

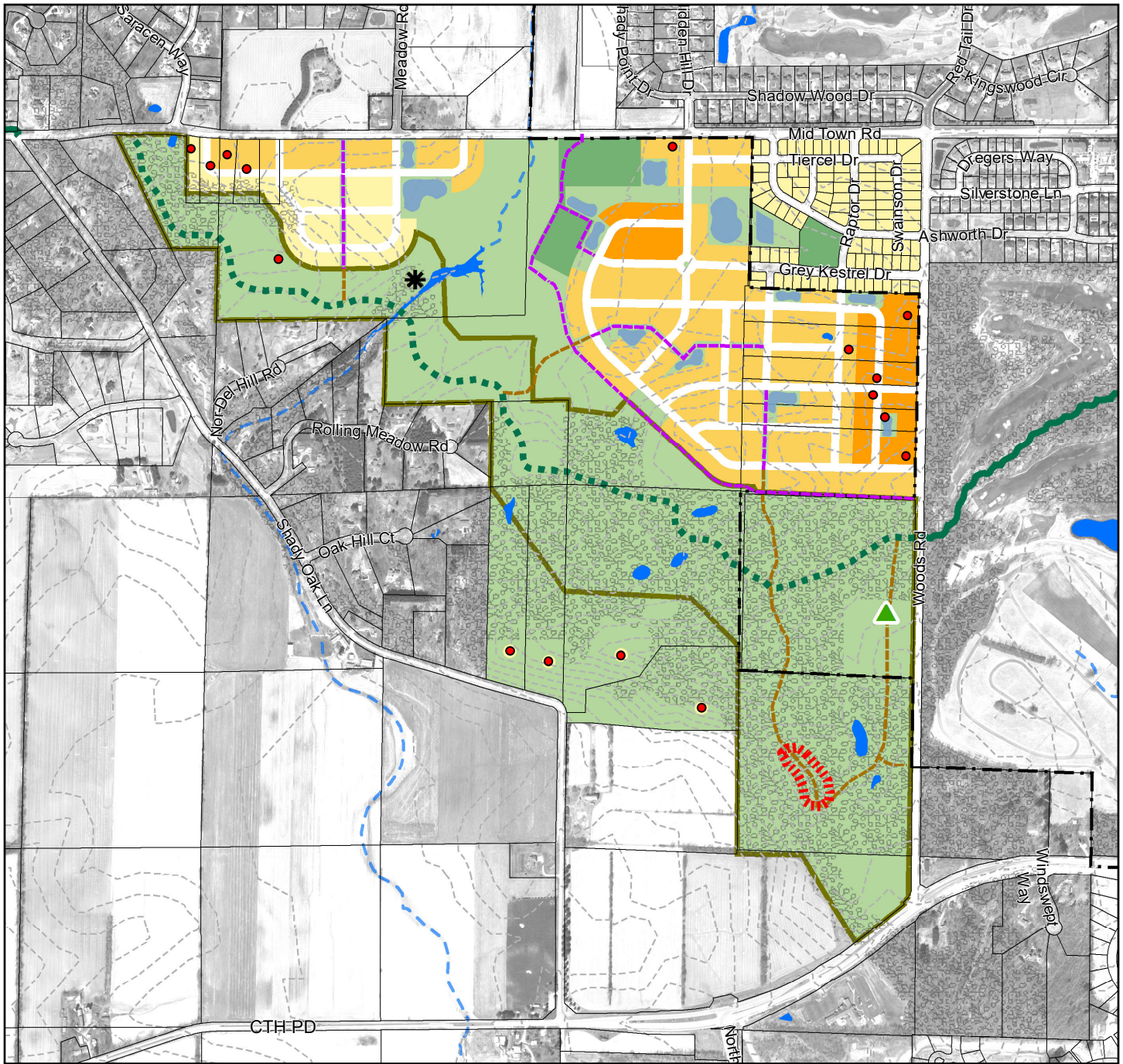
Draft

Shady Wood Neighborhood Development Plan



City of Madison, Wisconsin
Department of Planning and Community and Economic Development
Planning Division

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Map 7: Land Use and Street Plan

DRAFT



View Opportunity



Existing Dwelling Units



Richardson's Cave



Conceptual Ice Age Trail Trailhead

Existing Ice Age Trail

Conceptual Ice Age Trail

Proposed Shared-Use Path

Proposed Pedestrian Path

Elevation Contours - 10ft



Housing Mix 1 (6-12 du/ac)



Housing Mix 2 (12-20 du/ac)



Housing Mix 3 (20-40 du/ac)



Potential Sports Fields



Stormwater and Other Open Space



Open Space Conservation Corridor



Conceptual Stormwater Pond Location



Surface Water



Intermittent Stream



Woodlands

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Introduction

The Shady Wood Neighborhood Development Plan (NDP) was prepared to guide future growth alongside continued efforts to preserve a corridor for the Ice Age National Scenic Trail. The planning area comprises a portion of a near term Peripheral Planning Area (PPA-A) in the City of Madison Comprehensive Plan's Growth Framework, that recommends that a detailed plan for the area be prepared and adopted. The Comprehensive Plan's Generalized Future Land Use Map includes specific guidance to preserve the significant natural glacial features located in the planning area as part of the Ice Age National Scenic Trail corridor.

The Plan was prepared through a planning effort that included the participation of property owners, City staff and officials, representatives of other municipalities, and other interested individuals and organizations. Two public meetings were held to present and discuss background information, a conceptual land use and street plan, and the draft neighborhood development plan. The Plan reflects an effort to balance the interests and objectives of all participants, while providing a comprehensive, long-range vision for future neighborhood development.

The Plan includes recommendations for land use, open space preservation, transportation, urban services delivery, development phasing, sustainability, and plan implementation. The Plan serves as a guide for future development and open space preservation within the planning area.

Background Information and Planning Context

Planning Area

The planning area covers approximately 435 acres south of Mid-Town Road and west of Woods Road. See **Map 1**. About 73 acres (16.8%) are in the City of Madison and 362 acres (83.2%) are in the Town of Verona. See **Map 2**.

Municipal Jurisdiction and Property Ownership

Several large property ownerships account for a majority of the land within the planning area. Larger property ownerships within the planning area are listed in **Table 1** and shown in **Map 2**.

Table 1: Property Ownership

Property Owner	Approximate Acreage
Dreger	107.10
Land Acquired for Ice Age Trail	85.88
Blake	64.78
Keryluk	39.70
Jackson	13.13

Topography and Natural Features

Topography

The planning area is located along the terminal moraine of the most recent glacier that reached the area. The glacier left unique features in this area including a large and defined terminal moraine that traverses between the northwest corner and southeast corner of the planning area. Lower Badger Mill Creek occupies an area that was a glacial lake, and a glacial outwash area located to the southwest of the moraine, and rolling terrain to the northeast of the moraine.

The elevation in the planning area ranges from approximately 1,028 feet U.S.G.S along Lower Badger Mill Creek and near Shady Oak Lane to approximately 1,170 feet U.S.G.S. along the terminal moraine near the intersection of Moraine Woods Park and Jackson property lines. Topography and other natural features are shown in **Map 3**.

