



Comprehensive Plan City of Columbus

5/31/19 DRAFT



Table of Contents

Chapter 1: Introduction and Goals	1
Regional Setting	1
Background/History of the Community	4
Planning Process	4
Goals and Policies	5
Chapter 2: Land Use	10
Purpose	10
Forecasts	10
Existing Land Use	12
Future Land Use	17
Density Calculations	24
Staged Development or Redevelopment	26
Natural Resources	30
Water Resources	32
Community Facilities and Services Plan	37
Special Resource Protection	37
Resilience	39
Chapter 3: Housing	41
Purpose	41
Existing Housing	41
Existing and Projected Housing Needs	46
Affordable Housing Allocation	46
Housing Implementation Plan	48
Chapter 4: Parks and Trails	54
Purpose	54
Regional Parks and Trails	54
County Parks and Trails	57
Local Parks and Trails	57
Planned Improvements	57
Chapter 5: Transportation	58
Introduction	58
Existing Roadway Conditions	60
Summary of Relevant Transportation Studies	66
Roadway System Plan	67

Bicycling and Walking	80
Transit	83
Aviation	86
Freight	86
Chapter 6: Water Resources	89
Wastewater.....	89
Water Supply Plan.....	98
Chapter 8: Implementation	99
Overview	99
Official Controls	99
Housing Implementation Program	102
Public Programs and Tools.....	102
Capital Improvement Plan (CIP).....	103
Schedule of Changes.....	103
Plan Amendment Process	104

Figures

Figure 1.1: Community Designation from Metropolitan Council	3
Figure 2.1: Existing Land Use	13
Figure 2.2: Future Land Use.....	19
Figure 2.3: Potential Staging Plan	27
Figure 2.4: Development Constraints	31
Figure 2.5: Water Resources.....	33
Figure 2.6: Regionally Significant Environmental Features	35
Figure 2.7: MLCCS Land Cover	36
Figure 2.8: Solar Potential Map	40
Figure 3.1: Owner Occupied Units by Value	44
Figure 4.1: Existing and Planned Parks and Trails.....	55
Figure 5.1: Regional Location.....	59
Figure 5.2: Existing Traffic Volume and Crash Data	61
Figure 5.3: Existing Roadway Jurisdiction	62
Figure 5.4: Existing Roadway Functional Class	63
Figure 5.5: Transportation Analysis Zones in County Model.....	72
Figure 5.6: 2040 Traffic Volume Projections and Capacity Analysis.....	74
Figure 5.7: Future Functional Class.....	78

Figure 5.8: Non-Motorized Facilities.....	82
Figure 5.9: Existing Fixed Route Transit Facilities	84
Figure 5.10: Freight and Heavy Commercial Corridors.....	88
Figure 6.1: Sewer Staging Plan.....	91
Figure 6.2: Existing Sewer System	92
Figure 6.3: Regional Wastewater System Long-Term Service Area.....	93
Figure 6.4: SSTS Location Map.....	94
Figure 7.1: City of Columbus Zoning Map.....	101

Tables

Table 2.1 – Forecasted Population, Housing, & Employment	10
Table 2.2 – Columbus Population & Households.....	11
Table 2.3 – Age Distribution in Columbus, 2010.....	11
Table 2.4 – Race/Ethnicity in Columbus, 2010	11
Table 2.5 – Columbus Historical Employment Trends	12
Table 2.6 – Existing Land Use Characteristics	14
Table 2.7 – Residential Acres by Type.....	14
Table 2.8 – Existing Net Residential Density.....	15
Table 2.9 – Residential Allowed Density Ranges	15
Table 2.10 – Commercial/Industrial Allowed Density	16
Table 2.11 – Planned Land Use Characteristics	17
Table 2.12 – Guided Land Use Acres.....	20
Table 2.13 – Planned Residential Density Ranges	Error! Bookmark not defined.
Table 2.14 – Commercial/Industrial Density Ranges	25
Table 2.15 – Future Land Use Units/Jobs/Acres per Decade.....	28
Table 2.16 – Solar Resource Calculations	39
Table 3.1 – Housing Conditions	41
Table 3.2 – Housing Unit Type, 2015	42
Table 3.3 – Percentage of Households by Age Distribution of Owners and Renters, 2015	42
Table 3.4 – Households by Householder Type.....	42
Table 3.5 – Owner Occupied Housing Values	45
Table 3.6 – Housing Values and Costs	46
Table 3.7– Regional Household Income Levels, 2017.....	47
Table 3.8 – Affordable Housing Allocation	47
Table 3.9 – Future Land Use Designations.....	47

Table 3.10 – Development Potential for Affordable Housing Allocation	48
Table 3.11 – Housing Implementation.....	49
Table 3.12 – Anoka County Housing and Redevelopment Authority Services	52
Table 4.1 – Park Amenities By Location	57
Table 5.1 – Principal Arterial Roadways	64
Table 5.2 – “A” Minor Arterial Roadways	65
Table 5.3 – Other Arterial Roadways	65
Table 5.4 – Major and Minor Collector Roadways.....	65
Table 5.5 – 2040 Columbus TAZ Data	71
Table 5.6 – Typical Traffic Capacity by Roadway Type/Configuration.....	75
Table 5.7 – Required Street Design Widths	79
Table 6.1 – Existing Lift Station Capacity	90
Table 6.1 – Sewer Allocation Forecasts in Columbus	96
Table 6.2 – Actual and Community Wastewater Flows (MGD)	96
Table 7.1 – City of Columbus Zoning Districts	99
Table 7.2 – Implementation Tools and Timeline	102

Appendices

Appendix A: Transportation

Appendix B: Water Resources

Appendix C: Capital Improvement Plan

Appendix D: Adjacent Community Comments and Responses

Appendix E: Reports and Resolutions

Appendix F: Intercommunity Service Agreements

Chapter 1: Introduction and Goals

The purpose of this comprehensive plan is to provide the City of Columbus with policy direction for the future growth and development of the city. This is intended to ensure that growth is managed in a way that contributes to the city's livability, small town character, environmental quality, and long-term sustainability. This plan reflects the values and goals prioritized by Columbus residents and other key stakeholders. The policy framework proposed in this plan has been established to provide direction toward these goals.

This plan provides an overview of existing conditions in Columbus, including historical context, existing land use, water and natural features, public facilities, transportation, population, housing, and employment trends and forecasts. It also provides goals and policies for the future of the city and proposes an implementation plan extending to 2040. The plan's policies are focused around future land use guidance for land within the city. It also provides policies and recommendations for the infrastructure, public facilities, and services that are needed serve the forecasted population and employment in the city.

In addition to providing direction for the city, this plan satisfies the requirements of the Metropolitan Land Planning Act: Minnesota Statutes, Section 473.859. This requires that all seven-county metropolitan area cities complete a comprehensive plan update every ten years. The purpose is to ensure that growth is coordinated with the development of regional systems and policies, as overseen by the Metropolitan Council. This plan covers all the elements required under this guidance, to the extent they are applicable to Columbus.

This plan updates and replaces the City's previously adopted comprehensive plan, which was approved in 2009.

Regional Setting

Columbus is located on approximately 47.6 square miles in Anoka County. It is northwest of the I-35E/I-35W split and is neighbors to Forest Lake, Hugo, Lino Lakes, Blaine, Ham Lake, East Bethel, Linwood Township, and Wyoming. According to the Metropolitan Council, Columbus is designated as a Diversified Rural and Emerging Suburban Edge community in the Metropolitan Area. **Figure 1.1** shows the boundaries of the designation areas for Columbus and the surrounding communities.

The Emerging Suburban Edge portion is in the southeast corner of the city, closest to I-35 and the freeway split. This area has public utility access, so it can develop more intensely than the remainder of the city. This area is beginning to transition toward urbanized development, but currently is less than half developed.

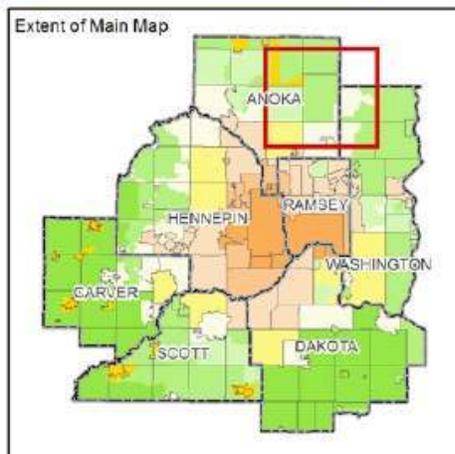
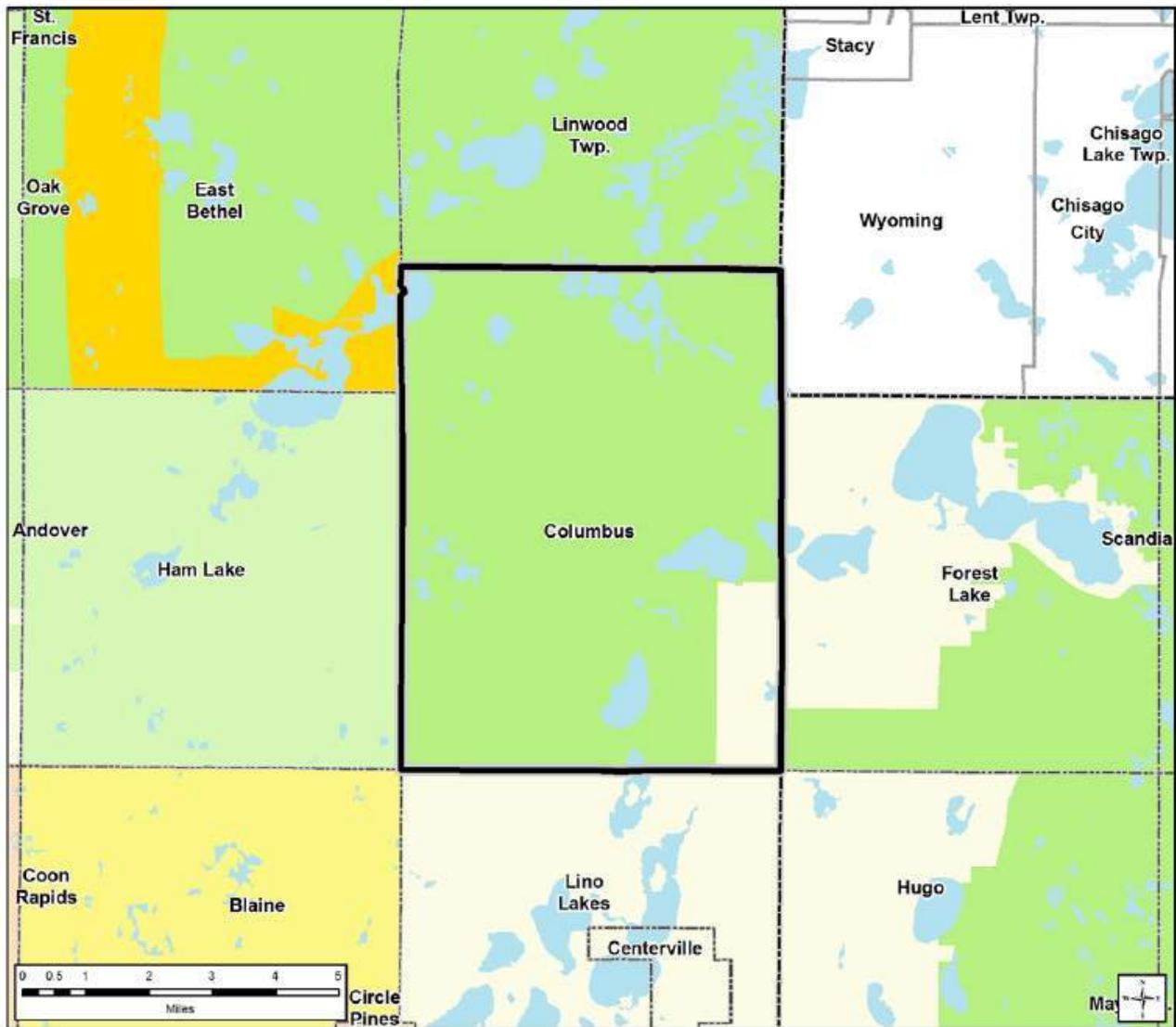
Emerging Suburban Edge communities include cities, townships and portions of both that are in the early stages of transitioning into urbanized levels of development. Emerging Suburban Edge communities are expected to plan for forecasted population and household growth at average residential densities of at least 3-5 units per acre for new development and redevelopment. In addition, Emerging Suburban Edge communities are expected to target opportunities for more intensive development near regional transit investments at densities and in a manner articulated in the 2040 Transportation Policy Plan. Adjacent areas in Forest Lake, Wyoming, and Lino Lakes share this designation.

However, most of the city's land area is Diversified Rural, a lower intensity designation. Diversified Rural communities are home to a variety of farm and nonfarm land uses including very large-lot residential,

clustered housing, hobby farms, and agricultural uses. Diversified Rural communities are expected to plan for growth not to exceed forecasts and in patterns that do not exceed 4 units per 40 acres on average. Adjacent areas of East Bethel, Linwood Township, and a portion of Forest Lake share this designation.

Diversified Rural communities are expected to manage land uses to prevent the premature demand for extension of urban services, so that existing service levels will meet service needs. This may include clustering of development in a way that preserves larger areas for future development, and protects sensitive natural resources. The Land Use chapter will further explore how this is incorporated into an overall plan for development in the city.

Figure 1.1: Community Designation from Metropolitan Council



Community Designations

- Outside Council planning authority
- Agricultural
- Rural Residential
- Diversified Rural
- Rural Center
- Emerging Suburban Edge
- Suburban Edge
- Suburban
- Urban
- Urban Center
- County Boundaries
- City and Township Boundaries
- Lakes and Major Rivers

Background/History of the Community

The history of Columbus is influenced by both Native Americans and the European settlers that followed. Human settlement of areas within the City of Columbus can be traced back to the presence of the Hopewell tribe of Native Americans. Archeologists believe that the Hopewell tribe established extensive trading with tribes over the entire continent. Burial mounds are located around Howard Lake in the Lamprey Pass Wildlife Management Area.

Following European settlement, this area became a predominantly agricultural community, although less than half of the land area was suitable for crop cultivation due to extensive wetland areas. Activities included small farming operations, such as grass harvesting for the assembly of mats, poultry farming, and wild rice harvesting. Several historic farmsteads of European settlers are also located in the city, including the Yost, Hans Hanson, J. T. Elwell, and Thurnbeck farms. The Anoka County Historical-Genealogical Society maintains files called Century Farms that include photographs, plat maps, crop information, and other information related to historical farms.

The Township of Columbus was platted in 1856 and a town organization was formed in 1857. Early settlers sought to develop a village center on the St. Paul-Kettle River Road, one of the earliest stage lines to be developed in the state. This site, known as “Boehm’s Corner,” contained a sawmill and hotel. Efforts to encourage the development of a village center met with no success. The township lost a bid in the mid-1860’s for the Anoka County seat and it was passed over as a potential route for the St. Paul-Duluth Railroad. The village center never materialized and, by 1879, the township abandoned efforts to establish a village at that site.



By the late 1880s the logging industry had depleted its resources and a new industry arose in the 1890s. The American Grass Twine Company began harvesting the native wire grass which covered the areas lowland prairies. This company, which employed 700-800 people in their St. Paul factory, later became the Crex Carpet Company of St. Paul. Three camps were located in Columbus Township and 10,000 acres were included in the company’s holdings. At one time, the camps employed 100 men and used 250 horses. After World War I, the carpet company went into decline and the land became tax delinquent. Many acres reverted to the state and became part of what is now the Carlos Avery Wildlife Management Area.

More recently, the citizens of Columbus petitioned the Town Board to change the form of government from a town to a city in 2006. On Sept. 21, 2006 the Township of Columbus was incorporated and became the City of Columbus.

Planning Process

The Columbus comprehensive plan update process began in early 2017. In March 2017, there was a kickoff meeting with the Planning Commission. At this meeting, the overall scope of the plan was discussed, as well as priorities the plan update.

In July, August, and October, there were meetings with the Planning Commission to explore land use and development scenarios for Rural Diversified areas of the community. This provided insight into

appropriate levels of development in those areas.

In February 2018, there was a workshop with the Planning Commission and property owners in the freeway corridor to determine direction for land use and intensity in this area of the city.

A public open house was held later in February. The meeting covered existing conditions across the city, forecasted growth, proposed growth plan, and related topics. The public was invited to attend to provide comments, which were incorporated in the plan.

The draft plan was reviewed at a public hearing in May 2018, and subsequently approved by City Council by resolution later that month, contingent on the completion of the interjurisdictional review. After the six-month interjurisdictional review (June-November 2018), the City reviewed comments received and made necessary updates. The plan was submitted to the Metropolitan Council for formal review in December 2018.

A summary of the full planning process will be included here, once the process is complete.

Goals and Policies

Comprehensive plan goals and policies are statements which provide the official basis for future City actions related to growth, development, and redevelopment. The goals and policies in this plan reflect input from community engagement efforts and city leadership. Goals identify various objectives of the City in managing future growth and protecting natural resources. Policies represent the official position of the City with respect to implementation of goals. The implementation chapter provides the next layer: implementation steps needed to move goals and policies from high level direction to action.

The overall goals of the City include: protecting the health, safety and welfare of the public; preserving natural features and environmental systems; protecting the rural character and identity of the city; and developing new employment and tax base in the community. From the perspective of accommodating growth, this means ensuring that adequate public services and infrastructure are available in a timely fashion to accommodate growth, so that it can be appropriately and sustainability incorporated into the community without overloading any systems or causing environmental damage.

Many of these goals are similar to those in the 2008 comprehensive plan. This is intentional: long term goals and policies may take years to achieve and providing consistent yet flexible direction helps to keep a community moving forward.

Growth Management

Goal #1: Encourage and manage future growth in the city, consistent with community values, small town character, and long term financial sustainability.

Policies:

- Protect the rural character of the city.
- Maintain land use patterns which ensure compatibility and function of uses.
- Establish land use patterns that reflect natural amenities and environmental constraints.
- Provide for the orderly development of safe and efficient housing opportunities.
- Maintain housing opportunities that will be consistent with the rural nature of the city and the protection of environmental systems.
- Protect the health and safety of residents, as well as ensuring stable residential areas.

Land Use

Goal #2: Manage development of rural diversified areas in a way that protects community character, preserves environmental resources, and allows for flexibility.

Policies:

- Maintain the overall existing density of rural residential areas.
- Allow for flexibility in lot sizes, through lot averaging or clustering, to manage development in rural areas.
- Require adequate lot sizes, minimum buildable areas, and consistency with MPCA Rules Chapter 7080, as amended, to sustain individual sewage treatment systems.
- Prohibit unplanned commercial or industrial uses from developing near residential areas.

Goal #3: Manage development in suburban areas in a way that accommodates additional housing, jobs, and tax base for the community and efficiently uses urban services.

Policies:

- Maintain a hierarchy of land uses within the Freeway Corridor, reserving land adjacent to the I-35 interchange for the highest intensity uses and land furthest from the interchange for more extensive land uses.
- Promote a pedestrian friendly development standard within the Freeway Corridor to provide internal non-vehicle access options and ensure future residential development has pedestrian access and circulation.
- Encourage the development of multifamily residential development in mixed use areas to expand life cycle housing alternatives and housing price options that do not exist in the rural residential areas.
- Promote the development of senior citizen housing, including assisted living and similar adult care facilities, in the Freeway Corridor.
- Minimize the impacts on future residential uses due to area commercial and industrial land uses and freeway proximity, while allowing for compatible mixed use development.
- Coordinate affordable housing needs with the Anoka County Housing and Redevelopment Authority.

Natural Resources

Goal #4: Protect existing natural resources to ensure continued environment health and benefits to the community.

Policies:

- Protect high quality functioning environmental systems from unnecessary impacts of future growth and development activities.
- Maintain and enhance the natural amenities of the city for future generations to enjoy,

including natural habitat areas and native vegetation.

- Protect the surface waters and wetland areas of the city to promote aesthetic qualities, natural habitat areas, and groundwater recharge.

Community Facilities and Services

Goal #5: Provide a range of public services and facilities to enhance community safety, livability, and quality of life.

Policies:

- Promote safe neighborhoods and crime prevention in the city.
- Retain the quality of life in the city.
- Provide efficient and responsive services to residents and businesses.
- Maintain the quality of educational opportunities available to residents.
- Explore expanded joint service initiatives and potential utility feasibility through continued communication and cooperation with city, county, and school officials.
- Promote effective communication with residents, business owners, educators, and volunteer organizations to maintain an understanding of community goals and objectives.
- Establish priorities for basic services to ensure that the highest levels of safety and accessibility are provided in the city.
- Maintain adequate and efficient administrative, public works, and emergency services to respond to growth in the city.
- Maintain appropriate development standards to ensure adequate protection for the use of solar energy systems.
- Work with the Anoka County Historical Society and the Minnesota Historic Preservation Office to preserve the cultural resources in the community.

Economic Competitiveness

Goal #6: Support the development and maintenance of a variety of businesses to provide jobs, goods and services, and tax base to the community.

Policies:

- Coordinate and promote marketing of Lake Drive and Freeway Corridor business development opportunities.
- Encourage the development of retail, service, mixed use, and general commercial uses in the Freeway Corridor, particularly on sites around the interchange.
- Allow for intensification of commercial/industrial opportunities in the Lake Drive corridor, consistent with the rural character of the city, and compatible with adjacent residential uses.
- Maintain adequate lot sizes and minimum buildable areas for commercial/industrial uses in the Lake Drive corridor to provide for convenient and safe access, to ensure adequate installation and operation of private utilities, and to allow site buffering and landscaping.

- Promote shared driveways and frontage roads in the Lake Drive corridor in order to minimize highway access points.
- Pursue and coordinate potential extensions of public utilities in the Lake Drive corridor with the City of Lino Lakes and the Metropolitan Council.
- Minimize potential incompatibilities between commercial/industrial and residential uses through adequate setbacks, buffering, or other strategies.
- Maintain high design and development standards within all business development areas.

Housing

Goal #7: Provide for a range of housing types and levels of affordability to meet the needs of residents who want to live in Columbus.

Policies:

- Protect residential areas from incompatible uses.
- Provide higher density housing alternatives in the I-35 public utility corridor.
- Encourage the rehabilitation of the existing housing stock in the city as a source of affordable housing, as well as the construction of new units.
- Coordinate with the Anoka County Housing and Redevelopment Authority to provide housing improvement assistance to residents.
- Participate in appropriate programs that will enhance housing opportunities for senior citizens.

Parks and Recreation

Goal #8: Provide a system of convenient active and passive recreation opportunities for residents and visitors.

Policies:

- Enhance the existing park and recreation areas in the city.
- Where appropriate, support the creation of new park, open space, and trail opportunities as part of new development.
- Work with Anoka County and other partners to develop trail corridors through the city to link Columbus with adjacent communities and regional parks and destinations.

Transportation

Goal #9: Maintain a safe, efficient, and convenient multimodal transportation system that accommodates all users and balances accessibility and mobility.

Policies:

- Maintain a safe and efficient road transportation system.
- Develop a long-term plan for the paving of all public thoroughfares in Columbus.

- Improve the current transportation system to relieve congestion and accommodate growth.
- Safely accommodate bicyclists and pedestrians in the city.
- Manage freight in a way that serves area needs while limiting impacts on the community.
- Enhance transit opportunities in and near the city.
- Comply with all regulatory requirements related to airspace.
- Coordinate transportation planning and system improvements with Anoka County and Minnesota Department of Transportation (MnDOT).

Public Utilities

Goal #10: Develop and maintain a planned and cost-effective system of public utilities suitable for the level of existing and anticipated development in the city.

Policies:

- Provide cost-effective public utilities within the I-35 corridor.
- Partner with adjacent communities, including Forest Lake and Lino Lakes, to explore opportunities to extend public utilities into appropriate areas.

Chapter 2: Land Use

Purpose

The land use element is a major focus of the comprehensive plan. This element shows where, when, and what type of development is expected to accommodate anticipated future growth of population, households, and jobs. Growth and development patterns, in turn, determine the need for new infrastructure, parks, and other public investment in services and facilities.

In addition to this, the land use plan demonstrates how the city will fit within overall regional planning requirements and guidelines. The City of Columbus has portions of the community that are designated as Emerging Suburban Edge and Diversified Rural. This plan generally reflects the guidelines for these designations, as appropriate for the community context.

Forecasts

Future growth in the city is forecasted as part of the regional planning process, based past growth trends, ability of the city to accommodate growth, and future expectations in terms of overall growth patterns. These forecasts are used as a starting place to determine need for land to accommodate new development.

As of 2015, approximately 3,800 people lived in Columbus in roughly 1,400 households. **Table 2.1** shows estimated and forecasted growth in the city. This growth represents a moderate increase over existing levels of population, households, and jobs. From 2015 to 2040, the population is expected to grow by 44% and employment is expected to grow by 25%.

Table 2.1 – Forecasted Population, Housing, & Employment					
	2010	2015	2020	2030	2040
Population	3,914	3,828	4,220	4,950	5,500
Households	1,416	1,426	1,600	1,930	2,200
Employment	1,172	1,436	1,500	1,670	1,800

Source: Metropolitan Council

Recent population and household growth in Columbus was strongest in the 1970s and 1980s. This growth reflected a region-wide, outer-ring suburban trend, which largely resulted from the development of the interstate highway system. Communities surrounding Columbus, as well as Anoka County as a whole, experienced similar if not more rapid growth.

The large lot, rural residential character of housing and the limited amount of developable land in Columbus have resulted in a decrease in the rate of growth since 1990. Communities with greater developable land supplies, particularly those with municipal sewer and water, have maintained an accelerated pace of growth since 1990. Columbus' rate of growth has been similar to the overall growth rate of Anoka County. Household size has declined in Columbus and Anoka County since 1970, which parallels the national trend. Columbus maintained one of the higher average numbers of persons per household in the county from the 1970s through the 1990s, but has had ratios closer to county and neighboring community ratios since the 2000s. **Table 2.2** illustrates historical population, household, and persons per household rates in Columbus from 1970 to 2010.

Table 2.2 – Columbus Population & Households					
Category	1970	1980	1990	2000	2010
Population	1,999	3,232	3,690	3,957	3,914
Households	487	870	1,129	1,328	1,146
Persons per Household	4.11	3.72	3.27	2.98	2.76

Source: US Census Bureau

Table 2.3 shows the age distribution of Columbus residents in 2010. The median age in Columbus in 2010 was 45.3 years, higher than the county median of 37.1.

Table 2.3 – Age Distribution in Columbus, 2010		
Age	Count	Percent of Population
Under 5	163	4.2%
5-9	223	5.7%
10-14	281	7.2%
15-19	315	8%
20-24	184	4.7%
25-34	316	8.1%
35-44	449	11.5%
45-54	875	22.4%
55-64	671	17.1%
65-74	308	7.9%
75-84	105	2.7%
85 and Over	24	0.6%
Totals	3,914	100%

Source: US Census Bureau

The racial background in Columbus is predominantly white, non-Hispanic (93.6%). This compares to approximately 87% in Anoka County as a whole. Asians and Pacific Islanders make up the largest minority population in Columbus, followed by Hispanic/Latino, African American, and American Indian. Table 2.4 illustrates the 2010 Census breakdown of the population by race in Columbus.

Table 2.4 – Race/Ethnicity in Columbus, 2010		
Race	Count	Percent of Population
White	3,665	93.6%
American Indian	25	0.6%
African American	26	0.7%
Asian/Pacific Islander	142	3.7%
Two or More Races	48	1.2%
Some Other Race	8	0.2%
Total	3,914	100%
Ethnicity		
Hispanic/Latino	64	1.6%

Source: US Census Bureau

The economic base of Columbus is transitioning from a more traditional rural service center to a regional sales, service, and entertainment center. Columbus is home to a number of businesses that have historically served recreational and service needs, such as watercraft, snowmobile, recreational vehicle conversions, and vehicle sales and service centers. The Lake Drive (CSAH 23) commercial/ industrial area is home to expanding construction services, trucking, floral production, landscaping, trade services, warehousing, light manufacturing, and vehicle sales and service. **Table 2.5** summarizes historic employment trends.

Employment throughout Columbus increased more than tenfold between 1990 and 2010. Employment opportunities within the Interstate 35 corridor have increased since 2000 with the development of Ziegler Caterpillar, Coates RV, Brinkman Trailer, and the Running Aces harness racing and card room facility. There are substantial employment growth opportunities remaining in both the Lake Drive and I-35 commercial and industrial development corridors.

Table 2.5 – Columbus Historical Employment Trends							
Year	1970	1980	1990	2000	2010	2015	Job:Pop Ratio, 2015
Employment	80	100	100	507	1,172	1,436	.38

Source: U.S. Census; Metropolitan Council; MN DEED

Summary

- Columbus has had a growth rate that is comparable to county averages in recent years, slower than it has been historically. The more gradual pace of growth helps in planning future land use to avoid boom and bust cycles.
- Columbus has a higher median age than the county, which may mean the city will experience demand for senior services sooner than other communities in Anoka County. Additionally, a smaller youth population can impact schools and employment opportunities in the city.
- Columbus’ low density rural character overall will limit growth opportunities, but there are key locations where new jobs and housing can be located.

Existing Land Use

The city’s existing land use is the base for future growth and change. **Figure 2.1** shows the existing land use for the City of Columbus. **Table 2.6** summarizes acreages of land by type. Following is a summary and description of the land use categories within the city.

As of 2017, the City of Columbus covered around 30,491 acres, of which around 17,800 (58%) is constrained by some feature that limits development, such as wetlands. The largest of the land use categories was park, recreational, or preserve, which accounted for roughly 37% of the total acreage. The next two largest land use categories are agricultural/undeveloped (28% of total acreage) and rural residential which accounts for about 23% of the city’s total acreage.

The predominance of these land use types points to the very rural nature of the majority of the city, characterized by large publicly owned preserves and large lot single family development.

The land supply is anticipated to be more than adequate to accommodate all planned future growth through 2040 within existing city limits.

Figure 2.1: Existing Land Use

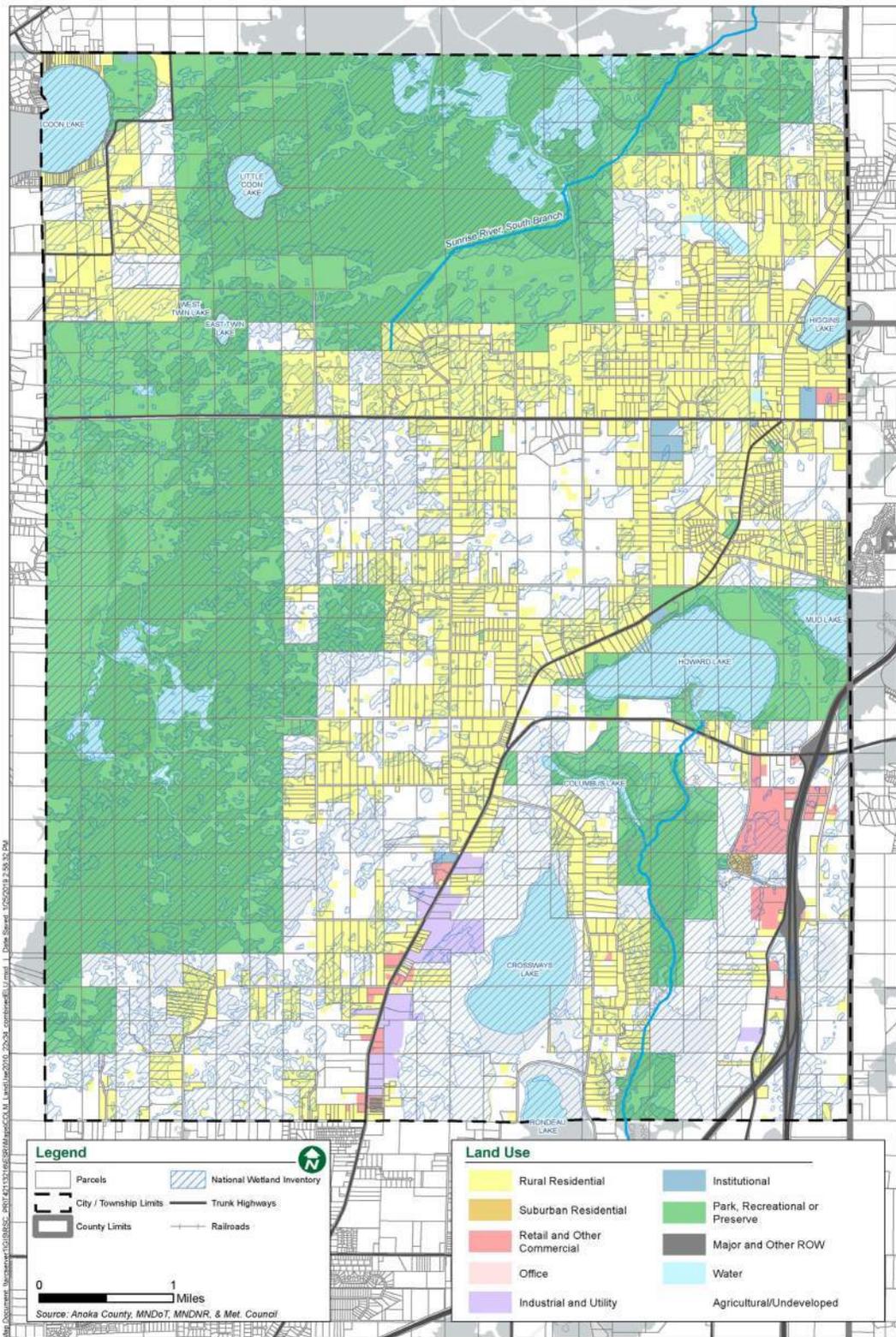


Table 2.6 – Existing Land Use Characteristics		
Land Use	Acres	Percent of Total
Park, Recreational, or Preserve	11,407	37.4%
Rural Residential	7,047	23.1%
Agricultural/Undeveloped	8,454.9	27.7%
Water	1,962	6.4%
Retail and Other Commercial	278	0.91%
Industrial and Utility	256	0.84%
Major and Other ROW	985.3	3.2%
Institutional	85	0.28%
Suburban Residential	14	0.05%
Office	1.4	0.00%
Total	30,490.6	100.0%

Wetlands and surface waters have a major presence in the landscape in Columbus, covering a substantial percentage of the city. While Columbus is a large community in terms of land area, the percentage of developable land in the city is much lower than in surrounding communities. In addition to the high percentage of wetlands, there is also a considerable amount of publicly held land in the city – mostly state-owned wildlife management areas (WMAs).

Approximately 8,455 gross acres of land are currently vacant or agricultural land. The net buildable land in those areas (gross acres less wetlands, surface water, or floodplain) is approximately 2,095 acres. There is very little commercial agriculture in Columbus due to smaller isolated parcels of uplands and sandy or overly wet soils. Because of these conditions, vacant or agricultural land is designated as either residential, mixed use, commercial, industrial, or commercial/industrial in the future land use plan – rather than identified for future agricultural use.

Residential

Table 2.7 shows residential acres by type. Approximately 7,047 gross acres and 5,364 net acres of land are currently used for rural residential, which is primarily single family detached housing. This comprises most of residential acres in the city. The corresponding zoning district is RR Rural Residential, which requires a five acre minimum lot size. The current average density in the developed rural residential area is approximately consistent with this guideline.

Around 14 gross acres and 12 net acres are currently used as suburban residential, which is primarily single family attached housing. The corresponding zoning district is SR Suburban Residential, which currently allows densities of 3-6 units per acre. However, the zoning for suburban residential areas are expected to change in the future to a mixed use designation, as shown in the future land use plan.

Table 2.7 – Residential Acres by Type		
Land Use	Acres	Percent of Total
Rural Residential	7,047	99.8%
Suburban Residential	14	0.2%
Total	7,060	100%

Source: Metropolitan Council

Table 2.8 details the net density of these two residential density levels, taking into account a significant amount of undevelopable land (primarily wetlands) within these areas.

Table 2.8 – Existing Net Residential Density					
Land Use	Number of Units	Gross Residential Acres	Undevelopable Land Acres*	Net Residential Acres	Net Density Units/Acre
Rural Residential	1,469	7,047	1,683	5,364	0.27
Suburban Residential	15	14	2	12	1.22
Total	1,484	7,061	1,685	5,376	0.28

*Undevelopable due to steep slopes, wetlands, right-of-way or other prohibiting features or uses

The Columbus zoning code specifies minimum and maximum densities for various residential development types. As part of the implementation of this comprehensive plan, the zoning code will be updated to add three new zoning districts for mixed use development, described in the Future Land Use section. **Table 2.9** shows the range of units per acre that can be developed under current zoning regulations as well as under anticipated changes as part of this comprehensive planning process. The planned densities and the average of these density ranges can be used to forecast the amount of land that is expected to be needed to accommodate growth. Senior Citizen Housing is not a separate zoning classification, but part of series of performance standards specifically for this development type. The maximum units per acre only applies to senior housing development.

Table 2.9 – Residential Allowed Density Ranges				
Residential Land Use Category	Existing Zoning Ordinance		Planned Zoning Ordinance Changes	
	Minimum Density	Maximum Density	Minimum Density	Maximum Density
Rural Residential	-	1 unit per 5 acres	1 unit per 10 acres	1 unit per 5 acres
Suburban Residential	3 units per acre	4 units per acre	n/a	n/a
Mixed Use – Low	n/a	n/a	1 unit per acre	3 units per acre
Mixed Use – Medium	n/a	n/a	8 units per acre	16 units per acre
Mixed Use – High	n/a	n/a	17 units per acre	30 units per acre
Senior Citizen Housing	-	20 units per acre	-	20 units per acre

Commercial/Industrial

There are two separate and distinct commercial/industrial areas in Columbus: Lake Drive and the freeway corridor.

Lake Drive/CSAH 23 has a two mile long corridor between Potomac Street and the Lino Lakes border guided and zoned for a mix of commercial and industrial uses. The corresponding zoning district is C/I Commercial/Industrial. The C/I District allows preexisting homes as permitted uses in the district. This plan does not propose any expansions of this district, as there are still developable acres in the currently identified corridor. However, a portion of this area near the city’s southern border will be guided for low density mixed use, to allow both residential and commercial on the same site.

The land in Columbus located along Interstate 35W, Interstate 35E, and Interstate 35 forms a three-mile long corridor. The mile-wide corridor is bound on the east by Forest Lake, on the south by Lino Lakes, and on the west by Rice Creek and its large wetland basin. The “freeway corridor” is the only area in Columbus that is currently developing with municipal sewer and water. Corresponding zoning districts

within the freeway corridor include CR Community Retail, CS Commercial Showroom, LI Light Industry, and HR Horse Racing. The Freeway Corridor is home to several older and several newer businesses. The zoning in the Freeway Corridor will be updated as part of the comprehensive planning process to accommodate medium and high density mixed use districts.

There are approximately 2,006 gross acres and 550 net acres total of land guided for commercial and industrial uses within the Lake Drive and Freeway corridors.

Columbus’ zoning code does not have specifications for the density of jobs in employment uses as it does for residential units. However, the Metropolitan Council has provided estimates for the number of employees per square feet in various employment types, and for typical floor area ratios for such development. Using this information and the city’s employment projections, an estimate of jobs per acre can be developed to project need for additional commercial, industrial, and institutional land. **Table 2.10** summarizes these ranges.

Table 2.10 – Commercial/Industrial Allowed Density				
	Minimum FAR	Maximum FAR	Minimum Jobs/Acre	Maximum Jobs/Acre
Commercial	0.28	0.69	8	33
Industrial	0.19	0.46	9	13
Mixed Use – Low	0.28	0.69	8	33
Mixed Use – Medium	0.28	0.69	8	33
Mixed Use – High	0.28	0.69	8	33

Future Land Use

The future land use plan shows what land uses and intensities are expected to be in the city by the horizon year of 2040. It is anticipated that the rural areas of the city will remain similar to their current conditions with a moderate amount of new residential units. Most growth and development is anticipated within the freeway corridor area, currently the only portion of the city with public water and sewer service available. This future land use plan is consistent with the population, household, and employment forecasts in **Table 2.1**.

Areas of change to future land use guidance since the previous comprehensive plan include:

- Boundaries of future land uses within the freeway corridor have been adjusted in response to past and anticipated development needs.
- Mixed use land use categories are being added to the freeway corridor in areas previously guided for just residential or commercial, to accommodate new forms of development. This replaces the former Suburban Residential Overlay concept, and includes different boundaries.
- A low density mixed use district is also being added to the Lake Drive corridor, to accommodate live/work uses.
- The majority of the city’s land area, with its rural residential guidance, remains effectively the same. The overall extent of the area planned for urbanized growth has not expanded.

Because of the nature of the community, there is limited opportunity for redevelopment of existing developed areas. However, the City of Columbus supports redevelopment and reinvestment in existing properties where appropriate. Additionally, the City will partner with Anoka County when appropriate to support development and redevelopment with resources, when there is demonstrated public benefit.

Figure 2.2 shows future land use guidance for all property in Columbus. **Table 2.11** summarizes the planned land uses by category shown on the map. The planned future land uses shown on this map reflect previous community planning efforts as well as desired updates identified as part of the 2018 Comprehensive Plan Update process.

The largest category of land in the city is anticipated to be Rural Residential (44.3%), followed by Wildlife Management Area (33.7%). Combined, these represent a majority of the acreage within the city.

Table 2.11 – Planned Land Use Characteristics		
Land Use	Acres	Percent of Total
Rural Residential	13,522.5	44.3%
Mixed Use – Low Density	40.8	0.1%
Mixed Use – Medium Density	128.6	0.4%
Mixed Use – High Density	51.6	0.2%
Commercial/Industrial	586.3	1.9%
Commercial	824	2.7%
Light Industrial	596	2.0%
Park	970.6	3.2%
Wildlife Management Area	10,276.4	33.7%
Other Protected	468.6	1.5%
Public Institutional	77.2	0.3%
Major and Other ROW	986	3.2%

Water	1,962	6.4%
Total	30,490.6	100.0%



Figure 2.2: Future Land Use

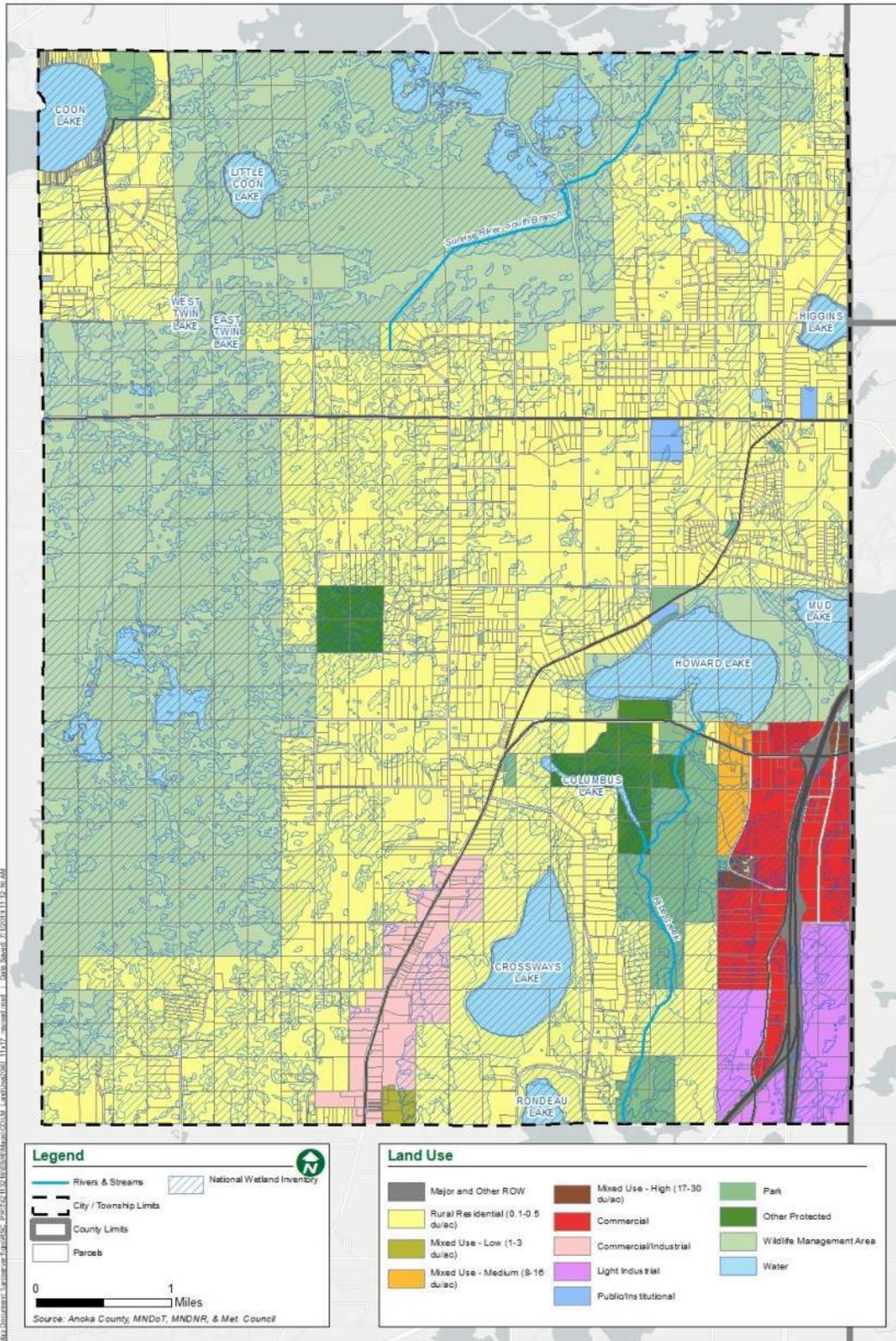


Table 2.12 provides further detail in terms of land availability for development. This table shows what areas are developable versus non-developable at each growth stage through 2040 (non-developable land primarily being areas that are already developed or that are set aside as undevelopable, such as wetlands, steep slopes, parks, WMAs, and other protected lands, and road rights-of-way). The staging of development shown below is also reflected in **Table 2.15** for sewerred portions of the city, with land anticipated to be developed in each decade shifting from “developable” to “non-developable.” Existing development in future mixed use areas not encumbered by natural constraints are included in the “developable” columns below due to redevelopment potential.

Table 2.12 – Guided Land Use Acres								
Future Land Use Category*	2015 (Current)		2016 - 2020		2021 - 2030		2031 - 2040	
	Developable	Non-Developable	Developable	Non-Developable	Developable	Non-Developable	Developable	Non-Developable
Rural Residential	1,433.5	12,089.0	1,208.7	12,313.8	782.3	12,740.2	433.5	13,089.0
Residential Mixed Use – Low Density	9.5	27.2	7.5	29.2	3.7	33.0	0.5	36.2
Residential Mixed Use – Medium Density	32.6	83.2	25.6	90.2	12.3	103.5	1.5	114.3
Residential Mixed Use – High Density	26.6	19.9	20.6	25.8	9.4	37.0	0.3	46.2
Commercial/Industrial	83.5	502.8	82.5	503.8	79.4	506.9	77.4	508.9
Commercial	258.4	565.6	255.9	568.1	247.7	576.2	241.0	582.9
Commercial Mixed Use – Low Density	1.057	3.02	0.68	3.40	0.3	3.77	0.1	4.02
Commercial Mixed Use – Medium Density	3.62	9.24	3.12	9.74	1.0	11.87	0.0	12.87
Commercial Mixed Use – High Density	2.95	2.21	2.58	2.59	1.3	3.84	0.1	5.09
Light Industrial	208.3	387.7	205.4	390.6	199.8	396.2	195.4	400.6
Park	2.3	968.3	2.3	968.3	2.3	968.3	2.3	968.3
Wildlife Management Area	0.0	10,276.4	0.0	10,276.4	0.0	10,276.4	0.0	10,276.4
Other Protected	0.0	468.6	0.0	468.6	0.0	468.6	0.0	468.6
Public Institutional	1.3	75.9	1.3	75.9	1.3	75.9	1.3	75.9
Major & Other ROW	0	986.4	0	986.4	0	986.4	0	986.4
Water	0	1,961.6	0	1,961.6	0	1,961.6	0	1,961.6
Total	2,063.6	28,427.1	1,816.2	28,674.4	1,340.8	29,149.7	953.4	29,537.3

**For the purposes of calculations, 90% of mixed use areas are allocated to residential and 10% to commercial*

The following land use descriptions will be used for planning purposes and guiding future land use.

Rural Residential

Columbus is unique in that large amounts of land are held in permanent public ownership, including extensive wetlands and wildlife management areas. Within that context, the City will continue to maintain a permanent rural character for Columbus by allowing only low density rural residential uses in the majority of the community. Agricultural uses are permitted in the Rural Residential area, but the reality is that agriculture is not a dominant activity or major economic force in the community.

The RR Rural Residential Zoning district covers almost the entire city, with the exception of around 2,300 acres dedicated to suburban residential, commercial, and industrial districts. This is anticipated to continue into the future.

With a gross acreage of around 13,500 acres, rural residential acres could theoretically support over 1,350 rural households at a gross 10-acre density. Currently, there are around 1,400 rural households in the unsewered area of Columbus.

Since the extensive amount of publicly owned land and wetlands in Columbus results in fragmented areas of developable land, the City has required a maximum density of one home per five acres and minimum lot size of five acres for several decades. This has proven to be an effective way to manage growth in this environmentally sensitive area while still allowing feasible use of property. The City will continue develop the remaining rural residential area at this density.

The City may from time to time use lot averaging to allow some lots less than 5 acres in size, for instance as part of a Planned Unit Development. However, the overall density for any development will not be more than one unit per 5 acres. The planned density range is 1 unit/10 acres to 1 unit/5 acres. As a result, most housing units in this district are anticipated to be single family detached homes.

At present, it is not anticipated that it will be financially feasible to extend public water and sewer into most of the rural residential area for the foreseeable future. For areas where there may be potential (for instance, proximity to existing systems in adjacent communities), Columbus will use flexible residential development tools to preserve land for post-2040 growth and to accommodate the future extension of regional urban services. Columbus will work to ensure compatibility between city development standards and flexible development guidelines for Diversified Rural communities, where applicable.

Mixed Use

The 2020 Comprehensive Plan (1999) indicated locations in the Freeway Corridor that were best suited for future potential residential development. The 2030 Land use plan established the “Suburban Residential Overlay” in these locations, providing flexibility to accommodate a variety of uses.. The current plan departs from the previous approach by creating mixed use land use designations to better match with potential development opportunities. New mixed use districts will allow both commercial and residential uses, in either horizontal or vertical configurations. The mixed use acreages in **Table 2.12** reflect the gross and net acreages for these areas. For the purposes of calculation, it is expected that these areas will be 10% commercial and 90% residential. The percentage of residential is relatively high because there are large commercial areas adjacent to the mixed use districts which are expected to accommodate many of the larger-scale commercial uses.

It is anticipated that many areas designated for mixed use in the future land use plan will redevelop, since most existing development in these areas is farmsteads or large lot residential. This is particularly the case in areas guided as Mixed Use – Low Density in this future land use plan. For planning purposes, all acres not encumbered by natural constraints such as wetlands are considered developable with the 2040 planning time frame.

There are three levels of intensity in mixed use districts in Columbus:

- Mixed Use – Low: 1 to 3 units per acre; development likely to include single family attached and detached homes, duplexes, and triplexes.
- Mixed Use – Medium: 8 to 16 units per acre; development likely to include single family attached homes, duplexes, triplexes, quadplexes, apartments, and condominiums.
- Mixed Use – High: 17 to 30 units per acre; development likely to include apartments and condominiums.

The Metropolitan Council projects a need for 27 units of affordable housing in Columbus by 2030. This is most likely to be met within Mixed Use districts in the Freeway Corridor. The Anoka County Housing and Redevelopment Authority (ACHRA) administers housing and redevelopment services and economic development services in Columbus. The City will work with the ACHRA to provide housing assistance for affordable and lifecycle housing opportunities within the Mixed Use area and general housing rehabilitation assistance throughout the rural residential area.

Commercial/Industrial

Business development along CSAH 23/Lake Drive has historically allowed a mix of commercial and industrial land uses. The corresponding zoning district for this area is the C/I Commercial/Industrial District. Residences in existence as of May 1, 2003 in the C/I District are permitted uses, but no new residences are permitted. The creation of the Mixed Use – Low Density land use designation in a portion of this area is intended to accommodate future housing and live/work needs in this area of the city.

The Lake Drive commercial/industrial area is currently served with private sewer and water systems. The types of uses permitted in this area are dependent upon the demonstrated capability of providing private utilities. The City of Columbus will continue to examine alternatives for public utilities in the area, including potential partnership with the City of Lino Lakes. The City is also considering a future partnership with Forest Lake to provide utilities to the West Broadway area. Both concepts would require a comprehensive plan amendment and future land use change.

The zoning boundary for the commercial/industrial area, updated after the 2030 comprehensive plan update, will be slightly modified in the 2040 plan to accommodate a small mixed use area.

