

Comprehensive Plan 2040



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2040 COMPRHENSIVE PLAN GREENWOOD, MINNESOTA

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BACKGROUND, OVERVIEW, GOALS, POLICIES

Background

LOCATION

Greenwood is mainly a residential community located on the southeast area of Lake Minnetonka approximately 20 minutes west of Minneapolis, MN on State Hwy 7. The city of Excelsior is located to the southwest of Greenwood, the city of Deephaven is located to the north, and the city of Shorewood is located to the east.

HISTORY

With the Treaties of the Traverse des Sioux and Mendota concluding in the year 1851, the Dakota “Sioux” Indians ceded lands to the United States lying in Minnesota including the lands around Lake Minnetonka. In 1852, surveyor reports reached the east coast and caught the attention of promoters in New York. By 1853, a colony of settlers led by George M. Bertram, Charles Galpin, and Peter Gideon under the title “Excelsior Association Number 1” arrived at Excelsior Bay. In 1854, the village of Excelsior was platted. In 1856, there was an effort to establish a village on the north shore of St. Alban’s Bay, Lake Minnetonka. The name St. Alban’s was given to the community by the original settler whose wife came from St. Alban’s, England. A mill was established at the site but economics prevailed, the village of Excelsior grew, and village of St. Alban’s was abandoned. The name, however, carried on in its association with the bay which Greenwood largely surrounds.

By 1880, the Excelsior / Lake Minnetonka area was home to many resorts and summer cabins. At the turn of the twentieth century, developers were beginning to plat and sell lakeshore parcels, often in small sizes intended for cabins. Many of those lots continue to be of record today.

At the close of World War II, the Excelsior area grew increasingly attractive to those who wished to obtain lakeshore on Lake Minnetonka, but had the need for reasonable commuting distance to Minneapolis afforded by Hwy 7. Today, Greenwood provides highly desirable residential neighborhoods, many of which have lakeshore. The need for local control of neighborhoods was a principal motivator in the breakup of Excelsior Township in 1956, when Excelsior Township was divided into the cities of Excelsior, Greenwood, and Shorewood.

Comprised mostly of residential neighborhoods with a few commercial properties, the city of Greenwood expects that it will continue to focus its attention on providing a quality residential environment.

Overview

In conformance with the Metropolitan Land Planning Act, the city of Greenwood prepared a development guide plan in October 1972. Comprehensive plans for 2010, 2020, and 2030 also were prepared.

As required by the Metropolitan Land Planning Act, the city of Greenwood has updated its comprehensive plan for 2040. Little change has been made to this update of the comprehensive plan – mainly due to the fact that Greenwood is a small city that is almost fully developed. Therefore, no reference is made to development plans for housing and expansion.

As in past years, the philosophy of the city has been to share services with adjacent communities when possible, while retaining Greenwood’s own identity. Greenwood continues to cooperate with surrounding communities in order to minimize the cost of the services by contracting for services from adjacent communities or sharing in the cost of services whenever possible through common efforts. Cooperative efforts include:

1. Administration, public works, sewer, and zoning services provided by a contract with the city of Deephaven.
2. Building inspection services provided by a contract with the city of Minnetonka via Deephaven.
3. Fire protection provided through the Excelsior Fire District, which operates under a joint powers agreement between the cities of Greenwood, Deephaven, Excelsior, Shorewood, and Tonka Bay.
4. Police service provided by the South Lake Minnetonka Police Department (SLMPD) which, which operates under a joint powers agreement between the cities of Greenwood, Excelsior, Shorewood, and Tonka Bay.

The city also appoints representatives to serve on the boards of the Lake Minnetonka Conservation District and Lake Minnetonka Communications Commission and an ex-officio member of the St. Albans Bay Lake Improvement District.

The Greenwood comprehensive plan contains three primary sections – Land Use, Public Facilities, and Implementation. The following summarizes the three major elements of the comprehensive plan.

LAND USE SECTION SUMMARY

Greenwood's current and future land use will be addressed by focusing on the following issues:

Protection

This section describes how the city regulates the use and development of land and water in regard to:

- Natural watercourses
- Wetlands
- Lakes
- Slopes
- Woodlands

Land Use

This section includes an analysis of the existing and proposed locations, intensity, and extent of the use of land and water for residential, commercial, industrial, and other public and private purposes.

Housing

This section includes an analysis of opportunities to meet existing and projected local housing needs, including the availability of land for future development.

PUBLIC FACILITIES SECTION SUMMARY

The Public Facilities section considers the community's needs related to sanitary sewers, storm sewers, water, transportation, parks, and open space. It explores the character, location, timing, sequence, function, use, and capacity of existing and future public facilities. Specifically, it addresses existing and potential effects that projected growth and development may have on the following:

Public Utilities (Sanitary Sewer, Storm Sewer, and Water)

This section includes a description, designation, and scheduling of areas served or to be served by public sewer and water systems.

Transportation

This section includes a description, designation, and scheduling of the location, function, and capacity of existing and proposed local public and private transportation services and facilities.

Recreation, Parks, Trails, Open Space

This section includes a description, designation, and scheduling of improvements to existing and proposed parks and recreational open spaces within the city.

IMPLEMENTATION SECTION SUMMARY

Achieving the land use pattern and public facilities infrastructure addressed in the Land Use and Public Facilities sections of the plan requires the delineation of specific implementation techniques. The goals and policies offered in the planning framework will be realized if they are supported by the following:

Controls

A description of necessary ordinance modifications including a schedule for the preparation, adoption, and administration of such controls.

Capital Improvements Program

Addressing transportation, sewers and water, parks and open space facilities.

Housing Implementation Program

Controls designed to help implement the housing element of the land use plan.

Protection Goals / Policies

PROTECTION GOALS

1. To protect natural resources which serve vital functions in the city, such as drainage ways, wetlands, and other environmental features.
2. To preserve sites and structures of historical importance.

NATURAL WATERCOURSE POLICIES

1. Continue to implement city ordinances and partner with the Department of Natural Resources (DNR) and Minnehaha Creek Watershed District (MCWD) to protect natural drainage ways and watercourses from accelerated stormwater run-off or constriction in conjunction with the development, redevelopment, or expansion of housing and / or subdivision of land through use of restrictive easements, land-use regulation, and hard-surfacing regulations.

WETLAND POLICIES

1. Continue to implement city ordinances and partner with the DNR and MCWD to protect wetlands from alteration or encroachment by physical structures or development to preserve the essential role of wetlands in the hydrology and ecology of the community.
2. Continue to maintain an official city wetland map.
3. Continue to implement city ordinances to protect wetlands as part of public or private development or subdivisions.

LAKE POLICIES

1. Continue to implement the city's Shoreland Management District ordinance that meets or exceeds Department of Natural Resources shoreline standards to protect the shoreland from undue hardcover and specifically protect the shore impact zone from adverse consequences of development.
2. Continue to partner with Lake Minnetonka Conservation District, DNR, and MCWD for implementation of standards regarding stormwater runoff.
3. Continue to implement city stormwater management ordinances that meet or exceed state and watershed standards.
4. Encourage the maintenance of vegetation along the shorelines of Lake Minnetonka and encourage stabilization of the shoreline by individual property owners.

SLOPE POLICIES

1. Continue to implement city ordinances to ensure that slopes >30% that are susceptible to severe erosion are maintained in as natural state as possible with vegetative cover to minimize erosion problems.
2. Continue to implement city ordinances to ensure that slopes that are subject to moderate erosion (12-30%) are covered with vegetation to minimize erosion problems and require information regarding soil loss both during and after construction.
3. Continue to implement city ordinances to ensure that soil is left bare for the shortest time possible and techniques are employed to trap sediment.
4. Continue to implement the city's Shoreland Management District ordinance to ensure bluff setbacks are maintained and that slopes and other natural features are free of unnecessary erosion through the introduction of destabilizing development and / or loss of natural vegetation.

WOODLAND POLICIES

1. Continue to implement city ordinances for public or private construction to minimize the removal of trees, shrubs, and groundcover, with replanting occurring where removal is done.
2. Continue to implement city ordinances that require fencing to protect trees during construction.
3. Continue to implement city ordinances that require identification of existing trees, trees to be removed, and proposed plantings for subdivisions and construction projects.
4. Encourage tree preservation by enforcing the city's tree ordinance, which requires a tree inventory for subdivisions and construction projects, prevents clear-cutting of properties, and limits the removal of trees.

AGGREGATE RESOURCES POLICIES

1. There are no aggregate deposits of significant commercial potential in the city. Due to the fact the city is almost fully developed, there is no need to review the city ordinances to address aggregate mining.

HISTORIC SITES & STRUCTURES POLICIES

1. Continue to maintain the Greenwood portion of the Excelsior Cemetery through the agreement between the two cities.
2. Continue to work with the city of Excelsior to determine next steps for the St. Alban's Bay bridge and ensure compliance with Minnesota Department of Transportation Cultural Resources Unit and State Historic Preservation Office.
3. Continue to review places and structures that are not now "historic," but may eventually be considered historic in the future. If historic sites or structures are identified in the future, the city will take appropriate steps to ensure preservation.

Housing Goals / Policies

HOUSING GOALS

1. To have safe, healthy, and quality housing that preserves the natural character and environmental features of the City and avoids overdevelopment to provide an attractive environment for both Greenwood residents and the numerous visitors to our area of Lake Minnetonka.
2. To have a variety of housing ages and sizes to provide opportunities for ownership or rental for a variety of income levels.
3. To have a variety of housing choices including multiple housing and senior housing opportunities both within the city of Greenwood and within our neighboring communities.

HOUSING POLICIES

1. Continue to implement city ordinances to permit reasonable accommodations for the maintenance and modernization of the residential housing stock.
2. Continue to implement city ordinances to ensure safety and quality of rental properties.
3. Continue to allow, through reasonable accommodation, the maintenance and improvement of older homes consistent with city's variance procedures.
4. Consider the adoption of land use regulations that would provide flexibility in design and site planning that supports greater housing choices within the city.

Land Use Goals / Policies

LAND USE GOALS

1. To keep the character of residential neighborhoods.
2. To have commercial areas that are free of encroachments or undue impacts on adjacent residential areas.

LAND USE POLICIES

1. Continue to implement city ordinances that allow residential development on substandard size lots, which existed prior to the city's zoning ordinance.
2. Continue to implement city ordinances to maintain standards for residential properties regarding mass, setbacks, and hardcover.
3. Continue to implement city ordinances to maintain standards for commercial building regarding setbacks, hardcover, architectural design, landscaping, lighting, parking, access, buffering, signage, etc.

Recreation, Parks, Trails, Open Space Goals / Policies

RECREATION, PARKS, TRAILS, OPEN SPACE GOALS

1. To have parks, trails, and open spaces that conserve natural resources, protect environmentally sensitive areas, and fulfill the recreational needs of the citizens of Greenwood.

RECREATION, PARKS, TRAILS, OPEN SPACE POLICIES

1. Continue to maintain parks, trails, and open spaces which complement the development pattern of the city.
2. Continue to maintain open space areas that assist in the conservation and protection of ecologically sensitive areas.
3. Continue to encourage citizen participation in the planning and development of park, trail, and open space areas.
4. Continue to improve and upgrade parks, trails, and open spaces to keep pace with the changing needs of the community.

Solar & Wind Energy Goals

SOLAR / WIND ENERGY GOALS

To allow solar and wind energy systems that are compatible with the residential character of the city. Encourage the development of solar/wind energy facilities including solar/wind farms and solar/wind gardens located in appropriate settings.

GROSS AND ROOFTOP SOLAR RESOURCE CALCULATIONS

COMMUNITY	GROSS POTENTIAL (MWH/YR)	ROOFTOP POTENTIAL (MWH/YR)	GROSS GENERATION POTENTIAL (MWH/YR) ²	ROOFTOP GENERATION POTENTIAL (MWH/YR) ²
GREENWOOD	163,611	25,733	16,361	2,573

Source: Met Council

LAND USE

Existing Land Uses Inventory

The city of Greenwood is located within the Metropolitan Council (Met Council) defined urban service area. . It contains approximately 661 acres or 1.03 square miles including 427 acres or 65% open water and 234 land acres or 0.37 square miles. Of the 234 land acres, 144.5 acres are single-family residential, 1.2 acres are multi-family residential, and 8.5 acres are commercial.

The residential density in the city is 2.24 units per acre. If subdivision opportunities arise in the city, the city requires a minimum lot size of 15,000 sq ft – a density of 2.9 units per acre. The residential density per net acre is higher since the 2.24 units per acre includes road rights of way, wetlands and other undevelopable acres such as lakeshore setbacks and bluffs that are protected by local ordinances.

Of the existing acreage there are 7 wetlands that have been identified by the city and protected by wetland ordinances. They comprise approximately 8.2 acres independent of the waters of Lake Minnetonka. In addition, the shore impact zone (25 feet back from the ordinary high water mark) represents approximately 99 acres of the city. Flood plains are limited to land lying below 931.5 ASL; which is 2.1 feet above Lake Minnetonka's OHWL of 929.4 ASL. There are locations within the residential areas abutting Lake Minnetonka which have top of bluff or bottom of slope regulation requirements but no calculation is available as to total acreage of these areas.

The principal use of land within in the city is single-family residential. 70.1% of the city's land is devoted to single-family residential uses. 44% of the residences in the city of have lakeshore on Lake Minnetonka.

Currently there are two residential zoning districts: R-1 sets a 15,000 square foot lot minimum and R-2 sets a 20,000 square foot lot minimum. Overall, 86% of the land zoned single-family residential include lots that are 15,000 square feet or smaller lots. Within these zones, there are very few remaining properties to be developed or further subdivided. Properties will likely be improved through repair, renovation, or demolition and reconstruction. Multi-family residential is limited to a 17-unit apartment complex located on 1.2 acres in the R-1 district a grandfathered non-conforming use and a 20-unit condominium complex located on 2 acres in the C-2 district. The city recently made significant changes in the zoning ordinance to reduce the number of non-conforming properties within each residential zoning district. Neighborhoods and districts within Greenwood are quite small and dispersed among other neighborhoods and districts. The common attributes of lots within each neighborhood and its resulting development requirement is the lot size and geometry of each lot. As a result, the city reduced the number of residential zoning districts from four to two with varying setbacks, hardcover allowances, structure volume requirements based on a sliding scale tied to the lot size and geometry.

Properties large enough to subdivide are few and are not expected to give rise to any significant increase in the total number of single-family residential home sites within the city. The existence of very few properties with more than one acre of land severely limits the potential for the creation of multi-family residential developments in the city. This will likely cause those properties to remain single-family residential uses. In addition, the cost typically associated with purchasing and consolidating existing single-family residential properties is prohibitive.

Commercial properties within the city are divided into two zoning districts: The C-1 Office & Institutional District located in the southerly portion of the city along the northerly right-of-way of State Hwy 7 and the C-2 Lake Recreation District located on Solberg's Point near the St. Alban's Bay channel.

The permitted uses in the C-1 district include general offices, banks, cemeteries, and conditional uses such as food and dry goods retail, hotel, mortuary, music studios, photographic studios, day nurseries. The permitted uses in the C-2 district are marinas and general offices. C-2 conditional uses include retail uses that are marina or water related, multi-family housing, and restaurants.

The C-1 Office & Institutional District (3 acres) presently is host to a bank, chiropractic office, gas station / convenience store, motor vehicle licensing, and general office building. All of these properties are likely to continue to be used in a similar manner for the foreseeable future. These uses are compatible with the adjacent residential neighborhood across Excelsior Blvd on the south side of St. Alban's Bay, Lake Minnetonka. The city's ordinances have provisions that provide for buffering between the residential and commercial district to reduce the effects of noise, lighting, etc on the neighboring residential properties.

The uses presently in the C-2 Lake Recreation District include three marinas, a multi-family condominium development, and office buildings. Due to the amount of lakeshore these premises enjoy, their highest and best use is the delivery of lake-related services, entertainment, and higher density residential uses. Demand for such services and uses is strong. Given their value, it is in the interest of the citizens of Greenwood that these properties remain productive of tax revenue and not be removed from the tax rolls. As in the C-1 district, the city's ordinances have provisions that provide for buffering between the residential and commercial district to reduce the effects of noise, lighting, etc on the neighboring residential properties.

Multi-family residential development in the C-1 district may be impractical due to, poor soil conditions necessitating pilings for construction and a high water table that may limit underground parking. The multi-family residential development in the C-2 district complies with DNR Rules 6120 et seq, which typically limit density within the shoreland areas. This multi-family development reflects the market value of similar multi-family properties located on Lake Minnetonka.

There remains one additional commercial property of significance – the Old Log Theatre located in the R-1 district of the city. This theater is a legal nonconforming use that predates the city's ordinance code. The Old Log has been in operation since 1940 and blends well with its residential surroundings. While it is located on a 10+ acre site, a large portion of the site is wetland. The potential redevelopment of this property is dependent on the economic viability of the Old Log Theatre.

Regional Growth Policy

According to the Metropolitan Council's Regional Growth Strategy, Greenwood has been classified as a developed community within the Metropolitan Council's 2030 Regional Development Framework. This means that Greenwood will have a minor future impact on metropolitan systems such as transportation, sewers, and parks, principally due to the fact that the community will experience limited future growth. The city is not forecasted to experience any population or household growth.

The city is classified as a suburban community with no population or household growth projected by the Met Council.

As described in the Overview, the Land Use Section will contain three primary elements: Protection, Land Use, and Housing. These elements will describe the present and projected picture of Greenwood's overall land use.

Protection

This element of the Land Use section identifies and assesses some of the more critical environmental features and historic sites. Effective protection of these areas requires more than identification, it requires an understanding of their importance. Municipal planning has changed significantly in recent years, and one phase of local planning that has gained considerably more recognition is the preservation of what is often referred to as "sensitive lands" and historic sites. "Sensitive lands" include certain soil types, woodlands, floodplains, natural watercourses, wetlands, and steep slopes. The emphasis has been on developing standards that will allow these areas to perform their natural functions. The misuse of sensitive land can result in both destruction of private property and increased public cost related to construction of corrective measures. The topic of soils is not addressed in this plan since there are no environmental constraints on the soil on the few acres of remaining undeveloped land.

Historic sites are locations and / or structures with past significance or current uniqueness that demand their preservation as a part of community continuity and character. The failure to recognize and preserve historic sites can lead to a more sterile environment in which little identity can be found.

HISTORIC SITES & STRUCTURES

Historic Sites & Structures Inventory

The only "historic site" in the city is limited to a small portion of the Excelsior Cemetery located between Hwy 7 and Excelsior Blvd on the border of the cities of Greenwood and Excelsior. The cemetery dates from the settlement of the area in the 1850s. There are no other identified historic sites within the city.

In the 19th century, Greenwood was host to summer recreation hotels that were serviced by the railroad industry and supported by a network of streetcars and streetcar boats on Lake Minnetonka. No resorts remain within the city. Cabin sites that were platted at the turn of the century have largely been converted to locations for year-round, single-family residences. Most of these have been substantially rebuilt and / or demolished and rebuilt. Therefore, there are no identified buildings of architectural significance in the city. Places of interest but not considered historical are:

1. The Old Log Theatre, which has been operating since 1940, is recognized as a local treasure, but is not considered to be an historic site or historic structure.
2. The St. Alban's Bay bridge which is co-owned by the cities of Greenwood and Excelsior. The Minnesota Department of Transportation (MnDOT) lists the bridge as number 090608 and includes it on the Minnesota Historic Bridge Inventory as a bridge that is "eligible" to be historic. The bridge was built as a Works Progress Administration (WPA) project in 1941 under the sponsorship of the Hennepin County Board of Commissioners. The inventory document states, "With its curved fascia girders and rounded, stepped-back piers and railing posts, the bridge is a well-detailed example of the Art Deco Style as applied to bridges. The structure is eligible for the National Register for its architectural design." The city does not consider this structure to be worthy of inclusion as a historic structure but has determined that the Art Deco Style features will be maintained in future bridge repairs and will be included in new bridge construction as it occurs.

