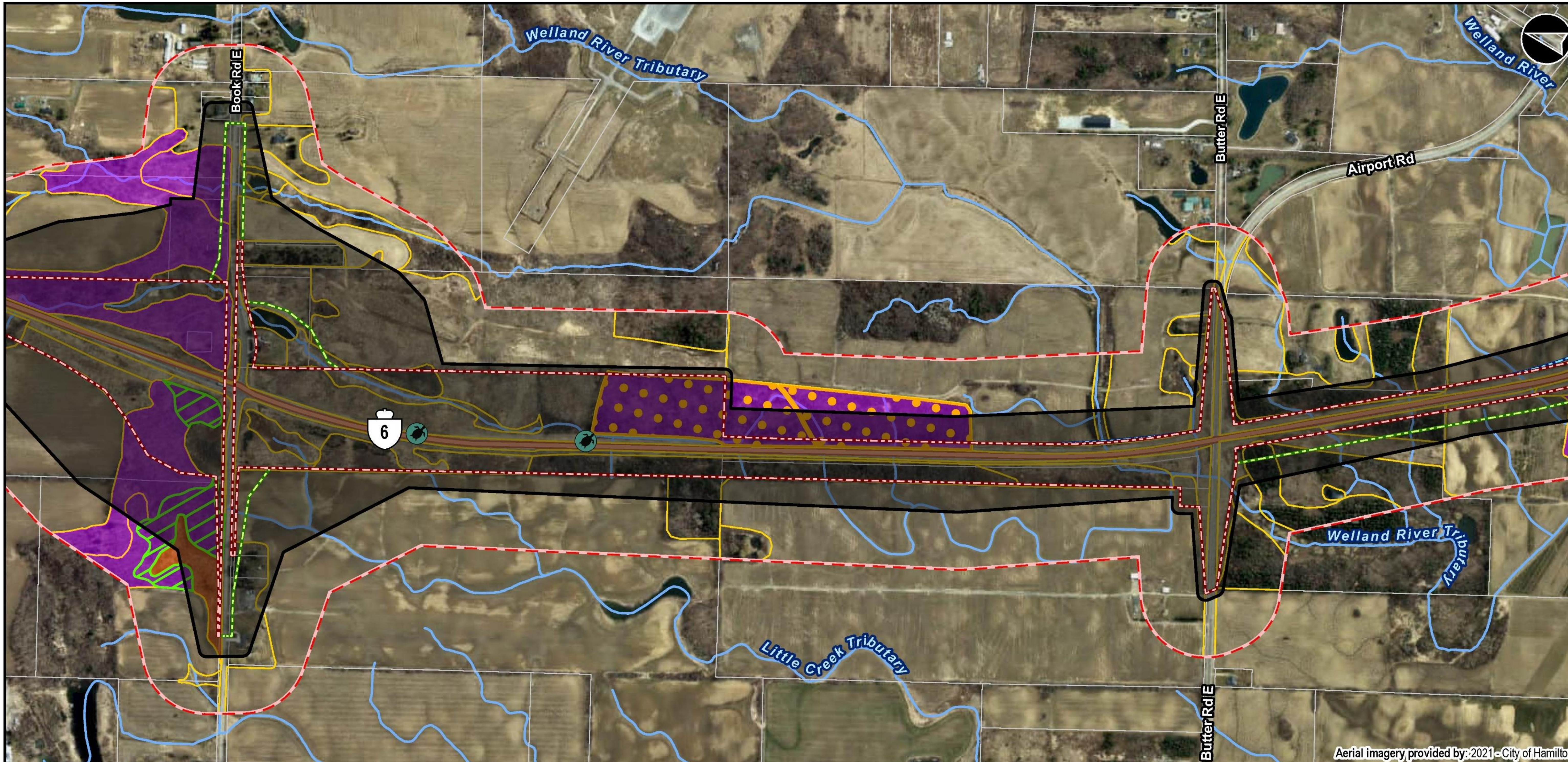


LEGEND

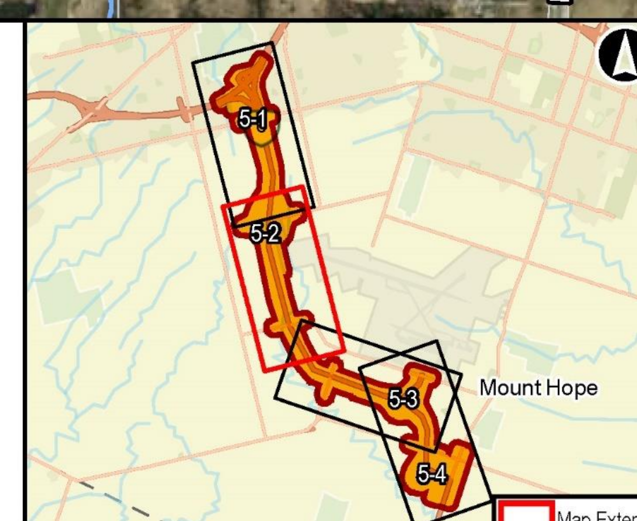
- Study Area - 120 m
- Preliminary Design Construction Disturbance Area
- 2022 Preliminary Design Additional Property Requirements
- 1987 E.A. Designated Right-of-Way
- Existing M.T.O. Right-of-Way

General Features

- Primary or 400 Series Highway
- Property Limit
- Watercourse
- Ecological Land Classifications

Confirmed Significant Wildlife Habitat (S.W.H.)

- Snapping Turtle (SC; Roadkill)
- Rare Vegetation Community
- Eastern Wood-pewee (SC)
- Wood Thrush (SC)
- Amphibian Breeding - Wetlands



Preliminary Design for Highway 6 South Widening from Highway 403 to Upper James Street

Confirmed Significant Wildlife Habitat (S.W.H.)

0 100 200 400 600 M

NAD 1983 UTM Zone 17N

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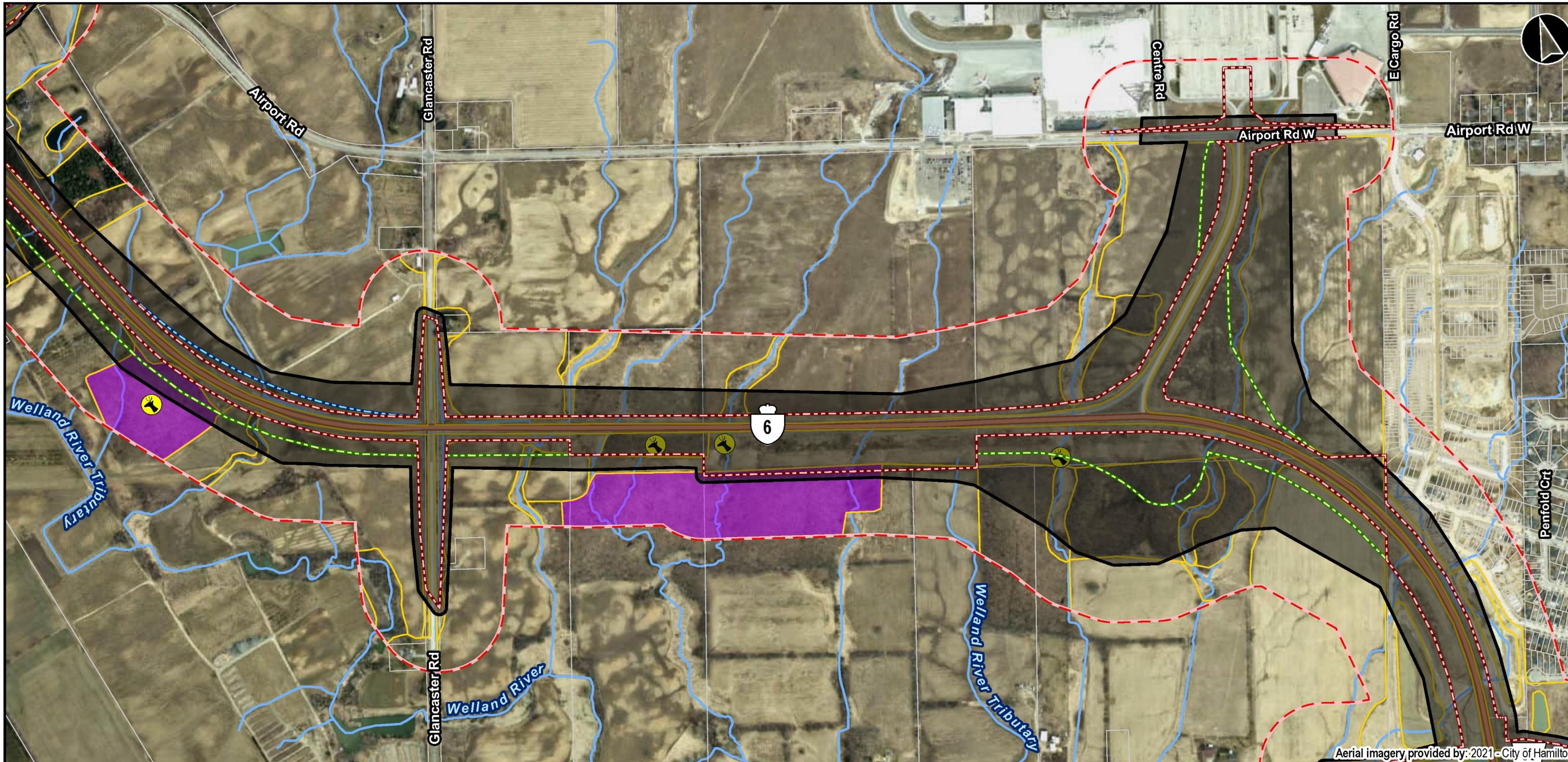
Figure: A-3.18



LEGEND

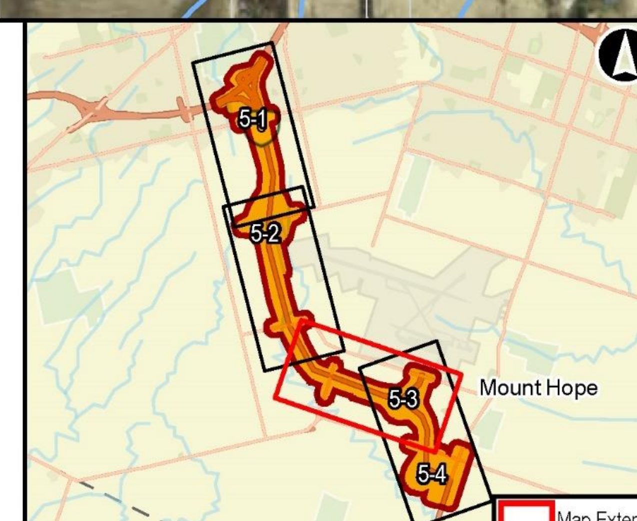
- Study Area - 120 m
- Preliminary Design Construction Disturbance Area
- 2022 Preliminary Design Additional Property Requirements
- 1987 E.A. Designated Right-of-Way
- Existing M.T.O. Right-of-Way

General Features

- Primary or 400 Series Highway
- District, County, or Regional Road
- Property Limit
- Watercourse
- Ecological Land Classifications

Confirmed Significant Wildlife Habitat (S.W.H.)

- Evidence of White-tailed Deer
- Eastern Wood-pewee (SC)
- Differential Grasshopper (S3)



Preliminary Design for Highway 6 South Widening from Highway 403 to Upper James Street

Confirmed Significant Wildlife Habitat (S.W.H.)

0 100 200 400 600 M

NAD 1983 UTM Zone 17N

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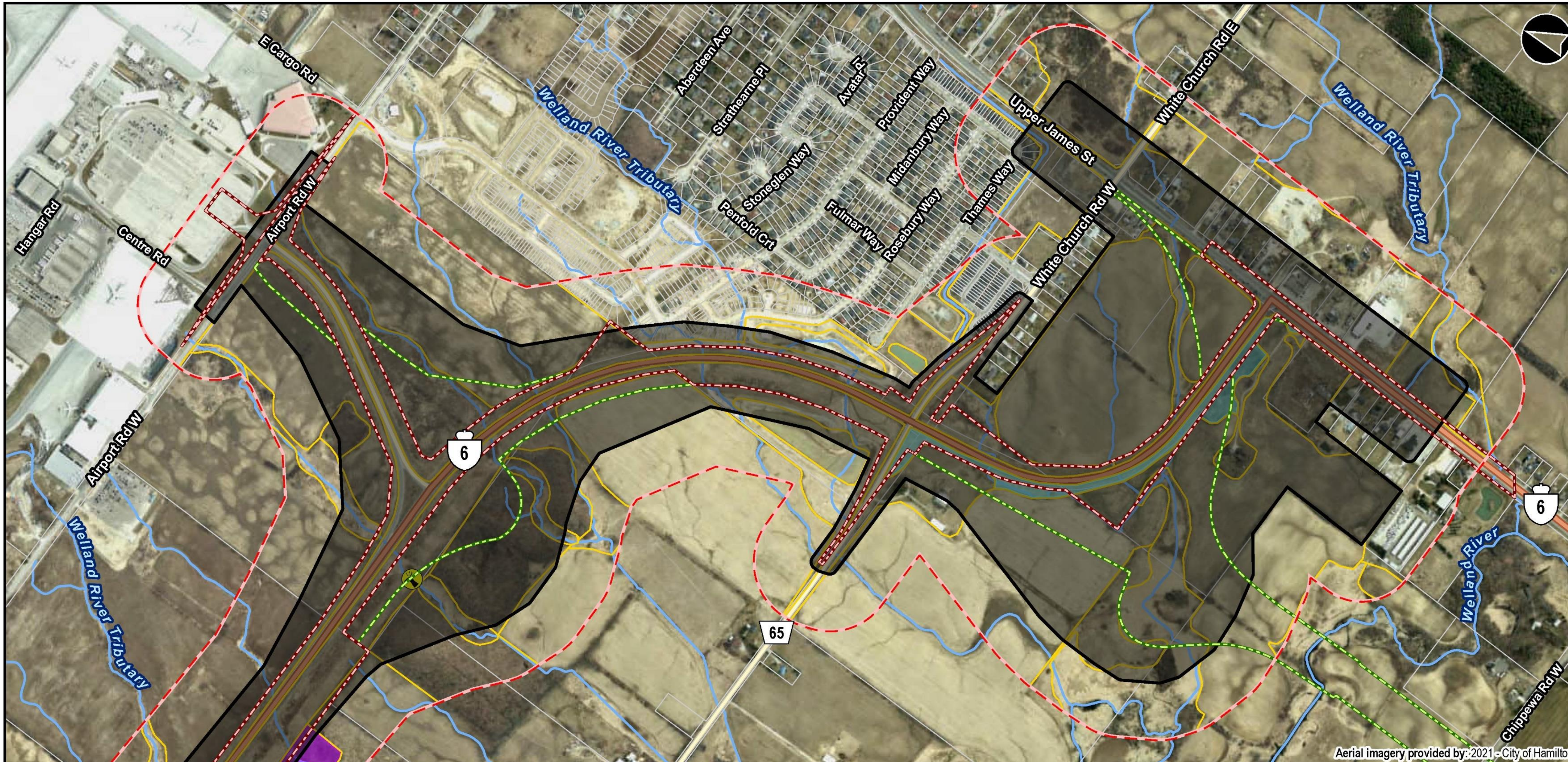
Figure: A-3.19



LEGEND

Study Area - 120 m

Preliminary Design Construction Disturbance Area

1987 E.A. Designated Right-of-Way

Existing M.T.O. Right-of-Way

General Features

Primary or 400 Series Highway

District, County, or Regional Road

Property Limit

Watercourse

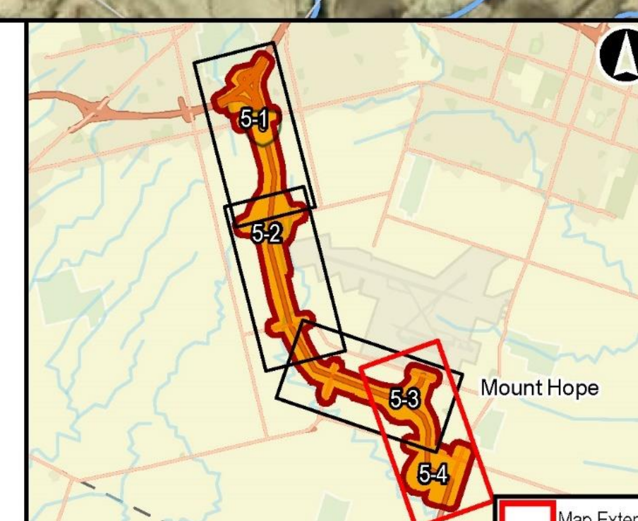
Ecological Land Classifications

Confirmed Significant Wildlife Habitat (S.W.H.)

Evidence of White-tailed Deer

Eastern Wood-pewee (SC)

Differential Grasshopper (S3)



Preliminary Design for Highway 6 South Widening from Highway 403 to Upper James Street

Confirmed Significant Wildlife Habitat (S.W.H.)