Richardson's Cave

Richardson's Cave, called the "Great Cave of Dane County" by some, is located adjacent to a pond within the Lower Badger Mill Creek corridor. Documentation of the cave dates back to 1845. In the 1960s, University of Wisconsin researchers mapped areas of the cave they were able to access. Those explorations extended approximately 1,000 feet in length from the opening of the cave and 40 feet underground. In the past, large amounts of stormwater from the Lower Badger Mill Creek watershed entered the cave during rain events. The cave has silted in over the years as land within the watershed has been converted from woodlands and more natural ground covers to agricultural uses that cause more erosion.

The owners of the land containing the cave have been good stewards of the resource. They have occasionally removed silt from the cave and had a large berm constructed to prevent stormwater from entering the cave. Overall, Richardson's Cave is a unique resource with an interesting history, which should be preserved.

Woodlands

The planning area includes extensive woodlands, covering approximately 161 acres. Most of the woodlands are located on several properties in the southeastern portion of the planning area along the steep slopes of the terminal moraine and the undulating topography northeast of the moraine.

Water Resources

Stormwater Drainage

Lower Badger Mill Creek travels through the planning area as an intermittent stream. It bisects agricultural fields and runs past Richardson's Cave before entering a deep ravine between Nor-Del Hill Road and Rolling Meadow Road. The lower elevations on the Dreger and Blake properties often experience flooding during larger rain events. See **Map 13**. Lower Badger Mill Creek watershed is part of the larger Upper Sugar River watershed. The Upper Sugar River watershed is a cold-water community, which are subject to stormwater requirements for development that are more restrictive than the general standards that typically apply. In particular, development must provide temperature reduction practices for stormwater runoff leaving the site.

Kettle Ponds

There are several kettle ponds or depressions within the planning area that hold water on an intermittent or continuous basis. These features were probably formed from large blocks of ice within the glacier which reserved space as the glacier melted and disintegrated. The blocks of ice eventually melted and the surface of the land collapsed leaving a depression in its place. The larger of these features are located on the Dreger, Keryluk, and the property to the south of Moraine Woods Conservation Park.

Wetlands and Floodplain

According to the Wisconsin Department of Natural Resources Wetland Inventory maps, there are areas where wetlands may exist. If wetlands do exist, the exact boundaries of them must be delineated in the field prior to development. Federal Emergency Management Agency (FEMA) floodplain maps classify much of the area along Lower Badger Mill Creek as being within the 100-year floodplain. Special regulations apply to developments that contain or are adjacent to wetlands or floodplains.

Existing Land Use

The planning area is currently comprised of agricultural/vacant, residential, or open space land uses. Existing land uses are listed in **Table 2** and shown in **Map 4**. Approximately half of the land in the planning area is currently either being farmed or is vacant land. The vacant lands include extensive woodlands and areas with steep slopes or undulating topography that are less suitable for farming or development. A substantial portion of the planning area consists of residential lots. The Hawks Valley subdivision at the southwest corner of Woods Road and Mid-Town Road contains 99 residential lots, while the remainder of the homes in the area are on relatively large rural lots, parts of which may also include steep slopes, woods, and other natural areas. The City of Madison has two parks within the planning area: Kestrel Park and Moraine Woods Conservation Park. The City also recently partnered with Dane County, the City of Verona, and the Town of Verona to purchase the property adjoining Moraine Woods Conservation Park to the south. The Bitzer family generously donated 8.3 acres to be preserved as open space. In addition, the Ice Age Trail Alliance owns one property adjacent to Mid-Town Road that will eventually become a part of the Ice Age Trail route.

Table 2: Existing Land Use

Land Use	Acres	Percent of Total
Agricultural/Vacant	253.1	58.2%
Parks and Open Space	75.5	17.4%
Residential	60.3	13.9%
Road Right-of-Way	44.2	10.2%
Industrial	1.3	0.3%
Total	434.4	100.0%

Historical and Cultural Structures and Sites

The Wisconsin Historical Society's Architecture and History Inventory identifies two archaeological sites in the planning area which are located along Lower Badger Mill Creek in the area of Richardson's Cave. Richardson's Cave (DA-1324) and the Blake site (DA-1325) warrant further investigation as part of a professional archaeological survey.

Existing Zoning

The planning area includes lands in the City of Madison and the Town of Verona. Lands within the City of Madison are subject to the City of Madison Zoning Code and lands within the Town are governed by the Dane County Zoning Ordinance. See **Map 6**.

School Districts

The Hawks Valley subdivision at the corner of Woods Road and Mid-Town Road is within Madison Metropolitan School District (MMSD), while the remainder of the planning area is within the Verona Area School District (VASD). In 1999, VASD and MMSD approved a Boundary Agreement, which will transfer most of the land within the planning area to MMSD if the following provisions are met.

Properties slated for transfer to MMSD that are not resident-owned, as defined in the Agreement, are transferred to the MMSD after annexation to the City of Madison. Properties that were resident-owned at the time of the agreement will remain in VASD until the property is annexed to the City of Madison and one of the following criteria is met:

- The owner of the parcel, at the time of the agreement, no longer owns the land
- The parcel is rezoned by the City of Madison to a non-agricultural zoning district and the rezoning was initiated or consented to by the owner
- A subdivision plat is filed with the City of Madison
- A certified survey map is approved by the City of Madison (parcels with resident owners would remain in VASD)
- The owner initiated annexation of the property and was notified that annexation to the City of Madison would prompt attachment to the MMSD

Under MMSD's current configuration of school attendance areas, Olson Elementary School, Toki Middle School, and Memorial High School would serve the MMSD portion of the planning area. VASD areas are currently served by Country View Elementary School, Badger Ridge Middle School, and Verona Area High School. See **Map 14**.

Ice Age National Scenic Trail

A segment of the planned Ice Age National Scenic Trail traverses the planning area. In 1980, the Ice Age Trail was authorized as a National Scenic Trail by the United States Congress. The approximately 1,100-mile

trail generally follows the farthest southern extent of the most recent glacial advance. The Ice Age Trail is one of eight National Scenic Trails within the United States and is one of only two contained within a single state. National Scenic Trails are similar in status to the nation's national parks. See **Map 15**.

The Ice Age Trail has the support of many levels of government in addition to the federal government. In 1987, the Wisconsin Department of Natural Resources' Natural Resources Board designated the Ice Age Trail as a State Trail, and subsequently approved a general trail corridor. In 1990, the Dane County Board included the trail corridor in the Dane County Park and Open Space Plan. The Comprehensive Plan recommends a more refined corridor. This open space was specifically recommended to preserve the significant natural features along the corridor and incorporate them into a future extension of the Ice Age National Scenic Trail.

The headquarters for the National Park Service's Ice Age Trail office is located a few miles northeast of the planning area. Another organization, the Ice Age Trail Alliance, is the non-profit partner that conserves, creates, maintains, and promotes the Ice Age Trail. Their staff and volunteers work closely with the City and other partners to advance the Ice Age Trail.