The August 2016 Bridge Report includes a sufficiency rating of 43.2. When a sufficiency rating falls below 50, a bridge is categorized as "structurally deficient," but this does not mean that the bridge should be closed for safety reasons, nor does it indicate structural failure. It is simply a categorization to determine funding eligibility for bridge replacement or rehabilitation projects. Follow-up inspections and reviews have indicated that the bridge is structurally sound but requires some repair on the aesthetic features of the bridge.

HISTORIC SITES & STRUCTURES PLAN

The city of Excelsior is will continue to maintain the Greenwood portion of the Excelsior Cemetery through the agreement between the two cities.

The city of Greenwood will continue to work with the city of Excelsior to determine next steps for the St. Alban's Bay bridge and will comply with Minnesota Department of Transportation Cultural Resources Unit and the State Historic Preservation Office requirements.

Places and structures that are not now "historic," may eventually be considered historic in the future. If historic sites or structures are identified in the future, the city will take appropriate steps to ensure preservation.

ENVIRONMENTAL FEATURES

The city ordinances protect environmental features during development of the remaining vacant land within the community and during potential future redevelopment.

Natural Watercourses Inventory

There are no significant watercourses within the city. There is general non-point drainage into the Lake Minnetonka basin that is then drained by way of Minnehaha Creek to the Mississippi River. The various marshes and wetlands within the city are drained by small streams and conduits to the waters of Lake Minnetonka and are otherwise illustrated on the wetlands map.

Natural Watercourses Plan

The city has an interest in ensuring that the natural drainage of existing upland wetlands are maintained and otherwise unobstructed. Restrictions on hard surfacing and limits on the right to expand properties within the Shoreland Management District contribute to the city's ability to control and maintain the natural drainage.

Preservation of natural watercourses is an essential part of any program to minimize public investment in storm sewers and improve the quality of stormwater runoff. However, the conservation efforts must extend beyond the streams and creeks themselves, and consideration must be given to the entire watershed, including wetlands, lakes, and ground water resources. Included in the attachments section of this comprehensive plan is the city's most recent Stormwater Management Plan that serves as a policy document and detailed plan to enhance overall water quality. The plan conforms to the guidelines established by the Minnehaha Creek Watershed District.

Wetlands Inventory

Wetlands are low-lying areas, which are normally covered with shallow or intermittent waters. Swamps, marshes, bogs, and other low-lying areas are all wetlands, and may occur as part of a river, stream, drainage way, or as a freestanding low area. Wetlands that provide desirable open space and wildlife habitat also provide a natural filtering system and storage basin to absorb and hold stormwater runoff. They also reduce soil erosion and flood potential.

Both the Minnesota and Federal governments heavily regulate wetlands. In Minnesota, agencies regulating wetlands include the Army Corps of Engineers, Board of Soil and Water Resources, Department of Natural Resources, watershed districts, and municipalities. In general, wetlands or wetland alterations exceeding a total area of 400 sq ft

are subject to a variety of regulations. In most urban areas, any alteration of wetlands must be replaced at an acre ratio of 2 to 1. As a matter of practice, the city of Greenwood rarely permits the alteration of wetland areas and reserves the right to permit such alterations on a case-by-case basis. Restrictions generally apply to all of the following wetland categories:

Type 1. Seasonally Flooded Basin or Forest: The soil is covered with water or is waterlogged during variable seasonal periods but usually is well-drained during much of the growing season.

Type 2. Inland Fresh Meadow: The soil is usually waterlogged within a few inches of water on the surface throughout the growing season.

Type 3. Inland Shallow Fresh Marshes: These principal production areas for waterfowl are often found bordering deep-water marshes, or as seep areas on irrigated lands.

Type 4. Inland Deep Fresh Marshes: 6 inches to 3 feet of water supporting water lilies, pond weeds, and attract ducks.

Type 5. Inland Fresh Open Water: Less than 10 feet of water may sustain permanent populations of fish and migratory waterfowl.

Type 6. Shrub Swamps: Waterlogged areas along sluggish streams and floodplains, supporting dogwood, willow, alders, and many forms of wildlife.

The city has designated seven wetlands of varying sizes. Total acreage of wetlands within the city is 8.2 acres. These are largely upland wetlands that ultimately drain to the waters of Lake Minnetonka.

Wetlands Plan

The city's zoning ordinance includes a wetland ordinance which prohibits the disturbance of designated wetlands within the city and requires an environmental protection plan in the event any manmade structure is proposed to be built within an existing wetland. Justification of such development is required and otherwise limited and restricted. The city is not required to allow the improvement of wetlands under its ordinances.

Lakes Inventory

The city of Greenwood largely surrounds St. Alban's Bay, Lake Minnetonka. It also abuts Excelsior Bay and lower Lake Minnetonka. This 14,000 acre lake on the western side of Minneapolis in Hennepin County is considered one of the finest inland navigation lakes in the United States.

Lakes are a source of concern when altered by surrounding development. High levels of precipitation can inundate abutting land, while adjacent streets and parking lots may produce runoff containing polluting substances. Thus, all discharge into and withdrawal from lakes should be carefully regulated and monitored.

Since Greenwood's character and unique value derive largely from its setting on the shores of Lake Minnetonka, the following specific concerns and issues are raised:

- Runoff from streets and parking lots introduce contaminants into lakes and drainage ways.
- There is the possibility of inundating abutting land areas with water during floods.
- Watercourses could be used for roads, driveways, and utilities without proper precautions.

The three agencies concerned with water quality in the Greenwood area are the Lake Minnetonka Conservation District, the Minnesota Department of Natural Resources, and the Minnehaha Creek Watershed District. These organizations and the standards and regulations are described below.

The Lake Minnetonka Conservation District (LMCD) has regulations regarding docks and policy statements regarding stormwater runoff and quality.

The Minnesota Department of Natural Resources (DNR) regulates shoreland throughout the state of Minnesota. Its lake protection classifications apply to Lake Minnetonka. Lake Minnetonka is classified as a General Development lake, which is the most densely developed, multiple use category of lake.

The Minnehaha Creek Watershed District (MCWD) has regulates many aspects of lake protection. Their jurisdiction in Greenwood includes policy statements and regulations concerning the following:

- Flood plains
- Stream and lake crossing
- Dredging in or dredging related to water areas
- Other work in beds and levels of water areas
- Municipal drainage plans
- Land use and soil characteristics
- Withdrawal of waters
- Placement of structures on lots riparian to public waters
- Erosion and sediment control

Lakes Plan

1. In 1993, the city adopted a Shoreland Management District ordinance which regulates development with 1000 feet of any of the classified lakes. The ordinance also contains lot size restrictions, setback provisions, and limits amounts of impervious hardcover. Greenwood's ordinance was approved by the DNR and is more restrictive than the DNR's standards.
2. The city has established harbor regulations intended to complement and supplement the LMCD and MCWD regulations and will continue to review those regulations with an eye towards ensuring the peaceful use of Lake Minnetonka's resources and otherwise ensure that the use of the lake is compatible with the residential character of the city as a whole.
3. The city will continue to partner with the MCWD to implement their regulations.
4. The city will continue to partner with the LMCD implement their regulations.

Woodlands Inventory

A woodland differs from a forest because of its smaller land area. Woodlands are the basis of much of what is "scenic" in landscape and function as windbreaks, water and air filters, and temperature moderators. Greenwood's woodlands cover a majority of the total land in the community and therefore contribute greatly to the character of the community.

While larger tracts of trees are sometimes protected by Federal and State preserves, significant amounts of woodland areas are subject to the potential threat of urban development. Other threats to woodlands that are more significant for Greenwood are disease and natural disaster. Communities have had some success controlling Dutch Elm Disease and Oak Wilt by developing effective management programs.

Woodlands Plan

Total preservation of woodlands or forests may not be desired or in the best public interest. However, a choice need not be made between total preservation or nothing at all. The city's care and attention to proper preservation and use of woodland areas include the following steps:

1. Continue to plant trees in public open space and right-of-ways and carefully monitor the cutting and trimming of trees on public property.
2. Maintain the natural state of the woodland area gifted to the city (Shuman Woods Park) and within Greenwood City Park.
3. Continue to implement ordinances such as the existing code section 1140.80 Tree Preservation Ordinance that mandate replacement planting, limit clear-cutting, and regulate the number of trees a property owner can remove on an annual basis.

Slopes Inventory

Regulating development on hillsides is a concern in the Lake Minnetonka area because of the varied topography. Slopes, if abused through ill-considered development practices, could be stripped of their natural protective functions. As people seek out choice residential sites and as some lots are further subdivided, there will be increasing pressure for hillside development. The slope, soil, vegetation, and underlying geological formation of the hillsides determine the stability and susceptibility of the soil to erosion. Removal of vegetation from slopes alters the soil stability and increases erosion and siltation. Although there are no severe soil stability problems in Greenwood, the city has established ordinances to avoid them in the future.

The city relies on its requirements of bluff setback and toe of bluff setback as well as excavation and clear-cutting limitations within the Shoreland Management District ordinance to control adverse impacts on slopes. These ordinances are effective since the entire city has been included in the designated Shoreland Management District.

Slopes Plan

In Greenwood, because of the presence of slopes and susceptibility of these areas to erosion, steep slopes are identified whenever a property is reviewed for subdivision or construction. Since poorly-designed or poorly-constructed structures on hillsides frequently result in a substantial cost to the public, slope regulations within the Shoreland Management District ordinance are necessary.

The city will continue to review its Shoreland Management District regulations and, as may be appropriate, expand the prohibitions on clear-cutting and / or excavation or disturbance of existing slopes and bluffs.

Slopes that are prone to severe erosion (30%) are protected as permanent open space. Slopes that are subject to moderate erosion (18% to 30%) can be developed if there is proper enforcement of appropriate standards. Preservation of erodible slopes is important, not only from an environmental and economic standpoint, but also for aesthetic reasons. The city's Shoreland Management District ordinance provides the following protections:

1. There shall be no alterations of slopes greater than 30%.
2. Structures are allowed on slopes that are susceptible to erosion only if proper precautions are observed.
3. Vegetative cover is to be preserved as much as possible to minimize erosion problems.
4. A permit is required for shoreline properties with banks that have a 12%+ slope.
5. Development controls should be adopted to minimize erosion and slippage.
6. Soil is to be exposed for the shortest possible time and sediment trapped during construction.
7. Shoreline protection and stabilization are the individual property owner's responsibility.

Land Use

INTRODUCTION

No significant changes are forecasted in the current land use of the city of Greenwood, which is already fully developed. Economic forces are expected to improve the maintenance of lakeshore and non-lakeshore properties.

There are no areas of blight. Consequently, the city has designated no areas for redevelopment. Present commercial areas, whether they be lake oriented in the C-2 Lake Recreation District or business oriented in the C-1 Office & Institutional District along Hwy 7, are most likely to continue in their present orientation and remain unchanged for the foreseeable future.

The future land use map sets forth anticipated course and intensity of future development within the city of Greenwood. The type of land use in the city will remain unchanged in the years 2020, 2030, and 2040. No significant future development is anticipated. It is anticipated that residential use will remain static for the reason there are very few lots large enough for future subdivision, and the use of lakeshore property for residential home sites is considered its highest and best economic use.

Adjacent non-lakeshore properties will have continuing high value as single-family residential home sites due to the availability of recreational opportunities in conjunction with Lake Minnetonka and the general quality of life. Commercial areas also will likely remain unchanged. The land in the C-2 Lake Recreation District, will most like continue to be devoted to servicing Lake Minnetonka boating – a demand which certainly will not fade. The land used within the C-1 Office & Institutional District will continue to attract small businesses due to relatively small lot sizes and the need to ensure that use of these properties minimizes the impact on adjacent residential areas.

5-YEAR STAGING

As noted above, the city does not anticipate any significant growth between now and 2040. This is in conformance with the Metropolitan Council's forecast of population, households, and employment opportunities in the city of Greenwood.

REDEVELOPMENT AREAS

There is one tax-forfeited 7,536 sq ft property in the city located at 21495 Minnetonka Blvd. There are no brown field sites, obsolete retail areas, or general areas of declining property values within the city. There are no locations near retail, transit, or other services that would be appropriate for senior or high-density housing in the future

NEW LAND TO URBAN SERVICE AREA

The entire city of Greenwood is within the current urban service area and no change will occur.

LAND USE MAP

There are minor differences between the existing land use map and the future land use map as the city is entirely within the urban service area and has very little vacant land. Because there are no major changes anticipated, there are no interim uses identified. Therefore, it is not necessary to create a local capital improvement program to stage local infrastructure development. The existing infrastructure is anticipated to serve the needs of the community as presently built. Given that the Metropolitan Council forecasts that the city population, households, and employment will remain static through the year 2040, public services and roads are expected to meet the needs of the population today and for the foreseeable future. There are no planned highway improvements. There are also no planned transit or sewer collector and treatment plant improvements to serve residential or commercial growth in Greenwood. As discussed in the Public Facilities section all planned improvements to Minnesota State Hwy 7 have been completed.

RESIDENTIAL DEVELOPMENT

The zoning map (attachment B) shows streets, city property / parks, office and institutional zoning district, lake recreation zoning district, and two residential zoning districts. The city council recently consolidated four residential zoning districts into one residential zoning district. The existing and future land use maps (attachments D & E) show streets, city property / parks, commercial, and residential areas. No major changes are anticipated through the year 2040.

COMMERCIAL AND INDUSTRIAL AREAS

Commercial properties within the city are divided into two zoning districts. The C-1 Office & Institutional District is located in the southerly portion of the city along the northerly right-of-way of State Hwy 7 and the C-2 Lake Recreation District is located on Solberg's Point near the St. Alban's Bay channel. The only other commercial property is the Old Log Theatre located in the R-1 Single-Family Residential district of the city. There are no other commercial areas within the city and no others are planned or anticipated. There are no industrial areas within the city and none are planned or anticipated.

COMMERCIAL DEVELOPMENT AND EMPLOYMENT FORECASTS

No new commercial developments are planned or anticipated. The city has no regulation on the maximum / minimum number of jobs required per acre, nor does the city have the ability to anticipate the number of jobs that existing commercial properties would host on a per acre basis apart from the forecast of the Metropolitan Council. Their forecast shows total employment for the city is expected to grow from 82 in the year 2010 to 130 in the year 2040. There is no information available as to whether these are part-time, full-time, or seasonal jobs. However, it is anticipated that most workers within the Lake Recreation District would be part-time or seasonal. Work in the service businesses along Minnesota Hwy 7 include part-time and full-time year-round positions. Jobs at the Old Log Theatre include short-term, part-time, and full-time positions.

The minimum lot area in the C-1 district is 20,000 sq ft and is 3 acres in the C-2 district. Lot coverage for both areas is not more than 30% hardcover to be occupied by buildings or other hard surfacing as dictated by the Shoreland Management District ordinance. 75% hardcover is allowed with a stormwater management plan approved by the city engineer. Front, side, and rear yard setback regulations define buildable lot area and otherwise confine the properties on Hwy 7 to a relatively small building envelope while the 50-foot lakeshore setbacks for the C-2 Lakeshore Recreation District restrict the expansion of buildings lakeward. These restrictions will limit total employment and growth of employment opportunities.

There are no rural areas in the city.

NON-HIGHWAY LINKAGES (TRAILS)

Indicated on the street and trail map are existing walking and biking corridors and trails maintained by the city and / or Three Rivers Parks District. These link the citizens of Greenwood to the cities of Excelsior, Deephaven, Shorewood, and beyond. The local road network is conducive to biking and walking to park facilities. Trails are further discussed under the Recreation, Parks, Trails, Open Space heading on page 23. Roads are further discussed under the Transportation heading on page 22.

BRIDGE PLAN

The city of Greenwood shares in the use of the St. Alban's Bay Bridge, located on Minnetonka Boulevard, with the city of Excelsior. The city will continue to monitor the condition of the bridge. The two cities will work together with the goal that monies from the federal, state, and county may be used to repair and / or replace the bridge when necessary. The bridge is further discussed on page 10 and page 23.

STAGING: FLEXIBILITY & OPTIONS

The city is not subject to staged growth.

HISTORIC SITES & STRUCTURES

Historic sites and structures are discussed under the Historic Sites & Structures heading on page 10.

Housing

INTRODUCTION

Because Greenwood is virtually fully developed, the mix of housing will not change significantly over the next two decades. At the most a few vacant lots will be developed and a few new single-family building sites will become available due to minor subdivisions of existing larger lots. As a result, the focus of the community's future housing efforts will be on maintenance, renovation, and demolition / reconstruction of the existing housing stock. This is accentuated by the low average turnover of Greenwood housing stock. The March 5, 2018 Sales Book from Hennepin County Assessor showed 14 single family and condo sales between October 1, 2016 and September 30, 2017. Thus only 14 out of 313 or 4.5% of single-family properties turned over in what was a busy sales year for Greenwood. The very low turnover of Greenwood properties works against any significant redevelopment in Greenwood. High property values with most properties already being in their typically current economic best use are also an impediment to redevelopment.

HOUSEHOLD CHARACTERISTICS

44% of the properties in the city are lakeshore properties which are often subject to renewal, redevelopment, remodeling, and rehabilitation. Off-lake properties are a significant portion of the available housing at 56%. The 2017 value of single-family properties ranged from \$123,000 to \$4,958,000 with a median home value of \$885,000. Georgetown Manor, which has 17 units, is the only multi-family rental apartment building in the city. The St. Alban's Bay Villas, which has 20 units, is the only multi-family condominium in the city. Because there is very little land available for subdivision, it is unlikely the city will see any changes in the relative number of affordable housing or an increase in multi-family housing.

Population and Household Developments

Since Greenwood almost fully developed city, there very little land to be developed. There is potential growth due to subdivision and development of a few vacant lots. Between 2000 and 2010, the city had a net gain of 5 households, a 1.8% increase. By 2040, the Metropolitan Council estimates that Greenwood will have 300 households, a 0% change from 2020 to 2040.

In addition, the total population for the city is forecasted to slightly decline. The 2010 census put the population of Greenwood at 688. The Metropolitan Council estimates the city's population will be than 680 in 2020, 670 in 2030, and 650 in 2040.

Population / Household Trends

	2000	2010	Change	% Change
Total Population	729	688	-41.0	-5.6%
Number of Households	285	290	5	1.8%
Persons per Household	2.6	2.4	-0.2	-7.4%
Number of Families	215	223	8	3.7%
Persons per Family	3.0	2.7	-0.3	-8.8%

Source: U.S. Census Bureau

Forecasts of Population, Households, and Employment

	2010	2020	2030	2040
Population	688	680	670	650
Households	290	300	300	300
Employment	82	110	120	130

Source: Met Council

2010 General Demographic Characteristics

Male	357	Median Household Income	\$130,417
Female	331	Average Commute	25.3 minutes
Median Age	49.8	Age 65 Years and Older	96

Source: U.S. Census Bureau

Existing Housing Assessment**Affordability**

Total No. of Housing Units	330
Units affordable to 30% AMI	9
Units affordable to 50% AMI	3
Units affordable to 80% AMI	20
Persons per Family	3.0

Unit Type

Ownership Units	289
Rental Units	41
Single Family Units	296
Multifamily Units	34
Other Units	0

Source: Met Council

Cost Burdened Households in 2016

Income at or below 30% AMI	3
Income 31% to 50% AMI	16
Income 51% to 80% AMI	20

Source: Met Council

Publicly Subsidized Units

All Publicly Subsidized Units	0
Publicly Subsidized Senior Units	0
Publicly Subsidized Units for People with Disabilities	0
Publicly Subsidized Units: All others	0

Source: Met Council

The above Met Council data shows a reasonable but not perfect match of housing affordability to household income. For example, 20 units are affordable to 51-80% AMI and there are 20 households with 51-80% AMI. Thus, to the extent that the city can maintain its existing housing mix there is a reasonable balance between housing costs and household income.

METROPOLITAN COUNCIL FORECASTS

Forecasts prepared by the Metropolitan Council predict that Greenwood will add zero households over the next 20 years. This projection could change if the property currently occupied by the Old Log Theatre is developed as housing. Since that property was recently sold in 2013 and continues to be operated as a theatre, it is unlikely that the Old Log property will be developed as housing. Without the development of the Old Log property, the only source of new housing growth will come from the development of the very few existing vacant lots and subdivisions of very few existing larger properties. Occasionally, adjoining lots are combined which reduces the number of households within the city.