0 100 200 400 600 M

NAD 1983 UTM Zone 17N

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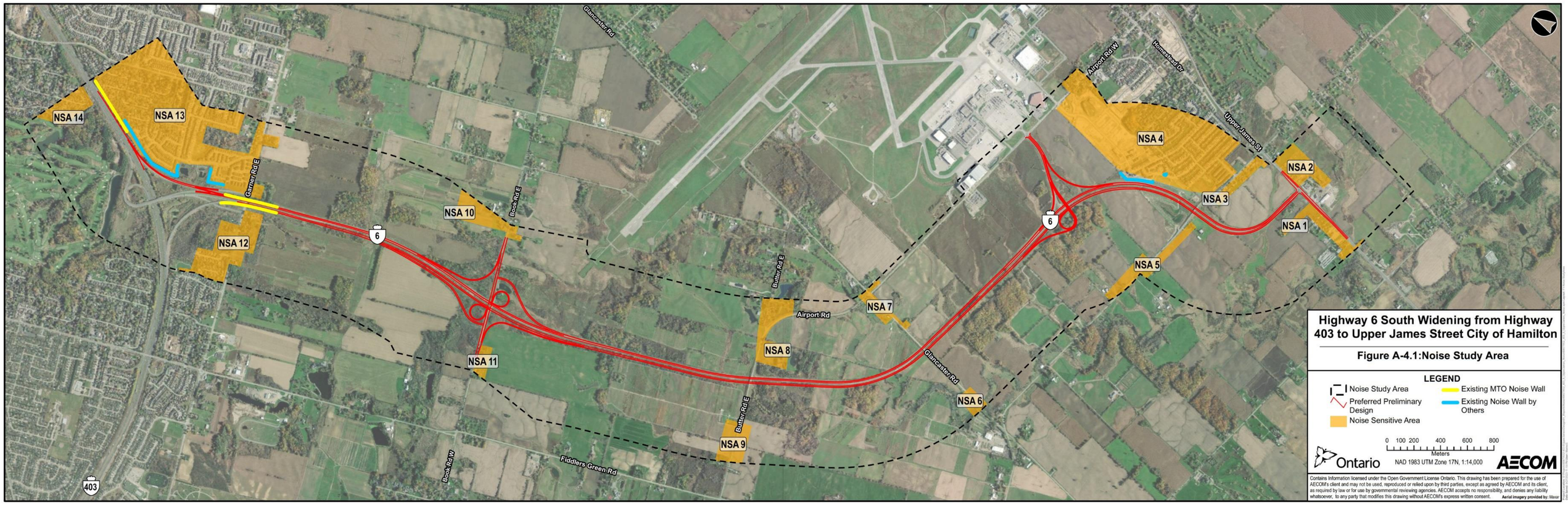
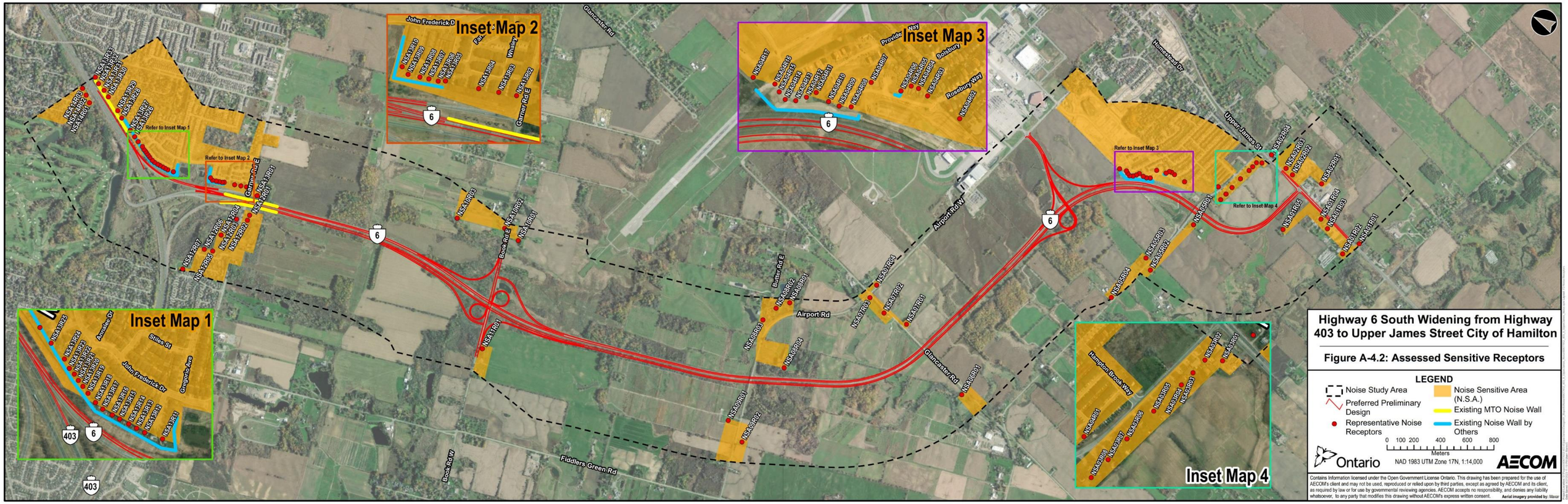
Noise





Highway 6 South Widening from Highway 403 to Upper James Street City of Hamilton

Figure A-4.2: Assessed Sensitive Receptors

LEGEND

- Noise Study Area
- Preferred Preliminary Design
- Representative Noise Receptors
- Noise Sensitive Area (N.S.A.)
- Existing MTO Noise Wall
- Existing Noise Wall by Others

0 100 200 400 600 800
Meters

Ontario

NAD 1983 UTM Zone 17N, 1:14,000

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Appendix B

Evaluation of Alternatives Tables

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Airport Connection Road Interchange Alternatives

Category	Factor	Indicator	Significance of Factor in Overall Evaluation	Significance of Category in Overall Evaluation	Assessment		
					Highway 6 South / Airport Connection Road Interchange Alternatives		
					Alternatives		
					Alternative 1 - Loop ramp	Alternative 2 - Diamond with roundabout	Alternative 3 - Extended loop ramp
Transportation and Cost	Traffic Operations and Safety	Intersection Operations - Future Level of Service in AM and PM Peaks (Poor to Very good)			●	◐	◕
					The Trumpet A configuration can handle high capacities of traffic and removes the need for intersections within the interchange with directional free flowing ramps. The intersection at Airport Road & Highway 6 Connector Ramp is shown to operate well over capacity during the AM peak hour even with new storage lanes at the highest approach movements (i.e., WBL, SBL, etc.). Under a signalized configuration with left-turn storage lanes at each approach, the intersection would operate at an overall LOS B with all movements operating at LOS C or better with v/c ratios above 0.76 during the AM peak hour and above 0.70 during the PM peak hour. Signal warrant will be conducted based on post-modelling adjusted volumes.	This configuration cannot handle the capacity of the other alternatives. However, under an all-way stop configuration, the ramp terminal intersection operates with excess capacity at LOS A with a maximum v/c ratio of 0.39 during the 2041 AM peak hour and at LOS A with a maximum v/c ratio of 0.30 during the 2041 PM peak hour. Roundabout to be assessed.	The Trumpet B configuration can handle high capacities of traffic and removes the need for intersections within the interchange. The intersection at Airport Road & Highway 6 Connector Ramp is shown to operate well over capacity during the AM peak hour even with new storage lanes at the highest approach movements (i.e., WBL, SBL, etc.). Under a signalized configuration with left-turn storage lanes at each approach, the intersection would operate at an overall LOS B with all movements operating at LOS C or better with v/c ratios above 0.76 during the AM peak hour and above 0.70 during the PM peak hour. Signal warrant will be conducted based on post-modelling adjusted volumes.
		Safety - Collision Reduction/Signage (Poor to Very Good)			●	◐	◔
					Realignment of Airport Connection Road allows the approach to the new structure to be perpendicular to Highway 6 and a tangential alignment enhances sight distance and safety. The relatively short weaving distance at the south leg of Airport Road & Highway 6 Connector Ramp will need to be assessed at the next stage to identify any potential safety concerns.	Realignment of Airport Connection Road allows the approach to the new structure to be perpendicular to Highway 6 and a tangential alignment enhances sight distance and safety. The intoduction of a roundabout offers more signage and collision reduction in comparison to signalized intersections. However, roundabouts are generally less compatible with cyclist and pedestrian traffic than signalized intersections. The relatively short weaving distance at the south leg of Airport Road & Highway 6 Connector Ramp will need to be assessed at the next stage to identify any potential safety concerns.	Loop off-ramp has a large radius which would be more desirable for trucks/heavy vehicles looking to access Airport Connection Road however Aiport Road relaignment is curvilinear over the structure which is less desirable from a safety perspective. However, the long length of the ramp may not be desirable for trucks/heavy vehicles. The relatively short weaving distance at the south leg of Airport Road & Highway 6 Connector Ramp will need to be assessed at the next stage to identify any potential safety concerns.
	Geometrics	Horizontal and Vertical Geometry, Sight Distances (Poor to Very Good)			●	●	●
					The interchange configuration consists of two single lane 340m radius directional off ramps, one single lane 250m radius directional on ramp and one single lane 55m radius loop on ramp.	This partial diamond interchange consists of two single lane directional off ramps (800m and 340m radii), two single lane directional on ramps (340m and 250m) and a 25m outer radius 2-lane roundabout.	The interchange configuration consists of one single lane 90m radius loop off ramp, one 1 single lane directional off ramps (340m radius) and two single lane directional on ramps (250m radii). Airport Connection Road and new structure are on a 600m radius curve.

Category	Factor	Indicator	Significance of Factor in Overall Evaluation	Significance of Category in Overall Evaluation	Assessment		
					Highway 6 South / Airport Connection Road Interchange Alternatives		
					Alternatives		
					Alternative 1 - Loop ramp	Alternative 2 - Diamond with roundabout	Alternative 3 - Extended loop ramp
Transportation and Cost	Constructability						
					Moderate construction complexity in comparison to the other 2 alternatives due to the need for 4 ramps, a new structure and realignment of Airport Connection Road.	Moderate to high construction complexity in comparison to the other 2 alternatives due to the need for 4 ramps, a new structure, realignment of Airport Connection Road and a new roundabout. A stop controlled or signalized intersection may be required on the west side of Highway 6.	High construction complexity in comparison to the other 2 alternatives due to the need for 4 ramps, a larger footprint, and curvilinear structure.
	Utilities	Impacts to Existing and Future Planned Utilities (Low to High)					
					Low (3) number of utility crossings will be impacted by the alternative's ramps, new structure, and road realignment.	Moderate (7) number of utility crossings will be impacted by the alternative's ramps, new structure, and road realignment.	Low (4) number of utility crossings will be impacted by the alternative's ramps, new structure, and road realignment
	Total Construction Cost ($)						
					Moderate to high-cost vs the other alternatives due to the number of ramps required, structure and road realignment, illumination needs and a signalized intersection	Lower cost vs other alternatives largely due to reduced ramp lengths and Illumination needs in comparison to the other alternatives. The addition of a 2-lane roundabout still doesn't drive the cost close to the other two alternatives.	Highest cost vs other alternatives largely due to the increased ramp lengths and illumination needs in comparison to the other alternatives.
	Transportation and Cost Summary						
					The three alternatives recommend interchanges at Airport Connection Road which results in enhanced capacity and serviceability for road users. Alternative 1, the Trumpet A configuration, is the interchange type that provides the most capacity and free flow serviceability for road users via the on/off ramps. Alternatives 3 also provides similar capacity however at a much larger footprint. Alternative 2, the diamond interchange, which has less capacity in comparison to the other configurations but minimizes the interchange footprint along the west side of Highway 6 considerably. Alternatives 1 and 3 allow for on/off ramp traffic free flow while Alternative 2 considers stop controlled/signalized intersections. Alternative 1 and 3 are similar from a constructability perspective while Alternative 2 reduces construction complexity by simplifying the on/off ramp configuration of the interchange on the west side of Highway 6. Due to the lower complexity of construction, Alternative 2 also has the lowest overall cost while Alternative 3 has the highest due to the additional ramp lengths and property requirement. Alternatives 1 and 3 impacts similar number of utilities however Alternative 2 impacts double the amount (7). Alternative 1 is preferred from a traffic operations and safety perspective and promotes a high level of constructability while optimizing utility impacts. In addition, this alternative is consistent with the recommendations from the 1987 approved environmental assessment. **In summary, Alternative 1 (Trumpet A) is the overall preferred alternative for improvements to the Highway 6/Airport Connection Road interchange.**		

Category	Factor	Indicator	Significance of Factor in Overall Evaluation	Significance of Category in Overall Evaluation	Assessment		
					Highway 6 South / Airport Connection Road Interchange Alternatives		
					Alternatives		
					Alternative 1 - Loop ramp	Alternative 2 - Diamond with roundabout	Alternative 3 - Extended loop ramp
Natural Environment	Fish and Fish Habitat	Length of Fish Habitat Impacted (m)			Approximately 600 m of potential indirect fish habitat associated with three crossings (all unnamed tributaries to Welland River). All other watercourse crossings within envelope of alternative are drainage features and are not likely to provide fish habitat.	Approximately 600 m of potential indirect fish habitat associated with three crossings (all unnamed tributaries to Welland River). All other watercourse crossings within envelope of alternative are drainage features and are not likely to provide fish habitat.	Approximately 820 m of potential indirect fish habitat associated with three crossings (all unnamed tributaries to Welland River). All other watercourse crossings within envelope of alternative are drainage features and are not likely to provide fish habitat.
		Aquatic Species at Risk (Low to High)			Low (no SAR records for impacted watercourses; however, Special Concern Species - Grass Pickerel identified in adjacent watercourses). Indirect fish habitat within area of impact could contribute to impacts on downstream SAR habitat.	Low (no SAR records for impacted watercourses; however, Special Concern Species - Grass Pickerel identified in adjacent watercourses). Indirect fish habitat within area of impact could contribute to impacts on downstream SAR habitat.	Low (no SAR records for impacted watercourses; however, Special Concern Species - Grass Pickerel identified in adjacent watercourses). Indirect fish habitat within area of impact could contribute to impacts on downstream SAR habitat.
	Terrestrial Habitat	Area of Terrestrial Ecosystems Impacted (vegetation and wildlife habitat)			Similar impact to ELC's as alternative 2 when construciton footprint of alternative 2 is considered.	Similar impact to ELC's as alternative 1 when construciton footprint of alternative 2 is considered.	Most impact to ELC's in all quadrants.
		Terrestrial Species at Risk habitat			Impact to candidate bat SAR and candidate Jefferson Salamander habitat.	Impact to candidate bat SAR and candidate Jefferson Salamander habitat.	More impact to candidate bat SAR and Jefferson Salamander habitat than Altenrtiaves 1 and 2.
		Potential Impacts to Designated Natural Areas (i.e., PSW)			Less impact to Locally Significant Wetlands in northwest quadrant.	Less impact to Locally Significant Wetlands in northwest quadrant.	More impact to Locally Significant Wetlands in northwest and southeast quadrants.
	Groundwater	Susceptibility to Construction Activities			Within highly vulnerable aquifer and encompasses less significant groundwater recharge area space. Is also within a source water protection area.	Within highly vulnerable aquifer and encompasses less significant groundwater recharge area space. Is also within a source water protection area.	Within highly vulnerable aquifer and encompasses more significant groundwater recharge area space. Is also within a source water protection area.
	Surface Water	Susceptibility to Construction Activities			Low to medium impact to existing drainage pattern. Surface water/drainage system may need to be modified south of the interchange.	Less impact to existing surface drainage pattern particularly to surface water south of the interchange.	Larger area of surface drainage system will be impacted particularly a larger area south of the interchange.

Category	Factor	Indicator	Significance of Factor in Overall Evaluation	Significance of Category in Overall Evaluation	Assessment		
					Highway 6 South / Airport Connection Road Interchange Alternatives		
					Alternatives		
					Alternative 1 - Loop ramp	Alternative 2 - Diamond with roundabout	Alternative 3 - Extended loop ramp
Natural Environment	Natural Environment Summary						
					Alternative 3 has the most impacts to fish habitat, ELC's and surface drainage. Construction of Alternative 2 over the existing pipeline will create a similar construction disturbance footprint as seem for Alternative 1. For this reason many of the impacts for Alternative 1 and 2 are similar including impacts to SWH, candidate SAR habitat and wetlands. Altenative 2 is slightly preferred due to its least amount of impacts to existing surface drainage systems. Alternatives 1 and 2 will have the least impact outside the designated MTO row and the Environmental impacts can be properly mitigated and are in line with the 1987 EA commitments. **Overall, Alternative 2 has the least potential impacts to natural environment features.**		

Category	Factor	Indicator	Significance of Factor in Overall Evaluation	Significance of Category in Overall Evaluation	Assessment		
					Highway 6 South / Airport Connection Road Interchange Alternatives		
					Alternatives		
					Alternative 1 - Loop ramp	Alternative 2 - Diamond with roundabout	Alternative 3 - Extended loop ramp
Socio-economic Environment	Noise	Incremental Effect on Noise Sensitive Receivers			●	●	●
					Alternative does not have a significant impact to nearby receivers compared to other alternatives.	Alternative does not have a significant impact to nearby receivers compared to other alternatives.	Alternative does not have a significant impact to nearby recievers compared to other alternatives.
	Air Quality and Greenhouse Gas Emissions	Incremental Effect on Local Air Quality Conditions and GHG Emissions			●	◔	●
					Alternative unlikely to have a significant impact on air quality at nearby receivers. A free flow of traffic is preferred as this will result in fewer GHG emissions.	Alternative unlikely to have a significant impact on air quality at nearby receivers. The stop intersection has greater potential to produce more GHG emissions than alternatives with free flow of traffic.	Alternative unlikely to have a significant impact on air quality at nearby receivers. A free flow of traffic is preferred as this will result in fewer GHG emissions.
	Community Impacts	Institutional, Recreational or Community Features Displaced / Disrupted			●	●	●
					No impacts to institutional, recreational or community features anticipated.	No impacts to institutional, recreational or community features anticipated.	No impacts to institutional, recreational or community features anticipated.
		Overall effects on access and travel time to various land uses			●	●	●
					No significant differences in impacts to travel time between alternatives.	No significant differences in impacts to travel time between alternatives.	No significant differences in impacts to travel time between alternatives.
		Overall effect on locations and usage of wells			●	●	●
					No wells identified in research within 500 m of Airport Road Interchange.	No wells identified in research within 500 m of Airport Road Interchange.	No wells identified in research within 500 m of Airport Road Interchange.
	Agricultural Operations and Access	Potential impacts to agricutlural land and access			●	●	◑
					Similar impacts to agricultural lands as Alternative 2, and significantly less impacts compared to Alterntiave 3. Farm access to be replaced where feasible.	Similar impacts to agricultural lands as Alternative 1, and significantly less impacts compared to Alterntiave 3. Farm access to be replaced where feasible.	Significant impact to agricutlural lands. Farm access to be replaced where feasible.
	Property Impacts	Potential impacts to properties			●	●	◑
					Additional property required south of Highway 6 South,but less than alterntaive 3. Additional property reuqired west of Airport Connection Road.	Additional property required south of Highway 6 South, but less than reqired for Alternative 3. Property required for constuct alternative 2 above the pipeline will make property impacts similar to that of Altenrtiave 1. Additional property required west of Airport Connection Road.	Requires the most additional property outside of the exsiting MTO ROW including additional lands south of Highway 6 South and on the east side of Airport Road

Category	Factor	Indicator	Significance of Factor in Overall Evaluation	Significance of Category in Overall Evaluation	Assessment		
					Highway 6 South / Airport Connection Road Interchange Alternatives		
					Alternatives		
					Alternative 1 - Loop ramp	Alternative 2 - Diamond with roundabout	Alternative 3 - Extended loop ramp
Socio-economic Environment	Planning Policies	Potential Impacts to Approved Plans and Policies			●	●	●
					Similar impacts to Greenbelt lands across all alternatives.	Similar impacts to Greenbelt lands across all alternatives. Property required for constuct alternative 2 above the pipeline will result in impacts to Greenbelt to be similar to those of Altenrtiave 1 and 3.	Similar impacts to Greenbelt lands across all alternatives.
	Impacts to Views and Vistas	Extent of Changes to Existing Views, Vista, Visual Screenings and Other Plantings			●	●	◕
					No significant impact to views/vistas.	No significant impact to views/vistas.	Some impacts to the views affecting the neighbourhood and residences east of Whitechurch Road West.
	Socio-Economic Environment Summary				●	◕	◑
					Alternative 3 has the most impacts including significant impacts to views and agricultural lands and private property. Alternative 1 and 2 have similar impacts. The cosntruction area required to construct Alterntiave 2 over the existing pipeline will result in additional impacts outside of the right of way, similar to those of Alternative 1. The stop interesction proposed for Alternative 2 has a greater potential for GHG emissions.		