Commercial

The I-35 Freeway Corridor is planned with large areas of commercial land use. The corridor is served by municipal trunk sewer and water facilities. The highest intensity uses – mixed use, retail, office, restaurant, hospitality, and entertainment – are planned nearest to the I-35 interchange. The corresponding zoning district for some of this area is CR Community Retail, although a portion of that area will be changed to mixed use zoning based on this comprehensive plan.

Columbus has become the home of the Running Aces harness racetrack, which opened in 2008. As a regional entertainment facility, the racetrack is located close to the I-35 interchange and is situated among other planned higher intensity commercial retail uses. Because of its unique characteristics, a separate zoning district was established for this use. The HR Horse Racing District allows standard bred horse racing, pari-mutuel betting, simulcasting, card clubs, and food and beverage services. The HR District also requires the highest architectural and design standards within the Freeway Corridor.

The center section of the Freeway Corridor is planned for larger scale retail uses and service facilities, such as “big box” retail, building supply centers, office/showrooms, automobile sales, fitness centers,

and hospitals. The corresponding zoning district is the C/S Commercial/Showroom District, though a portion of this area will be rezoned based on the comprehensive plan. The C/S District is a transition area from higher intensity retail uses to more land intensive light industrial uses. Municipal trunk sewer and water facilities are now in place to serve the commercial showroom area.

In addition to the new mixed use districts, zoning may also be amended in the future to allow for more differentiation between the commercial districts to better focus commercial development in areas where it will be the most viable. This may include adding a new Service Commercial zoning district (as a subset of the current CR district area), intended for areas with good access to major roads. It may also include refining the C/S district with a new Business Center district, intended for high tech manufacturing, medical office, and other compatible uses.

Industrial

The southern portion of the Freeway Corridor and locations without direct visibility from I-35 are planned for light industrial uses. The corresponding zoning district in this area is the LI Light Industrial District. The LI District allows warehousing, equipment sales and service, wholesale distribution and sales, light manufacturing, greenhouses, and landscape businesses. An example of uses in this area is the Ziegler Caterpillar heavy equipment sales and service center. Municipal sewer and water is available to light industrial users on the west side of I-35 and the northerly portion of the light industrial area on the east side of I-35. Complete utility service in this area is dependent upon utility staging plans and petitions for sewer and water service.

Zoning may also be amended to allow for more differentiation in the industrial areas, including potentially new industrial zoning districts, to better manage compatibility between adjacent uses.

Park, Wildlife Management, and Other Protected Land

The Park, Wildlife Management, and Other Protected Land categories cover a range of passive open space park amenities with some limited active areas. The majority of this land (with the exception of a few city parks) is primarily for the preservation of wildlife and natural resources. Due to the similarity in land use, these future land use categories are and will continue to be treated the same in the zoning ordinance. Their separate designations are for legal reasons and ownership, not intended use.

The Other Protected Land areas do not have the same permanent status of protection as the Park and Wildlife Management areas but are currently expected to remain as open space. If Other Protected Lands were to transition out of natural or passive uses, the land use guidance would be similar to Rural Residential.

Public Institutional

The public/institutional land use category includes the Columbus City Hall, Fire Hall, and Public Works complex on Kettle River Boulevard and Notre Dame Street. It also includes public utility facilities, several churches, and the Columbus Elementary School.

Water

There is an extensive amount of wetlands and open water located within the city limits. At present, these areas are contained within broader areas guided for other land uses, although they are netted out

when calculating development capacity of a given area.

Major and Other ROW

This area designates vehicular right-of-way (ROW) surrounding principal arterials and other roadways. In Columbus, this includes the area along I-35, I-35W, I-35E, and other major roads. They are netted out when calculating development capacity of a given area.

Density Calculations

Based on the above future land use plan and land use calculations, residential and commercial land use requirements have been calculated to help Columbus plan for and meet Metropolitan Council projections for population, households, and employment. Residential calculations are detailed in **Table 2.13** and commercial calculations are detailed in **Table 2.14**.

Based on Metropolitan Council estimates for 2015, there are about 1,426 households in 1,484 housing units in Columbus. Growth forecasts estimate around 774 more households will be added to the city by 2040. To accommodate this growth and maintain the modest vacancy rate present in 2015, about 805 housing units will need to be built by 2040. Of these, around 100 are anticipated in rural residential (unsewered) areas, and around 705 in mixed use (sewered) areas. This assignment is based on an analysis of available developable land in both areas and on minimum allowed densities in each district, detailed in **Table 2.13**.

Even at the minimum densities allowed, the City of Columbus has room to accommodate this forecasted growth.

Table 2.13 – Planned Residential Density Ranges and Acres Needed					
Future Land Use Category	Density Range (Units/Acre)		Units Needed	Minimum Acres Needed	Maximum Acres Needed
	Minimum	Maximum			
Rural Residential	0.1	0.2	100	500	1,000
Mixed Use – Low Density	1	3	9	3.0	9.0
Mixed Use – Medium Density	8	16	249	15.6	31.1
Mixed Use - High Density	17	30	447	14.9	26.3
Total			805	533.5	1,066.4

The Metropolitan Council has also forecasted employment levels for Columbus. Employment is anticipated to increase by 364 jobs by 2040. Employment projections will be met within the Mixed Use, Commercial/Industrial, Commercial, and Light Industrial land use districts. Some employment growth may occur from institutional land uses, but this growth is most likely to occur in areas already guided for institutional land uses and will not require additional acreage. **Table 2.14** shows the anticipated amount

of land needed to accommodate development for employment growth. There is also capacity to accommodate this future growth.

Table 2.14 – Commercial/Industrial Density Ranges and Acres Needed					
Future Land Use Category	Density Range (Jobs/Acre)		Jobs Needed	Minimum Acres	Maximum Acres
	Minimum	Maximum			
Commercial	8	33	139	4.2	17.4
Industrial	9	13	116	8.9	12.9
Commercial/Industrial	8	33	49	1.5	6.1
Mixed Use – Low Density	8	33	8	0.2	1.0
Mixed Use – Medium Density	8	33	29	0.9	3.6
Mixed Use – High Density	8	33	23	0.7	2.9
Total			364	16.4	43.9

Staged Development or Redevelopment

Emerging Suburban Edge communities must include a staging plan to show the sequence of growth and anticipated timing. The goal of the Staging Plan is to manage growth and guide the orderly and cost-effective provision of infrastructure at a rate that is consistent with forecasted growth, at the same time responding appropriately to market conditions. Since only a portion of Columbus is within the Emerging Suburban Edge district, the staging plan applies to only that portion of the city and the growth forecasted for that area.

The earliest staging is planned to be adjacent to existing development and then extend from this point in a logical sequence based on what the city believes is an efficient pattern of growth. Staging is limited to the areas within Columbus that are located within the MUSA. City services will need to be extended to accommodate planned development. Residential and commercial/industrial densities, outlined in **Tables 2.13 and 2.14** above, were used to determine the acreage needed to accommodate projected growth and development in Columbus.

Figure 2.3 shows a proposed approach to City of Columbus' staging plan, divided by the horizon years. The plan anticipates that the one area that has been not yet been sewered in the city's freeway corridor will be connected by 2020. All development after that point will occur as infill within the existing areas currently served by utilities.

Table 2.15 shows how housing units and jobs are allocated in terms of timing and developable acres needed to accommodate these allocations. The actual development pattern and sequencing may vary – however, public utilities should be extended in a cost-effective manner to efficiently serve development. Housing units and jobs not represented in the table below are anticipated to be in unsewered portions of the city in the Rural Residential, Mixed Use Low Density and Commercial/Industrial districts. The full anticipated staging of developable and non-developable acres per decade are provided in **Table 2.12**.

Table 2.15 – Future Land Use Units/Jobs/Net Acres per Decade

Within Urban Service Area	Planned Density Range Housing Units/Acre*		Existing (2015)		2016 - 2020		2021 - 2030		2031 - 2040		Change 2015-2040		
	Min	Max	Units	Acres	Units	Acres	Units	Acres	Units	Acres	Units	Acres	
Residential Land Uses													
Mixed Use – Medium Density	8	16	15	12	53	7.0	109	13.3	87	10.9	249	31.1	
Mixed Use – High Density	17	30	0	0	103	5.9	189	11.2	155	9.2	447	26.3	
TOTAL			15	12	156	12.9	298	24.5	242	20	696	57.4	
Average Density for New Development: 696 New Units/57.4 Acres = 12.1 units/acre													
C/I Land Uses	Estimated Employment/ Acre		Jobs	Acres	Jobs	Acres	Jobs	Acres	Jobs	Acres	Jobs	Acres	Change 2015-2040
Commercial	8	33	678	139	20	2.5	65	8.1	54	6.8	139	17.4	
Industrial	9	13	158	64	26	2.9	50	5.6	40	4.4	116	12.9	
Mixed Use – Medium Density	8	33	0	0	4	0.5	17	2.1	8	1.0	29	3.6	
Mixed Use – High Density	8	33	0	0	3	0.4	10	1.3	10	1.3	23	2.9	
TOTAL			836	203	53	6.3	142	17.1	112	13.5	307	36.8	

2020

The 2020 growth staging area will extend services into the southeast corner of the freeway interchange. Utilities and road improvements will be extended on a development-driven timeline to service this area.

2030

The 2030 growth staging area expands upon the areas in the 2020 phase, with additional growth around developed areas and utility connections. Utilities and road improvements will be extended on a development-driven timeline.

2040

The 2040 growth staging area continues to build outward from existing developed areas, consistent with the identified land uses by subarea. Utilities and road improvements will be extended on a development-driven timeline.

Future Years

Additional land in the city could be developed prior to 2040, particularly if growth forecasts for the district exceed expectations, or new uses need particularly extensive areas of land.

There are several potential areas where future public utilities could be expanded beyond the freeway corridor, including:

- Areas along the Broadway Avenue corridor, in coordination with Forest Lake
- Areas along the Lake Avenue corridor, in coordination with Lino Lakes
- Areas near the freeway corridor, in coordination with Lino Lakes

Any of these changes would require a comprehensive plan amendment, as land use in those areas is not currently guided for public water/sewer levels of development.

Natural Resources

Natural resources are beneficial to the social, environmental, and economic vitality of a community. To ensure their quality and benefits, it is essential to plan and manage natural resources and areas as was done for residential and commercial areas.

Columbus has a variety of environmental amenities, such as recreational lakes, wetlands, and forested areas, which make the city an attractive location for rural residential development. A limited amount of land is available for development because of the extensive wetlands and the physical characteristics of soils. Columbus lies primarily within an area known as the Anoka Sand Plain in which depressions are common, formed when blocks of ice with fine sands melted from retreating glaciers 13,000 years ago. **Figure 2.4** shows the natural features in Columbus that are constraints on development.

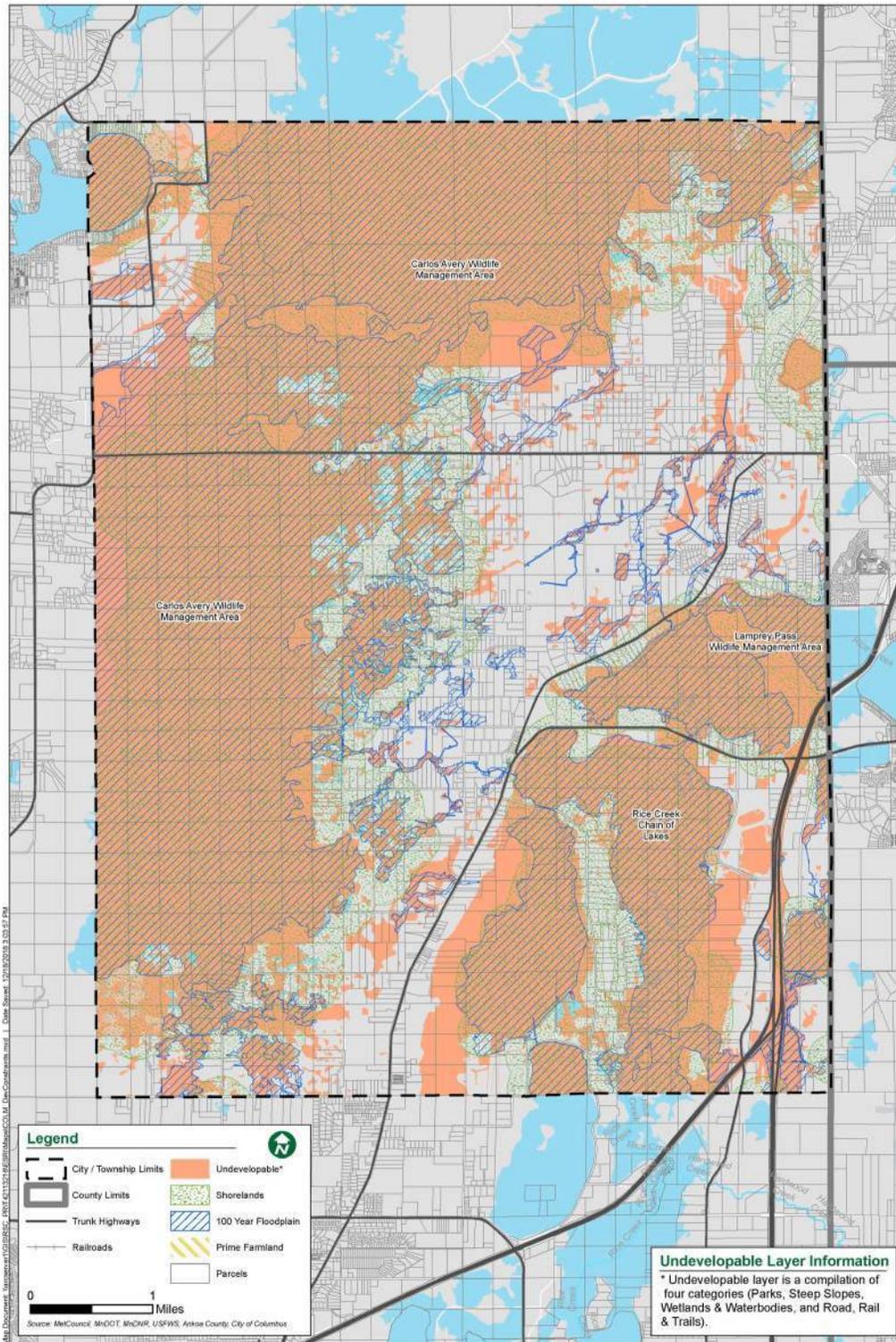
Soils

There are three general soil associations (related soils) within the City of Columbus. The Nessel-Dundas-Webster Association is roughly located along the Interstate 35 corridor. This soil association was formed in loamy glacial till and the soils range from being nearly-level to gently-sloping and from being well-drained to poorly-drained. Much of the association is moderately to poorly suited for certain urban uses, due to the high water table levels and the fertility of the soil.

The Zimmerman-Isanti-Lino Association covers approximately 40% of the city, along areas west and east of Crossways Lake, Howard Lake and Higgins Lake. The association is relatively well-suited for urban development and moderately well-suited for farming; however, a high water table limits many uses. The main concerns related to the management of this soil association are controlling soil blowing, improving fertility, and controlling the level of the water table in low-lying areas.

The *Rifle-Isanti Soil Association* covers approximately 53% of the city and includes the Carlos Avery Wildlife Management Area. This association is comprised of a series of large, level bogs dominated by organic soils and small sandy island-like features that rise several feet above the level of the surrounding bogs. The association has a naturally high water table and it ranges from moderate to low fertility and the available water capacity ranges from low to very high. These soils are poorly suited for urban or agricultural uses. The main concerns related to the management of this soil association are control of the water table and maintaining soil fertility.

Figure 2.4: Development Constraints



Water Resources

Wetlands and surface waters are predominant features in Columbus. According to the National Wetlands Inventory, approximately 16,684 acres in Columbus are encumbered by wetlands and floodplain areas. There are another 1,962 acres of surface waters, which combined represent a large percentage of the total acreage in the city. Wetlands are protected by state law and several lakes and rivers are designated public waters with shoreland management regulation required by the state and implemented by the City.

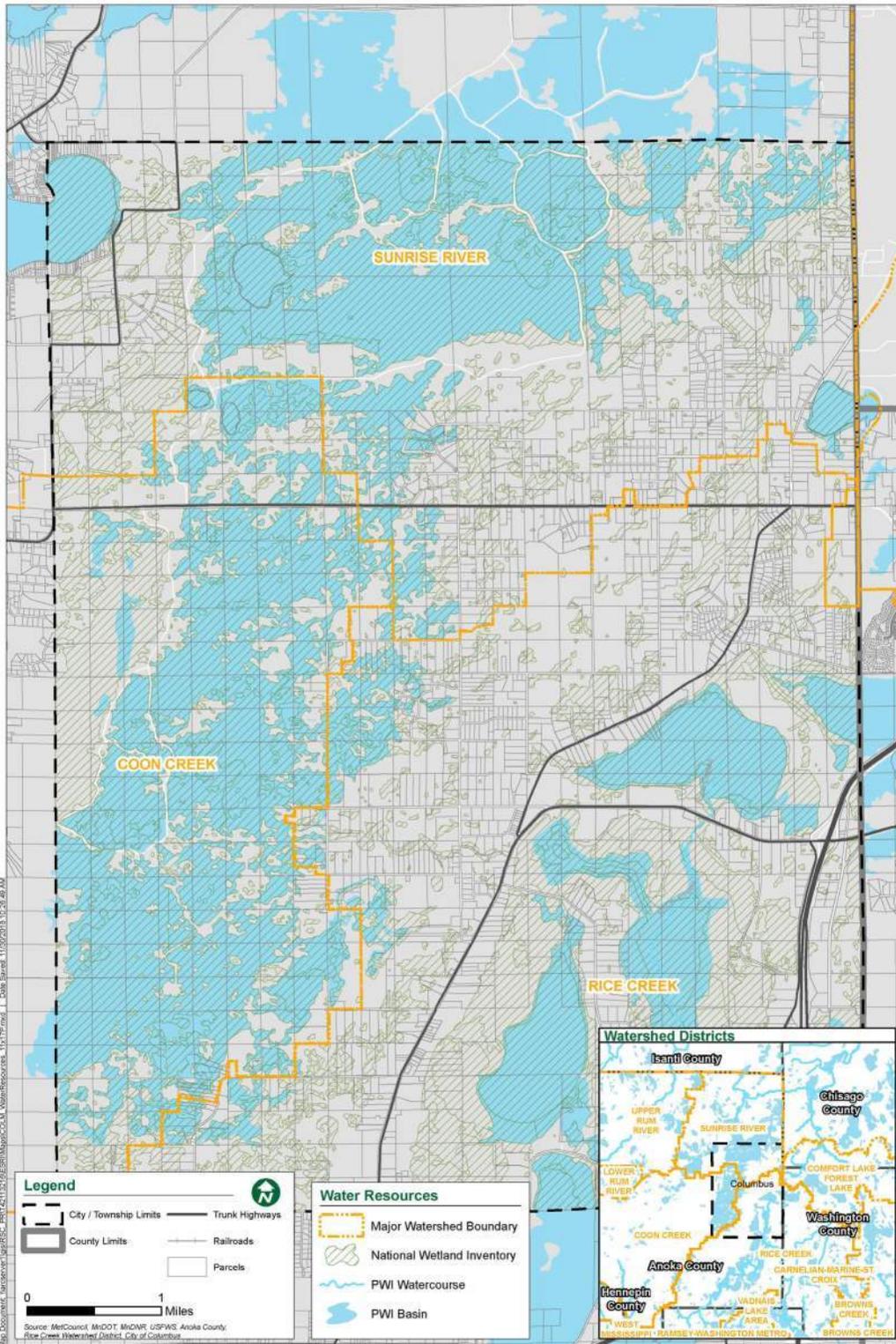
Columbus is located within three separate watersheds: Rice Creek, Coon Creek, and Sunrise River. A watershed is an overland drainage area where precipitation flows into wetlands, lakes, rivers, and streams. Water resource management and planning within watersheds are conducted through the watershed management organizations and by the City. **Figure 2.5** illustrates the water resources and watershed boundaries in Columbus.

The Rice Creek Watershed includes Rondeau Lake, Crossways Lake, Columbus Lake, Howard Lake, and Mud Lake, all of which are Natural Environment Lakes. Rice Creek is classified by the DNR as a Tributary River, and it is surrounded by a large wetland basin. The Rice Creek Watershed is organized as a watershed district and it acts as the Local Government Unit (LGU) for the Wetland Conservation Act (WCA) in Columbus within the Rice Creek Watershed District boundary.

The Sunrise River Watershed includes a portion of the Sunrise River, a tributary river, Coon Lake, Little Coon Lake, Twin Lakes, Higgins Lake, and several unnamed lakes. All of the lakes are classified as Natural Environment Lakes, except Coon Lake, which is a General Development Lake. The northerly portion of Carlos Avery WMA in Columbus comprises much of this watershed. The Sunrise River Watershed is organized as a watershed management organization and Columbus is the LGU for permitting.

The Coon Creek Watershed includes a portion of Coon Creek, a tributary stream along the westerly border of Columbus, and an unnamed Natural Environment Lake located within Carlos Avery WMA. Coon Creek Watershed covers much of west-central Columbus including the southerly half of Carlos Avery WMA. Coon Creek Watershed is organized as a watershed district and acts as the LGU for permitting in Columbus.

Figure 2.5: Water Resources



Regionally Significant Resources

Some natural resources areas within Columbus has been identified as significant on a regional level.

There are substantial areas within Columbus that are identified in the Minnesota Biological Survey (MBS) as “high biodiversity significance” and “outstanding biodiversity significance.” The latter is generally located within and around Carlos Avery WMA. The former is located near Rondeau Lake. **Figure 2.6** identifies these resources.

This figure also shows how these fit within an overall assessment of regionally significant ecological features, which were identified in 2003 through a landscape scale assessment by the Minnesota Department of Natural Resources. These areas are defined as places where intact native plant communities and/or native animal habitat are still found in the region and continue to provide important ecological functions such as:

- Habitat for game and non-game, including threatened, endangered, and special concern animals
- Biological diversity
- Connectivity in the landscape
- Groundwater recharge and improved water quality
- High to outstanding examples of native plant and/or animal communities or animal aggregations

These designations further emphasize the importance of the permanent protections that are already in place for these area – and the need for managing development in areas bordering them.

Woodlands Protection

Columbus values the extensive woodlands areas throughout the community. The City has adopted a Forestry Regulations chapter in the City Code. The Forestry Regulations provide restrictions for the unnecessary removal or destruction of trees, requirements for tree protection plans when warranted, and Oak Wilt Disease and Shade Tree Pest inspection and treatment programs. **Figure 2.7** identifies forested areas, as well as other types of land cover.

Figure 2.6: Regionally Significant Environmental Features

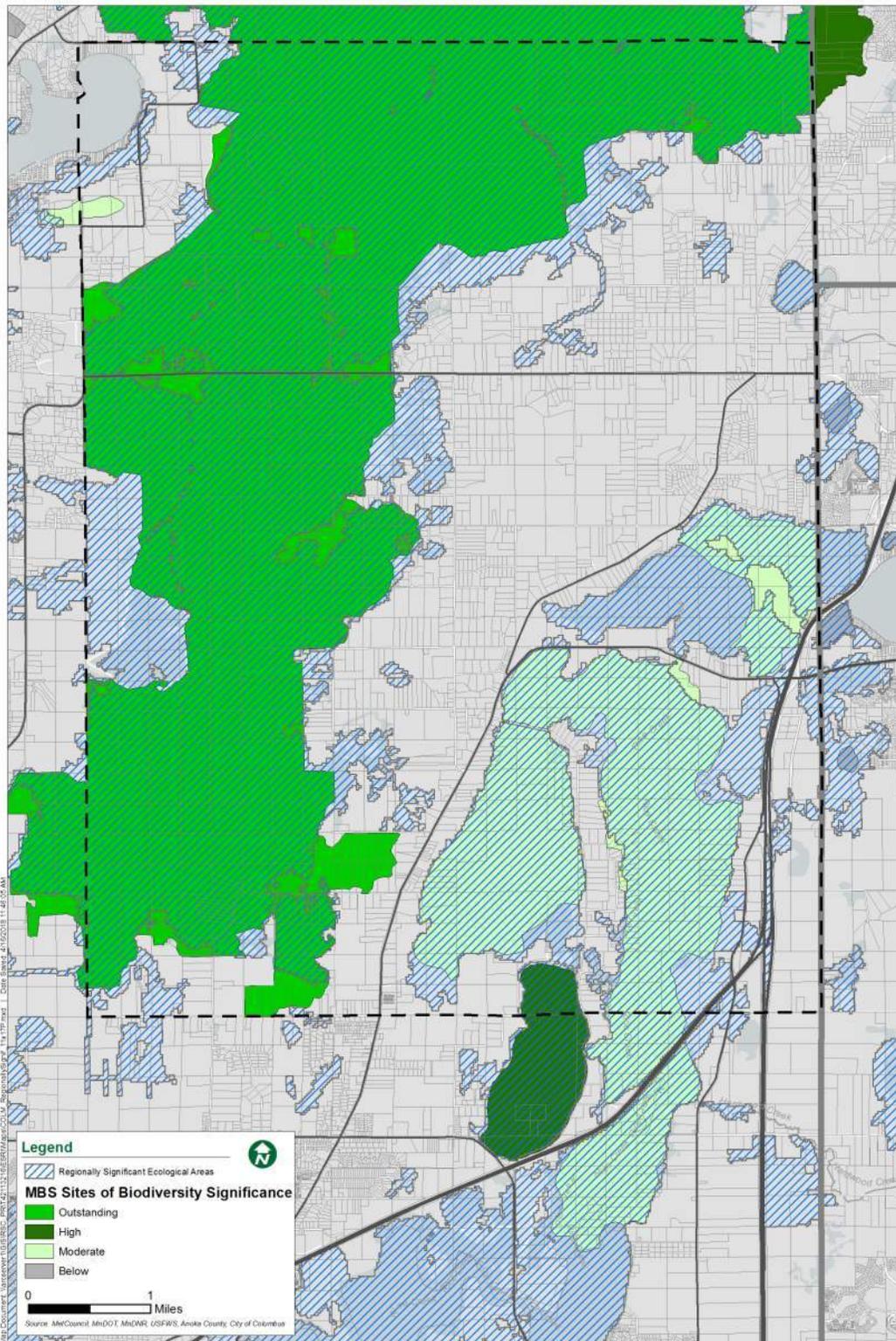
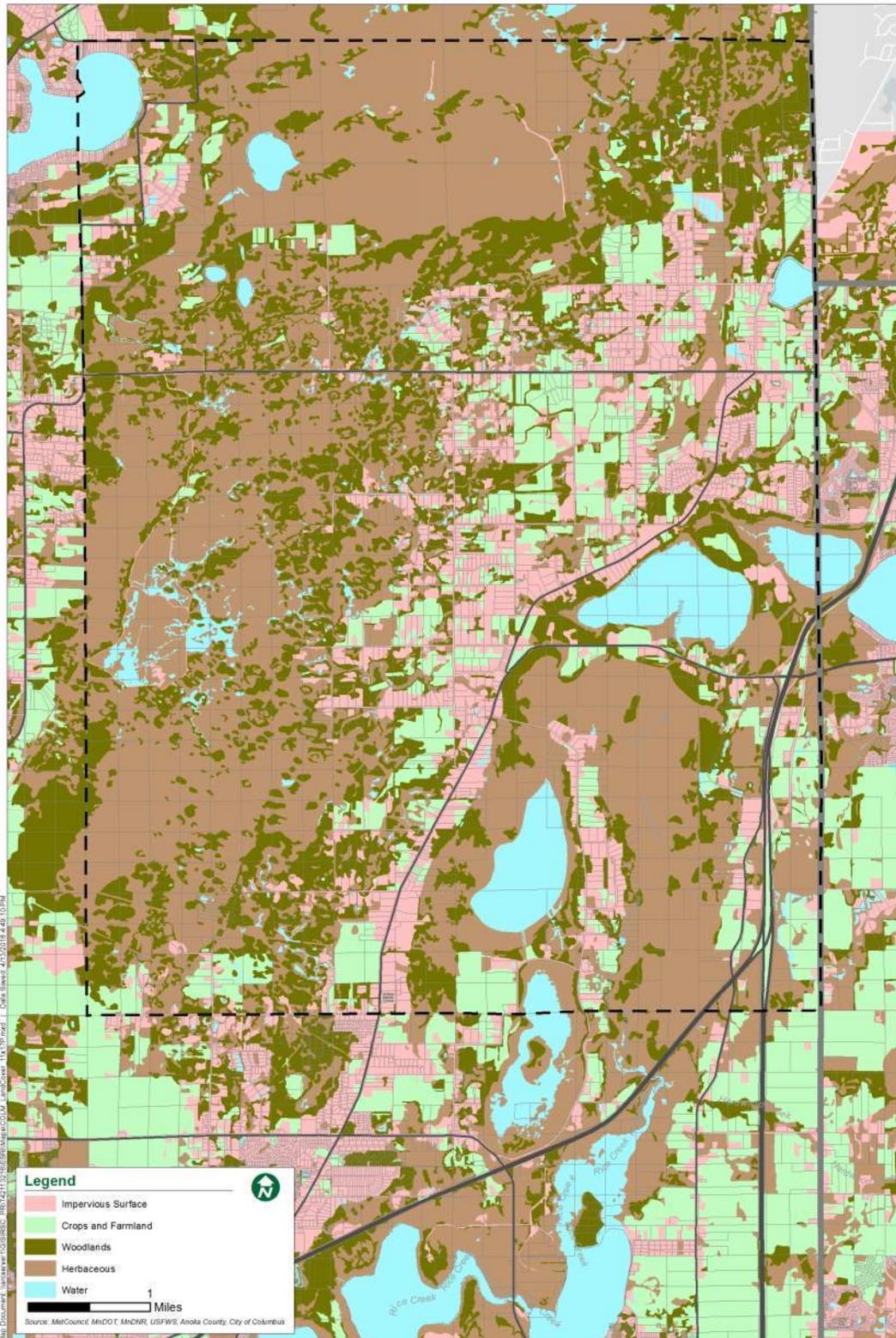


Figure 2.7: MLCCS Land Cover



Community Facilities and Services Plan

The City Hall is located on the east side of Kettle River Boulevard adjacent to Howard Lake. This site also includes the City's fire hall, public works facility, and a senior citizen center. Firefighting services are provided to Columbus through a joint powers agreement with the City of Forest Lake. Law enforcement services are provided by the Anoka County Sheriff.

It is the intent of the City to provide a range of cost-effective services to the community, including police and fire protection, street maintenance, public utility maintenance, and parks and recreation, based on priorities set by community residents. The City also seeks to continually evaluate the efficiency of the services offered. Privatization, cost sharing, joint services with other units of government, and capital improvements planning are options that the City will consider as part of an evaluation process. Currently, the City has no plans for new or expanded facilities. However, the City acknowledges that it is imperative to identify long range needs to serve anticipated new residential and commercial/ industrial development.

Special Resource Protection

The comprehensive plan is required to address policy for a range of special resources that impact community land use planning. These include historic resources, solar energy, agricultural preserves, and aggregate resources. The ones that are applicable to Columbus are addressed in this section.

Historic Resources

The history of Columbus is influenced by both Native Americans and the European settlers that followed. There are significant remnants that were left by the Hopewell tribe, including burial mounds located around Howard Lake in the Lamprey Pass Wildlife Management Area. Three large mounds were discovered in 1889; and it was not until 1977 that three smaller mounds were discovered. Each of these areas are designated and protected as historic sites by the Minnesota Historical Society. In addition, the Minnesota Historical Society believes that remnants of Native American settlements may exist along Kettle River Boulevard northeast of Howard Lake and along Rice Creek.

The only site in Columbus that is on the National Register of Historic Places is the Carlos Avery Game Farm, located Broadway Avenue. It has been on the Register since 1991. It is the site of buildings built by the WPA in the 1930's and includes an entrance gate to the site that is built of stone and iron. During that era, it was a national showplace for the rearing of quail. The facilities are now the home of the north metro wildlife Forest Lake Area office of the Department of Natural Resources (DNR), the headquarters for the DNR's Carlos Avery Wildlife Management Area.

A number of structures and building sites have had historic value for Columbus even though they are not legally preserved or protected by state or federal preservation programs. The first public structure built in Columbus was a post office in 1858. The post office closed after plans for the Village of Columbus did not materialize. The first school house was built in 1866 in the northern part of Columbus. It was a log structure and provided facilities for instruction for three to four months per year. No remnants of these structures exist today.

Other structures in the city still remain. The Republic School, built in 1890, had a Grange Hall upstairs and a school downstairs. The Grange refers to a lodge or local branch of the "Patrons of Husbandry," an association for promoting the interests of agriculture. It is now a private residence located on Lake Drive. The old Town Hall was built in 1902 and the City inquired into the historical significance of the structure. However, due to extensive renovation over many years, the Minnesota Historical Society did

not feel it had the historic value to warrant designation.

The City supports efforts to preserve the heritage of the community. Columbus also supports archeological research prior to or in conjunction with any excavation or building in areas known or suspected to contain burial mounds and other archeological features or artifacts. The City will work with the Anoka County Historical Society and the Minnesota Historic Preservation Office to preserve the cultural resources in the community.

Aggregate Resources

There are no aggregate resources in Columbus.

Agricultural Preserves

While agricultural has been a feature of the history of this community, it has not been a significant land use within the city itself. The large percentage of wetlands and sandy soils mean this agriculture has had limited value in Columbus. While the City does have an Agricultural Preserve zoning district, which limits residential development to one unit per 40 acres, it is not currently applied to any area of the city due to lack of a suitable location.

The state Agricultural Preserve program conveys tax benefits to properties that are maintained for agricultural production. This voluntary program requires that maximum density of residential structures in an agricultural preserve shall not exceed one unit per 40 acres. The Metropolitan Council also requires that these parcels be guided as agriculture on the future land use map. Once this status is entered into, there is a multi-year process necessary to remove it from the program. At the time of the writing of this plan, no parcels in Columbus have this status.

Resilience

Resilience in planning and development helps to ensure the prosperity, livability, equity, and sustainability of a community for future generations. Resilience planning focuses on all aspects of community, ensuring the economy, the environment, and social/living conditions are vibrant and upheld through adversity.

The Metropolitan Land Planning Act (Minnesota Statutes 473.859, Subd. 2) requires local comprehensive plans to include for the protection and development of access to direct sunlight for solar energy systems. Columbus recognizes the importance of protecting solar access from potential interference by adjacent structures. Due to the rural, low-density character of Columbus, it is unlikely that solar energy systems would be precluded by structure inference in most areas. Provisions within the Zoning Ordinance related to density, height, and structure setback in residential, mixed use, commercial, and industrial areas provide adequate protection for solar energy access.

According to the Metropolitan Council, Columbus has the following solar potential, detailed in **Table 2.16** and shown on **Figure 2.8**. These calculations assume a 10% conversion efficiency and current (2016/17) solar technologies. The average home in Minnesota consumes between 9 and 10 Mwh/year (Solar Energy Industries Association; US Energy Information Administration). Using only Columbus' rooftop generation potential, between 3,810 and 4,233 homes could be powered by solar energy annually. This is more than the existing and forecasted housing units in Columbus.

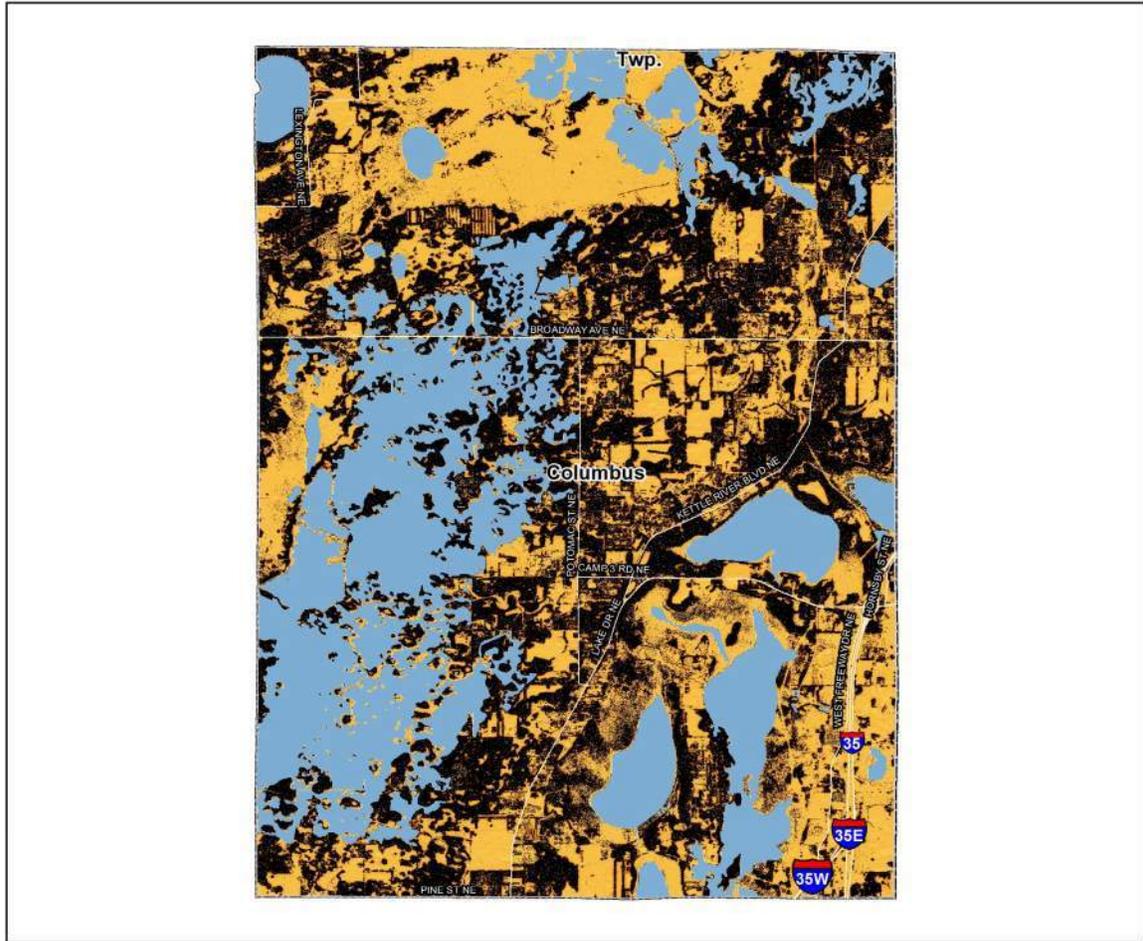
Table 2.16 – Solar Resource Calculations			
Gross Potential (Mwh/yr)	Rooftop Potential (Mwh/yr)	Gross Generation Potential (Mwh/yr ²)	Rooftop Generation Potential (Mwh/yr ²)
53,676,916	381,017	5,367,691	38,101

Source: Metropolitan Council

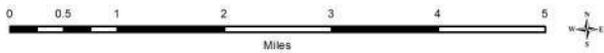
The City of Columbus goal relative to solar resource development is meeting state standards regarding access to direct sunlight for solar energy systems. Its policy is to maintain zoning and subdivision standards which satisfy this requirement.

Figure 2.8: Solar Potential Map

Gross Solar Potential
City of Columbus, Anoka County



12/5/2016



Gross Solar Potential
(Watt-hours per Year)

High : 1265104
Low : 900001

Solar Potential under 900,000 watt-hours per year

County Boundaries

City and Township Boundaries

Wetlands and Open Water Features

Source: University of Minnesota U-Spatial Statewide Solar Raster.

Chapter 3: Housing

Purpose

This chapter provides an overview of existing housing conditions in Columbus. It also includes a plan to accommodate affordable housing as required through the Metropolitan Council, and a supporting implementation program for housing in general.

Existing Housing

As of 2015, Columbus contained 1,484 housing units, 98% of which are single family and 2% of which are multifamily. Most homes are owner occupied (92%).

Housing affordability is an issue that every community needs to address when making long range plans, and Columbus is no different. The city has been able to maintain a sizeable amount of housing stock that is affordable to households between 51 and 80% Area Median Income (AMI) with 759 units, which make up approximately 51% of the total housing stock. Around 54% of Columbus’ housing stock is affordable to families with incomes between 31 and 80% AMI. There are no available units to those households with incomes at or below 30% AMI. Approximately 17% of households with incomes below 80% AMI are cost burdened, which means they pay over 30% of their incomes on housing expenses. These and other housing data can be seen in **Table 3.1**.

Table 3.1 – Housing Conditions, 2015		
General Housing Statistics	Number of Units	Percent of Units
Total of Housing Units	1,484	
Housing Units – Owner Occupied	1,369	92.3%
Housing Units – Rental	115	7.7%
Single Family Homes	1,460	98.4%
Multi-family Homes	24	1.6%
Publicly Subsidized Units		
– Senior Housing	0	0.0%
– Housing for People with Disabilities	0	0.0%
– All Other Publicly Subsidized Units	0	0.0%
Housing Affordability in Reference to Average Median Income (AMI)		
Housing Units affordable to households with incomes at or below 30 AMI	0	0.0%
Housing Units affordable to households with incomes between 31 and 50% AMI	43	2.9%
Housing Units affordable to households with incomes between 51 and 80% AMI	759	51.1%
Households Experiencing Cost Burden		
Existing households experiencing housing cost burden with incomes below 30% AMI	144	9.7%
Existing households experiencing housing cost burden with incomes between 31 and 50% AMI	55	3.7%
Existing households experiencing housing cost burden with incomes between 51 and 80% AMI	53	3.6%

Source: Metropolitan Council

Housing in Columbus is predominantly single family detached, which is typical of rural communities. According to the American Community Survey, approximately 97% of the occupied housing stock (1,438 units) in 2015 were detached single family, compared to 1.5% attached single family residences (22 units). There are no multiple family residences in Columbus outside a small number of 2-4 unit buildings (1.6% of total housing stock).

Table 3.2 illustrates the breakdown of housing unit type in Columbus in 2015. The average household size in Columbus in 2015 was 2.64 persons per household, which has decreased from 2.98 in 2000.

Table 3.2 – Housing Unit Type, 2015	
Household Type	Number of Units
Single Family, detached	1,438
Single Family, attached	22
2-4 Units	24
Total Households	1,484

Source: 2011-2015 American Community Survey; Metropolitan Council

Table 3.3 illustrates the approximate distribution of owner-occupied and renter-occupied households in Columbus by age according to the 2015 American Community Survey. Two-thirds of all households are headed by middle-aged householders from 35-64 years of age. About 23% of the households are occupied by residents age 65 or older. Approximately 7% of all households are headed by persons under the age of 35. This pattern of aging householders (one of the highest percentages in the county) suggests that there may be a growing need for senior housing options in the future.

Table 3.3 – Percentage of Households by Age Distribution of Owners and Renters, 2015			
Householder Age	Owners	Renters	Total Households
15-34	5%	2%	7%
35-64	66%	6%	72%
65 or Older	23%	0%	23%
Total Households	94%	8%	102%

Source: 2011-2015 American Community Survey

Married couples dominate household type in Columbus (over 70%). Families, including male and female heads of households, make up almost 80% of households. Approximately 21% of all households have nonfamily occupants, including single person households (19%) and multiple person nonfamily households (2%). **Table 3.4** identifies the percentage of 2015 households by householder type.

Table 3.4 – Households by Householder Type	
Householder Type	Number of Households
Married Couples	73%
Male Householder, Family	1%
Female Householder, Family	5%
Non-family (single person)	19%
Non-family (2 or more people)	2%
Total Households	100%

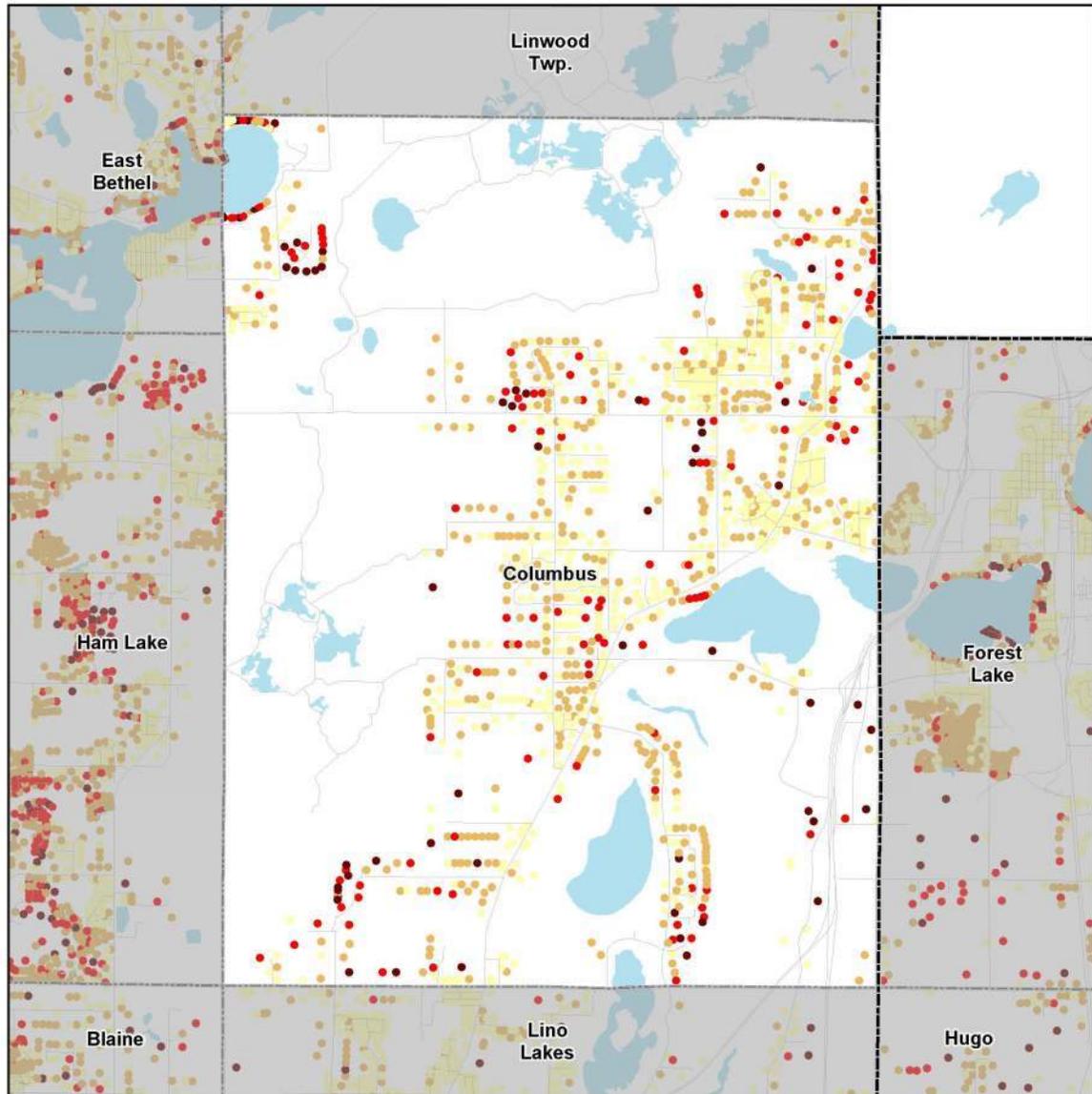
Source: 2011-2015 American Community Survey; Metropolitan Council

Figure 3.1 shows the location of owner occupied units in the city, by value. While units in a substantial portion of the city are valued at less than \$238,000 (an estimated benchmark for affordability for a

family of four), there are a number units over that as well.

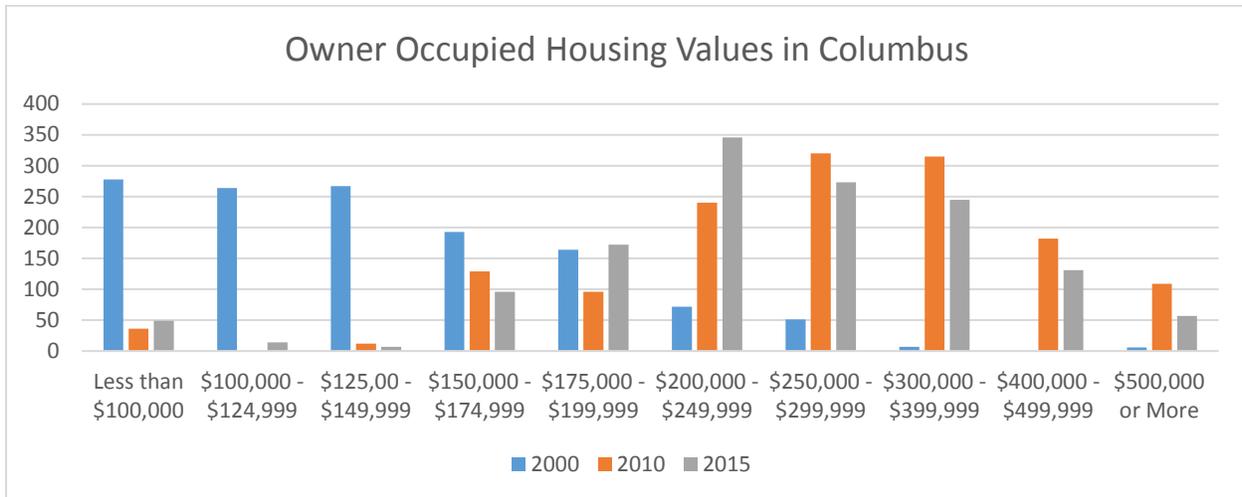
Figure 3.1: Owner Occupied Units by Value

Owner-Occupied Housing by Estimated Market Value
Columbus



County Boundaries	Owner-Occupied Housing Estimated Market Value, 2015	1 inch = 1.2738 miles
City and Township Boundaries	\$238,500 or Less	
Lakes and Major Rivers	\$238,501 to \$350,000	
Street Centerlines	\$300,001 to \$450,000	
	Over \$450,000	

Source: MetroGIS Regional Parcel Dataset, 2015 estimated market values for taxes payable in 2016.
Note: Estimated Market Value includes only homesteaded units with a building on the parcel.



Source: US Census; Metropolitan Council

Housing values in Columbus followed the trend many areas experienced in the last 20 years. A surge in the housing market in the early and mid-2000s led into a crash of the housing market in the late 2000s and early 2010s, as well as a large increase in the amount of housing that was valued over \$200,000 in the area. The numbers in **Table 3.5** and the chart above have not been adjusted for inflation, which could affect the layout of the chart and skew interpretation of the data. Taking inflation in account, the gap between 2000 and 2010 is still present, but not as large as it may appear. The area has since been recovering but still lacks much of what was affordable back in 2000.

Values (in \$000s)	2000		2010*		2015*	
	Percent of Units	Cumulative Percent	Percent of Units	Cumulative Percent	Percent of Units	Cumulative Percent
Less than \$100	21.4%	21.4%	2.5%	2.5%	3.5%	3.5%
\$100 - \$124	20.3%	41.6%	0.0%	2.5%	1.0%	4.5%
\$125 - \$149	20.5%	62.1%	0.8%	3.3%	0.5%	5.0%
\$150 - \$174	14.8%	77.0%	9.0%	12.3%	6.9%	11.9%
\$175 - \$199	12.6%	89.6%	6.7%	19.0%	12.4%	24.3%
\$200 - \$249	5.5%	95.1%	16.7%	35.6%	24.9%	49.2%
\$250 - \$299	3.9%	99.0%	22.2%	57.9%	19.6%	68.8%
\$300 - \$399	0.5%	99.5%	21.9%	79.8%	17.6%	86.5%
\$400 - \$499	0.0%	99.5%	12.6%	92.4%	9.4%	95.9%
\$500 or More	0.5%	100.0%	7.6%	100.0%	4.1%	100.0%

Source: U.S. Census Bureau, American Community Survey

*Not adjusted for inflation

Table 3.6 provides both median housing values and median gross rents for Columbus and Anoka County. Columbus had higher home values than the county average in both 2010 and 2015. In 2010, Columbus had a lower median rent than the county average. However, median rent in the city surpassed county averages in 2015, which may contribute to housing cost burden among renter households.

Table 3.6 – Housing Values and Costs		
Type of Sale	Columbus	Anoka County
Median Housing Value, 2010	\$282,300	\$223,100
Median Housing Value, 2015	\$252,000	\$187,600
Median Gross Rent, 2010	\$784	\$870
Median Gross Rent, 2015	\$1,136	\$971

Source: Metropolitan Council

Existing and Projected Housing Needs

Based on 2015 housing data, about 17% of households at or below 80% AMI in Columbus experience cost burden. Addressing housing affordability is a primary need in Columbus, and is expected to continue to be in the future.

In recent years, there have been two countywide housing assessments in Anoka County that include Columbus. While forecasted demand numbers from these studies will not be used directly in this plan (which relies on Metropolitan Council numbers), they provide other insights into the housing market in Columbus.