FUTURE HOUSING DEMAND

A number of current trends are likely to impact future housing demand in the city of Greenwood and the Metropolitan Area. These trends include:

Life-Cycle Evolution

As people move through the different stages of life they develop different housing needs. This process is known as life-cycle housing. A young person getting out of school usually can't afford a home and begins by renting. As people grow older, they establish a family and buy their first home, typically either a townhome or a smaller home. As families grow and household income increases, they move up into a larger home. Once the children leave the house, many people downsize and move back to smaller homes or multi-family housing with less maintenance needs. Finally, as people reach retirement they may desire or need an assisted-living housing type. Greenwood accommodates many of the housing styles in the life-cycle evolution. The city has both a rental apartment building and older, smaller, relatively affordable homes including rental homes. The city has a large supply of move-up housing that are higher-value, single-family detached homes. The city also has condominiums for those who are looking to downsize to housing with less maintenance. There has been some market impact from second homeowners who are attracted to the Greenwood area and to a limited extent may be pushing out full time residents with the prices that they are willing to pay for homes.

The Baby Boom Generation

The baby boom generation was born between 1940 and 1960. This large population cohort is a driving force in the economy and is expected to continue to be so for at least the next 10 years. Their housing needs are changing as well. Those who are in the 40s age group are living in the largest home of the life-cycle chain and will be seeking to downsize in the next 10 to 20 years. Those residents who are in their 50s will be looking to downsize in the next 10 years. Those in their 60s are driving the demand for one-level living and senior housing today.

As the baby boom generation moves into the next cycle of housing, they leave behind the larger single-family homes. The population cohort that followed the baby boom era is much smaller. Now that the baby boomers have begun to downsize, regionally there will be an excess supply of larger single-family homes. Fortunately, amenities in and around Greenwood are expected to help sustain the demand for larger single-family homes despite an abundant regional supply of such housing. The city of Greenwood amended its zoning ordinance in fall 2018 to facilitate the improvement of smaller less than 10,000 square foot residential lots to make it simpler for homeowners to reinvest in Greenwood with modest sized houses based on clearer City hardcover and setback expectations.

Rental Housing

Development of rental housing has increased in the Twin Cities metro area in recent years with the primary emphasis being on upper scale apartment complexes and rental townhome developments. There has also been a recent increase in the development of smaller apartments with fewer amenities at more affordable price points as developers attempt to deliver more apartments that residents can afford. Forecasts at the Minnesota Multi Housing Association Perspectives 2018 indicated that the rental housing market will likely peak in 2020. It is anticipated that the then excess supply of upper scale housing will put downward pressure on the entire rental housing market as the new developments scramble to fill their buildings. While rental housing is a critical element of the housing marketplace, as noted previously the opportunities for new development in Greenwood are very limited since the city is fully developed with existing lot costs, configurations, and topography that typically do not lend themselves well to redevelopment as apartment buildings.

The current rental housing stock in the city of Greenwood does include an apartment building and a variety of single-family housing stock.

HOUSING PLAN

The city of Greenwood recognizes that the community will have a number of housing needs over the next 10 to 20 years. Since the city is almost fully built out and experiences very low average housing turnover, it is impossible to significantly change the current composition of housing stock within the boundaries of the city. Therefore, the city will continue to focus its housing development and other related efforts on the maintenance and rehabilitation of current housing stock to provide a variety in housing choices that will continue to serve much of the life-cycle housing and affordable housing needs.

Livable Communities Program

Greenwood currently does not participate in the Livable Communities Program. The city will continue to monitor the program and will periodically assess participation in the program. The city does provide information on financial resources and economic assistance that may be available through the County HRA or Minnesota Housing Finance Agency.

Housing Maintenance Code / Code Enforcement

The city currently enforces building and zoning codes as measures to require and encourage property maintenance. The city requires registration of rental properties (Greenwood code section 320.30) and enforces the International Property Maintenance Code (Greenwood code section 320.05) to ensure that the rental housing supply is maintained in good condition.

Rehabilitation / Renovation Programs

A number of programs are currently available for housing rehabilitation and renovation. As a community's housing stock ages, it is increasingly important to provide low to moderate income residents with the resources needed to be able to install a new roof, replace old windows, replace deteriorated siding, replace outdated mechanics, and other maintenance issues facing older homes. In addition to housing rehabilitation, many homes need renovation to meet the needs of changing household demographics. Older homes often fit the bill for first-time home buyers and this sometimes mean a transition from an elderly single person to a young family with children. Housing needs and tastes between these generations are different and can be accommodated through remodeling and renovation.

The size of Greenwood prohibits the city from participating directly in any redevelopment of properties within its boundaries. However, the city will refer interested parties to economic assistance programs available from the Minnesota Housing Finance Agency, Metropolitan Council, Minnesota Mortgage Program, Homeownership Assistance Fund, Purchase Plus Program, Minnesota Urban & Rural Homesteading Program, and other agencies or programs.

Affordable Housing

The Metropolitan Council has forecasted the affordable housing needs for all cities and townships within the Twin Cities Metropolitan Area for the period from 2021 to 2030. The city's share of this allocation is zero affordable housing units. Affordable housing is defined as housing affordable to households at or below 80% of the Area Median Income (AMI). According to the Metropolitan Council, in 2018, 80% of the AMI for the Twin Cities Metro Area equaled \$71,900 for a family of four. 30% or less of 80% AMI gross monthly income equals \$1,797 per month or less for a mortgage or rent. The Metropolitan Council 2016 Estimated Market Value data shows that 8 of 296 single family units are valued at \$243,500 or below. The city confirmed with the owner of the Georgetown Manor apartments that the 17 units range in rent from \$1,000 (1BR) to \$1,400 (3BR).

Infrastructure Improvements

An important part of maintaining strong neighborhoods and strong housing opportunities is maintaining quality infrastructure including streets, trails, and utilities. Old infrastructure that is poorly maintained shows a lack of investment into the community and subtly communicates a low expectation for upkeep of housing. Conversely the maintenance of city infrastructure encourages a high expectation for upkeep of housing. The city will continue to maintain quality streets, trails, and utilities throughout the community.

PUBLIC FACILITIES

Sanitary sewer, storm sewer, water, transportation, and parks comprise the major categories of public facilities addressed in this section. Since Greenwood is approaching full development, existing utilities (except water), roads, parks, and trails are accessible to all areas of the community. Therefore, city planning is oriented toward maintaining and improving existing facilities rather than planning for the accommodation of future growth.

Public Utilities

UTILITIES INVENTORY

Sanitary Sewer

1. Availability - The existing local system was constructed in the early 1970s and full service is available to the entire community.
2. Capacity – Sanitary sewer service to the city of Greenwood is supplied by the Metropolitan Council Environmental Services. Effluent from Greenwood is treated at the Blue Lake Waste Water Treatment Plant located in Shakopee. Since Greenwood is projected to add 0 households from 2020 through 2040, the current system has the capacity to accommodate the city's needs into the future.

Water Supply

1. Greenwood does not currently have a water tower or municipal water system.
2. Water is provided from private wells with the exception of two localized areas that receive municipal water from the city of Excelsior: (1) The St. Alban's Bay Villas and adjacent commercial properties; and (2) The residential and commercial properties along Excelsior Blvd from the Excelsior city boundary to Maple Heights Road.
3. There are no plans to extend municipal water to other areas of the city at this time.
4. The quality of private well water is generally acceptable except that it has a high iron content. If a well water issue arises, the city will work with the Minnesota Department of Health and Hennepin County to identify and seal wells in order to prevent contamination of groundwater resources.
5. The city will be a willing participant in state and local efforts to protect private water supplies and will continue to provide information, resources, and recommendations for residents on well maintenance and wellhead protection.

Storm Sewer

The city has a few small areas that have curb and gutter to direct water into drainage ways and wetland areas via storm sewers, but Greenwood does not have an overall storm sewer system. The city's stormwater drainage primarily is handled via overland flows that are collected in various drainage ways and wetland areas.

UTILITIES PLAN

Sanitary Sewer

1. Greenwood is completely sewered and all households, population and employment are service by the Blue Lake Wastewater Treatment Plant. Since the city is fully developed, the city does not need to consider any expansion or phasing of new facilities.
 - a. About 10% of the city is served via gravity sewers that discharge into Deephaven. The wastewater is comingled with Deephaven and other communities' wastewater and transported to MCES Lift Station L-48 via MCES interceptor 6-DH-545. About 90% of the wastewater is transported by City facilities to MCES Lift Station L-47. The flow to L-47 also includes wastewater flows from Excelsior and Shorewood.
2. The city of Greenwood has no record of any intercommunity service agreements between the cities of Excelsior, Deephaven, and Shorewood.
3. Projected sewer flows are expected to remain relatively stable since the sewered population is not anticipated to increase over the next 20 years and the expected increase in sewered households and employment over the same period will not change. The past and projected flows are as follows:

	2010	2020	2030	2040
Sewered Population	688	680	670	650
Total Households served	290	300	300	300
Sewered Employment served via L-48	0	0	0	0
Sewered Employment served via L-47	82	110	120	130
Total Sewered Employment	82	110	120	130
Average Annual Wastewater Flow (MGD) via L-48	0.006	0.006	0.006	0.006
Average Annual Wastewater Flow (MGD) via L-47	0.054	0.054	0.054	0.054
Total Average Annual Wastewater Flow (MGD)	0.06	0.064	0.066	0.068
Allowable Peak Hourly Flow (MGD) to L-48	0.024	0.024	0.024	0.024
Allowable Peak Hourly Flow (MGD) to L-47	0.216	2.216	0.216	0.216

4. The city acknowledges the issue of inflow and infiltration (I/I) into the city’s sanitary sewer system. The city has an active program of reducing I/I throughout its system. The bulk of the wastewater collection system has been internally inspected and sealed. The city has smoke tested the entire city. The city has reconstructed and raised manholes and lift stations to reduce the amount of I/I entering the system. The city conducted a self-reporting sump survey of the city.
 - a. The city enacted a sump pump inspection ordinance and will continue to participate in Metropolitan Area Grant Fund programs to undertake I/I projects to minimize I/I flow into the sanitary sewer system. See the Sump Pump ordinance (attachment K).
 - b. The I/I flows observed within the city’s system show little groundwater related infiltration as flows during record high lake (groundwater) levels showed insignificant changes in flows. Peak flows have been observed to correlate to intensive rainfall events. The city is currently reviewing flow hydrographs from peak intensity rainfall events and high groundwater events to determine the extent and location of potential I/I sources. These rainfalls related peak events have generated exceedances of the MCES’s action levels.
 - c. Analysis of the wastewater system is an ongoing process. The city has reduced the amount of infiltration in its system with the sealing of manholes and pipelines. Smoke testing did not identify any new I/I sources. Physical surveys have identified surface flooding that impacts lift stations and manholes that need to be raised, relocated or sealed. Two lift stations in water ponding areas have been raised. Current efforts are focused on manhole location and sealing.
 - d. The city understands that a significant amount of I/I sources are on private property. It is planning on conducting an on-site inspection of each household to determine the outlet of any groundwater sumps or other sources of rainfall related I/I.
 - i. The city was developed pre-1970s but the entire sewer system was installed in the mid-70s during the conversion of individual systems to a city-wide collection system. The housing stock is continually being remodeled and replaced. During those projects each house must be brought to current codes, which prohibit the connection of foundation drains and sump pumps to the sanitary sewer system.
 - ii. Those households that have sump pump or other rainfall related I/I sources will be required to relocate their discharges whenever the existence of these connections are identified.

Water

Most properties within the city of Greenwood receive water from private wells. Pollution of private wells has not been a major problem in Greenwood. Accordingly, the city intends to continue to rely on private wells for potable water for the foreseeable future and has no immediate plans to implement a municipal water system.

Storm Sewer

1. The city of Greenwood had adopted a comprehensive stormwater management plan in conformance with plans and policies adopted by the Minnehaha Creek Watershed District. The plan complies with the requirements of the watershed district as well as those of the Metropolitan Council.
2. The city also has adopted an ordinance that requires construction projects to maintain the same rate of runoff after development that existed in the pre-development or pre-redevelopment condition.

Transportation

THOROUGHFARES

The current roadway system has been established in Greenwood and due to the extent of existing development, major changes to the system are neither warranted nor would they be economically feasible. Higher traffic volumes and traffic congestion occur in one primary area: Minnesota Hwy 7. All roads within Greenwood are part of an overall system of functional classification. Minnesota Hwy 7 is a principal arterial and Minnetonka Boulevard is a collector. All remaining streets are classified as local streets.

The Metropolitan Council utilizes Traffic Assignment Zones (TAZ) to analyze the impacts of future growth on the metropolitan roadway system. Traffic assignment zones information are shown on the following table and attached map.

Greenwood TAZ Information

	TAZ	2010	2020	2030	2040
Population	625	688	680	670	650
Households	625	290	300	300	300
Employment	625	82	110	120	130

LOCAL TRANSPORTATION SYSTEMS

The southerly boundary of the city is the right-of-way of Minnesota State Hwy 7, a principal arterial metropolitan highway. This 4-lane limited access east / west highway services the western Twin City suburbs. It provides access directly to Minneapolis and the I-494 / I-694 ring interstate road system. There are no expansion plans for Hwy 7.

Public transportation is provided by Metro Transit bus routes 670 & 671 servicing the city of Excelsior from downtown Minneapolis by way of Minnetonka Boulevard or Excelsior Boulevard. The bus transportation provides peak period service for residents to commute to downtown Minneapolis and points en route. The city of Greenwood does not have park and ride lots or station facilities for transit passengers. There is no plan for development of such sites.

Greenwood is within the Transit Capital Levy District and included within Transit Market Area IV. Services for cities within Transit Market Area IV include peak express bus service, Transit Link (formerly Dial-A-Ride), and special needs transit service for ADA and seniors (Metro Mobility).

AVIATION & AIRPORTS

Aviation Inventory

Greenwood is approximately 20 miles from the Minneapolis / St. Paul International Airport which serves the metropolitan area. It is approximately 14 miles from Flying Cloud Airport, a regional airport in the city of Eden Prairie. There are no privately owned airports, airfields, or heliports within the city. There are no radio beacons or navigational aids related to aircraft operation and no existing or proposed water towers, television, radio towers, or structures which exceed 200 feet in height located in Greenwood. The Minnesota Department of Transportation has identified Lake Minnetonka as an area of seaplane operation. The FAA controls the designation of seaplane base lakes and all associated regulations.

Aviation Plan

There is no land suitable within Greenwood for uses relating to aircraft operation. The city will notify the FAA and the Minnesota Department of Transportation of any structure 200 feet above the ground that could affect navigable airspace, however the city's zoning code does not permit such structures.

TRAFFIC FLOW & CONGESTION

With the exception of Minnesota State Hwy 7, where traffic flow and congestion is managed by the Minnesota Department of Transportation, there are no traffic congestion problems in the city. Most streets are local and residential in character and are limited to local traffic. Through traffic is confined to Minnetonka Blvd which connects Greenwood with Excelsior at its southern boundary and Deephaven and Shorewood at its northern boundary. Excelsior Boulevard connects Shorewood to Excelsior through the city. Neither of these routes experience traffic congestion.

Minnesota State Hwy 7 has a current AADT of 39,000 and a 2040 forecast of AADT of 42,600. The only connection to the city is via a controlled intersection with Christmas Lake Road. That intersection provides access to Hwy 7 for local traffic generated in Greenwood, Excelsior, Chanhassen, and Shorewood. The intersection is Greenwood's only connection to Hwy 7.

BRIDGES

The city of Greenwood owns one half of the bridge on Minnetonka Boulevard with the city of Excelsior owning the other half. The bridge is currently in acceptable condition but needs cosmetic maintenance. The bridge is currently weight restricted. The weight restriction has not caused any problems with access or commercial traffic into the city of Greenwood.

STREET MAINTENANCE

Street maintenance is provided under contract with the city of Deephaven. They are responsible for repairing, plowing, and maintaining the street system. Larger street projects, such as mill and overlay projects, are awarded through a bid process.

PUBLIC SAFETY SERVICES

The South Lake Minnetonka Police Department (SLMPD) provides police services to the city of Greenwood. The SLMPD is operated under a joint powers agreement between the cities of Greenwood, Excelsior, Shorewood, and Tonka Bay. The SLMPD was established in 1973. The department functions with a high-level of efficiency and is well respected by the citizens it serves.

Fire protection is provided by the Excelsior Fire District which is operated under a joint powers agreement between the cities of Greenwood, Deephaven, Excelsior, Shorewood, and Tonka Bay.

Recreation, Parks, Trails, Open Space

This section serves as a guide for the city council in making decisions that impact recreational opportunities within the city. Greenwood is fortunate to have abundant natural resources. Mature trees, wetlands, and lakes provide the backdrop for recreational activities within the community.

Greenwood's overall goal for recreation, parks, trails, and open space is to preserve the existing natural setting, conserve natural resources, protect environmentally sensitive areas, and fulfill the needs of the people of the city.

RECREATION, PARKS, TRAILS, OPEN SPACE SUPPLY

The city of Greenwood does not have federal or state parks within its boundaries. The Lake Minnetonka Regional Trail, located on the western border of the city, is managed by Three Rivers Park District. The Greenwood section of this heavily used trail includes one of the most spectacular views of Lake Minnetonka and Big Island. City recreation, park, trail, and open space amenities include:

- **Greenwood Park** Located on Covington Street between Meadville Street and Fairview Street. Amenities include a tennis court, basketball court, playground equipment, picnic tables, and trail.
- **Shuman Woods Park** Located on St. Alban's Bay Road near the intersection with Minnetonka Blvd, this park is a natural woodland.
- **Minnetonka Blvd Trail** This asphalt trail is located along Minnetonka Blvd between Lodge Lane and Meadville Street.
- **Excelsior Blvd Trail** This asphalt trail connects with Excelsior's trail to the west and Shorewood's trail to the east.
- **Lake Minnetonka Amenities** The city offers four Lake Minnetonka amenities: (1) A city marina located on the north shore of St. Alban's Bay near Greenwood Circle includes 26 boat slips; (2) A boat launch located on

Meadville Street includes 2 sailboat slips, canoe racks, and a bench; (3) A passive overlook located on Meadville Street; and (4) A dock on the north shore of St. Alban's Bay near Curve Street.

According to the National Recreation & Park Association, cities that maintain less than 250 acres of park land have a median of 5 acres of park land per 1000 residents (.005 per person). The most current population estimate for Greenwood is 702 x .005 equals 3.51 acres. The combined acreage of Greenwood Park (1.57 acres) and Shuman Woods Park (2.65 acres) is 4.22 acres. Therefore, the city exceeds the national median for park acreage.

Utilizing population ratio standards is only one general measure of the adequacy of a community's park and recreation system. A comprehensive analysis also requires a review of the accessibility of recreational facilities. Various types of parks and recreation facilities have recommended service areas. Neighborhood parks have a typical service area of 1/2 mile. The service area for community parks is 1-2 miles. Since the entire city of Greenwood is less than 1/2 square mile, the park and trail system in the city serves the recreational needs of our residents.

RECREATION, PARKS, TRAILS, OPEN SPACE PLAN

Since Greenwood residents' recreational needs are served by the Lake Minnetonka Regional Trail and city amenities, there are no plans for adding new recreation, park, trail, or open space amenities. In accordance with state law, the city's designated park fund will continue to be used for acquisitions and improvements for the current park, trail, and open space amenities. Costs for maintenance of the city's park, trails, and open spaces will continue to be paid from the city's general fund. Costs for acquisitions, improvements, and maintenance of the city's marina and boat launch / sailboat slip / canoe rack area will continue to be paid from the city's marina fund.

Off-road bicycle facilities are provided on the Lake Minnetonka Regional Trail that parallels Minnetonka Boulevard and transects the city providing uninterrupted pathways to the cities of Excelsior, Shorewood and Deephaven. This route is a Tier 1 alignment on the Regional Bicycle Transportation Network. Excelsior Boulevard (or Highway 7) is designated as a Tier 2 corridor. Excelsior Boulevard was recently widened and improved including the addition of wide sidewalks along the Highway 7 side of the street. No on-road bicycle facilities exist or are planned. See the Street & Trail Map (attachment A).