Recommendations

Land Use Concept

The land use concept for the Shady Wood neighborhood envisions an engaging residential community that provides a variety of housing options sensitively integrated with an open space conservation corridor encompassing the unique glacial features in the planning area.

The recommended open space conservation corridor will preserve and protect the unique natural features associated with the glacial moraine and provide an appropriate setting for the Ice Age National Scenic Trail, which was created to preserve features such as those found within the area so they can be experienced by future generations.

Other than parks and open space, most of the neighborhood is recommended for residential uses. Housing choices in the neighborhood will include a mix of single-family homes with a range of house and lot sizes, as well as duplexes, townhouses, and smaller-scale multi-family housing types. Another defining land use for the area is open space for stormwater management, which will address present day stormwater issues in addition to creating pedestrian connections through key parts of the neighborhood. To increase land use efficiency, a portion of the stormwater management areas are recommended for use as sports fields, which may occasionally be inundated with stormwater.

Recommended Land Use

The recommended land uses are shown in **Map 7: Land Use and Street Plan** and summarized below.

Table 3: Recommended Land Use (Excludes Phase A Development)

Recommended Land Use	Acres	Percent of Total
Housing Mix 1	13.2	3.0%
Housing Mix 2	63.0	14.5%
Housing Mix 3	11.5	2.6%
Parks	0.0	0.0%
Stormwater Management and Other Open Space*	272.8	62.9%
Street Rights-of-Way	73.9	17.0%
Total	434.4	100.0%

* Acreage for the Proposed Ice Age Trail Open Space includes the lands identified as most appropriate to preserve in order to protect significant glacial features, provide essential trail connectivity, and create a corridor width adequate to maintain a sense of relative seclusion and a natural environment along the trail. The recommended conservation area can include both public and privately-owned open space, and can include portions of lots that are otherwise developed. The exact alignment for the future trail and the extent and configuration of the associated open space corridor may differ to some degree from that illustrated in the Land Use and Street Plan.

Residential Uses

It is recommended that residential development areas include a variety of housing types to serve households of different sizes, ages, incomes, and lifestyles. Although the mix of housing types will vary in different parts of the neighborhood, it is intended that all housing developed within the neighborhood be

well-integrated into the community as a whole, and be located and designed to enhance neighborhood identity and encourage engagement and participation in neighborhood activities.

New development should be primarily oriented towards a well-connected network of public streets. Additional relatively higher-density development is adjacent to Woods Road and a focal stormwater management area, transitioning to smaller-scale attached housing and single-family development as it abuts existing dwelling units. The planned mix of housing types provides variety to the neighborhood.

Housing mix district recommendations are not equivalent to zoning district designations, and all developments are expected to provide a variety of housing choices. Specific locations for particular housing types will be identified during the review process as proposed development projects are brought forward for consideration and approval.

Existing residences located on larger Town properties are shown as red dots. The existing home sites located along and just west of the terminal moraine are characterized by significant natural features, including steep slopes, diverse topography, kettle ponds, extensive woodlands, and natural open areas that would be compromised by more intensive development. These properties are owned by Anwar, Jackson, Keryluk, and Tucker. As noted in the Park and Open Space recommendations, portions of some of these properties are recommended as potential components of the Ice Age Trail open space conservation corridor.

The large existing residential lots located along Woods Road and Mid-Town Road have greater potential for additional subdivision and more intensive development, although only a few of the owners have expressed interest in considering additional subdivision at this time. While these existing residential uses may continue, land use recommendations are made in the case that property owners would like to further develop or redevelop their property. Many of these lots are relatively narrow and very deep, with the house located near the front part of the lot. Because of this, it would be difficult to provide street access to the rear portions of the lots that would allow them to be further subdivided independently. Future additional development will likely need to be coordinated with development schedules on adjacent properties. The Land Use and Street Plan illustrates how future additional development in these areas could be integrated with the surrounding neighborhood, in the event these properties redevelop.

Housing Mix 1

There is an existing area of Housing Mix 1 at the southwest corner of the Mid-Town Road and Woods Road intersection. A second area of Housing Mix 1 is proposed on the Blake property, adjacent to the open space conservation corridor. Housing Mix 1 is recommended here to minimize the visual impact on the Ice Age Trail and conservation corridor planned for the area immediately to the south.

The predominant housing type in the Housing Mix 1 district is detached single-family housing on individual lots, but limited areas may be developed with other lower-density housing types such as duplexes or townhouses at appropriate locations.

Housing Types

- Single-family detached homes with a wide range of house and lot sizes
- Duplexes
- Four-units
- Rowhouses
- Townhouses
- Buildings up to two stories in height

Net Density Ranges

- Individual developments: 6-12 dwelling units per acre
- District average: 8 dwelling units per acre

It is specifically recommended that single-family housing developments include a range of house types and lot sizes. Duplexes, four-units, and townhouses provide higher-density housing options that can be appropriate at some limited locations. In general, larger groupings of these housing types should be located closer to the Housing Mix 2 district, where they will help provide a transition to the higher densities found in those areas. Individual duplexes or small groups of townhouses might be interlaced within areas primarily comprised of single-family homes, but careful site and building design is important in order to maintain compatibility and consistency with the character of surrounding development.

The recommended open space corridor for the Ice Age Trail is relatively narrow in some areas, including on the current Blake properties. Because of this, the lots on the Blake property that abut the Ice Age Trail corridor should include a minimum of a 25-foot wide landscape buffer. This landscape screening is intended to create a naturalized buffer between the Ice Age Trail corridor and future development.

Housing Mix 2

Housing Mix 2 is recommended for the majority of the developable area within the planning area. Generally, higher density development is located near to transit and amenities. Metro Transit Route 55 runs along Woods Road and the Ice Age Trail is planned to run from the southeast portion of the planning area to the northeast portion of the planning area. Given the topography in the majority of the planning area, Housing Mix 2 with its smaller form, is recommended over Housing Mix 3 to provide the density of development needed to support transit and take advantage of the nearby amenities. Where possible, buildings should front on streets, including collectors like Mid-Town Road.

Housing Mix 2 is a predominately single-family designation, however homes are often on smaller lots and there is a greater share of other housing types compatible with single-family homes including duplexes, four-units, townhouses, and small-scale apartment buildings.

Housing Types

- Single-family detached houses on smaller lots
- Duplexes
- Four-units
- Townhouses
- Small multi-family (8-16 units)
- Building lots generally provide front, side, and rear yards
- Buildings up to three stories in height

Net Density Ranges

- Individual developments: 12-20 dwelling units per net acre
- District average: 16 dwelling units per acre

Housing Mix 2 Districts are recommended at numerous locations. Higher-density development at these locations will give more residents the opportunity to live within convenient walking and biking distance to parks and open space and other nearby amenities.