Category	Factor	Indicator	Significance of Factor in Overall Evaluation	Significance of Category in Overall Evaluation	Assessment		
					Highway 6 South / Airport Connection Road Interchange Alternatives		
					Alternatives		
					Alternative 1 - Loop ramp	Alternative 2 - Diamond with roundabout	Alternative 3 - Extended loop ramp
Cultural Environment	Archaeological Resources	Area of Archaeological Potential Displaced (ha)			●	●	◕
	Built Heritage Resources and Cultural Heritage Landscapes	# of Built Heritage Resources and Cultural Heritage Landscapes Impacted (#)			●	◕	◐
					Similar impacts to CHL 14/20 as Alternative 2 but avoids impacts to CHL 11.	Similar impacts to CHL 14/20 as Alternative 1but also impacts CHL 11.	Significantly more impacts to CHL 14/20 than Alterntiaves 1 and 2.
	Cultural Environment Summary				●	◕	◐
					The cosntruction area required to construct Alterntiave 2 over the existing pipeline will result in additional impacts outside of the right of way, similar to those of Alternative 1. For that reason **Alternative 1 is preferred** as there are less impacts to CHL 11 .		
Highway 6 South / Airport Connection Road Interchange Alternatives Summary					Alternative 1, Trumpet A interchange allows for free flow operations, enhances safety by eliminating left turn/wrong way moves and provides the most desirable speed reduction. Alternative 1 also meets the EA commitment to retain 70% of the Benedict Woodlot and has less potential for GHG emissions and impacts to cultural resources. Consistent with the recommendations from the 1987 approved EA, **Alternative 1 was selected as the preferred alternative**		

LEGEND

Most Preferred → Least Preferred

● ◕ ◐ ◔ ○

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Book Road East Interchange Alternatives

Category	Factor	Indicator	Significance of Factor in Overall Evaluation	Significance of Category in Overall Evaluation	Assessment Highway 6 South / Book Road East Interchange Alternatives Alternatives Alternative 1A - Parclo A-4 with signalized ramp terminals	Alternative 1B - Parclo A-4 with ramp terminal roundabouts	Alternative 2A - Diamond with signalized ramp terminals	Alternative 2B - Diamond with ramp terminal roundabouts
Transportation and Cost	Traffic Operations and Safety	Intersection Operations - Future Level of Service in AM and PM Peaks (Poor to Very good)	High					
					Parclo A4 offers the best traffic operations through free flow movements via directional ramps within the interchange. East and west ramp terminal intersections both operate at LOS B with a maximum v/c ratio of 0.79 during the 2041 AM peak hour. Both ramp terminal intersections operate at LOS B with a maximum v/c ratio of 0.67 during the 2041 PM peak hour (i.e., very good).	This alternative offers moderate traffic operations due to the reduced number of ramps in comparriosn to the other alternatives which could cause disruptions to traffic flow due to capacity deficiencies. This alternative operates well until 2031 however would need to be ugraded to a Parclo A4 by 2041. Roundabout to be assessed.	The diamond interchange offers a limited maximum capacity due to left turn lanes being required for on ramp access along Book Road. East and west ramp terminal intersections both operate at LOS B with a maximum v/c ratio of 0.84 during the 2041 AM peak hour, however, a westbound right-turn storage lane is required at the east ramp terminal to achieve acceptable operations. Both ramp terminal intersections operate at LOS B with a maximum v/c ratio of 0.76 during the 2041 PM peak hour (i.e., good).	The diamond interchange offers a limited maximum capacity. The addition of rounabouts at the ramp terminals may hinder driver decisions and traffic operations. Roundabout to be assessed.
		Safety - Collision Reduction/Signage (Poor to Very Good)						
					From a safety perspective, this interchange configuration reduces the need for left turns and potential for wrong way movements however signalized intercsetions dont offer the same level of safety and signage as roundabouts from a baseline persepective.	From a safety and signage perspective, roundabouts offer more signage and a reduction in collisions in comparison to signalized intersections. However, roundabouts are generally less compatible with cyclist and pedestrian traffic than signalized intersections.	Left turn on-ramp movements along Book Road would add additional conflicting movements to the ramp terminal intersections, which is less desirable from a safety and collision perspective.	From a safety and signage perspective, roundabouts offer more signage and a reduction in collisions in comparison to signalized intersections. However, roundabouts are generally less compatible with cyclist and pedestrian traffic than signalized intersections.
	Geometrics	Horizontal and Vertical Geometry, Sight Distances (Poor to Very Good)	High					
					55m radii single lane loop on-ramps, two single lane 130m and 190m directional on-ramps and two 2-lane 340m radius off-ramps. Stop-controlled/ signalized intersections at ramp terminals with left turns from Book Road eastbound/ westbound directions.	60m and 100m radii loop on-ramps and two 2-lane directional off-ramps of 340m radii which conclude at 25m outer radii 2-lane roundabout terminals along Book Road.	Two 190m and two 340m radii directional on and off ramps respectively. Stop-controlled/ signalized intersections at ramp terminals with left turns from Book Road eastbound/westbound directions.	Four (4) 340m radii directional on and off ramps. Two 25m outer radius, 2 lane roundabout terminals.
	Constructability	Construction Complexity (Low to High)	Medium					
					Highest construction complexity due to the higher number of ramps (6) in this alternative vs others along with a new structure and Book Road realignment.	Moderate to high construction complexity in comparison to other alternatives with 4 ramps, 2 roundabouts, a new structure and Book Road realignment.	Moderate construction complexity in comparison to other alternatives with 4 ramps, a new structure and Book Road realignment.	Moderate to high complexity in comparison to other alternatives due to the construction and staging requirements of 4 ramps, 2 roundabouts, a new structure and Book Road realignment.

Category	Factor	Indicator	Significance of Factor in Overall Evaluation	Significance of Category in Overall Evaluation	Assessment Highway 6 South / Book Road East Interchange Alternatives Alternatives Alternative 1A - Parclo A-4 with signalized ramp terminals	Alternative 1B - Parclo A-4 with ramp terminal roundabouts	Alternative 2A - Diamond with signalized ramp terminals	Alternative 2B - Diamond with ramp terminal roundabouts
Transportation and Cost	Utilities	Impacts to Existing and Future Planned Utilities (Low to High)	Low					
					Moderate utility crossing impacts (10) due to the alternative's ramps, new structure and road realignment	Higher number of utility crossing impacts (14) due to the alternative's ramps, new structure and road realignment	Moderate utility crossing impacts (9) due to the alternative's ramps, new structure and road realignment	Moderate utility crossing impacts (11) due to the alternative's ramps, new structure and road realignment
	Total Construction Cost		Low					
					Highest priced alterative, due largely to the fact that this alternative has more ramps and speed change lanes than other alternatives. Illumination needs and as well as two 3-leg intersections were priced in as well	Moderate to high-cost vs other alternatives due to the need for 4 ramps, illumination needs and two 2-lane roundabouts.	Lowest cost in comparison to other alternatives because this alternative has only four directional ramps and speed change lanes. Illumination needs and two 3-leg intersections were included.	Moderate to low cost in comparison to other alternatives.
	Transportation and Cost Summary							
					The four alternatives recommend interchanges at Book Road which results in enhanced capacity and serviceability for road users. Alternative 1A, the Parclo A4 configuration, is the interchange type that provides the most capacity and free flow serviceability for road users via the on/off ramps. Alternatives 2A and 2B are diamond interchanges which has less capacity in comparison to the parclo A4 configuration of Alternatives 1A. Alternatives 1A and 2A considers stop controlled/signalized intersections while Alternative 1B and 2B includes roundabouts which are anticipated to enhance safety by reducing the number of vehicular conflict points and reducing vehicular speeds which will reduce the potential for severe crashes and serious injury. Also, Alternatives 2A and 2B roundabout configurations enhance free-flow conditions. Roundabouts are require a larger property footprint and Alternative 1A requires construction of additional ramps however Alternatives 1B and 2B require construction of two (2) roundabouts. Alternative 2A is the least complex option to construct as it minimizes the number of ramps and does not include a roundabout at ramp terminals. Due to the lower complexity of construction, Alternative 2A has the lowest overall cost. Alternatives 1B impacts the most utility crossings (14) while the other alternatives are very similar when considering impacts to existing utilities within the Book Road study area. Alternative 1A is preferred from a traffic operations and safety perspective however the complexity of construction and cost would be higher when compared to Alternatives 2A. Alternative 1A is consistent with the recommendations from the 1987 approved environmental assessment. **In summary, Alternative 1A (parclo A4) is the overall preferred alternative for improvements to the Highway 6/Book Road interchange.**			

Category	Factor	Indicator	Significance of Factor in Overall Evaluation	Significance of Category in Overall Evaluation	Assessment Highway 6 South / Book Road East Interchange Alternatives Alternatives Alternative 1A - Parclo A-4 with signalized ramp terminals	Alternative 1B - Parclo A-4 with ramp terminal roundabouts	Alternative 2A - Diamond with signalized ramp terminals	Alternative 2B - Diamond with ramp terminal roundabouts
Natural Environment	Fish and Fish Habitat	Length of Fish Habitat Impacted (m)			Approximately 600 m of potential direct and indirect fish habitat associated with private pond and potential upstream habitat east of Hwy 6 S (unnamed tributary to Welland River). All other watercourse crossings within envelope of alternative are drainage features and are not likely to provide fish habitat. Highest number of potential new crossing locations.	Approximately 600 m of potential direct and indirect fish habitat associated with private pond and potential upstream habitat east of Hwy 6 S (unnamed tributary to Welland River). All other watercourse crossings within envelope of alternative are drainage features and are not likely to provide fish habitat. Lowest number of potential new crossing locations.	Approximately 600 m of potential direct and indirect fish habitat associated with private pond and potential upstream habitat east of Hwy 6 S (unnamed tributary to Welland River). All other watercourse crossings within envelope of alternative are drainage features and are not likely to provide fish habitat.	Approximately 600 m of potential direct and indirect fish habitat associated with private pond and potential upstream habitat east of Hwy 6 S (unnamed tributary to Welland River). All other watercourse crossings within envelope of alternative are drainage features and are not likely to provide fish habitat.
		Aquatic Species at Risk (Low to High)			Low (no SAR records for impacted watercourse)	Low (no SAR records for impacted watercourse)	Low (no SAR records for impacted watercourse)	Low (no SAR records for impacted watercourse)
	Terrestrial Habitat	Area of Terrestrial Ecosystems Impacted (vegetation and wildlife habitat)			Similar impacts to ELC's in all quadrants. Similar impacts to confirmed SWH for Eastern Wood-pewee (northeast and northwest quadrants) and rare vegetation community in northwest quadrant.	Similar impacts to ELC's in all quadrants except the northeast and southwest. Slightly less impacts to confirmed SWH for Eastern Wood-pewee than Alternative 1. Impacts rare vegetation community in northwest quadrant.	Similar impacts to ELC's in all quadrants. Similar impacts to confirmed SWH for Eastern Wood-pewee (northeast and northwest quadrants). Avoids rare vegetation community in northwest quadrant.	Similar impacts to ELC's in all quadrants. Similar impacts to confirmed SWH for Eastern Wood-pewee (northeast and northwest quadrants). Avoids rare vegetation community in northwest quadrant.
		Terrestrial Species at Risk habitat			Similar impact to confirmed Butternut habitat (northwest quadrant), candidate bat SAR habitat and Jefferson Salamander habitat in northeast and northwest quadrants.	Similar impact to confirmed Butternut habitat (northwest quadrant) and candidate bat SAR habitat and Jefferson Salamander habitat in northwest quadrant.	Similar impact to confirmed Butternut habitat (northwest quadrant), candidate bat SAR habitat and Jefferson Salamander habitat in northeast and northwest quadrants.	Similar impact to confirmed Butternut habitat (northwest quadrant), candidate bat SAR habitat and Jefferson Salamander habitat in northeast and northwest quadrants.
		Potential Impacts to Designated Natural Areas (i.e., PSW)			Similar impact to unevaluated wetlands in northeast, northwest and southeast quadrants.	Similar impact to unevaluated wetlands in northwest and southeast quadrant but no impact to unevaluated wetland in northeast quadrant.	Similar impact to unevaluated wetlands in northeast, northwest and southeast quadrants.	Similar impact to unevaluated wetlands in northeast, northwest and southeast quadrants.
	Groundwater	Susceptibility to Construction Activities			Within source water protection area and highly vulnerable aquifer.	Within source water protection area, highly vulnerable aquifer and moves into higher significant groundwater recharge area rating.	Within source water protection area, highly vulnerable aquifer and moves into higher significant groundwater recharge area rating.	Within source water protection area, highly vulnerable aquifer and moves into higher significant groundwater recharge area rating.

Category	Factor	Indicator	Significance of Factor in Overall Evaluation	Significance of Category in Overall Evaluation	Assessment Highway 6 South / Book Road East Interchange Alternatives Alternatives			
					Alternative 1A - Parclo A-4 with signalized ramp terminals	Alternative 1B - Parclo A-4 with ramp terminal roundabouts	Alternative 2A - Diamond with signalized ramp terminals	Alternative 2B - Diamond with ramp terminal roundabouts
Natural Environment								
	Surface Water	Susceptibility to Construction Activities			Ramp will impact existing pond. It will need to modify the existing surface drainage pattern at the interchange (four quadrants).	Ramp grading may impact the existing pond. Existing drainage system will not be impacted at the southwest and northeast quadrants of the interchange.	Existing pond may not be impacted. It will need to modify the existing surface drainage pattern at the interchange (four quadrants).	Existing pond may not be impacted. It will need to modify the existing surface drainage pattern at the interchnage (four quadrants).
	Natural Environment Summary							
					Alternative 1B has least impacts to SWH, candidate SAR habitat, wetlands, existing surface drainage systems as well as fewest potential new watercourse crossing locations. Alternatives 2A and 2B avoid a rare vegetation community in the northwest quadrant and may avoid impacts to the existing pond in the southeast quadrant, but have more watercourse crossings than Alternative 1B. Alternative 1A has the most potential new watercourse crossings, impacts to the existing pond and natural features including the rare vegetation community in the northwest quadrant. All alternatives have similar overall environmental impacts all of which can be properly mitigated and are in line with the 1987 EA commitments. **Overall, Alternative 1B has the least potential impacts to natural environment features.**			

Category	Factor	Indicator	Significance of Factor in Overall Evaluation	Significance of Category in Overall Evaluation	Assessment Highway 6 South / Book Road East Interchange Alternatives Alternatives			
					Alternative 1A - Parclo A-4 with signalized ramp terminals	Alternative 1B - Parclo A-4 with ramp terminal roundabouts	Alternative 2A - Diamond with signalized ramp terminals	Alternative 2B - Diamond with ramp terminal roundabouts
Socio-economic Environment	Noise	Incremental Effect on Noise Sensitive Receivers						
					Southwest quadrant ramp is closest to existing reciever on Book Road. Merge lane on Book Road brings traffic closer to reciever. Signalized intersections at ramp terminals increase instances of breaking, deccelerating and accelerating.	This alternative has no ramp in southwest quadrant eliminating that noise source, which is closest in proximity to the existing receiver on Book Road. Roundabout preferred than stop intersections.	Southwest quadrant ramp included in this alternative, which is quadrant with closet reciever. Signalized intersections at ramp terminals increase instances of breaking, deccelerating and accelerating.	Southwest quadrant ramp included in this alternative, which is quadrant with closet reciever. Roundabouts at ramp terminals decrease instances of breaking, deccelerating and accelerating that would be heard with signalized intersections.
	Air Quality	Incremental Effect on Local Air Quality Conditions						
					Southwest quadrant ramp is closest to existing reciever on Book Road. Merge lane on Book Road brings traffic closer to reciever. Signalized intersections at ramp terminals increase instances of breaking, deccelerating and accelerating.	This alternative has no ramp in southwest quadrant eliminating that noise source, which is closest in proximity to the existing receiver on Book Road. Roundabout preferred than stop intersections.	Southwest quadrant ramp included in this alternative, which is quadrant with closet reciever. Signalized intersections at ramp terminals increase instances of breaking, deccelerating and accelerating.	Southwest quadrant ramp included in this alternative, which is quadrant with closet reciever. Roundabouts at ramp terminals decrease instances of breaking, deccelerating and accelerating that would be heard with signalized intersections.
	Community Impacts	Institutional, Recreational or Community Features Displaced / Disrupted						
					Similar impacts to historical human cemetary properties as alternatives 2A and 2B.	Least amount of impact to historical human cemetary property/access.	Similar impacts to historical human cemetary properties as alternatives 1A and 2B.	Similar impacts to historical human cemetary properties as alternatives 2A and 1A.
		Overall effects on access and travel time to various land uses						
					No significant differences in impacts to travel time between alternatives.	No significant differences in impacts to travel time between alternatives.	No significant differences in impacts to travel time between alternatives.	No significant differences in impacts to travel time between alternatives.
		Overall effect on locations and usage of wells						
					1 well directly impacted by all alternatives. Potential for impacts to other wells in construction but can be mitigated with proper mitigation.	1 well directly impacted by all alternatives. Potential for impacts to other wells in construction but can be mitigated with proper mitigation.	1 well directly impacted by all alternatives. Potential for impacts to other wells in construction but can be mitigated with proper mitigation.	1 well directly impacted by all alternatives. Potential for impacts to other wells in construction but can be mitigated with proper mitigation.
	Agricultural Operations and Access	Potential impacts to agricutlural land and access						
					Impacts to agricultural lands in northwest quadrant is similar across all alternatives. Impacts to agricultural lands withithin the designated ROW in southwest quadrant. Farm entrance in southwest quadrant will need to be relocated if possible.	Impacts to agricultural lands in northwest quadrant is similar across all alternatives. No impact to farm fields in southwest quadrant. No farm entrances require removal/replacement anticipated.	Impacts to agricultural lands in northwest quadrant is similar across all alternatives. Some impacts to agricutural land within current ROW in southwest quadrant. No farm entrances require removal/replacement anticipated.	Impacts to agricultural lands in northwest quadrant is similar across all alternatives. Some additional impacts to agricutural land outside of current ROW in southwest quadrant. No farm entrances require removal/replacement anticipated.