Pedestrian needs are served by the Lake Minnetonka Regional Trail and by added sidewalks along Excelsior Boulevard that connect Shorewood to Excelsior. These facilities provide pedestrian access along scenic areas of the city. Local pedestrian traffic elsewhere is served by the street system in the city. The street system has many "traffic calming" features that were installed and maintained from the original street construction that preceded the existence of the city.

IMPLEMENTATION

The Greenwood comprehensive plan contains a collection of goals, policies, and standards designed to set a direction for the community over the next 10 to 20 years. Many communities prepare comprehensive plans to help address significant change. Since Greenwood is almost fully developed, major changes are not anticipated over the next couple of decades. The city does not have any additional capital improvements planned between 2019-2024 that would have potential to impact regional transportation, sewers, parks, water supply, and open space facilities. Rather, the focus of the city will be on maintaining quality residential and commercial properties and in enhancing the natural environment.

Comprehensive plan implementation in Greenwood includes administrative procedures, official controls, environmental protection, and a housing plan.

Administrative Procedures

As a regulatory entity, the city plays a major role in land development. Development decisions have a lasting effect on the image and identity of a community. Therefore, the city's policies, plans and ordinances reflect the collective vision of the community. In order to make the development process and application procedures more understandable to the general public, current procedures will be reviewed on an ongoing basis and revised where appropriate.

Official Controls

Greenwood's zoning, shoreland, and subdivision ordinances are the principal tools in implementing the policies outlined in the comprehensive plan. The zoning ordinance establishes minimum requirements and standards for the utilization of land and structures within the city. The existing zoning classifications are consistent with the land use plan of the comprehensive plan. There are no plans to change the official controls currently in place.

Environmental Protection

The image of a community is established by a number of factors. The strongest single element that shapes the form of Greenwood is the environment. Lake Minnetonka, wetlands, and mature trees are dominant natural elements. These elements are so strong that they overshadow the manmade components of the development pattern.

Because of the importance of Greenwood's natural environment, the city will need to continually monitor the adequacy and effectiveness of environmental protection ordinances. The city's Shoreland Management District provisions contain standards for shoreline development. At the state and national levels, wetland regulation has become more comprehensive in recent years. At the local level, Greenwood will continue to examine its current ordinances to ensure that environmental protection is adequately addressed.

Attached to this document is the City of Greenwood Surface Water Management Plan (SWMP) which meets the requirements of Minnesota Statute 103B.235 and Minnesota Rule 8410. The SWMP implementation plan can be found beginning on page 24 of the SWMP.

Housing

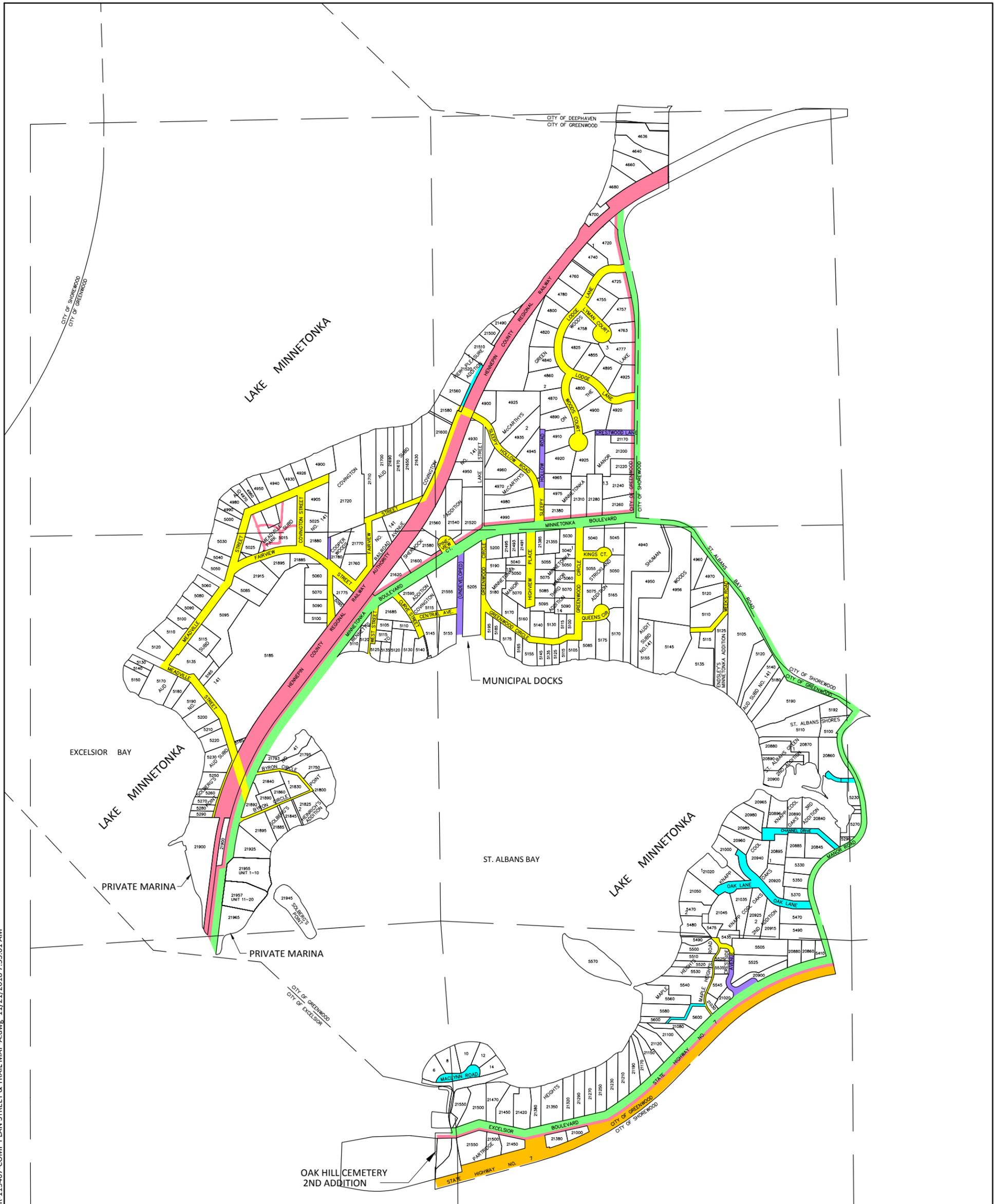
The city of Greenwood is at full development with very low average housing turnover. As a result, the city has virtually no opportunities for new housing development. The city is relatively small with limited financial resources (2019 General Fund revenues budget of \$777,463). The city has accordingly placed its focus on providing excellent core city services such as police, fire, roads, sewer, zoning, and stormwater management with minimal overhead that will give property owners the confidence to reinvest in their properties. Thus, excellent city services are the key tool in the city's housing plan. The second tool is the city's zoning ordinances. The city does not view these as set in stone. As noted previously, the city made significant changes to these ordinances in the fall of 2018 to provide better guidance and options for homeowners with smaller parcels. At a fundamental level, the city has worked hard to implement a zoning code that preserves the character and diversity of Greenwood. For example, the Building Volume ordinance in section 1140.18 of the code is designed to prevent the "mansionization" of Greenwood and help preserve the diversity of its housing stock. Section 1140.80 of the code provides strong and detailed tree preservation requirements. Sections 1140.17 and 1140.19 provide strict stormwater management and grading requirements. While home remodelers and builders sometimes complain that Greenwood has tougher requirements than other cities, the end result of these

ordinances is to make Greenwood an attractive place to live and in reinvest in for all residents. Based on Greenwood's low housing turnover, this approach to zoning appears to be working well.

The city will continue to require registration of rental properties and to proactively enforce the International Property Maintenance Code as noted above. Otherwise, the lack of sizable developable parcels and transit options will limit the potential for additional apartment development in Greenwood. Metropolitan Transit bus routes 670 and 671 that serve Greenwood currently only provide eastbound service for an hour on weekday mornings from roughly 6:20am to 7:30am and westbound service from roughly 5:00pm to 6:10pm on weekdays. If the Metropolitan Council elects to provide frequent scheduled bus service to Greenwood with connections to the Southwest LRT there could be future potential for apartment development on Highway 7 in Greenwood. However, the city's preference is to maintain its small commercial base in that area.

Land Use

Greenwood is a fully developed, well maintained community with very low housing and commercial turnover. Thus, Greenwood does not have any areas that are identified for new growth, development, or redevelopment. The city's small size provides very limited future options as do the 50-foot minimum setback for the lakeshore parcels that account for approximately 50% of the city's lots. Further, the topographical nuances of the city as well as the widely varied lakefront parcel configurations also severely limit the options for assembling parcels into larger developments to provide higher density housing. Greenwood "The City on the Lake" attracts many visitors to our area of Lake Minnetonka and the Old Log Theatre with its low-key charm, and extensive protections of our trees and natural resources. With the limited transit options, relatively fully-utilized sewer collector and Blue Lake wastewater plant, and increasing traffic and congestion on State Highway 7 there does not appear to be a regional need for Greenwood to increase development and redevelopment densities to 5 units per net acre. This is particularly the case since the only development / redevelopment opportunities in Greenwood that are currently anticipated involve the remodeling and teardown / replacement of individual single-family homes. However, to the extent that larger development opportunities present themselves, the city will proactively consider density options that meet or exceed 5 units per net acre.

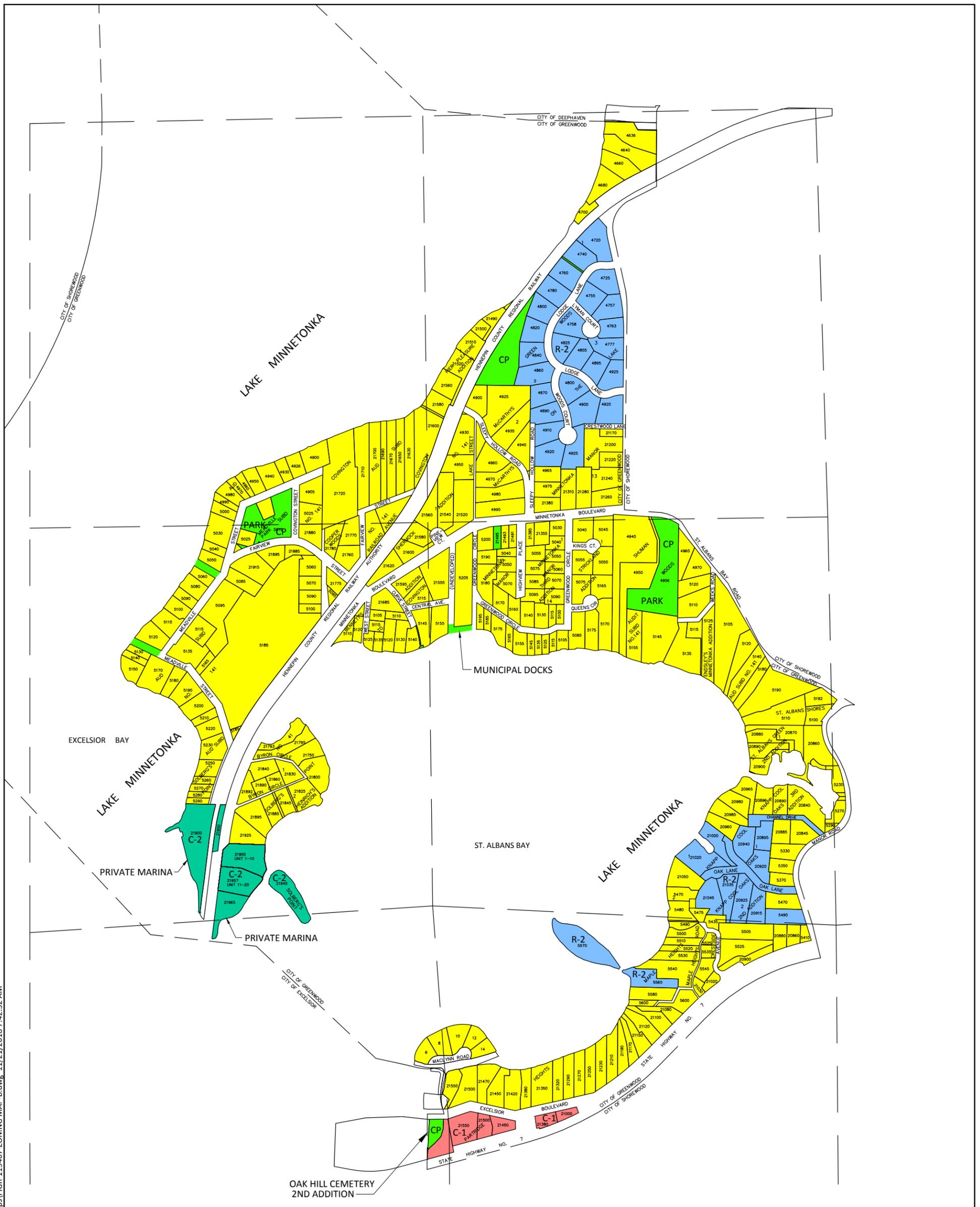


LEGEND

- PRINCIPAL ARTERIAL
- LOCAL COLLECTOR STREET
- LOCAL STREET
- PRIVATE STREET
- STREET NOT CONSTRUCTED
- TRAIL / WALKWAY



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LEGEND

- C-1 OFFICE & INSTITUTIONAL
- C-2 LAKE RECREATION
- R-1 SINGLE FAMILY
- R-2 SINGLE FAMILY
- CP CITY PROPERTY / PARKS



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GREENWOOD ZONING DISTRICT DESCRIPTIONS

R-1 SINGLE-FAMILY RESIDENTIAL DISTRICT

The intent of this district is to provide a use zone for single-family dwellings that will be exclusive of other types of use for the purpose of creating and preserving the residential character of the community, and also allow for the continuing operation of an established theater with attached restaurant in the manner it has been used historically heretofore and providing for possible enlargement of facilities and / or intensification of established uses by conditional use permit first obtained in a manner that is compatible with the surrounding residential community and provides flexibility to address changing business conditions. The minimum lot size is 15,000 sq ft. The minimum lot size is 15,000 sq ft.

R-2 SINGLE-FAMILY RESIDENTIAL DISTRICT

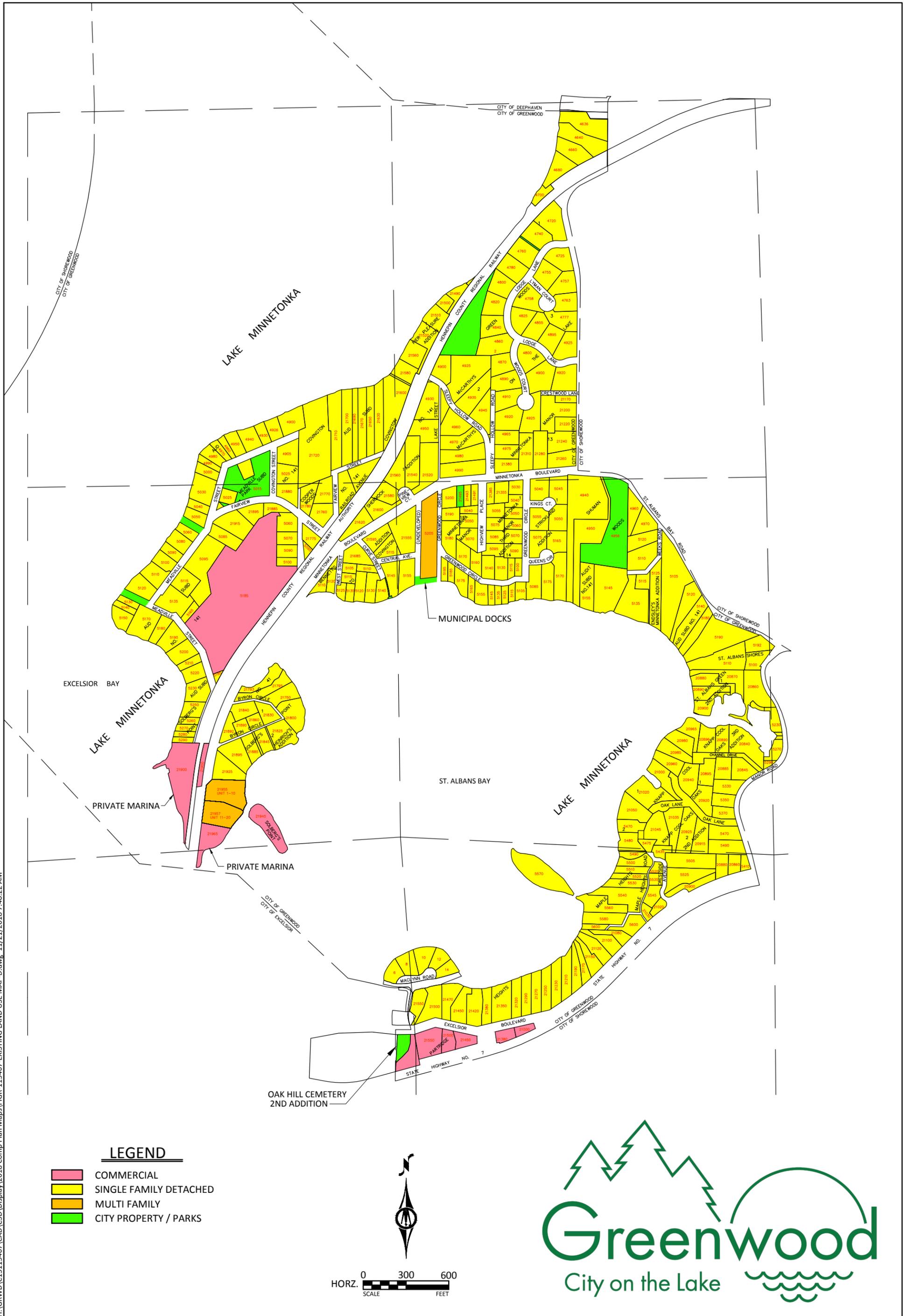
This district establishes a use zone for low-density, single-family dwellings. The minimum lot size is 20,000 sq ft.

C-1 OFFICE AND INSTITUTIONAL DISTRICT

The C-1 district is intended to provide a district that is related to and may reasonably adjoin other residential districts for the location and development of administrative office buildings and related office uses which are subject to more restrictive controls. The office uses allowed in this district are those in which there is limited contact with the public and no manufacture, exterior display or selling of merchandise to the general public.

C-2 LAKE RECREATION DISTRICT

The C-2 lake recreation district is intended to provide a district that will allow commercial activity to serve the recreational needs of residents in conjunction with lake activities and to otherwise permit as conditional use, general offices, retail uses, and multi-family residential uses that meet specific standards and which will otherwise prevent and buffer interference with residential areas.

