

**Staff Analysis of Proposed Amendment to the
Dane County Water Quality Plan,
Revising the Central Urban Service Area Boundary and Environmental Corridors
in the City of Middleton (Hidden Oaks Development)**

1. Applicant: City of Middleton

2. Description of Proposal

The proposed amendment is located on the west side of the City of Middleton, south of Airport Road and west of Evergreen Road, contiguous to the Central Urban Service Area. The City of Middleton proposes to designate 4.4 acres within the existing urban service area as environmental corridors and add 32.7 acres to the Central Urban Service Area including 2.0 acres of existing development and 9.5 acres of environmental corridors, resulting in a net developable area of 21.2 acres. The land use proposed for the addition is residential, accommodating approximately 93 new housing units with an estimated population of 235, including 42 school age children (see Table 1, and Maps 1, 2, and 3).

NOTE: The public hearing notice misstated the existing development as 2.8 acres and the net developable area as 20.4 acres.

The density proposed for the amendment area is 6.4 units per acre. In addition to the proposed amendment area, the Hidden Oaks development concept plan includes 27 new housing units on 2.9 acres within the existing urban service area boundary, bringing the density for the total project to 6.9 units per acre, greater than the current CUSA density of 6.6 units per acre.

Proposed Land Use	Total acreage	% of Total	Existing Develop.	Environ. Corridor	Develop-able acres	Housing Units	Density		No. of Persons	No. of Students
							Proposed Units/dev acre	Existing CUSA u/ac		
Single Family Residential	16.1	49%	1.6		14.5	93	6.4	4.2	235	42
Residential Total	16.1	49%	1.6		14.5	93	6.4	6.6	235	42
Stormwater Management	0.8	2%		0.8	0.0					
Other Park & Open Space	9.2	28%		8.7	0.5					
Street R-O-W	6.6	20%	0.4		6.2					
TOTAL	32.7	100%	2.0	9.5	21.2	93			235	42

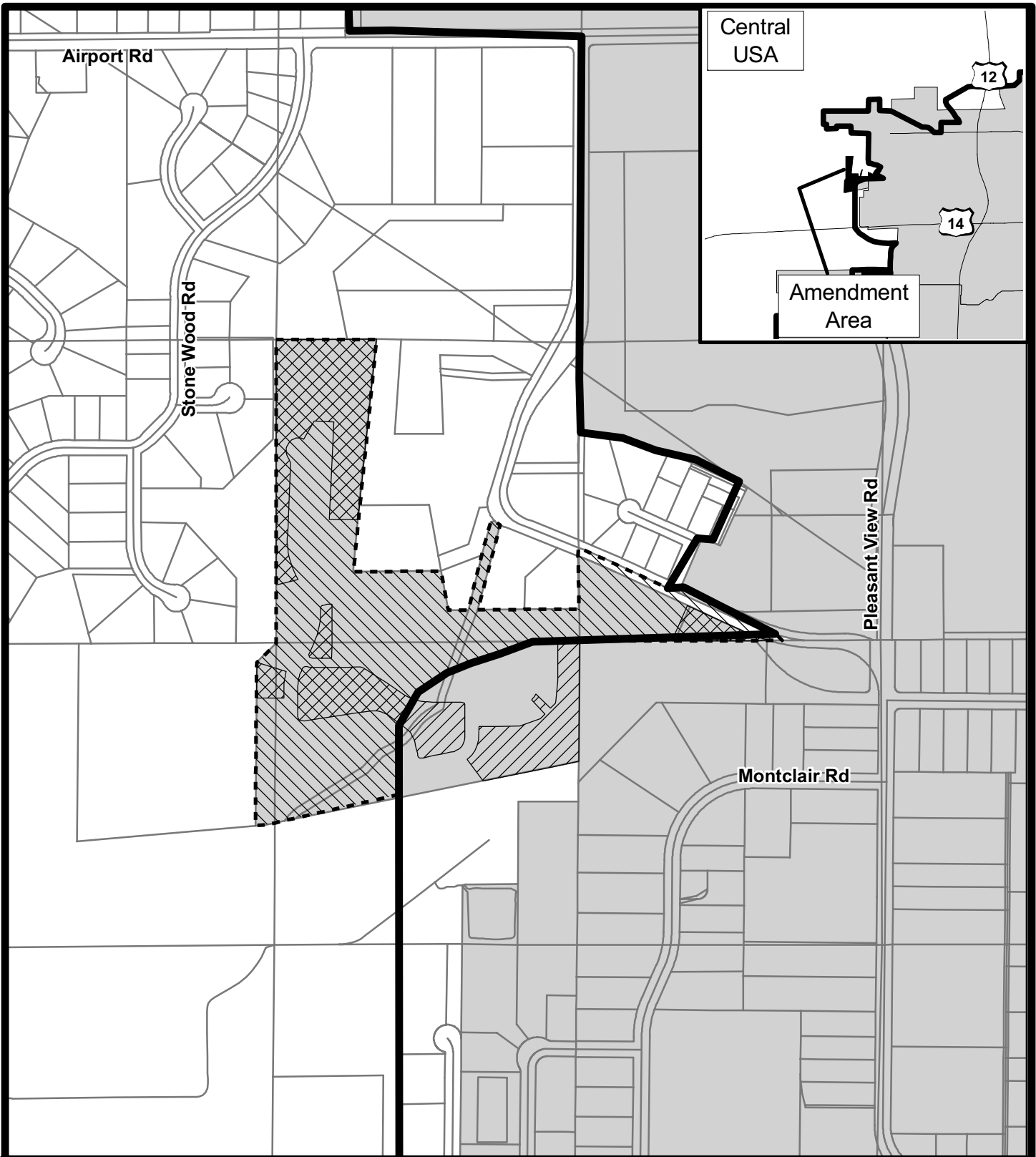
32.7 acres in City of Middleton

Source: City of Middleton Planning Submittal and Dane County Community Analysis and Planning





3. Existing Environment

Land Use. Existing land uses in the proposed amendment area are two single family residences, cropland, woodland and open vacant land. Existing land uses adjacent to the amendment area are:


- North: Residential, woodland (Town of Middleton)
- East: Agriculture, commercial, industrial (City of Middleton)
- South: Industrial and Agricultural (Town and City of Middleton)
- West: Residential, woodland, agriculture and open space (Town of Middleton)



Map 1
Amendment
to the Central
Urban Service Area,
City of Middleton

-  Service Area to be added
-  Proposed Environmental Corridor
-  Existing Urban Service Area Boundary
-  Proposed Urban Service Area Boundary