Dwelling unit types in Housing Mix 2 District should be varied. Large areas of one housing unit type should be avoided. Detached single-family, duplexes, and four-units should generally be developed on relatively small lots consistent with the higher average density recommended for the category. Townhouses may be more predominant than in Residential Housing Mix 1 and could be developed along an entire block face, or mixed with multi-unit buildings or detached housing.

Housing Mix 3

To provide additional density to the planning area, limited areas of Housing Mix 3 are proposed along Woods Road and the northeast portion of the Dreger property, adjacent to the potential future sports fields.

These locations were chosen to minimize the visual impact on the open space conservation corridor and the future Ice Age Trail. Buildings should front on streets, including collector streets like Woods Road.

Housing types within the Housing Mix 3 District should consist of a mix of townhouses and multi-family buildings. Buildings will likely be larger and taller than in the Housing Mix 2 District, but should retain a neighborhood scale.

Housing Types

- Townhouses
- Apartment buildings
- Relatively larger buildings than those in Residential Housing Mix 2 district
- Limited side yards when buildings are located along standard streets
- Buildings may include front plazas or be grouped around courtyards to create defined common space
- Buildings generally 2 to 4 stories in height*

*Note: For Housing Mix 3 shown on the Dreger property, a maximum of 3 stories is recommended to reduce the visual impact on the Ice Age Trail and conservation corridor.

Net Density Ranges

- Individual development: 20-40 dwelling units per acre

Apartment buildings may be larger and closer together compared to those buildings in Housing Mix 2. Parking should be provided behind or beneath the buildings, minimizing its visual impact on the neighborhood. In this district, buildings will generally be two to four stories, but heights may vary depending on the context, size, and scale of surrounding developments. In general, an urban character of design and architecture is recommended. Multi-unit developments should include a mix of unit sizes, including larger two and three-bedroom units suitable for larger families.

Buildings should be oriented to and front on adjacent streets and be designed to help define and enhance the public realm along the street edge. The design of these developments should incorporate interior access drives and walkways that establish direct connections across the site in order to prevent isolated islands of development. Courtyards and other defined open spaces are potential methods of organizing buildings within these areas.

Estimated Amount of Residential Development

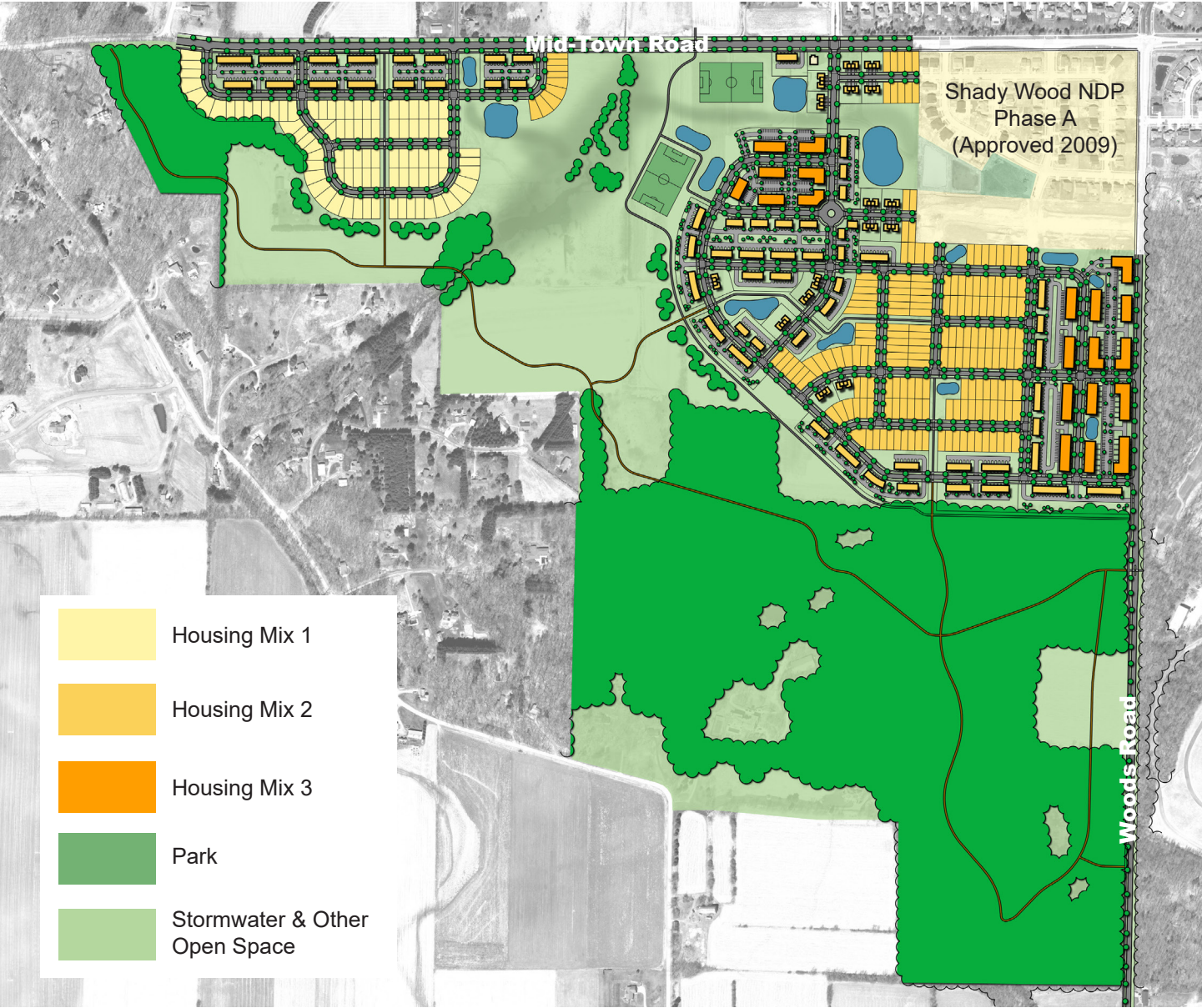
If all of the lands in the planning area recommended for additional residential development were built out, there would be an estimated total of 1,495 dwelling units in the neighborhood. The actual number of future dwelling units will depend on the amount of land developed with residential uses and the density of individual housing projects. See **Table 4**.

Table 4: Estimated Dwelling Units

Land Use	Existing Units	Acres Undeveloped	Density (Units/Acre)	Additional Units	Total Units
Housing Mix 1	99	13.2	8	106	205
Housing Mix 2	0	63.0	15	945	945
Housing Mix 3	0	11.5	30	345	345
Total	99	87.7	--	1,396	1,495

Figure 1 provides a graphical representation of how the residential neighborhood could develop over time. It shows arrangement of potential building types, stormwater pond locations, and how paths could provide connections to and within the neighborhood. Townhomes and duplexes are anticipated to serve as a transition between single-family home lots and the apartment buildings located near Woods Road and the potential sports fields. Note that Figure 1 does not represent a prediction or expectation of exactly how development will occur. It is merely an example that is generally consistent with the street network and land use recommendations shown in **Map 7: Land Use and Street Plan**.