In 2010, the Anoka County Housing and Redevelopment Authority (HRA) produced a report entitled *Senior Housing Demand Analysis for Submarkets in Anoka County, Minnesota*. Linwood and Columbus were grouped as one of the submarkets analyzed for the purposes of this study. The study notes that this submarket has a high percentage of seniors who are the target market for senior housing (71% of seniors are considered income-qualified for senior housing).

However, the study’s demand calculations show that only a minimal amount of excess Anoka County demand could be captured in the Linwood and Columbus submarket at that time. As a result, the study does not recommend the development of additional senior housing in this submarket.

In 2011, the Anoka County HRA produced another report entitled *Comprehensive Housing Needs Assessment for Anoka County*. As with the previous study, Linwood and Columbus are grouped together as one submarket for the purposes of analysis.

This study showed a demand for 430 units of general occupancy housing units in this submarket between 2010 and 2020. It is anticipated that single family homes will continue to dominate the housing stock. Specifically, this forecast includes:

- 21 rental units – 7 deep subsidy (<50% AMI), 3 shallow subsidy (50-80% AMI), 11 market rate
- 405 ownership units – 81 modest homes (<\$250,000), 263 move-up homes (\$250,000-\$450,000), and 60 executive homes (>\$450,000), 0 multifamily

Affordable Housing Allocation

The Metropolitan Council prioritized housing affordability in Thrive MSP 2040 Regional Policy and determined the allocation of affordable housing needed to meet the rising need of affordable housing across the region. Housing is considered “affordable” when no more than 30% of household income goes to housing. Households with different income levels have different thresholds of “affordable,” as outlined in **Table 3.7**. The Metropolitan Council selected the 4-person household thresholds as the general measurement for affordable housing needs at each income level.

Table 3.7– Regional Household Income Levels, 2017			
Household Size	30% AMI	50% AMI	80% AMI
1-Person	\$19,000	\$31,650	\$47,600
2-Person	\$21,700	\$36,200	\$54,400
3-Person	\$24,400	\$40,700	\$61,200
4-Person	\$27,100	\$45,200	\$68,000
5-Person	\$29,300	\$48,850	\$73,450
6-Person	\$32,960	\$52,450	\$78,900
7-Person	\$37,140	\$56,050	\$84,350
8-Person	\$41,320	\$59,700	\$89,800

The allocation of affordable housing need is calculated based on a variety of factors:

- Projected growth of households experiencing housing cost burden
- Current supply of existing affordable housing, whether subsidized or naturally occurring
- Disparity of low-wage jobs and housing for low-wage households within a community

The Affordable Housing Allocation reflects the region’s forecasted population that will need affordable housing. According to the Metropolitan Council’s affordable housing allocation, Columbus’ share of affordable housing need is 27 units between 2021 and 2030, noted in **Table 3.8**.

Table 3.8 – Affordable Housing Allocation	
At or below 30 AMI	15
From 31 to 50 AMI	12
From 51 to 80 AMI	0
Total Number	27

Source: US Census; Metropolitan Council

Communities accomplish this affordable housing allocation by designating adequate vacant land or redevelopable land at minimum densities (units/acre) high enough to make affordable housing a viable option. The cost to build per unit decreases as the number of units per acre increases. Lower per unit costs make development an option for affordable housing developers as well as market-rate developers. The affordable housing allocation does not mean the city is forced to build this number of affordable units. However, the city must ensure the opportunity for affordable housing exists by guiding adequate vacant or redevelopable land for higher densities to meet the stated share.

To determine if the city can achieve the identified number of units, it is necessary to identify which future land use designations count towards the Affordable Housing Allocation need. According to the Metropolitan Council, any residential future land use designation that has a minimum density of eight units per acre or more will count towards affordable housing allocation calculations. **Table 3.9** features the future land use designations for Columbus and the minimum units per acre.

Table 3.9 – Future Land Use Designations		
Land Use	Minimum Density (units/acre)	Qualify for Affordable Housing
Rural Residential	0.1	No
Mixed Use – Low Density	1	No
Mixed Use- Medium Density	8	Yes

Mixed Use – High Density	17	Yes
--------------------------	----	-----

Any vacant or redevelopable land designated as Mixed Use Medium or High Density is counted in the affordable housing allocation calculations. In **Table 3.10** below, the net developable or redevelopable acres of each applicable land use have been multiplied by the minimum units per acre to determine the minimum number of units that could be developed. Developable acreage does not include unbuildable areas, such as right-of-way, open water, and wetlands. As these are mixed use categories, it also does not include the percentage allocated for commercial.

Table 3.10 – Development Potential for Affordable Housing Allocation			
Land Use	Net Acres	Min Units/Acre	Units
Mixed Use- Medium Density	32.6	8	261
Mixed Use – High Density	26.6	17	451
Total	59.1	-	712
Residential Acres Planned/Staged from 2021-2030			
Mixed Use- Medium Density	12.3	8	99
Mixed Use – High Density	9.4	17	160
Total	21.7	-	259

With the available vacant and redevelopable land in the Mixed Use – Medium Density and Mixed Use – High Density designations, the City of Columbus has enough land to meet its allocation for affordable housing. This is intended to help address housing cost burden within the city, for both owners and renters.

The City of Columbus will be reviewing its zoning ordinance after the completion of the comprehensive plan update process to update densities and other guidelines to be in conformance with the comprehensive plan.

Housing Implementation Plan

The City of Columbus is committed to encouraging the availability of affordable housing as a long-term community value. The City will continue to participate and work with programs offered by the Anoka County Housing and Redevelopment Authority (ACHRA) and the Minnesota Housing Finance Agency. Additionally, the City will continue to update and maintain the existing zoning ordinance standards that allow densities in appropriate areas that are consistent with affordable housing objectives.

The Anoka County Housing and Redevelopment Authority (ACHRA) administers housing and redevelopment services and economic development services in Columbus. The City will work with the ACHRA to provide housing assistance for affordable and life cycle housing opportunities within Mixed Use areas and general housing rehabilitation assistance throughout the rural residential area. The City of Columbus will consider supporting and implementing ACHRA programs in partnership with the ACHRA, as development occurs, to meet identified housing needs and goals. The City will review the implementation plan with the ACHRA.

Table 3.11 provides a range of local options for housing implementation, based on some general housing goals for the community. **Table 3.12** provides information on the Anoka County programs that can be used to further housing goals. County CDA tools are most likely to be used on County led projects to meet County and City housing needs. The City of Columbus will consider the following tools on a case-by-case basis, as development occurs.

Table 3.11 – Housing Implementation

Housing Goal/Need	Implementation Opportunity/Available Tool	Circumstance and Sequence of Use
Affordable Housing (up to 80% AMI)	Planned Unit Development (PUD)	The City would consider a PUD application in all Mixed Use districts to accommodate affordable housing.
	Tax Abatement	The City would consider tax abatement for development proposals including housing affordable at or below 80% AMI.
	Tax-Increment Financing (TIF)	It is unlikely the City will consider using TIF to support affordable housing development.
	Housing Bonds	It is unlikely the City will consider issuing housing bonds to support affordable housing development.
	Landlord Education for Inclusive Housing Policies	The City will partner with ACHRA and other agencies to offer educational resources to landlords.
	Site Assembly	The City would consider assembling a site for this housing need. This could include acquiring and holding land as well as sub-allocating such monies to a qualified developer approved by the City Council.
	Super or Consolidated RFP	The City would consider supporting an application to RFP programs for housing affordable at or below 80% AMI in residential locations of the future land use map.
	Community Development Block Grant (CDBG)	The City is not planning on using allocated CDBG funds for this housing type.
	Inclusionary Zoning Policy	The City will consider the exploration and development of Inclusionary Zoning policy to incentivize the development of affordable housing in the city
	Referrals	The City will work with Anoka County CDA to provide information on potential resources to the best of its ability.
	Housing-related Organizations, Partnerships, and Initiatives	The City will consider participation in housing-related organizations, partnerships, and initiatives, such as potential involvement of the mayor in the Regional Council of Mayors
Preserving existing rental housing stock	Rental Rehabilitation Grants and Loans	The City will partner with ACHRA and other agencies to offer resources to landlords for rehabilitation grants/loans for existing rental properties.
	4d Tax Program	The City will partner with ACHRA and other agencies to offer resources to owners of existing rental properties regarding 4d program tax breaks.
	Landlord Education for Inclusive Housing Policies	The City will partner with ACHRA and other agencies to offer educational resources to landlords of existing rental properties.
Supporting Young/First-time Homeowners	Single Family Rehabilitation Grants and Loans	The City will partner with ACHRA and other agencies to offer resources to homeowners for home rehabilitation grants/loans.
	Start-Up Loan Program	Minnesota Housing program to assist first-time homebuyers with financing a home purchase and down payment through a dedicated loan program. The City may partner to offer education about this program.

Maintaining Homeownership	Single Family Rehabilitation Grants and Loans	The City will partner with ACHRA and other agencies to offer resources to homeowners for home rehabilitation grants/loans.
	Foreclosure Prevention Counseling	The City will partner with ACHRA and other agencies to offer foreclosure prevention resources to homeowners.
	Step-Up Loan Program	Minnesota Housing program to assist non first-time homebuyers to purchase or refinance a home through a dedicated loan program. The City may partner to offer education about this program.
	Housing Improvement Areas (HIAs)	The City will consider partnering with townhome or condominium associations on an HIA, if it is determined to be consistent with city policy and goals.
Senior Housing	Planned Unit Development (PUD)	The City would consider a PUD application in the Mixed Use Medium Density and Mixed Use High Density districts to accommodate affordable housing.
	Expedited Pre-application Process	The City would consider creating a pre-application process to identify ways to minimize unnecessary delay for projects prior to formal application process.
	Site Assembly	The City would consider assembling a site for this housing type. This could include acquiring and holding land as well as sub-allocating such monies to a qualified developer approved by the City Council.
	Zoning Ordinance	The City will review the zoning ordinance and identify policies or regulations that may inhibit senior housing development.
	Tax Abatement	The City would consider tax abatement for a senior housing project affordable at or below 80% AMI.
	Tax-Increment Financing (TIF)	It is unlikely the City would support the use of TIF for this need/goal.
	Housing Bonds	It is unlikely the City will consider issuing housing bonds to support senior housing development.
	Super or Consolidated RFP	The City would consider supporting an application to RFP programs for senior housing affordable at or below 80% AMI in residential locations of the future land use map.
	Community Development Block Grant (CDBG)	The City is not planning on using allocated CDBG funds for this housing type.
Increasing the Livability of the City	Livable Communities Demonstration Account	The City would consider supporting/sponsoring an application to Livable Communities Account programs to address above housing needs/goals.
	Home Improvement Loans	Minnesota Housing program to assist to homeowners in financing home maintenance projects to accommodating a physical disability or select energy efficiency improvement projects. The City may partner to offer education about this program.
	ADU Ordinance	The City will consider developing an ordinance permitting the construction of accessory dwelling units or guest homes in specific zoning districts.
	Program or Framework	The City will consider working with stakeholders to develop guiding principles, frameworks, and action plans

		to consider and incorporate the needs of older residents into development decisions.
--	--	--

Table 3.12 – Anoka County Housing and Redevelopment Authority Services

Tools	Purpose/Need	Policy	City Implementation/ Partnership Opportunity
Community Land Trust (CLT)	Provide affordable housing to households below 80% AMI	CLT homes are sold to homebuyers below the market value and remain permanently affordable through a 99-year renewable ground lease.	Affordable housing up to 80% AMI, supporting first-time homeowners, maintaining homeownership
Affordable Mortgage Products/MCPP (Minnesota Cities Participation Program)	Provide mortgages to those on a median income limit with low interest rates	Affordable mortgages are available to Anoka County residents through participating lenders in the Start Up and Step Up Loan programs. Borrowers must meet median income limits and interest rates are kept low by funding mortgages through a bonding allocation. First time homebuyers who are income qualified may also access down payment closing cost assistance. This service is accessed through the Homebuyer Services program.	Affordable housing up to 80% AMI, supporting first-time homeowners, maintaining homeownership
Homebuyer Education and Pre-Purchase Counseling	Provide educational workshops to better inform prospective homeowners.	An eight hour in person workshop or an online interactive tool are available from the County to provide advice and guidance to prospective homebuyers through professionals that covers topics such as budgeting, credit scores, and home maintenance.	Supporting first-time homeowners
Homeowner Counseling	Provide post-purchase counseling to homeowners about issues relating to their homes.	The County offers counseling to homeowners that may be considering options when faced with refinancing a mortgage or facing foreclosure due to missing mortgage payments. The program operates either in person or via phone.	Supporting first-time homeowners, maintaining homeownership
Rental Assistance/ Vouchers	Provide affordable housing	The HRA provides access to a variety of housing assistance programs such as: Shelter Plus Care, Bridges/Bridges RTC/Bridges EHLIF, Housing Trust Fund, HTF Re-entry. Residents find housing in the private market and pay rent based on income, and the HRA makes up the difference. These are exclusively for households between 30-50% AMI, depending on the program. Some programs also help secure housing for those with serious and persistent mental illness.	Affordable housing between 30 and 50% AMI
Community Development	Fund a wide range of activities to	The CDBG program is the federal government’s primary program for	Developing affordable housing at or below 60%

Block Grant (CDBG) Funds	address community needs, including affordable housing	promoting community revitalization. CDBG provides annual grants on a formula basis to Anoka County.	AMI, when consistent with city policy and program criteria
HOME Investment Partnerships Program (HOME)	Fund a wide range of activities to build, buy, or rehabilitate affordable housing.	Anoka County uses HOME funds for activities including tenant-based rental assistance, home buyer assistance, property acquisition, new construction, and rehabilitation. Other requirements for funding apply.	Development, purchase, or rehabilitation of affordable housing at or below 60% AMI, when consistent with city policy and program criteria
Rental and Homeless Displacement Counseling	Provide counselors to work with clients to address particular needs to secure housing.	The HRA is a HUD approved rental and homeless counseling agency. Counselors provide budget and financial analysis to ensure affordability, refer low-to-moderate income households to appropriate sources, and well as other counseling services.	Low to moderate income households, particularly with incomes at or below 60% AMI
Coordinated Entry	Provide assistance for single adults and families that are homeless and connect them with housing options	The HRA acts as a conduit to the Coordinated Entry System, which is HUD mandated to connect the homeless with housing program resources. The Coordinated Entry system is required to be used with all programs through the HRA.	Low to moderate income households, particularly with incomes at or below 60% AMI
Deposit Fund	Provide assistance in the form of funding for homeless individuals or families for housing	When homeless individuals or families have found stable housing but lack the funds needed to lease-up, this fund can be used to bridge the gap in the security deposit. The deposit is a no interest loan, and payments are structured so the previously homeless family can afford the payments.	Low to moderate income households, particularly with incomes at or below 60% AMI

Chapter 4: Parks and Trails

Purpose

The purpose of this chapter is to provide an overview of existing and planned parks and trails serving Columbus.

Parks are an important asset for a community, providing space for recreation, leisure, community gatherings, and preservation of natural resources. They also increase overall community livability, and may increase property values for nearby uses.

Trails likewise provide recreation and leisure options. They can connect parks and other community destinations. Longer trails can attract people from out of town who may bring activity and revenue to area businesses. Additionally, trails may serve a transportation function (further detailed in Chapter 5 Transportation).

Figure 4.1 shows existing and planned parks and trails in Columbus.

Regional Parks and Trails

Regional parks and trails are shown on **Figure 5.1**. Rice Creek Chain of Lakes Regional Park Reserve is partially located within the City of Columbus, as are the Carlos Avery State Wildlife Management Area (WMA) and Lamprey Pass State Wildlife Management Area (WMA).

The Rice Creek Chain of Lakes Regional Park Reserve has several facilities and amenities, including biking, camping, canoeing, cross country skiing, fishing, geocaching, golfing, hiking, a beach, boat launch, picnic pavilion, playground, and the Wargo Nature Center. However, there is limited access and limited facilities in the City of Columbus itself. Acquisitions to make the park facilities more accessible within Columbus have begun, and additional ones are anticipated before 2040.

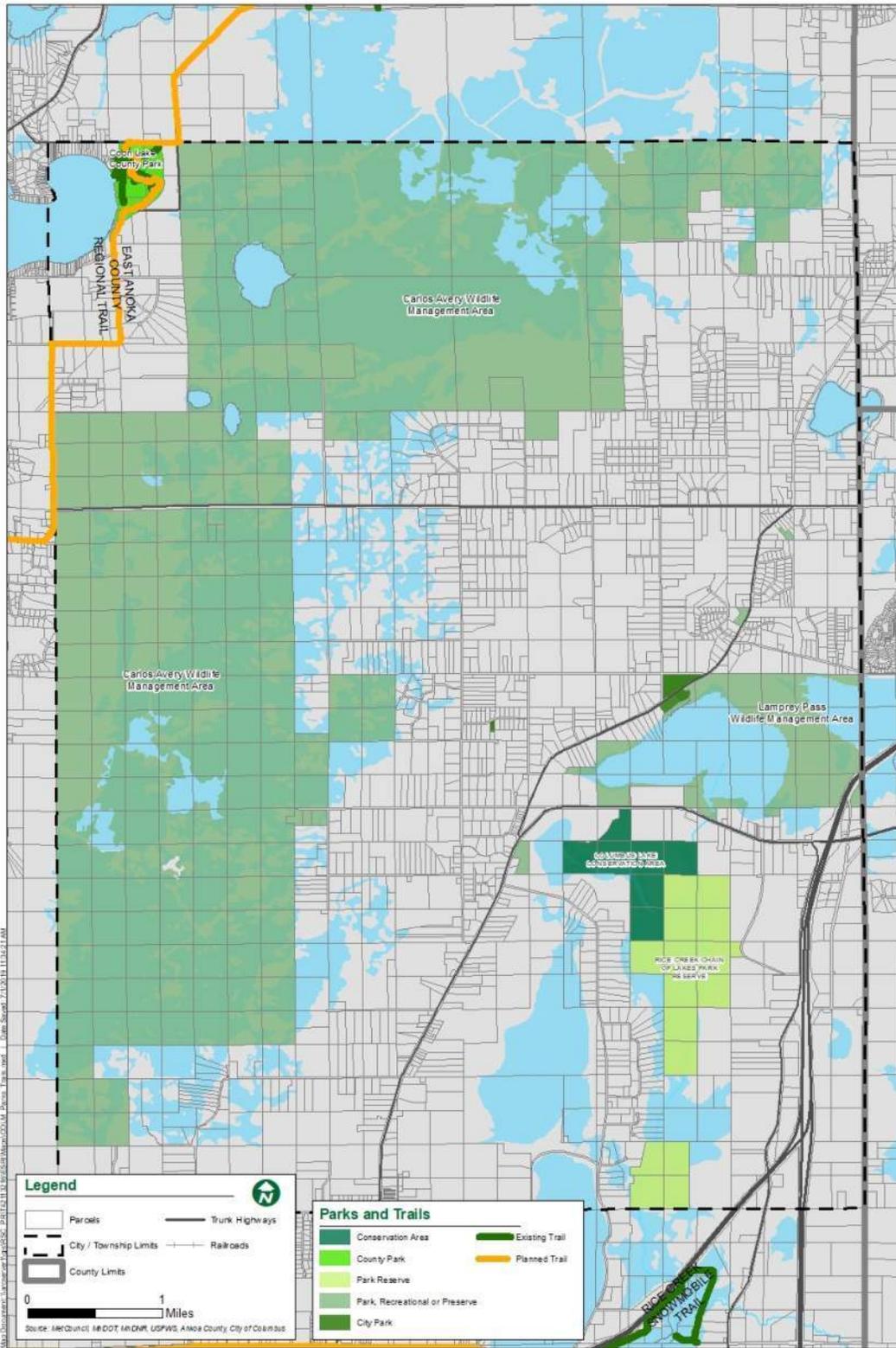
Carlos Avery WMA is the largest urban WMA and ninth overall largest WMA in the state. It occupies portions of Columbus and Linwood Township to the north and extends into Chisago County to the northeast. There are over 9,800 acres of Carlos Avery WMA in west central and north central Columbus. Recreational opportunities within the Carlos Avery WMA include hunting, fishing, hiking, bird watching, cross-country skiing, and snowshoeing.

Lamprey Pass WMA covers over 1,040 acres in east central Columbus, surrounding Howard Lake and Mud Lake. Howard and Mud Lakes within Lamprey Pass WMA are two of the largest bodies of water in the metro area to offer non-motorized boating opportunities where motorized boats are not allowed. Breeding eagles can be observed. Lamprey Pass WMA also protects one of the largest and most diverse heron colonies in the state. Discovered in 1979, this colony supports four different species of herons including great blue herons, great egrets, black-crowned herons, and double-crested cormorants.

The City has worked closely with the Minnesota Department of Natural Resources (DNR) to identify issues regarding the use implications and recreational opportunities and the potential expansion of both WMAs. The City will continue to coordinate use and expansion opportunities of the WMAs with the DNR through long range planning and mutual understanding of the City's concerns over potential impacts to adjacent residential land uses and payments in lieu of taxes. The DNR also maintains a database of snowmobile trails that have been adopted statewide. There are snowmobile trails recorded by the DNR in and near Columbus. Snowmobile trails are maintained by local snowmobile clubs and volunteers.

There are no existing regional trails in Columbus.

Figure 4.1: Existing and Planned Parks and Trails



County Parks and Trails

Coon Lake County Park is located in the northwestern corner of Columbus on Coon Lake, close to the Carlos Avery WMA. This 125 acre park provides a public boat launch, swimming beach, hiking trails, picnic pavilions, and a playground.

Local Parks and Trails

Local parks are also shown on **Figure 4.1**. In addition to the regional and state parks, Columbus has three local parks: Columbus City Park located near City Hall, Howard Lake Park located across the street from a neighborhood on Howard Lake Drive, and Hidden Park on 162nd Avenue. Existing local park amenities are shown in **Table 4.1**.

Amenities	Columbus City Park	Howard Lake Park	Hidden Park
Walking/Hiking Trails	X		
Picnic Area/Shelter	X	X	X
Playground		X	X
Sport Courts	Football/Soccer, Tennis		
Baseball Diamond(s)	X		

Because of the low density rural character of Columbus, the City has not pursued the development of traditional neighborhood parks. Rural residential lots are typically larger than neighborhood parks and residents are afforded personal recreation and open space opportunities with rural residential lifestyles. Current emphasis will be placed on maintaining and improving Columbus City Park.

Columbus will develop a Parks and Trails Master Plan that evaluates current city, county, and regional resources, identifies potential needs, identifies partners for parks and trails coordination, establishes plans for park and trail improvements, and creates a timeframe and budget for implementation. Columbus is interested in maximizing the potential development of local and regional trail corridors through the city that connect existing and planned trails, existing parks and recreation facilities, existing neighborhoods and commercial destinations. The City will also examine the potential parks and pedestrian circulation needs in the Freeway Corridor.

Planned Improvements

Regional Trails

The East Anoka County Extension Regional Trail was approved in October 2015. The planned trail will run through the northwest corner of the city along CSAH 17. The trail corridor is shown on **Figure 4.1**. The City will work with Anoka County and the Metropolitan Council on any plans for trail improvements in Columbus.

Chapter 5: Transportation

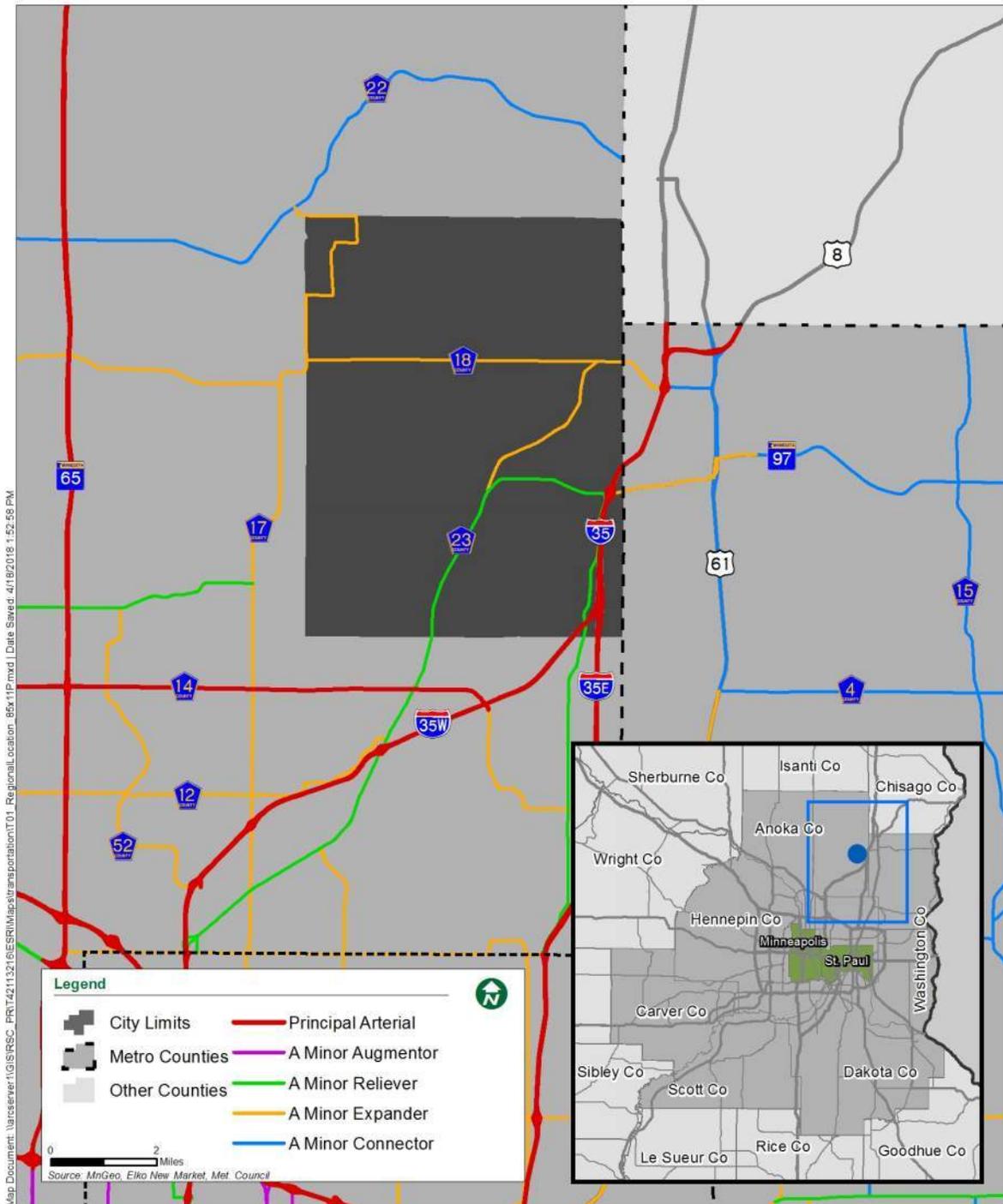
Introduction

Overview

The City of Columbus is a growing community located near the fringe of the Anoka County urbanized area (see **Figure 5.1**). Columbus is served by a network of federal, state, county, and local roadways. Interstate Highways 35E and 35W converge into I-35 in a 3-mile corridor in the southeast corner of the city. It is expected this area will see growth in population and jobs by 2040. Accommodating this growth will involve a number of improvements and expansions to the existing transportation network in and around the city.

The primary purpose of this chapter is provide guidance to city staff and elected officials regarding the implementation of effective, integrated transportation facilities and programs through the 2040 planning timeframe. This chapter is consistent with regional requirements for transportation as described in the Metropolitan Council's 2040 Local Planning Handbook.

Figure 5.1: Regional Location



Existing Roadway Conditions

Existing Traffic Volumes and Crash Data

The most basic characteristic of a given roadway is the volume of traffic that it carries. Existing traffic volumes on roadways within Columbus are presented on **Figure 5.2**. This is the most current MnDOT data available for traffic volumes on these roads.

Recent crash data for roadways also are shown on **Figure 5.2**. It can be seen that the highest volumes of crashes are at:

- Interstate 35 and CSAH 97/Lake Drive NE
- CSAH 18/W Broadway Avenue and CSAH 62/Kettle River Boulevard NE
- CSAH 18/W Broadway Avenue and Potomac Street NE
- CSAH 62/Kettle River Boulevard NE and CSAH 97/Lake Drive NE

Additional analysis may be needed at these and other intersections to determine the causes of crashes, and potential improvements which could address safety issues.

Jurisdictional and Functional Classification

Roadways are classified on the basis of which level of government owns and has jurisdiction over them. In the case of Columbus, roadways are under the jurisdiction of MnDOT, Anoka County, or the City of Columbus. **Figure 5.3** depicts the existing roadway jurisdictional classification system in Columbus.

The functional classification system is a roadway network that distributes traffic from neighborhood streets to collector roadways, then to minor arterials, and ultimately the Metropolitan Highway System. Roads are placed into categories based on the degree to which they provide **access** to adjacent land uses and lower level roadways versus providing higher-speed **mobility** for “through” traffic. Functional classification is a cornerstone of transportation planning. Within this approach, roads are located and designed to perform their designated function.

The current roadway functional classification map for Columbus as identified by the Metropolitan Council is presented on **Figure 5.4**. The roadway system presently consists of five roadway functional roadway classifications:

- Principal Arterial
- A Minor Arterial
- Other Arterial
- Major Collector
- Local Street

Figure 5.2: Existing Traffic Volume and Crash Data

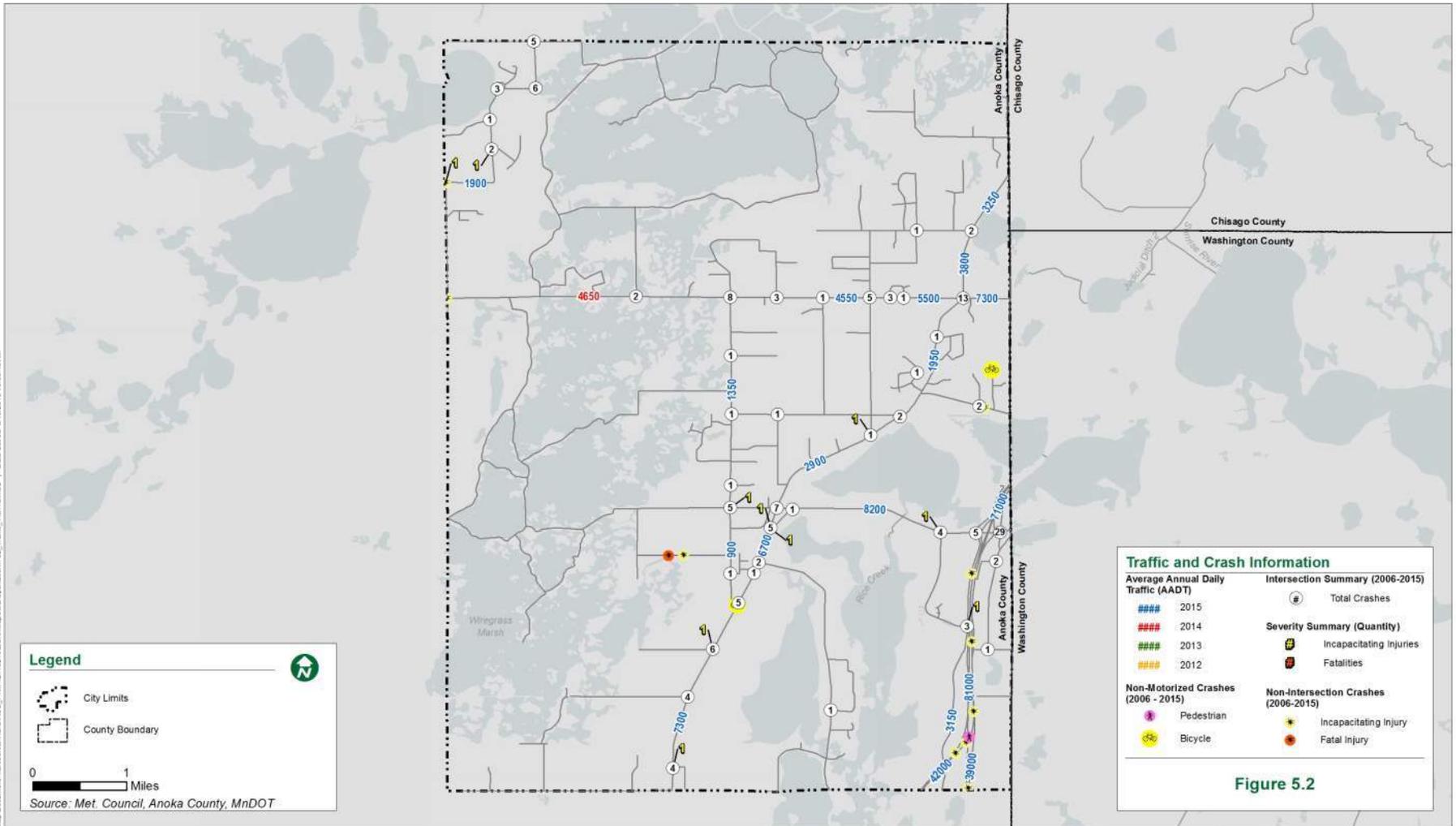


Figure 5.3: Existing Roadway Jurisdiction

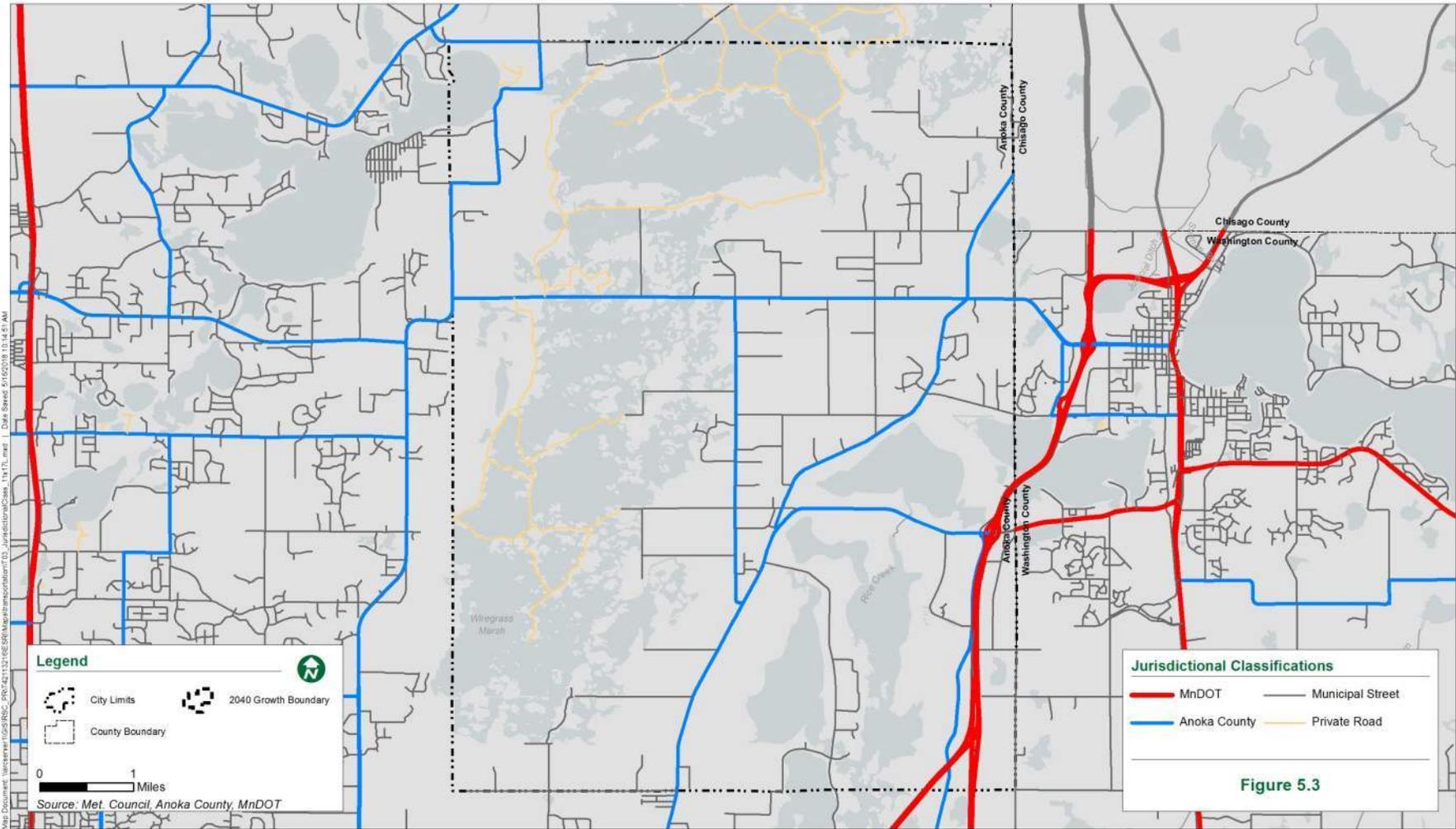
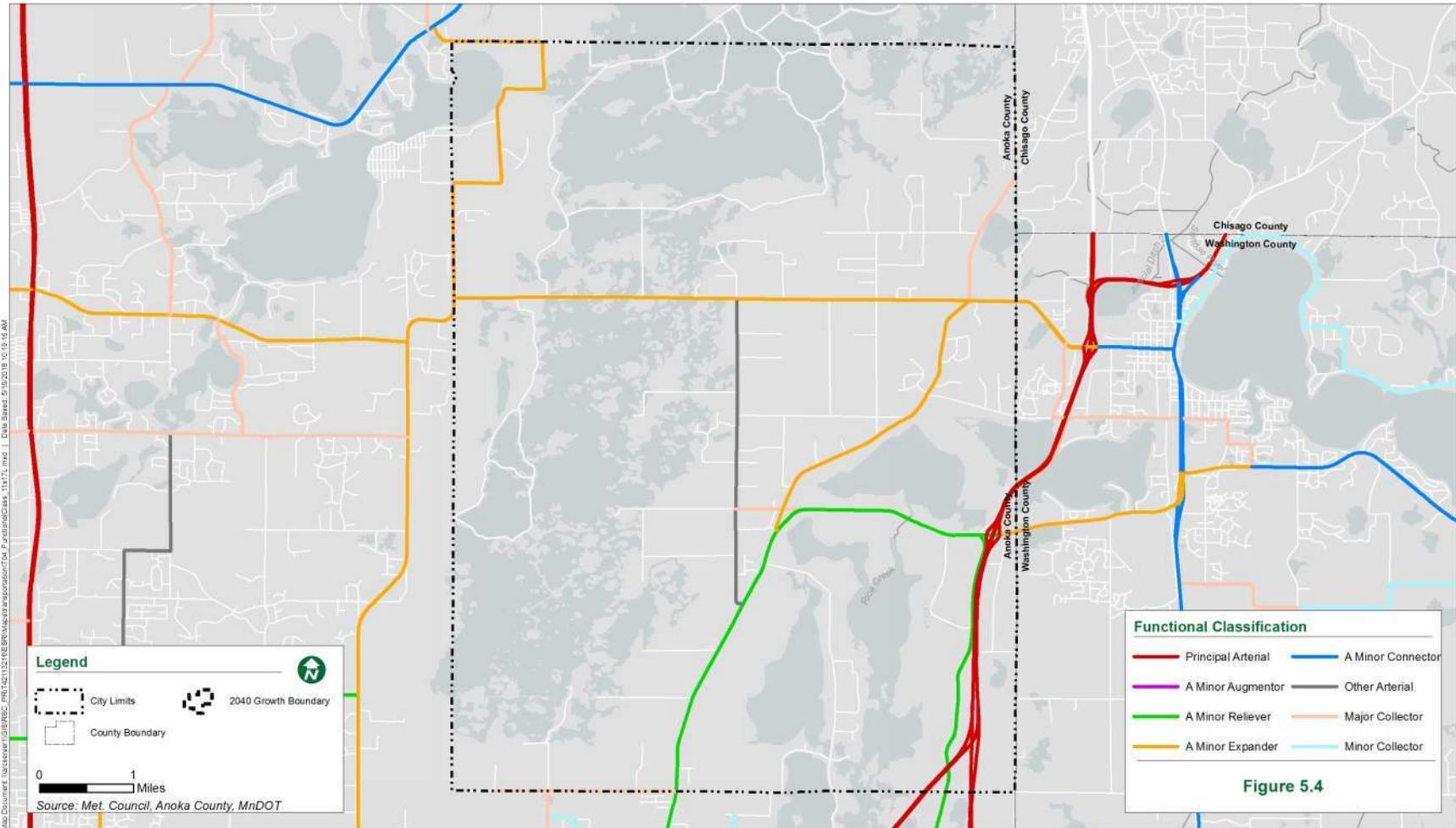


Figure 5.4: Existing Roadway Functional Class



For arterial roadways, the Metropolitan Council has designation authority. Local agencies may request that their roadways become arterials (or are downgraded from arterial to collector), but such designations or re-designations must be approved by the Metropolitan Council. The agency which has jurisdiction over a given roadway (e.g. Anoka County or the City of Columbus) has the authority to designate collector status.

Principal Arterials

Principal arterials are the highest roadway classification and make up the Metropolitan Highway System. The primary function of these roadways is to provide mobility for regional trips, and they do not provide a land access function. They are intended to interconnect regional business concentrations in the metropolitan area, including the central business districts of Minneapolis and St. Paul. These roads also connect the Twin Cities with important locations outside the metropolitan area. Principal arterials are generally constructed as limited access freeways, but may also be multiple-lane divided highways.

The principal arterial roadways in Columbus are identified in **Table 5.1**, below:

Table 5.1 – Principal Arterial Roadways			
Roadway	From	To	Number of Travel Lanes (Total)
I-35/I-35E/I-35W	CSAH 22/East Viking Blvd	CSAH 14/Main St	4

“A” Minor Arterials

These roads connect important locations within the City of Columbus with access points to the metropolitan highway system and with important destinations outside the city. These arterials are also intended to carry short to medium trips that would otherwise use principal arterials. While “A” minor arterial roadways provide more access than principal arterials, their primary function is still to provide mobility rather than access to lower level roadways or adjacent land uses.

The Metropolitan Council has defined four subcategories of “A” minor arterials: reliever, expander, connector, and augmentor. These subcategories are primarily used by the Metropolitan Council to allocate federal funding for roadway improvements. The different types do not have separate, specific design characteristics or requirements. However, they have somewhat different functions in the roadway network, and are typically found in certain areas within the region.

- **Relievers** provide supplementary capacity for congested parallel principal arterials. They are typically found in urban and suburban communities.
- **Augmentors** supplement the principal arterial system in more densely developed or redeveloping areas. They are typically found in urban communities.
- **Expanders** supplement the principal arterial system in less densely developed or redeveloping areas. They are typically found in urban and suburban communities.
- **Connectors** provide safe, direct connections between rural centers and principal arterials in rural areas without adding continuous general purpose lane capacity. They are typically found in rural communities.

As shown on **Figure 5.4**, the “A” minor roads in Columbus are relievers, providing supplementary capacity for congested parallel principal arterials (in this case, Interstate 35), and expanders, supplementing the principal arterial system in less developed areas. The “A” minor arterial roadways in Columbus are identified in **Table 5.2**.

Table 5.2 – “A” Minor Arterial Roadways			
Roadway	From	To	Number of Travel Lanes (Total)
CSAH 97	I-35	Highway 61	2-4
CSAH 17 (Lexington Ave NE)	197 th Ave NE	CSAH 18/W Broadway Ave	2
CSAH 18 (W Broadway Ave)	CSAH 17/Lexington Ave	I-35	2
CSAH 23 (Lake Drive NE)	I-35	I-35W	2
CSAH 62 (Kettle River Blvd.)	CSAH 23/Lake Drive NE	CSAH 18	2
County Road 21 (W Freeway Drive)	CSAH 23/I-35	I-35E	2

Other Arterials

Like “A” minor arterials, these roadways also serve more of a mobility function than access function. However, they may not have as much regional importance as “A” minor arterials and are not eligible for federal roadway improvement funding. Other arterials within Columbus are identified in **Table 5.3**.

Table 5.3 – Other Arterial Roadways			
Roadway	From	To	Number of Travel Lanes (Total)
County Road 19	CSAH 18	CSAH 23	2

Major and Minor Collectors

Collector roadways provide a balance of the mobility and land-use access functions discussed above. They generally serve trips that are entirely within the city and connect neighborhoods and smaller commercial areas to the arterial network. Minor collectors generally are shorter in length, with lower volumes and lower speeds than major collectors. Current collector roadways are identified in **Table 5.4**, below.

Table 5.4 – Major and Minor Collector Roadways			
Roadway	From	To	Number of Travel Lanes (Total)
Major Collectors			
Camp 3 Road NE	County Road 19	CSAH 23	2
CSAH 62	CSAH 18	Lyon Street NE (east border of town)	2

Problem Issues and Locations

The planning process involved discussions with city staff, city leadership, and community stakeholders regarding transportation problems and their context.

At present, there are few major traffic concerns within the City of Columbus. Traffic on most city roadways is relatively low volume, and there are few serious accidents, except along the freeway corridor which is outside the jurisdiction of the City to address. There are a higher number of crashes near the interstate interchange area, but there have been recent studies to address access and traffic flow there that will result in improvements.

Most comments received related to ensuring that there is adequate access to serve development sites, as a number of roads in the city are still unimproved.

Summary of Relevant Transportation Studies

A summary of transportation studies relevant to the City of Columbus' roadway system is provided below.

CSAH 23/TH 97 at I-35 in Columbus Project Summary Report

Anoka County completed the *CSAH 23/TH 97 at I-35 in Columbus Project Summary Report* in 2014. The purpose of this study was to address multiple concerns around the Interstate 35 (I-35) interchange at County State Aid Highway (CSAH) 23 (Lake Drive) and Trunk Highway (TH) 97 in the Cities of Columbus and Forest Lake. These included:

- Ensuring access to commercial land development planned in the proximity of the interchange in Columbus and Forest Lake, including determining future right-of-way needs and access management controls associated with new and existing development.
- Responding to freeway access operational and safety concerns associated with CSAH 23 and TH 97 near the I-35 interchange, as well as CSAH 54 which intersects CSAH 23/Lake Drive in close proximity to the I-35 interchange.
- Addressing the fact that the bridge over I-35 along this stretch is functionally obsolete and needs replacement as part of the reconstruction.

The study identified several interchange configuration options to both ensure access and improve traffic flows, and made some recommendations for moving forward.

Since the completion of this study, the County has developed and refined a recommended alternative, and advanced it through the design process. A realignment of the CSAH 54 at CSAH 23 intersection is proposed to move forward for construction in 2019, discussed more in the following section.

Roadway System Plan

Future Roadway Network

The roadway network assumed for the 2040 analysis includes the existing network, plus projects that have been programmed and/or planned. At present, there are no plans to expand the overall major roadway network serving the Columbus area by 2040. The exceptions will be local roads added primarily to provide access to development sites, though these are unlikely to significantly change overall traffic circulation patterns in the area.

As such, the future roadway network for 2040 looks largely the same as it does today, with the exception of some fairly minor reconfigurations around the Interstate 35 (I-35) interchange. There are no anticipated road widenings which would add lanes elsewhere, so the number of existing lanes (two lanes on all roads in Columbus, with the exception of six lanes on I-35) will remain the same.

Improvements to the existing roadway network therefore will focus almost entirely on routine maintenance to existing facilities, paving and pavement upgrades, and safety improvements where such projects are warranted.

If at some point in the future there is significant growth that triggers the need for roadways beyond local roads providing access to developments, this will likely merit a comprehensive plan amendment, as well as traffic impact analyses to determine the overall impact to the community.

There are several planned improvements to the principal arterials in the Columbus area shown in the Current Revenue section of the TPP. These improvements, described below, are included in the future roadway network and model. They also include 2015-2018 TIP pavement improvements to Interstate 35 north of the 35W/35E split.

Bridge Replacement at the Interstate 35/CSAH 23 interchange

A 2015 study of the CSAH 23/Hwy 97 bridge over I-35, discussed above, showed traffic congestion and crash concerns at this interchange. Additionally, structural issues with the bridge were identified. To address these concerns, the CSAH 23/Hwy 97 bridge is being replaced with a diverging diamond interchange. The new interchange style will increase the number of lanes on the bridge, reducing congestion. This is part of a series of projects in this section of the I-35 corridor to improve access management and traffic congestion.

Bridge Replacement at the Interstate 35W/35E split

The I-35W bridge over I-35E is currently being replaced with a new bridge, scheduled to open in 2019. This is part of a series of projects in this section of the I-35 corridor to improve access management and traffic congestion.

Hornsby Street

The first of several smaller projects connected to the larger I-35 corridor projects is the realignment of Hornsby Street north of Hwy 97. Currently, the road runs straight south to Hwy 97 and does not line up with Hornsby Street south of Hwy 97. This project will realign Hornsby Street to the north, with a slight curve to bring the road east and in line with Hornsby Street to the south of Hwy 97. This will create a new intersection east of the Hwy 97 bridge. The stoplight for this new intersection will be timed with the lights on the diverging diamond interchange to ensure good traffic flows. There are plans to add a dedicated turn lane at this intersection to turn north onto Hornsby Street.

Design of the realignment and new intersection was completed in 2018, with construction occurring in 2019.

Lake Drive/CSAH 23 Roundabout

Another project to be completed around the same time as the larger I-35 corridor projects is the is the CSAH 54 and Lake Drive/CSAH 23 roundabout. CSAH 54 and CSAH 23 intersection is currently less than 300 feet west of the I-35 interchange, which does not meet Anoka County's access management guidelines. The intersection of CSAH 54 and Lake Drive/CSAH 23 will be relocated roughly 600 feet west to meet Lake Drive west of the gas station. The new intersection will be a roundabout to ease traffic flow.

The roundabout project was scheduled to be completed prior to the realignment of W. Freeway Drive/CSAH 54. Construction was largely complete in 2018. The following figure below shows the proposed future roundabout.

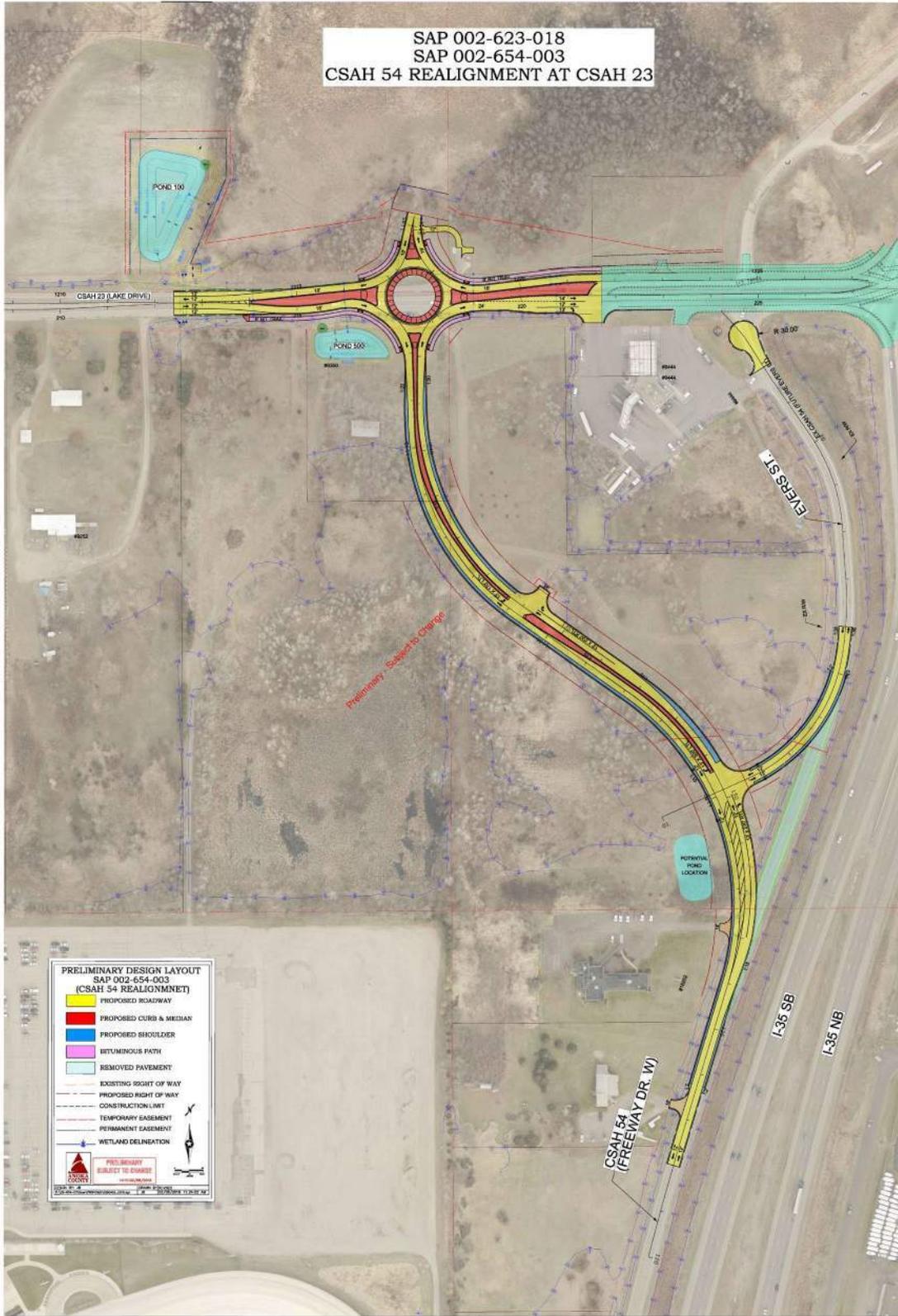
West Freeway Drive/CSAH 54 Realignment

CSAH 54 currently serves as a frontage road along I-35. However, the CSAH 54 and CSAH 23 intersection is too close to the new I-35 interchange at CSAH 23/Hwy 97. With the need for the intersection to be relocated, CSAH 54 will need to be realigned to create more distance between it and the I-35 interchange.

