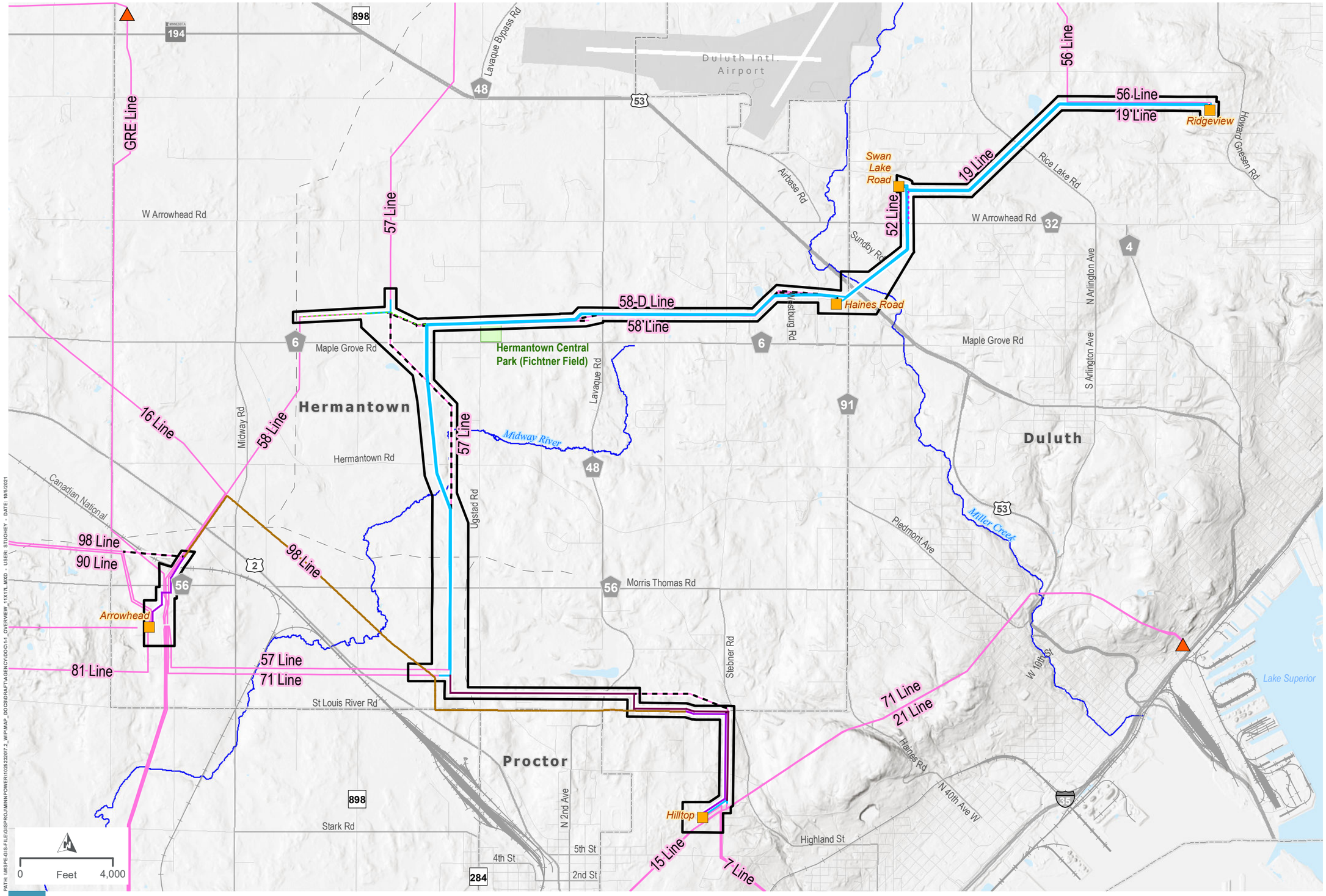
PROJECT MAPS



LEGEND

- Proposed Route
- Project Substation
- Non-Project Substation
- Relocated Distribution
- Project 115 kV Transmission Line(s) (Single Circuit)
- Project 115 kV Transmission Line (Double Circuit)
- Project 230 kV Transmission Line (Single Circuit)
- Removed Transmission Line (Realigned)
- Thermal Upgrades
- New Underground Fiber
- Existing Transmission Line
- Existing Pipeline
- Waterbody
- Public Water Watercourse
- Park
- Airport
- Railroad
- City Boundary

NOTE: ONLY EXISTING LINE LABELS ARE PROVIDED FOR REFERENCE. FOR FURTHER DEFINITION ON FINAL LINE CONFIGURATIONS AND DESIGNATIONS, SEE MAP 2-4 PROPOSED SYSTEM OVERVIEW OR APPENDIX K-3

PATH: \\MSPE-GIS-FILE\GISPROJ\MINNPOWER\102522072_2_WIP\MAP_DOCS\DRAFT\AGENCY\DOC1-1_OVERVIEW_11X17L.MXD - USER: STUOHEY - DATE: 10/5/2021

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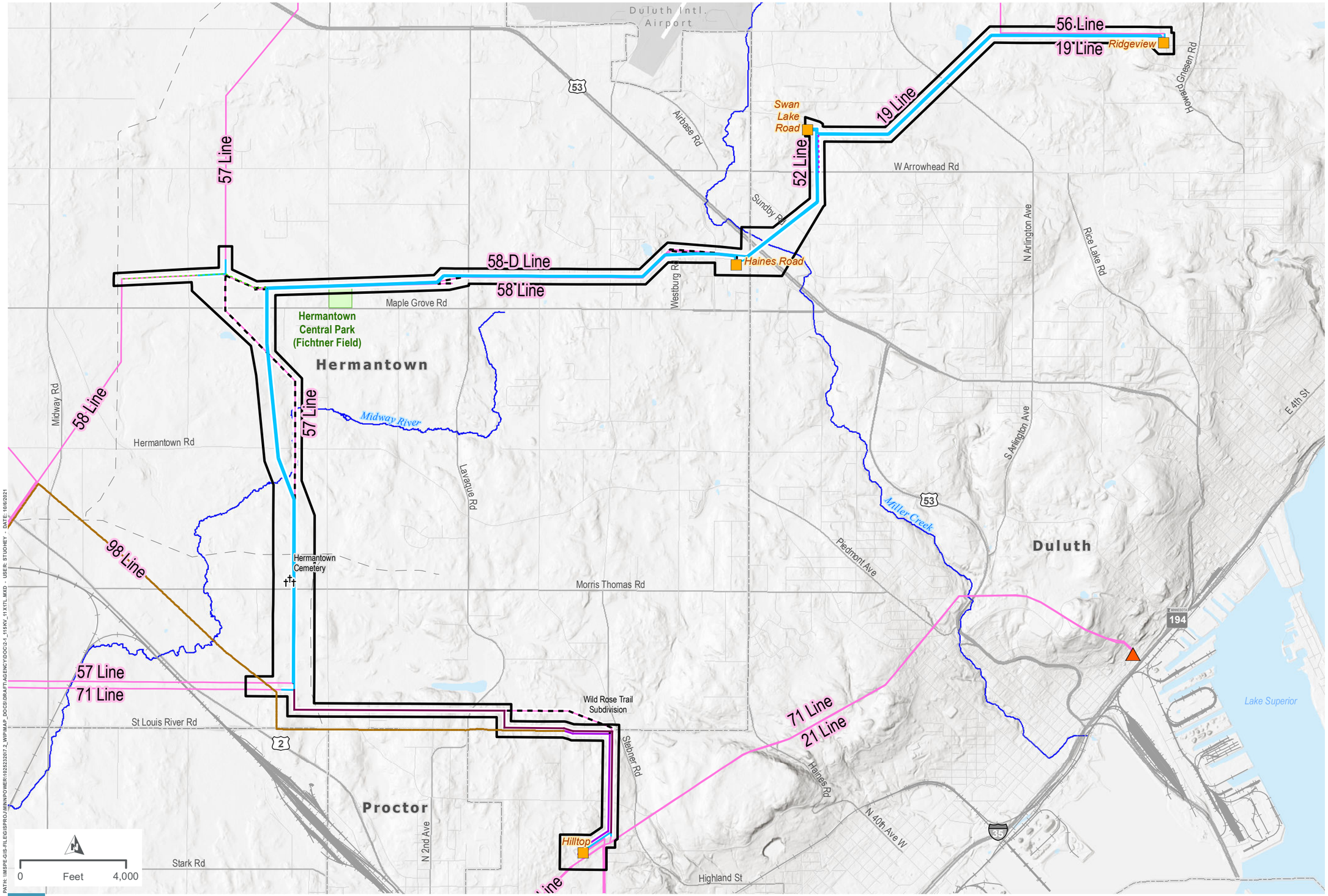
DULUTH LOOP PROJECT OVERVIEW