Figure 1: Neighborhood Development Concept



Park and Open Space

The areas recommended for park and open spaces uses are designed to provide recreational opportunities for the neighborhood and the community, prevent urban development on unsuitable or fragile lands, and conserve and protect the unique glacial features in the planning area that still exist in a largely unspoiled natural state. Recommendations include a large open space conservation corridor that will provide a proper setting for a future extension of the Ice Age National Scenic Trail, and several athletic fields within areas designated for stormwater management that will provide convenient access to a variety of recreational opportunities. Other recommended open space areas encompass lands characterized by steep slopes, wetlands or floodplains, and planned locations for stormwater management facilities.

Parks

Given the close proximity to the proposed Ice Age Trail open space corridor and other nearby existing parks and open space, the Plan does not recommend any additional parks within the planning area. To make efficient use of land and meet stormwater management requirements, several proposed sports fields recommended adjacent to the planned Lower Badger Mill Creek stormwater management area. This location makes efficient use of land by serving as a dual-use for both stormwater management and recreational space for the neighborhood. The primary function is for stormwater management, so the fields may occasionally be inundated with stormwater. Future detailed park development planning will be needed to determine the exact configuration and facilities. Conceptually, the open playfields can be adapted for soccer, football, softball, ultimate Frisbee, and similar field sports.

Ice Age Trail Open Space Conservation Corridor

The Ice Age National Scenic Trail is a long-term program authorized by Congress to establish an educational and recreational hiking trail generally following the southern edges of the most recent glacial advance in Wisconsin. The Shady Wood planning area includes a relatively undisturbed segment of the glacial moraine, and the Plan recommends preservation of a wide open space corridor that encompasses many of the significant natural features that characterize a terminal moraine environment. The proposed open space conservation corridor is within the general Ice Age Trail corridor approved by the Wisconsin Department of Natural Resources in 1987 and included in the Dane County Parks and Open Space Plan, and is consistent with the open space corridor recommended in the Comprehensive Plan. The recommended open space corridor is intended to protect a unique natural environment for the enjoyment of future generations and provide an outstanding setting for the Ice Age Trail that will support both its recreational and educational objectives. The proposed conservation corridor will also help maintain wildlife habitat and provide additional groundwater protection by preserving the natural terrain.

This segment of the proposed Ice Age Trail corridor includes what is considered to be among the highest-quality natural glacial areas in Dane County. The Ice Age Trail open space conservation corridor recommended in the Plan includes the lands that are most critical to substantial preservation of the unique glacial features of the area and creation of a secluded natural setting for a future public trail that will not only provide linkages with other segments the Ice Age Trail, but also provide access for the public to enjoy and learn from these unique assets.

Open Space Conservation Corridor Design Parameters

The recommended open space conservation corridor illustrated in the Land Use and Street Plan is conceptual, rather than exact, and the extent and configuration of the corridor that is ultimately implemented may differ to some degree. Factors considered in defining the open space conservation corridor illustrated in the Land Use and Street Plan are described below.

- The corridor should seek to encompass and preserve a substantial portion of the lands that contain the unique natural features characteristic of a glacial moraine environment, including:
 - The steep, generally wooded, ridge along the southern edge of the moraine.

- The irregular “hummocky” topography north of the moraine ridge, also generally wooded.
- Glacial kettles and kettle ponds.
- Future development, including roadways, should not extend across the open space conservation corridor.
- The corridor should seek to encompass and preserve other natural environments along the general corridor alignment, such as remaining wooded areas and meadows.
- Cultivated farm fields and pastures are included in the corridor when less disturbed alternatives are unavailable. Agriculture is an open space use, but consideration should be given to restoring such lands to a more naturalized state at a future time.
- The corridor should provide sufficient width to create a sense of seclusion along the trail route to the extent possible, and a sense of privacy for developments adjacent to the corridor.
- The corridor should provide sufficient width to facilitate use of secondary ridgelines to help visually screen and buffer the trail route from adjacent development areas when possible.
- The corridor should provide opportunities to create an interesting trail alignment that reflects and respects the topography and provides the public with opportunities to view or access the unique glacial features within the corridor.

Key Features within the Conservation Corridor

The conceptual open space conservation corridor illustrated in the Land Use and Street Plan encompasses approximately 176 acres and includes the following features:

- An approximately 2,000 foot segment of the steep, wooded terminal moraine ridge.
- A high point along the moraine that can provide an overlook to the outwash plain.
- Approximately 129 acres of wooded land.
- Six kettle ponds or natural depressions.
- Richardson’s Cave.
- Approximately 33 acres of currently cultivated lands, meadows, and open fields.

Potential Open Space Conservation Corridor and Ice Age Trail Route

Implementation of the Ice Age Trail is viewed as a long-term undertaking. It may take years to acquire the land and access rights needed for a particular trail segment, and the actual route for the Trail will not be planned until the necessary lands or rights are secured. When access is available, trail designers walk the corridor to determine the best route, given the available options. Even after a trail segment is designed and built, the trail can be modified at a later time to incorporate any additional acquisitions or easements on adjacent areas. The recommended corridor and Ice Age Trail route illustrated in the Land Use and Street Plan is conceptual, but it reflects the design parameters discussed above.

Neighborhood Connections to the Ice Age Trail

The Land Use and Street Plan provides multiple opportunities for connections between future residential development areas and the future Ice Age Trail. **Maps 8 and 10** show recommended locations for proposed shared-use paths that would use stormwater greenways to connect the trail to the interior parts of the neighborhood. The appropriate number and location of access points to the Trail will be determined through future detailed planning as the Trail is established and development is reviewed.

Implementation of the Ice Age Trail and Open Space Corridor

Long-Term Approach

Given the scope of the Ice Age Trail project, the process of securing and preserving the Trail corridor and constructing the Trail could take many years. Because implementation is a long-term process, there is also flexibility in how and when the lands and access rights needed for the trail corridor are acquired, and when those acquisitions take effect.

Preservation Mechanisms

Preservation of lands within the recommended open space conservation corridor could be achieved through a variety of means. The goal is open space preservation, but this can occur on private as well as public land. While there are some advantages to public ownership, the entire recommended conservation area would not necessarily need to be publicly owned. Nor would public access to all the open space necessarily be required.

Preservation methods could include fee acquisition of title to the land; acquisition of conservation or scenic easements; and acquisition of access easements. Additional land may be acquired through land donations or through required dedications as part of land divisions. It is also possible to include conservation restrictions on portions of privately-owned properties as part of development approvals on other portions of those properties, and other mechanisms. Requirements to maintain a no-build zone on portions of a property or to maintain a landscaped buffer area are examples of this approach. Securing the proposed open space corridor might include approaches such as purchases that take effect after a period of time, purchase of long-term options, and similar techniques.