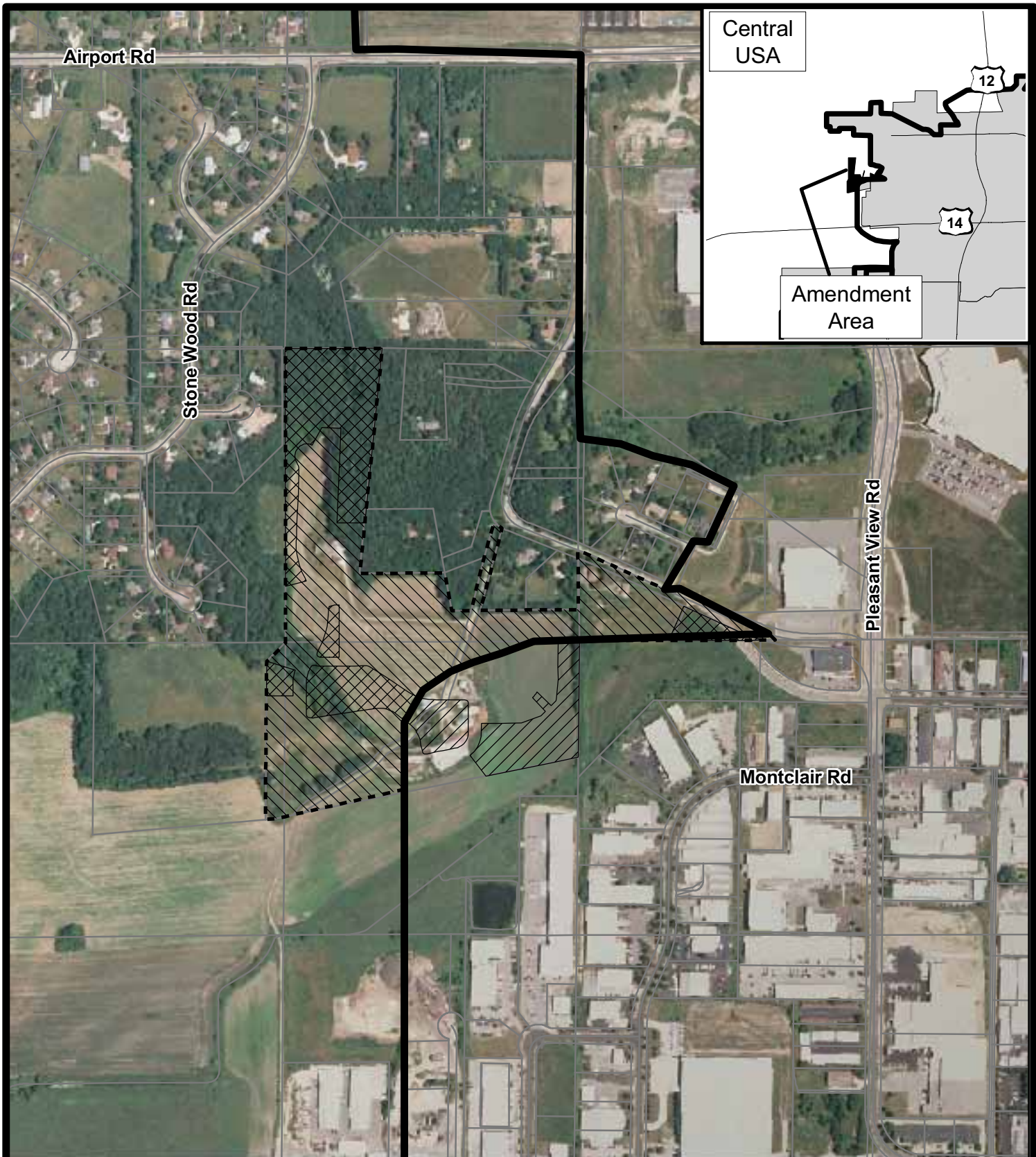
29 Aug 06







0 600

Feet

Prepared by staff
of the CAPD.


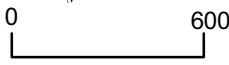


Map 2 Aerial
Amendment
to the Central
Urban Service Area,
City of Middleton

-  Service Area to be added
-  Proposed Environmental Corridor
-  Existing Urban Service Area Boundary
-  Proposed Urban Service Area Boundary