The realigned CSAH 54 will have one through lane in each direction, with a T-intersection at the new Evers Street, roughly one quarter mile south of Lake Drive/CSAH 23. There are also plans for a partial access intersection roughly 600 feet south of Lake Drive/CSAH 23.

Construction of the new alignment began in the spring of 2019. The following figure shows the proposed future alignment.

SAP 002-623-018
 SAP 002-654-003
 CSAH 54 REALIGNMENT AT CSAH 23



PRELIMINARY DESIGN LAYOUT
 SAP 002-654-003
 (CSAH 54 REALIGNMENT)

- PROPOSED ROADWAY
- PROPOSED CURB & MEDIAN
- PROPOSED SHOULDER
- BITUMINOUS PATH
- REMOVED PAVEMENT
- EXISTING RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- CONSTRUCTION LIMIT
- TEMPORARY EASEMENT
- PERMANENT EASEMENT
- WETLAND DELINEATION

PRELIMINARY
 SUBJECT TO CHANGE
 COLUMBUS ENGINEERING & CONSTRUCTION, INC.
 10000 W. STATE ST. SUITE 100
 COLUMBUS, OH 43240
 TEL: 614.881.1100
 WWW.COLUMBUS-ENGINEERING.COM

Forecasting Future Traffic

As part of the support for regional, county, and local transportation planning, the Metropolitan Council has developed and maintained a regional travel demand model. This model forecasts 2040 traffic volumes on major roadways throughout the Twin Cities region, based on expected population and job growth, observed travel behavior, and other factors. Since the model is mainly designed to work at the regional level, Anoka County has done additional work to refine the analysis and results to provide more locally relevant forecasts for the county and its cities. The model information included in this plan is derived from the Anoka County modified version of the regional model.

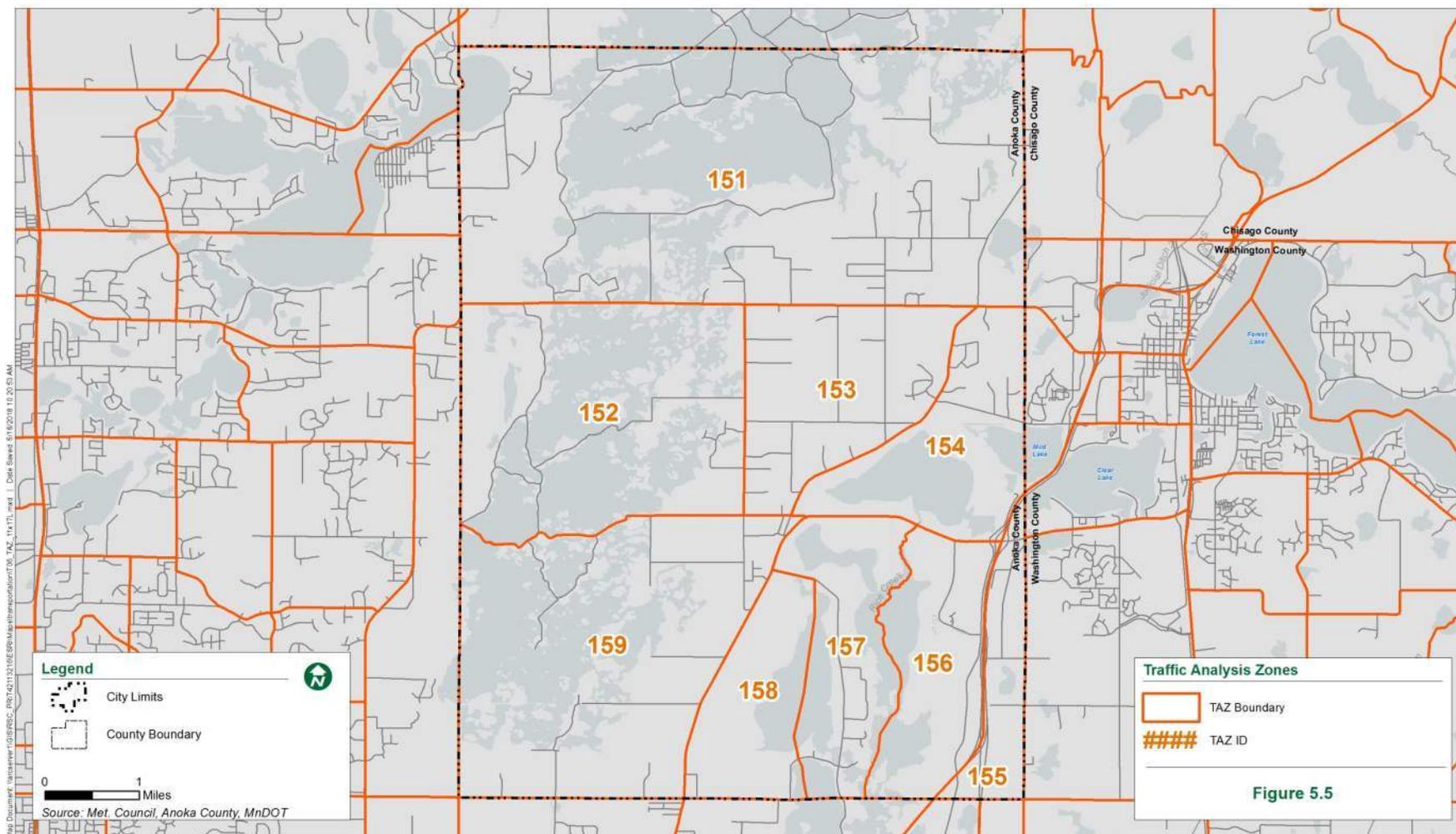
Forecasts of population, households, and employment are incorporated in to the model at the level of Transportation Analysis Zones (TAZs). The TAZs for the City of Columbus, as defined in the Anoka County model, are presented on **Figure 5.5**. These are different than the Metropolitan Council's TAZs, namely due to the fact that Anoka County has split some of the larger TAZs in the regional model to improve their ability to forecast traffic at a smaller scale, particularly in rural areas where TAZs tend to be large.

The anticipated land use patterns discussed in Chapter 2 of this Comprehensive Plan were assumed for the 2040 transportation projections. The 2040 future land use map for Columbus is presented in **Figure 2.2** in that chapter. The TAZ socioeconomic data projected for 2040 are presented in **Table 5.5**.

Table 5.5 – 2040 Columbus TAZ Data						
TAZ	Year	Population	Households	Retail Jobs	Non-Retail Jobs	Total Jobs
151	2014	1,360	491	0	118	118
	2020	1,310	480	0	120	120
	2030	1,290	490	0	120	120
	2040	1,250	490	0	120	120
152	2014	255	95	0	6	6
	2020	480	180	10	0	10
	2030	500	190	0	10	10
	2040	500	200	0	10	10
153	2014	801	291	0	65	65
	2020	780	300	0	70	70
	2030	820	330	10	80	90
	2040	840	340	10	90	100
154	2014	455	170	0	28	28
	2020	470	180	0	30	30
	2030	520	210	0	40	40
	2040	570	230	0	50	50
155	2014	43	15	1	41	42
	2020	150	60	10	40	50
	2030	540	210	10	70	80
	2040	1,000	400	30	110	140
156	2014	44	21	78	688	766
	2020	110	40	80	720	800
	2030	200	80	100	770	870
	2040	250	100	120	790	910
157	2014	209	70	0	23	23
	2020	280	110	0	20	20
	2030	330	130	0	20	20
	2040	290	120	0	20	20
158	2014	153	60	0	232	232
	2020	250	100	20	220	240
	2030	290	120	30	230	260
	2040	260	100	30	230	260
159	2014	567	219	47	105	152
	2020	390	150	10	150	160
	2030	460	170	20	160	180
	2040	540	220	10	180	190
	2014 sum	3,887	1,432	126	1,306	1,432
	2040 sum	5,500	2,200	200	1,600	1,800
	'14-'40 chg	1,613	768	74	294	368

Source: Anoka County

Figure 5.5: Transportation Analysis Zones in County Model



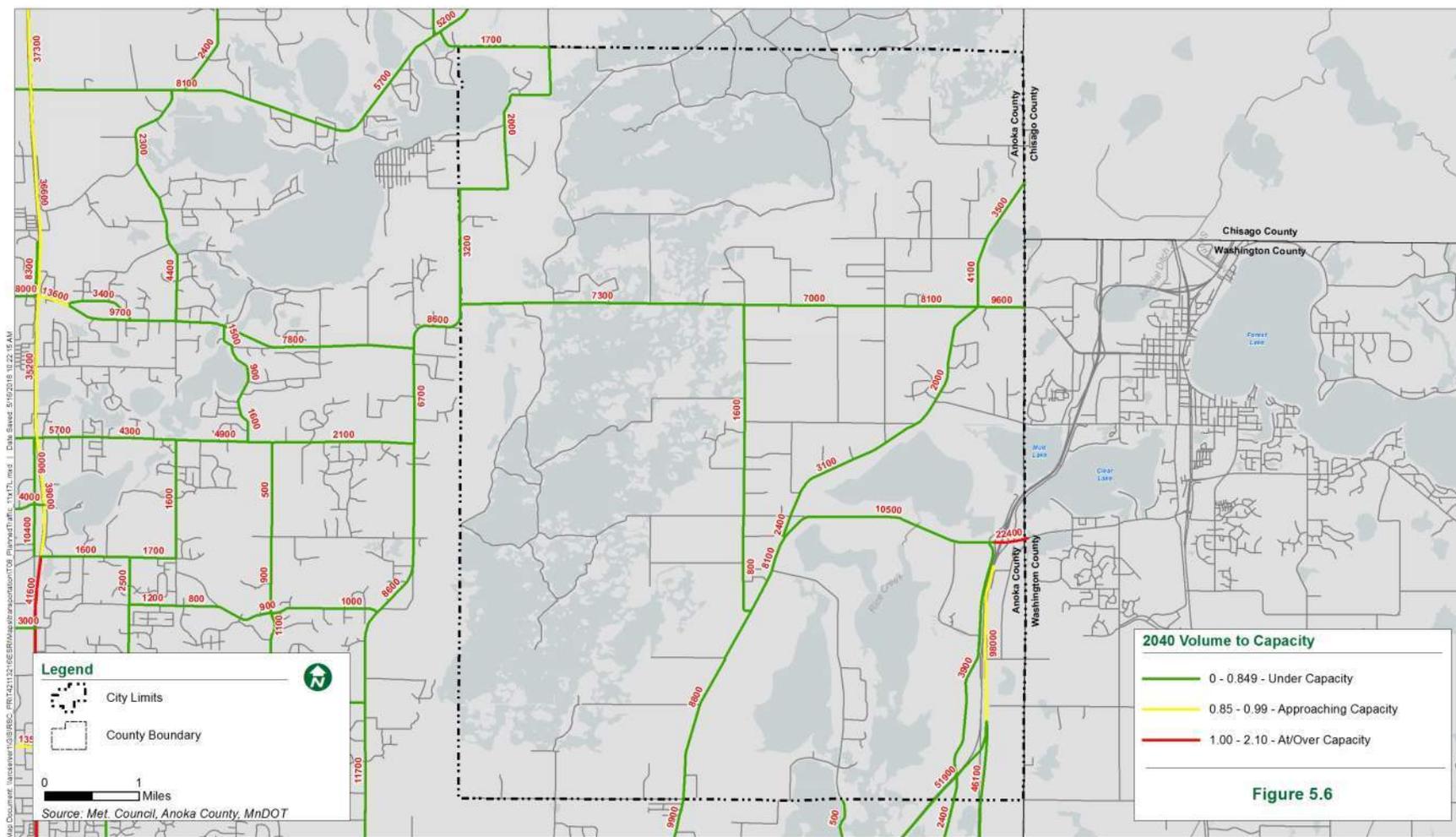
2040 Traffic Projections

Traffic projections for the year 2040 are from the Anoka County transportation model. The County produced daily traffic forecasts for 2040 for all arterial and collector roads in the county. They were made based on modifications to the regional Metropolitan Council travel demand model. Factors considered in developing these forecasts included:

- Historic trend analysis for traffic volumes
- Assessment of anticipated local and regional development patterns and associated TAZ information
- Discussion and coordination with local, county, and regional staff regarding future plans and the update the regional travel demand model
- Review of other studies and plans for consistency

The 2040 traffic projections are presented on **Figure 5.6**. Comparing this with existing volumes on **Figure 5.2**, it is apparent that these new volumes represent a moderate increase over existing levels, consistent with planned growth.

Figure 5.6: 2040 Traffic Volume Projections and Capacity Analysis



Future Capacity Deficiencies

All roads are designed to handle a defined level of traffic volume. Once the road begins to approach or exceed capacity, traffic movements become more difficult and there may be congestion. It is at that point when it is determined whether there needs to be a capacity increase in the transportation system – through the addition of new travel lanes, new roads, intersection or interchange redesign, or other capacity-increasing improvements.

A planning-level analysis was performed to identify roadway segments where capacity problems are anticipated to occur by 2040. Based on the projected 2040 traffic volumes and the assumed 2040 roadway network, an analysis of anticipated future congestion conditions was performed. This analysis used the volume-to-capacity method. The volumes were taken from the 2040 projections discussed under the previous heading. The capacity is based on typical capacity levels for different non-freeway types and configurations of roadways as summarized in **Table 5.6**.

Table 5.6 – Typical Traffic Capacity by Roadway Type/Configuration	
Roadway Design	Planning Level Daily Capacity
Local	
Gravel Roadway	Up to 500
Local and Minor Collector 2-Lane	Up to 1,000
Collector and Arterial	
Urban 2-Lane	7,500 – 12,000
Urban 3-Lane or 2-Lane Divided	12,000 – 18,000
Urban 4-Lane Undivided	Up to 20,000
Urban 4-Lane Divided	28,000 to 40,000
4-Lane Freeway	Up to 70,000

Figure 5.6 shows the results of this capacity analysis. As is apparent from reviewing the map, all of the roads within Columbus are forecasted to still be below capacity in 2040. While there is definitely growth in traffic – from both local and regional sources – the volumes are still below what the roads were designed to handle.

As can be seen on **Figure 5.6**, there is an additional roadway segment “approaching capacity,” defined as having a volume-to-capacity ratio of 0.85 – 0.99. Locations such as these should be monitored in the coming years to determine if problem conditions develop and next steps should be implemented including more detailed analysis. Since the roadway segment is I-35 between the I-35E/W split and CSAH 23, it is in the jurisdiction of MnDOT to monitor and respond to potential capacity issues along that corridor.

Recommended Roadway System Improvements and Studies

Roadway Segments

Based on the capacity analysis above and other supporting information, the following road improvements are recommended. These are also shown on **Figure 5.7**.

Upgrade and pave the existing alignments of Hornsby Street NE, 145th Avenue NE, Lyons Street, and Elmcrest Avenue North to the southeast of the I-35/CSAH 97 interchange. This route provides the primary access to a planned development area in the freeway corridor. It will function as a local collector in the near term, providing connectivity between this area and the regional road network. Longer term, this may be designated as an A Minor Arterial, in coordination with improvements to the roadway segment extending across the border with the City of Lino Lakes, serving as a reliever to the interstate corridor. The timing of this project will likely be related to both development opportunities, and the potential to extend public utilities to serve these sites.

Some additional local roads may be needed to provide access to development sites in Columbus. These are not currently mapped, as the timing of construction and exact configuration of these local roads will be development-driven – with the developer playing a role constructing the streets in accordance with established city standards.

This recommendation is based on existing assumptions about growth and development in Columbus and the surrounding area. If there is a major change to growth assumptions within the planning horizon, there should be a reassessment to determine if additional capacity, connectivity, or other roadway improvements are needed. Any major new development project should also conduct a traffic impact analysis to determine what improvements (major or minor) are needed to accommodate the project's impact on the transportation system.

Intersections

It is beyond the scope of this 2040 transportation plan to perform intersection analyses with detailed recommendations. However, based on information gathered as part of this planning process, it is recommended that the City work with the County and MnDOT to continue to assess safety issues at intersections along major roadways in the city.

Interchanges

While improvements to the interstate system, including the development of new interchanges, is outside the jurisdiction of an individual city, the City of Columbus has taken a position on a couple interchange improvements. Since these likely would not be within Columbus city limits, coordination and joint planning are needed with MnDOT and adjacent jurisdictions. Since the alignments and interchange locations have not been determined, they are not on the future functional class map.

- **New I-35E Interstate Interchange.** Plan for the construction of a new interstate interchange along I-35E to provide access to existing and future development sites in Columbus and other jurisdictions. Anoka and Washington Counties, in partnership with the cities of Hugo and Lino Lakes, completed an analysis that recommends a futures interchange at 80th Street/CR 140 (Anoka County) - CSAH 8/170th Street (Washington County).

This concept would require further coordination with other agencies including MnDOT, Washington County, Anoka County, as well as the cities of Forest Lake, Hugo, and Lino Lakes. Pending coordination with these agencies and general agreement regarding the concept to be advanced, there are formal steps that would need to be taken to further develop that concept and secure the necessary approvals. The City of Columbus will continue to participate in joint planning and discussions for this potential future interchange when appropriate.

- **CSAH 54 Interstate Connector.** The City of Columbus has also expressed a preference for the construction of a southbound ramp CSAH 54 to I-35W. This would provide easier and more convenient access to the freeway system for CSAH 54 traffic, which currently has limited and indirect options. As a parallel stretch of I-35 is forecasted to be near capacity by 2040, this further extends the ability of CSAH 54 to serve as an “A” Minor Reliever route by providing an alternative for southbound traffic.

Future Functional Classification

Re-designations of roadways involving the A-minor arterial functional classification (e.g. from collector to arterial, from arterial to collector, or changing designations within arterial) are under the authority of the Metropolitan Council. For collector roadways, the functional class designation is under the authority of the agency which owns the given road.

At present, the City of Columbus anticipates the improved roadway following Hornsby Street NE, 145th Avenue NE, Lyons Street, and Elmcrest Avenue North needing a functional classification change from local collector to minor arterial. The planned roadway would serve as a reliever to I-35E, connecting TH 97 and CSAH 14. A new minor collector route is also shown on **Figure 5.7** and described above. The functional classification changes would happen once the roads are upgraded, and would depend in part on connectivity with the roadway segment to the south of city limits in Lino Lakes. At this point, there is no timeline for this change.

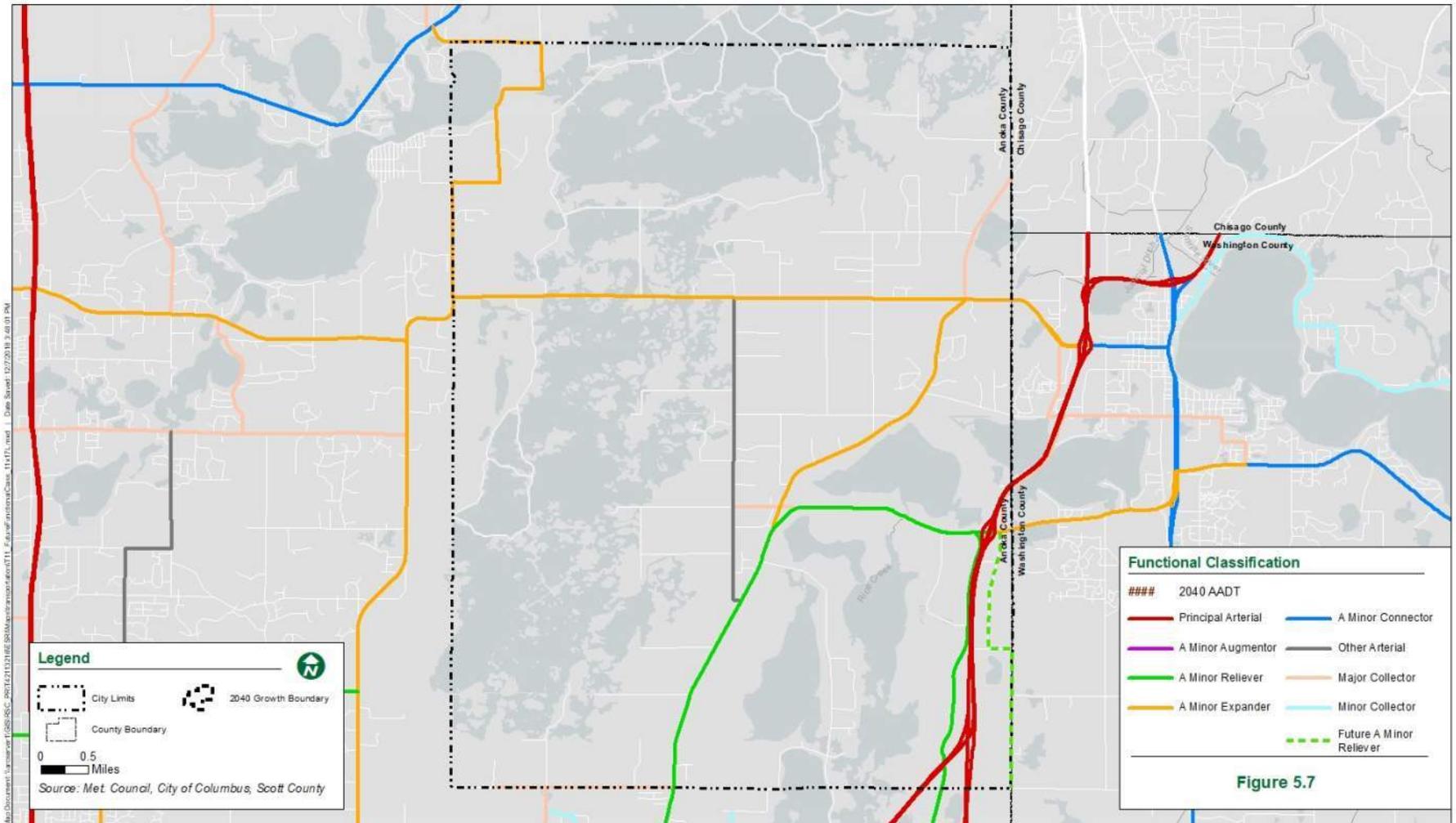
Additional interstate related improvements have not yet been finalized in terms of specific alignments, so are not currently shown on the map.

Future Jurisdictional Classification

Jurisdictional changes are made when it is determined that a road is better maintained by another jurisdiction. Roads are sometimes turned back to local communities, and hence removed from a county or regional system. Likewise, local roads at times become county or regional routes, often in the context of new development which changes the function and usage of the roadway within the network.

At this time, no changes to jurisdictional classification are being anticipated by the City of Columbus. Anoka County’s comprehensive plan identifies a potential jurisdictional transfer of 141st Avenue (from CSAH 23/Lake Drive to Jordell Street) from the City of Columbus to Anoka County. Additional discussion is needed between the City and County regarding this potential change.

Figure 5.7: Future Functional Class



Access Management

Access management refers to balancing the need for connections to local land uses (access) with the need for network-level movement (mobility) on the overall roadway system. Arterials generally have limited access in the form of driveways and low volume side streets because their role in the network is to support relatively long, high speed traffic movements. Collectors allow a greater degree of access given their combined mobility/access function, and local streets have relatively few limits on access. Appropriate access control preserves the capacity on arterial and collector streets, and improves safety by separating local turning movements from higher-speed “through” traffic. Moreover, it concentrates higher volume traffic linkages at intersections controlled with traffic signals, roundabouts, or other measures.

MnDOT and Anoka County roadways in Columbus are identified on **Figure 5.3**. For MnDOT roadways, MnDOT access management guidelines apply. Similarly, for county roadways, Anoka County’s access management guidelines apply. MnDOT and Anoka County guidelines are included in **Appendix A**.

For local roads, the City of Columbus’ subdivision ordinance has general guidance on road access and spacing. Block lengths are regulated to be between 450’-1,800’ feet. Lots must abut and take primary access from a publicly dedicated street, except as specifically allowed. For more complete information, consult the city’s subdivision ordinance.

Geometric Design Standards

The City of Columbus’ subdivision ordinance provides minimum design standards for streets in an appendix, Standard Specifications for New Roadway Construction. The minimum widths of new streets are provided in **Table 5.7**.

Table 5.7 – Required Street Design Widths				
Classification	Minimum ROW Width	Minimum Roadway Width		Shoulder Width
		Rural	Urban*	
Commercial Streets	66’	-	36’	-
Collector Streets	66’	24’	32’	4’
Minor Streets	66’	24’	28’	2’
Turnarounds	Varies – typically 45’-60’ radius			2’-4’

*Measured from curb to curb

Source: City of Columbus Subdivision Ordinance

Other regulations in this ordinance relate to construction materials, gradients, intersection design, alleys, curb and gutter, sidewalks, and other elements.

Future Right-of-Way Preservation

Due to a lack of major capacity increasing roadway projects outside of the I-35/I-35W corridor, this plan does not recommend any future right of way preservation for specific locations in Columbus.

Right-of-way may be needed for local access roads to serve future development. The process for dedicating the right of way will be regulated and determined through the city’s subdivision ordinance.

Bicycling and Walking

A well-developed bicycle and pedestrian network provides a way for people of all ages and abilities to travel in a way that is safe, comfortable, accessible, and active. It connects people to community destinations, improves bicycle and pedestrian safety, increases multimodal opportunities, encourages active living, and provides a community amenity.

However, in rural communities such as Columbus, there may be less need for dedicated pedestrian and bicycle facilities on local roadways, compared to other community types. As traffic volumes are often very low, shared facilities may sometimes be sufficient. However, they still may be important when connecting key community destinations such as parks and schools, or providing safe access on roadways with higher volumes or speeds.

Pedestrian Facilities

Pedestrian travel provides an alternative to driving for short distance trips, and safe connections between other modes and final destinations for longer ones. It also can serve as an amenity for residents and visitors who are looking for a safe and active means of recreation, and for businesses districts looking for street life. Dedicated pedestrian facilities also help prevent fatalities resulting from pedestrians mixing with vehicle traffic.

Due to its predominately rural, low density character, the City of Columbus currently has very few sidewalks. There is one located along one side of Zurich Street, from Lake Drive to the southern boundary of the Running Aces racetrack facility. As the freeway corridor further develops, the City will work with future developers to determine the appropriateness and feasibility of installing additional sidewalks in that area, to allow for safe accommodation of pedestrians. It is currently not anticipated than sidewalk projects will be initiated in other parts of the city.

The city's subdivision ordinance provides guidance on the location, width, and grades of sidewalks.

Bicycle Facilities

Bicycle facilities provide additional opportunities for non-motorized connectivity and travel. Bicycle trips can be longer than pedestrian trips, which opens up possibilities of both replacing auto trips and connecting to a regional network. As traffic volumes grow, having an alternative means of travel can ease pressure on roads with limited capacity. Additionally, bicycle tourism has become increasingly popular in many communities, as a low-impact way to enjoy area attractions and support local businesses.

They can also be developed as a system that is similar to road functional class – with different facility types for different travel needs. Major categories of bicycle facilities which are potential options in Columbus include:

- **Off-street trails** – These trails link destinations and communities and may have a range of supporting amenities, including signage, parking, seating, and wayfinding. They may be located along major roadways, or in their own dedicated right-of-way (such as an abandoned rail corridor). They are frequently located along higher volume and speed corridors where on-street bicycling would be less safe. Regional trails are developed and maintained at the county or regional level, and provide connections over longer distances and between cities. Local trails are maintained at the city level, and typically provide connectivity between local destinations and regional systems.

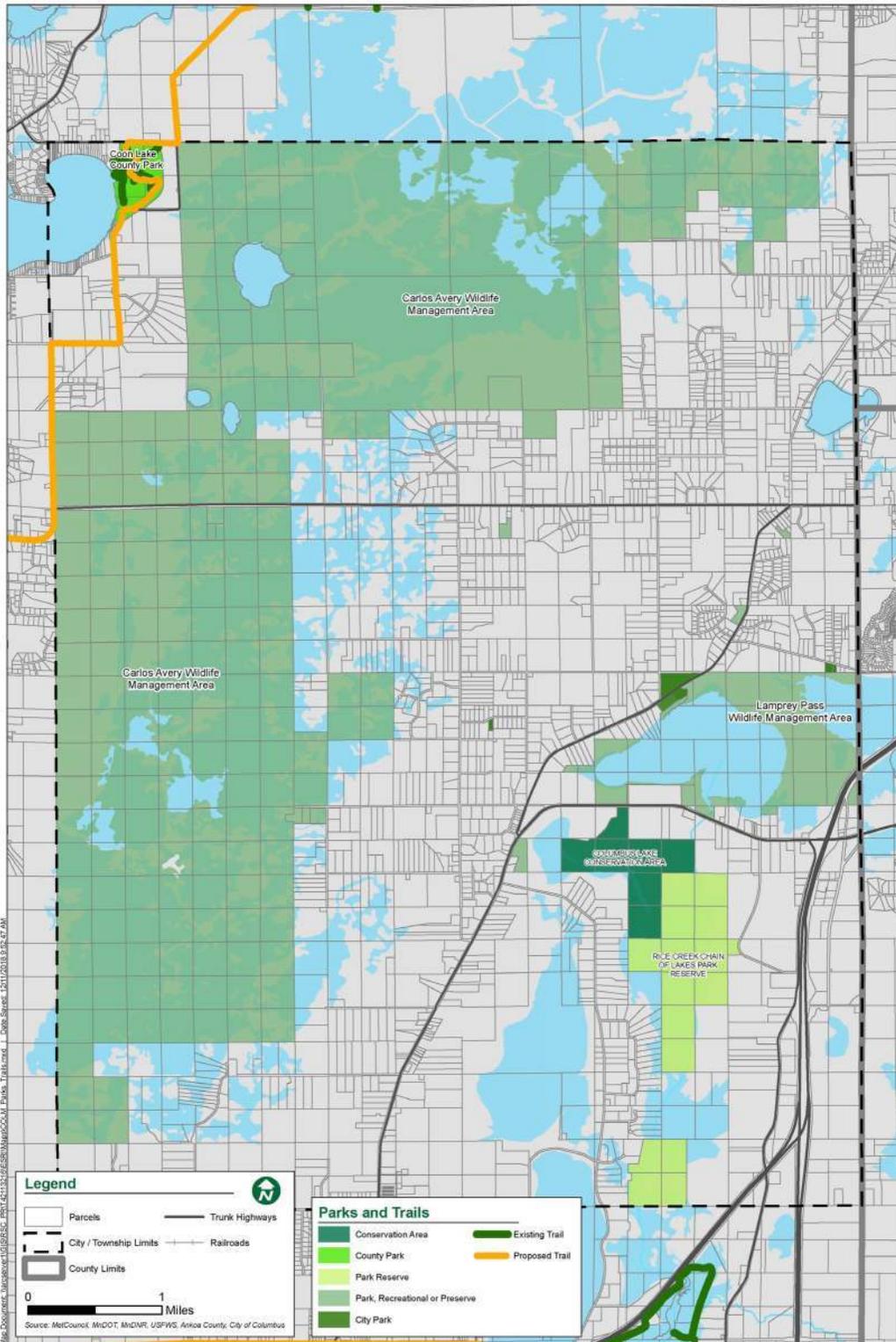
- **On-street bike lanes** – On-street bicycle facilities are typically developed by the county or municipality when funding or right-of-way constraints preclude off-street facilities – or where traffic volumes do not justify the additional investment. They can provide important local connections to the off-street system and local destinations.

Existing and planned bicycle facilities are depicted on **Figure 5.8**.

There is a planned regional trail connection along the western edge of the city. Additional information about this is included in Chapter 4, Parks.

In addition, the Metropolitan Council has designated the Regional Bicycle Transportation Network (RBTN). This consists of prioritized alignments and corridors (where alignments have not yet been established) that were adopted in the Council’s 2040 Transportation Policy Plan. There are no current or planned Tier I or II alignments with the Regional Bicycle Transportation Network in or near Columbus.

Figure 5.8: Non-Motorized Facilities



Transit

Transit Market Area

The Metropolitan Council has defined Transit Market Areas based on the following primary factors:

- Density of population and jobs
- Interconnectedness of the local street system
- Number of autos owned by residents

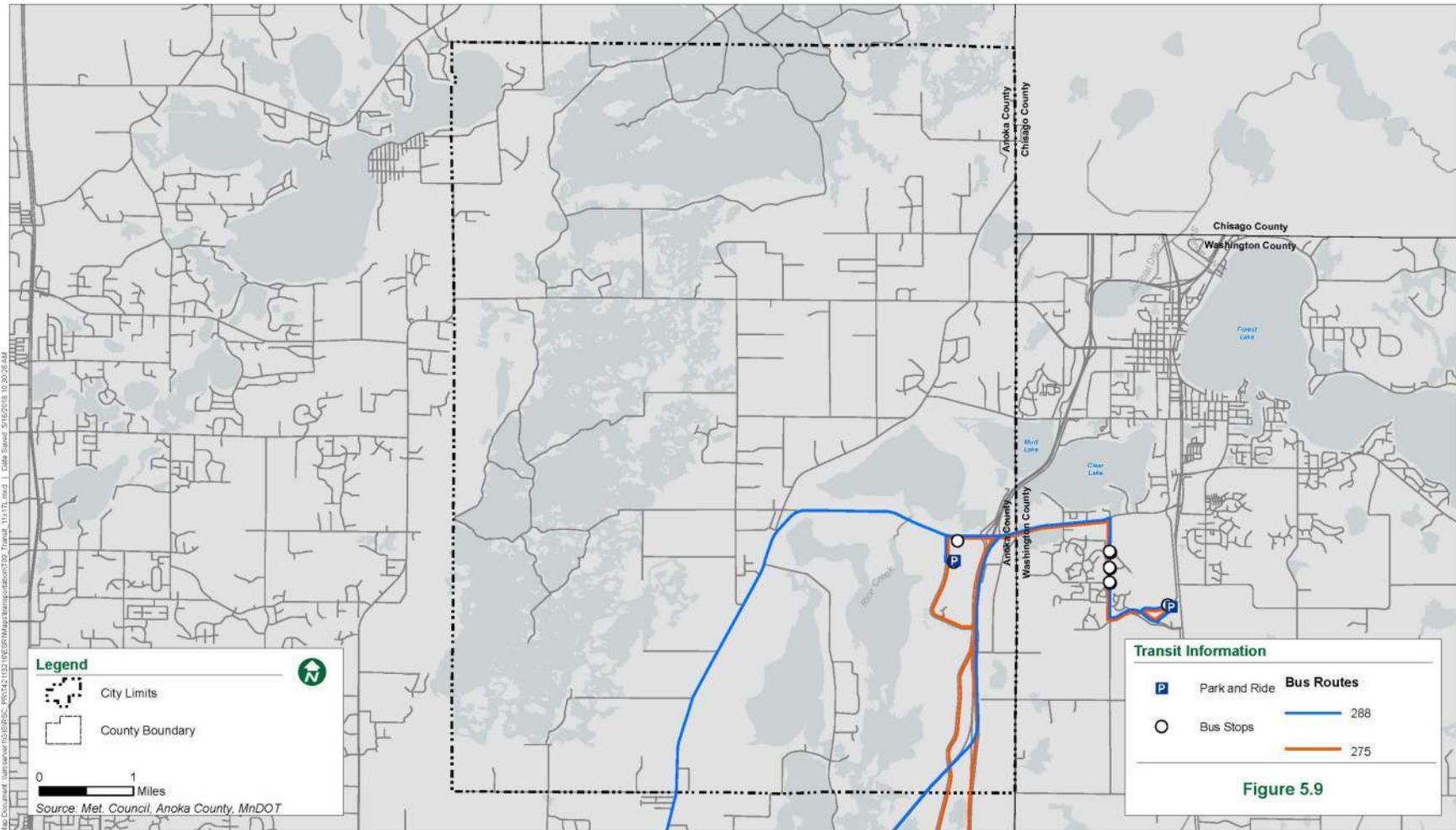
In general, areas with high density of population and jobs, highly interconnected local streets, and relatively low auto ownership rates will have the greatest demand for transit services and facilities. Transit Market Areas are a tool used to guide transit planning decisions. They help ensure that the types and levels of transit service provided, in particular fixed-route bus service, match the anticipated demand for a given community or area.

Based on this analysis, the Metropolitan Council categorizes the City of Columbus as Transit Market Area V. As identified in Appendix G of the Metropolitan Council's 2040 Transportation Policy Plan (TPP), the characteristics of this category area are as follows: Transit Market Area V has very low population and employment densities and tends to be primarily rural communities and agricultural uses.

Also from Appendix G of the 2040 TPP (Gable G-2), the typical transit service within this Market Area consists of: general public dial-a-ride service, but due to the very low-intensity land uses these areas are not well-suited for fixed-route transit service.

Columbus is within the Transit Capital Levy District as shown in Fig 1-3 of the TPP (Existing Transit System with Transit Capital Levy District).

Figure 5.9: Existing Fixed Route Transit Facilities



County Traveler Transit Link is available throughout the City of Columbus, which is not a fixed route service.

Current and Planned Transit Facilities

While the City of Columbus generally is not well suited for local transit routes, there are some express transit routes on the I-35W corridor that serve a park and ride facility in Columbus. The existing transit system in Columbus is shown on **Figure 5.9**.

Fixed Route Service

Columbus is served by two Express Bus Routes, 275 and 288, operated by Metro Transit. Route 275 runs north/south along I-35 E between Downtown St. Paul and Forest Lake Transit Center. This route runs southbound to St. Paul from 5:30 am – 8:20 am and northbound to Columbus/Forest Lake from 3:40 pm to 5:50 pm. This route does not run on weekends or holidays. Route 288 runs north/south along I-35 W between Downtown Minneapolis and Forest Lake Transit Center. This route runs southbound to Minneapolis from 5:40 am to 9:00 am and northbound to Columbus/Forest Lake from 3:00 pm to 6:45 pm. This route does not run on weekends or holidays.

Transitway (LRT or BRT)

There are no current or planned transitways in Columbus. The closest potential transitway is the planned Rush Line Bus Rapid Transit (BRT) corridor, which would provide transit service from several northern suburbs into St. Paul. At present, no alternatives being considered pass through Columbus. However, there is a proposal that would provide connecting bus service from nearby Forest Lake to the BRT line.

Transit Facilities

There is one park-and-ride facility in Columbus. Running Aces Park & Ride facility is located at 15201 Zurich St. NE, Running Aces Casino and Racetrack and holds approximately 300 vehicles. In 2016, this facility was 81% utilized, a 157% increase from 2015 utilization rates. Routes 275 and 288 service this facility. There are no additional facilities planned at this time.

Dial-a-Ride Service

Columbus is serviced by Transit Link, the dial-a-ride service provided through the Metropolitan Council at the county level. Transit Link provides metro-wide transit connections and access to qualifying rides, such as last mile service, connections between transit stations, or to and from areas not serviced by regular bus routes. Any member of the public may reserve a qualifying ride. Upon reservation, each trip is assessed to ensure it does not overlap with regular route bus services. Starting and ending destinations must be more than ¼ mile from regular route transit in winter months (November – March) and more than ½ mile from regular route transit in summer months (April- October). Transit Link Service does not operate on Thanksgiving Day, Christmas Day, and New Year's Day.

Transit Link fares are one-way and are determined by distance traveled. The fare tiers are as follows: trips less than 10 miles, trips between 10 and 20 miles, and trips more than 20 miles. One-way fares include transfer to a regular service route except for the Northstar Line or peak hour services.

Transit Link service offered through Anoka County serves all cities and townships in the county as well as the cities of Arden Hills, Falcon Heights, Lauderdale, Mounds View, New Brighton, Roseville, St. Anthony, and Shoreview in Ramsey County. Service is available Monday-Friday from 6:00am – 7:00pm. Transfers between Transfer Link and regular service routes take place at one of the following transit hubs: Anoka County Government Center, Northtown Transit Center, Columbia Heights Transit Center, Rosedale Transit Center, Little Canada Transit Center, or Foley Boulevard Park and Ride.

Additionally, Anoka County Medlink, formerly Anoka County Volunteer Transportation, operates

Monday – Friday, 8:00 am to 4:30 pm through the generosity of volunteers. Medlink is a ride program for veterans, persons age 60 and older, and clients of Anoka County to travel to Anoka County buildings and medical appointments throughout the Twin Cities.

City Considerations

Presently, there are no plans to further extend transit service to Columbus within the 2040 planning horizon.

The City will work with the County, Metro Transit, Transit Link, and other stakeholders to ensure that the provision of transit is sufficient to meet the needs of area residents.

Aviation

There are no airports located within Columbus. However, Columbus is within the influence of Forest Lake Airport, located 1.5 miles east of Columbus on TH 97. The Forest Lake Airport has a turf runway and is considered a special purpose airport (business and pleasure). Plans have been prepared for a paved runway expansion of the airport. Columbus is a member of a Joint Airport Zoning Board with the City of Forest Lake. Anoka County-Blaine Airport is a minor reliever airport in the metropolitan system, located six miles southwest of Columbus. Howard Lake, Mud Lake, Coon Lake and nearby Clear Lake are all identified for seaplane use. There are currently no obstructions in the city to navigable airspace.

The Metropolitan Council states that each community has a responsibility to identify policies and ordinances that protect regional airspace from obstructions, including meeting any Federal Aviation Administration (FAA) notification requirements. The Transportation Policy Plan provides some guidance and resources to inform the development of ordinances and regulations.

The City of Columbus' Zoning Ordinance has regulations related to airspace, including tower placement and lighting, and FAA notification and compliance.

Freight

In the area around Columbus, freight primarily travels on trucks and semi-trailers on the interstate network. **Figure 5.10** shows the major corridors around Columbus that handle freight traffic.

- I-35 is identified as a Tier 2 freight corridor in the Metropolitan Council's *Regional Truck Highway Corridor Study (2017)* – a study whose objective was to determine regionally important truck freight corridors in the Twin Cities metropolitan area. South of the split, I-35E is a Tier 1 and I-35W is Tier 2. These designations reflect the high degree of significance of the interstate system for truck movement. On the section of I-35 in Columbus, there are approximately 3,250 heavy commercial vehicles per day out of 81,000 vehicles total – or around 4%.
- In the same study, CSAH 23/Lake Drive is identified as a Tier 3 freight corridor between CSAH 62/Kettle River Boulevard and Highway 61 in Forest Lake. In Columbus, there are approximately 600 heavy commercial vehicles per day out of 18,200 vehicles total – or about 3%.
- Other major roads in Columbus handle freight traffic, but were not specifically designated in the study because they are of more local than regional importance.

There are no active rail lines in Columbus.

There are multiple freight generating uses in the City of Columbus. Most are located either in the freeway corridor near the interstate or along CSAH 23/Lake Drive, in commercially and industrially

zoned areas. At present, no significant issues have been identified in Columbus related to weight-restricted roads or bridges, bridges with insufficient height or width clearances, locations with unprotected road crossings of active rail lines, or intersections with inadequate turning radii.

The City will continue to work with the County and MnDOT to ensure that freight traffic is safely and efficiently accommodated on major roadways, while minimizing any negative impacts on local traffic and land uses. This will include serving current and planned commercial and industrial centers on Lake Drive and in the freeway corridor.

Chapter 6: Water Resources

Wastewater

Overview and Background

Growth of population and jobs in a community can present challenges to protecting ground and surface water resources while ensuring the needs of residents and businesses are adequately met. One of the key elements in addressing this challenge is the planning, construction, and maintenance of adequate wastewater collection systems. A wastewater and comprehensive sewer plan is a useful tool for defining the strategies the city will use to accomplish planning, construction, and maintenance of the wastewater system. Under the state Metropolitan Planning Act, local governments are required to submit a Wastewater and Comprehensive Sewer Plan element as part of their overall Comprehensive Plan.

This chapter covers the planning for the existing and future wastewater collection and treatment system in Columbus. The freeway corridor area in the southeast corner is the only portion of the city developing municipal sewer.

Existing and Planned System

The I-35 corridor in Columbus is currently located within the 2040 MUSA. Columbus has been designing and constructing components of municipal sewer and water facilities within the public utility corridor since 1998. The 1999 Comprehensive Plan included a “Tier I” sewer plan component, which identified estimated sanitary sewer flows from 2000-2020 and identified sewer staging areas for the same timeframe. At the Metropolitan Council’s request, the City prepared a “Tier II” Sanitary Sewer Plan in 2004. The Tier II Plan is a more detailed plan for sewer services, including sewer trunk, lift station and facility design information, metropolitan system connection details, and average and peak flow data.

The Tier II Plan and amended Tier I plan were submitted to the Metropolitan Council for approval in the spring of 2005. While the sewer plans were acceptable in form and content by the Metropolitan Council staff, downstream interceptor capacity restrictions caused the Metropolitan Council to put the plans on hold. The 1999 Tier I plan was deemed sufficient by the Metropolitan Council to allow construction of the proposed sewer improvements in the Freeway Corridor.

In 2007, Columbus received petitions for expanded utility service within the northeast and northwest sectors of the Freeway Corridor. The City prepared and forwarded a sewer staging plan amendment to the Metropolitan Council to allow the expansion of public utilities in these areas. The amendment was approved by the Metropolitan Council and current sewer staging within the Freeway Corridor identifies service potential for the entire utility district.

Table 6.1 below details the design flow and capacity of existing lift stations in Columbus.

Table 6.1 – Existing Lift Station Capacity			
Lift Station Number	Influent Pipe Size (Inches)	Forcemain Size (Inches)	Design Flow (gpm)
1	15	16	1,050
2	12	6	500
3	8	6	275
4	10	8	800
5	8	8	650
6	8	6	350

Figure 6.1 identifies the current and proposed Sewer Staging Plan. **Figure 6.2** illustrates the current sanitary sewer collection system. Sewer service in the westerly side of the Freeway Corridor and the north half of the easterly side of the Freeway Corridor will be completed in 2019. Completion of sewer service in the south half of the easterly side of the Freeway Corridor is development driven and will require one or more lift stations and a gravity sewer connection to the existing sewer line in 145th Avenue. It is anticipated this area will be served after 2020.

Figure 6.1: Sewer Staging Plan

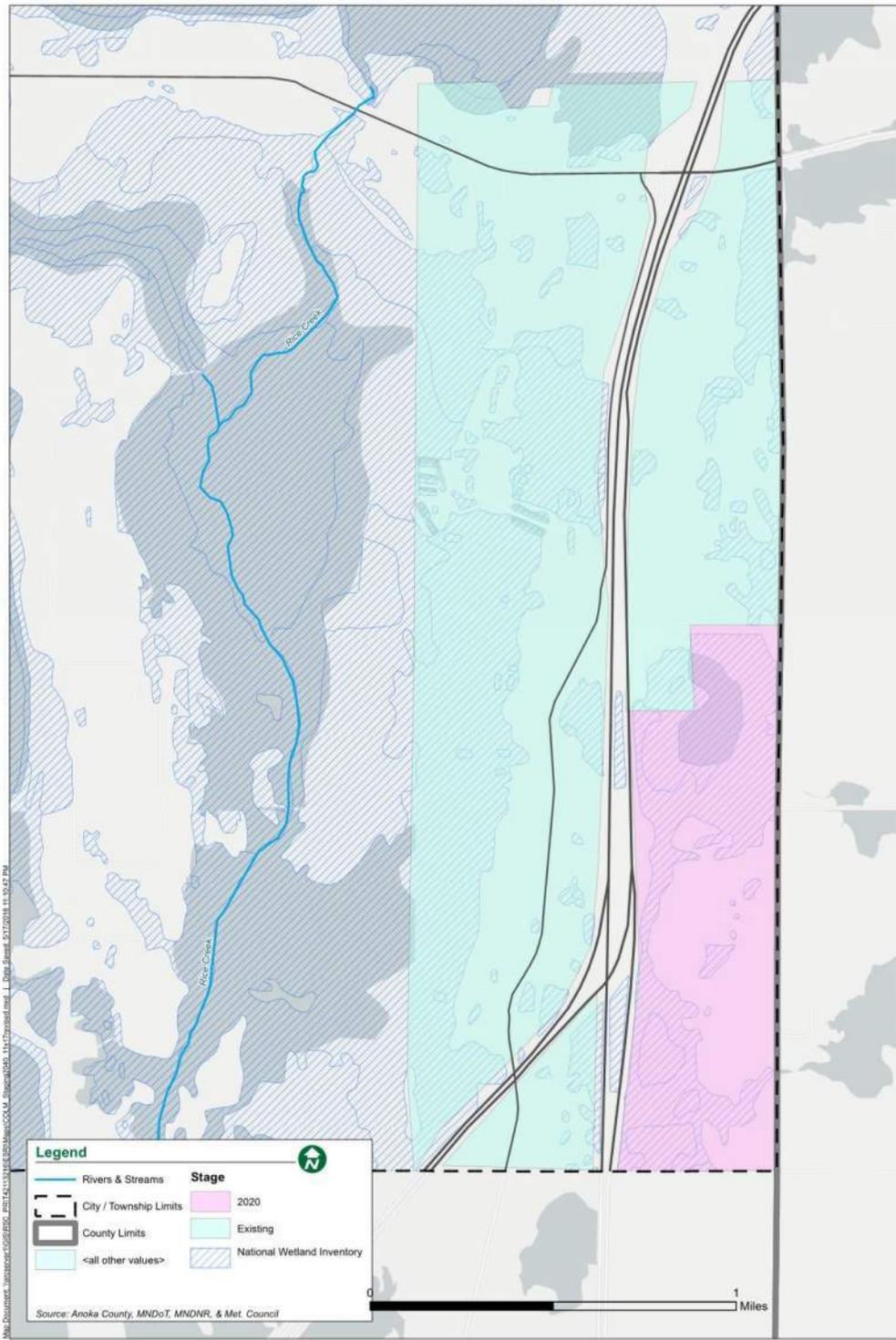
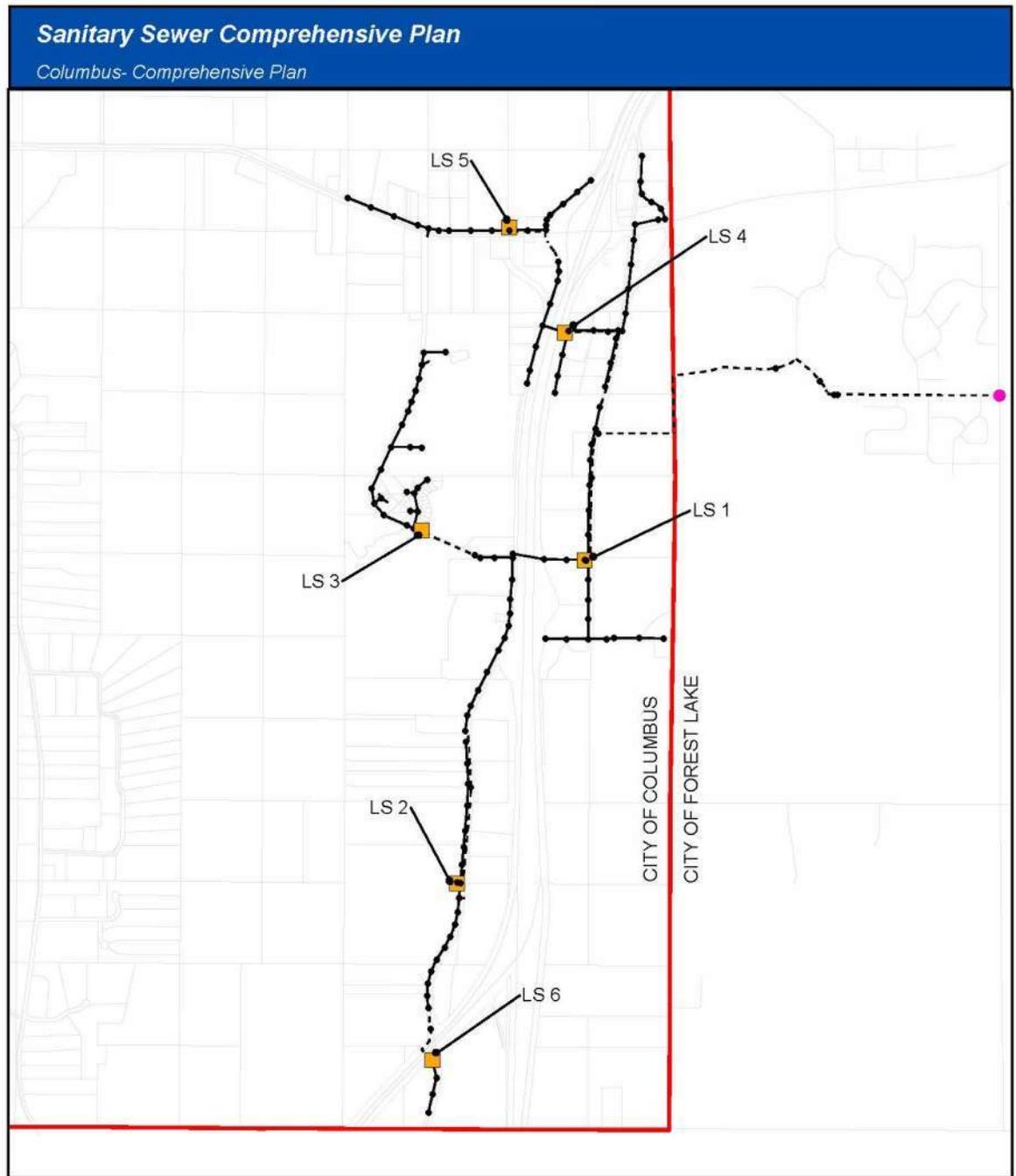


Figure 6.2: Existing Sewer System



- Legend**
- Lift Station
 - MCES Connection
 - Maintenance Hole
 - Forcemain
 - Sanitary Sewer
 - Columbus City Limits



Limitation of Liability
This document is not a legally recorded map or survey and is not intended to be used as one. This map is a compilation of records and information from various state, county, and township offices, and other sources.