Category	Factor	Indicator	Significance of Factor in Overall Evaluation	Significance of Category in Overall Evaluation	Assessment Highway 6 South / Book Road East Interchange Alternatives Alternatives Alternative 1A - Parclo A-4 with signalized ramp terminals	Alternative 1B - Parclo A-4 with ramp terminal roundabouts	Alternative 2A - Diamond with signalized ramp terminals	Alternative 2B - Diamond with ramp terminal roundabouts
Socio-economic Environment	Property Impacts	Potential impacts to properties						
					Property impacts outside of designated MTO ROW in southeast and northwest quadrants for all alternatives. Some additional impacts to property in northeast quadrant.	Property impacts outside of designated MTO ROW in southeast and northwest quadrants for all alternatives.	Property impacts outside of designated MTO ROW in southeast and northwest quadrants for all alternatives. Some additional impacts to property in southwest quadrant.	Property impacts outside of designated MTO ROW in southeast and northwest quadrants for all alternatives. Some additional impacts to property in southwest quadrant.
	Planning Policies	Potential Impacts to Approved Plans and Policies						
					Similar impacts to lands designated under Greenbelt Plan in northeast and southeast quadrants of interchange.	Similar impacts to lands designated under Greenbelt Plan in northeast and southeast quadrants of interchange.	Similar impacts to lands designated under Greenbelt Plan in northeast and southeast quadrants of interchange.	Similar impacts to lands designated under Greenbelt Plan in northeast and southeast quadrants of interchange.
	Impacts to Views and Vistas	Extent of Changes to Existing Views, Vista, Visual Screenings and Other Plantings						
					Some impacts to views from private residence in southwest quadrant due to removal of vegetation and construction of ramp in southwest quadrant.	Least impact to views as no impact to southwest quadrant	Some impacts to views from private residence in southwest quadrant due to removal of vegetation and construction of ramp in southwest quadrant.	Some impacts to views from private residence in southwest quadrant due to removal of vegetation and construction of ramp in southwest quadrant.
	Socio-economic Environment Summary							
					Alternative 1B has the least potential impacts to agricultural lands compared to 1A, 2A and 2B. 1B also has fewest impacts to views/vists, air quality and noise impacts that would be potentially experienced by the resident west of the southwest quadrant of Book Road Highway 6 South Interchange. Alternative 1A has slightly more impact to properties outside the designated MTO ROW, requiring more property int he northeast quadrant. Most impacts avoided in Alternative 1B are experienced by 1 resident (noise, air, property impacts and changes to views). All alternatives have similar impacts to lands outside the existing MTO ROW, and have similar overall environmental impacts, all of which can be properly mitigated and are in line with the 1987 EA commitments. **Overall, Alternative 1B has the least potential impacts to socio-economic environment features.**			

Category	Factor	Indicator	Significance of Factor in Overall Evaluation	Significance of Category in Overall Evaluation	Assessment Highway 6 South / Book Road East Interchange Alternatives Alternatives Alternative 1A - Parclo A-4 with signalized ramp terminals	Alternative 1B - Parclo A-4 with ramp terminal roundabouts	Alternative 2A - Diamond with signalized ramp terminals	Alternative 2B - Diamond with ramp terminal roundabouts
Cultural Environment	Archaeological Resources	Area of Archaeological Potential Displaced (ha)			◐	●	◕	◕
	Built Heritage Resources and Cultural Heritage Landscapes	# of Built Heritage Resources and Cultural Heritage Landscapes Impacted (#)			◕	●	◕	◕
					Alternative with the most imapct to CHL-4 (Parkins Cemetary property).	Avoids most impact to CHL-4, some potential for impacts during construction.	Avoids most impact to CHL-4, some potential for impacts during construction.	Avoids most impact to CHL-4, some potential for impacts during construction.
	Cultural Environment Summary				◐	●	◕	◕
					Alternative 1B has least potential impacts to Parkin's Cemetery access/property than Alternative 1A, 2A and 2B. Alternative 1A has the most potential impacts to the access to Parkin's Cemetery. However, all alternatives have the same impact to lands outside the existing MTO right of way, and have similar overall environmental impacts all of which can be properly mitigated and are in line with the 1987 EA commitments. **Overall, Alternative 1B has the least potential impacts to cultural environment features.**			
Highway 6 South / Book Road East Interchange Alternatives Summary					Alternative 1A, a Parclo A4 with signalized ramp terminals was prreferred from a transportation and operations perspective. Though the alternative has greater environmental impacts anticipated outside the MTO ROW, these impacts can be mitigated where feasible. Alternative 1A is also consistent with the recommendations and environmental commitments from the 1987 approved EA and given the operational advantages, **Alternative 1A was chosen as the overall preferred alternative.**			

LEGEND

Most Preferred → Least Preferred

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AECOM

Upper James Street Interchange Alternatives

Category	Factor	Indicator	Assessment Highway 6 South / Upper James Street Interchange Alternatives Alternatives Alternative 1A -	Alternative 1B -	Alternative 2	Alternative 3A -	Alternative 3B -	Alternative 4 -
Transportation and Cost	Traffic Operations and Safety	Intersection Operations - Future Level of Service in AM and PM Peaks (Poor to Very good)	The configuration utilizes the existing signalized intersection at Highway 6 and Upper James Street as a termination point of the twinning of Highway 6. The overall intersection would operate at LOS C during both the 2041 AM and PM peak hours, with maximum v/c ratios of 0.89 during the AM peak hour and 0.83 during the PM peak hour. In order to avoid over-capacity conditions during the AM peak, a dual left-turn lane is required on the northbound approach to the intersection.	The configuration replaces the existing intersection at Highway 6 and Upper James Street with a roundabout as a termination point of the twinning of Highway 6.	The new twinned Highway 6 from south of the existing Upper James Street intersection promotes free traffic movement from Highway 6 south with a 250m curve. Another 250m curve was used to connect Upper James Street north to the new intersection. The horizontal curves along Highway 6 promotes deceleration from Highway 6 towards Highway 6 South. The overall intersection would operate at LOS C with a maximum v/c ratio of 0.97 during the 2041 AM peak hour and LOS B with a maximum v/c ratio of 0.85 during the 2041 PM peak hour. Implementing a dual left-turn lane on the southbound approach to the intersection would reduce the maximum v/c ratio during the AM peak hour to 0.90.	Upper James Steet North transitions to the twinned Highway 6 from the existing White Church Road and Upper James Street intersection with a 500m curve followed by a 200m curve. Reduced intersection spacing between White Church Road and the New Upper James Street & Highway 6 intersection may cause traffic flow issues. The overall intersection would operate at LOS C during both the 2041 AM and PM peak hours, with maximum v/c ratios of 0.90 during the AM peak hour and 1.00 (i.e., at capacity) during the PM peak hour. Implementing a dual left-turn lane on the southbound approach to the intersection would reduce the maximum v/c ratio during the PM peak hour to 0.93.	Similarly to the previous altenative, a 500m curve followed by a 200m curve from Upper James Street to Highway 6 along with reduced intersection spacing is less than desirable however the addition of roundabouts may aid in traffic operations.	Similarly to the previous altenative, a 500m curve followed by a 200m curve from Upper James Street to Highway 6 along with a 55m loop ramp and reduced intersection spacing and is less than desirable hfrom a traffic operations perspective.
		Safety - Collision Reduction/Signage (Poor to Very Good)	The utilization of the existing horizontal curve west of the termination at Upper James Street promotes deceleration from the 130 km/h Highway 6 design speed to 90 km/h.	The utilization of the existing horizontal curve west of the termination at Upper James Street promotes deceleration from the 130 km/h Highway 6 design speed to 90 km/h. The addition of a roundabout over the signalized intersection reduces the risk collisons and improves signage. However, roundabouts are generally less compatible with cyclist and pedestrian traffic than signalized intersections.	The increased intersection spacing between the new Highway 6 and White Chruch Road intersections along Upper James Street should enhance collision reduction and signage between the two intersections.	Reduced intersection spacing between White Church Road and Highway 6 in addition to the 200m curve along Highway 6 are less than ideal from a safety and collision reduction standpoint.	Reduced intersection spacing between White Church Road and Highway 6 in addition to the 200m curve along Highway 6 are less than ideal from a safety and collision reduction standpoint however the addition of roundabouts vs signalized intersections increases safety and signage from a baseline perspective. However, roundabouts are generally less compatible with cyclist and pedestrian traffic than signalized intersections.	Reduced intersection spacing between White Church Road and Highway 6 in addition to the 200m curve and the 55m loop ramp along Highway 6 are less than ideal from a safety and collision reduction standpoint.

Category	Factor	Indicator	Assessment Highway 6 South / Upper James Street Interchange Alternatives Alternatives Alternative 1A -	Alternative 1B -	Alternative 2	Alternative 3A -	Alternative 3B -	Alternative 4 -
Transportation and Cost	Geometrics	Horizontal and Vertical Geometry, Sight Distances (Poor to Very Good)	340m horizontal curve along Highway 6. Maintains the existing intersection spacing of 415m between Highway 6 and White Church Road along Upper James Street.	340m horizontal curve on Highway 6. Intersection spacing of 385m between Highway 6 and White Church Road along Upper James Street.	•340m horizontal curve on Highway 6. •The transition from Highway 6 to Upper James Street utilizes 250m curves. •Increased intersection spacing between the new Highway 6 and Upper James Street to 455m.	•200 m radius curve along Highway 6. •500 m transition curve from Upper James Street into Highway 6. •325 m intersection spacing between the existing White Church Road and the new Highway 6/Upper James Street intersection. •110 m between Highway 6 and new Upper James Street Intersection. •190 m radius south directional ramp from Highway 6 to Upper James Street South.	•250 m radius curve along Highway 6. •500 m transition curve from Upper James Street into Highway 6. •240 m spacing between the White Church Road and the new Highway 6/Upper James Street roundabouts. •190 m radius directional ramp from Highway 6 to Upper James Street South.	•200 m radius curve along Highway 6 (Northbound on ramp). •500 m transition curve from Upper James Street into Highway 6. •55m Southbound loop off ramp •190 m radius south directional ramp from Highway 6 to Upper James Street South.
	Constructability		•Low complexity construction as there are no major ramps to be included. •Medium Staging complexity as roadwork will need to be done online the existing Highway 6.	•Medium complexity construction with the introduction of a roundabout at terminal exit. •Higher staging complexity as roadwork and roundabout construction would disrupt existing Highway 6 and Upper James Street traffic.	•Medium complexity constructability with new ramps and stop controlled intersection introduced. •Low staging complexity as most of the roadwork can be done offline.	•Medium complexity construction is to be expected with new off ramp and stop controlled intersection •Low staging complexity as most of the roadwork can be done offline.	•High complexity construction is to be expected with new off ramp and roundabouts. •Higher complexity staging than previous alternative due to the introduction of roundabouts.	•High complexity construction is to be expected with new off ramp and roundabouts. •Higher complexity staging than previous alternative due to the introduction of roundabouts.
	Utilities	Impacts to Existing and Future Planned Utilities (Low to High)	•2 utility crossings at the west side of the existing Upper James/Highway 6 intersection.	•7 utility crossings will be impacted by new roundabout.	•2 utility crossings at the west side of the existing Upper James/Highway 6 intersection.	•8 utility crossings at the existing Highway 6/Upper James Street and White Church Road/Upper James Street intersections.	•8 utility crossings at the existing Highway 6/Upper James Street and White Church Road/Upper James Street intersections.	•8 utility crossings at the existing Highway 6/Upper James Street and White Church Road/Upper James Street intersections.
	Total Construction Cost ($)		•Lowest cost in comparison to other alternatives as this alternative would only require some road reconstruction as well as a new 3 leg intersection and illumination needs.	•Low cost in comparison to other alternatives as this alternative would only require some road reconstruction and a new 2-lane roundabout.	•Low to moderate costs in comparison to other alternatives. Cost is made up of mainly 2-lane road reconstruction and 2 lane new construction as well as illumination and intersection needs.	•Moderate costs in comparison to other alternatives. Cost is made up of mainly 2-lane road reconstruction and 2 lane new construction as well as illumination and intersection needs.	•Moderate to high costs in comparison to other alternatives. Cost is made up of mainly 2-lane road reconstruction and 2 lane new construction as well as illumination and two 2-lane roundabouts.	•Highest cost in comparison to the other alternatives. Cost is made up of mainly 2-lane road reconstruction and 2 lane new construction, illumination needs, a new structure and two 2-lane roundabouts.

Category	Factor	Indicator	Assessment Highway 6 South / Upper James Street Interchange Alternatives Alternatives					
			Alternative 1A -	Alternative 1B -	Alternative 2	Alternative 3A -	Alternative 3B -	Alternative 4 -
Transportation and Cost	Transportation and Cost Summary							
			The six alternatives recommend intersections at Upper James Street which results in enhanced capacity and serviceability for road users. Alternatives 1A and 1B similarly provide the most capacity and free flow serviceability and both provide freeway termination at Upper James Street through the existing intersection configuration and a roundabout respectively. Alternative 2, realignment of Highway 6/Upper James Street South intersection to the West, provides similar capacity to Alternative 1A and 1B however has a larger footprint and less than desirable geometry to provide free flow from the new twinned Highway 6 to existing Highway 6 South. Alternative 3A and 3B both provide similar capacity and flow through realignments of Highway 6/Upper James Street South Intersection to the East through multiple stop-controlled intersections and roundabouts respectively. Alternative 4, like Alternative 3B, provides a realignment of Highway 6/Upper James Street South Intersection to the East using roundabouts, however, an additional off-ramp loop increases the footprint and potential capacity of the alternative however free flow and driver decision will be impacted by the added loop ramp. Alternative 1A is the least complex alternative from a constructability and perspective. Alternative 1B and 2 both slightly increase construction complexity and cost in comparison to Alternative 1A with the addition of the roundabout and the realignment of Highway 6/Upper James Street South intersection to the West. Alternative 3A and 3B increases construction complexity by realignments of Highway 6/Upper James Street intersection and an increased footprint North and South of the existing Highway 6 increase cost vs the Alternative 1A, 1B and 2. Alternative 4 further increases the construction complexity and cost vs Alternative 3A and 3B with an increased footprint in the form of an additional structure and loop ramp to go along with multiple roundabouts. Alternatives 1A and 2 impact similar a number of utilities however Alternative 1B, 3A, 3B and 4 impact a much larger amount (8). **Alternative 1A is preferred from a traffic operations and safety perspective and promotes a high level of constructability while optimizing utility impacts. In addition, this alternative is consistent with the recommendations from the 1987 approved environmental assessment.** **In summary, Alternative 1A (Intersection Termination at Existing Upper James Street) is the overall preferred**					

Category	Factor	Indicator	Assessment: Highway 6 South / Upper James Street Interchange Alternatives — Alternatives: Alternative 1A -	Alternative 1B -	Alternative 2	Alternative 3A -	Alternative 3B -	Alternative 4 -
Natural Environment	Fish and Fish Habitat	Length of Fish Habitat Impacted (m)	●	●	●	◐	◔	○
			Approximately 40 m of potential indirect fish habitat associated with five crossings on three watercourses (all unnamed tributaries to Welland River). Lowest additional footprint outside of exisitng ROW.	Approximately 40 m of potential indirect fish habitat associated with five crossings on three watercourses (all unnamed tributaries to Welland River). Lowest additional footprint outside of exisitng ROW.	Approximately 40 m of potential indirect fish habitat associated with five crossings on three watercourses (all unnamed tributaries to Welland River). Lowest additional footprint outside of exisitng ROW.	Approximately 550 m of potential indirect fish habitat associated with five crossings on three watercourses (all unnamed tributaries to Welland River). Moderate additional footprint on southwest side of Highway 6 S.	Approximately 550 m of potential indirect fish habitat associated with five crossings on three watercourses (all unnamed tributaries to Welland River). Moderate additional footprint on SW side of Hwy 6 and on NE side of Highway 6 S associated with roundabouts.	Approximately 1,150 m of potential indirect fish habitat associated with five crossings on three watercourses (all unnamed tributaries to Welland River). Largest overall footprint and closest alternative to Welland River mainstem.
		Aquatic Species at Risk (Low to High)						
			Low (no SAR records for impacted watercourses; however, Special Concern Species - Grass Pickerel identified in adjacent watercourses). Indirect fish habitat within area of impact could contribute to impacts on downstream SAR habitat.	Low (no SAR records for impacted watercourses; however, Special Concern Species - Grass Pickerel identified in adjacent watercourses). Indirect fish habitat within area of impact could contribute to impacts on downstream SAR habitat.	Low (no SAR records for impacted watercourses; however, Special Concern Species - Grass Pickerel identified in adjacent watercourses). Indirect fish habitat within area of impact could contribute to impacts on downstream SAR habitat.	Low (no SAR records for impacted watercourses; however, Special Concern Species - Grass Pickerel identified in adjacent watercourses). Indirect fish habitat within area of impact could contribute to impacts on downstream SAR habitat.	Low (no SAR records for impacted watercourses; however, Special Concern Species - Grass Pickerel identified in adjacent watercourses). Indirect fish habitat within area of impact could contribute to impacts on downstream SAR habitat.	Moderate (no SAR records for impacted watercourses; however, Special Concern Species - Grass Pickerel identified in Welland River). Footprint of alternative in close proximity to Welland River mainstem. Indirect fish habitat within area of impact could contribute to impacts on downstream SAR habitat.
	Terrestrial Habitat	Area of Terrestrial Ecosystems Impacted (vegetation and wildlife habitat)	●	●	◕	◐	◔	○
			Least impacts to ELC's.	Least impacts to ELC's.	Slightly more impacts to ELC's.	More impacts to ELC's.	Higher impacts to ELC's.	Signficantly more impacts to ELC's.
		Terrestrial Species at Risk habitat	●	●	●	●	●	●
			No anticipated impacts to SAR or their habitat.	No anticipated impacts to SAR or their habitat.	No anticipated impacts to SAR or their habitat.	No anticipated impacts to SAR or their habitat.	No anticipated impacts to SAR or their habitat.	No anticipated impacts to SAR or their habitat.
		Potential Impacts to Designated Natural Areas (i.e., PSW)	●	●	●	●	●	●
			No anticipated impacts to Designat	No anticipated impacts to Designat	No anticipated impacts to Designat	No anticipated impacts to Designat	No anticipated impacts to Designat	No anticipated impacts to Designate
	Groundwater	Susceptibility to Construction Activities	●	●	●	●	●	●
			Within source water protection area, highly vulnerable aquifer and significant groundwater recharge area.	Within source water protection area, highly vulnerable aquifer and significant groundwater recharge area.	Within source water protection area, highly vulnerable aquifer and significant groundwater recharge area.	Within source water protection area, highly vulnerable aquifer and significant groundwater recharge area.	Within source water protection area, highly vulnerable aquifer and significant groundwater recharge area.	Within source water protection area, highly vulnerable aquifer and significant groundwater recharge area.

