

## WETLAND FUNCTION AND VALUE INVENTORY UPDATE AND GROUNDWATER DEPENDENT WETLAND RECLASSIFICATION

Date	12/6/2024
To / Contact info	BCWD Board of Managers
Cc / Contact info	Karen Kill, District Manager
From / Contact info	Jimmy Marty and Pat Conrad, EOR
Regarding	Wetland Function and Value Inventory Update and Groundwater Dependent Wetland Reclassification

### BACKGROUND

The District initiated two separate but complementary tasks in August 2024 focused on updating the existing wetland inventory and associated rules implementation. These tasks included 1) an updated wetland function and value assessment and 2) re-classification of groundwater dependent natural resources. This memo addresses each of these tasks in tandem.

#### Function and Value Update

The District completed its original wetland function and value assessment during the 2<sup>nd</sup> generation planning process in 2001. All wetlands in the District were inventoried and all wetlands greater than 2.5 acres had an assessment of their functions and values through a methodology based on the Minnesota Routine Assessment Method (MnRAM). In the 2005 District Rule Revision process the Board made the decision to extend its wetland rules to all wetlands greater than 1.0 acre. In order to appropriately apply the BCWD wetland rule, an update to the function and values assessment was conducted in 2007 on additional wetlands greater than an acre in size that had not previously been assessed.

An updated function and value inventory was completed in fall 2024 to ensure wetland classifications are accurate and align with current science and practice. The original inventory was based on National Wetland inventory (NWI) mapping, which has since been updated by the Department of Natural Resources (DNR) in 2013. Further, technical understanding and the assessment methods for wetland function and value have evolved substantially over the last decade. For example, the MnRAM was initially developed in the 1990s as an assessment tool to identify management classes of wetlands for use by local authorities to help establish wetland protection standards. MnRAM was widely used in the following decades to inventory and assign management classes. Over the last 10 years, technical support for MnRAM has been phased out by the Board of Soil and Water Resources (BWSR) as MnRAM often lacks the precision to make wetland permitting/impact decisions for specific wetlands.

On August 1, 2024 BWSR and Wisconsin DNR released a collaborative draft Wisconsin-Minnesota Wetland Assessment Tool (WAT) to provide a resource that can be used to assist in wetland regulatory implementation, conservation, and planning. The WAT tool includes site assessment protocols that better relate to functional capacity and values, and also provides assessment of additional functions and values not assessed by MnRAM. The WAT tool includes outputs for “functional capacity” and “opportunity value” of each function. Functional capacity is defined as the ability of a wetland to perform a specific function. Opportunity value is defined as the potential for a wetland to perform a specific function and its relative value to society. Table 1 provides a summary of functional groups and specific functions assessed by WAT and MnRAM equivalents.

The objectives of the 2024 update to the wetland function and value inventory were to 1) update the current wetland inventory using the 2013 NWI maps 2) use the draft functional assessment tool to re-assess function and value of a subset of District wetlands, and extrapolate results to assess District-wide status of wetland function and values and 3) provide recommendations for rule revisions based on inventory results and implementation of the draft WAT.

**Table 1. WAT Functional Groups, Specific Functions, and Definitions and MnRAM equivalents. Categories assessed by MnRAM but not WAT include Characteristic Hydrology and In-Wetland Water Quality (both recognized by Ecological category of WAT).**

Functional Group	Specific Function	Definition	MnRAM Equivalent
Hydrology	Surface Water Attenuation (SWA)	The ability of a wetland to store or delay surface water over a period of time to influence the magnitude, frequency, and/or duration of inundation further downstream or within a watershed	Flood Attenuation
	Surface Water Supply (SWS)	The ability of a wetland to supply water to downstream/downslope waters or within a watershed via surface water outflows, saturation overland flow, and/or groundwater discharge.	Not Assessed
	Groundwater Recharge (GR)	The ability of a wetland to recharge groundwater.	Not Assessed
Water Quality	Nitrate Removal (NR)	The ability of a wetland to remove nitrate.	Assesses generalized downstream water quality
	Phosphorus Retention (PR)	The ability of a wetland to serve as a phosphorus sink.	Assesses generalized downstream water quality
	Sediment and Pollutant Retention (SPR)	The ability of a wetland to serve as a sediment and pollutant sink.	Assesses generalized downstream water quality
	Shoreline Stabilization (SS)	The ability of a wetland to stabilize shorelines of adjacent larger water bodies.	Shoreline Protection
	Thermoregulation (TR)	The ability of a wetland to maintain or reduce water temperature.	Assesses generalized downstream water quality
Ecological	Native Plant Habitat (NP)	The ability of a wetland to support the life requirements of native plants and plant communities.	Vegetative Diversity/Integrity
	Wildlife Habitat (WH)	The ability of a wetland to support the life requirements of native wildlife.	Characteristic Wildlife Habitat Structure
	Fish Habitat (FH)	The ability of a wetland to support the life requirements of native fish.	Maintenance of Characteristic Fish Habitat
Climate	Carbon Sequestration (CS)	The ability of a wetland to sequester carbon.	Not Assessed
Anthropogenic	Historic or Cultural Uses (HCU)	The capacity for a wetland to serve as an archaeological, historical, or culturally significant resource.	Assesses generalized aesthetics/recreation/education /cultural
	Scientific or Educational Importance (SEI)	The capacity for a wetland to serve as scientific or educational resource.	Assesses generalized aesthetics/recreation/education /cultural
	Commercial Uses (CU)	The capacity of the wetland to serve as a commercial resource.	Assesses generalized aesthetics/recreation/education /cultural

Functional Group	Specific Function	Definition	MnRAM Equivalent
	Recreational Uses (RU)	The capacity of the wetland to serve as a recreational resource for the public.	Assesses generalized aesthetics/recreation/education /cultural
	Scenic Beauty (SB)	The capacity of the wetland to provide an aesthetic resource for the public.	Assesses generalized aesthetics/recreation/education /cultural

**Groundwater Dependent Wetlands Update**

Currently the District has two sources of information that it uses in determining groundwater dependency of its resources (groundwater dependent natural resources – GDNR).

The first comes from the District’s Wetland Inventory and Functions & Values Evaluation that was performed in 2001 and updated in 2007. In this evaluation, wetlands were identified as having groundwater dependency in terms of providing hydrology for the wetland, i.e., was the source of water for the wetland coming from surface water runoff, groundwater, or a combination of the two.

The second source of information related to groundwater dependency was developed in support of the District’s Rules and the Managers desire to provide greater protection to wetlands that were dependent upon groundwater. In this case, the dependency went beyond simply providing hydrology to the wetland. Wetlands were determined to be Groundwater Dependent (for purposes of the District Rule) if their plant community relied upon groundwater. For example, the Grant Fen is a groundwater dependent natural resource because there are high-quality indicator plant species within the Fen that are only seen in areas where groundwater is the predominant source of hydrology. The quantity and quality of the water supporting the fen hydrology support the Fen’s plant community.

In terms of the Districts Rules, groundwater dependency is based on this second source of information (i.e. the wetland plant community). Plant communities consisting of plants that are dependent upon groundwater are defined as being groundwater dependent. For purposes of the Rule, a wetland that is fed by groundwater (i.e. its hydrology is provided by groundwater) is not automatically a groundwater dependent natural resource. The wetland must have a plant community that is an expression of the groundwater according to classifications based on the Minnesota Land Cover Classification System (MLCCS). However, this vegetation-based definition lacks clarity when stressors beyond hydrology degrade the plant community, such as invasive species, vegetation clearing (e.g. cultivation), or historical overgrazing. Plant communities may be dominated by plants (e.g. cattails) that do not necessarily indicate groundwater dependency, but conversely do not rule out the wetland’s groundwater dependent hydrology. For example, based on existing MLCCS data, there would be only nine District wetlands qualifying as groundwater dependent under current rules.

Shortcomings of the existing approach include definitional confusion and outdated data sources, as the MLCCS is currently being updated. The objectives of the 2024 GDNR re-classification include 1) reclassification of GDNR within the District into a simplified layer and 2) redefining the definition of GDNR within District rules. This will provide clarity to the District’s permitting process and serve as a better resource for project planning.

**METHODS**

**Function and Value Update**

The 2013 NWI mapping update was aggregated with the original function and value inventory. The resulting layer included the new NWI geometries and attributes while preserving data from the original function and value inventory. From this layer, 12 sites were selected for field assessment using the WAT. Selection criteria included existing

management classification, wetland size and location, public waters status, proximity to existing permits, and potential for future development. Selected wetlands are provided in Table 2 and mapped in Appendix A: Figure 2.

**Table 2. Selected wetlands for field assessment.**

Wetland ID	Public Water	Original Management Classification	Selection Criteria
3	N	Manage 1	Small Manage 1 wetland
233	N	Manage 1	Small Manage 1 wetland
459	Y	Manage 1	Manage 1 public water wetland proximal to permit
674	Y	Manage 1	Manage 1 public water wetland proximal to permit
949	Y	Manage 1	Manage 1 public water wetland proximal to permit
504	N	Manage 2	Manage 2 wetland proximal to permit
553	N	Manage 2	Small Manage 2 wetland with development potential
330	N	Manage 3	Manage 3 wetland with development potential
413	N	Manage 3	Manage 3 wetland. Highly studied wetland with restoration potential (Mendel Road wetland)
298	N	Preserve	Small Preserve wetland proximal to permit
939	Y	Preserve	Preserve public water wetland proximal to permit
1064	N	Preserve	Preserve wetland proximal to permit

Field assessments of wetlands primarily occurred from 9/30/24-10/7/2024. Wetland 413 was assessed on 10/23/24 to accommodate landowner schedule. The WAT field protocol included assessment of wetland hydrogeomorphology, rapid floristic quality assessment according to MPCA methods, and several other field observations related to hydrology, vegetation, wildlife habitat, and anthropogenic values.

The WAT protocol also includes a desktop component that incorporates multiple GIS analyses including catchment delineation, land cover analyses, relationships to mapped wildlife habitat core/connection areas, and soil profiles. Desktop analyses were initially completed prior to field work and refined based on field observations.

Data was input into the automated WAT data spreadsheet, which assigns function and value rankings for specific functions related to hydrology, water quality, ecological, climate, and anthropogenic functional groups (Table 1). Four rankings are possible for each specific function: Lower, Moderate, Higher, and Not Applicable. Summary rankings are also provided for each functional group. Manual analysis was occasionally necessary due to spreadsheet bugs in the draft formulas. An important difference from the MnRAM and the previous function and value inventory are the ranking tiers. MnRAM provided an "Exceptional" ranking beyond the "Higher" ranking, which the WAT does not include.

Results of the functional rankings were then translated to the existing wetland management classification system as outlined in District rules. As the relationship between WAT output and MnRAM output is not 1:1, EOR developed a crosswalk for the management classification translation (Table 3). Based on observed trends from the 12 field assessments, EOR extrapolated trends to District-wide wetlands using GIS according to the following criteria.



- Reduce to Manage 2 class:
  - o Existing Manage 1 wetlands smaller than 2 acres and not overlapping mapped high quality MLCCS/NWI/NPC vegetation classes, previously scored moderate or below for vegetation quality, or not overlapping a mapped habitat core area.
- Increase to Preserve class:
  - o Existing Manage 1 wetlands greater than 2 acres overlapping high quality MLCCS/NWI/NPC vegetation classes or previously scored high for vegetation or habitat diversity.
- Increase to Manage 2 class:
  - o Existing Manage 3 wetlands within 250 feet of an arterial road and unobstructed.

The resulting classifications were appended to the aggregated NWI/original function and value inventory layer to create a single summary wetland inventory. Only wetlands greater than 1 acre were assigned classifications. Known and likely artificial ponds (e.g. stormwater ponds, golf course ponds, agricultural ponds) were assigned an "Excavated Ponds" classification. The Excavated Ponds layer was created by extracting ponds with NWI "excavated" modifiers located in areas with non-hydric soil. Existing BCWD stormwater pond data was also included in the Excavated Ponds layer.

**Table 3. MnRAM/WAT ranking crosswalk as applicable to District rules.**

MnRAM Function or Value	WAT Function or Value	MnRAM/WAT Crosswalk
Vegetative Diversity	Native Plant Habitat	MnRAM "Exceptional" OR "High" = WAT "Higher" MnRAM "Medium" = WAT "Moderate" MnRAM "Low" = WAT "Lower"
Wildlife Habitat	Wildlife Habitat	MnRAM "Exceptional" OR "High" = WAT "Higher" MnRAM "Medium" = WAT "Moderate" MnRAM "Low" = WAT "Lower"
Fish Habitat	Fish Habitat	MnRAM "Exceptional" OR "High" = WAT "Higher" MnRAM "Medium" = WAT "Moderate" MnRAM "Low" = WAT "Lower"
Aesthetics/Education/Recreation/Cultural	Anthropogenic Overall	MnRAM "Exceptional" OR "High" = WAT "Higher" MnRAM "Medium" = WAT "Moderate" MnRAM "Low" = WAT "Lower"
Maintenance of Hydrologic Regime	Hydrology Overall	MnRAM "Exceptional" OR "High" = WAT "Higher" MnRAM "Medium" = WAT "Moderate" MnRAM "Low" = WAT "Lower"
Stormwater Sensitivity	NA	Original stormwater sensitivity rating is independent of MnRAM and is still valid based on WAT plant community classifications

## Groundwater Dependent Natural Resources Update

The aggregated summary layer from the 2024 function and value inventory was used as the base layer for the GDNR re-classification. This assessment focuses on wetland groundwater dependency; other sources should be used to assess lake and stream groundwater dependency. EOR used five (5) GIS data sources to assess wetland groundwater dependency. These indicator layers consisted of:

- Groundwater-dependency classifications from the original function and value assessment: The 2007 assessment included hydrology source for each wetland evaluated. Although wetland characteristics can change over time and basin-specific data may not be suitable for project-specific assessments, the existing Function and Value data is likely still relevant at a District-wide scale.
- NWI Hydrogeomorphic (HGM) Classification: The DNR updated NWI maps for the BCWD area in 2013. These new data were included in the aggregated summary layer for the 2024 function and value update. In addition to revised polygon boundaries, the 2013 NWI layer included HGM attribute data. The HGM classification system classifies wetlands based on their landscape position, source of water, and hydrodynamics (inflow, outflow, flowthrough, etc.). The HGM classifications within NWI data can be used to define hydrology source. In general, wetlands classified as “slope” wetlands are considered groundwater dependent.
- DNR Native Plant Communities (NPCs): The NPC system is the most widely used plant community classification system in Minnesota. This system groups wetland NPC classes into four categories of groundwater dependence. These categories encompass 1) wetlands dependent on sustained groundwater discharge, 2) wetlands dependent on groundwater associated with consistently high water tables, 3) wetlands dependent on groundwater associated with water tables that are high for some portion of the growing season, and 4) wetlands not highly dependent on groundwater. These data complement other GIS layers in classifying groundwater dependency, such as for HGM wetlands that are not classified as “slope” wetlands. A limiting factor of the DNR NPC layer is that it is constrained to the small geographic area where DNR has surveyed NPCs. To address this limitation, EOR used a 2024 DNR model that uses MLCCS and other data to model NPCs across all natural areas.
- Minnesota Land Cover Classification System (MLCCS): EOR also used the original MLCCS data to identify groundwater dependent natural resources, which generally aligns with existing District rules.
- 2003 North Washington Groundwater Study: The 2003 Groundwater Study identified areas of groundwater recharge and groundwater discharge within the District.

Each wetland polygon was assigned a score for groundwater dependency based on the source data on a scale of 0 to 1 (Table 4). The scores for each data source were added together to create a composite groundwater dependency score, with the highest possible score being 5 and the lowest possible score being 0. Composite scores equal to 1 or greater were considered groundwater dependent. A score of 1 or greater indicates that a wetland has at least one strong indicator of groundwater dependency or multiple soft indicators of groundwater dependency.

**Table 4. Scoring system for groundwater dependency indicator layers.**

Layer	Class	Score
Prior Function and Value Assessment	No	0
	Both	0.5
	Groundwater Dependent	1
2003 Mapped Groundwater Discharge Area	No	0
	Yes	1
NWI Slope Wetland	No	0
	Yes	1
MLCCS Groundwater Dependent Plant Community	No	0
	Yes	1
DNR NPC	No	0
	Partially	0.33
	Highly	0.67
	Fully	1

## RESULTS AND DISCUSSION

### Function and Value Update

#### Field Inventory

Individual narratives, summary function and value tables, and plant community maps are provided for each assessed wetland in Appendix B. The following describes notable field observations, function and value results, and management classifications of field-assessed wetlands.

