Natural Resource Inventory and Enhancement Opportunities

Dayton's Bluff and Payne–Phalen Community Council

2024

Natural Resource Inventory and Enhancement Opportunities

Dayton's Bluff and Payne-Phalen Community Council

By Capitol Region Watershed District

Prepared in cooperation with Ramsey-Washington Watershed District

Project conducted in partnership with Payne-Phalen Community Council and Dayton's Bluff Community Council

Prepared by Barr Engineering Co. for Capitol Region Watershed District

Saint Paul, Minnesota

2024

Cover image: Wheelock Parkway stormwater pond, Brendan Dougherty

Natural Resource Inventory and Enhancement Opportunities

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Abbreviations

BMP	Best management practice for stormwater management
BWSR	Minnesota Board of Water and Soil Resources
BRT	Bus Rapid Transit
CDC	Centers for Disease Control and Prevention
City	City of Saint Paul
CRWD	Capitol Region Watershed District
District	Capitol Region Watershed District
EAB	Emerald Ash Borer
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRI	Natural Resource Inventory
NWI	National Wetland Inventory
MDA	Minnesota Department of Agriculture
MLCCS	Minnesota Land Cover Classifications System
MNDNR	Minnesota Department of Natural Resources
MNDOT	Minnesota Department of Transportation
MPCA	Minnesota Pollution Control Agency
ROW	Right-of-Way
RWMWD	Ramsey-Washington Metro Watershed District
State	State of Minnesota
SSGI	Shared, stacked green infrastructure for stormwater management
UHI	Urban heat island
USCS	Unified Soil Classification System
USGS	United States Geological Survey

1 Introduction

Capitol Region Watershed District (CRWD), working with Ramsey-Washington Metro Watershed District (RWMWD), Payne Phalen Community Council (Planning District 5), and the Dayton's Bluff Community Council (Planning District 4) initiated this natural resource inventory (NRI) within portions of Saint Paul's district councils 4 and 5, on the east side of downtown Saint Paul. This project focuses on identifying natural and semi-natural areas located within a densely urbanized portion of the city. The project boundary contains residential, industrial, parkland, and commercial land use areas **(Figure 1**).

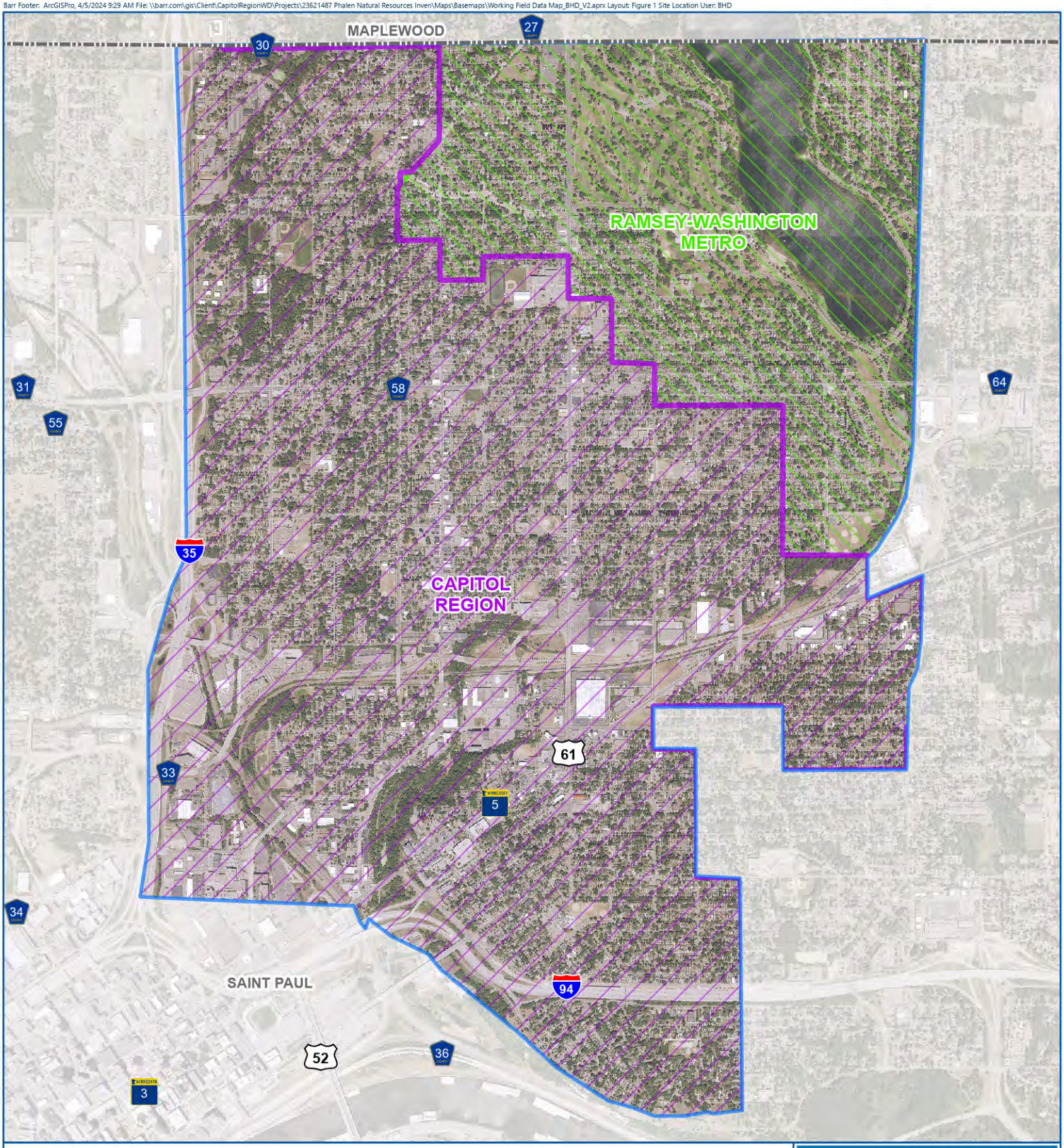
The purpose of the study is to guide watershed districts, the City of Saint Paul (City), and community groups to characterize, prioritize, protect, and improve natural resources within the project area. Saint Paul's natural resources are currently under threat from a variety of forces, including invasive species, over browsing by animals, direct impacts caused by humans, and climate change. If left unmanaged they will continue to lose ecological function and biodiversity. This NRI documents existing plant communities, habitat quality, and presents goals and strategies to protect and improve those identified natural resources before they are lost.

Barr and the project partners conducted a desktop NRI throughout the project area, and then completed field investigations at 43 sites throughout the project area. The inventory data and management strategies provided in this report will help CRWD, RWMWD, and the City by:

1) Identifying natural resources within the project area
2) Quantifying the quality of existing plant communities
3) Identifying degraded areas and management issues
4) Identifying opportunities for natural resources protection and enhancement
5) Providing information that can be used to develop management priorities

The results of the field investigations and proposed approach for managing natural resources can be used as a tool by CRWD, RWMWD, and partners to prioritize and implement natural resource protection and enhancement efforts as opportunities arise.

Image 1 – View of Eastside Heritage Park looking south



Project Area

Municipal Boundary

Watershed District (WD)

Capitol Region WD

Ramsey-Washington Metro WD

N

0 1,000 2,000

Feet

PROJECT AREA AND WATERSHED DISTRICT BOUNDARIES

Dayton's Bluff and Payne-Phalen Natural Resources Inventory

Capitol Region Watershed District

FIGURE 1

2 Natural History and Current Conditions

2.1 Project Location

Located within portions of the Dayton's Bluff and Payne-Phalen neighborhoods of Saint Paul, the 3,550-acre project area makes up approximately 10% of the city's total 35,931-acre land area (**Figure 2**). The project area is bound by Larpenteur Avenue on the north side, Great River Road on the south, Interstate 35E on the west side, and follows along portions of Earl Street, Cypress Street, and Johnson Parkway on the east side. Phalen Boulevard and the adjacent Union Pacific Railroad bisects the central portion of the project area.

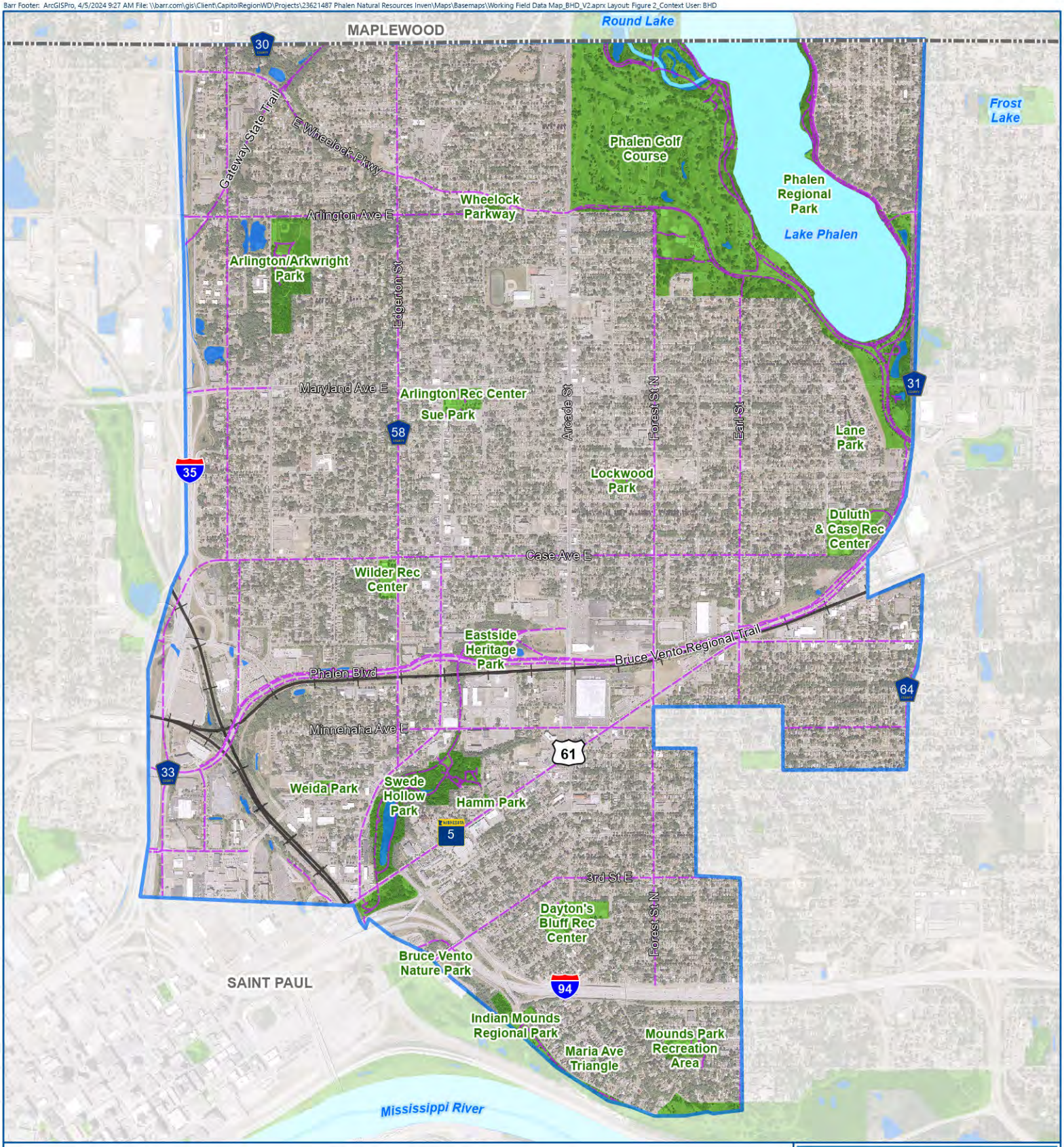
2.2 Historic Ecological Communities

Identifying the native plant communities present before the urban development took place during the late 19th and early 20th century provides an understanding as to what ecological communities once thrived in the local climate and soil conditions. Developed from the original 1846-1848 Public Land Survey of Minnesota, **Figure 3** is a digitized representation of the historical land cover at the time of the survey. It depicts detailed information about the location and types of ecological communities once present. This information offers insights as to which plant communities are best adapted to the area and can be a guide when developing future preservation and restoration objectives.

Image 2 - Oak savanna and open prairie grasslands was present and common in the area prior to development.

Oak savannas and open prairie grasslands once covered large portions of Minnesota and were also the most common vegetation cover found within the project area. These communities have since been disturbed by human development and have now been reduced to small unconnected patches. While oak savannas and prairie grasslands share many of the same species, oak savannas are defined as prairie grasslands having just one oak tree per acre or as many that result in up to 50-percent coverage of the landscape (Minnesota Department of Natural Resources (MNDNR), 2005). The open oak savanna plant communities allow enough sunlight to reach the ground which permits the growth of a diversity of prairie species such as big bluestem, prairie dropseed, leadplant, wild bergamot, and many other native grasses and wildflowers. In addition to supporting a diversity of plant species the habitat structure supports a range of birds, pollinators, and other wildlife. Given the importance of this habitat type, oak savannas could have a greater role in future restoration efforts within the project area.

The historic wetlands in Figure 3, as well as CRWD mapping and historical photographs indicate that Trout Brook and Phalen Creek historically passed through the project area (**Figure 4**).



- Project Area
- Municipal Boundary
- Bikeways
- Railroad
- Wetlands (National Wetland Inventory)
- Park
- Lakes, Ponds, and Rivers

N

0 1,000 2,000

Feet

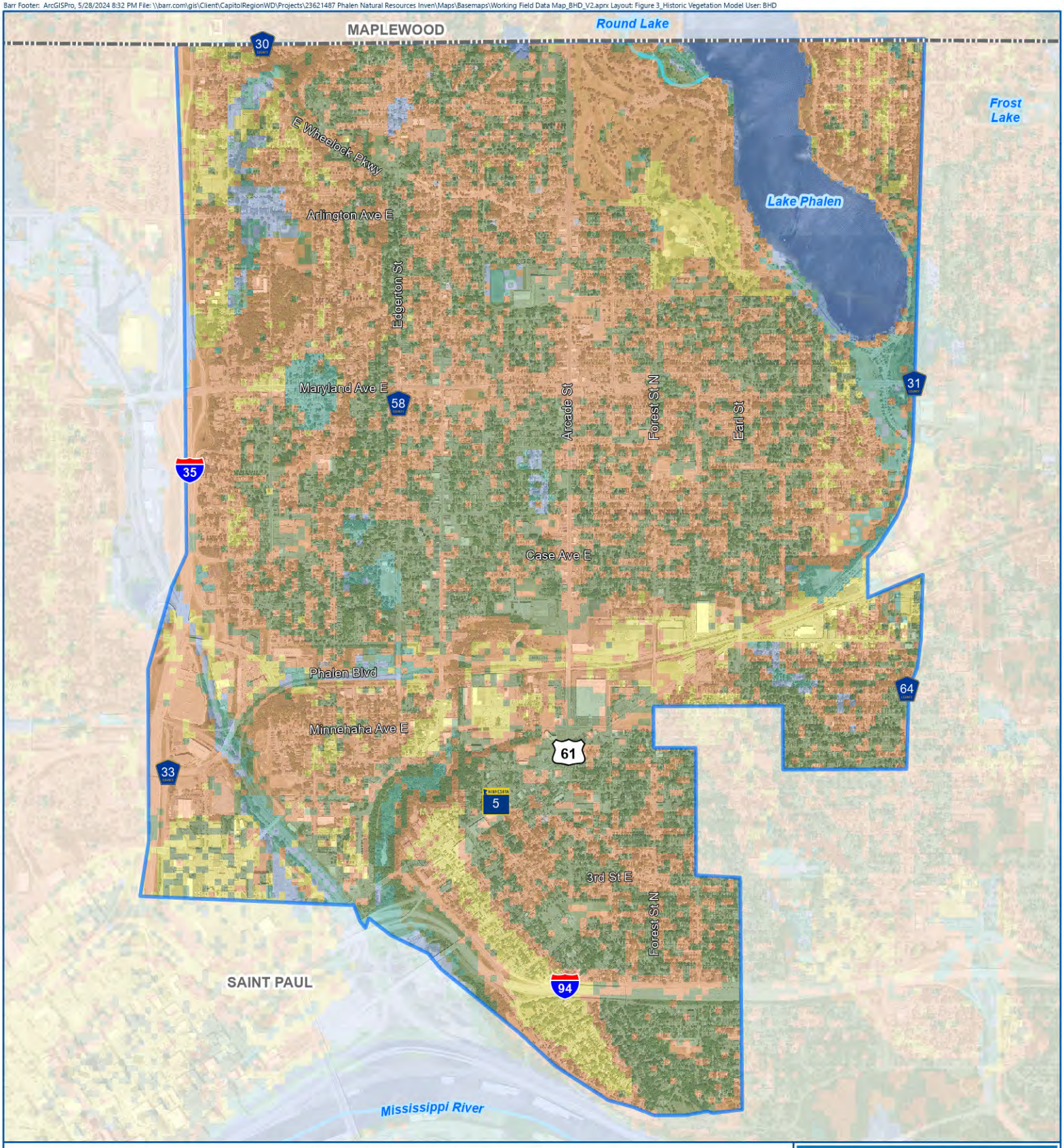
PROJECT AREA CONTEXT

Dayton's Bluff and Payne-Phalen Natural Resources Inventory

Capitol Region Watershed District

FIGURE 2

Barr Footer: ArcGISPro, 5/28/2024 8:32 PM File: \\barr.com\gis\Client\CapitolRegionWD\Projects\23621487 Phalen Natural Resources Inven\Maps\Basemaps\Working Field Data Map_BHD_V2.aprx Layout: Figure 3_Historic Vegetation Model User: BHD



Project Area

Municipal Boundary

Historic Vegetation Potential Classes

- Deciduous Forest
- Oak Savanna
- Prairie
- Seasonal Wetlands
- Perennial Wetlands
- Surface Water

N

0 1,000 2,000

Feet

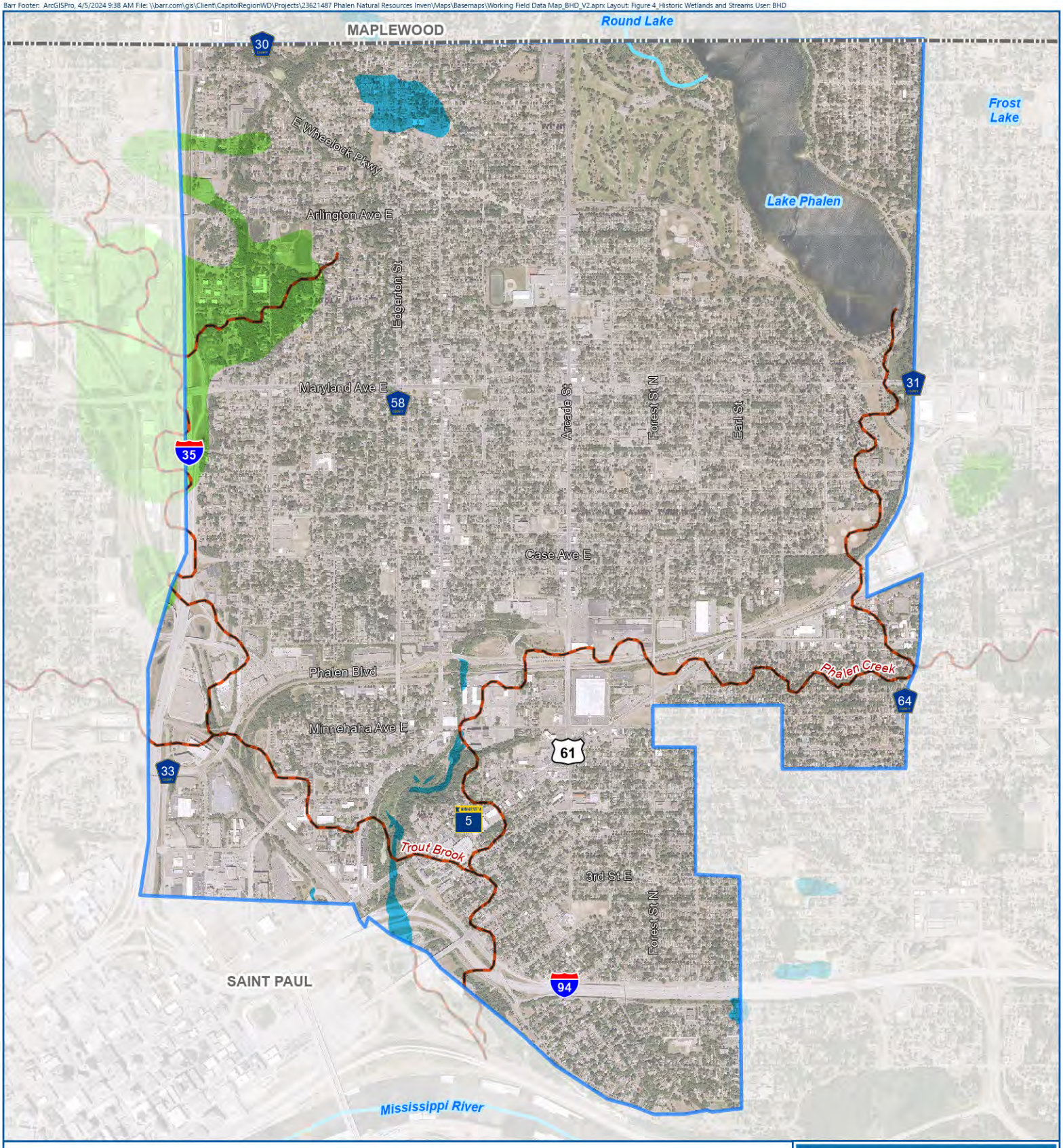
Data Source: MnModel Historical Vegetation Model, MN DNR, 2018

HISTORIC PLANT COMMUNITIES

Dayton's Bluff and Payne-Phalen Natural Resources Inventory

Capitol Region Watershed District

FIGURE 3



- Project Area
- Municipal Boundary
- Historic Stream
- Historic Wetland (1848-1922)
- Historic Open Water (1848-1922)

0 1,000 2,000
Feet

Data Source: CRWD

HISTORIC WATER RESOURCES

Dayton's Bluff and Payne-Phalen Natural Resources Inventory

Capitol Region Watershed District

FIGURE 4

Cultural modifications for railroad infrastructure and urban development have resulted in the loss of ecological function for these watercourses and their once associated wetlands.

2.3 Historic Land Use

Before the arrival of the European colonists in the 1600s, the area of what today is Saint Paul had long been inhabited by native peoples. The first European settlers came to the area around 1838 (National Park Service (NPS), 2021). Following their arrival, they altered land by harvesting trees, creating cultivated fields, and filled wetlands and buried streams to create railways and roads. Residential, commercial, and industrial development further impacted the land as urbanization cause significant alterations to the soils and natural hydrology of the area. The earliest available historic imagery shows how urbanized the project area was starting in 1940 and shows the changes as urban development continued through the rest of the 20th century (**Figures 5,6,7, and 8**).

Image 3 - Swede Hollow neighborhood and the St. Paul and Duluth Railroad tracks, c.1910 (Source: Minnesota Historical Society).

2.4 Current Conditions

The following provides an overview of existing data used to identify natural features within the project area.

2.4.1 Topography and Soil Texture

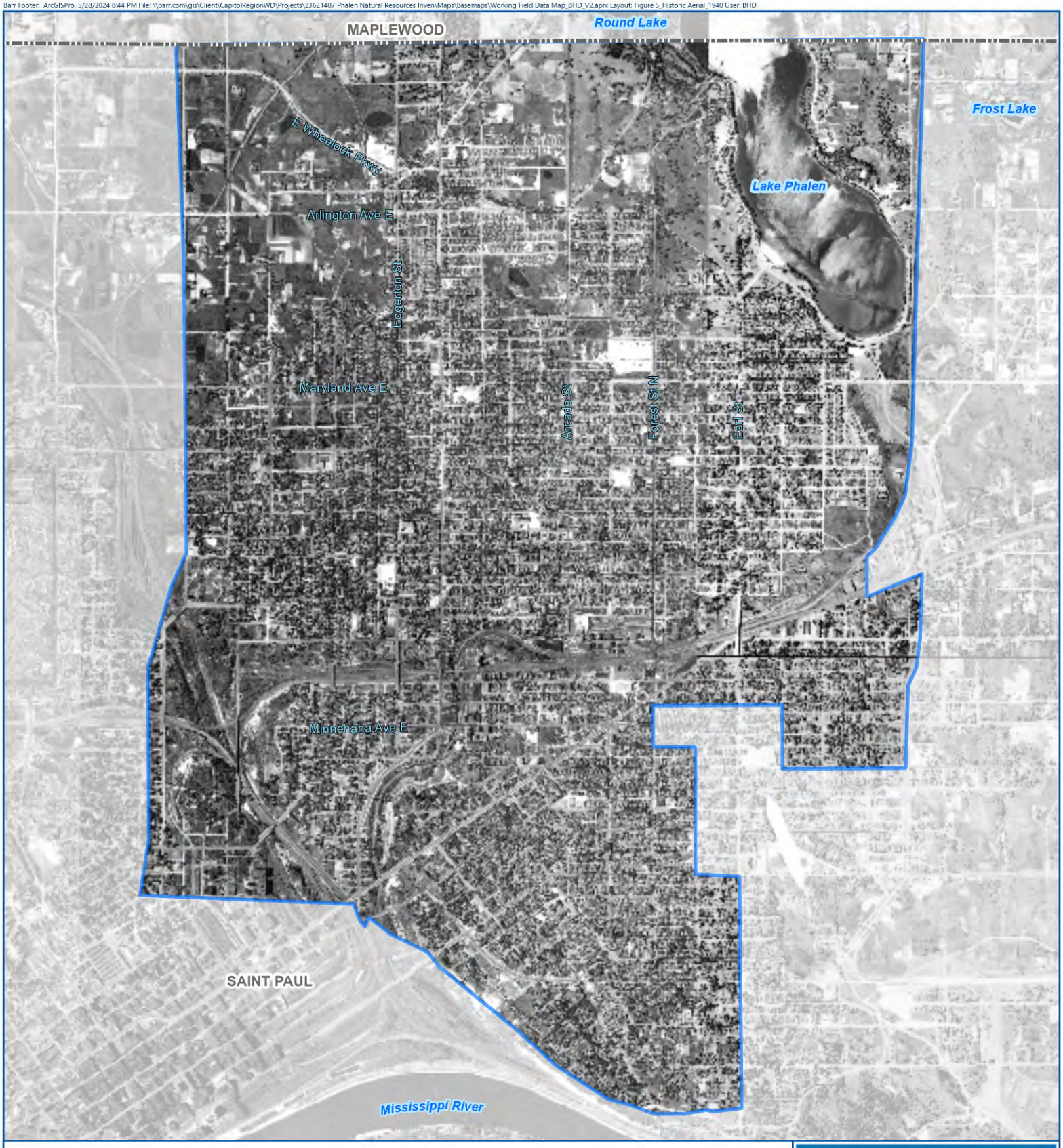
Figures 9 and 10 illustrate broad patterns of soil texture and drainage patterns**.** There are dramatic bluffs overlooking downtown Saint Paul located on the southwest portion of the site, however, much of the project area has been leveled and filled for cultural modification for industrial and commercial uses (Bluestem Heritage Group, 2013).

Natural Resources Conservation Service (NRCS) soil survey data is quite limited for the project area. However, broad scale soil data like this would likely be inaccurate given the history of soil disturbance throughout the city.

2.4.2 Land Use and Ownership

Two large green spaces within the project area include Swede Hollow Park and Phalen Regional Park. Single family residential and parks are the most common land use types within the project area. There are also commercial and industrial zones located along the major road corridors of Phalen Boulevard, Arcade Street, and Payne Avenue **(Figure 11).**

Figure 12 shows all City of Saint Paul, Ramsey County, and other publicly owned lands within the project area. All wetlands and a majority of intact natural and semi-natural plant communities exist within these publicly owned parcels. Inspection of publicly-owned parcels and parcels that would allow connectivity between natural resources was prioritized as part of this project.



Project Area

Municipal Boundary

N

0 1,000 2,000

Feet

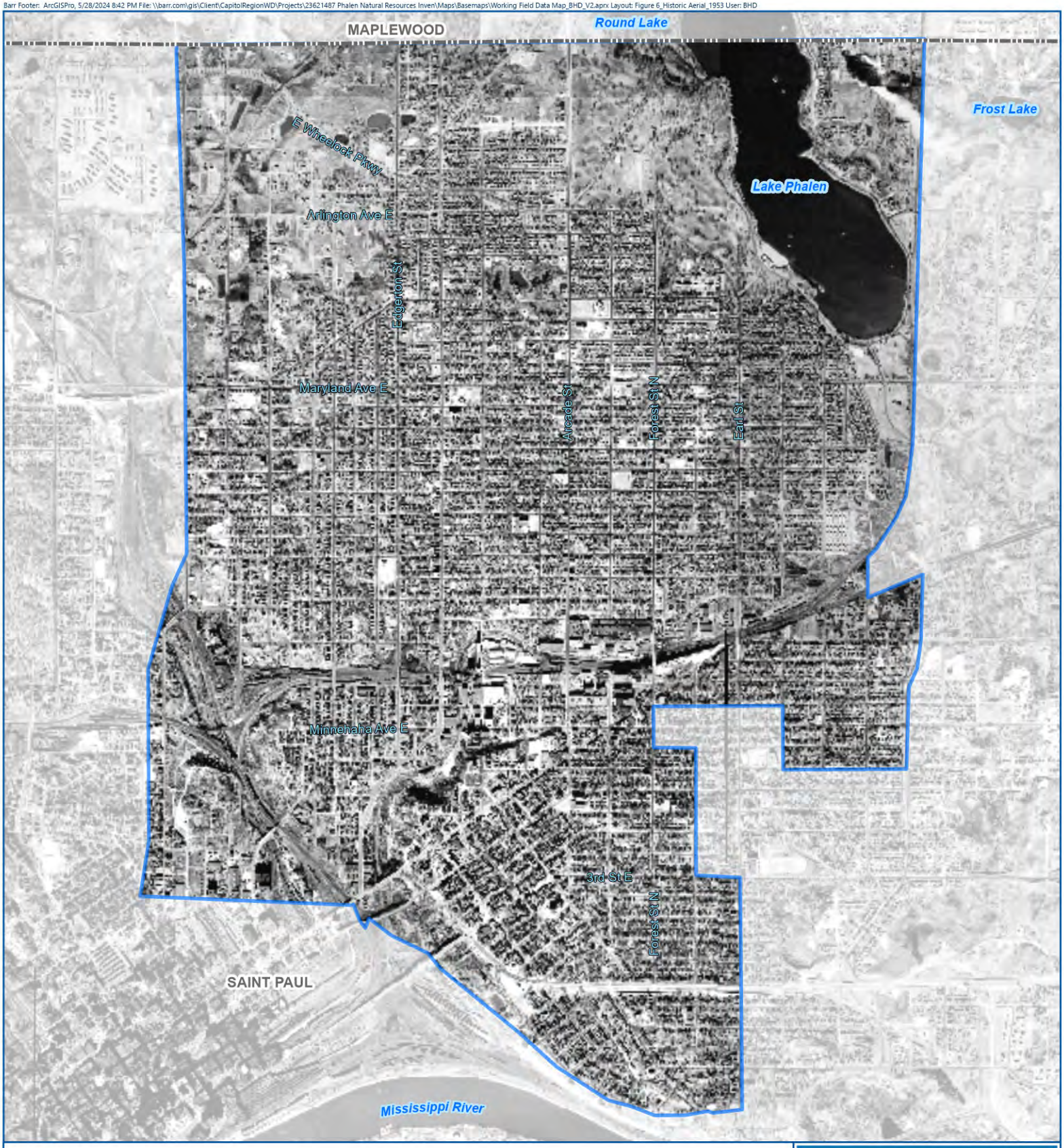
Data Source: Ramsey County

HISTORICAL IMAGERY
1940

Dayton's Bluff and Payne-Phalen Natural Resources Inventory

Capitol Region Watershed District

FIGURE 5



Project Area

Municipal Boundary

N

0 1,000 2,000

Feet

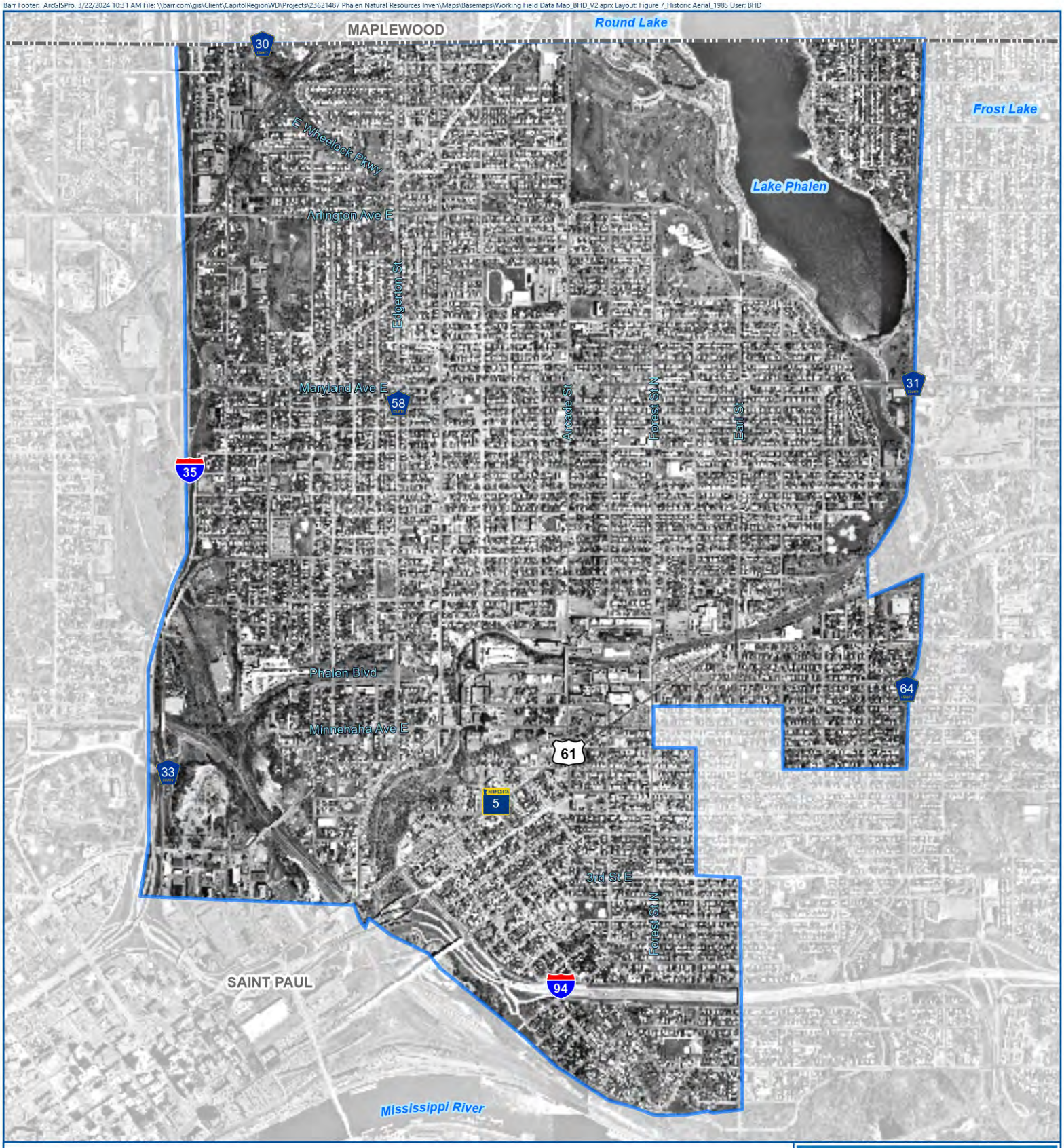
Data Source: Ramsey County

HISTORICAL IMAGERY 1953

Dayton's Bluff and Payne-Phalen Natural Resources Inventory

Capitol Region Watershed District

FIGURE 6



Project Area

Municipal Boundary

0 1,000 2,000

Feet

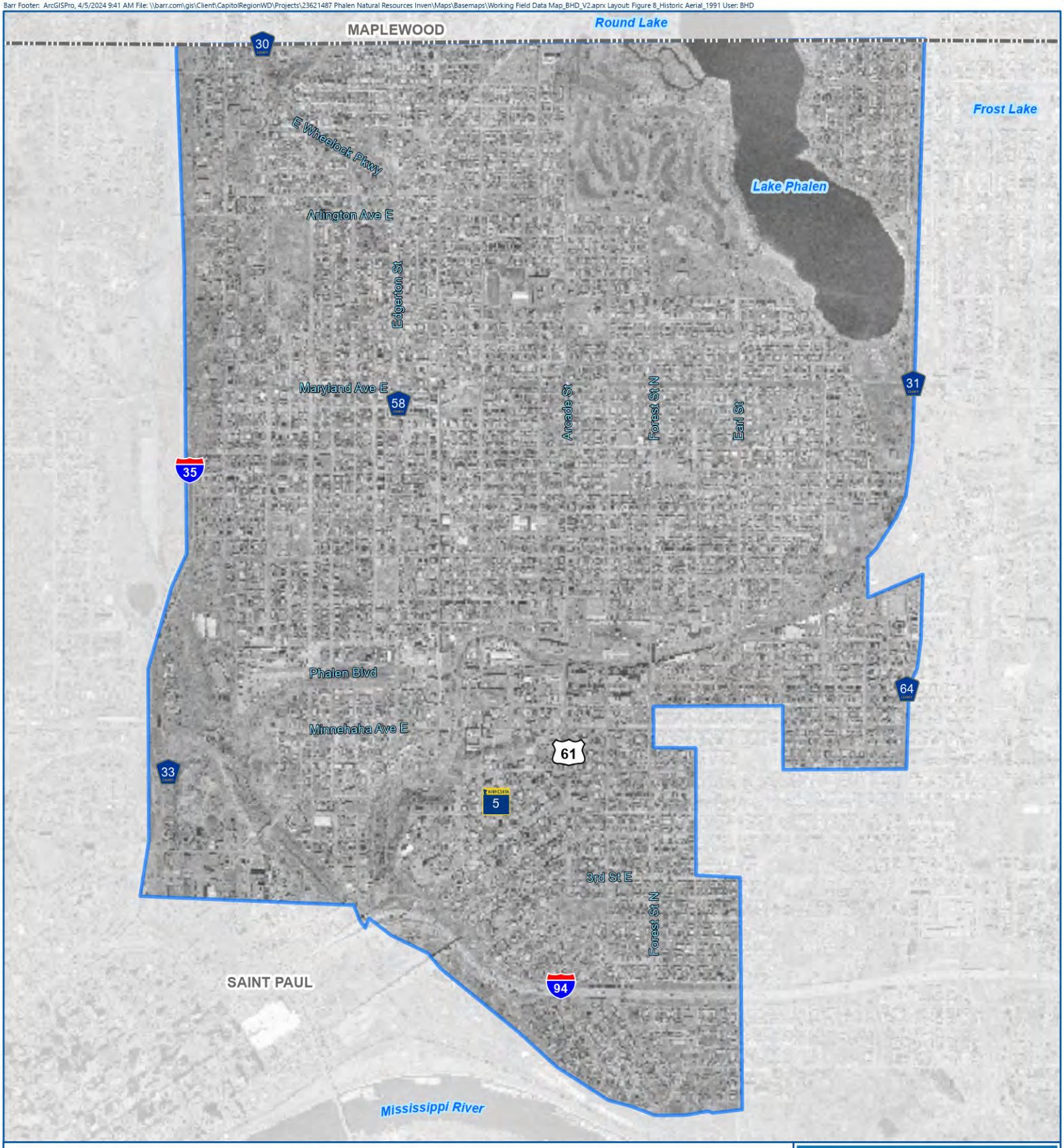
Data Source: Ramsey County

HISTORICAL IMAGERY
1985

Dayton's Bluff and Payne-Phalen Natural Resources Inventory

Capitol Region Watershed District

FIGURE 7



Project Area

Municipal Boundary

0 1,000 2,000

Feet

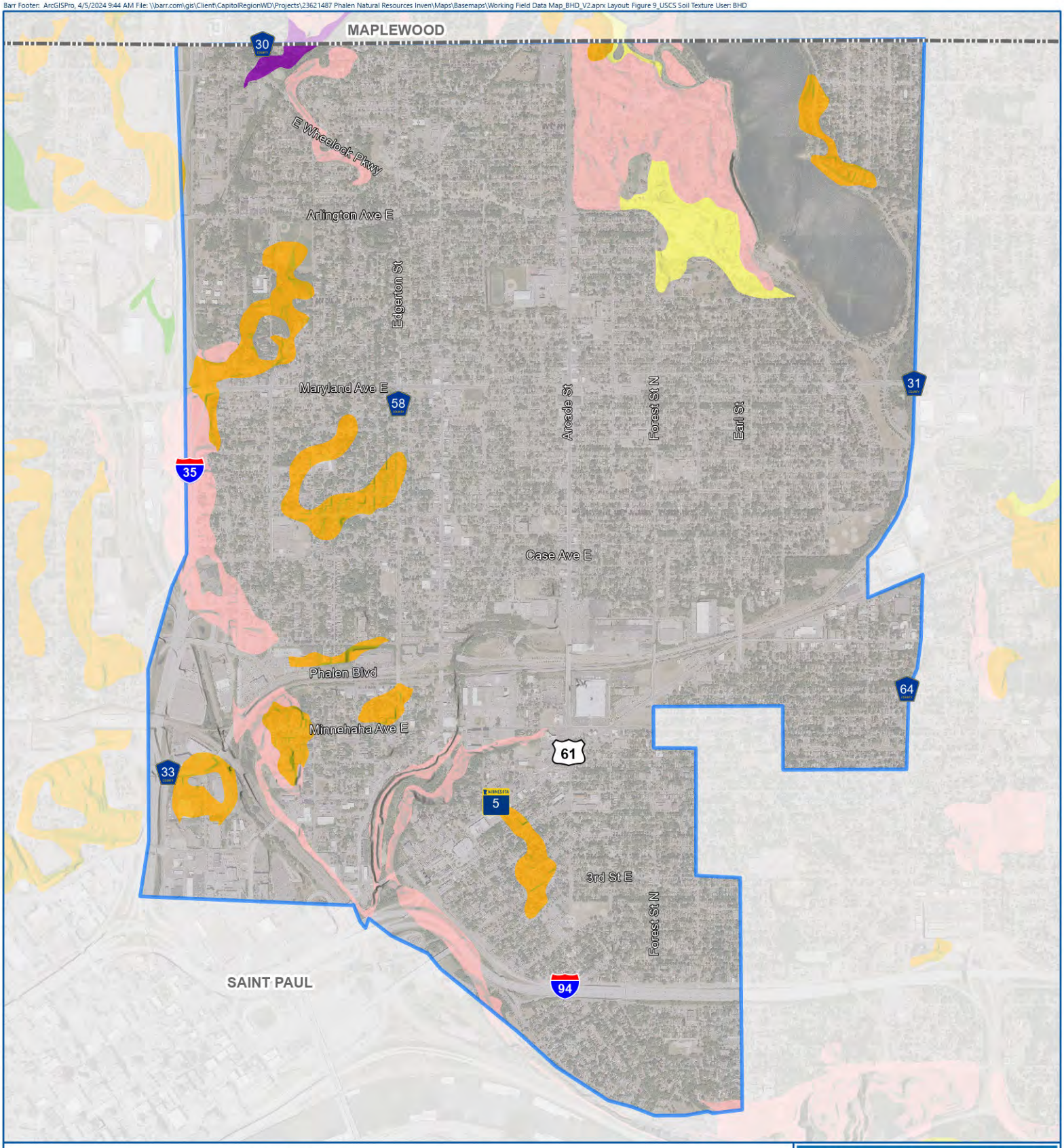
Data Source: Ramsey County

HISTORICAL IMAGERY
1991

Dayton's Bluff and Payne-Phalen Natural Resources Inventory

Capitol Region Watershed District

FIGURE 8



Project Area

Municipal Boundary

USCS Soil Texture

- CL (clay of low plasticity, lean clay)
- CL-ML (clay of low plasticity, lean clay-silt)
- ML (silt)
- PT (peat)
- SC-SM (clayey sand-silty sand)
- SM (silty sand)
- Not rated or not available

N

0 1,000 2,000

Feet

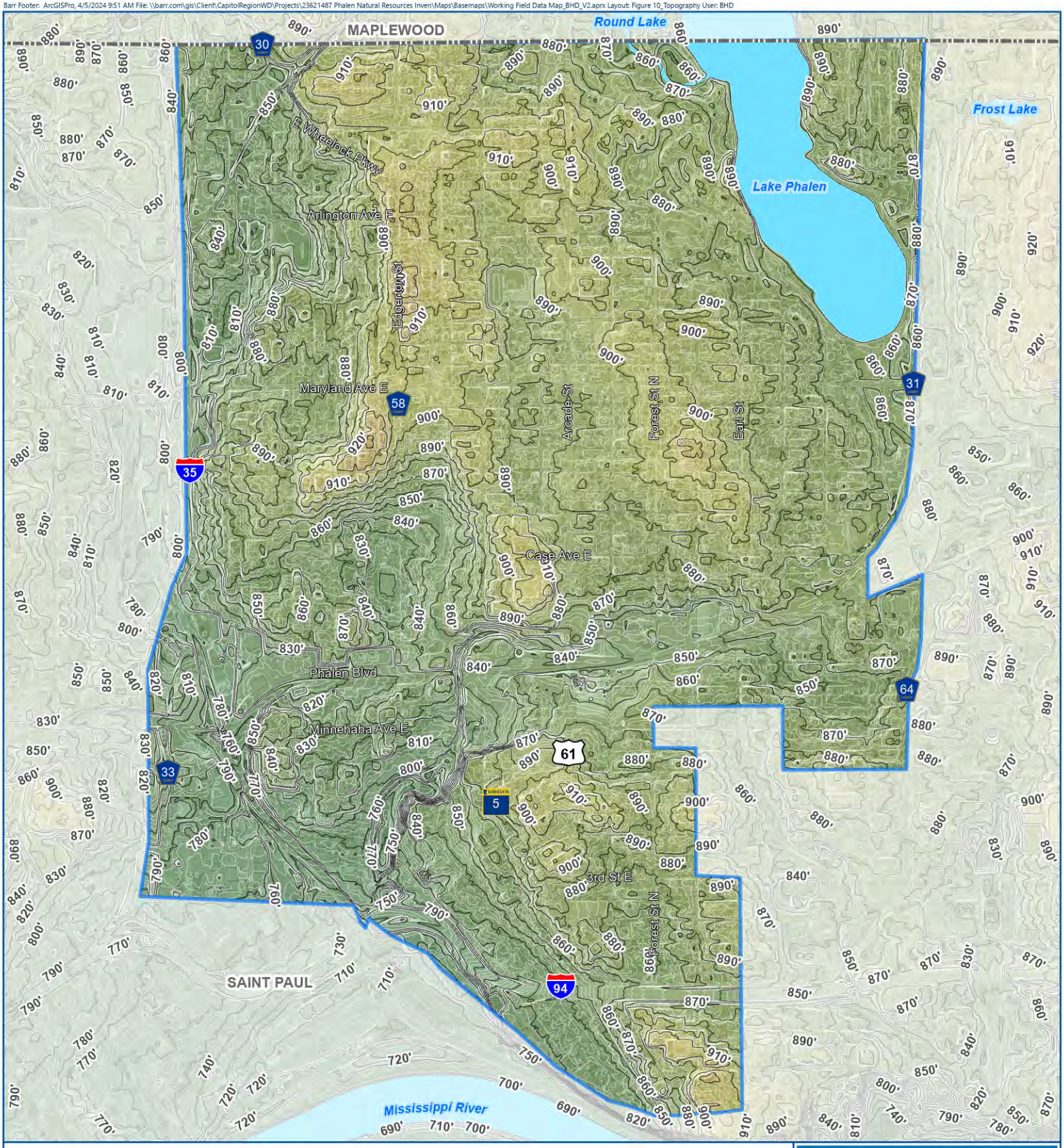
Source: USDA, NRCS

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS) SOIL TEXTURE

Dayton's Bluff and Payne-Phalen Natural Resources Inventory

Capitol Region Watershed District

FIGURE 9



Project Area

Municipal Boundary

10-Foot Contour

2-Foot Contour

Elevation (ft)

1000

600

0 1,000 2,000

Feet

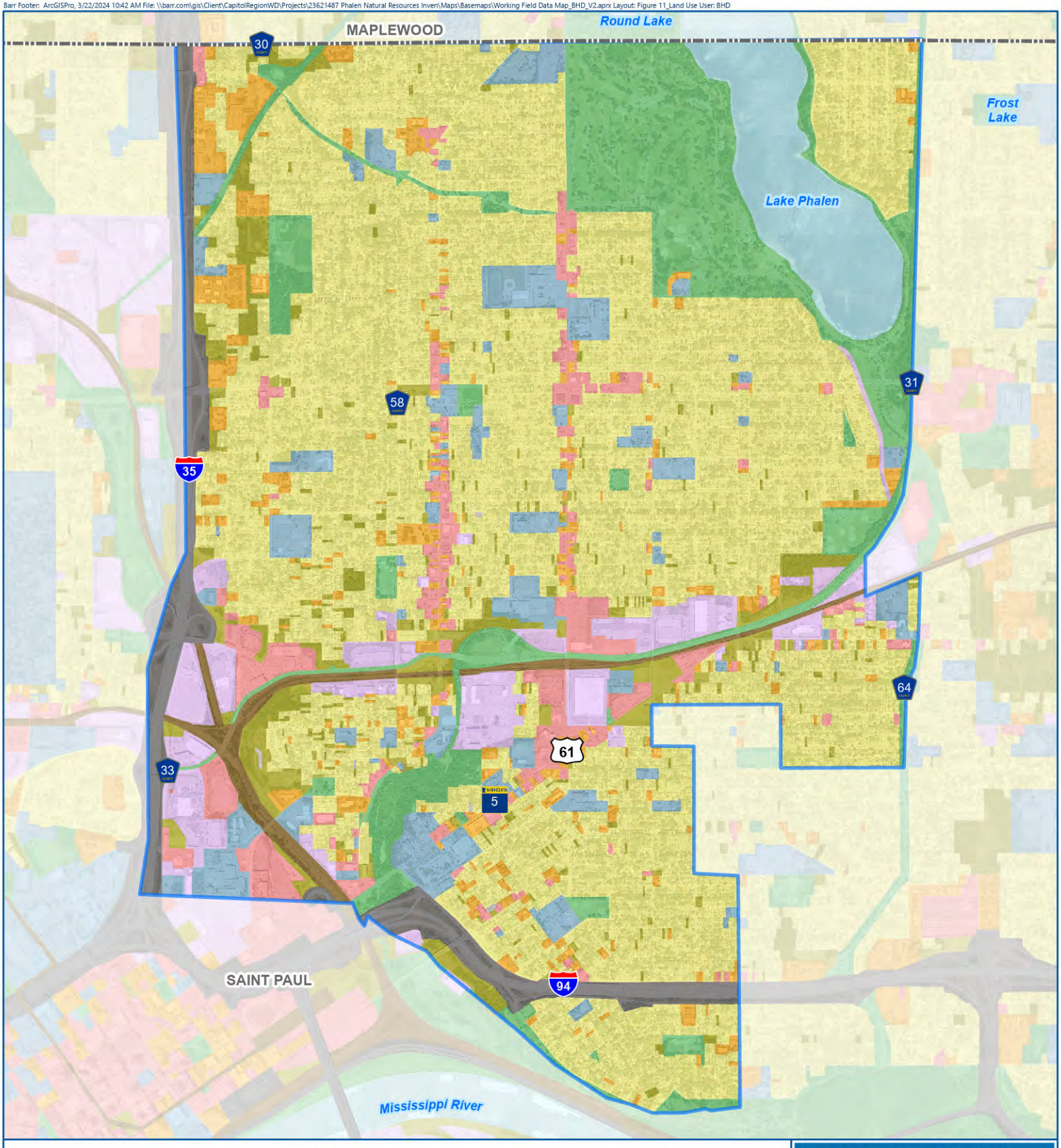
Data Source: MNDNR, Ramsey County

TOPOGRAPHY

Dayton's Bluff and Payne-Phalen Natural Resources Inventory

Capitol Region Watershed District

FIGURE 10



Project Area
Municipal Boundary

2020 Land Use (Met Council)

- Single Family
- Multifamily & Mixed Use Residential
- Commercial
- Industrial
- Institutional
- Park, Recreational, or Preserve
- Major Highway
- Major Railway
- Agricultural
- Undeveloped
- Water

0 1,000 2,000
Feet

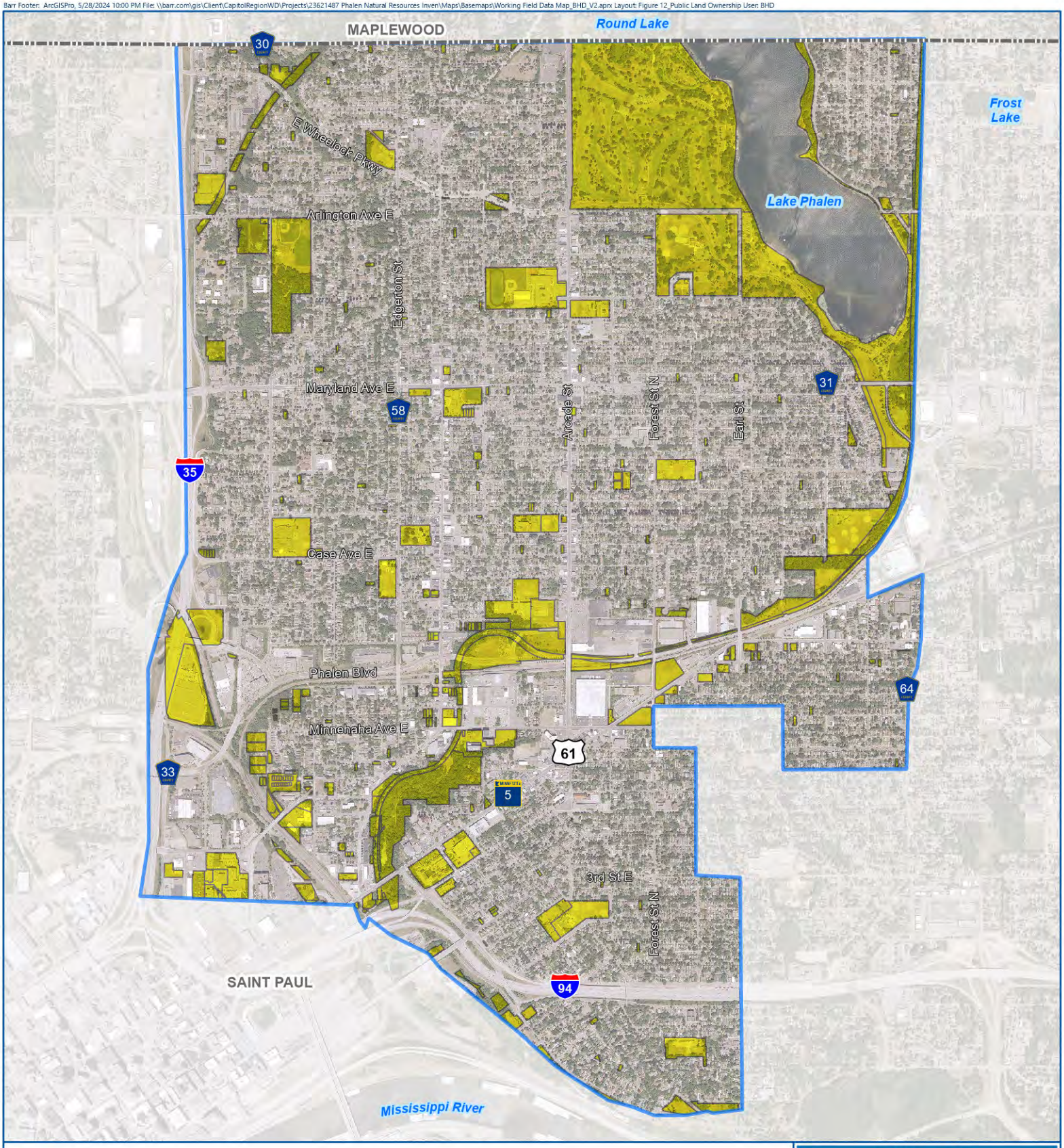
Source: Met Council

GENERALIZED LAND USE (2020)

Dayton's Bluff and Payne-Phalen Natural Resources Inventory

Capitol Region Watershed District

FIGURE 11



Project Area

Municipal Boundary

Publicly-Owned Parcel

0 1,000 2,000

Feet

Source: Met Council

PUBLIC LAND OWNERSHIP

Dayton's Bluff and Payne-Phalen Natural Resources Inventory

Capitol Region Watershed District

FIGURE 12

2.4.3 Minnesota Land Cover Classification

Barr conducted an inventory of land cover types (**Figure 13**) using the 2014 Minnesota Land Cover Classifications System (MLCCS) produced by the MNDNR. MLCCS identifies the physical land cover rather than traditional land use descriptions. MLCCS categorizes both cultural features, such as buildings and pavement, as well as natural and semi-natural land cover**.** The system also assigns habitat quality rankings (based on the MNDNR's Natural Heritage Element Occurrence Ranking Guidelines) to indicate the condition of natural areas and presence of non-native species within.

