
**Staff Analysis of Proposed Amendment to the
Dane County Water Quality Plan,
Revising the Sewer Service Area Boundary and Environmental Corridors
in the Central Urban Service Area (City of Madison / Yahara Hills Neighborhood)**

History of the Amendments to the Central Urban Service Area

The Central Urban Service Area was established in 1971 with the adoption of the first sewer service plan and originally included about 29,000 acres. The first Madison amendment to the Central Urban Service Area occurred in 1985. There have been 115 amendments to this service area since its creation totaling roughly 8,700 acres of developable land and 4,000 acres of Environmental Corridor. The most recent amendment of the service area by the City was recommended by the Commission and approved by the WDNR in 2018.

Existing Conditions

Land Use

The City of Madison is requesting amendment to the Central USA along its eastern edge in the City of Madison and Town of Cottage Grove. The amendment area includes the existing Dane County Sanitary Landfill (currently LSA) and a portion of the Yahara Hills Golf Course. The land in question is covered by the City's *Yahara Hills Neighborhood Development Plan (NDP)*. Roughly 84 acres (<10%) of the total land area of the requested amendment area is currently a developed use. The majority (89%) of land is currently open, recreation, or agricultural.

The proposed future use of the area leaves roughly two-thirds of the land undeveloped (around 638 acres) and allocates the remaining land to solar farm, employment, institutional, and industrial uses. Open space/park and stormwater are the predominant future land uses identified for the site, including 200 acres designated as Environmental Corridor, with an additional 133 acres designated Environmental Corridor after the closure of the current landfill location and its conversion to park space. Land south of Highway 12 will be developed, and along with the remaining portion of the current sanitary landfill north of the highway will be known as the "Dane County Landfill and Sustainability Campus."

Surrounding Planned Land Uses Include:

- North: Mixed-use neighborhood, Mixed housing
- West: Existing commercial/industrial development, Mixed-use neighborhood
- South: Parks and open space, agriculture
- East: Agriculture

**Table 1
Existing and Planned Land Use**

Land Use Category	Existing Land Use Acres (see Map 3)	Proposed Land Use Acres (see Map 4)
Agriculture	111.4	0.5
Commercial	6.5	110.3
Industrial	8.3	102.1
Institutional/Governmental		28.6
Natural area/open land	235.2	407.5
Parks/outdoor recreation	234.5	237.2
Residential	17.0	1.4
Transportation, Utilities, Communication	283.1	46.7
Under Construction	19.2	
Water	5.5	1.1
Woodlands	15.3	0.6
Total	936.0	936.0

Cultural and Historic Sites

The Wisconsin Historical Society (WHS) has been contacted regarding the presence of any known archaeological sites or cemeteries within the amendment area. This Central Urban Service Area amendment contains at least one documented linear mound and a burial pit feature. Any work/disturbance in the area must avoid the burial feature. WHS can supply the location of these resources if they are unknown to any parties involved in ground preparation or construction. (Attachment 1)

Natural Resources

The proposed amendment area is in the Lake Monona-Yahara River (HUC 12: 070900020702) and Door Creek (HUC 12: 070900020901) watersheds (Map 5). There are several mapped wetlands and floodplain within the amendment area.

Wastewater from the amendment area will be treated at the Madison Metropolitan Sewerage District (MMSD) Wastewater Treatment Facility. The treated effluent is discharged to Badfish Creek and Badger Mill Creek, bypassing the Yahara chain of lakes.

Wetlands

DNR's Wisconsin Wetland Inventory (WWI) shows three wetland areas within in the amendment area (Map 5). One emergent / wet meadow and forested wetland area in the northwestern portion, one emergent / wet meadow and forested wetland area north of the landfill, and one emergent / wet meadow along the eastern edge of the amendment area.

A wetland delineation ([link to report](#)) was conducted within the far eastern portion of the amendment area by Stantec, a DNR-qualified assured delineator in October 2021. The site investigation and field delineation determined there are two wetlands totaling 3.6 acres within

the amendment area (Map 11). Wetland 1 (W1) is a wet meadow / shrub carr / hardwood swamp complex that covers approximately 3.2 acres in the eastern portion of the amendment area, south of Femrite Drive. This wetland is associated with Door Creek. The dominant vegetation was reed canary grass (*Phalaris arundinacea*), American black current (*Ribes americanum*), boxelder (*Acer negundo*), and silver maple (*Acer saccharinum*). Wetland 2 (W2) is a farmed wetland and covers approximately 0.4 acres in the eastern portion of the amendment area, west of W1. This wetland is described as isolated. The dominant vegetation was fall panicgrass (*Panicum dichotomiflorum*). These wetlands with a minimum 75' vegetated buffer are required to be designated as environmental corridor per the adopted policies and criteria for environmental corridors ([link to document](#)).

No recent wetland delineations have been conducted for the northern wetlands. The 2008 *Dane County Wetlands Resource Management Guide* ([link to report](#)) classifies the wetlands within the amendment area as Group V wetlands, which are poorer quality but have the potential to be restored.

Lake Monona - Yahara River

The northwestern corner and southern portion of the proposed amendment area are within the Lake Monona - Yahara River watershed (Map 5). The 94 square mile watershed encompasses predominately suburban and urban areas, with a mix of agricultural and other uses. An unnamed perennial stream ([WBIC 804100](#) / WATERSID 305082), known locally as Penitto Creek, flows through the northwestern corner of the amendment area. It is a 5.65-mile long tributary to Upper Mud Lake originating at Blooming Grove Drumlins Natural Resource Area and flows to Lake Monona via the Yahara River. The unnamed stream has cool-cold headwater shallow lowland and cool-warm headwater natural communities.

Since April 2018, this waterway has been included on state 303(d) list of impaired waterways for total phosphorus and a degraded biological community. The assessment for the 2022 listing cycle showed continued impairment for both. There has been a Rock River Coalition / Yahara WINs monitoring location on Pennito Creek north of Femrite Dr ([Station ID 10042379](#)) since 2015. Field measurements from 2021 indicated dissolved oxygen levels of 6.5 to 12.0 mg/L, transparency of 22.1 to 114.4 cm, and a macroinvertebrate index score of 1.8. Laboratory analysis of samples from 2021 showed ammonia (NH₃) levels from 0.10 to 0.16 mg/L, total phosphorus (P) from 0.09 to 0.17 mg/L, and total suspended solids (TSS) from 6.2 to 16.8 mg/L. Recent chloride monitoring has not been conducted for this watershed. There are no USGS baseflow monitoring stations within this portion of the watershed.

The unnamed stream flows southeast into the Upper Mud Lake. Upper Mud Lake ([WBIC 804000](#) / WATERSID 18256) is a shallow, fertile 256-acre lake between Lakes Monona and Waubesa. It is surrounded by wetlands and has a shallow lowland natural community. This water body was proposed to be added to the 303(d) list during the 2022 listing cycle for fish consumption due to elevated PFOS in fish tissue.

The Yahara River ([WBIC 798300](#) / WATERSID 11671) is a large tributary to the Rock River, draining over one third of Dane County and connecting the county's four largest lakes. The section of the river between Upper Mud Lake and Lake Monona (miles 32.3 - 33.5) supports a warm mainstem natural community and is considered to be in excellent condition for fish and aquatic life. There are no monitoring stations on this stretch of the Yahara River.

Door Creek

The central and eastern portions of the proposed amendment area are within the Door Creek watershed, a subwatershed of the Lake Kegonsa-Yahara River watershed (Map 5). Door Creek ([WBIC 802800](#) / WATERSID 11644) is a tributary to Lake Kegonsa. It begins as a small stream in the southeast corner of the Town of Burke and flows generally south to the Lake. Door Creek and its tributaries drain 29.5 square miles of land in the drumlin-marsh area of eastern Dane County. Much of Door Creek has been straightened and ditched to facilitate agricultural drainage. It is a relatively sluggish stream subject to low flows and high temperatures.

From its mouth at Lake Kegonsa (mile 0) upstream to its headwaters north of Interstate Highway 94 (mile 14.02), the DNR's current designated biological use of Door Creek is as a Limited Forage Fishery (the classification used to determine water quality criteria and effluent limits under NR 102 and NR 104). The current biological use of Door Creek is as warmwater forage fishery, and the attainable use is as a warmwater sport fishery.

Since April 2012, all of Door Creek has been included on the state 303(d) list of impaired waters for total phosphorus from unknown sources of urban or rural nonpoint source pollution. The DNR's 2018 assessments showed continued impairment by phosphorus however, available biological data do not indicate impairment. A Total Maximum Daily Load (TMDL) for phosphorus has been established for this segment of Door Creek associated with the greater Rock River TMDL project. There has been a Rock River Coalition / Yahara WINS monitoring location on Door Creek north of Hope Road ([Station ID 10029221](#)) since 2016. Field measurements from 2021 indicated dissolved oxygen levels of 7.5 to 21.0 mg/L, transparency of 98 to 120 cm, and a macroinvertebrate index score of 2.0. Laboratory analysis of samples from 2021 showed ammonia (NH₃) levels from no detect to 0.13 mg/L, total phosphorus (P) from 0.08 to 0.13 mg/L, and total suspended solids (TSS) from 4.5 to 9.8 mg/L. Recent chloride monitoring has not been conducted for this watershed. There are no active USGS baseflow monitoring stations within this watershed.

Springs

The Wisconsin Geological and Natural History Survey (WGNHS) maintains an inventory of springs in Dane County, and throughout the state. From 2014 and 2017, the WGNS surveyed springs statewide that were expected to have flow rates at least 0.25 cubic feet per second (cfs). There are no known springs in or near the proposed amendment area. There are no surveyed springs in the Door Creek Watershed. Springs represent groundwater discharge visible to the casual observer.

Groundwater

Groundwater modeling, using the 2016 Groundwater Flow Model for Dane County developed by the WGNHS ([link to website](#)), shows that baseflow in Door Creek at Interstate Highway 39 has decreased from 14.0 cfs during pre-development conditions (no well pumping) to 11.7 cfs in 2010 (Table 4). This decrease is due to the combined impacts of high capacity well groundwater withdrawals contributing to reduced stream baseflow.

In 2012, the WGNHS published a report, *Groundwater Recharge in Dane County, Wisconsin, Estimated by a GIS-Based Water-Balance Model*, ([link to report](#)) estimating the existing groundwater recharge rates in Dane County based on the soil water balance method. The study estimates that the existing groundwater recharge rate in the proposed amendment area ranges from 9 to 10 inches per year.

Endangered Resources

The WDNR Bureau of Endangered Resources maintains a database representing the known occurrences of rare plants, animals, and natural communities that have been recorded in the Wisconsin Natural Heritage Inventory ([link to website](#)). A screening review of this database conducted by Regional Planning Commission staff for species designated as endangered, threatened, or of special concern identified one plant species of concern within a one-mile radius of the amendment area. A 1-mile buffer was considered for terrestrial and wetland species and a 2-mile buffer for aquatic species. Therefore, it is recommended that a formal Endangered Resources Review be conducted by the WDNR or one of their certified reviewers for potential impacts to endangered resources and habitat protection measures be implemented if species are found.

The vast majority (over 96%) of the amendment area is outside of the High Potential Zone (species likely present) for the federally endangered Rusty Patched Bumble Bee ([link to web map](#)).

Soils and Geology

The amendment area is located within the Dane-Jefferson Drumlins and Lakes Land Type Associations of Wisconsin. The Association classifies the surficial geology of this area as an undulating complex of till plains with drumlins, outwash plains, lake plains and muck deposits common.

Surface elevations within the amendment area range from around 1015 feet to 1026 feet. There are areas of steep (> 12%) and very steep (>20%) slopes on the four drumlins in the amendment areas with large, sloped areas in the center just to the north of Femrite Drive (Map 6). Small areas of steep and very steep slopes associated with road embankments can also be found in the amendment area. These areas of steep slopes are not riparian and do not require inclusion in environmental corridors; however, the slopes associated with wooded areas a mapped as environmental corridor for open space.

According to the Natural Resource Conservation Service (NRCS) Soil Survey of Dane County, the soils in amendment area are in Batavia – Houghton – Dresden and Dodge – St. Charles – McHenry associations. Soils in the Batavia – Houghton – Dresden association are well drained and poorly drained, deep and moderately deep silt loams and mucks that are underlain by silt, sand, and gravel. Soils in the Dodge – St. Charles – McHenry association are well drained and moderately well drained, deep silt loams. Table 2 shows detailed classification for soils in the amendment area (Map 7) while Table 3 shows important soil characteristics for the amendment area.

There are seven hydric soils within the amendment area, the Elvers, Houghton, Marshaun, Palms, Orion, Sable, and Wacousta soils (the Ev, Ho, Mc, Pa, Os, SaA and Wa map units) (see Map 7). Hydric soils are good indicators of existing and former (drained) wetlands.