K:\a-f\Columbus\17115000\04_Production\07_GIS
Source: Anoka County



Map date: May 2019

Figure 6.3: Regional Wastewater System Long-Term Service Area

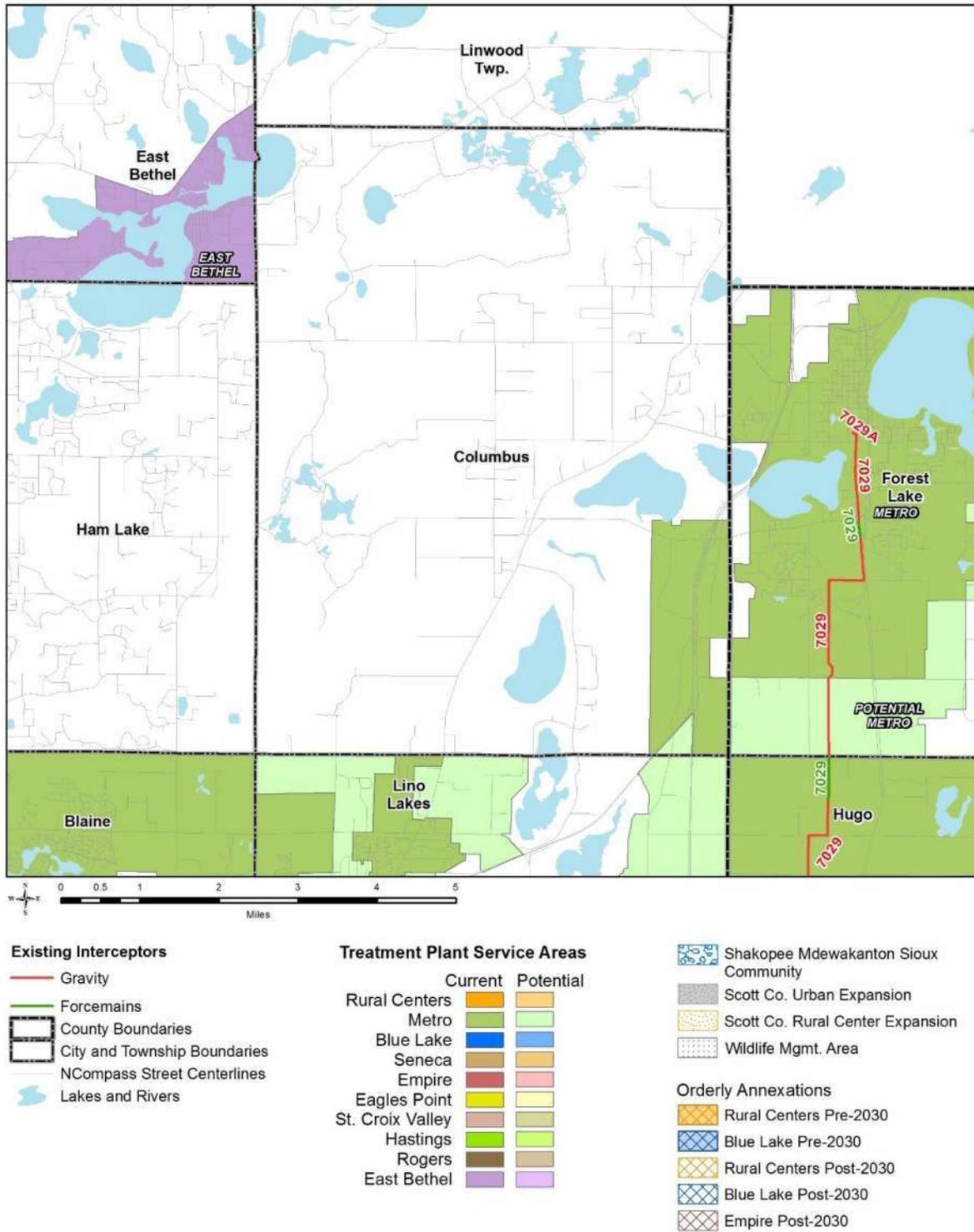
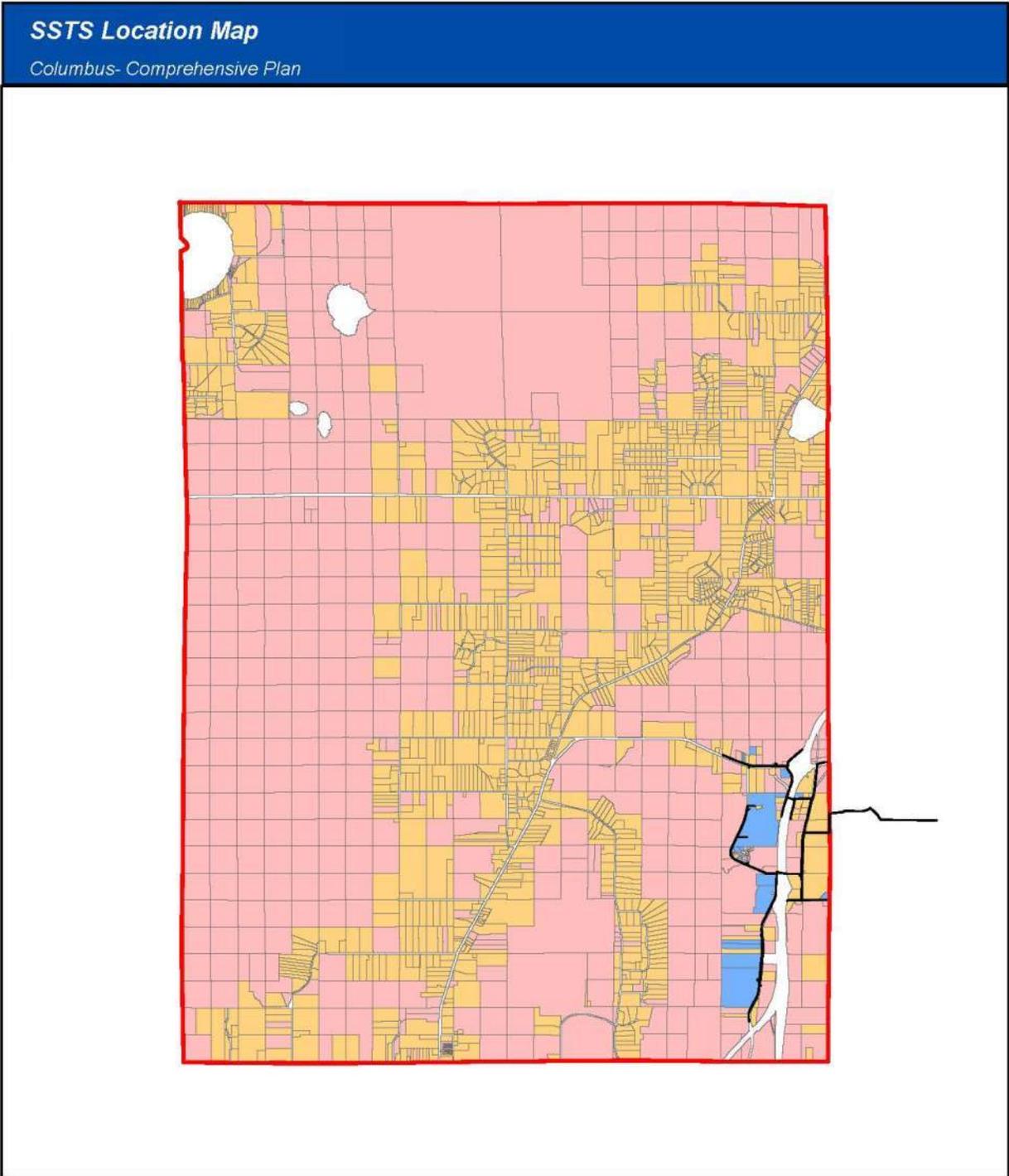
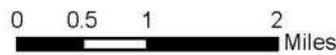


Figure 6.4: SSTS Location Map



Legend

- Sanitary Pipes
- ▭ Columbus
- ▭ Sanitary Sewer Parcels
- ▭ SSTS Parcels
- ▭ Vacant Land Parcels



Limitation of Liability
This document is not a legally recorded map or survey and is not intended to be used as one. This map is a compilation of records and information from various state, county, and township offices, and other sources.

K:\a-h\Columbus\17115000\04_Production\07_GIS

Source: Anoka County



Map date: May 2019

Subsurface Sewage Treatment Systems (SSTS) and Private Systems

It is estimated there are approximately 1580 SSTSs in the City of Columbus. This includes approximately 1420 residential systems and approximately 160 non-residential systems. There are no other private systems in the city. Parcels utilizing SSTS are shown in **Figure 6.4**.

Columbus has adopted Minnesota Rule Chapters 7080-7083 and Anoka County Sewage Treatment Ordinance (2013-1) by reference. The City requires Minnesota Pollution Control Agency licensure for all system designers, installers, pumpers, and maintenance contractors. Compliance inspections are required at point of sale and with any system expansion. The City also requires a triennial pumping and inspection program for all systems. Any system found to be in noncompliance must be corrected within ten months of any issuance of a noncompliance notice. The City has no record of existing nonconforming systems in the community.

Inflow and Infiltration (I/I)

A Metropolitan Council Task Force met in 2003 and 2004 to address the impacts of excess inflow and infiltration (I/I) on the regional sanitary sewer system. Inflow is typically storm water that enters the sanitary sewer system and infiltration is typically groundwater that enters the sanitary sewer system. I/I uses capacity of the MCES collection and treatment system that would otherwise be available for actual sanitary sewer flow.

Sources of I/I in the sanitary sewer system include cracks and openings in sewer mains, service laterals, joints, and deteriorated manholes. Sump pump foundation drains and rain gutter leaders are also potential sources.

Because of the relative newness of the Columbus sewer system, including construction materials and construction techniques, there are no known inflow or infiltration problems in the city. The City reports lift station run times, pump capacities, and calculated flow rates to MCES. These reports do not suggest there are any significant inflow and infiltration concerns. Figure 6.4 shows flow data for 2018 plotted against precipitation, which shows little to no correlation between them.

All new sewers are constructed in accordance with the City Engineers' Association of Minnesota's "Standard Specifications for Sanitary Sewer and Storm Sewer Installation." These sewers are pressure tested for leak tightness before being placed in service. External rubber wraps are installed on all new and modified manhole rings to reduce inflow and infiltration.

The City's Building Code requires the lowest floor of any new building to be at least three (3) feet above the calculated high water level of any adjacent wetland, pond, lake, or groundwater table. In the future the City will look to include specific ordinances prohibiting the discharge of sump pumps to the sanitary sewer system.

Public Works maintenance workers continually look for signs of inflow and infiltration during routine sewer maintenance. Items such as misaligned castings, open pick holes, and leaking rings are reported as they are encountered and repairs planned.

The City will continue to maintain its current sanitary sewer system and construct infrastructure in the future to minimize inflow and infiltration.

Population, Household, and Employment Forecasts

The municipally owned sanitary sewer system provides service to residents and businesses in the

freeway corridor area. The majority of the city is expected to remain unsewered through 2040. According to the Metropolitan Council population, household, and employment forecasts, the City of Columbus will have the following sewer demands, as detailed in **Table 6.1**.

Table 6.1 – Sewer Allocation Forecasts in Columbus				
	Status	Population	Households	Employment
2010	Sewered	20	9	710
2010	Unsewered	3,894	1,407	462
2020	Sewered	500	190	910
2020	Unsewered	3,720	1,410	590
2030	Sewered	680	270	1,010
2030	Unsewered	4,270	1,660	660
2040	Sewered	830	340	1,090
2040	Unsewered	4,670	1,860	710

Source: Metropolitan Council

Actual and Projected Wastewater Flow

Table 6.2 shows actual and projected flows for the City’s wastewater system, in millions of gallons per day (MGD).

Table 6.2 – Actual and Community Wastewater Flows (MGD)			
2010 Actual Flow	2020 Flow	2030 Flow	2040 Flow
0.02	0.06	0.07	0.08

Source: Metropolitan Council

Future Service Considerations

Columbus has held discussions with the City of Lino Lakes to examine the feasibility of extending public utilities from Lino Lakes to the Lake Drive commercial/industrial area. Coordination of such municipal service options is also dependent upon metropolitan sewer interceptor improvements and local trunk sewer alternatives. The City will continue to work with the City of Lino Lakes and the Metropolitan Council to examine alternatives for public utilities in this area.

Columbus has attended meetings with the Metropolitan Council and City of East Bethel discussing potential metropolitan sewer treatment alternatives in East Bethel and potential municipal sewer service in the Coon Lake area. There are approximately 50 residences in Columbus that are located on Coon Lake. The City is interested in continuing discussions with East Bethel and the Metropolitan Council.

Local Surface Water Management Plan

The Surface Water Management Plan for the City of Columbus is included in **Appendix B**. Below is a summary of the plan's purpose and scope, excerpted from its executive summary.

Purpose

The purpose of this Local Surface Water Management Plan (Plan) is to guide the City of Columbus in conserving, protecting, and maintaining the quality of its natural and water resources. This Plan recognizes the numerous entities involved in water resources management and environmental protection and has been created to meet the provisions of Minnesota Statutes §473.157 and §103B.235. It also conforms to Minnesota Rules 8410, Rice Creek Watershed District Rules, and Coon Creek Watershed District Rules.

The Plan avoids duplicating efforts of others by adopting or referencing the plans, standards and policies of the Rice Creek Watershed District (RCWD), Coon Creek Watershed District (CCWD), and Sunrise River Watershed Management Organization (SRWMO). It is consistent with the requirements of the Metropolitan Council (METCO), State of Minnesota Agencies such as the Minnesota Pollution Control Agency (MPCA), the Minnesota Department of Natural Resources (MNDNR), the Minnesota Department of Health (MDH) and the Board of Soil and Water Resources (BWSR), and Federal Agencies, such as the Environmental Protection Agency (EPA). This plan may be periodically amended to remain current with local practices and policies.

Scope

To achieve its general goal of protecting and improving the quality of city surface waters, the Plan includes specific goals for surface and groundwater management.

Each of the goals has one or more corresponding policies. A policy is a specific means for achieving established goals.

The Implementation Plan is prioritized to focus on the policies that the City can most effectively implement. There are several policies where the City does not have direct implementation authority. In these cases, the City has recognized the importance of the issues and pledged cooperation with Anoka County and Watershed Authorities. The combination of these Implementation Plans will formulate the overall strategy for implementing the Plan.

Water Supply Plan

The Water Supply Plan for the City of Columbus is included in **Appendix B**. This plan has been submitted to the Minnesota Department of Natural Resources for review, as required.

Water supply plans are developed to ensure a sustainable water supply for the region's current and future generations. In Minnesota, public water suppliers serving more than 1,000 people, large private water suppliers in designated Groundwater Management Areas, and all water suppliers in the Twin Cities metropolitan area are required by state statute to prepare and submit a water supply plan.

The goal of the water supply plan is to help water suppliers implement long term water sustainability and conservation measures and develop critical emergency preparedness measures. Communities need to know what measures will be implemented in case of a water crisis. Many emergencies can be avoided or mitigated if long term sustainability measures are implemented. Integrating this planning with land and resource planning ensures that future growth is considered when planning for water needs.

Chapter 8: Implementation

Overview

The implementation of this comprehensive plan will happen in multiple ways. As this plan provides overall guidance for the growth and development of the city, many official actions taken by the City can implement the plan – including determinations about proposed developments, enforcement of City ordinances, and decisions regarding funding and completing public projects.

The City of Columbus has directed its Planning Commission to review and make recommendations to the City Council on the Comprehensive Plan, zoning ordinances, requests for variances, ordinance amendments, and special use permits. The policy and action adopted by the City Council will guide day-to-day activities toward overarching community goals. A Capital Improvement Plan, adopted on an annual basis, will guide capital expenditures to meet growth needs and community goals.

While this chapter does not cover all the actions needed to implement the comprehensive plan, it does cover many of the major strategies and approaches for doing so.

Official Controls

The City’s official controls are a key element of the implementation of Comprehensive Plan. Under state statute, the City is required to ensure that there is consistency between these official controls and this plan. The City will evaluate land use controls and consider amendments to eliminate inconsistencies with the Comprehensive Plan, conform to State and Federal regulations, and support the overarching community goals identified through this plan update.

The City has an adopted Zoning Map shown on **Figure 7.1** and a Zoning Ordinance and Subdivision Ordinance to implement the Comprehensive Plan. These controls are used to make determinations about the type, location, scale, intensity, and aesthetics of development located in the community. **Table 7.1** shows the existing zoning districts in the city with each respective primary use and minimum lot size/intensity of use.

Table 7.1 – City of Columbus Zoning Districts				
District	Primary Use	Minimum Lot Area		Residential Density
		Without Public Sewer	With Public Sewer	
AG	Agriculture General District	20 acres	NA	1 unit per 40 acres
AP	Agricultural Preserve District	40 acres	NA	1 unit per 40 acres
RR	Rural Residential District	5 acres	NA	1 unit per 5 acres
SR	Suburban Residential District	5 acres	10,000 sq ft	3 units per acre
CR	Community Retail District	2.5 acres	0.5 acre	1 unit per 5 acres (existing units only)
C/S	Commercial/Showroom District	2.5 acres	0.5 acre	1 unit per 5 acres (existing units only)
LI	Light Industrial District	2.5 acres	0.5 acre	1 unit per 5 acres (existing units only)
C/I	Commercial/Industrial District	2.5 acres (5 for residences)	NA	1 unit per 5 acres (existing units only)
HR	Horse Racing	20 acres	20 acres	NA

The City also maintains several overlay districts that provide additional guidance for specific areas,

particularly those with environmental constraints. These include:

- Coon Lake Special Overlay District
- Shoreland Overlay District
- General Floodplain District
- Floodway District (subset of General Floodplain District)
- Flood Fringe District (subset of General Floodplain District)

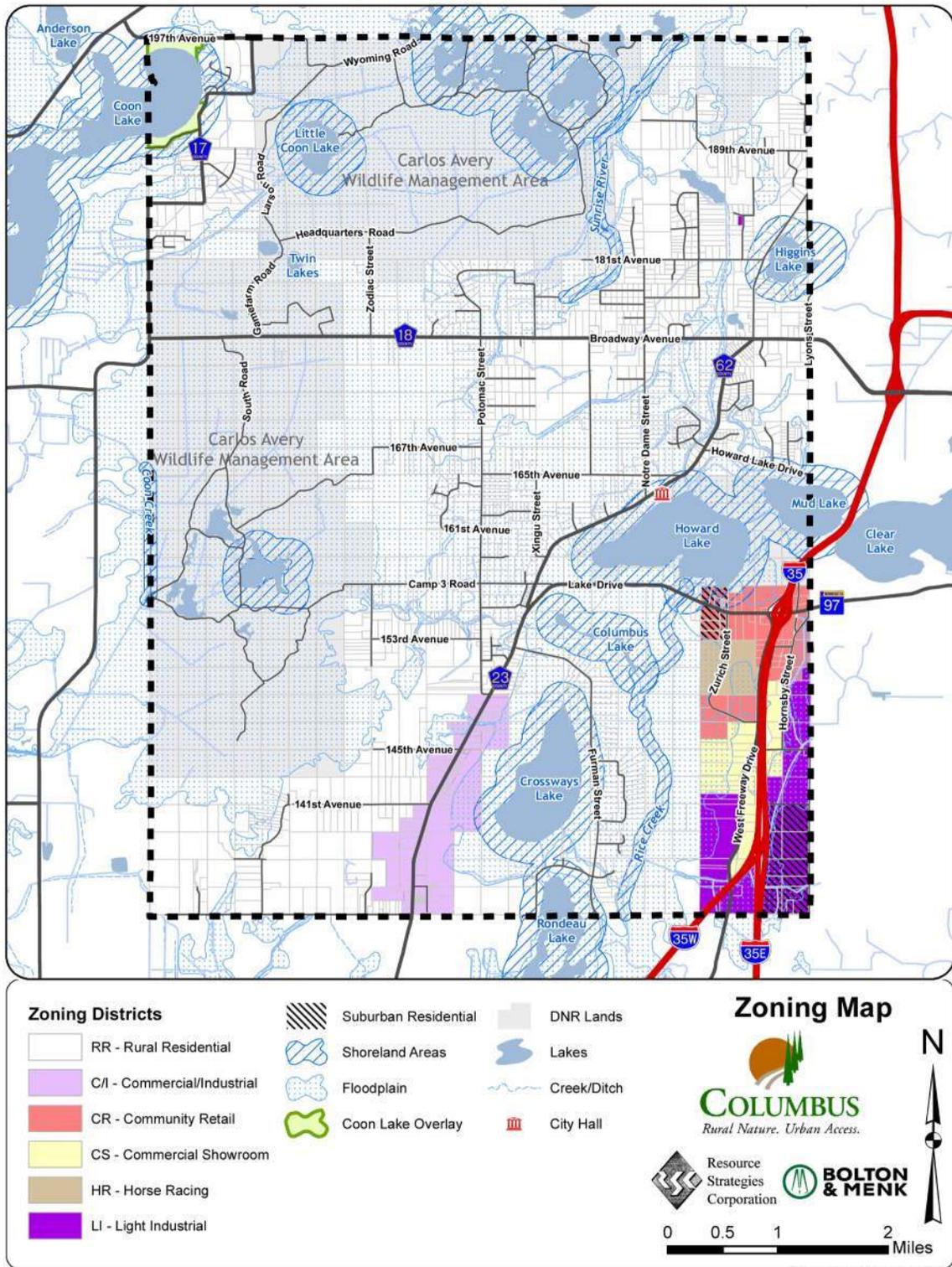
The Zoning and Subdivision Ordinances will allow the City to implement a number of the objectives in this plan, including the following:

1. An overall density of residential development in area planned for public water and sewer (the Freeway Corridor) that exceeds three dwelling units per acre.
2. Platting of property that allows for the dedication of right of way for public roadway and trail connections and improvements.
3. Compliance of all new development with stormwater management and erosion control requirements, including wetland buffer areas.
4. Protecting access for solar collectors and other renewable resource systems from potential interference by adjacent structures and vegetation. City decisions regarding development will be made to enhance the possible future development and use of solar energy and other renewable resource systems. Provisions within the City's official controls establish the regulatory basis for this protection including, but not be limited to, minimum structure separation and height restrictions.

As part of the planning process, the City will evaluate its land use controls and consider amendments to the existing Zoning and Subdivision Ordinances, after the adoption of this Comprehensive Plan. The purpose of the evaluation is to eliminate inconsistencies in the ordinances with the policies and objectives of new Comprehensive Plan, enhance performance standards, protect public and private investments, and conform to mandatory state and federal regulations. This will include:

- Creation of new low, medium, and high density mixed use zoning districts, consistent with the corresponding future land use designations.
- Updates and revisions to existing zoning districts, mapping, and standards to ensure consistency with the comprehensive plan.
- Other updates to the zoning and subdivision ordinances as needed.

Figure 7.1: City of Columbus Zoning Map



Housing Implementation Program

The City of Columbus is committed to encouraging the availability of affordable housing as a long-term community value. See Chapter 3 for the comprehensive plan’s housing implementation program.

Public Programs and Tools

Much of the plan will be implemented through the use of public programs, fiscal devices, and other related actions. **Table 7.2** outlines the overarching community goals for Columbus (as discussed in more detail in Chapter 1) and identifies the primary implementation tools to help the City obtain its goals. For the purposes of this table, short term is defined as within five years or less (significantly less in the case of zoning changes, as identified above).

Table 7.2 – Implementation Tools and Timeline		
Plan Goal	Primary Tools (Policy, Fiscal, and Programs)	Timeline for Implementation
Land Use		
1. <i>Growth management</i>	Zoning Ordinance; Subdivision Ordinance	<u>Short term</u> : Zoning changes to be in conformance with comprehensive plan <u>Ongoing</u> : Decisions in response to development applications
2. <i>Rural development</i>	Zoning Ordinance; Subdivision Ordinance	<u>Short term</u> : Zoning changes to be in conformance with comprehensive plan <u>Ongoing</u> : Decisions in response to development applications
3. <i>Suburban development</i>	Zoning Ordinance; Subdivision Ordinance	<u>Short term</u> : Zoning changes to be in conformance with comprehensive plan <u>Ongoing</u> : Decisions in response to development applications
Natural Resources		
4. <i>Protect and preserve natural resources</i>	State and Federal Environmental Regulations	<u>Ongoing</u> : City conformance with environmental standards
Community Facilities		
5. <i>Provide range of public services and facilities</i>	City Budget; Capital Improvement Plan; Cooperative agreements with other jurisdictions; Regional and state grant funding	<u>Annual</u> : City Budget, Capital Improvement Plan updates and approvals <u>Ongoing</u> : Provision of basic city services, such as police, fire, parks, administration, etc.
Economic Competitiveness		
6. <i>Business and job growth</i>	Partnership with Anoka County; Tax abatements, TIF, and other fiscal incentives	<u>Ongoing</u> : Response to business investment opportunities

Housing		
<i>7. Range of housing options for all residents</i>	<i>See details in Housing Implementation Plan</i>	<u>Ongoing</u> : Response to housing development opportunity or requests for assistance from residents
Parks and Trails		
<i>8. Active and passive recreational opportunities</i>	City Budget; Capital Improvement Plan; Partnership with Anoka County; Regional and state grant funding	<u>Ongoing</u> : Decisions in response to development applications; maintenance and operations of park facilities
Transportation		
<i>9. Safe and efficient multimodal system</i>	Capital Improvement Plan; Partnerships with Anoka County and MnDOT; Regional and state grant funding	<u>Annual</u> : Evaluate need for improvements to city roadways; cooperate with County and MnDOT on country, state, and federal improvements <u>Ongoing</u> : Respond to developer plans for extension of roads to new development
Public Utilities		
<i>10. Efficient meet needs of development</i>	Capital Improvement Plan; Partnerships with Anoka County and MnDOT; Regional and state grant funding; State and federal regulations	<u>Annual</u> : Evaluate need for improvements to city utilities; cooperate with County and State on county and regional improvements <u>Ongoing</u> : Respond to developer request for extension of utilities to new development

Capital Improvement Plan (CIP)

The City annually reviews capital expenditure needs and will budget for improvements identified throughout the 2040 Comprehensive Plan Update accordingly. Capital needs include public and private investments in infrastructure, infrastructure repair and replacement, transportation, building maintenance and repair, water systems, equipment, and park expenditures. The CIP budget is continually assessed and is subject to modification as appropriate.

The Capital Improvement Plan will require review on an annual basis to determine the need for any adjustments as further development within the city occurs and other governmental decisions are made regarding sub-regional or county improvements. The current CIP is located in **Appendix C**.

Schedule of Changes

To meet the goals of the 2040 Comprehensive Plan update and remove any potential inconsistencies in policy, changes and amendments to the city's zoning codes and ordinances will need to be made, including the creation of new zoning districts as described in the official controls section. These changes will be completed within nine months after the official adoption of the 2040 Comprehensive Plan update.

Plan Amendment Process

The Comprehensive Plan is intended to be general and flexible; however, formal amendments to the Plan will be required when land use elements, sewer staging areas or growth policies are revised. Periodically, the City should undertake a formal review of the plan to determine if amendments are needed to address changing factors or events in the Columbus area.

While a plan amendment can be initiated at any time, the City should carefully consider the implications of the proposed changes before its adoption. When considering amendments to this plan, the City will use procedures outlined in the City's ordinances. Landowners, land developers, organizations, individuals, the City Council and Planning Commission may initiate amendments to the Comprehensive Plan. All amendments to the Comprehensive Plan require a public hearing and must be submitted to the Metropolitan Council, the county, and townships for review prior to implementation.

When considering amendments to this plan, the City will use the following procedure:

1. Landowners, land developers, the Planning Commission or the City Council may initiate amendments.
2. The Planning Commission will direct staff or the planning consultant to prepare a thorough analysis of the proposed amendment.
3. Staff or the planning consultant will present to the Planning Commission a report analyzing the proposed changes, including their findings and recommendations regarding the proposed plan amendment.
4. The Planning Commission will decide whether or not to proceed with the proposed amendment. If a decision to proceed is made, a formal public hearing will be held on the proposed amendment.
5. Following the public hearing the Planning Commission will make a recommendation to the City Council.
6. The City Council will receive the recommendation from the Planning Commission and make a final decision on whether to adopt the amendment.
7. All amendments must be submitted to area review jurisdictions and the Metropolitan Council for review prior to implementation.

Appendix A: Transportation

**Anoka County Highway Department
Access Spacing Guidelines**

Roadway Type	Route Speed (MPH)	Intersection Spacing (Nominal ⁽⁴⁾)		Signal Spacing	Private Access ⁽¹⁾
		Full Movement Intersection	Conditional Secondary Intersection ⁽²⁾		
Principal Arterial	50 - 55	1 mi.	1/2 mi.	1 mi.	Subject to conditions for all roadway types and speeds
	40 - 45	1/2 mi.	1/4 mi.	1/2 mi.	
	< 40	1/8 mi.	300 - 660 feet ⁽³⁾	1/4 mi.	
Arterial Expressway	50 - 55	1 mi.	1/2 mi.	1 mi.	
Minor Arterial	50 - 55	1/2 mi.	1/4 mi.	1/2 mi.	
	40 - 45	1/4 mi.	1/8 mi.	1/4 mi.	
	<40	1/8 mi.	300 - 660 feet ⁽³⁾	1/4 mi.	
Collector and Local	50 - 55	1/2 mi.	1/4 mi.	1/2 mi.	
	40 - 45	1/8 mi.	N/A	1/4 mi.	
	<40	1/8 mi.	300 - 660 feet ⁽³⁾	1/8 mi.	
Specific Access Plan		By adopted plan/agreement/covenant on land			

- (1) Private access refers to residential, commercial, industrial and institutional driveways. Reference Anoka County's Development Review Manual for specifics on private access.
- (2) Conditional secondary access is defined as right-in/out.
- (3) Access spacing may be determined by planning documents approved by the county (e.g., Lino Lakes I-35E AUAR)
- (4) Any spacing deviations shall have a detailed traffic study completed by the requesting agency, AND approved by the County Engineer.

Mn/DOT Access Management Manual

Figure 3.1 – Summary of Recommended Street Spacing for IRCs

Category	Area or Facility Type	Typical Functional Class	Public Street Spacing		Signal Spacing
			Primary Full-Movement Intersection	Secondary Intersection	
1 High-Priority Interregional Corridors & Interstate System (IRCs)					
1F	Interstate Freeway	Principal Arterials	Interchange Access Only		⊘
1AF	Non-Interstate Freeway		Interchange Access Only (see Section 3.2.7 for interim spacing)		See Section 3.2.5 for Signalization on Interregional Corridors
1A	Rural		1 mile	1/2 mile	
1B	Urban/Urbanizing		1/2 mile	1/4 mile	
1C	Urban Core		300-660 feet dependent upon block length		
2 Medium-Priority Interregional Corridors					
2AF	Non-Interstate Freeway	Principal Arterials	Interchange Access Only (see Section 3.2.7 for interim spacing)		See Section 3.2.5 for Signalization on Interregional Corridors
2A	Rural		1 mile	1/2 mile	
2B	Urban/Urbanizing		1/2 mile	1/4 mile	
2C	Urban Core		300-660 feet, dependent upon block length		
3 Regional Corridors					
3AF	Non-Interstate Freeway	Principal and Minor Arterials	Interchange Access Only (see Section 3.2.7 for interim spacing)		Interim
3A	Rural		1 mile	1/2 mile	See Section 3.2.5
3B	Urban/Urbanizing		1/2 mile	1/4 mile	1/2 mile
3C	Urban Core		300-660 feet, dependent upon block length		1/4 mile

H.3

APPENDICES

Figure H-2: Minnesota State Airport System Plan

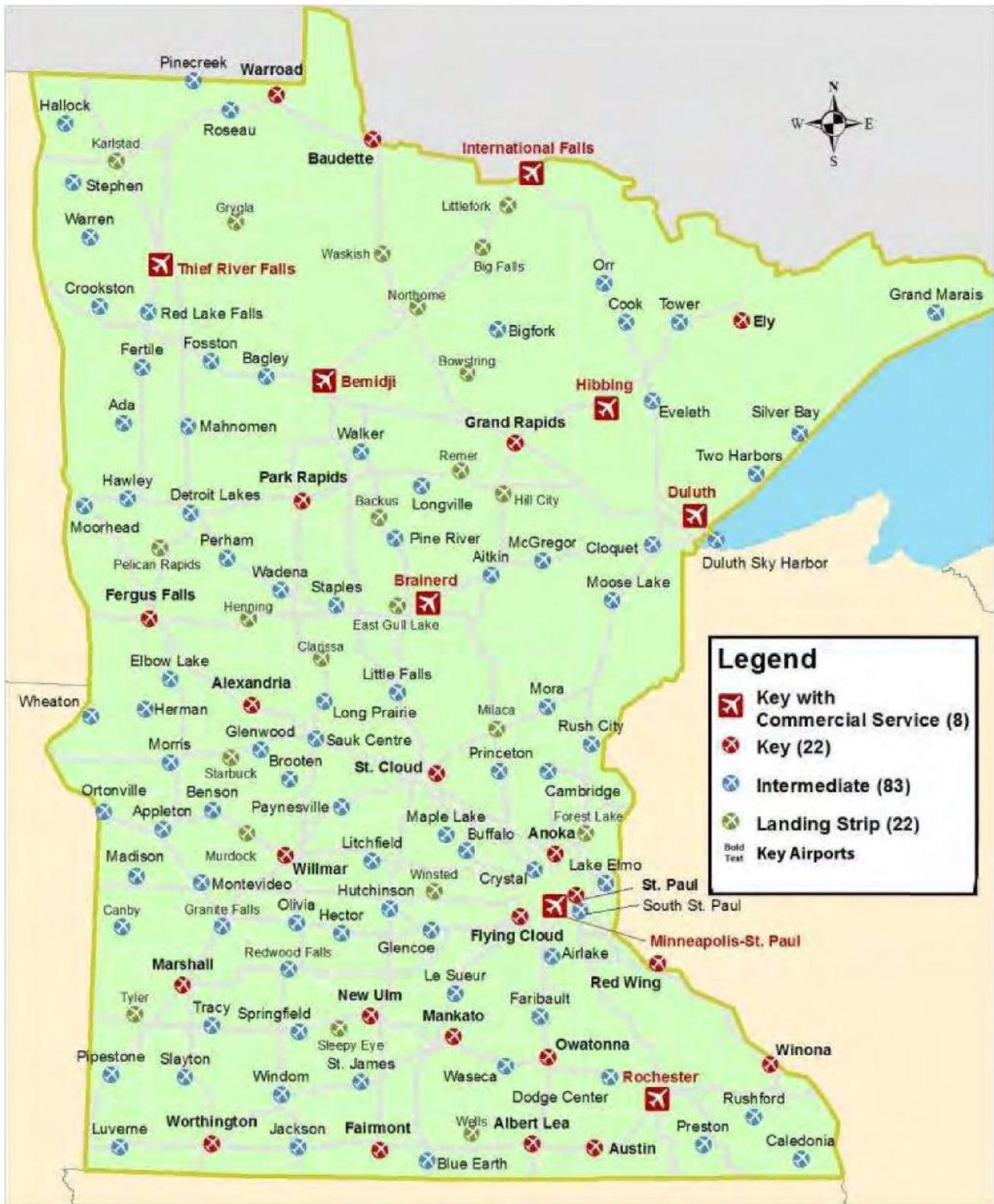
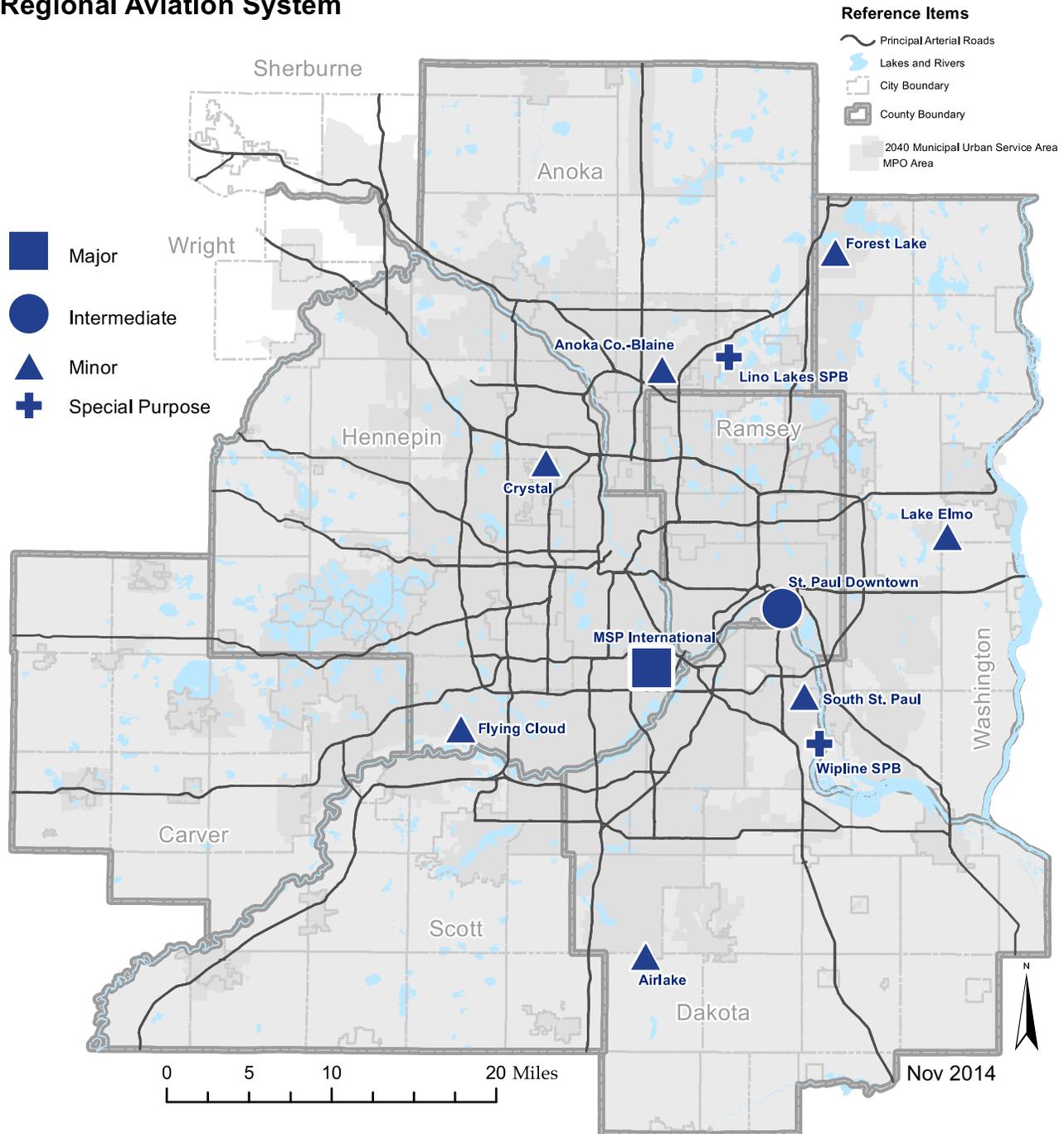


Figure H-3: Existing Regional Airport System

Regional Aviation System



Appendix B: Water Resources



Local Surface Water Management Plan

Final Plan Update

City of Columbus, Minnesota

TKDA Project No.16642.000

December 27, 2018

DRAFT



444 Cedar Street, Suite 1500
Saint Paul, MN 55101
651.292.4400
tkda.com



444 Cedar Street, Suite 1500
Saint Paul, MN 55101
651.292.4400
tkda.com

December 27, 2018

Patricia Preiner, President
Rice Creek Watershed District
4325 Pheasant Ridge Drive NE No.611
Blaine, MN 55449-4539

Tim Kelly, District Administrator
Coon Creek Watershed District
12301 Central Avenue NE Suite 100
Blaine, MN 55434

Dan Babineau, Chair
Sunrise River WMO
SRWMO c/o East Bethel City Hall
2241 NE 221st Avenue
Cedar, MN 55011

RE: Final Plan Update
Local Surface Water Management Plan
City of Columbus, Minnesota
TKDA Project No.16642.000

Dear Ms. Preiner, Mr. Kelly & Mr. Babineau:

Please find the Local Surface Water Management Plan (SWMP) Update for the City of Columbus on the following pages. We have included a page of acronyms used throughout the report. This Plan is being submitted for your review and comment as required.

If you have questions about the documents, please feel free to contact me directly at 651.292.4492 or dennis.postler@tkda.com.

Sincerely,

Dennis M. Postler, PE
City Engineer & VP of Municipal Division

kp:amc
k:\a-f\columbus\16642000\04_production\05_reports\swmp\city of columbus local swmp 2018.docx

Final Plan Update
Local Surface Water Management Plan
City of Columbus, Minnesota

TKDA Project No.16642.000

December 27, 2018

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

Dennis M. Postler, PE
City Engineer & VP of Municipal Division

Date: December 2018 Lic. No.: 22011

Reviewed By: Kevin Pittelko Date: December 2018

TKDA
444 Cedar Street - Suite 1500
Saint Paul, MN 55101



Executive Summary

City of Columbus, Minnesota Surface Water Management Plan

This Surface Water Management Plan will help to guide the protection and management of surface waters and related natural resources in the City of Columbus. The plan has been developed as a part of the City's 2040 Comprehensive Plan, to meet the requirements of the Metropolitan Council and State Statutes.

The City is included within three Watershed Authorities, the Rice Creek Watershed District, Coon Creek Watershed District, and the Sunrise River Watershed Management Organization. The existing plans of these organizations were used to develop several sections of this plan.

The plan includes an inventory of surface waters and natural resources within the City. Columbus has extensive wetland and lake areas, and is part of the headwaters area for Rice Creek. The Carlos Avery Wildlife Management Area, Lamprey Pass Wildlife Management Area, and several other significant areas of natural communities remain within Columbus.

The City has experienced limited commercial and larger-lot residential development to date, and is predicting limited additional development through 2040.

The plan includes a discussion of existing water quantity and quality concerns within the City, identified by the City and the Watershed Districts and Management Organization.

The goals and policies indicate that the Rice Creek Watershed District and Coon Creek Watershed District will continue to take the primary role in surface water management within their limits in Columbus. The two Districts will take the primary role in permitting for development projects and in recommending Best Management Practices for development and redevelopment. The City will provide comments to the Watershed Districts during the review process. Within the limits of the Sunrise River Water Management Organization, the City will take the primary role in permitting and will seek comments from the SRWMO during their development reviews.

The goals and policies and Implementation Plan note that the City will enforce its zoning and subdivision ordinances to assist in maintaining or improving the quality of surface and ground waters within Columbus. The City will update its code as noted to ensure that it meets the requirements of the Metropolitan Council and its ordinances are consistent with the rules of the Watershed Authorities.

List of Report Acronyms

Acronym	Description
ACD	Anoka County Ditch
BMP	Best Management Practice
BWSR	Board of Water and Soil Resources
CCWD	Coon Creek Watershed District
CIP	Capital Improvement Program
CWA	Clean Water Act
EQB	Minnesota Environmental Quality Board
FEMA	Federal Emergency Management Agency
FHBM	Flood Hazard Boundary Map
FIRM	Flood Insurance Rate Map
FIS	Flood Insurance Study
JD	Judicial Ditch
JPA	Joint Powers Agreement
LGU	Local Government Unit
LID	Low Impact Development
LSWMP	Local Surface Water Management Plan
MCBS	Minnesota County Biological Survey
MDH	Minnesota Department of Health
METCO	Metropolitan Council
MLCCS	Minnesota Land Cover Classification System
MNDNR	Minnesota Department of Natural Resources
MNDOT	Minnesota Department of Transportation
MPCA	Minnesota Pollution Control Agency
MS4	Municipal Separate Storm Sewer System (NPDES)
NFIP	National Flood Insurance Program
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OHWL	Ordinary High Water Level
PWI	Public Waters Inventory
RCWD	Rice Creek Watershed District
RMP	Resource Management Plan
SCS	Soil Conservation Service, USDA (replaced by NRCS)
SDWA	Safe Drinking Water Act
SFHA	Special Flood Hazard Area
SRWMO	Sunrise River Watershed Management Organization
STIP	State Transportation Improvement Plan
SWCD	Soil and Water Conservation District
SWMP	Surface Water Management Plan
TMDL	Total Daily Maximum Load
TP	Total Phosphorus
TSS	Total Suspended Solids
USACE	US Army Corp of Engineers
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WCA	Wetland Conservation Act
WD	Watershed District
WMA	Wildlife Management Area
WMO	Watershed Management Organization

Table of Contents

Cover Letter of Transmittal
 Executive Summary
 Table of Contents

	Page
1.0 Purpose & Scope	1
1.1 Purpose	1
1.2 Scope.....	1
1.3 Surface Water Related Agreements.....	1
2.0 Physical Setting	2
2.1 Location, Population & History	2
2.2 Topography	2
2.3 Soils	4
2.4 Groundwater	6
2.5 Climate.....	6
2.6 Surface Water Resources	6
2.6.1 Lakes	7
2.6.2 Wetlands.....	7
2.6.3 Rivers and Streams.....	10
2.7 Floodplains	10
2.8 Natural Resources.....	12
2.8.1 Land Cover, Natural Resources and Fish & Wildlife Habitat	12
2.8.2 Greenway Corridors	15
2.8.3 Surface Water Based Recreation and Access	15
2.9 Public and Private Drainage Systems.....	15
2.10 Planning & Development.....	17
2.10.1 Comprehensive Plan & Land Use	17
3.0 Regulatory Setting	23
3.1 City of Columbus	23
3.2 Anoka County	23
3.3 Anoka County Department of Parks and Recreation	23
3.4 Anoka Conservation District	24
3.5 Watershed Authorities	24
3.5.2 Rice Creek Watershed District (RCWD).....	26
3.5.3 Coon Creek Watershed District (CCWD).....	26
3.5.4 Sunrise River Watershed Management Organization (SRWMO).....	27
3.6 Metropolitan Council.....	27
3.7 State Board of Water and Soil Resources (BWSR)	28
3.8 Minnesota Pollution Control Agency (MPCA)	28
3.9 Minnesota Department of Natural Resources (MNDNR)	29
3.10 Minnesota Department of Health (MDH).....	29
3.11 Minnesota Environmental Quality Board (EQB).....	29
3.12 Minnesota Department of Transportation (MnDOT).....	29
3.13 US Environmental Protection Agency (USEPA)	29
3.14 US Army Corps of Engineers (USACE)	29
3.15 Federal Emergency Management Agency (FEMA)	29

Table of Contents (Continued)

3.16	Natural Resource Conservation Service (NRCS)	30
3.17	US Geological Survey (USGS).....	30
3.18	US Fish and Wildlife Service (USFWS).....	30
4.0	Related Studies, Plans & Reports.....	30
4.1	Comprehensive Plan	30
4.2	RCWD Watershed Management Plan.....	30
4.3	RCWD Resource Management Plan (RMPs)	30
4.4	CCWD Comprehensive Plan.....	31
4.5	SRWMO Watershed Management Plan.....	31
5.0	Goals & Policies.....	33
5.1	No Adverse Impacts	33
5.1.1	Policies:	33
5.2	Protect the Quality with Support.....	34
5.2.1	Policies:	34
5.3	Protection of Wetland Resources	34
5.3.1	Policies:	34
5.4	Protection of Endangered Species.....	34
5.4.1	Policies	34
5.5	Watershed Authority Support	34
5.5.1	Policies:	35
6.0	Assessment of Issues & Corrective Actions.....	35
6.1	Development & Redevelopment.....	35
6.2	Water Quantity.....	36
6.3	Water Quality.....	36
6.4	Impaired Waters	36
6.5	Total Maximum Daily Load (TMDL) Studies	37
6.6	Erosion	39
6.7	Groundwater.....	39
6.8	Shoreland	39
7.0	Implementation	39
7.1	Actions to Implement Plan & Address Identified Issues.....	39
7.1.1	Surface Water Regulation and Permitting.....	39
7.1.2	Ordinance Updates.....	40
7.1.3	Stormwater System Inventory, Mapping and Maintenance.....	40
7.1.4	Water Quantity Management	40
7.1.5	Impaired Waters	40
7.1.6	Permit Process	40
7.1.7	Shoreland Regulations	41
7.2	Funding Mechanisms	41
7.3	Capital Improvement Plan (CIP).....	41
7.4	City Ordinances	41
8.0	Administration.....	42
8.1	Review & Adoption Process	42
8.2	Plan Amendments and Updates.....	42

Table of Contents (Continued)

List of Tables

Table 2-1 Columbus Population Trends	2
Table 2-2 Average Monthly Climate Data 1981–2010	6
Table 2-3 Public Waters, Lakes & Wetlands	6
Table 2-4 Public Ditch Systems.....	17
Table 2-5 Benchmark Inter-Community Flow Rates	17
Table 6-1 Impaired Waters in Columbus.....	36

List of Figures

Figure 2-1 – Location Map.....	3
Figure 2-2 – Hydrologic Soils Group	5
Figure 2-8 – Public Waters	8
Figure 2-9 – Wetland Types within Columbus.....	9
Figure 2-10 – FEMA Flood Zones	11
Figure 2-11 – Natural Area Priority.....	13
Figure 2-12 – Current Land Cover in Columbus	14
Figure 2-13 – Greenway Corridors & Hub Areas in Columbus	16
Figure 2-14 – Drainage System.....	19
Figure 2-15 – Drainage Areas and Flow Paths	20
Figure 2-16 – Existing Land Use	21
Figure 2-17 – Future 2040 Land Use	22
Figure 3-1 – Watershed Authorities.....	25
Figure 4-1 – RCWD Features.....	32
Figure 6-1 – Impaired Waters.....	38

List of Appendices

Appendix A	Lake Information Reports and Ecosystem 2000 Reports
Appendix B	Groundwater Sensitivity to Pollution Map
Appendix C	Hardwood Creek TMDL Fact Sheet
Appendix D	Statewide Mercury TMDL Fact Sheet
Appendix E	Carlos Avery Wildlife Management Area Map
Appendix F	Capital Improvement Plan (CIP)

Local Surface Water Management Plan

Final Plan Update

Prepared for City of Columbus, Minnesota

1.0 Purpose & Scope

1.1 Purpose

The purpose of this Local Surface Water Management Plan (Plan) is to guide the City of Columbus in conserving, protecting, and maintaining the quality of its natural and water resources. This Plan recognizes the numerous entities involved in water resources management and environmental protection and has been created to meet the provisions of Minnesota Statutes §473.157 and §103B.235. It also conforms to Minnesota Rules 8410, Rice Creek Watershed District Rules, and Coon Creek Watershed District Rules.

The Plan avoids duplicating efforts of others by adopting or referencing the plans, standards and policies of the Rice Creek Watershed District (RCWD), Coon Creek Watershed District (CCWD), and Sunrise River Watershed Management Organization (SRWMO). It is consistent with the requirements of the Metropolitan Council (METCO), State of Minnesota Agencies such as the Minnesota Pollution Control Agency (MPCA), the Minnesota Department of Natural Resources (MNDNR), the Minnesota Department of Health (MDH) and the Board of Soil and Water Resources (BWSR), and Federal Agencies, such as the Environmental Protection Agency (EPA). This plan may be periodically amended to remain current with local practices and policies.

