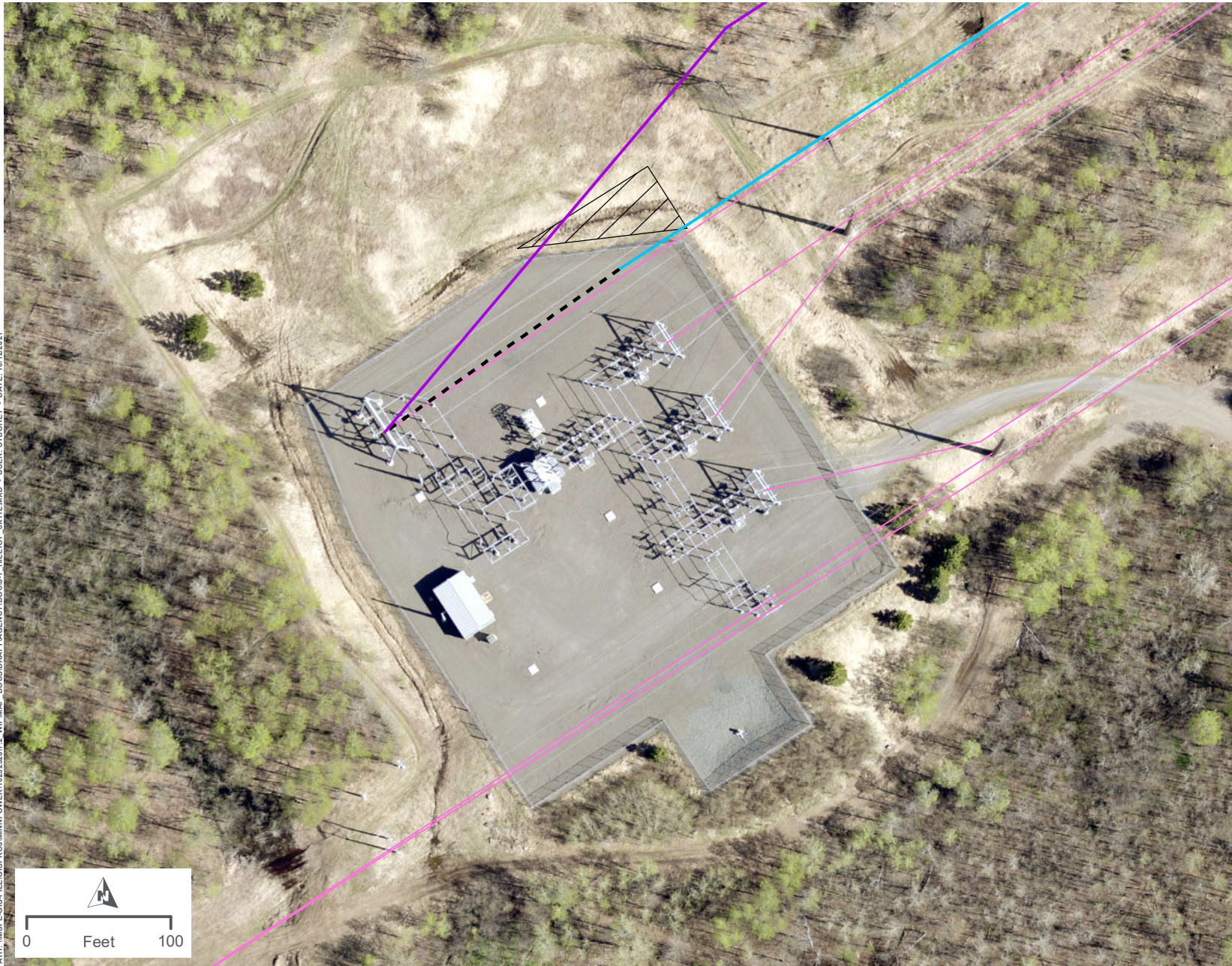







APPENDIX J

DETAILED ROUTE MAPS AND FIGURES SHOWING THE RIDGEVIEW SUBSTATION AND HILLTOP SUBSTATION EXPANSIONS

PATH: \\MSPEC\SIS-FILES\GIS\PROJECTS\MINNPOWER\1025232017.2_WIP\MAP DOCS\DRIFT\AGENCY\DOCS\1 HILLTOP EXHIBIT.WXD - USER: STUOHEY - DATE: 10/12/2021



LEGEND

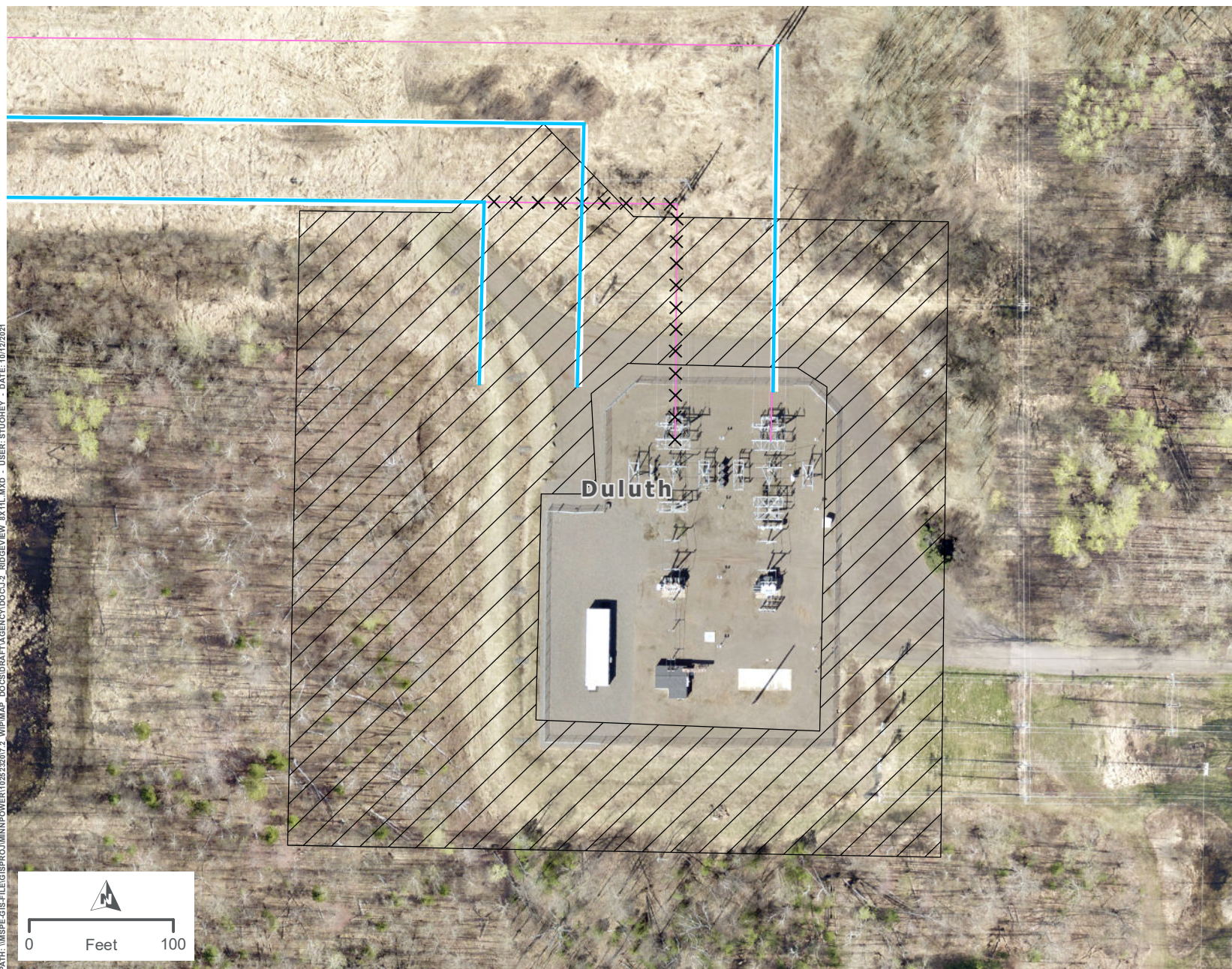
-  Substation Expansion Area
-  Project 115 kV Transmission Line (Single Circuit)
-  Project 230 kV Transmission Line (Single Circuit)
-  Removed Transmission Line (Realigned)
-  Existing Transmission Line







HILLTOP SUBSTATION EXPANSION DULUTH LOOP RELIABILITY PROJECT

APPENDIX J-1

PATH: \\MSPEC\GIS\FILES\PROJECTS\MINNPOWER\102522017.2_VIP\MAP DOCS\DRAFT\AGENCY\1000\J2 RIDGEVIEW AX1L.WXD - USER: STUDIOEY - DATE: 10/12/2021



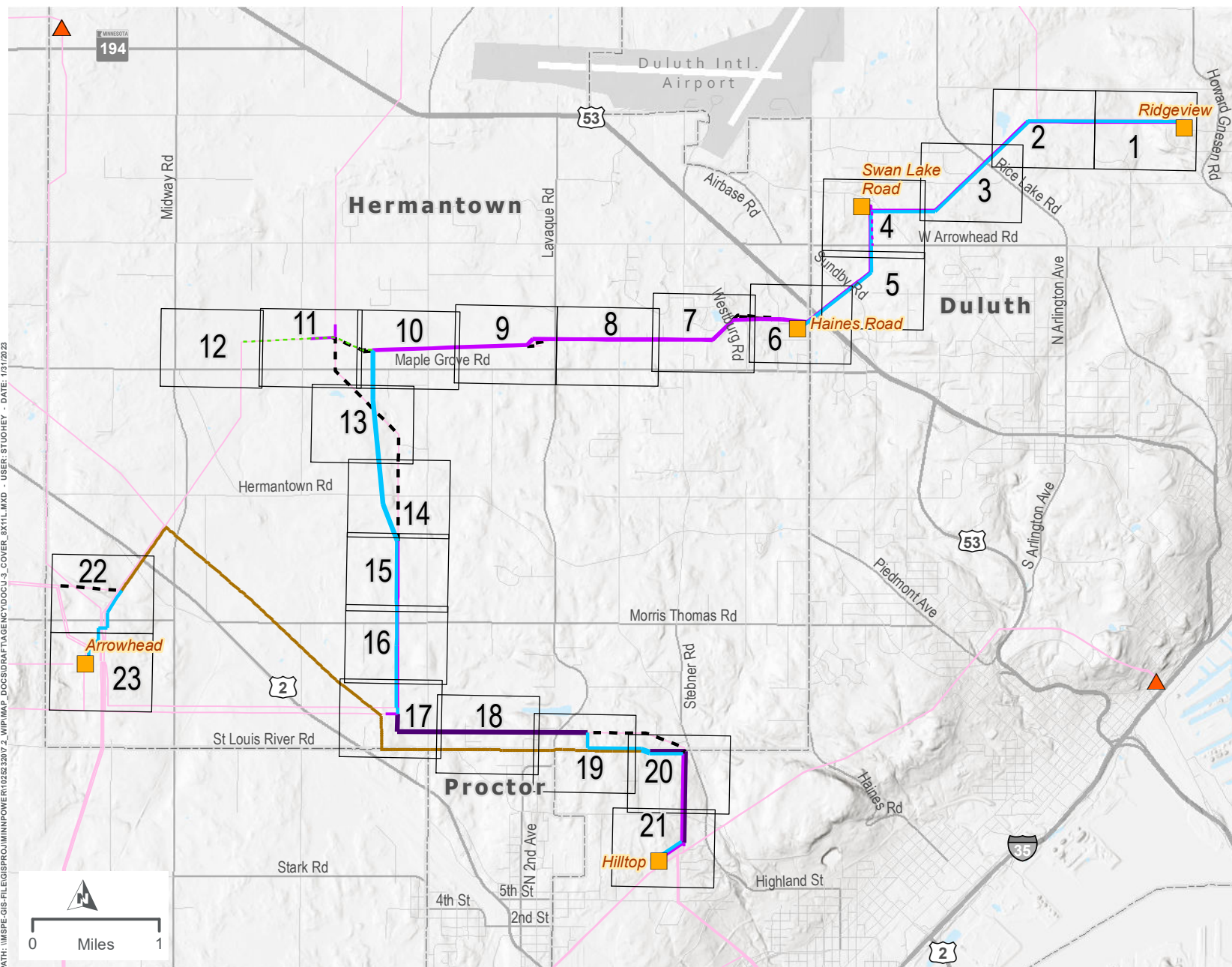
- LEGEND**
-  Substation Expansion Area
 -  Project 115 kV Transmission Line (Single Circuit)
 -  Removed Transmission Line (Realigned)
 -  Existing Transmission Line