#### Field Observations

Several exceptional observations were recorded during the field assessment for specific wetlands. Wetland 939 scored as a Good quality plant community with a Higher ecological function and value score. Additionally, during the field survey, several notable aquatic plants were collected and submitted to the DNR for identification confirmation. One is a state-listed special-concern plant and Washington County record typically found in northern Minnesota. Another, spiny coontail (*Ceratophyllum echinatum*), has not been recorded in Washington County since 1929. A third plant appeared to be a native milfoil (*Myriophyllum* sp.) that would also be a Washington County record but has yet to be confirmed by DNR botanists. Spiny coontail was also found in Wetland 553, along with a species of aquatic stonewort that would be a Washington County record. These assemblages of plants are rare in Washington County and more so in the metro area, and are also indicative of soft water chemistry that is suitable habitat for several other uncommon or rare aquatic plant species such as snailseed pondweed (*Potamogeton bicupulatus*). Snailseed pondweed is a state-endangered plant that has recently been found in two other District lakes with soft water characteristics. The presence of these soft water communities within the District is extremely unique. The observation of Wetlands 939 and 553 as additional water resources with these characteristics further suggests the small, relatively undeveloped, well-buffered open water communities of the District that are a valuable biodiversity resource worthy of conservation.

Wetland 949 is located near Wetland 939 and is another unique resource. The wetland consists of a floating mat and open water fringe. The fringes of the mat are dominated by invasive cattail, which encroaches toward the center. However, the interior is dominated by a carpet of Sphagnum moss and the shrub leatherleaf, with sedges and regionally uncommon plants such as small cranberry and the carnivorous round-leaved sundew. Spiny coontail was observed in the open water fringe. There is potential for rare species presence if surveyed earlier in the growing season. The plant community classifies as an open bog according to the WAT methods and classifies as a leatherleaf-sweet gale shore fen (OPn81b) according to the higher resolution DNR Native Plant Community Classification system. Although common in northern Minnesota, Wetland 939 would be the southernmost occurrence of OPn81b in the DNR's database, suggesting both local and statewide importance.

The lands surrounding and including Wetlands 939 and 949 are mapped as a Minnesota Biological Survey Site of Moderate Biodiversity Significance. EOR obtained survey records from the MBS assessment conducted in 1985. Wetlands 939 and 949 were not included in the original survey. The observations recorded during the field assessment may support a higher level of biodiversity significance for this locality.

#### Function and Value

Table 5 provides summaries of overall functional scores, functional capacity scores, and opportunity value scores for each wetland and functional group. Specific function scores for each wetland are provided in Appendix B. Overall, all of the assessed wetlands provided Higher function and value for at least one functional group, indicating wetlands in the District are important resources. Hydrology and water quality functional groups most consistently scored Higher, with ecological function rating as Higher for half of the assessed wetlands. Climate and Anthropogenic scores were Low to Moderate.

Hydrology: Eleven of the 12 wetlands scored Higher for overall hydrology, indicating that most of the assessed wetlands provide significant hydrologic benefit or restoration opportunity/societal value for the watershed. Nine of the 12 scored Higher for functional capacity and 10 of the 12 scored Higher for opportunity value. Depressional, unditched wetlands (e.g. 233) with temporary/seasonal water regimes tended to score Higher for surface water attenuation functional capacity, with ditched wetlands of similar characteristics providing Higher opportunity-value (e.g. 330). Wetlands with free-flowing outlets to downstream waters and open water (e.g. 298) and groundwater-discharge wetlands (e.g. 504) tended to score Higher for surface water supply functional capacity, while those with similar characteristics but restricted outlets (e.g. 1064) provided Higher opportunity value. Depressional wetlands with temporary/seasonal water regimes, permeable soils, and located high in the watershed tended to score Higher for groundwater recharge functional capacity (e.g. 3), with Higher opportunity value if located in a developed/agricultural area or area of notable groundwater use (e.g. 553).

Water Quality: Ten of the 12 wetlands scored Higher for overall water quality as well as functional capacity, indicating that most of the assessed wetlands provide significant water quality benefit for the watershed. Five of the 12 wetlands provide Higher opportunity-value, all of which have Higher functional capacity scores and suggesting these wetlands provide significant societal value but restoration opportunities may be somewhat limited. Isolated wetlands with saturated/semi-permanent water regimes and peaty/mucky substrates tended to score Higher for nitrate removal functional capacity. Isolated wetlands with seasonally saturated or permanently flooded regimes, loamy/clayey soils, and several vegetation characteristics tended to have Higher phosphorus retention functional capacity. Isolated wetlands with high stem density and overland flow across the soil surface tended to score Higher for sediment and general pollutant runoff functional capacity. Position in the watershed was also important for determining functional capacity for all water quality functions. Wetlands receiving direct runoff from developed/agricultural catchments provided Higher opportunity value for all these water quality functions.

Assessed wetlands were not associated with lakes or streams and did not receive shoreline stabilization functional scores. Only two wetlands (413 and 504) discharge to streams, and therefore received thermoregulation functional scores. Both of these wetlands scored Higher for thermoregulation functional capacity due to discharging to a low order stream, geomorphology, and groundwater discharge.

Ecological: Six of the 12 wetlands scored Higher for overall ecology, four of which scored Higher for both functional capacity and opportunity value. Wetland 413 scored Higher for functional capacity, but Moderate for opportunity value due to a lack of natural land cover in the immediate area. Wetland 1064 scored Higher for opportunity value, but Moderate for functional capacity due to fair vegetation and wildlife habitat quality. Ecological scores were primarily driven by plant diversity and structure characteristics and position within wildlife habitat core areas. No fisheries habitat scores were provided as wetlands were too shallow and/or isolated from perennial waterbodies.

Climate: No assessed wetlands scored Higher for Climate functional capacity. Eleven of the 12 wetlands scored Moderate and one scored Lower (3). The lack of Higher scores appears to be driven by a lack of forested wetlands and a lack of Sphagnum moss dominated wetlands. Forested wetlands are uncommon within the District and Sphagnum dominated wetlands are extremely rare (although 949 is an example), which likely suppresses the amount of Higher climate scores present in the District. A bug in the draft tool related to hydrology regime influence on methane limitation may also have suppressed Climate scores.

Anthropogenic: No assessed wetlands scored Higher for Anthropogenic opportunity value. Eight of the 12 wetlands scored Moderate and four scored Lower. The lack of Higher scores appears to be driven by a lack of public access, recreational/educational/scientific/commercial use, and lack of cultural/historical significance. Moderate ranks were driven by higher scores for scenic beauty due to unobstructed views from public roads.

Several caveats should be considered while interpreting scores. The first caveat is that the WAT tool is still in draft form. Several bugs were detected during implementation, most of which could be manually fixed. It is possible the final tool may include updates that alter functional scores.

Second, ecological scores are highly dependent on plant community quality, which is determined by the tool in the field using the MPCA's Rapid Floristic Quality Assessment (RFQA). The RFQA assigns quality rankings according to plant community type relative to statewide conditions (Poor, Fair, Good, or Exceptional). Plant communities are scored relative to the same community type and independent of other plant communities. For example, fresh meadows are a highly degraded plant community statewide, so a Good quality fresh meadow may still have some degree of invasive species dominance and low diversity relative to less degraded communities such as coniferous bogs or sedge mats that are often found in undeveloped areas of the state. Therefore, a Good quality fresh meadow may actually have lower raw floristic quality metrics than a Poor quality coniferous bog. This can be seen as a flaw in the WAT tool that overlooks the regional importance of plant communities located on the fringes of their range and/or where wetland loss/degradation is higher. The assessed wetlands within the District are an excellent example. Although invaded by cattail, wetland 949 would be the southern most example of an open shrub shore fen DNR Native Plant Community recorded in their database. It includes several uncommon species for Washington County. However, because it is partially invaded by cattail and RFQA compares quality to similar plant communities in the northern part of the state, wetland 949 scores as a Poor quality community. Similarly, wetland 413 includes tamarack-dominated coniferous bog that is being invaded by glossy buckthorn. This is a rare plant community in Washington County, but is ranked as Fair according to the RFQA. Wetlands 939 and 1064 also have similar plant community classification issues that impact overall ecological score. The simple presence and regional importance of plant communities should be accounted for while interpreting WAT ecological scores.

The final caveat is that climate scores are highly dependent on forested and Sphagnum moss wetlands, both of which are uncommon wetland plant communities in the District. Interpretation of climate functional capacity scores should consider the local importance of maintaining climate functions in the context of wetland characteristics of the District.

### Management Classification

Table 6 presents management classification results for individual wetlands. Management classifications of field-assessed wetlands exhibited several trends. Observed trends were used to extrapolate watershed wide results as described in the Methods section.

All Preserve wetlands from the prior classification maintained Preserve classification following the WAT assessment, indicating resilience to change. Three Manage 1 wetlands (459, 674, and 949) increased from Manage 1 to Preserve classification. These are all relatively large wetlands with good buffers and likely have some resilience to degradation. Further, because the WAT tool only has three functional capacity ratings compared to the four ratings provided by MnRAM, "Higher" WAT scores were assumed to be equivalent to both "High" and "Exceptional" MnRAM scores. The lower resolution may have increased the overall Native Plant Habitat and Wildlife Habitat scores compared to the previous MnRAM based assessment, particularly for Wetlands 674 and 459 which may have not rated as "Exceptional" for these functions based on MnRAM. Finally, the WAT assessment relied on more detailed field surveys than the previous assessment. Exceptional plant communities such as those present within Wetland 949 may have been missed during the prior assessment.

Two Manage 1 wetlands (3 and 233) from the prior assessment decreased to Manage 2 wetlands. Both of these wetlands are relatively small and near roads. These factors may make them less resilient to degradation, resulting in a decline in function over time.

One Manage 2 wetland increased to Preserve (504). Wetland 504 is a large, groundwater fed wetland that discharges into a stream eventually draining to Brown's Creek. The more specific function and value classes for hydrology may have contributed to a higher hydrology rating. Additionally, portions of the wetland are dominated by invasive species while others are relatively high quality plant communities. The coarse resolution of the prior assessment may have missed the high quality vegetation. Further, similar to Wetlands 674 and 459, the Native Plant Habitat score may not have scored as "Exceptional" under the prior MnRAM-based assessment, but is included in the top tier for this function by WAT.

One Manage 2 wetland increased to Manage 1 (553). Like with other wetlands demonstrating an increase in classification, it may be attributed to the coarse resolution of the prior survey and high WAT Native Plant Diversity score that may not have ranked "Exceptional" under the prior MnRAM based methods.

One Manage 3 wetland increased to Preserve (413). Wetland 413 is also known as the Mendel Road wetland and includes a large portion of tamarack-dominated coniferous bog. The coarse resolution of the prior assessment may have missed the unique and higher quality interior portions of the wetland, as from Manning Avenue the visible portion of the plant community appears degraded.

One Manage 3 wetland increased to Manage 2 (330). Wetland 330 is a ditched wetland located in a pasture visible from Manning Avenue. The sole reason Wetland 330 increased to a Manage 2 wetland is the WAT tool's criteria for scenic beauty and visibility from Manning Avenue.

**Table 5. Summary of overall functional capacity (FC), opportunity value (OV), and overall combined ranking for each functional group. See Appendix A for specific function scores of each wetland. Note that the WAT does not provide OV rankings for Climate function or FC rankings for Anthropogenic function.**

Wetland ID	3	233	298	330	413	459	504	553	674	939	949	1064
Hydrology FC	Higher	Higher	Higher	Higher	Moderate	Higher	Moderate	Higher	Higher	Moderate	Higher	Higher
Hydrology OV	Higher	Higher	Higher	Higher	Higher	Higher	Higher	Higher	Higher	Moderate	Moderate	Higher
Hydrology Overall	Higher	Higher	Higher	Higher	Higher	Higher	Higher	Higher	Higher	Moderate	Higher	Higher
Water Quality FC	Higher	Higher	Higher	Moderate	Higher	Higher	Higher	Higher	Moderate	Higher	Higher	Higher
Water Quality OV	Moderate	Moderate	Lower	Lower	Higher	Higher	Higher	Higher	Moderate	Moderate	Moderate	Higher
Water Quality Overall	Higher	Higher	Moderate	Lower	Higher	Higher	Higher	Higher	Moderate	Higher	Higher	Higher
Ecological FC	Moderate	Lower	Moderate	Lower	Higher	Higher	Higher	Moderate	Higher	Higher	Higher	Moderate
Ecological OV	Moderate	Lower	Moderate	Lower	Moderate	Higher	Moderate	Moderate	Higher	Higher	Higher	Higher
Ecological Overall	Moderate	Lower	Moderate	Lower	Higher	Higher	Higher	Moderate	Higher	Higher	Higher	Higher
Climate FC/Overall	Lower	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Anthropogenic OV/Overall	Lower	Moderate	Lower	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Lower	Moderate

**Table 6. Summary of management classifications as applied per District rules and MnRAM crosswalk presented in Table 3**

Wetland ID	Native Plant Habitat	Wildlife Habitat	Fish Habitat	Anthropogenic Overall	Hydrology Overall	Stormwater Sensitivity	WAT Management Class	Prior Management Class	Public Water	Hypothesis for change
3	Moderate	Lower	NA	Lower	Higher	B	Manage 2	Manage 1	N	Small, less resilient to degradation.
233	Lower	Lower	NA	Moderate	Higher	B	Manage 2	Manage 1	N	Small, less resilient to degradation.
298	Moderate	Lower	NA	Lower	Higher	Exceptional	Preserve	Preserve	N	No change
330	Lower	Lower	NA	Moderate	Higher	B	Manage 2	Manage 3	N	Higher anthropogenic value due to visibility from roadside
413	Moderate	Higher	NA	Moderate	Higher	Exceptional	Preserve	Manage 3	N	Coarse resolution of prior assessment may have missed bog.
459	Higher	Higher	NA	Moderate	Higher	Exceptional	Preserve	Manage 1	Y	Large and good buffers, more resilient to degradation; higher value in new tool on plant diversity
504	Moderate	Higher	NA	Moderate	Higher	A	Preserve	Manage 2	N	Additional hydrology functions in WAT; coarse resolution of prior assessment may have missed better vegetation areas; high value in new tool on plant diversity (especially fresh meadows that aren't dominated by invasives).
553	Moderate	Moderate	NA	Moderate	Higher	A	Manage 1	Manage 2	N	Better plant diversity than apparent, coarse resolution of prior may have missed good shallow open water diversity
674	Higher	Higher	NA	Moderate	Higher	B	Preserve	Manage 1	Y	Large and good buffers, more resilient to degradation; higher value in new tool on plant diversity (especially fresh meadows that aren't dominated by invasives).
939	Higher	Higher	NA	Lower	Moderate	A	Preserve	Preserve	Y	No change
949	Moderate	Higher	NA	Moderate	Higher	Exceptional	Preserve	Manage 1	Y	Coarse resolution of prior assessment may have missed bog plant community.
1064	Moderate	Moderate	NA	Lower	Higher	Exceptional	Preserve	Preserve	N	No change



## Watershed-Wide Inventory

The revised NWI layer included a total of 686 wetland polygons. A summary table of watershed-wide management classifications based on the extrapolation criteria from the field inventory is provided in Table 7. Maps of prior and revised classifications are provided in Figures 3-6.

The watershed-wide extrapolation resulted in both increases and decreases of specific management classifications. Preserve and Manage 2 wetlands both increased while Manage 1 and Manage 3 wetlands decreased. The decrease in Manage 1 wetlands was due to both increases to Preserve wetlands and Manage 2 wetlands. The decrease in Manage 3 wetlands was a result of an increase in Manage 2 wetlands due to visibility from arterial roads and highways.

The prior classification included seven lakes. The revised classification places all District ponds and lakes into a single classification of Lakes/Ponds, resulting an increase in this management class pulling from various other classes. There was also an increase in the Needs Assessment classification due to the new NWI increasing some wetland sizes beyond the 1-acre assessment threshold. The Excavated Ponds classification also increased due to broader analysis capturing existing ponds potentially located in uplands.

Changes in Management Classes appear reasonable based on field results. Previously, only 36 wetlands were classified as Preserve. The finer resolution of the WAT field surveys revealed many of the previously non-Preserve wetlands included areas of high or exceptional ecological value. Although there are many degraded wetlands within the District, the landscape/geologic setting and relatively undeveloped land with good buffers maintains numerous high quality wetlands.