1.2 Scope

To achieve its general goal of protecting and improving the quality of City surface waters, the Plan includes specific goals for surface and ground water management.

Each of the goals has one or more corresponding policies. A **policy** is a specific means for achieving established goals.

The Implementation Plan is prioritized to focus on the policies that the City can most effectively implement. There are several policies where the City does not have direct implementation authority. In these cases, the City has recognized the importance of the issues and pledged cooperation with Anoka County and Watershed Authorities. The combination of these Implementation Plans will formulate the overall strategy for implementing the Plan.

1.3 Surface Water Related Agreements

The City of Columbus has informal agreements with the three Watershed Authorities within the City regarding cooperative management of water resources within the community. The RCWD and CCWD manage permitting within the respective areas of the City within those districts and the City provides comments on development proposals and other permit applications. The City manages permitting within areas of the City within the SRWMO. The RCWD and CCWD also serve as the local governmental units (LGUs) for enforcing the Wetland Conservation Act (WCA) in Columbus, and manage the public ditch system in those



areas of the City. The City is the LGU for the Wetland Conservation Act in that part of the City within the SRWMO and the Anoka County Highway Department is the ditch authority in that portion of the City.

The City of Columbus manages a limited amount of stormwater infrastructure, such as culverts under public roads. It also holds drainage and utility easements on some stormwater ponds within private developments.

2.0 Physical Setting

2.1 Location, Population & History

The City of Columbus is located in east-central Anoka County in the northerly portion of the Minneapolis-St. Paul Metro Area as shown in **Figure 2-1**. The Town of Columbus was established in 1857 as a predominantly agricultural community, although less than half of the land area was suitable for crop cultivation due to extensive wetland areas. In addition to the large wetland systems, the City is home to six lakes, each over 100 acres in size, and Rice Creek. The City also includes some high quality natural areas and rare species. Many of these areas are within the Carlos Avery Wildlife Management Area.

The City was known as Columbus Township until September 21, 2006, when it was incorporated as the City of Columbus.

Columbus began to experience development pressure in the 1960s, with a significant increase in both residential and commercial development in the 1970s. Development slowed during the 1980s and 1990s and is anticipated to grow slowly through 2040 as shown in **Table 2-1**:

**Table 2-1
Columbus Population Trends**

Year	Population	Households
1970	1,999	487
1980	3,232	870
1990	3,690	1,129
2000	3,957	1,328
2010	3,914	1,416
2020	4,220	1,600
2030	4,950	1,670
2040	5,500	2,200

Sources: U.S. Census, Metropolitan Council, City of Columbus

2.2 Topography

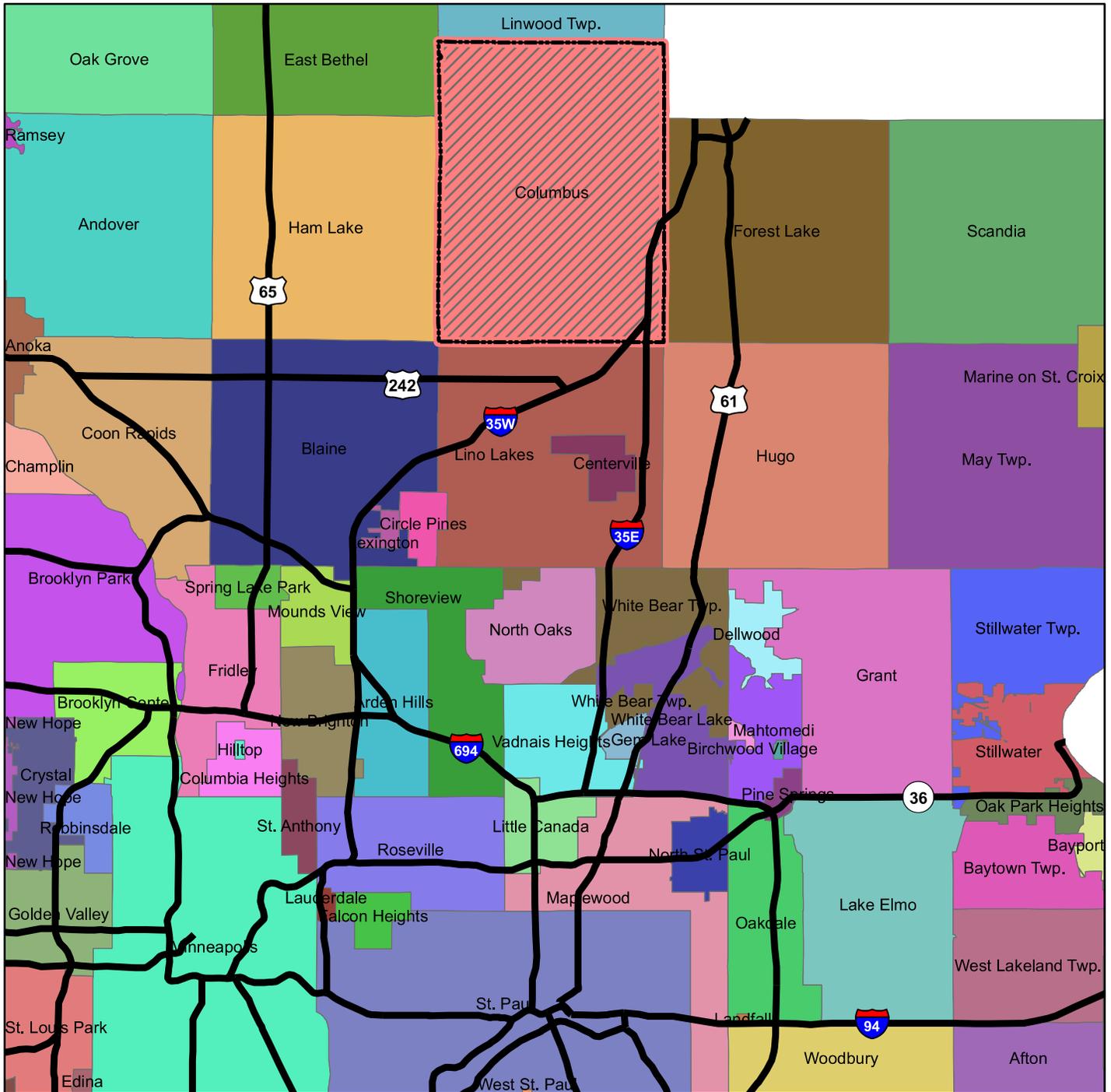
The City of Columbus lies principally within the geologic region known as the Anoka Sandplain and is characterized by nearly level to gently rolling topography interspersed with lakes, streams, and wetlands.

The local topography was shaped by the advance and retreat of glaciers, most recently by the Grantsburg Sublobe of the Wisconsin glaciation. As the glaciers receded, meltwater formed a series of streams and large glacial lake plains. The Anoka Sandplain was created when the glacial lakes gradually filled with fine sands carried by glacial meltwater.

Depressions are common in the Sand Plain and were formed when large blocks of buried ice gradually melted. Beginning approximately 10,000 years ago, peat began to form in many of the depressions, creating wetlands and lakes. These wetlands and lakes are visible throughout Columbus today.

2.1 Location Map

Columbus- Local Surface Water Management Plan



Legend

 City of Columbus Boundary



0 1.25 2.5 5 Miles

Limitation of Liability
 This document is not a legally recorded map or survey and is not intended to be used as one. This map is a compilation of records and information from various state, county, and township offices, and other sources.

K:\gis\COLUMBUS\SWMP\Figures\2.1-LocationMap.mxd

Source: Metropolitan Council



Map date: October 2018

2.3 Soils

The Soil Conservation Service (SCS) published the Soil Survey of Anoka County in 1980. The publication provides soil location maps and information on the physical properties of soils found in Anoka County.

The SCS has identified three soil associations (soil patterns) within the City of Columbus. A general description of these associations is given below.

Rifle-Isanti Association - These soil types occupy approximately 53 percent of the City and include the Carlos Avery Wildlife Management Area. These soils are formed in organic material and fine sand, and are generally near level and very poorly drained. These soils are poorly suited to urban, farm, and recreational uses. Natural fertility is moderate to low. If drained, the organic soils may be suited to specialty crops. High water tables limit the capacity of these soils to support septic sewer systems or urban development.

Zimmerman-Isanti-Lino Association - These soil types occupy approximately 40 percent of the City, along areas west and east of Crossways Lake, Howard Lake, and Higgins Lake. These soils are dominated by fine sands and are usually found in broad, undulating plains. The soils range from being excessively drained to very poorly drained and are well suited to urban development. However, both the Isanti and Lino associations are characterized by high water tables that limit their capacity to support on-site septic systems and urban development.

Nessel-Dundas-Webster Association - These soil types are located roughly alongside Interstate 35. The soil association was formed in loamy glacial till and range from being nearly-level to gently sloping and from being moderately well-drained to poorly-drained. These soils are moderately to poorly suited to most urban uses. They are better suited to farming and for recreational facilities. High water tables associated with these soils may be of limited usefulness in accommodating on-site septic systems.

The nature of soils comprising the top layer of unconsolidated material in a watershed is important because soil properties are a primary factor in determining the volume of runoff associated with a given rainfall event. The SCS *Soil Survey* assigns soil types to a hydrologic group depending on the soils ability to infiltrate water during long-duration storms. The four hydrologic soil group classifications are described below.

Group A soils have low runoff potential and high infiltration rates even when thoroughly wetted. These consist of deep, well-drained sands or gravels.

Group B soils have moderate infiltration rates and the potential for runoff. They consist of moderately-deep to deep, and moderate to well-drained soils.

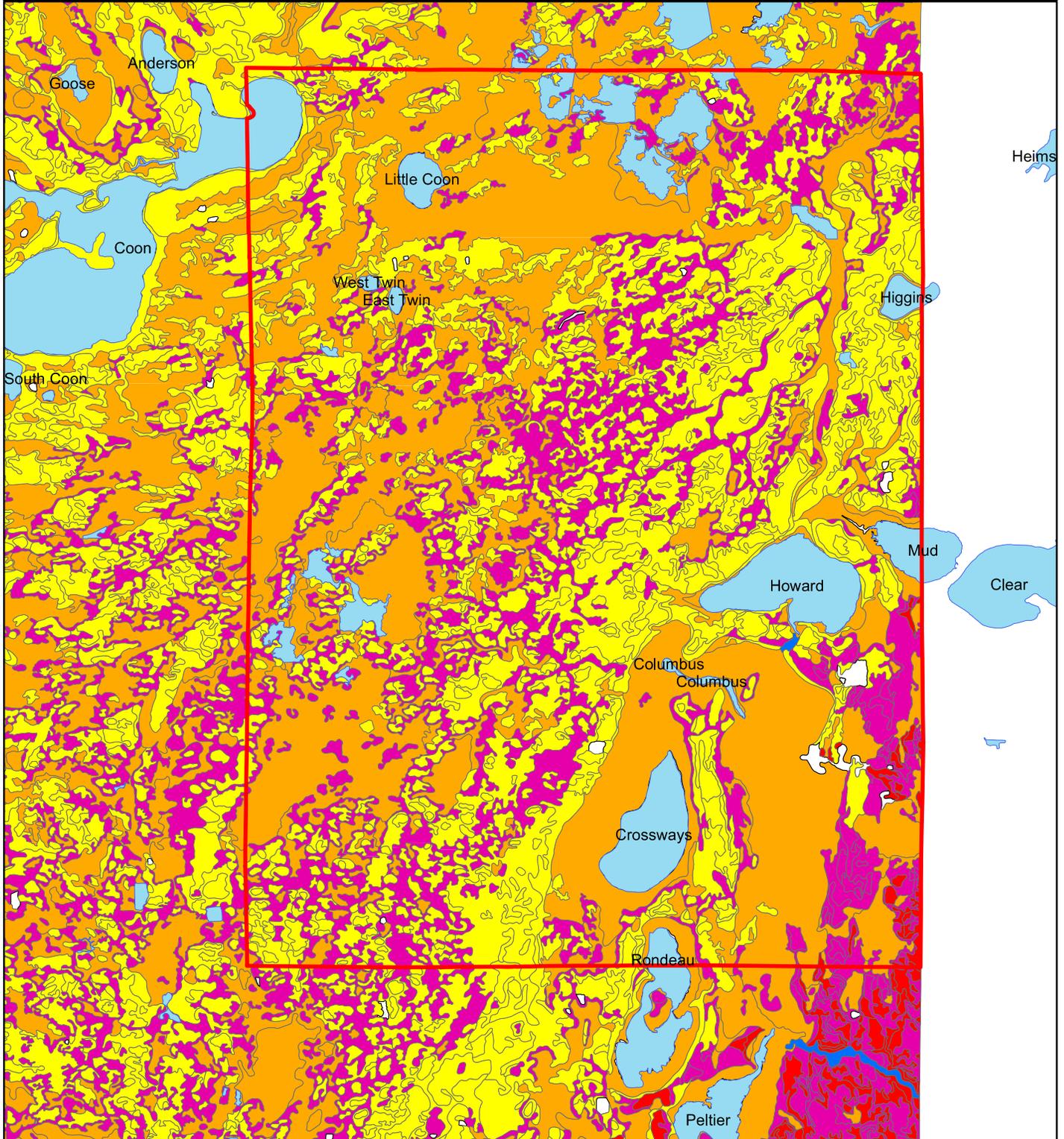
Group C soils have low infiltration rates and generally impede the downward movement of water. These soils have more moderately-fine to fine textures and provide greater amounts of runoff volumes when thoroughly wetted.

Group D soils have very low infiltration rates and very high runoff potential. These soils are associated with clays with high swelling potential and soils with a high permanent water table.

The hydrologic soil groups located within the City are shown on **Figure 2-2**. Land disturbing activities can change a soil's physical properties; therefore, actual conditions of a particular site may vary somewhat from the general conditions identified on the hydrologic soils map.

2.2 Hydrologic Soil Groups

Columbus- Local Surface Water Management Plan



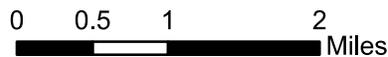
Legend Hydrologic Soils Group

	A		B/D		Columbus
	A/D		D		Lakes
	B		Not Rated		



K:\gis\COLUMBUS\SWMP\Figures\2.2-HydrologicSoilGroups.mxd

Source: Natural Resources Conservation Service



Limitation of Liability
This document is not a legally recorded map or survey and is not intended to be used as one. This map is a compilation of records and information from various state, county, and township offices, and other sources.



Map date: April 2018

2.4 Groundwater

The City is located over substantial ground water reserves. The predominant aquifer that underlies Columbus is the Prairie-du-Chien aquifer, which lies 200 feet below the surface. A glacial drift aquifer and the Mt. Simon-Hinckley aquifer also underlie the City.

The Minnesota Geological Survey has established aquifer sensitivity ratings, related to the ability of a contaminant to reach the aquifer. The majority of the City, with the exception of the area along Interstate 35, lies within areas that are very highly susceptible to pollution. The Geologic Sensitivity of the Uppermost Aquifer to Pollution Map attached in the Appendix of this Report identifies these areas within the City.

The City of Columbus recognizes the importance of groundwater sensitivity and will work with Anoka County, local Watershed Districts, and other agencies to protect local groundwater resources. The City will implement its land use plan, ordinances, and the policies included in this surface water management plan to protect groundwater resources.

2.5 Climate

This City is located near the center of the North American continent, which greatly influences climate. The climate is continental, meaning cold winters and mild summers characterize the area, the result of being near the center of a large land mass. Polar air masses dominate during the winter season resulting in cold, dry weather. Warm and moist air masses, originating from the Gulf of Mexico, share predominance during the summer with tropical air masses from the desert southwest resulting in warm days and nights. The spring and fall seasons are transition periods, characterized by alternating intrusions of air from various sources. The diverse nature of the air masses impacting Minnesota's climate leads to seasonal temperature extremes within the City.

The National Weather Service station at Chanhassen has published climatic summaries of precipitation, temperatures and snowfall; all of which are summarized in **Table 2-2**.

Table 2-2
Average Monthly Climate Data 1981–2010

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Daily Temperature (°F)	15.6	20.9	32.8	47.5	59.2	68.9	73.8	71.2	62.0	48.9	33.7	19.7
Average Precipitation (in.)	0.90	0.77	1.89	2.66	3.36	4.25	4.04	4.30	3.08	2.43	1.77	1.16
Average Snowfall (in.)	12.2	7.7	10.3	2.5	0.1	0.0	0.0	0.0	0.0	0.6	9.3	11.9

2.6 Surface Water Resources

Wetlands and open water dominate the landscape and constitute nearly two-thirds of the City. The Minnesota Department of Natural Resources has regulatory authority over all lakes, wetlands, and watercourses defined as public waters within the state. **Figure 2-8** and **Table 2-3** identify the major public waters located in the City of Columbus.

Table 2-3
Public Waters, Lakes & Wetlands

Lake Name	DNR Public Waters No.	Surface Area (Acres)	Maximum Depth (Feet)
Columbus	2-18	26	
Crossways	2-19	365	9
Higgins*	2-2		
Howard	2-16	488	6.5

Lake Name	DNR Public Waters No.	Surface Area (Acres)	Maximum Depth (Feet)
Mud	82-168		
Rondeau *	2-15	275	7
East and West Twin Lakes	2-20 and 2-33		
Coon Lake*	2-42	1,259	27
Little Coon Lake	2-32	107	4
Rice Creek Marsh	2-740		
Unnamed Lakes	2-30, 2-31, 2-481, 2-482, 2-483, 2-484 2-502, 2-504, 2-505, 2-510, 2-511, 2-515, 2-519, 2-520, 2-529, 2-530		
Unnamed Wetlands	2-506, 2-507, 2-508, 2-517, 2-518, 2-521, 2-522, 2-523, 2-528, 2-531, 2-533, 2-536, 2-717		
* Only a small portion of these Lakes lie within the City Limits.			

2.6.1 Lakes

There are 40 lakes and wetlands within Columbus that are listed as public waters by the MNDNR. Twenty six of these are classified as lakes. The public waters lakes are listed in the table above. Size & depth of these water bodies is included where available from the MNDNR.

Lake Information Reports for named lakes in this area are included in the Appendix of this Report. These reports are a summary of MNDNR and MPCA data and describe available public access information, lake characteristics, water level histories, and water quality information. Additional information on these lakes is available from the RCWD, CCWD, and SRWMO.

The Metropolitan Council has identified Coon Lake and Little Coon Lake as the only Priority Lakes within Columbus. The “priority lake” designation is used to focus the Council’s limited resources, and to identify lakes that will require completion of a nutrient budget analysis during environmental review processes.

2.6.2 Wetlands

The relatively flat topography and wet soil conditions in Columbus result in extensive wetland areas. Wetland community types within the City include a full range of wetlands, from wet meadows and seasonally-flooded wetlands to marshes and deep marshes, shrub and forested wetland types (**Figure 2-9**). Many of the highest quality wetlands remaining in the community are within the Carlos Avery Wildlife Management Area.

The City’s Comprehensive Plan identifies wetlands as valuable resources that provide many benefits to the City and surrounding areas. Some of these benefits include groundwater recharge, filtration of sediments and nutrients, flood control, wildlife habitat, and scenic value.

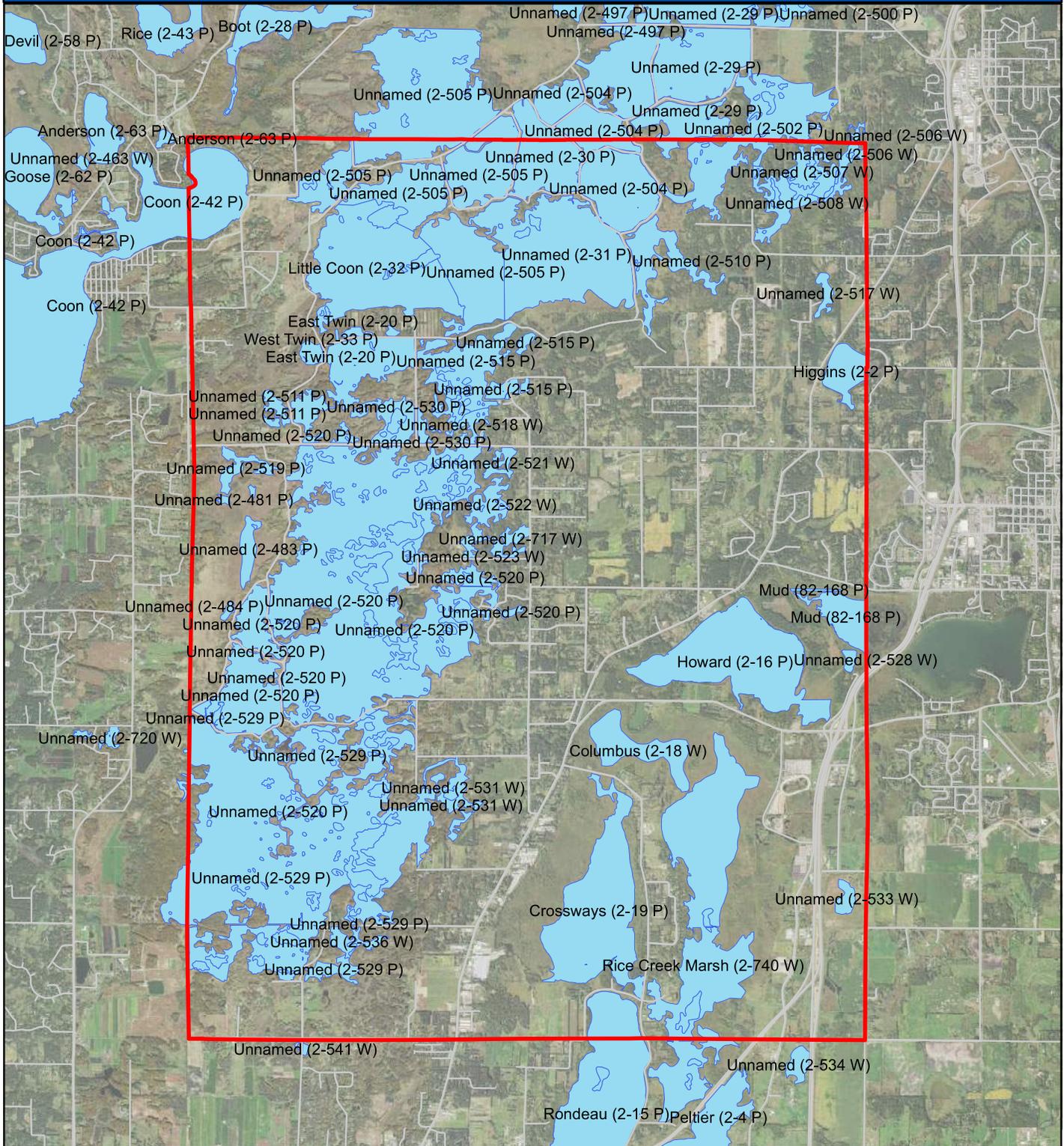
The CCWD conducted a functional assessment of wetlands within the District as a part of its adopted Watershed Management Plan.

The RCWD has completed a wetland inventory and assessment for portions of the City within the JD4/ACD15 Resource Management Plan (RMP) Area defined by the drainage areas of the public drainage system. The RCWD, in partnership with the City of Columbus, created a Comprehensive Wetland Protection and Management plan in 2010.

The SRWMO has not yet completed a functional assessment of wetlands within its District.

2.8 Public Waters

Columbus- Local Surface Water Management Plan



Legend

-  Columbus
-  Public Waters



K:\gis\COLUMBUS\SWMP\Figures\2.8-PublicWaters.mxd

Source: MN Dept of Natural Resources

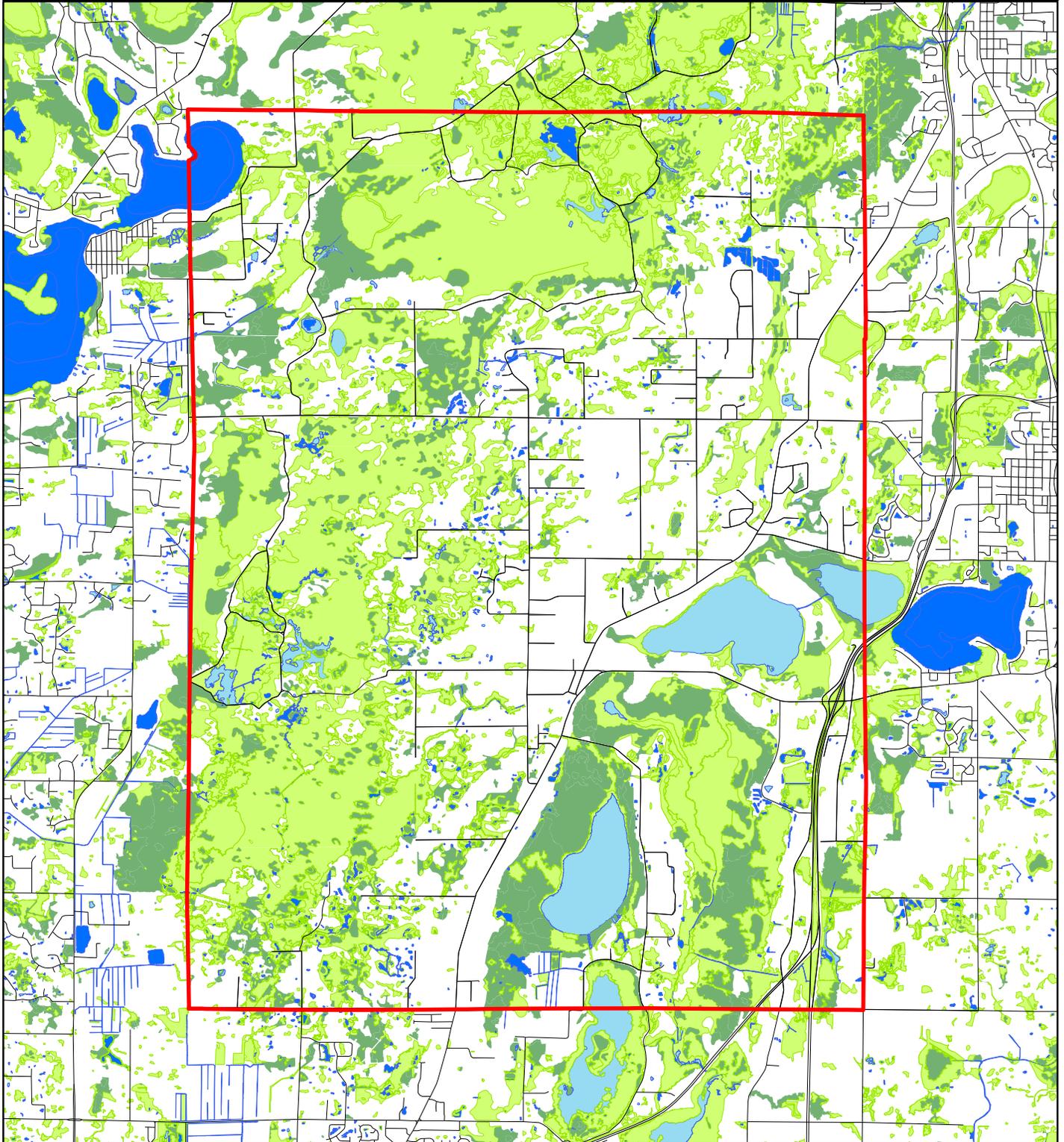
Limitation of Liability
 This document is not a legally recorded map or survey and is not intended to be used as one. This map is a compilation of records and information from various state, county, and township offices, and other sources.



Map date: April 2018

2.9 Wetland Types within Columbus

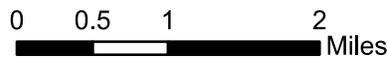
Columbus- Local Surface Water Management Plan



K:\gis\COLUMBUS\SWMP\Figures\2.9-NWI.mxd

Legend

-  Columbus
-  Freshwater Emergent Wetland
-  Freshwater Forested/Shrub Wetland
-  Lake
-  Freshwater



Limitation of Liability
 This document is not a legally recorded map or survey and is not intended to be used as one. This map is a compilation of records and information from various state, county, and township offices, and other sources.

Source: MN Dept of Natural Resources,
 National Wetland Inventory



Map date: April 2018

2.6.3 Rivers and Streams

Rice Creek. Rice Creek is the dominant stream that flows through Columbus. Extensive information about Rice Creek can be found in the RCWD's Water Resource Management Plan. Columbus is close to the "headwaters" of Rice Creek at Clear Lake.

Several County Judicial Ditches that drain the City of Columbus and neighboring communities are tributary to Rice Creek. These include Anoka County Ditches 15, 46 (with several branches) and Anoka/Washington Judicial Ditch 4.

Another system of County Ditches—Anoka County Ditch 31 & branches—drain to Howard Lake.

Anoka County Ditch 10-22-32 drains to Marshan Lake.

Sunrise River. The South Branch of the Sunrise River flows through the City of Columbus, primarily in the Carlos Avery WMA. The river begins in Coon Lake. A dam on the northeast end of the lake regulates the discharge from the lake. The river is regulated by a series of dikes and dams, which create pools within the WMA that are used for waterfowl habitat.

2.7 Floodplains

Land use regulations define the floodplain as the area covered by the flood with a one percent chance of occurring each year, also known as the 100-year flood. The floodplain is divided into two zoning districts: the floodway and flood fringe. The floodway includes the river channel and nearby land areas which must remain open to discharge the 100-year flood. The flood fringe, while in the flood plain, lies outside the floodway. Regulations usually allow development in the flood fringe but require flood-proofing or raising to the legal flood protection elevation.

In 1968, Congress created the National Flood Insurance Program (NFIP) to make flood insurance available to property owners at federally subsidized rates. The NFIP required communities to adopt local laws to protect lives and future development from flooding. The Federal Emergency Management Agency (FEMA) first must formally notify a community that it has Special Flood Hazard Areas (SFHA) before it can join the NFIP. FEMA notifies communities by issuing a Flood Hazard Boundary Map (FHBM). This map shows the approximate boundaries of the community's 100-year flood plain. Each participating community has a special conversion study or a Flood Insurance Study (FIS). The FIS includes a flood plain map depicting the community's flood hazard areas.

Local Issues. The SRWMO Management Plan notes that local and regional flooding have been identified as problems within the watershed, particularly during spring snowmelt. The SRWMO indicated that the problems are usually the result of culvert blockages, beaver activity, culvert sizing and elevation, other obstructions, and lack of outlets for isolated basins. The SRWMO notes that many of the problems have occurred in undeveloped areas, and that future development needs to be managed to protect floodplains within the WMO.

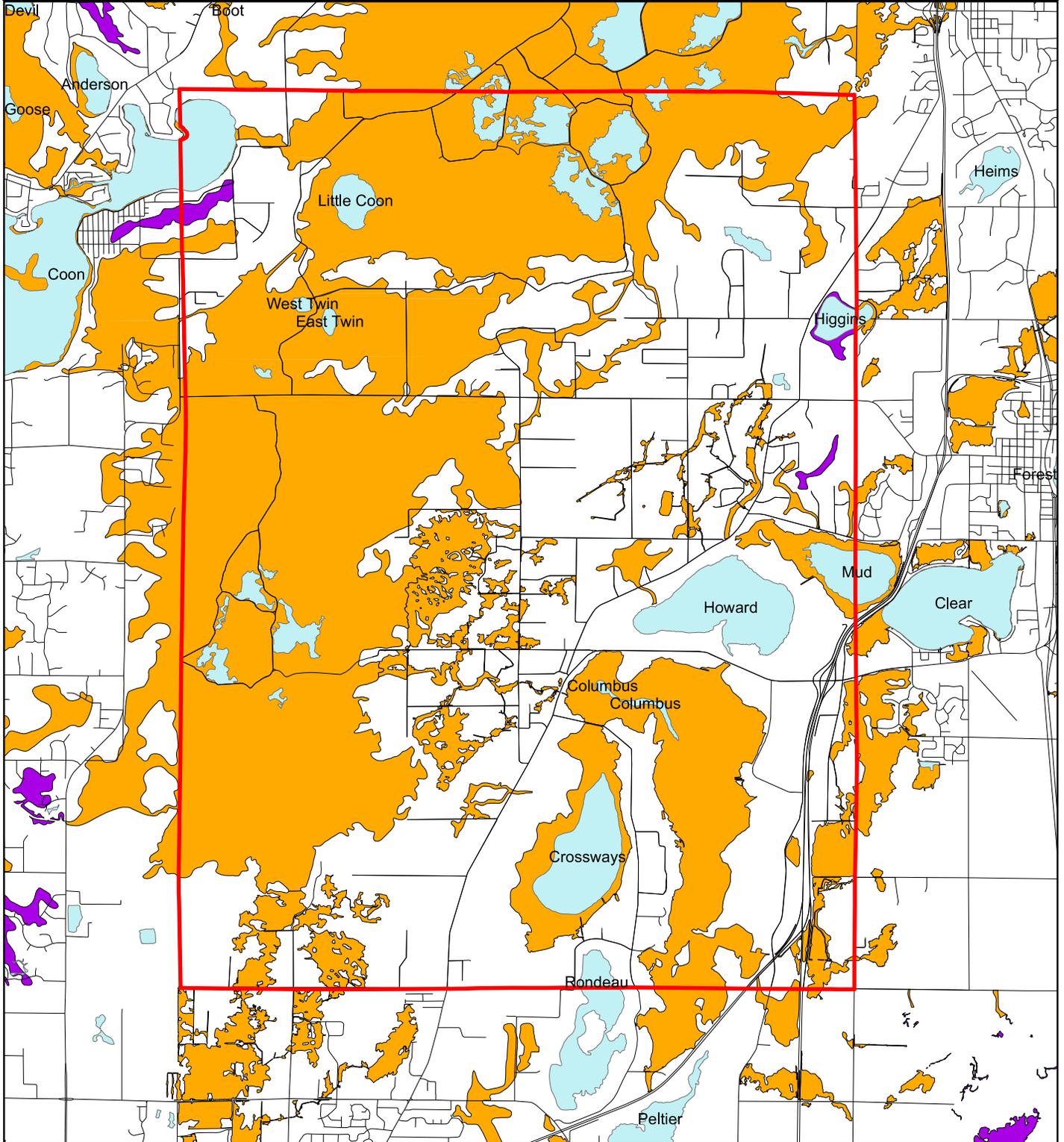
The RCWD has completed extensive hydrologic modeling for the Watershed. This modeling indicates that the 100-year runoff event during snowmelt is also the critical flood event in this watershed. The 100-year rainfall event model and hydrographs are also available for planning purposes.

The CCWD Plan indicates the District has not recently experienced significant flooding problems. The District notes that development in some urbanizing areas has the potential to cause flooding problems. These areas are outside Columbus.

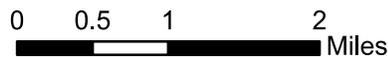
Designated FEMA Floodplain areas in Columbus are identified on **Figure 2-10**. The City has adopted a Floodplain Ordinance to protect and manage these areas.

2.10 FEMA Flood Zones

Columbus- Local Surface Water Management Plan



- Legend**
- Columbus
 - Lakes
 - 100 Year
 - 500 Year



K:\gis\COLUMBUS\SWMP\Figures\2.10-FloodZones.mxd
 Source: Minnesota Pollution Control Agency



Limitation of Liability
 This document is not a legally recorded map or survey and is not intended to be used as one. This map is a compilation of records and information from various state, county, and township offices, and other sources.

Map date: April 2018

2.8 Natural Resources

2.8.1 Land Cover, Natural Resources and Fish & Wildlife Habitat

The original vegetation of Columbus included a mix of Hardwood Forests, Oak Savanna and Aspen-Oak Lands, and a variety of wetland communities, including wet prairies, marshes, sloughs, conifer bogs and swamps. The Minnesota County Biological Survey (MCBS) has identified significant areas of these natural communities that still remain in the City. These communities are identified on **Figure 2-11**. Columbus has a relatively large area of natural communities, in comparison to most municipalities in the Twin Cities Metro Area. The communities are located throughout the City—including significant areas within the Carlos Avery Wildlife Management Area, and around the Rice Creek Chain of Lakes. Similar areas of high quality resources are located just to the north and west in Linwood Township and East Bethel.

Minnesota's St. Croix River Valley and Anoka Sandplain: A Guide to Native Habitats provides detailed descriptions of the natural communities remaining in the Columbus area, as well as a history of landscape development and change.

The County Biological Survey maps also include the approximate locations of several rare species of animals and plants found within the City of Columbus. In general, the rare species locations coincide with the remaining natural communities in the City.

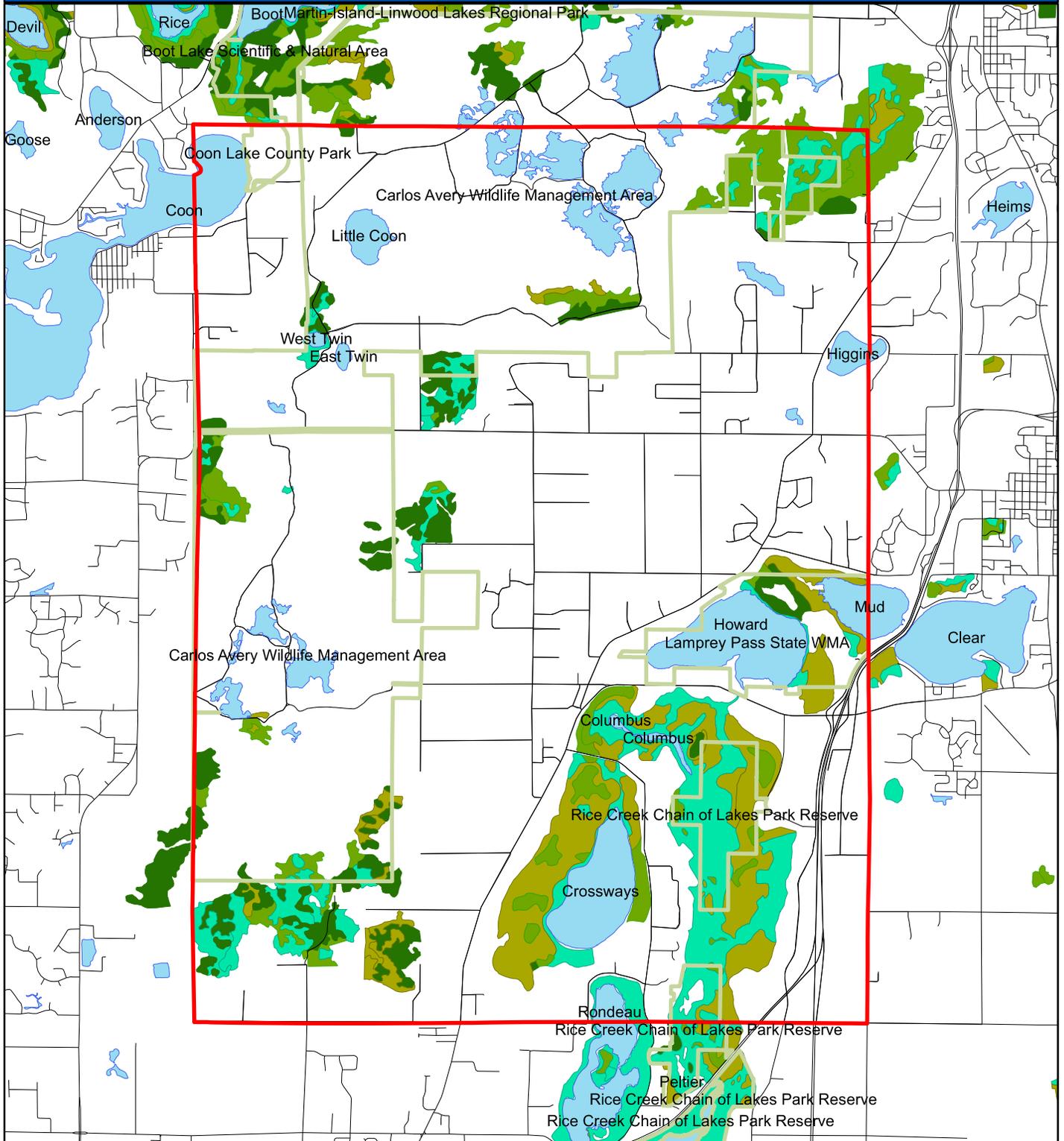
Howard Lake is home to two large heron colonies. The colony within the Lamprey Pass Wildlife Management Area is among the larger and more diverse colonies in Minnesota. The colony includes Great blue herons, Great egrets, Black-crowned night herons, and Double-breasted cormorants.

The Carlos Avery Wildlife Management Area (WMA) was established in 1933, and includes large areas within Columbus and Linwood Township. It is an extensive area of wetlands and other habitats managed to support wildlife and allow public uses, such as hunting and trapping. The area includes a variety of upland and wetland habitat types. Sixteen of the large wetland pools within the WMA are in the SRWMO. Each wetland pool contains a control structure monitored by the DNR. Following a large storm event, these structures require monitoring to maintain a desired water elevation for waterfowl habitat management. A map showing the number and location of these wetland pools is included in the Appendix. The WMA provides some of the best wildlife habitat remaining in the Twin Cities Area.

The current land cover in Columbus is identified on **Figure 2-12**. Agricultural and residential land uses predominate, along with the numerous wetlands, lakes and natural communities remaining in the City.

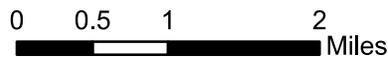
2.11 Natural Area Priority

Columbus- Local Surface Water Management Plan



Legend

- Columbus
- Regional Park
- Lakes
- Hardwood Forest
- Forested Wetland
- Shrub Wetland
- Wetland Prairie



Limitation of Liability
 This document is not a legally recorded map or survey and is not intended to be used as one. This map is a compilation of records and information from various state, county, and township offices, and other sources.

K:\gis\COLUMBUS\SWMP\Figures\2.11-NaturalAreaPriority.mxd

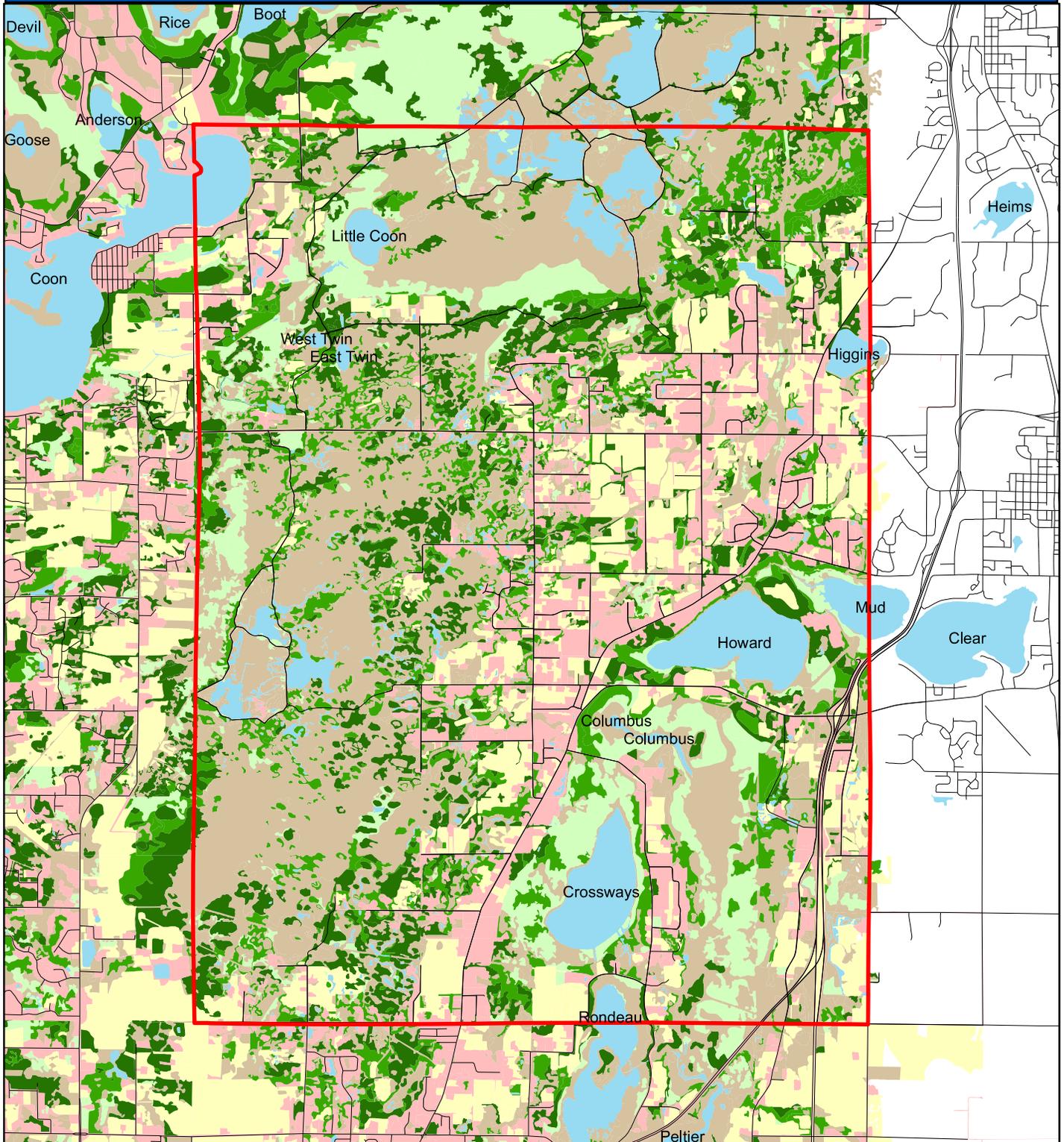
Source: MN Dept of Natural Resources,
 County Biological Survey



Map date: April 2018

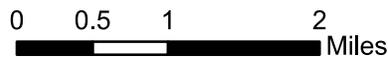
2.12 Current Land Cover in Columbus

Columbus- Local Surface Water Management Plan



Legend

- | | |
|--|---|
|  Columbus |  Shrublands |
|  Artificial Surfaces |  Herbaceous Vegetation |
|  Planted or Cultivated Vegetation |  Sparse Vegetation |
|  Forest |  Open Water |
|  Woodland | |



Limitation of Liability
 This document is not a legally recorded map or survey and is not intended to be used as one. This map is a compilation of records and information from various state, county, and township offices, and other sources.

K:\gis\COLUMBUS\SWMP\Figures\2.12-MLCCSRCWDPortion.mxd

Source: MN Dept of Natural Resources, MLCCS



Map date: April 2018

2.8.2 Greenway Corridors

The Metropolitan Council and Anoka County have mapped and identified Greenway and Wildlife Corridors throughout the County. The greenway corridors are shown on **Figure 2-13**. Several of these corridors are mapped in Columbus, and connect the significant natural areas identified by the County Biological Survey and the major water and natural resource areas (called “hubs” on **Figure 2-8**). Rice Creek and its tributaries are important natural linkages within the Corridor network. The corridors follow Rice Creek, chains of wetlands, and other natural corridors to connect the habitat areas within Columbus and to surrounding communities. The WMAs within the City, (Carlos Avery and Lamprey Pass) are within the City’s overall Greenway Corridor. These corridors also provide a natural wildlife corridor due to the connection of lakes, streams, and natural areas.

2.8.3 Surface Water Based Recreation and Access

Water bodies within Columbus provide a variety of opportunities for recreation. Coon Lake County Park on the east end of Coon Lake provides for boating access to the lake. Coon Lake is also a popular fishing lake.

The Carlos Avery WMA and Lamprey Pass WMA provide opportunities for hunting, fishing, trapping, and nature observation. The wetlands and impoundments within the WMAs are important recreation areas.

2.9 Public and Private Drainage Systems

The first public drainage system was constructed in Columbus in the 1890s. Anoka County Ditch 15 (ACD 15) was excavated in 1891 and is located entirely within the City of Columbus in Anoka County. The headwaters of ACD 15 are in the Lamprey Pass Wildlife Management Area. In 1914, the majority of ACD 15 was incorporated into Judicial Ditch 4 (JD4). JD4 is located in Anoka and Washington Counties.

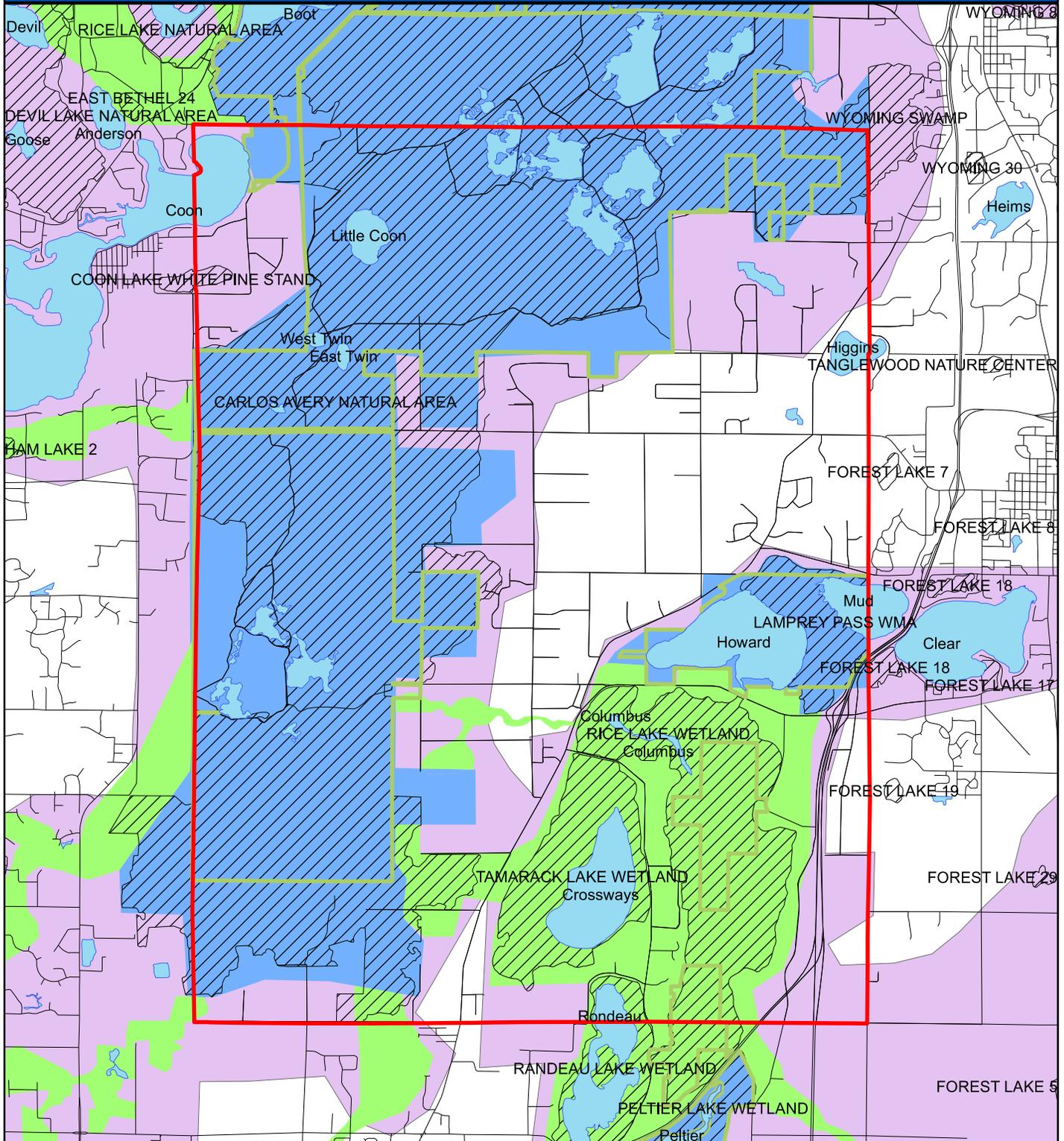
There are a numerous County Ditches and one Judicial Ditch that run through the City. Many of the ditch systems (ACD 15, 46, and JD 4) are tributary to Rice Creek and ultimately flow to Peltier Lake. ACD 31 discharges into Howard Lake and ACD 10-22-32 discharges to Marshan Lake. The MPCA has listed Peltier and Marshan Lakes as impaired waters, as noted in Section 6.4. **Table 2-4** describes the public drainage systems located within the City.

In addition to the public ditch system, there are also numerous private ditches that drain the community. Historically, much of the area drained by the ditch system was agricultural land. As the land area shifts toward suburban residential, new demands will be placed on the traditional drainage system. With the evolution of environmental regulation and water resources protection, drainage systems in the City of Columbus will continue to become more complex. As development occurs, systems will be required to meet regulations for runoff rate and volume reduction, pollutant removal, groundwater recharge, and stream protection.

While some concerns related to poor maintenance of private ditches and impacts on downstream areas have been noted, maintenance of these ditches is still the responsibility of private landowners. As development occurs on land with private ditches, the City may utilize Developer’s Agreements or other mechanisms to obtain public easements over the ditch systems and to require improvements if repairs are needed.