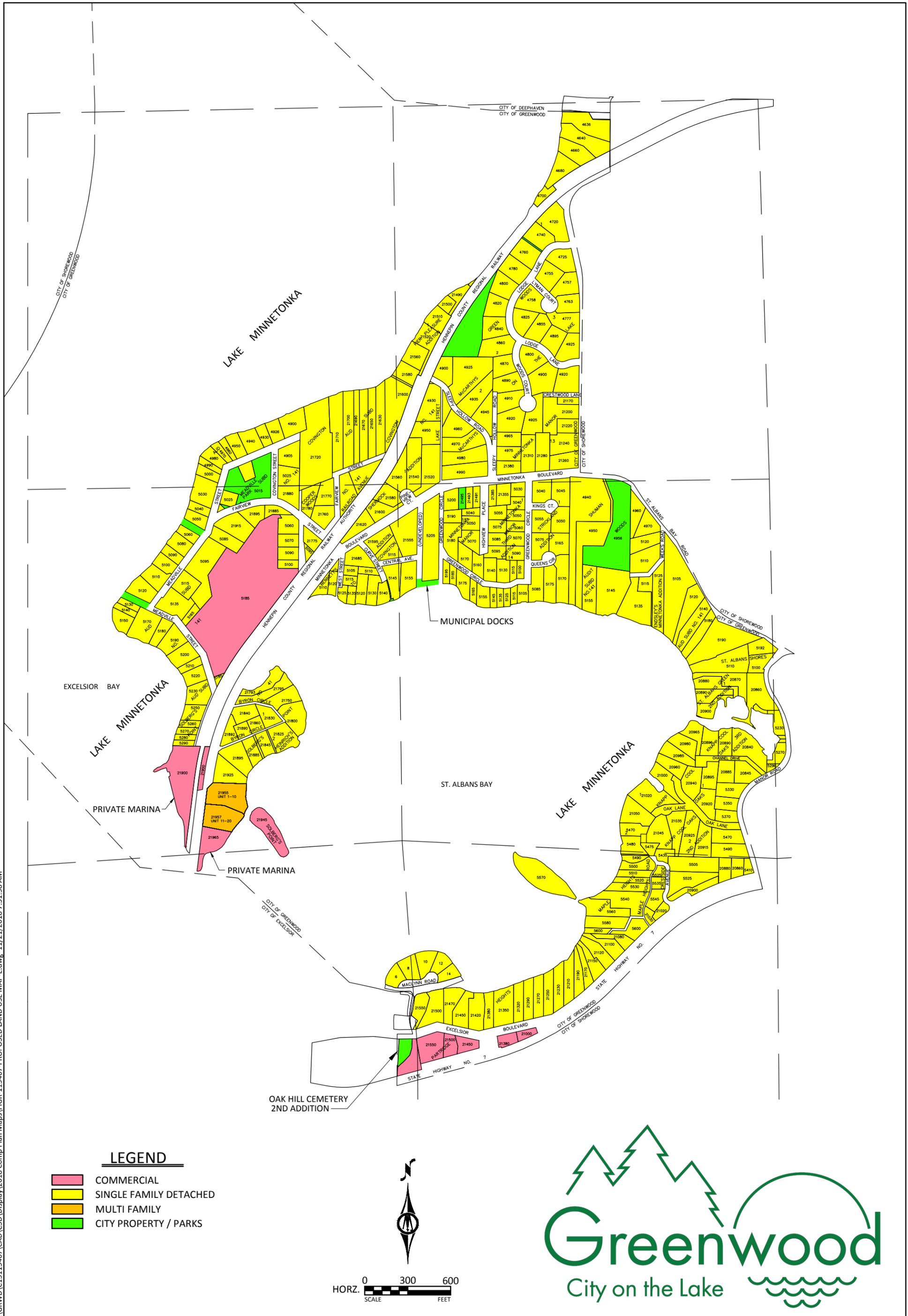


LEGEND

- COMMERCIAL
- SINGLE FAMILY DETACHED
- MULTI FAMILY
- CITY PROPERTY / PARKS



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LEGEND

-  COMMERCIAL
-  SINGLE FAMILY DETACHED
-  MULTI FAMILY
-  CITY PROPERTY / PARKS



GREENWOOD LAND USE TABLE

	Allowed Density Units / Acre		Existing (2020)	2025	2030	2035	2040	Change 2020- 2040
	Minimum	Maximum						
SEWERED AREA								
Residential	Minimum	Maximum	Acres	Acres	Acres	Acres	Acres	Acres
Single-Family Detached	2.8	2.8	144.5	144.5	144.5	144.5	144.5	0
Multi-Family	14.1	14.1	1.2	1.2	1.2	1.2	1.2	0
C / I Land Uses	Est. Employees / Acre		Acres	Acres	Acres	Acres	Acres	Acres
Commercial	21.7		8.5	8.5	8.5	8.5	8.5	0
Public / Semi-Public	Minimum	Maximum	Acres	Acres	Acres	Acres	Acres	Acres
City Property / Parks	–	–	6.02	6.02	6.02	6.02	6.02	0
Roadway Rights of Way	–	–	43.79	43.79	43.79	43.79	43.79	0
Regional Railway (Trail)	–	–	1.1	1.1	1.1	1.1	1.1	0
Subtotal Sewered	–	–	205.11	205.11	205.11	205.11	205.11	0
UNSEWERED AREA								
Residential	–	–	0	0	0	0	0	0
Commercial	–	–	0	0	0	0	0	0
Public / Semi-Public	–	–	0	0	0	0	0	0
Subtotal Unsewered	–	–	0	0	0	0	0	0
UNDEVELOPED								
Wetlands	–	–	8.2	8.2	8.2	8.2	8.2	0
Open Water Lake Minnetonka, Streams	–	–	406	406	406	406	406	0
TOTAL	–	–	619.31	619.31	619.31	619.31	619.31	0

Updated 04-16-18

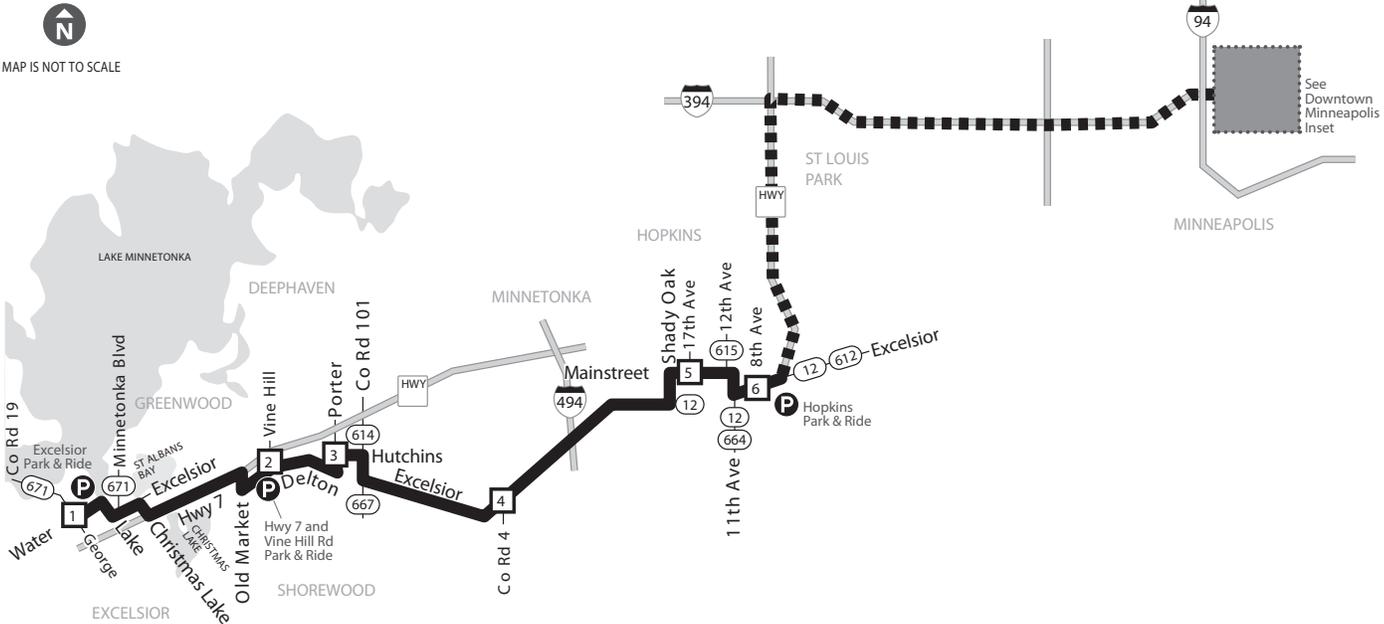
METRO TRANSIT ROUTES THAT SERVE GREENWOOD

670 Express Bus Route



metrotransit.org
612-373-3333

Effective 12/2/17

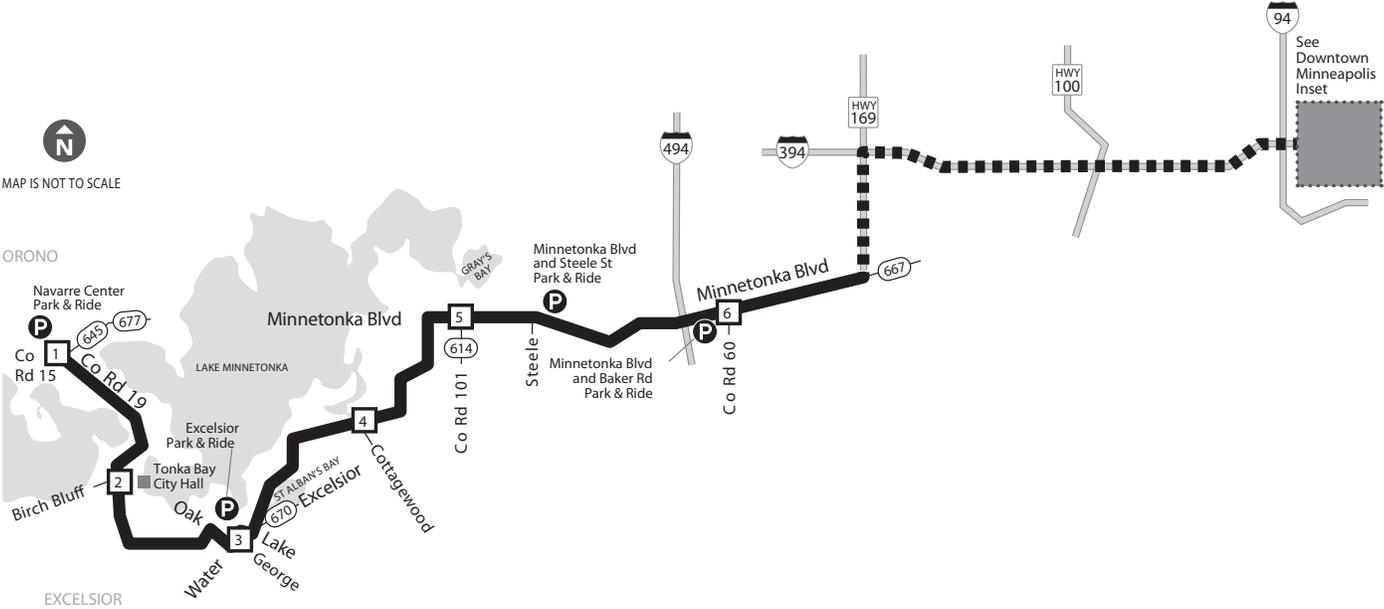


671 Express Bus Route



metrotransit.org
612-373-3333

Effective 12/2/17



GREENWOOD / MCWD COORDINATION PLAN

Background

Through its Water Management Plan (WMP/Plan) the Minnehaha Creek Watershed District (MCWD/District) has defined its role as a regional water planning agency and incorporates a subwatershed focus to address areas of significant resources needs with a level of complexity that requires sustained effort and coordination across multiple partners. Through sustained focus, the District is able to develop a thorough understanding of issues and drivers, build relationships, identify opportunities and coordinate plans and investments with its partners for maximum natural resource and community benefit. While operating on a subwatershed scale, focused within priority areas indicated in its WMP, the MCWD is remaining responsive to its communities District-wide by providing technical resources, regulatory coordination, and in some cases funding.

As the District implements its Watershed Management Plan it will be engaged in a continuing process of reviewing priorities and programming the commitment of technical resources and funds. The coordination plan is an opportunity for the City to develop a collaborative relationship that promotes opportunities to integrate land use and water planning to maximize goals and outcomes. Through the implementation of this coordination plan the District encourages the City to identify any known initiatives of collaboration and potential future priorities which would benefit from early coordination.

Coordination Plan

The City will meet with MCWD annually to coordinate plan elements (i.e. improvement projects, education opportunities, potential partnerships, etc.). Annual meetings will be coordinated to account for the City and MCWD budgeting schedules.

In addition to the annual meeting, the City will:

- Transmit the MS4 report to the MCWD annually.
- Notify the MCWD whenever the City proposes revisions to land use planning, infrastructure, park and recreation, and CIPs related to surface water management.
- Notify the MCWD regarding small area plans and other focused development or redevelopment actions.
- Coordinate with the MCWD regarding District permit applications, reviews, construction site inspections, and compliance with their rules for public projects.
- Require property owners to coordinate directly with the MCWD regarding District permit applications, reviews, construction site inspections, and compliance with their rules for projects on private property.
- Defer Wetland Conservation Act reviews and permitting to the MCWD according to law.
- Support the MCWD in the implementation of their rules.

The City has no projects or requests on the horizon that would trigger any of these activities. The City will coordinate with the MCWD should any project be identified in the future.

The city zoning administrator is responsible for communication and implementation of this coordination.

Comprehensive Plan 2040 Surface Water Management Plan



SURFACE WATER MANAGEMENT PLAN

For the

CITY OF GREENWOOD

Bolton & Menk, Inc.

November 2018

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.

11-27-2018
Date



Robert Bean, Jr
Minnesota Registration No. 40410

**CITY OF GREENWOOD
SURFACE WATER MANAGEMENT PLAN**

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1. EXECUTIVE SUMMARY

1.1. Introduction

The City of Greenwood has prepared this Surface Water Management Plan (SWMP) to provide the City and its residents with direction concerning the administration and implementation of surface water management activities within the community. The SWMP inventories city land and water resources and presents water management policies and goals that address known surface water-related problems and concerns about future development activities. The SWMP also addresses the requirements of the various regulatory agencies involved in surface water management.

1.2. Surface Water Management Plan Content

The City of Greenwood's SWMP has been developed to meet the needs of the community and address the management planning requirements of the Metropolitan Surface Water Management Act. The SWMP has been prepared in general accordance with Minnesota Rules Chapter 8410 and follows the plan outline identified in the rules. The following paragraphs identify the major sections of the SWMP and where information can be located in the plan document.

SECTION 1 – EXECUTIVE SUMMARY

This section presents an introduction for the local water management plan, a summary of City objectives, regulatory requirements included in the plans preparation, and a general overview of the plan contents. This section also summarizes strategic recommendations for consideration by the City in implementing the SWMP.

SECTION 2 – SURFACE WATER MANAGEMENT PLAN PURPOSE

This section outlines the purpose of this plan.

SECTION 3 – WATER RESOURCE MANAGEMENT RESPONSIBILITIES AND RELATED AGREEMENTS

This section identifies any surface water-related agreements between the city and adjacent communities, organizations or government agencies.

SECTION 4 – LAND AND WATER RESOURCE INVENTORY

This section categorizes a wide range of information under the subsections entitled Physical Environment, Human Environment, Surface Water System and Groundwater Resource Data. The subsections provide information and references regarding water resource and physical factors within the City of Greenwood including the following:

- Precipitation data for hydrologic/hydraulic review and design.
- Topographic, geologic and groundwater information.
- Surface soils information
- Unique features and scenic areas.
- Land use and public utility services.
- Water-based recreational areas and land ownership.
- Surface water, wetlands, flood studies and water quality data.
- Groundwater resource data

SECTION 5 – ESTABLISHMENT OF GOALS AND POLICIES

This section outlines goals and policies addressing water resource management needs of the City and their relationship with Regional, State, and Federal goals and programs. Goals and policies relating to the following issues are presented:

- Water quality
- Water quantity
- Erosion and sedimentation
- Wetlands
- Public ditch systems
- Groundwater
- Recreation and ecological integrity
- Education and Public Involvement
- Monitoring, enforcement and expertise
- Low impact development, natural area preservation and water resource protection
- Municipal Housekeeping

SECTION 6 – ASSESSMENT OF ISSUES AND CORRECTIVE ACTIONS

This section provides an assessment of existing or potential water resource related issues within the City. This section also describes potential structural, nonstructural and programmatic solutions to the identified problems. Assessments of the following issues are included:

- Excessive nutrient levels and MCWD phosphorus reduction
- Construction site erosion and sediment control
- Increase in runoff discharge rates from new and redevelopment

SECTION 7 – IMPLEMENTATION PRIORITIZATION & FINANCIAL CONSIDERATIONS

This section ranks the policy and corrective actions from Section 6 in an effort to associate a prioritization schedule with the items identified. The list is somewhat subjective and intended to be flexible with changing conditions and information.

SECTION 8 – AMENDMENT PROCEDURES

This section presents the expected longevity of the SWMP (to the year 2018) and the process for making amendments consistent with the MCWD Plan.

2. SURFACE WATER MANAGEMENT PLAN PURPOSE

This Surface Water Management Plan (SWMP) meets the requirements of Minnesota Statute 103B.235 and Minnesota Rule 8410. Minnesota Statute 103B.201 states that the purposes of the water management programs are to:

1. Protect, preserve, and use natural surface and groundwater storage and retention systems;
2. Minimize public capital expenditures needed to correct flooding and water quality problems;
3. Identify and plan for means to effectively protect and improve surface and groundwater quality;
4. Establish more uniform local policies and official controls for surface and groundwater management;
5. Prevent erosion of soil into surface water systems;
6. Promote groundwater recharge;
7. Protect and enhance fish and wildlife habitat and water recreational facilities; and
8. Secure the other benefits associated with the proper management of surface and groundwater.

The City of Greenwood is situated entirely within the Minnehaha Creek watershed, with its drainage ultimately being directed to Lake Minnetonka. **Figure 1** shows the City, adjacent communities and Lake Minnetonka. This SWMP is intended to meet the requirements, needs and directions of the following regulatory requirements:

1. Metropolitan Surface Water Management Act - Minnesota Statutes Chapter 103B.
2. Metropolitan Area Local Water Management - Minnesota Rules Chapter 8410.
3. Minnehaha Creek Watershed District – Watershed Management Plan, as well as related subwatershed Plans.

3. WATER RESOURCES MANAGEMENT RESPONSIBILITIES AND RELATED AGREEMENTS

The City of Greenwood is responsible for construction, maintenance, and other projects in or along the City's storm water management systems (i.e., ponds, pipes, channels, etc.). With regards to land disturbance and stormwater management, the City of Greenwood must comply with the Minnehaha Creek Watershed District (MCWD) Rules, NPDES General Stormwater Permit for Construction Activity, NPDES Permit for Municipal Separate Storm Sewer Systems (MS4), and the NPDES Multi-Sector General Permit for Industrial Activity.

Water Resource Agreements

- With MCWD regarding Wetland Conservation Act (WCA) Representative.
- With MCWD regarding land use or related project improvements permitting to meet District rules within City boundaries shall be performed by the District.

The regulations outlined in this plan do not supersede those put forth by MCWD or other Local, State, or Federal agencies. If a discrepancy exists between regulations contained in this plan and other agencies, the more restrictive requirement shall govern.

4. LAND AND WATER RESOURCE INVENTORY

4.1. Introduction

This section provides a generalized description and summary of factors affecting the water resources within the City of Greenwood. The subsections include Physical Environment, Human Environment, Surface Waters, and Groundwater. The Physical Environment subsection presents local information on precipitation, geology, topography, soils and unique features and the Human Environment subsection identifies local land use, public utility services and water based recreational areas. The Surface Waters subsection presents information on the City's drainage patterns, hydrologic systems, public waters and wetlands, floodplain areas and flood studies, shoreland management and water quality information, while the Groundwater subsection presents information pertaining to just that.

Much of the information contained within this section was compiled from available governmental sources. Whenever possible, the location of the information or additional resources have been identified or referenced.

4.2. Physical Environment

4.2.1. Location

The City of Greenwood occupies approximately 0.37 square miles in western Hennepin County, as shown in **Figure 1**. The city almost completely surrounds St. Albans Bay (minus the southwest corner) and the communities adjacent to Greenwood are the Cities of Deephaven, Shorewood and Excelsior. This city is entirely contained within the Watershed jurisdiction of the Minnehaha Creek Watershed District.

4.2.2. Climate and Precipitation

Greenwood has a Humid Continental Climate, typified by considerable seasonal temperature differences, hot and humid summers, and cold to extremely cold winters, and is located in USDA Plant Hardiness Zone 4b. Native vegetation has a seven month growing season (April to October) and crops have a five month growing season (May to September). Two-thirds of the precipitation occurs during the crop growing season, with a total of almost 31 inches annually. Refer to the links provided below for the 30 year average of temperature and precipitation data and the Point Precipitation Frequency Estimates provided by the National Oceanic and Atmospheric Administration (NOAA) Atlas 14 for estimated precipitation amounts for specific frequencies, durations, and locations.

<https://www.ncdc.noaa.gov/data-access/land-based-station-data/land-based-datasets/climate-normals/1981-2010-normals-data>

https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html?bkmrk=mn

4.2.3. Geology

The general geology of Hennepin County and the City of Greenwood has been compiled by the Minnesota Geological Survey in a document titled Geologic Atlas of Hennepin County Minnesota (N.H. Balaban, Editor, 1989). This document and its figures are readily available on the Hennepin County website.