DULUTH LOOP RELIABILITY PROJECT

MAP 1-1

MPUC Docket No. E015/CN-21-140
MPUC Docket No. E015/TL-21-141



LEGEND

- Proposed Route
- Project Substation
- Non-Project Substation
- Relocated Distribution
- Project 115 kV Transmission Line(s) (Single Circuit)
- Project 115 kV Transmission Line (Double Circuit)
- Project 230 kV Transmission Line (Single Circuit)
- Removed Transmission Line (Realigned)
- Thermal Upgrades
- New Underground Fiber
- Existing Transmission Line
- Existing Pipeline
- Park
- Cemetery
- Waterbody
- Public Water Watercourse
- Airport
- City Boundary

NOTE: ONLY EXISTING LINE LABELS ARE PROVIDED FOR REFERENCE. FOR FURTHER DEFINITION ON FINAL LINE CONFIGURATIONS AND DESIGNATIONS, SEE MAP 2-4 PROPOSED SYSTEM OVERVIEW OR APPENDIX K-3

PATH: \\MSPE-GIS-FILE\GISPROJ\MINNPOWER\102523207 2_WIP\MAP_DOCS\DRAFT\AGENCY\DOC\2-1_115KV_11X17L.MXD - USER: STUOHEY - DATE: 10/6/2021

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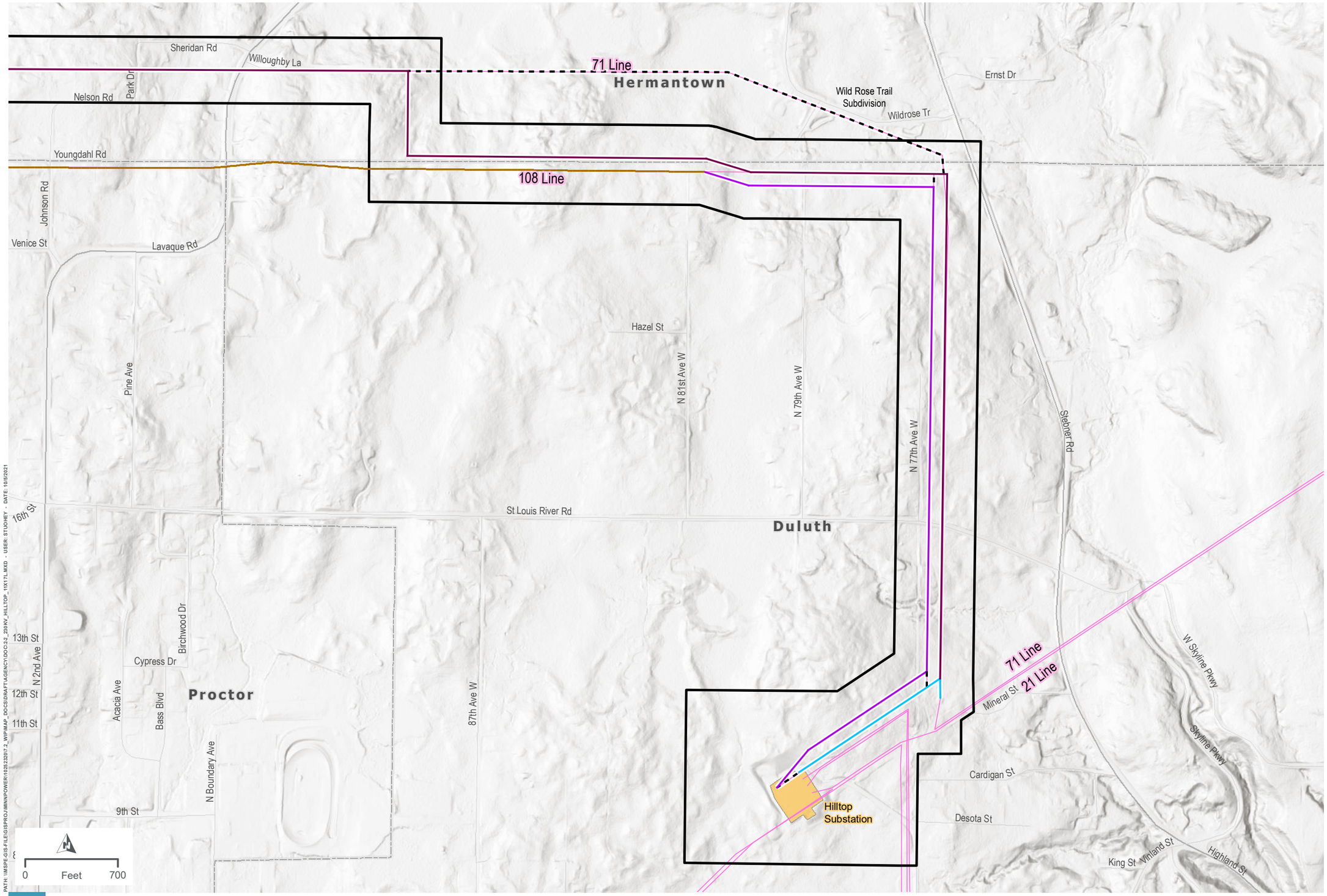
PROPOSED 115 KV ROUTE

DULUTH LOOP RELIABILITY PROJECT

MAP 2-1



LEGEND

- Hilltop Substation
- Proposed Route
- Project 115 kV Transmission Line(s) (Single Circuit)
- Project 115 kV Transmission Line (Double Circuit)
- Project 230 kV Transmission Line (Single Circuit)
- Removed Transmission Line (Realigned)
- Thermal Upgrades
- Existing Transmission Line
- City Boundary

NOTE: ONLY EXISTING LINE LABELS ARE PROVIDED FOR REFERENCE. FOR FURTHER DEFINITION ON FINAL LINE CONFIGURATIONS AND DESIGNATIONS, SEE MAP 2-4 PROPOSED SYSTEM OVERVIEW OR APPENDIX K-3