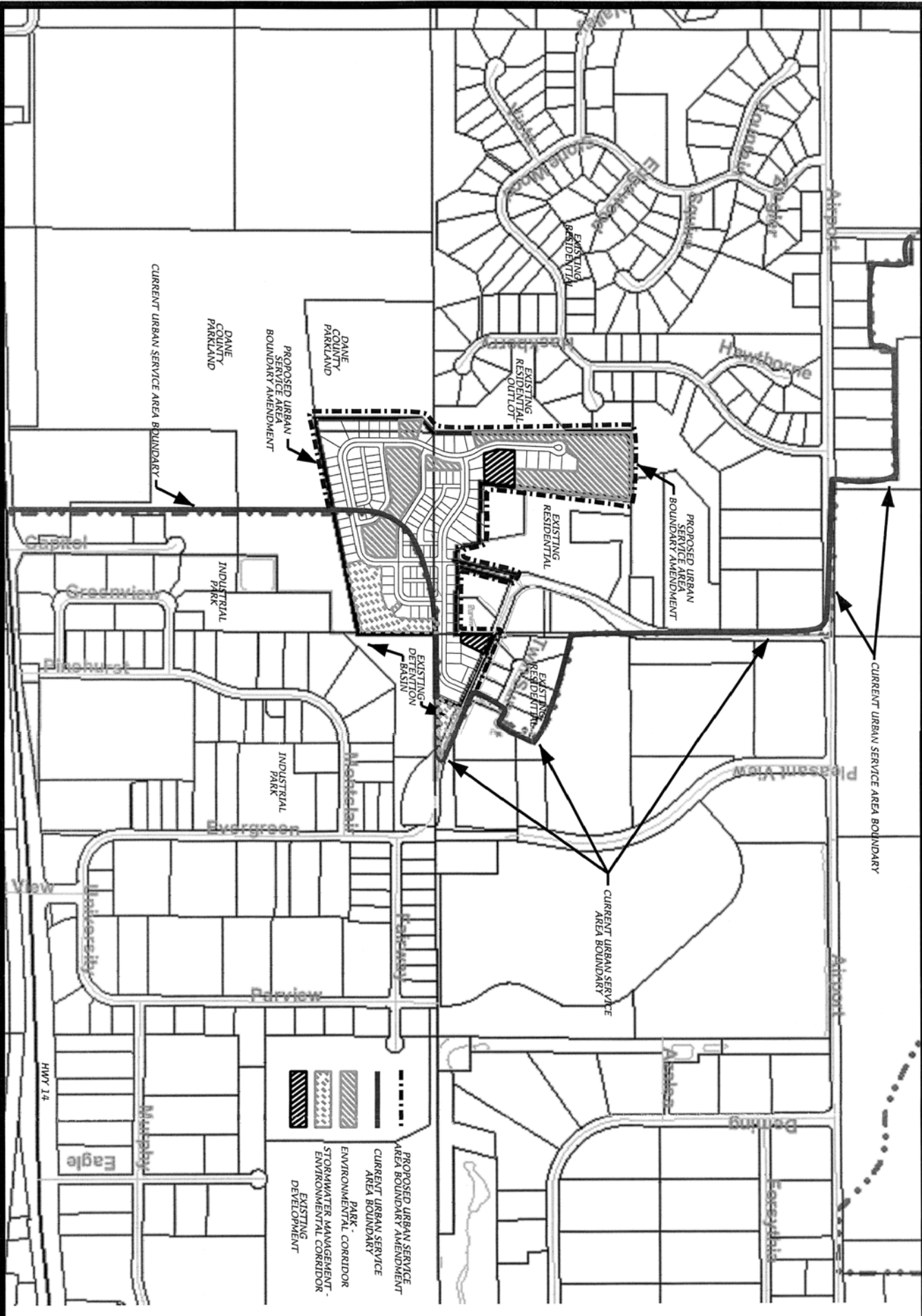
2005 aerial courtesy of FSA/NRCS

6 Sept 06

0 600
 Feet

Prepared by staff
 of the CAPD.




D'ONOFRIO, KOTKE AND ASSOCIATES, INC.
 7530 WESTWARD WAY
 MADISON, WISCONSIN 53717
 TEL: 608-833-7630
 FAX: 608-833-1089

URBAN SERVICE AREA BOUNDARY

HIDDEN OAKS

EVERGREEN DRIVE
 MIDDLETON, WISCONSIN

Map 3

DATE: 03-08-06

FN: 04-04-105



Natural Resources. The area proposed for addition is in the Wisconsin River watershed and the Black Earth Creek sub-watershed for both surface water and groundwater. A ravine runs north and south through the northern portion of the amendment area, with steep slopes to the east and west. This ravine drains the amendment area to the south, and to the low area farther south in the neighboring County-owned property (which was originally owned by the owners of the amendment area parcel). This low area is a prior-converted wetland which had been used for agriculture through ditching by the original owners. The owners had installed a pump near Highway 14 to lift the water that was collected in the dewatering ditch to the culvert under Highway 14 and to the tributary of the Black Earth Creek on the south side of the highway. This pump remains, and the County has been operating it since it purchased the land (see Map 5).

In the northern portion of the amendment area, groundwater is at a depth of over 25 feet, and the depth to bedrock is 10 to 50 feet. The bedrock type is predominantly sandstone, with pockets of fractured dolomite. In the southern portion of the amendment area, groundwater is at a depth of 10 to 25 feet, and sandstone bedrock is at a depth of over 50 feet.

There are no wetlands or floodplain in the proposed amendment area. However, the County-owned land to the south includes wetlands and areas of prior converted wetlands (used for agricultural production). The County is planning to restore the wetlands in this area.

The area drains to an intermittent tributary of the Upper Black Earth Creek. The headwaters tributary is located approximately 3,000 feet from the south edge of the proposed amendment area, on the south side of Highway 14. The subject property is not within the proposed "Black Earth Creek Headwater Protection Zone" as designated in the City's updated Southwest Quadrant Plan. The protection zone is based on the intergovernmental agreement between the City and Town of Middleton to protect the undeveloped portion of the headwater area of the Black Earth Creek watershed from intensive development. The Southwest Quadrant Plan envisions a mixed use redevelopment of the industrial park and the quarry area to the south. In this context, the City views the proposed amendment as an infill development that fits in the proposed Quadrant plan.

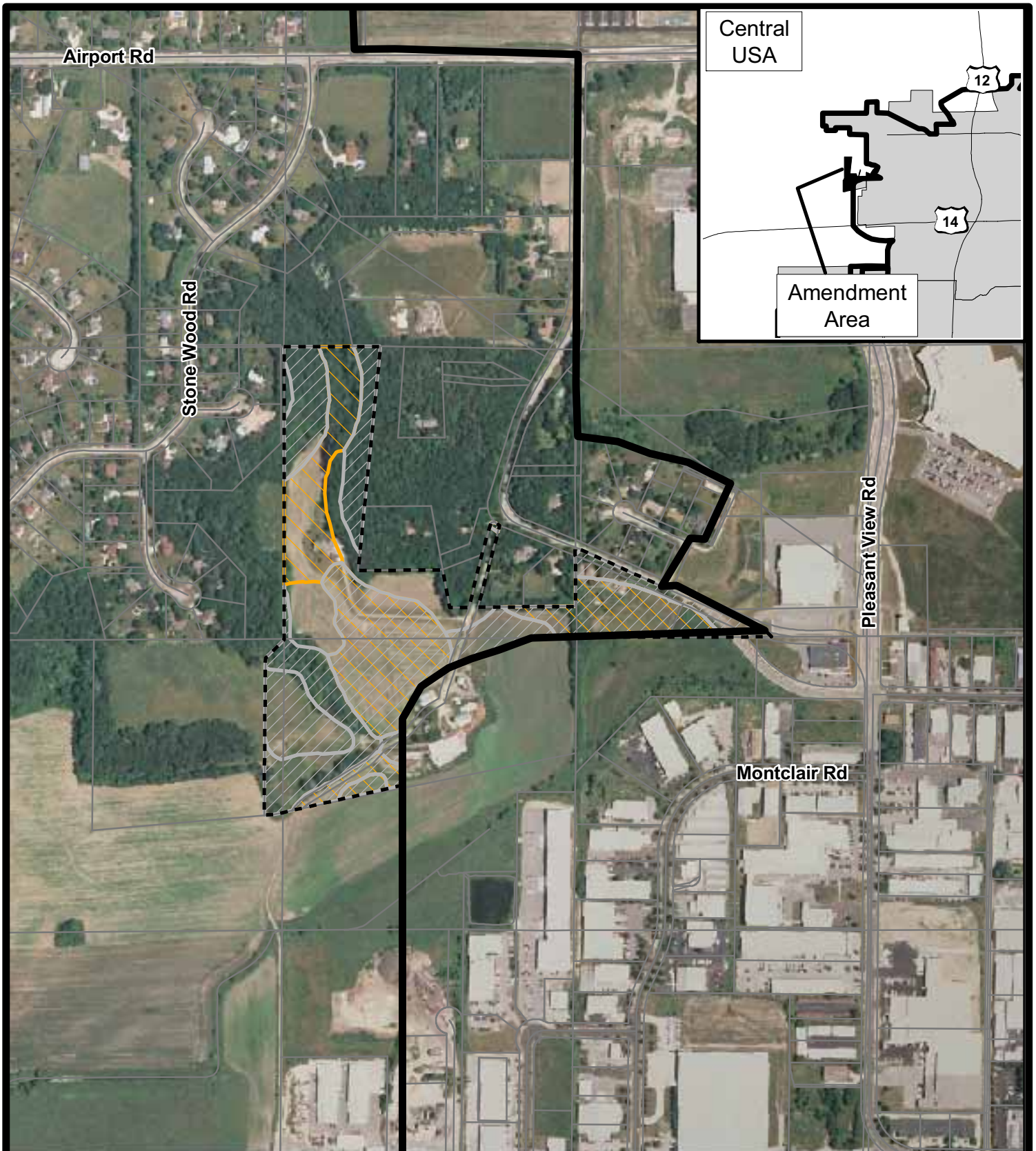
The soils of the amendment area are in the Batavia-Houghton-Dresden Association. These soils are formed in outwash material and they are well-drained and poorly drained deep silt loams and mucks that are underlain by silt, sand, and gravel. Approximately 47% of the amendment area contains prime agricultural soils. Soil details are summarized in Table 2 (also see Map 4).