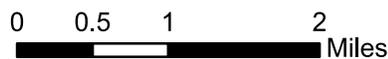
2.13 Greenway Corridors and Hub Areas in Columbus

Columbus- Local Surface Water Management Plan



Legend

- Columbus
- Regional Parks
- MCBS Sites of Biodiversity Significance
- Anoka County SWCD Corridors
- Anoka County SWCD Hubs
- DNR Conservation Corridors



K:\gis\Columbus\Figures\GreenwayCorridors-111408.mxd

Source: MN Dept. of Natural Resources,
Anoka County Conservation District



Limitation of Liability
This document is not a legally recorded map or survey and is not intended to be used as one. This map is a compilation of records and information from various state, county, and township offices, and other sources.

Map date: April 2018

**Table 2-4
Public Ditch Systems**

Number	Year Established	Discharge Location
Anoka County		
15	1891	Rice Creek/Peltier Lake
31	1898	Howard Lake
46	1907	Rice Creek/Peltier Lake
10-22-32	1893	Marshan Lake
Anoka/Washington Counties		
JD4	1915	Rice Creek/Peltier Lake

The existing mapped stormwater conveyance system and stormwater treatment system in Columbus is identified on **Figure 2-14** Drainage System. Drainage paths and areas are shown in **Figure 2-15** Major Watersheds and Flow Paths.

Locations where water is transferred out of Columbus with estimated rates can be found in reports created by the Watershed Authorities.

CCWD and RCWD have completed hydraulic modeling of their district. Data includes water quality, quantity and intercommunity flow models,

Four points of discharge from Columbus to the City of Lino Lakes have been identified by the RCWD as part of their district-wide modeling. These points of discharge and peak rates are identified in Table 2-5. These flows have been established by RCWD as benchmark flow rates based on current land use. Through the goals and policies as well as deference to RCWD rules, the City will regulate to either maintain or reduce flow rates relative to the established benchmarks.

**Table 2-5
Benchmark Inter-Community Flow Rates**

Receiving City	Watercourse	Peak Flow (CFS)			
		2-Year, 24-Hour Rainfall	10-Year, 24-Hour Rainfall	100-Year, 24-Hour Rainfall	100-Year, 10-Day Snowmelt
Lino Lakes	Rice Creek	160	281	517	413
Lino Lakes	Rondeau	2	2	6	9
Lino Lakes	ACD 10-22-32 Branch 4	<1	2	5	5
Lino Lakes	ACD 10-22-32 Main Trunk	3	9	19	21

2.10 Planning & Development

2.10.1 Comprehensive Plan & Land Use

The City of Columbus is currently updating its Comprehensive Plan. This Surface Water Management Plan will be adopted as an element of the Comprehensive Plan. The new Comprehensive Plan was approved by the City Council at the May 13th City Council meeting, subject to review by the Metropolitan Council.

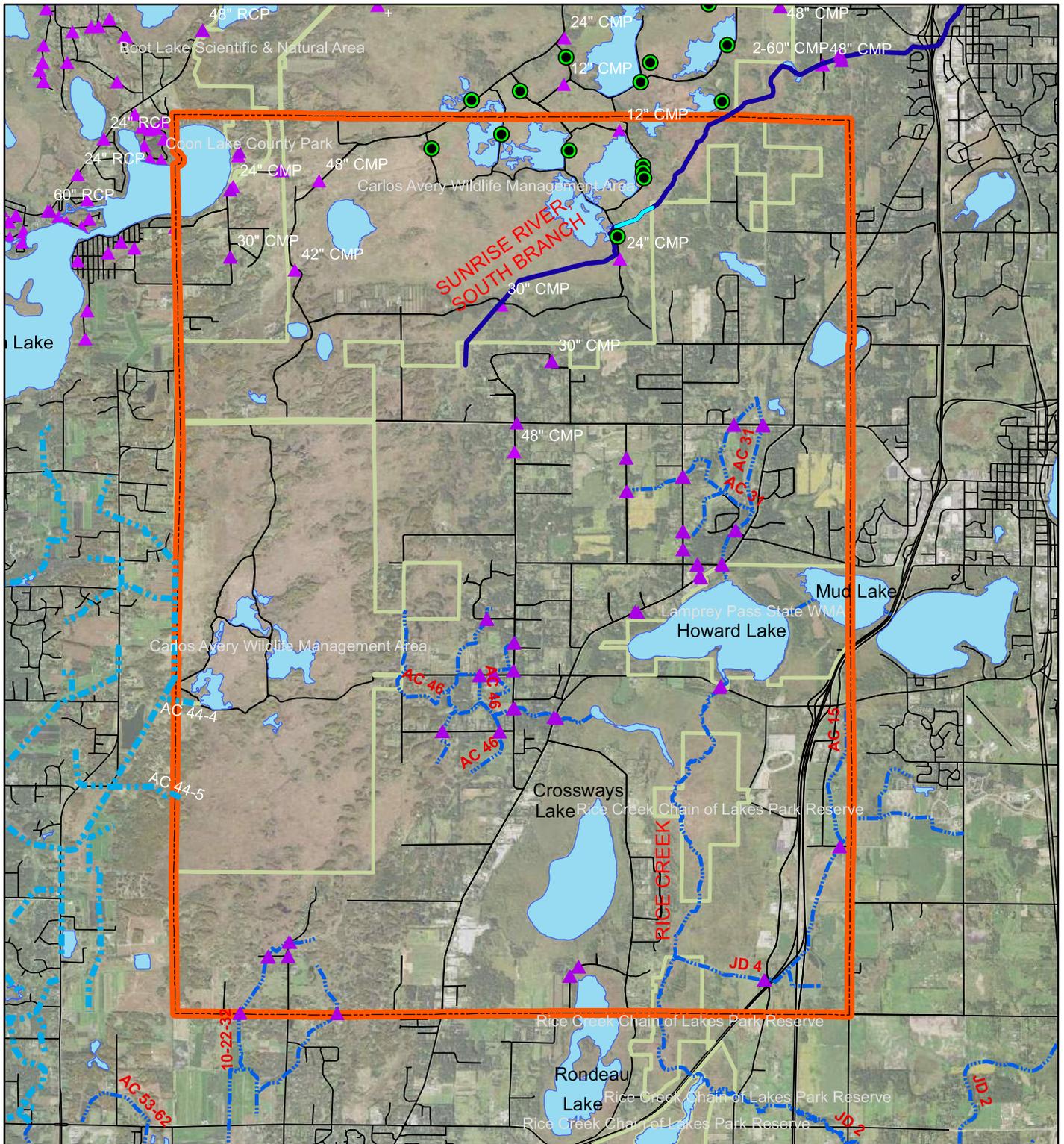
The City’s land use plan through 2040 is similar to the existing land use plan. The largest land use within the City is Rural Residential. A small area of the community in the southeast corner is planned for commercial and industrial land uses. Significant open space areas are included within WMAs and parks. Wetlands, lakes, and extensive woodland areas within the community result in few remaining areas of developable land available in the City. These characteristics help retain the rural landscape in much of the City. Land use changes are

primarily planned within the RCWD area of the community along the I-35 corridor and the CR 23 corridor. The areas around these roadways are planned for expanded commercial and industrial land uses with access to public utilities along the I-35 corridor.

Figure 2-16 and **Figure 2-17** show the City's existing and proposed land use maps.

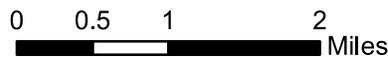
2.14 Drainage System

Columbus- Local Surface Water Management Plan



Legend

- Stop Logs
- Culverts
- Ditches
- Columbus
- Regional Parks
- CCWD Public Ditches
- RCWD Public Ditches



Limitation of Liability
 This document is not a legally recorded map or survey and is not intended to be used as one. This map is a compilation of records and information from various state, county, and township offices, and other sources.

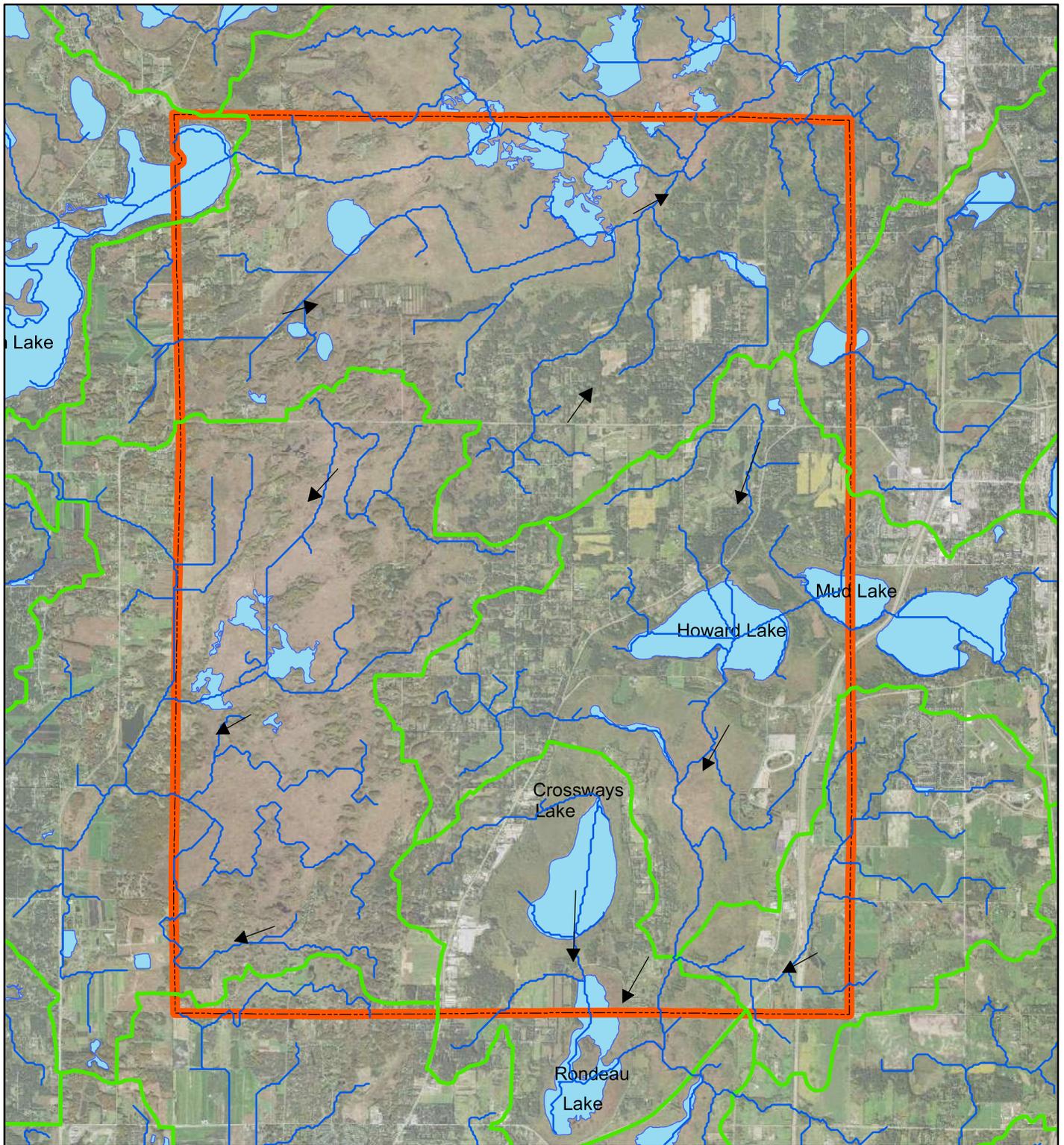
Source: Anoka County, Anoka Conservation District, Rice Creek Watershed District, Coon Creek Watershed District



Map date: October 2018

2.15 Major Watersheds and Flow Paths

Columbus- Local Surface Water Management Plan

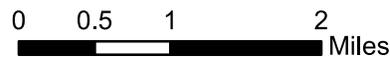


K:\gis\COLUMBUS\SWMP\Figures\2.15-Flow Paths.mxd

Source: MN DNR

Legend

- Major Watersheds
- Columbus
- Flow Paths
- Surface Flow Direction



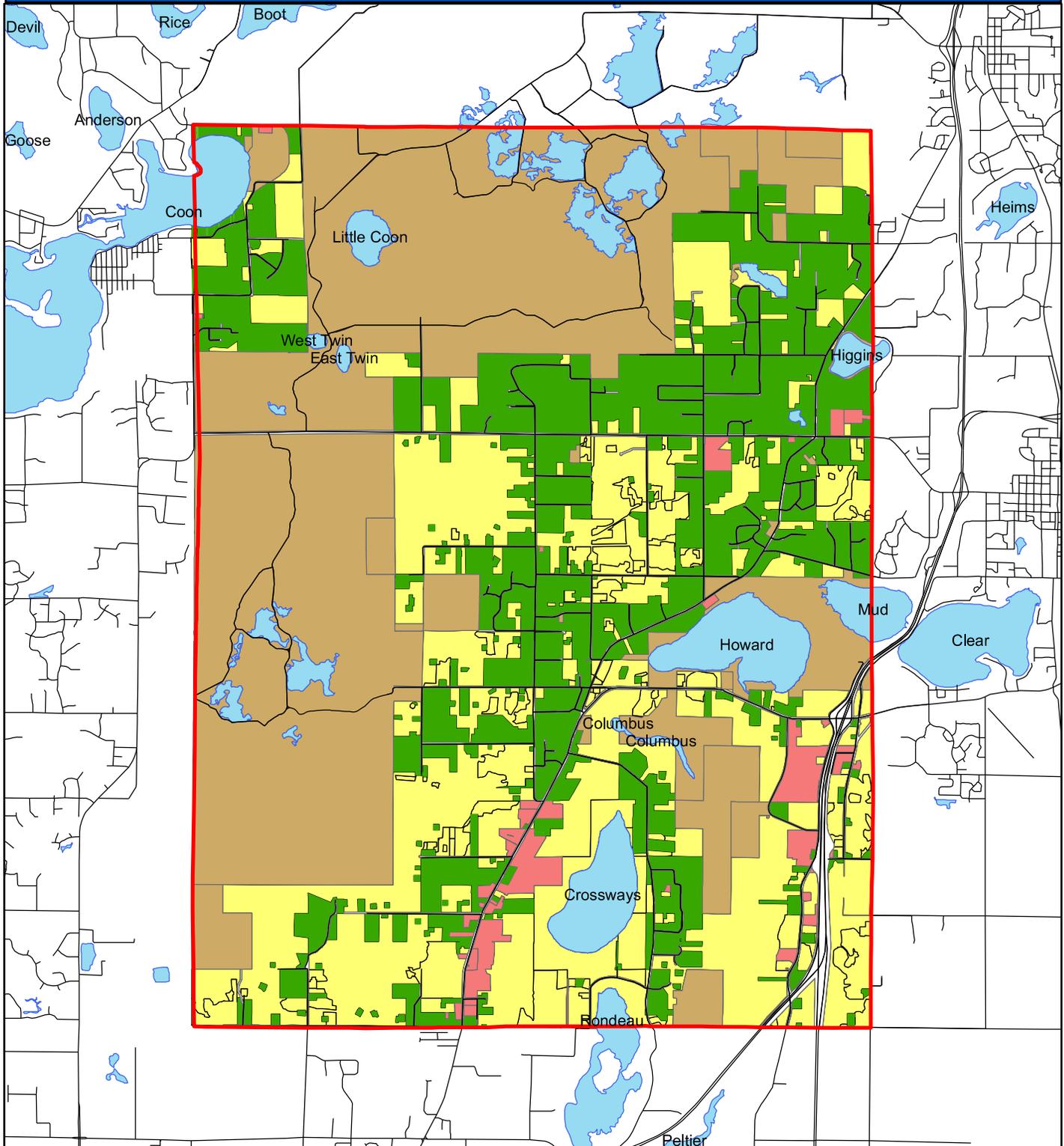
Limitation of Liability
 This document is not a legally recorded map or survey and is not intended to be used as one. This map is a compilation of records and information from various state, county, and township offices, and other sources.



Map date: October 2018

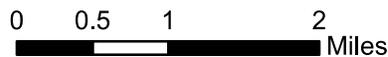
2.16 Existing Land Use

Columbus- Local Surface Water Management Plan



Legend

- Columbus
- Land Use Category**
- Residential
- Commercial/Industrial
- Park, Recreational, or Preserve
- Vacant/Agriculture
- Highway ROW



Limitation of Liability
 This document is not a legally recorded map or survey and is not intended to be used as one. This map is a compilation of records and information from various state, county, and township offices, and other sources.

K:\gis\Columbus\Figures\ExistingLanduse.mxd

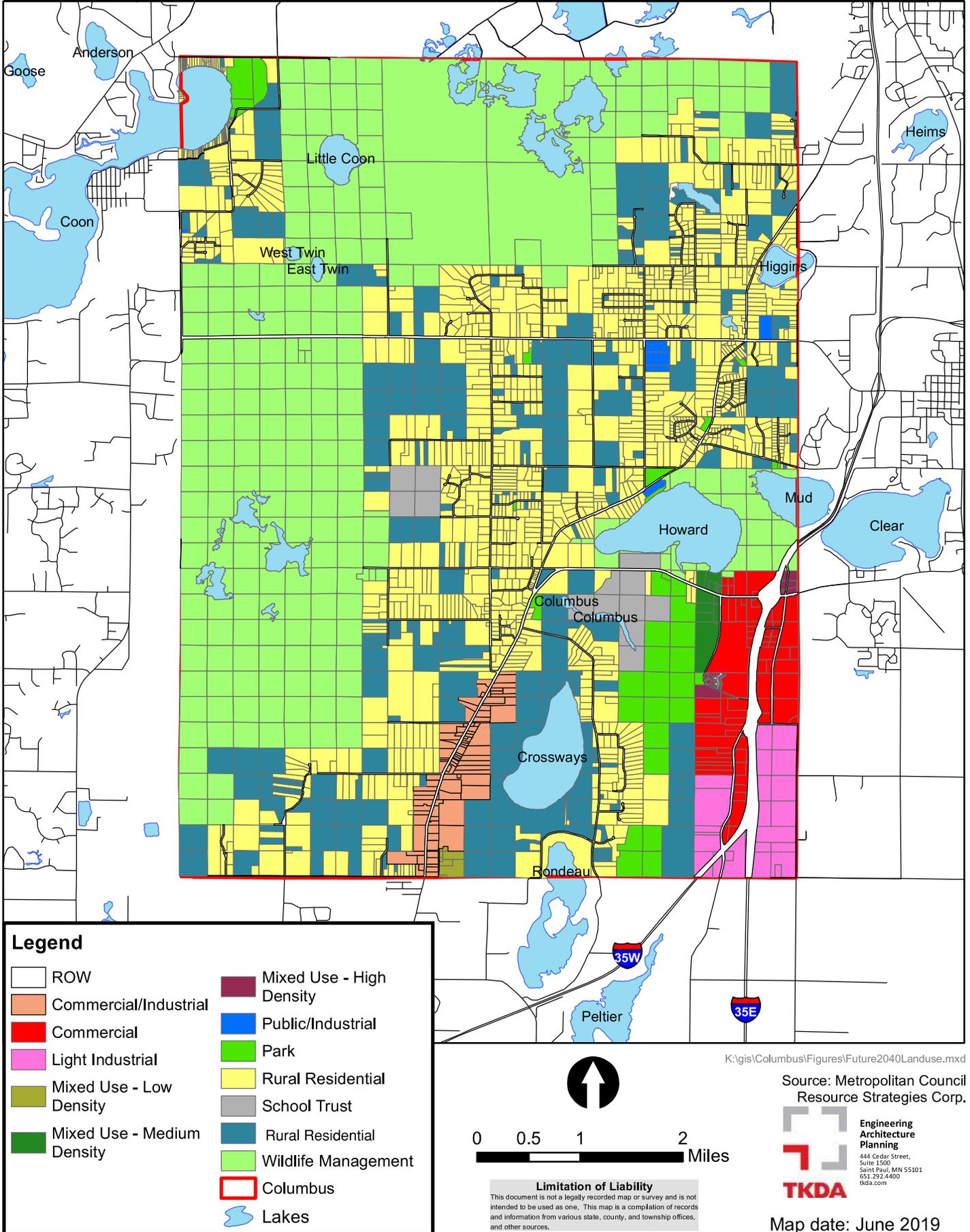
Source: Metropolitan Council



Map date: June 2019

2.17 Future 2040 Land Use

Columbus- Local Surface Water Management Plan



3.0 Regulatory Setting

3.1 City of Columbus

The Zoning Administrator manages comprehensive planning, zoning controls and city ordinances, in conjunction with the Planning Commission and City Council. The zoning code contains the following regulations related to surface water management and protection:

Chapter 07C	Wetland Zoning Regulations
Chapter 07D	Stormwater Management Regulations
Chapter 07E	Shoreland Management
Chapter 07F	Floodplain Management
Chapter 8-709	Drainage
Chapter 8-714	Dedications of Public Lands
Chapter 09	Excavation, Mining
Chapter 14	Public Health, Wells, Sewers, and Utilities (includes ISTS)
Chapter 20	Forestry Regulations

The City's zoning and subdivision regulations form the basis by which City-wide goals and policies for land use, development and environmental protection are implemented. As development applications are presented to the City, the City utilizes the code as a means to communicate minimum requirements, encourage best management practices, and require permits for certain activities. Permits and development reviews are often completed in partnership with other agencies such as the County, watersheds, conservation districts, and regional, state and federal agencies.

As it relates to stormwater management, the City's land use regulations (listed above) seek to preserve water quality and natural drainage ways, manage floodplains, support retention and infiltration practices, protect surface and groundwater supplies and minimize impacts on water quality and encourage infiltration. These regulations recognize the permit authority of the RCWD and CCWD in the areas governed by those Districts. The City's Code will be revised as needed to incorporate the goals and policies identified in this Local Surface Water Management Plan as part of implementing the City's Comprehensive Plan.

3.2 Anoka County

Anoka County is the primary local planning entity for ground water planning. State Statute §103B.255–Ground water plans, Subdivision 1, requires that Watershed and Local Water Management Plans comply with the provisions of the County's Groundwater Plan.

The County also has specific programs and policies relating to drainage issues on its highway systems and county ditch systems. The County has adopted a shoreland zoning ordinance and floodplain ordinance for areas outside incorporated cities.

Counties have the option to delegate authority over drainage systems to watershed districts. Anoka County has delegated the jurisdiction over all public ditches within Columbus to the RCWD and CCWD for those areas of the City. Thus, the water management organizations are the ditch authority for the purposes of implementing Minnesota Statute §103E (Drainage Law). The Anoka County Highway Department is the ditch authority in that portion of the City within the SRWMO.

3.3 Anoka County Department of Parks and Recreation

The Anoka County Department of Parks and Recreation oversees fourteen parks throughout the County, including the Coon Lake County Park located in the City of

Columbus. This 125-acre park offers recreational amenities on Coon Lake such as hiking trails, boat launch, swimming beach, canoeing, and fishing.

3.4 Anoka Conservation District

The Anoka Conservation District is a Soil and Water Conservation District (SWCD), established under Chapter 103C of Minnesota Statutes. The purpose of these Districts is to promote programs and policies which can conserve the soil and water resources within their territorial limits. Historically, SWCDs focused on identification, implementation, and financial support of practices that effectively reduce or prevent erosion, sedimentation, siltation, and agriculturally-related pollution. As formerly rural counties in the Metropolitan Area have become more urban, SWCDs have expanded their roles to address the impacts of urban development on water and natural resources.

The Anoka Conservation District and other SWCDs frequently act as local sponsors or provide cost-share resources for water management projects that include a variety of BMPs. The Districts also are actively involved in educational programs which promote water, natural resource, and soil conservation practices. The SWCDs receive a great deal of technical assistance from the United States Natural Resource Conservation Service.

In 1998, Minnesota Legislature established the Metro Greenways Program. The goal of this program is to establish a regional network of connected open space and natural areas for the purpose of protecting diverse plant and animal habitat while providing aesthetic and economic benefits to communities. The Anoka Conservation District has prepared a Resource Inventory for the City and other communities in Anoka County as part of the Metro Greenways Project. This inventory may be used as a tool for greenways planning within the City. The proposed greenways map is shown on **Figure 2-13**.

3.5 Watershed Authorities

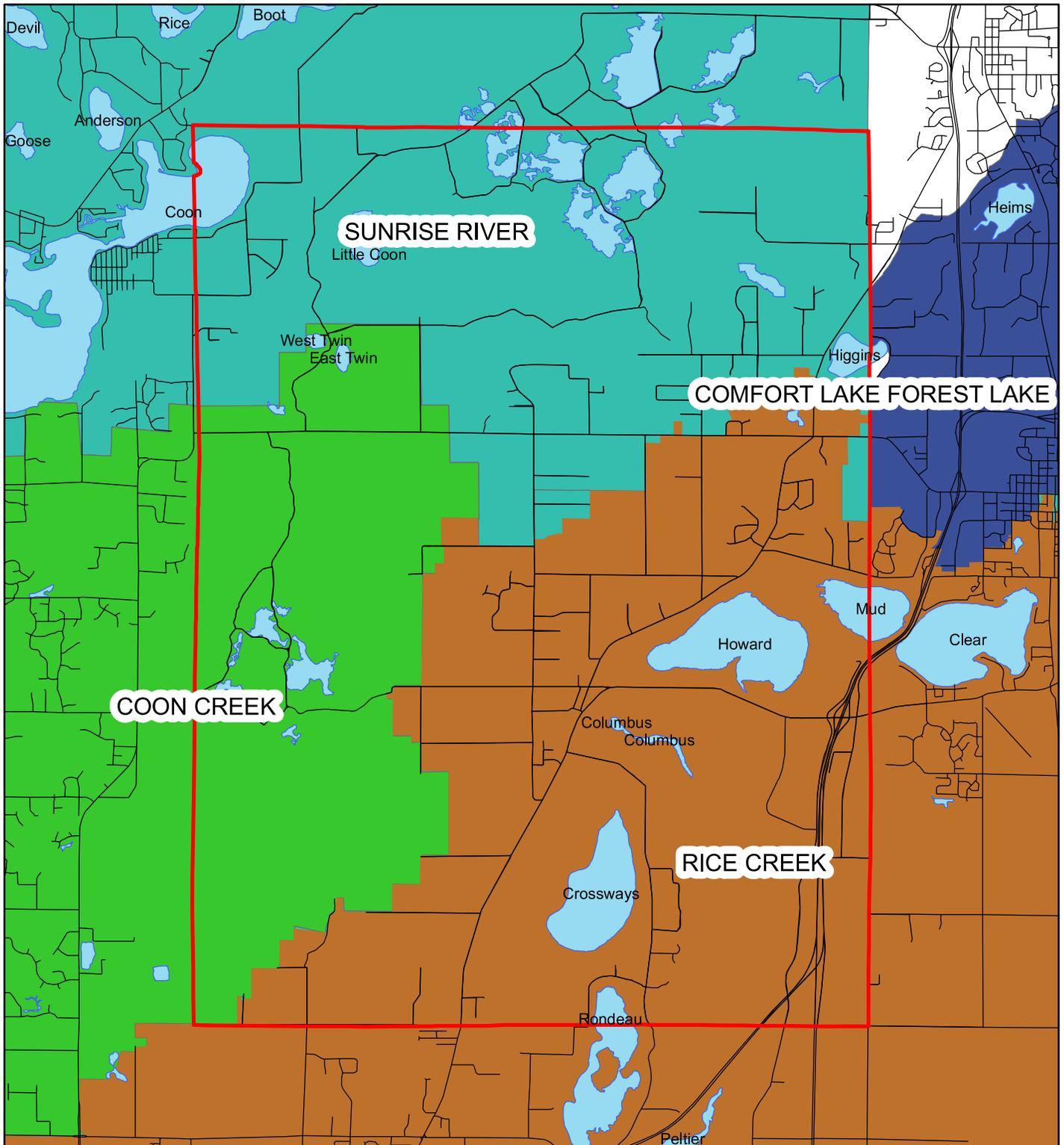
The State of Minnesota adopted the Minnesota Watershed District Act in 1955. This Act, now codified in Minnesota Statutes §103D (formerly Chapter 112), provides for establishment of watershed districts to regulate water resource planning, flood control, and other conservation issues.

In 1982, the State approved the Metropolitan Surface Water Act, Minnesota Statutes §103B. This act requires all metropolitan area local governments to address surface water management through participation in a Water Management Organization (WMO). A WMO can be organized as a Watershed District, a Joint Powers Agreement (JPA) among municipalities, or as a function of county government.

The City of Columbus is divided into multiple drainage basins that flow to three separately managed watersheds. The Rice Creek Watershed and Coon Creek Watershed are managed by Watershed Districts. The Sunrise River Watershed is managed by a joint powers Watershed Management Organization. **Figure 3-1** shows the three Watershed Authorities with jurisdiction in the City.

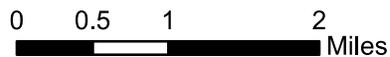
3.1 Watershed Authorities

Columbus- Local Surface Water Management Plan



Legend

- Columbus
- COMFORT LAKE FOREST LAKE
- COON CREEK
- RICE CREEK
- SUNRISE RIVER



Limitation of Liability
 This document is not a legally recorded map or survey and is not intended to be used as one. This map is a compilation of records and information from various state, county, and township offices, and other sources.

K:\gis\Columbus\Figures\WatershedAuthorities.mxd
 Source: MN Dept of Natural Resources



Map date: April 2018

3.5.2 Rice Creek Watershed District (RCWD)

Rice Creek Watershed District (RCWD) was formed in 1972 under the authority of Minnesota Statutes §103D. RCWD covers approximately 185 square miles and is composed of 28 communities: Arden Hills, Birchwood Village, Blaine, Centerville, Circle Pines, Columbia Heights, Columbus, Dellwood, Falcon Heights, Forest Lake, Fridley, Grant, Hugo, Lauderdale, Lexington, Lino Lakes, Mahtomedi, May Township, Mounds View, New Brighton, Scandia, Roseville, Shoreview, Spring Lake Park, Saint Anthony, White Bear Lake, White Bear Township, and Willernie.

RCWD has been authorized by the Minnesota State Legislature to act as the local government unit responsible for administering the Wetland Conservation Act. RCWD does not have a local wetland-banking program and relies on the state program for mitigation purposes. It uses methods and procedures outlined in the WCA to determine replacement of wetland values in mitigation proposals. In addition to the WCA, RCWD has Comprehensive Wetland Protection Management Plan (CWPMP) requirements of Rule F(6); within this section of the rule there are mitigation ratios and actions eligible for credit that differ from WCA when within a CWPMP area. RCWD implements its stormwater and wetland permitting authority in those areas of the City under jurisdiction of the RCWD through the RCWD General Rules (adopted December 2016). The City requests that RCWD continue to implement its rules and regulations and issue permits within the City.

The RCWD is the ditch authority for public ditches within Columbus for the purposes of implementing Minnesota Statute §103E (Drainage Law).

3.5.3 Coon Creek Watershed District (CCWD)

Coon Creek Watershed District (CCWD) was formed in 1959 under the authority of Minnesota Statutes §103D. CCWD covers approximately 107 square miles and is composed of 7 communities: Andover, Blaine, Columbus, Coon Rapids, Fridley, Ham Lake, and Spring Lake Park.

CCWD has been authorized by the Minnesota State Legislature to act as the local government unit responsible for administering the Wetland Conservation Act. CCWD does not have a local wetland-banking program and relies on the state program for mitigation purposes. It uses methods and procedures outlined in the WCA to determine replacement of wetland values in mitigation proposals.

The CCWD 2013-2023 Comprehensive Management Plan notes that the number and length of public drainage systems within the CCWD are currently 134 miles. The Watershed also includes private ditches. The District expects that the length of the public ditch system will remain stable in the future. Population growth and land use change in portions of the District will lead to an increased emphasis on the use of ditches for stormwater conveyance, and a desire for improved aesthetics. There may be some decreases in the length of private ditches as land is developed, and stormwater is routed to the public ditch system.

CCWD implements its stormwater and wetland permitting authority in those areas of the City under jurisdiction of the CCWD through the CCWD Rules (adopted March 2009). The rules include requirements for permits for all land disturbing activities and standards for permit applicants. Approval standards are identified for Drainage, Floodplain, Groundwater, Soils and Erosion Control, Stormwater, Water Quality, Wetlands, and Wildlife. The City requests that CCWD continue to implement its rules and regulations and issue permits within the City. The District Plans and Rules may be reviewed in detail on its website at www.cooncreekwd.org.

The CCWD is the ditch authority for public ditches within Columbus for the purposes of implementing Minnesota Statute §103E (Drainage Law).

This LSWMP adopts the rules and standards of the watershed districts and watershed management organization by reference and requires that applicants for obtain permits and approvals from the Watershed District.

The City will update its existing ordinances as needed to be consistent with the Watershed Rules and Standards, after its Comprehensive Plan is approved. This includes an update of the Erosion and Sediment control ordinance.

Existing ordinances require compliance with watershed permitting. Examples of these requirements and coordination with District plans include the following:

- Chapter 7D-500 requires that “If a stormwater, surface water or drainage alteration plan has already been approved by another reviewing governmental agency, then such plan shall be utilized by the City of Columbus in lieu of a duplicate application.”
- Chapter 9 of the City’s Ordinances, Section 9-108 regarding Excavation and Mining states “Land owners are advised that the limited scope of this Chapter does not relieve them of the responsibility to ensure that their small excavation or fill meets the requirements of the local watershed management, the county, or the state or federal government.”

3.5.4 Sunrise River Watershed Management Organization (SRWMO)

The Sunrise River Water Management Organization (SRWMO) was formed in 1985 through a Joint Powers Agreement ratified by three local units of government: Columbus, East Bethel, and Linwood Township in order to cooperatively develop a Watershed Management Plan. An amended Joint Powers Agreement was executed in 1995 to include the City of Ham Lake.

The SRWMO plan includes goals and associated policies that form the framework for water resource management decisions. Their current plan was adopted in June, 2010 and expires on December 31, 2019.

The South and West Branches of the Sunrise River are the major drainage features of the Watershed. The South Branch is also known as County Ditch No. 12.

3.6 Metropolitan Council

The Metropolitan Council, created in 1963, is the regional governmental body responsible for planning within the seven-county Minneapolis-St. Paul metropolitan area. The Metro Area includes Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, and Washington Counties. The Council plans for major regional systems, including the following:

- Transportation and Mass Transit
- Wastewater and Public Water Supply Systems
- Housing, Re-development, and Urban Growth
- Regional Parks and Open Space
- Water Resource Management

The Council has review authority for City and County Comprehensive Plans within the 7-County Area to assure that they are consistent with the regional system plans. The Council provides extensive data analysis and information to local communities, and completes forecasts of regional and local population growth that are used in the development of local plans.

The Council's activities specific to water resources management include:

- Region-wide Surface and Ground water Planning and Non-point Source Pollution Abatement
- Industrial Wastewater Management
- Sewage Collection and Treatment

The Council provides guidance for developing local water resource plans in its "2040 Water Resources Policy Plan" adopted May 20, 2015. The Plan identifies broad region-wide objectives for water management, and its Appendices detail the requirements for Local Surface Water Management Plans.

3.7 State Board of Water and Soil Resources (BWSR)

The BWSR was created by State Legislature in 1987. Three functioning state boards (Soil and Water Conservation Board, Water Resources Board and the Southern Minnesota Rivers Basin Council) were eliminated by this legislation and their duties were transferred to BWSR on October 1, 1987. BWSR duties include oversight programs and funding of State SWCDs, formation and guidance of watershed districts, and the direction and assistance to counties in developing their Comprehensive Water Plans. The BWSR is the State agency responsible for implementation of the Wetland Conservation Act (WCA). The BWSR reviews and approves water management plans and project activity of watershed districts and soil and water conservation districts.

3.8 Minnesota Pollution Control Agency (MPCA)

The MPCA was created by State Legislature in 1967. The MPCA has both regulatory and enforcement authority relative to potential actions which could affect the quality of the ground waters and surface waters of the State. Since future City projects will likely involve water quality considerations, the MPCA may become an active participant in these projects. The MPCA is also involved with other governmental units, such as municipalities, in the construction and operation of wastewater treatment plants and the control of non-point source pollution. The MPCA is the key state agency that regulates the management of wastewater, stormwater, and solid waste in the City of Columbus.

The MPCA is required to publish a list of impaired waters in the state not meeting federal water quality standards. For each waterbody on the list, the MPCA is required to conduct a study to determine the allowable Total Maximum Daily Load (TMDL) for each pollutant that exceeds the standard. Local governments will be required to incorporate completed TMDL Studies into their surface water management plans. Impaired waters in Columbus are summarized in **Table 6-1**.

Another important function of the MPCA is implementing the National Pollutant Discharge Elimination System (NPDES) program. This program regulates not only traditional wastewater discharges but also construction activities and storm water.

The MPCA NPDES Phase II general permit establishes conditions for discharging storm water, and specific other related discharges, to waters of the State. This permit is required for discharges that are from Small Municipal Separate Storm Sewer Systems (MS4). The Rule identifies a number of implementation options for regulated MS4 operators. Columbus is not yet an MS4 community.

The MPCA has also published the Minnesota Stormwater Manual. The manual serves as a unified stormwater guidance document for the entire state.

3.9 Minnesota Department of Natural Resources (MNDNR)

The MNDNR was originally created in 1931 as the Department of Conservation. The MNDNR has both regulatory and enforcement authority over the natural resources of the State. The principal divisions of MNDNR include the Division of Waters, Division of Forestry, and Division of Fish and Wildlife (which includes the sections of Wildlife, Fisheries, and Ecological Services). The Division of Fish and Wildlife is responsible for the management of Minnesota's 1.2 million acres of wildlife management areas (WMA), including the Carlos Avery Wildlife Management Area and Lamprey Pass Wildlife Management Area located in the City of Columbus.

The MNDNR has permit authority for any change in cross-section or work below the Ordinary High Water (OHW) level of regulated water bodies. This often includes protected waters and wetlands. The MNDNR is also actively involved in helping local units of government administer floodplain management ordinances and standards.

3.10 Minnesota Department of Health (MDH)

The MDH manages programs to protect the public health, including implementation of the Safe Drinking Water Act (SDWA). It has permit authority and regulatory authority for monitoring water supply facilities. These facilities include water wells, surface water intakes, water treatment, and water distribution for public use. The MDH also is responsible for the development and implementation of the Wellhead Protection Program.

3.11 Minnesota Environmental Quality Board (EQB)

The EQB is comprised of five citizen members and the heads of ten state agencies that play an important role in Minnesota's environment and development. The EQB develops policy, creates long-range plans and reviews proposed projects that may significantly influence Minnesota's environment.

3.12 Minnesota Department of Transportation (MnDOT)

Within the City, MnDOT administers several state highway systems. Since highway systems cross drainage patterns of natural and artificial waterways, there is opportunity for frequent interaction between Cities and MnDOT. City projects requiring structures through MnDOT regulated highways require coordination and approval by MnDOT. Anticipated activities of MnDOT are periodically published in their State Transportation Improvement Plan (STIP).

3.13 US Environmental Protection Agency (USEPA)

The EPA develops and enforces regulations that implement environmental laws enacted by congress. Responsibilities of the EPA within Minnesota have largely been delegated to the MPCA. The NPDES Program and Impaired Waters List are both the result of the Clean Water Act (CWA), administered by the EPA.

3.14 US Army Corps of Engineers (USACE)

The USACE can have permit and regulatory authority over projects in the City under Section 404 of the Clean Water Act. Wetlands are considered waters of the United States and are regulated by the US Army Corps of Engineers (USACE) under the Clean Water Act (CWA). Section 404 authorizes the USACE to issue permits for the placement of fill into all wetlands of the United States.

3.15 Federal Emergency Management Agency (FEMA)

FEMA manages federal disaster mitigation and relief programs, including the National Flood Insurance Program (NFIP). This program includes floodplain management and flood hazard mapping. FEMA published the Flood Insurance Rate Map (FIRM) in Columbus in 1980.

3.16 Natural Resource Conservation Service (NRCS)

The Natural Resources Conservation Service (formally called the Soil Conservation Service (SCS)), is a division of the US Department of Agriculture. The NRCS provides technical advice and engineering design services to local conservation districts across the nation. The Soil Survey of Anoka County was published by the NRCS in 1977. The NRCS also developed hydrologic calculation methods that are widely used in water resources design.

3.17 US Geological Survey (USGS)

The USGS provides mapping and scientific study of the nation's landscape and natural resources. USGS maps provide the basis for many local resource management plan efforts.

3.18 US Fish and Wildlife Service (USFWS)

The mission of the USFWS is to conserve, protect, and enhance the nation's fish, wildlife, plants and habitat. The USFWS developed the National Wetlands Inventory (NWI) in 1974 to support federal, state, and local wetland management work.

4.0 Related Studies, Plans & Reports

4.1 Comprehensive Plan

The City's 2040 Comprehensive Plan has been submitted to the Metropolitan Council and Watershed Authorities for review. The plan includes goals and policies for land use, infrastructure and community systems, and for protection of water and natural resources. The Comprehensive Plan will serve as the basis for updating the City's land use map, zoning map, and City Code.

This Local Surface Water Management Plan will be adopted as an element of the City's 2040 Comprehensive Plan.

4.2 RCWD Watershed Management Plan

The original RCWD Plan for water management was prepared in 1974. A "second generation" Plan was completed in 1990, in compliance with the Metropolitan Surface Water Management Act (Minnesota Statutes §103B). The Second Generation Plan has been updated in 1994, 1997, and 2000. The RCWD "third generation" watershed management plan was adopted in 2010 and amended in 2016. The plan includes a summary of water and natural resources within the district and identifies key issues for water resource management. These include management of storm water runoff (quantity and quality), public ditches, wetlands, shoreland, floodplains, erosion and sedimentation, groundwater, and public education. The plan identifies objectives, policies, management strategies, and an implementation plan to address these issues.

The current watershed management plan for RCWD is located on its website at <http://www.ricecreek.org/>.

4.3 RCWD Resource Management Plan (RMPs)

RCWD, in accordance with WCA requirements, has prepared two Comprehensive Wetland Management Plans for the purpose of maintaining ditches in the Judicial Ditch 4 system located in the Cities of Columbus, Forest Lake, and Lino Lakes. The intent of this plan is to meet stormwater needs while improving wetland ecological integrity and wildlife habitat within a wetland management corridor. RCWD has adopted special rule RMP-2 to implement wetland and stormwater permitting and banking in the RMP area, which is now contained in RCWD's Rules C and F. The boundaries of the two RMPs, Wetland Management Corridors and Wetland Management Corridor Adjustment Zones is shown in

Figure 4.1. Additional information on these features can be found at the RCWD Website at <http://www.ricecreek.org/>.

4.4 CCWD Comprehensive Plan

The CCWD Comprehensive Plan is a plan developed in compliance with the Metropolitan Surface Water Management Act (Minnesota Statutes §103B). The Plan will govern management of resources in the District through 2023. The CCWD Comprehensive Plan provides an assessment of water and natural resources, identifies key factors and major issues facing the watershed, and includes goals and policies for the protection and enhancement of the water and related land resources within the district. CCWD adopted revised rules in March 2009.

The current watershed management plan and rules for CCWD are located on its website at <http://www.cooncreekwd.org/>.

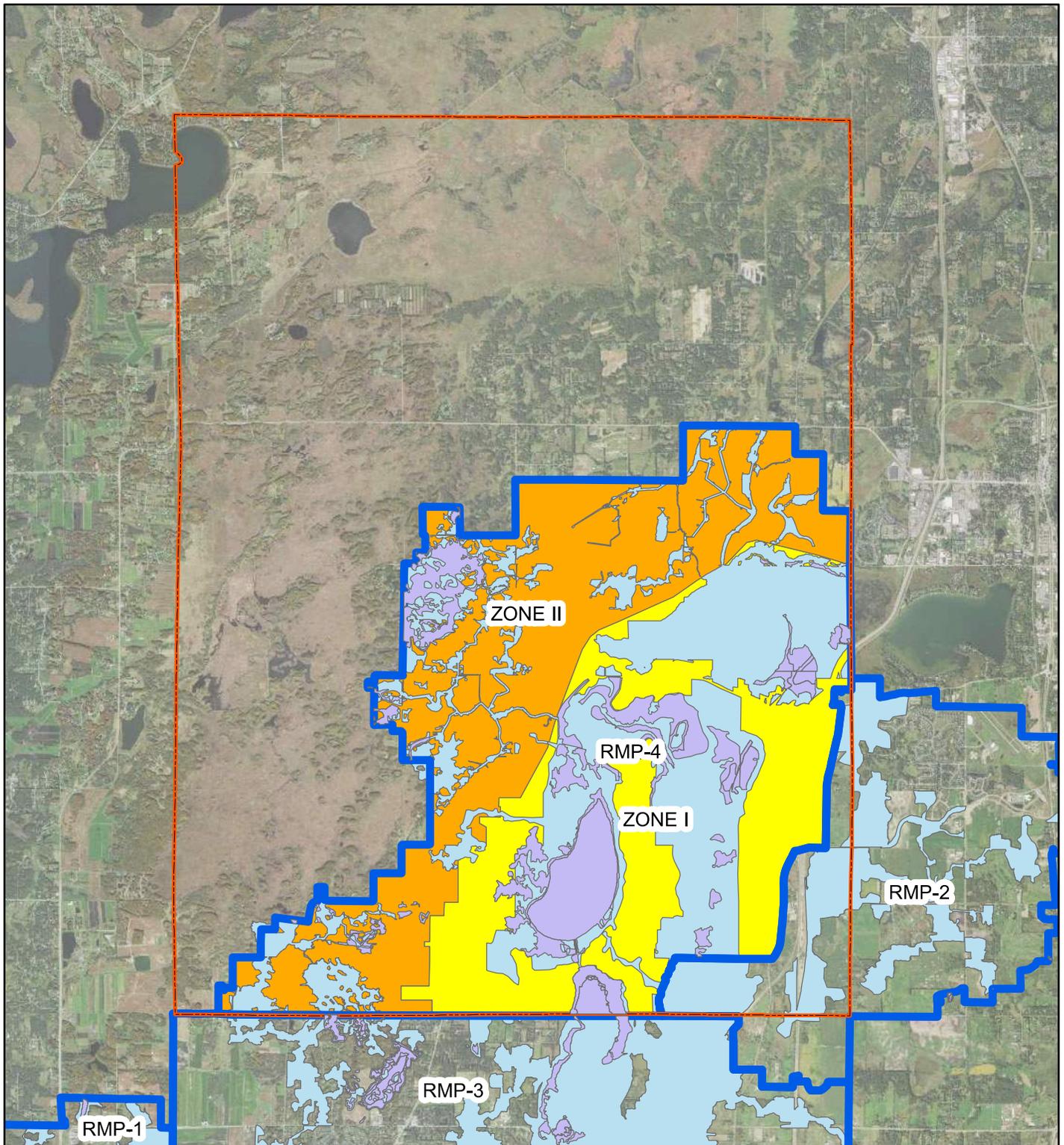
4.5 SRWMO Watershed Management Plan

The SRWMO was created through a joint powers agreement, signed in 1995. The current Watershed Management Plan was approved by the Minnesota Board of Water and Soil Resources and adopted by SRWMO in June 2010. This Plan sets forth goals, policies, management strategies, and implementation criteria for the Watershed. The SRWMO is currently updating their Watershed Management Plan which expires at the end of 2019.

The current watershed management plan for SRWMO is located on its website at <http://www.srwmo.org/>.

4.1 RCWD Features

Columbus- Local Surface Water Management Plan

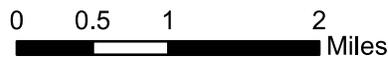


K:\gis\COLUMBUS\SWMP\Figures\4.1 - RCWD Features.mxd

Source: Rice Creek Watershed District,

Legend

-  High Quality Wetlands
-  Columbus
-  RCWD RMP Boundaries
-  Wetland Management Corridors (Landscape Scale)
- WMC Adjustment Zones**
-  Zone I
-  Zone II



Limitation of Liability
 This document is not a legally recorded map or survey and is not intended to be used as one. This map is a compilation of records and information from various state, county, and township offices, and other sources.



Map date: October 2018

5.0 Goals & Policies

The following are the adopted Surface Water Management goals and policies for the City of Columbus:

5.1 No Adverse Impacts

The City of Columbus is committed to a goal of no adverse impacts to ground and surface water resources in the area.

5.1.1 Policies:

- The City will work cooperatively with local water management organizations, state agencies, and landowners to protect local wetlands, lakes, streams, and groundwater to preserve the values of these resources for future generations.
- The City concurs with the RCWD, CCWD and SRWMO surface water plans and rules. The Watershed Districts will continue to enforce surface water regulations and permitting within the City within the boundaries of their districts. The City will coordinate its review of development proposals with the Watershed Districts, by providing review comments to the districts. The City will adopt and enforce the rules of the SRWMO in that geographic area of the community.
- The City will manage land use to support protection of surface and ground waters through the following elements of its Zoning and Subdivision Ordinance:
 - Chapter 07C Wetland Zoning Regulations
 - Chapter 07D Stormwater Management Regulations
 - Chapter 07E Shoreland Management
 - Chapter 07F Floodplain Management
 - Chapter 8-709 Drainage
 - Chapter 8-714 Dedications of Public Lands
 - Chapter 09 Excavation, Mining
 - Chapter 14 Public Health, Wells, Sewers, and Utilities (ISTS)
 - Chapter 20 Forestry Regulations
- The City will review its existing stormwater management and erosion and sediment control regulations, & will update its ordinances to be consistent with NPDES Construction Stormwater Permit requirements for erosion & sediment control as the NPDES requirements are updated. The City will make the requirements consistent with those of the Watershed Authorities.
- The City will update its ordinances to adopt and enforce the rules and performance standards of the CCWD, RCWD, and SRWMO.
- The City will cooperate with the County and the Watershed Authorities in managing land use to protect ground water resources. Additional goals and policies for groundwater protection are included in the Water Supply element of the Comprehensive Plan.
- The City encourages the use of best management practices for agricultural land uses to minimize erosion and to protect the quality of surface and groundwater resources.
- The City supports and will encourage developers and landowners to use storm water practices that promote infiltration/filtration and decrease impervious areas through site design and use of Low Impact Development (LID) techniques and Green Design. (City Code 7D—707 and 708)
- The City will cooperate with the Watershed Authorities and surrounding communities to address potential flooding issues and erosion issues on public and private ditches, such as Anoka County Ditch 10-22-32.
- The City will cooperate with the Watershed Authorities and Minnesota DNR on water level management issues in the Carlos Avery WMA.

- The City supports the efforts of the Watershed Authorities to educate the public on water resource and management issues. If requested, the City will consider providing information to the public through its newsletters and website.

5.2 Protect the Quality with Support

Protect the quality of local lakes by supporting the RCWD, CCWD, and SRWMO goals for managing lakes and creeks in the City.

5.2.1 Policies:

- The City will update and implement its land use plan, zoning and subdivision ordinances as necessary to continue to protect shoreland areas and lake water quality, and work with the Watershed Authorities to achieve the lake management goals identified in their Water Management Plans.
- The City will cooperate with the Watershed Authorities to implement the recommendations resulting from TMDL studies, through implementing its land use plan and enforcing its ordinances to assist in protection and improvement of these resources.

5.3 Protection of Wetland Resources

Protect wetland resources by requiring functions and values assessments of the wetlands in the City, and implementing wetland management requirements.

5.3.1 Policies:

- The City will cooperate with the Watershed Districts as they serve as the LGU for the WCA within the City. The City will serve as the LGU within the SRWMO area.
- The City will support Watershed Authority requirements for pretreatment of stormwater prior to discharge into all wetlands.
- Wetlands that have not been inventoried by the Watershed Authorities will be required to complete a functions and values assessment as a part of the development application. Watershed rules regarding wetland management will be applied based on the results of the assessment and the wetland classification.
- The City will adopt and enforce requirements for management of wetlands (such as buffer zones) in its Zoning and Subdivision Code. The requirements will be consistent with Watershed Authority standards.
- The City supports inspection of on-site individual sewage treatment systems by an MPCA certified inspector at the time of property sale or transfer and requirements that these systems meet state standards.

5.4 Protection of Endangered Species

Protect endangered species and significant natural communities

5.4.1 Policies

The City will support efforts of the Minnesota DNR to protect endangered species and significant natural communities within the City.

5.5 Watershed Authority Support

Support the implementation of Watershed Authority requirements for stormwater quality and quantity, volume control, infiltration and filtration, standards for wet detention basins, and other best management practices.