Using MLCCS data for an initial evaluation can be useful in identifying areas of interest for further ground investigations. Unfortunately, little of the project area has been assessed and as a result no data are currently available for review. In addition, no sites within the project area were assigned a natural quality ranking or given designation as a site of biodiversity significance (later discussed in Section 4, Barr developed MLCCS data for all sites investigated as part of this project).

2.4.4 Conservation Corridors

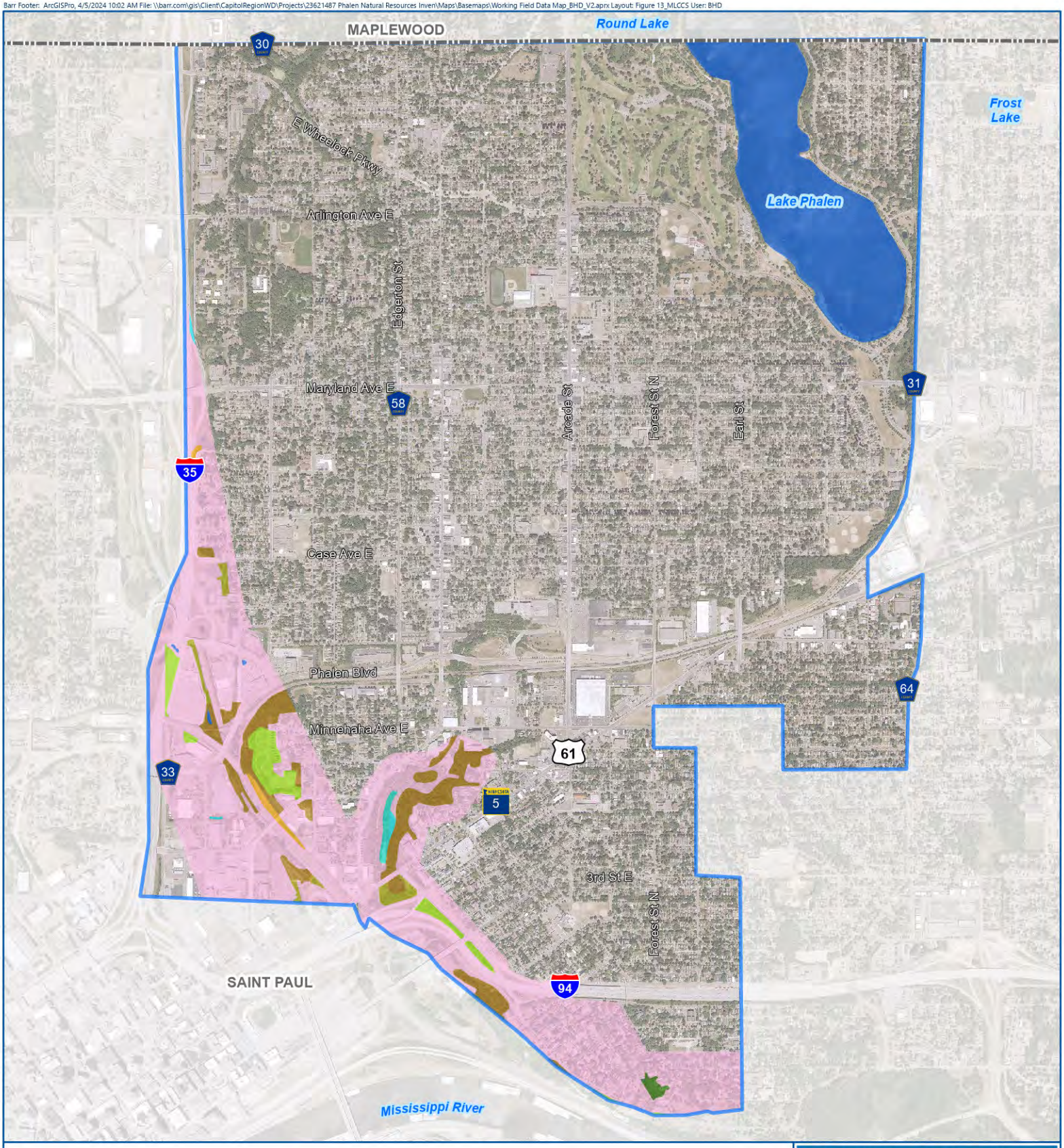
Conservation corridors have been designated by the MNDNR as a strategy for protecting and connecting habitat corridors throughout the Twin Cities area. **Figure 14** shows conservation corridors along the Mississippi River, within Swede Hollow Park, and a corridor extending north up to the Trout Brook Nature Sanctuary. Conservation corridors are critically important, especially in a built-out area like this study area. These are considered high-priority focus areas where habitat protection would be most valuable to accommodate species movement.

2.4.5 Impervious Surface and Heat Island

Heat island maps were developed by the Metropolitan Council by recording and mapping land surface temperature at a single point in time (September 1, 2022, 12pm) when the air temperature was 88 degrees. **Figure 15** shows that areas with higher surface temperatures (red and orange) correlate with areas of greater impervious surfaces (**Figure 16**). This is due to the capacity of hard surfaces to accumulate heat. This can be mitigated by reducing impervious surfaces and by shading these hard surfaces with trees.

2.4.6 Population Vulnerability

CRWD has made diversity and inclusion a priority for their organization as well as for the communities they serve (2021-2030 Watershed Management Plan). Data from the Centers for Disease Control and Prevention (CDC) and the Minnesota Pollution Control Agency (MPCA) was included as part of the site prioritization and scoring rubric (**Table 5-1**) to identify and protect natural areas located within vulnerable neighborhoods. For purposes here, the MPCA's Environmental Justice areas and the CDC's Vulnerability Index were used to identify locations that should be prioritized for environmental justice efforts and communities that are more vulnerable to human-caused or natural disasters respectively. Many studies demonstrate that low-income neighborhoods and communities of color have higher potential exposures to outdoor air pollutants, natural disasters, disease outbreak, and hazards caused by climate change. In addition, the social, economic, and health inequities that these populations face can make them more vulnerable to the effects of these hazards (CDC SVI Documentation 2020). Based on the CDC and MPCA's metrics, **Figures 17 and 18** show that most neighborhoods within the project area are potentially vulnerable and at risk to identified environmental hazards.



- Project Area
- Municipal Boundary

***MNDNR Landcover Type**

- Impervious Surface
- Tree Plantation
- Forest
- Shrubland
- Maintained Tall Grass
- Short Grasses
- Wetland Forest
- Tall Grasses
- Emergent Wetland
- Open Water

*DNR MLCCS data not available for a majority of the project area

0 1,000 2,000
Feet

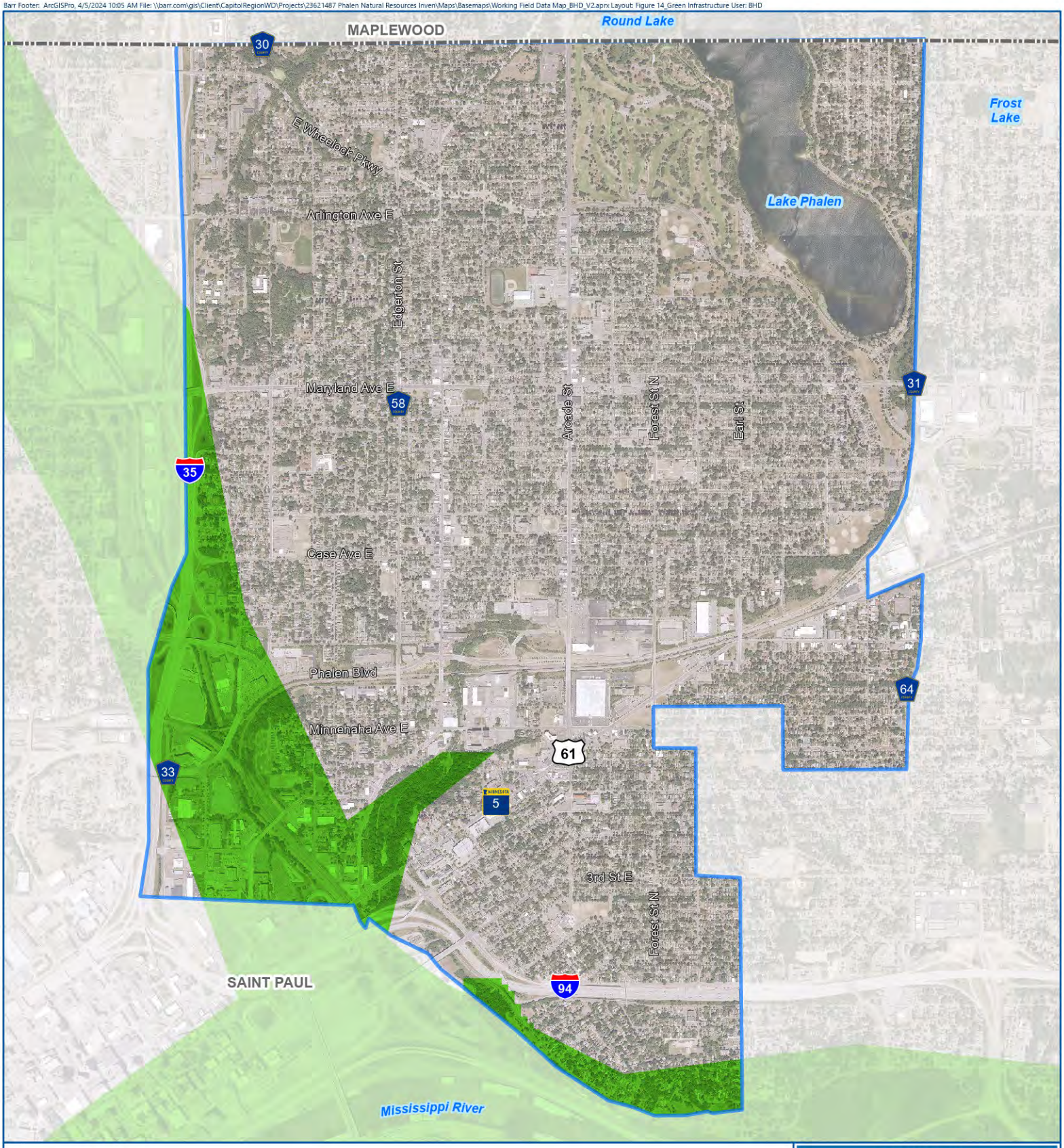
Source: MnDNR

MINNESOTA LAND COVER CLASSIFICATION (MLCCS)

Dayton's Bluff and Payne-Phalen Natural Resources Inventory

Capitol Region Watershed District

FIGURE 13



Project Area
Municipal Boundary
Conservation Corridors (MNDNR)

0 1,000 2,000
Feet

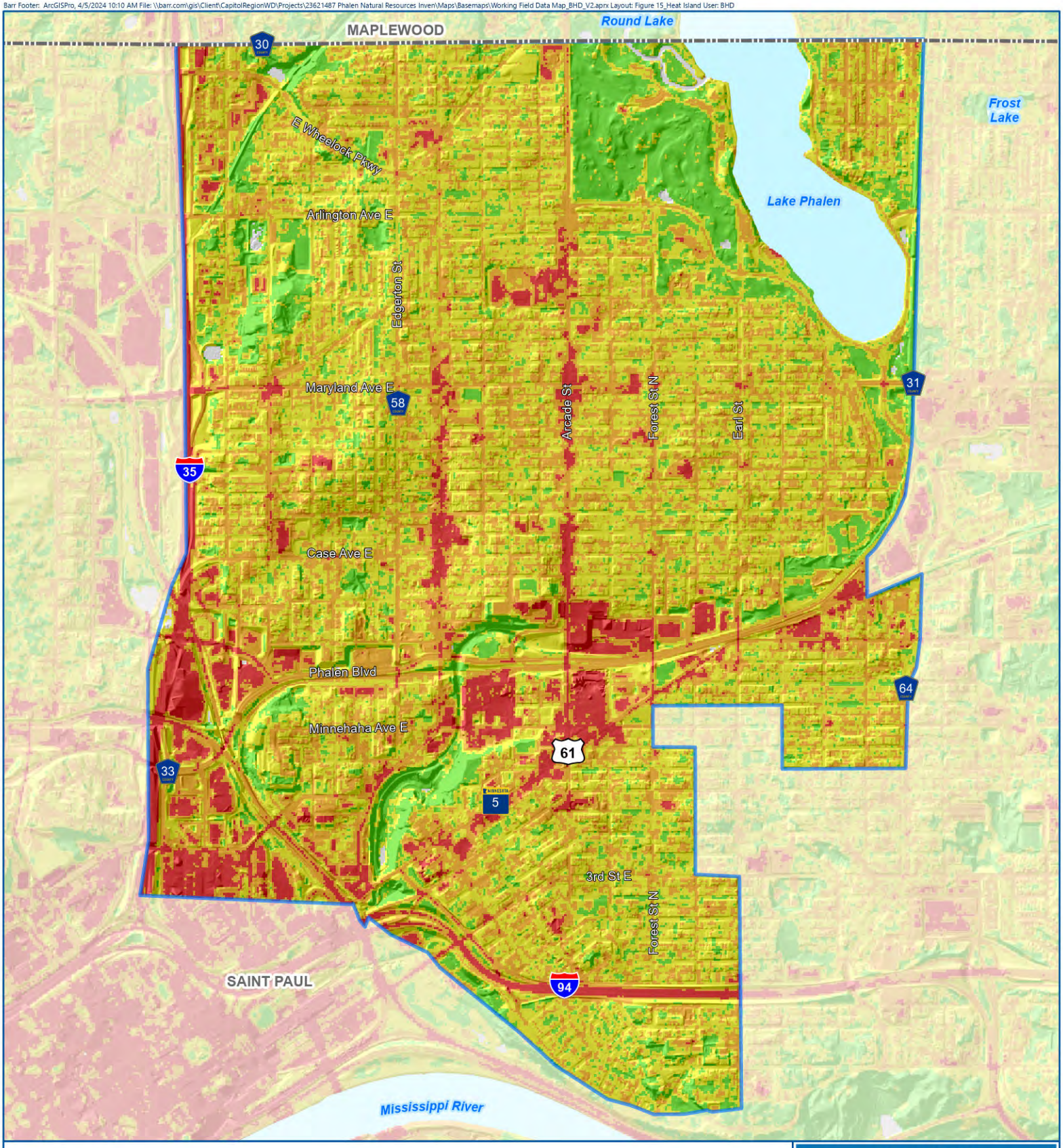
Source: Metro Conservation Corridors, MNDNR, 2015

METRO AREA CONSERVATION CORRIDORS

Dayton's Bluff and Payne-Phalen Natural Resources Inventory

Capitol Region Watershed District

FIGURE 14



Project Area

Municipal Boundary

Land Surface Temperature (°F)*

- 100 - 125
- 95 - 100
- 90 - 95
- 85 - 90
- 80 - 85
- 74 - 80

*Land Surface Temperature satellite image taken at noon on September 1, 2022. Air temperature at MSP was 88°F.

N

0 1,000 2,000

Feet

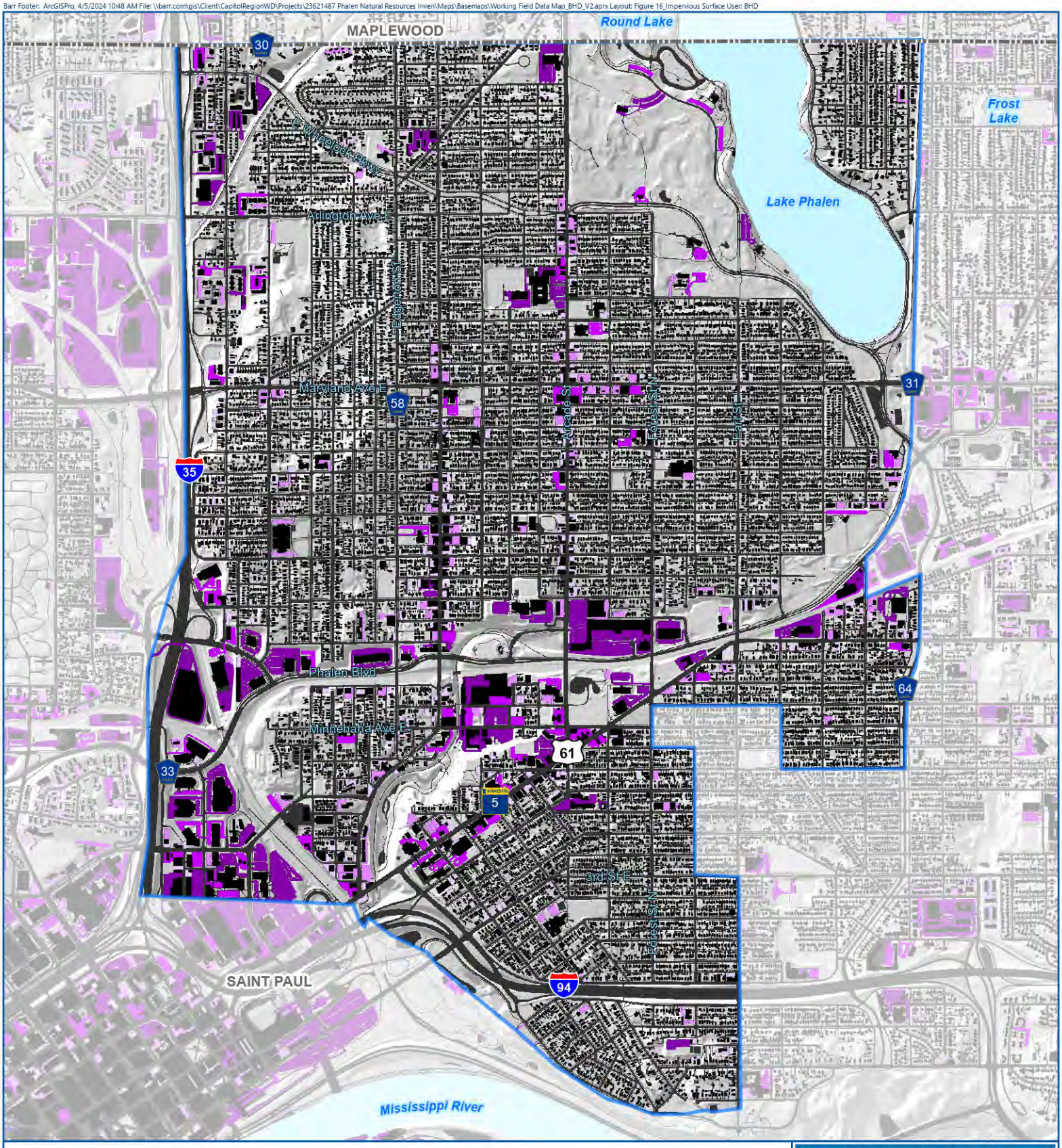
Source: Met Council

HEAT ISLAND

Dayton's Bluff and Payne-Phalen Natural Resources Inventory

Capitol Region Watershed District

FIGURE 15



- Project Area
- Municipal Boundary
- Impervious Surface (road, building, sidewalk, ect.)

Impervious Surface Parking Lot

- Under 1/4 acre
- 1/4 - 1/2 acre
- 1/2 - 1 acre
- Over 1 acre

0 1,000 2,000

Feet

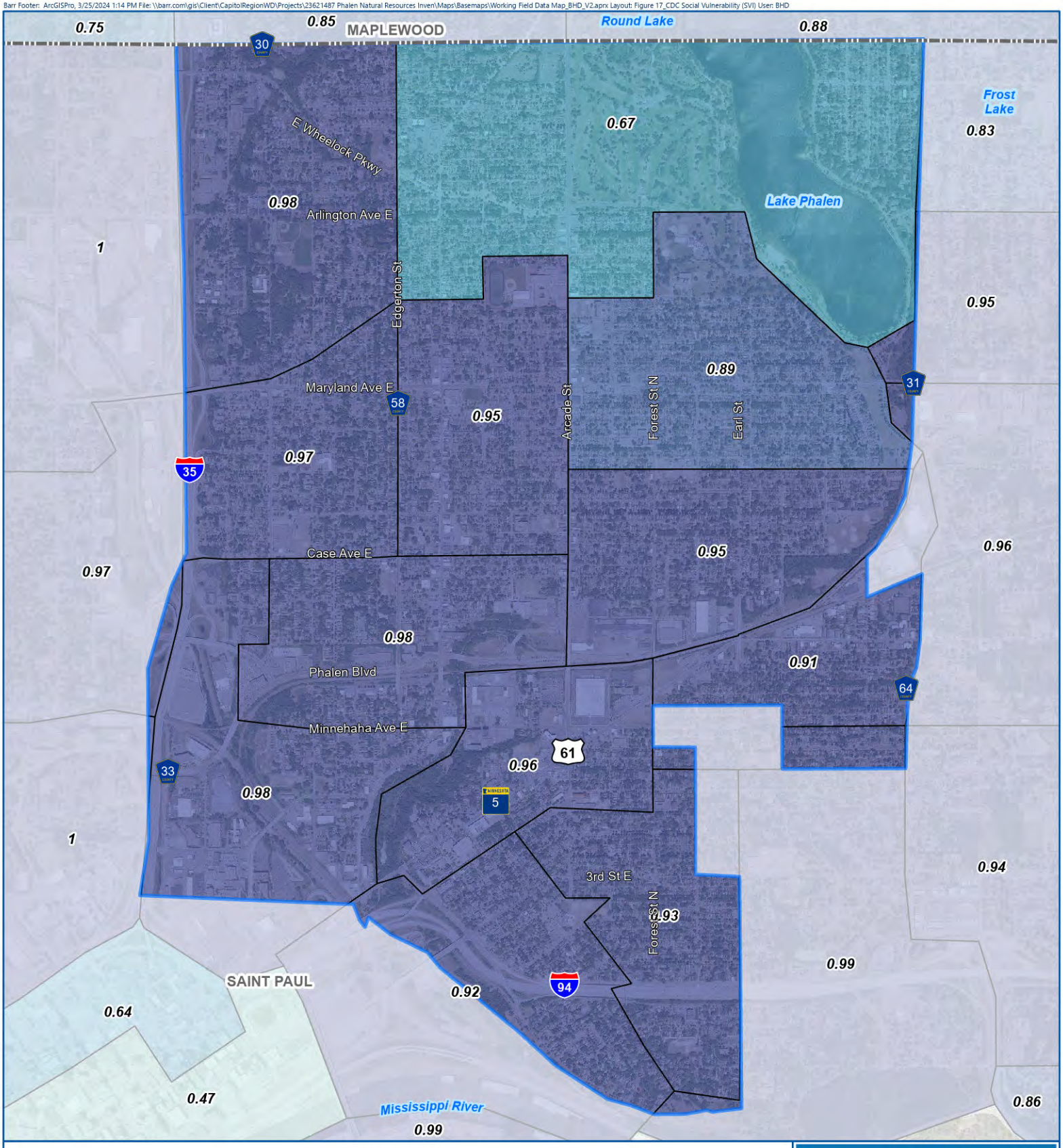
Source: Ramsey County (2017)

IMPERVIOUS SURFACE

Dayton's Bluff and Payne-Phalen Natural Resources Inventory

Capitol Region Watershed District

FIGURE 16



Project Area

Municipal Boundary

CDC Social Vulnerability Index (SVI)

- 0.00 - 0.10
- 0.10 - 0.20
- 0.20 - 0.30
- 0.30 - 0.40
- 0.40 - 0.50
- 0.50 - 0.60
- 0.60 - 0.70
- 0.70 - 0.80
- 0.80 - 0.90
- 0.90 - 1.00
- 1.00+

N

0 1,000 2,000

Feet

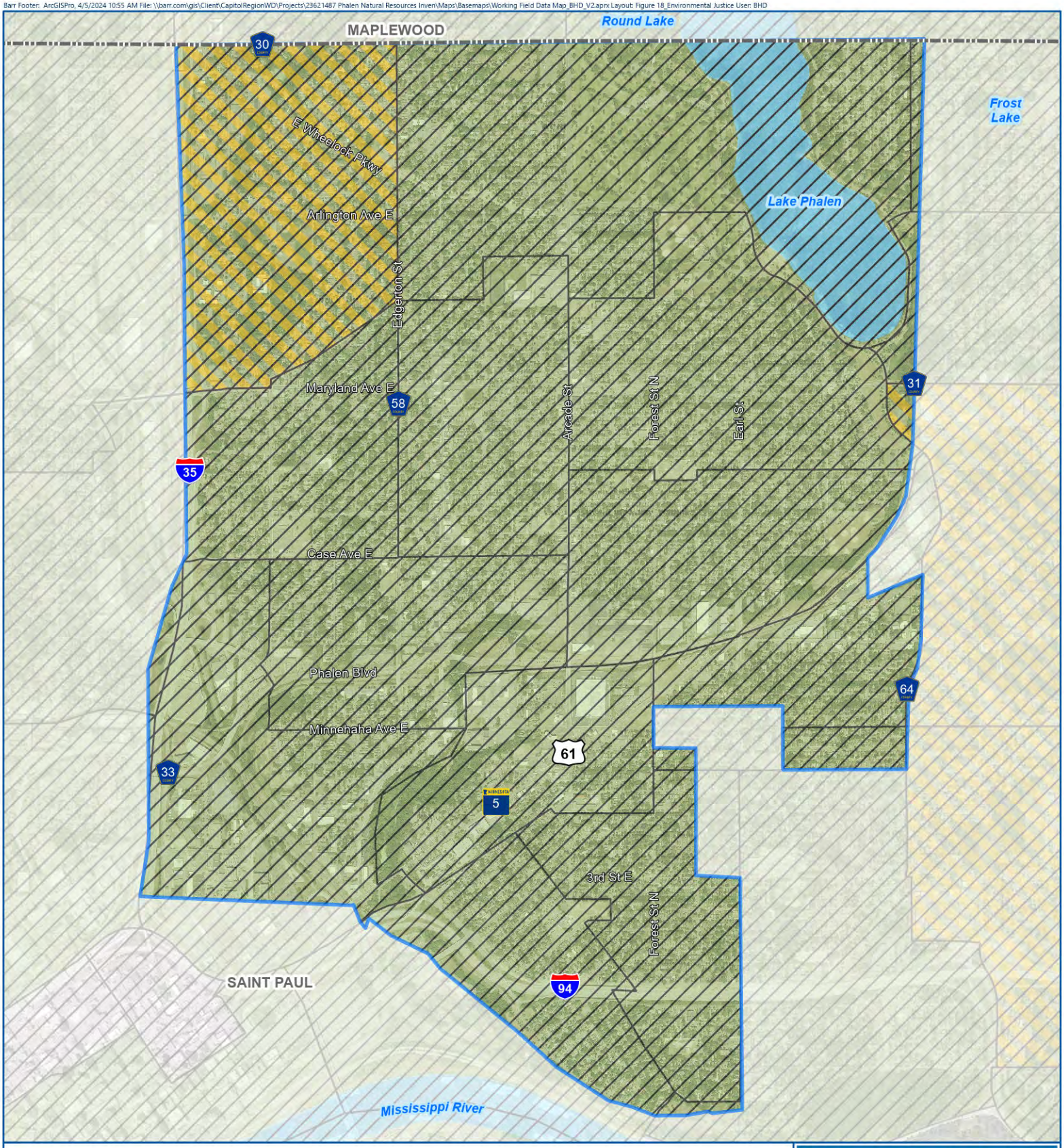
Source: CDC

CDC SOCIAL VULNERABILITY INDEX

Dayton's Bluff and Payne-Phalen Natural Resources Inventory

Capitol Region Watershed District

FIGURE 17



Project Area

Municipal Boundary

MPCA Environmental Justice Areas

Over 35% of People Below 200% Poverty Level

40% of People Have Limited English Proficiency

Over 40% People of Color

0 1,000 2,000

Feet

Source: MPCA

MPCA ENVIRONMENTAL JUSTICE AREAS

Dayton's Bluff and Payne-Phalen Natural Resources Inventory

Capitol Region Watershed District

FIGURE 18

3 Inventory Methods

3.1 Desktop Analysis

After compiling relevant and publicly available geospatial and site-specific data, existing geologic, topographic, hydrologic, ecological, and cultural datasets, Barr assessed the information to understand the entirety of the project area and to identify potential locations of existing natural resources.

Following the desktop analysis, Barr developed a screening method to identify specific sites for field investigations. With the project goals in mind, the following criteria were layered using a GIS software program to identify parcels with existing natural resources (**Figure 19**):

- Presence of natural or semi-natural plant communities
- Wetlands
- Location of historical water resources
- Ecological corridor connectivity
- Public or undeveloped land that may provide recreational and cultural enhancement opportunities

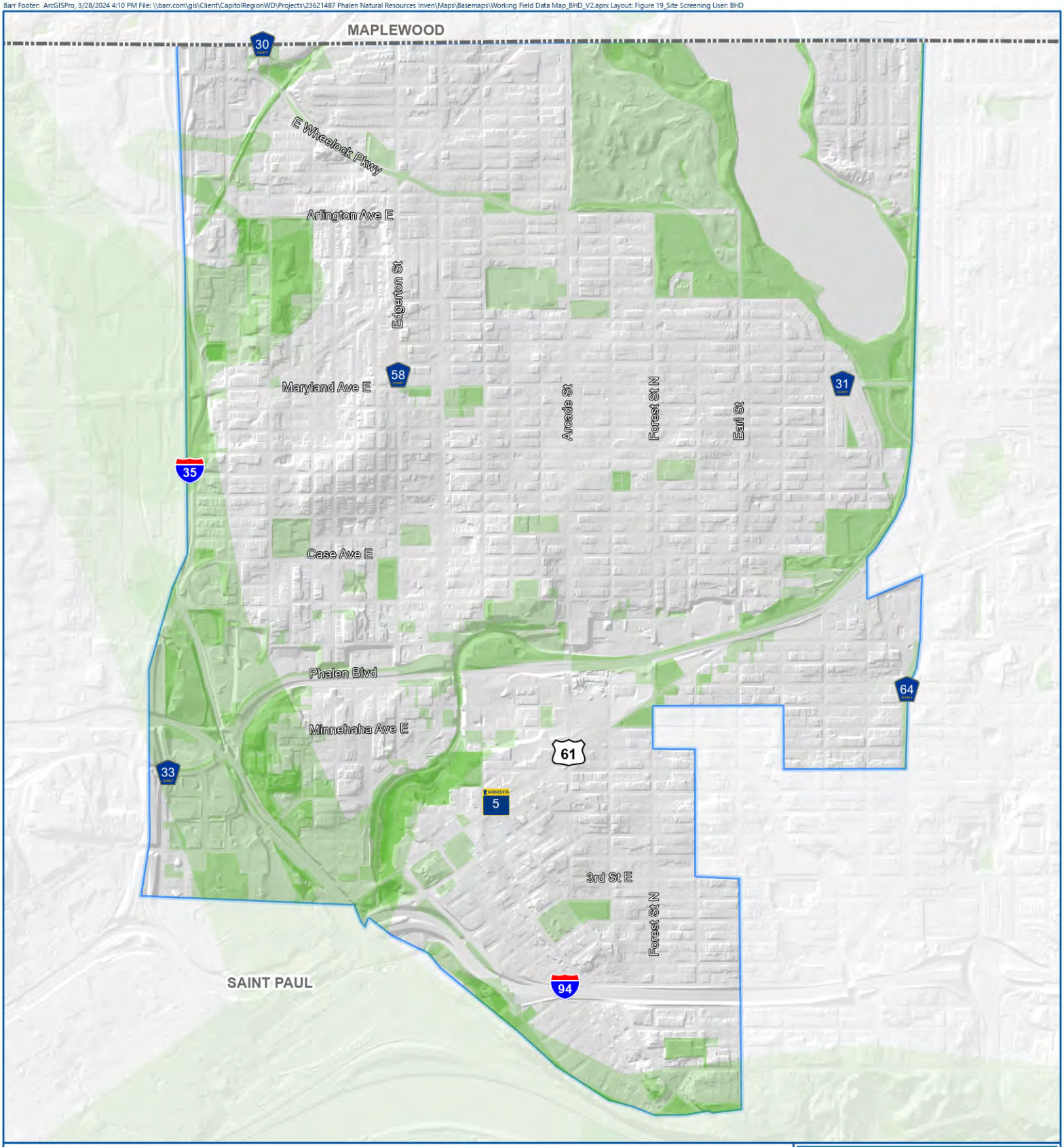
Using the results of the initial screening and input from CRWD, RWMWD, and the project partners, Barr identified 43 sites for detailed field investigation (**Figure 20** and **Table 5-4**). Sites are numbered for identification purposes only and are based on the general location of the site starting in the northwest corner of the project area. The site number is not based on a natural resource priority or quality rank. The site boundaries follow parcel limits and include cultural areas not containing natural resources.

3.2 Field Methods

Image 4 - Example of mapped landcover using GIS mapping software in the field.

Following the desktop analysis, in September 2023, Barr ecologist and professional landscape architects conducted field investigations to document the existing conditions at the 43 identified sites. While in the field, notes, photographs, plant community boundaries, and all relevant information were recorded on tablet computers using GIS mapping software. Investigators documented existing land cover, identified plant community types, characterized ecological quality, identified unique physical features (such as slope, aspect, erosion, standing water etc.), and inspected for evidence of past disturbance or ongoing management practices (if any).

Inspectors were able to visit the entirety of most sites or were able to discern vegetation and ecological quality from a distance where areas were inaccessible due to physical hazards or barriers. Barr then compiled, reviewed, summarized, and mapped the results of the field investigations.



***Screening Layers**

- Existing Wetlands
- Historic Water Resources (1848-1922)
- Public Land Ownership, Acres > 0.5
- Public or undeveloped Parcel > 0.5 acres
- Existing MLCCS Data (natural or semi-natural plant communities)
- Conservation Corridors

- Project Area
- Municipal Boundary

*Note: Overlapping criteria layers appear darker

N

0 1,000 2,000

Feet

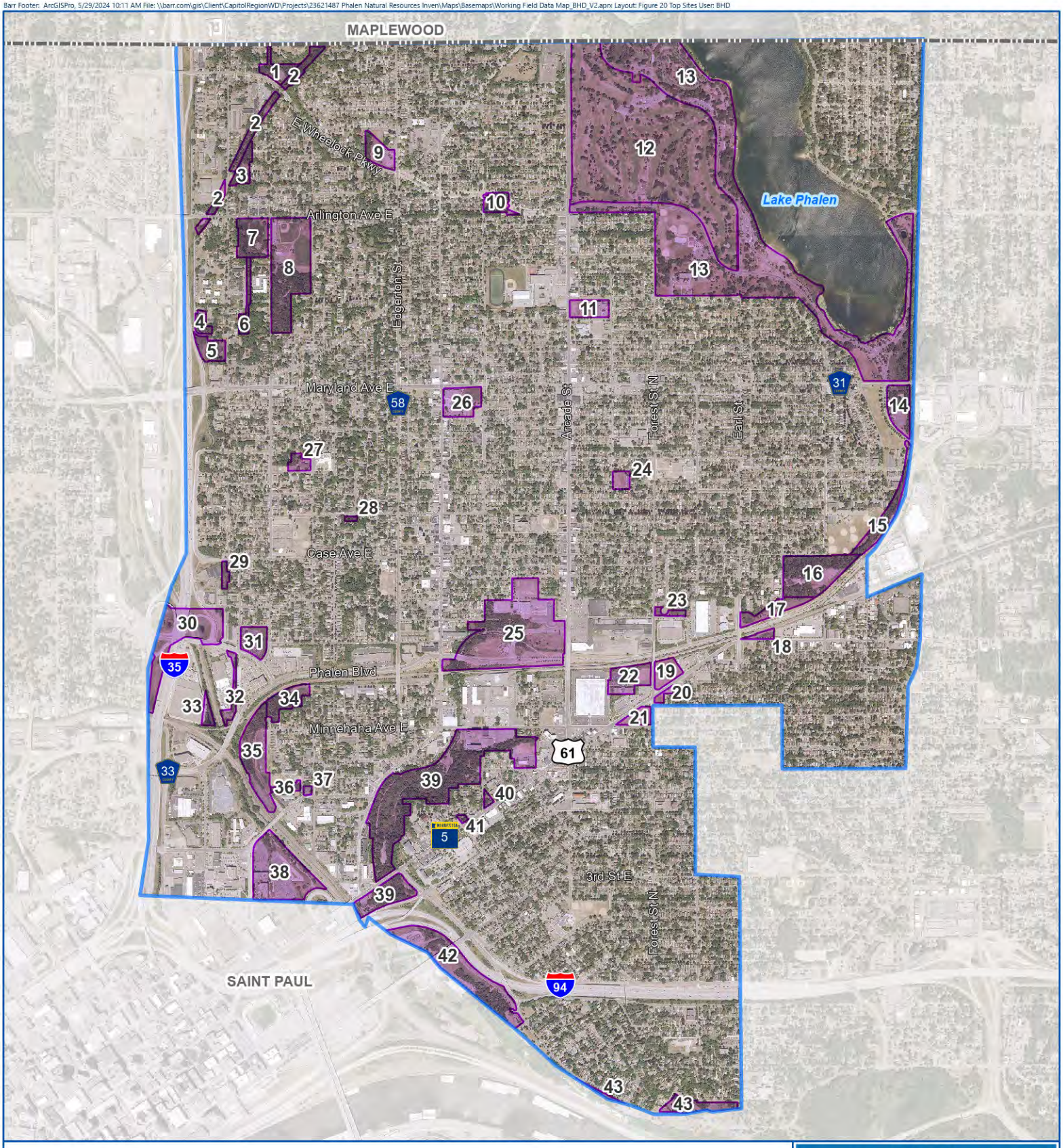
Source: MPCA, MNDNR, Ramsey County, CRWD

SCREENING LAYERS FOR DESKTOP ANALYSIS

Dayton's Bluff and Payne-Phalen Natural Resources Inventory

Capitol Region Watershed District

FIGURE 19



Project Area

Municipal Boundary

Sites Identified for Field Investigation
(labeled by site identification number)

N

0 1,000 2,000

Feet

SITES IDENTIFIED FOR FIELD INVESTIGATION

Dayton's Bluff and Payne-Phalen Natural Resources Inventory

Capitol Region Watershed District

FIGURE 20

4 Natural Resource Inventory Results

4.1 Plant Community Inventory

The land cover categories depicted in **Figure 21** are based on the MLCCS cover types recorded in the field. However, the categories as shown represent a simplification of the MLCCS classifications for purposes of planning. The following summary provides a brief description of cover types that characterize the 43 sites investigated as part of the study.

4.1.1 Cultural

General Characteristics: These areas are developed landscapes such impervious surfaces (roads, buildings, and parking lots) or lawns (athletic fields, residential yards, etc.). Native vegetation has been removed or impacted in these areas. As a result, these areas were not given an ecological quality value (**Table 4-1)**. Within the project sites, mown parkland and athletic fields are the most common example of this land type.

Typical Landscape Settings and Soils: Developed landscapes

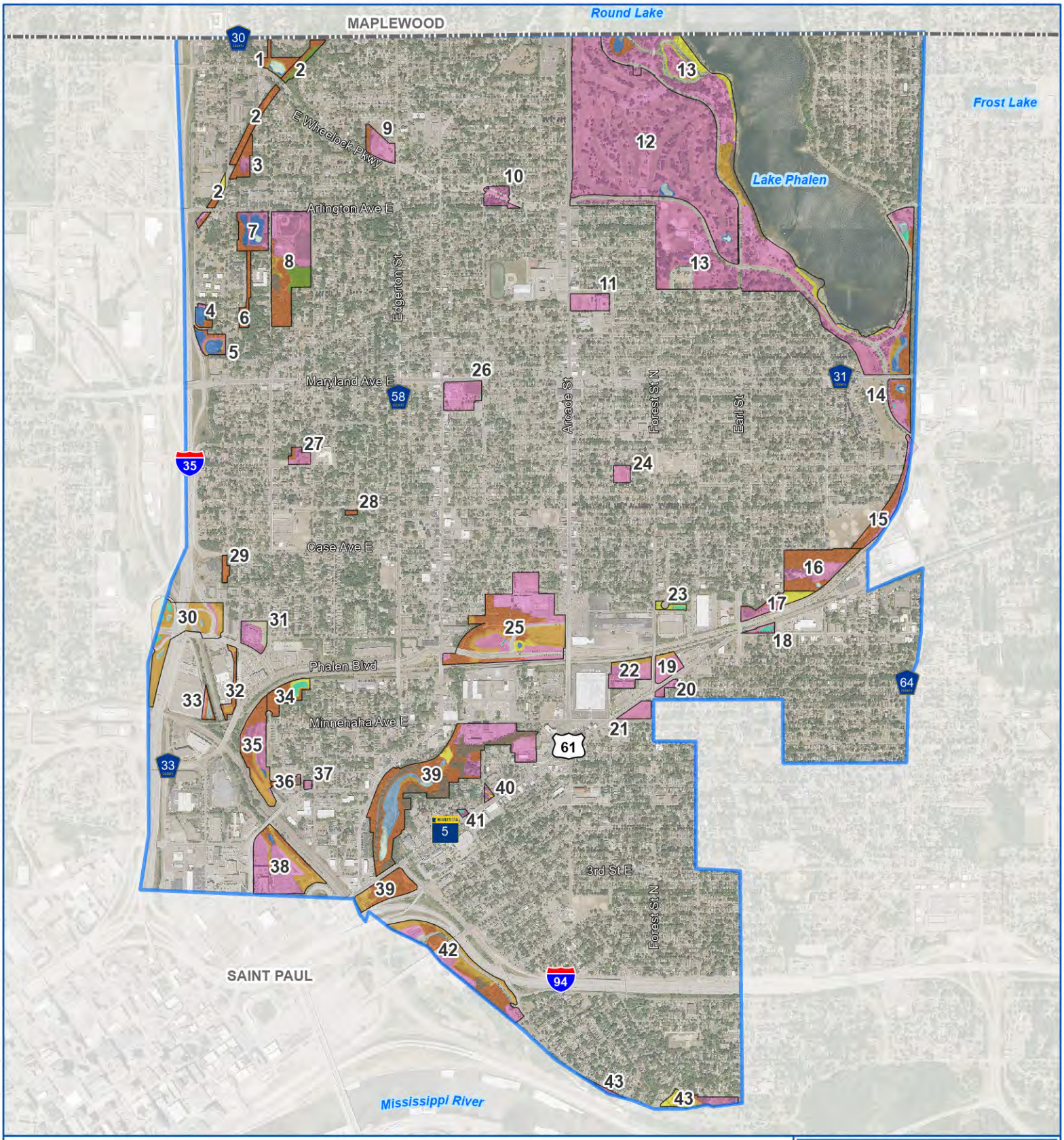
Image 5 - Park features at Arlington/Arkwright Park are classified as "cultural" landcover for the purposes of this natural resource inventory.

4.1.2 Altered/Non-Native Deciduous Forest

General Characteristics: The tree canopy is generally 60-100% closed and is dominated by either generalist native tree species (e.g., boxelder, green ash, black walnut, and cottonwood) or non-native tree species (e.g., Siberian elm, black locust, amur maple). Understory and herbaceous ground layer species vary from non-native invasives (e.g., Tatarian honeysuckle, common burdock, thistles, and buckthorn) to native generalists (e.g., snakeroot, woodbine, Canada goldenrod, and asters). This plant community structure and species composition is a direct result of past human disturbance (e.g., plowing, grading, grazing, etc.) that evolved into a non-native plant community that was not present prior to European settlement.

The soil is often exposed with sparse pockets of shrubs and herbaceous groundcovers. This is likely due to the dense shading caused by thickets of buckthorn (*Rhamnus catharitca)*, invasion of earthworms, and by intensive browsing by deer and rabbits.

Typical Landscape Settings and Soils: Present on a range of soil types, soil moisture, slopes, and slope aspects. This community is a result of human disturbances.



EXISTING LAND COVER

Dayton's Bluff and Payne-Phalen Natural Resources Inventory

Capitol Region Watershed District

FIGURE 21

Image 6 - Typical altered/non-native deciduous forest consisting of a buckthorn understory with sparse herbaceous groundcover.

Grassland – Non-Native

Image 7 – Typical smooth brome dominated grassland containing little native plant diversity.

General Characteristics: These are a sparsely-treed upland plant community dominated by non-native grasses (primarily smooth brome grass) and non-native wildflowers (e.g., spotted knapweed, sweet clover, Canada thistle, and crown vetch). Native plant species typically comprise less than 10% of the vegetative cover. This plant community was either directly planted or a result of past human disturbances (e.g., plowing, grading, herbicide use) where invasive species were able to outcompete native species to recolonize. Non-native cool season grasses, like smooth brome grass (*Bromus inermis*) and reed canary grass (*Phalaris arundinacea*), were sometimes intentionally planted because they establish quicky and are able thrive in a range of soil conditions.

Typical Landscape Settings and Soils: Typically present on somewhat poorly drained to well-drained loamy or clay-loam soils. Grasslands were present primarily on level to gently rolling sites.

4.1.3 Grassland – Mesic Prairie

General Characteristics: These are a sparsely-treed upland plant community dominated by native grasses (e.g., big bluestem, little bluestem, switchgrass, and Indian grass) and wildflowers (e.g., black-eyed Susan, wild bergamot, fragrant hyssop, common ox-eye, and Canada goldenrod). Within the project area the presence of this plant community is a result of active restoration and reseeding efforts. Repeated human disturbance that historically occurred over the entire urban area mostly eliminated savanna and mesic prairie grasslands and only exist within the project area today as a result of ongoing restoration efforts.