RIDGEVIEW SUBSTATION EXPANSION DULUTH LOOP RELIABILITY PROJECT

APPENDIX J-2

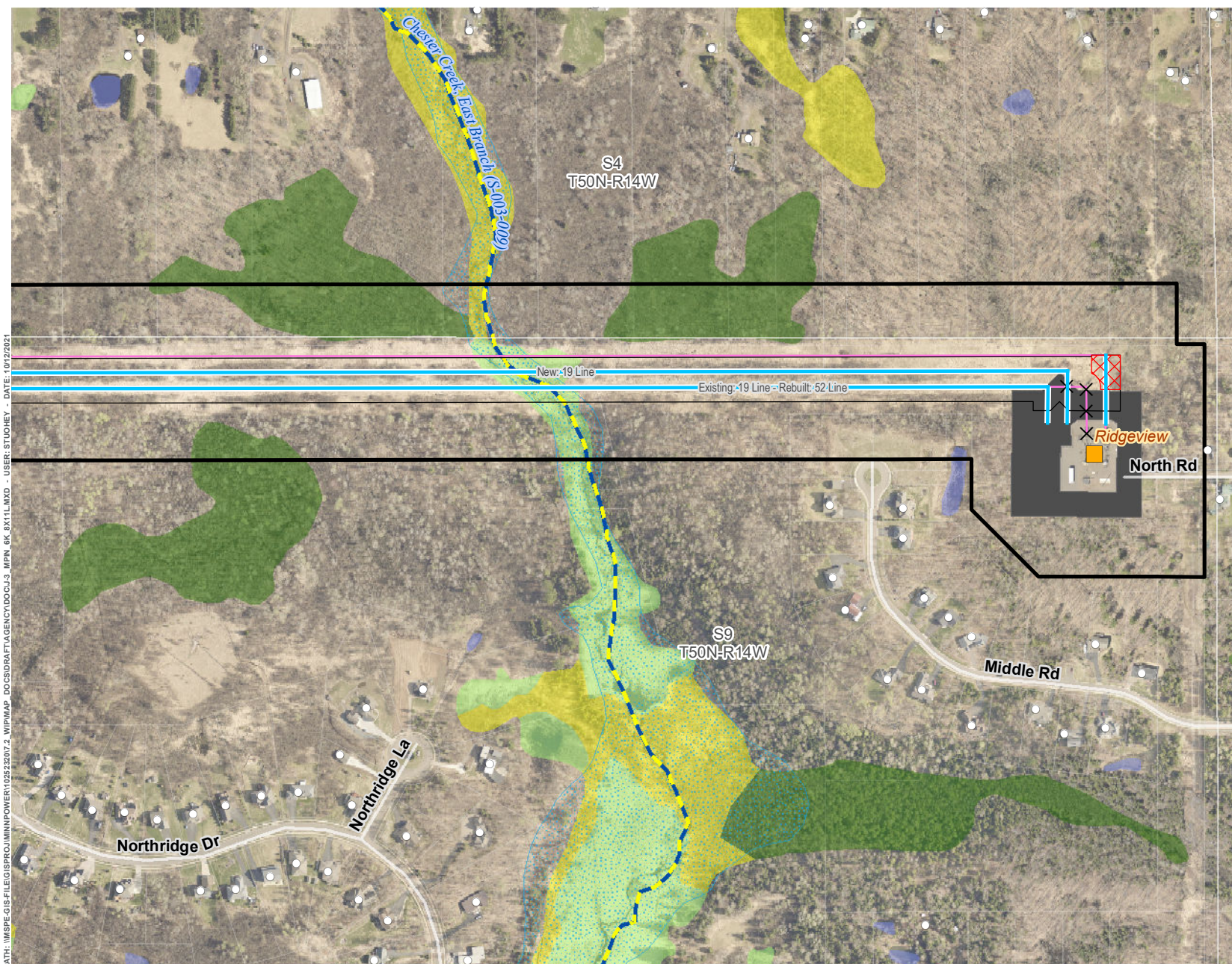
PATH: \\MSPE-GS-FILES\PROJ\MINNPOWER\12523207_2_WIP\MAP_DCS\DATA\TAGE\NCTOCU_3_COVER_3X11L.MXD - USER: STUCHEY - DATE: 1/31/2023

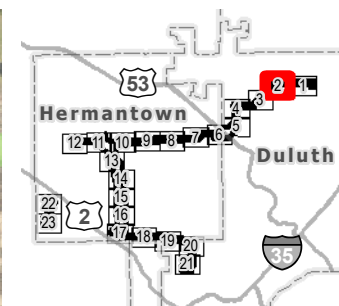
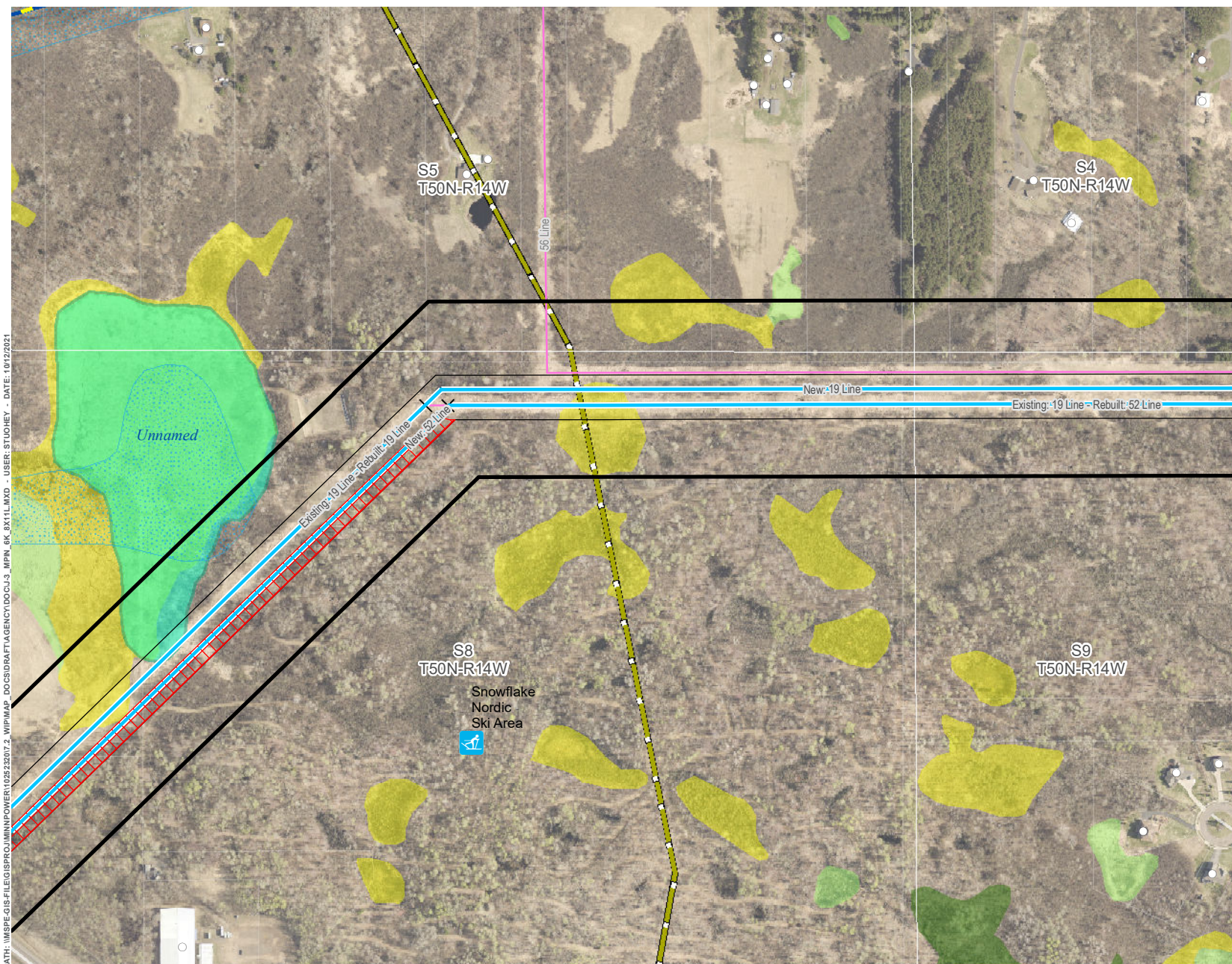


LEGEND

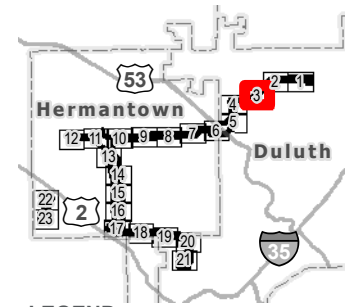
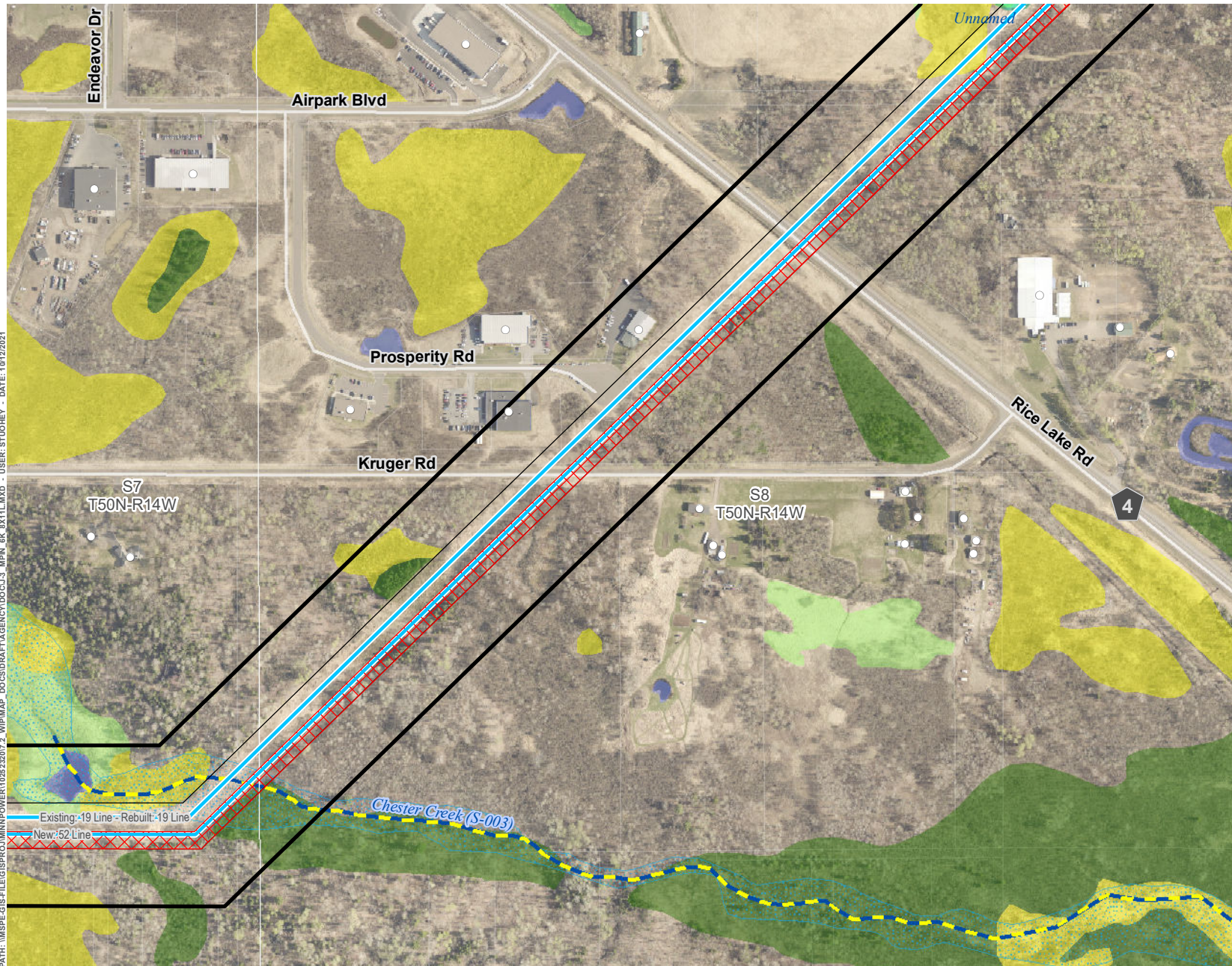
- Map Page
- Project Substation
- Non-Project Substation
- Existing Transmission Line
- Rebuilt Distribution
- New Transmission Line
- Rebuilt Transmission Line (Single Circuit)
- Rebuilt Transmission Line (Double Circuit)
- Removed Transmission Line
- Thermal Upgrades
- Rebuilt Fiber
- Waterbody
- Airport
- City Boundary







PATH: \\MSPEC-GIS-FILE\GIS\PROJECTS\MINNPOWER\10252207\2_WPM\MAP DOCS\DATA\AGENCY\DOCS\J3_MPN_6K_0X1\1.MXD - USER: STUOHEY - DATE: 10/12/2021



LEGEND

- Proposed Route
- Approximate ROW
- Approximate New Impact Area
- Project 115 kV Transmission Line (Single Circuit)
- Existing Structure
- Existing Transmission Line
- PWI Basin
- Existing/Proposed Trail
- Designated Trout Stream
- PWI Watercourse
- FEMA Floodplain
- National Wetlands Inventory**
 - Freshwater Emergent Wetland
 - Freshwater Forested Wetland
 - Freshwater Shrub Wetland
 - Freshwater Pond; Lake; Riverine