According to the Soil Survey Geographic data for Dane County developed by the USDA Natural Resources Conservation Service ([link to web soil survey](#)), the St. Charles, Virgil, Plano, Troxel, and Radford soils (the ScB, VwA, PnA, PnB, TrB and RaA map units) are not hydric, but they do have a seasonal (April to June) zone of water saturation within 5 feet of the ground surface. Only the VwA, soils are classified as somewhat poorly drained, which can pose a limitation for buildings with basements.

Table 2
Soils Classification

Soil	% of Area	General Characteristics
<i>Dodge Silt Loam; DnB</i>	15.7	Deep, well drained, gently sloping and sloping soils on glaciated uplands. Soils have high fertility, moderate permeability, and a moderate to severe hazard of erosion. Poses moderate limitations for development due slope and shrink/swell potential.
<i>St. Charles Silt Loam; ScB</i>	13.8	Deep, well drained, sloping soils to moderately steep soils on glaciated uplands. Soils have high fertility, moderate permeability, and a moderate to severe hazard of erosion. Poses moderate limitations for development due to slopes, shrink/swell potential and low bearing capacity.
<i>Landfill; LDF</i>	12.8	This map unit consists of areas in which solid wastes have been deposited.
<i>Houghton Muck; Ho</i>	10.6	Deep, very poorly drained, nearly level soils on low benches and bottoms in stream valleys. Soils have medium fertility, moderately rapid permeability, and no hazard of erosion. Poses very severe limitations for development due to compressibility, bearing capacity and seasonal high water table.
<i>Virgil Silt Loam; VwA</i>	9.5	Deep, nearly level and gently sloping, poorly drained soils on low benches in stream valleys. Soils have high fertility, moderately slow permeability, and a low hazard of erosion. Poses severe limitations for development due to depth to saturated zone.
<i>McHenry Silt Loam; MdC2</i>	6.6	Deep, well drained, gently sloping to moderately steep soils on glaciated uplands. Soils have medium fertility, moderate permeability, and a moderate to severe hazard of erosion. Poses slight to moderate limitations for development due to slopes, shrink/swell potential and low bearing capacity.

<i>Sable Silty Clay Loam; SaA</i>	3.5	Deep, nearly level and gently sloping, poorly drained soils on low benches in stream valleys. Soils have high fertility, moderate permeability, and low hazard of erosion. Poses very severe limitations for development due to low bearing capacity, moderate shear strength and compressibility, flooding, depth to saturated zone, and shrink/swell potential.
<i>Plano Silt Loam; PnA</i>	2.8	Deep, well drained and moderately well drained, nearly level to sloping soils on glaciated uplands. Soils have high fertility, moderate permeability, and a moderate to severe hazard of erosion. Poses moderate limitations for development due to low bearing capacity.
<i>Troxel Silt Loam; TrB</i>	2.7	Deep, well drained and moderately well drained, gently sloping soils in draws, on fans, and in drainageways. Soils have high fertility, moderate permeability, and a moderate hazard of erosion. Poses severe limitations for development due to low bearing capacity.
<i>Ringwood Silt Loam; RnB</i>	2.3	Deep, well drained, gently sloping and sloping soils on glaciated uplands. Soils have high fertility, moderate permeability, and a moderate hazard of erosion. Poses moderate limitations for development due to low bearing capacity and erodibility.
<i>Orion Silt Loam; Os</i>	2.3	Deep, somewhat poorly drained, nearly level soils on flood plains and narrow stream bottoms. Soils have high fertility, moderate permeability, and a severe hazard of erosion. Poses very severe limitations for development due to flooding, seasonal high-water table, moderate shrink/swell potential, and very low bearing capacity.
<i>Kidder Silt Loam; KdC2</i>	2.2	Deep, well drained, gently sloping to very steep soils on glaciated uplands. Soils have medium fertility, moderate permeability, and severe hazard of erosion. Poses moderate limitations for development due to steep slopes.
<i>Palms Muck; Pa</i>	1.9	Deep, very poorly drained, nearly level organic soils on low benches in stream valleys. Soils have medium fertility, moderately rapid permeability, and no hazard of erosion. Poses very severe limitations for development due to seasonal high water table and bearing capacity.
<i>Kegonsa Silt Loam, KeB</i>	1.5	Well drained, nearly level and gently sloping, moderately deep soils on benches on outwash plains. Soils have medium fertility, moderate to rapid permeability, and moderate hazard of erosion. Poses no limitations for development.
<i>Kidder Loam, KdD2</i>	1.5	Deep, well drained, gently sloping to very steep soils on glaciated uplands. Soils have medium fertility, moderate permeability, and a very severe hazard of erosion. Poses severe limitations for development due to slope.
<i>Kidder Soils; KrE2</i>	1.5	Deep, well-drained, gently sloping to very steep soils on glaciated uplands. Soils have medium fertility, moderate permeability, and a very severe hazard of erosion. Poses severe limitations for development due to slope.
<i>Radford Silt Loam, RaA</i>	1.3	Deep, somewhat poorly drained, nearly level and gently undulating alluvial soils in low drainageways and stream channels. Soils have high fertility, moderate permeability, and a moderate hazard of erosion. Poses very severe limitations for development due to very low bearing capacity and depth to saturated zone.
<i>Eivers Silt Loam; Ev</i>	1.2	Poorly drained, nearly level soils on low benches and bottoms in stream valleys. Soils have medium fertility, moderately slow permeability, and no hazard of erosion. Poses very severe limitations for development due to bearing capacity, compressibility, and seasonal high water table.
<i>Cut and fill land; Cu</i>	1	Variable – too variable to be estimated.
<i>Dodge Silt Loam; DnC2</i>	1	Deep, well drained, gently sloping and sloping soils on glaciated uplands. Soils have high fertility, moderate permeability, and a severe hazard of erosion. Poses moderate limitations for development due to slope, shrink/swell potential, and low bearing capacity.
<i>Marshaun Silt Loam; Mc</i>	1	Moderately deep, poorly drained, nearly level soils on low benches in major stream valleys. Soils have medium fertility, moderate permeability, and a low hazard of erosion. Poses severe limitations for development due to bearing capacity and depth to saturated zone.
<i>Plano Silt Loam; PnB</i>	1	Deep, well drained and moderately well drained, nearly level to sloping soils on glaciated uplands. Soils have high fertility, moderate permeability, and a moderate hazard of erosion. Poses slight limitations for development due to shrink/swell potential and low bearing capacity.
<i>Wacousta Silty Clay Loam; Wa</i>	1	Deep, poorly drained, nearly level soils on low benches in old lake basins. Soils have low fertility, moderately slow permeability, and no hazard of erosion. Poses severe limitations for development due to ponding and depth to saturated zone.

Source: Soil Survey Geographic data for Dane County developed by the USDA Natural Resources Conservation Service

**Table 3
Soils Characteristics**

Characteristic	Soil Map Symbols (see Map 7)	% of Area
Prime Agricultural Soils	DnB, ScB, PnA, TrB, RnB, KeB, PnB	39.8
Hydric Soils (Indicates Potential / Restorable Wetlands)	Ho, SaA, Os, Pa, Ev, Mc, Wa	21.5
Poorly Drained Soils with Seasonal High Water Table (< 5')	Ho, VwA, SaA, Os, Pa, Ev, Mc, Wa	31.4
Soils Associated with Steep Slopes (> 12%)	KdD2, KrE2	3
Soils Associated with Shallow Bedrock (< 5')	None	0
Best Potential for Infiltration in Subsoils	DnB, ScB, VwA, MdC2, RnB, PnA, KdC2, KeB, KdD2, Mc, PnB	57.9

Source: Soil Survey Geographic data for Dane County developed by the USDA Natural Resources Conservation Service

According to WGNHS data, bedrock within the northern and eastern portions of the amendment area is in the Trempealeau Group and Tunnel City Group. Bedrock in the Trempealeau Group is quartz sandstone, dolomitic siltstone, silty dolomite, and sandy dolomite, consists of two formations including the Jordan and underlying St. Lawrence Formations, which were combined as one mapping unit. Thickness is about 75 feet, where not eroded. Bedrock in the Tunnel City Group is medium to very fine-grained quartz sandstone, locally very glauconitic, and consists of two formations including the Lone Rock and Mazomanie Formations. Thickness is up to 150 feet. Part of the central and southern portions of the amendment area is in the Sinnipee Group. Bedrock in the Sinnipee Group is dolomite with some limestone and shale, and consists of three formations including the Galena, Decorah, and Platteville Formations. Thickness is less than 100 feet. The southern portion of the amendment area is in the Prairie du Chien Group. Bedrock in the Prairie du Chien Group is dolomite, minor sandstone, cherty dolomite, vuggy, sandy, and oolitic, and consists of two formations including the Shakopee and Oneota Formations. Thickness is up to 145 feet in eastern Dane County. According to WGNHS data, the depth to bedrock in the amendment area ranges from 0-200 feet, with the shallowest depths being in the northcentral and southern portions and deepest depths being in the northwest corner and in the southeastern portion of the amendment area (see Map 8).

As is common throughout much of the upper Midwest, karst features such as enlarged bedrock fractures are prevalent in the local dolomite uplands. Karst features such as vertical fractures and conduits provide primary pathways for groundwater movement and can dramatically increase groundwater susceptibility when present. The location of karst features is difficult to predict, and the thickness and type of the overlying soil greatly affects how much water drains into them. Where clay soils are thick, infiltration rates are likely to be very low. However, where bedrock fractures are near the surface infiltration rates can be very high. Based on the WGNHS karst potential data, karst features may be encountered in the northern portion and much of the southeastern portion of the amendment area, at depths ranging from about 0 to 187 feet. Karst features may be encountered within the proposed environmental corridors at depths ranging from 7 to 155 feet. Shallow karst may be encountered where the stormwater management facilities are proposed in the northern portion of the amendment area. The Wisconsin Department of Natural Resources Conservation Practice Standard 1002 - Site Evaluation for Stormwater Infiltration requires field verification for areas of the development site considered suitable for infiltration. This includes a site assessment for karst features in this area. If shallow karst features are found, adequate protection measures are required to address any potential for groundwater contamination.

There is no minimum separation distance for roofs draining to surface infiltration practices. However, the Dane County ordinance requires infiltration practices to be located so that the separation distance between the bottom of the infiltration system and the elevation of seasonal high groundwater or the top of bedrock is at least 5 feet for residential arterial roads and 3 feet for other impervious surfaces. Soil test pits are required as part of the stormwater management plan to assure that infiltration practices are sited in locations that will not adversely affect groundwater quality.

Proposed Urban Services

Parks and Open Space

The amendment area includes a large portion of the Yahara Hills Golf Course (totaling approximately 236 acres) that is planned to be developed as the Dane County Landfill and Sustainability Campus in 2025. Due to the extent of natural features and environmentally sensitive areas, a large part of the amendment area, totaling nearly 640 acres, is planned for parks, stormwater management, and other open space.

Water System

The Madison Water Utility provides municipal water through a public water distribution system which includes approximately 4,812,221 lineal feet of water main, 23 high-capacity wells (two of which are in-active), and 40 booster pumps. A primary pump within each well unit pumps into an onsite reservoir, while one or more booster pumps within each well unit pump into the distribution system. The active wells are at depths ranging from approximately 500 to 1,188 feet, with a capacity of 750 to 6,300 gallons per minute (gpm) entering the distribution system. In total, the gross capacity of all municipal well pumps is approximately 125,875 gpm (181 million gallons per day, MGD); however, the City reports that the maximum available capacity of the system is 46,875 gpm (67.5 MGD). The City has six elevated storage tanks, three standpipes, and 24 reservoirs, with a combined storage capacity of 43.0 million gallons. According to the 2020 Annual Report to the Public Service Commission of Wisconsin ([link to 2020 Annual Report](#)), the City pumped an average of 16,634 gpm (24.0 MGD), approximately 35% of its available pumping capacity. In 2020, the maximum amount pumped in any one day was 33.6 million gallons, which is reported to be due to extreme heat with little preceding rain.

Water losses in the City's distribution system was an average of 2,712,830 gpd (2.71 MGD) in 2020, which accounted for 11% of the net water supplied in 2020. Approximately 98% of this was due to unreported and background leakage, with the remaining due to reported leaks. In 2020, there were 146 main breaks and 35 service breaks which were repaired. Water losses in the City's distribution system was 13% in 2019 and 12% in 2018. The Wisconsin Administrative Code PSC 185.85(4)(b) requires a utility with more than 1,000 customers to submit a water loss control plan to the Public Service Commission (PSC) if the utility reports its percentage of water losses exceeds 15%.