Typical Landscape Settings and Soils: Typically present on somewhat poorly drained to well-drained loamy or clay-loam soils. Grasslands were present primarily on level to gently rolling sites.

Image 8 - Diverse mesic prairie buffer planting along Lake Phalen's shoreline.

4.1.4 Maple-Basswood Forest

General Characteristics: These are a native plant community that's canopy is generally 60-100% closed and is composed of native basswood (*Tilia americana*), hackberry (*Celtis occidentalis*), sugar maple (*Acer saccharum*), and oak (*Quercus* spp.) tree species. The ground layer is interrupted to continuous with a mix of native and non-native woodland species. Maple-Basswood Forests were historically present on sites protected from fires along wetlands, rivers, and mid to lower slopes of bedrock bluffs. This plant community once existed throughout the project area but only two sites were recognizable as such today.

Image 9 - Small patch of intact mature hackberry, sugar maple, and oak canopy trees along the Gateway State Trail.

Typical Landscape Settings and Soils: Typically present on loamy soils. Present on middle and lower slopes with north and northeast aspects.

4.1.5 Oak Forest

General Characteristics: This plant community is dominated by bur oak (*Quercus macrocarpa*), red oak (*Quercus rubra*) and basswood canopy species. The canopy is generally 60 - 100% closed. The Oak Forest often transitions to a mesic Maple-Basswood Forest; the two mainly differ by the density of oak species within the canopy cover.

Vegetation within the native shrub-layer is generally sparse throughout the study area, although some cherry (*Prunus* spp.), gooseberry (*Ribes* spp.), and currant (*Ribes* spp.) species occur at various locations. Where the shrub-layer is present, non-native honeysuckles (*Lonicera tatarica* and *Lonicera maackii*) and buckthorn are the most common species. Where groundcover is present, white snakeroot (*Ageratina altissima*), woodbine (*Parthenocissus inserta*), riverbank grape (*Vitis riparia*) is common. The ground layer is patchy and sparse in the most degraded areas. This is likely due to the dense shading of the ground by thickets of buckthorn, invasion of earthworms, and by intensive browsing by deer and rabbits.

Typical Landscape Settings and Soils: Typically present on well-drained loamy soils.

Image 10 – Small grouping of historic bur oak trees (with buckthorn understory) near Tadesco and North Otesgo Street.

4.1.6 Stormwater Basin – Wet Meadow

General Characteristics: These are low-lying areas containing dense cover of grasses and wildflowers that were intentionally created for the purpose of managing stormwater runoff. These sites contain species found in a native wet meadow wetland community but are categorized here because they have been graded or altered for the purpose of controlling, storing, or infiltrating stormwater runoff. Some of these sites are present on the National Wetland Inventory (NWI) data layer while others are not.

Image 5 - Infiltration basins at Eastside Heritage Park collect stormwater runoff from adjacent parking lot.

Typical Landscape Settings and Soils: Constructed basins with loamy soils.

4.1.7 Wetland – Cattail

General Characteristics: These are emergent wetland communities that are almost entirely dominated by non-native cattails (*Typha angustifolia* and *Typha x glauca*). Vegetation is often composed of dense monotypic stands of narrow leaved cattails interspersed with pools of open water or bare soil. The dominance of emergent wetlands by non-native cattail species is likely related to alterations in wetland hydrology, commonly from ditching and impoundments, and from nutrient-rich and silt-laden stormwater runoff from lawns and hard surfaces. The altered urban hydrology makes restoring and maintaining these wetland types very difficult.

Image 6- Cattail dominated emergent wetland near Arlington/Arkwright Park.

Typical Landscape Settings and Soils: Typically occurs in shallow basins, around stormwater ponds, depressions, wetland complexes, and transitional areas between open water and wet meadows. Substrates range from mineral soil to organic rich muck.

4.1.8 Wetland – Reed Canary Grass

General Characteristics: These are reed canary grass dominated wetland plant communities that are found on saturated soils. Tree and shrub cover is less than 30%. Diversity of other plant species are typically limited. Reed canary grass was often planted for forage and erosion control and is a cool season grass that can outcompete native species in natural wetlands and presents a major challenge for restoration in wetland mitigation efforts. Reed canary grass is a very aggressive species however, these wetland types can take considerably less resources to restore and maintained as a native wetland when compared to cattail wetlands.

Image 7 - Reed canary grass dominating the transition from cattail emergent wetland to upland areas at the boardwalk near the south Lake Phalen Trail Parking lot.

Typical Landscape Settings and Soils: Typically occurs in low lying areas and stormwater treatment areas. Usually found in saturated organic soils.

4.2 Invasive/Non-native Species

An invasive plant is defined as a plant that is non-native or native (e.g., Canada goldenrod, ragweed, and box elder) and has negative effects on our economy, environment, or human health. Invasive plants are aggressive species that can establish rapidly and outcompete native plants. When invasive species displace native plants they degrade wildlife habitat by altering the physical structural cover of a plant community and by eliminating essential food sources. The terms "invasive," "weedy," and "non-native species" are often interchangeable; however, a non-native species may not always be an invasive or aggressive species; whereas a weed is often considered aggressive and invasive but may not always be non-native (there are native weed species).

The State of Minnesota and Ramsey County developed Noxious Weed Laws to protect public health, the environment, roads, crops, livestock and other property from harm (MDA, 2023; M.S. 18.771). As part of this law the State maintains and updates a list of weeds that should be controlled or are prohibited from the nursery trade. While no species on the State's "Eradicate" list were observed during field investigations, many noxious weeds on the state's "Control" and "Restrict" plant lists were found throughout (see the Minnesota Department of Agriculture's (MDA) Minnesota Noxious Weed List website for more information). "Control" species are plants the State requires that efforts must be made to prevent their spread, maturation, and dispersal of any propagating parts, thereby reducing established populations and preventing reproduction and spread (Minnesota Statutes, Section 18.78.; MDA, 2023). Control species Canada thistle (*Cirsium arvense)*, Japanese knotweed *(Polygonum cuspidatum)*, leafy spurge (*Euphorbia esula)*, spotted knapweed (*Pastinaca sativa*) was found in the project area.

Image 14 - Black locust is an aggressive tree that can outcompete native woodland species.

In addition, Barr staff encountered "Restricted" plant species Amur honeysuckle, black locust (*Robinia pseudoacacia)*, buckthorn, crown vetch *(Securigera varia)*, and garlic mustard *(Alliaria petiolate)*. Restricted species are plants that are widely distributed in Minnesota and are detrimental to human or animal health, the environment, public roads, crops, livestock or other property, but whose only feasible means of control is to prevent their spread by prohibiting the importation, sale, and transportation of their propagating parts in the state except as allowed by Minnesota Statutes, Section 18.82 (MDA 2023). Establishment of restricted species like buckthorn and garlic mustard can create areas of exposed soils which lead to erosion and result in

the degradation of water quality in lakes and streams. The removal of invasive species and the prevention of future species establishing could be a priority throughout the watershed.

4.3 Ecological Quality

Barr conducted a qualitative assessment of the plant communities as part of the field investigations. Barr initially evaluated ecological quality using the MNDNR's MLCSS quality guidelines. However, given past disturbances that occurred throughout the study area the evaluation guidelines resulted in very low scores that made it difficult to tell the nuanced difference between plant communities across various sites. To account for the history of human disturbance, Barr developed ecological quality rankings, mapped in **Figure 22**, that are defined as follows:

A. Natural communities of high ecological quality. Evidence of human disturbance and invasive species are limited (invasive species <5%). Habitat structure is intact and native plant species diversity is high, but some areas may have slightly limited diversity. These communities should be protected, and disturbance should be minimized or undertaken with extreme care.

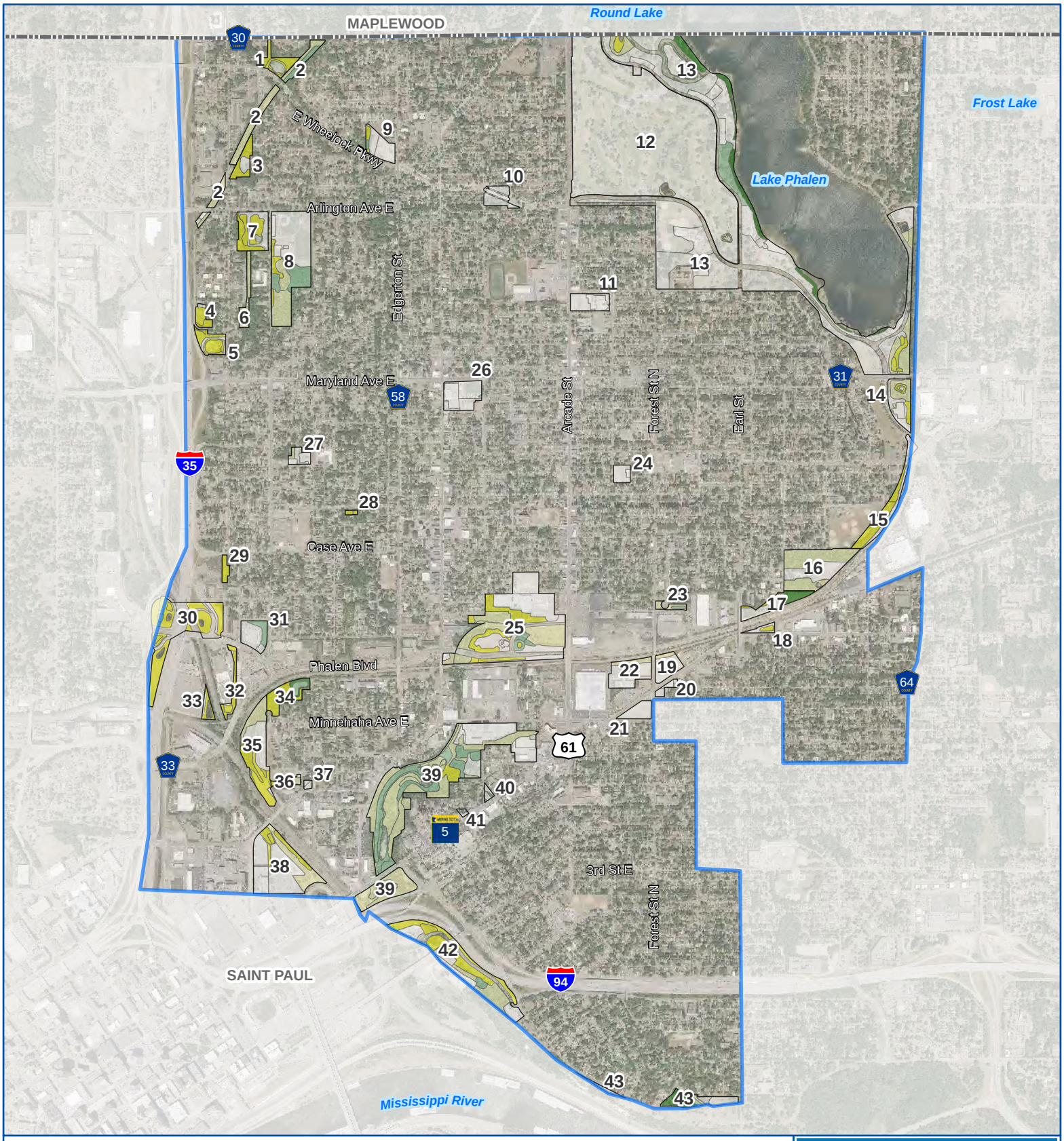
B. Natural communities that have been altered or entirely created by people (e.g., stormwater ponds, raingardens) but are still clearly recognizable as native plant communities. Native pant diversity may be reduced but invasive species encroachment is somewhat low (5-50%). These areas could be enhanced, or at least be managed to avoid further damage. Native plant community restoration is highly feasible.

C. Natural communities that have been disturbed through actions such as logging, farming, or grazing. The shrub and/or groundcover layers are dominated by invasive species (50-80%). If forested, a native tree canopy is intact (>50% native tree canopy). These communities generally have low native plant diversity. These communities are restorable, but a greater effort is required to restore native plant diversity.

D. Natural community is highly disturbed and in poor condition. These areas may include native species but are dominated by invasive species (>80% cover) and/or is widely disturbed and altered (bare soil). If forested, healthy native tree species comprised of <50% of the canopy cover. These sites do not resemble native plant communities historically found in Minnesota. These sites are low priority for restoration but may be good locations for stormwater improvement or habitat improvement projects.

Cultural Landscape (CL). These are developed areas (e.g., managed lawns, gardens, playgrounds, buildings, roads, etc.) are not considered for natural quality ranking because no natural plant communities are present. Cultural landscapes may still have ecological value for birds and insects (e.g., street trees, gardens, shrub massing, etc.), but they currently do not resemble a natural plant community. They could be converted into a natural plant community to provide habitat, improve ecological connections, and provide soil and water quality benefits as well as flood protection.

Areas of lower quality (C and D) and cultural landscapes are great opportunities for natural resource actions such as providing recreation trails, cultural interpretation, and stormwater management as these are currently providing limited ecological value.



Project Area

Municipal Boundary

Sites Identified for Field Investigation (labeled by site identification number)

Ecological Quality Ranking

A -Natural communities of high ecological quality, less than 5% invasive species coverage

B -Native plant communities with reduced diversity, between 5-50% invasive species coverage

C -Disturbed plant community with 50-80% invasive species cover

D -Plant community is in poor condition, greater than 80% invasive species coverage

CL (Cultural Landscape) -Developed areas (e.g., managed lawns, gardens, playgrounds, buildings, roads, etc.)

N

0 1,000 2,000

Feet

ECOLOGICAL QUALITY

Dayton's Bluff and Payne-Phalen Natural Resources Inventory

Capitol Region Watershed District

FIGURE 22

Table 4-1 describes the association of ecological quality with the level of restoration effort necessary to regenerate the community. The regeneration of native plant communities within the project area should begin at the sites with the highest ecological potential (as identified in **Table 4-1**). The goal is to first establish a high-quality core, and to then repeat invasive species management or habitat creation steps in the adjacent areas. It is best to protect the highest quality areas first to preserve biodiversity and then to expand outward adding more plant diversity as you proceed. An increased abundance and diversity of native plants within parklands and residential parcels will help support stronger pollinator populations.

Table 4-1 Ecological Quality Ranking

Quality Ranking	Opportunity	Recommended Management Strategy	Level of Disturbance*	Native Species Diversity	Level of Restoration Effort**
A	High	Protect and Maintain	Slight to None	Highest	**Slight**: monitor for invasive species, control when observed
B	High	Restore	Slight	High	**Medium**: remove invasive species and plant native species
C	Moderate	Control Invasive Species and/or Restore	Moderate	Medium	**High**: control invasive species to protect adjacent higher quality plant communities
D	Lower Priority	Restore; Other Natural resource management projects feasible (e.g., stormwater improvement, habitat creation, recreation trail or access improvement)	Severe	Low	**Significant**: focus on restoring higher quality areas first, complete overhaul of existing vegetation or control invasive species to protect adjacent higher quality plant communities
CL	NA	Opportunities to convert turf and parking lots for natural resource management	Developed Area	NA	**Varies**: lawn areas or conversion of impervious surface can be relatively easier and potentially less expensive to restore than a highly degraded woodland

* Disturbance refers to how closely the site currently resembles a native plant community. Severe levels of past disturbance occurred at all sites in within the project area

**Level of restoration effort refers to the financial resources and physical effort required to restore a native plant community.

5 Natural Resources Issues, Opportunities, Goals, and Priorities

This NRI report is intended to present information on the status, condition, and qualitative trends of the existing natural areas within the project area. It does not prescribe specific management actions for regenerating or creating natural resource features where there currently are none (i.e., parking lots, buildings, railyards, commercial districts, paved surfaces, athletic fields, etc.). However, this report provides actions that could be considered to prioritize, improve, expand, and connect the remaining natural areas that do exist.

5.1 Management Goals

In addition to inventorying existing natural resources in the project area, CRWD and partners wanted to evaluate and prioritize restoration opportunities with the following management goals in mind:

- **Maintain and preserve existing green spaces and plant communities (lose no ground):** This natural resource inventory is a key first step in achieving this goal as it identifies existing resources within the project area. Areas identified as having highest ecological qualify should be protected first, and then ways to stop further degradation of remaining natural features should be identified.
- **Improve ecological connectivity between natural areas:** Ecological connectivity allows plant and animal species to move freely between habitat patches to find food, reproduce, and establish new populations. Lake Phalen Region Park, Swede Hollow Park, and the Bruce Vento Nature Sanctuary serve as recreation and natural resource cornerstones within the project area. Utilizing existing greenways, railroads, and historic waterways as vegetated wildlife corridors would establish stronger connections between these natural areas.
- **Improve the quality of natural areas to increase biodiversity (wildlife, plant, and pollinator habitat):** Compared to pre-settlement conditions, biodiversity within the project area has plummeted to extremely low levels (see **Figure 3**). This not only impacts wildlife, but also impacts people in that we have reduced air quality, water quality, and places in nature to relax and mentally recharge. Decreasing biodiversity is a global issue that can be partially addressed at a local scale. Enhancing habitat connections and increasing habitat quality within the project area is an important step in supporting more wildlife and plant diversity on a local and regional scale.
- **Increase the acreage of biodiverse natural areas through restoration:** The expansion of natural areas is a critical component of achieving the ecological connectivity and biodiversity goals listed above. For publicly-owned land, natural resource management priorities and long-term funding sources are an essential requirement to maintain and expand what currently exists. However, most land within the project area is privately owned. Governmental and community action groups can help educate, motivate, and mandate private individuals to protect and expand natural resources within their own property.
- **Improve public access and visibility to natural areas:** Where appropriate, provide opportunities for recreation, cultural interpretation, and onsite learning to increase public awareness of natural resources within the study area. Saint Paul has been recognized as

having one the nations' best park systems. 99% of residents live within a 10-minute walk from a park space (Saint Paul Parks and Recreation System Plan). There is a unique opportunity to leverage this network to support nature-based experiences (e.g., community gardens, bird watching programs, nature play) and incorporate environmental and cultural education layers (e.g., e-newsletters, social media, outreach programs, interpretive site features).

- **Prioritize natural areas management through scientific and culturally-sensitive, socially based decisions:** The health and accessibility of natural resources is critical to the health of residents of Saint Paul. Natural areas management needs to be supported by a regional system-wide vision as well as through site specific management plans. The Saint Paul Parks and Recreation System Plan, the Saint Paul Climate Action and Resilience Plan, the 2021-2030 Watershed Management Plan (CRWD), and the 2017-2026 Watershed Management Plan (RWMWD) identify many strategies for scientific and culturally-sensitive approaches to natural resource stewardship.

  This plan focuses on how those identified larger regional goals of natural resource management could be prioritized within our project area. The project area is within CRWD's Focus Area, which accounts for social factors including historically underrepresented groups, including people of color, immigrants, younger generations, and those living in poverty. Additionally, the site prioritization matrix includes social factors like public access and vulnerable population areas.

5.2 Natural Resources Issues and Opportunities

This section describes the primary issues that are contributing to the ecological degradation of natural areas within the project area and provides potential solutions to these problems. CRWD and RWMWD have addressed natural resources issues for decades through past efforts focused on water resource improvement projects, education and outreach, native pollinator planting efforts, and through natural resource protection ordinances and policies. This positive momentum will continue as the City of Saint Paul, the watershed districts, and community action groups address further impacts to natural resources.

Image 8 - Bruce Vento Regional trail is a valuable public amenity that connects bikers, walkers, and joggers to multiple parks and natural areas throughout the project area.

Current issues of concern and opportunities for improvement are discussed below. The opportunities listed in the following sections should be thought of as a 'menu' of potential future actions that could be considered for implementation by watersheds districts, district councils, city, county, or private landowners. As watershed districts and partners evaluate the feasibility of each opportunity suggested, they should assess the following factors:

- Cooperation with property owners/ partners
- Additional feasibility studies or management plan development needed
- Available resources, funding, and staff capacity
- Property ownership
- Long-term maintenance
- Equity impacts
- Time sensitivity/related projects
- Engagement/involvement with community and stakeholders
- Alignment with existing watershed management plans or site-specific management plans
- Potential co-benefits of implementation

Responsibility for implementation of any proposed opportunities would depend on land ownership and type of activity proposed. In general, most of the proposed activities on private property would need to be implemented by the property owners. Opportunities identified on parkland generally would be implemented by City of St. Paul, Ramsey County, or other public partners. Opportunities identified for stormwater ponds are generally the responsibility of St. Paul Public Works, MNDOT, and the Metropolitan Council.

Neither CRWD nor RWMWD own any of the land that was inventoried, but may be involved in some of the opportunities identified both on public and private property via grant funding, maintenance support, technical assistance, and/or education and outreach if it is determined to be a priority and aligns with each watershed district's respective watershed management plan.

5.2.1 Habitat Fragmentation

Issue: Saint Paul's original landscape has been drastically impacted by over a century of urban development. The creation of highways, railroads, homes, industrial and commercial buildings, and parking lots have resulted in the loss of natural resources and habitat areas. The process of bisecting and isolating habitats is called habitat fragmentation and results in smaller unconnected "islands" of habitat that are highly vulnerable to disturbances and stressors. The stresses of urban heat island effect, invasive species, heavier precipitation, and drought will impact the remaining habitat islands and may result in the continued loss of species diversity within what remains. Fragmentation also limits wildlife mobility for many species. Individual species that cannot move between habitat patches are at greater risk of local extinction (they become unable to reproduce or survive). Unfortunately, the loss of one species can have a cascading ecological effect that results in further habitat degradation. Connecting habitat patches with vegetative corridors can provide ecological, aesthetic, and recreation benefits for both people and animals.

Opportunities to consider:

- Protect and expand areas of existing habitats.
- Prioritize the maintenance and the expansion higher quality and more resilient core habitat areas.
- Support the creation of micro-habitat within residential parcels and increasing the urban tree canopy in commercial zones would help create a matrix in which pollinators, birds, and other animals could move more freely within the city.

- Continue to explore private-public partnerships on redevelopment projects to implement shared, stacked green infrastructure (SSGI) projects with environmental, economic, and social benefits.
- Establish ecological corridors using native vegetation.
    - Consider daylighting of buried historic creeks and waterways.
        - The daylighting of Phalen Creek (running parallel to the Bruce Vento Regional Trail) would create a both a recreational and ecological corridor between the Bruce Vento Nature Sanctuary, Swede Hollow Park, Eastside Heritage Park, Duluth and Case Recreation Center, and Lake Phalen.
        - Explore feasibility of daylighting portions of Trout Brook.
    - Recreational trails and parkways can serve as vegetated corridors to connect isolated tracts of natural resources.
        - Identify opportunities to convert underutilized lawn areas along Wheelock Parkway and Phalen Boulevard into native habitat or for stormwater management purposes.
        - Convert lawn to native plantings, eradicate invasive species, and improve plant diversity along the Bruce Vento Regional Trail and Gateway State Trail. This would improve habitat connectivity within the project area, in addition, it would create connections to the greater region to the north and the south.
- Increase public awareness of habitat fragmentation through education and outreach. Encourage residents to create habitat through planting in their yards (convert unnecessary lawn into native plantings).
- Consider integrating more street trees or green stormwater infrastructure in places with the largest heat island effect (typically along commercial corridors and large impervious surface areas). Trees and patches of vegetation along roadways can allow for the movement of pollinator and bird species between habitat cores.
    - Consider opportunities to coordinate with street reconstruction projects such as the Arcade and 7th Street reconstruction project and the Purple Line Bus Rapid Transit (BRT) project.
- Develop systems to monitor for potential loss of natural areas over time.
- Explore the feasibility of acquiring properties for restoration, or funding/developing conservation easements.
- Where feasible, consider installing wildlife crossings at roads and other major impediments.

5.2.2 Reduced Native Plant Diversity and Invasive Species

Issue: The native plant diversity within the project site has greatly reduced due to the urban development. Today, invasive species encroachment, climate change, and new urban development is leading to the degradation of native plant communities and loss of biodiversity. The control of invasive species, prevention of future invasive species establishing, and the restoration of a diversity of native plant species is an important goal for natural resource managers.

Opportunities to consider:

- Funding is a common barrier to implementing management opportunities. Consider partnerships and grant opportunities to leverage funding from multiple stakeholders.
- Landowners with degraded natural areas could develop and follow through with a comprehensive invasive species management program.

- Monitor to detect new invasive species to the watershed district.
- Develop or support site specific master and restoration plans to restore habitat.
    - Existing plans like the Phalen-Keller Regional Park Master Plan and Swede Hollow Park Master Plan provide detailed information on restoration goals and the required budgets.
- Increase public awareness about the impacts of invasive plant species and provide resources on how they can be identified and controlled.
- Provide cost sharing or other incentives for private landowners to control invasive vegetation, convert existing lawn areas and plant native species on their property.

5.2.3 Pollinator Species

Issue: Across the U.S., habitat for many pollinator species has been degraded, eliminated or poisoned making it increasingly difficult for bees, butterflies and other pollinators to survive. Pollinators play an essential role in supporting our agricultural economies, food supply, and flowering landscapes. Native plant community restoration provides habitat and food for bees, butterflies, moths, beetles, wasps, ants, hummingbirds, and other species that pollinate flowers. Research has shown that local native pollinators prefer local native plants (Frankie GW, et al., 2005).

Opportunities to consider:

- Continue to plant native species in appropriate watershed district capital projects.
- Continue to spread awareness and educate residents about the importance of pollinators and the plants that support them.
- Provide incentive programs for property owners to plant nectar sources and host pollinator friendly plants on their property.
- Encourage native plantings as an alternative to turfgrass in redevelopment and construction projects.
- Work to negate effects of climate change and heat islands. Warming temperatures have been shown to contribute to a decline in bumblebees (USGS).

5.2.4 Soil Degradation

Issue: The compaction and removal native topsoil in our urban areas has resulted in damaged soil that lacks oxygen, microbes, and the ability to absorb and filter stormwater runoff. Pesticides, fertilizers, salt, and non-native earthworms further damage and compact soils making them unable to support healthy plants. Fortunately, measures can be taken to reduce cultural impacts and help regenerate soils. Improved soil quality results in robust plant growth that are resistant to disease and pests. Healthier plant communities protect local water bodies by reducing pollution runoff and soil erosion. Healthy soils also improve groundwater recharge because porous soils increase stormwater infiltration.

Opportunities to consider:

- Continue to promote soil protection measures and soil regeneration practices for new construction projects.
- Educate property owners on the importance of soil regeneration and low-input landscapes.
- Supply educational resources about the impact of earthworms and how they affect Minnesota's native plant communities.

- Spread awareness about how planting lawn alternatives can help build healthy soils that sequester carbon, reduce the need for fossil fuel and pesticides, and support resilient pollinator habitat.

5.2.5 Urban Heat Island Effect

Issue: Urban heat islands (UHI) are developed areas that experience higher temperatures than outlying areas due to the heat absorption properties of hard structures such as buildings and roads, and the generation of heat from cars and buildings. Impervious surfaces (such as streets, parking lots, and buildings) within the urban core raise the surrounding air temperatures which contributes to a range of environmental, energy, economic, and human health impacts. **Figures 15** and **16** show the extent of impervious surfaces within the project area. The effects of urban heat island can be reduced by planting shade trees, installing green and white roofs, and by reducing or converting unnecessary impervious surfaces to greenspace.

Opportunities to consider:

- Implement more streetside BMPs. These are great places to grow trees and keep watered.
- Look for opportunities to plant more shade trees, especially along streets and in parking lots. Further fund urban forest management programs that maintain and plant new trees.
- Promote the use of light-colored roofs and pavement in new construction projects.
- Fund impervious surface conversion and native landscaping.

5.2.6 Altered Hydrology

Issues: The project area is located within a highly urbanized landscape with few natural wetlands. Over the course of urbanization, the historic wetlands and watercourses have been drained, leveled, and buried in pipes. These impacts as well as the increase of impervious surfaces and compaction of soils in natural areas have fundamentally changed how water flows in and through our landscapes. This altered hydrology has resulted in the loss and degradation of wetlands, lakes, streams, and even affects upland forests and grassland plant communities. Changing climate trends exacerbates these problems. Frequent periods of drought followed by intense precipitation events will further stress natural resources. Identifying and expanding opportunities to restore natural hydrology will result in healthier natural areas that could also help reduce the effects of urban heat island and reduce flood risk.

Opportunities to consider:

- Continue partnerships with local organizations and government units to share education efforts and obtain funding for initiatives to mitigate watershed issues.
- Transition altered/non-native forests to native plant communities to establish complete vegetative cover. Thin out undesirable and short-lived trees to establish a savanna plant community. Plant appropriate native herbaceous plants to develop a complete ground cover and restore native hydrology.
- Work with site owners to identify, evaluate, and carry out opportunities for localized stormwater management systems.
- Foster the expansion of native plant communities, wetland restoration, and green infrastructure practices. Promote watershed and partner grant opportunities and highlighting the benefits of native plants and the restoration of historic wetlands.
- Pursue opportunities to restore portions of historic Phalen Creek and Trout Brook.

5.2.7 Climate Change

Issues: Climate change is already negatively impacting natural resources and will be a defining challenge for both current and future residents. The impacts of climate change on a specific neighborhood can be greater depending on social, economic, and demographic variables. According to the MNDNR State Climatologist office, drought and summer daytime temperatures are predicted to increase within the next 10 to 20 years. In addition, changing climate patterns are resulting in warmer winters, increasing precipitation, and increased storm intensity (more heavy rains and fewer slow soaking events). Climate change exacerbates all the ecological issues discussed above and is a considerable threat to natural resources in the region. Projects implemented by watershed districts, the City, and developers have long design lives that must consider the potential future effects of climate change. Proactive steps should be taken to address the potential negative impacts to natural resources and the community as a whole.

Opportunities to consider:

- Examine opportunities to implement a monitoring program to track changes in soils, wildlife, and in plant communities. Especially watch for new invasive plant species.
- Consider developing and implementing an adaptive management plan for natural resources at sites of high priority (see **Table 5-2)**
- Explore opportunities to increase plant and habitat diversity in natural areas. Increasing species diversity establishes resilient plant communities because different species are adapted to tolerate different stresses.
- Promote the planting of more southernly native plant species that may be more adaptable to anticipated shifts in weather patterns (avoid potentially aggressive species).
- Continue to protect and enhance natural resources that mitigate weather and climate impacts (e.g., shade trees, wetlands, and pervious greenspaces).
- Implement stormwater infiltration projects by converting lawns into more diverse natural areas better suited to mitigate the potential impacts of climate change.
- Provide educational and cost-share opportunities that promote native landscaping, pollinator habitat, and stormwater runoff reduction.

5.3 Natural Resources Prioritization and Ranking Criteria

This section presents ecological communities management priorities for 43 sites within the project area. Implementation of natural resource management strategies and opportunities will allow watershed districts, property owners, and City of Saint Paul natural resource managers to effectively utilize funds and to focus on the protection of the most ecologically significant sites first. Note that only areas surveyed as part of this project are ranked. Other natural areas exist within the study area and should be considered for management opportunities in the future.

Given the size of the project area and the number of natural areas within, a method for resource prioritization was developed so managers can be strategic with preservation, restoration, and management efforts. Twelve criteria were developed to prioritize sites for management. **Table 5-1** below details the prioritization categories and the descriptions of rankings. **Table 5-2** and **5-3** (5-2 is sorted by prioritization score; 5-3 is sorted by site identification number**)** shows the ranking scores for the project sites, and **Figure 23** maps sites by their management prioritization based on their ranking score (Figure 23 shows site prioritization is indicated by shades of purple, site are labeled with the associated identification numbers).

All rankings were based on the conditions within the project area at the time of this report and should be reevaluated on a regular basis (every 5 years is recommended). Each site was ranked with the following criteria:

Table 5-1 Prioritization and Ranking Criteria

Prioritization Criteria	Prioritization Rank and Description
Ecological Quality of Natural Area	**0 -** Dominated by altered/non-native plant community (nothing higher than Ecological Quality of D found within site) **1 -** Moderate natural communities present (ecological quality of C found within site) **2 -** High ecological quality (ecological quality of B found within site) **3 -** Highest ecological quality (ecological quality of A found within site)
Size of Natural Area within Site (not including open water)	**0 -** 0 - 0.5 acres **1 -** .5 - 3 acres **2 -** 3+ acres
Located within a DNR Conservation Corridor	**0 -** Area not located within MN DNR Metro Conservation Corridor **1 -** Area located within Metro Conservation Corridor
Presence of Rare Natural Feature	**0 -** None **1 -** Unique, intact ecological community to project area (ex. oak woodland, basswood forest, restored native habitat) **2 -** Rare NHIS* feature found within site (example - Blanding's turtle, kitten-tails, rusty-patched bumblebee) (observed since 1990) (*Information from the MNDNR Natural Heritage Information System (NHIS).
Located within Vulnerable Population Area (CDC designation)	**0 -** Least vulnerable (0-70 score on the CDC Social Vulnerability Composite Index) **1 -** Moderately vulnerable (71-90 score on the CDC Social Vulnerability Composite Index) **2 -** Most vulnerable (91+ score on the CDC Social Vulnerability Composite Index)
Adjacency to Lakes and Wetland (NWI)	**0 -** No adjacency **1 -** Adjacency
Public Access and Use (public amenity)	**0 -** Natural areas not easily visible or accessible to public **1 -** Natural areas are visible but are not highly visited or site is dominated by cultural or recreational land cover **2 -** Natural areas are highly visited (trails located within or adjacent to natural areas)
Presence of Historic Water Resources	**0 -** No Historic Water Resources **1 -** Presence of Historic Water Resources
Access for Maintenance	**0 -** Natural areas not easily accessible (steep slopes, barriers, private land) **1 -** Natural areas somewhat accessible (some areas hard to access with vehicle, accessible by foot; private owned but public access) **2 -** Natural areas are highly accessible (good vehicle access)
Improvement/Expansion of Existing Management Efforts	**0 -** No restoration efforts currently occurring within site **1 -** Evidence of previous restoration efforts but no current restoration activities or in restoration rotation **2 -** Restoration ongoing or detailed plans for restoration exist for the park
Property Ownership (**Figure 24**)	**0 -** Privately held property (entire site) **1 -** Public and privately held property within site **2 -** Public property (entire site)
Potential for Turf Conversion	**0 -** Little to no areas of turf suitable for conversion into natural plant community (turf areas are < 0 .5 acres in size) (site is either fully developed, fully natural, or combination of both) **1 -** Potential for conversion of turf or lawn areas into a natural plant community (turf areas are >0.5 acres) (additional review needed to understand feasibility of turf conversion)

Table 5-2 Site Prioritization for Natural Resources Management (sorted by overall prioritization score, high to low)

Overall Score	Management Prioritization Designation Description
15+	**High Priority** - active restoration/high quality natural resources/ site is highly accessible for public use and maintenance access
8-14	**Medium Priority** - natural resources do exist/ site is accessible for public use and maintenance access
1-7	**Lower Priority** – little to no habitat/restoration occurring but opportunities exist for more/ Access to site may be limited

				Existing Quality Categories							Potential Restoration Categories							
Site ID Number	Watershed District	District Council (D5 | Payne-Phalen; D4 | Dayton's Bluff)	Park or Natural Area	Ecological Quality of Natural Area (0-3)	Size of Existing Natural Area within Site (0-2)	Located within DNR Conservation Corridor (0-1)	Presence of rare natural feature (0-2)	Located within Vulnerable Population Area (0-2)	Adjacency to Lakes and Wetland (0-1)	Public Access and Use (0-2)	Presence of Historic Wetland (0-1)	Access for Maintenance (0-2)	Improvement/ Expansion of Existing Management Efforts (0-2)	Property Ownership (0-2)	Potential for Turf Conversion (0-1)	Existing Subtotal (possible 13)	Potential Subtotal (possible 8)	Site Prioritization Score (possible 21)
13	RWMWD	D4	Phalen Regional Park	3	2	0	2	1	1	2	1	2	2	2	1	11	8	19
39	CRWD	D5	Swede Hollow Park	2	2	1	1	2	1	2	1	2	2	1	1	11	7	18
25	CRWD	D4 & D5	Eastside Heritage Park (& adjacent Bruce Vento Regional Trail)	2	2	0	2	2	1	2	1	2	1	2	1	11	7	18
43	CRWD	D4	Indian Mounds Regional Park	3	2	1	1	2	0	2	0	2	2	2	1	11	7	18
42	CRWD	D4	Bruce Vento Nature Sanctuary	2	2	1	1	2	0	2	1	2	1	2	0	10	6	16
2	CRWD	D5	Gateway State Trail	2	2	0	0	2	0	2	1	2	2	2	0	8	7	15
8	CRWD	D5	Arlington/Arkwright Park	2	2	0	1	2	0	2	1	2	0	2	1	9	6	15
14	RWMWD	D5	Johnson Parkway Tennis Courts	1	2	0	0	1	1	1	1	2	1	2	1	6	7	13
23	CRWD	D5	Duchess (Beacon Bluffs) Street Stormwater BMP	2	2	0	0	2	0	1	0	2	2	2	0	7	6	13
7	CRWD	D5	Arlington/Arkwright Stormwater Pond	0	2	0	0	2	1	1	1	2	1	2	1	6	7	13
15	RWMWD	D5	Duluth and Case Recreation Center	1	2	0	0	2	0	1	1	2	1	2	1	6	7	13
34	CRWD	D5	Bush-Desoto Stormwater Basin and Woodland	3	2	1	0	2	0	1	0	1	2	1	0	9	4	13
17	CRWD	D5	Bruce Vento Regional Trail at Frank St	3	1	0	0	2	0	1	0	2	1	2	1	7	6	13
35	CRWD	D5	Rivoli Bluffs Farm and Restoration Site	1	2	1	0	2	0	1	1	1	2	1	1	7	6	13
12	RWMWD	D5	Phalen Golf Course	1	1	0	0	1	1	1	0	2	2	2	1	5	7	12
26	CRWD	D5	Arlington Hills Library and Playground	2	0	0	0	2	0	1	0	2	2	2	1	5	7	12
40	CRWD	D4	Hamm Park	2	0	0	0	2	0	1	1	2	1	2	1	5	7	12
5	CRWD	D5	Westminster Pond	0	1	0	0	2	1	1	1	2	1	2	0	5	6	11
9	CRWD	D5	Wheelock Early Learning Center	2	1	0	0	2	0	1	0	2	0	2	1	6	5	11
30	CRWD	D5	Cayuga and 35 E Interchange (Cloverleaf)	0	2	1	0	2	0	1	1	1	1	2	0	6	5	11

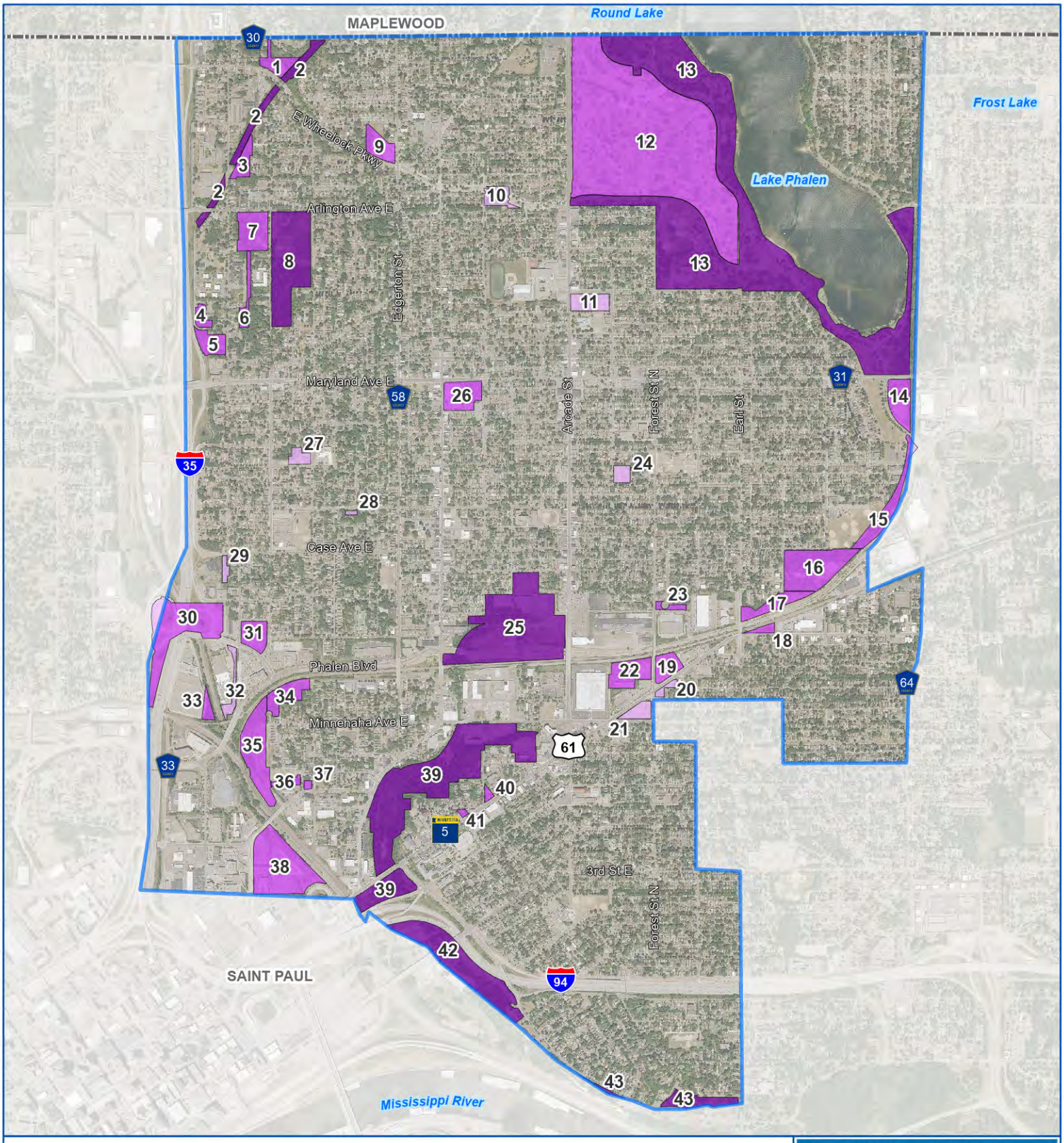
				Existing Quality Categories							Potential Restoration Categories							
Site ID Number	Watershed District	District Council (D5 | Payne-Phalen; D4 | Dayton's Bluff)	Park or Natural Area	Ecological Quality of Natural Area (0-3)	Size of Existing Natural Area within Site (0-2)	Located within DNR Conservation Corridor (0-1)	Presence of rare natural feature (0-2)	Located within Vulnerable Population Area (0-2)	Adjacency to Lakes and Wetland (0-1)	Public Access and Use (0-2)	Presence of Historic Wetland (0-1)	Access for Maintenance (0-2)	Improvement/ Expansion of Existing Management Efforts (0-2)	Property Ownership (0-2)	Potential for Turf Conversion (0-1)	Existing Subtotal (possible 13)	Potential Subtotal (possible 8)	Site Prioritization Score (possible 21)
36	CRWD	D5	Rivoli Bluff - Otsego Street Slope	1	1	1	1	2	0	1	0	2	0	2	0	7	4	11
38	CRWD	D5	MNDNR/MPCA Office Landscape	1	2	1	0	2	0	0	1	2	0	1	1	6	5	11
1	CRWD	D5	Wheelock Parkway Stormwater Pond	1	2	0	0	2	1	1	0	2	0	1	0	7	3	10
31	CRWD	D5	Highway Federal Credit Union	2	1	1	0	2	0	1	1	2	0	0	0	7	3	10
41	CRWD	D4	Swede Hollow Cafe Raingardens	2	0	0	0	2	0	1	0	2	1	1	0	5	4	9
16	CRWD	D5	Frank and Sims Yard Waste Collection Site	1	2	0	0	2	1	0	1	1	0	1	0	6	3	9
4	CRWD	D5	Hyacinth Ave & Mississippi St	0	1	0	0	2	1	1	1	2	0	1	0	5	4	9
3	CRWD	D5	Nebraska Ave Garden	0	1	0	0	2	0	1	1	2	0	1	0	4	4	8
6	CRWD	D5	Westminster Place ROW	1	2	0	0	2	0	0	1	1	0	1	0	5	3	8
18	CRWD	D4	MacQueen Equipment HQ	1	1	0	0	2	0	0	0	2	1	0	1	4	4	8
19	CRWD	D4	Beacon Bluff Business Center South, 2nd (Port Authority)	1	1	0	0	2	0	0	1	0	0	2	1	4	4	8
22	CRWD	D4	The Archdiocese of Saint Paul and Minneapolis	1	1	0	0	2	0	0	1	2	0	0	1	4	4	8
33	CRWD	D5	Metro Transit East Garage	0	1	1	0	2	1	0	0	1	0	2	0	5	3	8
37	CRWD	D5	Railroad Island Greenspace	0	0	1	0	2	0	0	1	2	0	2	0	3	5	8
11	CRWD	D5	Farnsworth Pre K	0	0	0	0	1	0	1	0	2	0	2	1	2	5	7
10	CRWD	D5	Wheelock Triangles	0	0	0	0	0	0	1	0	2	0	2	1	1	5	6
24	CRWD	D5	Lockwood Park	0	0	0	0	0	0	1	0	2	0	2	1	1	5	6
28	CRWD	D5	Bradley Street Woodlot (Victory Shipping LLC & ROW)	0	0	0	0	2	0	1	0	2	0	1	0	3	3	6
32	CRWD	D5	Univar Addition	0	1	1	0	2	1	0	1	0	0	0	0	5	1	6
20	CRWD	D4	Port Authority of St Paul (Terry's Addition)	0	0	0	0	2	0	0	0	0	0	2	1	2	3	5
21	CRWD	D4	Beacon Bluff Business Center South (Forest Street Triangle)	0	0	0	0	2	0	0	0	0	0	2	1	2	3	5
29	CRWD	D5	Case Ave and Westminster Woodland (Nyla Properties LLC)	0	1	1	0	2	0	0	0	0	0	0	0	4	0	4
27	CRWD	D5	St. Patrick's of Saint Paul	0	0	0	0	2	0	0	0	0	0	0	1	2	1	3

Table 5-3 Site Prioritization for Natural Resources Management (sorted by site identification number)

Overall Score	Management Prioritization Designation Description
15+	**High Priority** - active restoration/high quality natural resources/ site is highly accessible for public use and maintenance access
8-14	**Medium Priority** - natural resources do exist/ site is accessible for public use and maintenance access
1-7	**Lower Priority** – little to no habitat/restoration occurring but opportunities exist for more/ Access to site may be limited

				Existing Quality Categories							Potential Restoration Categories							
Site ID Number	Watershed District	District Council (D5 | Payne-Phalen; D4 | Dayton's Bluff)	Park or Natural Area	Ecological Quality of Natural Area (0-3)	Size of Existing Natural Area within Site (0-2)	Located within DNR Conservation Corridor (0-1)	Presence of rare natural feature (0-2)	Located within Vulnerable Population Area (0-2)	Adjacency to Lakes and Wetland (0-1)	Public Access and Use (0-2)	Presence of Historic Wetland (0-1)	Access for Maintenance (0-2)	Improvement/ Expansion of Existing Management Efforts (0-2)	Property Ownership (0-2)	Potential for Turf Conversion (0-1)	Existing Subtotal (possible 13)	Potential Subtotal (possible 8)	Site Prioritization Score (possible 21)
1	CRWD	D5	Wheelock Parkway Stormwater Pond	1	2	0	0	2	1	1	0	2	0	1	0	7	3	10
2	CRWD	D5	Gateway State Trail	2	2	0	0	2	0	2	1	2	2	2	0	8	7	15
3	CRWD	D5	Nebraska Ave Garden	0	1	0	0	2	0	1	1	2	0	1	0	4	4	8
4	CRWD	D5	Hyacinth Ave & Mississippi St	0	1	0	0	2	1	1	1	2	0	1	0	5	4	9
5	CRWD	D5	Westminster Pond	0	1	0	0	2	1	1	1	2	1	2	0	5	6	11
6	CRWD	D5	Westminster Place ROW	1	2	0	0	2	0	0	1	1	0	1	0	5	3	8
7	CRWD	D5	Arlington/Arkwright Stormwater Pond	0	2	0	0	2	1	1	1	2	1	2	1	6	7	13
8	CRWD	D5	Arlington/Arkwright Park	2	2	0	1	2	0	2	1	2	0	2	1	9	6	15
9	CRWD	D5	Wheelock Early Learning Center	2	1	0	0	2	0	1	0	2	0	2	1	6	5	11
10	CRWD	D5	Wheelock Triangles	0	0	0	0	0	0	1	0	2	0	2	1	1	5	6
11	CRWD	D5	Farnsworth Pre K	0	0	0	0	1	0	1	0	2	0	2	1	2	5	7
12	RWMWD	D5	Phalen Golf Course	1	1	0	0	1	1	1	0	2	2	2	1	5	7	12
13	RWMWD	D4	Phalen Regional Park	3	2	0	2	1	1	2	1	2	2	2	1	11	8	19
14	RWMWD	D5	Johnson Parkway Tennis Courts	1	2	0	0	1	1	1	1	2	1	2	1	6	7	13
15	RWMWD	D5	Duluth and Case Recreation Center	1	2	0	0	2	0	1	1	2	1	2	1	6	7	13
16	CRWD	D5	Frank and Sims Yard Waste Collection Site	1	2	0	0	2	1	0	1	1	0	1	0	6	3	9
17	CRWD	D5	Bruce Vento Regional Trail at Frank St	3	1	0	0	2	0	1	0	2	1	2	1	7	6	13
18	CRWD	D4	MacQueen Equipment HQ	1	1	0	0	2	0	0	0	2	1	0	1	4	4	8
19	CRWD	D4	Beacon Bluff Business Center South, 2nd (Port Authority)	1	1	0	0	2	0	0	1	0	0	2	1	4	4	8
20	CRWD	D4	Port Authority of St Paul (Terry's Addition)	0	0	0	0	2	0	0	0	0	0	2	1	2	3	5