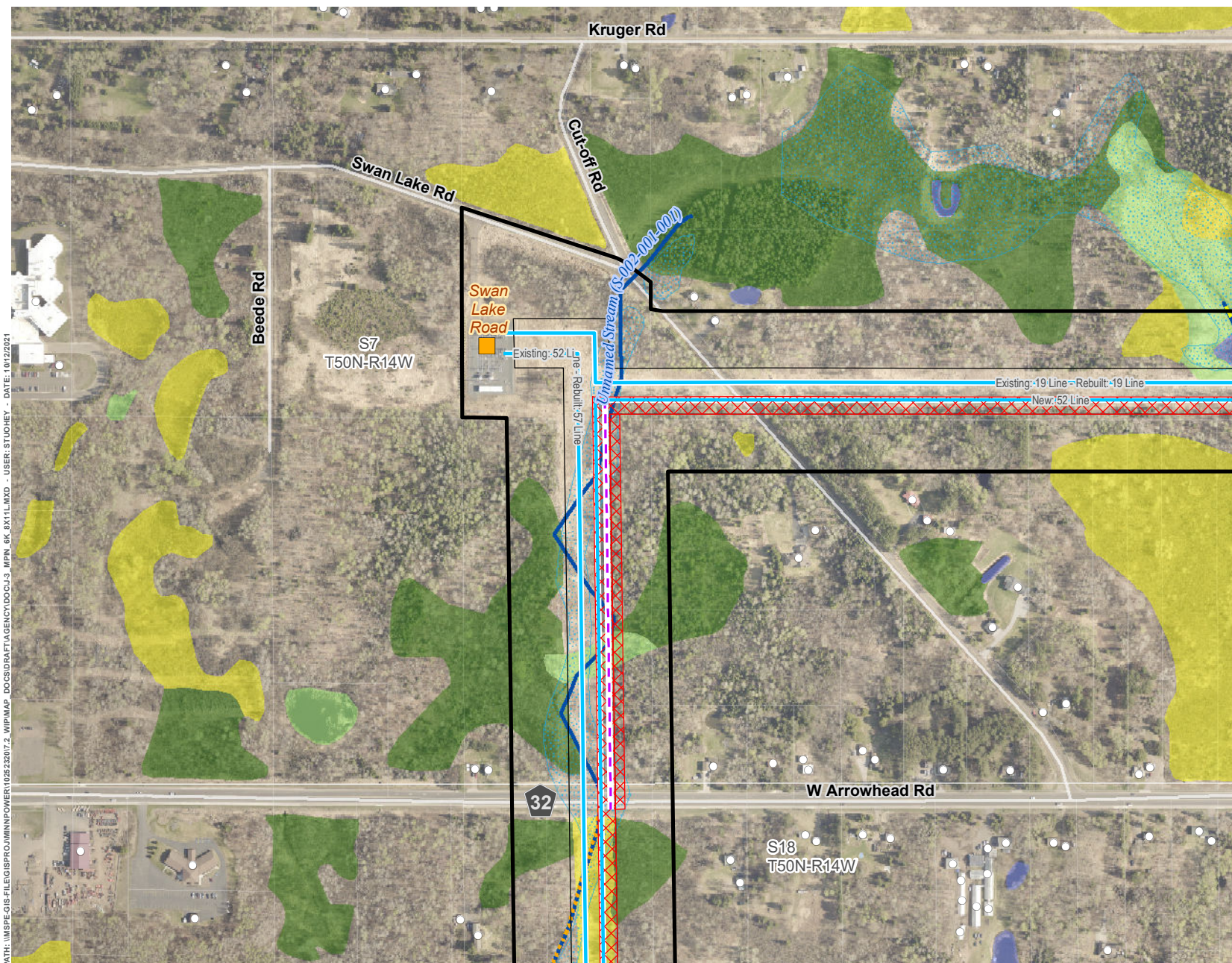
*Note: Removals shown for significant realignments only. Line removals associated with the reconstruction of transmission lines, including minor centerline shifts are not indicated for clarity purposes. See Proposed System Overview for further definition on final line configurations and designations.



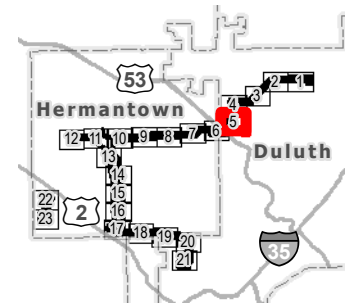
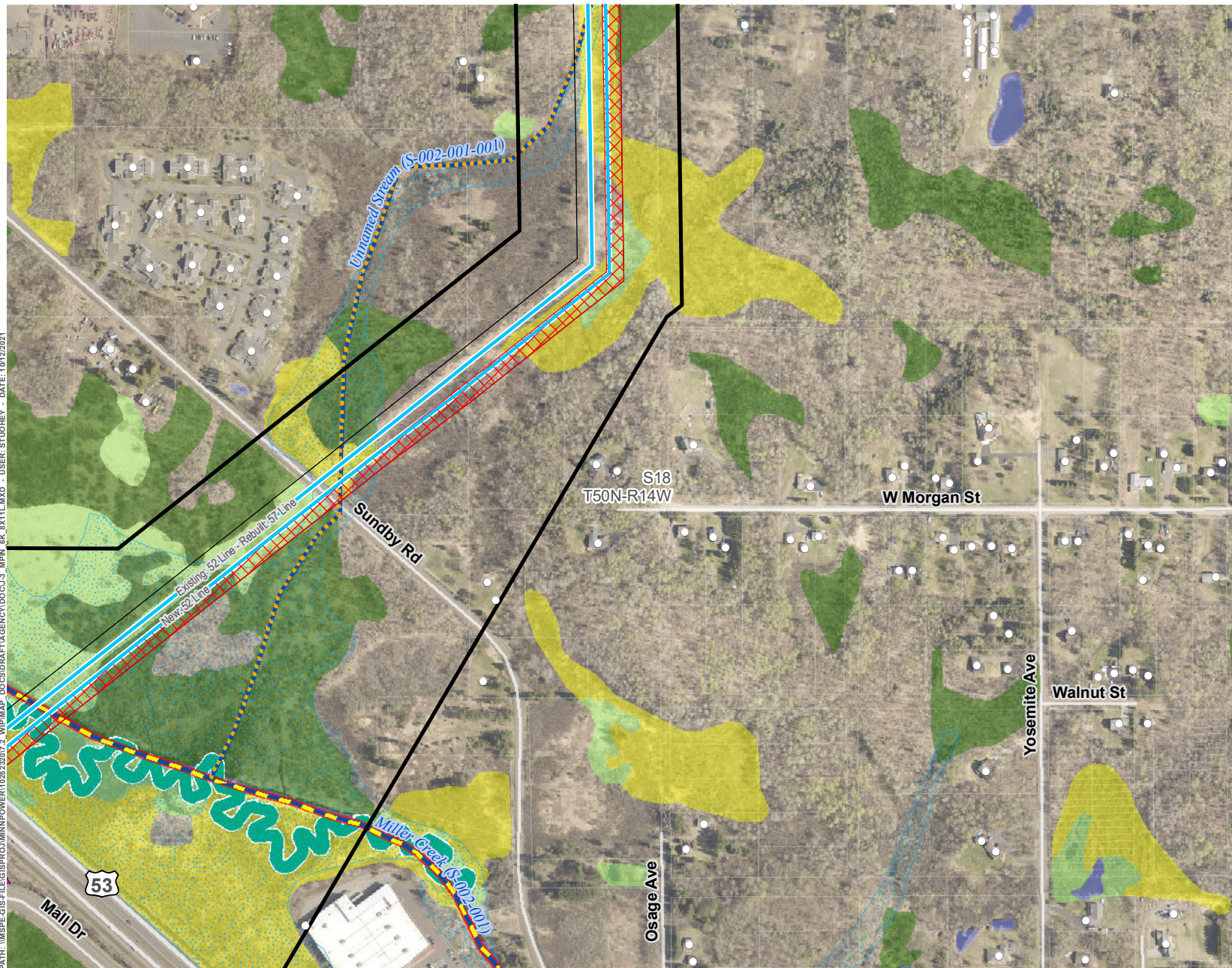
PROJECT DETAIL - SWAN LAKE ROAD TO RIDGEVIEW DULUTH LOOP RELIABILITY PROJECT

APPENDIX J-3: PAGE 3 OF 23





PATH: \\MSPEC\GIS\FILES\PROJECTS\MINNPOWER\10252307\2_WPM\MAP_DCS\DRIFT\AGENCY\DOC\J_3_MPH_6K_0X1\1.MXD - USER: STUOKEY - DATE: 10/12/2021



- LEGEND**
- Proposed Route
 - Approximate ROW
 - Approximate New Impact Area
 - Project 115 kV Transmission Line (Single Circuit)
 - Existing Structure
 - Existing Transmission Line
 - Existing/Proposed Trail
 - Impaired Water
 - Designated Trout Stream
 - Protected Tributary to Designated Trout Stream
 - Unmapped Tributary
 - PWI Watercourse
 - Miller Creek Meander
 - FEMA Floodplain
 - National Wetlands Inventory**
 - Freshwater Emergent Wetland
 - Freshwater Forested Wetland
 - Freshwater Shrub Wetland
 - Freshwater Pond; Lake; Riverine

*Note: Removals shown for significant realignments only. Line removals associated with the reconstruction of transmission lines, including minor centerline shifts are not indicated for clarity purposes. See Proposed System Overview for further definition on final line configurations and designations.



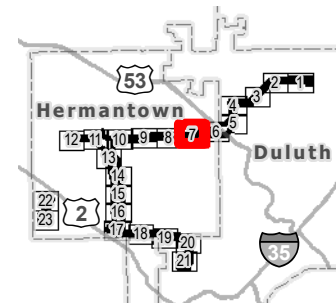
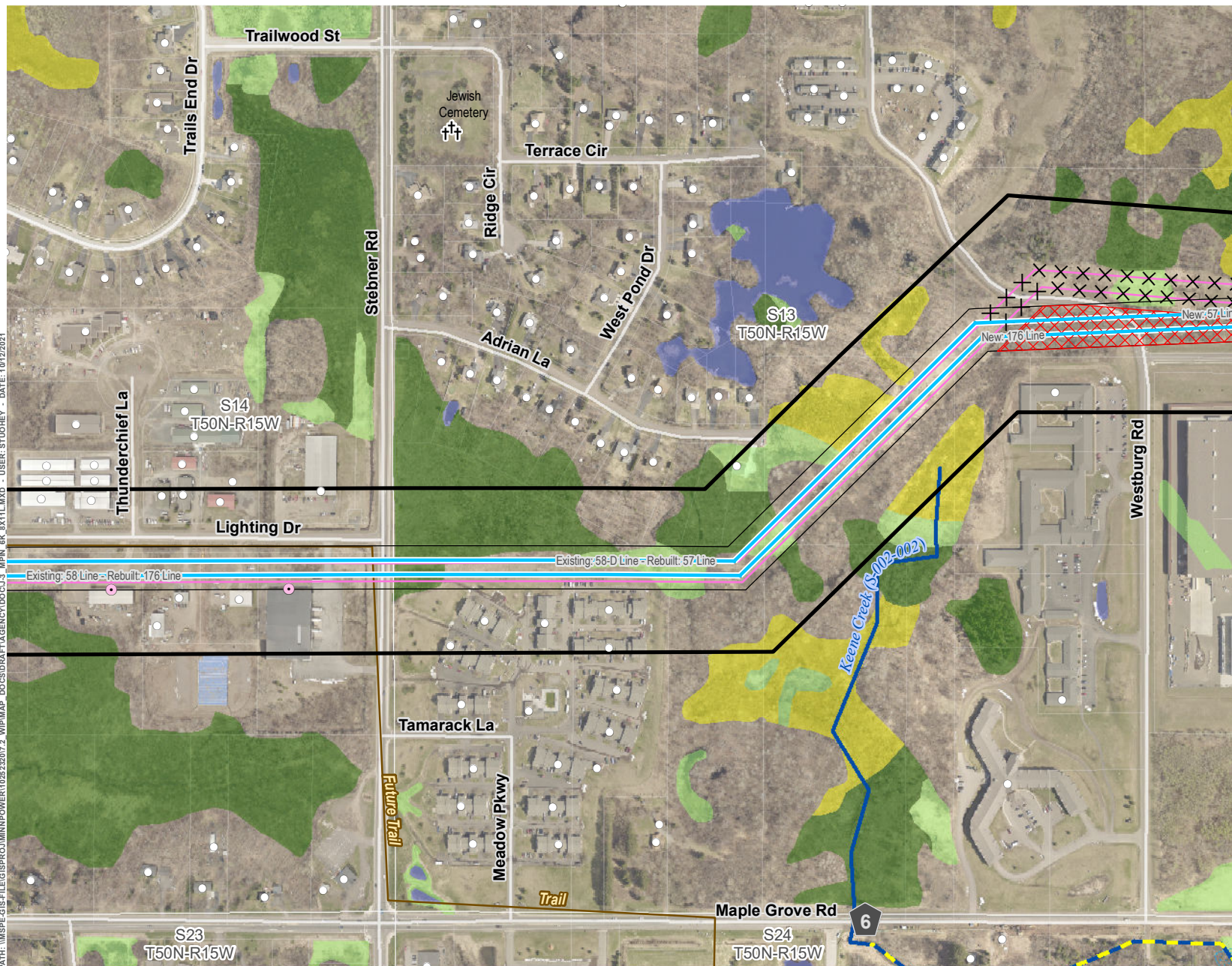
PROJECT DETAIL - HAINES ROAD TO SWAN LAKE ROAD

DULUTH LOOP RELIABILITY PROJECT



APPENDIX J-3: PAGE 5 OF 23

PATH: \\MSPE-GIS-FILES\GIS\PROJECTS\MINNPOWER\10252207\2_WIP\MAP DOCS\DATA\AGENCY\DOCS\J_1_MPH_6K_0X1L.WXD USER: STUOHEY - DATE: 10/12/2021



LEGEND

- Proposed Route
- Approximate ROW
- Approximate New Impact Area
- Project 115 kV Transmission Line (Single Circuit)
- Removed Transmission Line (Realigned)
- Existing Structure
- Structure in ROW
- Cemetery
- Existing Transmission Line
- Existing/Proposed Trail
- Designated Trout Stream
- PWI Watercourse
- FEMA Floodplain
- National Wetlands Inventory**
 - Freshwater Emergent Wetland
 - Freshwater Forested Wetland
 - Freshwater Shrub Wetland
 - Freshwater Pond; Lake; Riverine

*Note: Removals shown for significant realignments only. Line removals associated with the reconstruction of transmission lines, including minor centerline shifts are not indicated for clarity purposes. See Proposed System Overview for further definition on final line configurations and designations.