PATH: \\MSPE-GIS-FILE\GISPROJ\MNNPOWER\102523207.2_WIPMAP_DOCS\DRAFT\AGENCY\DOC\2.2_230KV_HILLTOP_11X17L.MXD - USER: STUOHEY - DATE: 10/5/2021

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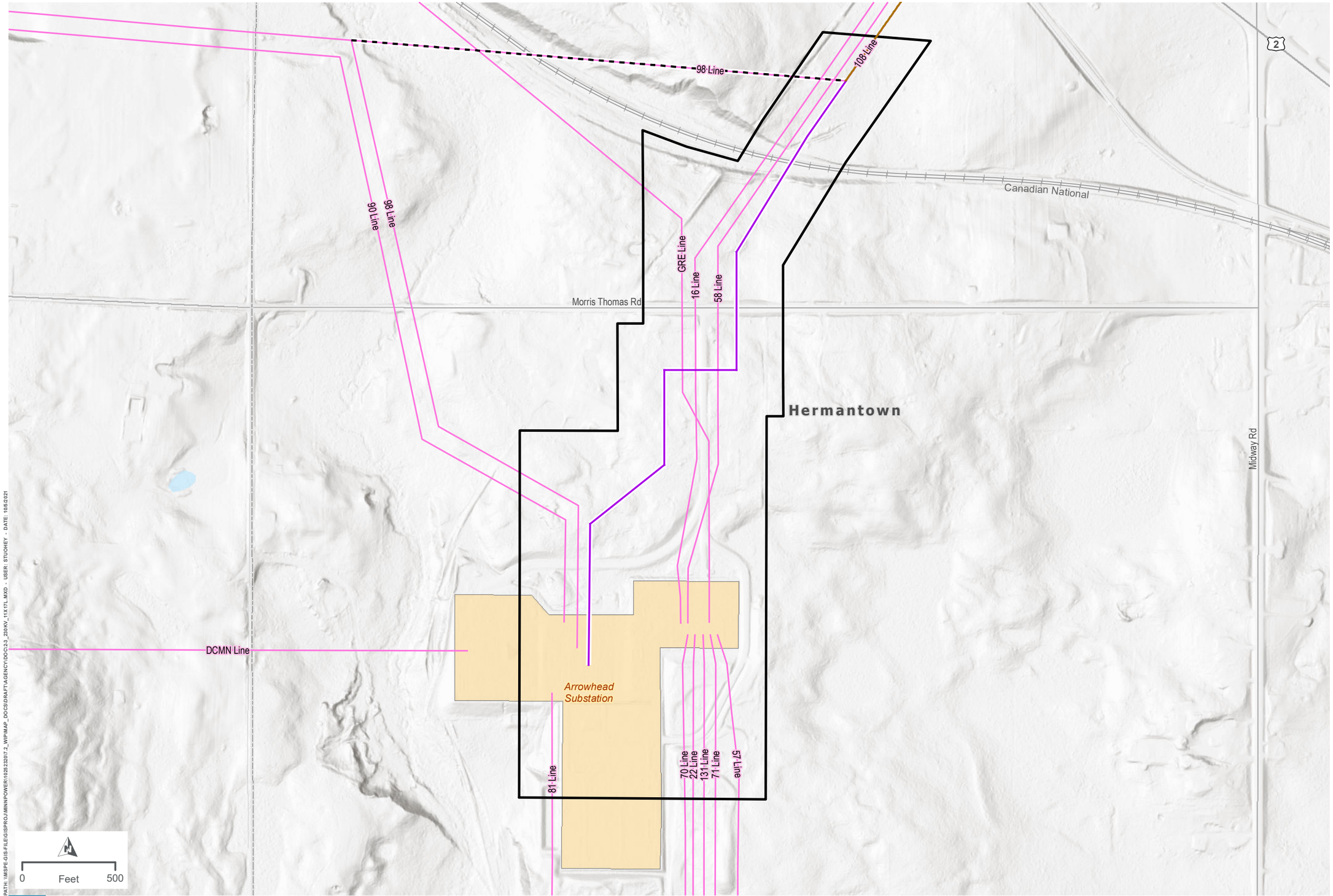
PROPOSED 115 KV ROUTE INTO HILLTOP SUBSTATION

DULUTH LOOP RELIABILITY PROJECT

MAP 2-2



LEGEND

- Arrowhead Substation
- Proposed Route
- Project 230 kV Transmission Line (Single Circuit
- Removed Transmission Line (Realigned)
- Thermal Upgrades
- Existing Transmission Line
- Waterbody
- Railroad
- City Boundary

NOTE: ONLY EXISTING LINE LABELS ARE PROVIDED FOR REFERENCE. FOR FURTHER DEFINITION ON FINAL LINE CONFIGURATIONS AND DESIGNATIONS, SEE MAP 2-4 PROPOSED SYSTEM OVERVIEW OR APPENDIX K-3

PATH: \\MSPE-GIS-FILE\GISPROJ\MINNPOWER\102522017_2_WIP\MAP_DOCS\DRAFT\AGENCY\DOC\2.3_230KV_11X17L.MXD - USER: STUOHEY - DATE: 10/8/2021

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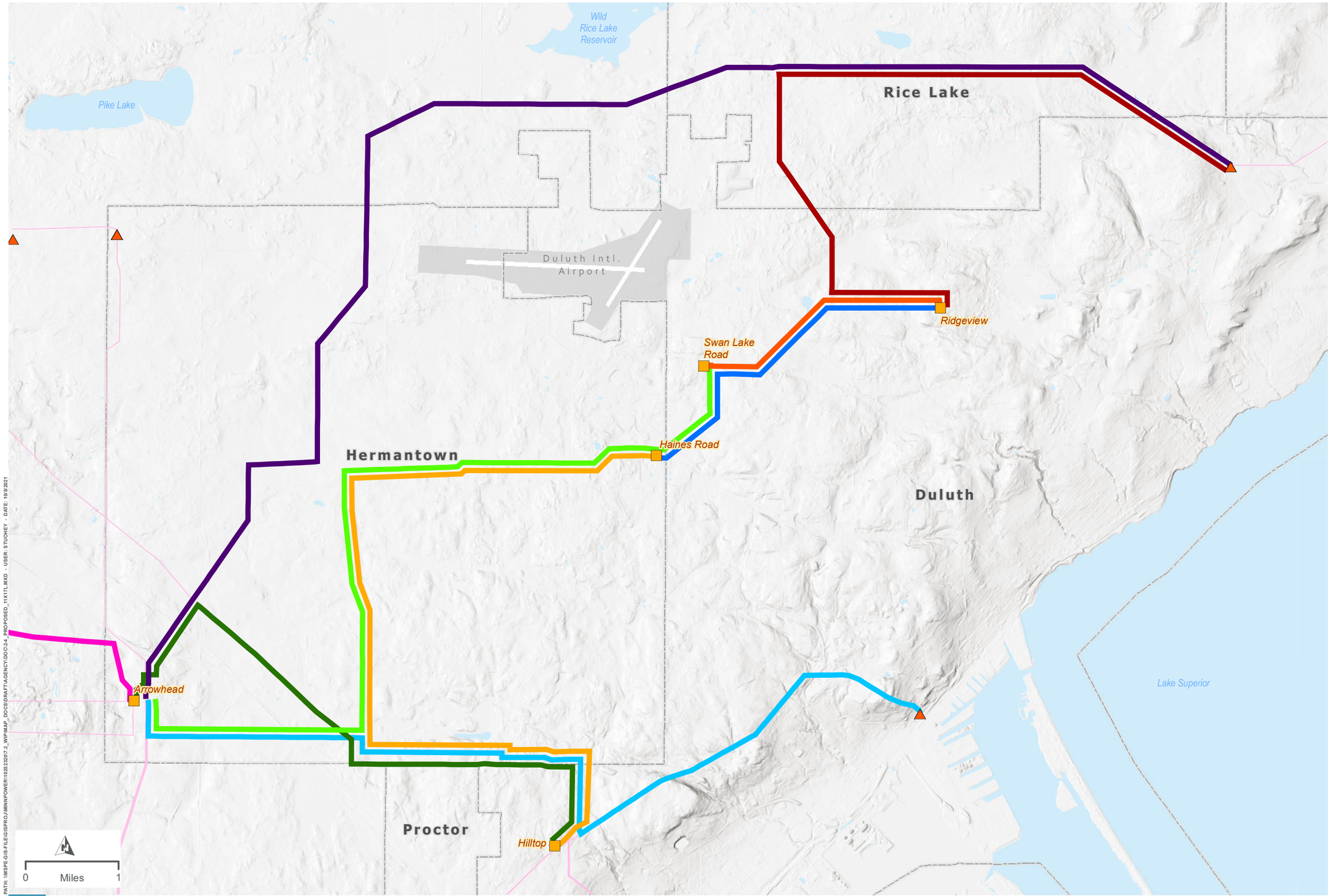
PROPOSED 230 KV ROUTE