The amendment area is located within Pressure Zone 4. The firm capacity of the booster pumps in this area is 4,200 gpm and the Unit Well 31 reservoir has a capacity of 1.5 million gallons. According to the City's application, current average daily demand within Pressure Zone 4 is 1,111 gpm, or 1,600,000 gpd (1.6 MGD). The estimated current peak hourly demand within Pressure Zone 4 is 3,889 gpm (233,333 gallons per hour, gph), based on the City's peak hourly demand factor of 3.5. This peak hourly demand factor (ratio of maximum hour to average hour) is derived from recent system-wide usage analyses over a ten-year period.

Water supply to parcels within the City of Madison will be provided by connection to the City's existing water distribution system, with connections made to existing water main on Femrite Drive and existing water main within the amendment area east of Millpond Road. Water main will be extended throughout the amendment areas as development occurs, with additional infrastructure added to create a "loop" for redundancy.

The estimated annual average daily water demand for the amendment area will be 21,293 gallons per day (gpd), or 15 gpm, based on following estimates reported in the City application:

- Dane County East District Campus: 4,575 gpd
- Dane County RNG Plant: 3,000 gpd (peak demand = 40,000 gpd 1-2 weeks per year, twice a year)
- Dane County Sustainability Campus: 11,250 gpd
- Proposed landfill: 0 gpd

The estimated peak daily demand is 37,476 gpd (26 gpm), based on the City's peak daily factor of 1.76; and estimated peak hourly demand is 3,105 gph (52 gpm), based on the City's peak hourly demand factor of 3.5. It is anticipated that the existing water supply system and Pressure Zone 4 will support the additional demand from the proposed amendment area. Additionally, the City reports that the system can provide 3,500 gpm over 3 hours for firefighting purposes.

Wastewater

A portion of the amendment area is currently within the Rodefild Limited Service Area (LSA), receiving public sanitary sewer service from the City of Madison, and includes the Dane County Sanitary Landfill and City of Madison Parks Yahara Hills Golf Course clubhouse. Sanitary sewer service to additional parcels within the City of Madison will be provided by connection to the existing mains serving the LSA or by extension from existing sewer on Femrite Road. The City's wastewater collection system ultimately drains to the Madison Metropolitan Sewerage District's (MMSD's) system for collection and treatment, with this area being served by the MMSD's Southeast Interceptor.

The proposed amendment area consists of a mix of land uses contributing to wastewater flows, including industrial, employment, and institutional land uses, as well as the existing landfill and proposed landfill and sustainability campus. The estimated annual average daily wastewater generation for the amendment area, including existing development within the Rodefild LSA, is 228,965 gallons per day (gpd), or 159 gallon per minute (gpm), based on following estimates reported in the City application:

- Employment: 6,390 gpd or 4 gpm (estimated 426 persons at 15 gpd/person)
- Industrial: 15,750 gpd or 11 gpm (estimated 1,050 persons at 15 gpd/person)
- Ho-Chunk Casino: 40,522 gpd or 28 gpm
- Existing Landfill: 122,755 gpd or 85 gpm (estimated 120,810 gpd from leachate)
- Proposed Landfill: 43,548 gpd or 30 gpm (estimated 40,000 gpd from leachate)

The estimated daily peak flow for the amendment area is 915,860 gpd, or 636 gpm. This assumes a peaking factor of 4 for all areas.

The primary areas of new development within the amendment area lie outside of the current Rodefild LSA and comprise the industrial land uses north and south of Femrite Road. The receiving sewer for new development in this area is reported to have a capacity of 1,090,909 gpd, or 758 gpm. Sanitary sewer within the amendment area will be designed as specific development dictates and sized to handle the specific loading of each respective sewershed. The City will need to monitor future wastewater flow contributions to the receiving interceptors as additional areas development, but it appears the existing collection system has sufficient capacity to handle the additional peak flows from the amendment area

Wastewater Treatment Facility

Madison Metropolitan Sanitary District (MMSD) will provide wastewater treatment for the amendment area. The Nine Springs wastewater treatment facility (WWTF) is located on Moorland Road, Madison, WI, and discharges treated effluent to Badfish Creek within the Badfish Creek Watershed (Lower Rock River Basin) and Badger Mill Creek within the Upper

Sugar River Watershed (Sugar-Pecatonica Basin). The rated monthly design flow capacity of the facility is 56.0 MGD and the maximum daily design flow capacity is 68.6 MGD. In the year 2020, the facility received an average monthly influent hydraulic loading of 41.9 MGD (75% of the 56.0 MGD design capacity), including infiltration and inflow, according to the 2020 Compliance Maintenance Annual Report (CMAR) ([link to 2020 CMAR](#)). It is expected to reach 90% of current hydraulic design capacity around 2026 based on current projected growth rate assumptions. This already occurs on occasion, although average flows did not exceed 90% design capacity for any month in 2020. MMSD has completed a long-range plan that evaluated various options for expanded treatment capacity to serve its current and future service area. For the 20-year planning period, treatment for this area is expected to remain at the existing wastewater treatment facility location with expanded capacity of the system as the need is foreseen.

MMSD has not had issues meeting its WPDES permit limits for the quality of effluent discharged to Badfish Creek and Badger Mill Creek, according to their 2020 CMAR. Effluent quality summarized here refers to Badfish Creek, where approximately 95% of discharge is released. Below is a summary of the major effluents reported on in the 2020 CMAR:

- The biological oxygen demand (BOD) effluent quality for 2020 was below the monthly average limit, with a monthly average of 4.3 mg/L (22% of the limit) and a maximum of 10 mg/L (53% of the limit) for the months of January and February.
- The total suspended solids (TSS) effluent quality for 2020 was well below the monthly average limit, with a monthly average of 4.5 mg/L (23% of the limit) and a maximum of 6 mg/L (30% of the limit) for the month of January.
- The ammonia (NH₃) effluent quality for 2020 was below the monthly average limits (limits vary by month), with a monthly average of 0.50 mg/L (3-74% of the limit) and a maximum of 1.34 mg/L (74% of the limit) for the month of August.
- The phosphorus (P) effluent quality for 2020 was well below the monthly average limits (limits vary by month), with a monthly average of 0.36 mg/L (23-51% of the limit) and a maximum of 0.53 mg/L (35% of the limit).

Badfish Creek is a tributary to the Rock River, and thus the WPDES permit includes phosphorus and TSS limits to comply with the Total Maximum Daily Load (TMDL) developed for the Rock River Basin to protect and improve water quality. In addition to the TMDL limits, future water quality-based effluent limits (WQBEL) have been considered in the WPDES permit. The monthly limits to comply with the TMDL for TSS are easily met by MMSD, and in some cases, the current WPDES permit limits are more stringent than the TMDL limits. The interim limit for phosphorus is a 1.0 mg/L monthly average required beginning May 2020 (previous limit was 1.5 mg/L), with a final WQBEL of 0.225 mg/L. Additionally, an interim limit of 0.6 mg/L, expressed as a six-month average (May through October and November through April) is required beginning May 2020, with a final WQBEL of 0.075 mg/L. To meet the WQBEL for phosphorous, MMSD has implemented a Watershed Adaptive Management (WAM) approach, leading a diverse group of partners called Yahara Watershed Improvement Network (Yahara WINS) in implementing phosphorus reducing practices in the Yahara Watershed ([link to Yahara WINS website](#)).

Stormwater Management System

The City of Madison stormwater management and performance standards are contained within Chapter 37 of the City of Madison Code of Ordinances. Dane County Code of Ordinances, Chapter 14, contains stormwater management and performance standards which apply to all areas of Dane County, and which were recently updated at the end of 2021. The amendment area will be required to follow the more stringent standards contained within the respective ordinances, as well as Wisconsin DNR requirements contained in NR 151 and 216.

The amendment area partly is within the Yahara River-Lake Monona watershed and partly within the Door Creek watershed, with the drainage divide meandering through the amendment area. Most of the area south of the existing landfill is within the Yahara River-Lake

Monona watershed, and drains west through the existing golf course, wetlands, and into an intermittent stream, which then runs generally west through exiting City development. The northern most end of the amendment area is also with the Yahara River-Lake Monona watershed and generally drains northwest across agricultural fields, wooded areas, and wetlands, before draining into Penitto Creek. The central and eastern portions of the amendment area are within the Door Creek watershed, generally draining east across agricultural fields and wetlands before being picked up in Door Creek. The central portion of the amendment area north of the existing landfill follows this flow path, except some of this area is picked up within an intermittent stream/constructed drainage channel and then enters the Town of Cottage Grove just east of the amendment area, which then takes it to Door Creek.

Detailed stormwater management design has not been completed for the amendment area due to the large scope of the proposed amendment; however, several areas have been identified on the proposed land use map for potential stormwater management. All development that occurs in the amendment area will be required to meet current stormwater regulations for peak rate control and attenuation, water quality, volume control (infiltration), and oil/grease control. In addition, to meet peak runoff rate requirements, City of Madison ordinances require green infrastructure practices to be used to capture at least the first ½-inch of rainfall over the total site impervious area. Depending on site conditions, green infrastructure practices may include infiltration and bioretention facilities, green roofs, pervious pavements, stormwater trees, or stormwater harvesting measures. These contribute to runoff volume and peak rate reduction through evapotranspiration and consumption/reuse. Public and regional stormwater management facilities are typically owned and maintained by the City of Madison. Private and site-level facilities, as well as green infrastructure practices, must be included in a stormwater management maintenance agreement which will be recorded with the Dane County Register of Deeds.

The City will soon be commencing a watershed study for the Door Creek watershed, scheduled to be completed in 2023 ([link to City of Madison Watershed Studies website](#)). This study will indicate if there is a need for regional stormwater management improvements within the watershed to meet watershed-wide goals and address flooding concerns. These are generally retrofit practices in existing urban areas, which are in addition the stormwater management requirements for new development in the amendment area.

A detailed stormwater management plan review and approval is required prior to beginning any development construction. The plan will be required to meet all stormwater management and performance standards of the City of Madison, as well as those of Dane County and Wisconsin DNR.

Performance Standards

The City of Madison proposes stormwater management performance measures to meet or exceed standards required by the State of Wisconsin (NR 151), Dane County (Chapter 14), and City of Madison (Chapter 37). The stormwater standards for new development are as follows:

1. Require post-construction sediment control (reduce total suspended solids leaving the site by at least 80%, as compared to no runoff management controls; with a minimum of 60% of that control occurring in a retention pond prior to infiltration for residential land uses and a minimum of 80% occurring prior to infiltration for commercial, industrial, and institutional land uses) for the average annual rainfall. This is consistent with the standards currently required by Dane County and City of Madison ordinances.
2. Require post-construction peak runoff rate control for the 1-, 2-, 10-, 100-, and 200-year, 24-hour design storms (using NRCS MSE4 storm distributions) to match predevelopment peak runoff rates. This is consistent with the standards currently required by Dane County and City of Madison ordinances.

3. Require post-development infiltration (stay-on) volume of at least 90% of the pre-development infiltration (stay-on) volume for the average annual rainfall. This is consistent with the standards currently required by Dane County and City of Madison ordinances.
4. Maintain predevelopment groundwater annual recharge rates of 9 to 10 inches per year, specific to the location within the amendment area, as estimated by the Wisconsin Geological and Natural History Survey in a 2012 report titled “Groundwater Recharge in Dane County, Wisconsin Estimated by a GIS-Based Water Balance Model.” This is consistent with the standards currently required by Dane County and City of Madison ordinances.
5. Treat the first one-half inch of runoff to provide oil and grease control using the best available technology for commercial or industrial land uses and any other uses where the potential for pollution by oil or grease, or both, exists. This is consistent with the standards currently required by Dane County and City of Madison ordinances.

Impacts and Effects of Proposal

Environmental Corridors

The proposed amendment area includes approximately 200 acres of environmental corridor (See Map 12). This will include the three wetland areas with associated buffers, floodplain areas in the northwestern corner and far eastern portion, and planned stormwater management areas in accordance with the Environmental Corridor Policies and Criteria ([link to document](#)) adopted in the *Dane County Water Quality Plan*. Two wooded areas and ridgelines in the northern portion of the amendment area, one wooded area in the southeastern portion of the amendment area, and a pond/hydric soil area in the northeast corner of the Yahara Hills Golf Course are also proposed to be added as environmental corridor.