Category	Factor	Indicator	Assessment Highway 6 South / Upper James Street Interchange Alternatives Alternatives Alternative 1A -	Alternative 1B -	Alternative 2	Alternative 3A -	Alternative 3B -	Alternative 4 -
Natural Environment	Surface Water	Susceptibility to Construction Activities						
			Less impact to the existing surface drainage system.	Less impact to the existing surface drainage system.	Less impact to the existing surface drainage system.	Impact to surface water and drainage system due to Highway 6 S realignment and connection with Upper James.	Medium impact to surface water and drainage system due to Highway 6 S realignment and connection with Upper James.	Greater impact to surface water and existing drainage system due Highway 6 S realignment and connection with Upper James and loop to the north.
	Natural Environment Summary							
			Alternatives 1A and 1B have the least impacts on the natural environment. Potential environmental impacts gradually increase in the order of the alternatives with Altenrative 4 having the most impacts (due to larger design footprint). **Overall, Alternatives 1A or 1B have the least potential impacts to natural environment features.**					

Category	Factor	Indicator	Assessment Highway 6 South / Upper James Street Interchange Alternatives Alternatives Alternative 1A -	Alternative 1B -	Alternative 2	Alternative 3A -	Alternative 3B -	Alternative 4 -
Socio-economic Environment	Noise	Incremental Effect on Noise Sensitive Receivers	Least Impact to nearby receivers but signalized intersection creates idling, breaking, acceleration and decceleration more than roundabout.	Least Impact to nearby receivers. Roundabout allows free flow and therefore potentially less impacts of noise on nearby receptors.	Noise of Highway 6 South is brough closer to recievers west of Highway 6 south on Upper James.	Traffic is moved closer to existing and planned development and signalized intersection less preferred over roundabouts.	Traffic is moved closer to existing and planned development. Roundabout preferred over signalized intersection of alternative 3A.	Traffic is moved closer to existing and planned development. Simliar impacts as 3B. Ramp to the north is not close enough to existing development to make it less preferred than alternative 3B.
	Air Quality and GHG Emissions	Incremental Effect on Local Air Quality Conditions	No significant changes to air quality for this alternative. The signalized less prefered than roundabout and free flow ramps as this increases probability of greater GHG emissions.	roundabout preferred from air quality perspective.	simlar to roundabout, less idling with this alternative than alt 1B.	Traffic is moved closer to existing and planned development and signalized intersection less preferred over roundabouts.	Traffic is moved closer to existing and planned development. Roundabout preferred over signalized intersection of alternative 3A.	Traffic is moved closer to existing and planned development. Simliar impacts as 3B. Ramp to the north is not close enough to existing development to make it less preferred than alternative 3B.
	Community Impacts	Institutional, Recreational or Community Features Displaced / Disrupted	No impacts to institutional, recreational or community features anticipated.	No impacts to institutional, recreational or community features anticipated.	No impacts to institutional, recreational or community features anticipated.	No impacts to institutional, recreational or community features anticipated.	No impacts to institutional, recreational or community features anticipated.	No impacts to institutional, recreational or community features anticipated.
		Overall effects on access and travel time to various land uses	No significant differences in impacts to travel time between alternatives.	No significant differences in impacts to travel time between alternatives.	No significant differences in impacts to travel time between alternatives.	No significant differences in impacts to travel time between alternatives.	No significant differences in impacts to travel time between alternatives.	No significant differences in impacts to travel time between alternatives.
		Overall effect on locations and usage of wells	Direct impacts to 1 commercial well that was identified in background research. Least excavation required outside of MTO row.	Direct impacts to 1 commercial well that was identified in background research. Least excavation required outside of MTO row.	Direct impacts to 1 commercial well that was identified in background research.some excavation required outside of MTO row west of Highway 6 South.	Direct impacts to commercial and domestic wells, more excavation required outside of MTO ROW than in Alternatives 1A/B and 2.	Direct impacts to many commercial and domestic wells, Siognificant excavation required for construction.	Direct impacts to many commercial and domestic wells, The most excavation required for construction.
	Agricultural Operations and Access	Potential impacts to agricutlural land and access	Impacts least amount of agriculatural land.	No significant differences in impacts to travel time between alternatives.	Impacts agricultural land to the west of Highway 6 S. Access to agricultural fiedl west fo Highway 6 South would need ot be relocated, if possible.	Impacts agricultural land to the west and east of Highway 6 S.	Impacts agricultural land to the west and east of Highway 6 S.	Impacts the most agricultural lands over the other alternatives. Impacts Agricultural land to the west, northwest and east of Highway 6 S

Category	Factor	Indicator	Assessment Highway 6 South / Upper James Street Interchange Alternatives Alternatives Alternative 1A -	Alternative 1B -	Alternative 2	Alternative 3A -	Alternative 3B -	Alternative 4 -
Socio-economic Environment	Property Impacts	Potential impacts to properties						
			Least amount of property impact outside the current MTO ROW and designated ROW. 2 properties total.	Some impact to additional property outside the current MTO ROW and designated ROW. 3 properties total. Changes to accesses and possible displacement of residential property due to roundabout and location fo driveway.	Additional property requirements outside current MTO ROW and designated ROW. 5 properties total. Potential issues to property access for those west of Hgihway 6 South and North of Upper James.	Additional property requriements outside current MTO ROW and designated ROW. 6 properties total.	Additional property requriements outside current MTO ROW and designated ROW. 6 properties total.	Additional property requriements outside current MTO ROW and designated ROW. 6 properties total.
	Planning Policies	Potential Impacts to Approved Plans and Policies						
			Minimal impacts to Greenbelt lands.	Minimal impacts to Greenbelt lands.	Some additional impacts to Greenbelt lands west of Highway 6 S and north of Upper James.	Additional impacts to Greenbelt lands west and east of Highway 6 S and north of Upper James.	Additional impacts to Greenbelt lands west and east of Highway 6 S and north of Upper James.	The most impacts to Greenbelt lands west and east of Highway 6 S and north of Upper James.
	Impacts to Views and Vistas	Extent of Changes to Existing Views, Vista, Visual Screenings and Other Plantings						
			Minimal changes to views and vistas.	Minimal changes to views and vistas.	Minimal changes to views and vistas.	Changes to views and vistas from White Church Road West and Upper James Street.	Changes to views and vistas from White Church Road West and Upper James Street.	Changes to views and vistas from White Church Road West and Upper James Street.
	Socio-economic Environment Summary							
			Alternative 1A and 1B are similar in preference with the only differences being a prefernce for free flow of traffic that would be create with a roundabout at the intersection of Highway 6 south and Upper James. Alternatives 2, 3A, 3B and 4 have increasingly more impacts to water wells, property outside of the designated MTO row. Alternative 2 raises concerns for potential impacts to access to properties west of Highway 6 south on Upper James Street. Overall Alternative 1B is preferred, but Alternative 1A is very closely scored.					

Category	Factor	Indicator	Assessment Highway 6 South / Upper James Street Interchange Alternatives Alternatives Alternative 1A -	Alternative 1B -	Alternative 2	Alternative 3A -	Alternative 3B -	Alternative 4 -
Cultural Environment	Archaeological Resources	Area of Archaeological Potential Displaced (ha)	●	●	◕	◐	◔	○
	Built Heritage Resources and Cultural Heritage Landscapes	# of Built Heritage Resources and Cultural Heritage Landscapes Impacted (#)	●	●	◕	◐	◐	◔
			Minimal impacts to CHL 15 and CHL 17.	Minimal impacts to CHL 15 and CHL 18.	Similar to Alternative 1 but more impacts to CHL 17.	Similar to Alternative 1 and 2 but more impacts to CHL 17.	Additional impacts to CHL 15 and CHL 17.	Significantly more impacts to CHL 15 and CHL 17.
	Cultural Environment Summary		●	●	◕	◐	◔	◔
			Overall Alternatives 1A and 1B are preferred					
Highway 6 South / Upper James Street Interchange Alternatives Summary			Alternative 1A, a Signalized Intersection Termination at Upper James maintains existing traffic patterns, provides the highest capacity and has the lowest construction cost and complexity against other alternatives. Alternative 1A has the least impacts to private property, and greenbelt lands as well as minimum impacts to potential cultural heritage resources and agricultural lands. Consistent with the recommendations from the 1987 approved EA (initial condition), **Alternative 1A was selected as the preferred alternative**.					

LEGEND

Most Preferred →

● ◕ ◐

Appendix C

Recommended Plan

PRELIMINARY

LEGEND

- EXISTING HIGHWAY 6 RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- PROPOSED RIGHT-OF-WAY
- ADDITIONAL MTO RIGHT-OF-WAY AREA
- PROPOSED DITCH
- GRADING LIMITS

CITY OF HAMILTON

STA: 10+400

H6-CL-1

HIGHWAY 6

UPPER JAMES STREET

MATCH EXISTING

10+000

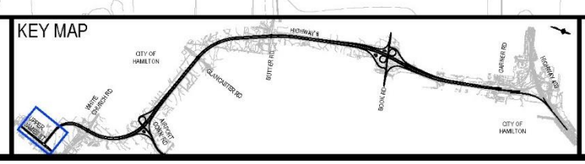
MATCH EXISTING

AECOM

Ontario Ministry of Transportation

HIGHWAY 6
FROM HIGHWAY 403 TO UPPER JAMES STREET
AGREEMENT # 2021-E-0011

KEY MAP



HIGHWAY 6
RECOMMENDED PLAN

STATION 10+000 TO STATION 10+400

SCALE
25m 0m 50m

PLATE
1

PRELIMINARY

CITY OF
HAMILTON

WHITE CHURCH RD

HIGHWAY 6

H6-CL-3

STA AHEAD = 16+600.00
STA BACK = 10+917.33

STA: 16+800

REHABILITATION OF EXISTING
BRIDGE AT WHITE CHURCH RD

H6-CL-4

10+500

H6-CL-2

STA: 10+400

LEGEND

- EXISTING HIGHWAY 6 RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- PROPOSED RIGHT-OF-WAY
- ADDITIONAL MTO RIGHT-OF-WAY AREA
- PROPOSED DITCH
- GRADING LIMITS

AECOM

Ontario Ministry of Transportation

HIGHWAY 6
FROM HIGHWAY 403 TO UPPER JAMES STREET
AGREEMENT # 2021-E-0011

KEY MAP

HIGHWAY 6
RECOMMENDED PLAN

STATION 10+400 TO STATION 16+800

SCALE
25m 0m 50m

PLATE
2

PRELIMINARY

CITY OF
HAMILTON

STA: 16+800

STA: 17+500

STA: 10+060

17+000

HIGHWAY 6

RAMP S-E

H6-CL-5

H6-CL-6

LEGEND

EXISTING HIGHWAY 6 RIGHT-OF-WAY

EXISTING PROPERTY LINE

PROPOSED RIGHT-OF-WAY

ADDITIONAL MTO RIGHT-OF-WAY AREA

PROPOSED DITCH

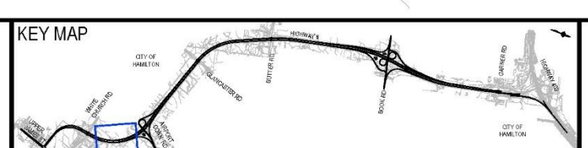
GRADING LIMITS

AECOM

Ontario Ministry of Transportation

HIGHWAY 6
FROM HIGHWAY 403 TO UPPER JAMES STREET
AGREEMENT # 2021-E-0011

KEY MAP



HIGHWAY 6
RECOMMENDED PLAN

STATION 16+800 TO STATION 17+500

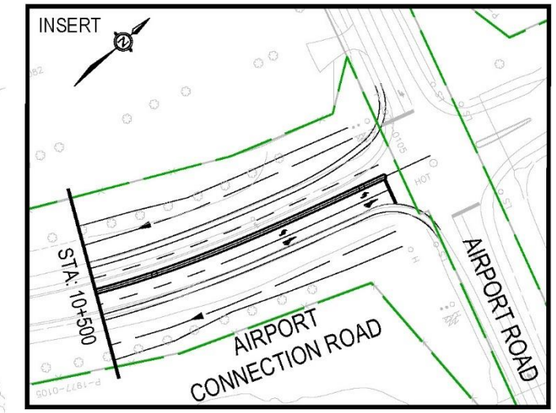
SCALE

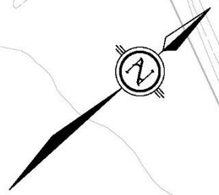
25m 0m 50m

PLATE

3

PRELIMINARY





STA: 10+140
STA: 17+900
H6-CL-8
RAMP N-E
RAMP E-S
HIGHWAY 6
RAMP E-N
AIRPORT CONNECTION ROAD
STA: 10+500 (SEE INSERT)
NEW BRIDGE CONSTRUCTION AT AIRPORT CONNECTION RD
RAMP S-E
STORM WATER MANAGEMENT POND
H6-CL-7
STA: 17+500
STA: 10+060
CITY OF HAMILTON

LEGEND

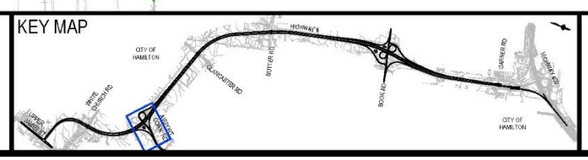
- EXISTING HIGHWAY 6 RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- PROPOSED RIGHT-OF-WAY
- ADDITIONAL MTO RIGHT-OF-WAY AREA
- PROPOSED DITCH
- GRADING LIMITS

AECOM

Ontario Ministry of Transportation

HIGHWAY 6
FROM HIGHWAY 403 TO UPPER JAMES STREET
AGREEMENT # 2021-E-0011

KEY MAP



HIGHWAY 6
RECOMMENDED PLAN

STATION 17+500 TO STATION 17+900

SCALE
25m 0m 50m

PLATE
4

PRELIMINARY

CITY OF
HAMILTON

STA: 10+140

RAMP N-E

HIGHWAY 6

STA: 17+900

18+000

18+500

STA: 18+600

RAMP E-N

BIS

H6-CL-9

H6-CL-10

P-1977-0100

P-1977-0098

LEGEND

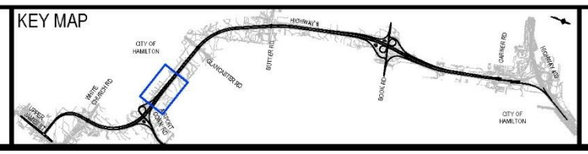
- EXISTING HIGHWAY 6 RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- PROPOSED RIGHT-OF-WAY
- ADDITIONAL MTO RIGHT-OF-WAY AREA
- PROPOSED DITCH
- GRADING LIMITS

AECOM

Ontario Ministry of Transportation

HIGHWAY 6
FROM HIGHWAY 403 TO UPPER JAMES STREET
AGREEMENT # 2021-E-0011

KEY MAP



HIGHWAY 6
RECOMMENDED PLAN

STATION 17+900 TO STATION 18+600

SCALE

25m 0m 50m

PLATE

5

PRELIMINARY

CITY OF
HAMILTON

GLANCASTER ROAD

REHABILITATION OF EXISTING
BRIDGE AT GLANCASTER RD

STA: 18+600

HIGHWAY 6

19+000

STA: 19+300

H6-CL-11

H6-CL-12

H6-CL-13

P-1977-0098

P-1977-0095

P-1977-0082

P-1977-0101

P-5105-0007

P-5105-0015

LEGEND

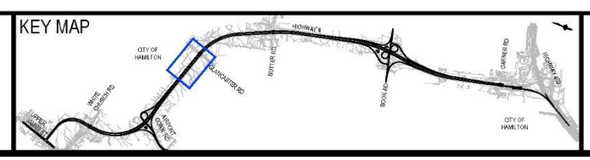
- EXISTING HIGHWAY 6 RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- PROPOSED RIGHT-OF-WAY
- ADDITIONAL MTO RIGHT-OF-WAY AREA
- PROPOSED DITCH
- GRADING LIMITS

AECOM

Ontario Ministry of Transportation

HIGHWAY 6
FROM HIGHWAY 403 TO UPPER JAMES STREET
AGREEMENT # 2021-E-0011

KEY MAP



HIGHWAY 6
RECOMMENDED PLAN

STATION 18+600 TO STATION 19+300

SCALE

25m 0m 50m

PLATE

6

PRELIMINARY

CITY OF
HAMILTON

HIGHWAY 6

STA: 19+300

STA: 20+000

19+650

H6-CL-14

H6-CL-15

LEGEND

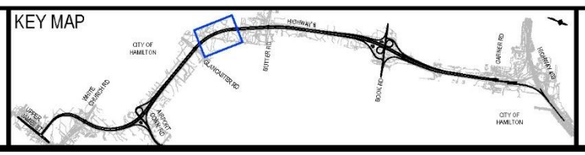
- EXISTING HIGHWAY 6 RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- PROPOSED RIGHT-OF-WAY
- ADDITIONAL MTO RIGHT-OF-WAY AREA
- PROPOSED DITCH
- GRADING LIMITS