**Table 7. Summary of management class reclassification results and comparison to prior function and value assessment.**

Classification	Number of Wetlands	Net Change (Reclassification-Old)
Preserve (Old)	36	+56
Preserve (Reclassification)	92	
Manage 1 (Old)	143	-100
Manage 1 (Reclassification)	43	
Manage 2 (Old)	73	+23
Manage 2 (Reclassification)	96	
Manage 3 (Old)	50	-13
Manage 3 (Reclassification)	37	
Needs Assessment (Old)	1	+24
Needs Assessment (Reclassification)	25	
Below Threshold (Old)	367	-41
Below Threshold (Reclassification)	326	
Lakes (Old)	7	+33
Lakes/Ponds (Reclassification)	40	

Classification	Number of Wetlands	Net Change (Reclassification-Old)
Stormwater Management Ponds (Old)	9	+18
Excavated Ponds (Reclassification)	27	

## Groundwater Dependent Natural Resources Reclassification

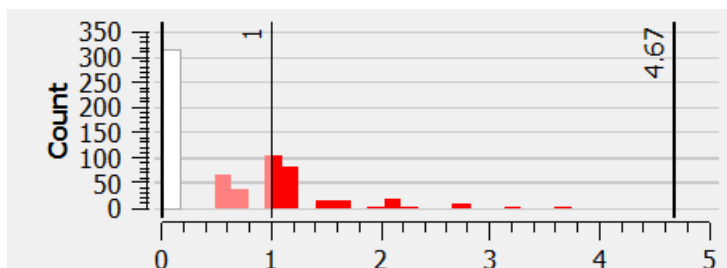
Wetlands with revised management classes of “Lake/Pond” or “Excavated Pond” were not included in final quantities as methods are either not applicable (Lake/Ponds) or wetlands may be artificial (Excavated Ponds). Excluding these features, a total of 619 wetland polygons were assessed for groundwater dependency. A comparison of prior groundwater classification and the reclassification is provided in Table 8 and maps of the groundwater dependent reclassification are provided in Figure 7 and Figure 8.

**Table 8. Comparison of prior groundwater dependent wetlands classification and 2024 reclassification.**

	Prior Groundwater Dependency Classification	Reclassified Groundwater Dependency Classification (score of 1 or greater)
Groundwater Dependent Wetlands	179	235
Not Groundwater Dependent Wetlands	440	384

The number of groundwater dependent wetlands increased from 179 to 235 based on the prior classification. The groundwater-dependent score threshold of 1 or greater appears reasonable in the context of the groundwater summary score distribution (Figure 1). Most of the wetlands near the threshold score as groundwater dependent either due to NWI HGM slope classification or a combination of secondary characteristics (highly dependent NPC and both surface water and groundwater dependent based on prior classification).

It is important to consider groundwater-dependent wetland classification and potential rule revision recommendations in the context of current District rules. Current District rules are based on plant communities as defined by MLCCS classification. Using existing MLCCS data, only 9 wetlands within the District would meet this criteria. The MLCCS classifications are highly specific and representative of intact plant communities. Many groundwater dependent wetlands are no longer reflective of these communities, but still may provide functions of groundwater dependent wetlands such as inclusions or microhabitat for groundwater-dependent plants, surface water supply, and thermoregulation. These wetlands may also have capacity for restoration to plant communities more reflective of groundwater-dependency (e.g. seepage wetlands at Brown’s Creek Park).



**Figure 1. Distribution of groundwater-dependency scores for District wetlands on scale of 0-5 (x-axis).**

## RECOMMENDATIONS

### Function and Value Inventory

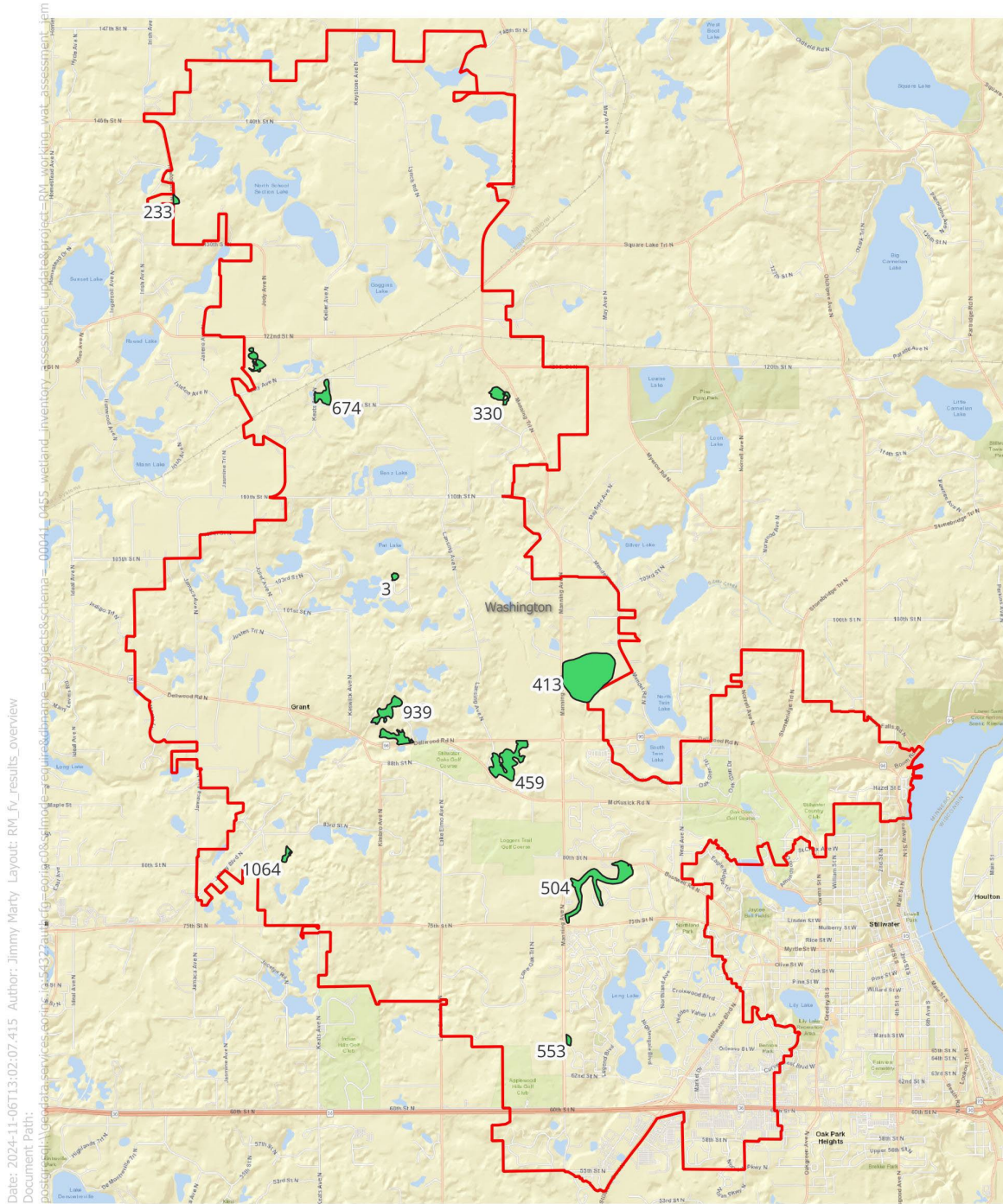
1. The revised watershed-wide management classifications should be used as base layer for assessing wetland management classifications. The classifications can be applied under the current framework of the District rules to continue protection of high quality wetlands.
  - a. Site-specific decisions related to permitting or potential projects should continue to require site-specific data to field-verify classifications and describe functions and values.
  - b. MnRAM should continue to be used for management classification and functional assessments for application of District rules until WAT is finalized. At that time the District should consider rule revisions to implement WAT for site-specific management classifications. Coordinate with agencies at that time for specific guidance on regulatory implementation similar to MnRAM-based regulatory guidance released at onset of MnRAM.
  - c. Unless the final WAT integrates revisions to plant community condition scoring, the District should consider an additional rule protecting regionally important plant communities that are currently not factored into WAT as Preserve wetlands (e.g. open bogs, coniferous bogs, sedge mats, calcareous fens).
2. Since WAT includes additional function and value categories, the District could consider rule revisions to protect locally important functions. For example, thermoregulation may be a locally important function for maintaining stream temperatures.
3. The District should consider assessment of a subset of wetlands on an annual basis. Additional assessment would improve accuracy of extrapolated classifications, provide ability to adjust extrapolation parameters, and offer opportunity to document exceptional wetland resources within the District as demonstrated by the identification of Wetlands 939 and 949 as particularly exceptional resources.

### Groundwater Dependent Wetland Recommendations

1. Adopt the new classification layer as the base layer for assessing wetland groundwater dependency. Site-specific assessment should supplement GIS-based determinations for proposed projects.
2. Revise the District's rule language to define groundwater dependent wetlands as wetlands with groundwater dependent hydrology and/or a plant community that reflects groundwater hydrology.
3. Specify that field assessment criteria for determining groundwater dependency should include but not be limited to:
  - a. Presence of groundwater dependent MLCCS plant communities as defined by current rules
  - b. Presence of fully groundwater dependent DNR Native Plant Communities
  - c. Presence of mapped springs or seeps
  - d. Field identification of springs or seeps
  - e. Geomorphic position along slope
  - f. Secondary groundwater discharge field indicators
    - i. Abnormally cold water (especially observed during hottest summer months)
    - ii. Location within a mapped groundwater discharge area, near a groundwater divide, or headwater wetland
    - iii. Iron and marl deposits in soils
    - iv. Rainbow film on surface water that breaks apart (unlike an oily film)
  - g. For open water wetlands where some indicators may not be evident, investigation of landscape position and underlying soils may be necessary.

## **Appendix A**

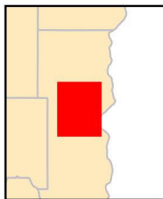
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- BCWD Boundary
- Assessment Areas



**Brown's Creek  
 Watershed District  
 Selected Wetlands for  
 Field Assessment**

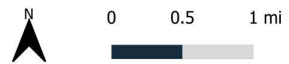


Figure 2. Selected wetlands for WAT field assessment.



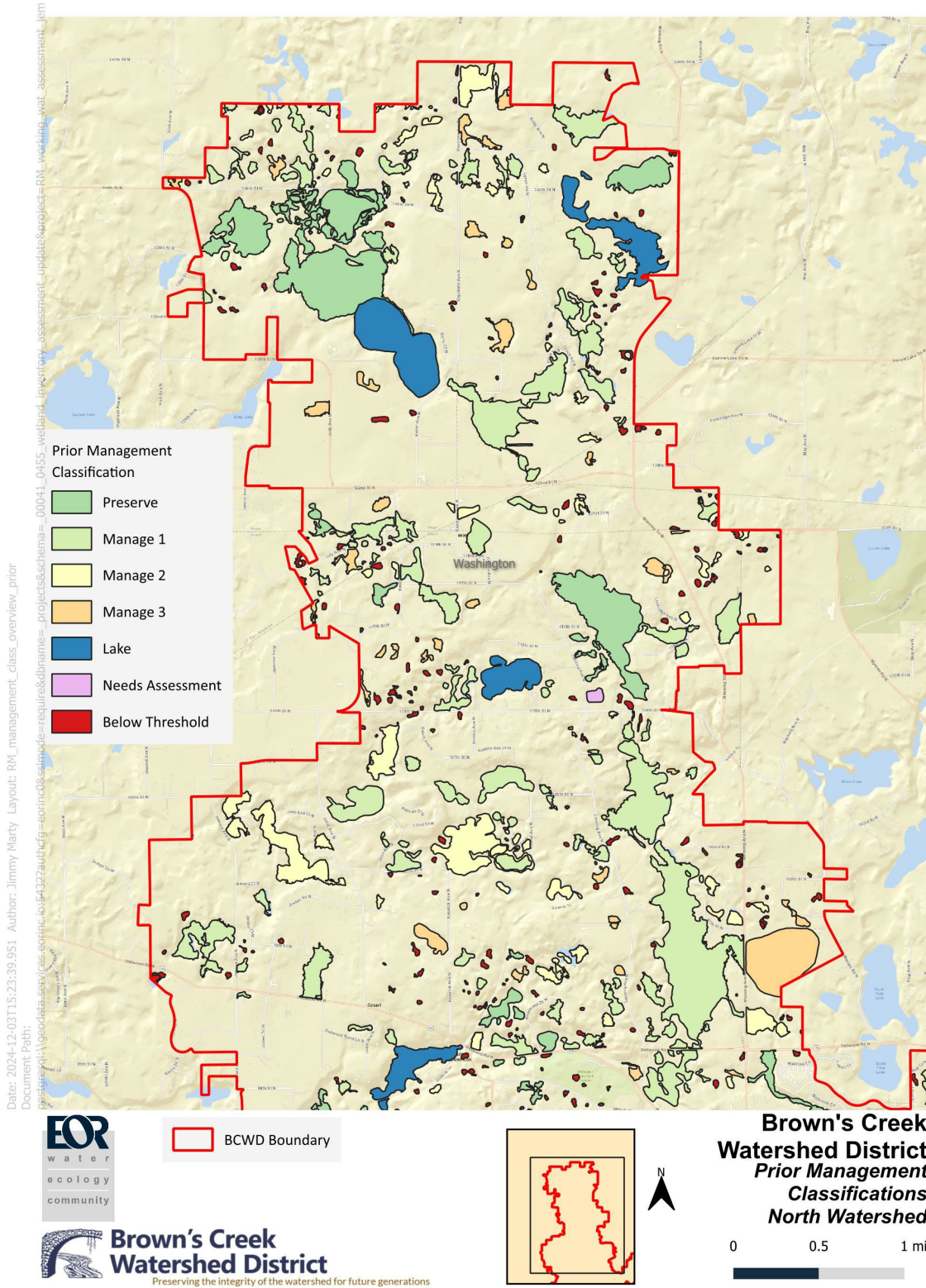


Figure 3. Prior management classifications from the 2001 and 2007 function and value inventory - north watershed.

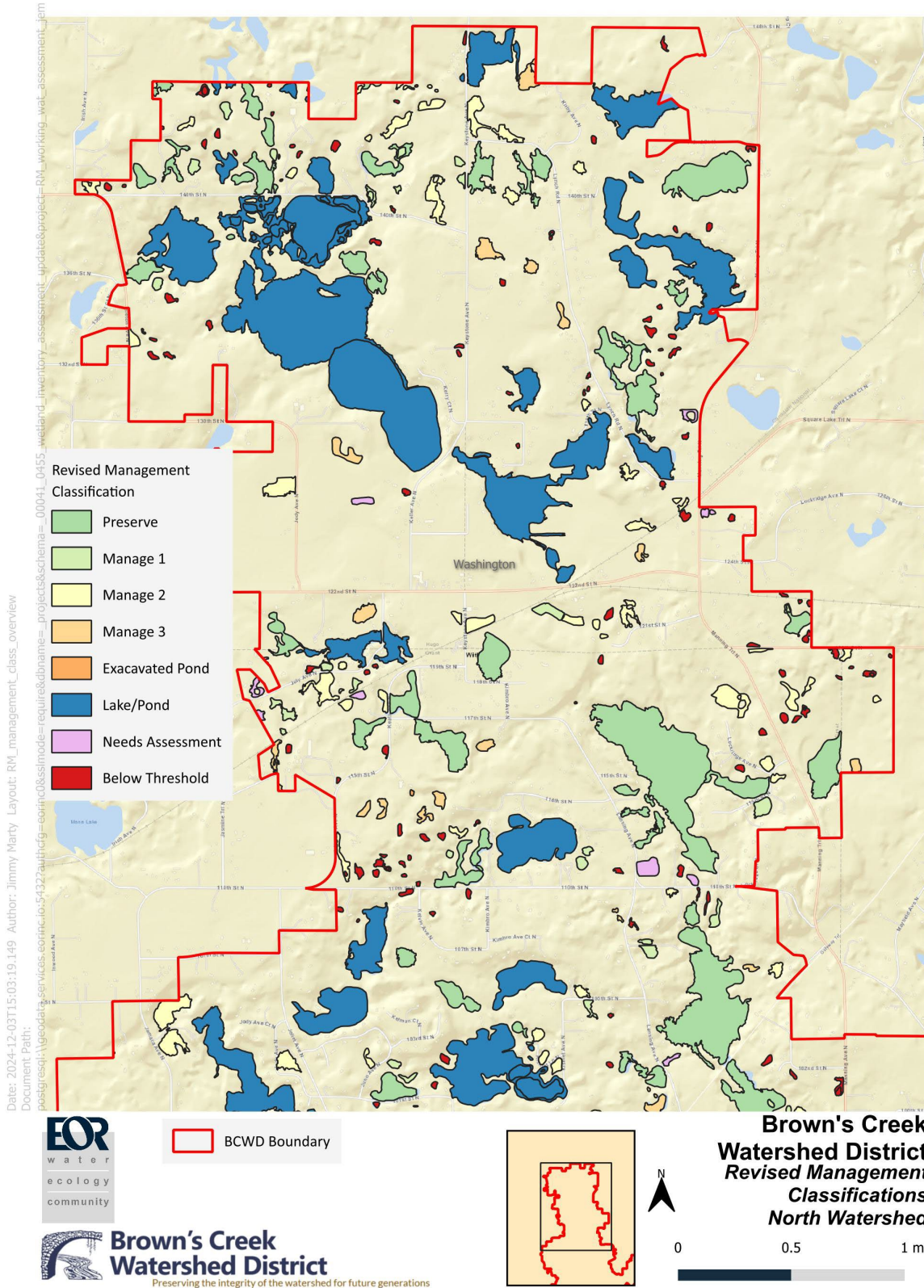


Figure 4. Updated management classifications from the 2024 function and value inventory - north watershed.