The 2050 Regional Development Framework (RDF) is designed to serve as a guide for local communities as they plan for future growth and development. One of the three goals of the RDF is to foster regional development that conserves water resources and natural areas. The RDF objective to achieve this goal is to enhance stewardship and natural resource areas. Stewardship areas are advisory areas to consider for inclusion in environmental corridors above the minimum requirements. The stewardship area recommendations in the RDF include natural resources features such as the 0.2% annual chance floodplain, potentially restorable wetlands, internally drained areas, hydric soils, current/potential Ice Age Trail Corridor, and Natural Resource Area boundaries identified in the Dane County Parks and Open Space Plan. The proposed amendment area includes 113.6 acres mapped as stewardship area for various natural resource features (0.2% annual chance floodplain, potentially restorable wetland, internally drained areas, and hydric soil), 24.3 acres of which are proposed to be designated as environmental corridor by this amendment (Map 12).

Meeting Projected Demand

Interim CARPC projections (draft) for 2050 suggest that an additional 114,000 residents, 59,000 housing units, and 72,000 jobs can be expected in the Central Urban Service Area over the next 30 years. Modeling in Urban Footprint for the Regional Development Framework located future business development districts in the location of this amendment request. The amendment area would accommodate approximately 1,475 employees at full build-out.

Phasing

All proposed development is anticipated to begin within 10 years. Development north of the existing landfill (north and east of the intersection of Femrite Road and Meier Road within the expansion area) is expected to develop in the next five to eight years. Development south of Highway 12 & 18 is expected to begin development by 2025. Land to the east of Highway AB along Luds Lane to the west of Femrite Drive is expected to develop within the next few years.

Surface Water Impacts

Development creates impervious surfaces (i.e., streets, parking areas, and roofs) and typically alters the natural drainage system (e.g., natural swales are replaced by storm sewers). Without structural best management practices (i.e., detention basins and infiltration basins) this would result in increased stormwater runoff rates and volumes, as well as reduced infiltration.

Without structural best management practices for erosion control, development would also cause substantial short-term soil erosion and off-site siltation from construction activities. Scientific research has well documented that without effective mitigation measures, the potential impacts of development on receiving water bodies can include the following:

- Flashier stream flows (i.e., sudden higher peaks)
- Increased frequency and duration of bankfull flows
- Reduced groundwater recharge and stream base flow
- Greater fluctuations in water levels in wetlands
- Increased frequency, level (i.e., elevation), and duration of flooding
- Additional nutrients and urban contaminants entering the receiving water bodies
- Geomorphic changes in receiving streams and wetlands

Natural drainage systems attempt to adapt to the dominant flow conditions. In the absence of mitigation measures, the frequency of bank-full events often increases with urbanization, and the stream attempts to enlarge its cross section to reach a new equilibrium with the increased channel forming flows. Higher flow velocities and volumes increase the erosive force in a channel, which alters streambed and bank stability. This can result in channel incision, bank undercutting, increased bank erosion, and increased sediment transport. The results are often wider, straighter, sediment laden streams, greater water level fluctuations, loss of riparian cover, and degradation of shoreland and aquatic habitat.

Since 2002, there have been stormwater management standards in effect at the state, county, and local level to require stormwater management and erosion control plans and structural best management practices designed to address the impacts of development on water quality, runoff volumes, peak flows, water temperature, and groundwater recharge. In 2011, county and local standards for runoff volume control were increased beyond state standards to further address the potential stormwater impacts of development. Since 2010 many communities adopted even higher standards for volume control through their own ordinances or as part of USA amendment agreements. In 2017, State statute 281.33(6)(a)(1) was changed to limit the ability of local governments to adopted higher standards for runoff volume through local ordinances. In response to climate change, the City of Madison adopted peak rate control for the 200-year storm event in their ordinance in June 2020. Dane County adopted this same peak rate control requirement as well as requirements for closed basins in November 2021, which made these requirements universal to all of the communities in Dane County.

The City of Madison proposes to mitigate the urban nonpoint source impacts of the proposed development by requiring the implementation of various stormwater best management practices that are designed and constructed to meet current Dane County standards for pollutant reduction, runoff volumes, peak flows, water temperature, and groundwater recharge to address the potential water quality impacts of stormwater runoff from the proposed development on the receiving waters.

Regional partners are actively working to address chlorides through the Wisconsin Salt Wise Partnership. Participation in the chloride reduction trainings provided by WI Salt Wise is open to any municipality and private winter maintenance professional in the region. The City of Madison has been a key partner in WI Salt Wise and city staff regularly attended winter salt certification class for winter road maintenance.

Groundwater Impacts

Without effective mitigation practices, as natural areas are converted to urban development, the ground/surface water balance in streams and wetlands shifts from a groundwater-dominated system to one dominated more and more by surface water runoff. This can result in subsequent reductions in stream quality and transitions to more tolerant biological communities.

Groundwater modeling indicates that the cumulative effects of well withdrawals have resulted in a 2.3 cfs decrease in baseflow in Door Creek at Interstate Highway 39 from predevelopment (no pumping) to 2010 (Table 4). An additional 0.5 cfs decline compared to 2010 conditions is anticipated for the year 2040, according to modeling, reducing the baseflow to 11.2 cfs.

Stream	No Pumping	2010	2040
<i>Door Creek</i>	<i>14.0 cfs</i>	<i>11.7 cfs</i>	<i>11.2 cfs</i>

The loss of baseflow from the cumulative effects of well water pumping is a regional issue, beyond the boundaries of a single USA Amendment or even a single municipality. This issue is discussed along with potential management options in the updated *Dane County Groundwater Protection Planning Framework* ([link to report](#)). Maintaining pre-development groundwater recharge by infiltrating stormwater runoff helps to replenish groundwater, maintain baseflow, and mitigate this impact.

Comments at the Public Hearing

A public hearing was held on the proposed amendment at the March 10, 2022, meeting of the Capital Area Regional Planning Commission. City of Madison staff registered in favor of the amendment. There were no registrants opposed to the amendment. Commissioners inquired about the future relocation of CTH AB, the willingness of landowners to be included in the urban service area, and the size and phasing of the amendment area.

Conclusions and Staff Water Quality Recommendations

There is sufficient existing treatment plant system capacity at MMSD to serve the proposed amendment area. There is also sufficient existing or planned wastewater collection system capacity to serve the proposed amendment area.

Since 2002, there have been stormwater management standards in effect at the state, county, and local level to require stormwater management and erosion control plans and structural best management practices designed to address the impacts of development on water quality, runoff volumes, peak flows, water temperature, and groundwater recharge. In 2011, county and local standards for runoff volume control were increased beyond state standards to further address the potential stormwater impacts of development. Since 2010 many communities adopted even higher standards for volume control through their own ordinances or as part of

urban service area amendment agreements. In 2017, State statute 281.33(6)(a)(1) was changed to limit the ability of local governments to adopted higher standards for runoff volume through local ordinances. In response to climate change, the City of Madison adopted peak rate control for the 200-year storm event in their ordinance in June 2020. Dane County adopted this same peak rate control requirement as well as requirements for closed basins in November 2021, which made these requirements universal to all of the communities in Dane County.

The City of Madison proposes to mitigate the urban nonpoint source impacts of the proposed development by requiring the implementation of stormwater best management practices that are designed and constructed to meet current Dane County standards for pollutant reduction, runoff volumes, peak flows, water temperature, and groundwater recharge to address the potential urban nonpoint source impacts of the proposed development on the receiving waters.

It is the Regional Planning Commission staff's opinion that the proposed amendment is consistent with water quality standards under Wis. Stat. § 281.15, and the adopted Policies and Criteria for the Review of Sewer Service Area Amendments to the *Dane County Water Quality Plan*, with the existing state and local requirements identified below. Additional actions have also been recommended below to further improve water quality and environmental resource management.

State and Local Requirements

Regional Planning Commission staff recommends approval of this amendment, based on the land uses and services proposed, and in recognition of the state and local requirements for the following:

1. State and local review and approval of stormwater management plan(s) is required, including Regional Planning Commission staff review and approval as part of the sewer extension review process.
 - a. Stormwater and erosion control practices are required to be installed prior to other land disturbing activities. Infiltration practices are required to be protected from compaction and sedimentation during land disturbing activities.
 - b. Peak rates of runoff are required to be controlled for the 1-, 2-, 10-, 100-, and 200-year 24-hour design storms to "pre-development" levels, in accordance with the City of Madison and Dane County Stormwater Ordinances.
 - c. Sediment control is required that achieves at least 80% sediment control for the amendment area based on the average annual rainfall, with a minimum of 60% of that control occurring prior to infiltration, in accordance with the City of Madison and Dane County Stormwater Ordinances.
 - d. Runoff volume control is required that maintains the post development stay-on volume to at least 90% of the pre-development stay-on volume for the average annual rainfall period, in accordance with the City of Madison and Dane County Stormwater Ordinances.
 - e. Oil and grease control are required that treats the first 0.5 inches of run-off using best management practices at commercial and industrial sites, in accordance with the City of Madison and Dane County Stormwater Ordinances.
 - f. Maintaining pre-development groundwater recharge rates from the Wisconsin Geological and Natural History Survey's 2012 report, *Groundwater Recharge in Dane County, Wisconsin, Estimated by a GIS-Based Water-Balance Model* (a range of 9 to 10 inches/year for the amendment area or by a site specific analysis, when required by the City of Madison and Dane County Stormwater Ordinances.

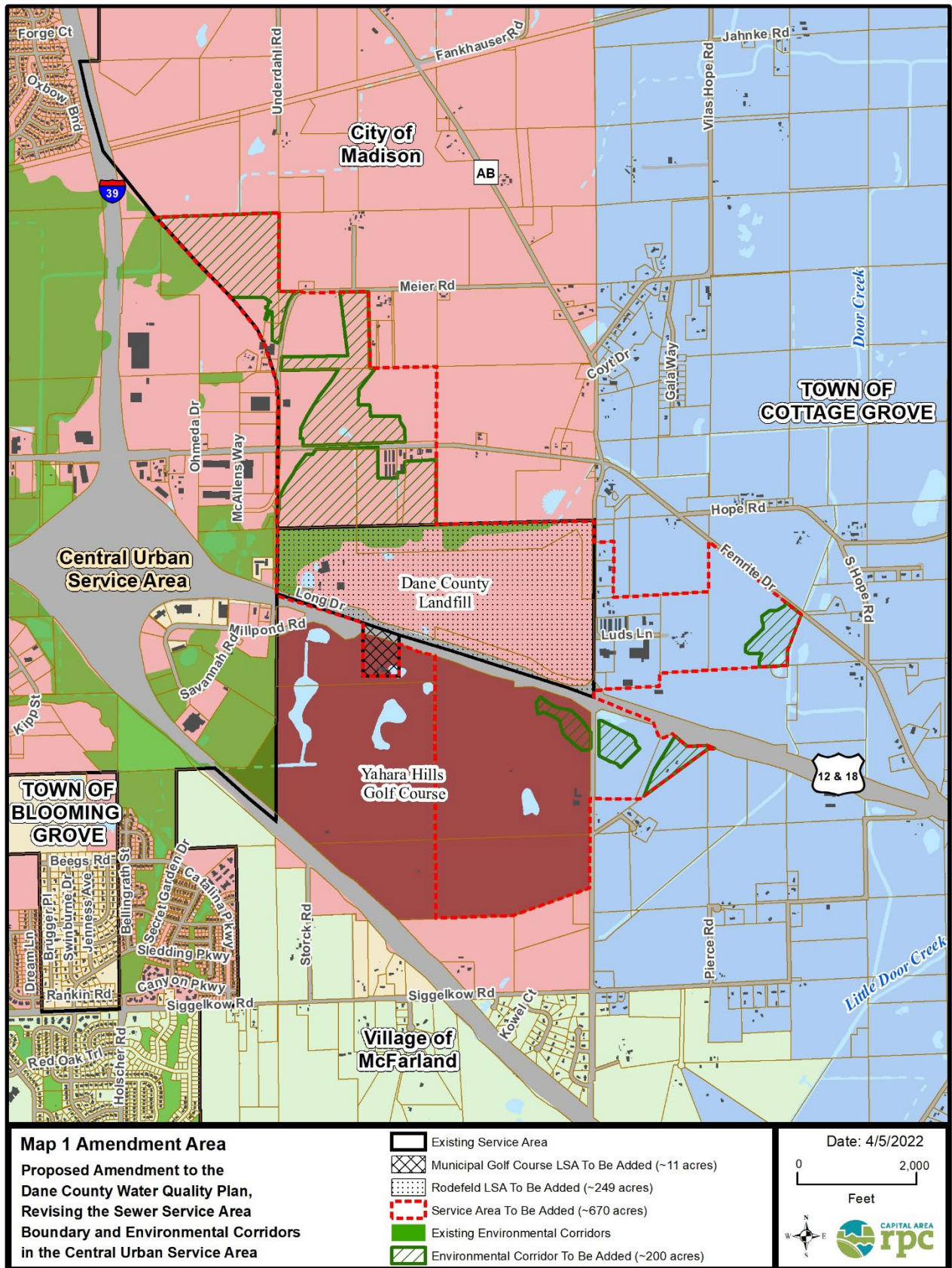
2. Easements and perpetual legal maintenance agreements with the City, to allow the City to maintain stormwater management facilities if owners fail to do so, are required for any facilities located on private property.
3. Field verification for areas of the development site considered suitable for infiltration including a site assessment for karst features is required by the Wisconsin Department of Natural Resources Conservation Practice Standard 1002 - Site Evaluation for Stormwater Infiltration.
4. Environmental corridors are required to be delineated to meet the Environmental Corridor Policies and Criteria adopted in the *Dane County Water Quality Plan*.