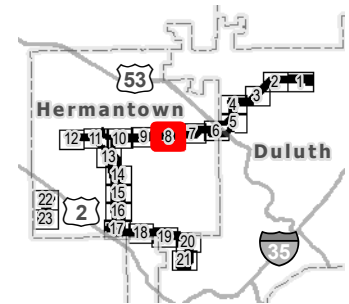
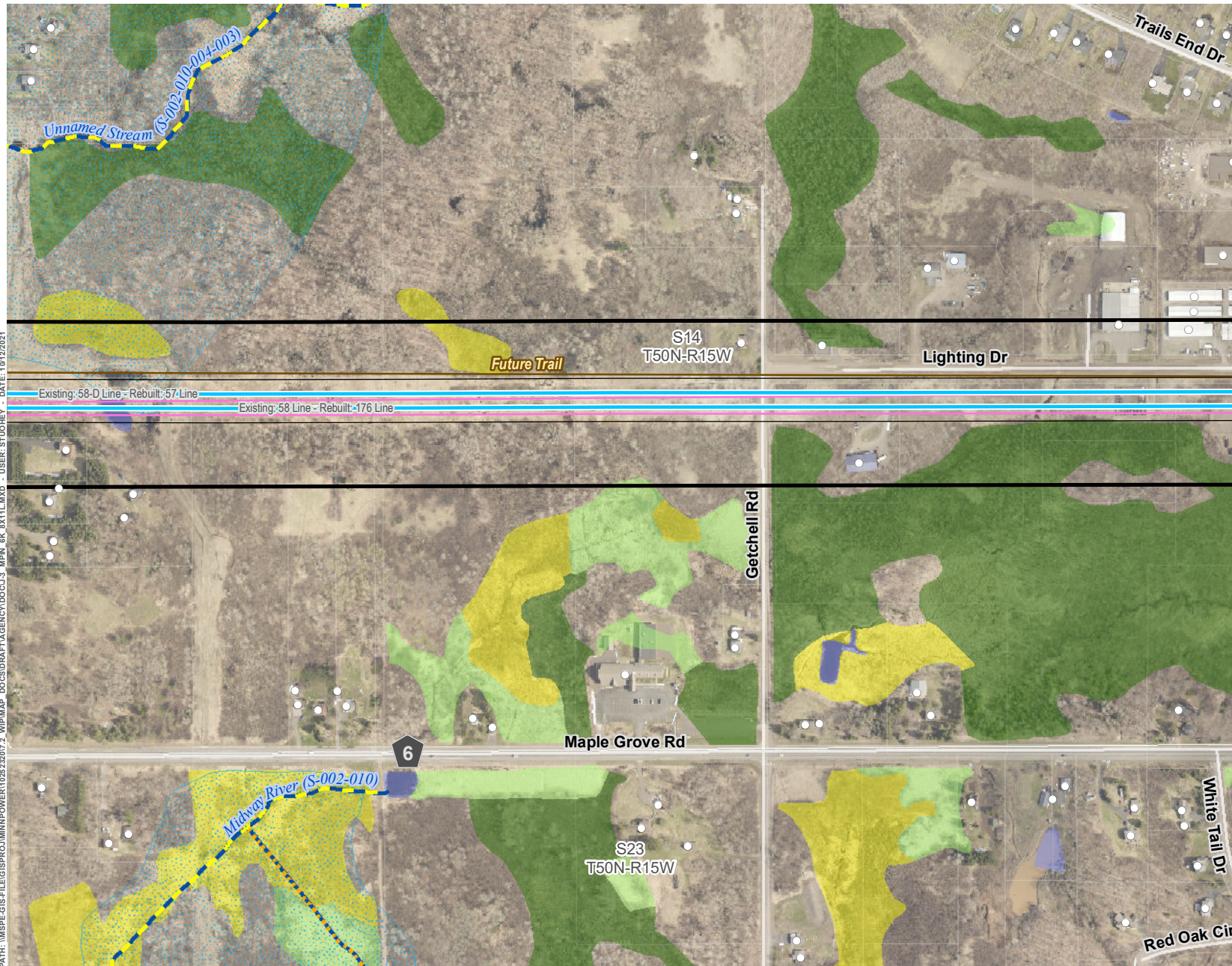


PROJECT DETAIL - HILLTOP TO HAINES ROAD DULUTH LOOP RELIABILITY PROJECT

APPENDIX J-3: PAGE 7 OF 23



PATH: \\MSPE-GIS-FILE\GIS\PROJECTS\HILLTOP TO HAINES ROAD\1025232017_2_WPM\MAP DOCS\DATA\AGENCY\DOC\J_3_MPH_6K_0X1L1.MXD - USER: STUOKEY - DATE: 10/12/2021



- LEGEND**
- Proposed Route
 - Approximate ROW
 - Project 115 kV Transmission Line (Single Circuit)
 - Existing Structure
 - Existing Transmission Line
 - Existing/Proposed Trail
 - Designated Trout Stream
 - Protected Tributary to Designated Trout Stream
 - PWI Watercourse
 - FEMA Floodplain
 - National Wetlands Inventory**
 - Freshwater Emergent Wetland
 - Freshwater Forested Wetland
 - Freshwater Shrub Wetland
 - Freshwater Pond; Lake; Riverine

*Note: Removals shown for significant realignments only. Line removals associated with the reconstruction of transmission lines, including minor centerline shifts are not indicated for clarity purposes. See Proposed System Overview for further definition on final line configurations and designations.



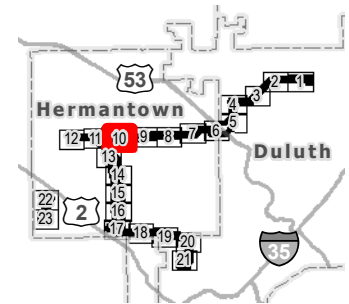
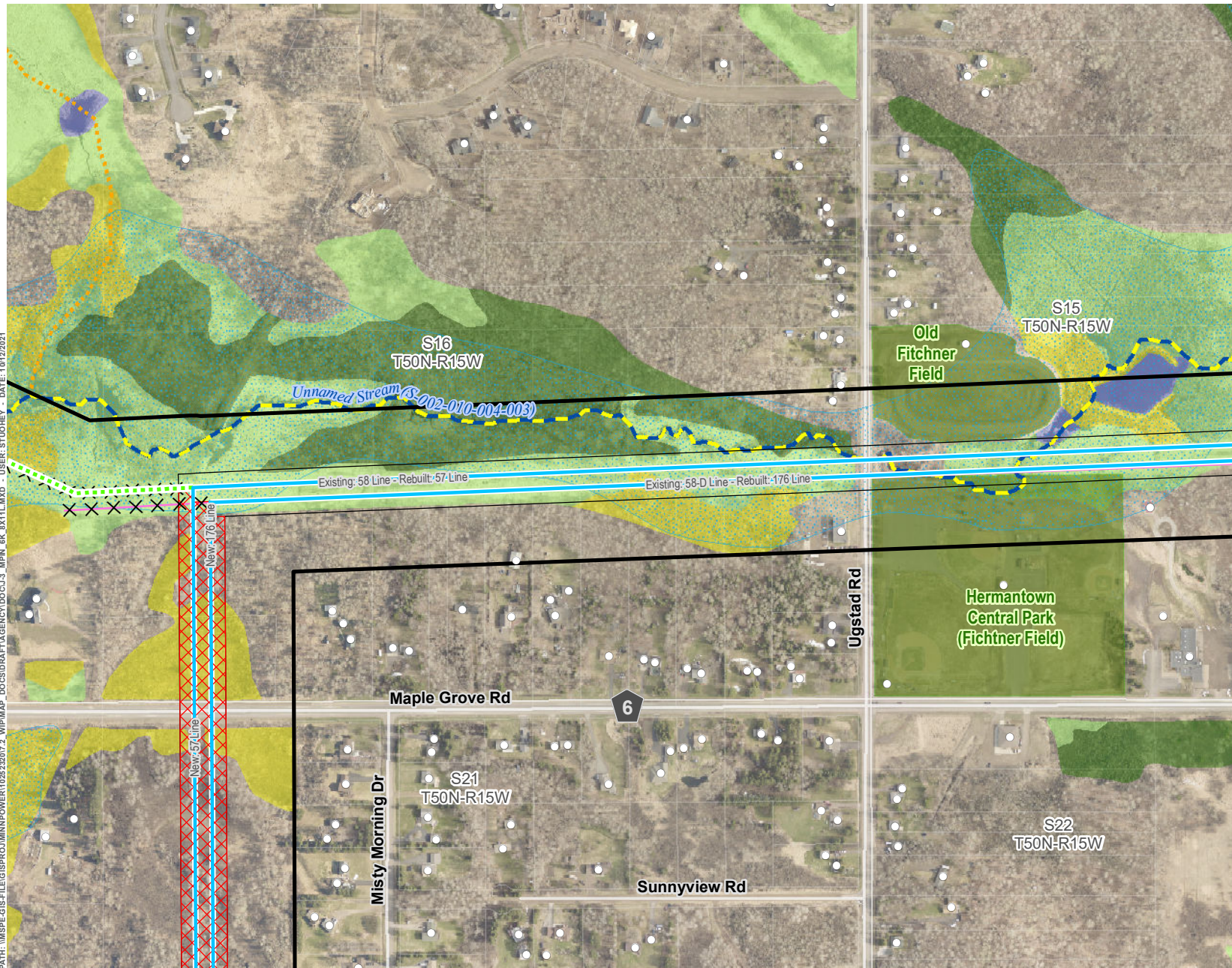
PROJECT DETAIL - HILLTOP TO HAINES ROAD

DULUTH LOOP RELIABILITY PROJECT

APPENDIX J-3: PAGE 8 OF 23



PATH: \\MSPE-GIS-FILES\GIS\PROJECTS\10252207\2_WPMAP\DOCS\DATA\AGENCY\DOCS\J_1_MPH_6K_0X11L.MXD - USER: STUONEY - DATE: 10/12/2021



- LEGEND**
- Proposed Route
 - Approximate ROW
 - Approximate New Impact Area
 - Project 115 kV Transmission Line (Single Circuit)
 - Removed Transmission Line (Realigned)
 - New Underground Fiber
 - Existing Structure
 - Existing Transmission Line
 - Existing/Proposed Trail
 - Designated Trout Stream
 - Protected Tributary to Designated Trout Stream
 - PWI Watercourse
 - FEMA Floodplain
 - Park
 - National Wetlands Inventory**
 - Freshwater Emergent Wetland
 - Freshwater Forested Wetland
 - Freshwater Shrub Wetland
 - Freshwater Pond; Lake; Riverine

*Note: Removals shown for significant realignments only. Line removals associated with the reconstruction of transmission lines, including minor centerline shifts are not indicated for clarity purposes. See Proposed System Overview for further definition on final line configurations and designations.

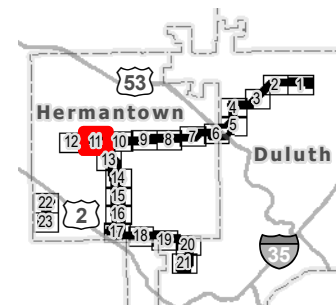
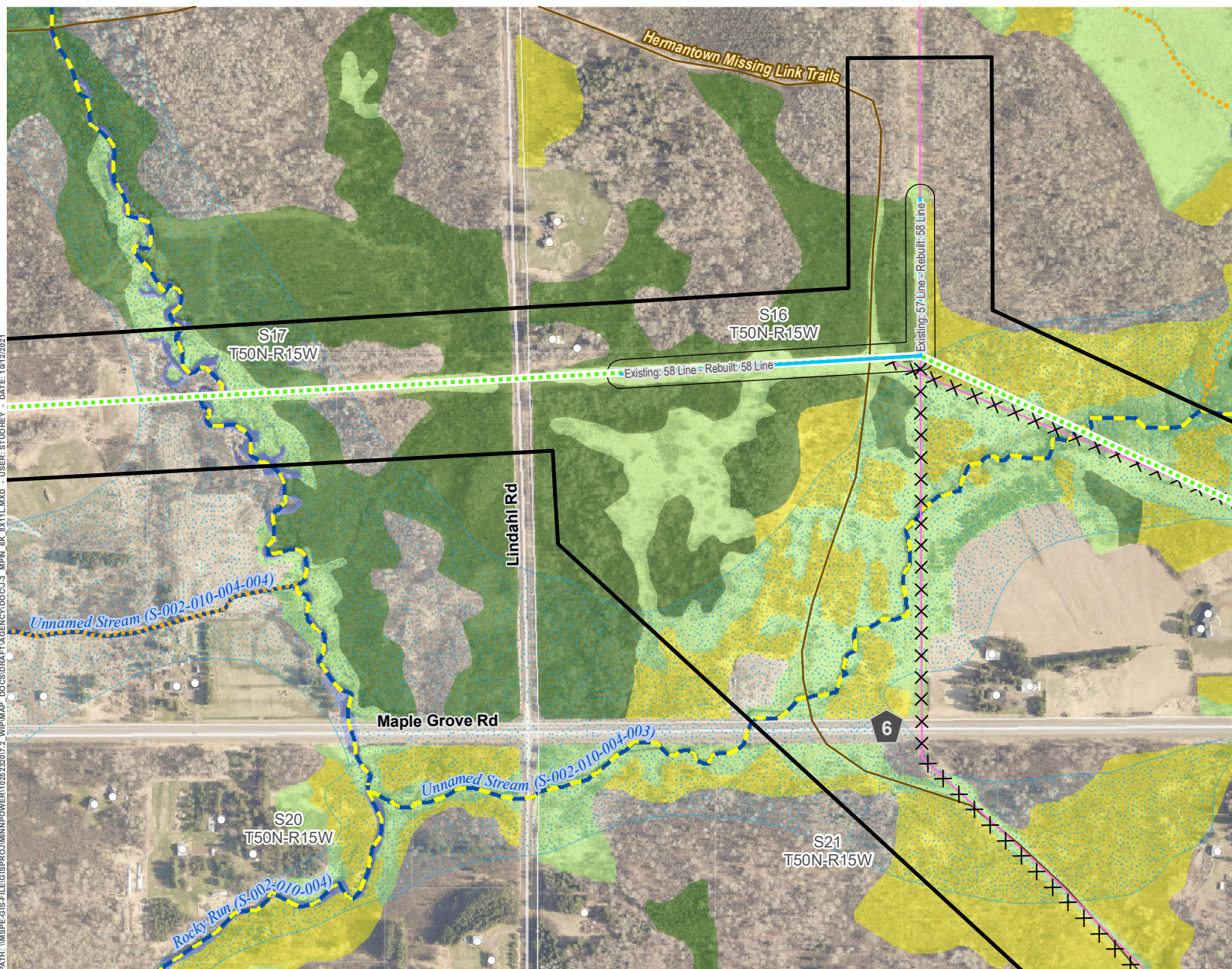