AECOM

Ontario Ministry of Transportation

HIGHWAY 6
FROM HIGHWAY 403 TO UPPER JAMES STREET
AGREEMENT # 2021-E-0011

KEY MAP



HIGHWAY 6
RECOMMENDED PLAN

STATION 19+300 TO STATION 20+000

SCALE

25m 0m 50m

PLATE

7

PRELIMINARY

CITY OF HAMILTON

BUTTER ROAD

REHABILITATION OF EXISTING BRIDGE AT BUTTER RD

HIGHWAY 6

STA: 20+000

20 + 500

STA: 20+700

H6-CL-16

H6-CL-17

LEGEND

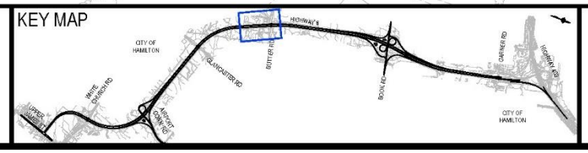
- EXISTING HIGHWAY 6 RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- PROPOSED RIGHT-OF-WAY
- ADDITIONAL MTO RIGHT-OF-WAY AREA
- PROPOSED DITCH
- GRADING LIMITS

AECOM

Ontario Ministry of Transportation

HIGHWAY 6
FROM HIGHWAY 403 TO UPPER JAMES STREET
AGREEMENT # 2021-E-0011

KEY MAP



HIGHWAY 6
RECOMMENDED PLAN

STATION 20+000 TO STATION 20+700

SCALE

25m 0m 50m

PLATE

8

PRELIMINARY

CITY OF
HAMILTON

HIGHWAY 6

STA: 20+700

21+000

STA: 21+400

H6-CL-18

H6-CL-19B

P-5105-0019

P-5105-0012

LEGEND

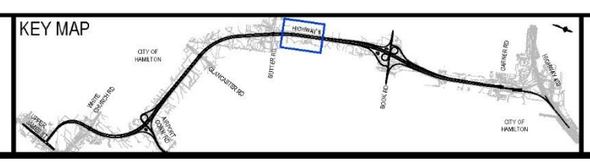
- EXISTING HIGHWAY 6 RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- PROPOSED RIGHT-OF-WAY
- ADDITIONAL MTO RIGHT-OF-WAY AREA
- PROPOSED DITCH
- GRADING LIMITS

AECOM

Ontario Ministry of Transportation

HIGHWAY 6
FROM HIGHWAY 403 TO UPPER JAMES STREET
AGREEMENT # 2021-E-0011

KEY MAP



HIGHWAY 6
RECOMMENDED PLAN

STATION 20+700 TO STATION 21+400

SCALE

25m 0m 50m

PLATE

9

PRELIMINARY

CITY OF
HAMILTON

H6-CL-19A

HIGHWAY 6

RAMP W-S

RAMP S-E/W

H6-CL-20

STA: 21+400

21+500

22+000

STA: 9+800

STA: 22+100

STA: 10+000

P-5105-0019

P-5105-0012

LEGEND

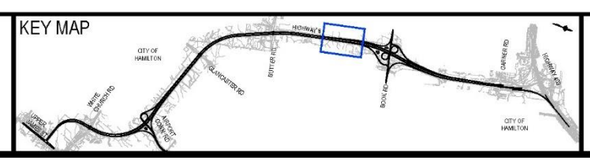
- EXISTING HIGHWAY 6 RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- PROPOSED RIGHT-OF-WAY
- ADDITIONAL MTO RIGHT-OF-WAY AREA
- PROPOSED DITCH
- GRADING LIMITS

AECOM

Ontario Ministry of Transportation

HIGHWAY 6
FROM HIGHWAY 403 TO UPPER JAMES STREET
AGREEMENT # 2021-E-0011

KEY MAP



HIGHWAY 6
RECOMMENDED PLAN

STATION 21+400 TO STATION 22+100

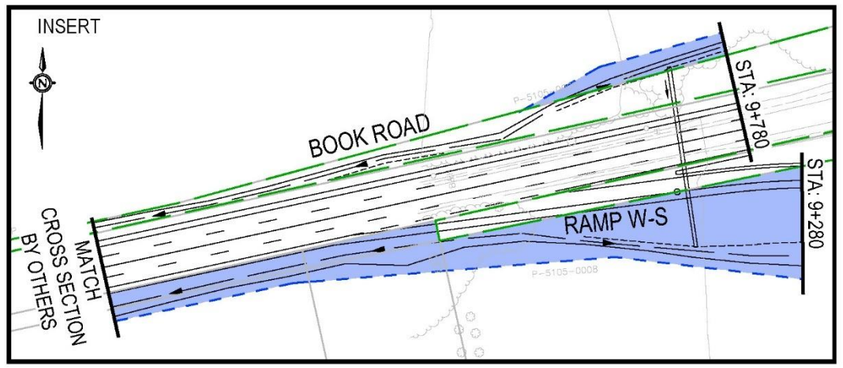
SCALE

25m 0m 50m

PLATE

10

PRELIMINARY



STA: 9+780 (SEE INSERT)

STA: 9+280

RAMP N-E/W

STA: 10+700

RAMP E-S

STORM WATER MANAGEMENT POND

NEW BRIDGE CONSTRUCTION AT BOOK RD

RAMP W-S

H6-CL-21

STA: 9+800

HIGHWAY 6

22+500

STA: 22+100

STA: 22+760

STA: 10+000

STORM WATER MANAGEMENT POND

H6-CL-22

RAMP S-E/W

RAMP W-N

BOOK-PARKIN CEMETERY

BOOK ROAD

STA: 10+245

CITY OF HAMILTON

LEGEND

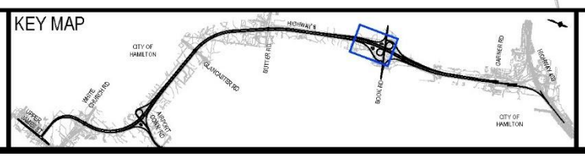
- EXISTING HIGHWAY 6 RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- PROPOSED RIGHT-OF-WAY
- ADDITIONAL MTO RIGHT-OF-WAY AREA
- PROPOSED DITCH
- GRADING LIMITS

AECOM

Ontario Ministry of Transportation

HIGHWAY 6
FROM HIGHWAY 403 TO UPPER JAMES STREET
AGREEMENT # 2021-E-0011

KEY MAP



HIGHWAY 6
RECOMMENDED PLAN

STATION 22+100 TO STATION 22+760

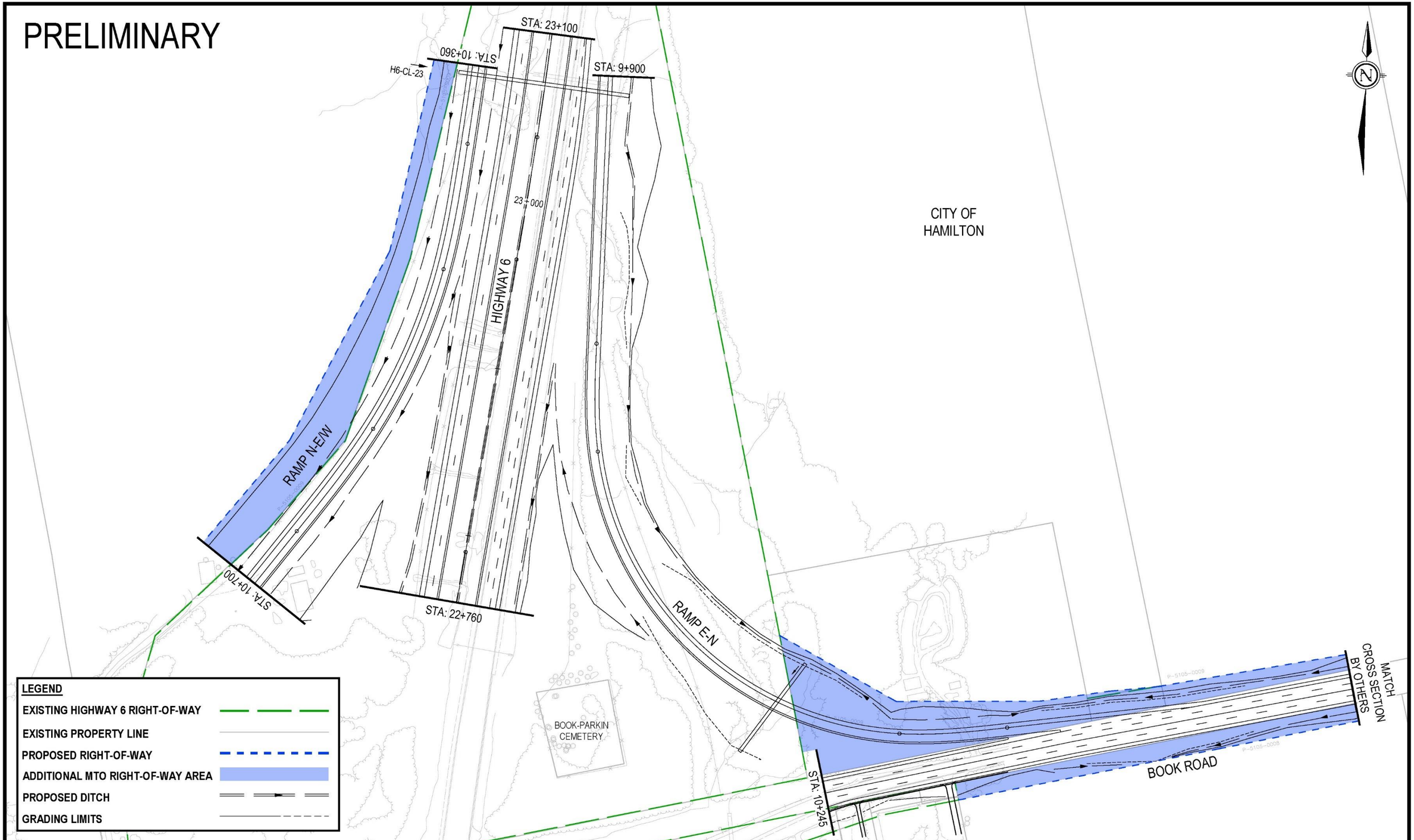
SCALE

25m 0m 50m

PLATE

11

PRELIMINARY

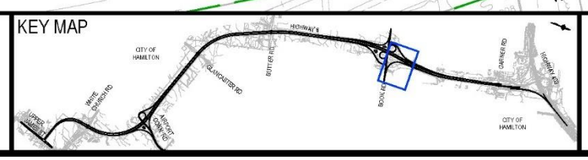


AECOM

Ontario Ministry of Transportation

HIGHWAY 6
FROM HIGHWAY 403 TO UPPER JAMES STREET
AGREEMENT # 2021-E-0011

KEY MAP



HIGHWAY 6
RECOMMENDED PLAN

STATION 22+760 TO STATION 23+100

SCALE

25m 0m 50m

PLATE

12

PRELIMINARY

CITY OF HAMILTON

STA: 10+360

RAMP N-E/W

STA: 23+100

STA: 9+900

RAMP E-N

23+500

HIGHWAY 6

STA: 23+800

LEGEND

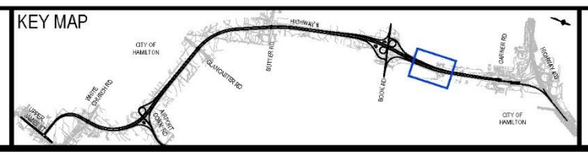
- EXISTING HIGHWAY 6 RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- PROPOSED RIGHT-OF-WAY
- ADDITIONAL MTO RIGHT-OF-WAY AREA
- PROPOSED DITCH
- GRADING LIMITS

AECOM

Ontario Ministry of Transportation

HIGHWAY 6
FROM HIGHWAY 403 TO UPPER JAMES STREET
AGREEMENT # 2021-E-0011

KEY MAP



HIGHWAY 6
RECOMMENDED PLAN

STATION 23+100 TO STATION 23+800

SCALE

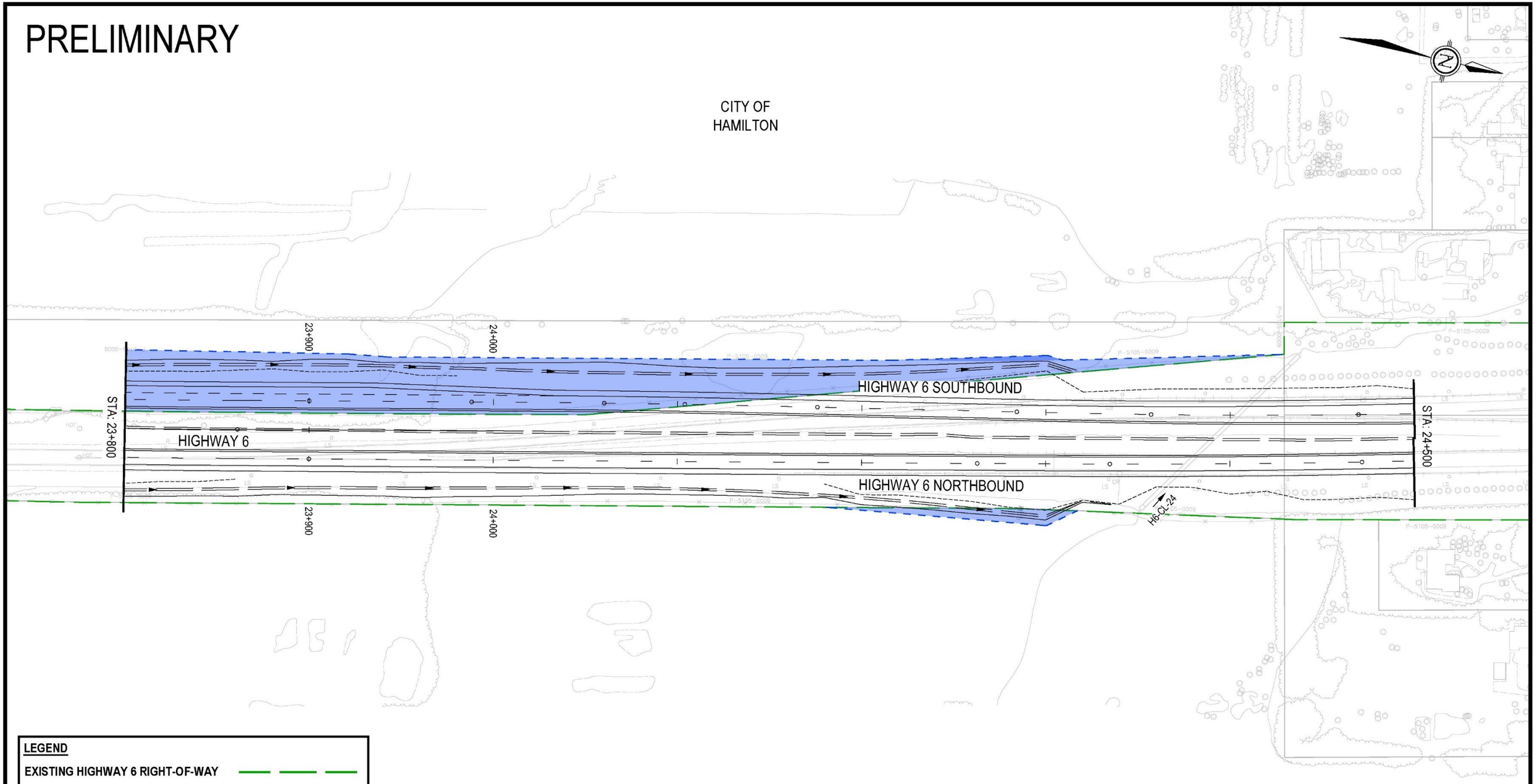
25m 0m 50m

PLATE

13

PRELIMINARY

CITY OF
HAMILTON



LEGEND

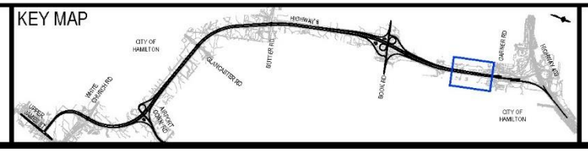
- EXISTING HIGHWAY 6 RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- PROPOSED RIGHT-OF-WAY
- ADDITIONAL MTO RIGHT-OF-WAY AREA
- PROPOSED DITCH
- GRADING LIMITS

AECOM

Ontario Ministry of Transportation

HIGHWAY 6
FROM HIGHWAY 403 TO UPPER JAMES STREET
AGREEMENT # 2021-E-0011

KEY MAP



HIGHWAY 6
RECOMMENDED PLAN

STATION 23+800 TO STATION 24+500

SCALE

25m 0m 50m

PLATE

14

PRELIMINARY

GARNER ROAD

RAMP 403E-E/W

RAMP 403W-6S

RAMP 403E-6S

RAMP 6S-403W

HIGHWAY 6
SOUTHBOUND

STA: 24+500

HIGHWAY 6
NORTHBOUND

RAMP 6S-403E

STA: 9+600

H403-R-1

RAMP E/W-403E

CITY OF
HAMILTON

LEGEND

- EXISTING HIGHWAY 6 RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- PROPOSED RIGHT-OF-WAY
- ADDITIONAL MTO RIGHT-OF-WAY AREA
- PROPOSED DITCH
- GRADING LIMITS

AECOM

Ontario Ministry of Transportation

HIGHWAY 6
FROM HIGHWAY 403 TO UPPER JAMES STREET
AGREEMENT # 2021-E-0011

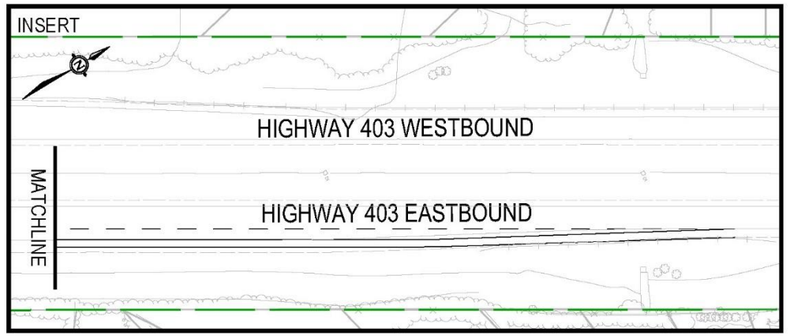
KEY MAP

HIGHWAY 6
RECOMMENDED PLAN
HIGHWAY 6 RAMP 6S-403E
STATION 24+500 TO STATION 9+600

SCALE
25m 0m 50m

PLATE
15

PRELIMINARY



RAMP 6S-403W

RAMP 403E-6S

HIGHWAY 403 WESTBOUND

HIGHWAY 403 EASTBOUND

CITY OF HAMILTON

RAMP 6S-403E

STA. 9+600

MATCHLINE (SEE INSERT)