Archaeological records at the State Historical Society indicate the presence of one site near the amendment area. The SHS notes that "considering the presence of this historic Ho-Chunk community, the presence of wetlands and the presence of the upper reaches of the local drainage system, it seems prudent to have an on-the-ground archaeological survey of the project area completed by a qualified archaeologist." (Letter attached.)

The Natural Heritage Inventory, maintained by the Department of Natural Resources, does not record the occurrence of threatened or endangered species in the amendment area.

Table 2 – Soil Characteristics

Soil	Percent of Area	Prime Agricultural Soils?	Characteristics
Kidder Loam, eroded; KdC2/D2; KrE2	35	No	Deep, well-drained, gently sloping to very steep soils on glaciated uplands. Soils have medium fertility and moderate permeability. Poses moderate to severe limitations for development due to slope.
Chaseburg Silt Loam; ChB	19	Yes	Deep, well-drained and moderately well-drained , gently sloping soils in narrow drainageways, on bottoms of intermittent streams, and on low sides of steep hills. Soils have high fertility and moderate permeability. Poses moderate to severe limitations for development due to flooding and low stability. 125 Bu./acre corn yield.
St. Charles Silt Loam; ScB	13	Yes	Deep, well-drained soils on glaciated uplands underlain by sandy loam glacial till. Substrate is rapidly permeable. Severe hazard of erosion. Slight to moderate limitation to development. 145 Bu./acre corn yield.
Wacousta Silty Clay Loam; Wa	11	Yes	Deep, poorly drained soils on low benches in old lake basins. Soils have low fertility and moderately slow permeability. Subject to seasonally high water table. Poses severe to very severe limitations for development due to seasonally high water table and poor stability. Prime agricultural soils where drained, 110 Bu/acre corn yield.
Dodge Silt Loam, eroded; DnC2	9	No	Deep, well-drained soils on glaciated uplands formed over sandy loam glacial till. Soils have high fertility, moderate permeability, and severe hazard of erosion. Poses moderate to severe limitations to development.
Granby Loamy Sand; Gn	5	No	Deep, poorly drained, nearly level soils formed on low benches in stream valleys and old lakebeds. Soils have low fertility, rapid permeability, and are subject to frequent flooding and seasonally high water table. Poses severe to very severe limitations for development due to high water table, poor stability, and liquefaction and piping.
Boyer Sandy Loam, eroded; BoD2	4	No	Well-drained soils on side slopes of benches on outwash plains. Soils have low fertility. Permeability is moderately rapid in the surface layer and subsoil and rapid in the substratum. Subject to severe erosion. Poses severe limitations to development due to slope and poor stability.
Orion Silt Loam, Wet; Os	3	Yes	Deep, poorly drained soils formed in low bottom lands of stream valleys. Soils have high fertility and moderate permeability. Severe to very severe limitation for development due to high water table and flooding. Prime ag soil where protected from flooding. 145 Bu/acre corn yield
McHenry Silt Loam, eroded; MdD2	1	Yes	Deep, well-drained soils on lower side slopes on glacial uplands. Soils have medium fertility and moderate permeability. Very severe hazard of erosion. Poses severe limitation to development due to slope. 100 Bu/acre corn yield.



Map 4 Soils

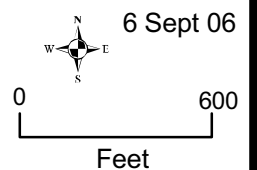
**Amendment
to the Central
Urban Service Area,
City of Middleton**

 Prime Farmland (14.8 acres)

 Severe Limitations to Development (24.4 acres)