PROJECT DETAIL - HILLTOP TO HAINES ROAD DULUTH LOOP RELIABILITY PROJECT

APPENDIX J-3: PAGE 10 OF 23



PATH: \\MSPE-GIS-FILE\GIS\PROJECT\POWER\102532017_2_WPMAP - DOCS\DATA\AGENCY\DOCS\J_MPH_6K_0X1-L.MXD USER: STUDIOEY DATE: 10/12/2021



LEGEND

- Proposed Route
- Approximate ROW
- Project 115 kV Transmission Line (Single Circuit)
- Removed Transmission Line (Realigned)
- New Underground Fiber
- Existing Structure
- Existing Transmission Line
- Existing/Proposed Trail
- Designated Trout Stream
- Protected Tributary to Designated Trout Stream
- PWI Watercourse
- FEMA Floodplain
- National Wetlands Inventory**
 - Freshwater Emergent Wetland
 - Freshwater Forested Wetland
 - Freshwater Shrub Wetland
 - Freshwater Pond; Lake; Riverine

*Note: Removals shown for significant realignments only. Line removals associated with the reconstruction of transmission lines, including minor centerline shifts are not indicated for clarity purposes. See Proposed System Overview for further definition on final line configurations and designations.

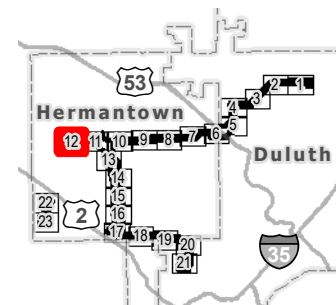
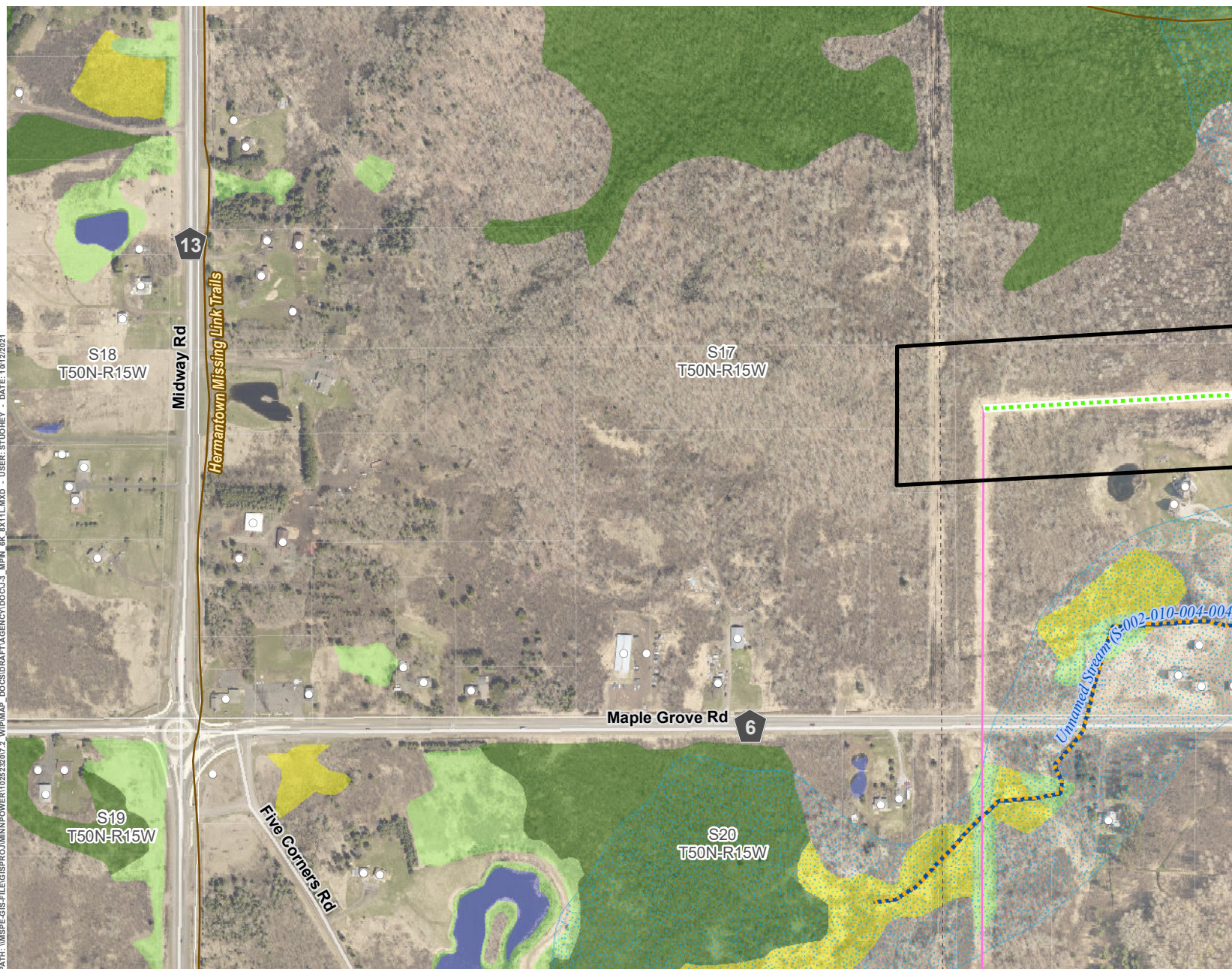


PROJECT DETAIL - FIBER DULUTH LOOP RELIABILITY PROJECT

APPENDIX J-3: PAGE 11 OF 23



PATH: \\MSPE-GIS-FILE\GIS\PROJECT\MINNPOWER\102522017_2_WIP\MAP DOCS\DATA\AGENCY\DOCS\J_3_MPH_6K_0X1L.MXD - USER: STUOHEY - DATE: 10/12/2021



LEGEND

- Proposed Route
- New Underground Fiber
- Existing Structure
- Existing Transmission Line
- Existing Pipeline
- Existing/Proposed Trail
- Designated Trout Stream
- Protected Tributary to Designated Trout Stream
- PWI Watercourse
- FEMA Floodplain
- National Wetlands Inventory**
 - Freshwater Emergent Wetland
 - Freshwater Forested Wetland
 - Freshwater Shrub Wetland
 - Freshwater Pond; Lake; Riverine

*Note: Removals shown for significant realignments only. Line removals associated with the reconstruction of transmission lines, including minor centerline shifts are not indicated for clarity purposes. See Proposed System Overview for further definition on final line configurations and designations.

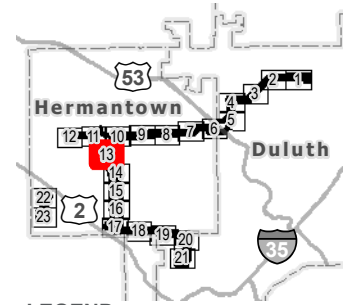
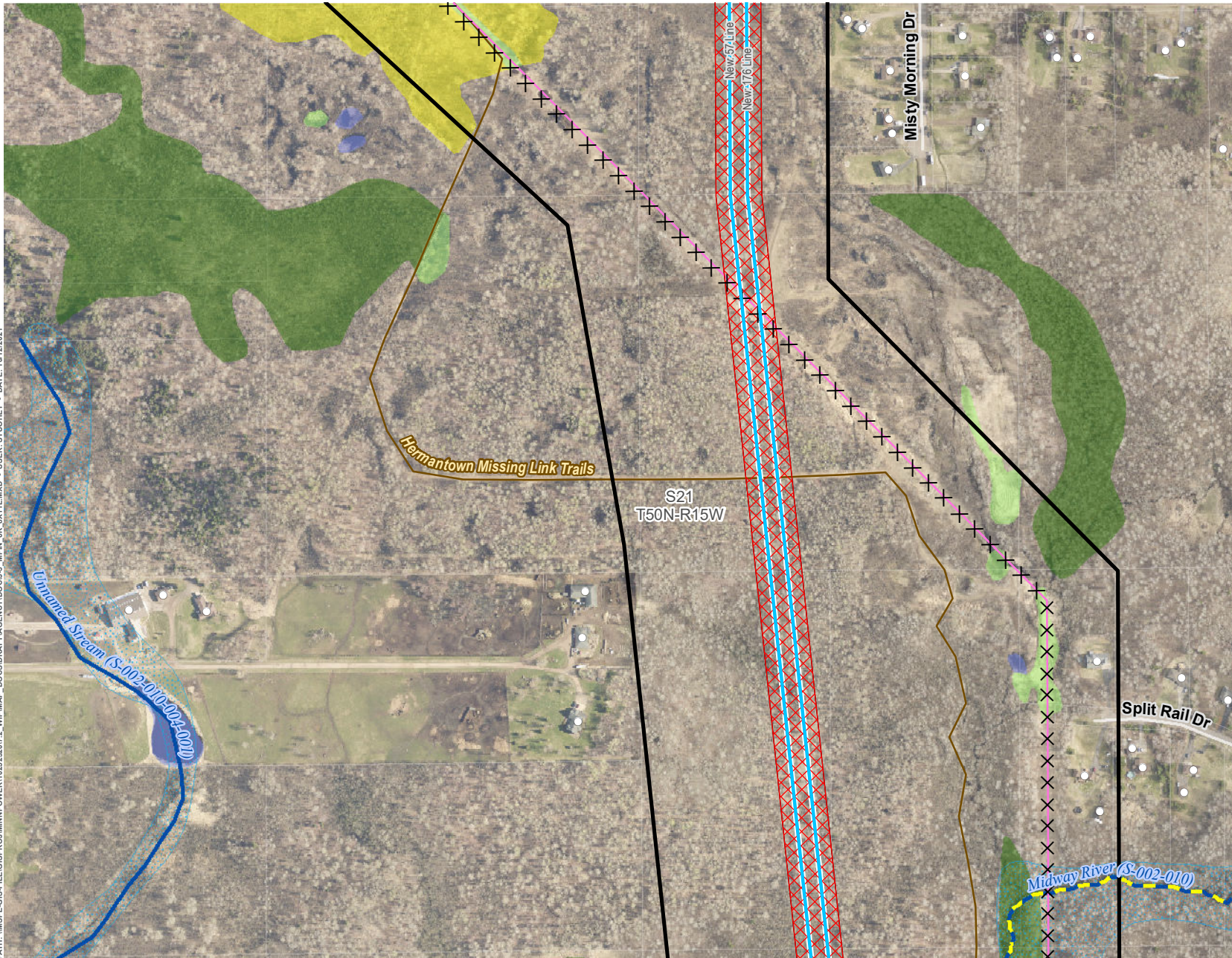


PROJECT DETAIL - FIBER DULUTH LOOP RELIABILITY PROJECT

APPENDIX J-3: PAGE 12 OF 23



PATH: \\MSPE-GIS-FILE\GIS\PROJECTS\MINNPOWER\10252207\2_WIP\MAP DOCS\DATA\AGENCY\DOC\J_3_MPH_6K_0X1L.MXD - USER: STUOEY - DATE: 10/12/2021



LEGEND

- Proposed Route
- Approximate ROW
- Approximate New Impact Area
- Project 115 kV Transmission Line (Single Circuit)
- Removed Transmission Line (Realigned)
- Existing Structure
- Existing Transmission Line
- Existing/Proposed Trail
- Designated Trout Stream
- PWI Watercourse
- FEMA Floodplain
- National Wetlands Inventory**
 - Freshwater Emergent Wetland
 - Freshwater Forested Wetland
 - Freshwater Shrub Wetland
 - Freshwater Pond; Lake; Riverine

*Note: Removals shown for significant realignments only. Line removals associated with the reconstruction of transmission lines, including minor centerline shifts are not indicated for clarity purposes. See Proposed System Overview for further definition on final line configurations and designations.