Implementation Entities and Funding

A significant amount of funding may be needed to implement the recommended corridor. There are several typical sources of funding for preservation efforts and any other potential funding sources will be sought. A review of the typical funding sources for activities within Dane County are outlined below:

- The National Park Service is charged with overseeing the country's National Parks and National Scenic Trails. They are able to receive funds from the Land and Water Conservation Fund for acquisitions and can make direct acquisitions for the trail.
- The Ice Age Trail is eligible for funding through the State of Wisconsin's Knowles-Nelson Stewardship Fund. The Stewardship Fund included \$32 million in annual funding for land conservation and outdoor recreation for 2021 - 2025. The Stewardship Fund has a 50 percent matching requirement that can be met from other public or private sources. Government agencies and non-profits may apply for these funds.
- The Ice Age Trail is eligible for funding through the Dane County Conservation Fund, which has been funded at between \$4 - 6 million in recent years. This Fund also has a 50 percent matching requirement. Government agencies and non-profits may apply for these funds.
- The Ice Age Trail Alliance (IATA) is a non-profit organization that helps protect, promote, build, and maintain the Ice Age Trail. IATA often applies to governmental agencies to receive funding for these activities, but also receives private contributions. IATA works with other nonprofit organizations to protect lands and has staff and volunteers that participate in trail development and management activities.

Transportation Recommendations

Transportation recommendations for the planning area include improvements to the existing roadways that serve as the primary routes to the neighborhood, an interconnected local street network, and pedestrian and bicycle facilities integrated with the planned regional bicycle system. See **Maps 9, 10, and 11**.

Arterial and Collector Roadways

Mid-Town Road currently serves as an arterial roadway east of Woods Road. This roadway is anticipated to carry regional as well as local traffic and will have the highest traffic volumes. To the west of Woods Road, Mid-Town Road is anticipated to serve as a collector. Woods Road is planned to serve as a collector roadway, primarily carrying traffic from the Shady Wood neighborhood and adjacent neighborhoods. See **Map 9**.

Mid-Town Road

Mid-Town Road is planned as a two-lane undivided roadway within a 66-foot right-of-way. It is envisioned to be classified as a Community Connector type of street under the City's Complete Green Streets framework. It would include a shared-use path along the south side of the road, a sidewalk on the north side, and terraces from the Woods Road intersection west to the future north/south greenway shared-use path. It would have a pedestrian median at the point where the future shared-used path comes through the greenway and crosses Mid-Town. On-street bicycle lanes would continue west of the greenway path to Meadow Road.

Woods Road

Woods Road is planned as primarily a two-lane undivided roadway with a right-of-way width of 66 feet. It is envisioned to fit under the Community Connector street typology from the Complete Green Streets framework. A median should be provided where the Ice Age Trail crosses Woods Road to provide a refuge for hikers crossing the road. Driveway access will generally be allowed along Woods Road. The design of future roadway improvements should be particularly sensitive to the woodlands and topography adjacent to the roadway.

The speed limit on Woods Road is currently 45 miles per hour. A speed limit reduction review is recommended on Woods Road for safety purposes, aligning with Vision Zero's goal to improve safety for everyone moving about the city. A study should be conducted and the speed limit determined by Madison Department of Transportation.

Local Streets

The proposed street layout illustrated in the Land Use and Street Plan is a "modified grid" pattern that provides a high degree of connectivity within the neighborhood. The street pattern is designed to accommodate factors such as topography, property ownerships, and solar orientation, while providing curves and bends that will help slow traffic and provide an engaging streetscape.

Typical Local Streets

The typical right-of-way width in a new residential subdivision is 60 feet with a pavement width of 32 feet. These dimensions can vary depending on the location and the type of development along the street. Local streets within the planning area will be designed under the guidelines for Neighborhood Streets in the Complete Green Streets framework.

It is recommended that narrower pavement widths and tighter corner radii be considered in all parts of the neighborhood, as this enhances the pedestrian scale of the neighborhood and helps encourage street-oriented development. The use of narrower streets also reduces the amount of impervious surface. However, it is recommended that street rights-of-way be at least 60 feet in width. This would provide wider terraces to support larger street trees and accommodate snow and leaf storage. It would also provide more opportunity to locate rain gardens in the terrace while still preserving space for street trees at adequate intervals.

Pedestrian and Bicycle Facilities

Pedestrian mobility in the planning area is encouraged by the interconnected "modified grid" street system, which provides multiple routes to most destinations. Marked bicycle lanes are recommended on the primary roads and off-street shared-use paths are integrated with planned regional bicycle facilities. Recommended pedestrian and bicycle facilities are shown in **Map 10** and described further below.

Marked Bicycle Lanes

Marked bicycle lanes are recommended on Mid-Town Road from Meadow Road to the existing bicycle lanes which will be classified as a collector roadway west of Woods Road.

Pedestrian-Bicycle Paths

Generally, all City of Madison streets will have public sidewalks and are designed to accommodate bicycle travel. Within the neighborhood, shared-use paths are recommended along greenways to provide more direct connections to open space, including the proposed Ice Age Trail and to the planned sports fields near Mid-Town Road. See **Map 10**.

An off-street shared-use path is planned along the south side of Mid-Town Road, intersecting with a proposed shared-use path along the west side of Woods Road. The Woods Road path will continue south and will intersect with a path running east/west along CTH PD. A shared-use path is expected to be built through future development to the north of CTH PD, connecting to Shady Oak Lane. From there a shared-use path is proposed to be built as part of the Madison Metropolitan Sewerage District interceptor project (described in the Sanitary Sewer Service section on page 16), which will be located along Lower Badger Mill Creek between Nor-Del Hill Road and Rolling Meadow Road. That path will run northeast through the greenway to connect to the northeastern portion of the planning area.

An off-street shared-use path will be built as part of the Lower Badger Mill Creek pond construction project. That future greenway path will run adjacent to the stormwater management facilities north of Mid-Town Rd and west of the Hawks Landing subdivision. On the northern end, it will connect to Soaring Sky Run just north of Hill Creek Park, as well as connect to a future planned off-street path that extends north to Valley View Road. Going south, it will cross Mid-Town Road at a location with a pedestrian refuge median before continuing south along the edge of the future sports fields and running along the western edge of the future residential neighborhood in the planning area before connecting to Woods Road.

Transit Service

The planning area is currently served by Metro Transit's commuter route 55, which provides limited service on weekdays during the morning and evening peak hours, operating between Epic's campus in Verona and the West Transfer Point facility on Tokay Boulevard at Whitney Way. In 2023, route 55 will provide service to and from a planned transfer point and future park & ride facility near the intersection of Junction Road and Watts Road. Ridership potential in the service area of route 55 is anticipated to remain relatively low until substantial additional development has occurred in the planning area. A transition from weekday commuter route service to regularly scheduled all-day bus service on a daily basis in the planning area is not likely to be a funding priority for the municipal jurisdictions involved for the foreseeable future.

Complementary paratransit service must be offered within $\frac{3}{4}$ mile of any non-commuter bus routes, during the hours of the service day when those routes are in operation. The current transit system and adopted route network plan have no non-commuter routes that would operate within $\frac{3}{4}$ of a mile of any part of the planning area. As such, no properties in the planning area would be eligible for paratransit service.