Recommendations

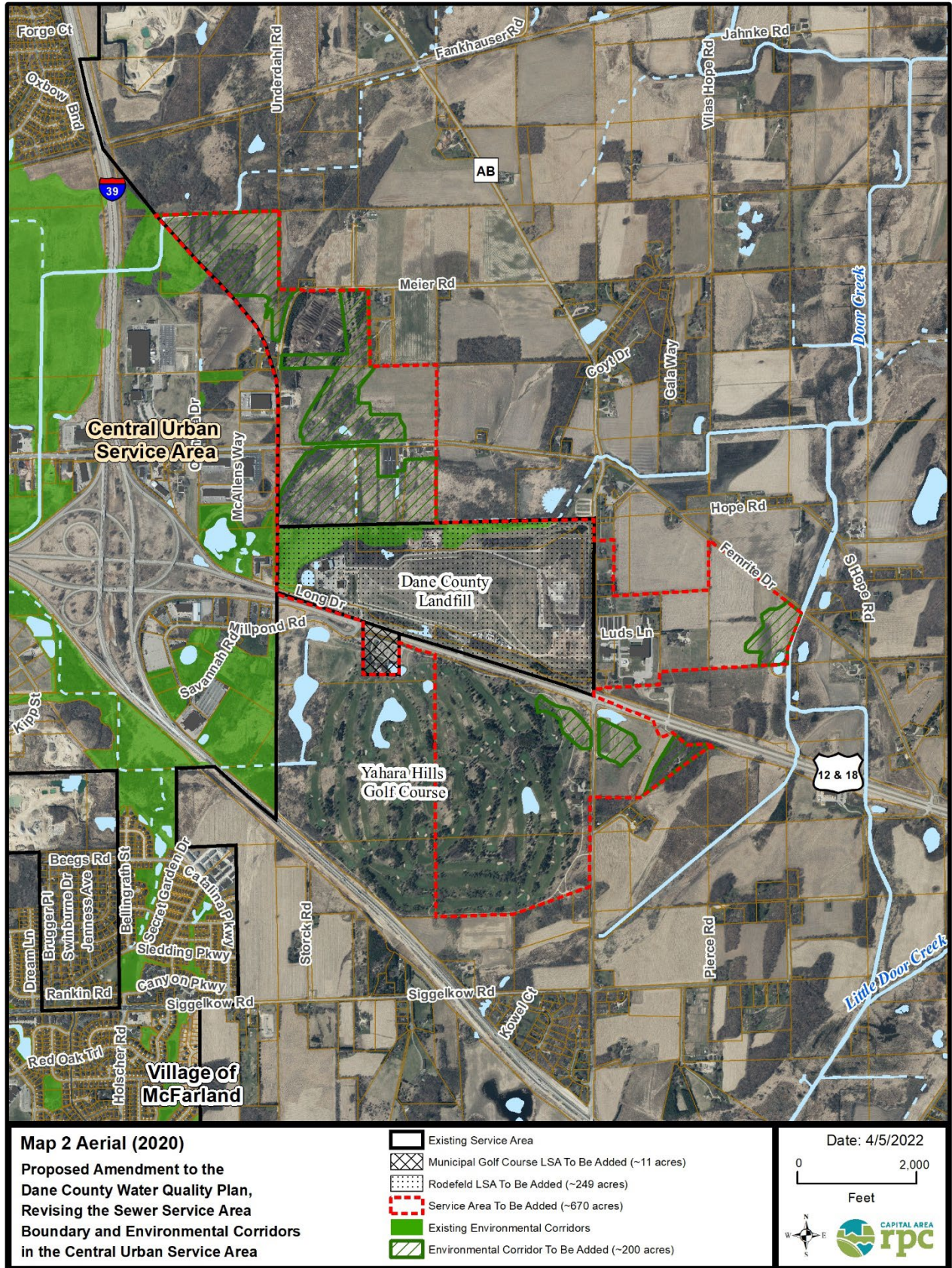
It is recommended that the City of Madison pursue the following to further improve water quality and environmental resource management:

1. Request a formal Endangered Resources Review by the WDNR or one of their certified reviewers for potential impacts to endangered resources like rare plants, animals and natural communities and take necessary habitat protection measures if species are found.
2. Continue to foster the responsible use of chlorides by collaborating with Wisconsin Salt Wise.