				Existing Quality Categories							Potential Restoration Categories							
Site ID Number	Watershed District	District Council (D5 | Payne-Phalen; D4 | Dayton's Bluff)	Park or Natural Area	Ecological Quality of Natural Area (0-3)	Size of Existing Natural Area within Site (0-2)	Located within DNR Conservation Corridor (0-1)	Presence of rare natural feature (0-2)	Located within Vulnerable Population Area (0-2)	Adjacency to Lakes and Wetland (0-1)	Public Access and Use (0-2)	Presence of Historic Wetland (0-1)	Access for Maintenance (0-2)	Improvement/ Expansion of Existing Management Efforts (0-2)	Property Ownership (0-2)	Potential for Turf Conversion (0-1)	Existing Subtotal (possible 13)	Potential Subtotal (possible 8)	Site Prioritization Score (possible 21)
21	CRWD	D4	Beacon Bluff Business Center South (Forest Street Triangle)	0	0	0	0	2	0	0	0	0	0	2	1	2	3	5
22	CRWD	D4	The Archdiocese of Saint Paul and Minneapolis	1	1	0	0	2	0	0	1	2	0	0	1	4	4	8
23	CRWD	D5	Duchess (Beacon Bluffs) Street Stormwater BMP	2	2	0	0	2	0	1	0	2	2	2	0	7	6	13
24	CRWD	D5	Lockwood Park	0	0	0	0	0	0	1	0	2	0	2	1	1	5	6
25	CRWD	D4 & D5	Eastside Heritage Park (& adjacent Bruce Vento Regional Trail)	2	2	0	2	2	1	2	1	2	1	2	1	11	7	18
26	CRWD	D5	Arlington Hills Library and Playground	2	0	0	0	2	0	1	0	2	2	2	1	5	7	12
27	CRWD	D5	St. Patrick's of Saint Paul	0	0	0	0	2	0	0	0	0	0	0	1	2	1	3
28	CRWD	D5	Bradley Street Woodlot (Victory Shipping LLC & ROW)	0	0	0	0	2	0	1	0	2	0	1	0	3	3	6
29	CRWD	D5	Case Ave and Westminster Woodland (Nyla Properties LLC)	0	1	1	0	2	0	0	0	0	0	0	0	4	0	4
30	CRWD	D5	Cayuga and 35 E Interchange (Cloverleaf)	0	2	1	0	2	0	1	1	1	1	2	0	6	5	11
31	CRWD	D5	Highway Federal Credit Union	2	1	1	0	2	0	1	1	2	0	0	0	7	3	10
32	CRWD	D5	Univar Addition	0	1	1	0	2	1	0	1	0	0	0	0	5	1	6
33	CRWD	D5	Metro Transit East Garage	0	1	1	0	2	1	0	0	1	0	2	0	5	3	8
34	CRWD	D5	Bush-Desoto Stormwater Basin and Woodland	3	2	1	0	2	0	1	0	1	2	1	0	9	4	13
35	CRWD	D5	Rivoli Bluffs Farm and Restoration Site	1	2	1	0	2	0	1	1	1	2	1	1	7	6	13
36	CRWD	D5	Rivoli Bluff - Otsego Street Slope	1	1	1	1	2	0	1	0	2	0	2	0	7	4	11
37	CRWD	D5	Railroad Island Greenspace	0	0	1	0	2	0	0	1	2	0	2	0	3	5	8
38	CRWD	D5	MNDNR/MPCA Office Landscape	1	2	1	0	2	0	0	1	2	0	1	1	6	5	11
39	CRWD	D5	Swede Hollow Park	2	2	1	1	2	1	2	1	2	2	1	1	11	7	18
40	CRWD	D4	Hamm Park	2	0	0	0	2	0	1	1	2	1	2	1	5	7	12
41	CRWD	D4	Swede Hollow Cafe Raingardens	2	0	0	0	2	0	1	0	2	1	1	0	5	4	9
42	CRWD	D4	Bruce Vento Nature Sanctuary	2	2	1	1	2	0	2	1	2	1	2	0	10	6	16
43	CRWD	D4	Indian Mounds Regional Park	3	2	1	1	2	0	2	0	2	2	2	1	11	7	18



Project Area

Municipal Boundary

Sites Identified for Field Investigation (labeled by site identification number)

Site Prioritization

High

Medium

Low

0 1,000 2,000

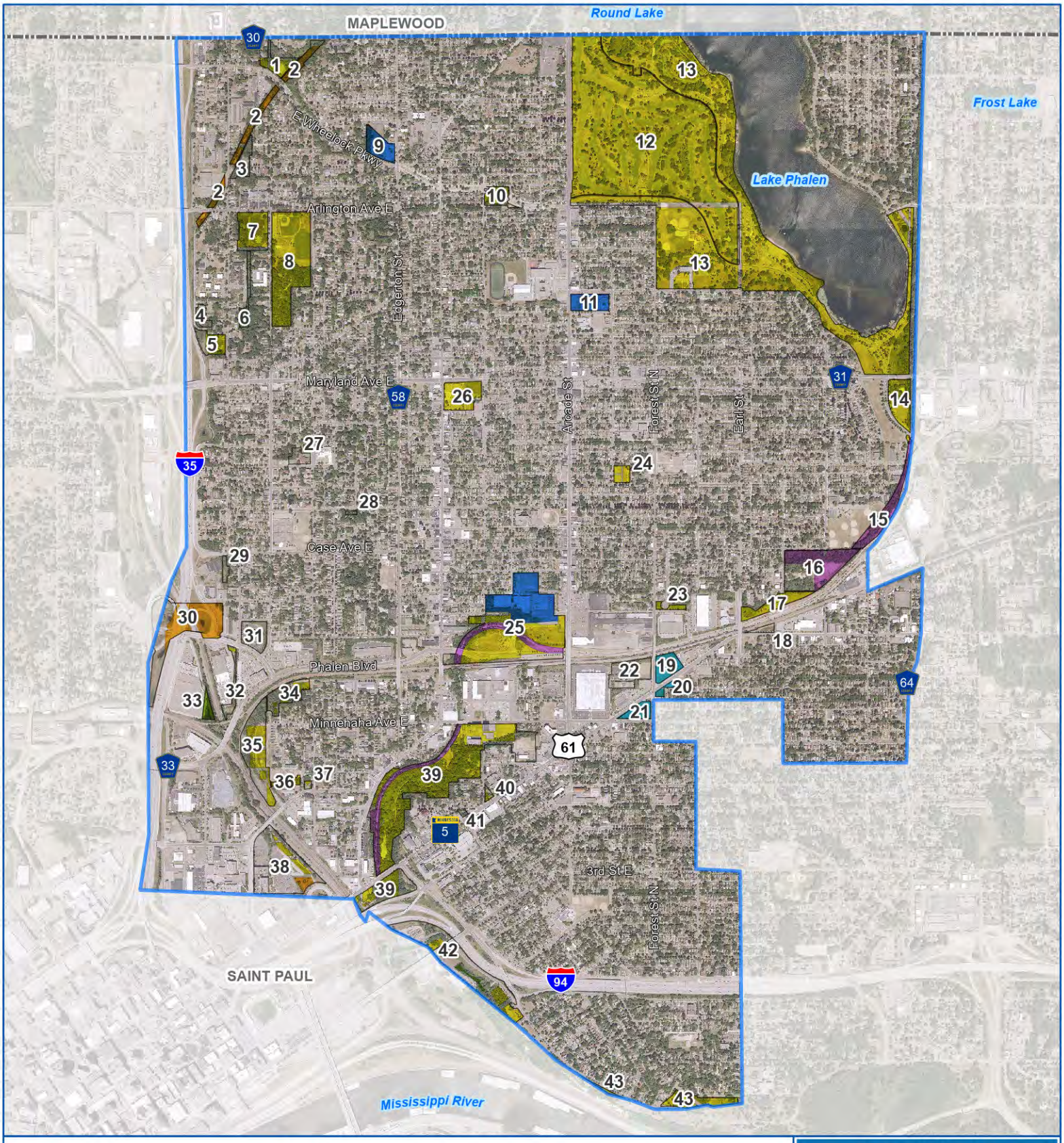
Feet

NATURAL RESOURCE MANAGEMENT SITE PRIORITIZATION

Dayton's Bluff and Payne-Phalen Natural Resources Inventory

Capitol Region Watershed District

FIGURE 23



Project Area
Municipal Boundary
Sites Identified for Field Investigation

Land Ownership

- City-Owned Parcel
- County-Owned Parcel
- Met Council-Owned Parcel
- Port Authority-Owned Parcel
- School District-Owned Parcel
- State-Owned Parcel
- Privately-Owned Parcel

N

0 1,000 2,000

Feet

SITES OWNERSHIP

Dayton's Bluff and Payne-Phalen Natural Resources Inventory

Capitol Region Watershed District

FIGURE 24

5.4 Summary of Site Features

Table 5-4 provides a summary of key features and potential management opportunities for each of the 43 sites investigated. This table provides a broad overview of the results of the field inventory, see **Appendix A** for detailed descriptions of site conditions, challenges, and opportunities for each site. **Appendix A** also includes figures depicting existing landcover, habitat quality, target plant community, and restoration priority for each site. **Figure 25** summarizes the key potential management opportunities for each of the sites investigated.

Table 4-4 Summary of Natural Areas

Site No.	Site Name	Description	Quality	Site Prioritization Score	Wetland Features (NWI)	Estimated Slope	Ownership	Natural Resource	Size of Natural Areas (not including open water)	Management Opportunities (see Appendix A for detailed site descriptions and additional opportunities)
1	Wheelock Parkway Stormwater Pond	Open water wetland surrounded by cattails. Slope dominated by non-native species. Early succession forest (ash, boxelder) with bare soil and buckthorn	D	10 (Medium Priority)	Emergent wetland and open water	1-30% around wetland edge	Private and Public	Altered/Non-Native Deciduous Forest, Non-Native Grassland, Cattail Wetland	2.3 acres	• Improve forest habitat - remove buckthorn and restore native understory • Collaborate with adjacent landowner to restore forest on private property • Restore upland buffer around pond to increase native plant diversity for birds and pollinator species • Control exotic invasive species
2	Gateway State Trail	Elevated recreation trail corridor with cottonwood, ash, and boxelder on the edges. Maple-basswood forest on north end is relatively diverse with low amounts of invasive species.	B, C, D	15 (High Priority)	N/A	0-40% steep slopes various locations	Public	Altered/Non-Native Deciduous Forest, Native and Non-Native Grassland, Maple-Basswood Forest, Cattail Wetland	7.0 acres	• Promote native tree species diversity • Improve ecological patch corridor dynamics with surrounding natural areas • Maintain and preserve existing green spaces and plant communities
3	Nebraska Ave Garden	Maintained community garden surrounded by degraded early succession forest. Located adjacent to Site 2.	D	8 (Medium Priority)	N/A	0-15%	Private and Public	Altered/Non-Native Deciduous Forest	1.8 acres	• Leverage support of community gardeners for Control exotic invasive species • Incorporate/promote pollinator plantings within cultivated garden area • Control exotic invasive species • Enhance connection to Gateway State Trail habitat corridor
4	Hyacinth Ave & Mississippi St	Reed canary grass dominated wetlands. Degraded boxelder forest along edges.	D	9 (Medium Priority)	Emergent wetland	0-5%	Private (non-profit/tax exempt) and Public	Altered/Non-Native Deciduous Forest, Cattail Wetland	1.4 acres	• Maintain wetland functions • Location of historic Trout Brook - restore historic wetland plant community
5	Westminster Pond	Cattail dominated stormwater basin surrounded by mix of non-native and native species. Reed canary dominated wetland along west edge.	D	11 (Medium Priority)	Emergent wetland and open water	1-30% around wetland edge	Public	Altered/Non-Native Deciduous Forest, Non-Native Grassland, Cattail Wetland	2.1 acres	• Maintain wetland functions • Control problematic thistle and ragweed species
6	Westminster Place ROW	Narrow wooded corridor (60 -100' wide) dominated by boxelder and cottonwood canopy trees. Mature bur oak trees located on south parcel. Understory is highly degraded (bare soils and invasive species)	C	8 (Medium Priority)	N/A	1-15%	Private and Public	Altered/Non-Native Deciduous Forest	2.2 acres	• Manage large oak and hardwood canopy trees • Improve ecological patch corridor dynamics with surrounding natural areas
7	Arlington/ Arkwright Stormwater Pond	Cattail dominated stormwater basin surrounded by non-native species. Early succession forest species (ash, boxelder, Siberian elm) with degraded understory on west and south edge (bare soils and invasive species).	D	13 (Medium Priority)	Emergent wetland and open water	1-30% around wetland edge	Public	Altered/Non-Native Deciduous Forest, Cattail Wetland	3.0 acres	• Increase wetland vegetation diversity for pollinator and bird species • Reduce unused turf

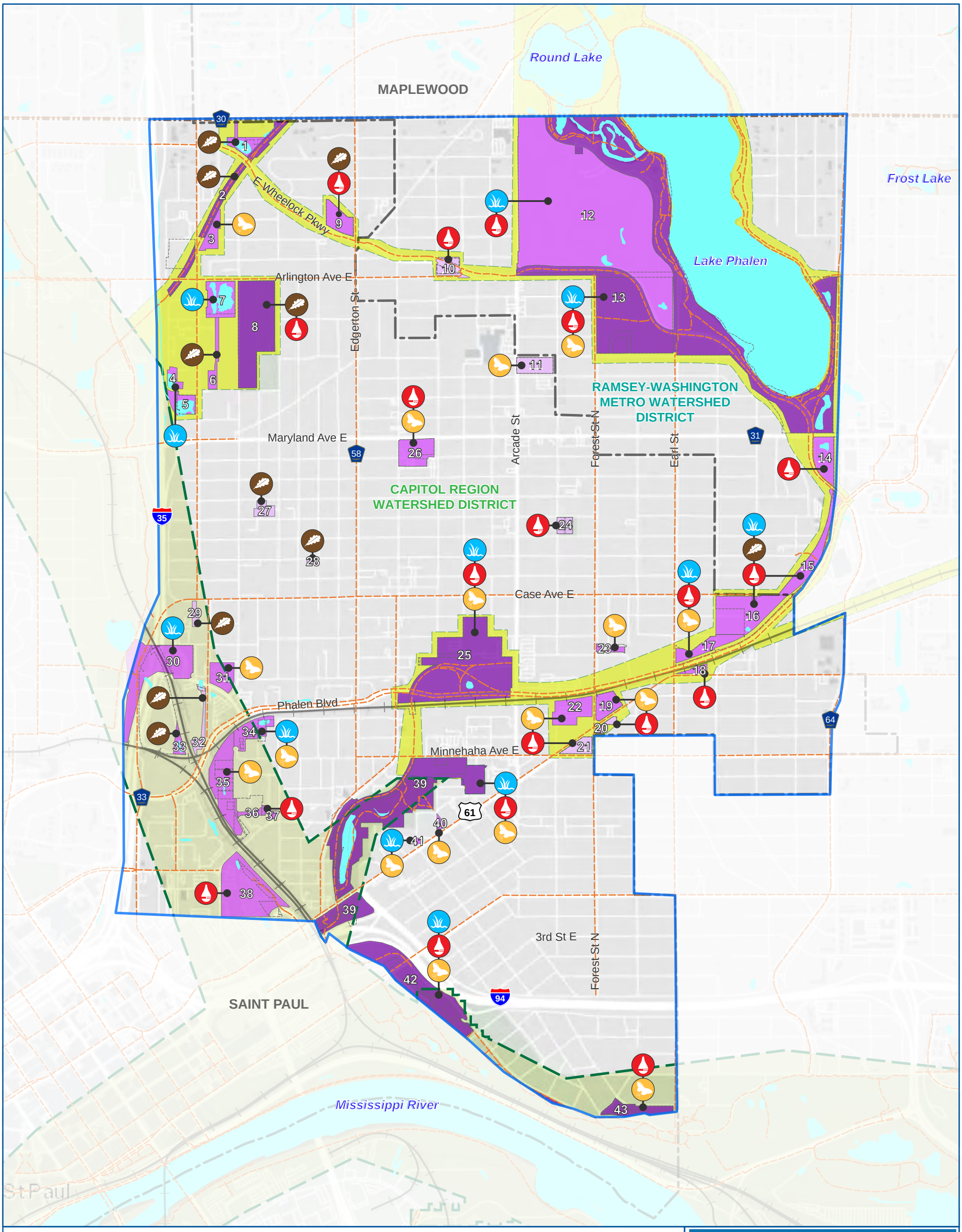
Site No.	Site Name	Description	Quality	Site Prioritization Score	Wetland Features (NWI)	Estimated Slope	Ownership	Natural Resource	Size of Natural Areas (not including open water)	Management Opportunities (see Appendix A for detailed site descriptions and additional opportunities)
8	Arlington/ Arkwright Park	20-acre park containing recreation fields and a wooded dog park. Maple-basswood forest on east side of park is fairly diverse. Invasive black locust taking over natural areas.	B, C, D	15 (High Priority)	N/A	1-30% steeper slopes along Arlington St	Public	Altered/Non-Native Deciduous Forest, Non-Native Grassland, Maple-Basswood Forest, Oak Forest	8.8 acres	• Convert unused/unnecessary mowed turf areas path with native grasses, forbs, and/or tree species • Identify opportunities to utilize lawn or degraded natural areas for green infrastructure practices (stormwater quality/quantity control) • Manage exotic tree species to prevent continued encroachment • Maintain and preserve existing green spaces and plant communities
9	Wheelock Early Learning Center	Low diversity forest adjacent to the Wheelock Early Learning Center.	B, D	11 (Medium Priority)	N/A	5-10% wooded swale	Public	Altered/Non-Native Deciduous Forest	0.8 acre	• Convert unused/unnecessary mowed turf areas with native grasses, forbs, and/or tree species • Identify opportunities to utilize lawn or the currently degraded forest for green infrastructure practices (stormwater quality/quantity control) • Explore partnership with school for interpretive and/or hands-on learning opportunities
10	Wheelock Triangles	Maintained as turf grass with a diverse number of mature tree species scattered throughout	CL	6 (Low Priority)	N/A	0-2%	Public	Cultural Landscape (lawn)	N/A	• Convert portions of lawn area to native pocket prairie • Maintain healthy canopy trees • Identify opportunities to utilize lawn for green infrastructure practices (stormwater quality/quantity control)
11	Farnsworth Pre K	Maintained as mown turf grass with a diverse number of mature tree species scattered throughout	CL	7 (Low Priority)	N/A	0-5%	Public	Cultural Landscape (lawn)	N/A	• Collaborate with school to develop educational or interpretive opportunities about the importance of pollinator plantings • Identify opportunities to utilize lawn for native plantings and green infrastructure practices (stormwater quality/quantity control) • Replace removed ash trees with climate-change-appropriate species that will also help reduce UHI.
12	Phalen Golf Course	18-hole public golf course containing two emergent cattail wetlands	C	12 (Medium Priority)	Emergent wetland and open water	10 – 20%	Public	Cattail Wetland, Reed Canary Grass Wetland	0.6 acre	• Oak savanna restoration in out-of-play areas • Identify opportunities to reduce herbicide, fertilizers, and runoff from lawn • Utilize unnecessary lawn for green infrastructure practices (stormwater quality/quantity control)
13	Phalen Regional Park	Large park containing oak savanna, restored lakeshore buffer plantings, and large expanses of lawn containing mature oak, maple, and hackberry trees	A, B, C, D	18 (High Priority)	Emergent wetland and open water	10 – 20%	Public	Altered/Non-Native Deciduous Forest, Native and Non-Native Grassland, Oak Forest, Stormwater Basin, Cattail Wetland, Reed Canary Grass Wetland	45.5 acres	• Protect and maintain habitat for the rusty patch bumble bee • Collaborate with the City and local partners to support the existing master plan and restore habitat (Phalen-Keller Regional Park Master Plan) • High visibility and use within the park can help leverage support for additional resources for on-going management efforts ◦ Consider opportunities to participate in planning efforts to daylight stretches of historic Phalen Creek. • Explore opportunity for SSGI or habitat improvements connected to the METRO Purple Line BRT project
14	Johnson Parkway Tennis Courts	City park containing tennis courts and a non-native species dominated wetland. Degraded boxelder forest along edges. Native prairie species in open areas suggest history of plant community management.	C, D	14 (Medium Priority)	Emergent wetland	10 – 30%	Public	Altered/Non-Native Deciduous Forest, Stormwater Basin, Cattail Wetland, Reed Canary Grass Wetland	2.0 acres	• Connections to Phalen Regional Park and Bruce Vento Regional Trail to improve ecological corridors • Control the most aggressive non-native species to prevent spread to adjacent natural areas • Explore opportunity for SSGI and site-wide stormwater or habitat improvements connected to the METRO Purple Line BRT project

Site No.	Site Name	Description	Quality	Site Prioritization Score	Wetland Features (NWI)	Estimated Slope	Ownership	Natural Resource	Size of Natural Areas (not including open water)	Management Opportunities (see Appendix A for detailed site descriptions and additional opportunities)
15	Duluth and Case Recreation Center	A linear degraded forest containing boxelder, black walnut, cottonwood, and oak trees. Understory is sparse and contains dense thickets of buckthorn and honeysuckle.	D	13 (Medium Priority)	N/A	2 -10%	Public	Altered/Non-Native Deciduous Forest	4.5 acres	• Promote native tree species diversity • Consider opportunities to participate in planning efforts to daylight stretches of historic Phalen Creek. • Explore opportunity for SSGI or habitat improvements connected to the METRO Purple Line BRT project
16	Frank and Sims Yard Waste Collection Site	Actively used yard waste facility located within an altered/Non-native forest. Mature bur oak trees are located throughout. Understory is highly degraded (bare soils and invasive species). Wetland is largely unvegetated.	C, D	9 (Medium Priority)	Emergent wetland and open water	0 -30%	Private and Public	Altered/Non-Native Deciduous Forest, Cattail Wetland	7.2 acres	• Educational partnership opportunities with Ramsey County • Consider opportunities to participate in planning efforts to daylight stretches of historic Phalen Creek. • Explore opportunity for SSGI or habitat improvements connected to the METRO Purple Line BRT project
17	Bruce Vento Regional Trail at Frank St	Newly established prairie planting on east portion of site; remaining areas are maintained as lawn	A	11 (Medium Priority)	N/A	5-20% shallow depression along Earl St	Public	Altered/Non-Native Deciduous Forest, Native Grassland	2.0 acres	• Consider opportunities to participate in planning efforts to daylight stretches of historic Phalen Creek. • Explore opportunity for SSGI or habitat improvements connected to the METRO Purple Line BRT project • Maintain and preserve existing green spaces and plant communities
18	MacQueen Equipment HQ	Non-native cattail stormwater pond surrounded by turf and ornamental tree plantings	D	8 (Medium Priority)	N/A	2 -20%	Private	Stormwater Basin	0.6 acre	• Identify opportunities to utilize lawn for native plantings and green infrastructure practices (stormwater quality/quantity control) • Control exotic invasive species
19	Beacon Bluff Business Center South, 2nd (Port Authority)	Large lawn with a non-native tall grassland located along the railroad corridor to the north. Pioneer and invasive tree species are quickly establishing in the grassland.	C	8 (Medium Priority)	N/A	2 -20%	Public	Non-Native Grassland	0.4 acre	• Promote native tree species diversity • Improved habitat could serve as an ecological corridor along railroad • Identify opportunities to utilize lawn for native plantings and green infrastructure practices
20	Port Authority of St Paul (Terry's Addition)	Half-acre lawn and parking lot. One very large bur oak located on site.	CL	5 (Low Priority)	N/A	2-5%	Public	Cultural Landscape (lawn)	N/A	• Identify opportunities to utilize lawn or the vacant parking lot for green infrastructure practices • Partner with Port Authority to convert lawn area to native pocket prairie
21	Beacon Bluff Business Center South (Forest Street Triangle)	2.2-acre lawn area with a small wet depression located on the southwest corner	CL	5 (Low Priority)	N/A	2-5%	Public	Cultural Landscape (lawn)	N/A	• Identify opportunities to utilize lawn for native plantings and green infrastructure practices
22	The Archdiocese of Saint Paul and Minneapolis	Large lawn with a non-native tall grassland located along the railroad corridor to the north. Pioneer and invasive tree species are quickly establishing in the grassland.	C	8 (Medium Priority)	N/A	2 -20%	Private (non-profit/tax exempt)	Non-Native Grassland	1.0 acre	• Promote native tree species diversity • Improved habitat could serve as an ecological corridor along railroad • Identify opportunities to utilize lawn for native plantings and green infrastructure practices
23	Duchess Street (Beacon Bluff) Stormwater BMP	Two stormwater infiltration basins containing a mix of native and non-native invasive species. Past restoration efforts are being taken over by smooth brome and non-native cattails.	B, C	14 (Medium Priority)	N/A	2 -20%	Public	Native Grassland, Stormwater Basin	0.9 acres	• Increase basin vegetation diversity for pollinator and bird species (plug plantings) • Control exotic invasive species • Maintain BMPs
24	Lockwood Park	City park containing recreation fields and a playground. Majority of the site is maintained as lawn.	CL	6 (Low Priority)	N/A	2-5%	Public	Cultural Landscape (Lawn)	N/A	• Identify opportunities to utilize lawn for green infrastructure practices (stormwater quality/quantity control) • Convert unused lawn area and boulevard to native pocket prairie

Site No.	Site Name	Description	Quality	Site Prioritization Score	Wetland Features (NWI)	Estimated Slope	Ownership	Natural Resource	Size of Natural Areas (not including open water)	Management Opportunities (see Appendix A for detailed site descriptions and additional opportunities)
25	Eastside Heritage Park (& adjacent Bruce Vento Regional Trail)	Large park and surrounding natural areas. Bruce Vento Regional Trail is bound by a degraded grassland (smooth brome) and early succession forest (ash, boxelder, Siberian elm). Forests contain a degraded understory of invasive species and bare soil.	B, C, D	18 (High Priority)	Emergent wetland	2-40% steep slopes along edge of bike trail (old rail corridor)	Public	Altered/Non-Native Deciduous Forest, Native and Non-Native Grassland, Stormwater Basin, Cattail Wetland	18.3 acres	• Improved habitat could serve as an ecological corridor along regional bike trail • Identify opportunities to utilize lawn for native plantings and green infrastructure practices • Explore opportunity for SSGI or habitat improvements connected to the METRO Purple Line BRT project • Consider opportunities to participate in planning efforts to daylight stretches of historic Phalen Creek. • Maintain habitat for the rusty patch bumble bee
26	Arlington Hills Library and Playground	Public library facility with a soccer field and open lawn areas. One stormwater BMP planted with dogwoods is located on the east edge of the site.	B	12 (Medium Priority)	N/A	2-5%	Public	Cultural Landscape (lawn), Stormwater Basin	0.03 acres	• Identify opportunities to utilize lawn for green infrastructure practices (stormwater quality/quantity control) • On-site educational partnership opportunities with Saint Paul Public Library to promote importance of stormwater management and pollinator plantings • Expand existing native demonstration plantings around building
27	St Patrick's of Saint Paul	Church complex containing a .25-acre cottonwood dominated forest. The forest shrub and ground layers contain buckthorn, riverbank grape, and other common woodland edge species.	C	3 (Low Priority)	N/A	2-5%	Private (non-profit/tax exempt)	Altered/Non-Native Deciduous Forest	0.3 acres	• Explore opportunity for partnering with church to create and maintain native plantings • Control exotic invasive species
28	Bradley Street Woodlot (Victory Shipping LLC & ROW)	Early succession forest (ash, boxelder) with bare soil and buckthorn. The relatively small site is located where grades were too steep for the continuation of Bradley Street.	D	6 (Low Priority)	N/A	10-40% steep south facing slope	Private and Public	Altered/Non-Native Deciduous Forest	0.3 acres	• Control invasive tree species to open up the forest understory for the regeneration of native plants • Collaborate with adjacent landowner to control invasive species on private property
29	Case Ave and Westminster Woodland (Nyla Properties LLC)	Early succession forest (ash, boxelder, and cottonwood) with a smooth brome grass monoculture understory.	D	4 (Low Priority)	N/A	5-30% steep west facing slope	Private	Altered/Non-Native Deciduous Forest	0.9 acres	• Collaborate with landowner to control invasive species on private property • Convert undeveloped areas into more diverse oak savanna plant community for pollinator and bird species
30	Cayuga and 35 E Interchange (Cloverleaf)	Series of stormwater BMPs surrounded by upland prairie plantings located within the Cayuga Street off/on ramps. Upland areas appeared to have been planted with native species but have since been taken over by invasive species.	D	11 (Medium Priority)	Emergent wetland and open water	5-10%	Public	Non-Native Grassland, Stormwater Basin	10.3 acres	• Control exotic invasive species • Maintain BMPs for stormwater control • Promote tree growth and survival
31	Highway Federal Credit Union	Formal landscape plantings around the office building and parking lot. Steep slope on north side of property is planted with monotypic massing of fragrant sumac	B	10 (Medium Priority)	N/A	10-40% steep slope on north and east edge	Private	Shrubland (native shrub massing)	1.0 acres	• Expand existing native demonstration plantings around building and increase diversity of native plants within large shrub plantings
32	Univar Addition	Narrow strip of degraded forest (Siberian elm, cottonwood, and green ash) containing a low diversity understory (smooth brome grass, crown vetch, Canada goldenrod). Open grasslands are dominated by smooth brome (located on the north and south edges of the stie).	D	6 (Low Priority)	N/A	10-40% steep slope on length of site	Private	Altered/Non-Native Deciduous Forest, Non-Native Grassland	1.8 acres	• Control Siberian elm and exotic invasive species • Plant long lived native shrub or hardwood tree species to replace ash and Siberian elm

Site No.	Site Name	Description	Quality	Site Prioritization Score	Wetland Features (NWI)	Estimated Slope	Ownership	Natural Resource	Size of Natural Areas (not including open water)	Management Opportunities (see Appendix A for detailed site descriptions and additional opportunities)
33	Metro Transit East Garage	Stormwater pond surrounded by cottonwood, Siberian elm, and boxelder trees. The site was observed from a distance (accessible only through security entrance)	D	8 (Medium Priority)	Emergent wetland and open water	1-30% around wetland edge	Public	Altered/Non-Native Deciduous Forest	0.8 acres	• Control Siberian elm and noxious weed species
34	Bush-Desoto Stormwater Basin and Woodland	Stormwater basin and open upland prairie vegetation are to be restored in spring of 2024. Early succession forest is highly degraded (Siberian elm, boxelder, ash) with sparse groundcover.	A, B, D	13 (Medium Priority)	Emergent wetland	1-30% around wetland edge	Private and Public	Altered/Non-Native Deciduous Forest, Native Grassland, Stormwater Basin	3.4 acres	• Maintain stormwater basin for water quality and flood control • Maintain and preserve existing green spaces and plant communities
35	Rivoli Bluffs Farm and Restoration Site	Large community garden located on a south facing bluff located above the Union Pacific rail line and Phalen Boulevard. Low-diversity grassland and forested areas are dominated by invasive species. A stormwater detention basin captures runoff from garden areas and is dominated by cattails.	C, D	13 (Medium Priority)	Emergent wetland	10-40% steep slope along railroad	Private and Public	Altered/Non-Native Deciduous Forest, Non-Native Grassland, Cattail Wetland	7.0 acres	• On-site educational partnership opportunities with gardeners and the community groups to promote importance of stormwater management and pollinator plantings • Improved habitat could serve as an ecological corridor along railroad • Maintain and preserve existing green spaces and plant communities
36	Rivoli Bluff - Otsego Street Slope	Smooth brome dominated south facing slope. There is a patch of nice bur oaks located on east edge of the site.	C, D	11 (Medium Priority)	N/A	15-30%	Public	Non-Native Grassland, Oak Forest	0.7 acres	• Convert existing degraded areas into more diverse oak savanna plant community for pollinator and bird species • Collaborate restoration efforts with the adjacent Rivoli Bluff Farm site to create a larger habitat patch
37	Railroad Island Greenspace	Neighborhood community garden and open lawn	CL	8 (Medium Priority)	N/A	2-5%	Public	Cultural Landscape (lawn and gardens)	N/A	• Identify opportunities to utilize lawn for native plantings and green infrastructure practices (stormwater quality/quantity control)
38	MNDNR/MPCA Office Landscape	Open grassland and degraded woodlands are located along east edge of site. Non-native species dominate but native grass and forb species are present in areas. Small wetland is dominated by cattails.	C, D	11 (Medium Priority)	Emergent wetland	2-30%	Private and Public	Altered/Non-Native Deciduous Forest, Non-Native Grassland, Cattail Wetland	5.1 acres	• Explore opportunity for SSGI and habitat improvements around surface parking lots
39	Swede Hollow Park	36-acre park containing a linear wetland feature, open grasslands, and a relatively large oak forest. Restoration efforts have been ongoing throughout the park. However, many portions of the forested areas are infested with buckthorn.	B, C, D	18 (High Priority)	Emergent wetland and open water	2-40% steep slopes along edges of site	Public	Altered/Non-Native Deciduous Forest, Native and Non-Native Grassland, Oak Forest, Reed Canary Grass Wetland	36.9 acres	• Improved habitat could serve as an ecological corridor along regional bike trail • Consider opportunities to participate in planning efforts to daylight stretches of historic Phalen Creek. • Collaborate with the City and local partners to support the existing park master plan and to restore habitat (Swede Hollow Park Master Plan) • Maintain and preserve existing green spaces and plant communities
40	Hamm Park	Well-maintained native plantings, lawns and ornamental shade trees.	B	12 (Medium Priority)	N/A	2-5%	Public	Cultural Landscape (lawn and native mesic prairie plantings within garden)	0.1 acres	• A great example of a well-maintained pocket prairie with native plant diversity
41	Swede Hollow Cafe Raingardens	Public ROW and privately held commercial parcel that contains two well maintained raingardens.	B	10 (Medium Priority)	N/A	2-5%	Private and Public	Stormwater Basin	0.1 acres	• A great example of a well-maintained stormwater basin planting with a mix of plant diversity • Collaborate and promote importance of stormwater management and pollinator plantings with Urban Roots (non-profit currently maintaining plantings)

Site No.	Site Name	Description	Quality	Site Prioritization Score	Wetland Features (NWI)	Estimated Slope	Ownership	Natural Resource	Size of Natural Areas (not including open water)	Management Opportunities (see Appendix A for detailed site descriptions and additional opportunities)
42	Bruce Vento Nature Sanctuary	Large park featuring sandstone bluffs, oak forests, and open grasslands. Portions of the park have been restored while others are in poor condition because of past industrial use.	B, C, D	16 (High Priority)	N/A	2-40% steep slopes along north edge	Public	Altered/Non-Native Deciduous Forest, Non-Native Grassland, Oak Forest	10.4 acres	• Improved habitat could serve as an ecological corridor along regional bike trail • Consider opportunities to participate in planning efforts to daylight stretches of historic Phalen Creek. • Collaborate with the City and local partners to support the existing master plan and restore habitat (2020-2024 Ecological Management Recommendations) • Maintain and preserve existing green spaces and plant communities
43	Indian Mounds Regional Park	Portions of lawn have recently been converted into prairie. Majority of the site remains lawn for passive and active recreation within parkland. Small, degraded forest located on west side of site.	A, C	18 (High Priority)	N/A	2-30%	Public	Altered/Non-Native Deciduous Forest, Native and Non-Native Grassland	3.5 acres	• Coordinate with the City and local partners to support the ongoing restoration efforts to create a larger more manageable habitat patch (project area encompasses only a portion of the park) • Identify opportunities to utilize lawn for native plantings and green infrastructure practices (stormwater quality/quantity control) • Improved habitat could serve as an ecological corridor along the bluff • Maintain and preserve existing green spaces and plant communities



Project Area
Municipal Boundary
Site Identification Number
Watershed District Boundary
Wetland or Waterbody
Railroad
Publicly-Owned Parcel Within Site
Bikeways
Conservation Corridor (MnDNR)

Site Prioritization
High
Medium
Low

Primary Management Opportunities
Expanded Ecological Corridor
Plant Diversity for Wildlife and Pollinators
Improve Forest Canopy
Maintain/Improve Wetland Function
Impervious Surface or Lawn Reduction

N
0 1,500
Feet

MANAGEMENT OPPORTUNITIES

Dayton's Bluff and Payne-Phalen Natural Resources Inventory

Capitol Region Watershed District

FIGURE 25

6 Conclusion

Current conditions and opportunities for improvement discussed above are a snapshot in time and should be thought of as a starting point for future actions that could be considered for implementation by watershed districts, District councils, the City of Saint Paul, Ramsey County, or private landowners. The ecosystem and biological communities within the project area were altered over a hundred years ago and as a result the restoration of these natural resources will likely be a long process. It takes time to identify, fund, and implement both publicly or privately funded natural resource improvement projects. Implementation of natural resource improvement projects are prioritized in sections 5 and within **Appendix A**.

The rapid urban development that took place within the project area during the early 20th century was implemented with an indifference to the protection of natural resources. The effects of urban development are apparent in the lack of plant diversity and ubiquitous presence of invasive species throughout the project area. This is a result of not only the direct removal of the historic plant communities but also due to the alteration of the soils and hydrology of the landscape. These natural resources are an important foundation for a healthy ecosystem and it will take a focused effort to restore the beneficial function of these important systems.

Each site identified has its own unique challenges and opportunities for regeneration and ongoing maintenance. Natural resource managers could focus first on the underlying issues that have primarily led to the degradation of a specific site. Some sites may simply need invasive species control and replanting with native species. Restoration efforts at Phalen Regional Park, Swede Hollow Park, and Indian Mounds Regional Park have already proved to be successful and have positive momentum that could continue to be expanded upon. However, other sites will require major soil restoration, impervious surface removal, and stormwater management features in order to restore ecosystem services.

The strategies presented within this NRI are intended to help improve the parks and natural areas that deliver ecosystem services that support human life and society. Responsibility for implementation of any proposed opportunities would depend on land ownership and type of activity proposed. Opportunities identified for the highest priority sites are located within City of St. Paul Parkland. Full implementation for recommendations at these priority sites could potentially be supported, funded, and ultimately achieved with collaboration from the watershed districts, District councils, Ramsey County, neighborhood organizations, and the residents within. In contrast, most of the proposed activities on private property would need to be initiated by the individual property owners. However, grant funding and technical support to private landowners could be supplied by many of the same partners that would be involved with public projects.

This document serves as a foundation for further planning and investment to implement transformative natural resource protection and enhancement actions. All recommendations and strategies included in the document are conceptual in nature and should be further developed. Changes in demographics, landownership, technology, and climate are constant and so these strategies need to respond to future needs, challenges, and opportunities as they arise. Review and updates to this document is recommended every 5 years as new opportunities for funding or engagement may present themselves. Major updates and amendments could be summarized to the planning district's, the City, and County partners to promote continued collaboration.

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Appendix A – Site Summaries

Barr worked with CRWD, RWMWD, and partners to identify 43 sites being most likely to contain native plant communities and other natural resources of interest. Each of the parcels is described and mapped in detail below. The parcel numbers and locations correspond to **Figure 20**. The site descriptions are also summarized in **Table 5-4**. These site summaries are for planning and management prioritization purposes. See **Section 5.2** for factors that need to be considered before implementation of opportunities listed for each site. Detailed restoration and maintenance plans should be developed for each site with specific direction on techniques, phasing, and budgets for regeneration and maintenance efforts. Site summaries include:

Site overviews:

- Brief summary of existing (2023) site conditions
- Primary challenges
- Opportunities to consider for future management efforts

Figures for each site:

- **Existing Land Cover Types:** A 2023 inventory of existing plant communities
- **Habitat Quality:** A 2023 inventory of existing plant community's ecological quality
- **Target Plant Communities:** Recommended native plant communities for restoration (goals) based on historic plant communities, and existing site conditions (vegetation, slope, aspect, soil, sunlight, and past disturbance).
- **Restoration Priority:** Site specific strategies for phasing and prioritizing restoration efforts based on existing plant community, ecological quality, current restoration efforts, site access, habitat size, and adjacencies to areas of high ecological quality and ongoing management activities.

Site 1 – Wheelock Parkway Stormwater Pond (3.0 acres)

Management Prioritization: Medium **Watershed District:** CRWD **District Council:** D5

Condition Summary: The Wheelock Parkway Stormwater Pond is located on the north side of Wheelock Parkway, adjacent to the Gateway State Trail. A majority of the site is owned by the City of Saint Paul; however, a portion of the site extends onto privately-held parcels along the northern edge. The site contains a 0.9-acre stormwater pond (open water) surrounded by a degraded tallgrass field and early succession woodland. A majority of the pond (~75%) is covered with duckweed (*Lemna* spp.) with tall stands of non-native cattail comprising approximately 15% of the ponded area (south edge of the pond). The area surrounding the pond is dominated by non-native species, including burdock (*Arctium minus*), Canada thistle, reed canary grass, and shrubby regrowth of previously mown Siberian elm (*Ulmus pumila*) trees. Canada goldenrod (*Solidago canadensis*) and black-eyed Susan (*Rudbeckia hirta)* are among the few native perennial species and are present in relatively low abundance. The native annual giant ragweed (*Ambrosia trifida*) is also common in open areas.

An altered/non-native deciduous forest comprises approximately 2 acres of the site (woodland extends onto private property to the north). The canopy is composed of boxelder (*Acer negundo)*, green ash (*Fraxinus pennsylvanica)*, black locust, cottonwood (*populus deltoides*), and Siberian elm. Boxelder is the most abundant canopy tree comprising approximately 50% of the forested area. Buckthorn saplings are common throughout the understory and are densely growing along the woodland edges. The herbaceous ground cover is sparse throughout the wooded areas (bare soil is common). Woodbine, creeping charley (*Glechoma hederacea*), motherwort (*Leonurus cardiaca*), and poison ivy (*Toxicodendron radicans)* are patchy throughout. Historic aerial photographs taken in the 1940s show no canopy trees and evidence of heavy human disturbance (potentially through plowing, grading, grazing, etc.).

Challenges:

- Wetland edges dominated by non-native cattails
- Nearly all parts of the upland areas are dominated by invasive and non-native species
- Natural areas within both public and privately owned parcels (coordination with multiple owners required)
- Buckthorn – Nearly all parts of the forested areas are highly degraded
- Goldenrod may be out competing other native plant species. Consider introducing other plants that could compete and add additional diversity.

Opportunities to consider[1]:

- Site is located adjacent to a high-quality maple-basswood forest and the Gateway State Trail (opportunity to create a high quality habitat corridor)
- Existing higher quality forested areas should be expanded and understory growth encouraged
- Collaborate with adjacent landowner to restore woodland on private property

[1] See **Section 5.2** for factors that need to be considered before implementation of opportunities listed for each site (typical for all sites within this section).

- Restore upland buffer around pond to increase native plant diversity for birds and pollinator species (managing cattails in pond would be difficult and would remain an ongoing issue)

Existing Land Cover Type

- Altered/Non-Native Deciduous Forest
- Grassland - Non-Native
- Maple-Basswood Forest
- Wetland - Cattail

- Site 1 Boundary
- Site Identified for Field Investigation
- Parcel

0 50 100

Feet

Image: Nearmap 2023

SITE - 1

Wheelock Parkway Stormwater Pond

EXISTING LAND COVER

Natural Resources Inventory
Capitol Region
Watershed District

Barr Footer: ArcGISPro, 4/5/2024 9:32 AM File: \\barr.com\gis\Client\CapitolRegionWD\Projects\23621487 Phalen Natural Resources Inven\Maps\Basemaps\Working Field Data Map_BHD_V2.aprx Layout: Site Specific_Existing Land Cover User: BHD

Ecological Quality Ranking

- A
- B
- C
- D
- CL (Cultural Landscape)

- Site 1 Boundary
- Site Identified for Field Investigation
- Parcel

N

0 50 100

Feet

Image: Nearmap 2023

SITE - 1

Wheelock Parkway Stormwater Pond

ECOLOGICAL QUALITY

Natural Resources Inventory
Capitol Region
Watershed District

Target Plant Community Type

- Grassland - Mesic Prairie
- Maple-Basswood Forest
- Shallow Marsh

- Site 1 Boundary
- Site Identified for Field Investigation
- Parcel

N

0 50 100

Feet

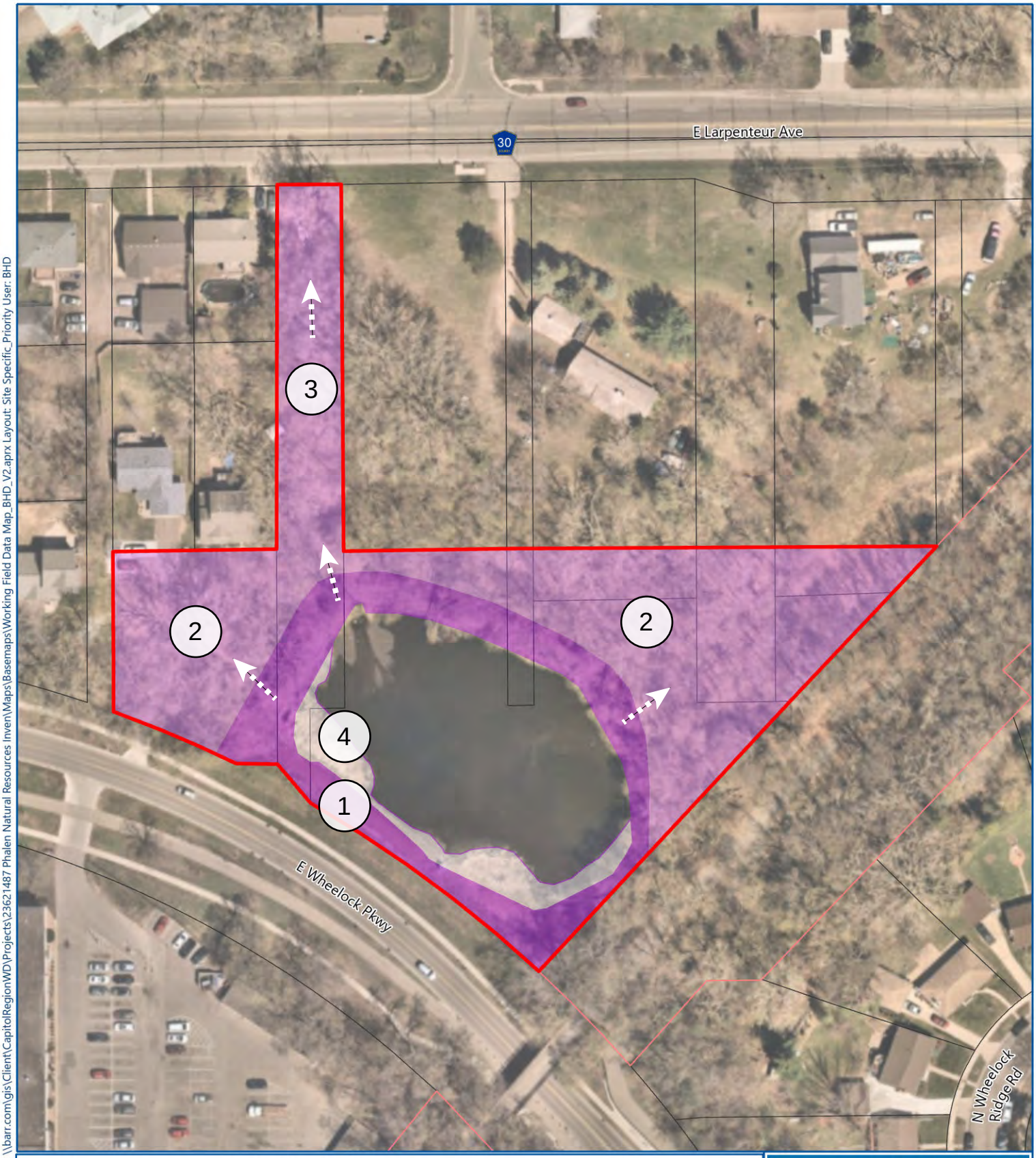
Image: Nearmap 2023

SITE - 1

Wheelock Parkway Stormwater Pond

TARGET PLANT COMMUNITY

Natural Resources Inventory
Capitol Region
Watershed District



Site 1 Boundary

Parcel

Restoration Priority

- High
- Medium
- Low
- Lowest
- Maintain

Restoration Phasing

1 - Restoration efforts begin in these areas.

2 - Second priority for restoration. Move restoration efforts to these areas once phase 1 restoration efforts are complete. Continue maintaining phase 1 to retain restoration success.

3 - Expand restoration to these areas as resources allow. It is critical to maintain previously restored areas.

4 - Last priority for restoration due to the extent of degradation.

Restoration Priority Note: Phasing and prioritizing restoration efforts based on existing plant community, ecological quality, habitat size, and adjacencies to areas of high ecological quality. These strategies are for planning prioritization purposes. Detailed restoration and maintenance plans should be developed for each site.

N

0 50 100

Feet

Image: Nearmap 2023

SITE - 1

Wheelock Parkway Stormwater Pond

RESTORATION PRIORITY AND PHASING

Natural Resources Inventory

Capitol Region Watershed District

Barr Footer: ArcGISPro, 4/3/2024 1:25 PM File: \\barr.com\gis\Client\CapitolRegionWD\Projects\23621487 Phalen Natural Resources Inven\Maps\Basemaps\Working Field Data Map_BHD_V2.aprx Layout: Site Specific_Priority User: BHD

Site 2 – Gateway State Trail (7.2 acres)

Management Prioritization: High **Watershed District:** CRWD **District Council:** D5

Condition Summary: Site 2 is comprised of MNDNR-owned parcels of the Gateway State Trail between 35 E (on the south) and Larpenteur Avenue (on the north). A parking lot and community garden is located at the far south end of the site. The paved trail is elevated along an old railroad corridor and is bordered by woodland habitat on either side. Except for the northeast corner of the site, the wooded areas are degraded and contain little diversity in the canopy layer. Boxelder and green ash are the most abundant canopy trees with buckthorn dominating the understory and shrub layer. Black locust, cottonwood, mulberry (*Morus spp.*), silver maple (*Acer saccharinum*), bur oak, and aspen (*Populus tremuloides)* tree species were also present in limited abundance. Exposed soils and exotic species comprise most of the understory and herbaceous ground layers.

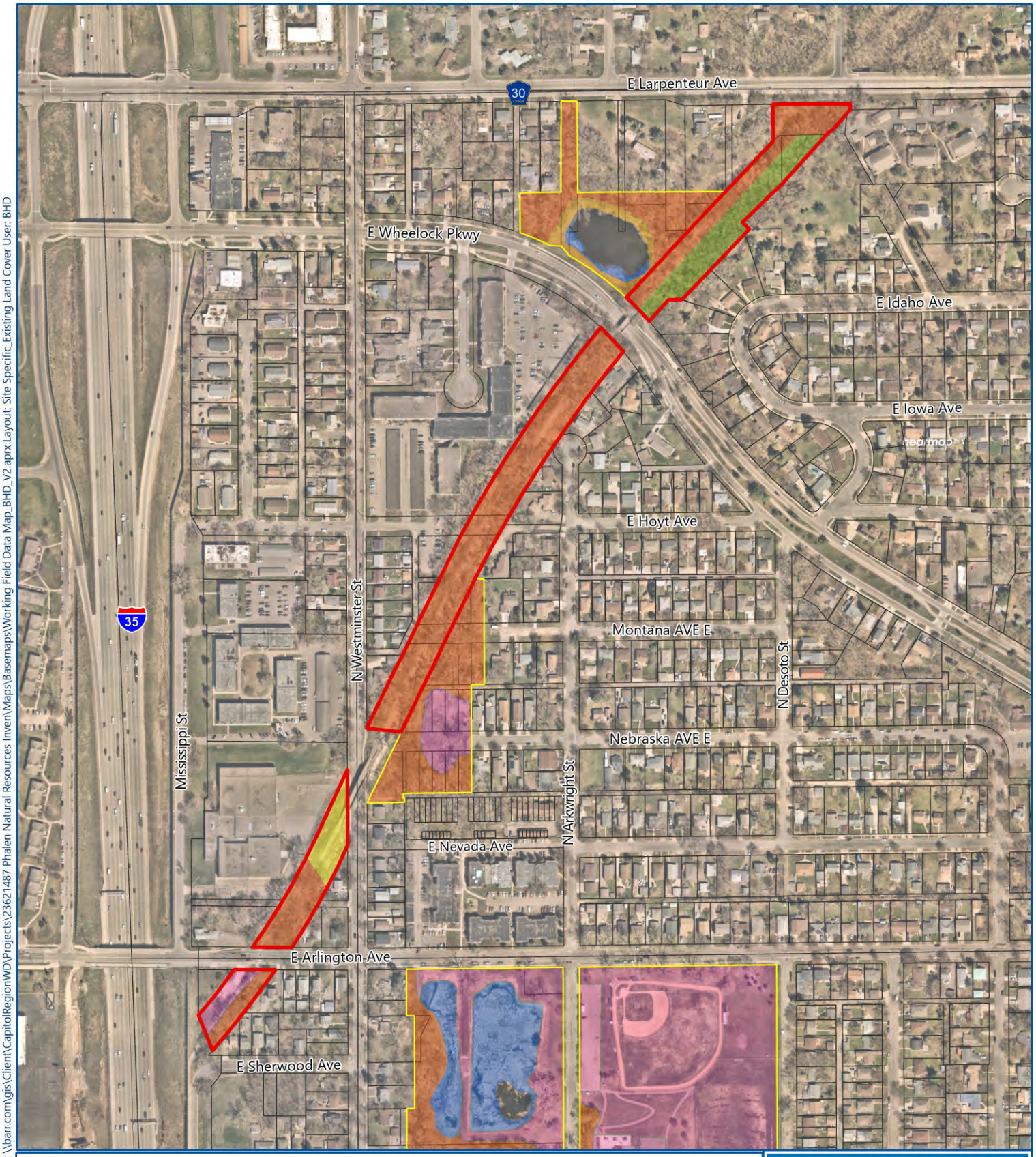
A high-quality maple-basswood forest is present along a steep (2H:1V) slope in the northern most portion of the site. This high-quality forest contains few invasive species and a diverse mix of native trees and shrubs. Canopy trees include aspen, hackberry, American elm (*Ulmus americana*), bur oak, basswood and sugar maples. The shrub and ground layer is diverse and is composed of pagoda dogwood (*Cornus alternifolia*), woodbine, pin cherry saplings (*Prunus pensylvanica*), red elderberry (*Sambucus racemose*), spikenard (*Aralia racemose*), bedstraw (*Gallium spp.)*, creeping Charlie, and white snakeroot. Exposed soil is present throughout, likely as a result of earthworm disturbance and deer browse.