Supplemental school day service by Madison Metro vehicles may be provided to areas that are or become part of the Madison Metropolitan School District (MMSD) as they are developed with residential uses, per funding and transportation contracting determinations made by the MMSD. The southwestern portion of the neighborhood is anticipated to remain in the Verona Area School District, and any supplemental school day service would be subject to the decisions of the Verona Area School District.

Other public transportation options are offered in the planning area through the Dane County Department of Human Services Transportation Services. These services are primarily oriented to serve seniors and persons with disabilities, although employment, training, and low-income transportation services are also available.

Other Public Utilities and Services

Lands that are annexed to the City of Madison will be served by the full range of urban services including sanitary sewer and municipal water service. Properties in the Town of Verona will continue to receive Town or County services. Municipalities may also enter into inter-governmental agreements to provide urban services in the most efficient manner, regardless of jurisdiction.

Sanitary Sewer Service

Lower Badger Mill Creek Interceptor

The Mid-Town Lift Station was built along the north side of Mid-Town Road in 2009. Effluent from development in the Lower Badger Mill Creek watershed north of Mid-Town Road is pumped via this lift station eastward along Mid-Town where it reaches gravity-flow interceptors. When the Mid-Town Road lift station nears its capacity, Madison Metropolitan Sewerage District will build the Lower Badger Mill Creek Interceptor from the south from County Highway PD to relieve the station and provide gravity flow service for the Lower Badger Mill Creek watershed. The pace of development in the area served by the lift station will determine when construction of the Lower Badger Mill Creek Interceptor sewer is needed. Current estimates indicate that this may be around 2025. Local sewers connecting to the Lower Badger Mill Creek Interceptor will be built to serve new development areas. Local sewers are typically constructed within public streets and drainageways, and are built at the time of development. See **Map 12**.

Sewer Charges

All developing parcels can expect one or more charges from the Madison Sewer Utility for the privilege of connecting to public sanitary sewer. This charge can be in the form of an impact fee, direct or deferred assessment, or a simple connection charge. Certain parcels could reside in multiple fee districts. These charges represent a prorated share of the costs for the City to extend sewer service to the respective parcel. In addition, all development parcels will incur sewer area charges from the Madison Metropolitan Sewerage District for downstream facilities and treatment plant connection charges.

Public Water Service

Water Distribution System

The Madison Water Utility will provide public water service to the planning area through the extension of water mains within Pressure Zones 8 and 10, which cover lands on the far west side of Madison. The area is within two zones due to the large differences in elevation. Most of the planning area is within Pressure Zone 8. The highest elevations in the southeast corner of the planning area between the terminal moraine and Woods Road are within Pressure Zone 10. Currently, water mains are located along Mid-Town Road and along the streets in the Hawks Valley subdivision. As development occurs, larger water mains will be extended along the primary roads, with smaller water distribution mains constructed along local streets developed within the neighborhood. The Madison Water Utility will also seek to loop the larger mains to increase service reliability.

Stormwater Management

Lower Badger Mill Creek Watershed

The Lower Badger Mill Creek watershed encompasses an area on the far west side of Madison and extends south to the City of Verona. The watershed is tributary to the Upper Sugar River, which is a cold-water sport fishery, so the Lower Badger Mill Creek watershed is considered a cold-water community. Coldwater communities are subject to stormwater requirements for development that are more restrictive than the general standards that typically apply. Generally, these requirements include:

- Detention of the peak flows for at least the pre-development 200-year rain event.
- Infiltration of at least 90 percent of the pre-development infiltration volume.

- Development must meet the infiltration requirement to satisfy the requirements for thermal control of stormwater runoff. Otherwise, additional mechanisms to control the temperature of stormwater runoff must be implemented.
- Account for the existing 100-year unintended detention on the site.
- 100-year storm events cannot flood structures.
- 25-year storm events cannot flood streets.

Another important consideration for stormwater management in the planning area is the existence of Karst features, which are direct conduits to the groundwater. Richardson's Cave is a dramatic example. These features can influence stormwater management planning. Stormwater will be directed away from areas with known or potential Karst features and directed to areas that provide more reliable separation from the groundwater.

Lower Badger Mill Creek Stormwater Management Analyses

In 2021, the Lower Badger Mill Creek Watershed Study was completed. The study utilized the same methodology and approach from the watershed studies being conducted citywide. This study established the existing 100-year unintended detention in the watershed and is utilized as a planning tool to guide flood risk reduction requirements for new development and redevelopment. The recommendations in the study have been utilized in developing this Plan.

Computer modeling results of existing conditions from this watershed study were used to identify additional areas needed for stormwater management. **Map 13: Stormwater Inundation Model** indicates the anticipated flooding that would result from a 100-year storm, given the existing topography, amounts of impervious surface, and existing stormwater infrastructure such as culverts.

Land Use and Street Plan

The Land Use and Street Plan illustrates a basic framework of proposed stormwater management facilities within the planning area, including a large, open drainageway corridor along Lower Badger Mill Creek and stormwater detention facilities at several locations within the planned development areas. The facilities shown in the map are preliminary, but their locations and approximate sizes are based on an analysis of drainage patterns and the amount of land and potential future development within the many neighborhood sub-basins.

In locating the facilities, it is generally assumed about fifteen percent of areas shown for development will be required for stormwater management. If the development of several properties is coordinated, it may be possible to shift the locations of some of the required stormwater facilities among them. Detailed stormwater management planning and engineering for specific development projects may result in some modifications to these conceptual facilities, but it is expected that any revisions will be generally consistent with the framework recommended in the Land Use and Street Plan.

Lower Badger Mill Creek Drainageway

Lower Badger Mill Creek will be accommodated within a wide drainageway surrounded by land set aside for stormwater management. Improvements to the corridor will occur at the time the adjacent land is developed or earlier. Open drainageways provide environmental benefits, such as an increased opportunity for water to infiltrate back into the ground and a location for wildlife habitat and movement. It is recommended that this drainageway be maintained in a relatively natural, undeveloped state. To the extent compatible with stormwater management objectives and other intended uses of the corridor, natural groundcovers are encouraged as an alternative to mowed swales. Natural-appearing drainageways also provide additional visual open space amenity within the neighborhood.

Localized Infiltration Techniques

It is recommended that as the neighborhood develops, other techniques be incorporated into the devel-

opments that will promote stormwater infiltration closer to the source of the runoff. Facilities such as rain gardens and bioswales capture stormwater locally and infiltrate it into the ground, rather than directing it to a drainageway or storm sewer system. This can help reduce non-point source pollution and preserve groundwater resources.

These techniques could be incorporated into many different areas within the neighborhood. It is currently anticipated that features could be located on public property in the street terraces. They could also be located on private property in many different locations to serve individual lots or an entire block.

Development Phasing

Urban development in the planning area will occur incrementally over time. Two development-phasing areas are identified, including the existing Hawks Valley subdivision, which makes up the vast majority of Phasing Area A. The actual sequence of development will depend on property owner interest, any needed coordination with adjacent properties, the availability of utilities and other urban services, and market conditions. See **Map 12**.