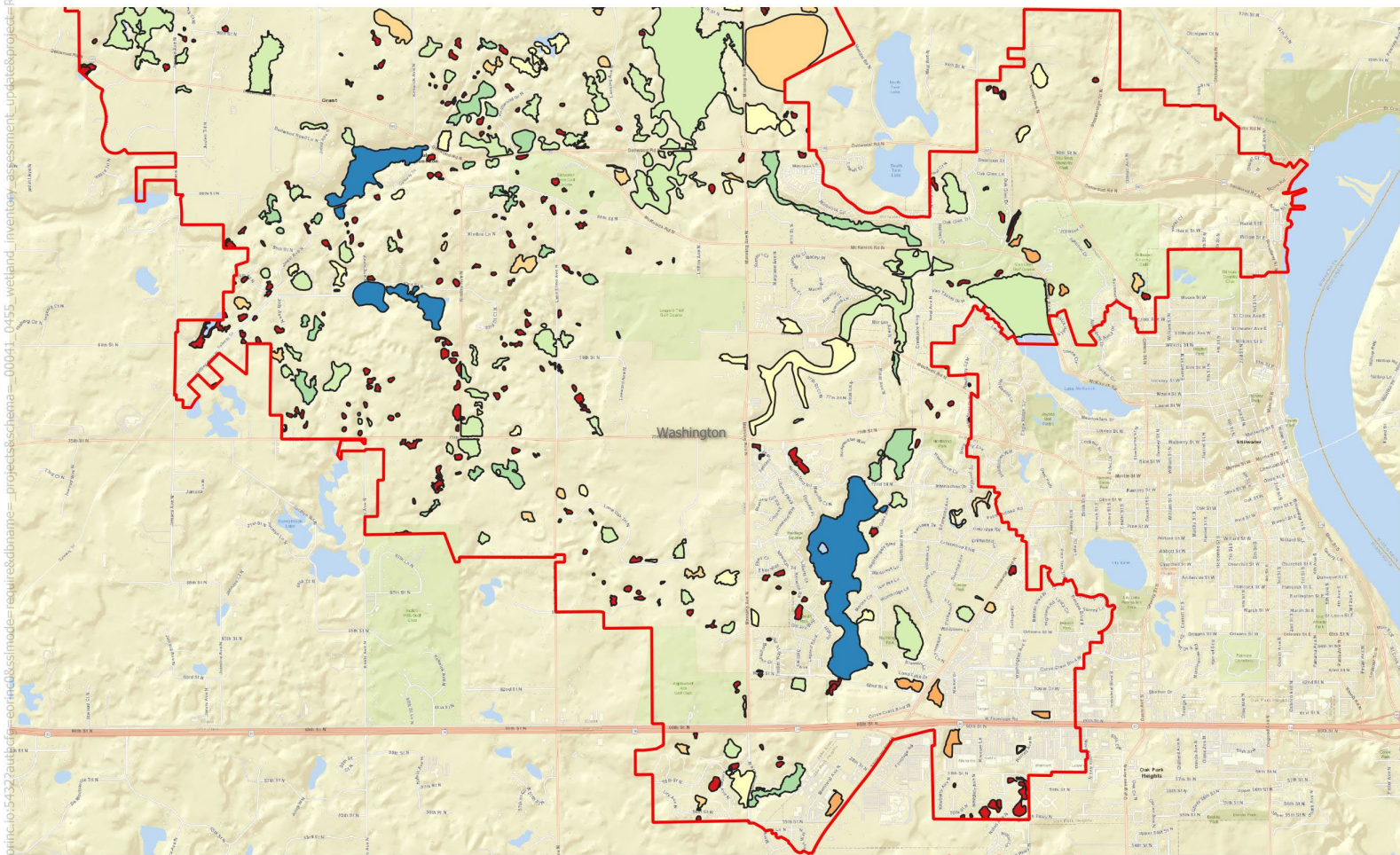
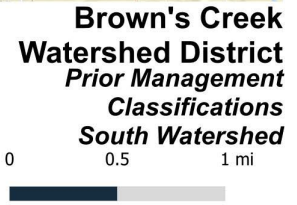
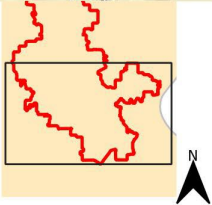
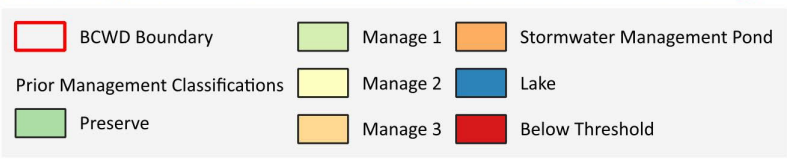


Figure 5. Prior management classifications from the 2001 and 2007 function and value inventory - south watershed.



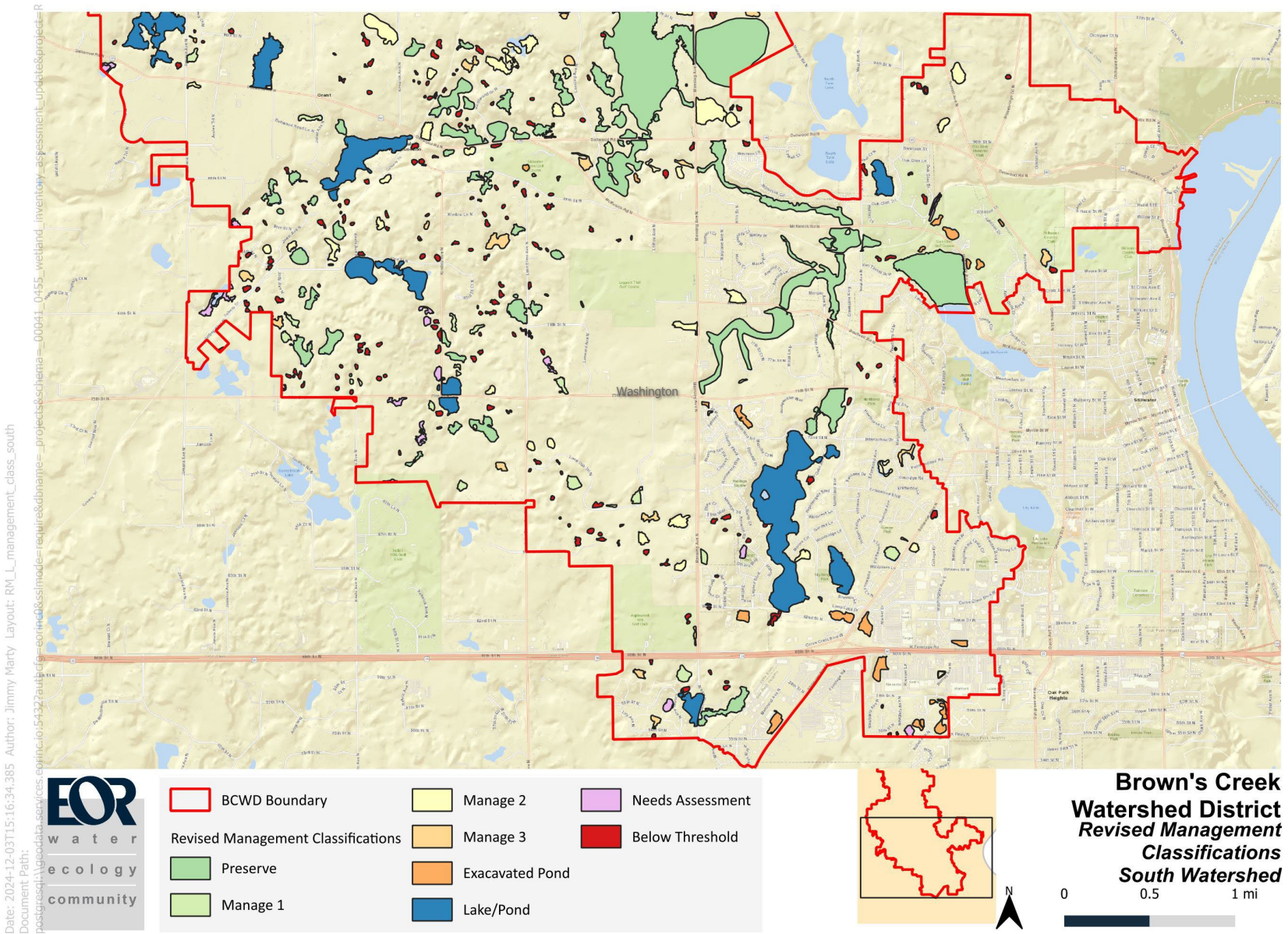


Figure 6. Updated management classifications from the 2024 function and value inventory - south watershed.



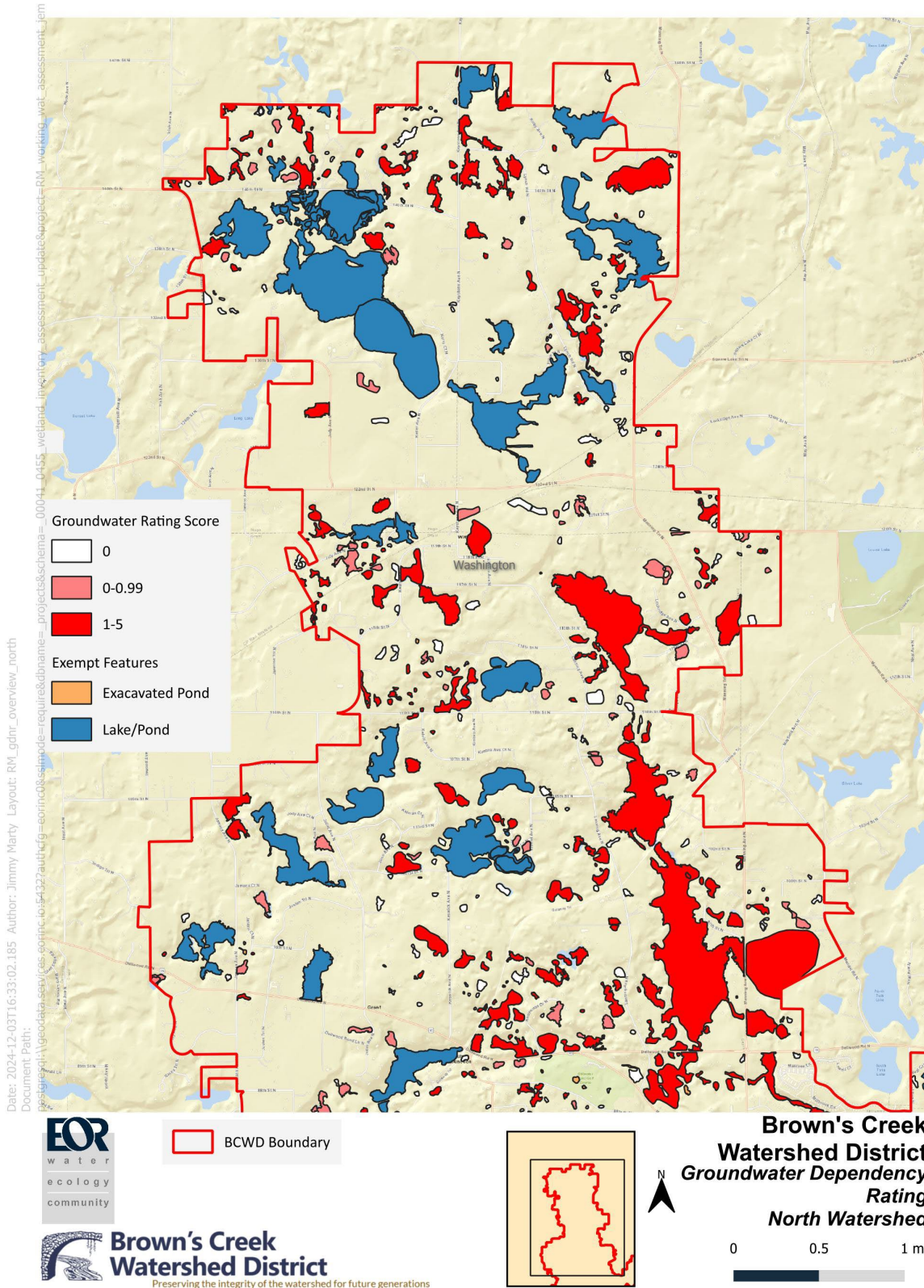
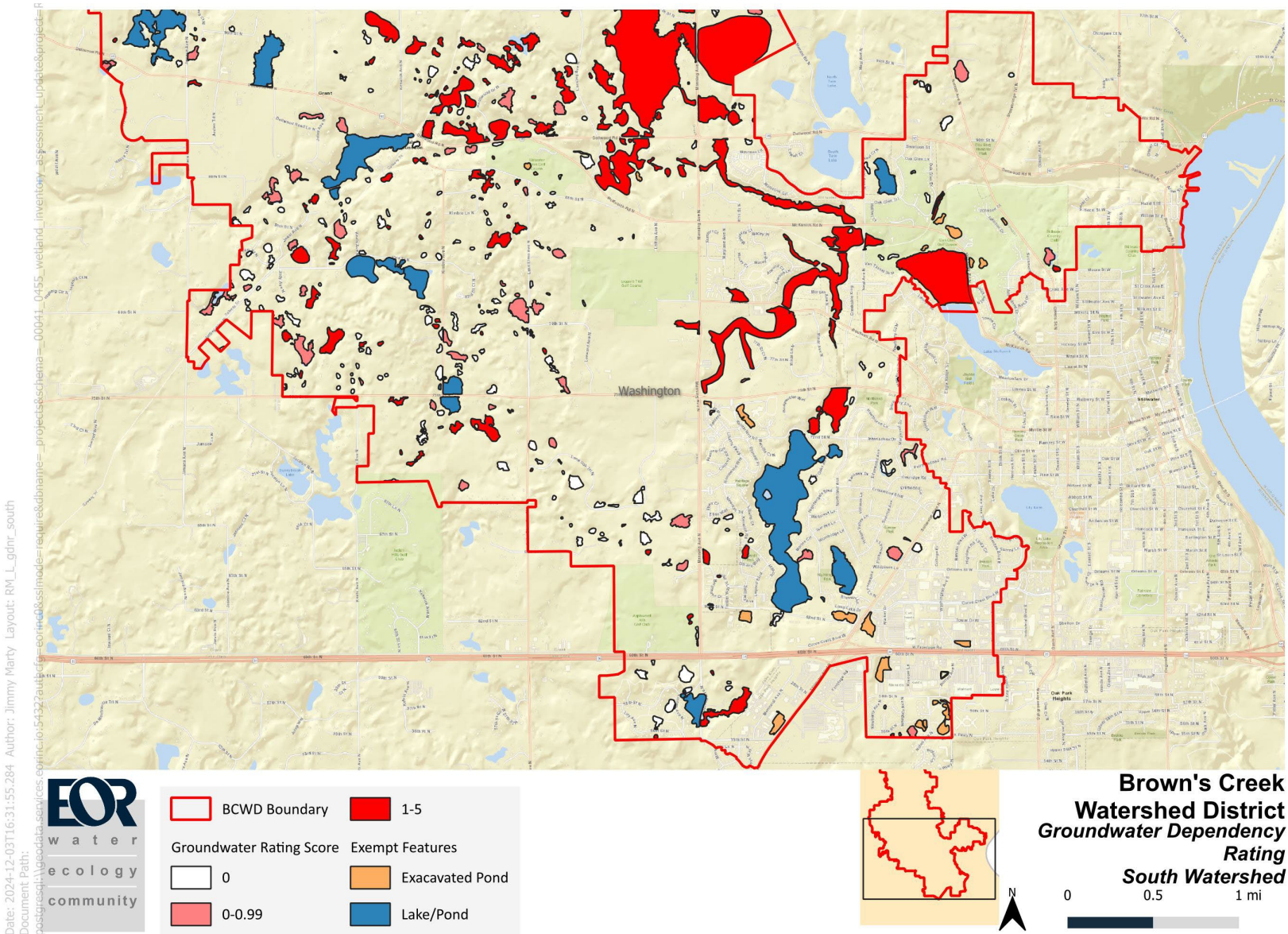


Figure 7. Groundwater dependency ratings for the north watershed.





**Figure 8. Groundwater dependency ratings for the south watershed.**

## **Appendix B**

### Individual Wetland Narratives

**Wetland ID: 3**

**Size: 1.51 acres**

**Catchment Area: 15.43 acres**

**Hydrogeomorphic Class: Depressional**

Wetland 3 is located north of Kismet Lane and west of Kismet Avenue in the north-central portion of the watershed. The wetland is situated within an intermediate elevation of the watershed. Surrounding land cover consists predominantly of hay/pasture, mixed forest, and low intensity development. The wetland receives surface water runoff from surrounding uplands. There is no wetland outlet.

Plant communities within Wetland 3 consist of Fresh Meadow (Fair Quality) and Shallow Open Water (Fair Quality), with an overall floristic quality of Fair. The invasive plant reed canary grass is dominant within the Fresh Meadow.