The general surficial geology in the City consists primarily of Glacial Till deposits and is dominated by sandy-loam/loam with thin deposits of silty to gravelly stratified sediment.

Bedrock is generally at a depth of 100 to 200 feet throughout the City, consisting almost entirely of a thin layer of St. Peter Sandstone. The upper half to two-thirds of the sandstone is fine- to medium-grained, friable quartz sandstone. The lower part of the St. Peter Sandstone contains multicolored beds of mudstone, siltstone, and shale with very coarse sandstone interlaced. Below the Sandstone lies the Prairie Du Chien Group, a Dolostone of varying thickness, on top of the subsequent Jordan Sandstone and St. Lawrence and Franconian Formation layers.

4.2.4. Topography

The City of Greenwood consists of gently to steeply rolling hills with wetlands prevalent in the low-lying areas. The city is contained within the Minnehaha Creek Watershed, with the entire city discharging to Lake Minnetonka during an extreme event. Surface elevations range from 990 feet near the northeastern corner of St. Albans Bay to 930 feet at Lake Minnetonka.

4.2.5. Soils

The Natural Resource Conservation Service (formerly the Soil Conservation Service) prepared the Soil Survey for Hennepin County in 1974. This reference shows the location of specific soil types throughout the City of Greenwood and provides detailed data on the typical characteristics of each soil type (this information is readily viewable on the Hennepin County website).

The Lester Association occupies the majority of the City. These soils are loams and sandy loams with a Type B moderate infiltration capacity. Low/wetland areas consist largely of Houghton muck, which are Type D soils with poor infiltration capacity, also known as hydric soils. These soils, as well as the locations of soils of varying infiltration potential (known as hydraulic characteristic *Type*, with decreasing infiltration potential from Type A to Type D), are important for stormwater-related planning purposes (**Figure 2**).

4.2.6. Fish and Wildlife Habitat

The existence and health of habitat generally determines the abundance and diversity of fish and wildlife within the City. Three distinct habitats affecting wildlife are prairie, forest and water area. The MCWD Plan contains an overview of the various ground covers, forests, plant species, and water bodies within the watershed and city that provide habitat to the numerous types of terrestrial and aquatic animal species.

Due to the rolling terrain, woodlands, wetlands, and lakes within the City of Greenwood there are conditions well suited for diverse types of natural habitat and wildlife. Most of the City's wetlands, lakes and streams provide wildlife habitat to varying degrees; however, the urbanized character of the city has reduced the quantity and variety of natural wildlife.

The MDNR has prepared a Fish Population Assessment and fisheries lake survey for Lake Minnetonka (including Halsteds Bay, Priests Bay, Cooks Bay, Phelps Bay, Spring Park Bay, Harrison's Bay, West Arm, Black Lake, Seton Lake and Emerald Lake). The reports, management plans, and lake depth maps are available from the MDNR Fisheries Division and are available from the MDNR. The MDNR has not prepared any fish or wildlife management plans nor have they designated any waterfowl lakes within the City.

4.2.7. Unique Features and Scenic Areas

There are no locations within the City of Greenwood that have been identified by the MDNR Natural Heritage and Non-Game Research Program as having rare plant or animal species or other significant natural features relating to water resources (such as Outstanding Resource Value Waters).

4.2.8. Key Conservation Areas

The MCWD Lake Minnetonka Subwatershed Plan identifies no areas of high or exceptional wildlife or vegetative diversity denoted as “Key Conservation Areas.” No Key Conservation Areas have been identified within the City of Greenwood.

4.3. Human Environment

4.3.1. Land Use and Cover

The Existing Land Use and Future Land Use Maps are provided in Greenwood’s Comprehensive Plan (see Figures 1 and 12 in the Comprehensive Plan). Land cover consists of mostly urban development, with a few pockets of wetlands and forest. All land within Hennepin County was mapped using the Minnesota Land Cover Classification System (MLCCS). Refer to **Figure 3** for the portion of area in and around Greenwood. The MLCCS was developed by the Minnesota Department of Natural Resources (MnDNR), and categorizes all areas by type of land cover into two categories. Natural/Semi-natural areas consist of forests, grasslands, wetlands, etc, and Cultural areas consist of urban and agricultural areas. The two categories are further subdivided on the basis of plant types, soil hydrology, plant species, and amount of impervious surface. At this point the city has no goals or policies relating to these classifications. Additional information regarding land cover can be found in MCWD’s Watershed Management Plan.

4.3.2. Public Utilities Services

The City of Greenwood has municipal sanitary sewer available to the properties on the eastern side and is within the Metropolitan Urban Service Area (MUSA). Private wells are the primary source of drinking water throughout Greenwood.

The storm sewer system within the city is minimal, with only the occasional culvert assisting topographic drainage patterns preventing road overflow. Much of the rainfall runoff discharges into city wetlands, waterbodies, and lakes without prior treatment. However, Greenwood has adopted ordinances that require new and redevelopment projects to apply permanent stormwater practices that meet the requirements of the Watershed District and comply with NPDES permit requirements regarding sediment and erosion control practices. Additional information pertaining to the city’s drainage features are presented in the Surface Waters subsection of this SWMP.

4.3.3. Public Areas for Water Based Recreation

Lake Minnetonka is a regional water resource and has many recreational uses including fishing, swimming, water skiing, and boating. In the winter the lake is used for cross-country skiing, snowmobiling, and ice fishing. Lake Minnetonka has public access from a boat launch in Deephaven at Carson’s Bay. In addition, there are many public beaches on the lake in adjacent communities, as well as public locations for snowmobile access to the lake.

4.3.4. Potential Pollutant Sources

Potential environmental hazards within the City include known and potential sources of soil and groundwater contamination listed by the Minnesota Pollution Control Agency (MPCA) and wells.

Known and Potential Sources of Soil and Groundwater Contamination: The MPCA maintains a database of sites with known or potential soil and groundwater contamination, including Superfund candidate sites, contaminated soil treatment facilities, leak sites, petroleum brownfields, state assessment sites, and voluntary investigation and cleanup sites. The database contains sites that have already been investigated and cleaned up, sites currently enrolled in MPCA cleanup programs, and sites suspected of contamination but found to be clean after investigation. A complete listing of sources and interactive map is provided at the following link:

<https://www.pca.state.mn.us/data/contaminated-sites-data>

Wells: When properly installed, wells pose no threat for potential contamination of groundwater. However, if improperly installed or abandoned, wells can provide a conduit for pollutants to enter groundwater. The County maintains an Index of known wells, some of which have been properly abandoned and sealed. However, those still in operation or abandoned but not properly sealed may allow for contamination of aquifers.

4.4. Surface Waters

The following section provides a detailed description of the surface waters within Greenwood. No surface waters have been appropriated for City needs.

4.4.1. Public Waters and Wetlands

The MDNR currently lists multiple protected waters, wetlands and water courses within the City of Greenwood of 2.5 acres or larger. Minnesota Chapter 103G provides specific criteria for protected status and the MDNR Protected Waters and Wetlands (PWI) maps identify the protected waters. In addition to the MDNR PWI Maps, National Wetlands Inventory (NWI) Maps have been prepared by the U.S. Fish and Wildlife Service, and Mosquito Wetland Inventory Maps have been prepared by The Metropolitan Mosquito Control District. These maps are available at the following links. Table 4.4.1 indicates the protected waters.

https://www.dnr.state.mn.us/waters/watermgmt_section/pwi/maps.html

<https://www.fws.gov/wetlands/data/Mapper.html>

<https://www.mmcd.org/>

Table 4.4.1: DNR Protected Waters and Wetlands Inventory

Waterbody Name	MDNR I.D.	Surface Area (acres)	Maximum Depth (ft)	DNR Management Classification
Lake Minnetonka	27-0033	14,004	113	Recreational Development
Lake Minnetonka – St. Albans Bay	27-0033-04	N/A	N/A	Recreational Development

The Minnehaha Creek Watershed District has completed a Functional Assessment of Wetlands (FAW), which includes those within the City of Greenwood. The assessment identifies the locations of wetlands and provides a functional classification to all wetlands greater than ¼ acre in size. The categories are based on the function and value as determined in the field and include Preserve,

Manage 1, Manage 2 and Manage 3. These categories are used to assist in managing water resources and applying buffer standards. The City will utilize the wetlands assessment as part of the site plan review process for individual projects, as well as for “global” planning activities. The City relies on the District for administration of its wetland protection rule, as well as the WCA requirements. Refer to the following link for more information on MCWD’s FAW.

<http://www.minnehahacreek.org/41-integration-past-planning-efforts/412-functional-assessment-wetlands>

4.4.2. Flood Insurance Studies

The current Flood Insurance Study (FIS) applicable for the City is dated November 4, 2016. The FEMA Community Number for Greenwood is 270164 and the panel (#27053C0316E) is viewable on FEMA’s Map Service Center website. The FIRM identifies areas of the City as being within Zone AE, areas inundated during the 100-year flood event (1.0% chance of occurring any given year). The FIRM generally identifies flood levels but only the approximate extent of flooding since it is not based on accurate topography. The City currently uses the floodplain information to review development proposals based upon the extent of flood plains identified in the FIRM. For determination of specific flow rates and floodplain elevations, a detailed hydrologic/hydraulic analysis may be required utilizing survey-accurate topographic data. Refer to the following link for more information regarding the FEMA 100-year floodplain areas around the City.

<https://msc.fema.gov/portal/advanceSearch#>

4.4.3. Hydrologic/Hydraulic Analyses

The City of Greenwood has no significant storm sewer and only the occasional culvert for conveyance of rainfall runoff. The existing system generally operates adequately removing stormwater from City property and roadways; should any future issues arise, the City will revise the CIP portion of this document to incorporate corrective actions, as appropriate. The subwatershed areas and general drainage patterns within the City are shown on **Figure 4**. The identification numbers indicated were selected randomly and correspond to the modeling performed, as described below.

As part of the SWMP preparation, a limited hydrologic and hydraulic analysis was conducted for the subwatersheds of the city. This modeling utilized the HydroCAD modeling software, which is widely accepted in the field of water resources for hydrologic/hydraulic analysis of surface water systems to determine runoff from design events using the Soil Conservation Service (SCS) TR-20 methodology. It provides a technical planning tool to address risk, along with a mechanism to consider various stormwater-related alternatives. However, the results should not to be used for design-level detail. The analysis included subwatershed delineation from USGS topography, available 2’ aerial contours, and field reconnaissance. The analysis determined subwatershed areas, hydrologic conditions, and peak discharge rates for the 1-year, 10-year and 100-year, 24 hour storm events (Table 4.4.3.1).

Table 4.4.3.1 – Subwatershed Hydrologic Runoff Characteristics

I.D.	Area (acres)	CN	Tc (min)	1-Year (2.35") (cfs)	10-Year (4.2") (cfs)	100-Year (6.0") (cfs)
LW1	6.5	71	22	2.2	10.1	19.7
SAB1	127.5	72	28	40.5	177.8	343.3
SL1	37.7	75	22	19.4	70.9	129.8
SL2	26.4	75	18	15.4	55.8	101.7
SL3	37.9	72	24	13.4	58.5	112.3

Note: Precipitation depths based on Technical Paper 40 data.

The modeling done as part of this project primarily focused on runoff quantities based on land use and travel times. Many of the ponding areas (lakes, wetlands, etc.) have been modeled here and the results of the discharge from these ponding areas are indicated in the following table (landlocked ponds/wetlands result in no discharge).

Table 4.4.3.2 – Pond/Lake/Wetland Discharge

I.D.	Drainage Area (acres)	1-Year (2.35") (cfs)	10-Year (4.2") (cfs)	100-Year (6.0") (cfs)	1-Year Discharge Volume (ac-ft)	10-Year Discharge Volume (ac-ft)	100-Year Discharge Volume (ac-ft)	100-Year HWL (feet)
LWP	6.5	1.5	8.3	13.5	0.2	0.8	1.6	933.9
SL2P	26.4	2.4	6.6	14.9	2.3	5.0	8.3	929.7
SL3P	37.9	1.0	3.4	4.8	1.3	4.9	9.0	932.8

Note: Precipitation depths based on Technical Paper 40 data.

4.4.4. Flood Problem Areas

There are no known areas within the city that have historic flooding or surface water control problems. If problem areas are identified in the future, Section 6 of this plan will be revised to reflect such changes.

4.4.5. Surface Water Quality

4.4.5.1. Available Water Quality Data

MCWD monitors and collects water quality data in many of the lakes and streams in the District, and the data is publicly available through the Minnesota Pollution Control Agency's Lake and Stream Information Tool at the following link:

<https://cf.pca.state.mn.us/water/watershedweb/wdip/index.cfm>

4.4.5.2. Impaired Waters & TMDLs

The Federal Clean Water Act requires states to establish water quality standards, to test surface waters, and formally list those as "impaired" that do not meet the water quality standards.

Subsequent sections present more detail on the impaired waters program and its relationship to Greenwood's stormwater management program. A Total Maximum Daily Load (TMDL) study is the next step for an impaired water, although it can be delayed years after identification of the impairment. The TMDL study can result in very specific water quality obligations for Cities. Once the TMDL Study is accepted by the MPCA, an Implementation Plan must be developed, and MS4 Cities must develop an approach to meet the obligations identified in the TMDL Study. Currently no water bodies located partially or entirely with the City boundary are listed as impaired.

4.4.6. Shoreland and Flood Plain Ordinances

The City of Greenwood has prepared and adopted a shoreland ordinance in accordance with MDNR requirements to provide for the protection of shorelands of public waters during development. The City's Shoreland Management District is an overlay district applying to lands within 1,000 feet of the edge of a MDNR Protected Water. The District applies restrictions above and beyond the underlying zoning district of the affected property based on the classification of the protected water body. The water body/shoreland classifications determined by the MDNR are shown in Table 4.4.6.

Table 4.4.6: MDNR Waterbody/Shoreland Classification

<p><u>GENERAL DEVELOPMENT LAKES</u></p> <ul style="list-style-type: none"> • Lake Minnetonka <p><u>NATURAL ENVIRONMENT LAKES</u></p> <ul style="list-style-type: none"> • N/A

The Zoning Ordinance (Ordinance Section 1176) identifies allowable uses, lot areas, setbacks and impervious coverage limits for properties adjacent to the protected waters.

To maintain Greenwood's eligibility in the National Flood Insurance program and to minimize potential losses due to periodic flooding, the City has prepared and adopted a floodplain ordinance in accordance with MDNR requirements. The Flood Plain District is an overlay zoning district to existing land use regulations of the city. The ordinance adopts by reference the Flood Insurance Rate Map (FIRM) developed by the Federal Emergency Management Agency (FEMA) and identifies permitted uses, standards, and evaluation criteria for improvements proposed in floodplains. Refer to the following link for more information regarding the Shoreland Management District and Floodplain ordinances.

http://www.greenwoodmn.com/vertical/sites/%7BC372340D-A0B8-479D-A77A-7A2C96A5C421%7D/uploads/Chapter_11_Zoning_12-14-17.pdf

4.5. Groundwater

4.5.1. Groundwater Appropriations

The City of Greenwood does not have any groundwater appropriations as community drinking water is obtained from private wells; therefore, the City does not have a Wellhead Protection Plan.

5. ESTABLISHMENT OF GOALS AND POLICIES

The City of Greenwood has developed the goals and policies contained in this section to conform to the water resource purposes specified in Minnesota Statute Section 103B.201 (see Section 2). They have been developed to avoid conflict with existing State, Regional, and County goals and policies, and to be generally consistent with the MCWD Plan. The City will regulate erosion control, floodplain alteration, and stormwater management for all land development within the City limits in accordance with City Ordinance and NPDES Permitting. The City relies on the Watershed to administer and enforce its Rules and the wetland requirements of the WCA.

Additionally, the City's MS4 Storm Water Pollution Prevention Plan (SWPPP) contains information related to the required Best Management Practices (BMPs) and how the City intends to meet the overall goals of the SWPPP, which are directly related to the goals and policies listed here.

The goals and policies developed by the City address:

- Water quality,
- Water quantity,
- Erosion and sediment control,
- Wetlands,
- Public ditch systems,
- Groundwater,
- Recreation, fish and wildlife and
- Education and public participation.

Outlined below are the goals and policies developed for each of the above items. The annual costs associated with policy making and upkeep is included within the City's general budget.

5.1. Water Quality

Goal:

To maintain or improve water quality of surface waters throughout the City by reducing sediment and nutrient loads from the city subwatersheds.

Policies:

1. As an MS4 community the City has developed a Storm Water Pollution Prevention Plan (SWPPP) outlining many of the municipal BMPs and associated actions being taken by the City. The SWPPP is referenced here and contains additional information on many of the following topics.
2. In the design and construction of new and redevelopment, treatment of stormwater runoff is required prior to discharge to a surface water or wetland. The City will continue to review and approve construction plans for conformance with the requirements of the NPDES permit. Additionally, projects within the city are required to obtain a Minnehaha Creek Watershed District permit (when site conditions warrant) and meet all requirements of the appropriate Rules.

3. The City will continually evaluate opportunities to reduce the phosphorus load to the area surface waters. Additionally, the City contributes runoff to St. Albans Bay of Lake Minnetonka, which is not currently on the State's 303(d) list of impaired waters; however, if any receiving bays are added in the future the City will need to address any TMDL requirements.
4. The City will make water resource protection a priority for city property, including: parks, open space, and other recreational areas. Areas will be swept as needed and buffer establishment or other retrofit treatment techniques will be incorporated into future projects within these areas, when feasible.
5. The City annually inspects and maintains its public stormwater management facilities to ensure their continued effectiveness. When feasible, the City will require stormwater management facilities to be located within outlots; however, many facilities will remain private. The City will evaluate requiring the owner of private stormwater facilities intended to meet runoff requirements to execute a maintenance agreement with the City to ensure regular inspection and maintenance occurs.
6. The City will continue to sweep paved public streets within the community as outlined in the City's SWPPP and the Housekeeping section, section 5.11 below.
7. The City contracts with the public works facilities of Deephaven and will ensure they implement Best Management Practices (BMPs) at City owned lands to retain and prevent pollutants in stormwater runoff from leaving the site.
8. The City requires the preparation and implementation of erosion and sediment control plans and best management practices for construction and land development activities in accordance with NPDES requirements.
9. The City will disperse public education information to foster responsible water quality management practices by City residents and businesses. The public information will include proper lawn fertilizing and other lawn chemical use, disposal of lawn waste, and disposal of solid, liquid, and household hazardous waste products.

5.2. Water Quantity

Goal:

To minimize downstream impacts by maintaining runoff discharge rates and promoting Low Impact Development (LID) techniques for runoff volume reduction/abstraction.

Policies:

1. The city will require that proposed stormwater discharge rates as a result of development be consistent with the requirements of NPDES Permitting.
2. The City will rely on the MCWD to administer their Rules regarding water quality and will require verification that Watershed permit requirements are being met.
3. The City will review downstream stormwater-related impacts (within the community) of development proposals and proactively address water resource-related concerns.

4. The City recognizes the potential environmental impacts associated with constructing new outlets to existing landlocked areas; therefore, the outletting of landlocked areas shall be done only as a last resort. The City will address landlocked areas on a case-by-case basis.
5. The design of new stormwater storage facilities and trunk lines will accommodate the 100-year storm event without causing flooding to building structures and maintaining required freeboard. Storm sewers will generally be designed to pass the 10-year rainfall event under gravity flow conditions, but downstream restrictions may require a reduced-capacity design.
6. Stormwater facilities receiving discharges from adjacent communities will be designed to accommodate existing runoff rates and anticipated volumes.
7. Lowest floor elevations for new buildings shall be at or above the elevations as indicated in the City's floodplain and shoreland ordinances, as well as meet the requirements of the MCWD Rules. Wetlands or water bodies without regulatory floodplain elevations or defined ordinary high water levels, but with outlets, shall have low floor elevations 2 feet above the 100-year high water level and the emergency overflow elevation. Structures around landlocked basins shall have low floor elevations 2 feet above the back-to-back 100-year events.
8. The City will encourage the use of natural drainageways for conveying stormwater where the drainageway can accommodate or be improved to accommodate proposed flows and volumes.
9. Enhanced infiltration practices will be encouraged, where feasible, in areas where the present or future land use does not have a significant potential to contaminate groundwater.
10. Public stormwater facilities will be regularly inspected and maintained as necessary for adequate operations. For private stormwater facilities, the City will require a maintenance agreement with the development proposal identifying regular inspection and maintenance of stormwater facilities.