Challenges:

- Steep slopes adjacent to trail have potential for erosion if soil is left bare
- Narrow habitat core and high weed pressure from adjacent properties

Opportunities to consider:

- Woodlands have low plant diversity but previous buckthorn management has opened the understory for regeneration of native plants (expand buckthorn and honeysuckle removal efforts)
- Improved habitat could serve as an ecological corridor connecting multiple nearby patches of habitat (Site 1, Site 3, and Site 7)
- Collaborate with adjacent landowner to control invasive species on private property
- Protect healthy hardwood canopy trees in north portion of the site
- Promote native tree species diversity – Emerald Ash Borer (EAB) will continue to alter existing ash tree canopy



Existing Land Cover Type

- Cultural
- Altered/Non-Native Deciduous Forest
- Grassland - Non-Native
- Grassland - Mesic Prairie
- Maple-Basswood Forest
- Wetland - Cattail

- Site 2 Boundary
- Site Identified for Field Investigation
- Parcel

N

0 200 400

Feet

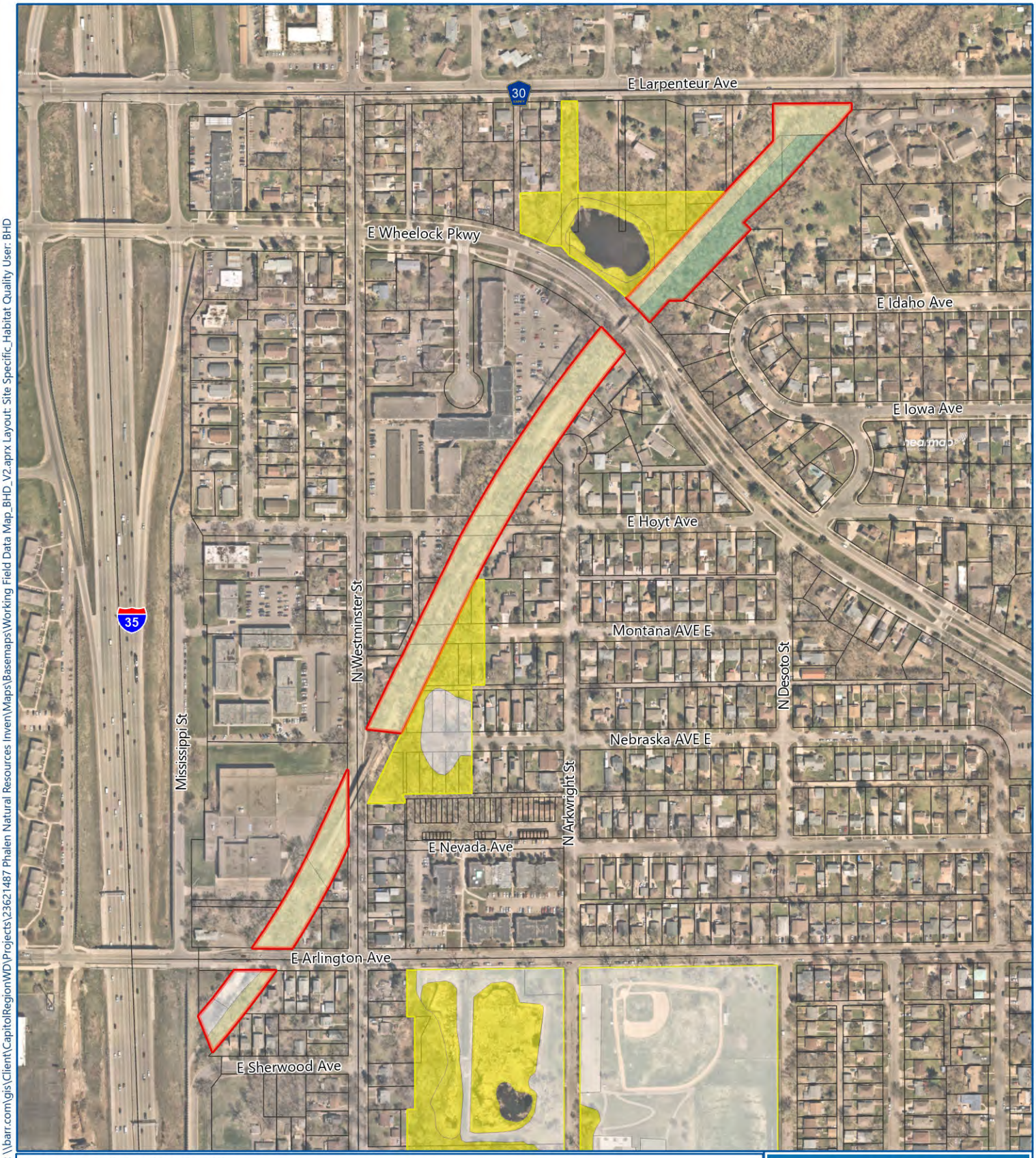
Image: Nearmap 2023

SITE - 2

Gateway State Trail

EXISTING LAND COVER

Natural Resources Inventory
Capitol Region
Watershed District



Ecological Quality Ranking

- A
- B
- C
- D
- CL (Cultural Landscape)

- Site 2 Boundary
- Site Identified for Field Investigation
- Parcel

N

0 200 400

Feet

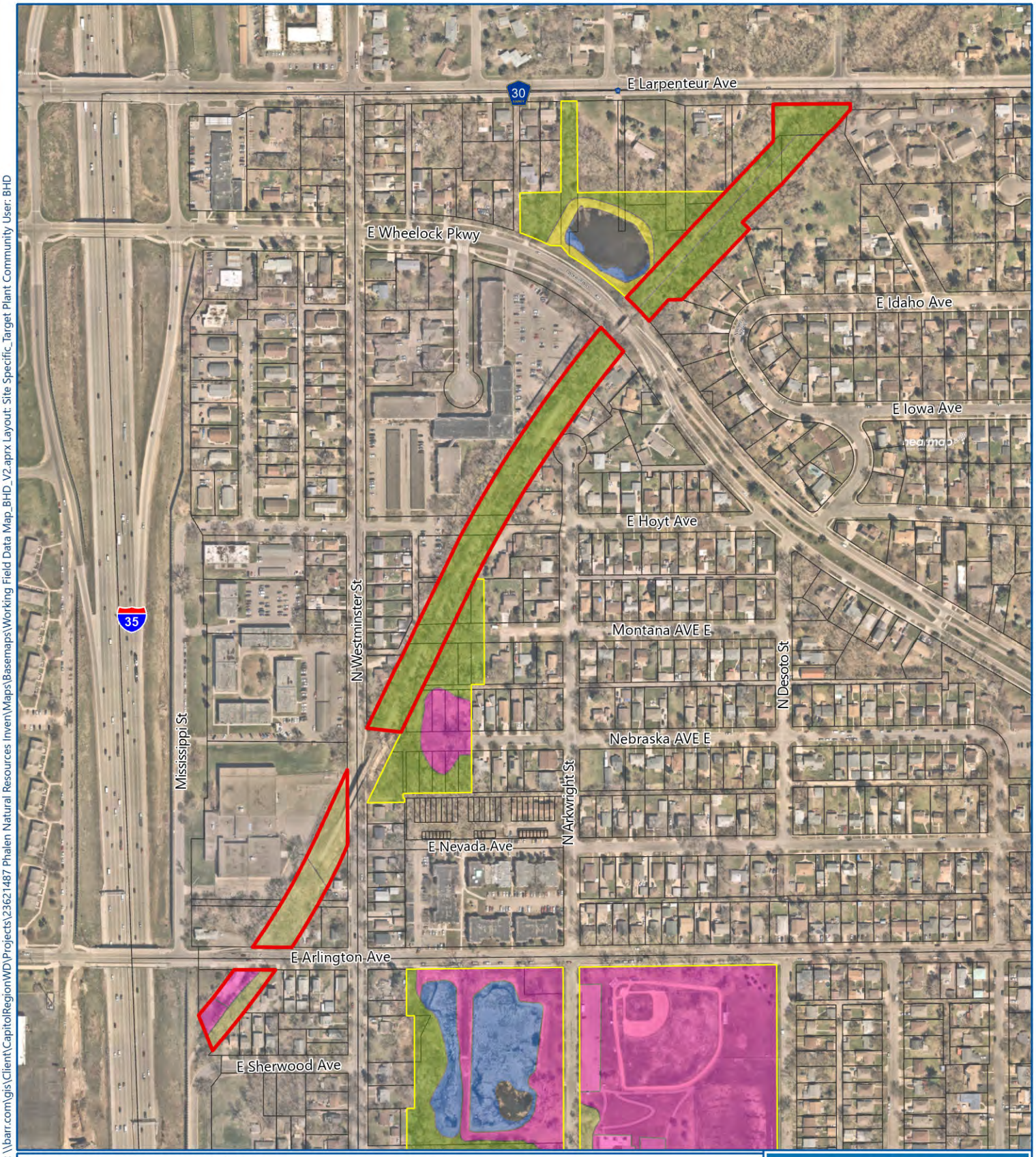
Image: Nearmap 2023

SITE - 2

Gateway State Trail

ECOLOGICAL QUALITY

Natural Resources Inventory
Capitol Region
Watershed District



Target Plant Community Type

- Cultural
- Grassland - Mesic Prairie
- Maple-Basswood Forest
- Oak Savanna
- Shallow Marsh

- Site 2 Boundary
- Site Identified for Field Investigation
- Parcel

N

0 200 400

Feet

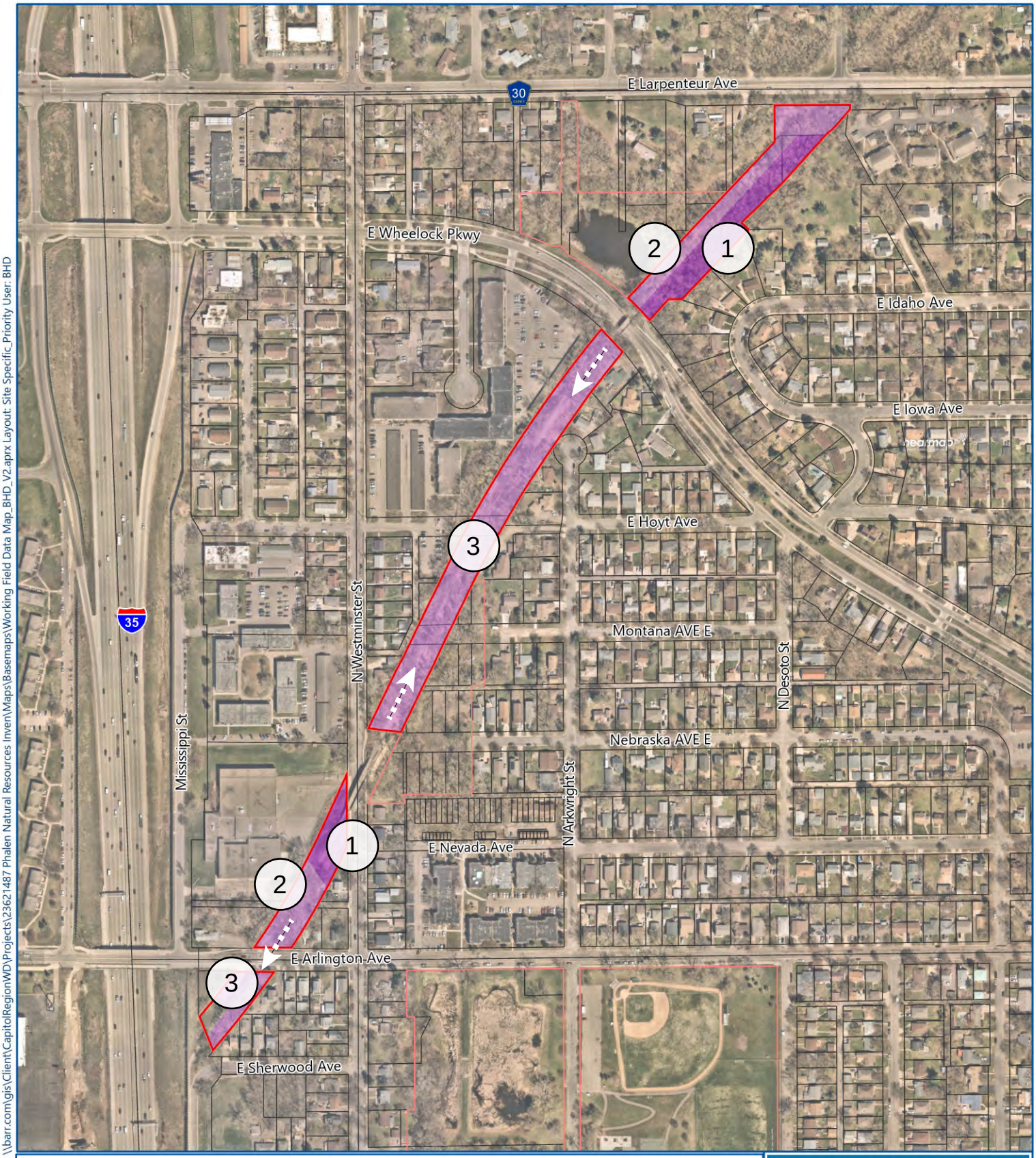
Image: Nearmap 2023

SITE - 2

Gateway State Trail

TARGET PLANT COMMUNITY

Natural Resources Inventory
Capitol Region
Watershed District



Site 2 Boundary

Parcel

Restoration Priority

- High
- Medium
- Low
- Lowest
- Maintain

Restoration Phasing

1 - Restoration efforts begin in these areas.

2 - Second priority for restoration. Move restoration efforts to these areas once phase 1 restoration efforts are complete. Continue maintaining phase 1 to retain restoration success.

3 - Expand restoration to these areas as resources allow. It is critical to maintain previously restored areas.

Restoration Priority Note: Phasing and prioritizing restoration efforts based on existing plant community, ecological quality, habitat size, and adjacencies to areas of high ecological quality. These strategies are for planning prioritization purposes. Detailed restoration and maintenance plans should be developed for each site.

N

0 200 400

Feet

Image: Nearmap 2023

SITE - 2

Gateway State Trail

RESTORATION PRIORITY AND PHASING

Natural Resources Inventory

Capitol Region

Watershed District

Barr Footer: ArcGISPro, 4/3/2024 2:38 PM File: \\barr.com\gis\Client\CapitolRegionWD\Projects\23621487 Phalen Natural Resources Inven\Maps\Basemaps\Working Field Data Map_BHD_V2.aprx Layout: Site Specific_Priority User: BHD

Site 3 – Nebraska Ave Garden (2.6 acres)

Management Prioritization: Medium **Watershed District:** CRWD **District Council:** D5

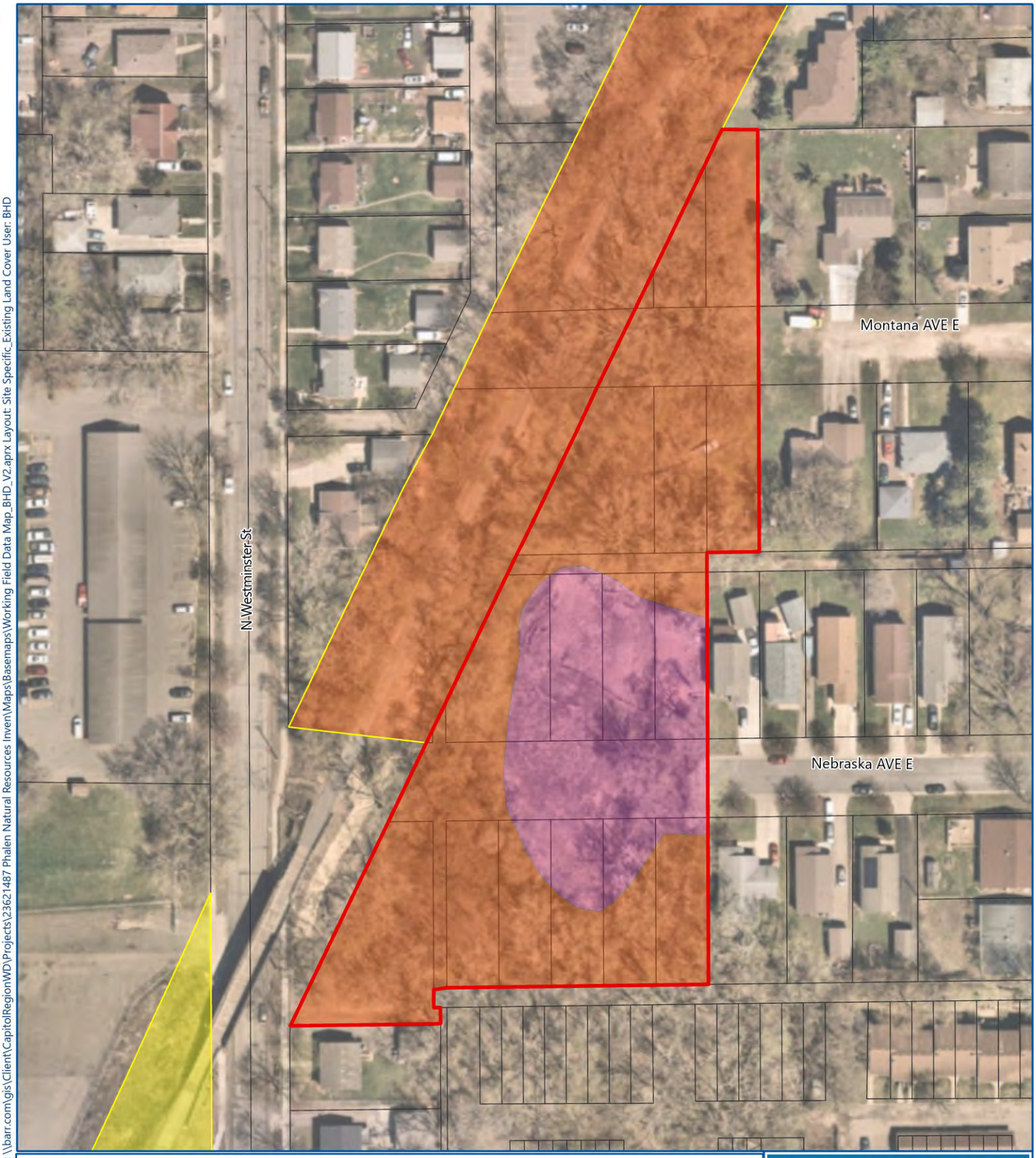
Condition Summary: Site 3 contains a 1.82-acre degraded woodland surrounding a 0.75-acre community garden. The site is located adjacent to the Gateway State Trail at the terminus of Nebraska Avenue East. The canopy is mostly boxelder, Siberian elm, and black walnut. The shrub layer is comprised of buckthorn, boxelder, and green ash saplings. The herbaceous ground layer is dominated by non-native common burdock (*Arctium minus*), nightshade (*Atropa belladonna*), reed canary grass, Asiatic dayflower (*Commelina communis*), garlic mustard, and creeping Charlie. Common native species such as white snakeroot, woodbine, and Canada goldenrod were also present.

Challenges:

- Woodland edges are a considerable source for weed species (garlic mustard, buckthorn, burdock, thistle, etc.)
- Woodlands have low plant diversity

Opportunities to consider:

- Leverage support of community gardeners for additional on-going management efforts to maintain adjacent natural areas
- Incorporate/promote pollinator plantings within the cultivated garden
- Control invasive tree species to open up the forest understory for the regeneration of native plants



Existing Land Cover Type

- Cultural
- Altered/Non-Native Deciduous Forest
- Grassland - Mesic Prairie

- Site 3 Boundary
- Site Identified for Field Investigation
- Parcel

0 50 100
Feet

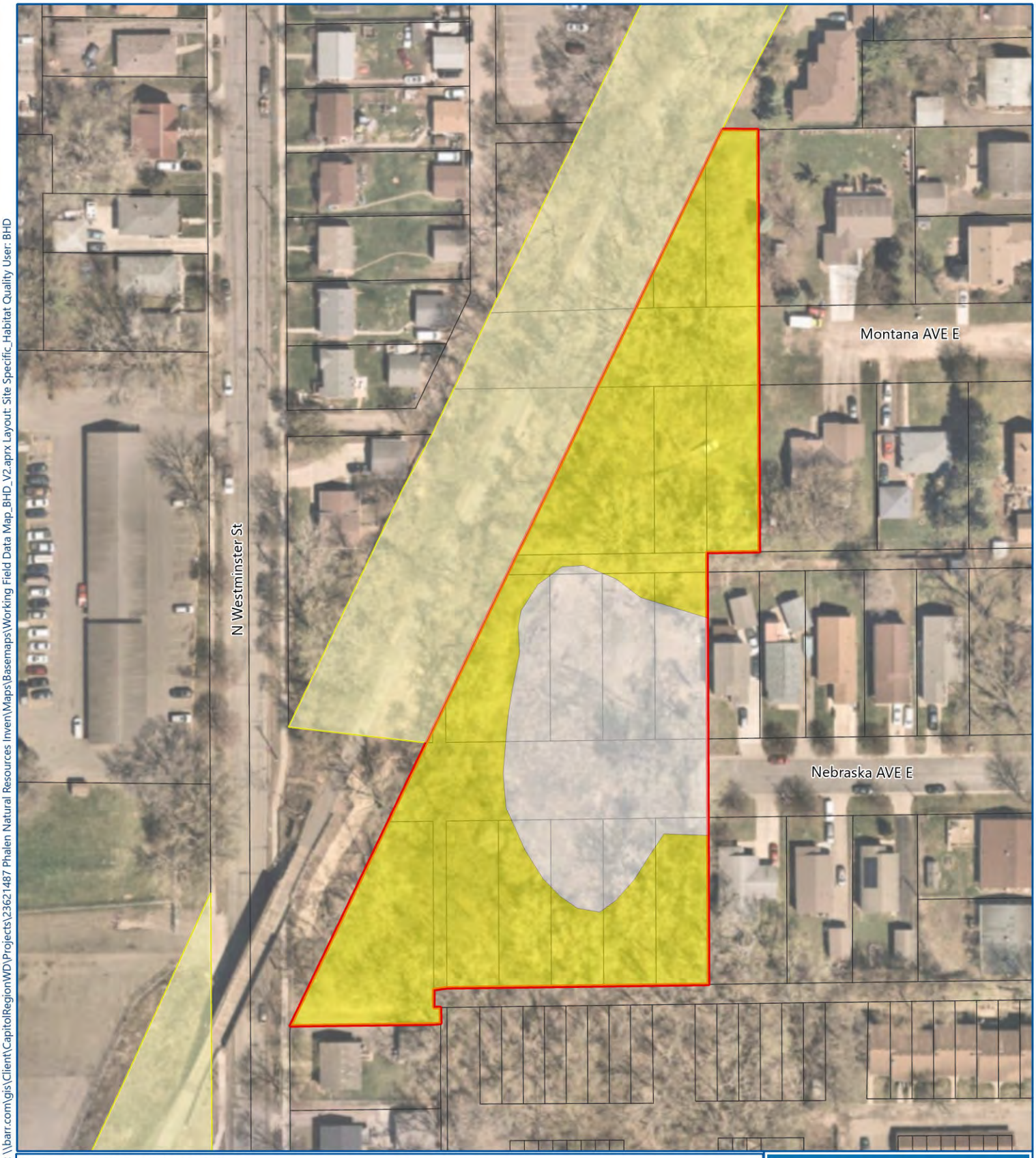
Image: Nearmap 2023

SITE - 3

Nebraska Ave Garden

EXISTING LAND COVER

Natural Resources Inventory
Capitol Region
Watershed District



Ecological Quality Ranking

- A
- B
- C
- D
- CL (Cultural Landscape)

- Site 3 Boundary
- Site Identified for Field Investigation
- Parcel

N

0 50 100

Feet

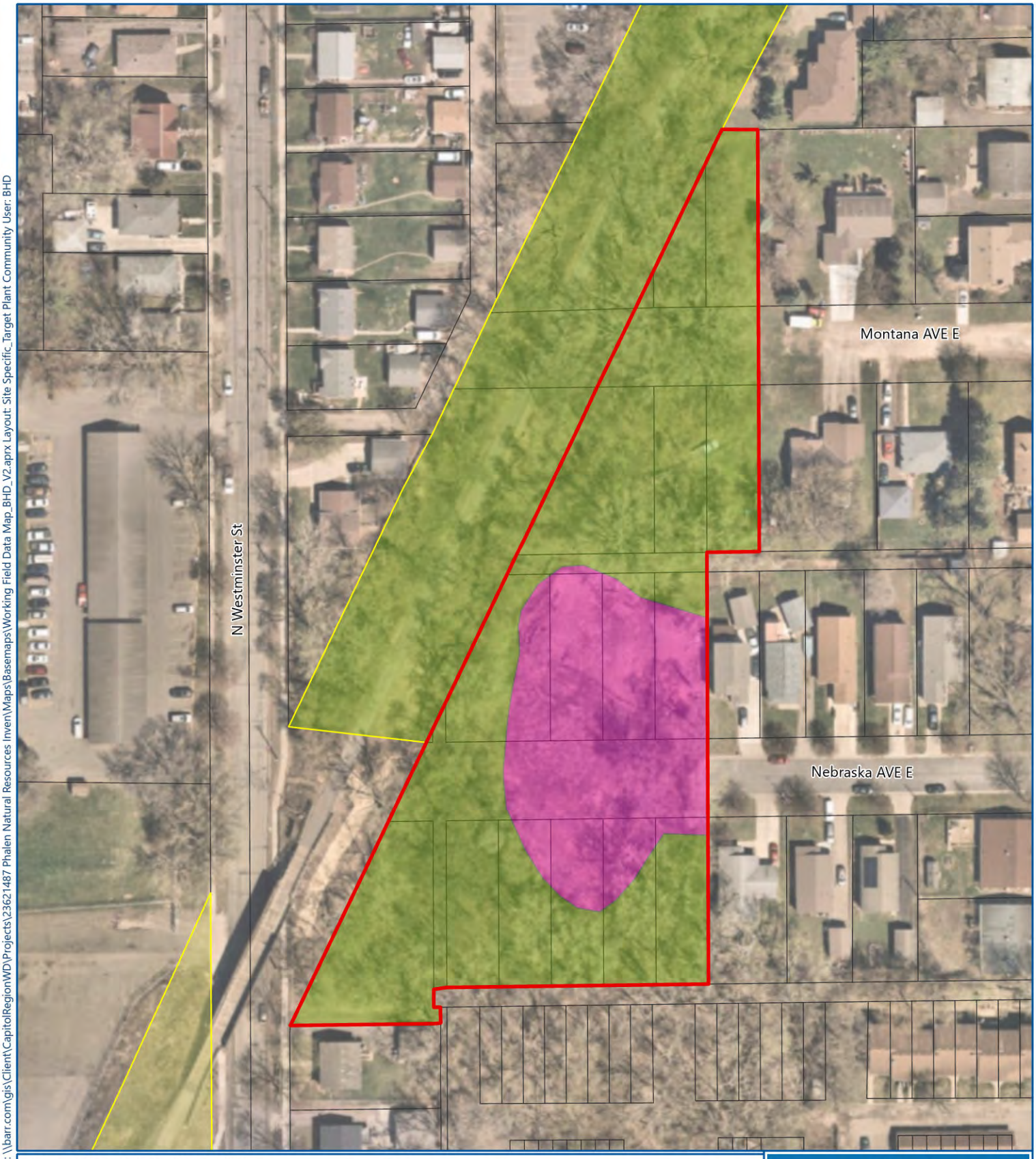
Image: Nearmap 2023

SITE - 3

Nebraska Ave Garden

ECOLOGICAL QUALITY

Natural Resources Inventory
Capitol Region
Watershed District



Target Plant Community Type

- Cultural
- Maple-Basswood Forest
- Oak Savanna

- Site 3 Boundary
- Site Identified for Field Investigation
- Parcel

0 50 100

Feet

Image: Nearmap 2023

SITE - 3

Nebraska Ave Garden

TARGET PLANT COMMUNITY

Natural Resources Inventory
Capitol Region
Watershed District

Site 3 Boundary

Parcel

Restoration Priority

- High
- Medium
- Low
- Lowest
- Maintain

Restoration Phasing

1 - Restoration efforts begin in these areas.

Restoration Priority Note: Phasing and prioritizing restoration efforts based on existing plant community, ecological quality, habitat size, and adjacencies to areas of high ecological quality. These strategies are for planning prioritization purposes. Detailed restoration and maintenance plans should be developed for each site.

0 50 100

Feet

Image: Nearmap 2023

SITE - 3

Nebraska Ave Garden

RESTORATION PRIORITY AND PHASING

Natural Resources Inventory

Capitol Region

Watershed District

Site 4 – Hyacinth Ave & Mississippi St (1.5 acres)

Management Prioritization: Medium **Watershed District:** CRWD **District Council:** D5

Condition Summary: The north portion of the site contains a 0.91-acre NWI-mapped emergent wetland composed primarily of non-native cattails with reed canary grass in the slightly drier areas along the edges. Boxelders on the north side of the wetland are approximately 15 feet tall and appear to have been cut back to form a shrub like massing. Burdock is growing in large groups beneath the shade of the boxelders.

The south portion of the site is a densely wooded monoculture of boxelder trees (approximately 15 to 25 feet tall) with limited herbaceous ground cover (exposed soil throughout). Non-native species such as motherwort, creeping Charlie, and burdock were the most dominant species found along the woodland edges.

Trout Brook was once located on south half of the site but has since been buried/filled.

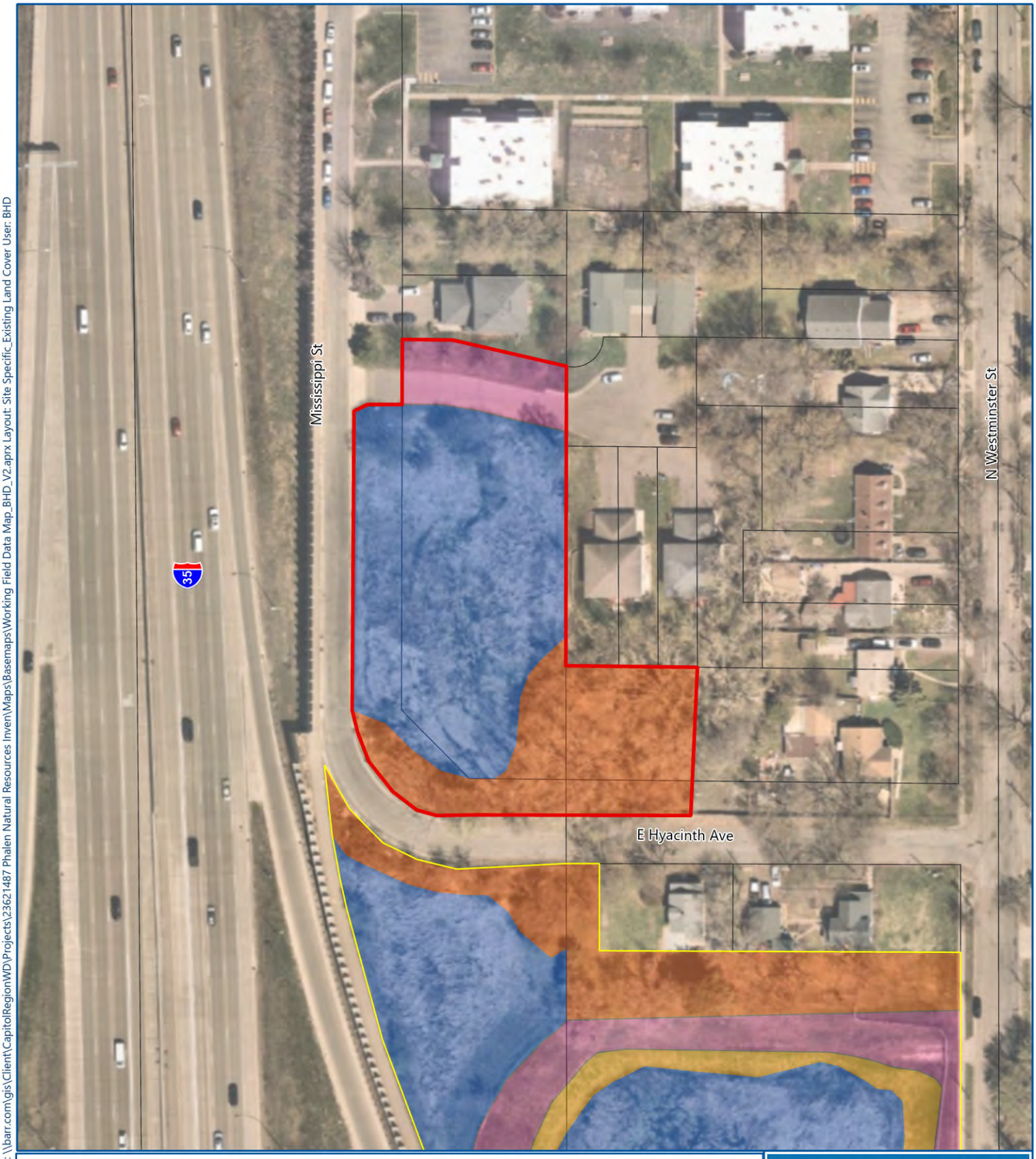
Challenges:

- Wetlands are dominated by reed canary grass and cattails
- Pioneer and invasive tree species are thriving along the edges of the site

Opportunities to consider:

- Restore historic wetland plant community – (restoration would be relatively straightforward – flat open site with clear boundaries for maintenance)
- Increase vegetation diversity for pollinator and bird species


Source: Google Street View, 2023



Existing Land Cover Type

- Cultural
- Altered/Non-Native Deciduous Forest
- Grassland - Non-Native
- Wetland - Cattail

- Site 4 Boundary
- Site Identified for Field Investigation
- Parcel

N

0 50 100

Feet

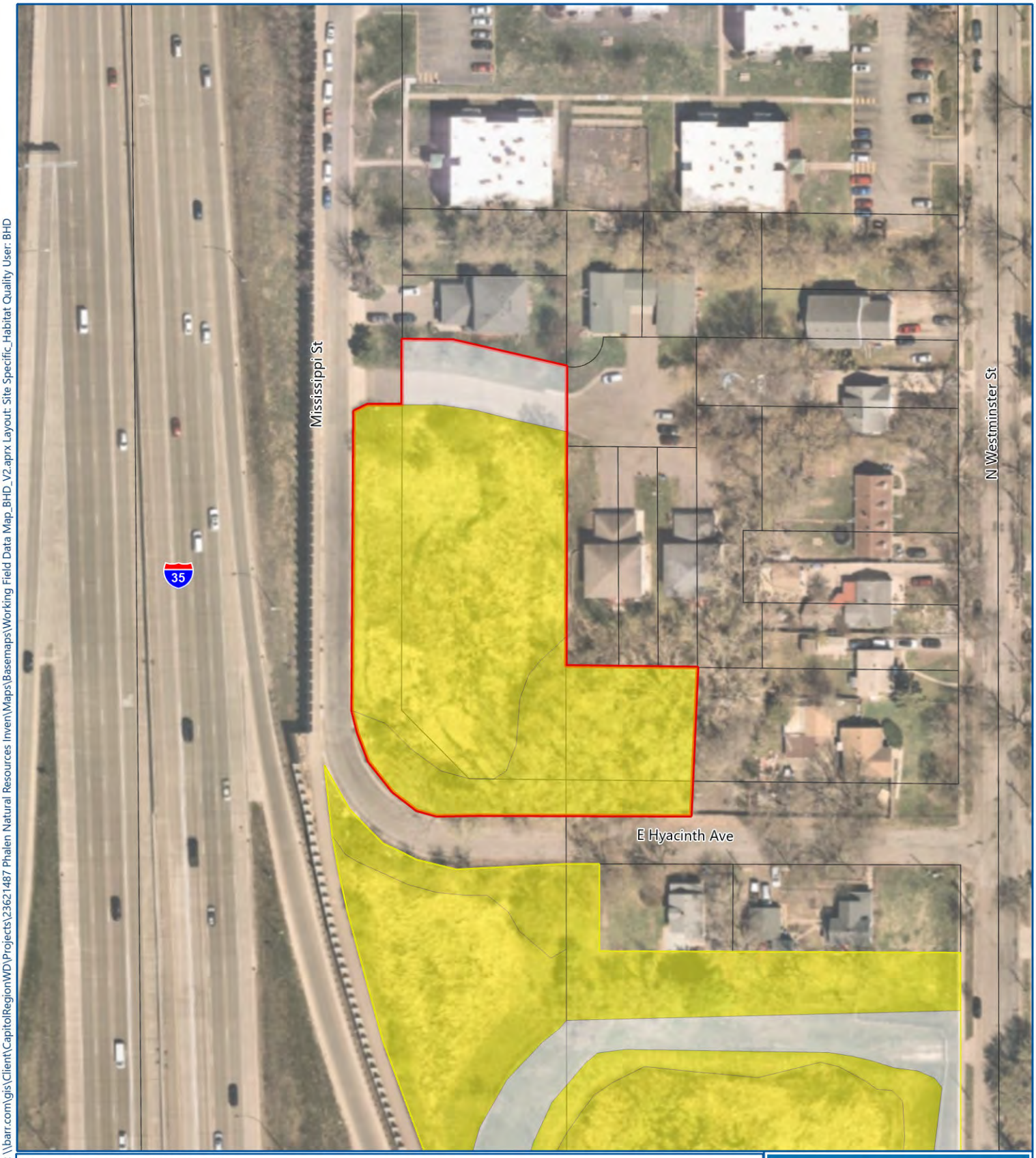
Image: Nearmap 2023

SITE - 4

Hyacinth Ave & Mississippi St

EXISTING LAND COVER

Natural Resources Inventory
Capitol Region
Watershed District



Ecological Quality Ranking

- A
- B
- C
- D
- CL (Cultural Landscape)

- Site 4 Boundary
- Site Identified for Field Investigation
- Parcel

N

0 50 100

Feet

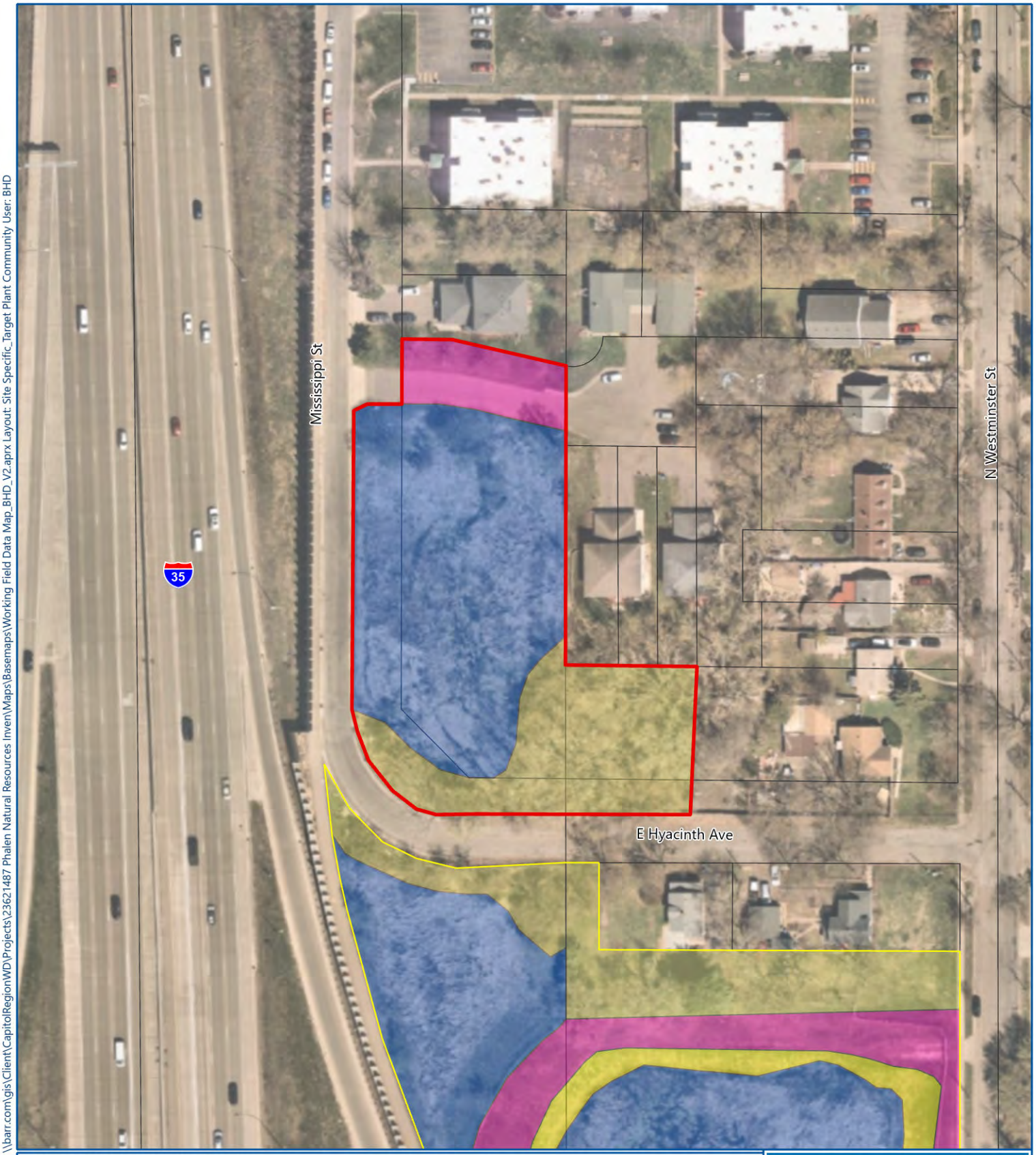
Image: Nearmap 2023

SITE - 4

Hyacinth Ave & Mississippi St

ECOLOGICAL QUALITY

Natural Resources Inventory
Capitol Region
Watershed District



Target Plant Community Type

- Cultural
- Grassland - Mesic Prairie
- Oak Savanna
- Shallow Marsh

- Site 4 Boundary
- Site Identified for Field Investigation
- Parcel

N

0 50 100

Feet

Image: Nearmap 2023

SITE - 4

Hyacinth Ave & Mississippi St

TARGET PLANT COMMUNITY

Natural Resources Inventory
Capitol Region
Watershed District

Site 4 Boundary

Parcel

Restoration Priority

- High
- Medium
- Low
- Lowest
- Maintain

Restoration Phasing

1 - Restoration efforts begin in these areas.

2 - Second priority for restoration. Move restoration efforts to these areas once phase 1 restoration efforts are complete. Continue maintaining phase 1 to retain restoration success.

3 - Expand restoration to these areas as resources allow. It is critical to maintain previously restored areas.

4 - Last priority for restoration due to the extent of degradation.

Restoration Priority Note: Phasing and prioritizing restoration efforts based on existing plant community, ecological quality, habitat size, and adjacencies to areas of high ecological quality. These strategies are for planning prioritization purposes. Detailed restoration and maintenance plans should be developed for each site.

N

0 50 100

Feet

Image: Nearmap 2023

SITE - 4

Hyacinth Ave & Mississippi St

RESTORATION PRIORITY AND PHASING

Natural Resources Inventory

Capitol Region

Watershed District

Site 5 – Westminster Pond (3.3 acres)

Management Prioritization: Medium **Watershed District:** CRWD **District Council:** D5

Condition Summary: The east side of the site contains a 1.2-acre City of Saint Paul-owned stormwater detention/retention pond that is dominated by cattails. The adjacent upland vegetation is composed of non-native perennial and annual weed species. Reed canary grass, burdock, garlic mustard, yellow rocket (*Barbarea vulgaris)*, and giant ragweed are the dominant species on 3:1 slopes directly surrounding the NWI-mapped wetland. A 30-foot-wide strip of lawn is maintained along a fence line surrounding the pond.

The west parcel is a federally-owned right-of-way (ROW) (adjacent to interstate 35-E) consisting of a 0.6-acre cattail wetland. The surrounding upland area is a dense massing of shrubby boxelder regrowth with a low diversity burdock dominated understory.

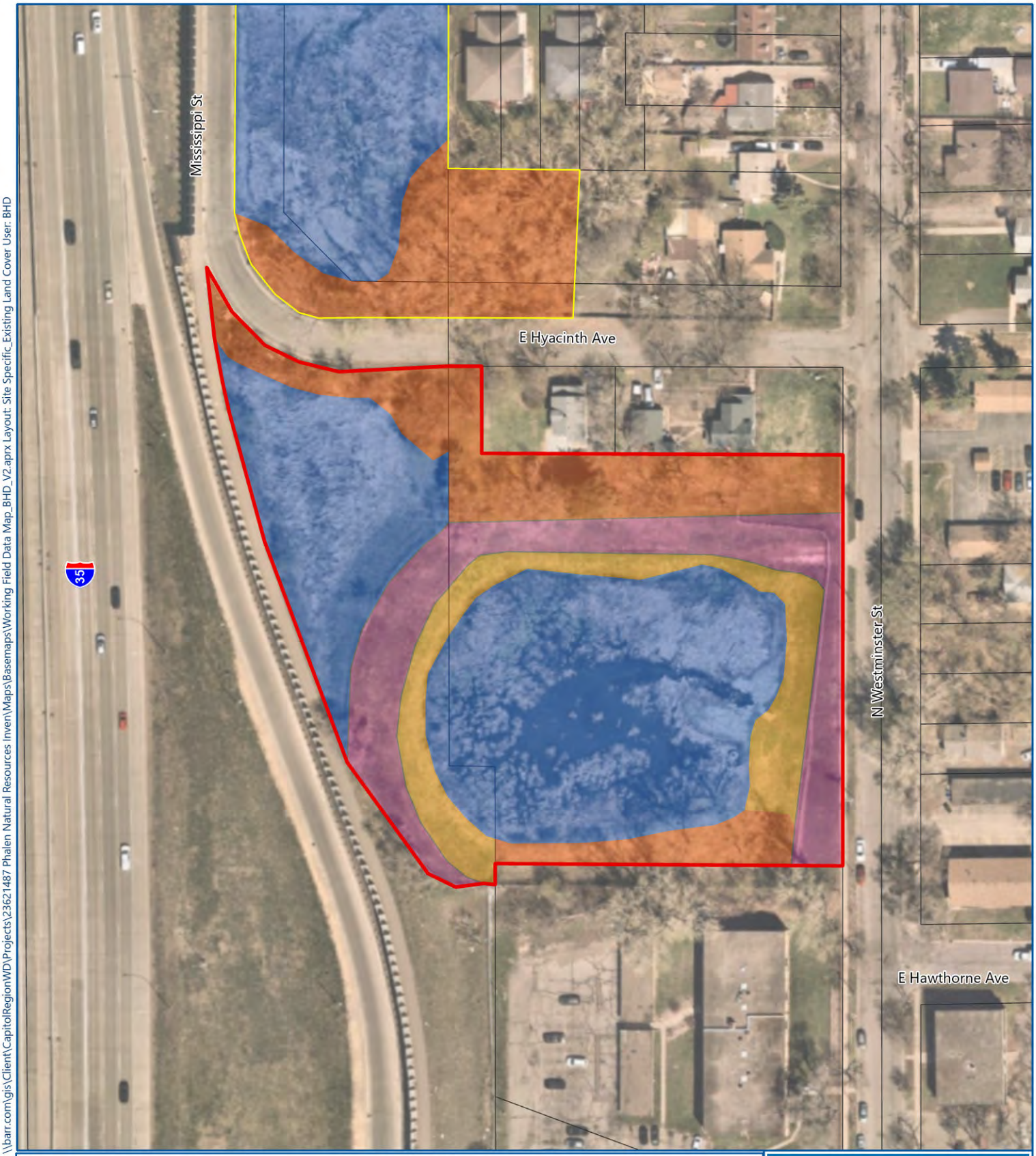
This site is located within what was historically part of a larger wetland complex, but the soils and vegetation have since been altered significantly due to urban development.

Challenges:

- Central wetland dominated by non-native cattails
- Nearly all parts of the upland areas are dominated by invasive and non-native species
- Serves as a stormwater management facility – fluctuating water levels due to stormwater runoff. Stormwater is also untreated, and as a result the site receives regular inputs of sediment and trash.