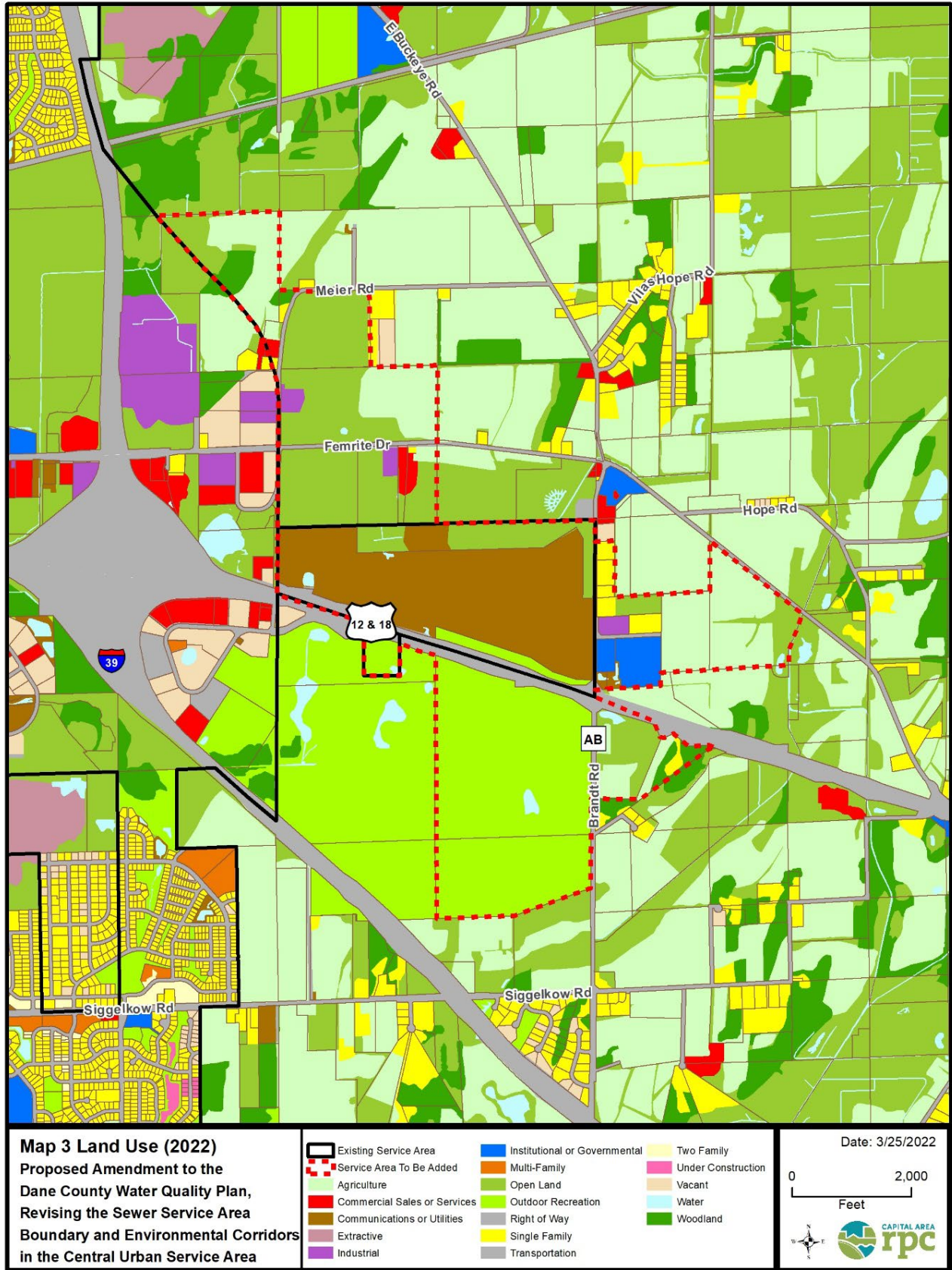
Map 1 - Amendment Area



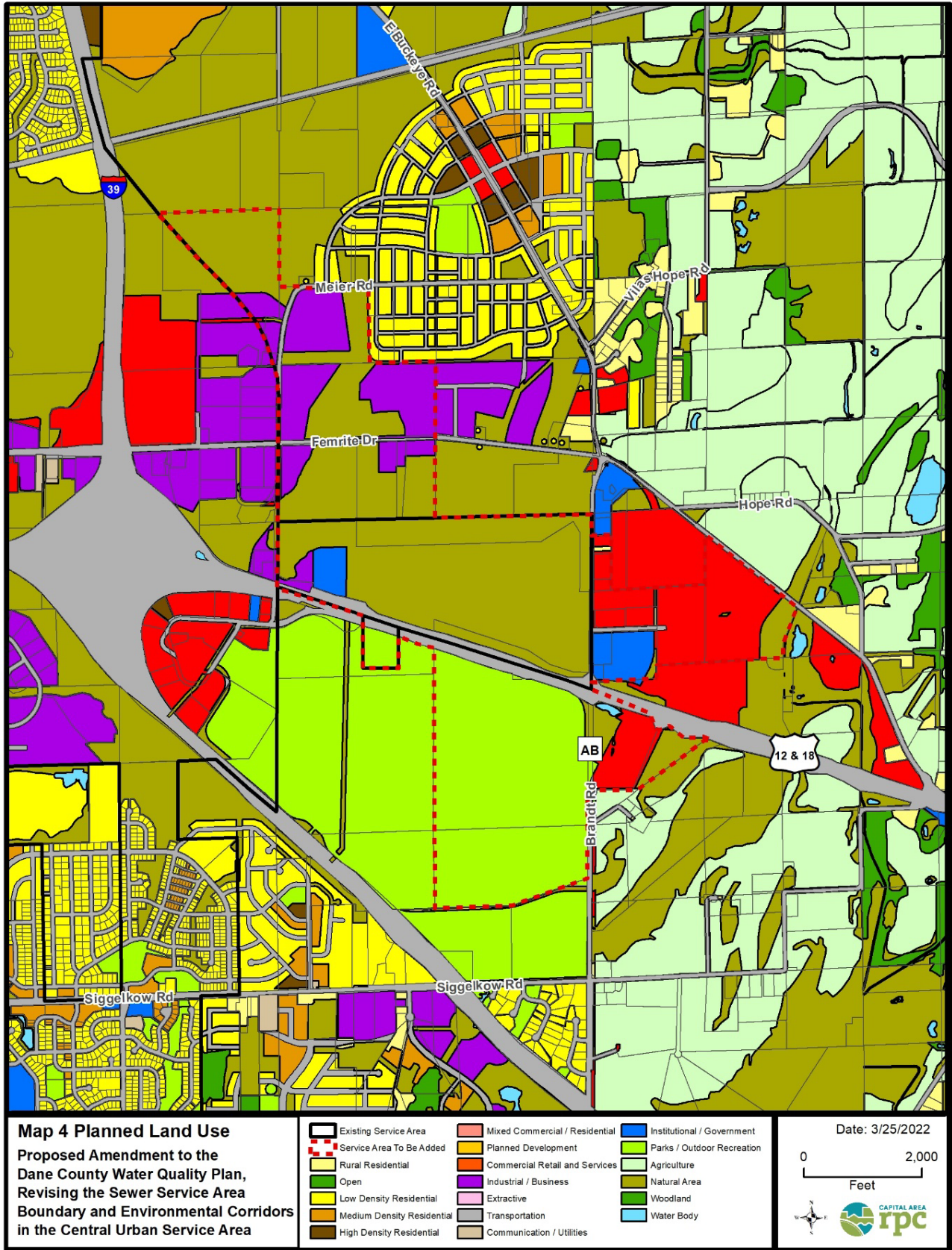
Map 2 – Aerial



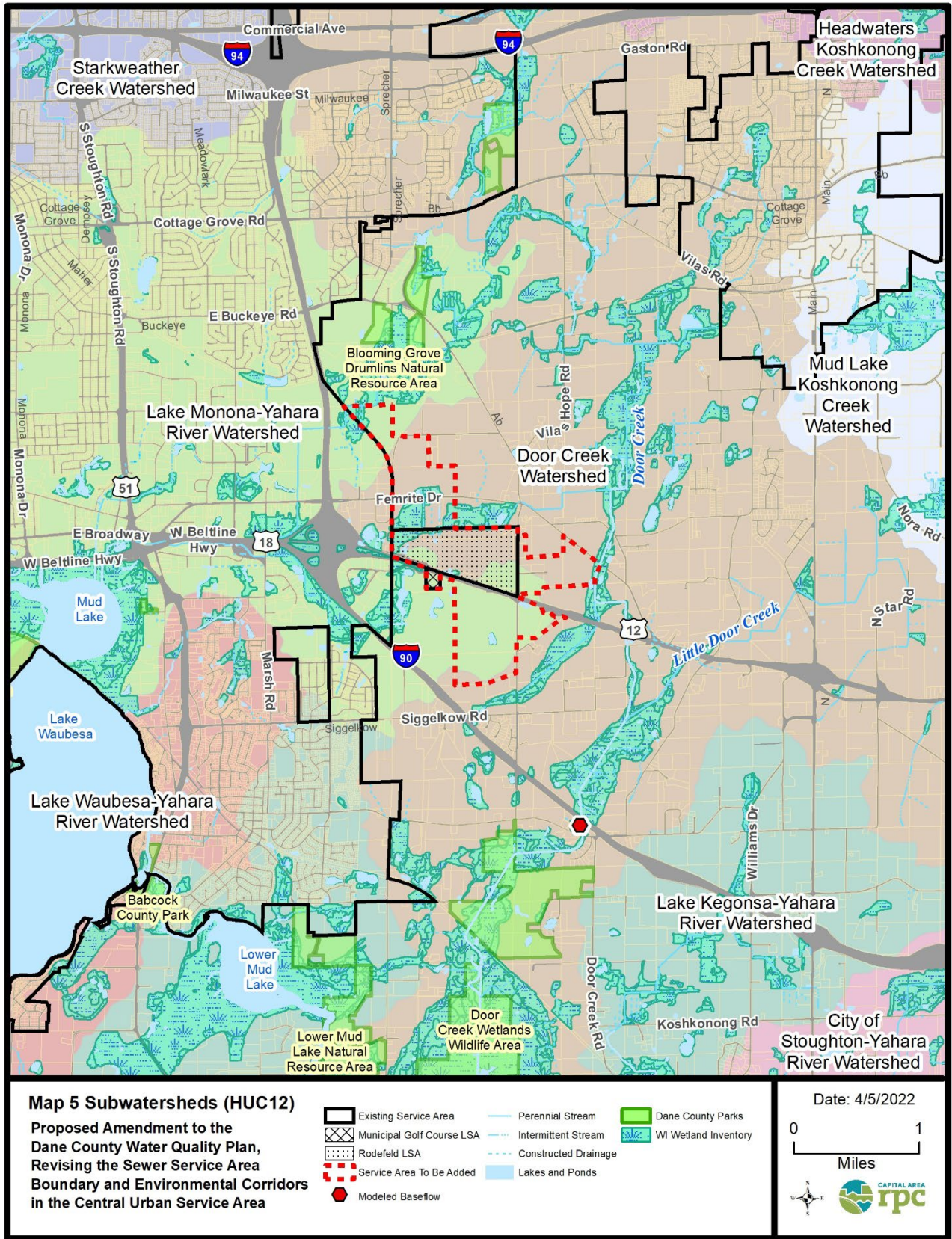
Map 3 – 2022 Land Use



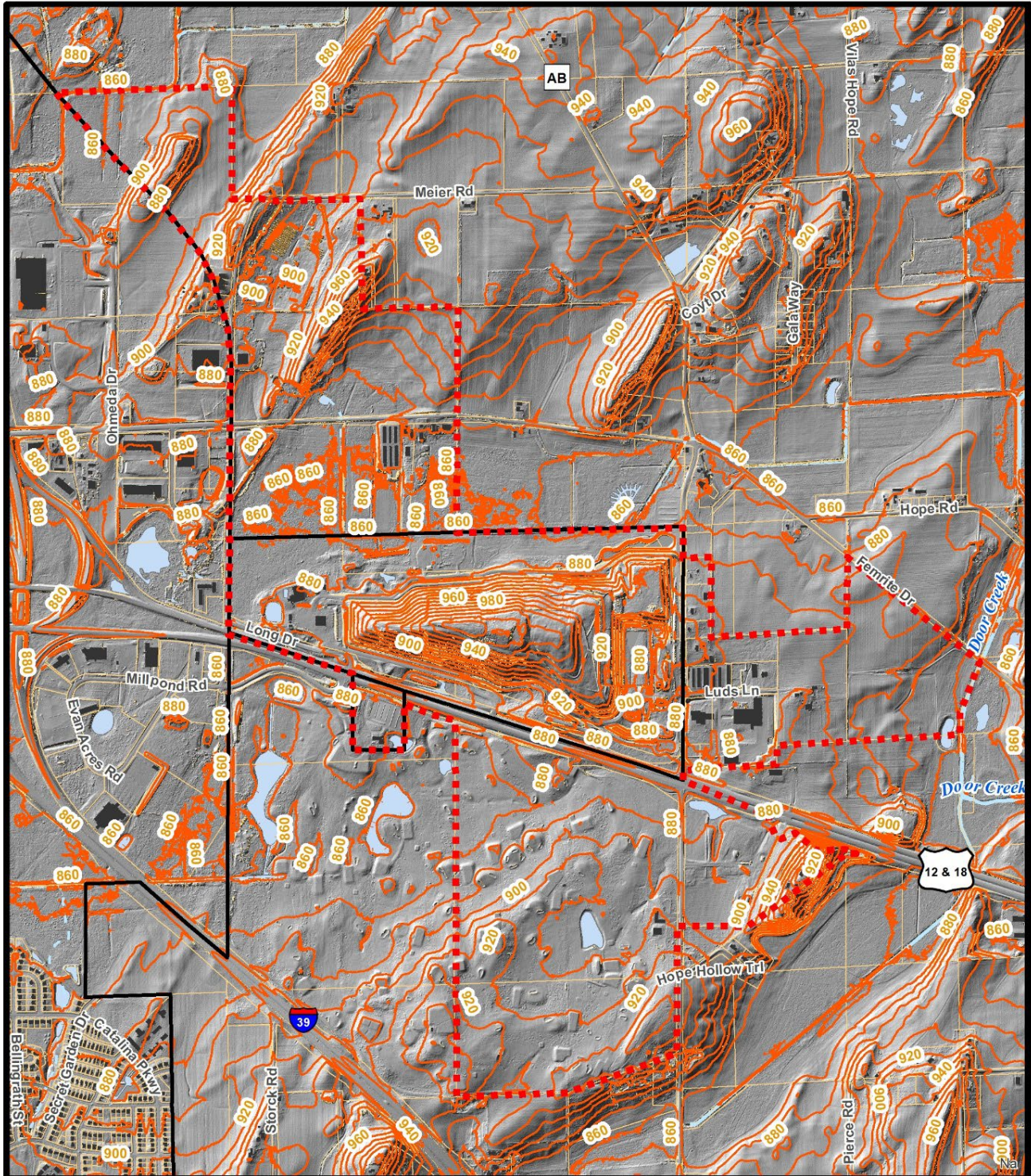
Map 4 – Planned Land Use



Map 5 – Subwatersheds

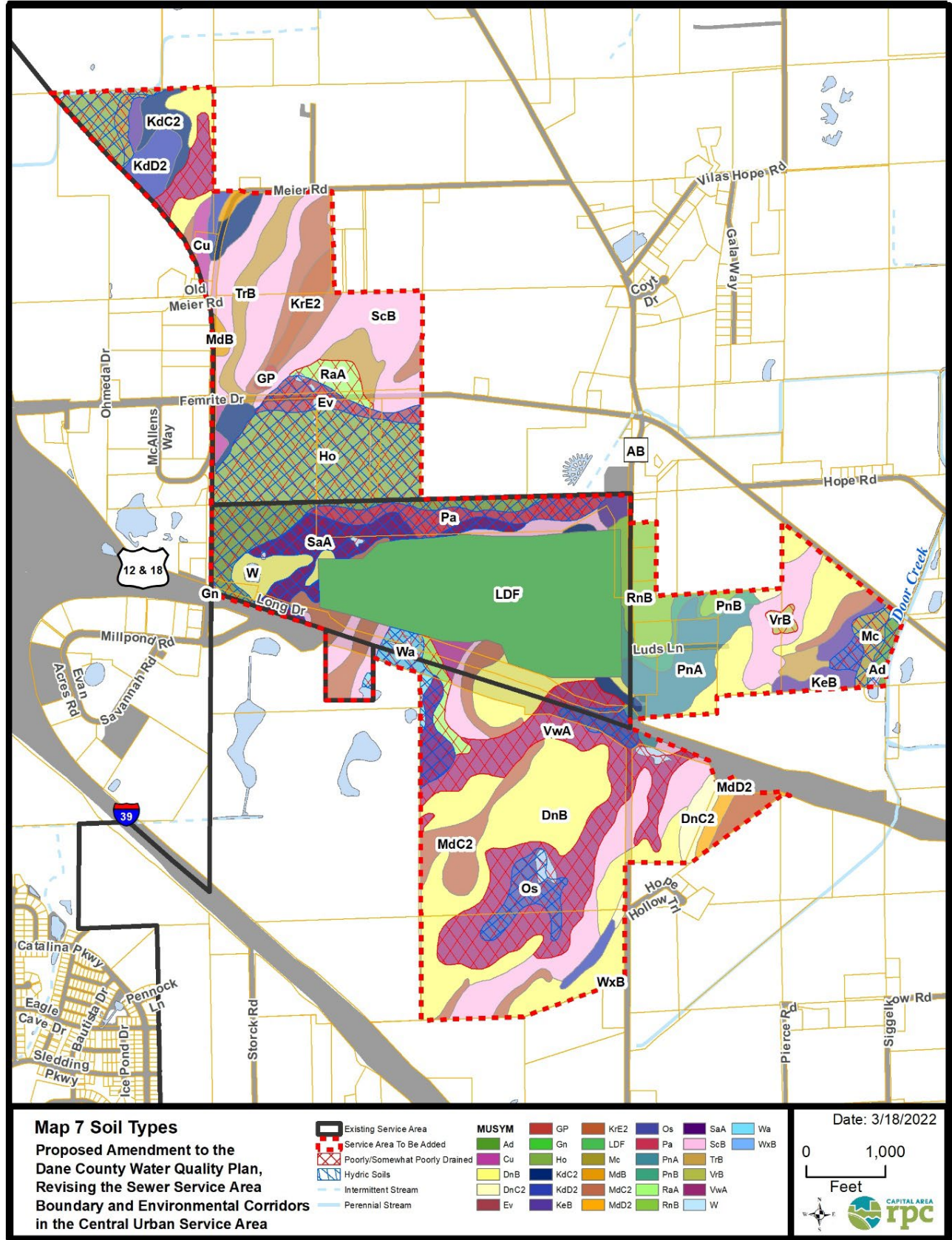


Map 6 - Elevations

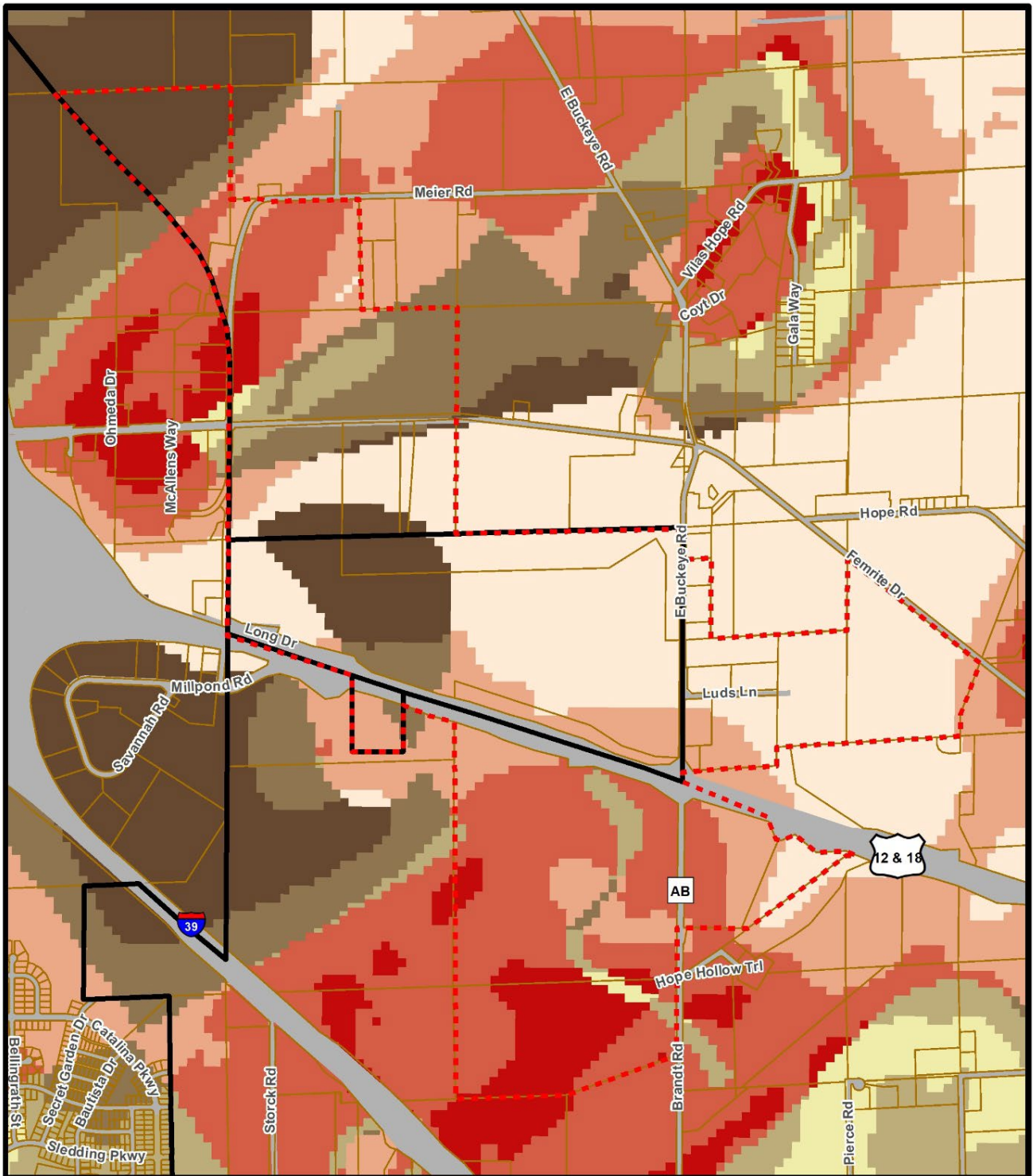


<p>Map 6 Elevation Proposed Amendment to the Dane County Water Quality Plan, Revising the Sewer Service Area Boundary and Environmental Corridors in the Central Urban Service Area</p>	Existing Service Area	<p>Percent Slope</p> 12 - 20 20 and greater	<p>Date: 3/18/2022</p>
	Service Area To Be Added Lakes and Ponds Buildings 2021		<p>0 1,000 Feet</p>

Map 7 - Soil Type



Map 8 – WGNHS Bedrock Depth and Potential Karst Features



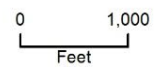
Map 8 WGNHS Bedrock Depth and Potential Karst Features

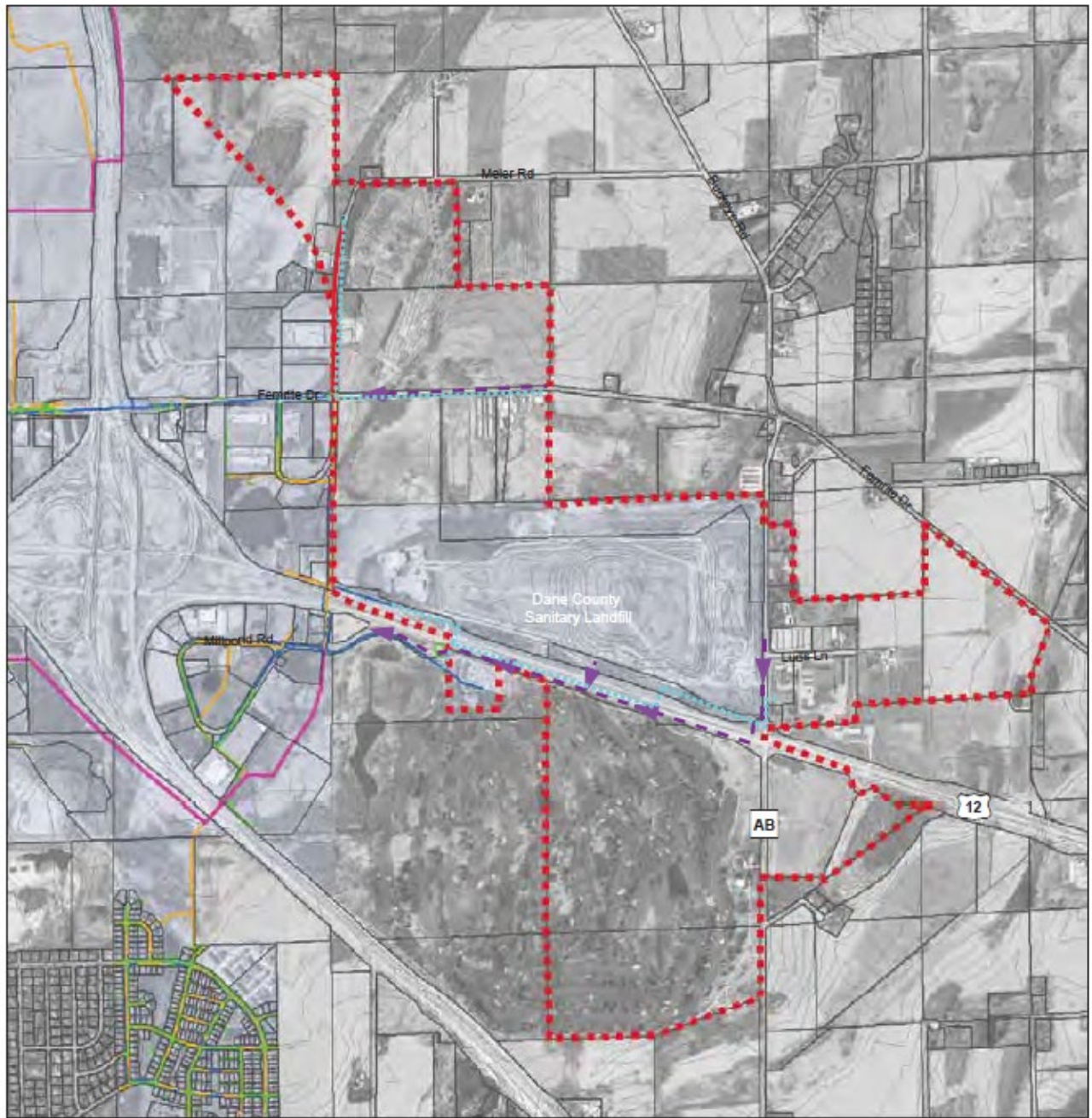
Proposed Amendment to the
Dane County Water Quality Plan,
Revising the Sewer Service Area
Boundary and Environmental Corridors
in the Central Urban Service Area