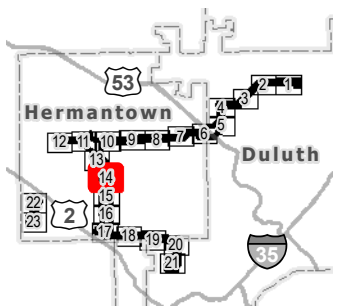
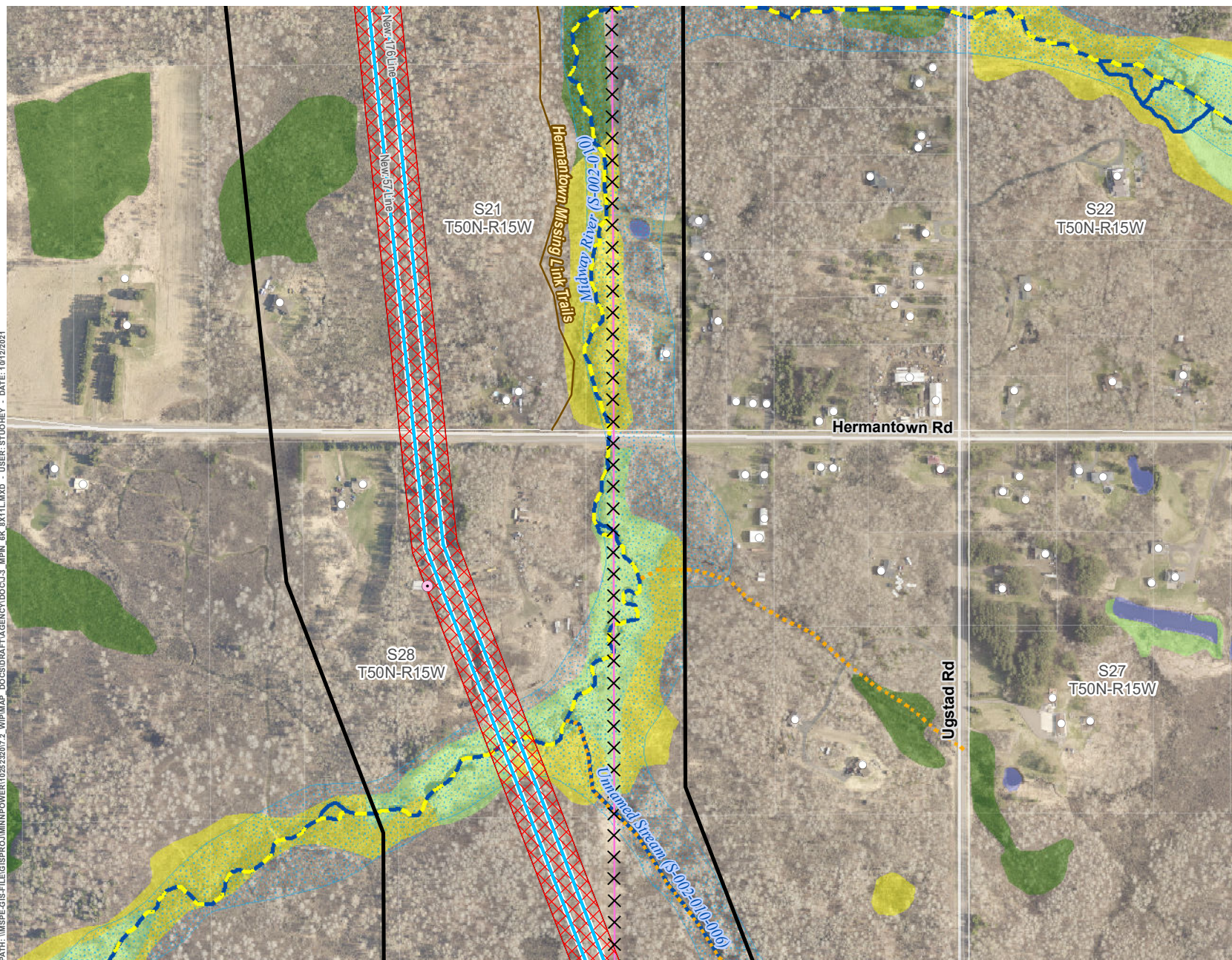


PROJECT DETAIL - HILLTOP TO HAINES ROAD DULUTH LOOP RELIABILITY PROJECT

APPENDIX J-3: PAGE 13 OF 23



PATH: \\MSPEC\GIS\PROJECTS\POWER\10252207\2_WIP\MAP DOCS\DATA\AGENCY\DOCS\3_MPH_6K_0X1\1.MXD - USER: STUONEY - DATE: 10/12/2021



LEGEND

- Proposed Route
- Approximate ROW
- Approximate New Impact Area
- Project 115 kV Transmission Line (Single Circuit)
- Removed Transmission Line (Realigned)
- Existing Structure
- Structure in ROW
- Existing Transmission Line
- Existing/Proposed Trail
- Designated Trout Stream
- Protected Tributary to Designated Trout Stream
- PWI Watercourse
- FEMA Floodplain
- National Wetlands Inventory**
 - Freshwater Emergent Wetland
 - Freshwater Forested Wetland
 - Freshwater Shrub Wetland
 - Freshwater Pond; Lake; Riverine

*Note: Removals shown for significant realignments only. Line removals associated with the reconstruction of transmission lines, including minor centerline shifts are not indicated for clarity purposes. See Proposed System Overview for further definition on final line configurations and designations.

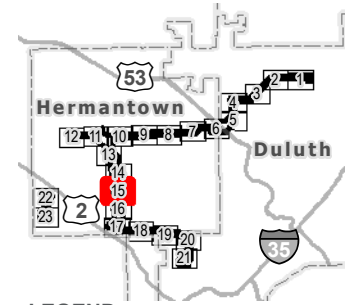
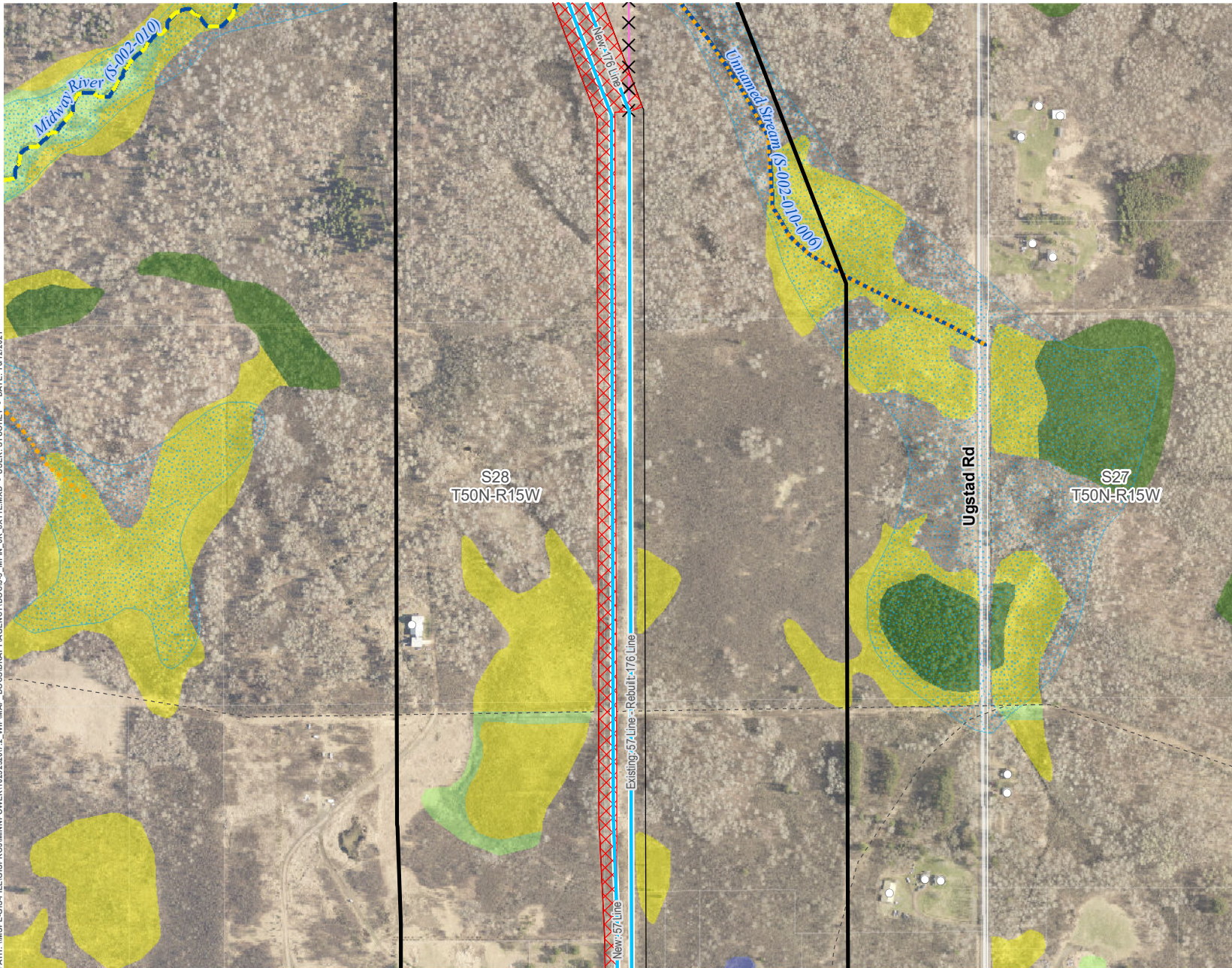


PROJECT DETAIL - HILLTOP TO HAINES ROAD DULUTH LOOP RELIABILITY PROJECT

APPENDIX J-3: PAGE 14 OF 23



PATH: \\MSPE-GIS-FILE\GIS\PROJECTS\MINNPOWER\102522017.2_WIP\MAP DOCS\DATA\AGENCY\DOC\J_3_MPH_6K_0X1L\MXD - USER: STUOHLEY - DATE: 10/12/2021



LEGEND

- Proposed Route
- Approximate ROW
- Approximate New Impact Area
- Project 115 kV Transmission Line (Single Circuit)
- Removed Transmission Line (Realigned)
- Existing Structure
- Existing Transmission Line
- Existing Pipeline
- Existing/Proposed Trail
- Designated Trout Stream
- Protected Tributary to Designated Trout Stream
- PWI Watercourse
- FEMA Floodplain
- National Wetlands Inventory**
 - Freshwater Emergent Wetland
 - Freshwater Forested Wetland
 - Freshwater Shrub Wetland
 - Freshwater Pond; Lake; Riverine

*Note: Removals shown for significant realignments only. Line removals associated with the reconstruction of transmission lines, including minor centerline shifts are not indicated for clarity purposes. See Proposed System Overview for further definition on final line configurations and designations.



















PROJECT DETAIL - HILLTOP TO HAINES ROAD DULUTH LOOP RELIABILITY PROJECT

APPENDIX J-3: PAGE 15 OF 23



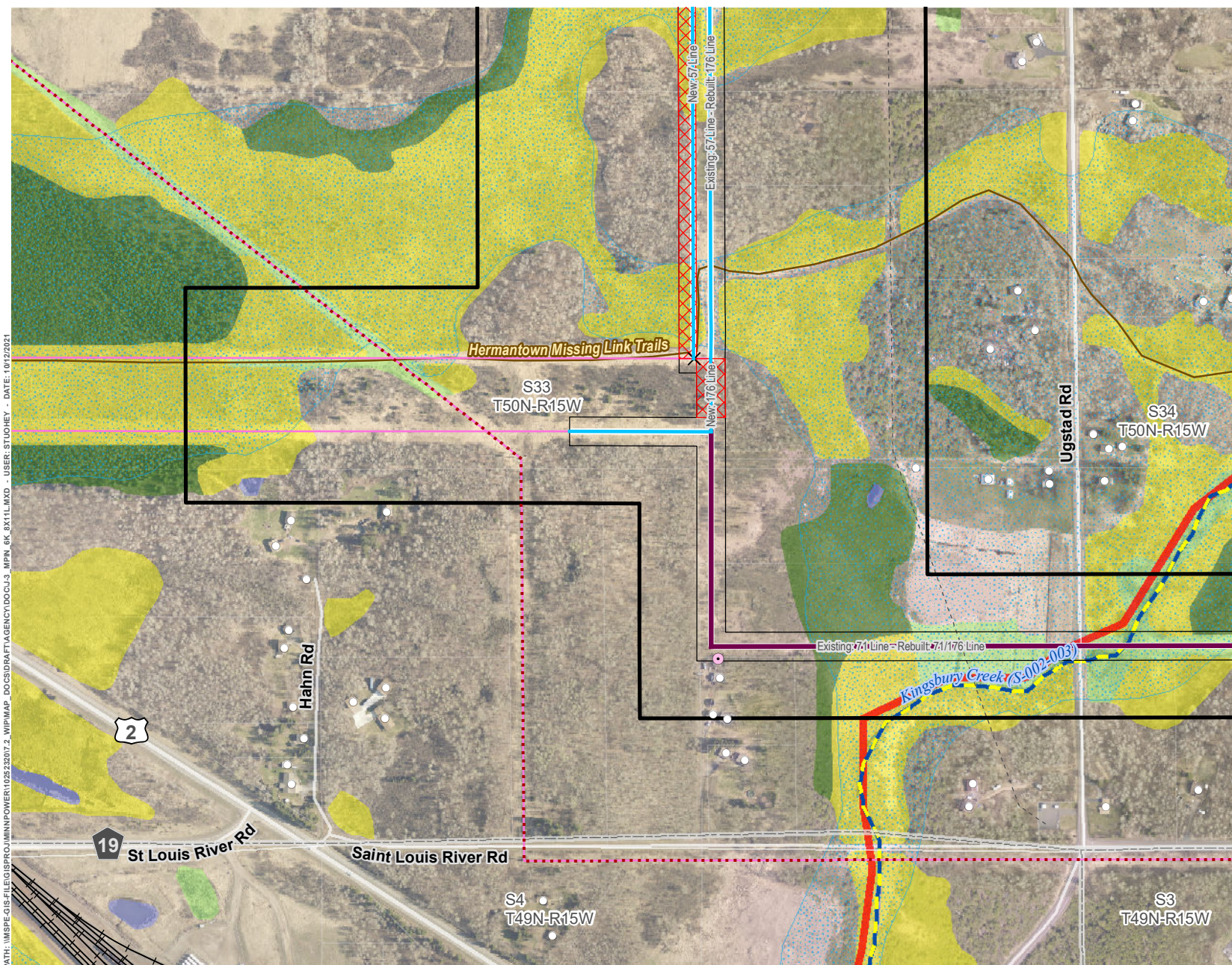


-
-  Proposed Route
 Approximate ROW
 Approximate New Impact Area
 Project 115 kV Transmission Line (Single Circuit)
 Existing Structure
 Cemetery
 Existing Transmission Line
 Existing Pipeline
 Existing/Proposed Trail
 Protected Tributary to Designated Trout Stream
 PWI Watercourse
 FEMA Floodplain
National Wetlands Inventory
 Freshwater Emergent Wetland
 Freshwater Forested Wetland
 Freshwater Shrub Wetland
 Freshwater Pond; Lake; Riverine