DULUTH LOOP RELIABILITY PROJECT

MAP 2-3

MPUC Docket No. E015/CN-21-140
MPUC Docket No. E015/TL-21-141



LEGEND

- Project Substation
- Non-Project Substation
- 19 Line
- 52 Line
- 56 Line
- 57 Line
- 58 Line
- 71 Line*
- 98 Line
- 108 Line
- 176 Line*
- Existing Transmission Line
- Waterbody
- Airport
- City Boundary

*NOTE: A PORTION OF 176 LINE WILL BE CONSTRUCTED AS A DOUBLE CIRCUIT WITH 71 LINE.

TRANSMISSION SYSTEM IS NOT SHOWN TO SCALE

PATH: \\MSPE-GIS-FILE\GISPROJ\MINNPOWER\102522072_WIP\MAP_DOCS\DRAFT\AGENCY\DOC2-4_PROPOSED_11X17L.MXD - USER: STUOHEY - DATE: 10/5/2021

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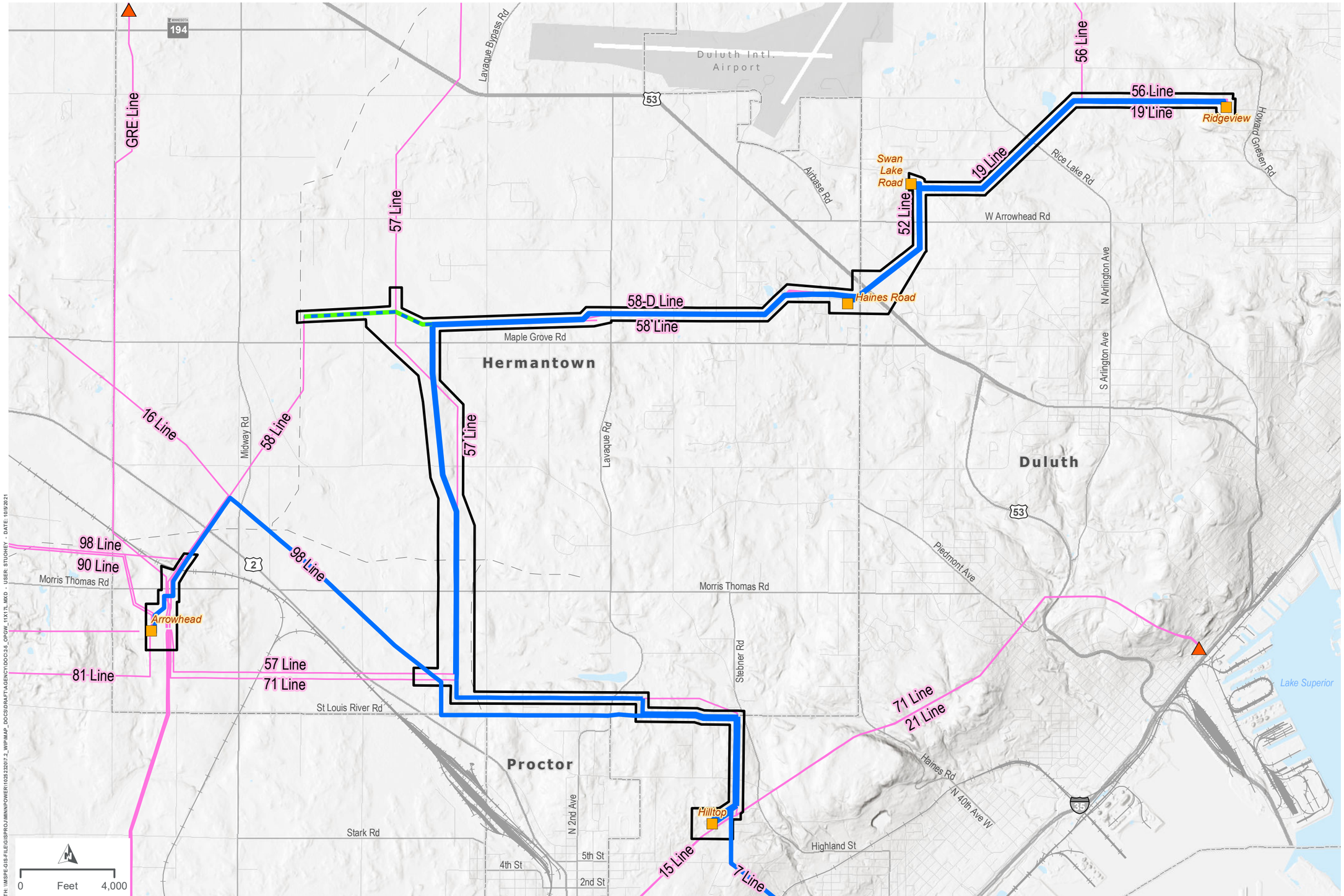
PROPOSED SYSTEM OVERVIEW

DULUTH LOOP RELIABILITY PROJECT

MAP 2-4



LEGEND

- Construct Underground OPGW
- Replace OPGW
- Removed OPGW
- Proposed Route
- Project Substation
- Non-Project Substation
- Existing Transmission Line
- Existing Pipeline
- Waterbody
- Airport
- City Boundary

NOTE: ONLY EXISTING LINE LABELS ARE PROVIDED FOR REFERENCE. FOR FURTHER DEFINITION ON FINAL LINE CONFIGURATIONS AND DESIGNATIONS, SEE MAP 2-4 PROPOSED SYSTEM OVERVIEW OR APPENDIX K-3

LIMITS OF NEW AND/OR REPLACEMENT OF FIBER OPTIC ON THE TRANSMISSION LINES MAY BE ADJUSTED OR REDUCED AS APPROPRIATE PENDING FINAL ENGINEERING.