Opportunities to consider:

- Potential for wetland buffer restoration with native plant diversity (accessing and managing cattails in central wetland would be difficult and would remain an ongoing issue)
- Restore historic wetland plant community (utilize aggressive flood tolerant native plants that are suitable for use in stormwater BMPs)
- Increase vegetation diversity for pollinator and bird species



Existing Land Cover Type

- Cultural
- Altered/Non-Native Deciduous Forest
- Grassland - Non-Native
- Wetland - Cattail

- Site 5 Boundary
- Site Identified for Field Investigation
- Parcel

N

0 50 100

Feet

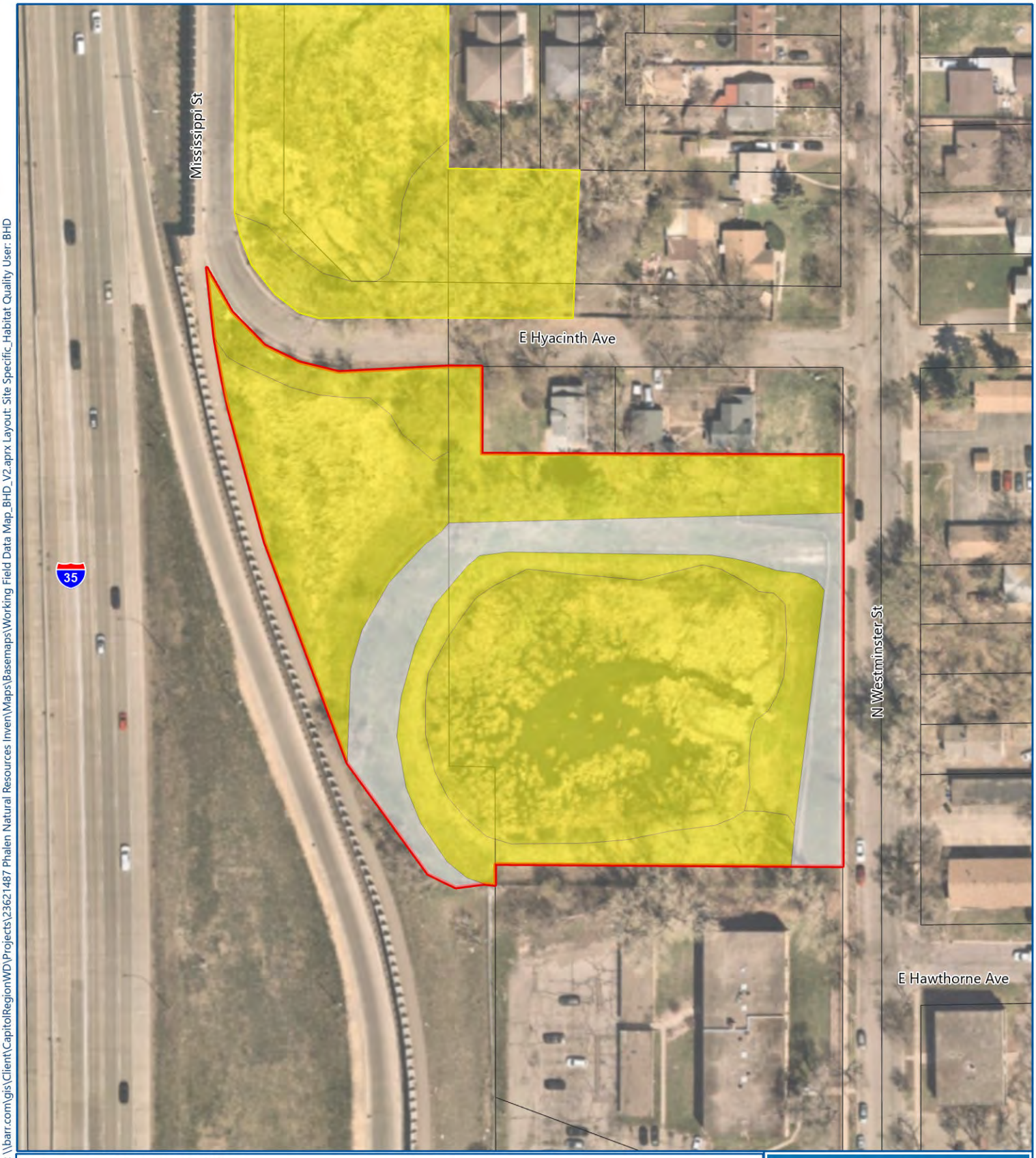
Image: Nearmap 2023

SITE - 5

Westminster Pond

EXISTING LAND COVER

Natural Resources Inventory
Capitol Region
Watershed District



Ecological Quality Ranking

- A
- B
- C
- D
- CL (Cultural Landscape)

- Site 5 Boundary
- Site Identified for Field Investigation
- Parcel

N

0 50 100

Feet

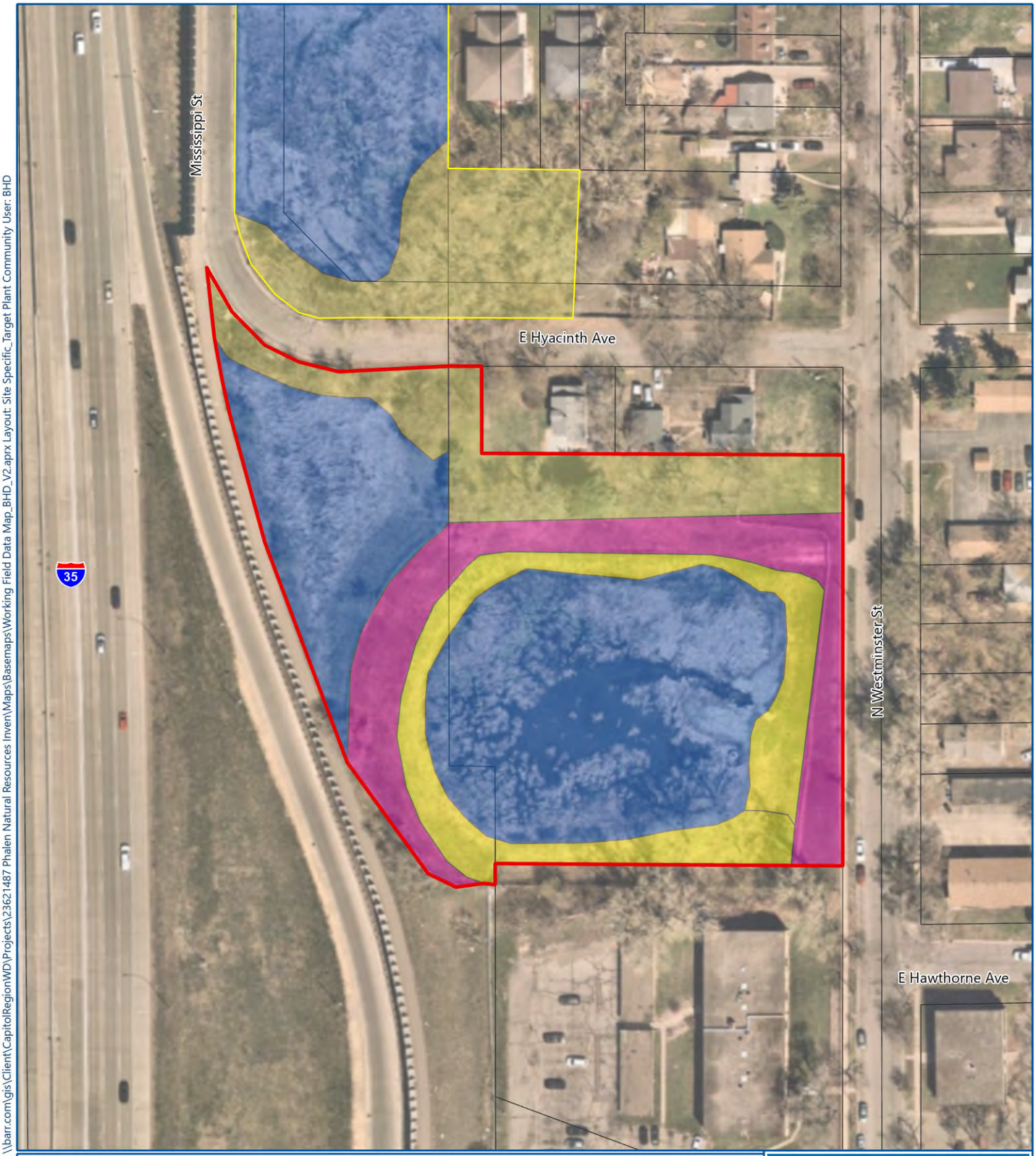
Image: Nearmap 2023

SITE - 5

Westminster Pond

ECOLOGICAL QUALITY

Natural Resources Inventory
Capitol Region
Watershed District



Target Plant Community Type

- Cultural
- Grassland - Mesic Prairie
- Oak Savanna
- Shallow Marsh

- Site 5 Boundary
- Site Identified for Field Investigation
- Parcel

N

0 50 100

Feet

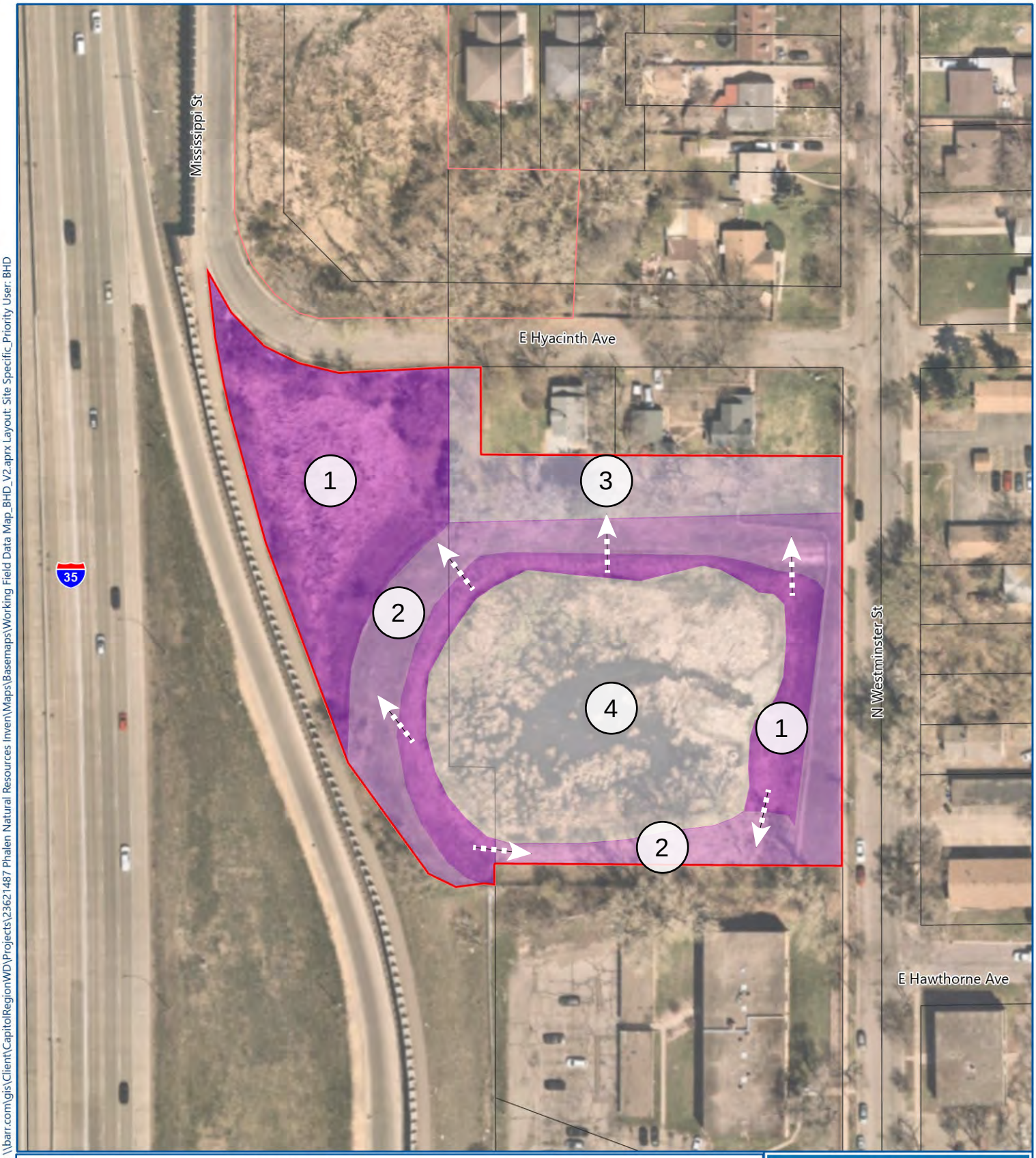
Image: Nearmap 2023

SITE - 5

Westminster Pond

TARGET PLANT COMMUNITY

Natural Resources Inventory
Capitol Region
Watershed District



Site 5 Boundary

Parcel

Restoration Priority

- High
- Medium
- Low
- Lowest
- Maintain

Restoration Phasing

1 - Restoration efforts begin in these areas.

2 - Second priority for restoration. Move restoration efforts to these areas once phase 1 restoration efforts are complete. Continue maintaining phase 1 to retain restoration success.

3 - Expand restoration to these areas as resources allow. It is critical to maintain previously restored areas.

4 - Last priority for restoration due to the extent of degradation.

Restoration Priority Note: Phasing and prioritizing restoration efforts based on existing plant community, ecological quality, habitat size, and adjacencies to areas of high ecological quality. These strategies are for planning prioritization purposes. Detailed restoration and maintenance plans should be developed for each site.

N

0 50 100

Feet

Image: Nearmap 2023

SITE - 5

Westminster Pond

RESTORATION PRIORITY AND PHASING

Natural Resources Inventory

Capitol Region

Watershed District

Site 6 – Westminster Place ROW (2.2 acres)

Management Prioritization: Medium **Watershed District:** CRWD **District Council:** D5

Condition Summary: Site 6 encompasses an undeveloped 1-acre privately owned parcel and a 700 x 60-foot public ROW extending to the north. The canopy of the public ROW is dominated by 30 to 50-foot-tall boxelders, black walnut, and cottonwood tree species. Similarly, the canopy of the 1-acre parcel is dominated by boxelder and black walnut but also contains mature bur oak trees throughout. The woody understory is comprised primarily of dense thickets of buckthorn and boxelder saplings. The herbaceous ground layer contains low plant diversity and is primarily dominated by burdock, garlic mustard, riverbank grape, woodbine, motherwort, and creeping Charlie. Common native species such as white snakeroot, stinging nettle (*Urtica dioica*), and Canada goldenrod were also present in lower quantities. The site is surrounded by fence and inaccessible without gate access.

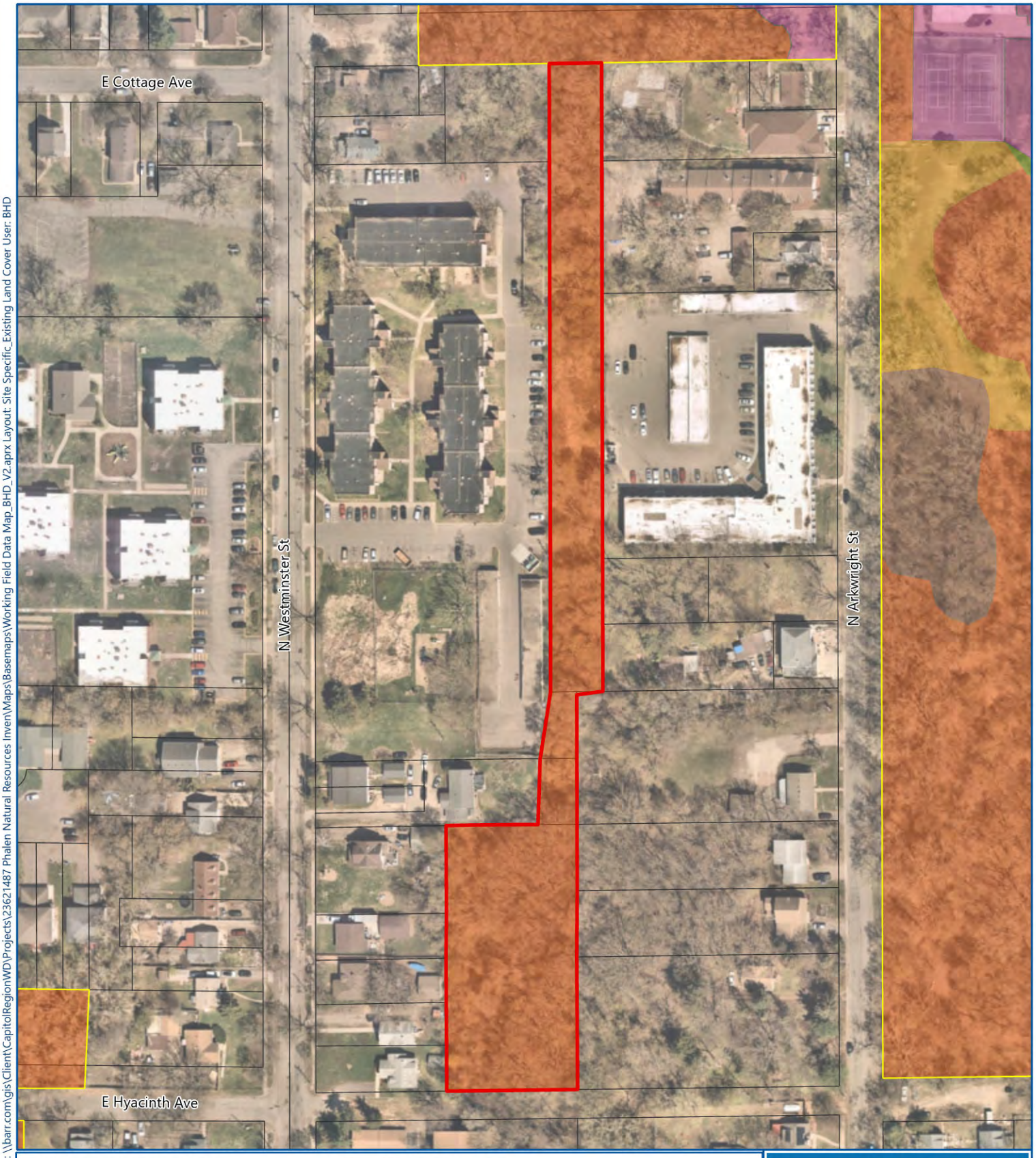
Trout Brook was once located on south half of the site but has since been buried/filled.

Challenges:

- Difficult to access - site is isolated between private residential parcels
- Buckthorn – nearly all parts of the forested areas are highly degraded

Opportunities to consider:

- Manage large oak and hardwood canopy trees - remove ash, boxelder, and black walnuts and promote native understory growth.
- Control noxious weed species
- Improved habitat could serve as an ecological corridor connecting multiple nearby patches of habitat



Existing Land Cover Type

- Cultural
- Altered/Non-Native Deciduous Forest
- Grassland - Non-Native
- Maple-Basswood Forest
- Oak Forest

- Site 6 Boundary
- Site Identified for Field Investigation
- Parcel

0 75 150

Feet

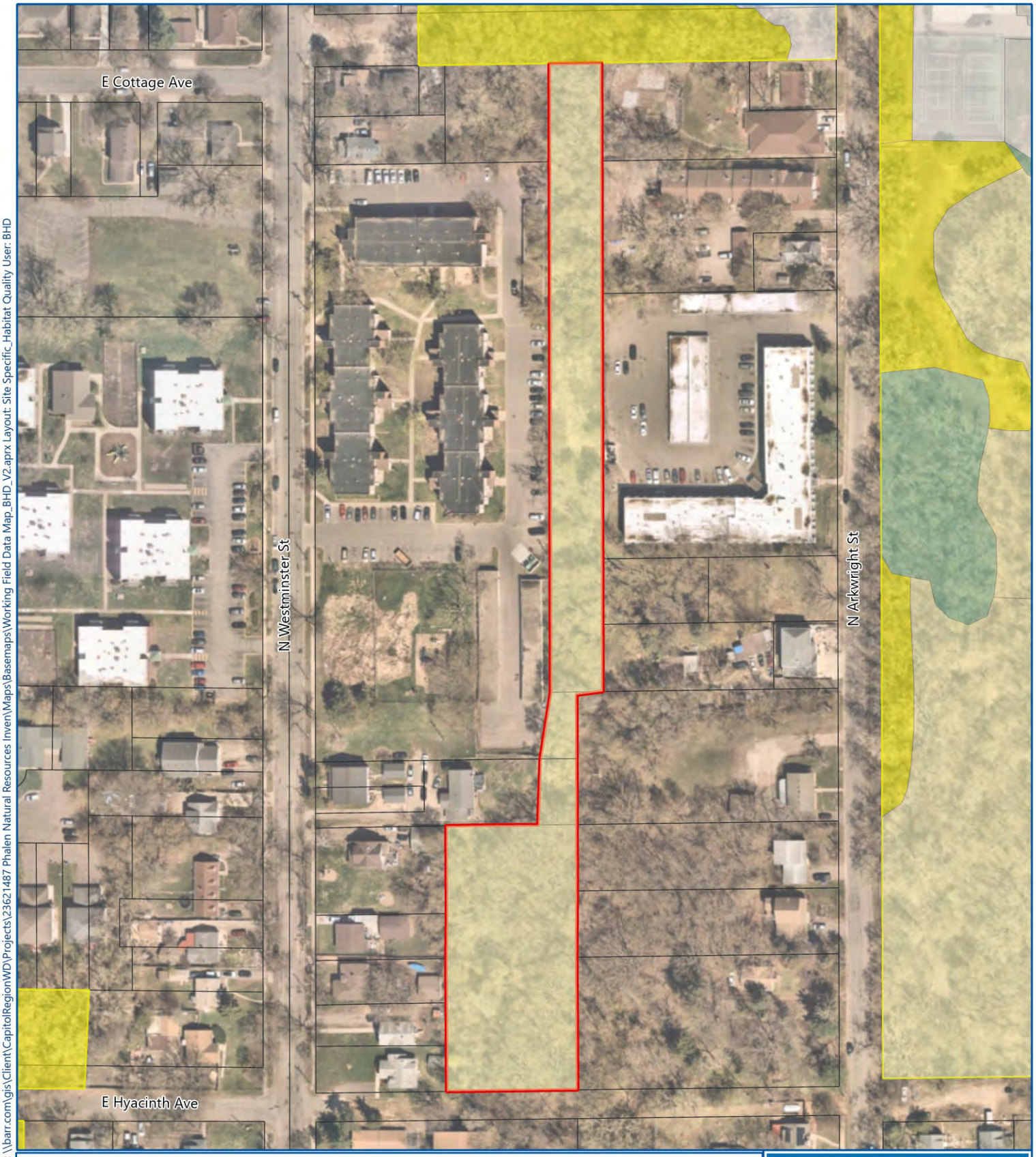
Image: Nearmap 2023

SITE - 6

Westminster Place ROW

EXISTING LAND COVER

Natural Resources Inventory
Capitol Region
Watershed District



Ecological Quality Ranking

- A
- B
- C
- D
- CL (Cultural Landscape)

- Site 6 Boundary
- Site Identified for Field Investigation
- Parcel

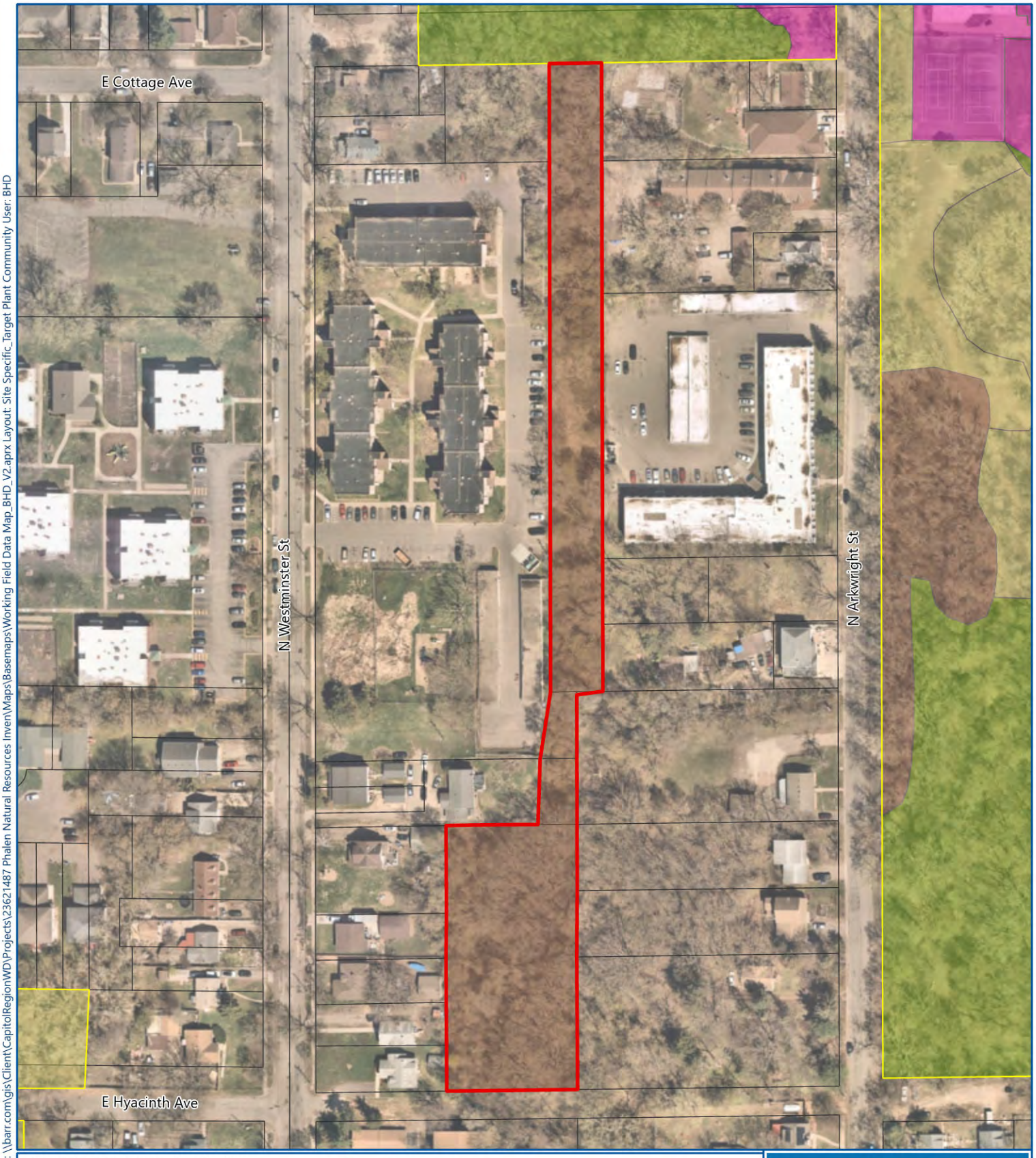
0 75 150
Feet

Image: Nearmap 2023

SITE - 6

Westminster Place ROW

ECOLOGICAL QUALITY
Natural Resources Inventory
Capitol Region
Watershed District



Target Plant Community Type

- Cultural
- Maple-Basswood Forest
- Oak Forest
- Oak Savanna

- Site 6 Boundary
- Site Identified for Field Investigation
- Parcel

0 75 150
Feet

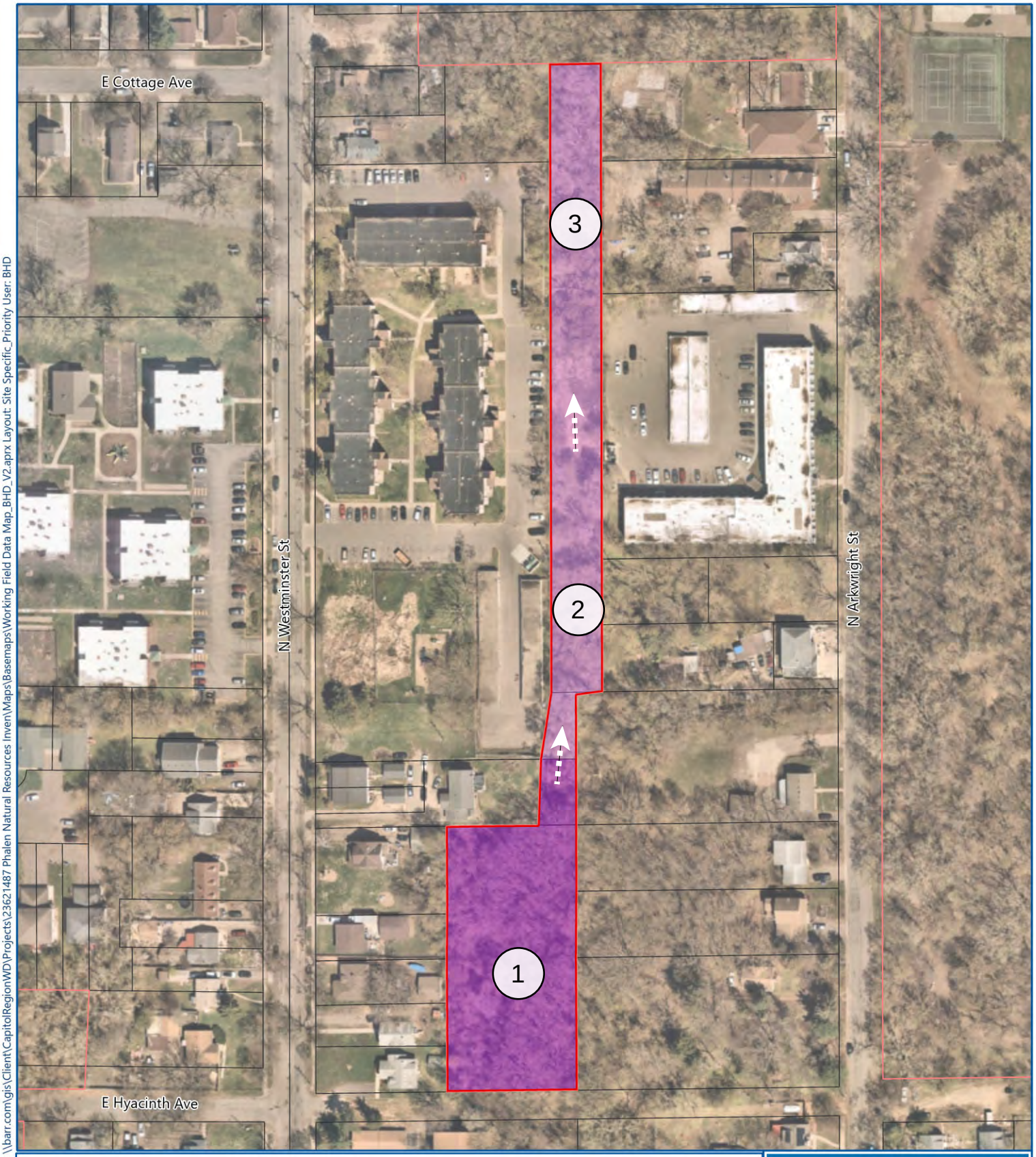
Image: Nearmap 2023

SITE - 6

Westminster Place ROW

TARGET PLANT COMMUNITY

Natural Resources Inventory
Capitol Region
Watershed District



Site 6 Boundary

Parcel

Restoration Priority

- High
- Medium
- Low
- Lowest
- Maintain

Restoration Phasing

1 - Restoration efforts begin in these areas.

2 - Second priority for restoration. Move restoration efforts to these areas once phase 1 restoration efforts are complete. Continue maintaining phase 1 to retain restoration success.

3 - Expand restoration to these areas as resources allow. It is critical to maintain previously restored areas.

Restoration Priority Note: Phasing and prioritizing restoration efforts based on existing plant community, ecological quality, habitat size, and adjacencies to areas of high ecological quality. These strategies are for planning prioritization purposes. Detailed restoration and maintenance plans should be developed for each site.

N

0 75 150

Feet

Image: Nearmap 2023

SITE - 6

Westminster Place ROW

RESTORATION PRIORITY AND PHASING

Natural Resources Inventory
Capitol Region
Watershed District

Site 7- Arlington/Arkwright Stormwater Pond (6.4 acres)

Management Prioritization: Medium **Watershed District:** CRWD **District Council:** D5

Condition Summary: The 2.5-acre stormwater basin on the south-west corner of Arlington Avenue and Arkwright Street is a monotypic stand of narrow leaved cattails. The 3H:1V slopes adjacent to the stormwater basin are composed primarily of giant ragweed, burdock, and Canada thistle. More drought-tolerant perennial weed species such as spotted knapweed and smooth brome grass are more abundant on the top of the basin slopes. The central berm bisecting the basin (maintenance access trail) and the north and east edges of the site are maintained as turf.

A low-quality altered woodland is present along the west and south edges of the site. Historical imagery from 1991 shows this wooded area was an open grassland being void of mature canopy tree species. Currently, the 1.5-acre woodland canopy is primarily composed of boxelder, green ash, and Siberian elm tree species. The understory is primarily composed of burdock, motherwort, and buckthorn. Large areas of exposed soil are present throughout.

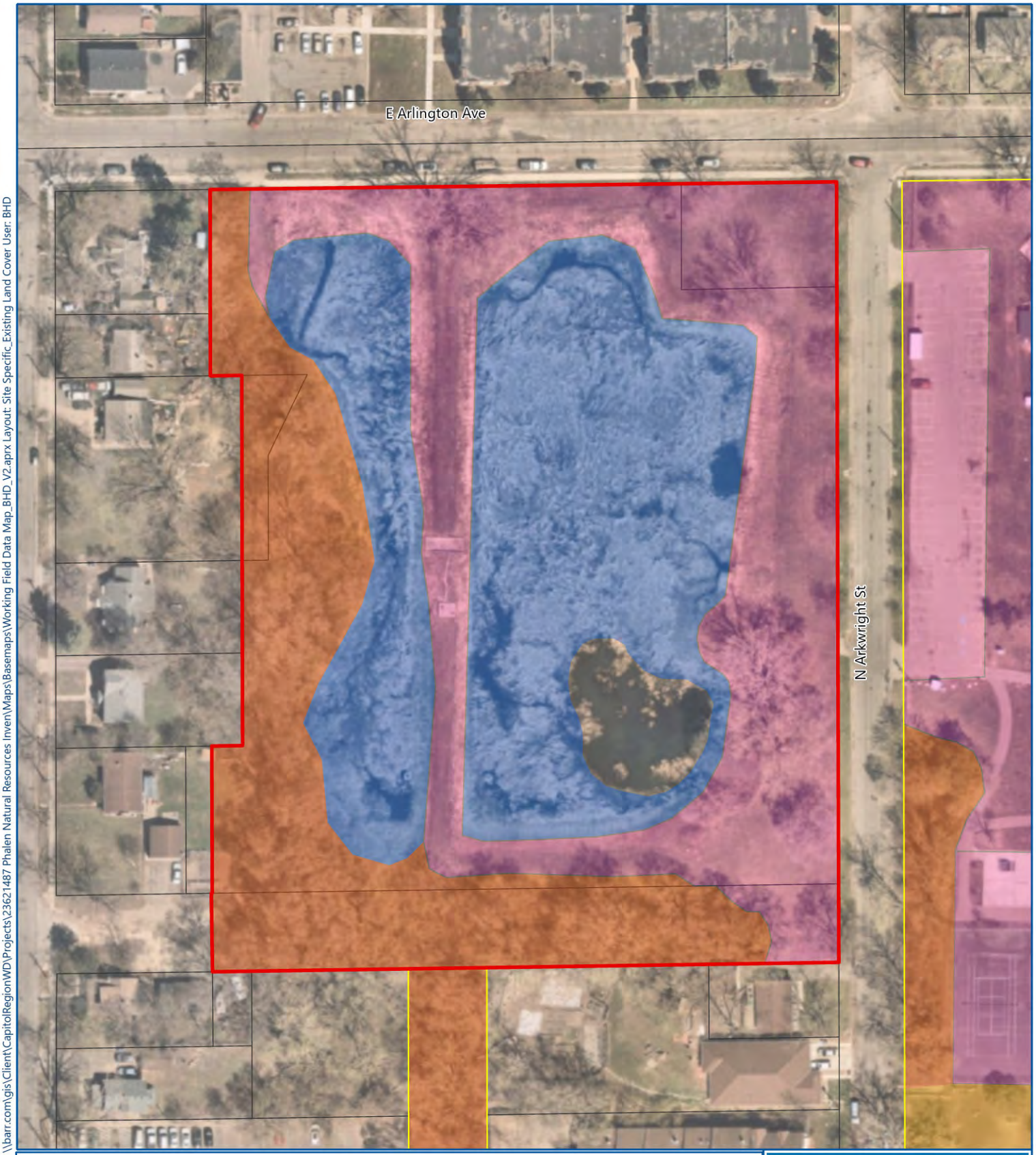
The ash trees on site showed signs of EAB (beetle exit holes, decaying bark, and dead branches).

Challenges:

- Central wetland dominated by non-native cattails
- Nearly all parts of the upland areas are dominated by invasive and non-native species
- Serves as a stormwater management facility – fluctuating water levels due to stormwater runoff. Stormwater is also untreated, and as a result the site receives regular inputs of sediment and trash.

Opportunities to consider:

- Potential for wetland buffer restoration with native plant diversity (accessing and managing cattails in central wetland would be difficult and would remain an ongoing issue)
- Restore historic wetland plant community (utilize aggressive flood tolerant native plants that are suitable for use in stormwater BMPs)
- Increase wetland vegetation diversity for pollinator and bird species
- Promote native tree species diversity and consider replacement trees suitable under projected climate change conditions– EAB will continue to alter existing ash tree canopy



Existing Land Cover Type

- Cultural
- Altered/Non-Native Deciduous Forest
- Grassland - Non-Native
- Wetland - Cattail

- Site 7 Boundary
- Site Identified for Field Investigation
- Parcel

N

0 50 100

Feet

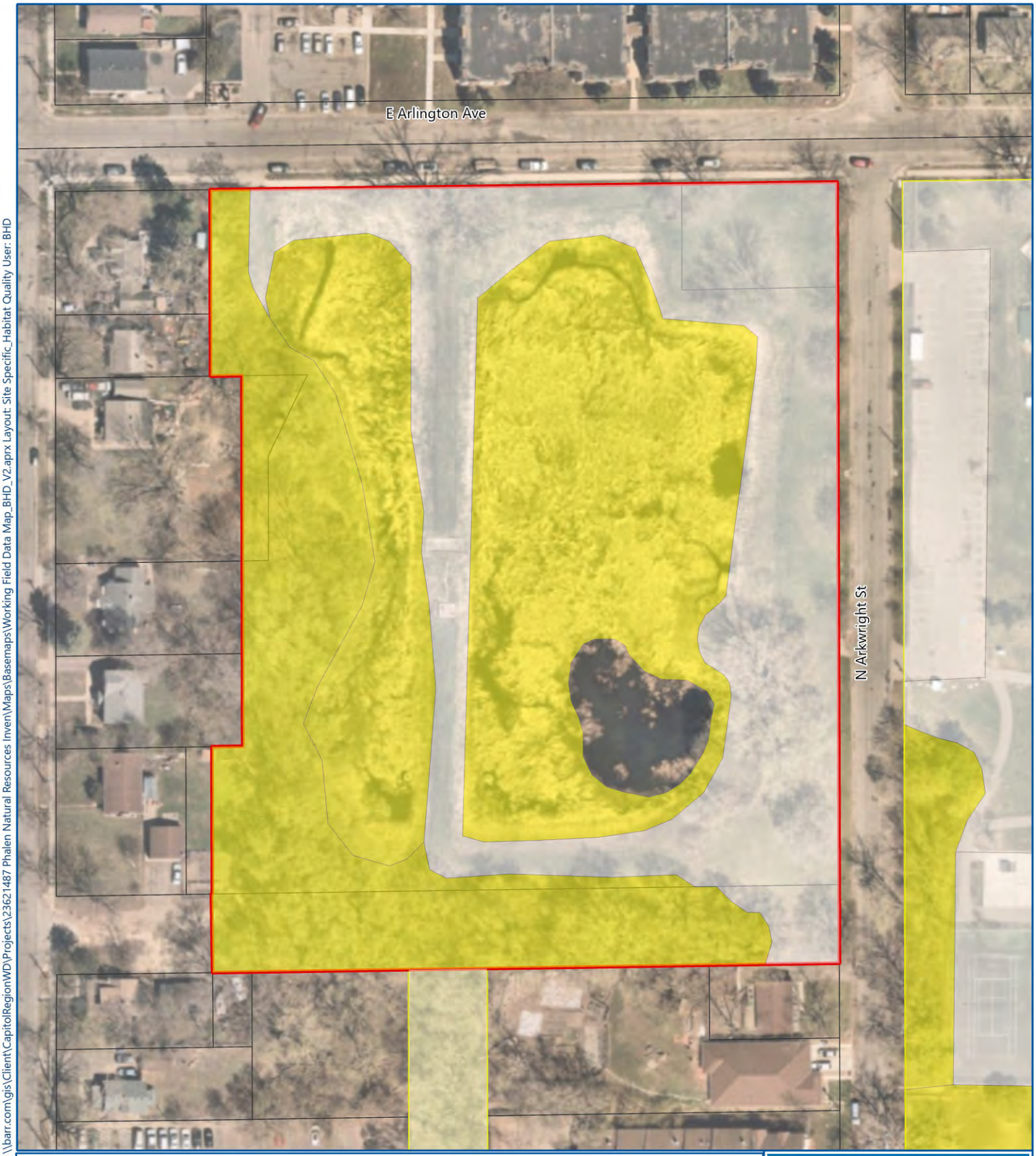
Image: Nearmap 2023

SITE - 7

Arlington/Arkwright Stormwater Pond

EXISTING LAND COVER

Natural Resources Inventory
Capitol Region
Watershed District



Ecological Quality Ranking

- A
- B
- C
- D
- CL (Cultural Landscape)

- Site 7 Boundary
- Site Identified for Field Investigation
- Parcel

N

0 50 100

Feet

Image: Nearmap 2023

SITE - 7

Arlington/Arkwright Stormwater Pond

ECOLOGICAL QUALITY

Natural Resources Inventory
Capitol Region
Watershed District

Target Plant Community Type

- Cultural
- Maple-Basswood Forest
- Oak Forest
- Oak Savanna
- Shallow Marsh

- Site 7 Boundary
- Site Identified for Field Investigation
- Parcel

N

0 50 100

Feet

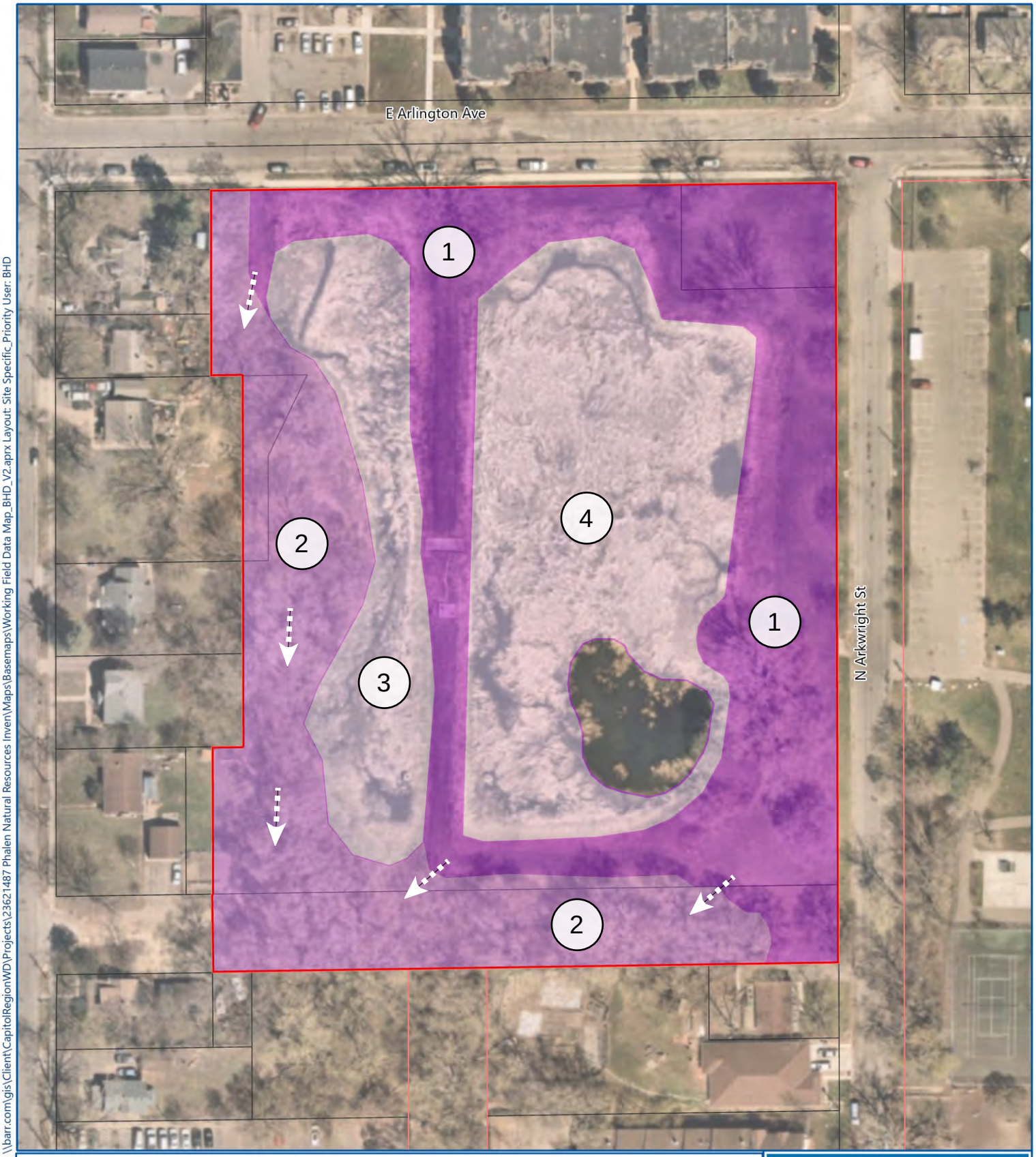
Image: Nearmap 2023

SITE - 7

Arlington/Arkwright Stormwater Pond

TARGET PLANT COMMUNITY

Natural Resources Inventory
Capitol Region
Watershed District



Site 7 Boundary

Parcel

Restoration Priority

- High
- Medium
- Low
- Lowest
- Maintain

Restoration Phasing

1 - Restoration efforts begin in these areas.

2 - Second priority for restoration. Move restoration efforts to these areas once phase 1 restoration efforts are complete. Continue maintaining phase 1 to retain restoration success.

3 - Expand restoration to these areas as resources allow. It is critical to maintain previously restored areas.

4 - Last priority for restoration due to the extent of degradation.

Restoration Priority Note: Phasing and prioritizing restoration efforts based on existing plant community, ecological quality, habitat size, and adjacencies to areas of high ecological quality. These strategies are for planning prioritization purposes. Detailed restoration and maintenance plans should be developed for each site.

N

0 50 100

Feet

Image: Nearmap 2023

SITE - 7

Arlington/Arkwright Stormwater Pond

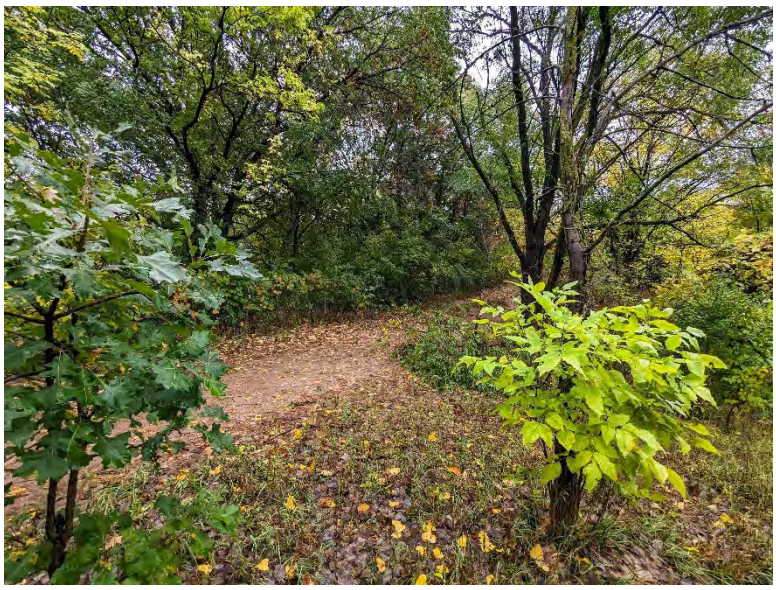
RESTORATION PRIORITY AND PHASING

Natural Resources Inventory

Capitol Region Watershed District

Site 8 – Arlington/Arkwright Park (20.2 acres)

Management Prioritization: High **Watershed District:** CRWD **District Council:** D5



Condition Summary: Site 9 is 20.2-acre park comprised of a 10-acre wooded off leash dog area in the south portion of the site and a 10-acre recreation and parking complex in the north. The north portion of the site consists of large areas of mown turf, paved access trails, a soccer field, a baseball field, and a basketball and tennis court. Cottonwood, red maple, and black spruce (*Picea mariana*) are the most common mature trees in the open parkland area.

The southern half of the site is primarily wooded with a majority of the dog park area being highly degraded and having native low plant diversity. Boxelder, green ash, cottonwood, black walnut, black locust, and Siberian elm were common canopy trees throughout the forested areas. A high-quality mature oak stand (approximately 0.75-acre canopy area) near the west central portion of the dog park appears to be in good health. Throughout the dog park the herbaceous ground layer is sparse. A majority of the exposed soils throughout the dog park are highly compacted through foot traffic. The limited vegetation that is present is primarily of burdock, snakeroot, common plantain (*Plantago major*), ragweed (*Ambrosia artemisiifolia*), and burdock. The worst areas of existing erosion are along the west side of the dog park on west facing slopes leading down to Arkwright Street.

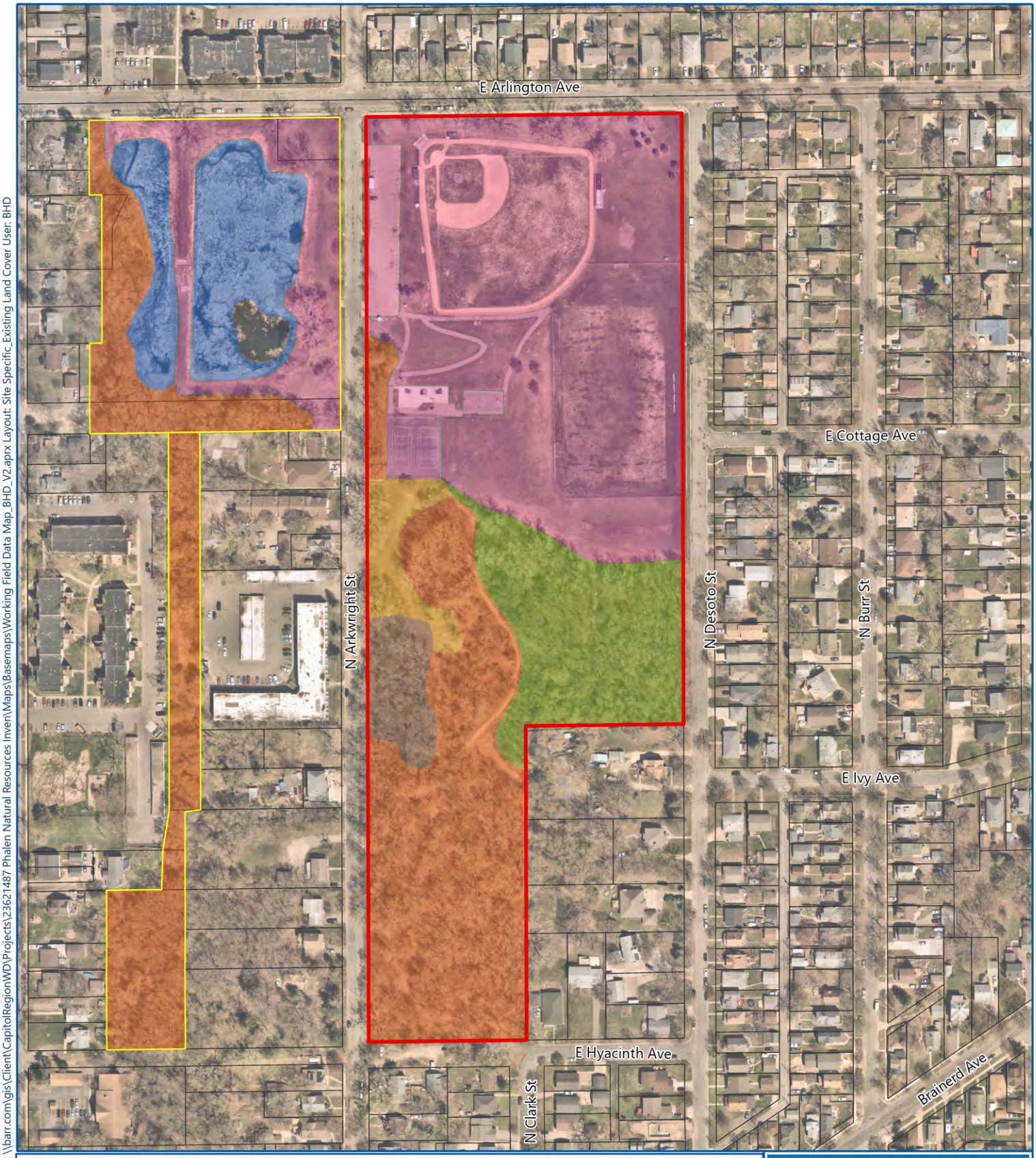
East of the dog park is a 2.9-acre maple-basswood forest community containing a diverse native tree canopy of aspen, basswood, black walnut, cottonwood, red maple, black cherry (*Prunus serotina*), hackberry, and white oak (*Quercus alba*) tree species. Dense stands of 30-foot-tall black locust have invaded portions of the forest. Buckthorn is the most common midstory tree species and is present throughout. The ground cover is composed of dense carpets of buckthorn saplings, chokecherry (*Prunus virginiana*), woodbine, and riverbank grape.