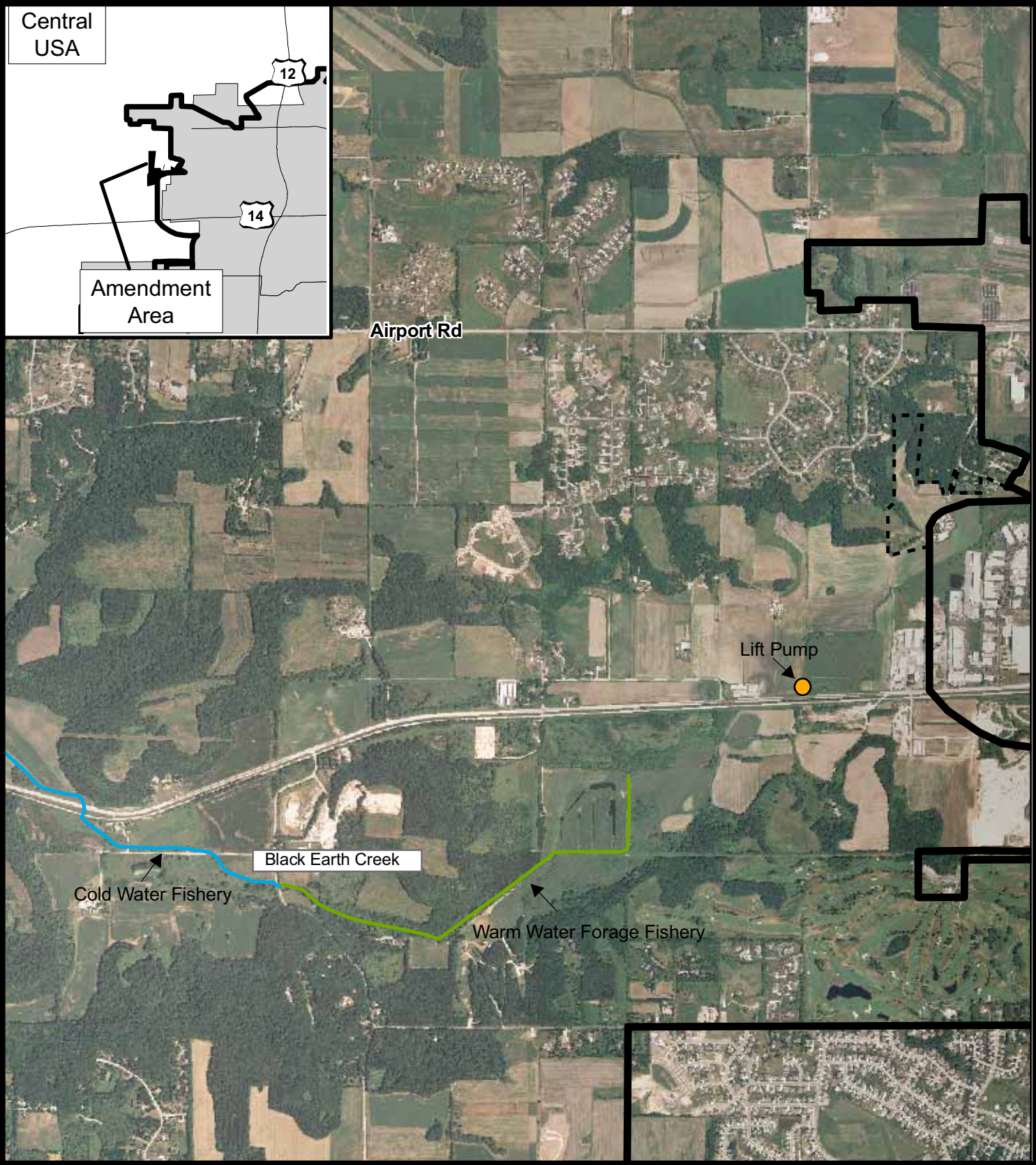
 Existing Urban Service Area Boundary

 Proposed Urban Service Area Boundary



Prepared by staff
of the CAPD.

2005 aerial courtesy of FSA/NRCS



Map 5
Amendment
to the Central
Urban Service Area,
City of Middleton

- Cold Water Fishery
- Warm Water Forage Fishery
- Existing Urban Service Area Boundary
- Proposed Urban Service Area Boundary

22 Sept 06

0 2000

Feet

Prepared by staff
of the CAPD.

2005 aerial courtesy of FSA/NRCS

4. Consistency or Conflict with Adopted Plans and Policies

The Central Urban Service Area Analysis, adopted by the RPC in 1989, includes a list of criteria to be met by proposed amendments to the service area, including:

- Preparation of an area plan which encompasses the proposed amendments
- Description of proposed land uses
- Evaluation of consistency with adopted plans
- Methods of protecting environmental corridors
- Evaluation of urban services to be provided, including transportation, water, sewer, police, fire, solid waste, storm drainage and neighborhood facilities.

The City of Middleton has addressed these criteria through information presented in its CUSA amendment proposal, dated April 2006, and its City of Middleton Southwest Quadrant Plan (March 2005, showing the amendment area as a potential development area and environmental corridors), and incorporated as a component of the City's 2006 Comprehensive Plan (approved as a draft but not yet approved by the City in final form). The City of Middleton expects to take final action on the Comprehensive Plan by the end of November 2006.

The CUSA has an estimated 2005 population of 285,533 and a 2030 population forecast of 339,222. The CUSA Housing Unit and Land Use Analysis provide a maximum urban service area of 74,436 acres to be consistent with the current 2030 population forecast. This represents a potential increase of 6,152 acres of developable land over the existing urban service area. The proposed amendment would add 21.2 acres of developable land to CUSA, well below the maximum year 2030 increase.

Table 3 presents the goal achievement checklist for the eleven major goals of the *Dane County Land Use and Transportation Plan*. The proposed amendment is supportive of four goals:

1. It promotes compact urban development because, while the amendment area has a density of 6.4 units per acre, just lower than the CUSA average of 6.6, the development project overall has a density of 6.9 units per acre when areas already within the service area are included.
2. It promotes a range of safe and affordable housing choices because the City has approved a workforce-housing plan with the developer of the property (priced for incomes at 80% of Dane County median) .
3. It promotes the goal of providing an integrated all mode transportation system by including pedestrian and trail facilities to link the amendment area to the business park and transit route approximately one-quarter mile from the amendment area.
4. It promotes the goal of developing a system of open space corridors to preserve environmental functions, scenic value, and recreational opportunities by designating 4.4 acres within the existing USA and 9.5 acres within the amendment area as environmental corridors. The proposal also includes trails that connect to regional trails in the greater metropolitan area.

The amendment is neutral with regard to six goals. It conflicts with the goal of protecting agricultural lands since approximately 47 percent of the soils in the amendment area are prime agricultural soils. Although a portion of the land is currently in agricultural use, much of the amendment area is vacant or wooded.

Table 3
Dane County Land Use and Transportation Plan
Goals Achievement Checklist

Goals	Strongly Conflicts	Conflicts	Neutral or Offsetting Effects	Supports	Strongly Supports
Promote balanced communities with a mix of development			X		
Promote compact urban development				X	
Promote distinct communities, mixed-use neighborhoods with a full range of public services			X		
Provide a range of safe and affordable housing choices				X	
Provide an integrated all-mode transportation system				X	
Concentrate employment and activity centers along transit corridors			X		
Maintain Downtown Madison as region's major activity center			X		
Provide employment opportunities and a diverse economic base			X		
Protect agricultural lands by limiting non-farm development in agricultural areas		X			
Protect environmental, cultural and historic resources			X		
Develop a system of open space corridors to preserve environmental functions, scenic value, and recreational opportunities				X	

Proposal: Middleton-Hidden Oaks in the Central Urban Service Area

Applicant and Submittal Date: City of Middleton, September 2006

5. Proposed Urban Services

Public Water System. Water service will be extended to the amendment area through two connections to existing City mains to create a loop system. The first connection is to a 10-inch main on Evergreen Road. A new 10-inch main will be extended along Evergreen to the new intersection near Twin Sunset Court. The second connection is to an existing 10-inch main on Pinehurst Drive through the adjacent industrial park. An 8-inch water main in the right-of-way will supply water through the USA amendment area. Hydrants will be included in the system. The applicant states that because the City Water Utility is unable to service areas which have an elevation above 980 feet, all homes constructed in the proposed amendment area will be below 980 feet. The current City of Middleton water distribution system can meet the necessary domestic and fire protection requirements. The City Water Utility's well capacity is 5600 gallons per minute (gpm). There is 1.25 million gallons (mg) of elevated storage and an additional 1.1 mg of ground level storage. The Utility is able to provide 2000 gpm for 2.5 hours for firefighting purposes. The current average daily pumping is 2.4 million gallons per day (mgd) and the peak hour demand is 5060 gpm.