PATH: \\MSPE-GIS-FILE\GISPROJ\MINNPOWER\102522007 2_WIP\MAP_DOCS\DRAFT\AGENCY\DOC2-5_OPGW_11X17L.MXD - USER: STUOHEY - DATE: 10/5/2021

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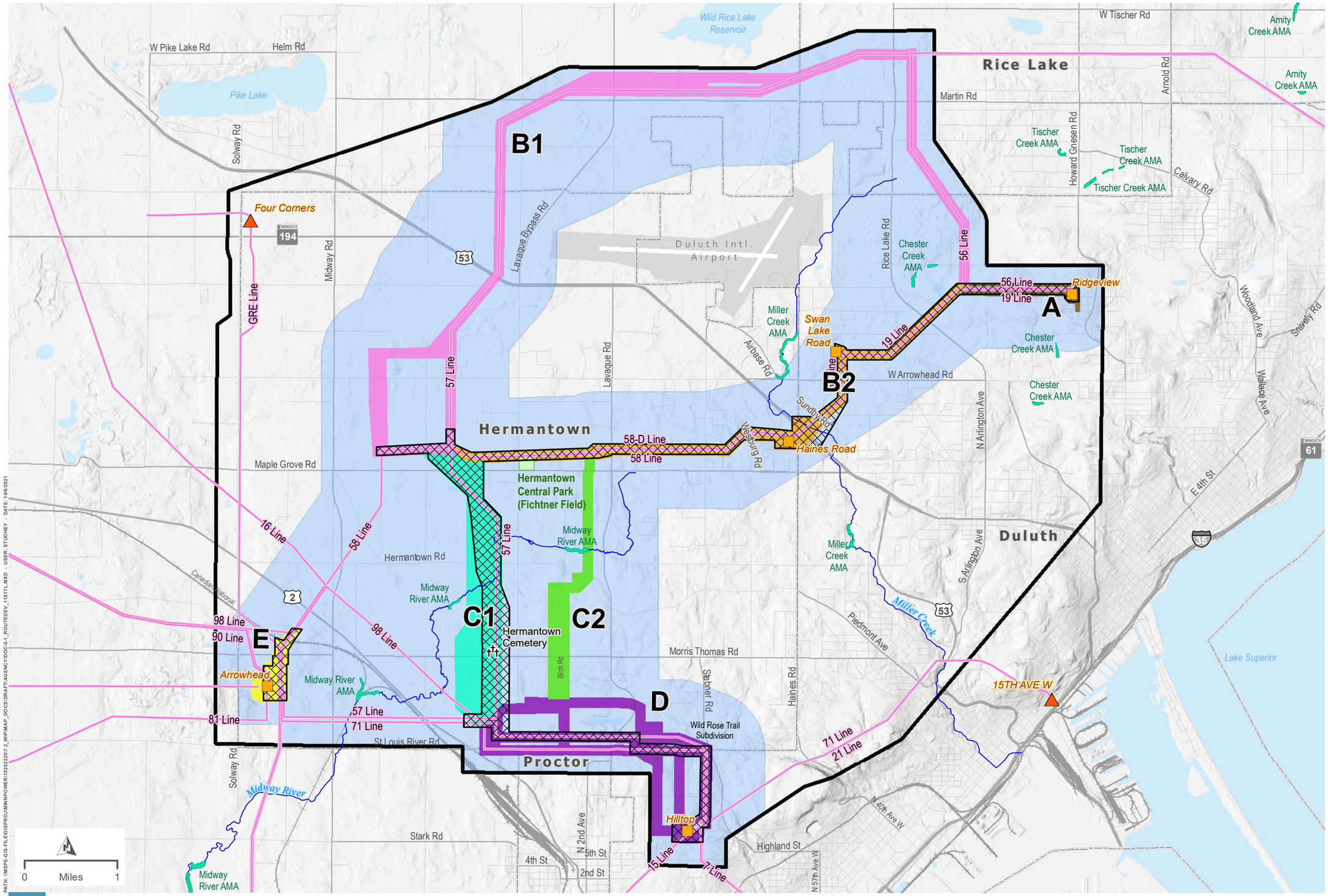
COMMUNICATIONS INFRASTRUCTURE MODIFICATIONS

DULUTH LOOP RELIABILITY PROJECT

MAP 2-5

MPUC Docket No. E015/CN-21-140
MPUC Docket No. E015/TL-21-141



LEGEND

- Study Area
- Study Corridor

Route Alternative

- Segment A (Brown)
- Segment B1 (Pink)
- Segment B2 (Orange)
- Segment C1 (Teal)
- Segment C2 (Green)
- Segment D (Purple)
- Segment E (Yellow)
- Proposed Route
- Existing Transmission Line
- Project Substation
- Non-Project Substation
- Aquatic Management Area
- Waterbody
- Public Water Watercourse
- School / College / University
- Park
- Cemetery
- Airport
- Railroad

NOTE: ONLY EXISTING LINE LABELS ARE PROVIDED FOR REFERENCE. FOR FURTHER DEFINITION ON FINAL LINE CONFIGURATIONS AND DESIGNATIONS, SEE MAP 2-4 PROPOSED SYSTEM OVERVIEW OR APPENDIX K-3

PATH: \\MSPE-GIS-FILE\GIS\PROJ\MINNPOWER\102522\2017_2_WIP\MAP_DOCS\DRAFT\AGENCY\DOC\5-1_ROUTEDEV_11X17_L.MXD - USER: STUOHEY - DATE: 10/6/2021