Potential Karst Units (ft) Depth to Bedrock (ft)



Date: 3/25/2022







Map 5: Utilities


**City of Madison CUSA Expansion
November 2021**

 Central Urban Service Area


 Expansion Area


 10 Foot Elevation Contour

 Water Main

 Sanitary Main

 Stormwater Pipe

 MMSD Sanitary Interceptor

 Future Sanitary Sewer Gravity Main

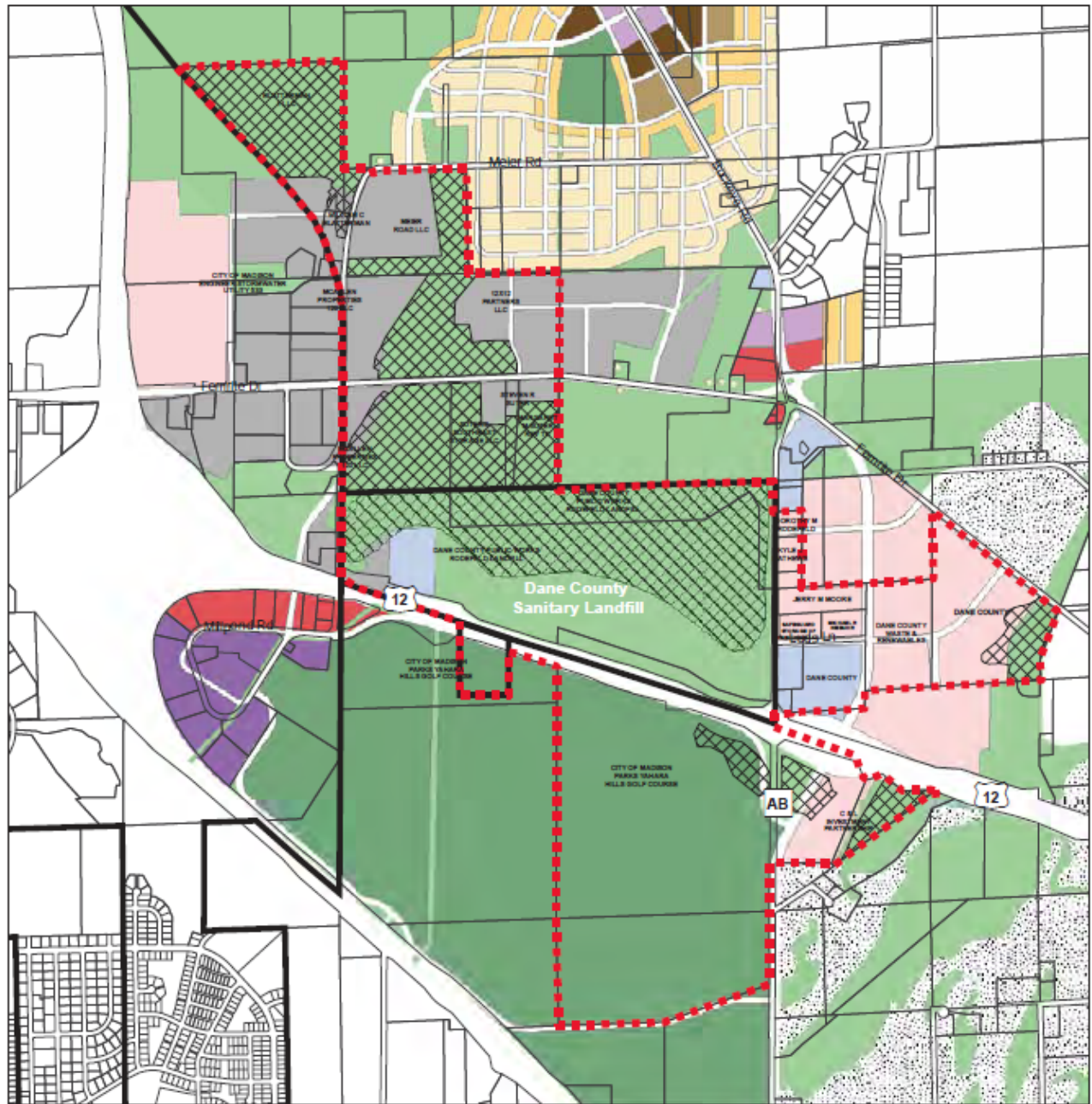
 Future Water Main

0 0.25 0.5 Miles



City of Madison Planning Division
Date: 12/1/2021

Data Source(s): Madison Planning Division, Dane County
Document Path: M:\Planning Division\Projects - Planning Department\CUSA\Ferrite - YHNDP\Map5\Map 5 Utilities.mxd



Map 4: Land Use and Street Plan

**City of Madison CUSA Expansion
November 2021**

- Central Urban Service Area
- Expansion Area
- Existing/Proposed/Future Environmental Corridor
- 2 Foot Contours

- Housing Mix 1 (0-8 du/ac)
- Housing Mix 2 (9-20 du/ac)
- Housing Mix 3 (21-40 du/ac)
- Housing Mix 4 (40-70 du/ac)
- Employment
- Commercial - General

- Mixed Use Neighborhood
- Mixed Use Community
- Institutional
- Parks and Open Space
- Other Open Space and Stormwater Management
- Industrial