Phasing Area B

The eastern portion of Phasing Area B comprises the Dreger property and the deep properties off Woods Road. This phasing area includes lands that are adjacent to the City and in close proximity to existing infrastructure to the north and east. Phasing Area B primarily consists of recommended residential land uses, along with dual-use stormwater management facilities and potential sports fields to serve residents of the immediate area, and the open space conservation corridor for the Ice Age Trail.

Sustainability

Madison has a long-standing commitment to protecting the natural environment. The Comprehensive Plan commits Madison to being a leader in stewardship of our land, air, and water resources, and identifies several strategies and actions related to sustainability. This section focuses on specific strategies, policies, and actions to accomplish the City's sustainability objectives. While some recommendations in this section can be achieved or directed by the City, many of these actions will require cooperation from future developers, builders, residents, and users of the neighborhood.

In the general planning of this area, Comprehensive Plan Land Use and Transportation chapter Strategy 6, which states that Madison should facilitate compact growth to reduce the development of farmland, is particularly important. Related actions pertinent to this Plan recommend the City continue to update plans to increase allowable development intensity and create density minimums and steer peripheral growth towards mapped priority areas, with a focus on land already served by utilities. This Plan also aims to advance the following strategies from the Green and Resilient chapter of the Comprehensive Plan:

1. Protect Madison's water supply and infrastructure to provide safe, clean drinking water.
2. Improve lake and stream water quality.
3. Increase the use and accessibility of energy efficiency upgrades and renewable energy.
4. Acquire parkland and upgrade park facilities to accommodate more diverse activities and gatherings.
5. Improve and preserve urban biodiversity through an interconnected greenway and habitat system.

Land Use and Transportation

This Plan seeks to increase trips via walking, bicycling, or transit by persons living in the area through the use of traditional neighborhood development, transit access, walkable environments, and bicycle facilities.

Primary benefits of these recommendations include decreased consumption of fossil fuels, decreased air pollution, and health benefits for residents.

Energy Generation, Consumption, and Efficiency

This Plan seeks to establish neighborhoods with reduced household consumption of fossil fuel-generated electricity and heat. Progress towards attaining these goals will be through the use of energy efficient construction, alternative energy sources, distributed on-site energy production, and conservation education and outreach. Further, all City agencies will work to identify ways of providing services to the planning area in the most energy efficient methods possible and seek partnerships with other entities for service delivery energy savings. Primary benefits of these efforts will include decreased consumption of fossil fuels and decreased emissions of air pollution and greenhouse gases.

Water Resources

The planning and future development of this area can address and support water resources through two primary methods: water use reduction and stormwater management and infiltration. By reducing per capita water use through the use of low-flow appliances and fixtures, rain barrels, and low-impact irrigation systems, impacts on the groundwater supply and surface water features can be minimized. Additionally, these methods can result in decreased need for additional wells and water distribution infrastructure, decreased energy consumption by the Madison Water Utility, and benefits to end users through reduced Water Utility bills.

Unregulated runoff from agriculture and urban sources contributes to pollution in local lakes and streams and poor management can cause a variety of flooding issues. Infiltrating a greater stormwater volume on or adjacent to points of generation through the use of rain gardens, green roofs, porous sidewalks and drives, or other on-site stormwater management practices can help address these issues. Achieving infiltration and stormwater management goals will require cooperation by several parties, including developers, builders, property owners, property managers, homeowners associations, and City staff. Primary benefits of these water use reduction and stormwater management and infiltration strategies include minimized impacts to the groundwater system and surface water features, a reduction of the amount of infrastructure needed for stormwater conveyance, and reduced flooding and erosion.

Groundwater quality adjacent to karst features is mostly controlled by surrounding land use. Research conducted in Dane County relating to karst features has shown that a reduction in agricultural land use along with the addition of stormwater management facilities and sewered development, as recommended in this Plan, will lead to water quality improvements, including decreased concentrations of nitrates and atrazine.¹

Land Resources

In order to ensure residents of the planning area will experience the benefits of a livable and healthy environment, the Plan recommends a model open space system that preserves significant natural features. Primary benefits of this commitment to land resources include improved urban biodiversity, interconnected greenway and habitat systems, a healthy and diverse urban tree canopy, parkland and park facilities that accommodate diverse uses, and local community food production.

1: Rayne, T. W., Bradbury, K. R., & Krause, J. J. (2019). Impacts of Rural Subdivision on Groundwater Quality: Results of Long-Term Monitoring. *Groundwater*, 57(2), 279–291.

Plan Implementation

This section of the Plan recommends the actions needed to prepare the neighborhood for development with the full range of urban services and ensure that future development is consistent with the recommendations of this Plan.

Neighborhood Development Plan Adoption

It is recommended that the Shady Wood Neighborhood Development Plan be adopted as a supplement to the Comprehensive Plan. It is also recommended that the Comprehensive Plan's Generalized Future Land Use Plan map be amended to reflect the land use recommendations in this Plan. See **Map 16**.

Central Urban Service Area Amendments

Most of the planning area is not currently within the Central Urban Service Area. In order for the City of Madison to provide public sanitary sewer and the full range of urban services to future development in the neighborhood, the lands proposed for development must first be included within an Urban Service Area. Following adoption of this Plan, the City will consider the appropriate time frame to make application to bring areas into the Central Urban Service Area.

City of Madison Annexations

It is generally recommended that future urban development on lands within the planning area occur only after the lands are annexed to the City of Madison and the full range of urban services can be provided at the time of development.

Zoning Map Amendments

It is recommended that the zoning classification of lands within the planning area conform to the land use recommendations of the adopted Shady Wood Neighborhood Development Plan. It is further recommended that lands be rezoned to another district only in conjunction with consideration of a specific subdivision and/or a specific development proposal sufficiently detailed to ensure that development within the district will be consistent with the Plan.

Land Subdivision Regulations

Properties in the planning area will need to be subdivided into smaller parcels before they can be developed with urban uses. As these lands are proposed for development, many of the Plan recommendations can be implemented through the review and approval of subdivision plats and application of the City of Madison's land subdivision regulations. In Madison, requests for approval of a land division are usually considered in conjunction with a request to rezone undeveloped property to allow urban development.

Future subdivisions in the planning area should conform to the recommendations in the adopted Plan, particularly regarding the locations of streets, off-street paths, and stormwater management facilities. Future subdivisions should provide building lots that facilitate development of the types of land uses recommended in the Plan. For higher density types of development, proposed subdivisions may also be required to provide information showing how the lots may be developed with building designs that maintain the desired street orientation and pedestrian-friendly street character. Local streets within proposed subdivisions should either generally conform to the pattern of local streets shown in the Plan, or similarly reflect the objectives illustrated in the Plan.

Interagency and Intergovernmental Cooperation

The Plan provides a framework for coordinating the activities of City of Madison agencies and other units of government in implementation. Many important elements of the Plan will require continued cooperation and coordination, including securing the recommended open space corridor for the Ice Age Trail.