The proposed amendment is estimated to consume approximately 19,000 gallons per day (gpd) of potable water. No new municipal wells are needed to supply the proposed development.

Wastewater. Wastewater treatment for the City of Middleton is provided by the Madison Metropolitan Sewerage District (MMSD). The City plans to provide public sanitary sewer service to the amendment area by connecting to the North Interceptor in the Esser Pond Service Area. The interceptor has adequate capacity to serve the proposed development, which is estimated to generate approximately 20,000 gpd of wastewater.

The Nine Springs Wastewater Treatment Facility is estimated to reach capacity by 2020. The MMSD has started the planning process for determining the most cost-effective and environmentally sound approach to providing wastewater collection and treatment service to its service area.

Stormwater Management System. A detailed stormwater management plan has been developed with the participation of local, County, regional, and state DNR staff and watershed and conservation group stakeholders. Stormwater management goals include peak control, sediment control, thermal control, and infiltration. The City of Middleton stormwater standards are more stringent than the minimum DNR and Dane County standards, and will be applied to the development. These include post-development peak control to pre-development levels (using a CN of 58) for storms up to and including the 100-year event. The standards require infiltration practices such that impervious surfaces do not contribute additional runoff volume for the 1-year storm event compared to pre-development conditions.

Stormwater management facilities such as storm sewer and detention basins will be owned and maintained by the City of Middleton. Infiltration practices in public areas will also be maintained by the City. Infiltration practices located on private property will be in easements and will require maintenance by a homeowners' association which will be bound by a legal agreement to perform maintenance approved by the City and the DNR.

The plan for the development of the amendment area includes two stormwater management facilities at the lowest point on the property in the southeast portion of the development. The proposed facilities treat most of the stormwater runoff from the

development and provide infiltration of treated stormwater. A bank of lots at the south edge of the development is not tributary to these regional stormwater management facilities. The stormwater plan includes a bio-infiltration trench along the south parcel boundary of the development to treat the runoff from the undetained south end of the development.

The proposed detention facility will be designed to control peak rates for the one-year through 100-year recurrence intervals per the City of Middleton ordinance. The detention facility will also be designed to reduce suspended sediment per the NR 151 requirements. The applicant specifies that since the USAA boundary is included in the headwaters of the thermally sensitive Black Earth Creek, thermal control devices will be incorporated into the detention facility release structure.

Bio-swales have been incorporated upstream of the detention facility, providing open drainage and infiltration through the development. These swales help in retaining the natural drainage regime of the site. Stormwater management detention facilities will be installed at commencement of construction and prior to major grading operations.

Environmental Corridors. Environmental corridors including parkland and stormwater facilities have been proposed for 9.5 acres of this amendment. An additional 4.4 acres of corridors are proposed for parkland and stormwater facilities in portions of the development which are already within the urban service area boundary.

Public Safety Services. The City of Middleton is part of a Fire District that encompasses all of the City plus the Town of Middleton, and portions of the Towns of Springfield and Westport. Fire protection and emergency medical services are provided from the station on University Avenue at Parmenter Street. The Fire District is in the design phase for a new Fire Station that will be built at the site of the current station, approximately two miles from the USAA. A response time of seven to eight minutes would be expected. In addition, the Fire District has plans to build a permanent “satellite” fire station at the location of the Town of Middleton Town Hall, where a fire truck is currently housed to facilitate response times within the Town and west side of the City of Middleton.

Police service is provided by the City of Middleton Police Department, which is located on Hubbard Avenue. It has 32 FTE officers, which translates into 1.9 officers per 1,000 residents, adequate for a city of this size. Police protection and services will be provided to the area at a level appropriate for the anticipated and planned development of the area.

Transportation. The proposed development will include sidewalks along all public streets. A bike trail will run through the development, connecting to the existing City trail system and to the County lands located to the south and west of the development. The sidewalk and trail system will provide access to the nearby business park and to public transit system service provided by the Madison Metro Transit, which currently extends to the intersection of Fairview and Pleasant View Road, approximately a quarter-mile from the amendment area.

Other City Services. The City of Middleton will provide solid waste collection and recycling as well as street repair, cleaning and snow and ice removal.

Parks and Open Space. The amendment proposal includes 9.2 acres of parks, of which 8.7 acres will be in environmental corridors. The concept plan for the Hidden Oaks development also includes 1.2 acres of parkland in the environmental corridors to be designated within the existing USA. Corridors for stormwater management facilities add an

additional 0.8 acres of open space within the amendment area, and 3.2 acres in the existing USA.

The proposal includes a bike trail system that connects to the City of Middleton trail system as well as the County land located to the south and west of the amendment area, and is consistent with the *2000 Dane County Bicycle Transportation Plan*.

5. Impacts or Effects of Proposal

Runoff and Storm Drainage Impacts. The potential impacts of urban development on receiving water bodies are to increase stormwater runoff rates, volumes, and temperature; reduce groundwater recharge and stream base flow; and introduce additional contaminants into the receiving bodies of water. This occurs from the expansion of impervious surfaces (i.e., streets, parking areas, and roofs). Development can also cause substantial soil erosion and off-site siltation from construction activities.

The proposed amendment and its watershed pose additional constraints to development. Stormwater from the amendment area flows to Black Earth Creek, a high quality and sensitive trout stream. Furthermore, the amendment area contains steep slopes and soils that pose severe hazard of erosion.

The City of Middleton has adopted an erosion and stormwater runoff control ordinance and a comprehensive stormwater management plan which is more restrictive than the minimum standards in many respects. This provides the means to control some of the adverse impacts of erosion and increased stormwater runoff and pollution resulting from the proposed development.

The City requires control of post-development rainfall runoff rates to pre-development rates for storms up to and including the 100-year storm event. Furthermore, the discharge from the development flows to the low area on the County property to the south. If the county implements its wetland restoration plans on the property, it would provide further protection for the Creek and downstream areas. The stormwater plan also proposes to install a plunge pool and level spreader on the County property, downstream from the stormwater discharge point for the development. This will help prevent channelization and erosion from the increased volume of runoff from the development.