Functional ranks for Wetland 3 are higher for hydrology and water quality. Its depressional geomorphology, small size to catchment ratio, and surrounding land cover provide higher surface water attenuation function. Along with these characteristics, its hydrologic regime and isolation provide higher groundwater recharge function. These characteristics also result in higher ranks for nitrate removal, phosphorus retention, and sediment and pollutant retention functions.

Based on translation to current District rules, Wetland 3 is classified as a Manage 2 wetland. This is based on its moderate vegetative diversity score. The Manage 2 classification is a decrease from its Manage 1 classification from the prior classification due to a lower functional rating for wildlife habitat, potentially due to increased invasive species cover.

**Table 9. Wetland 3 functional group ranks.**

Functional Group	Functional Capacity Rank	Opportunity-Value Rank	Overall Rank
Hydrology	Higher	Higher	Higher
Water Quality	Higher	Moderate	Higher
Ecological	Moderate	Moderate	Moderate
Climate	Lower	Not Applicable	Lower
Anthropogenic	Not Applicable	Lower	Lower

**Table 10. Wetland 3 specific function ranks**

Functional Group	Specific Function	Functional Capacity Rank	Opportunity-Value Rank	Overall Rank
Hydrology	Surface Water Attenuation (SWA)	Higher	Higher	Higher
	Surface Water Supply (SWS)	Moderate	Moderate	Moderate
	Groundwater Recharge (GR)	Higher	Moderate	Higher
Water Quality	Nitrate Removal (NR)	Higher	Moderate	Higher
	Phosphorus Retention (PR)	Higher	Moderate	Higher
	Sediment and Pollutant Retention (SPR)	Higher	Higher	Higher
	Shoreline Stabilization (SS)	Not Applicable	Not Applicable	Not Applicable
	Thermoregulation (TR)	Not Applicable	Not Applicable	Not Applicable
Ecological	Native Plant Habitat (NP)	Moderate	Moderate	Moderate
	Wildlife Habitat (WH)	Lower	Moderate	Lower
	Fish Habitat (FH)	Not Applicable	Not Applicable	Not Applicable
Climate	Carbon Sequestration (CS)	Lower	Not Applicable	Lower
Anthropogenic	Historic or Cultural Uses (HCU)	Not Applicable	Not Applicable	Not Applicable
	Scientific or Educational Importance (SEI)		Not Applicable	Not Applicable
	Commercial Uses (CU)		Lower	Lower
	Recreational Uses (RU)		Lower	Lower
	Scenic Beauty (SB)		Lower	Lower



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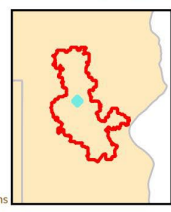
Mapped Plant Communities

- Fresh Meadow
- Shallow Open Water



- Assessment Area
- BCWD Boundary

**Brown's Creek Watershed District**  
 Preserving the integrity of the watershed for future generations



**BCWD  
 Function and Value  
 Assessment**

**Wetland 3**

0 50 100 ft

**Figure 9. Wetland 3 plant communities.**

**Wetland ID: 233**

**Size: 1.68 acres**

**Catchment Area: 21.87 acres**

**Hydrogeomorphic Class: Depressional**

Wetland 233 is located north of 132<sup>nd</sup> Street and east of Jody Avenue in the northwestern portion of the watershed. The wetland is situated within a high elevation of the watershed. Surrounding land cover consists predominantly of cultivated crops, hay/pasture, forest, and low intensity development. There is no wetland outlet. The wetlands receives surface water from surrounding uplands, including a culvert directing flow from east of Jody Avenue to the wetland.

Plant communities within Wetland 233 consist of Fresh Meadow (Poor Quality) and Shallow Marsh (Poor Quality), with an overall floristic quality of Poor. The invasive plant reed canary grass is dominant within the Fresh Meadow and the invasive plant hybrid cattail is dominant within the Shallow Marsh.

Functional ranks for Wetland 233 are higher for hydrology and water quality. Its depressional geomorphology, small size to catchment ratio, and surrounding land cover provide higher surface water attenuation function. Along with these characteristics, its landform and isolation provide higher groundwater recharge function. These characteristics also result in higher ranks for nitrate removal, phosphorus retention, and sediment and pollutant retention functions.

Based on translation to current District rules, Wetland 233 is classified as a Manage 2 wetland. This is based on its moderate anthropogenic value due to visibility from Jody Avenue. The Manage 2 classification is a decrease from its Manage 1 classification from the prior classification, potentially due to increased invasive species cover.

**Table 11. Wetland 233 functional group ranks.**

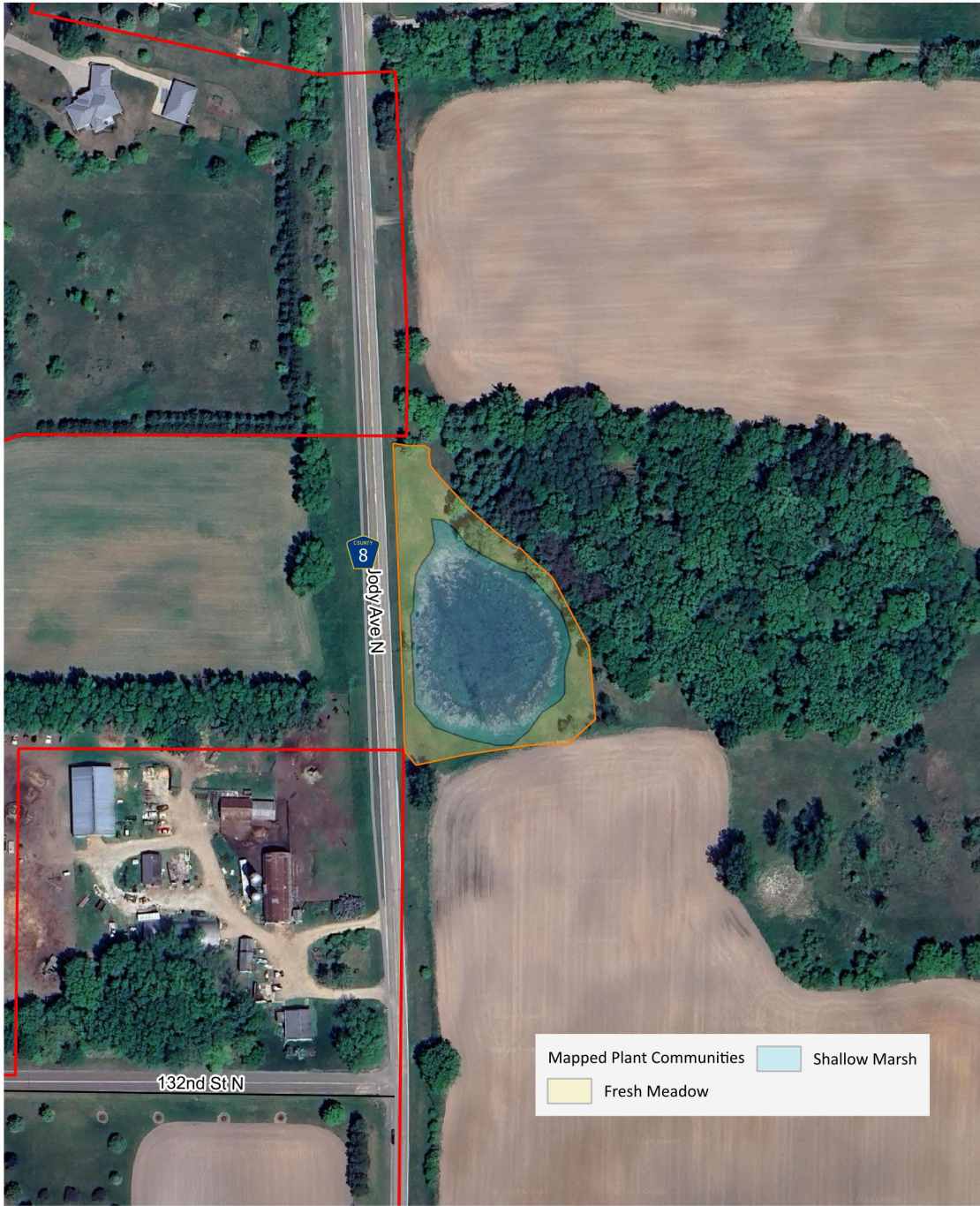
Functional Group	Functional Capacity Rank	Opportunity-Value Rank	Overall Rank
Hydrology	Higher	Higher	Higher
Water Quality	Higher	Moderate	Higher
Ecological	Lower	Lower	Lower
Climate	Moderate	Not Applicable	Moderate
Anthropogenic	Not Applicable	Moderate	Moderate



**Table 12. Wetland 233 specific function ranks.**

Specific Function	Functional Capacity Rank	Opportunity-Value Rank	Overall Rank
Surface Water Attenuation (SWA)	Higher	Higher	Higher
Surface Water Supply (SWS)	Moderate	Moderate	Moderate
Groundwater Recharge (GR)	Higher	Moderate	Higher
Nitrate Removal (NR)	Higher	Higher	Higher
Phosphorus Retention (PR)	Higher	Moderate	Higher
Sediment and Pollutant Retention (SPR)	Higher	Moderate	Higher
Shoreline Stabilization (SS)	Not Applicable	Not Applicable	Not Applicable
Thermoregulation (TR)	Not Applicable	Not Applicable	Not Applicable
Native Plant Habitat (NP)	Lower	Lower	Lower
Wildlife Habitat (WH)	Lower	Lower	Lower
Fish Habitat (FH)	Not Applicable	Not Applicable	Not Applicable
Carbon Sequestration (CS)	Moderate	Not Applicable	Moderate
Historic or Cultural Uses (HCU)	Not Applicable	Not Applicable	Not Applicable
Scientific or Educational Importance (SEI)		Not Applicable	Not Applicable
Commercial Uses (CU)		Lower	Lower
Recreational Uses (RU)		Lower	Lower
Scenic Beauty (SB)		Moderate	Moderate

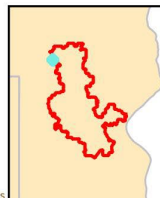
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- Assessment Area
- BCWD Boundary



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**BCWD  
 Function and Value  
 Assessment**

**Wetland 233**

0 50 100 ft



Figure 10. Wetland 233 plant communities.

**Wetland ID: 298**

**Size: 6.79 acres**

**Catchment Area: 46.99 acres**

**Hydrogeomorphic Class: Depressional**

Wetland 298 is located southwest of 122<sup>nd</sup> Street and July Avenue intersection in the northwestern portion of the watershed. The wetland is situated within a high elevation of the watershed and was identified as part of a landlocked basin in the 2006 landlocked basin study (basin ID UBC-1). Surrounding land cover consists predominantly of hay/pasture and open space/low intensity development. Wetland 298 receives surface water runoff from surrounding uplands. The wetland outlets to July Avenue Pond through a narrow wetland connection.

Plant communities within Wetland 298 consist of Fresh Meadow (Poor Quality), Shallow Marsh (Good Quality), Deep Marsh (Fair Quality), and Shallow Open Water (Fair Quality) with an overall floristic quality of Fair. The invasive plant reed canary grass is dominant within the Fresh Meadow and the invasive plant hybrid cattail is dominant within the Deep Marsh. The Shallow Marsh is mostly dominated by native sedges with occasional large patches of invasive cattail.

Functional ranks for Wetland 298 are higher for hydrology and water quality. Its depressional geomorphology, outlet characteristics, and surrounding land cover provide higher surface water attenuation function. Along with these characteristics, its landform, hydrology regime, and vegetation provide higher sediment and pollutant retention function.

Based on translation to current District rules, Wetland 298 is classified as a Preserve wetland consistent with its previous classification under the prior assessment. This is based on its moderate vegetative diversity score and exceptional stormwater sensitivity.

**Table 13. Wetland 298 functional group ranks.**

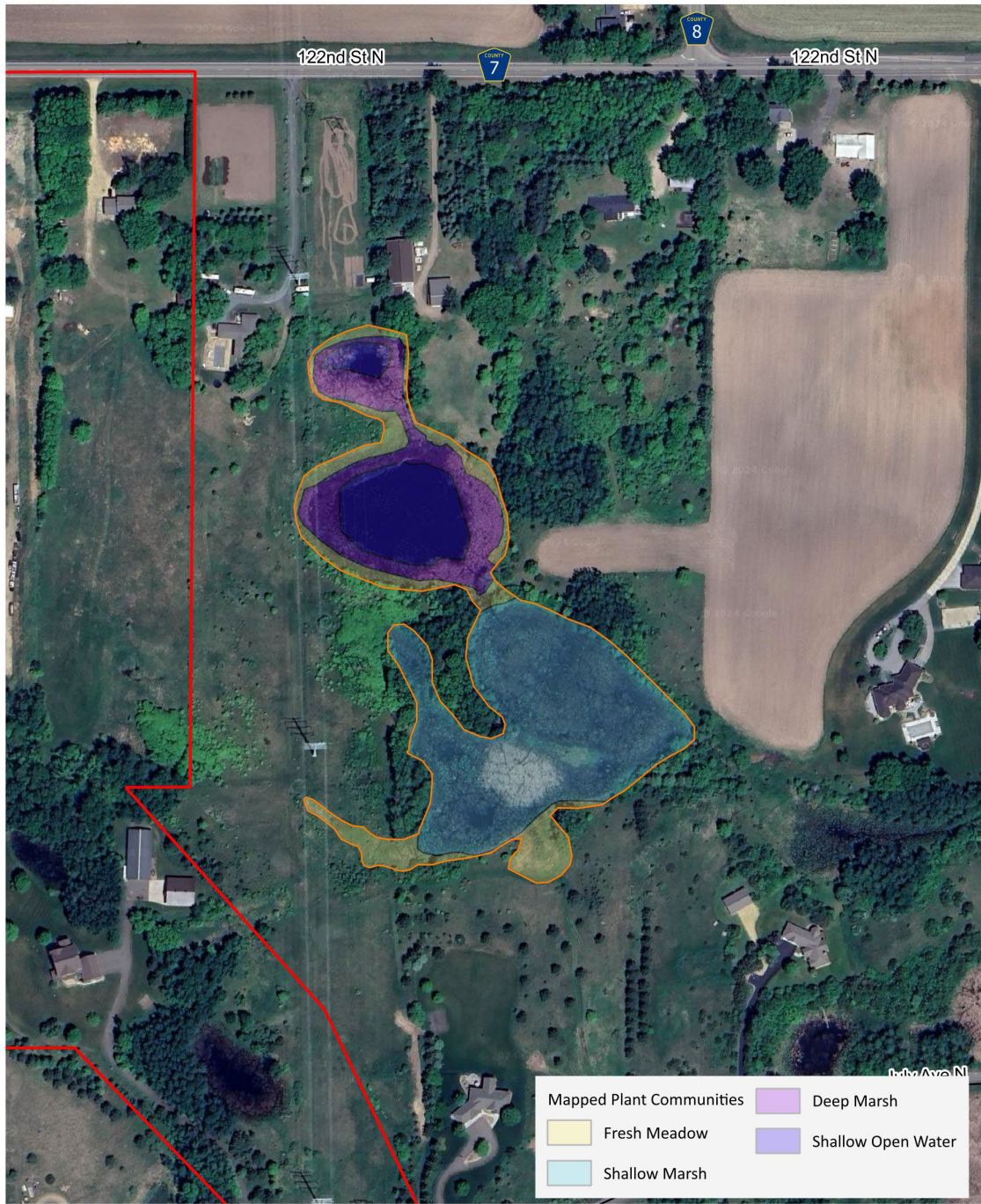
Functional Group	Functional Capacity Rank	Opportunity-Value Rank	Overall Rank
Hydrology	Higher	Higher	Higher
Water Quality	Higher	Lower	Moderate
Ecological	Moderate	Moderate	Moderate
Climate	Moderate	Not Applicable	Moderate
Anthropogenic	Not Applicable	Lower	Lower

**Table 14. Wetland 298 specific function ranks.**

Specific Function	Functional Capacity Rank	Opportunity-Value Rank	Overall Rank
Surface Water Attenuation (SWA)	Higher	Higher	Higher
Surface Water Supply (SWS)	Higher	Moderate	Higher
Groundwater Recharge (GR)	Moderate	Moderate	Moderate
Nitrate Removal (NR)	Moderate	Moderate*	Moderate*
Phosphorus Retention (PR)	Moderate	Lower	Moderate
Sediment and Pollutant Retention (SPR)	Higher	Lower	Moderate
Shoreline Stabilization (SS)	Not Applicable	Not Applicable	Not Applicable
Thermoregulation (TR)	Not Applicable	Not Applicable	Not Applicable
Native Plant Habitat (NP)	Moderate	Moderate	Moderate
Wildlife Habitat (WH)	Lower	Moderate	Lower
Fish Habitat (FH)	Not Applicable	Not Applicable	Not Applicable
Carbon Sequestration (CS)	Moderate*	Not Applicable	Moderate*
Historic or Cultural Uses (HCU)	Not Applicable	Not Applicable	Not Applicable
Scientific or Educational Importance (SEI)		Not Applicable	Not Applicable
Commercial Uses (CU)		Lower	Lower
Recreational Uses (RU)		Lower	Lower
Scenic Beauty (SB)		Lower	Lower





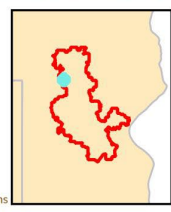
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Mapped Plant Communities	
	Fresh Meadow
	Shallow Marsh
	Deep Marsh
	Shallow Open Water



-  Assessment Area
-  BCWD Boundary



**BCWD  
 Function and Value  
 Assessment**

**Wetland 298**

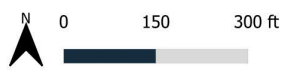


Figure 11. Wetland 298 plant communities.