Challenges:

- Foot traffic and off-leash dogs have caused soil disturbance and erosion
- Extensive network of informal trails with increased widening and erosion
- Nonnative plant species
- Ongoing use of dog park area would make restoration establishment difficult

Opportunities to consider:

- Expand higher quality forested areas to create one of the largest and more diverse woodlands in the project area
- Large oaks in woodland areas should be managed and buckthorn cleared out in the under-story to improve habitat quality for birds
- Restore and selectively close eroded footpaths through signage or strategic plantings
- Restore historic wetland plant community (detailed plan should be developed to identify areas for potential wetland restoration)
- Identify opportunities to utilize lawn or degraded natural areas for green infrastructure practices (stormwater quality/quantity control)
- Convert unused/unnecessary mowed turf areas with native grasses, forbs, and/or tree species
- Manage invasive tree species to prevent continued encroachment



Existing Land Cover Type

- Cultural
- Altered/Non-Native Deciduous Forest
- Grassland - Non-Native
- Maple-Basswood Forest
- Oak Forest
- Wetland - Cattail

- Site 8 Boundary
- Site Identified for Field Investigation
- Parcel

N

0 125 250

Feet

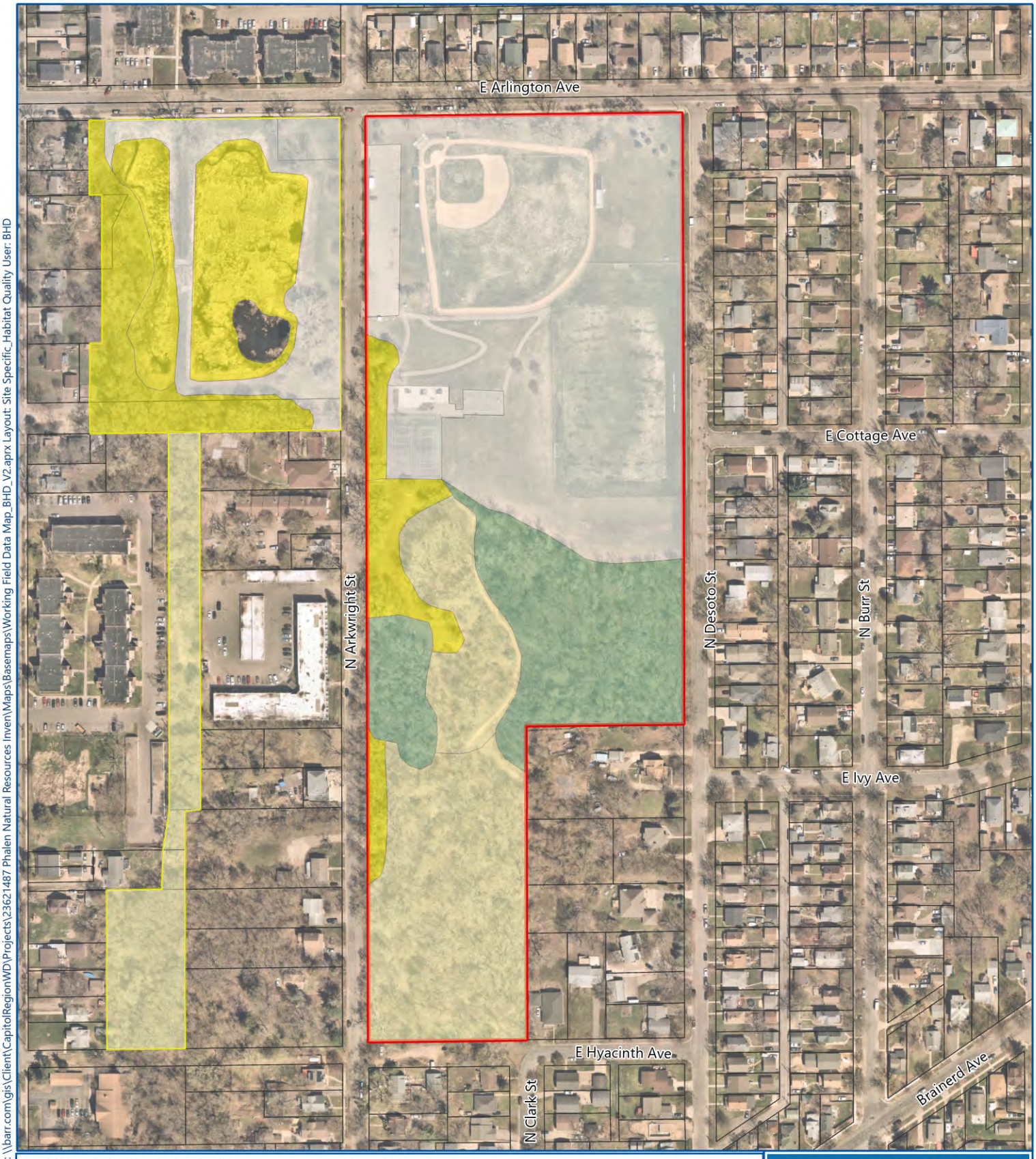
Image: Nearmap 2023

SITE - 8

Arlington/Arkwright Park

EXISTING LAND COVER

Natural Resources Inventory
Capitol Region
Watershed District



Ecological Quality Ranking

- A
- B
- C
- D
- CL (Cultural Landscape)

- Site 8 Boundary
- Site Identified for Field Investigation
- Parcel

0 125 250

Feet

Image: Nearmap 2023

SITE - 8

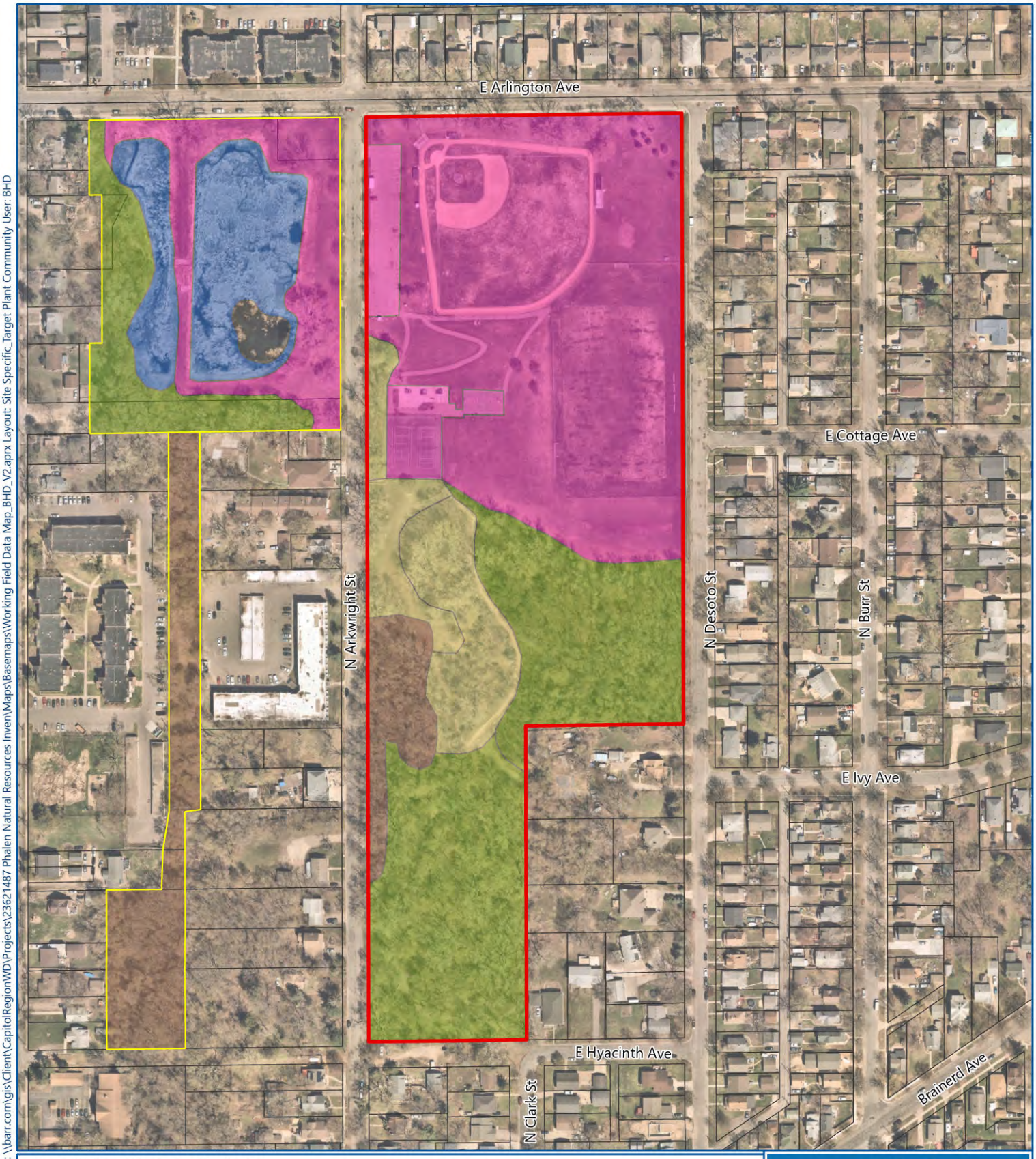
Arlington/Arkwright Park

ECOLOGICAL QUALITY

Natural Resources Inventory

Capitol Region

Watershed District



Target Plant Community Type

- Cultural
- Maple-Basswood Forest
- Oak Forest
- Oak Savanna
- Shallow Marsh

- Site 8 Boundary
- Site Identified for Field Investigation
- Parcel

0 125 250

Feet

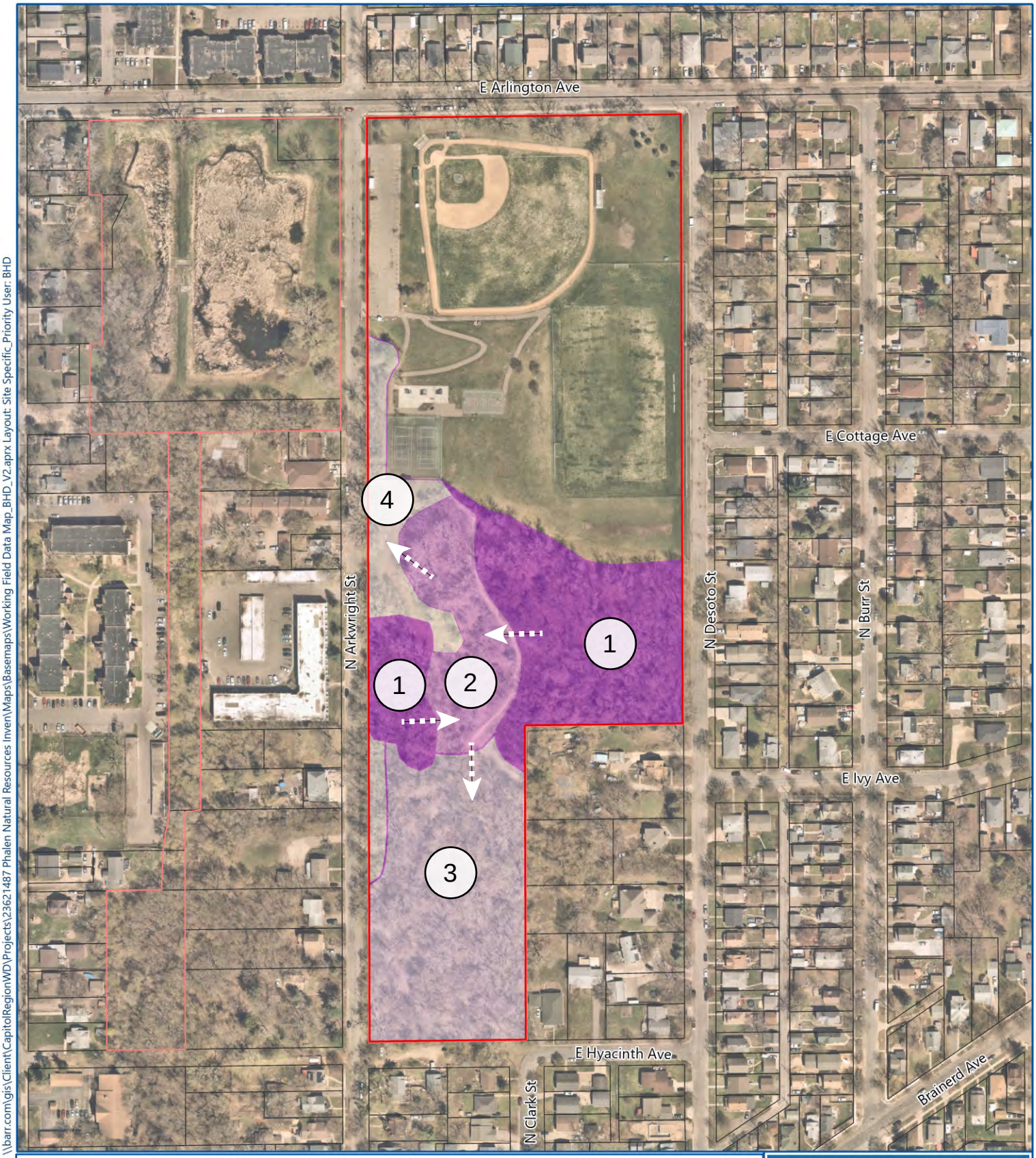
Image: Nearmap 2023

SITE - 8

Arlington/Arkwright Park

TARGET PLANT COMMUNITY

Natural Resources Inventory
Capitol Region
Watershed District



Site 8 Boundary

Parcel

Restoration Priority

- High
- Medium
- Low
- Lowest
- Maintain

Restoration Phasing

1 - Restoration efforts begin in these areas.

2 - Second priority for restoration. Move restoration efforts to these areas once phase 1 restoration efforts are complete. Continue maintaining phase 1 to retain restoration success.

3 - Expand restoration to these areas as resources allow. It is critical to maintain previously restored areas.

4 - Last priority for restoration due to the extent of degradation.

Restoration Priority Note: Phasing and prioritizing restoration efforts based on existing plant community, ecological quality, habitat size, and adjacencies to areas of high ecological quality. These strategies are for planning prioritization purposes. Detailed restoration and maintenance plans should be developed for each site.

N

0 125 250

Feet

Image: Nearmap 2023

SITE - 8

Arlington/Arkwright Park

RESTORATION PRIORITY AND PHASING

Natural Resources Inventory

Capitol Region

Watershed District

Site 9 – Wheelock Early Learning Center (3.7 acres)

Management Prioritization: Medium **Watershed District:** CRWD **District Council:** D5

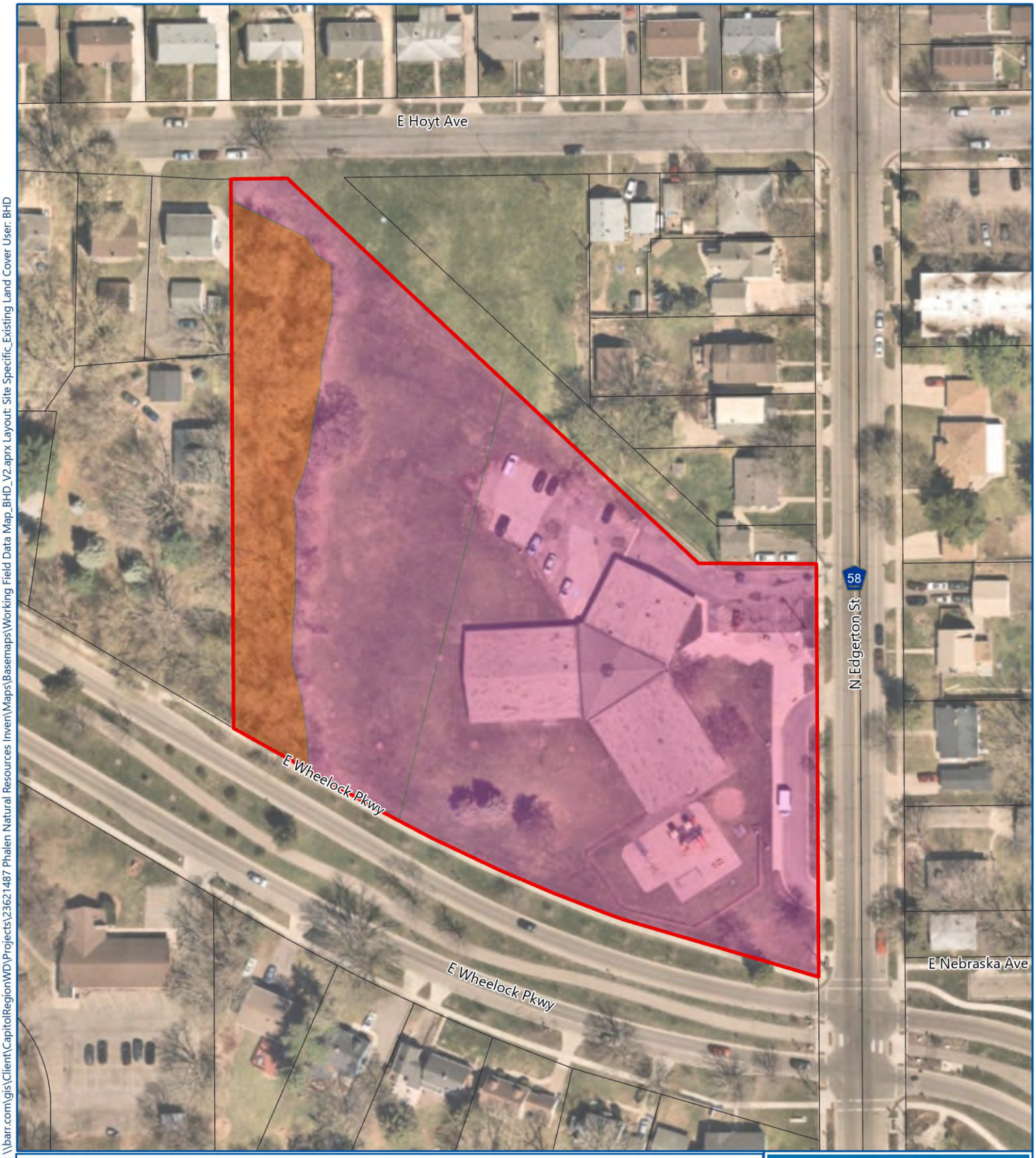
Condition Summary: The site contains a 0.8 low diversity woodland adjacent to the Wheelock Early Learning Center. Boxelder and relatively young American elm trees form a dense canopy within the forest. Buckthorn is pervasive and the most dominant understory species. Creeping Charlie and burdock are also common on the edges of the wooded area. A small area (approximately 0.1 acres) along the south edge of the site appears to have been managed for buckthorn in the past; elderberry (*sambucus* spp.) is thriving in this managed area.

Challenges:

- Exposed soil has potential for erosion
- Narrow habitat core and high weed pressure from adjacent properties

Opportunities to consider:

- Remove establishing elm and boxelder trees to create a more diverse oak savanna community
- Convert unused/unnecessary mowed turf areas with native grasses, forbs, and/or tree species
- Identify opportunities to utilize lawn or the currently degraded woodland for green infrastructure practices (stormwater quality/quantity control)
- Restored native habitat could serve as a learning landscape for the adjacent school – collaborate with the school to develop educational or interpretive opportunities about the importance of pollinator plantings



Existing Land Cover Type

- Cultural
- Altered/Non-Native Deciduous Forest

- Site 9 Boundary
- Site Identified for Field Investigation
- Parcel

N

0 50 100

Feet

Image: Nearmap 2023

SITE - 9

Wheelock Early Learning Center

EXISTING LAND COVER

Natural Resources Inventory
Capitol Region
Watershed District

Ecological Quality Ranking

- A
- B
- C
- D
- CL (Cultural Landscape)

- Site 9 Boundary
- Site Identified for Field Investigation
- Parcel

N

0 50 100

Feet

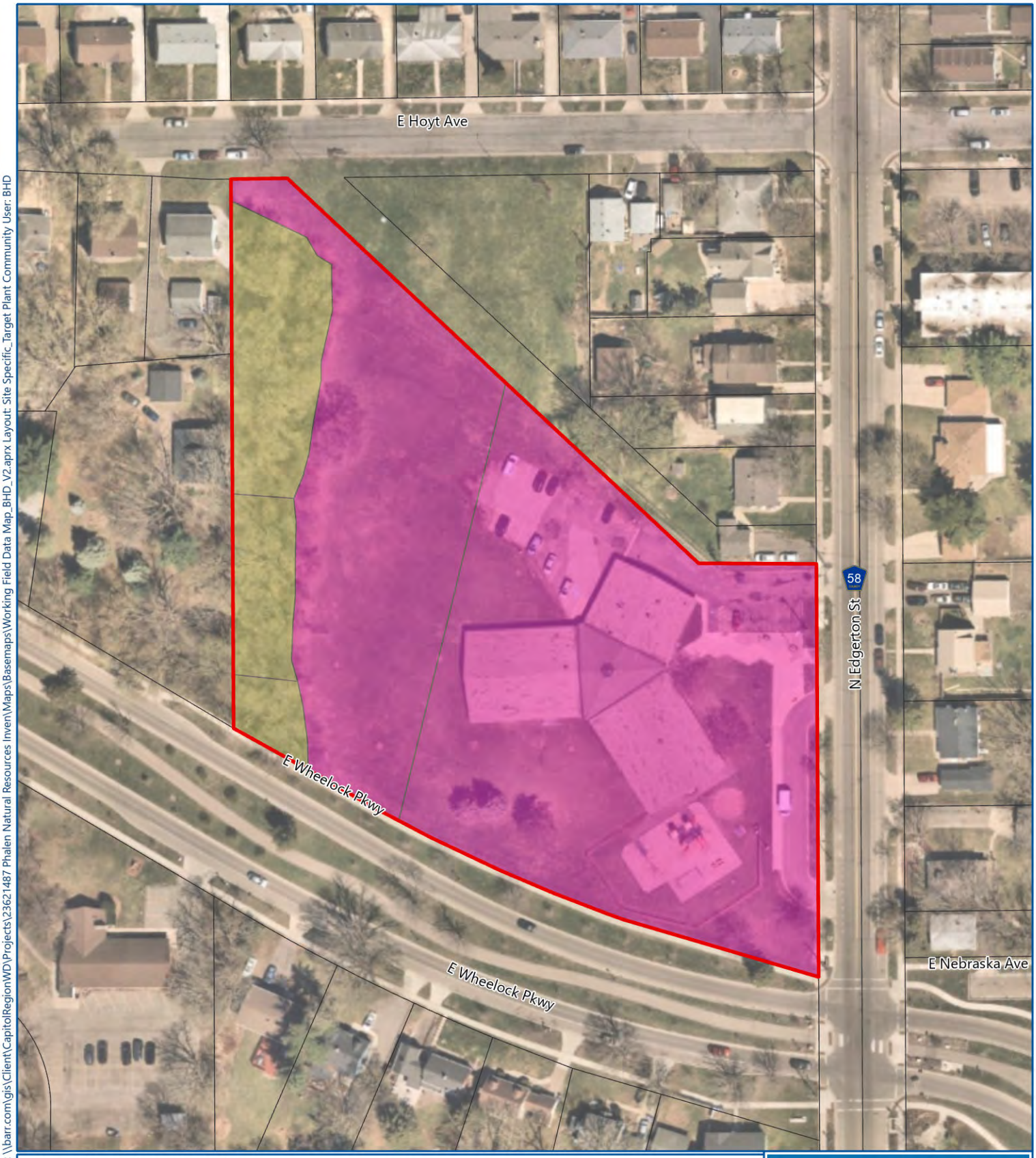
Image: Nearmap 2023

SITE - 9

Wheelock Early Learning Center

ECOLOGICAL QUALITY

Natural Resources Inventory
Capitol Region
Watershed District



Target Plant Community Type

- Cultural
- Oak Savanna

- Site 9 Boundary
- Site Identified for Field Investigation
- Parcel

0 50 100
Feet

Image: Nearmap 2023

SITE - 9

Wheelock Early Learning Center

TARGET PLANT COMMUNITY

Natural Resources Inventory
Capitol Region
Watershed District

Site 9 Boundary

Parcel

Restoration Priority

- High
- Medium
- Low
- Lowest
- Maintain

Restoration Phasing

1 - Restoration efforts begin in these areas.

2 - Second priority for restoration. Move restoration efforts to these areas once phase 1 restoration efforts are complete. Continue maintaining phase 1 to retain restoration success.

3 - Expand restoration to these areas as resources allow. It is critical to maintain previously restored areas.

Restoration Priority Note: Phasing and prioritizing restoration efforts based on existing plant community, ecological quality, habitat size, and adjacencies to areas of high ecological quality. These strategies are for planning prioritization purposes. Detailed restoration and maintenance plans should be developed for each site.

N

0 50 100

Feet

Image: Nearmap 2023

SITE - 9

Wheelock Early Learning Center

RESTORATION PRIORITY AND PHASING

Natural Resources Inventory

Capitol Region

Watershed District

Site 10 – Wheelock Triangles (2.8 acres)

Management Prioritization: Low **Watershed District:** RWMWD **District Council:** D5

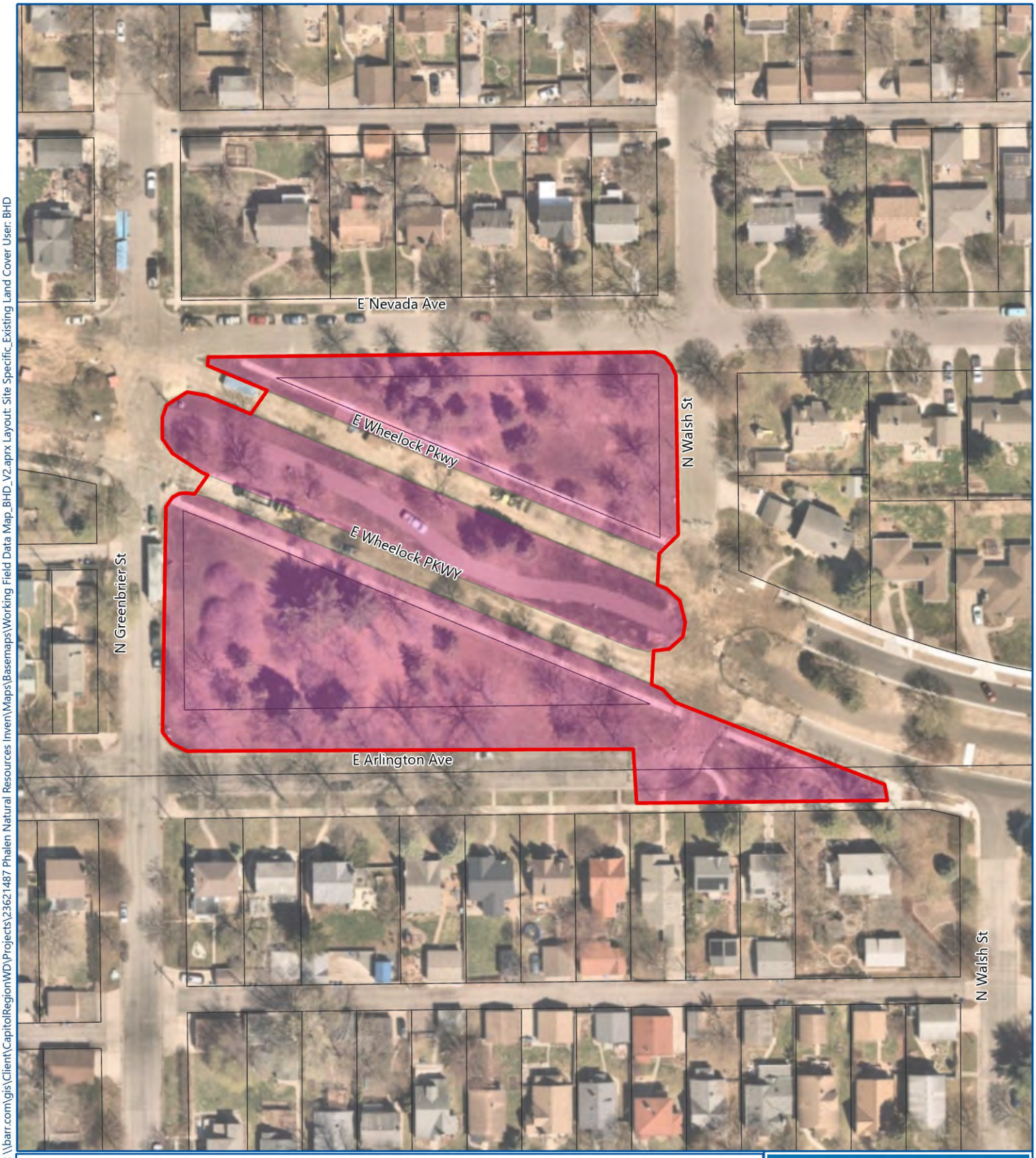
Condition Summary: The Wheelock Parkway Triangles is city parkland maintained as turf. A diverse number of mature tree species are scattered throughout. There is no subcanopy, understory, or shrub layer. The site is directly adjacent to a wide paved throughfare which may be a good candidate for conversion of turf grass into stormwater management BMPs.

Challenges:

- Currently maintained lawn

Opportunities to consider:

- Convert portions of lawn area to native "pocket prairie" (small, pollinator-friendly planting)
- Maintain healthy canopy trees
- Identify opportunities to utilize lawn for green infrastructure practices (stormwater quality/quantity control)



Existing Land Cover Type

Cultural

Site 10 Boundary

Site Identified for Field Investigation

Parcel

0 50 100

Feet

Image: Nearmap 2023

SITE - 10

Wheelock Triangles

EXISTING LAND COVER

Natural Resources Inventory

Capitol Region

Watershed District

Ecological Quality Ranking

- A
- B
- C
- D
- CL (Cultural Landscape)

- Site 10 Boundary
- Site Identified for Field Investigation
- Parcel

N

0 50 100

Feet

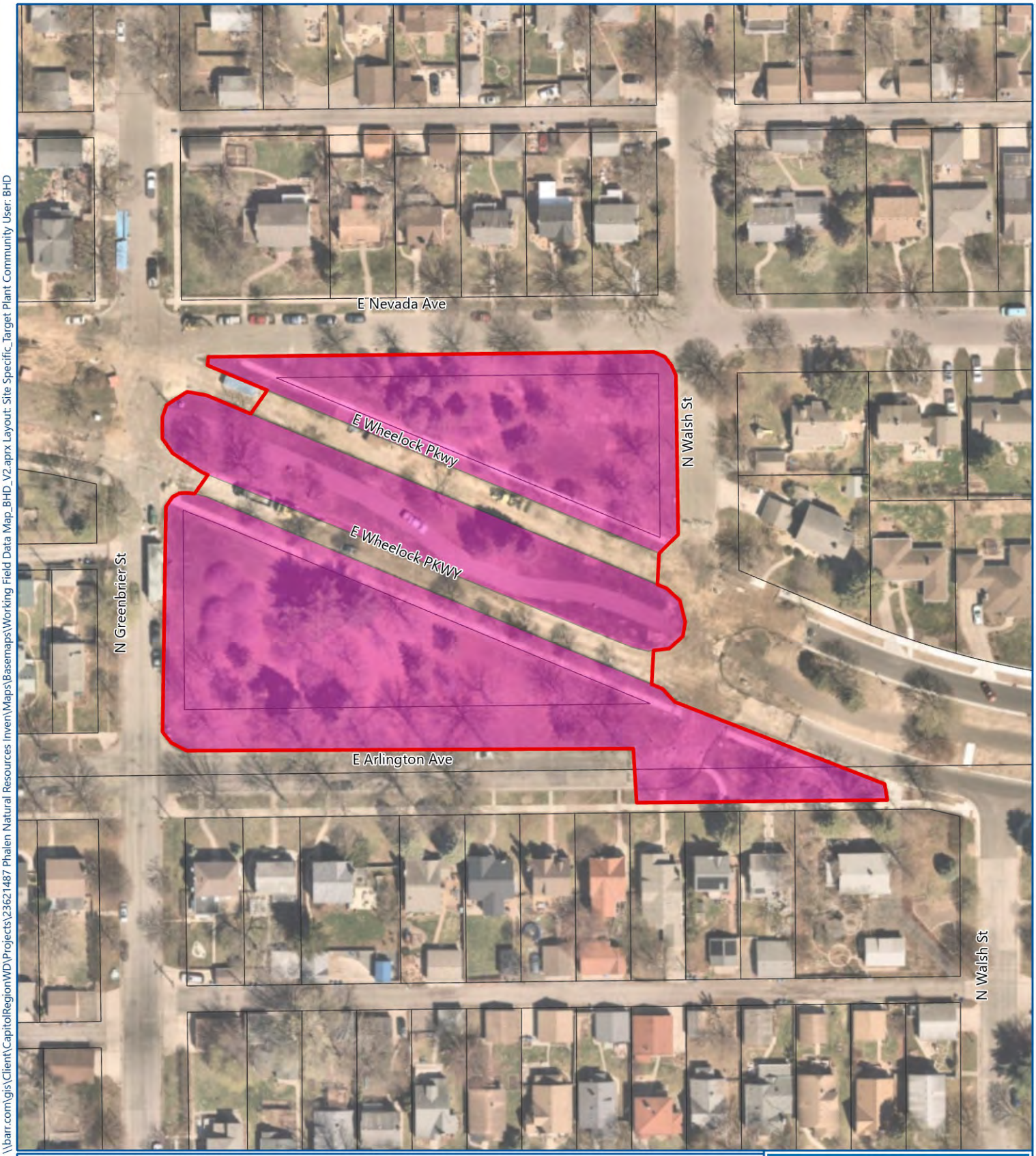
Image: Nearmap 2023

SITE - 10

Wheelock Triangles

ECOLOGICAL QUALITY

Natural Resources Inventory
Capitol Region
Watershed District



Target Plant Community Type

Cultural

Site 10 Boundary

Site Identified for Field Investigation

Parcel

0 50 100

Feet

Image: Nearmap 2023

SITE - 10

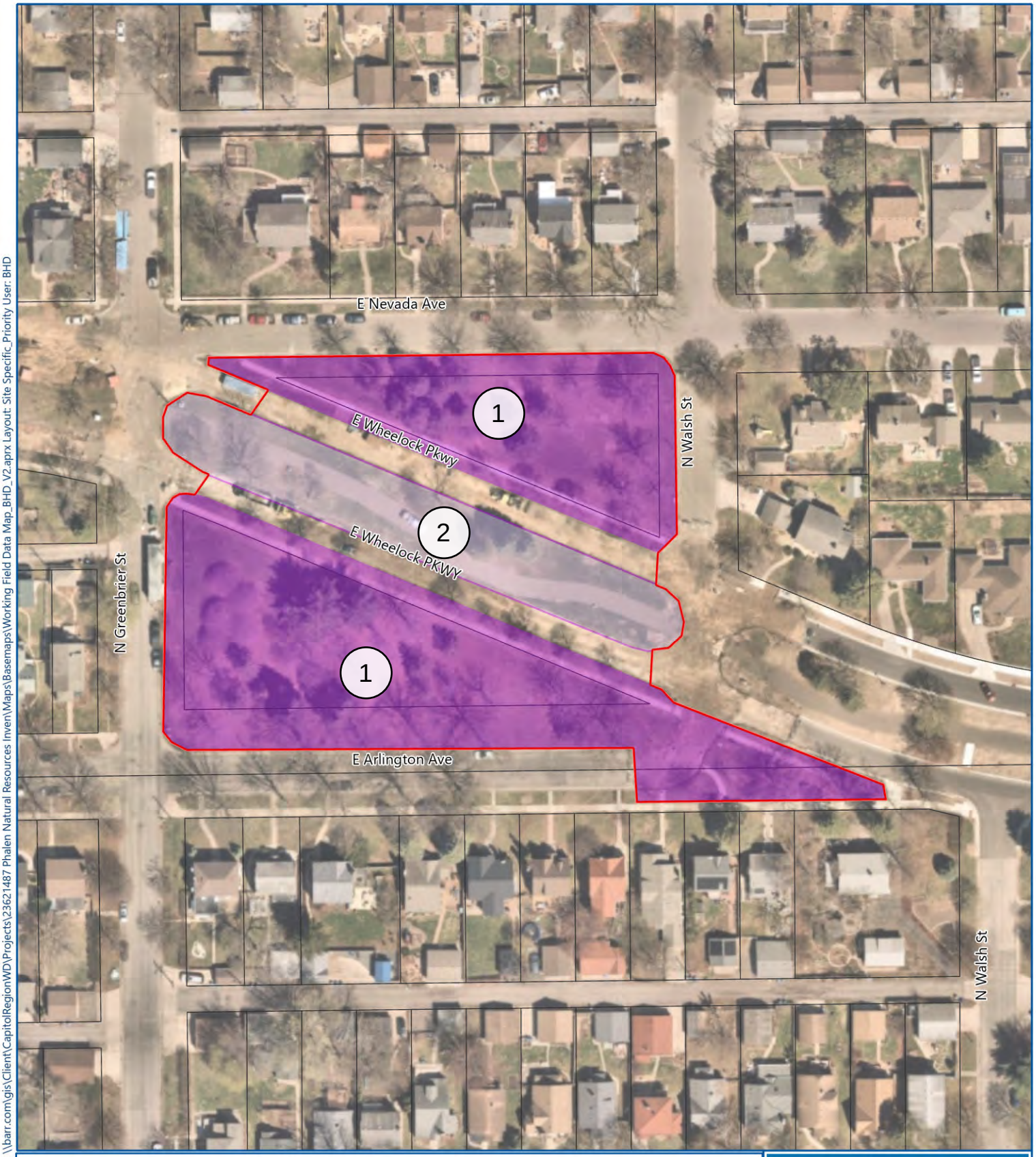
Wheelock Triangles

TARGET PLANT COMMUNITY

Natural Resources Inventory

Capitol Region

Watershed District



Site 10 Boundary

Parcel

Restoration Priority

- High
- Medium
- Low
- Lowest
- Maintain

Restoration Phasing

1 - Restoration efforts begin in these areas.

2 - Second priority for restoration. Move restoration efforts to these areas once phase 1 restoration efforts are complete. Continue maintaining phase 1 to retain restoration success.

Restoration Priority Note: Phasing and prioritizing restoration efforts based on existing plant community, ecological quality, habitat size, and adjacencies to areas of high ecological quality. These strategies are for planning prioritization purposes. Detailed restoration and maintenance plans should be developed for each site.

0 50 100

Feet

Image: Nearmap 2023

SITE - 10

Wheelock Triangles

RESTORATION PRIORITY AND PHASING

Natural Resources Inventory

Capitol Region

Watershed District

Site 11 – Farnsworth Pre-K (3.6 acres)

Management Prioritization: Low **Watershed District:** CRWD **District Council:** D5

Condition Summary: Site 11 is a 3.6-acre school campus containing few natural features. A small demonstration native planting is present along the southeast side of the building. Nearly all other pervious areas are maintained as turf grass. Lawn areas are generally in poor condition due to intense foot traffic and poor drainage.

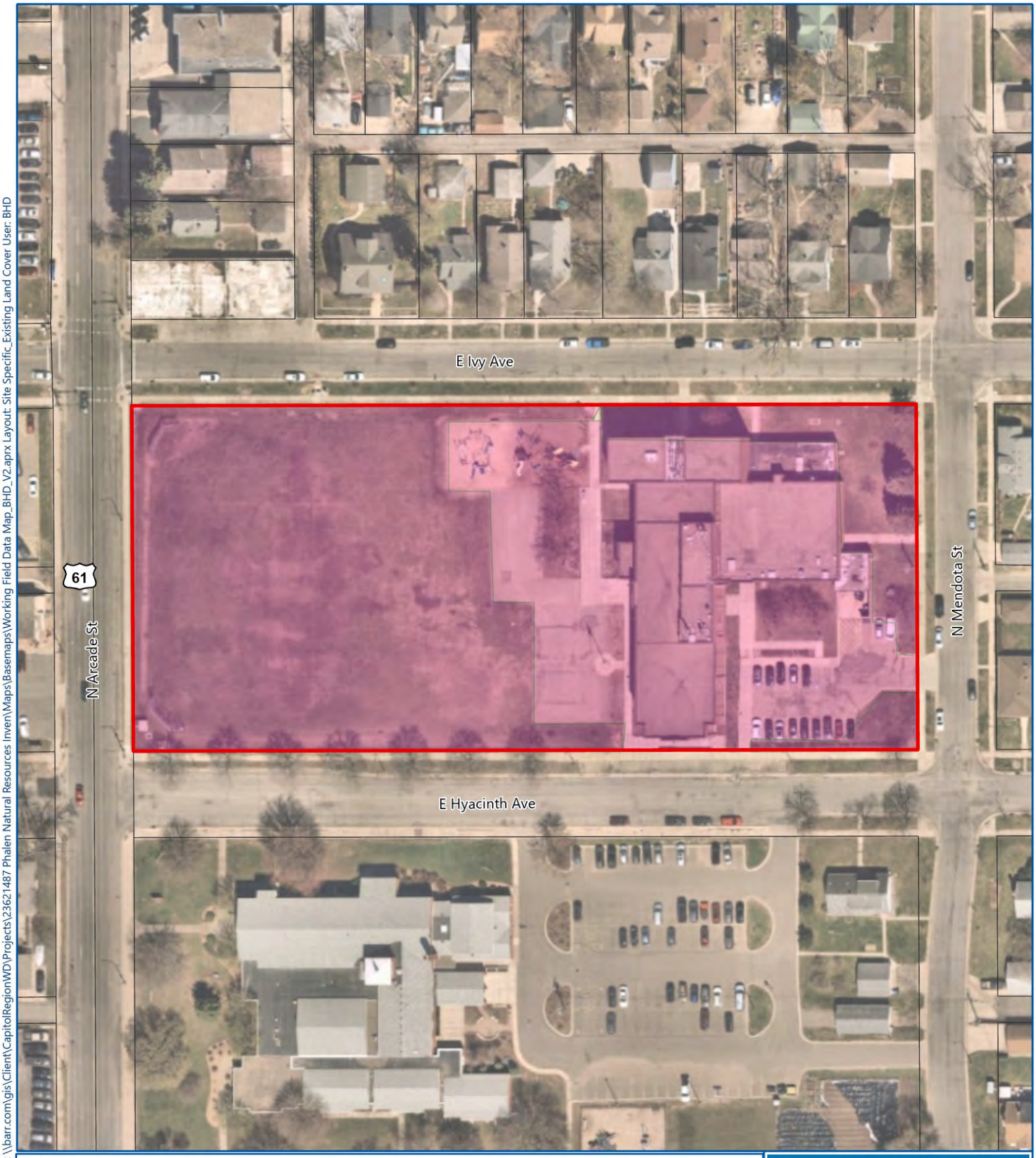
Many of the boulevard trees were recently removed due to an EAB infestation. Mature canopy trees are present only on the south and east edges of the site.

Challenges:

- Majority of the site is currently maintained lawn
- Site is heavily used for recreation by students

Opportunities to consider:

- Identify opportunities to utilize lawn for green infrastructure practices (stormwater quality/quantity control)
- Expand existing native demonstration plantings
- Collaborate with school to develop educational or interpretive opportunities about the importance of pollinator plantings
- Replace tree canopy lost due to EAB. Consider replacement trees that help mitigate UHI effect and are suitable under projected climate change conditions.



Existing Land Cover Type

Cultural

Site 11 Boundary

Site Identified for Field Investigation

Parcel

0 50 100

Feet

Image: Nearmap 2023

SITE - 11

Farnsworth Pre K

EXISTING LAND COVER

Natural Resources Inventory

Capitol Region

Watershed District

Ecological Quality Ranking

- A
- B
- C
- D
- CL (Cultural Landscape)

- Site 11 Boundary
- Site Identified for Field Investigation
- Parcel

N

0 50 100

Feet

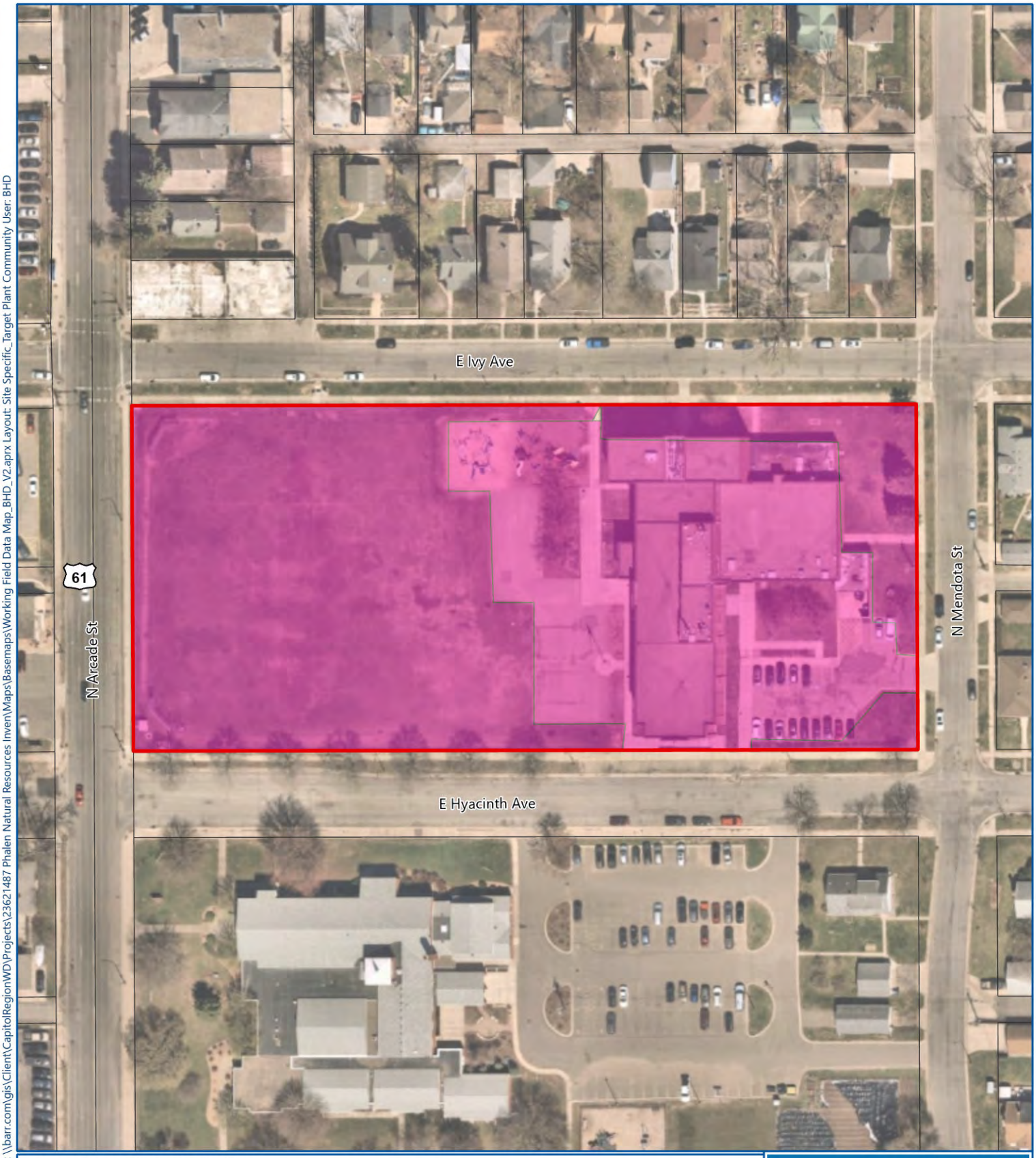
Image: Nearmap 2023

SITE - 11

Farnsworth Pre K

ECOLOGICAL QUALITY

Natural Resources Inventory
Capitol Region
Watershed District



Target Plant Community Type

Cultural

Site 11 Boundary

Site Identified for Field Investigation

Parcel

0 50 100

Feet

Image: Nearmap 2023

SITE - 11

Farnsworth Pre K

TARGET PLANT COMMUNITY

Natural Resources Inventory

Capitol Region

Watershed District

Site 11 Boundary

Parcel

Restoration Priority

High

Medium

Low

Lowest

Maintain

Restoration Phasing

1 - Restoration efforts begin in these areas.

Restoration Priority Note: Phasing and prioritizing restoration efforts based on existing plant community, ecological quality, habitat size, and adjacencies to areas of high ecological quality. These strategies are for planning prioritization purposes. Detailed restoration and maintenance plans should be developed for each site.