5.3. Erosion and Sedimentation

Goal:

To prevent erosion and sedimentation to the maximum extent practical through construction site permitting and inspection and good municipal housekeeping.

Policies:

1. The City requires the preparation and implementation of erosion and sediment control plans and best management practices for construction and land development activities in accordance with NPDES permit requirements with the ultimate goal of eliminating sediment discharge from the site.
2. The City will enforce the erosion and sediment control plan and best management practices on construction sites through the review and inspection process. Areas adjacent to water bodies and wetlands may require additional BMPs due to their environmental sensitivity.
3. The City may prohibit work in areas having steep slopes and/or high erosion potential where the impacts of significant erosion cannot be protected against or mitigated. In addition, as part of the

development proposal, the City may require restrictive easements on areas having steep slopes or high erosion potential.

4. The City will continue to sweep paved public streets as identified in the SWPPP. Areas with direct discharge into lakes, wetlands, and streams will be given first priority and areas requiring additional attention will be swept more on an as-needed basis.

5.4. Wetlands

Goal:

To protect wetland value and ensure conformance with the requirements of the City Wetlands Ordinance, the Minnesota Wetlands Conservation Act (WCA) and the MCWD Rules.

Policies:

1. The City will continue to review development activity for conformance with its Wetlands Ordinance (Ordinance Section 1175).
2. The City defers the administrative responsibility to the MCWD for wetland management and conformance with their rules and the Wetland Conservation Act.
3. The City will notify parties proposing land disturbing activities (i.e.: altering, dredging, filling, and draining) to verify with the MCWD for Rule requirements, as well as possible permit requirements from the MDNR and US Army Corps of Engineers (COE).
4. The MCWD completed a Functional Assessment of Wetlands (FAW) and subsequently created a classification system dependent upon the resulting wetland values. The City will continue to work with the MCWD to ensure appropriate impact restrictions are placed on the various classification categories.
5. The City of Greenwood is completely developed, making wetland covenant or easement dedication somewhat difficult for existing platted properties. The City does not require any additional dedication above and beyond the requirements of the WCA or the MCWD.
6. The City will cooperate with interested private or governmental parties on wetland restoration projects and may participate in the State's wetland banking program.

5.5. Public Ditch Systems

Comment:

There are no known county or judicial public ditch systems within the City.

5.6. Groundwater

Goal:

To protect groundwater through prudent management of surface waters and areas of potential contamination.

Policies:

1. The City will cooperate with County and State agencies to inventory and seal abandoned wells and notify its residents of State standards on well abandonment for wellhead protection zones.
2. The City will require individual sewage treatment systems to be in conformance with the State of Minnesota's on-site sewage treatment system requirements.
3. The City will consider the significance of sensitive geologic areas when making land use decisions, when reviewing development proposals, or when proposing construction of stormwater facilities. Activities that may have significant contamination potential will be required to include groundwater protection measures.
4. The City will encourage the use of infiltration methods to promote groundwater recharge where groundwater will not be significantly impacted by the land use or stormwater runoff.

5.7. Recreation and Ecological Integrity

Goal:

To protect and enhance recreational facilities, fish and wildlife habitat, and overall ecological continuity.

Policies:

1. The City will support the efforts of Local, State, and Federal agencies promoting public enjoyment, and the protection of fish, wildlife, and recreational resource values in the City.
2. The City will protect wetlands in accordance with the goals and policies of this plan.
3. The City will guide future land planning and community development into giving higher consideration towards preserving existing wooded and natural areas.
4. The City will encourage its residents to retain existing wetlands, vegetation buffers, and open spaces for the benefit of wildlife habitat.

5.8. Education and Public Involvement

Goal:

To educate and inform the decision makers and general public on water resources management issues; and to increase public participation in water management activities.

Policies:

1. The City will continue to promote best management practices for its residents. The public education will include topics such as: fertilizer use and the limited need for phosphorus in fertilizer; lawn care and lawn chemical use; solid, liquid and household hazardous waste disposal; and natural water resource systems and protection methods.
2. The City will have various types of water resource protection information available at City Hall for review by its residents, as well as links to information on its website.

5.9. Training, Inspection and Enforcement

Staff training, inspection of City facilities, illicit discharges, and construction sites, and enforcement responses are done in accordance with the City's MS4 Permit requirements. Further information regarding training, inspection and enforcement can be found in the City's SWPPP located at City Hall.

5.10. Low Impact Development, Natural Area Preservation & General Water Resource Protection

Goal:

To promote Low Impact Development (LID) techniques, preserve natural areas and protect surface water resources.

Policies:

1. The City is aware of the environmental benefits associated with LID and general natural area preservation and will work with development/redevelopment project managers to implement these practices. These may include, but not be limited to:
 - Impervious area reduction
 - Impervious area disconnection
 - Decentralized stormwater management
 - Street width reduction
 - Rural street sections
 - Reduced setbacks
 - Ecological/pedestrian corridors
 - Natural space preservation and incorporation into site design
 - Site disturbance minimization
 - Pervious pavement
 - Green Roofs
 - Increased stormwater abstraction (infiltration, filtration, irrigation reuse, etc.)
2. The City currently does not plan to adjust its codes to address LID specifically; however, the codes will continue to be flexible and allow for variance to accommodate LID designs on a case-by-case basis.
3. The City is continually looking for ways to enhance protection of its surface water resources, including the integration of improvement techniques into parks, open space and other recreational areas.
4. The City also will consider adopting minimal impact design standards (MIDS) as a requirement for new and redevelopment projects.

5.11. Municipal Housekeeping

Goal:

To conduct activities and perform maintenance operations as necessary to maintain and improve the health of the surrounding surface waters through minimization of runoff pollutants. Additional information can be found in the City's MS4 Storm Water Pollution Prevention Plan (SWPPP).

Policies:

1. The City will continue to sweep all paved streets as outlined in the SWPPP.
2. The City will inspect its stormwater treatment systems per requirements outlined in the MS4 Permit.
3. The City should receive annual inspection logs from the appropriate parties for all privately maintained practices for record keeping and reporting purposes (should any be constructed in the future). This will be a requirement of all future private maintenance agreements.
4. Stockpiles and materials handling areas are inspected per MS4 Permit requirements.
5. Inspection and maintenance records are kept and reported annually to the MPCA as part of the MS4 NPDES-required annual reporting process.

6. ASSESSMENT OF ISSUES AND CORRECTIVE ACTIONS

This section contains an assessment of existing and potential water resource related issues presently known within the City, as well as a description of structural, non-structural, or programmatic solutions that are proposed to address or correct the issues. These issues and concerns have been identified in the latest MCWD plan and many of the general issues addressed here are addressed by policies set forth in Section 5 of this plan. The City does not currently have any drainage-related issues requiring construction-related improvement.

6.1. Excessive Nutrient Levels and Phosphorus Reduction

Issue:

The City of Greenwood discharges stormwater runoff directly into the following bays of Lake Minnetonka: South Lower and St Albans. Runoff carrying nutrients, primarily phosphorus, from developed/undeveloped land to these water bodies ultimately causes elevated nutrient concentration in the waters. High nutrient loads will lead to reduced clarity, excessive algal growth and overall decreased public value of the affected water bodies.

Corrective Action:

The City requires new and redevelopment to apply permanent stormwater treatment measures meeting the requirements of MCWD and NPDES permitting. Also, in order to achieve some measure of phosphorus reduction, the City will employ a variety of techniques. These techniques will include the following:

- Evaluate municipal projects for incorporation of volume abstraction above and beyond MCWD and NPDES requirements
- Increased street sweeping frequency
- Natural area preservation
- Partnering with the MCWD for capital projects

Refer to the City's SWPPP for more information regarding pollutant removal practices and management.

Timeframe

Ongoing: Site plan review for permit compliance.

Ongoing: Evaluation of retrofit treatment opportunities to decrease pollutant loads

6.2. Construction Site Erosion and Sediment Control

Issue:

Sediment leaving construction sites pollutes, fills and degrades surface waters, wetlands and conveyance systems.

Corrective Action:

The City will continue to monitor appropriate use of sediment and erosion control practices, as required by the NPDES permitting, through the review and inspection process currently in place.

Timeframe:

Ongoing: Plan review and construction site inspection.

6.3. Increase in runoff discharge rates from new and redevelopment:

Issue:

The increased percentage of impervious area typically seen with new and redevelopment will cause a corresponding increase in flowrate of the runoff leaving the area. These increased rates can be responsible for downstream erosion and flooding if not properly mitigated for.

Corrective Action:

The City requires new- and redevelopment to apply permanent stormwater rate attenuation measures meeting the requirements of MCWD and NPDES permitting.

The city is fully developed and does not expect to see much new development. However, the city does have redevelopment occurring and will continue to apply governmental requirements as required.

Timeframe:

Ongoing: site plan review for permit compliance.

6.4. General Storm System Maintenance:

Issue:

The existing storm drainage system is performing adequately to convey runoff, although, system maintenance will be required annually.

Corrective Action:

Storm drainage system maintenance required includes pond assessment and cleaning, street sweeping, sewer televising, and GIS/mapping. As projects are identified in the future, the City will consider adding stormwater management and treatment improvements.

Timeframe:

Ongoing: storm system maintenance.

6.5. Street and Utility Improvement Projects:

Issue:

The existing storm drainage system is performing adequately to convey runoff, although, system maintenance will be required annually.

Corrective Action:

As street, sanitary sewer, and water main improvement projects are scheduled, project areas will also be reviewed for potential stormwater management and treatment improvements that were not previously identified. Potential improvements include, but are not limited to, conveyance improvements, stormwater treatment devices, bioretention basins, wet retention ponds, slope stabilizations, and native vegetation restoration..

Timeframe:

Ongoing: storm system improvements.

6.6. Stormwater Runoff Management and Treatment Projects:

Issue:

The existing storm drainage system is performing adequately to convey runoff, although, system maintenance will be required annually.

Corrective Action:

Correct flooding issues on City property as necessary to protect public safety and minimize potential for property damage. Also, collaborate as necessary with MCWD and willing private landowners to install stormwater treatment measures (i.e. rain gardens, stormwater treatment devices, etc.) throughout the City to provide additional runoff storage capacity, reduce runoff rates and volumes, and/or reduce pollutant loads. Coordinate stormwater treatment improvements to treat stormwater from areas with inadequate or no treatment and improve the quality of runoff reaching area surface waters.

Timeframe:

Ongoing: storm system improvements.

7. IMPLEMENTATION PRIORITIZATION & FINANCIAL CONSIDERATIONS

7.1. Implementation Prioritization

Provided below is a generalized ranking of the *policies* and *corrective actions* identified in sections 5 and 6. The High, Medium, Low format has been selected over a numerical format to emphasize the need for flexibility and the inherent inexactness of trying to quantify something that is fairly subjective. This prioritization is meant as a guide for future planning, as well as the corrective actions and associated CIP table in section 7.3. Funding appropriations and projects may switch levels at anytime given new information/circumstances.

All of the goals and associated policies identified in Section 5 are of high priority. Rather than restate each policy, the following policies are highlighted because they pertain to more recent developments.

Table 7.1: Policy Prioritization

Policy Description	Ranking
Administer and maintain the City MS4 Storm Water Pollution Prevention Plan (SWPPP)	HIGH
Continued promotion of LID techniques, infiltration and general runoff volume reduction	HIGH
Maintain existing storm sewer system to provide adequate treatment and conveyance of runoff	HIGH
Evaluate street and utility improvement projects for potential stormwater management and treatment improvements	HIGH
Correct flooding issues on City property as necessary and collaborate with MCWD and Private Landowners to install stormwater treatment measures	MED
Expand public education program to make wider use of City website	MED
Address Total Maximum Daily Load waste load allocations as they are developed	LOW

7.2. Funding Sources

The City currently uses a stormwater utility fee to support costs relating to stormwater runoff management, including improvement projects as well as maintenance. The City charges \$19/quarter for residential properties and \$57/quarter for commercial properties, which results in a current revenue of approximately \$25,729. As projects are identified, the stormwater utility fee may be supplemented with the general fund, and if the project provides treatment beyond what is required, MCWD Cost-Share Grant funding may also be pursued.

7.3. Capital Improvements Program

Capital improvements funded by the City will be at the direction of the City and based upon project feasibility, City priority, and availability of financial resources. The City does not currently have any

potential projects appropriate for a stormwater-oriented CIP. Instead, potential Stormwater Management projects will be evaluated as part of the Street and Utilities CIP, with funding provided from the stormwater utility fee for the stormwater management portions of the project.

8. AMENDMENT PROCEDURES

8.1. Review and Approval

It is the City's intention to have this SWMP reviewed and approved by the Minnehaha Creek Watershed District (MCWD) in accordance with Minnesota Statutes, Section 103B.235. The plan will be sent to Metropolitan Council for review and comment, with ultimate adoption as part of the Comprehensive Plan amendments.

8.2. City Amendments

If the City proposes changes to this SWMP, the changes and their impacts will be determined by the City as either a "minor" change or a "major" change. The general descriptions of minor or major changes and the associated review and approval requirements are presented as follows:

Minor Changes would include small adjustments to subwatershed or subdistrict boundaries or other minor changes that would not significantly affect the rate or quality of stormwater runoff discharged across the municipal boundary or significantly affect highwater levels within the City. Minor changes also include revisions made to the stormwater related Capital Improvements Program to best meet the City's water resource needs and financial considerations. For proposed minor changes, the City will prepare a document which defines the change and includes information on the scope and impacts of the change. The document will be forwarded to the MCWD for their records. The minor change will be implemented after the document is adopted by the City Council.

Major Changes are those that could have significant impacts on the rates, volumes, water qualities and water levels of stormwater runoff within the City or across its municipal boundaries. For proposed major changes, the City will prepare a document that defines the change and includes information on the scope and impacts of the change. The document will be forwarded to the MCWD for their review and approval. The MCWD shall have 60 days to comment on the proposed revisions. Failure to respond within 60 days will constitute approval. After MCWD approval, the City will adopt the amendment as part of the SWMP.

8.3. Plan Coordination

The City will meet with MCWD annually to coordinate plan elements (i.e. improvement projects, education opportunities, potential partnerships, etc.). Annual meetings will be coordinated to account for the City and MCWD budgeting schedules.

In addition to the annual meeting, the City will:

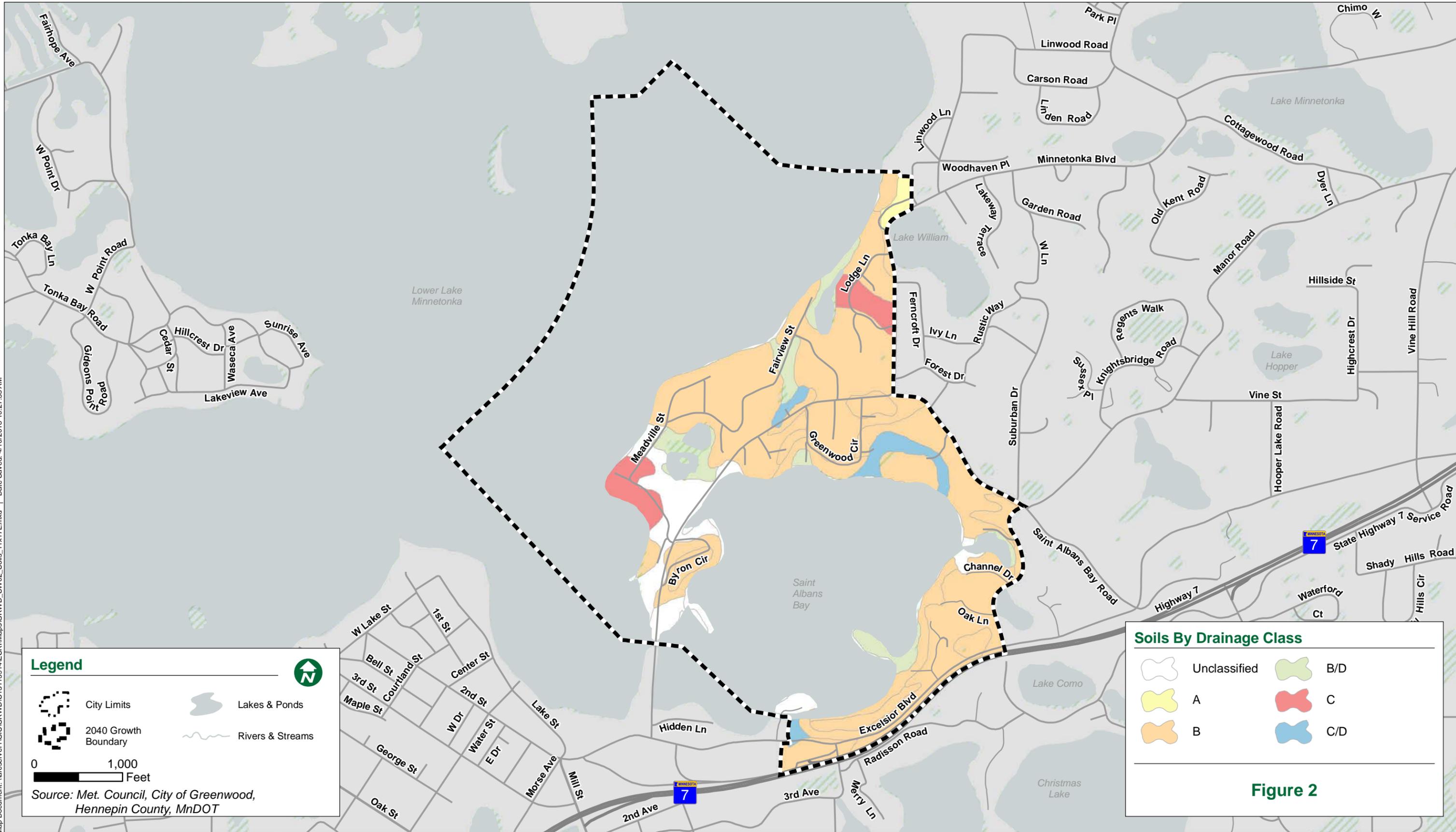
- Transmit the MS4 report to the MCWD annually.
- Notify the MCWD whenever the City proposes revisions to land use planning, infrastructure, park and recreation, and CIPs related to surface water management.
- Notify the MCWD regarding small area plans and other focused development or redevelopment actions.
- Coordinate with the MCWD regarding District permit applications, reviews, construction site inspections, and compliance with their rules for public projects.
- Require property owners to coordinate directly with the MCWD regarding District permit applications, reviews, construction site inspections, and compliance with their rules for projects on private property.
- Defer Wetland Conservation Act reviews and permitting to the MCWD according to law.

- Support the MCWD in the implementation of their rules.

The City has no projects or requests on the horizon that would trigger any of these activities. The City will coordinate with the MCWD should any project be identified in the future.