**Wetland ID: 330**

**Size: 7.62 acres**

**Catchment Area: 48.42 acres**

**Hydrogeomorphic Class: Depressional**

Wetland 330 is located south of the Manning Trail and 120<sup>th</sup> Street intersection in the northeastern portion of the watershed. The wetland is situated within an intermediate elevation of the watershed. Surrounding land cover consists predominantly of hay/pasture, cultivated crops, and low intensity development, and open space/low intensity development. Wetland 330 receives surface water runoff from surrounding uplands, including via culvert beneath Manning Trail to the east. The wetland outlets to a ditch draining to the Brown's Creek Headwaters wetland.

Plant communities within Wetland 330 consist of Fresh Meadow (Poor Quality), Shallow Marsh (Poor Quality), Deep Marsh (Fair Quality), and Shallow Open Water (Fair Quality) with an overall floristic quality of Poor. The invasive plant reed canary grass is dominant within the Fresh Meadow and the invasive plant hybrid cattail is dominant within the Shallow and Deep Marsh.

Functional ranks for Wetland 330 are moderate or lower due to its ditched hydrology and poor ecological condition. The opportunity-value rank is higher for hydrology due to potential for higher functioning surface water attenuation and surface water supply.

Based on translation to current District rules, Wetland 330 is classified as a Manage 2 wetland. This is based on its moderate anthropogenic value rating due to visibility from Manning Trail. The Manage 2 classification is an increase from its Manage 3 classification from the prior classification, due to the WAT tool rating public visibility as a moderate anthropogenic value.

**Table 15. Wetland 330 functional group ranks.**

Functional Group	Functional Capacity Rank	Opportunity-Value Rank	Overall Rank
Hydrology	Moderate	Higher	Higher
Water Quality	Moderate	Lower	Lower
Ecological	Lower	Lower	Lower
Climate	Moderate	Not Applicable	Moderate
Anthropogenic	Not Applicable	Moderate	Moderate


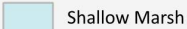

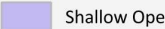
**Table 16. Wetland 330 specific function ranks.**

Specific Function	Functional Capacity Rank	Opportunity-Value Rank	Overall Rank
Surface Water Attenuation (SWA)	Moderate*	Higher	Higher
Surface Water Supply (SWS)	Moderate	Higher	Higher
Groundwater Recharge (GR)	Moderate	Moderate	Moderate
Nitrate Removal (NR)	Moderate	Moderate	Moderate
Phosphorus Retention (PR)	Lower	Lower	Lower
Sediment and Pollutant Retention (SPR)	Lower	Lower	Lower
Shoreline Stabilization (SS)	Not Applicable	Not Applicable	Not Applicable
Thermoregulation (TR)	-	-	-
Native Plant Habitat (NP)	Lower	Lower	Lower
Wildlife Habitat (WH)	Lower	Lower	Lower
Fish Habitat (FH)	Not Applicable	Not Applicable	Not Applicable
Carbon Sequestration (CS)	Moderate	Not Applicable	Moderate
Historic or Cultural Uses (HCU)	Not Applicable	Not Applicable	Not Applicable
Scientific or Educational Importance (SEI)		Not Applicable	Not Applicable
Commercial Uses (CU)		Lower	Lower
Recreational Uses (RU)		Lower	Lower
Scenic Beauty (SB)		Moderate	Moderate





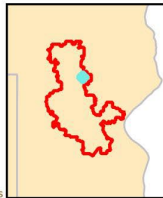
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Mapped Plant Communities	
	Fresh Meadow
	Shallow Marsh
	Deep Marsh
	Shallow Open Water

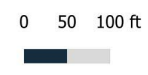


-  Assessment Area
-  BCWD Boundary



**BCWD  
 Function and Value  
 Assessment**

**Wetland 330**



**Figure 12. Wetland 330 plant communities.**



**Wetland ID: 413 (Mendel Road Wetland)**

**Size: 80.10 acres**

**Catchment Area: 325.50 acres**

**Hydrogeomorphic Class: Organic Soil Flat**

Wetland 413 is located between Manning Trail and Mendel Road and north of Highway 96. intersection in the east-central portion of the watershed. The wetland is situated within a locally high elevation of the watershed. Surrounding land cover consists predominantly of hay/pasture, cultivated crops, forest, emergent wetlands, and open space/low intensity development. The wetland receives overland flow from surrounding uplands. The area is mapped as a groundwater discharge area, but no evidence of groundwater discharge was observed in the field. The wetland is transected by a ditch that outlets south toward Brown’s Creek.

Plant communities within Wetland 413 consist of Coniferous Bog (Fair Quality), Fresh Meadow (Good Quality), Shallow Marsh (Fair Quality), Shrub-Carr (Poor Quality), and Shallow Open Water (Fair Quality) with an overall floristic quality of Fair. Although the Coniferous Bog community ranks as Fair Quality, this comparison is to overall statewide condition of Coniferous Bogs. Relative to other plant community types, Coniferous Bogs have high floristic quality. The Coniferous Bog of Wetland 413 is dominated by native species with some invasion by glossy buckthorn. Intact Coniferous Bogs are an uncommon plant community within the District and Wetland 413 is likely the largest Coniferous Bog present. The other plant communities within Wetland 413 are generally dominated by native species with exception of the Shrub-Carr. The Shrub-Carr is dominated by glossy buckthorn that threatens to further invade the Coniferous Bog.

Functional ranks for Wetland 413 are higher for water quality and ecological. Its geomorphology, discharge to a tributary of Brown’s Creek, and likely groundwater inputs provide thermoregulation benefits. and surrounding land cover provide higher surface water attenuation function. The condition and characteristics of the plant communities and position within a wildlife habitat core area contribute to its higher ecological function.

Based on translation to current District rules, Wetland 413 is classified as a Preserve wetland. This based on its higher wildlife habitat function. The Preserve classification is an increase from its Manage 3 classification from the prior classification. The prior inventory may have weighted the poor-quality Shrub-Carr and not access the interior of the Coniferous Bog and higher quality areas of the wetland.

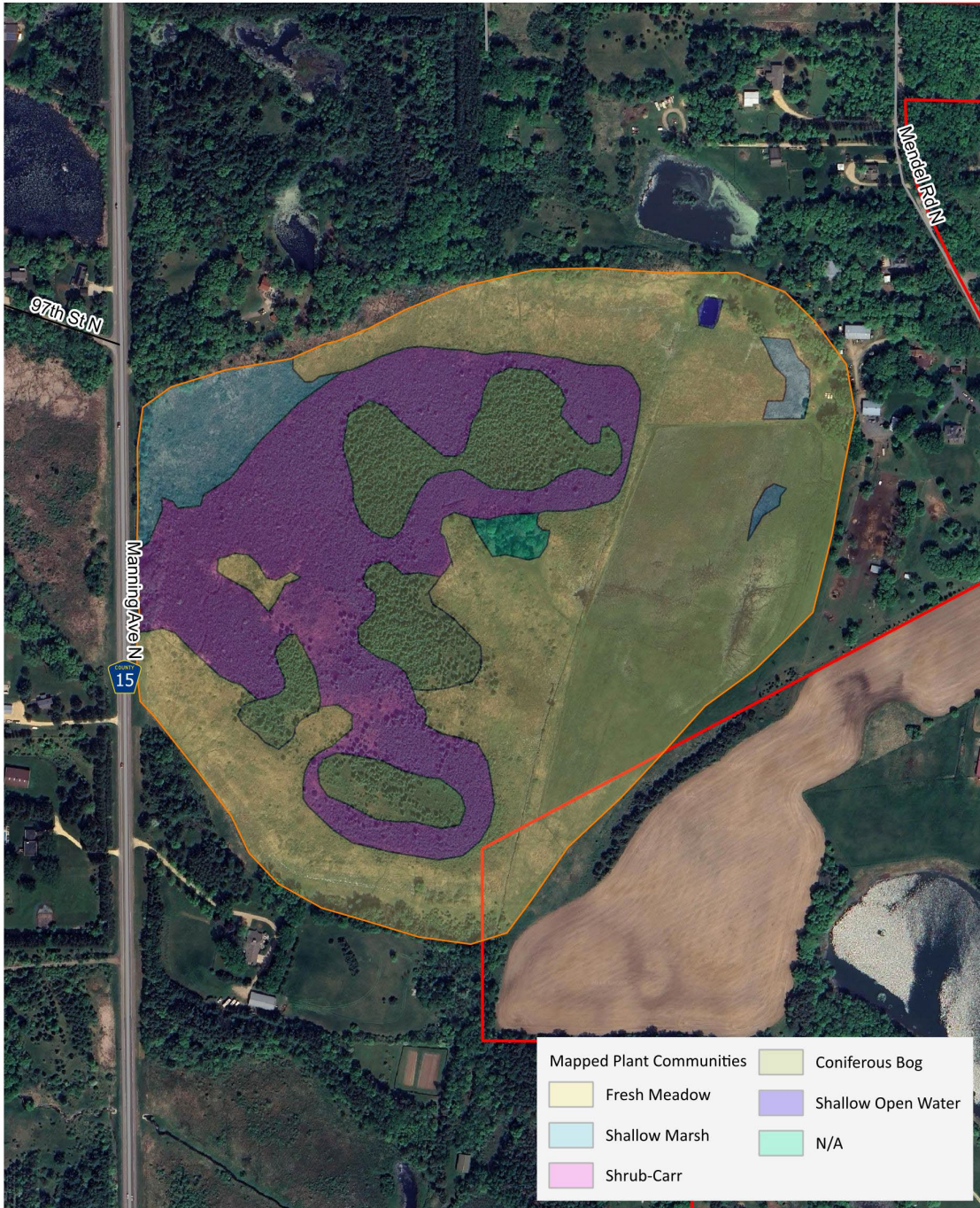
**Table 17. Wetland 413 functional group ranks.**

Functional Group	Functional Capacity Rank	Opportunity-Value Rank	Overall Rank
Hydrology	Moderate	Higher	Higher
Water Quality	Higher	Higher	Higher
Ecological	Higher	Moderate	Higher
Climate	Moderate	Not Applicable	Moderate
Anthropogenic	Not Applicable	Moderate	Moderate

**Table 18. Wetland 413 specific function ranks.**

Functional Group	Specific Function	Functional Capacity Rank	Opportunity-Value Rank	Overall Rank
Hydrology	Surface Water Attenuation (SWA)	Lower	Higher	Moderate
	Surface Water Supply (SWS)	Higher	Higher	Higher
	Groundwater Recharge (GR)	Moderate	Moderate	Moderate
Water Quality	Nitrate Removal (NR)	Moderate	Moderate	Moderate
	Phosphorus Retention (PR)	Moderate	Lower	Lower
	Sediment and Pollutant Retention (SPR)	Moderate	Lower	Lower
	Shoreline Stabilization (SS)	Not Applicable	Not Applicable	Not Applicable
	Thermoregulation (TR)	Higher	Higher	Higher
Ecological	Native Plant Habitat (NP)	Moderate	Moderate	Moderate
	Wildlife Habitat (WH)	Higher	Moderate	Higher
	Fish Habitat (FH)	Not Applicable	Not Applicable	Not Applicable
Climate	Carbon Sequestration (CS)	Moderate	Not Applicable	Moderate
Anthropogenic	Historic or Cultural Uses (HCU)	Not Applicable	Not Applicable	Not Applicable
	Scientific or Educational Importance (SEI)		Not Applicable	Not Applicable
	Commercial Uses (CU)		Lower	Lower
	Recreational Uses (RU)		Lower	Lower
	Scenic Beauty (SB)		Moderate	Moderate

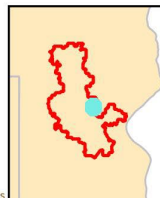
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- Assessment Area
- BCWD Boundary



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 Preserving the integrity of the watershed for future generations



**BCWD**  
**Function and Value**  
**Assessment**

**Wetland 413**



Figure 13. Wetland 413 plant communities.



**Wetland ID: 459**

**Size: 29.00 acres**

**Catchment Area: 427.05 acres**

**Hydrogeomorphic Class: Depressional**

Wetland 459 is located south of Highway 96 and east of Lansing Avenue in the central portion of the watershed. The wetland is situated within a locally low elevation of the watershed. Surrounding land cover consists predominantly of forest, emergent wetlands, hay/pasture, and developed open space. The wetland receives overland flow from surrounding uplands, including a culvert along McKusick Trail and a culvert on the west edge of the wetland draining from Highway 96. The area is mapped as a groundwater discharge area, and numerous seepage channels and mineral film were observed within the wetland. The wetland outlets to the north via a culvert beneath Highway 96 to a large unnamed wetland associated with Brown's Creek and to the east toward Brown's Creek via a wetland/swale/ditch complex.

Plant communities within Wetland 459 consist of Shrub-Carr (Good Quality), Sedge Mat (Fair Quality) and Shallow Open Water (Fair Quality) with an overall floristic quality of Good. Although the Sedge Mat community ranks as Fair Quality, this comparison is to overall statewide condition of Sedge Mats. Relative to other plant community types, Sedge Mats have high floristic quality. The Sedge Mat of Wetland 459 is dominated by native species with low invasive species cover. Intact Sedge Mats are an uncommon plant community within the District and rank as exceptionally sensitive to stormwater.

Functional ranks for Wetland 459 are higher for hydrology, water quality and ecological functions and values. Its depressional geomorphology, moderate size to catchment ratio, and surrounding land cover provide higher surface water attenuation function. These characteristics also result in higher rank for nitrate removal. The condition of the plant communities and position within a wildlife habitat core area contribute to its higher ecological function.

Based on translation to current District rules, Wetland 459 is classified as a Preserve wetland. This is based on its higher native plant habitat and wildlife habitat function. The Preserve classification is an increase from its Manage 1 classification from the prior classification. The increase in classification is likely due to the WAT tool having fewer classification categories than the MNRAM methods (no Exceptional category) and EOR's translation methodology lumping the "Higher" WAT ranking into the "Exceptional" MNRAM ranking.

**Table 19. Wetland 459 functional group ranks.**

Functional Group	Functional Capacity Rank	Opportunity-Value Rank	Overall Rank
Hydrology	Higher	Higher	Higher
Water Quality	Higher	Higher	Higher
Ecological	Higher	Higher	Higher
Climate	Moderate	Not Applicable	Moderate
Anthropogenic	Not Applicable	Moderate	Moderate

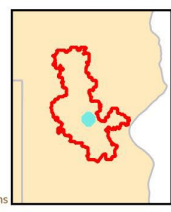
**Table 20. Wetland 459 specific function ranks.**

Specific Function	Functional Capacity Rank	Opportunity-Value Rank	Overall Rank
Surface Water Attenuation (SWA)	Higher	Higher	Higher
Surface Water Supply (SWS)	Moderate	Lower	Lower
Groundwater Recharge (GR)	Moderate	Moderate	Moderate
Nitrate Removal (NR)	Higher	Higher	Higher
Phosphorus Retention (PR)	Moderate	Moderate	Moderate
Sediment and Pollutant Retention (SPR)	Moderate	Higher	Higher
Shoreline Stabilization (SS)	Not Applicable	Not Applicable	Not Applicable
Thermoregulation (TR)	Not Applicable	Not Applicable	Not Applicable
Native Plant Habitat (NP)	Higher	Higher	Higher
Wildlife Habitat (WH)	Higher	Higher	Higher
Fish Habitat (FH)	Not Applicable	Not Applicable	Not Applicable
Carbon Sequestration (CS)	Moderate	Not Applicable	Moderate
Historic or Cultural Uses (HCU)	Not Applicable	Not Applicable	Not Applicable
Scientific or Educational Importance (SEI)		Not Applicable	Not Applicable
Commercial Uses (CU)		Lower	Lower
Recreational Uses (RU)		Lower	Lower
Scenic Beauty (SB)		Moderate	Moderate

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- Assessment Area
- BCWD Boundary



**BCWD  
 Function and Value  
 Assessment**

**Wetland 459**

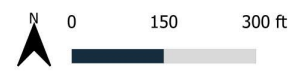


Figure 14. Wetland 459 plant communities.