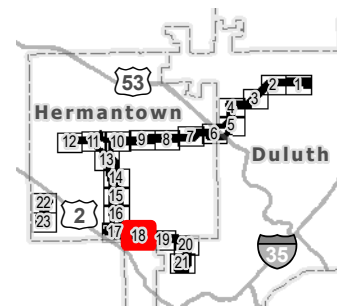
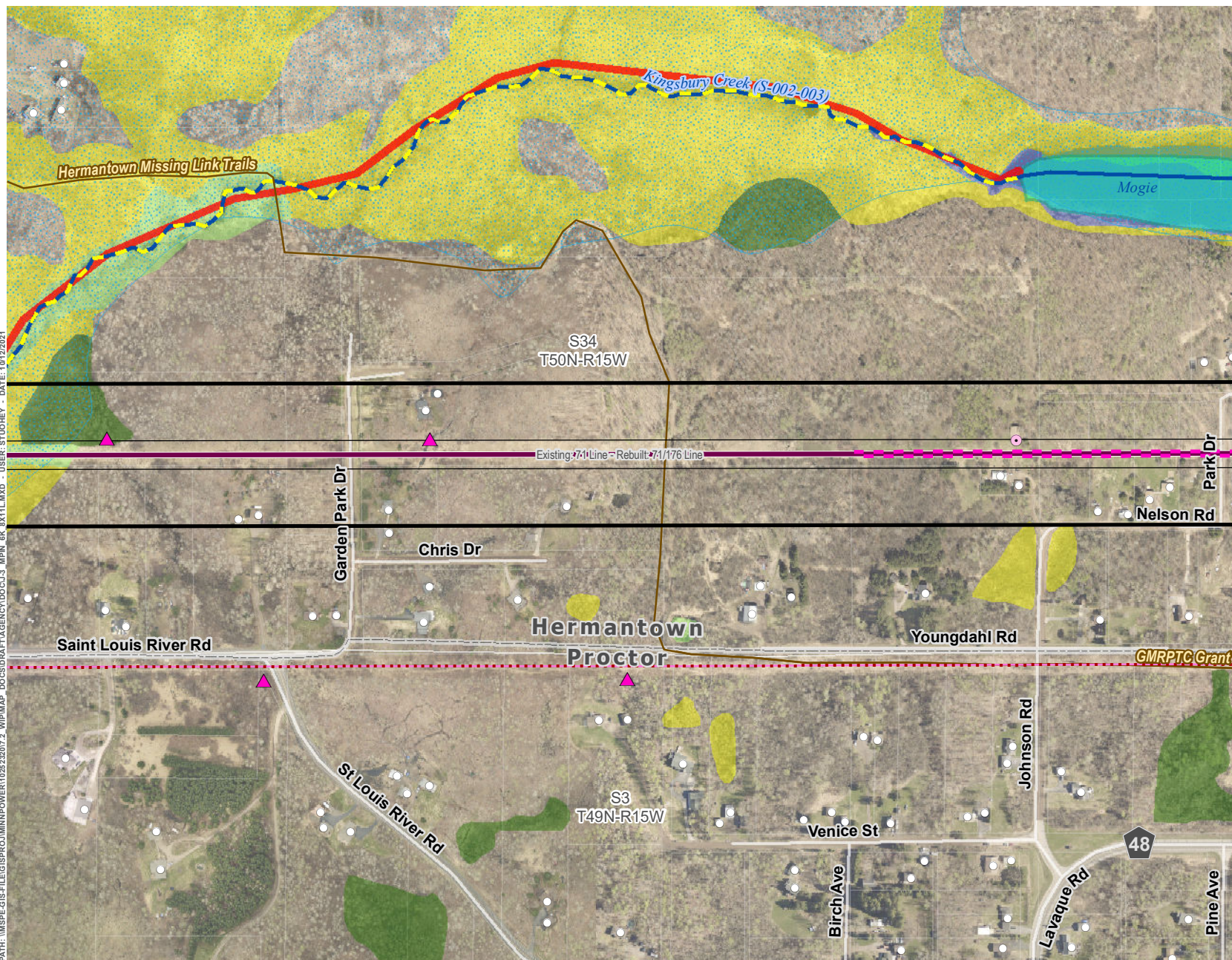
*Note: Removals shown for significant realignments only. Line removals associated with the reconstruction of transmission lines, including minor centerline shifts are not indicated for clarity purposes. See Proposed System Overview for further definition on final line configurations and designations.



APPENDIX J-3: PAGE 16 OF 23



PATH: \\MSPE-GIS-FILES\GIS\PROJECTS\MINNPOWER\10252207\2_WIP\MAP DOCS\DATA\AGENCY\DOCS\J_MPN_6K_0311\1.MXD - USER: STUOHNEY - DATE: 10/12/2021



LEGEND

- Proposed Route
- Approximate ROW
- Project 115 kV Transmission Line (Double Circuit)
- Thermal Upgrades
- Proposed Line Marking
- Existing Structure
- Structure in ROW
- Existing Transmission Line
- PWI Basin
- Existing/Proposed Trail
- Impaired Water
- Designated Trout Stream
- Unmapped Tributary
- PWI Watercourse
- FEMA Floodplain
- National Wetlands Inventory**
 - Freshwater Emergent Wetland
 - Freshwater Forested Wetland
 - Freshwater Shrub Wetland
 - Freshwater Pond; Lake; Riverine

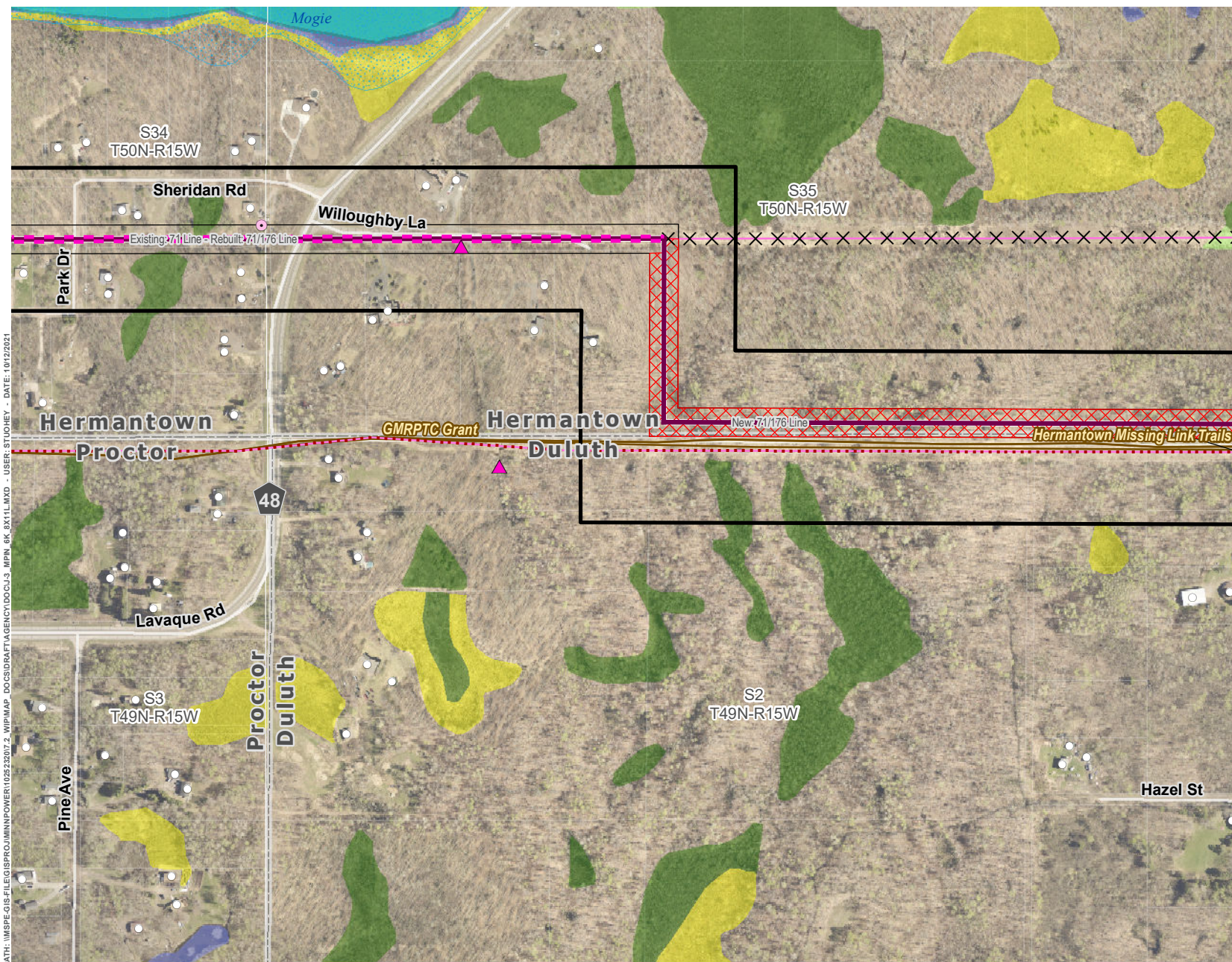
*Note: Removals shown for significant realignments only. Line removals associated with the reconstruction of transmission lines, including minor centerline shifts are not indicated for clarity purposes. See Proposed System Overview for further definition on final line configurations and designations.

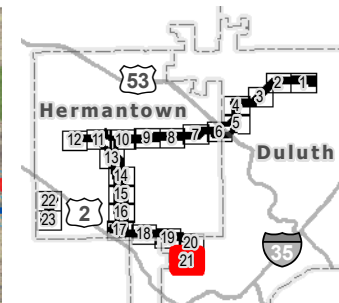
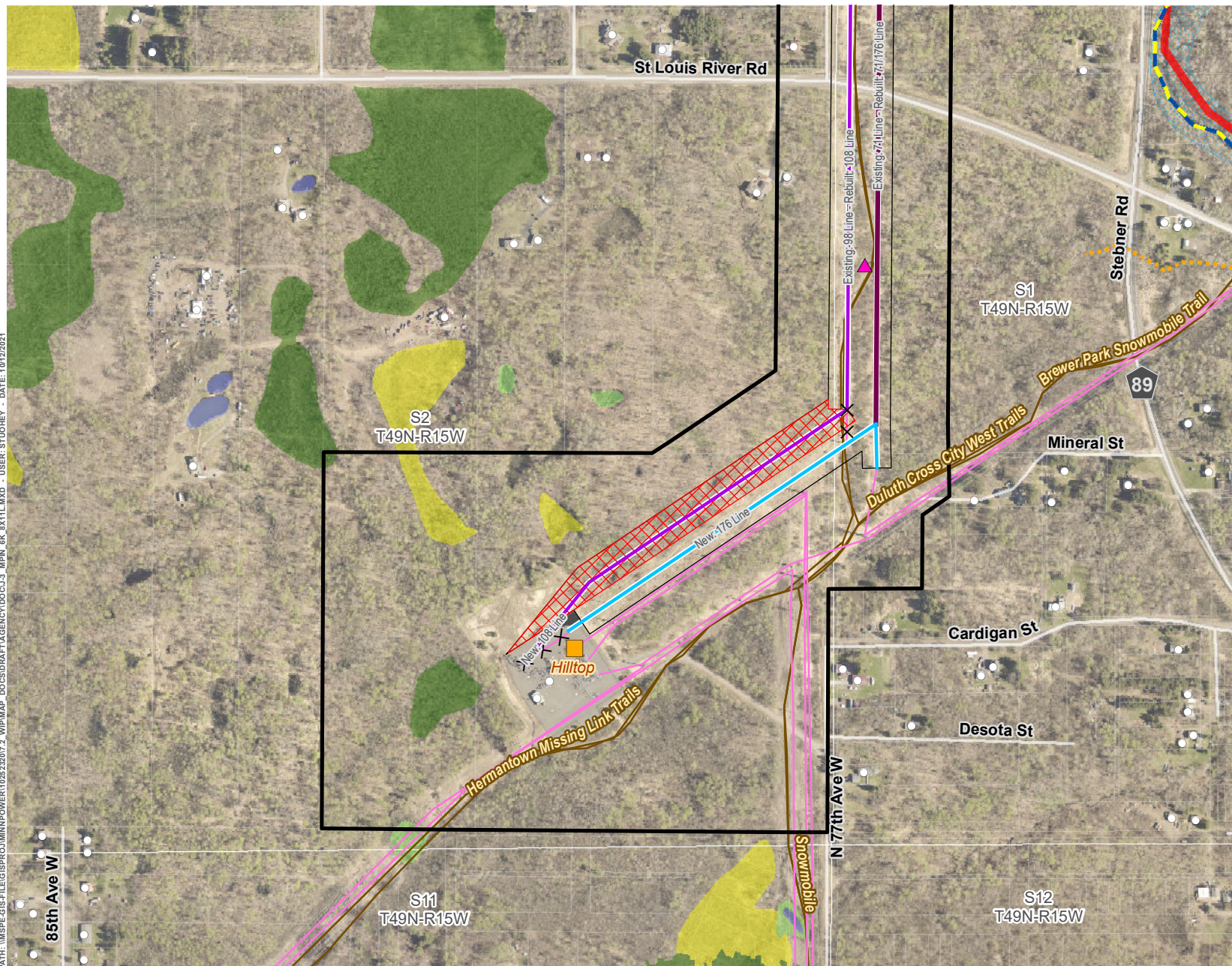