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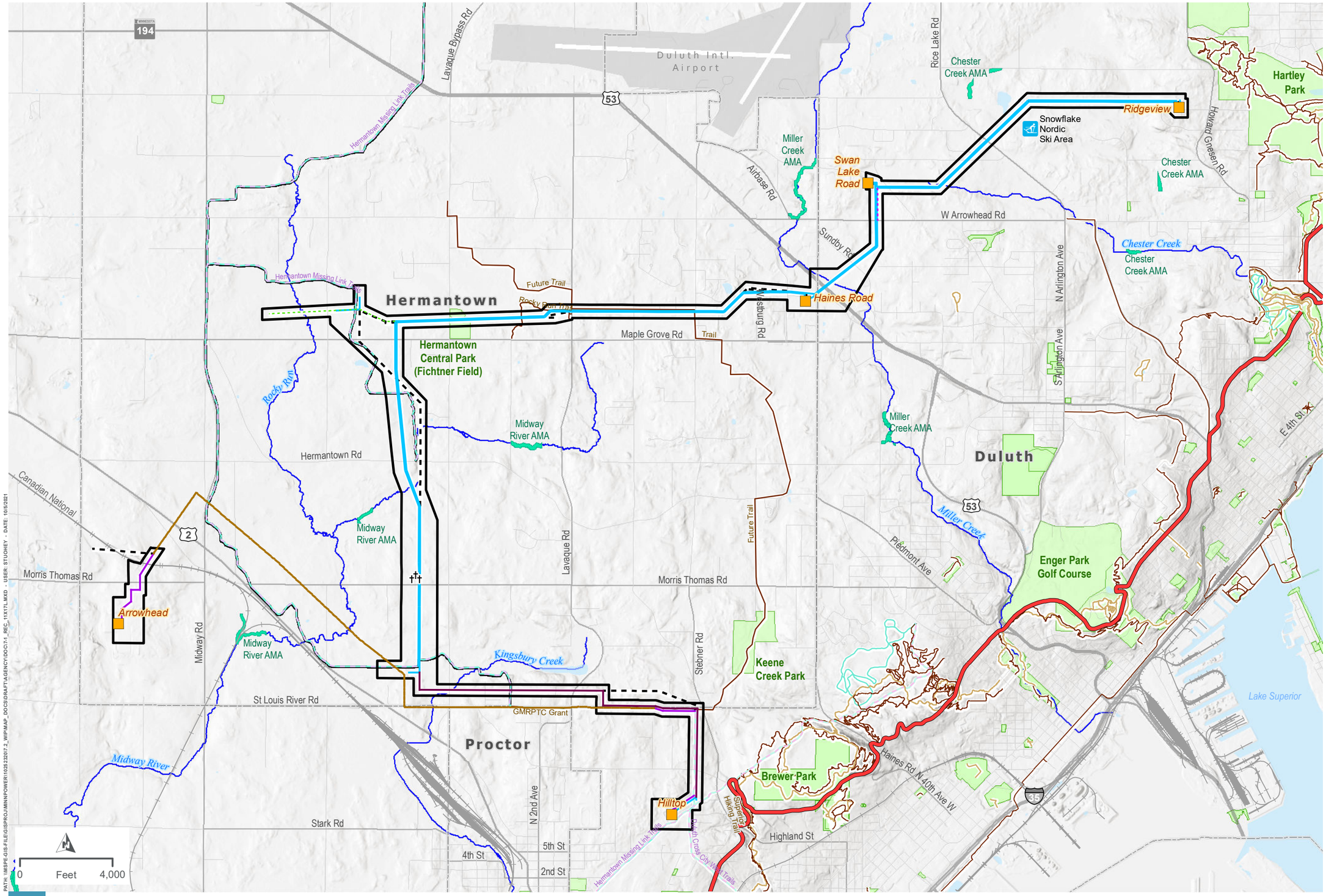
ROUTE DEVELOPMENT

DULUTH LOOP RELIABILITY PROJECT

MAP 5-1



LEGEND

- Proposed Route
- Project Substation
- Relocated Distribution
- Project 115 kV Transmission Line(s) (Single Circuit)
- Project 115 kV Transmission Line (Double Circuit)
- Project 230 kV Transmission Line (Single Circuit
- Removed Transmission Line (Realigned)
- Thermal Upgrades
- New Underground Fiber

Designated Trail

- Hiking Trail
- Multipurpose Trail (Existing/Future)
- Snowmobile Trail
- Cross Country Ski Trail
- Skyline Parkway
- Aquatic Management Area
- Park / Golf Course
- Ski Area
- Cemetery
- Public Water Watercourse
- Waterbody
- Airport
- City Boundary

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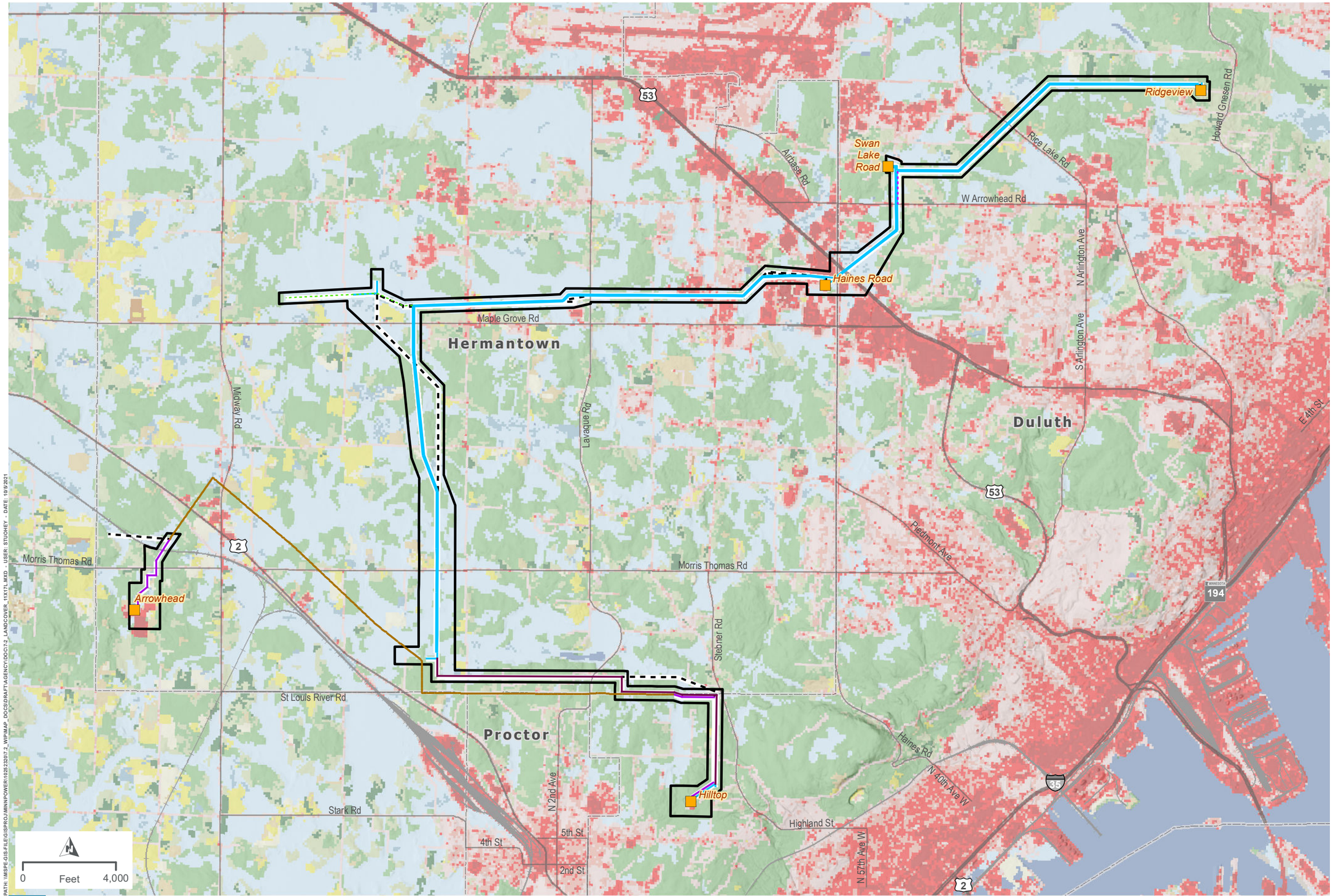
RECREATION OVERVIEW

DULUTH LOOP RELIABILITY PROJECT

MAP 7-1



LEGEND

- Proposed Route
- Project Substation
- Relocated Distribution
- Project 115 kV Transmission Line(s) (Single Circuit)
- Project 115 kV Transmission Line (Double Circuit)
- Project 230 kV Transmission Line (Single Circuit
- Removed Transmission Line (Realigned)
- Thermal Upgrades
- New Underground Fiber
- Open Water
- Developed, Open Space
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, High Intensity
- Barren Land
- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Shrub/Scrub
- Grassland/Herbaceous
- Pasture/Hay
- Cultivated Crops
- Woody Wetlands
- Emergent Herbaceous Wetlands
- City Boundary