**Wetland ID: 504**

**Size: 34.82 acres**

**Catchment Area: 1123.71 acres**

**Hydrogeomorphic Class: Slope -Groundwater**

Wetland 504 is located east of Manning Avenue between 80<sup>th</sup> Street and 75<sup>th</sup> Street. The wetland is situated within a locally low elevation of the watershed. Surrounding land cover consists predominantly of hay/pasture, developed open space, medium/low intensity development, and cultivated crops. The wetland receives overland flow from surrounding uplands, including culverts along 75<sup>th</sup> Street, 77<sup>th</sup> Street, and Manning Avenue. The area is mapped as a groundwater discharge area, and seepage flow was observed along with numerous seepage channels and mineral film. The wetland outlets to the north via a culvert beneath 80<sup>th</sup> Street.

Plant communities within Wetland 504 consist of Fresh Meadow (Fair Quality), Shallow Marsh (Poor Quality), Hardwood Swamp (Poor Quality), and Shallow Open Water (Fair Quality) with an overall floristic quality of Fair. Much of the Fresh Meadow is dominated by the invasive reed canary grass, with pockets dominated by native species. The Shallow Marsh is dominated by the invasive hybrid cattail, and the Hardwood Swamp dominated by the invasive common buckthorn.

Function and value ranks for Wetland 504 are higher for hydrology, water quality, and ecological functions and values. Its slope-groundwater geomorphology, outlet characteristics, and natural flow-through channels provide higher surface water supply function. These characteristics along with soils, vegetation, and discharge to a tributary of Bronw’s Creek result in higher rank for nitrate removal and thermoregulation. The condition of the plant communities and position within a wildlife habitat core area contribute to its higher ecological function.

Based on translation to current District rules, Wetland 504 is classified as a Preserve wetland. This is based on its higher wildlife habitat function. The Preserve classification is an increase from its Manage 2 classification from the prior classification. The increase in classification is likely due to the WAT tool having fewer classification categories than the MNRAM methods (no Exceptional category) and EOR’s translation methodology lumping the “Higher” WAT ranking into the “Exceptional” MNRAM ranking.

**Table 21. Wetland 504 functional group ranks.**

Functional Group	Functional Capacity Rank	Opportunity-Value Rank	Overall Rank
Hydrology	Moderate	Higher	Higher
Water Quality	Higher	Higher	Higher
Ecological	Higher	Moderate	Higher
Climate	Moderate	Not Applicable	Moderate
Anthropogenic	Not Applicable	Moderate	Moderate

**Table 22. Wetland 504 specific function ranks.**

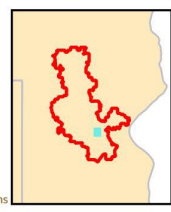
Functional Group	Specific Function	Functional Capacity Rank	Opportunity-Value Rank	Overall Rank
Hydrology	Surface Water Attenuation (SWA)	Moderate	Higher	Higher
	Surface Water Supply (SWS)	Higher	Higher	Higher
	Groundwater Recharge (GR)	Moderate	Higher	Higher
Water Quality	Nitrate Removal (NR)	Higher	Higher	Higher
	Phosphorus Retention (PR)	Moderate	Moderate	Moderate
	Sediment and Pollutant Retention (SPR)	Moderate	Moderate	Moderate
	Shoreline Stabilization (SS)	Not Applicable	Not Applicable	Not Applicable
	Thermoregulation (TR)	Higher	Higher	Higher
Ecological	Native Plant Habitat (NP)	Moderate	Moderate	Moderate
	Wildlife Habitat (WH)	Higher	Lower	Higher
	Fish Habitat (FH)	Not Applicable	Not Applicable	Not Applicable
Climate	Carbon Sequestration (CS)	Moderate	Not Applicable	Moderate
Anthropogenic	Historic or Cultural Uses (HCU)	Not Applicable	Not Applicable	Not Applicable
	Scientific or Educational Importance (SEI)		Not Applicable	Not Applicable
	Commercial Uses (CU)		Lower	Lower
	Recreational Uses (RU)		Lower	Lower
	Scenic Beauty (SB)		Moderate	Moderate



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- Assessment Area
- BCWD Boundary



**BCWD  
 Function and Value  
 Assessment**

**Wetland 504**

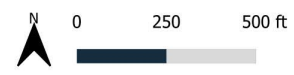


Figure 15. Wetland 504 plant communities.

**Wetland ID: 553**

**Size: 1.64 acres**

**Catchment Area: 30.38 acres**

**Hydrogeomorphic Class: Depressional**

Wetland 553 is located immediately east of Manning Avenue north of 62<sup>nd</sup> street in the southern portion of the watershed district. The wetland is situated within an intermediate elevation of the watershed. Surrounding land cover consists predominantly of hay/pasture, forest, and medium/low intensity development. The wetland receives overland flow from surrounding uplands, including a culvert beneath Manning Avenue. There is no wetland outlet.

Plant communities within Wetland 553 consist of Fresh Meadow (Poor Quality), Shallow Marsh (Fair Quality), and Shallow Open Water (Fair Quality) with an overall floristic quality of Fair. Much of the Fresh Meadow is dominated by the invasive reed canary grass, with pockets dominated by native species. The Shallow Marsh is generally dominated by native species, but includes substantial cover of reed canary grass. The Shallow Open Water is dominated by native species, and includes several uncommon or high quality native species that are not accounted for using the MPCA RFQA methods. These aquatic species include spiny coontail (*Ceratophyllum echinatum*), Braun’s stonewort (*Chara braunii*), and a stonewort (*Nitella* sp.) that could not be identified to species but is very likely a new Washington County record. The unknown stonewort was submitted to the New York Botanical Garden for genetic analysis in November 2024.

Function and value ranks for Wetland 553 are higher for hydrology and water quality functions and value. Its depressional geomorphology, outlet characteristics, relatively small catchment : wetland ratio, and surrounding land cover provide higher surface water attenuation function and value. These characteristics along with its hydrologic regime, result in higher rank for nitrate removal, phosphorus retention, and sediment and general pollutant function.

Based on translation to current District rules, Wetland 553 is classified as a Manage 1 wetland. This is based on its moderate native plant habitat and higher hydrology function. The Manage 1 classification is an increase from its Manage 2 classification from the prior classification. The increase in classification is likely due to the Shallow Marsh and Shallow Open Water communities being higher quality than expected.

**Table 23. Wetland 553 functional group ranks.**

Functional Group	Functional Capacity Rank	Opportunity-Value Rank	Overall Rank
Hydrology	Higher	Higher	Higher
Water Quality	Higher	Higher	Higher
Ecological	Moderate	Moderate	Moderate
Climate	Moderate	Not Applicable	Moderate
Anthropogenic	Not Applicable	Moderate	Moderate



**Table 24. Wetland 553 specific function ranks.**

Specific Function	Functional Capacity Rank	Opportunity-Value Rank	Overall Rank
Surface Water Attenuation (SWA)	Higher	Higher	Higher
Surface Water Supply (SWS)	Moderate	Moderate	Moderate
Groundwater Recharge (GR)	Moderate	Higher	Higher
Nitrate Removal (NR)	Higher	Moderate	Higher
Phosphorus Retention (PR)	Higher	Moderate	Higher
Sediment and Pollutant Retention (SPR)	Higher	Higher	Higher
Shoreline Stabilization (SS)	Not Applicable	Not Applicable	Not Applicable
Thermoregulation (TR)	Not Applicable	Not Applicable	Not Applicable
Native Plant Habitat (NP)	Moderate	Moderate	Moderate
Wildlife Habitat (WH)	Moderate	Lower	Moderate
Fish Habitat (FH)	Not Applicable	Not Applicable	Not Applicable
Carbon Sequestration (CS)	Moderate	Not Applicable	Moderate
Historic or Cultural Uses (HCU)	Not Applicable	Not Applicable	Not Applicable
Scientific or Educational Importance (SEI)		Not Applicable	Not Applicable
Commercial Uses (CU)		Lower	Lower
Recreational Uses (RU)		Lower	Lower
Scenic Beauty (SB)		Moderate	Moderate



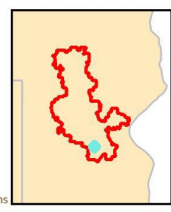
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-  Assessment Area
-  BCWD Boundary



- |  |   |
|--|---|
|  Fresh Meadow         |  Shallow Marsh |
|  Shallow Open Water |   |



**BCWD**  
**Function and Value**  
**Assessment**  
**Wetland 553**

0 50 100 ft




Figure 16. Wetland 553 plant communities.



**Wetland ID: 674**

**Size: 8.77 acres**

**Catchment Area: 100.15 acres**

**Hydrogeomorphic Class: Depressional**

Wetland 674 is located immediately northeast of Keats Avenue and 117<sup>th</sup> Street in the northern portion of the watershed district. The wetland is situated within a high elevation of the watershed and was identified as part of a landlocked basin in the 2006 landlocked basin study (basin ID UBC-2). Surrounding land cover consists predominantly of hay/pasture, forest, low intensity and open space development, emergent wetlands, and open water. The wetland receives overland flow from surrounding uplands, including a culvert beneath Keats Avenue to the west (there is no culvert from Keats Avenue to the north). An outlet discharging to an adjacent wetland is present at its southeast end under 117<sup>th</sup> Street but is situated high above the wetland so that the wetland is isolated under normal circumstances.

Plant communities within Wetland 674 consist of Shallow Marsh (Poor Quality) and Shallow Open Water (Good Quality) with an overall floristic quality of Good. Much of the Shallow Marsh is dominated by the invasive reed canary grass. The Shallow Open Water is sparsely vegetated but dominated by native species, with the most common species being the submerged aquatic macroalgae Braun's stonewort (*Chara braunii*).

Function and value ranks for Wetland 674 are higher for hydrology and ecological functions and value. Its depressional geomorphology, outlet characteristics, underlying soil texture, relatively small catchment : wetland ratio, and surrounding land cover provide higher surface water attenuation function and value. The good condition of the plant communities contribute to its higher ecological function.

Based on translation to current District rules, Wetland 674 is classified as a Preserve wetland. This is based on its higher native plant habitat and wildlife habitat function. The Preserve classification is an increase from its Manage 1 classification from the prior classification. The increase in classification is likely due to the WAT tool having fewer classification categories than the MNRAM methods (no Exceptional category) and EOR's translation methodology lumping the "Higher" WAT ranking into the "Exceptional" MNRAM ranking.

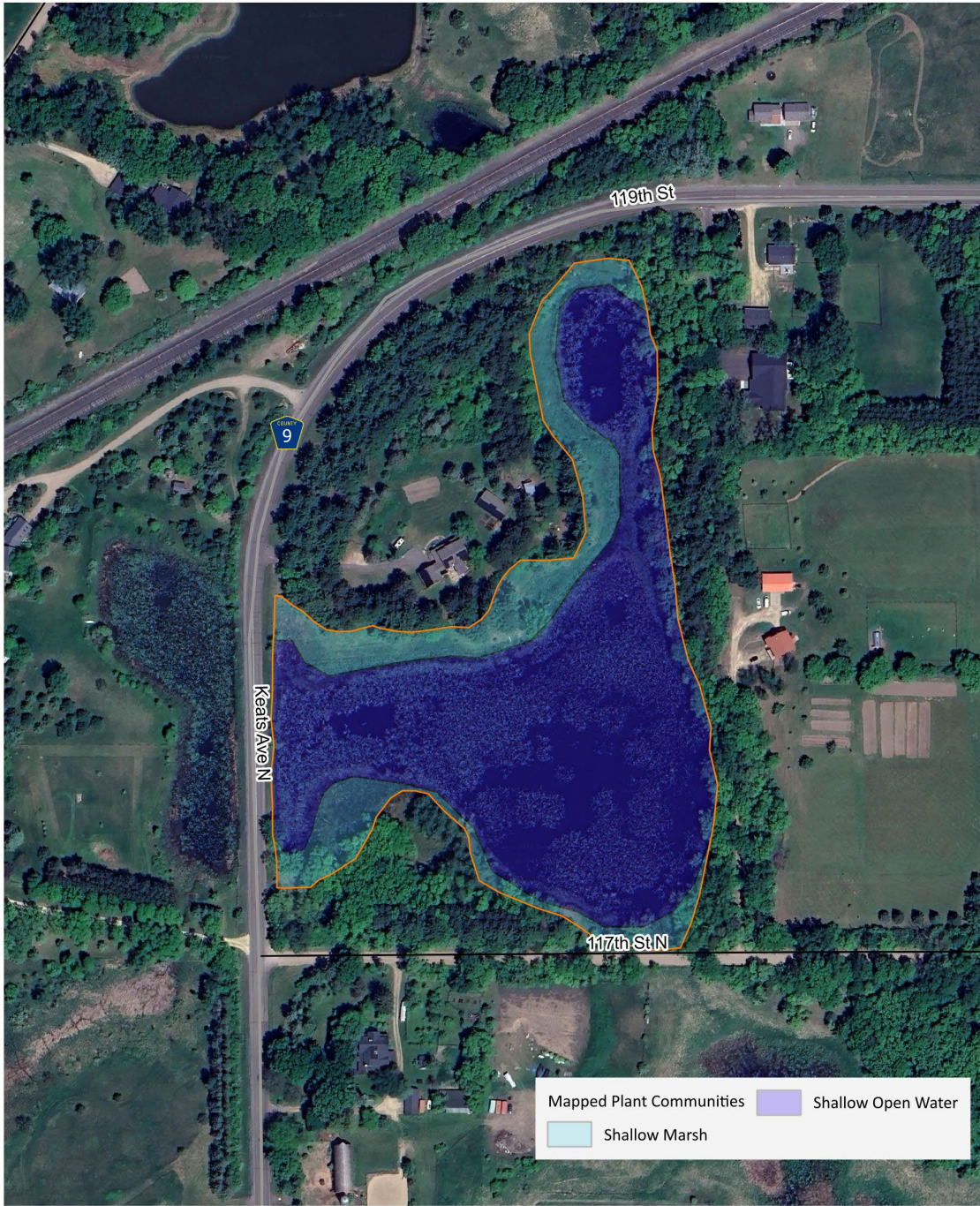
**Table 25. Wetland 674 functional group ranks.**



Functional Group	Functional Capacity Rank	Opportunity-Value Rank	Overall Rank
Hydrology	Higher	Higher	Higher
Water Quality	Moderate	Moderate	Moderate
Ecological	Higher	Higher	Higher
Climate	Moderate	Not Applicable	Moderate
Anthropogenic	Not Applicable	Moderate	Moderate

**Table 26. Wetland 674 specific function ranks.**

Specific Function	Functional Capacity Rank	Opportunity-Value Rank	Overall Rank
Surface Water Attenuation (SWA)	Higher	Higher	Higher
Surface Water Supply (SWS)	Moderate	Higher	Higher
Groundwater Recharge (GR)	Moderate	Moderate	Moderate
Nitrate Removal (NR)	Moderate	Higher	Moderate
Phosphorus Retention (PR)	Moderate	Moderate	Moderate
Sediment and Pollutant Retention (SPR)	Moderate	Moderate	Moderate
Shoreline Stabilization (SS)	Not Applicable	Not Applicable	Not Applicable
Thermoregulation (TR)	Not Applicable	Not Applicable	Not Applicable
Native Plant Habitat (NP)	Higher	Higher	Higher
Wildlife Habitat (WH)	Higher	Lower	Higher
Fish Habitat (FH)	Not Applicable	Not Applicable	Not Applicable
Carbon Sequestration (CS)	Moderate	Not Applicable	Moderate
Historic or Cultural Uses (HCU)	Not Applicable	Not Applicable	Not Applicable
Scientific or Educational Importance (SEI)		Not Applicable	Not Applicable
Commercial Uses (CU)		Lower	Lower
Recreational Uses (RU)		Lower	Lower
Scenic Beauty (SB)		Moderate	Moderate

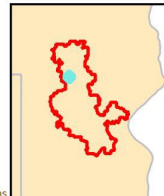
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-  Assessment Area
-  BCWD Boundary



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**BCWD  
 Function and Value  
 Assessment**

**Wetland 674**



0 100 200 ft



**Figure 17. Wetland 674 plant communities.**

**Wetland ID: 939**

**Size: 11.88 acres**

**Catchment Area: 80.55 acres**

**Hydrogeomorphic Class: Depressional**

Wetland 939 is located immediately east of the Gateway Trail north of its intersection with Highway 96 in the central portion of the watershed district. The wetland is situated within an intermediate elevation of the watershed and was identified as part of a landlocked basin in the 2006 landlocked basin study (basin ID CBC-3). Surrounding land cover consists predominantly of forest, hay/pasture, woody and emergent wetlands, and developed open space. The wetland receives overland flow from surrounding uplands. No outlet was observed.