PROJECT DETAIL - HILLTOP TO HAINES ROAD DULUTH LOOP RELIABILITY PROJECT

APPENDIX J-3: PAGE 18 OF 23







LEGEND

- Proposed Route
- Approximate ROW
- Approximate New Impact Area
- Project Substation
- Substation Expansion Area
- Project 115 kV Transmission Line (Single Circuit)
- Project 115 kV Transmission Line (Double Circuit)
- Project 230 kV Transmission Line (Single Circuit)
- Removed Transmission Line (Realigned)
- Existing Structure
- Existing Transmission Line
- Existing/Proposed Trail
- Impaired Water
- Designated Trout Stream
- Protected Tributary to Designated Trout Stream
- Unmapped Tributary
- PWI Watercourse
- FEMA Floodplain
- National Wetlands Inventory**
 - Freshwater Emergent Wetland
 - Freshwater Forested Wetland
 - Freshwater Shrub Wetland
 - Freshwater Pond; Lake; Riverine

*Note: Removals shown for significant realignments only. Line removals associated with the reconstruction of transmission lines, including minor centerline shifts are not indicated for clarity purposes. See Proposed System Overview for further definition on final line configurations and designations.

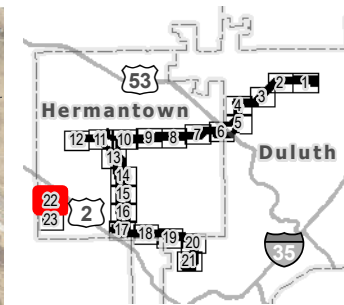
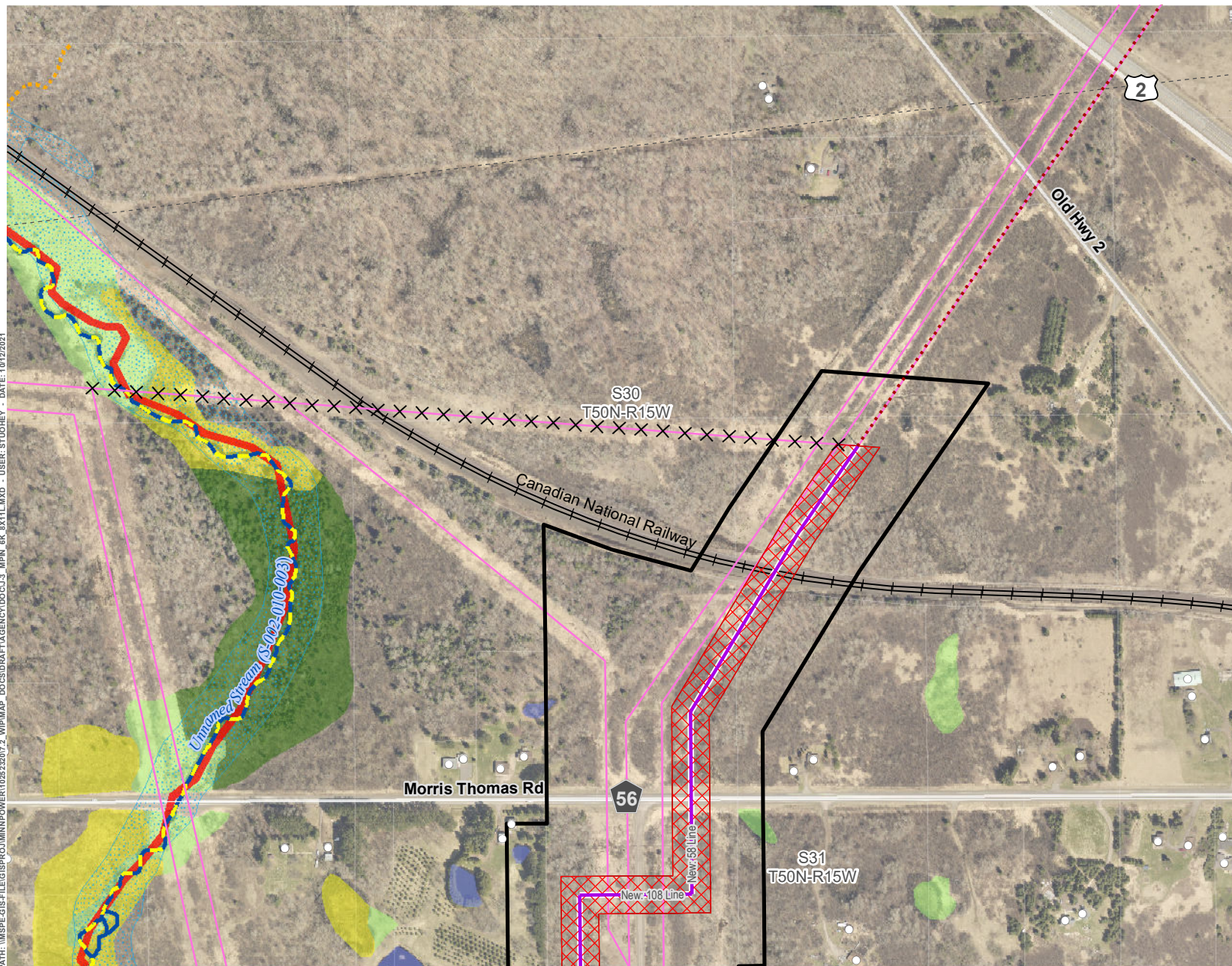


PROJECT DETAIL - HILLTOP TO HAINES ROAD DULUTH LOOP RELIABILITY PROJECT

APPENDIX J-3: PAGE 21 OF 23



PATH: \\MSPE-GIS-FILE\GIS\PROJECTS\MINNPOWER\10252207\2_WPM\MAP DOCS\DATA\AGENCY\DOCS\J3_MPH_6K_0X1L.MXD - USER: STUDNEY - DATE: 10/12/2021



LEGEND

- Proposed Route
- Approximate ROW
- Approximate New Impact Area
- Project 230 kV Transmission Line (Single Circuit)
- Removed Transmission Line (Realigned)
- Thermal Upgrades
- Existing Structure
- Existing Transmission Line
- Existing Pipeline
- Railroad
- Existing/Proposed Trail
- Impaired Water
- Designated Trout Stream
- Protected Tributary to Designated Trout Stream
- PWI Watercourse
- FEMA Floodplain
- National Wetlands Inventory**
 - Freshwater Emergent Wetland
 - Freshwater Forested Wetland
 - Freshwater Shrub Wetland
 - Freshwater Pond; Lake; Riverine

*Note: Removals shown for significant realignments only. Line removals associated with the reconstruction of transmission lines, including minor centerline shifts are not indicated for clarity purposes. See Proposed System Overview for further definition on final line configurations and designations.

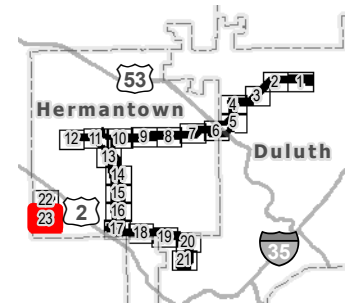
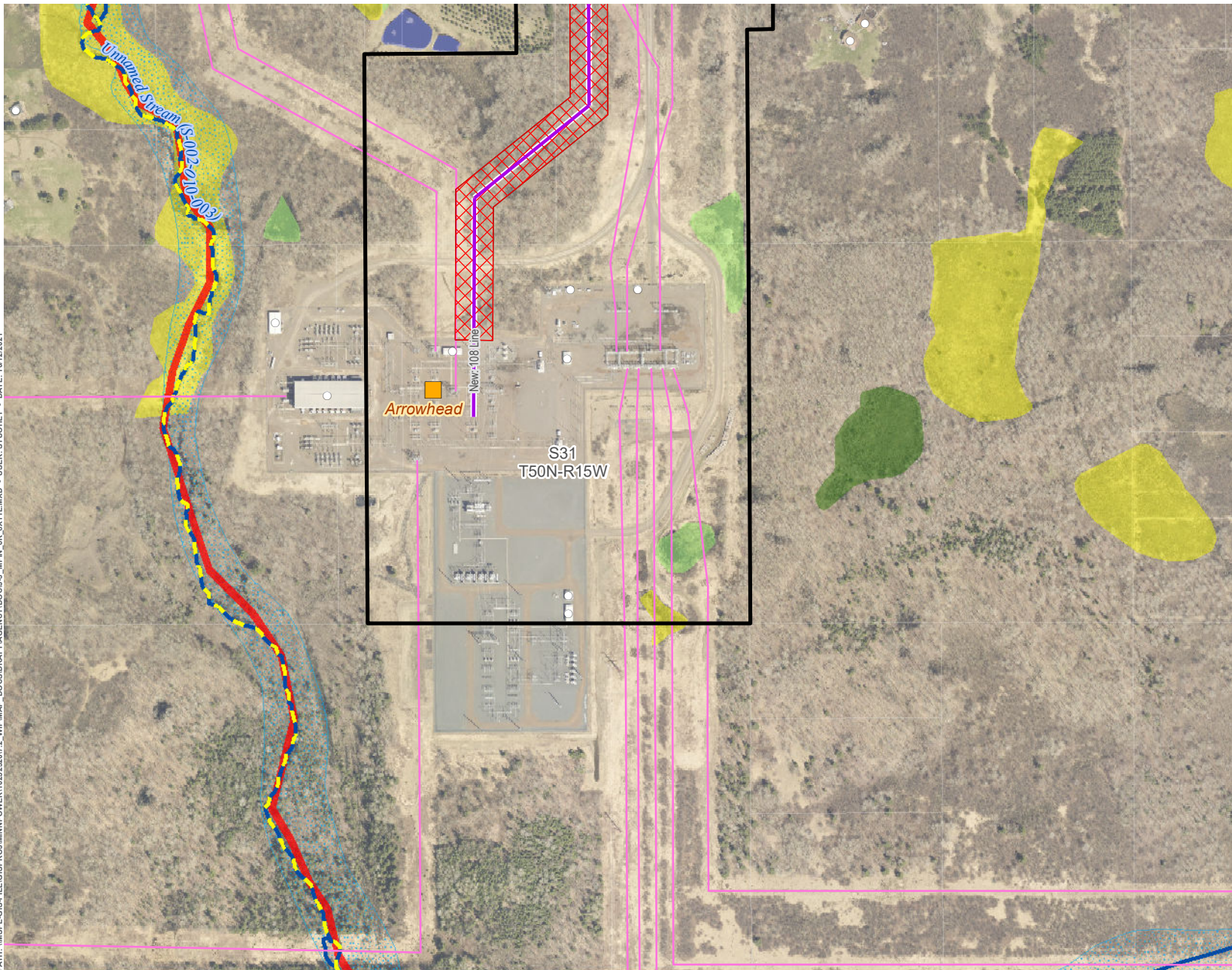


PROJECT DETAIL - ARROWHEAD DULUTH LOOP RELIABILITY PROJECT

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PATH: \\MSPE-GIS-FILE\GIS\PROJECTS\MINNPOWER\102523207_2_WIP\MAP DOCS\DATA\AGENCY\DOC\J_1_MPN_6K_0X1-L\MXD - USER: STUOHEY - DATE: 10/12/2021



- LEGEND**
- Proposed Route
 - Approximate ROW
 - Approximate New Impact Area
 - Project Substation
 - Project 230 kV Transmission Line (Single Circuit)
 - Existing Structure
 - Existing Transmission Line
 - Existing/Proposed Trail
 - Impaired Water
 - Designated Trout Stream
 - PWI Watercourse
 - FEMA Floodplain
- National Wetlands Inventory**
- Freshwater Emergent Wetland
 - Freshwater Forested Wetland
 - Freshwater Shrub Wetland
 - Freshwater Pond; Lake; Riverine

*Note: Removals shown for significant realignments only. Line removals associated with the reconstruction of transmission lines, including minor centerline shifts are not indicated for clarity purposes. See Proposed System Overview for further definition on final line configurations and designations.



PROJECT DETAIL - ARROWHEAD

DULUTH LOOP RELIABILITY PROJECT

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