APPENDIX A

Figures



Legend

- City Limits
- 2040 Growth Boundary
- Lakes & Ponds
- Rivers & Streams

0 1,000 Feet

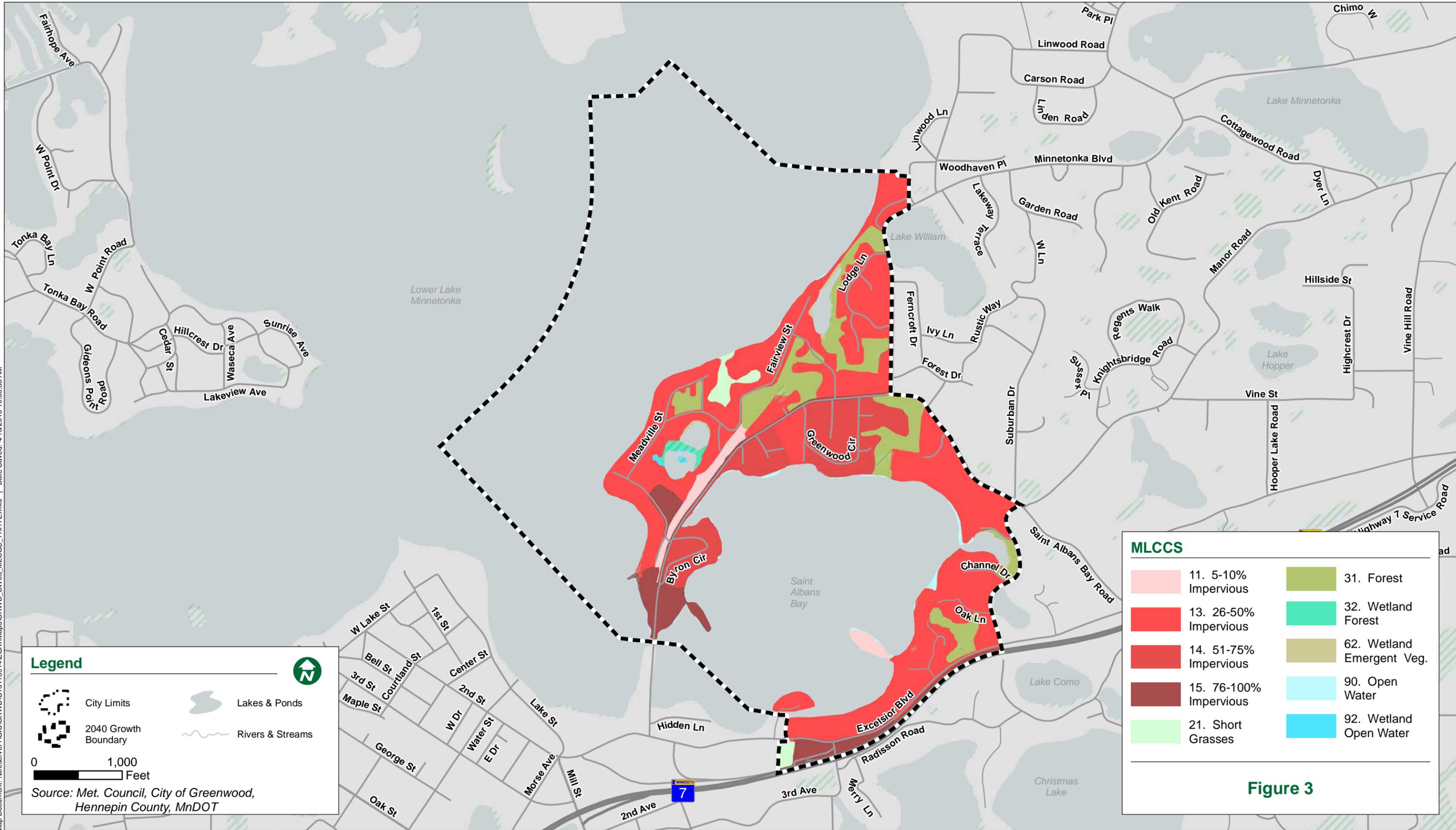
Source: Met. Council, City of Greenwood, Hennepin County, MnDOT

Soils By Drainage Class

	Unclassified		B/D
	A		C
	B		C/D

Figure 2

Map Document: \\arcserver\GIS\GRWD\C13115914\ESRI\Maps\GRWD_SW02_Soils_11x17L.mxd | Date Saved: 4/10/2018 10:27:35 AM



Legend

- City Limits
- 2040 Growth Boundary
- Lakes & Ponds
- Rivers & Streams

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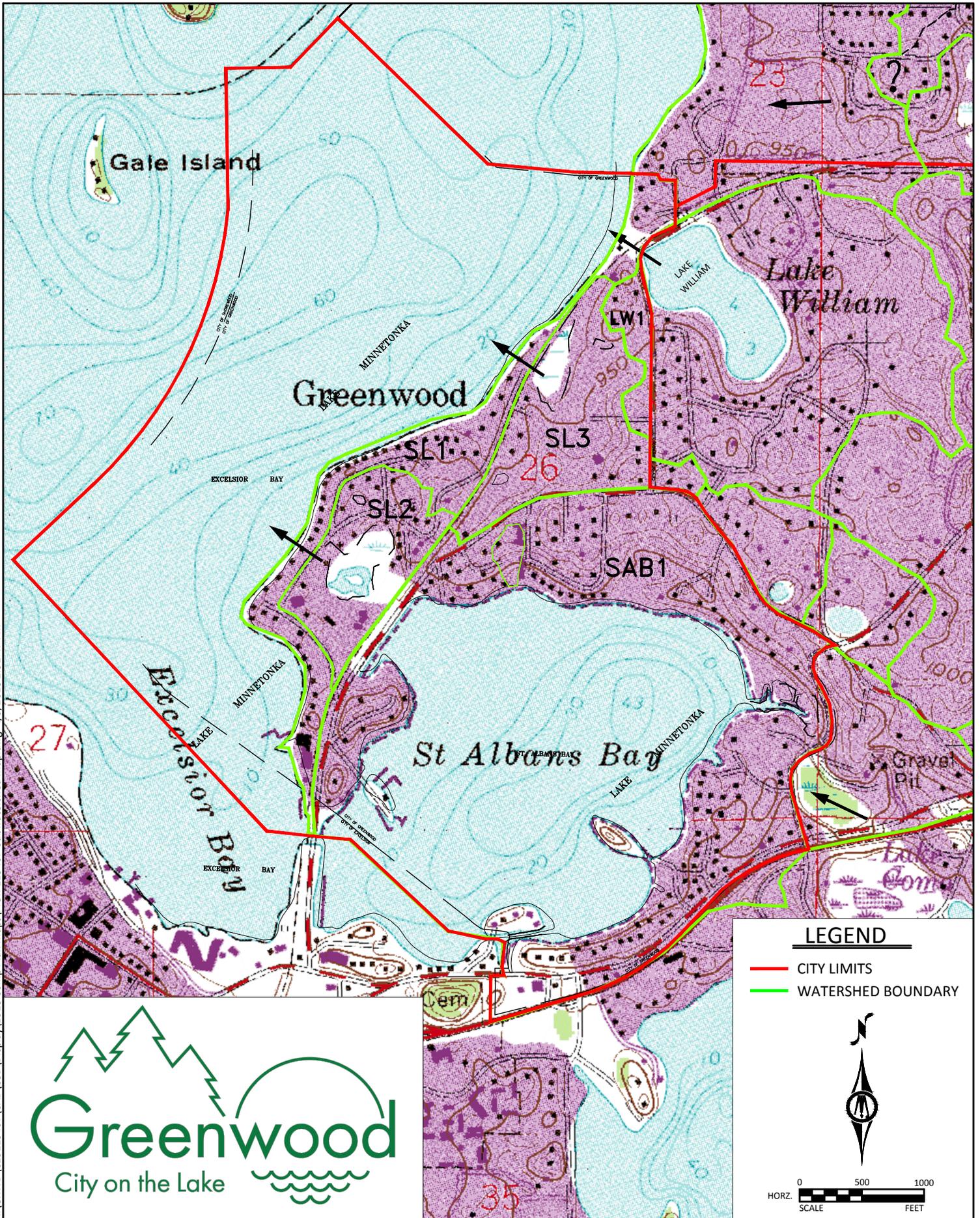
Source: Met. Council, City of Greenwood, Hennepin County, MnDOT

MLCCS

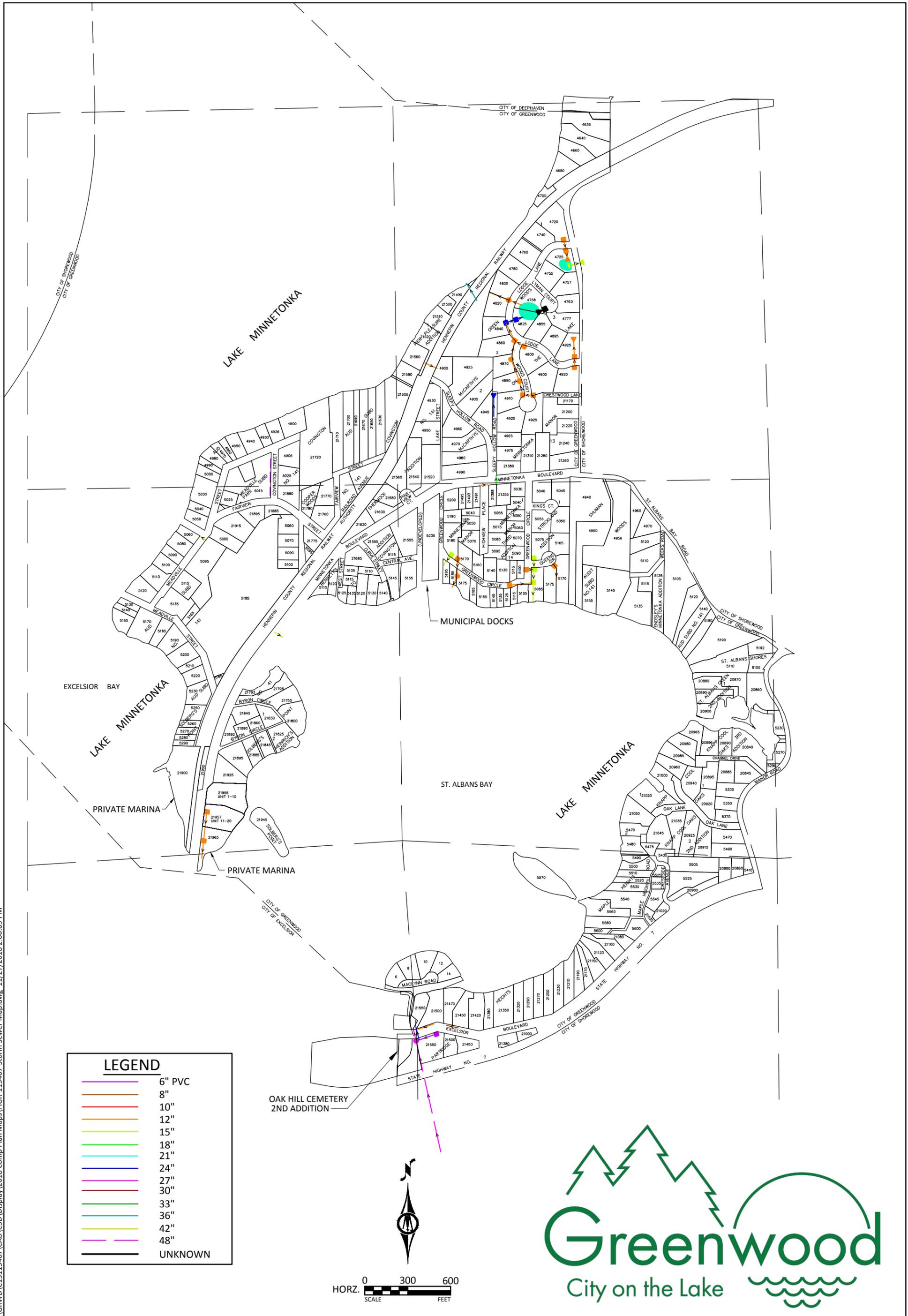
	11. 5-10% Impervious		31. Forest
	13. 26-50% Impervious		32. Wetland Forest
	14. 51-75% Impervious		62. Wetland Emergent Veg.
	15. 76-100% Impervious		90. Open Water
	21. Short Grasses		92. Wetland Open Water

Figure 3

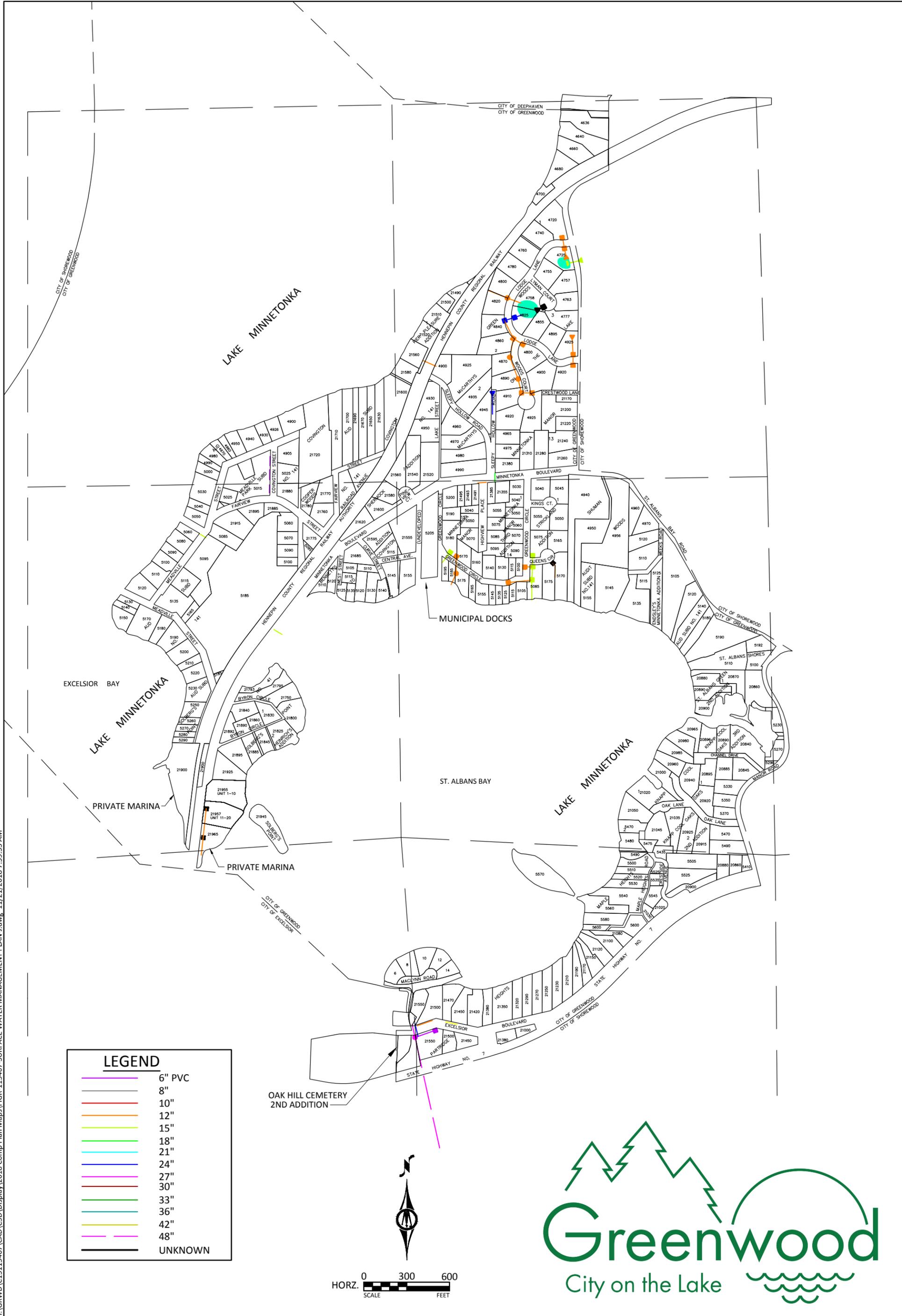
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H:\GRWD\C13115467\CAD\3D\Display\2018 Comp Plan Maps\FIGR-115467-Storm Sewer Map.dwg 11/27/2018 2:00:09 PM



H:\GRWD\C13115467\CAD\C3D\Display\2018 Comp Plan Maps\FIGR-115467-SURFACE WATER MANAGEMENT PLAN-I.dwg 11/21/2018 7:59:35 AM

GREENWOOD “SUMP PUMP” INSPECTION ORDINANCE**Section 310.30 Use of Sewers. Subd. 5. Prohibited Discharges of Stormwater, Surface Water, Groundwater, Roof Runoff, Subsurface Drainage, or Cooling Water and Discharge to Any Sanitary Sewer.**

- (a) No person shall discharge or cause to be discharged, directly or indirectly, any stormwater, surface water, groundwater, roof runoff, subsurface drainage, foundation drain systems, or cooling water to any sanitary sewer. Any person having a roof drain, sump pump, unauthorized swimming pool discharge, cistern overflow pipe or surface drain connected and/or discharging into the sanitary sewer shall disconnect and remove any piping or system conveying such water to the sanitary sewer system.
- (b) All construction involving the installation of clear water sump pits shall include a sump pump with minimum size 1-1/2 inch diameter discharge pipe. The pipe attachment must be a rigid permanent type plumbing such as PVC or ABS plastic pipe with glued fittings, copper or galvanized pipe. All discharge piping shall be installed in accordance with the building code. Discharge piping shall start at the sump pit and extend through the exterior of the building and terminate with not less than 6 inches of exposed pipe. Sump pump discharge location and flow shall be consistent with the approved development drainage plan for the lot. The discharge may not be pumped directly onto any public right-of-way unless approved by the city engineer or their designee. Any disconnects or openings in the sanitary sewer shall be closed and repaired in compliance with applicable codes.
- (c) Every person owning improved real estate which discharges into the city's sanitary sewer system shall allow inspection by authorized city employees or its agents of all properties or structures connected to the sanitary sewer system to confirm there is no sump pump or other prohibited discharge into the sanitary sewer system. Any persons refusing to allow their property to be inspected shall immediately become subject to the surcharge as described in subsection (f) hereinafter.
- (d) From time to time the city council may institute the following procedure to ensure compliance with section 310.30, subdivision 5:
 - (i) A sanitary sewer discharge certification letter with a return certification form shall be sent to every person owning improved real estate property that discharges into the city's sanitary sewer system.
 - (ii) Property owners must return the completed certification form within 14 days of the certification letter notification date. Any property owner that does not return a fully completed certification form by the deadline will incur a surcharge fee on their quarterly sewer utility bill as established in subsection (f) and set forth in chapter 5.
 - (iii) If a property owner requests assistance in completing the certification form or an inspection to determine where roof drains, foundation drains, or sump pumps feed, the inspection will be provided at no cost to the property owner.
 - (iv) If a property owner declares they have roof drains, foundation drains, or sump pumps that are connected to the sanitary sewer, they shall have 90 days from the date of mailing of the city's sanitary sewer discharge certification letter to remove all such connections.
 - (v) If a property owner certifies that their property has no roof drains, foundation drains, or sump pumps connected to the sanitary sewer system and it subsequently is discovered that the property is not in compliance with this code or otherwise has unlawful discharges, the property owner shall be back-charged to the date of the completed certification form on file, a surcharge fee, double that provided in paragraph (ii) above, shall be assessed, and prosecution for violation of this code, (as permitted in paragraph (h) below), may follow.
- (e) Upon verified compliance with this section, the city reserves the right to re-inspect such property or structure at least annually to confirm continued compliance. Any property found not to be in compliance upon re-inspection or any person refusing to allow their property to be re-inspected shall, following notification from the city, comply within 14 calendar days or be subject to the surcharge as provided in subsection (f) hereinafter.
- (f) A sewer non-compliance surcharge fee per quarter is hereby imposed and shall be added to every residential and commercial property utility billing issued to property owners who are found not in compliance with this section. The sewer non-compliance surcharge fee amount shall be determined by the city council and set forth in chapter 5 of this code book. If a property owner certifies that their property is in compliance and it subsequently is discovered that they were not in compliance, the property owner will be back-charged to the date of certification and the surcharge fee will double.
- (g) The city council, upon recommendation of the city engineer, shall hear and decide requests for temporary waivers from the provisions of this section where strict enforcement would cause a threat to public safety because of circumstances unique to the individual property under consideration. Any request for a temporary waiver shall be

submitted to the city engineer in writing. Upon approval of a temporary waiver from the provisions of this section, the property owner shall agree to pay an additional fee for sanitary sewer services based on the number of gallons discharged into the sanitary sewer system as estimated by the city engineer.

- (h) Violation of this section is a misdemeanor and each day that the violation continues is a separately prosecutable offense. The imposition of the surcharge shall not limit the city's authority to prosecute the criminal violations, seek an injunction in district court ordering the person to disconnect the nonconforming connection to the sanitary sewer, or for the city to correct the violation and certify the costs of connection as an assessment against the property on which the connection was made.