Plant communities within Wetland 939 consist of Fresh Meadow (Poor Quality), Deep Marsh (Good Quality), and Shallow Open Water (Good Quality) with an overall floristic quality of Good. Much of the Fresh Meadow is dominated by the invasive reed canary grass. The Deep Marsh is dominated by several high quality native emergent plants with low cover of invasive cattail. The Shallow Open Water is well vegetated and dominated by native species characteristic of soft-water lakes. Uncommon native plants, including one state-listed special concern species (*Najas gracillima*) were observed in the Shallow Open Water. Other unique species included abundant spiny coontail (*Ceratophyllum echinatum*), an unknown native milfoil that may be a Washington County record, and creeping bladderwort (*Utricularia gibba*). If visited earlier in the growing season, Wetland 939 has good potential for additional rare/uncommon species presence.

Function and value ranks for Wetland 939 are higher for water quality and ecological functions and value. Its isolated basin, permanently flooded water regime, and underlying soil texture result in higher rank for sediment and general pollutant function. The good condition of the plant communities contribute to its higher ecological function, and it is undoubtedly of exceptional value due to presence of rare and uncommon aquatic plant species.

Based on translation to current District rules, Wetland 939 is classified as a Preserve wetland consistent with its previous classification under the prior assessment. This is based on its higher native plant habitat and wildlife habitat function.

**Table 27. Wetland 939 functional group ranks.**

Functional Group	Functional Capacity Rank	Opportunity-Value Rank	Overall Rank
Hydrology	Moderate	Moderate	Moderate
Water Quality	Higher	Moderate	Higher
Ecological	Higher	Higher	Higher
Climate	Moderate	Not Applicable	Moderate
Anthropogenic	Not Applicable	Lower	Lower


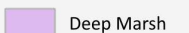
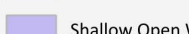
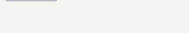


**Table 28. Wetland 939 specific function ranks.**

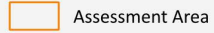

Specific Function	Functional Capacity Rank	Opportunity-Value Rank	Overall Rank
Surface Water Attenuation (SWA)	Moderate	Moderate	Moderate
Surface Water Supply (SWS)	Moderate	Moderate	Moderate
Groundwater Recharge (GR)	Moderate	Moderate	Moderate
Nitrate Removal (NR)	Moderate	Moderate	Moderate
Phosphorus Retention (PR)	Higher	Lower	Moderate
Sediment and Pollutant Retention (SPR)	Higher	Moderate	Higher
Shoreline Stabilization (SS)	Not Applicable	Not Applicable	Not Applicable
Thermoregulation (TR)	Not Applicable	Not Applicable	Not Applicable
Native Plant Habitat (NP)	Higher	Higher	Higher
Wildlife Habitat (WH)	Higher	Higher	Higher
Fish Habitat (FH)	Not Applicable	Not Applicable	Not Applicable
Carbon Sequestration (CS)	Moderate	Not Applicable	Moderate
Historic or Cultural Uses (HCU)	Not Applicable	Not Applicable	Not Applicable
Scientific or Educational Importance (SEI)		Not Applicable	Not Applicable
Commercial Uses (CU)		Lower	Lower
Recreational Uses (RU)		Lower	Lower
Scenic Beauty (SB)		Lower	Lower

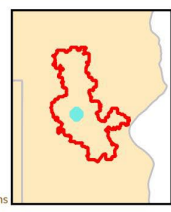
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Mapped Plant Communities	
	Fresh Meadow
	Deep Marsh
	Shallow Open Water
	Open Bog



	Assessment Area
	BCWD Boundary



**BCWD**  
**Function and Value**  
**Assessment**

**Wetland 939**

N 0 150 300 ft

Figure 18. Wetland 939 plant communities.

**Wetland ID: 949**

**Size: 9.67 acres**

**Catchment Area: 58.35 acres**

**Hydrogeomorphic Class: Depressional**

Wetland 949 is located immediately north Highway 96 east of its intersection with Gateway Trail in the central portion of the watershed district. The wetland is situated within an intermediate elevation of the watershed. Surrounding land cover consists predominantly of forest, hay/pasture, woody and emergent wetlands, and developed open space. The wetland receives overland flow from surrounding uplands and no inlet was observed. No outlet was observed.

Plant communities within Wetland 949 consist of Open Bog (Poor Quality) and Shallow Open Water (Fair Quality) with an overall floristic quality of Fair. Although the Open Bog community ranks as Poor Quality, this comparison is to overall statewide condition of Open Bogs. Relative to other plant community types, Open Bogs have high floristic quality. The Open Bog of Wetland 949 is being invaded by cattail, but is also dominated by native species such as leatherleaf (*Chamaedaphne calyculata*) and northwest territory sedge (*Carex utriculata*). A near continuous mat of *Sphagnum* moss occupies the interior of the wetland and forms a floating mat. Unique species of high floristic quality include round-leaf sundew (*Drosera rotundifolia*) and small cranberry (*Vaccinium oxycoccos*). Based on the DNR's Native Plant Community Classification system, the plant community is likely a Leatherleaf – Sweet Gale Shore Fen (OPn81b), and would be the farthest south occurrence of this plant community in the state. The Open Bog component of Wetland 949 is an incredibly unique occurrence within the watershed district, and despite its Poor statewide rating should be considered an exceptional resource. Additionally, the Shallow Open Water component of Wetland 949 included spiny coontail (*Ceratophyllum echinatum*), an uncommon plant sensitive to poor water quality that is not include in the RFQA species list. The Shallow Open Water therefore also appears to be higher in quality than the RFQA would indicate. dominated by native species with low invasive species cover. If visited earlier in the growing season, Wetland 949 has good potential for rare/uncommon species presence.

Function and value ranks for Wetland 949 are higher for hydrology, water quality, and ecological functions and values. Its depressional geomorphology, isolation, moderate size to catchment ratio, and surrounding land cover provide higher surface water attenuation function and value. These characteristics and permanently saturated hydrology, soil textures, and vegetation also result in higher ranks for nitrate removal, phosphorus retention, and sediment and pollutant retention functions. The position of Wetland 949 within a wildlife habitat core area and surrounding land cover contribute to its higher ecological function, despite the WAT tool not taking into account the unique southern geographic location of the Open Bog community.

Based on translation to current District rules, Wetland 949 is classified as a Preserve wetland. This is based on its higher wildlife habitat function. The Preserve classification is an increase from its Manage 1 classification from the prior classification. The increase in classification is likely due to the WAT tool having fewer classification categories than the MNRAM methods (no Exceptional category) and EOR's translation methodology lumping the "Higher" WAT ranking into the "Exceptional" MNRAM ranking. Though not considered by WAT, the increase in classification is justified via the presence of unique Open Bog that was likely not identified during the prior assessment due to its location within the interior of the wetland past a dense fringe of invasive cattail.

**Table 29. Wetland 949 functional group ranks.**

Functional Group	Functional Capacity Rank	Opportunity-Value Rank	Overall Rank
Hydrology	Higher	Moderate	Higher
Water Quality	Higher	Moderate	Higher
Ecological	Moderate	Higher	Higher
Climate	Moderate	Not Applicable	Moderate
Anthropogenic	Not Applicable	Moderate	Moderate

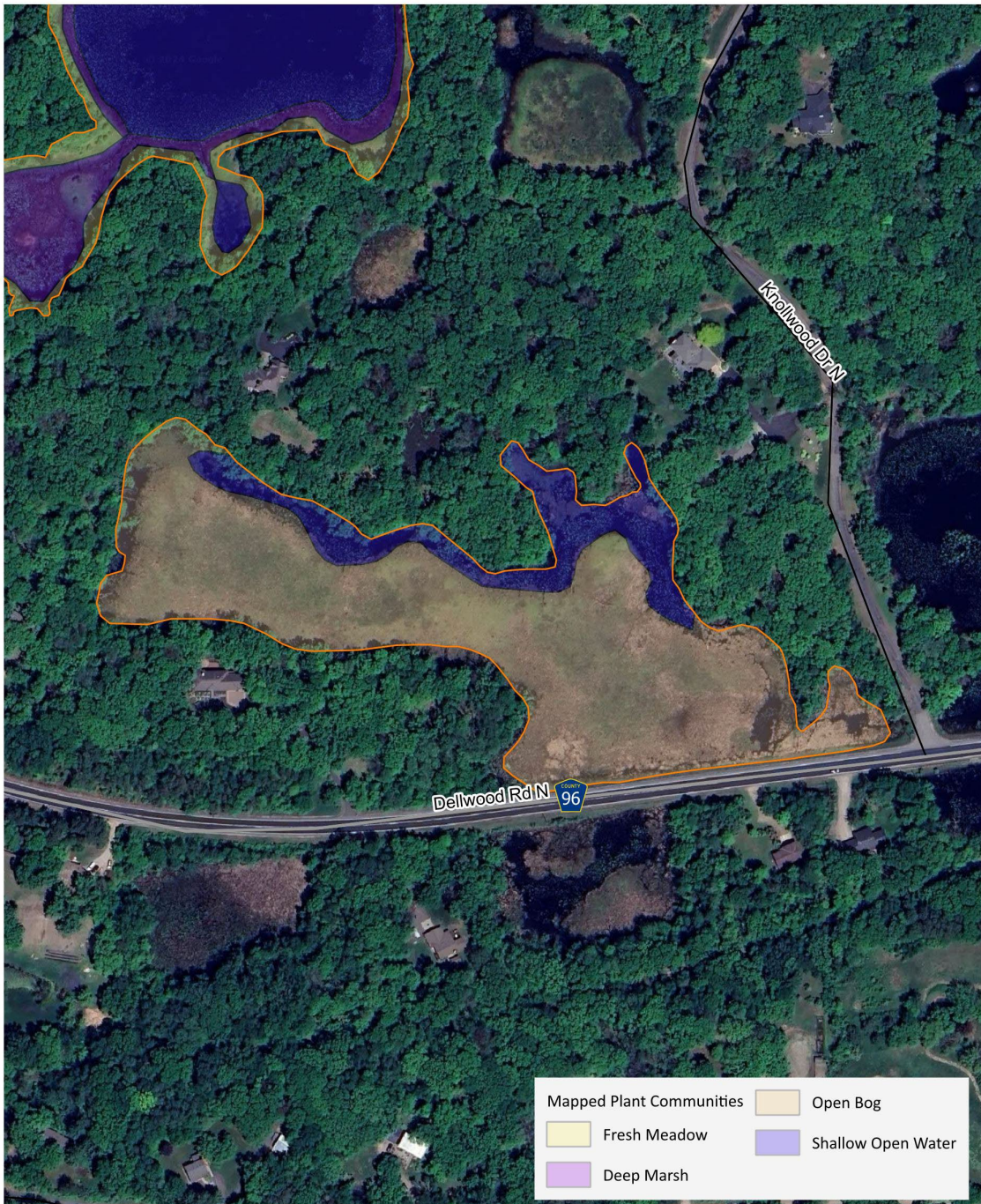
**Table 30. Wetland 949 specific function ranks.**

Specific Function	Functional Capacity Rank	Opportunity-Value Rank	Overall Rank
Surface Water Attenuation (SWA)	Higher	Moderate	Higher
Surface Water Supply (SWS)	Lower	Moderate	Moderate
Groundwater Recharge (GR)	Moderate	Moderate	Higher
Nitrate Removal (NR)	Higher	Moderate*	Higher*
Phosphorus Retention (PR)	Higher	Lower	Moderate
Sediment and Pollutant Retention (SPR)	Higher	Moderate	Higher
Shoreline Stabilization (SS)	Not Applicable	Not Applicable	Not Applicable
Thermoregulation (TR)	Not Applicable	Not Applicable	Not Applicable
Native Plant Habitat (NP)	Moderate	Moderate	Moderate
Wildlife Habitat (WH)	Moderate	Higher	Higher
Fish Habitat (FH)	Not Applicable	Not Applicable	Not Applicable



Specific Function	Functional Capacity Rank	Opportunity-Value Rank	Overall Rank
Carbon Sequestration (CS)	Moderate*	Not Applicable	Moderate*
Historic or Cultural Uses (HCU)	Not Applicable	Not Applicable	Not Applicable
Scientific or Educational Importance (SEI)		Not Applicable	Not Applicable
Commercial Uses (CU)		Lower	Lower
Recreational Uses (RU)		Lower	Lower
Scenic Beauty (SB)		Moderate	Moderate

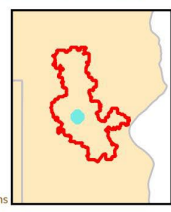
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Mapped Plant Communities	
<span style="display:inline-block; width:15px; height:15px; background-color:yellow; border:1px solid black;"></span> Fresh Meadow	<span style="display:inline-block; width:15px; height:15px; background-color:tan; border:1px solid black;"></span> Open Bog
<span style="display:inline-block; width:15px; height:15px; background-color:purple; border:1px solid black;"></span> Deep Marsh	<span style="display:inline-block; width:15px; height:15px; background-color:lightblue; border:1px solid black;"></span> Shallow Open Water



- Assessment Area
- BCWD Boundary



**BCWD  
Function and Value  
Assessment**

**Wetland 949**

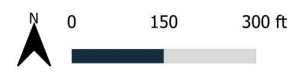


Figure 19. Wetland 949 plant communities.

**Wetland ID: 1064**

**Size: 2.84 acres**

**Catchment Area: 77.47 acres**

**Hydrogeomorphic Class: Depressional**

Wetland 1064 is located south of 83<sup>rd</sup> Street and east of Jeffery Avenue in the southwestern portion of the watershed. The wetland is situated within a high elevation of the watershed and was identified as part of a landlocked basin in the 2006 landlocked basin study (basin ID WLK-3). Surrounding land cover consists predominantly of forest, cultivated cropland, hay/pasture, and low intensity development. The wetlands receives surface water runoff from surrounding uplands. An outlet discharging to an adjacent wetland is present at its north end but is situated high above the wetland so that the wetland is isolated under normal circumstances.

Plant communities within Wetland 1064 consist of Sedge Mat (Fair Quality), Fresh Meadow (Poor Quality), and Shallow Open Water (Fair Quality), with an overall floristic quality of Fair. Although the Sedge Mat community ranks as Fair Quality, this comparison is to overall statewide condition of Sedge Mats. Relative to other plant community types, Sedge Mats have high floristic quality. The Sedge Mat of Wetland 1064 is dominated by native species with low invasive species cover. Intact Sedge Mats are an uncommon plant community within the District and rank as exceptionally sensitive to stormwater.

Functional ranks for Wetland 1064 are higher for hydrology, water quality, and ecological functions and values. Its depressional geomorphology, moderate size to catchment ratio, and surrounding land cover provide higher surface water attenuation function and value. Along with these characteristics, its high elevation in the watershed and relative isolation provide higher groundwater recharge function. These characteristics also result in higher ranks for nitrate removal and sediment and pollutant retention functions. The condition of the plant communities and position within a wildlife habitat core area contribute to its higher ecological function.

Based on translation to current District rules, Wetland 1064 is classified as a Preserve wetland consistent with its previous classification under the prior assessment. This is based on its moderate vegetative diversity score and exceptional stormwater sensitivity.

**Table 31. Wetland 1064 functional group ranks.**

Functional Group	Functional Capacity Rank	Opportunity-Value Rank	Overall Rank
Hydrology	Higher	Higher	Higher
Water Quality	Higher	Higher	Higher
Ecological	Moderate	Higher	Higher
Climate	Moderate	Not Applicable	Moderate
Anthropogenic	Not Applicable	Lower	Lower



**Table 32. Wetland 1064 specific function ranks.**

<b>Specific Function</b>	<b>Functional Capacity Rank</b>	<b>Opportunity-Value Rank</b>	<b>Overall Rank</b>
Surface Water Attenuation (SWA)	Higher	Higher	Higher
Surface Water Supply (SWS)	Moderate	Higher	Higher
Groundwater Recharge (GR)	Higher	Moderate	Higher
Nitrate Removal (NR)	Higher	Moderate	Higher
Phosphorus Retention (PR)	Moderate	Moderate	Moderate
Sediment and Pollutant Retention (SPR)	Higher	Higher	Higher
Shoreline Stabilization (SS)	Not Applicable	Not Applicable	Not Applicable
Thermoregulation (TR)	Not Applicable	Not Applicable	Not Applicable
Native Plant Habitat (NP)	Moderate	Moderate	Moderate
Wildlife Habitat (WH)	Moderate	Higher	Higher
Fish Habitat (FH)	Not Applicable	Not Applicable	Not Applicable
Carbon Sequestration (CS)	Moderate	Not Applicable	Moderate
Historic or Cultural Uses (HCU)	Not Applicable	Not Applicable	Not Applicable
Scientific or Educational Importance (SEI)		Not Applicable	Not Applicable
Commercial Uses (CU)		Lower	Lower
Recreational Uses (RU)		Lower	Lower
Scenic Beauty (SB)		Lower	Lower



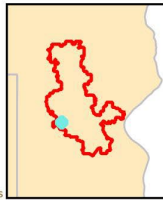
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-  Assessment Area
-  BCWD Boundary



**Brown's Creek Watershed District**  
 Preserving the integrity of the watershed for future generations



**BCWD  
 Function and Value  
 Assessment**

*Wetland 1064*



0 100 200 ft



**Figure 20. Wetland 1064 plant communities.**