LEGEND

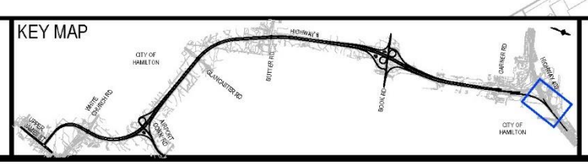
- EXISTING HIGHWAY 6 RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- PROPOSED RIGHT-OF-WAY
- ADDITIONAL MTO RIGHT-OF-WAY AREA
- PROPOSED DITCH
- GRADING LIMITS

AECOM

Ontario Ministry of Transportation

HIGHWAY 6
FROM HIGHWAY 403 TO UPPER JAMES STREET
AGREEMENT # 2021-E-0011

KEY MAP



HIGHWAY 6
RECOMMENDED PLAN
RAMP 6S-403E
STATION 9+600 TO STATION 10+000

SCALE
25m 0m 50m

PLATE
16

Appendix D

Landscape Plan

PRELIMINARY

LEGEND

- EXISTING HIGHWAY 6 RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- PROPOSED RIGHT-OF-WAY
- PROPOSED DITCH
- GRADING LIMITS

CITY OF HAMILTON

STA: 10+400

H6-CL-1

HIGHWAY 6

UPPER JAMES STREET

MATCH EXISTING

12+705

12+800

12+900

13+000

13+100

13+200

10+000

13+300

13+400

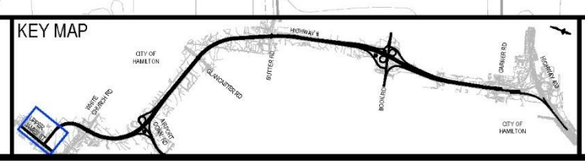
MATCH EXISTING

AECOM

Ontario Ministry of Transportation

HIGHWAY 6
FROM HIGHWAY 403 TO UPPER JAMES STREET
AGREEMENT # 2021-E-0011

KEY MAP



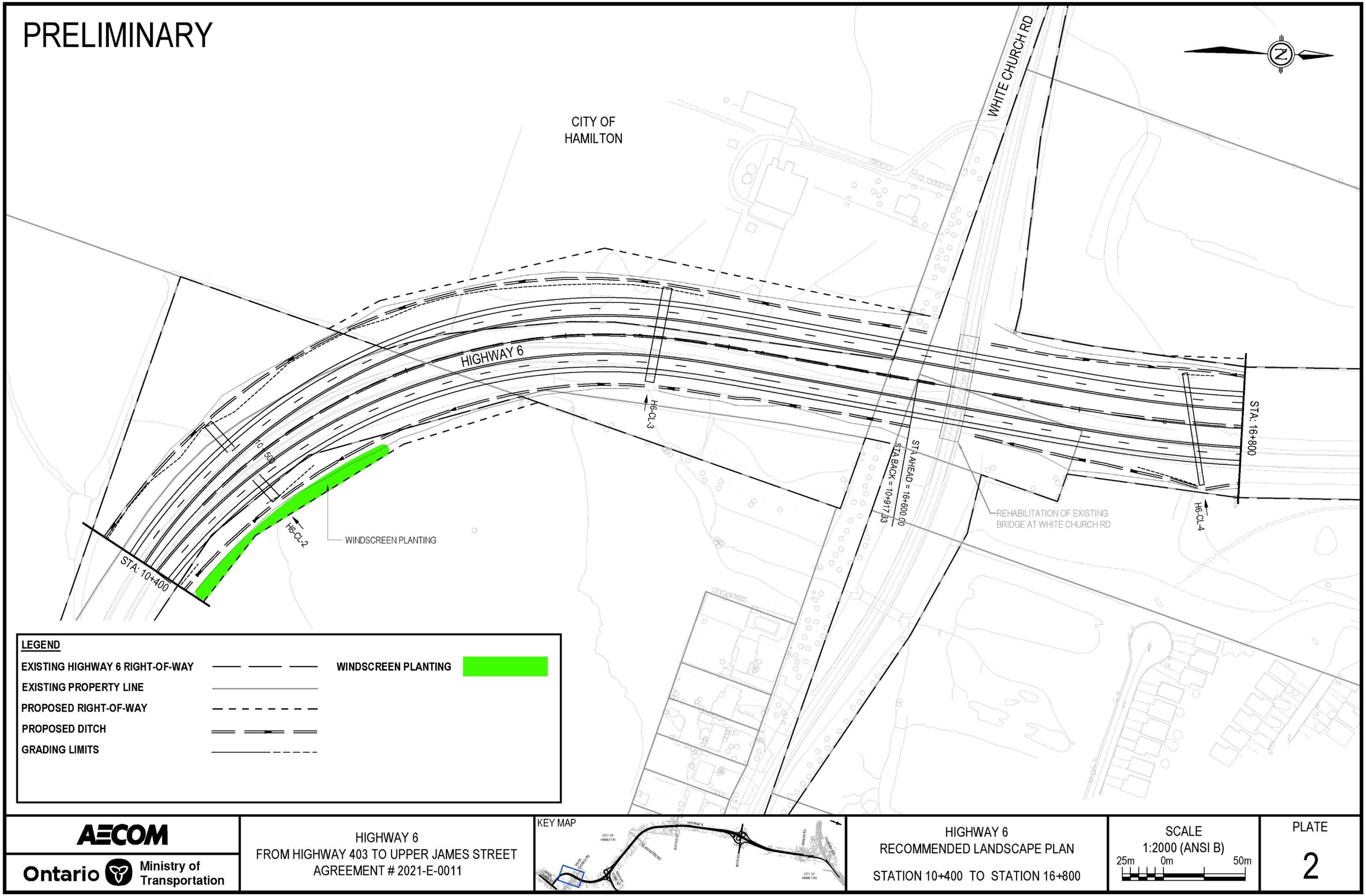
HIGHWAY 6
RECOMMENDED LANDSCAPE PLAN

STATION 10+000 TO STATION 10+400

SCALE
1:2000 (ANSI B)
25m 0m 50m

PLATE
1

PRELIMINARY



LEGEND

- EXISTING HIGHWAY 6 RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- PROPOSED RIGHT-OF-WAY
- PROPOSED DITCH
- GRADING LIMITS
- WINDSCREEN PLANTING

AECOM

Ontario Ministry of Transportation

HIGHWAY 6
FROM HIGHWAY 403 TO UPPER JAMES STREET
AGREEMENT # 2021-E-0011

KEY MAP

HIGHWAY 6
RECOMMENDED LANDSCAPE PLAN

STATION 10+400 TO STATION 16+800

SCALE
1:2000 (ANSI B)
25m 0m 50m

PLATE
2

PRELIMINARY

CITY OF
HAMILTON

STA: 16+800

17+000

WINDSCREEN PLANTING

STA: 17+500

STA: 10+060

RAMP S-E

HIGHWAY 6

H6-CL-5

H6-CL-6

10+000

WINDSCREEN PLANTING

LEGEND

EXISTING HIGHWAY 6 RIGHT-OF-WAY		WINDSCREEN PLANTING	
EXISTING PROPERTY LINE			
PROPOSED RIGHT-OF-WAY			
PROPOSED DITCH			
GRADING LIMITS			

AECOM

Ontario Ministry of Transportation

HIGHWAY 6
FROM HIGHWAY 403 TO UPPER JAMES STREET
AGREEMENT # 2021-E-0011

KEY MAP

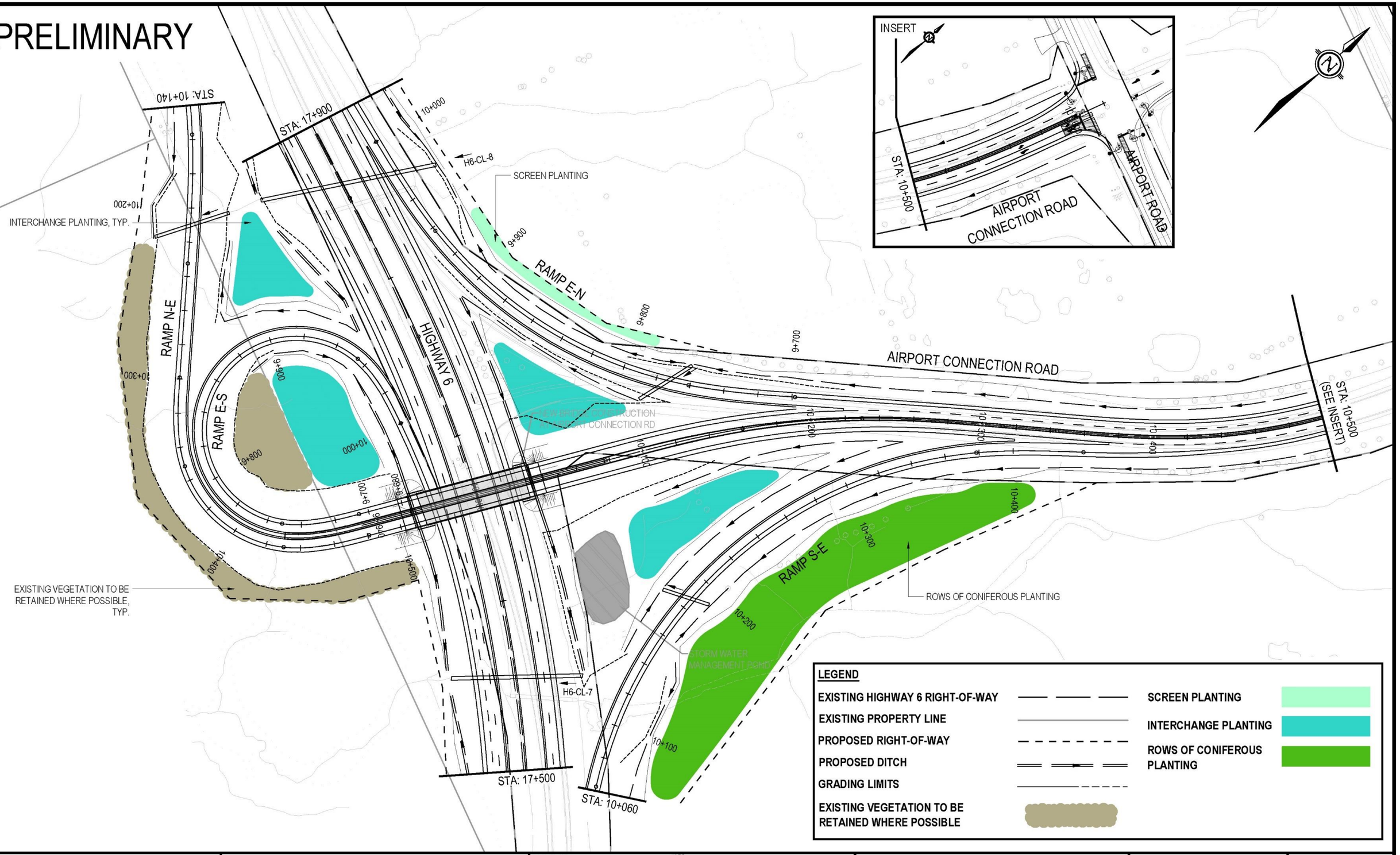
HIGHWAY 6
RECOMMENDED LANDSCAPE PLAN

STATION 16+800 TO STATION 17+500

SCALE
1:2000 (ANSI B)
25m 0m 50m

PLATE
3

PRELIMINARY

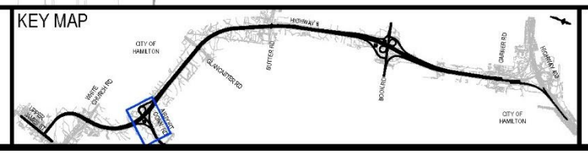


AECOM

Ontario Ministry of Transportation

HIGHWAY 6
FROM HIGHWAY 403 TO UPPER JAMES STREET
AGREEMENT # 2021-E-0011

KEY MAP



HIGHWAY 6
RECOMMENDED LANDSCAPE PLAN

STATION 17+500 TO STATION 17+900

SCALE
1:2000 (ANSI B)
25m 0m 50m

PLATE
4

PRELIMINARY

CITY OF
HAMILTON

ROWS OF CONIFEROUS PLANTING

STA: 10+140

10+100

10+000

RAMP N-E

HIGHWAY 6

STA: 17+900

18+000

18+500

STA: 18+600

RAMP E-N

BIS

H6-CL-9

H6-CL-10

ROWS OF CONIFEROUS PLANTING

LEGEND

EXISTING HIGHWAY 6 RIGHT-OF-WAY	ROWS OF CONIFEROUS PLANTING
EXISTING PROPERTY LINE	
PROPOSED RIGHT-OF-WAY	
PROPOSED DITCH	
GRADING LIMITS	

AECOM

Ontario Ministry of Transportation

HIGHWAY 6
FROM HIGHWAY 403 TO UPPER JAMES STREET
AGREEMENT # 2021-E-0011

KEY MAP

HIGHWAY 6
RECOMMENDED LANDSCAPE PLAN

STATION 17+900 TO STATION 18+600

SCALE
1:2000 (ANSI B)
25m 0m 50m

PLATE
5

PRELIMINARY

CITY OF
HAMILTON

GLANCASTER ROAD

REHABILITATION OF EXISTING
BRIDGE AT GLANCASTER RD

STA: 18+600

HIGHWAY 6

19+000

STA: 19+300

H6-CL-11

H6-CL-12

H6-CL-13

LEGEND

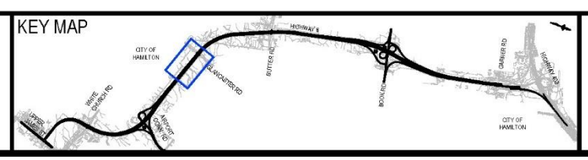
- EXISTING HIGHWAY 6 RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- PROPOSED RIGHT-OF-WAY
- PROPOSED DITCH
- GRADING LIMITS

AECOM

Ontario Ministry of Transportation

HIGHWAY 6
FROM HIGHWAY 403 TO UPPER JAMES STREET
AGREEMENT # 2021-E-0011

KEY MAP



HIGHWAY 6
RECOMMENDED LANDSCAPE PLAN

STATION 18+600 TO STATION 19+300

SCALE
1:2000 (ANSI B)
25m 0m 50m

PLATE
6

PRELIMINARY

CITY OF
HAMILTON

SCREEN PLANTING

EDGE MANAGEMENT PLANTING

HIGHWAY 6

19+600

STA. 19+300

H6-CL-14

H6-CL-15

STA. 20+000

ROWS OF CONIFEROUS PLANTING

SCREEN PLANTING

LEGEND

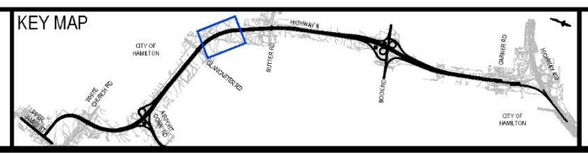
EXISTING HIGHWAY 6 RIGHT-OF-WAY	SCREEN PLANTING
EXISTING PROPERTY LINE	EDGE MANAGEMENT PLANTING
PROPOSED RIGHT-OF-WAY	ROWS OF CONIFEROUS PLANTING
PROPOSED DITCH	
GRADING LIMITS	

AECOM

Ontario Ministry of Transportation

HIGHWAY 6
FROM HIGHWAY 403 TO UPPER JAMES STREET
AGREEMENT # 2021-E-0011

KEY MAP



HIGHWAY 6
RECOMMENDED LANDSCAPE PLAN

STATION 19+300 TO STATION 20+000

SCALE
1:2000 (ANSI B)
25m 0m 50m

PLATE
7

PRELIMINARY

CITY OF HAMILTON

BUTTER ROAD

SLOPE STABILIZATION PLANTING, TYP.

SCREEN PLANTING, TYP.