The stormwater plan proposes to implement a combination of runoff attenuation and infiltration maximization measures (including bio-infiltration areas, infiltration swales, and other open drainage measures), aiming to maintain the pre-development hydrology of the area to the extent possible. These same measures will also serve to mitigate the effects of the loss of groundwater recharge, and to reduce the temperature increase in the stormwater.

The City has stormwater infiltration requirements that are more stringent than the minimum standards, requiring post-development runoff volumes for the one-year storm event to be equal or smaller than the pre-development runoff volumes (using a CN of 58, which is closer to a pre-settlement condition).

The amendment area is composed of some highly erodible soils and steep slopes. To prevent sediment from construction erosion to reach downstream wetlands and water bodies, the City proposes to install stormwater practices prior to other land disturbing activities in the amendment area. Additional measures that are needed in the area include stringent inspection and enforcement of construction erosion control measures; the use of

polymers (on the disturbed ground and in the stormwater ponds), diversion berms, and stone weepers; careful construction scheduling and grading planning to prevent large areas of land disturbance; and careful design oversight by the City to protect against the destabilization of steep areas. The proposed plan designates all steep slopes over 20% as environmental corridor, and protects these areas from disturbance.

The plan to restore the prior-converted wetlands on the County property immediately downstream from the proposed development provides a rare water quality buffer between the development and the Creek. The restored wetlands would provide further filtration and polishing of the stormwater prior to discharge to the Creek. The restoration project will have to be designed with its own temperature reduction measures, because wetland areas absorb heat on Summer days, increasing the temperature of any discharge from them.

Groundwater Pumping and Wastewater Diversion Impacts. A study by the USGS is under way with the goal of simulating the surface and ground water interactions in the Black Earth Creek watershed, and assessing the potential impacts that development can have on these resources. This study couples a refined version of the Dane County Regional Hydrologic Model and the surface water model in the watershed and is scheduled to produce a draft report by the end of 2006.

The Dane County Regional Hydrologic Model currently estimates that the baseflow of the Upper Black Earth Creek above the Village of Cross Plains (measured at the Capitol Sand and Gravel Quarry outfall) has decreased from 1.7 cubic feet per second (cfs, Q_{80}) in pre-settlement conditions, to 0.6 cfs (Q_{80}) currently, and expected to decrease to 0.19 cfs (Q_{80}) by 2030 (under current development plans). This reduction has been the result of municipal groundwater withdrawal and diversion through public sanitary sewers, and loss of natural recharge in the Central Urban Service Area and the Cross Plains Urban Service Area.

Aggressive stormwater infiltration measures (well beyond minimum standards, and to include retrofit infiltration practices with proper consideration of potential groundwater quality impacts), protection of natural groundwater recharge, reduction of water use through aggressive conservation practices, and judicious placement and management of municipal wells and groundwater withdrawal in the entire urban and urbanizing area will be needed to mitigate these adverse impacts.

This amendment will not have *additional or unanticipated* adverse impacts on the base flow of Black Earth Creek due to groundwater withdrawal. This is because no new municipal wells are proposed as part of this amendment and that the stormwater plan includes extensive infiltration practices.

School System Impacts. The proposed amendment is in the Middleton Cross Plains Area School District. The proposed addition will be developed with approximately 93 new single family homes. Additional school enrollments from the amendment area would include about 19 elementary school students, 10 middle school students, and 13 high school students. The amendment area is currently in the attendance areas for Sunset Ridge Elementary School (3 miles away), Glacier Creek Middle School (6 miles away), and Middleton High School (2.5 miles away).

6. Alternatives

Alternatives to development at this location are increased density within the current urban service area, addition to the USA in another location, or no expansion of the USA.

According to the standards outlined in NR 121, and the USA expansion flexibility standards of the current *Dane County Water Quality Plan*, the Central Urban Service Area can expand by a maximum of 6,152 developable acres by 2030. The *Water Quality Plan* does not provide for “no-growth” urban service areas if they fulfill the conditions, standards, and requirements of adding to the USA as outlined in the *Water Quality Plan*.

The City of Middleton can expand only to the west, into the Black Earth Creek watershed, or to the north, into the Pheasant Branch Creek watershed. Consideration of the option of an alternative location should weigh the potential adverse impacts in the alternative location. Growth areas immediately north of the City of Middleton are located in the Yahara River watershed (Pheasant Branch Creek and Dorn Creek sub-basins). Both streams support warm water sport fisheries in their one-mile reach upstream from Lake Mendota.

The Pheasant Branch Marsh and its associated springs are a sensitive resource in part of the Pheasant Branch sub-basin. Pheasant Branch Creek has a geologically young bed, and is prone to streambed erosion.

Both streams discharge into the Yahara chain of lakes which have been experiencing flooding due to increased runoff volume as a result of the expansion of impervious surfaces associated with urban development. The problem of flooding in the Yahara chain of lakes does not lend itself to easy stormwater management practices. The Yahara lakes have a sluggish water flow regime. This results in flooding despite the implementation of stringent stormwater detention and infiltration standards in new development in the watershed. A Yahara Lakes model is being prepared to provide an insight into alternative lake management approaches that may be used to alleviate the flooding problem in the Yahara watershed.

The Black Earth Creek watershed is a highly sensitive watershed. Although the headwater tributary that receives the discharge from the proposed amendment area is an intermittent stream, it flows into Black Earth Creek one mile downstream of the amendment area. The Creek supports a warm water forage fishery at this confluence and through a one-mile reach where it becomes an Outstanding Resource Water. The Creek becomes a trout stream about one mile farther downstream from this point to the Village of Cross Plains Wastewater Treatment Plant outfall where it becomes an Exceptional Resource Water (see Map 5).

Black Earth Creek is a relatively small stream in its upper reaches, and is consequently susceptible to loss of baseflow, increased sedimentation and pollution, and increases in temperature. The Creek is also susceptible to flooding in its lower reaches.

The City of Middleton is in the process of finalizing an agreement with the Town of Middleton to establish a “Black Earth Creek Headwater Protection Zone” which encompasses most of the watershed through the Town of Middleton. The City proposes to prevent intensive development in the protection zone.

The alternative of increasing the density of development within the current urban service area is addressed in the *Dane County Land Use and Transportation Plan*. However, the forecast population growth in Dane County is too large to accommodate through increased density alone. Furthermore, drastic increases in development density require supportive development economics and local land use regulations. Both of these requirements are slowly moving towards more supportive positions, but not fast enough to respond to the need for new housing units caused by the forecast population growth.