0 50 100

Feet

Image: Nearmap 2023

SITE - 11

Farnsworth Pre K

RESTORATION PRIORITY AND PHASING

Natural Resources Inventory

Capitol Region

Watershed District

Site 12 – Phalen Golf Course (108.6 acres)

Management Prioritization: Medium **Watershed District:** RWMWD **District Council:** D5

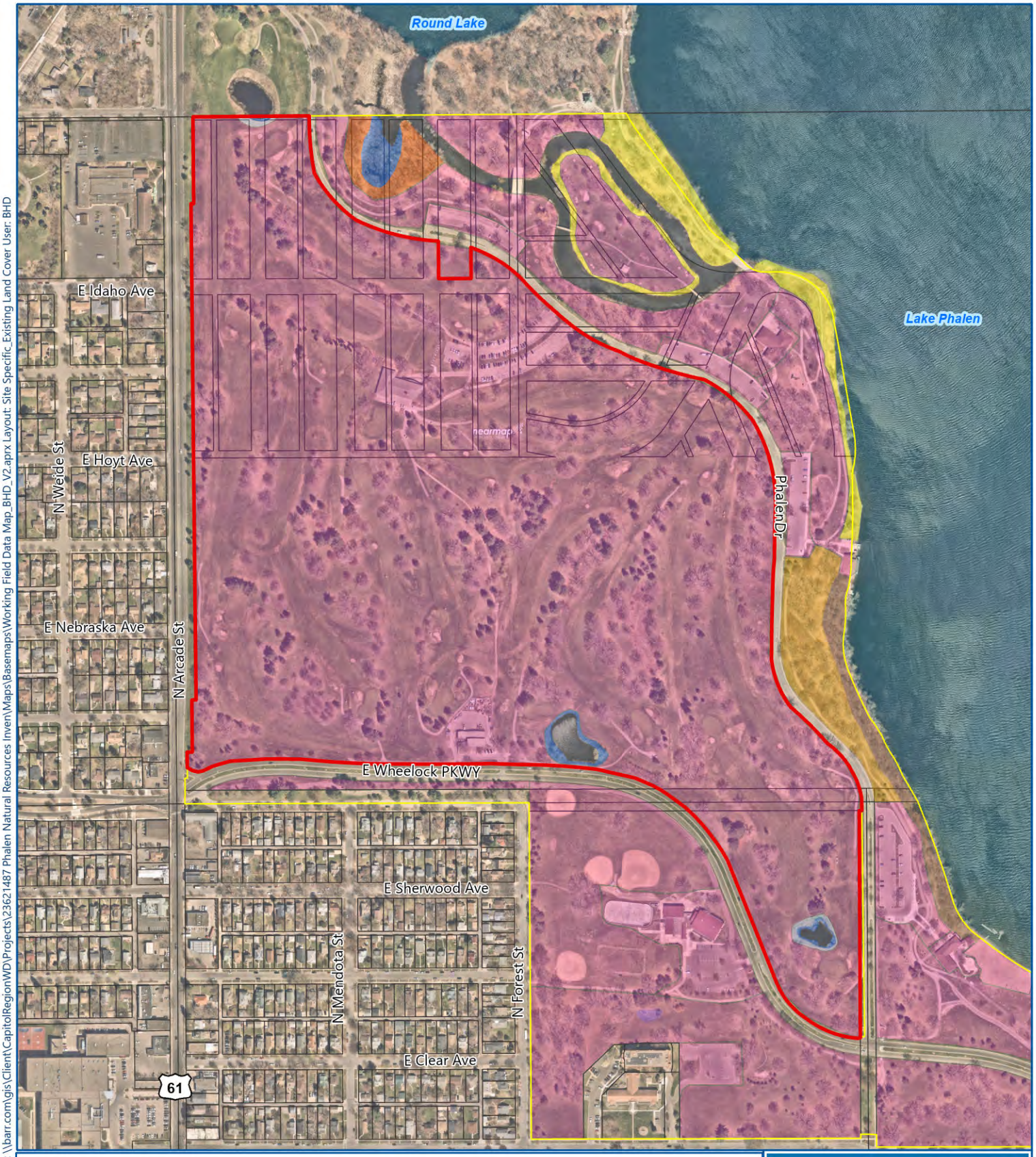
Condition Summary:
Boarding the west shore of Lake Phalen, Site 12 encompasses an actively used public golf course. The 18-hole course is bordered by Arcade Street to the west, East Wheelock Parkway to the south, and Phalen Drive East to the east and north. Two NWI-mapped wetlands are located within the course and are both categorized as freshwater ponds. The ponds contain cattails along the edges. Non-native species like reed canary grass and Canada thistle grow adjacent to the pond banks along with few patches of native giant bur-reed. The remaining areas are lawns (golf course fairways, rough, and greens) with well-maintained mature oak, hackberry, maple, pine, and spruce trees.

Challenges:

- Majority of the site is currently maintained as lawn for recreational activities
- Wetlands buffers are less than 25 feet wide in areas (encroachment by mowing)

Opportunities to consider:

- Oak savanna restoration opportunities within out-of-play areas
- Identify opportunities to reduce herbicide, fertilizers, and runoff from lawn
- Identify opportunities to implement more no-mow/low mow turf areas within golf play areas
- Utilize unnecessary lawn for green infrastructure practices (stormwater quality/quantity control)
- High visibility and use could help leverage support for additional resources for on-going buffer management efforts



Existing Land Cover Type

- Cultural
- Altered/Non-Native Deciduous Forest
- Grassland - Non-Native
- Grassland - Mesic Prairie
- Oak Forest
- Wetland - Cattail
- Wetland - Reed Canary Grass

- Site 12 Boundary
- Site Identified for Field Investigation
- Parcel

N

0 250 500

Feet

Image: Nearmap 2023

SITE - 12

Phalen Golf Course

EXISTING LAND COVER

Natural Resources Inventory
Capitol Region
Watershed District

Ecological Quality Ranking

- A
- B
- C
- D
- CL (Cultural Landscape)

- Site 12 Boundary
- Site Identified for Field Investigation
- Parcel

0 250 500

Feet

Image: Nearmap 2023

SITE - 12

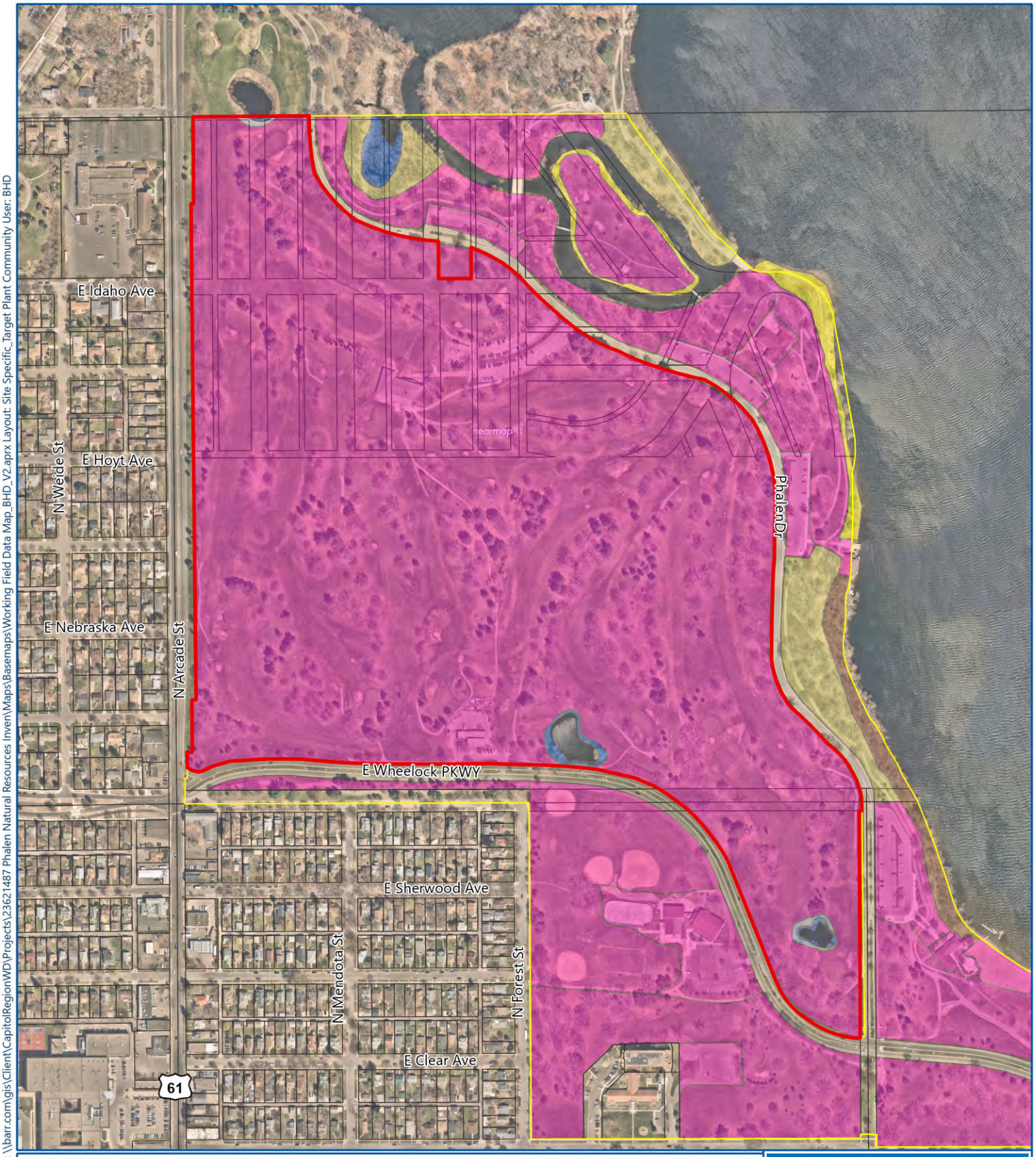
Phalen Golf Course

ECOLOGICAL QUALITY

Natural Resources Inventory

Capitol Region

Watershed District



Target Plant Community Type

- Cultural
- Grassland - Mesic Prairie
- Oak Forest
- Oak Savanna
- Shallow Marsh
- Wet Meadow

- Site 12 Boundary
- Site Identified for Field Investigation
- Parcel

N

0 250 500

Feet

Image: Nearmap 2023

SITE - 12

Phalen Golf Course

TARGET PLANT COMMUNITY

Natural Resources Inventory
Capitol Region
Watershed District

Site 12 Boundary

Parcel

Restoration Priority

- High
- Medium
- Low
- Lowest
- Maintain

Restoration Phasing

1 - Restoration efforts begin in these areas.

Restoration Priority Note: Phasing and prioritizing restoration efforts based on existing plant community, ecological quality, habitat size, and adjacencies to areas of high ecological quality. These strategies are for planning prioritization purposes. Detailed restoration and maintenance plans should be developed for each site.

0 250 500

Feet

Image: Nearmap 2023

SITE - 12

Phalen Golf Course

RESTORATION PRIORITY AND PHASING

Natural Resources Inventory

Capitol Region

Watershed District

Barr Footer: ArcGISPro, 4/3/2024 4:24 PM File: \\barr.com\gis\Client\CapitolRegionWD\Projects\23621487 Phalen Natural Resources Inven\Maps\Basemaps\Working Field Data Map_BHD_V2.aprx Layout: Site Specific_Priority User: BHD

Site 13 – Phalen Regional Park (115.9 acres)

Management Prioritization: High **Watershed District:** RWMWD **District Council:** D5

Condition Summary: Located just south of the Phalen Golf Course, Phalen Regional Park is comprised of oak savanna plantings, restored lakeshore, and recreation areas for fishing, swimming, and picnicking. Phalen Regional Park is bounded by the Bruce Vento Regional Trail to the east, East Wheelock Parkway to the South, and Phalen Drive to the west. The Phalen Regional Park provides recreation for walking, cycling, fishing, swimming, paddling, and wildlife photography.

Along East Wheelock Parkway and Phalen Drive, maintained turf grass is ubiquitous. Lawn areas contain a variety of mature tree species such as oak, maple, crabapple (*Malus* spp.), hackberry, elm, and black spruce. The area south of Wheelock Parkway is maintained as lawn for active and passive recreation (baseball and soccer fields). The Changsha China Friendship Garden is located on the northwest side of the lake and contains many tree and shrub species native to China.

An oak savanna restoration is underway west of Phalen Drive, just south of the Phalen Boathouse. This savanna borders a small but mature forest of burr oak trees.

A high-quality native prairie and wet meadow extends for two miles around Lake Phalen between the walking path and shoreline. The lakeshore is well maintained and contains a diverse number of native species. There are pockets of thistle throughout, but overall invasive species is limited and generally comprises less than 5% of the total cover.

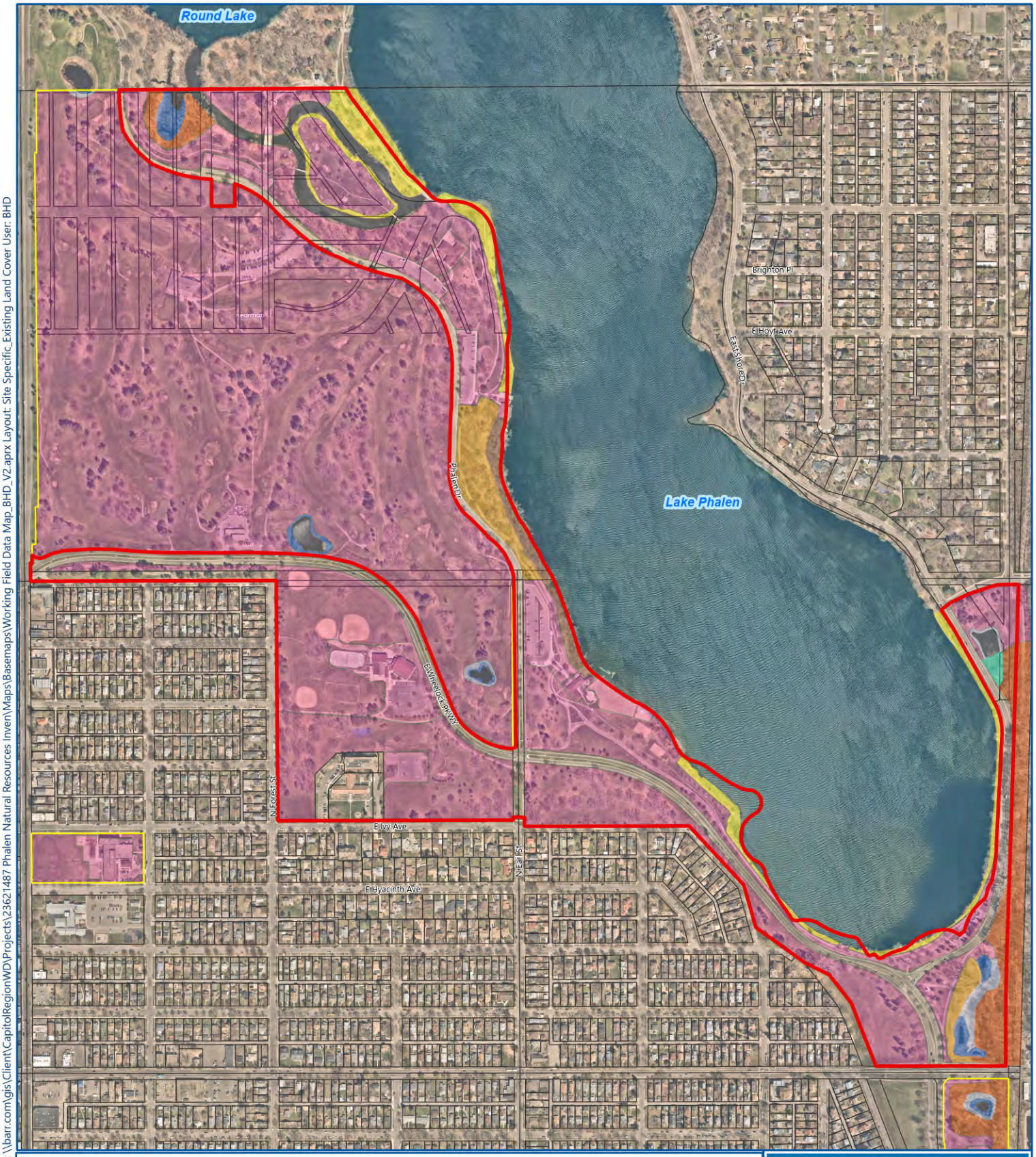
Challenges:

- Foot traffic has caused disturbance and erosion within restoration areas and along portions of the lakeshore
- Heavily used park

Opportunities to consider:

- A great example of a well-maintained lakeshore buffer restoration with native plant diversity (continue to maintain these areas of high-quality habitat)
- High visibility and use within the park could help leverage support for additional resources for on-going management efforts
- Formalize and stabilize lakeshore access points to prevent erosion
- Identify opportunities to utilize lawn for green infrastructure practices (stormwater quality/quantity control)

- Consider opportunities to participate in planning efforts to daylight stretches of historic Phalen Creek.
- Explore opportunity for SSGI improvements connected to the Metro Transit Purple Line BRT project (proposed within south and east portion of site)
- Maintain habitat for the rusty patch bumble bee (Bombus affinis) (last recorded observation in the area in 2018, MNDNR)
- Collaborate with the City and local partners to support the existing master plan (Phalen-Keller Regional Park Master Plan)



Existing Land Cover Type

- Cultural
- Altered/Non-Native Deciduous Forest
- Grassland - Non-Native
- Grassland - Mesic Prairie
- Oak Forest
- Stormwater Basin - Wet Meadow
- Wetland - Cattail
- Wetland - Reed Canary Grass
- Site 13 Boundary
- Site Identified for Field Investigation
- Parcel

N

0 350 700

Feet

Image: Nearmap 2023

SITE - 13

Phalen Regional Park

EXISTING LAND COVER

Natural Resources Inventory
Capitol Region
Watershed District

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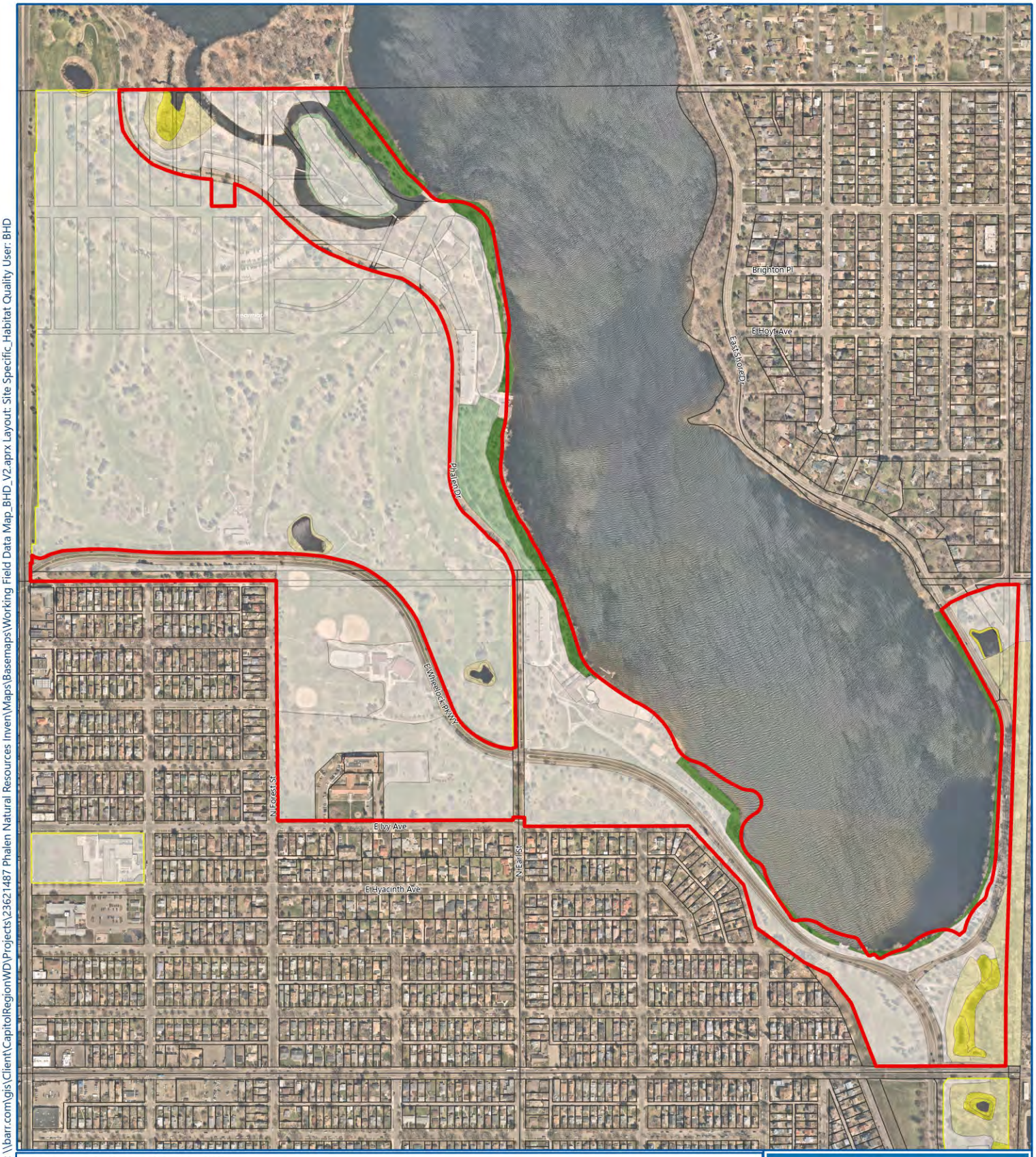


Ecological Quality Ranking

- A
- B
- C
- D
- CL (Cultural Landscape)

- Site 13 Boundary
- Site Identified for Field Investigation
- Parcel

N

0 350 700

Feet

Image: Nearmap 2023

SITE - 13

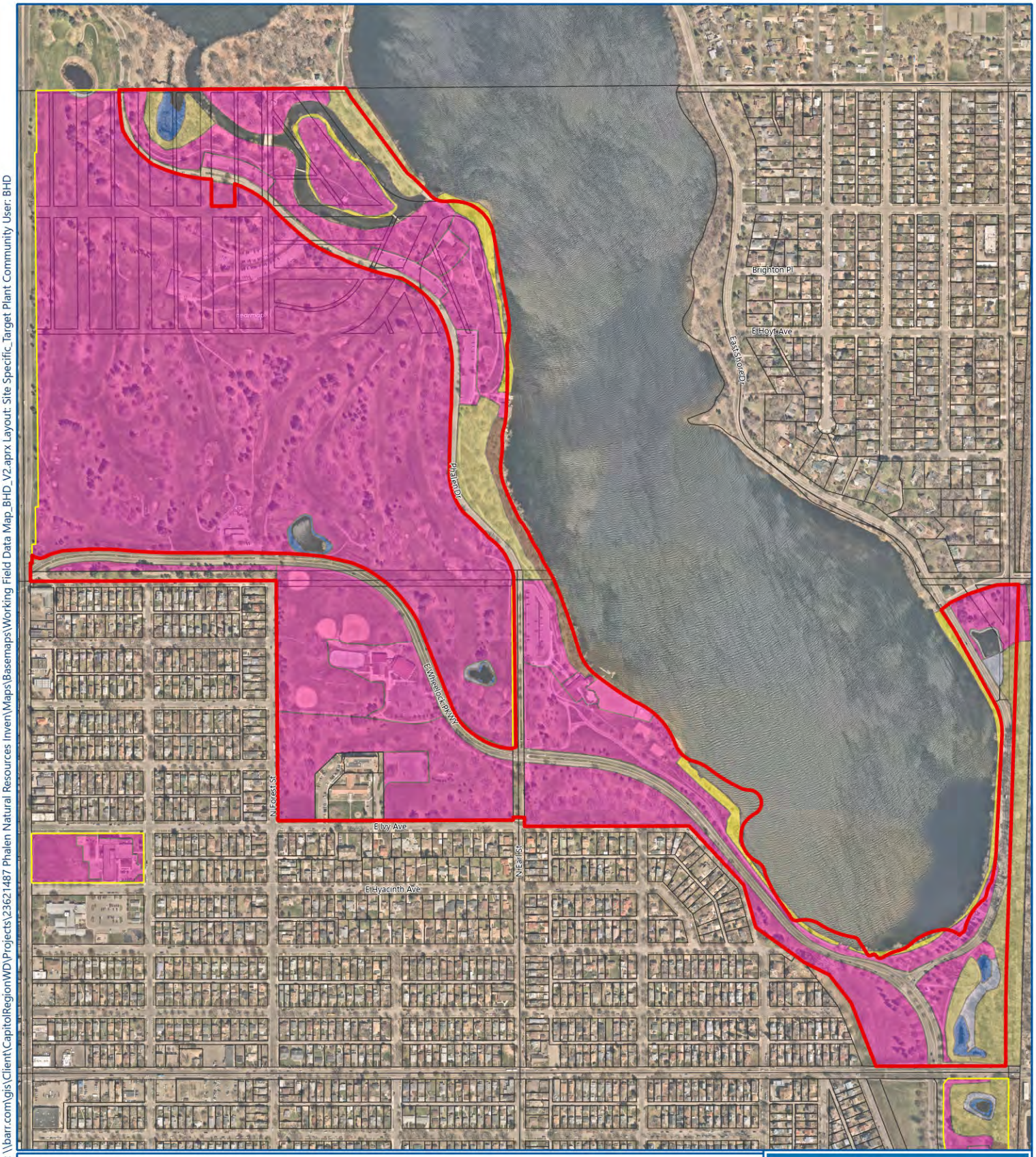
Phalen Regional Park

ECOLOGICAL QUALITY

Natural Resources Inventory

Capitol Region

Watershed District



Target Plant Community Type

- Cultural
- Grassland - Mesic Prairie
- Oak Forest
- Oak Savanna
- Shallow Marsh
- Wet Meadow

- Site 13 Boundary
- Site Identified for Field Investigation
- Parcel

N

0 350 700

Feet

Image: Nearmap 2023

SITE - 13

Phalen Regional Park

TARGET PLANT COMMUNITY

Natural Resources Inventory
Capitol Region
Watershed District

Site 13 Boundary

Parcel

Restoration Priority

- High
- Medium
- Low
- Lowest
- Maintain

Restoration Phasing

1 - Restoration efforts begin in these areas.

2 - Second priority for restoration. Move restoration efforts to these areas once phase 1 restoration efforts are complete. Continue maintaining phase 1 to retain restoration success.

3 - Expand restoration to these areas as resources allow. It is critical to maintain previously restored areas.

4 - Last priority for restoration due to the extent of degradation.

Restoration Priority Note: Phasing and prioritizing restoration efforts based on existing plant community, ecological quality, habitat size, and adjacencies to areas of high ecological quality. These strategies are for planning prioritization purposes. Detailed restoration and maintenance plans should be developed for each site.

N

0 360 720

Feet

Image: Nearmap 2023

SITE - 13

Phalen Regional Park

RESTORATION PRIORITY AND PHASING

Natural Resources Inventory

Capitol Region

Watershed District

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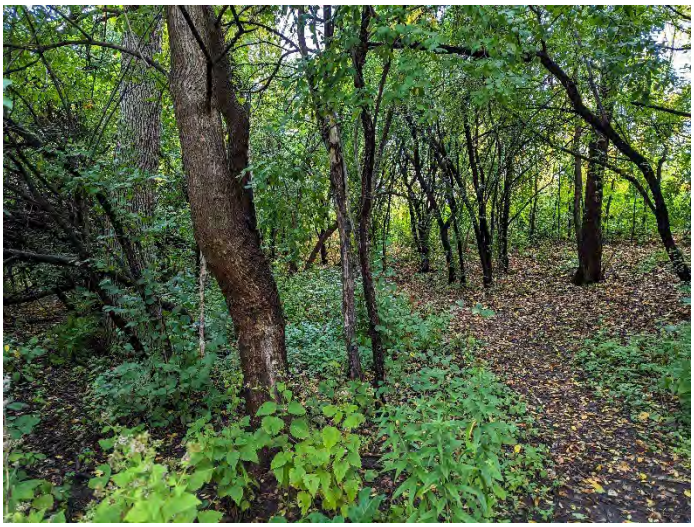
Site 14 – Johnson Parkway Tennis Courts (5.0 acres)

Management Prioritization: Medium **Watershed District:** RWMWD **District Council:** D5



Condition Summary: Site 14 is a public parcel bound by Maryland Avenue to the north, Johnson Parkway to the south and west, and a shopping center to the east. The north end of the site contains an NWI-mapped freshwater pond. The lowest point of the wetland is dominated by non-native cattails. Reed canary grass, common burdock, and lake sedge (*Carex lacustris*) are growing on the periphery of the cattail wetland. Cottonwood and black willow trees tower over the wetland (30 to 50-foot-tall). Open upland areas are dominated by dense stands of staghorn sumac (*Rhus typhina*). Burdock, common ox-eye (*Heliopsis helianthoides*), black-eyed Susan, and wild bergamot (*Monarda fistulosa*) were present in areas where the sumac had been mown down to the ground.

Turf grass, tennis courts, and a parking lot cover the south half of the site. A small, poorly functioning BMP dominated by non-native species is located near the northwest corner of the tennis courts. East of the tennis courts, a narrow and degraded forest is composed of boxelder, cottonwood, and a red oak trees (Quercus rubra). A dense thicket of buckthorn covers the outer edge of the woodland.

Challenges:

- Reed canary grass and cattails dominate the wetland
- Buckthorn – Nearly all parts of the forested areas are infested with buckthorn (no ongoing management efforts)

Opportunities to consider:

- Ecological connections to Phalen Regional Park and Bruce Vento Regional Trail (create habitat corridor)
- Control the most aggressive non-native species to prevent them from spreading to adjacent natural areas
- Explore opportunity for SSGI improvements connected to the Metro Transit Purple Line BRT project (proposed along east edge of site

Existing Land Cover Type

- Cultural
- Altered/Non-Native Deciduous Forest
- Stormwater Basin - Wet Meadow
- Wetland - Cattail
- Wetland - Reed Canary Grass

- Site 14 Boundary
- Site Identified for Field Investigation
- Parcel

N

0 50 100

Feet

Image: Nearmap 2023

SITE - 14

Johnson Parkway Tennis Courts

EXISTING LAND COVER

Natural Resources Inventory
Capitol Region
Watershed District

Ecological Quality Ranking

- A
- B
- C
- D
- CL (Cultural Landscape)

- Site 14 Boundary
- Site Identified for Field Investigation
- Parcel

N

0 50 100

Feet

Image: Nearmap 2023

SITE - 14

Johnson Parkway Tennis Courts

ECOLOGICAL QUALITY

Natural Resources Inventory
Capitol Region
Watershed District

Target Plant Community Type

- Cultural
- Oak Forest
- Oak Savanna
- Shallow Marsh
- Wet Meadow

- Site 14 Boundary
- Site Identified for Field Investigation
- Parcel

N

0 50 100

Feet

Image: Nearmap 2023

SITE - 14

Johnson Parkway Tennis Courts

TARGET PLANT COMMUNITY

Natural Resources Inventory
Capitol Region
Watershed District

Site 14 Boundary

Parcel

Restoration Priority

- High
- Medium
- Low
- Lowest
- Maintain

Restoration Phasing

1 - Restoration efforts begin in these areas.

2 - Second priority for restoration. Move restoration efforts to these areas once phase 1 restoration efforts are complete. Continue maintaining phase 1 to retain restoration success.

3 - Expand restoration to these areas as resources allow. It is critical to maintain previously restored areas.

4 - Last priority for restoration due to the extent of degradation.

Restoration Priority Note: Phasing and prioritizing restoration efforts based on existing plant community, ecological quality, habitat size, and adjacencies to areas of high ecological quality. These strategies are for planning prioritization purposes. Detailed restoration and maintenance plans should be developed for each site.

N

0 50 100

Feet

Image: Nearmap 2023

SITE - 14

Johnson Parkway Tennis Courts

RESTORATION PRIORITY AND PHASING

Natural Resources Inventory

Capitol Region

Watershed District

Site 15 – Duluth and Case Recreation Center (6.0 acres)

Management Prioritization: Medium **Watershed District:** RWMWD **District Council:** D5

Condition Summary: Site 15 is a linear public parcel south of the Duluth and Case Recreation Center located along Phalen Boulevard. The site contains a narrow and degraded forest approximately 100 feet wide and 1,500 feet long. The natural area creates a barrier between the recreation fields and Phalen Boulevard. This altered forest community contains few mature oak trees but is otherwise dominated by a canopy of boxelder, black walnut, and cottonwoods. Buckthorn and honeysuckle are dense in the understory, especially on the edges of the forest. Exposed soil is common throughout.

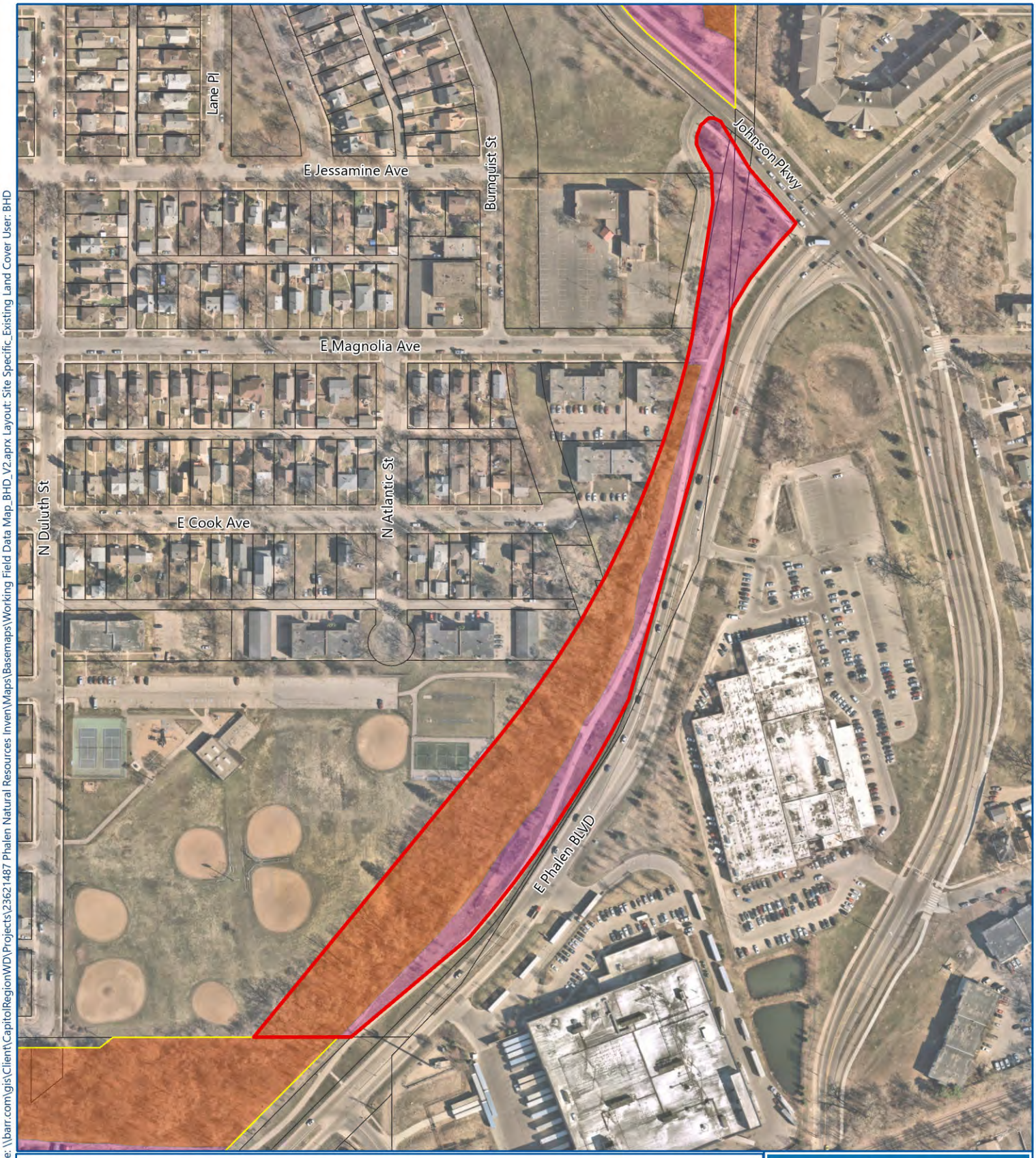
Phalen Creek historically ran through this site before it was diverted into underground storm sewer.

Challenges:

- Narrow habitat core and high weed pressure along edges of the site

Opportunities to consider:

- Nice hardwood canopy trees located in south portion of the site
- Promote native tree species diversity – EAB will continue to alter existing ash tree canopy
- Improved habitat could serve as an ecological corridor connecting multiple nearby patches of habitat (Site 14 and 16)
- Consider opportunities to participate in planning efforts to daylight stretches of historic Phalen Creek.
- Explore opportunity for SSGI improvements connected to the Metro Transit Purple Line BRT project (proposed along east edge of site)



Existing Land Cover Type

- Cultural
- Altered/Non-Native Deciduous Forest

- Site 15 Boundary
- Site Identified for Field Investigation
- Parcel

N

0 125 250

Feet

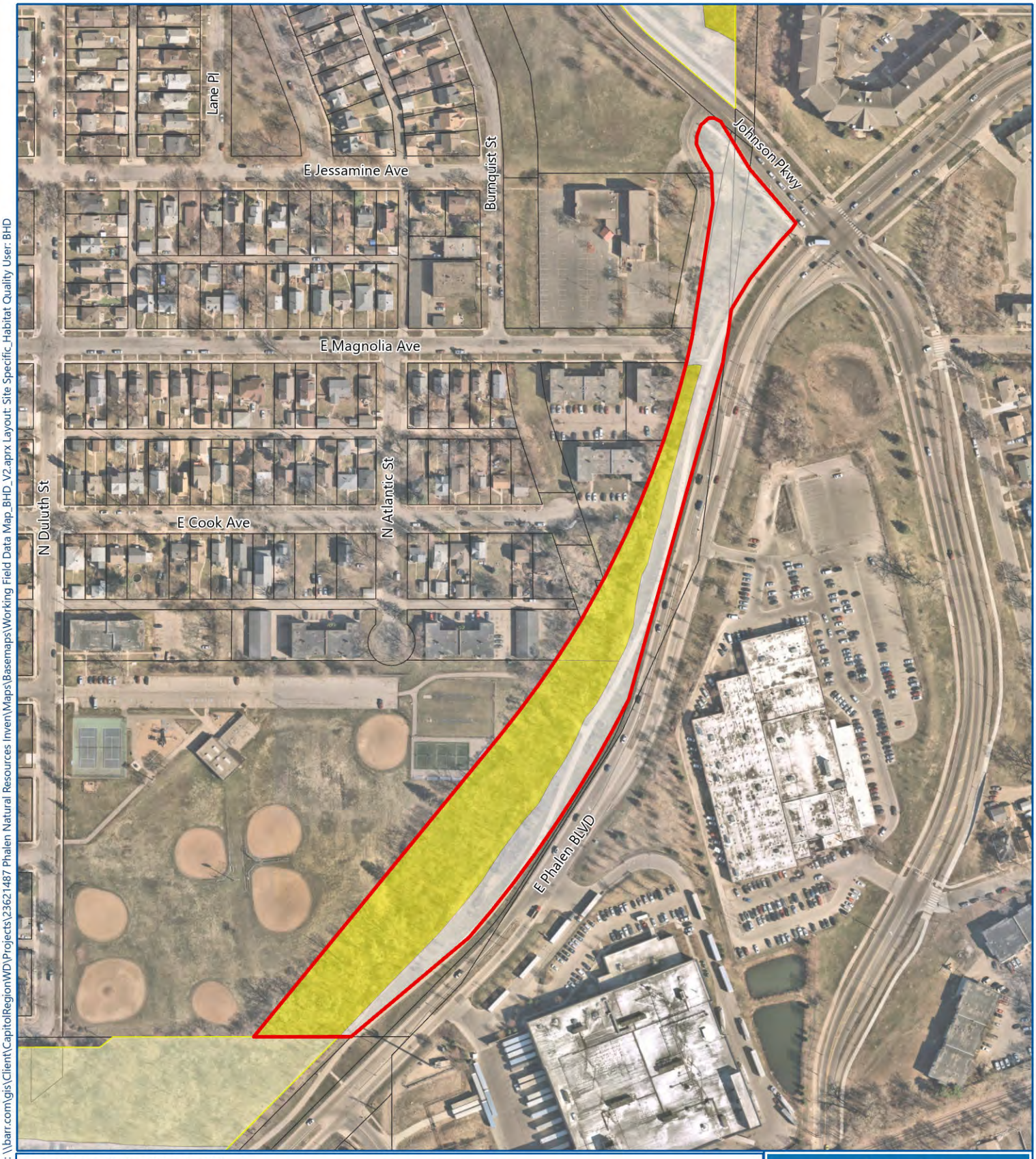
Image: Nearmap 2023

SITE - 15

Duluth and Case Recreation Center

EXISTING LAND COVER

Natural Resources Inventory
Capitol Region
Watershed District



Ecological Quality Ranking

- A
- B
- C
- D
- CL (Cultural Landscape)

- Site 15 Boundary
- Site Identified for Field Investigation
- Parcel

0 125 250

Feet

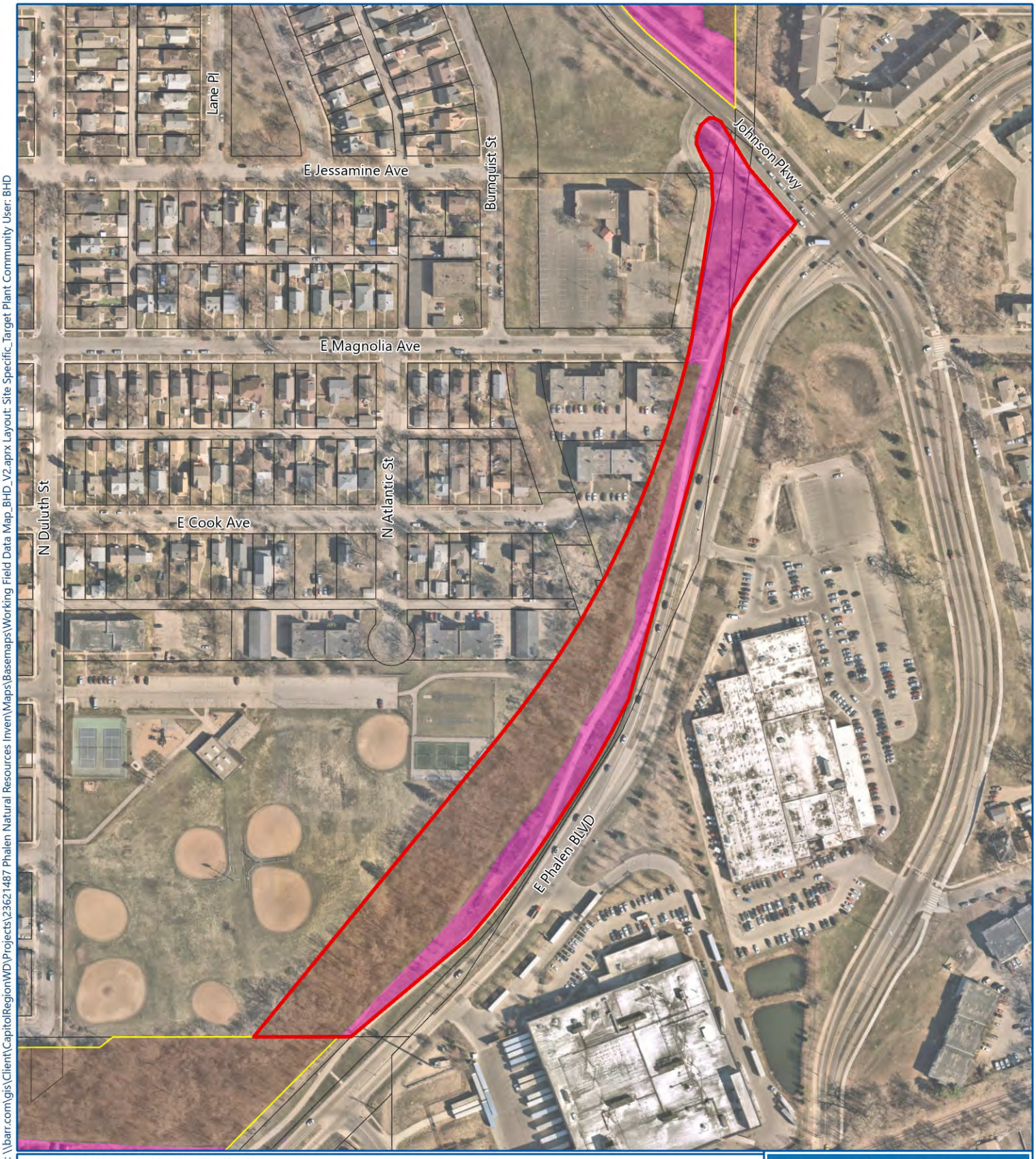
Image: Nearmap 2023

SITE - 15

Duluth and Case Recreation Center

ECOLOGICAL QUALITY

Natural Resources Inventory
Capitol Region
Watershed District



Target Plant Community Type

- Cultural
- Oak Forest

- Site 15 Boundary
- Site Identified for Field Investigation
- Parcel

0 125 250

Feet

Image: Nearmap 2023

SITE - 15

Duluth and Case Recreation Center

TARGET PLANT COMMUNITY

Natural Resources Inventory
Capitol Region
Watershed District

Site 15 Boundary

Parcel

Restoration Priority

- High
- Medium
- Low
- Lowest
- Maintain

Restoration Phasing

1 - Restoration efforts begin in these areas.

2 - Second priority for restoration. Move restoration efforts to these areas once phase 1 restoration efforts are complete. Continue maintaining phase 1 to retain restoration success.

Restoration Priority Note: Phasing and prioritizing restoration efforts based on existing plant community, ecological quality, habitat size, and adjacencies to areas of high ecological quality. These strategies are for planning prioritization purposes. Detailed restoration and maintenance plans should be developed for each site.

N

0 125 250

Feet

Image: Nearmap 2023

SITE - 15

Duluth and Case Recreation Center

RESTORATION PRIORITY AND PHASING

Natural Resources Inventory

Capitol Region

Watershed District

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Site 16 – Frank and Sims Yard Waste Collection Site (12.5 acres)

Management Prioritization: Medium **Watershed District:** CRWD **District Council:** D5

Condition Summary: Site 16 contains a relatively large and degraded woodland bordered by Phalen Boulevard to the south, North Frank Street to the west, and the Duluth and Case Recreation Center baseball fields to the north. The yard waste facility in the center of the site lacks vegetation and is actively used. The Big Urban Woods School Forest borders the waste facility to the north. This woodland is part of a Ramsey County partnership with nearby schools to introduce students to nature. Cottonwoods, black walnut, and burr oak dominate the canopy while the understory is dense with buckthorn and honeysuckle. The outermost edge of this site is lined with young boxelder trees with burdock, creeping Charlie, and woodbine carpeting the ground. The forested areas contain little to no vegetative cover (approximately half of the site has exposed soil). One NWI-mapped wetland exists within the southern portion of the wooded area and is classified as a freshwater pond. The wetland is largely unvegetated.

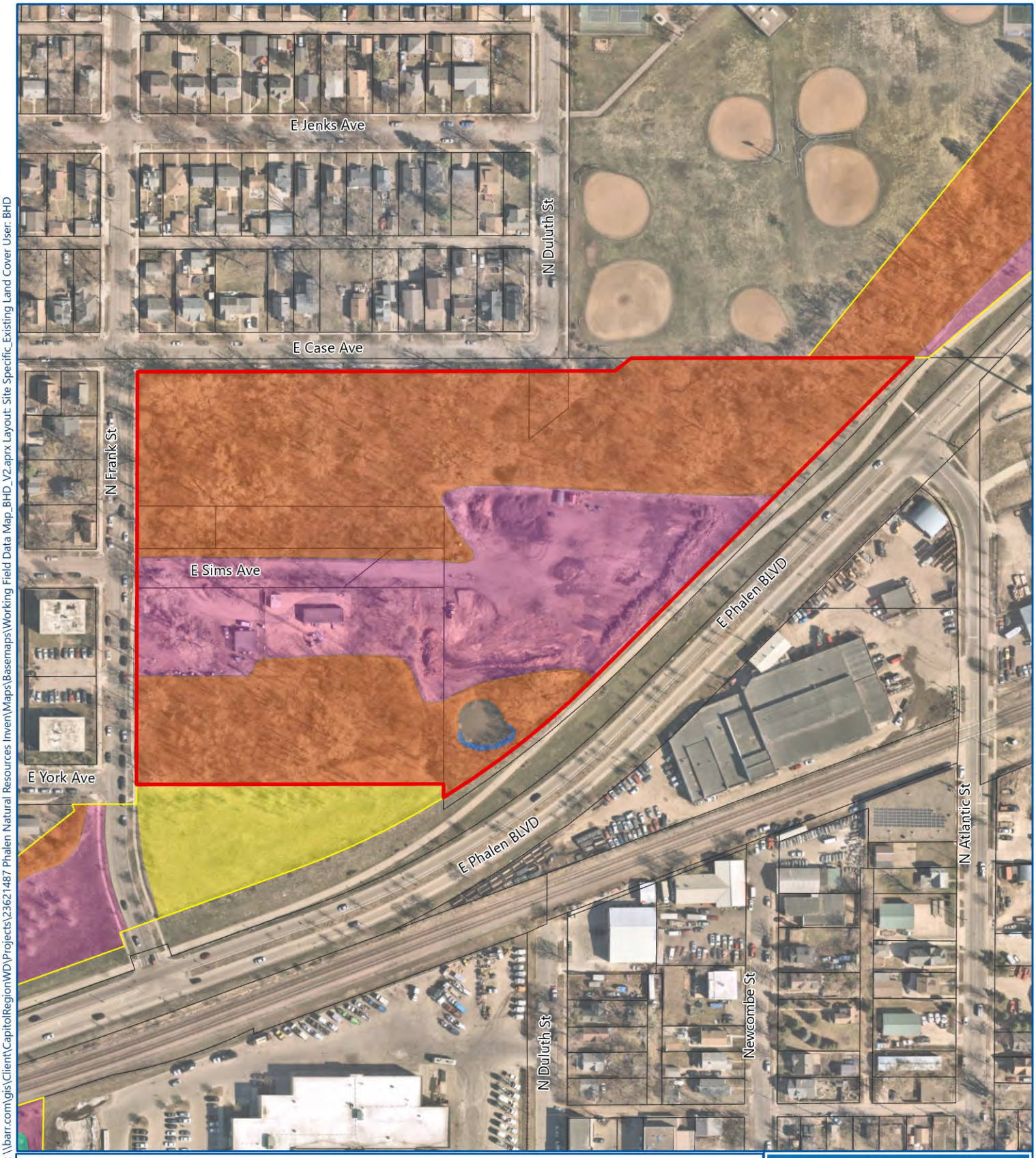
Phalen Creek historically ran through this site before it was diverted into underground storm sewer.

Challenges:

- The yard waste collection site is a constant source of weeds and invasive species
- Undefined boundary between yard waste area and natural plant communities (portions of the site heavily used)

Opportunities to consider:

- Educational partnership opportunities with Ramsey County, local schools, or community groups
- Consider opportunities to participate in planning efforts to daylight stretches of historic Phalen Creek
- Identify opportunities to utilize degraded natural areas for green infrastructure practices (stormwater quality/quantity control)
- Explore opportunity for SSGI improvements connected to the Metro Transit Purple Line BRT project (proposed along east edge of site)
- Manage invasive tree species to prevent continued encroachment



Existing Land Cover Type

- Cultural
- Altered/Non-Native Deciduous Forest
- Grassland - Mesic Prairie
- Stormwater Basin - Wet Meadow
- Wetland - Cattail

- Site 16 Boundary
- Site Identified for Field Investigation
- Parcel

0 100 200
Feet

Image: Nearmap 2023

SITE - 16

Frank and Sims Yard Waste Collection Site

EXISTING LAND COVER

Natural Resources Inventory
Capitol Region
Watershed District

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Ecological Quality Ranking

- A
- B
- C
- D
- CL (Cultural Landscape)

- Site 16 Boundary
- Site Identified for Field Investigation
- Parcel

0 100 200

Feet

Image: Nearmap 2023

SITE - 16

Frank and Sims Yard Waste Collection Site

ECOLOGICAL QUALITY

Natural Resources Inventory
Capitol Region
Watershed District