REHABILITATION OF EXISTING BRIDGE AT BUTTER RD

HIGHWAY 6

STA: 20+000

20+500

STA: 20+700

H6-CL-16

H6-CL-17

LEGEND

EXISTING HIGHWAY 6 RIGHT-OF-WAY

EXISTING PROPERTY LINE

PROPOSED RIGHT-OF-WAY

PROPOSED DITCH

GRADING LIMITS

SCREEN PLANTING

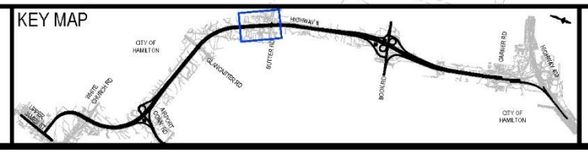
SLOPE STABILIZATION PLANTING

AECOM

Ontario Ministry of Transportation

HIGHWAY 6
FROM HIGHWAY 403 TO UPPER JAMES STREET
AGREEMENT # 2021-E-0011

KEY MAP



HIGHWAY 6
RECOMMENDED LANDSCAPE PLAN

STATION 20+000 TO STATION 20+700

SCALE
1:2000 (ANSI B)
25m 0m 50m

PLATE
8

PRELIMINARY

CITY OF
HAMILTON

HIGHWAY 6

21+000

STA: 20+700

STA: 21+400

H6-CL-18

H6-CL-19B

LEGEND

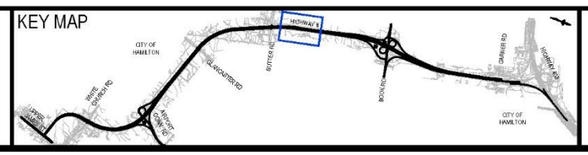
- EXISTING HIGHWAY 6 RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- PROPOSED RIGHT-OF-WAY
- PROPOSED DITCH
- GRADING LIMITS

AECOM

Ontario Ministry of Transportation

HIGHWAY 6
FROM HIGHWAY 403 TO UPPER JAMES STREET
AGREEMENT # 2021-E-0011

KEY MAP



HIGHWAY 6
RECOMMENDED LANDSCAPE PLAN

STATION 20+700 TO STATION 21+400

SCALE
1:2000 (ANSI B)
25m 0m 50m

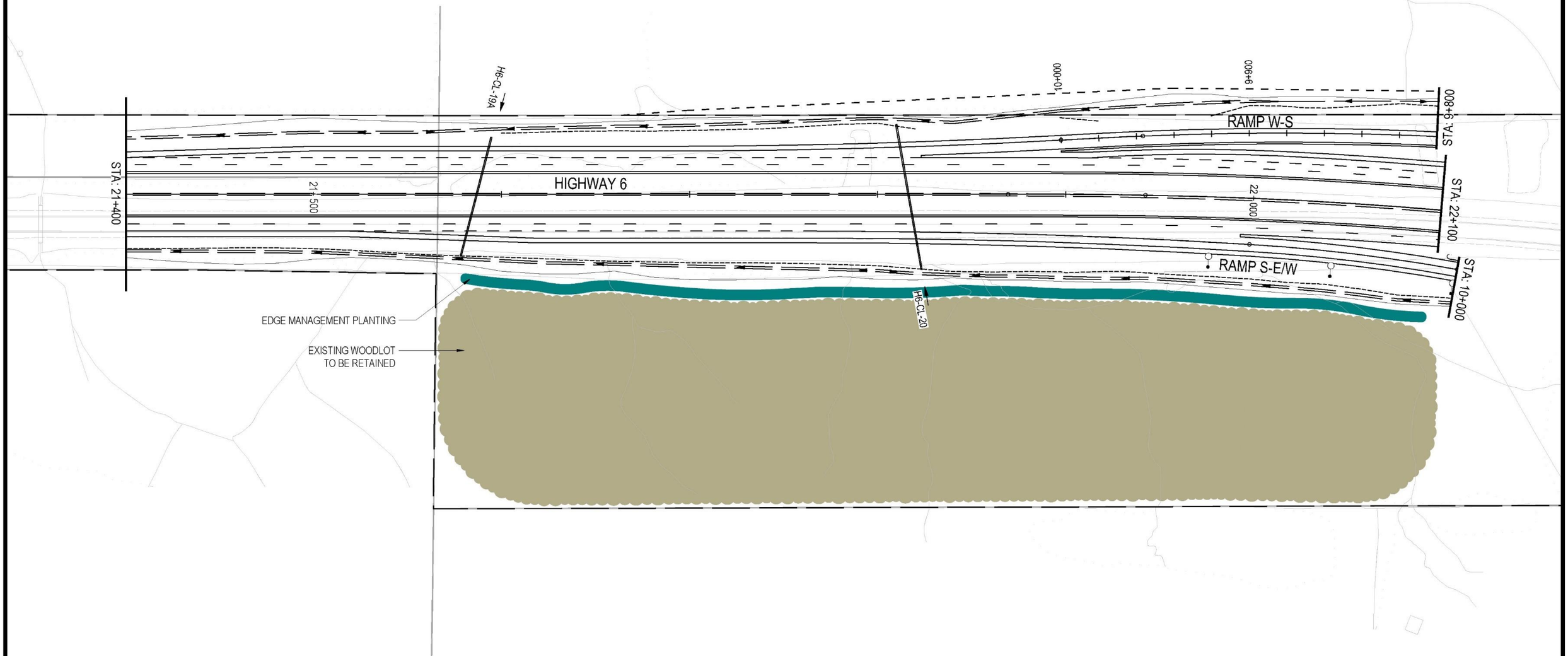
PLATE
9

PRELIMINARY

LEGEND

- EXISTING HIGHWAY 6 RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- PROPOSED RIGHT-OF-WAY
- PROPOSED DITCH
- GRADING LIMITS
- EDGE MANAGEMENT PLANTING
- EXISTING WOODLOT TO BE RETAINED

CITY OF HAMILTON

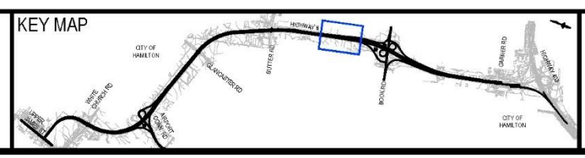


AECOM

Ontario Ministry of Transportation

HIGHWAY 6
FROM HIGHWAY 403 TO UPPER JAMES STREET
AGREEMENT # 2021-E-0011

KEY MAP



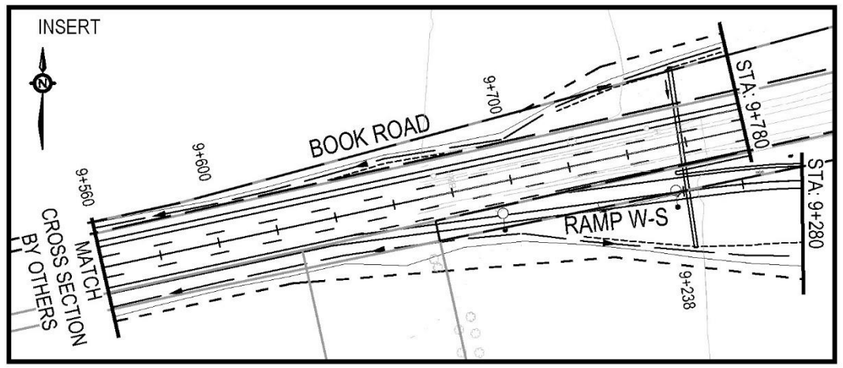
HIGHWAY 6
RECOMMENDED LANDSCAPE PLAN

STATION 21+400 TO STATION 22+100

SCALE
1:2000 (ANSI B)
25m 0m 50m

PLATE
10

PRELIMINARY



STA: 9+780 (SEE INSERT)

STA: 9+280

ROWS OF CONIFEROUS PLANTING

RAMP N-E/W

RAMP E-S

STA: 10+700

ROWS OF CONIFEROUS PLANTING

STORM WATER MANAGEMENT POND

NEW BRIDGE CONSTRUCTION AT BOOK RD

RAMP W-S

STA: 9+080

HIGHWAY 6

H6-CL-21

STA: 22+100

STA: 22+760

STA: 10+000

RAMP S-E/W

INTERCHANGE PLANTING, TYP.

STORM WATER MANAGEMENT POND

RAMP W-N

BOOK ROAD

H6-CL-22

BOOK-PARKIN CEMETERY

EXISTING VEGETATION TO BE RETAINED WHERE POSSBILE, TYP.

STA: 10+245

LEGEND

- EXISTING HIGHWAY 6 RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- PROPOSED RIGHT-OF-WAY
- PROPOSED DITCH
- GRADING LIMITS
- INTERCHANGE PLANTING
- ROWS OF CONIFEROUS PLANTING
- EXISTING VEGETATION TO BE RETAINED WHERE POSSIBLE

AECOM

Ontario Ministry of Transportation

HIGHWAY 6
FROM HIGHWAY 403 TO UPPER JAMES STREET
AGREEMENT # 2021-E-0011

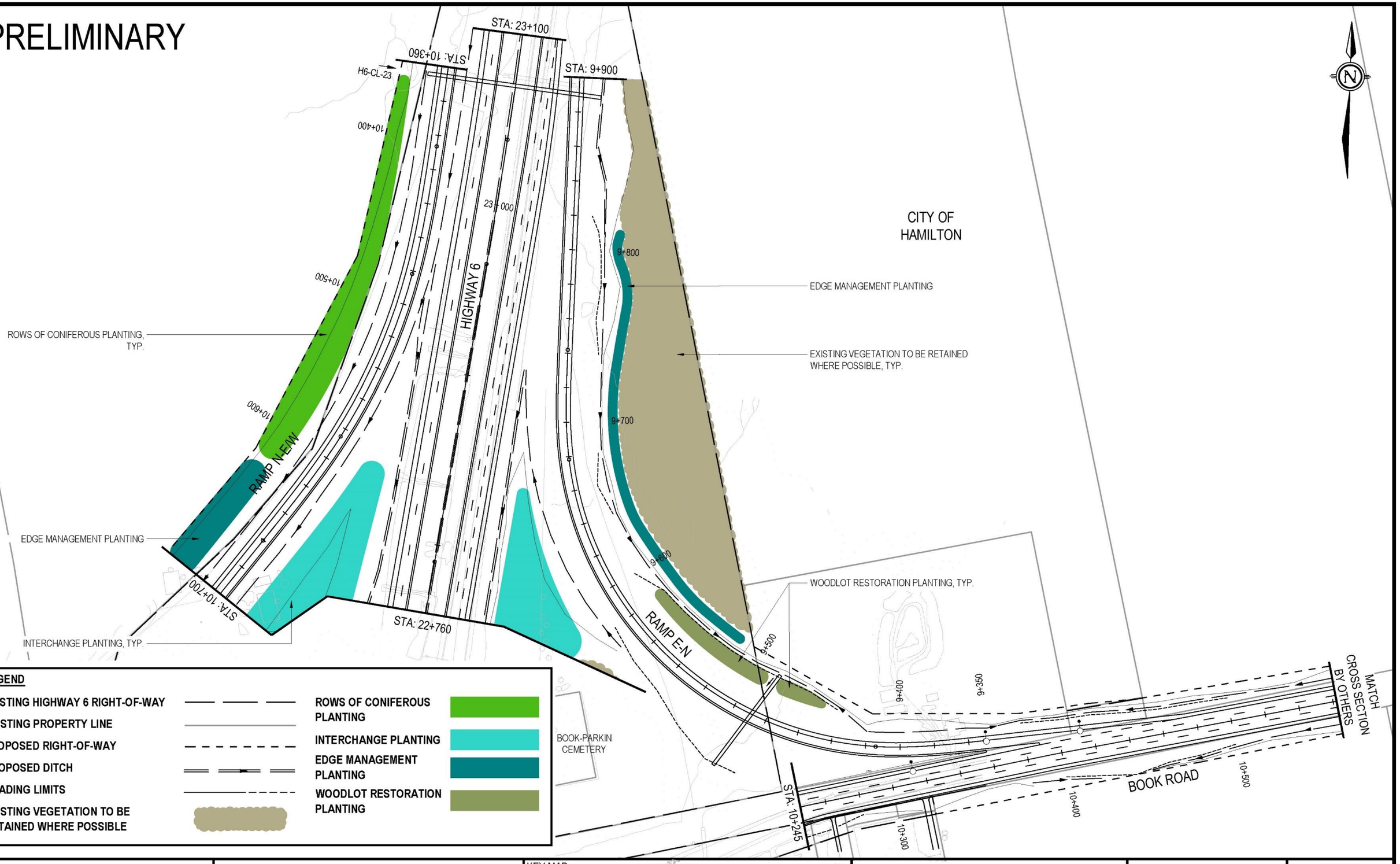
KEY MAP

HIGHWAY 6
RECOMMENDED LANDSCAPE PLAN
STATION 22+100 TO STATION 22+760

SCALE
1:2000 (ANSI B)
25m 0m 50m

PLATE
11

PRELIMINARY



LEGEND

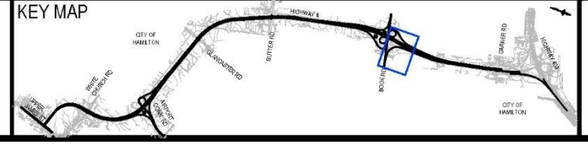
- EXISTING HIGHWAY 6 RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- PROPOSED RIGHT-OF-WAY
- PROPOSED DITCH
- GRADING LIMITS
- EXISTING VEGETATION TO BE RETAINED WHERE POSSIBLE
- ROWS OF CONIFEROUS PLANTING
- INTERCHANGE PLANTING
- EDGE MANAGEMENT PLANTING
- WOODLOT RESTORATION PLANTING

AECOM

Ontario Ministry of Transportation

HIGHWAY 6
FROM HIGHWAY 403 TO UPPER JAMES STREET
AGREEMENT # 2021-E-0011

KEY MAP



HIGHWAY 6
RECOMMENDED LANDSCAPE PLAN

STATION 22+760 TO STATION 23+100

SCALE
1:2000 (ANSI B)
25m 0m 50m

PLATE
12

PRELIMINARY

CITY OF HAMILTON

STA: 10+360

10+300

10+200

RAMP N-E/W

10+100

10+000

STA: 23+100

STA: 23+800

23+500

HIGHWAY 6

STA: 9+900

RAMP E-N

10+000

EXISTING VEGETATION TO BE RETAINED WHERE POSSIBLE

LEGEND

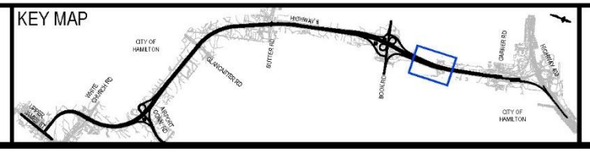
- EXISTING HIGHWAY 6 RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- PROPOSED RIGHT-OF-WAY
- PROPOSED DITCH
- GRADING LIMITS
- EXISTING VEGETATION TO BE RETAINED WHERE POSSIBLE

AECOM

Ontario Ministry of Transportation

HIGHWAY 6
FROM HIGHWAY 403 TO UPPER JAMES STREET
AGREEMENT # 2021-E-0011

KEY MAP



HIGHWAY 6
RECOMMENDED LANDSCAPE PLAN

STATION 23+100 TO STATION 23+800

SCALE
1:2000 (ANSI B)
25m 0m 50m

PLATE
13

PRELIMINARY

CITY OF
HAMILTON

ROWS OF CONIFEROUS
PLANTING

23+900

24+000

STA: 23+800

HIGHWAY 6

HIGHWAY 6 SOUTHBOUND

HIGHWAY 6 NORTHBOUND

STA: 24+500

HIGHWAY

NORTHBOUN

ROWS OF CONIFEROUS PLANTING

LEGEND

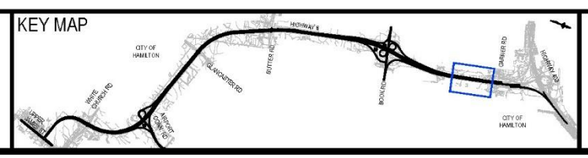
EXISTING HIGHWAY 6 RIGHT-OF-WAY		ROWS OF CONIFEROUS PLANTING	
EXISTING PROPERTY LINE			
PROPOSED RIGHT-OF-WAY			
PROPOSED DITCH			
GRADING LIMITS			

AECOM

Ontario Ministry of Transportation

HIGHWAY 6
FROM HIGHWAY 403 TO UPPER JAMES STREET
AGREEMENT # 2021-E-0011

KEY MAP



HIGHWAY 6
RECOMMENDED LANDSCAPE PLAN

STATION 23+800 TO STATION 24+500

SCALE
1:2000 (ANSI B)
25m 0m 50m

PLATE
14

PRELIMINARY

GARNER ROAD

ROWS OF CONIFEROUS PLANTING

RAMP 403E-E/W

RAMP 403W-6S

RAMP 403E-6S

RAMP 6S-403W

HIGHWAY 6
SOUTHBOUND

HIGHWAY 6
NORTHBOUND

STA: 24+500

R=4800m

RAMP 6S-403E

A=220

R=600m

STA: 9+600

9+112

9+200

9+300

EC

9+400

TS
9+500

SC

H403-R-1

RAMP E/W-403E

ROWS OF CONIFEROUS PLANTING

CITY OF
HAMILTON

LEGEND

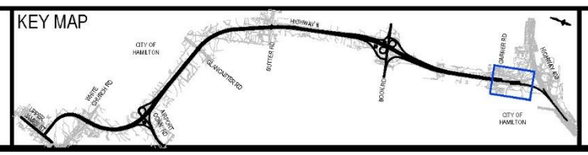
EXISTING HIGHWAY 6 RIGHT-OF-WAY	ROWS OF CONIFEROUS PLANTING
EXISTING PROPERTY LINE	
PROPOSED DITCH	
GRADING LIMITS	

AECOM

Ontario Ministry of Transportation

HIGHWAY 6
FROM HIGHWAY 403 TO UPPER JAMES STREET
AGREEMENT # 2021-E-0011

KEY MAP

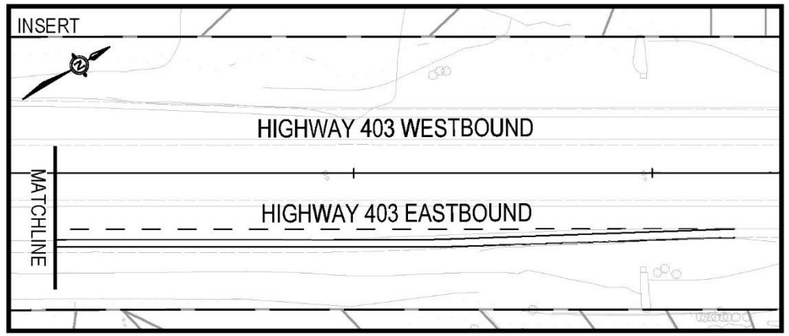


HIGHWAY 6
RECOMMENDED LANDSCAPE PLAN
HIGHWAY 6 RAMP 6S-403E
STATION 24+500 TO STATION 9+600

SCALE
1:2000 (ANSI B)
25m 0m 50m

PLATE
15

PRELIMINARY



RAMP 6S-403W

RAMP 403E-6S

10+000

HIGHWAY 403 WESTBOUND

HIGHWAY 403 EASTBOUND

CITY OF HAMILTON

R=600m

RAMP 6S-403E

A=220

10+500

STA. 9+600

9+700

9+800

9+900

CS

SC 10+000

R=4100m

MATCHLINE (SEE INSERT)

LEGEND

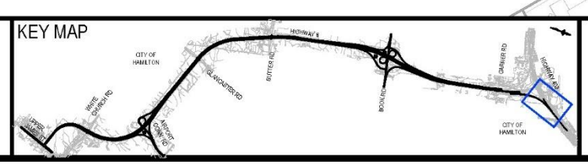
- EXISTING HIGHWAY 6 RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- PROPOSED DITCH
- GRADING LIMITS

AECOM

Ontario Ministry of Transportation

HIGHWAY 6
FROM HIGHWAY 403 TO UPPER JAMES STREET
AGREEMENT # 2021-E-0011

KEY MAP



HIGHWAY 6
RECOMMENDED LANDSCAPE PLAN
RAMP 6S-403E
STATION 9+600 TO STATION 10+000

SCALE
1:2000 (ANSI B)
25m 0m 50m

PLATE
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