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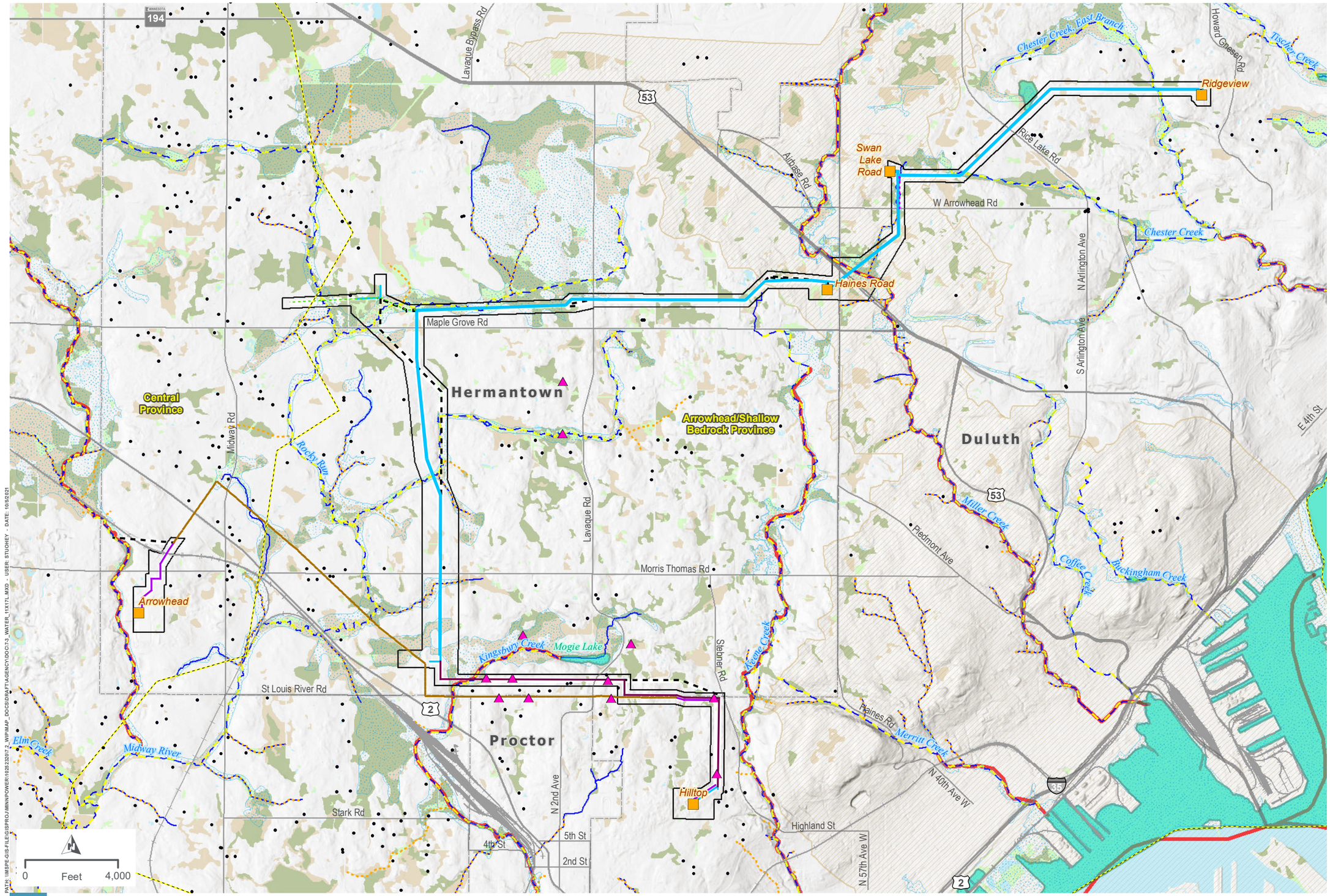
LAND COVER

DULUTH LOOP RELIABILITY PROJECT

MAP 7-2



LEGEND

- Proposed Route
- Project Substation
- Relocated Distribution
- Project 115 kV Transmission Line(s) (Single Circuit)
- Project 115 kV Transmission Line (Double Circuit)
- Project 230 kV Transmission Line (Single Circuit
- Removed Transmission Line (Realigned)
- Thermal Upgrades
- New Underground Fiber
- Private Well
- Impaired Water
- Public Water Basin/Wetland
- Public Water Watercourse
- FEMA Floodplain

National Wetlands Inventory

- Freshwater Emergent Wetland
- Freshwater Forested Wetland
- Freshwater Shrub Wetland
- Freshwater Pond; Lake; Riverine
- Designated Trout Stream
- Protected Tributary to Designated Trout Stream
- Unmapped Tributary
- Groundwater Province
- Saint Louis River Watershed
- City Boundary

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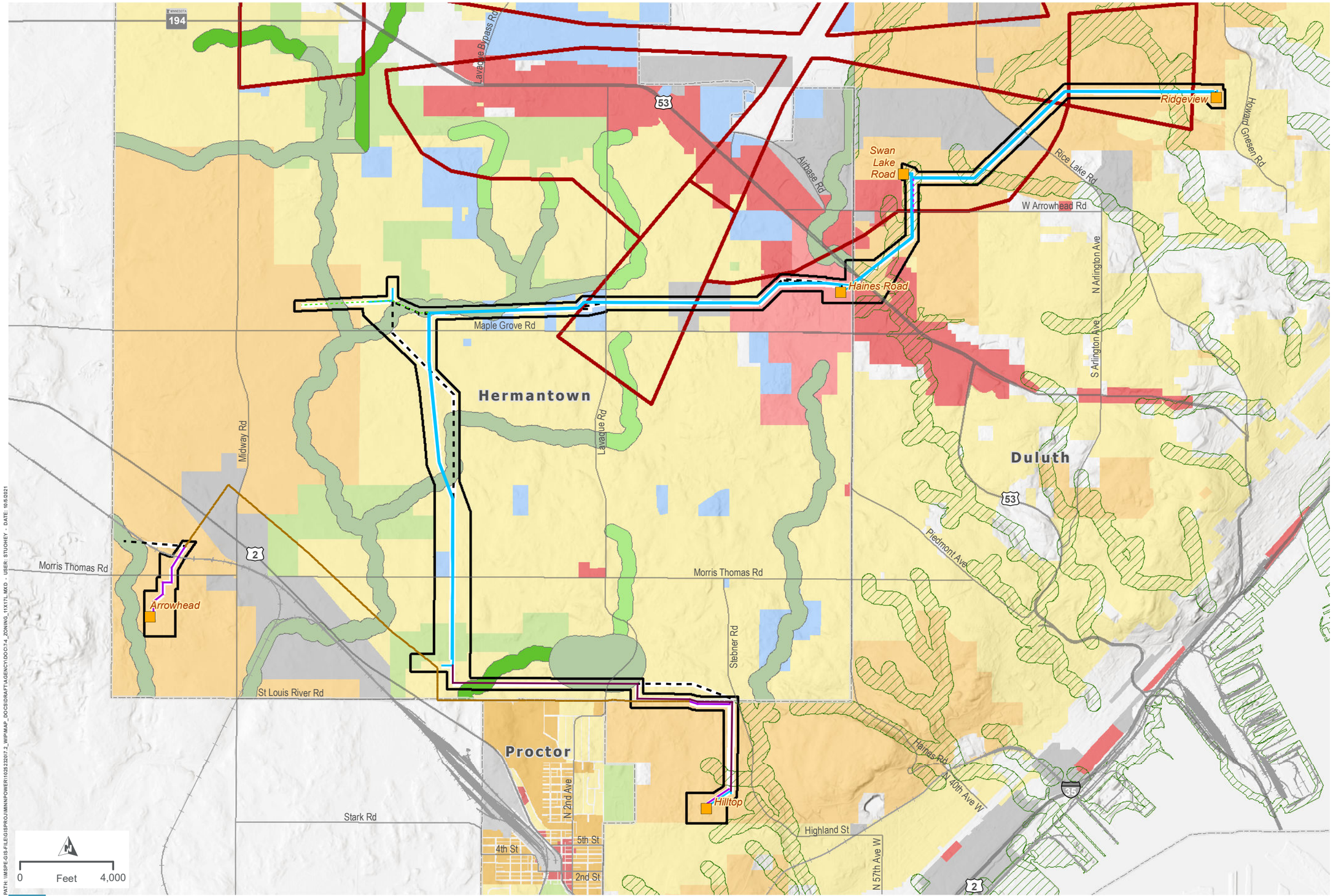
WATER RESOURCES