7. Controversies, Comments Received, Unresolved Issues

The Town of Middleton has been notified of the development plan and urban service area amendment request. No comments have been received to date from the Town. Comments have been received from neighboring property owners in the Town, and it is possible that the proposed development will meet with local opposition from its neighbors.

Dane County Community Analysis and Planning will hold a public hearing on this amendment on September 28, 2006, at 4:30 p.m. at the Middleton City Hall, 7426 Hubbard Avenue, Middleton, Wisconsin.

8. Conclusions and Staff Recommendation

The proposed amendment includes measures to mitigate the adverse impacts of development and meets several of the goals of the *Dane County Land Use and Transportation Plan*.

The location of the proposed development provides an effective buffer from Black Earth Creek due to the low area in the County property to the south. The proposed restoration of the wetlands on the County property provides further surface water quality and quantity (flooding) protection for the Creek.

The proposal includes mitigation measures to address the adverse groundwater impacts associated with the loss of natural rainfall infiltration in the area. The groundwater withdrawal impacts of the development on the water table recession in the central part of Dane County would be relatively insignificant (though important as a cumulative element) when compared to the overall groundwater withdrawal in the Central Urban Service Area and the Cross Plains Urban Service Area.

Local plans pertaining to the amendment area have not been adopted in final form yet. The City is planning to hold a public hearing in November, 2006, to finalize an update of the City of Middleton Comprehensive Plan to include the detailed land use in the proposed amendment area. The standard practice for amendments to the *Dane County Water Quality Plan* has been to ensure that they are consistent with adopted local plans. It is therefore necessary to delay the approval of this amendment until after the City of Middleton has taken action on the update of its Comprehensive Plan to include this specific parcel.

The proposed amendment raises a policy issue regarding the expansion of the Central Urban Service Area into the Black Earth Creek watershed. The Dane County Regional Planning Commission had an informal policy of not encouraging expansion of the CUSA into the watershed, in order to protect this sensitive resource area. This policy helped prevent urban expansion into the upper portion of the watershed (the portions of the City of Middleton that are located in the Black Earth Creek watershed predate the initial delineation of the Central Urban Service Area boundary). The proposed amendment opens the door to development in this area, representing a precedence that can ultimately have severe adverse impacts on the stream. The City of Middleton has identified a "Black Earth Creek Headwater Protection Zone," and proposes to limit intensive development in this zone. However, this leaves the door open for "low" intensity development in the protection zone. Because this upper portion of the watershed is small, relatively small areas of impervious cover can easily add to threshold percentages of imperviousness associated with degraded stream quality. The Department of Natural Resources dealt with a similar

situation in the Sugar River watershed adjacent to the Verona Urban Service Area by making future additions to the service area in the watershed contingent on a comprehensive study of the resources in the area and the needed level of protection. We suggest that the same approach would be appropriate in the Upper Black Earth Creek watershed. Furthermore, the results of the study should be used to plan and implement conservation measures throughout the watershed to ensure the protection of the Black Earth Creek as a viable, high quality, cold water ecosystem.

The staff is not able to make a recommendation on this proposal due to policy issues raised above. The proposal and its mitigation plan appear to provide adequate protection against the adverse impacts of development on Black Earth Creek. It is recommended that any decision on approval (by WDNR) be delayed until after the City of Middleton has finalized its Comprehensive Plan update relating to the subject parcel. Furthermore, if the proposed amendment is approved by the WDNR, it should be subject to the condition that the City of Middleton pursue the following:

- 1- Submit a detailed stormwater management plan for CAPD and DCLCD staff review and approval prior to land disturbance in the area. The stormwater management plan should implement the stormwater management concept plan submitted as part of the amendment request, maximize infiltration, prevent increased off-site flooding and erosion, provide aggressive construction erosion control practices and enforcement, and mitigate the water quality and thermal impacts of the development.
- 2- Install the stormwater management practices prior to other land disturbing activities in the area.
- 3- Stormwater management facilities to be publicly managed (privately owned facilities to have easements and legally enforceable maintenance agreement with the City).
- 4- Designate all steep slopes (over 20%) and public stormwater management areas as environmental corridors.

It is recommended that an on-the-ground archaeological survey of the area be conducted by a qualified archaeologist prior to land disturbance, and two copies of the survey report submitted to the State Historical Society.

It is also recommended that the City of Middleton, in collaboration with WDNR, USGS, CAPD, and Dane County, initiate a comprehensive study of the portion of the Black Earth Creek watershed that is within its Southwest Quadrant Plan, to assess the impact of development on the stream ecosystem, to develop and implement a conservation plan for the watershed to ensure the protection of the Black Earth Creek as a viable, high quality, cold water ecosystem.

Report approved by Kamran Mesbah, Deputy Administrator/Director of Environmental Resources Planning, Dane County Community Analysis and Planning Division



WISCONSIN
HISTORICAL
SOCIETY

Headquarters Building
816 State Street
Madison, WI 53706-1482
608-264-6400

Division of Historic Preservation
Office: 608-264-6500
Fax: 608-264-6504
Web: www.wisconsinhistory.org

14 September 2006

K. Mesbah
Community Analysis and Planning Division
City-County Building, Room 362
210 Martin Luther King Jr. Boulevard
Madison, WI 53703-2558

RE: Amending the *Dane County Water Quality Plan* by Revising the Central Urban Service Area Boundary and Environmental Corridors within the City of Middleton.

Dear Mr. Mesbah:

One previously recorded archaeological site has been recorded near the project area (DA-309). Considering the presence of this historic Ho-Chunk community, the presence of wetlands and the presence of the upper reaches of the local drainage system, it seems prudent to have an on-the-ground archaeological survey of the project area completed by a qualified archaeologist. When the survey is completed please send **two** copies of the report directly to our office.

Under Wisconsin law, Native American burial mounds, unmarked burials, and all marked and unmarked cemeteries are protected from intentional disturbance. If anyone suspects that a Native American burial mound or an unmarked or marked burial is present in an area, the Burial Sites Preservation Office should be notified. If human bone is unearthed during any phase of a project, **all work must cease**, and the Burial Sites Preservation Office **must be contacted** at 1-800-342-7834 to be in compliance with Wis. Stat. 157.70 which provides for the protection of all human burial sites. **Work cannot resume until the Burial Sites Preservation Office gives permission.** If you have any questions concerning the law, please contact the Coordinator of the Burial Sites Preservation Program at the Wisconsin Historical Society, Dr. Leslie Eisenberg at 608-264-6503.

If you have any questions, or if you need additional information, please feel free to contact me.

Sincerely;

John H. Broihahn
State Archaeologist
State Archaeology and Maritime Preservation
608-264-6496
jhbroihahn@whs.wisc.edu
(asi searches/Dane/ City of Middleton 09_14_06)