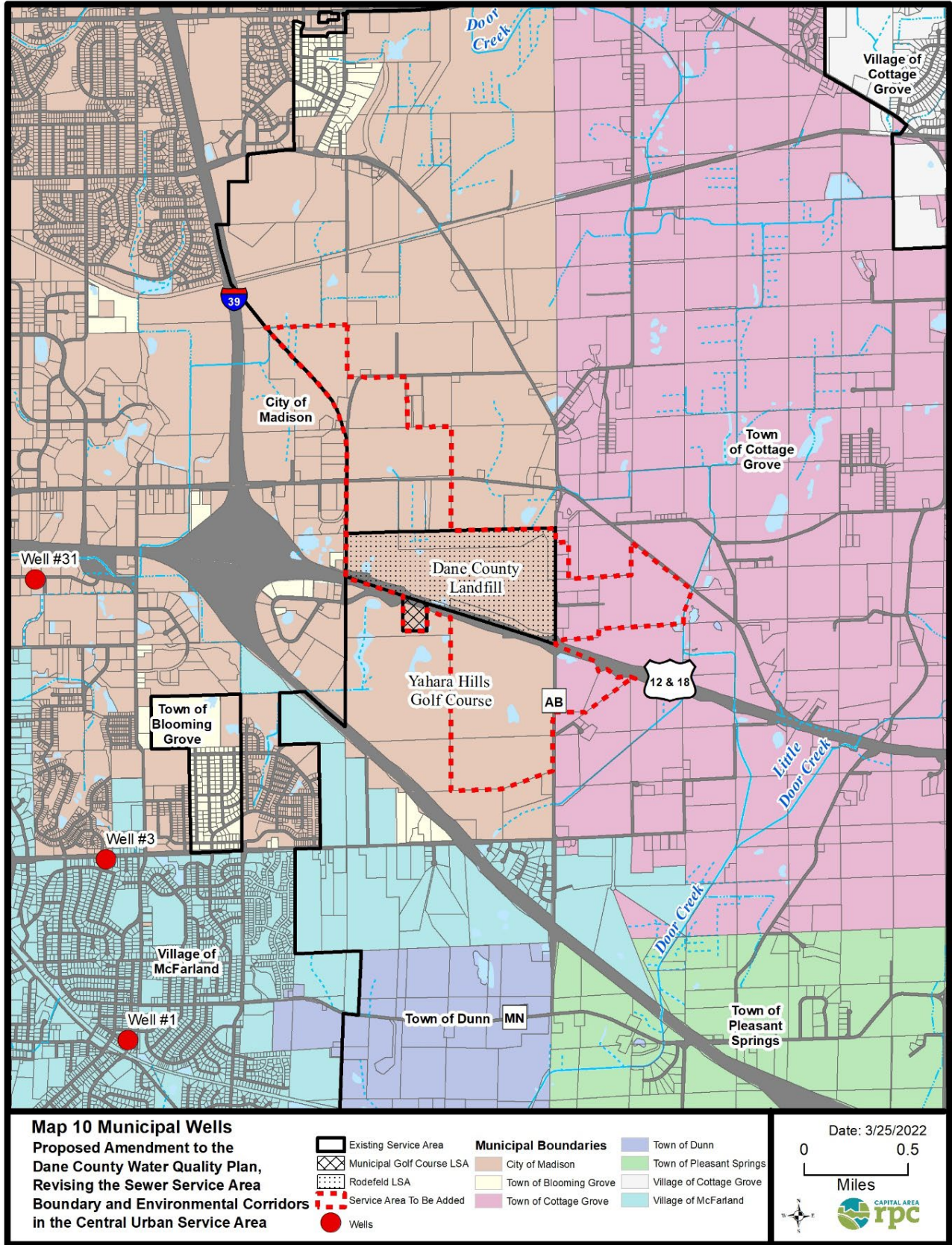
0 0.25 0.5 Miles



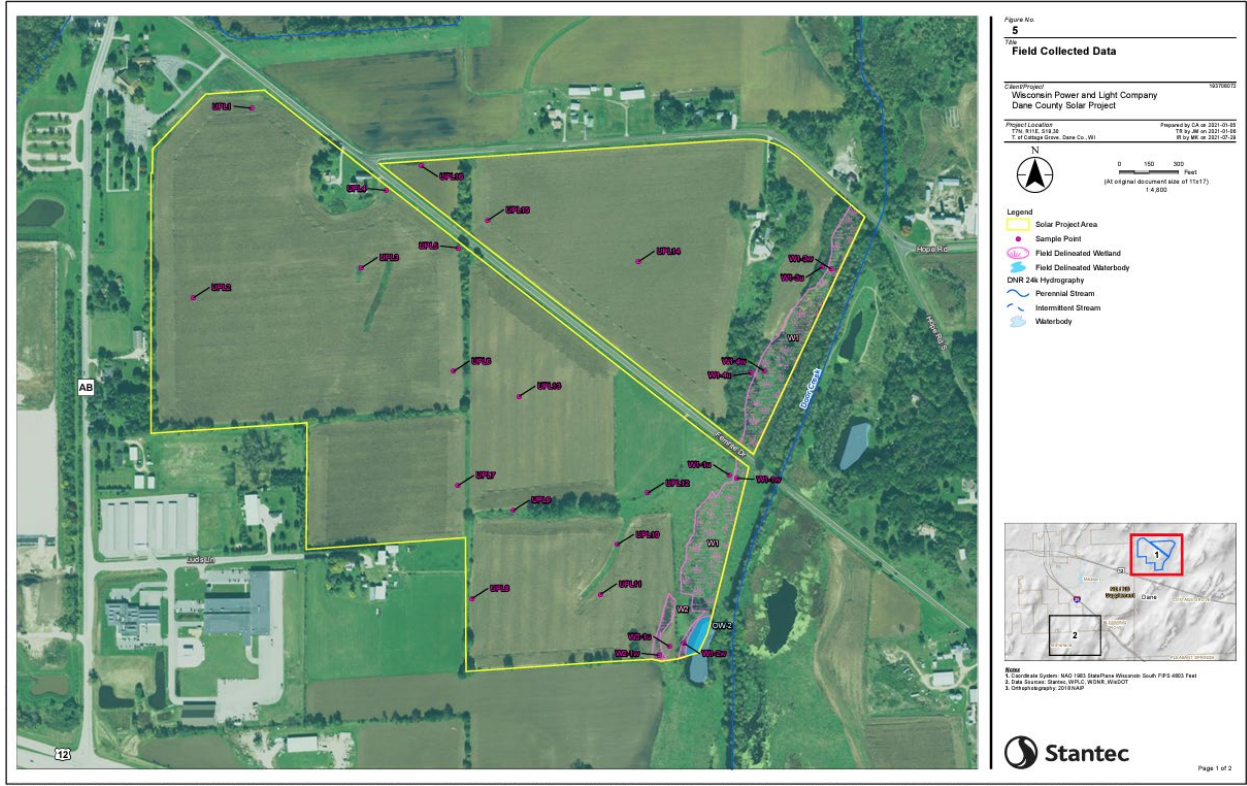
City of Madison Planning Division
Date: 12/1/2021

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Data Source(s): Madison Planning Division, Dane County

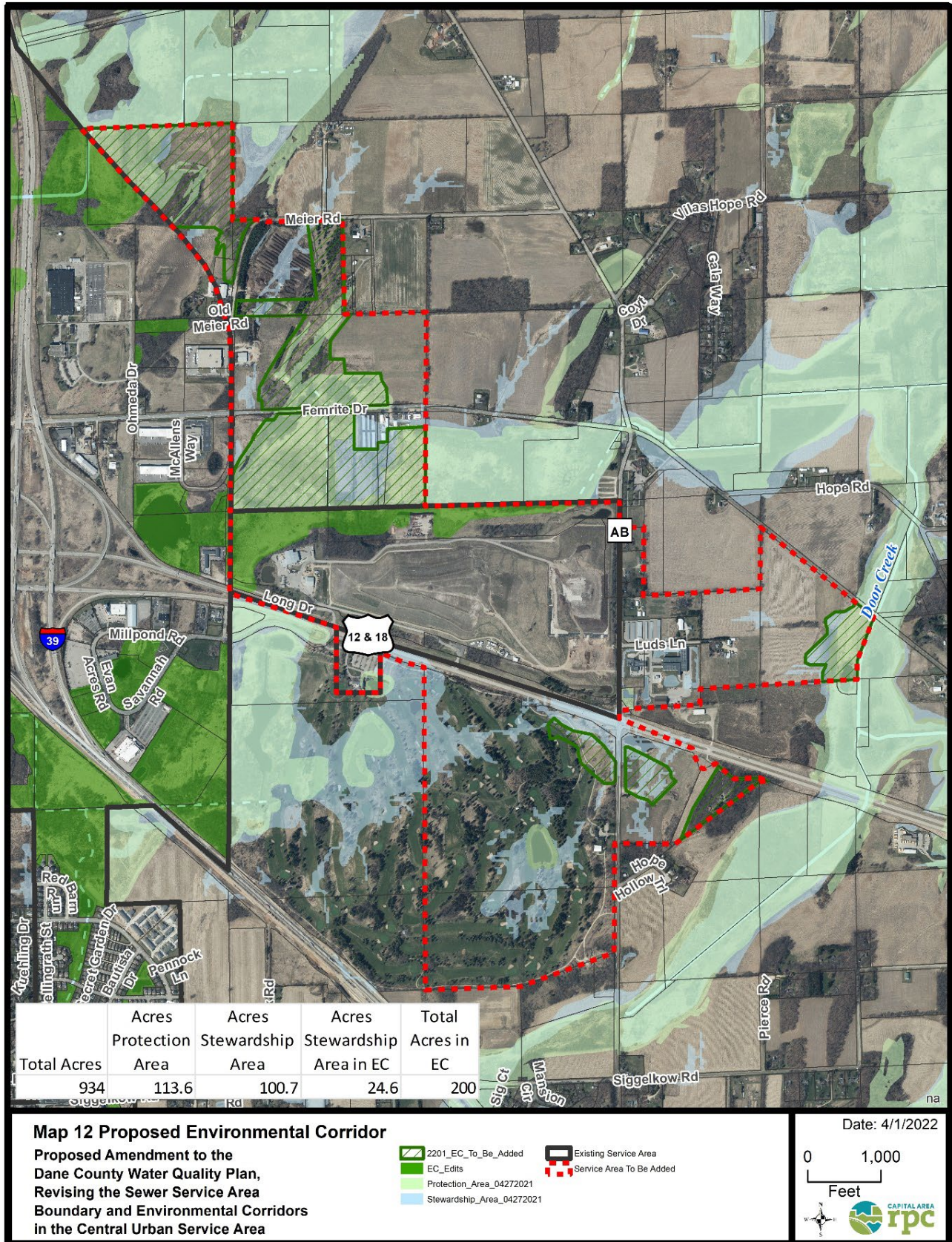
Map 10 – Municipal Wells



Map 11 – Wetland Delineation Along Door Creek



Map 12 – Proposed Environmental Corridor



Attachment 1 – Wisconsin Historical Society Letter

Sean Higgins

From: Office of the State Archaeologist <statearchaeologist@wisconsinhistory.org>
Sent: Wednesday, February 9, 2022 1:08 PM
To: Sean Higgins; Office of the State Archaeologist
Subject: RE: Upcoming Amendments

Follow Up Flag: Follow up
Flag Status: Flagged

Dear Sean,

The amendment area referred to below has Madison YHNDP near Femrite Road contains the Schimming Mound (DA-0034; BDA-0314), which was first identified in 1914. More recent investigations over the years have found that the linear mound on top of the drumlin has eroded to the point that it was no longer visible. However, in 2020 an archaeologist was monitoring the removing of the drumlin sediment for fill and a large pit feature was discovered. Such a feature at the base of or near a mound often contains human remains. Worked stopped in the immediate area as burials are protected under state law. Further monitoring away from the mound did not uncover any additional features. Any work/disturbance in the area must avoid the burial feature. If you are not aware of the location of the feature for purposes of your planning, I can provide it. Besides this feature there are no recorded archaeological material in the amendment area.

The amendment area referred to as Middleton CUSAA, has four archaeological sites in the amendment area: DA-0739, DA-0738, DA-0971, and DA-0987. The sites were recorded as surface finds during survey for road construction. Much of the amendment area, however, has not been surveyed and there is a high probability that there are additional sites because of the proximity to a water source. I would recommend survey of the area prior to development.

The third amendment area referred to NEN CUSAA has no recorded cultural material.

If you have questions or want additional information, please let me know.

Jim

James M. Skibo, Ph.D.
State Archaeologist

Wisconsin Historical Society
816 State St
Madison WI 53706
608-264-6496(o)
Email: james.skibo@wisconsinhistory.org

From: Sean Higgins <seanh@capitalarearpc.org>
Sent: Wednesday, February 9, 2022 9:04 AM
To: Office of the State Archaeologist <statearchaeologist@wisconsinhistory.org>
Subject: Upcoming Amendments

Good Morning Jim,

Below are links to documents describing three upcoming Sewer Service Area amendment requests. We'll be drafting our staff analysis in the coming weeks and would appreciate WHS input.