DULUTH LOOP RELIABILITY PROJECT

MAP 7-3



LEGEND

- Proposed Route
- Substation
- Relocated Distribution
- Project 115 kV Transmission Line(s) (Single Circuit)
- Project 115 kV Transmission Line (Double Circuit)
- Project 230 kV Transmission Line (Single Circuit
- Removed Transmission Line (Realigned)
- Thermal Upgrades
- New Underground Fiber
- Airport Safety Zone C
- Duluth Shoreland Management Zone

Hermantown Shoreland Overlay

- General Development
- Natural Environment
- Recreational Development

Zoning Classification

- Business and Light Manufacturing
- Commercial
- Hermantown Marketplace
- Open Space
- Public
- Low Density Residential
- Rural Residential
- City Boundary

PATH: \\MSPE-GIS-FILE\GISPROJ\MINNPOWER\102522007\2_WIP\MAP_DOCS\DRAFT\AGENCY\DOC\7-4_ZONING_11X17L.MXD - USER: STUOHEY - DATE: 10/5/2021

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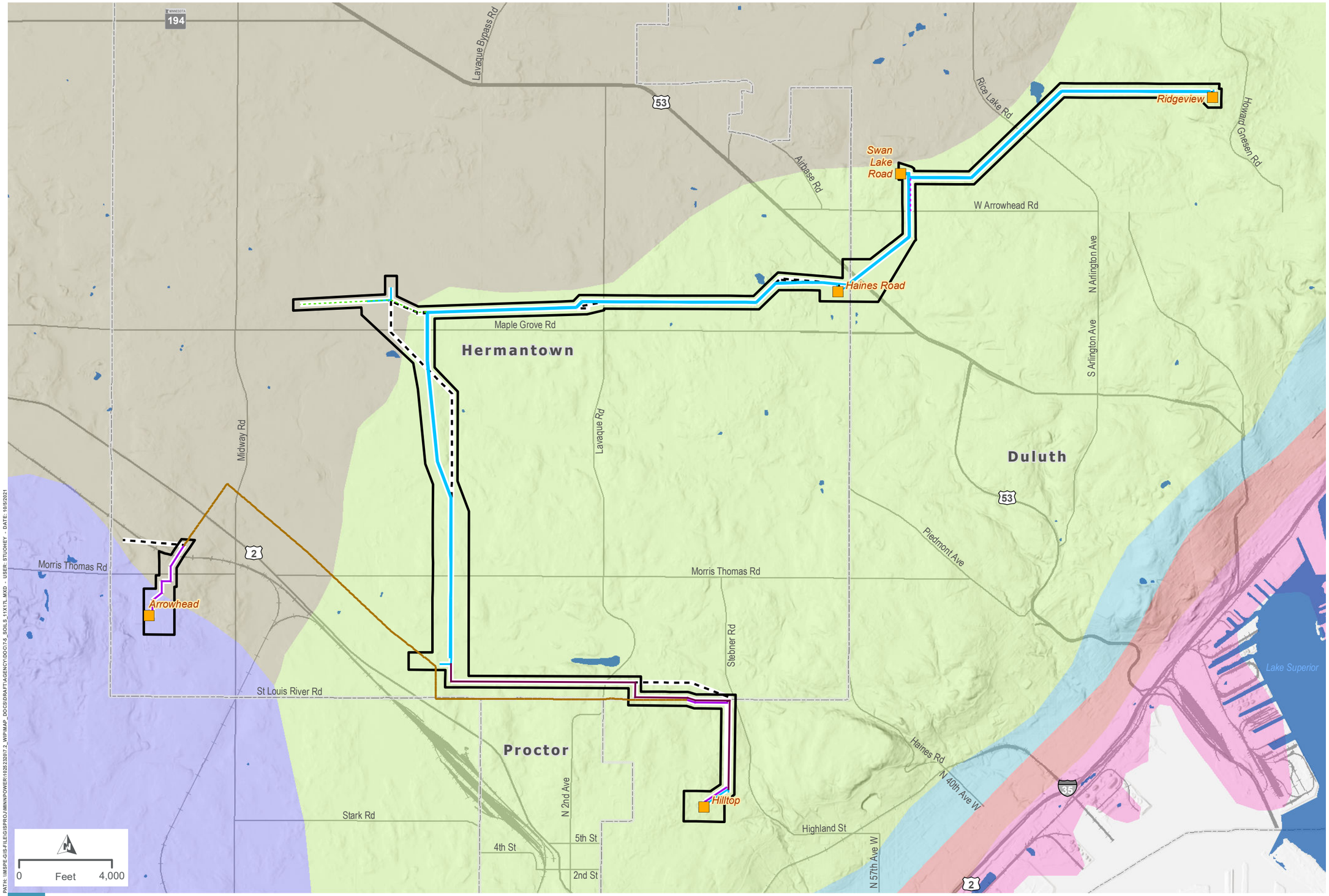
ZONING CLASSIFICATIONS

DULUTH LOOP RELIABILITY PROJECT

MAP 7-4



LEGEND

- Proposed Route
- Project Substation
- Relocated Distribution
- Project 115 kV Transmission Line(s) (Single Circuit)
- Project 115 kV Transmission Line (Double Circuit)
- Project 230 kV Transmission Line (Single Circuit
- Removed Transmission Line (Realigned)
- Thermal Upgrades
- New Underground Fiber

Soil Associations

- Dusler-Duluth (s3677)
- Hermantown-Ahmeek (s3676)
- Hermantown-Finland (s3672)
- Insula-Conic (s3673)
- Rudyard-Ontonagon-Be... (s8701)
- Sartell (s3694)
- Waterbody
- City Boundary

PATH: \\MSPE-GIS-FILE\GISPROJ\MNPOWER\10282232017.2_WIPMAP_DOCS\DRAFT\AGENCY\DOC\7.5_SOILS_11X17L.MXD - USER: STUOHEY - DATE: 10/5/2021

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SOIL RESOURCES

DULUTH LOOP RELIABILITY PROJECT

MAP 7-5