5.5.1 Policies:

- The City will support the Watershed Authorities implementation of their adopted standards for water quantity and quality management, such as control of peak runoff, volume control, infiltration and filtration, and best management practices to control Total Suspended Solids (TSS), Total Phosphorus (TP), and runoff from development or redevelopment within the City. The Watershed Districts will play the primary role in reviewing the stormwater plans for development applications within the City, and implement their rules through the review and permit process. The City will provide comments on development applications to the Watershed Districts during the review process.
- The City will adopt and enforce the rules and performance standards of the SRWMO within that geographic area of the City. The City will seek comments on development proposals and proposals for land alteration within the SRWMO area from the WMO, and incorporate the WMO's comments in development reviews.
- The City supports and will encourage landowners to use stormwater practices that promote infiltration/filtration and decrease impervious areas through site design and use of Low Impact Development techniques, where feasible.
- In accordance with SRWMO policy, the City of Columbus will require sweeping of streets with curb and gutter once annually in all areas, and twice annually in priority areas in the area of the City within the SRWMO. Priority areas shall be areas that drain directly to waterbodies and/or natural wetlands without pretreatment of stormwater runoff. Roadside ditches in rural areas will constitute treatment.
- In accordance with SRWMO policy, the City of Columbus will inspect stormwater treatment basins at 5 year intervals in the area of the City within the SRWMO. Sump catch basins will be inspected every year as required by the SRWMO.
- The City supports educational efforts of the SRWMO as a best management practice. Support of these efforts may include posting notices from the WMO in the City newsletter or on the City's website, or providing meeting space in City facilities for educational opportunities that benefit City residents.
- The SRWMO is considering phosphorus reduction as a watershed-wide goal. The City will share information about projects that may affect water quality with the WMO, as requested by the watershed and as available to the City.

6.0 Assessment of Issues & Corrective Actions

6.1 Development & Redevelopment

The majority of the land area of Columbus is zoned for Rural Residential or Agricultural Uses. Minimum lot size in the Rural Residential districts is one unit per five acres. The freeway district in the southeast corner of the community is zoned for Commercial and Industrial uses and Suburban Residential with smaller minimum lot size.

Development in Columbus is primarily occurring in the freeway district area. A Harness Race Track was built in 2007. Two residential developments were completed in 2017, Thurnbeck Preserve and Preiners Preserve. There is potential development at all four quadrants of I-35 and TH 97. The community expects development to occur at a relatively slow pace outside of the freeway district.

No specific water management problems currently exist related to development, redevelopment or public facilities. The City and Watershed Authorities have identified some existing flooding problems related to private ditches in Columbus. If development is proposed in these areas, the City will work in cooperation with the local Water Management Organizations to review proposed development, and ensure that surface water and natural

resource management for new development and redevelopment meet both City and Watershed requirements.

6.2 Water Quantity

Flooding problems have been noted on some private ditches within the City in the past. The City will need to work with the Watershed Authorities if future development or redevelopment has the potential to impact flooding or water quantity in the future. The Watershed Authority plans noted the following water quantity issues within Columbus:

- Potential flooding issues related to public and private ditches. For example, Anoka County Ditch 10-22-32, which crosses the Columbus/Lino Lakes border may need an inter-jurisdictional solution to flooding issues in the future.
- Need to coordinate with Minnesota DNR on their management of water levels in Carlos Avery WMA to ensure needs of the general public are considered.
- Need for an inventory of water control structures within the City, including structure elevation and condition.

6.3 Water Quality

Water quality issues identified in Coon Creek Plan:

- Increases in ditch and bank erosion causing an increased demand for bank stabilization projects.
- Wetland quality continues to decline in developing areas.

SRWMO Plan and Rice Creek and Coon Creek WD Plans:

- All on-site individual sewage treatment systems within the watershed should be inspected by an MPCA certified inspector.

6.4 Impaired Waters

One lake located within the City (Coon Lake) and two lakes south of the city with portions of their drainage areas within the City (Marshan Lake and Peltier Lake) are currently on the Minnesota Pollution Control Agency 303(d) impaired waters list. The 303(d) list is comprised of lakes and streams that do not meet Federal water quality standards.

Howard Lake was previously identified as impaired and was delisted in 2014.

Impaired streams that are adjacent to and receive runoff from the city are: Hardwood Creek to the south, Coon Creek to the west and the Sunrise River, South Branch to the north.

Peltier and Marshan Lakes are located south of the City. While these lakes are not within Columbus, a portion of the City within the RCWD drains to either Peltier Lake or Marshan Lake. Both of these lakes are listed on the MPCA 303(d) list. Impaired waters discussed here are identified on **Figure 6-1** and listed in **Table 6-1** below.

Table 6-1
Impaired Waters in Columbus

Impaired Water	Affected Use	Pollutant/ Stressor	Impaired Biota	TMDL Target Start Date	TMDL Target Complete Date
Coon Creek	Aquatic life/Aquatic recreation	Aquatic macroinvertebrate bioassessments/ <i>Escherichia coli</i>		Plan approved in 2016	
Coon Lake	Aquatic consumption	Mercury in fish tissue		Plan approved in 2008	

Impaired Water	Affected Use	Pollutant/ Stressor	Impaired Biota	TMDL Target Start Date	TMDL Target Complete Date
Hardwood Creek	Aquatic life	Oxygen dissolved/ Impaired biota /Fish bioassessments	Fish	Plan approved in 2009	
Marshan Lake	Aquatic recreation	Nutrient/Eutrophication Biological Indicators		Plan approved in 2013	
Peltier Lake	Aquatic consumption/ Aquatic recreation	Nutrient/Eutrophication Biological Indicators/ Mercury in fish tissue		Plan approved in 2013	
Sunrise River, South Branch	Aquatic life	Dissolved Oxygen			

Source: 2018 MPCA 303(d) List of Impaired Waters

6.5 Total Maximum Daily Load (TMDL) Studies

The local Watershed Districts have completed TMDL studies or are developing plans to address the “impaired waters” issues in the lakes and streams listed in Section 6.4. The City will cooperate with the Districts as they complete these studies, and implement its land use plan and enforce its ordinances to assist in protection and improvement of these resources.

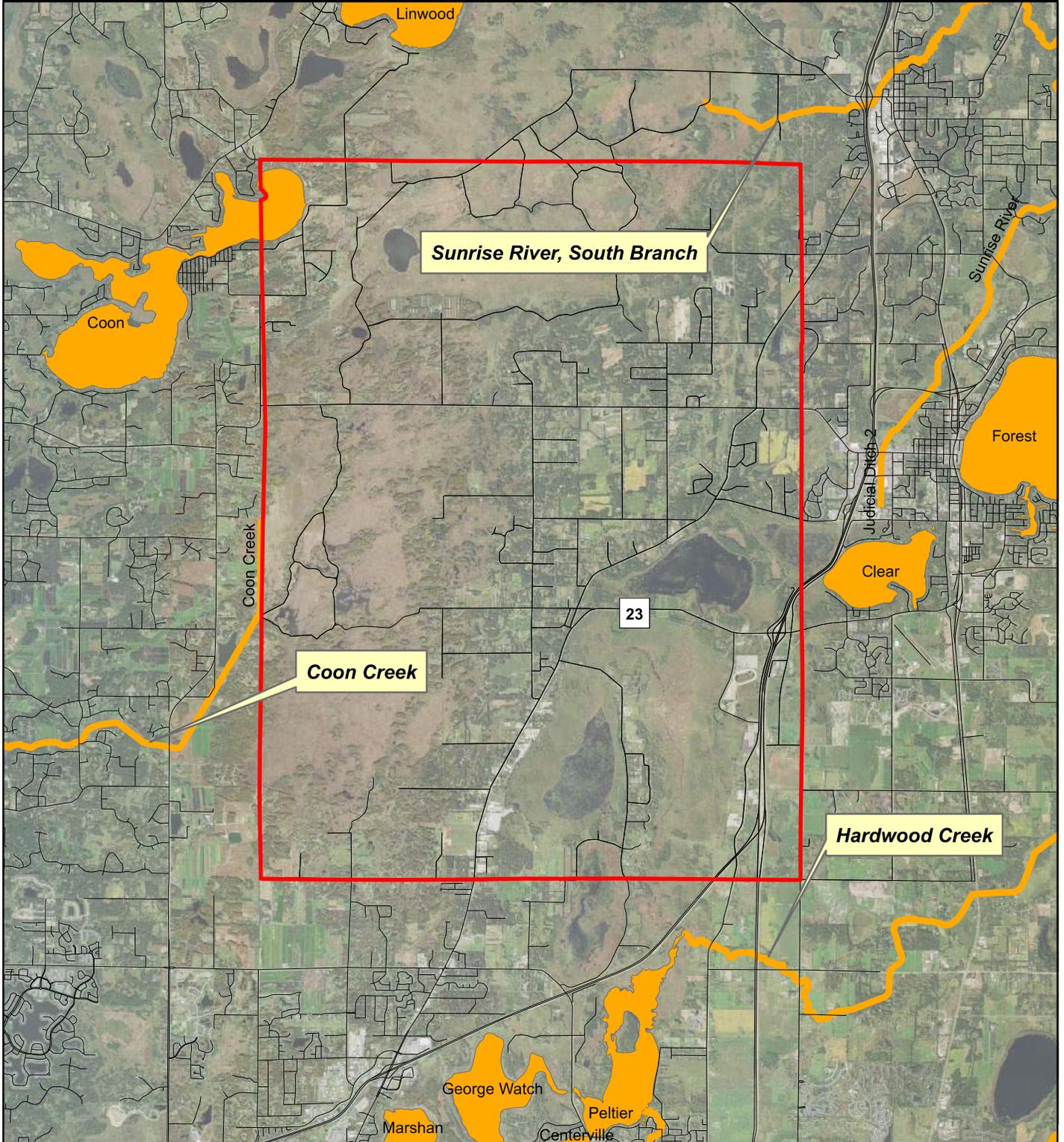
The TMDL study for Coon Lake was approved in 2008 as part of the state-wide mercury TMDL Plan. The Hardwood Creek TMDL was approved in June 2009. Marshan and Peltier Lakes were included in the Lino Lakes Chain of Lakes TMDL approved in 2013. Coon Creek TMDL study was approved in 2016. Fact sheets prepared by the MPCA which summarize these studies are included in the Appendix.

The Sunrise River South Branch is listed as impaired but does not have a TMDL study scheduled.

As TMDL studies are complete, an implementation plan and strategies are included with each plan. The City acknowledges that future actions and expenditures may be required to address the TMDL implementation plans. The City will participate as required.

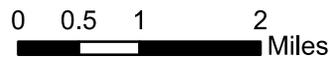
6.1 Impaired Waters

Columbus- Local Surface Water Management Plan



Legend

- Columbus
- Impaired Streams
- Impaired Water



Limitation of Liability
 This document is not a legally recorded map or survey and is not intended to be used as one. This map is a compilation of records and information from various state, county, and township offices, and other sources.

K:\gis\Columbus\Figures\ImpairedWaters.mxd

Source: Minnesota Pollution Control Agency



Map date: April 2018

6.6 Erosion

The following erosion issues were identified in Columbus in the Watershed Authority Plans:

CCWD Plan:

- Increases in ditch and bank erosion causing an increased demand for bank stabilization projects

SRWMO Plan

- Procedures and protocols to enforce erosion control standards on construction sites should be revised to ensure proper implementation of BMPs and construction site erosion control.

6.7 Groundwater

The following groundwater-related issues were identified in the Watershed District Plans:

- The long term effects of climate change, groundwater use, and changes in precipitation patterns on shallow ground water availability and wetlands is a concern.

6.8 Shoreland

There are no current shoreland related issues identified.

7.0 Implementation

7.1 Actions to Implement Plan & Address Identified Issues

Section 6 identified water resource management issues related to water quantity, quality, erosion and sediment control, lakes, wetlands, groundwater, and other issues. The City will complete the following specific implementation actions to implement the LSWMP and address issues identified in Section 6:

7.1.1 Surface Water Regulation and Permitting

- This plan adopts the plans and rules of the RCWD and CCWD as the water resource management rules for the City within the areas governed by those districts. The City supports the District's enforcement of these rules and requirements for BMPs to manage water quantity and quality.
- The City concurs with the District and WMO surface water plans and rules. The Watershed Districts will continue to enforce surface water regulations and permitting within the City within their geographic areas. The City will coordinate its review of development proposals with the Watershed Districts and will manage land use to support protection of surface and ground waters through its Zoning and Subdivision Ordinance.
- The City will adopt and enforce the rules and performance standards of the SRWMO within that geographic area of the City. The City will seek comments on development proposals and proposals for land alteration within the SRWMO area from the WMO, and incorporate the WMO comments in development reviews.
- The City will support the Watershed Authorities' implementation of their standards for management of water quantity and quality, including control of peak runoff, volume control, infiltration and filtration, wetland quality, and best management practices to control Total Suspended Solids (TSS), Total Phosphorus (TP), and runoff from development or redevelopment within the City. The Watershed Districts will play the primary role in reviewing the stormwater plans for development applications within the City, and implement their rules through the review and permit process. The City will provide comments on development applications to the Watershed Districts during the review process.

7.1.2 Ordinance Updates

- The City will review existing Zoning and Subdivision Ordinances to identify opportunities to further incorporate the goals and policies of this plan and to ensure that the standards and rules of the Watershed Authorities are addressed. This will be done in conjunction with ordinance amendments as a part of completion of the City's Comprehensive Plan.
- The City will update its erosion and sediment control ordinances to be consistent with NPDES Construction Stormwater permit requirements for erosion and sediment control.

7.1.3 Stormwater System Inventory, Mapping and Maintenance

The City completed an inventory of surface water control structures (culverts) and storm water ponds within the City. Maintenance will be completed as needed to address issues identified in the inventory. The City will update its drainage system map and inventory as new components are added to the system. A maintenance agreement is in place with RCWD to maintain stormwater basins near Highway 97 and Hornsby Street.

- Columbus is a rural community with a rural drainage system primarily made up of culverts and ditches. Columbus is not an MS4 community and so does not have an adopted schedule for the repair and inspection of outfalls and other stormwater system structures. However, the City will continue to monitor and inspect outfalls as problems are reported and make repairs as needed.

7.1.4 Water Quantity Management

- The City will cooperate with the Watershed Authorities and neighboring communities in managing flooding and erosion issues related to public and private ditches. The City will review the effects of high intensity rainfalls to determine if problems related to flooding occur.
- As development and redevelopment occur the City may consider acquisition of public easements over private ditches as part of a Developer's Agreement.
- The City will utilize NOAA Atlas-14 precipitation estimates to model rainfall data.
- The City will cooperate with the Watershed Authorities to maintain or reduce intercommunity flows.
- The City will evaluate regional stormwater treatment in areas to be developed where it makes sense to create solutions across property lines. When possible this will be done in conjunction with the Watershed Authorities.

7.1.5 Impaired Waters

- The City will participate and cooperate with the Watershed Authorities to address concerns related to impaired waters and as the Organizations complete TMDL studies, and will manage land use to avoid impacts to water resources within the City. The City will implement its zoning ordinances, subdivision regulations, and encourage BMPs that assist in the protection and improvement of impaired resources. The City will promote staff training regarding best management practices to help reduce water pollutant loading.

7.1.6 Permit Process

- The City will coordinate reviews of land use and zoning applications and permits with Local Watershed Districts, Watershed Management Organizations, and County staff. The City will provide copies of land use and zoning applications and permit requests to the appropriate District, Anoka County, Anoka Conservation District, and other agencies as appropriate for review and comment. The City will incorporate the comments of the County, District, ACD, and other agencies along with its own staff comments in its staff reports, recommendations, and conditions.

7.1.7 Shoreland Regulations

The City will implement its existing ordinances related to management of lakes, streams, and wetlands, including the following:

- Shoreland Management Regulations Ordinance. The Shoreland Management Regulations include the following setback requirements for structures, on-site sewage treatment systems, and structures in sewer areas:
 - Natural Environment Lakes - 150' setback for structures; 150' septic systems; and 150' for sewer structures.
 - General Development Lakes - 75' setback for structures; 75' for septic systems; and 50' setback for sewer structures.
 - Rivers and Streams - 100' for structures; 75' for septic systems; and 50' for sewer structures.
 - The City will review these and other ordinance requirements related to stormwater management as part of the Implementation of the Comprehensive Plan.

7.2 Funding Mechanisms

Columbus owns and manages a limited number of storm water management facilities, including culverts under public roadways, and drainage easements over a limited number of ponds within private developments. The City uses general fund revenues to fund improvements when needed to address water quality and quantity concerns and maintain these facilities in good working order.

The City requires that developers finance the improvements that are required to ensure that private developments meet City and watershed requirements.

The City's annual budget includes funding for maintenance of roads. If stormwater problem areas are identified related to road culverts, ditches, or other road-related stormwater needs, the City addresses these issues through its road maintenance budget.

The City may assess property owners for a portion of the costs when they will benefit from the improvements.

7.3 Capital Improvement Plan (CIP)

The City budgets for any capital improvements on an ongoing basis and will annually review capital expenditures that may arise as a result of implementing the Comprehensive Plan and this LSWMP. The capital improvements plan includes public investments in infrastructure, park expenditures, infrastructure repair and replacement, building maintenance and repair, and other planned capital expenditures. The capital improvements planning process is ongoing and subject to modification, as appropriate. As included in the Comprehensive Plan, the current capital improvements plan expenditures, excluding public sewer and water expenditures, are included in the Appendix.

No specific surface water management projects are currently identified in the City's Capital Improvement Plan.

7.4 City Ordinances

The City has adopted ordinances that provide standards and regulations to manage water resources. These include the following:

Chapter 07C	Wetland Zoning Regulations
Chapter 07D	Stormwater Management Regulations
Chapter 07E	Shoreland Management

Chapter 07F	Floodplain Management
Chapter 8-709	Drainage
Chapter 8-714	Dedications of Public Lands
Chapter 09	Excavation, Mining
Chapter 14	Public Health, Wells, Sewers, and Utilities (ISTS)
Chapter 20	Forestry Regulations

After the LSWMP and 2040 Comprehensive Plan are adopted, the City will revise or update its ordinances as described in the Goals and Policies section of this plan, to ensure that they meet state requirements and are consistent with the goals of this Plan.

A full copy of the current City ordinances can found on their website at <http://bit.ly/ColumbusOrdinances>

8.0 Administration

8.1 Review & Adoption Process

The City will provide draft copies of this Local Surface Water Management Plan to the Metropolitan Council and local Watershed Districts and WMO for review and comment. The plan will be submitted to the Metropolitan Council as part of the City's Comprehensive Plan, and will be adopted by the City when approved by the Metropolitan Council and Watershed Districts.

8.2 Plan Amendments and Updates

City Comprehensive Plans and Local Surface Water Management Plans are updated every ten years. Local Surface Water Management Plans must be updated within two years of completion of Watershed Authority Management Plans. The City will update its LSWMP along with its Comprehensive Plan, or as needed to comply with state rules related to LSWMP updates to be consistent with Watershed Plans.

The RCWD expects to complete its update to their Watershed Plan in 2020. The existing Coon Creek Watershed Plan will govern water management through 2023. It is currently being updated to reflect the latest TMDL studies.

The SRWMO plan expires in 2019 and will be updated.

Substantive revisions to the goals and objectives, the adoption of new or revised standards or rules, and major revisions to the CIP or administrative procedures of the Watershed Plans will require an amendment to this plan. Plan amendments require review and approval by the City Council, Metropolitan Council and the Watershed Authorities.

Plan revisions considered minor or housekeeping will not go through the full amendment process.

Annual work plans completed during the beginning of the calendar year by the City Council will serve to guide the immediate activities of the City. The periodic CIP updates will help focus the work plans by identifying projects requiring substantial planning and financial resources for successful completion. Capital storm water improvements may be proposed by other local, state, and federal agencies as well. Understanding capital improvements planned by others is important because of the potential impact to the water resources of the City.

The following steps will be completed should any plan amendment be made.

1. The City will prepare the proposed amendment.
2. The City will conduct a public hearing. In addition to normal hearing notice procedure, the City will provide notice to the Metropolitan Council, RCWD, CCWD and SRWMO.

3. After the hearing and any revisions to the draft amendment, the City will submit the amendment to the Metropolitan Council, RCWD, CCWD and SRWMO.
4. The Watershed Authorities will have 60 days to complete their review & approve or disapprove the amendment. The Metropolitan Council will have 45 days to review and comment.
5. After approval of the amendment by the Watershed Authorities, the City will adopt the amendment.



Appendix A

Lake Information Reports and Ecosystem 2000 Reports

Lake Water Level Report

Lake Name: Columbus

County: Anoka

Water Level Data

Period of record: 03/16/1990 to 03/16/1990

of readings: 1

Highest recorded: 885.62 ft (03/16/1990)

Lowest recorded: 885.62 ft (03/16/1990)

Recorded range: 0 ft

Last reading: 885.62 ft (03/16/1990)

OHW elevation: 887.2 ft

Datum: NGVD 29 (ft)

Benchmarks

Elevation: 891.95 ft Date Set: 03/06/1990
Datum: NGVD 29 (ft)

Benchmark Location

Township: 32 Range: 22 Section: 2

Description: 3/8 x 8" spike set at a 45 degree angle in the west root of a 1.9' oak, at the edge of a trail, 111' north of an iron pipe/signpost marked by an "Anoka County Surveyor" sign.

Elevation: 889.12 ft Date Set: 03/06/1990
Datum: NGVD 29 (ft)

Benchmark Location

Township: 32 Range: 22 Section: 22

Description: A vertical 3/8" x 8" spike in the south root of a 1.0' Ash 6.5' West of Anoka Co. Survey Marker (iron pipe with marking sign).

Lake Information Report

Lake Name: Coon

County: Anoka

Nearest Town: Soderville

Primary County: Anoka

Survey Date: 06/17/2015

Inventory Number: 02-0042-00

Public Access Information

Ownership	Type	Description
Minnesota DNR	Concrete	North shore west basin, off CSAH 22
County	Concrete	Concrete ramp in Anoka County Park, east shore east basin, by outlet.
County	Earthen	Dirt ramp off gravel road on south side of channel between basins.

Lake Characteristics

Lake Area (acres): 1,481.24

Littoral Area (acres): 1,098.20

Maximum Depth (ft): 27.00

Water Clarity (ft): 9.0

Dominant Bottom Substrate: N/A

Abundance of Aquatic Plants: N/A

Maximum Depth of Plant Growth (ft): N/A

Fish Sampled up to the 2015 Survey Year

Species	Gear	CPUE	Normal Range	Avg Weight	Normal Range	Count
black bullhead	Standard gill nets	3.33	1.0-38.0	1.04	0.3-0.7	20
black crappie	Standard gill nets	1.83	1.0-10.5	0.15	0.2-0.3	11
	Standard trap nets	1.18	0.7-4.3	0.31	0.2-0.6	13
bluegill	Standard trap nets	30.18	4.0-28.1	0.1	0.1-0.3	332
	Standard gill nets	24.17	N/A	0.19	N/A	145
bowfin (dogfish)	Standard trap nets	0.36	0.3-1.2	6.46	3.3-5.5	4
brown bullhead	Standard gill nets	1.83	0.7-4.5	1.04	0.4-0.9	11
green sunfish	Standard gill nets	0.17	5.7	0.32	N/A	1
hybrid sunfish	Standard trap nets	3.36	N/A	0.23	N/A	37
	Standard gill nets	0.67	N/A	0.18	N/A	4
largemouth bass	Standard electrofishing	11.27	N/A	1	N/A	23
	Standard gill nets	0.17	0.3-0.9	1.75	0.6-1.5	1
northern pike	Standard trap nets	0.64	N/A	1.27	N/A	7
	Standard gill nets	17	3.6-11.0	1.95	1.3-2.3	102
pumpkinseed	Standard trap nets	2.18	1.5-6.8	0.17	0.1-0.3	24
	Standard gill nets	1.5	N/A	0.17	N/A	9
walleye	Standard gill nets	1.5	1.0-3.2	1.57	1.0-2.1	9
yellow bullhead	Standard trap nets	0.09	1.4-5.0	0.35	0.4-0.8	1
	Standard gill nets	12.17	0.6-7.0	0.49	0.3-0.7	73
yellow perch	Standard trap nets	0.09	0.5-3.3	0.06	0.1-0.2	1
	Standard gill nets	13.67	3.8-22.8	0.13	0.1-0.2	82

Length of Selected Species Sampled for All Gear for the 2015 Survey Year

Species	Number of fish caught in each category (inches)									Total
	0-5	6-7	8-9	10-11	12-14	15-19	20-24	25-29	>29	
black bullhead	0	0	1	6	13	0	0	0	0	20
black crappie	4	15	4	1	0	0	0	0	0	24
bluegill	195	282	0	0	0	0	0	0	0	477
bowfin (dogfish)	0	0	0	0	0	0	1	3	0	4
brown bullhead	0	0	1	1	9	0	0	0	0	11
green sunfish	0	1	0	0	0	0	0	0	0	1
hybrid sunfish	2	39	0	0	0	0	0	0	0	41
largemouth bass	5	0	2	4	8	5	0	0	0	24
northern pike	0	0	1	8	11	39	34	15	1	109
pumpkinseed	12	22	0	0	0	0	0	0	0	34
walleye	0	1	1	0	3	2	2	0	0	9
yellow bullhead	3	11	32	23	5	0	0	0	0	74
yellow perch	17	65	1	0	0	0	0	0	0	83

Fish Consumption Advisory

These fish consumption guidelines help people make choices about which fish to eat and how often. Following the guidelines enables people to reduce their exposure to contaminants while still enjoying the many benefits from fish.

Pregnant Women, Women who may become pregnant and Children under age 15

LAKE NAME County, DOWID	Species	Meal Advice				Contaminants
		Unrestricted	1 meal/week	1 meal/month	Do not eat	
COON Anoka Co., 02004200	Bluegill Sunfish	All sizes				
	Bullhead		All sizes			Mercury
	Crappie	All sizes				
	Northern Pike		All sizes			Mercury
	Walleye		All sizes			Mercury
	White Sucker	All sizes				

General Population

LAKE NAME County, DOWID	Species	Meal Advice				Contaminants
		Unrestricted	1 meal/week	1 meal/month	Do not eat	
COON Anoka Co., 02004200	Bluegill Sunfish	All sizes				
	Bullhead	All sizes				
	Crappie	All sizes				
	Northern Pike		All sizes			Mercury
	Walleye	All sizes				
	White Sucker	All sizes				

DOWID - MN DNR, Division of Waters' lake ID number.

Contaminants listed were measured at levels that trigger advice to limit consumption. Listing of consumption guidelines do not imply the fish are legal to keep, MN DNR fishing regulations should be consulted.

Status of the Fishery (as of 06/17/2015)

Coon Lake is a 1,250-acre, class 35 lake located in northern Anoka County. Coon Lake is made up of two major basins. The eastern basin is smaller, deeper (maximum depth of 27ft), and has better water clarity. Walleye and Northern Pike are the two primary management species in Coon Lake. Walleye yearlings are currently stocked annually at a rate of 0.5lbs fish per littoral acre (549lbs of fish). A 17 inch minimum length limit on Walleye was implemented in 2009 to improve walleye size structure.

Walleye catch per unit effort (CPUE) in gillnets was 1.50 fish per net, between the first and second quartiles for abundance in class 35 lakes. This is the highest CPUE of Walleye ever recorded in Coon Lake, and three times higher than in the 2013 survey. The average Walleye sampled was 15.2 inches long, with fish up to 23 inches. Northern Pike were sampled at a CPUE of 17.00 fish per gillnet during the 2015 survey, above the third quartile for class 35 lakes. The average pike sampled in 2015 was 19.73 inches long, and the largest fish was 32.8 inches. Yellow Perch CPUE was 13.67 fish per gillnet, above the median abundance for class 35 lakes and the highest CPUE for perch in Coon Lake since 1993. The average size Yellow Perch sampled in the 2015 survey was 6.59 inches long, with only one fish over 8 inches observed. Largemouth Bass were sampled at a rate of 11.5 fish per hour of on-time during night-time electrofishing. The average Largemouth Bass sampled was 11 inches long, and the largest was 16.85 inches.

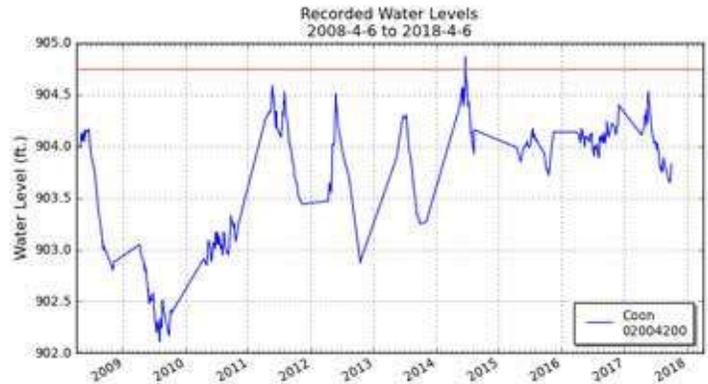
Bluegill CPUE was 30.18 fish per net in the trap nets, above the third quartile for abundance in class 35 lakes. Bluegill average length was 6.24 inches, and the largest fish sampled was 7.80 inches long. Black Crappie CPUE in trap nets was 1.18 fish per net, between the first and second quartiles of abundance for class 35 lakes. The average Black Crappie sampled in the 2015 survey was 8.03 inches long and the largest fish sampled was 11.89 inches.

Lake Water Level Report

Lake Name: Coon

Water Level Data

Period of record: 03/30/1938 to 10/03/2017
 # of readings: 1881
 Highest recorded: 905.11 ft (05/16/1986)
 Lowest recorded: 900.27 ft (09/22/1988)
 Recorded range: 4.84 ft
 Last reading: 903.83 ft (10/03/2017)
 OHW elevation: 904.75 ft
 Datum: NGVD 29 (ft)



Benchmarks

Elevation: 907.73 ft Date Set: 09/18/1996
 Datum: NGVD 29 (ft)

Benchmark Location
 Township: 33 Range: 23 Section: 25

Description: Found 2017. 60d spike, 0.8' above ground in the west side of a light pole 10' West of curb of oval island, 4' North of wood enclosure for portable toilet, at Public Access, Thielen Park, Thielen Blvd NE, East Bethel.

Elevation: 907.06 ft Date Set: 01/06/2000
 Datum: NGVD 29 (ft)

Benchmark Location
 Township: 33 Range: 23 Section: 27

Description: Horizontal 60d spike 1.3' above ground in the north side of a 0.9' aspen, 12' SW of edge of gravel driveway near center outside of 90 degree bend in driveway near south 1/16 corner between sections 27 and 28.

Elevation: 908.79 ft Date Set: 01/06/2000
 Datum: NGVD 29 (ft)

Benchmark Location
 Township: 33 Range: 23 Section: 28

Description: Temporary PK nail in centerline of Greenbrook Dr NE over 36" CMP at Co. Ditch 38 crossing.

Lake information report

Lake Name: Crossways

County: Anoka

Nearest Town: Centerville
Primary County: Anoka

Survey Date: 06/30/1950
Inventory Number: 02-0019-00

Public Access Information

No designated public access

Lake Characteristics

Lake Area (acres): 356.00
Littoral Area (acres): 356.00
Maximum Depth (ft): 9.00
Water Clarity (ft): 4.1

Dominant Bottom Substrate: N/A
Abundance of Aquatic Plants: N/A
Maximum Depth of Plant Growth (ft): N/A

Fish Consumption Guidelines

No fish consumption guidelines are available for this lake. For more information, see the "Fish Consumption Advice" pages at the Minnesota Department of Health.

Lake water level report

Water Level Data

Period of record: 02/07/1995 to 02/07/1995
of readings: 1
Highest recorded: 887.62 ft (02/07/1995)
Highest known: 888.4 ft
Lowest recorded: 887.62 ft (02/07/1995)
Recorded range: 0 ft
Last reading: 887.62 ft (02/07/1995)
OHW elevation: 888.5 ft
Datum: NGVD 29 (ft)

Benchmarks

Elevation: 901.91 ft Date Set: 02/07/1995
Datum: NGVD 29 (ft)

Benchmark Location

Township: 32 Range: 22 Section: 22

Description: Horizontal 60d spike 1.0' above ground in the west side of a power pole with transformer, 25' east of Crossways Lake Drive at Se corner of Sec. 2.

Elevation: 892.02 ft Date Set: 02/08/1995
Datum: NGVD 29 (ft)

Benchmark Location

Township: 32 Range: 22 Section: 27

Description: On east side of lake at lakeside of house #14538 (Anderson). Horizontal 3/8 x 8" spike (bent slightly downward) 1.2' above ground in the SE side of a 0.9' aspen, at the south side of a trail to the lake from a horse pen and 21' W-SW of a gate at the west side of the horse pen, tree is leaning and slightly twisted and is the only aspen at this location.

Lake Information Report

Name: Howard

County: Anoka

Nearest Town: Forest Lake
Primary County: Anoka

Survey Date: 09/18/1962
Inventory Number: 02-0016-00

Public Access Information

Ownership	Type	Description
Minnesota DNR	Carry-in	Access is on the south side of the lake off Lake Dr. NE.

Lake Characteristics

Lake Area (acres): 488.00
Littoral Area (acres): 488.00
Maximum Depth (ft): 6.50
Water Clarity (ft): N/A

Dominant Bottom Substrate: N/A
Abundance of Aquatic Plants: N/A
Maximum Depth of Plant Growth (ft): N/A

Fish Sampled for the 1962 Survey Year

Species	Gear Used	Number of fish per net		Average Fish Weight (lbs)	Normal Range (lbs)
		Caught	Normal Range		
Yellow Perch	Trap net	0.6	0.3 - 3.8	0.10	0.1 - 0.3
White Crappie	Trap net	1.4	0.3 - 6.0	0.27	0.3 - 0.6
Pumpkinseed Sunfish	Trap net	0.2	0.3 - 4.9	0.10	0.1 - 0.2
Northern Pike	Trap net	0.2	N/A - N/A	0.50	N/A - N/A
Golden Shiner	Trap net	0.8	0.2 - 1.1	0.10	0.1 - 0.1
Common Carp	Trap net	12.6	1.0 - 5.5	0.80	1.4 - 4.6
Brown Bullhead	Trap net	0.2	0.4 - 4.5	0.30	0.2 - 0.7
Black Crappie	Trap net	13.4	1.2 - 20.5	0.20	0.2 - 0.5
Black Bullhead	Trap net	45.4	11.5 - 132.6	0.16	0.2 - 0.4

Normal Ranges represent typical catches for lakes with similar physical and chemical characteristics.

Fish Stocked by Species for the Last Five Years

Year	Species	Age	Number
2004	Northern Pike	Adult	251
	Northern Pike	Fingerling	2,847
2005	Northern Pike	Adult	504
	Northern Pike	Fry	112,191

Fish Consumption Advisory

No fish consumption information is available for this lake. For more information, see the "Fish Consumption Advice" pages at the Minnesota Department of Health.

Status of the Fishery (as of 08/10/1993)

STATUS OF FISHERY: The fish population of this lake is dominated by small crappie and small bluegill. Less than 1% of the crappie sampled and none of the bluegill sampled were large enough for most anglers to keep. Two sub-legal hybrid muskie and two larger northern pike, believed to be migrants from Lake Elmo, were taken during this investigation. Local reports indicate that 30 to 40 inch hybrid muskie are caught quite readily in this lake. The lack of public access and suitable parking area are major limiting factors to fishing on this lake.

Lake Water Level Report

Lake Name: Howard

Water Level Data

Period of record: 11/04/1987 to 11/15/2017

of readings: 697

Highest recorded: 889.36 ft (05/25/2011)

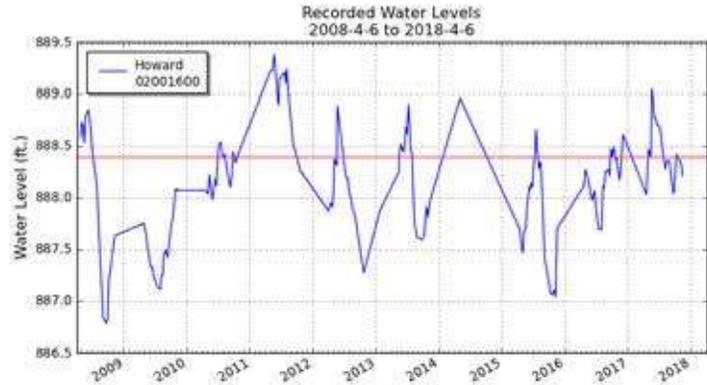
Lowest recorded: 886.79 ft (09/24/2008)

Recorded range: 2.59 ft

Last reading: 888.21 ft (11/15/2017)

OHW elevation: 888.4

Datum: NGVD 29 (ft)



Benchmarks

Elevation: 891.93 (ft)

Date Set: 07/23/1990

Datum: NGVD 29 (ft)

Benchmark Location

Township: 32 Range: 22 Section: 14

Description: 60d spike in landside root of two trunk willow on top of low bank at gage site at end of trail to lake from senior citizens building on NW side of lake, 16319 Kettle River Blvd NE, Columbus.

Elevation: 891.49 ft

Date Set: 04/15/2003

Datum: NGVD 29 (ft)

Benchmark Location

Township: 32 Range: 22 Section: 23

Description: Found 2017. At the outlet on the south side of lake, a rail spike in the West root of a 1.8' basswood, 5' West of the trail from the parking area to the boardwalk near the outlet and about 50' south of the south end of the boardwalk, accessed from a parking area off Lake Dr NE/Co Hwy 23, Columbus. [Note: Add 0.17' to NGVD 1929 elevations to obtain NAVD 1988 datum.]

Elevation: 892.48 ft

Date Set: 12/09/1987

Datum: NGVD 29 (ft)

Benchmark Location

Township: 32 Range: 22 Section: 23

Description: Brass Marker set in the top sill of downstream (south) headwall of 6'x10' box culvert in Howard Lake outlet (Rice Creek) at Anoka County Hwy. 23

Lake Information Report

Name: Little Coon

County: Anoka

Nearest Town: Soderville
Primary County: Anoka

Survey Date: 07/20/1956
Inventory Number: 02-0032-00

Public Access Information

Public access is restricted Avery Refuge.

Lake Characteristics

Lake Area (acres): 107.00
Littoral Area (acres): N/A
Maximum Depth (ft): 4.00
Water Clarity (ft): N/A

Dominant Bottom Substrate: N/A
Abundance of Aquatic Plants: N/A
Maximum Depth of Plant Growth (ft): N/A

Fish Consumption Advisory

No fish consumption information is available for this lake. For more information, see the "Fish Consumption Advice" pages at the Minnesota Department of Health.

Lake information report

Name: Mud

County: Washington

Nearest Town: Forest Lake
Primary County: Washington

Survey Date: 04/05/1999
Inventory Number: 82-0168-00

Lake Characteristics

Lake Area (acres): 174.9
Littoral Area (acres): 174.9
Maximum Depth (ft): 4.00
Water Clarity (ft): N/A

Dominant Bottom Substrate: N/A
Abundance of Aquatic Plants: N/A
Maximum Depth of Plant Growth (ft): N/A

Fish Consumption Advisory

No fish consumption information is available for this lake. For more information, see the "Fish Consumption Advice" pages at the Minnesota Department of Health.

Status of the Fishery (as of 04/05/1999)

Bullhead species dominated the trapnet catch. Most were black bullhead, followed in abundance by yellow bullhead and then brown bullhead. The three bullhead species made up 82.2% of the fish caught, yellow perch 10.7%, black crappie 3.0%, and northern pike 2.3%. The remaining 1.8% was made up of bluegill, carp, pumpkinseed sunfish, tadpole madtom, and white sucker.

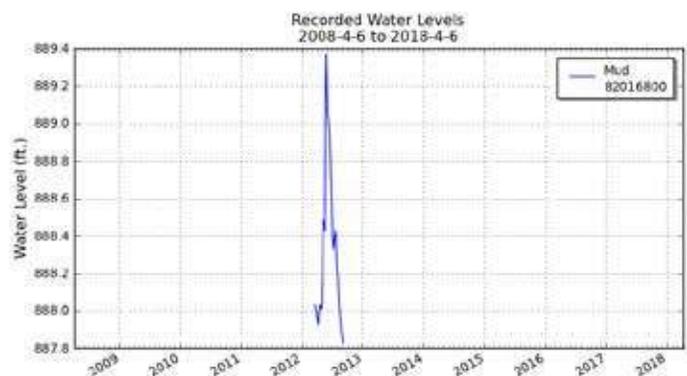
Lake water level report

Water Level Data

Period of record: 11/04/1987 to 09/06/2012
of readings: 72
Highest recorded: 889.37 ft (05/29/2012)
Lowest recorded: 887.11 ft (10/12/1999)
Recorded range: 2.26ft
Last reading: 887.83 ft (09/06/2012)
OHW elevation: N/A
Datum: (ft)

Benchmarks

No benchmark information available.



Lake Information Report

Name: Rondeau

County: Anoka

Nearest Town: Centerville
 Primary County: Anoka

Survey Date: 06/28/1950
 Inventory Number: 02-0015-00

Public Access Information

No designated public access. Possible from outlet ditch on E side.

Lake Characteristics

Lake Area (acres): 275.00
 Littoral Area (acres): 275.00
 Maximum Depth (ft): 7.00
 Water Clarity (ft): 5.1

Dominant Bottom Substrate: N/A
 Abundance of Aquatic Plants: N/A
 Maximum Depth of Plant Growth (ft): N/A

Fish Consumption Advisory

No fish consumption information is available for this lake. For more information, see the "Fish Consumption Advice" pages at the Minnesota Department of Health.

Status of the Fishery (as of 06/28/1950)

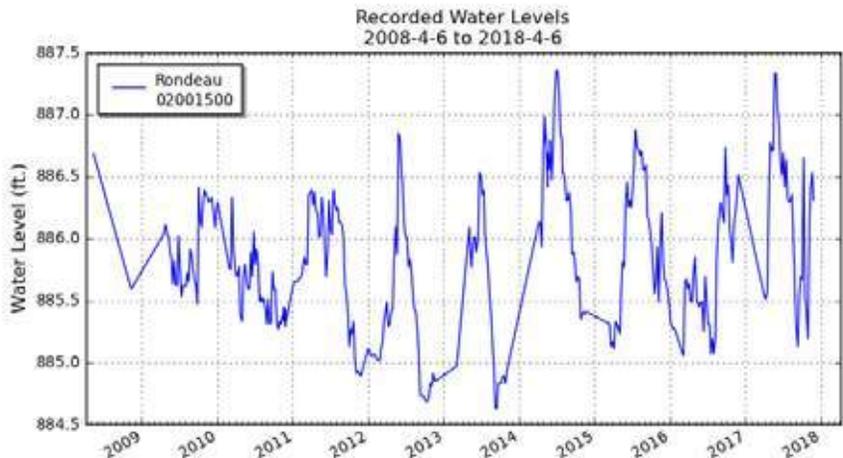
A limited number of northern pike are believed to be present in Rondeau lake. Carp and bullheads are also present but their numbers are probably controlled by winter-kills which occur quite frequently.

Lake Water Level Report

Lake Name: Rondeau

Water Level Data

Period of record: 05/22/1986 to 11/27/2017
 # of readings: 832
 Highest recorded: 887.35 ft (06/30/2014)
 Lowest recorded: 884.63 ft (09/09/2013)
 Recorded range: 2.72 ft
 Last reading: 886.31 ft (11/27/2017)
 OHW elevation: N/A
 Datum: (ft)



Benchmarks

Elevation: 888.57 ft
 Datum: NGVD 29 (ft)

Date Set: 06/08/1992

Benchmark Location
 Township: 31 Range: 22 Section: 2

Description: Found 2013. Top left end of right abutment of outlet dam on east side of lake, Rondeau Lake Rd E, Lino Lakes. [Note: Add 0.04' to NGVD 1929 elevations to obtain NAVD 1988 datum.]

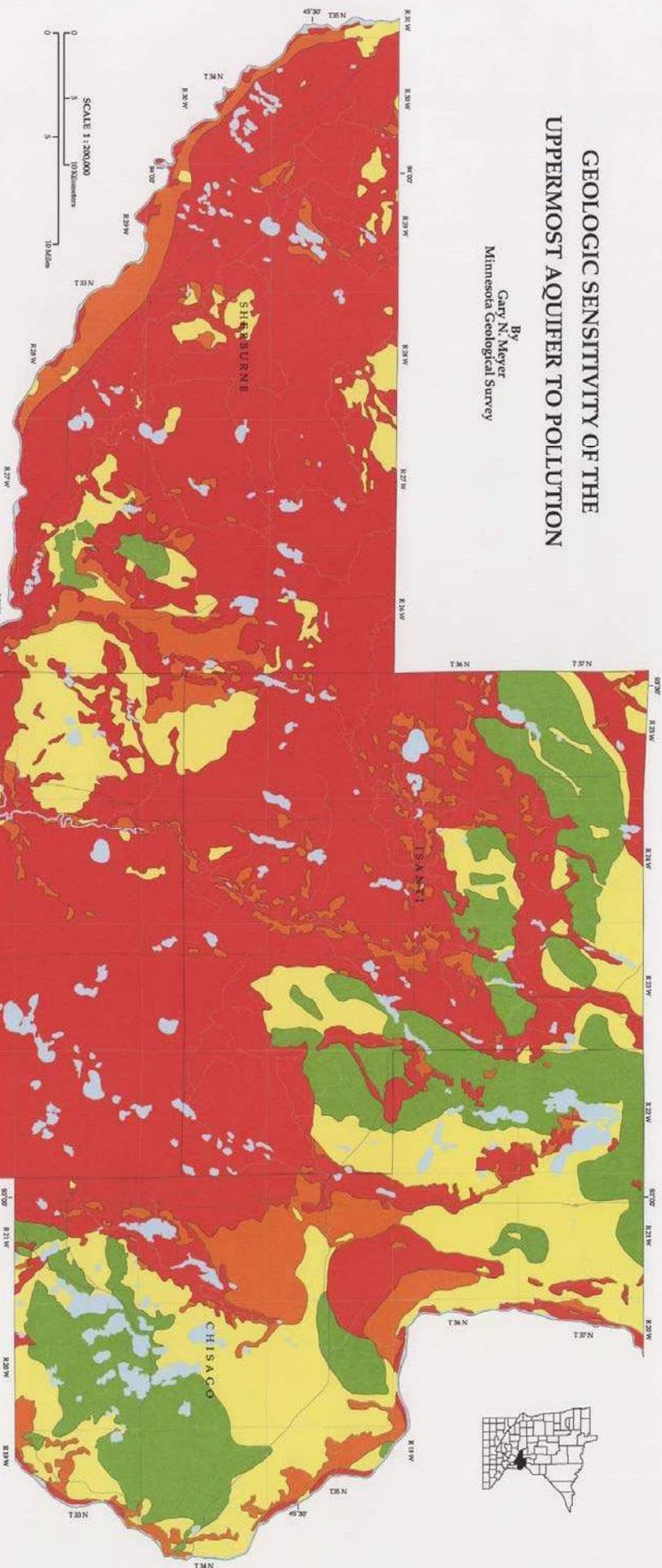


Appendix B

Groundwater Sensitivity to Pollution Map

GEOLOGIC SENSITIVITY OF THE UPPERMOST AQUIFER TO POLLUTION

By
Gary N. Meyer
Minnesota Geological Survey



ASSESSING GEOLOGIC SENSITIVITY TO POLLUTION

Geologic sensitivity is the potential due to geologic characteristics for surface contaminants to reach ground water resources. The map portrays an estimate of the sensitivity of the uppermost aquifer to pollution. Travel times are controlled by the permeability and thickness of the geologic materials through which contaminants would move. The sensitivity of an aquifer is inversely proportional to the time of travel. Longer travel times are associated with both a greater degree of geologic protection and reduced sensitivity to ground-water pollution. Shorter travel times represent an increased sensitivity to ground-water pollution. However, travel times represent an estimate. However, high sensitivity does not insure that water quality has or will be degraded. Low sensitivity does not guarantee that ground water will remain pristine.

The geologic sensitivity of the study area was evaluated following a modified version of the guidelines set forth in a recent publication of the Minnesota Department of Natural Resources (1991). The rating matrix shows how sensitivity based on materials at the surface is consistent with the guidelines principle that the top 10 feet of the unsaturated zone be ignored because of the possible presence of "direct pathways" opened by animal burrows, root casts, or fractures and joints caused by frost action or desiccation. Organic deposits shown on the surface geology map were ignored because of their potential to act as a barrier to downward movement of water. Although throughout study areas contain mostly of sand and gravel at depth and therefore was grouped in the rating matrix with other sands and gravels.

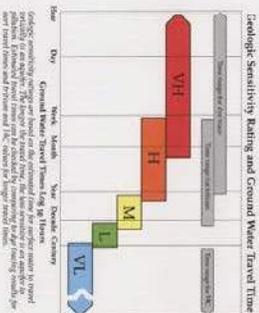
Assessment of the unsaturated materials above the water table was combined on the map with assessment of the uppermost aquifer where no water-table aquifer was present. This composite map of the uppermost aquifer in the study area is suitable for general planning and ground-water protection activities.

Ground water recharge data confirmed the generally high sensitivity ratings as discussed on Plate 2, Water-Table Hydrogeology. The presence of tritium in all sampled wells less than 131 feet deep confirmed ground-water recharge times of less than a decade or two and sensitivity ratings of High to Very High.

The geologic sensitivity of the uppermost aquifer in the Anoka Sand Plain study area is generally Very High in Anoka, Isanti and Sherburne Counties. Isanti County has the county with the lowest sensitivity in the east-central and northern part of the county, reflecting the lower permeability of surficial till deposits. Chisago County has the greatest extent of Moderate and Low sensitivity areas, again reflecting the greater occurrence of lower permeability materials at or near the surface.

REFERENCE CITED

Geologic Sensitivity Workshop, 1991. Criteria and guidelines for assessing geologic sensitivity of ground water resources in Minnesota. Minnesota Department of Natural Resources, Division of Waters, St. Paul, 172 p.



Matrix For Rating the Geologic Sensitivity of the Uppermost Aquifer

Geologic material of the top 10 feet of the uppermost aquifer	Sand and gravel	Sandy till	Clayey till or clayey till
Depth to uppermost aquifer (ft)	<20	>20	>20
No sandy till, clay or heavy to clayey till	VH	H	VH
Sandy till, clay or heavy to clayey till <10 feet thick	VH	H	M
Sandy till >10 feet thick	M	M	M
Clay or heavy to clayey till <10 feet thick	L	L	L
Clay or heavy to clayey till >10 feet thick	L	L	L

SENSITIVITY RATINGS

Estimated travel time for water-borne contaminants at the land surface to reach the uppermost aquifer

- Very High
- Higher to months
- High
- Moderate
- Years to decades
- Low
- Decades to a century
- Water
- Unrated

The information is available in an alternative format upon request. For more information, contact the Minnesota Department of Natural Resources, Division of Waters, 500 University Avenue, St. Paul, MN 55103. Phone: 651/224-2400. TDD: 651/224-2400. Fax: 651/224-2401. MN Toll Free 1-800-756-6400. MN Toll Free 1-800-657-5292.

Regional Assessment Series
Assessment RHA-1, Plate 3
Pollution Sensitivity
Water-Table System



This Page Left Blank Intentionally



Appendix C

Hardwood Creek TMDL Fact Sheet



Minnesota
Pollution
Control
Agency

Hardwood Creek Total Maximum Daily Load

Impaired Biota (Fish) and Low Dissolved Oxygen

Water Quality/Impaired Water #8.15a • February 2009

The list of impaired waters developed by the Minnesota Pollution Control Agency (MPCA) includes Hardwood Creek, located in the Rice Creek watershed in Washington and Anoka counties. Hardwood Creek is listed as impaired for biota (fish) on the lower portion of the creek (downstream of Highway 61), and low dissolved oxygen (DO) for the full length of the creek. The natural background level of DO is used as the water quality endpoint above Highway 61 due to naturally low oxygen levels occurring in that wetland-dominated part of the watershed.

A Total Maximum Daily Load (TMDL) study began in 2004 and addresses the impairments on Hardwood Creek. The TMDL is a collaborative effort between the MPCA and Rice Creek Watershed District. The technical lead under contract has been Emmons and Olivier Resources, Inc.

Description of water body

The upper two-thirds of Hardwood Creek is also known as Washington County Judicial Ditch #2 and originates south of Rice Lake. The watershed is predominantly made up of agricultural or undeveloped land.

Water quality impairments

A stream listed for “impaired biota (fish)” means that the stream is not supporting an appropriate quantity and/or diversity of native fish. Through a stressor identification process, the primary causes of the impairment in the creek were identified. In this case, excess sedimentation and low DO were identified as the primary causes. The TMDL for the biological impairment is based on total suspended solids (TSS) loads, which address sedimentation. Various candidate mechanisms affecting DO were identified and ultimately may all play a role in DO levels to varying degrees. However, the low DO TMDL focuses on biochemical oxygen demand (BOD) loading, which was identified as a significant stressor during 2004. BOD is a measure of oxygen-consuming organic matter additions to the water body (e.g., manure, top soil, leaves, etc.).



This study used a variety of methods to evaluate the current loading, contributions by the various pollutant sources, as well as the allowable pollutant loading capacity of the creek. It is estimated that the average TSS concentration will need to be decreased approximately 14 percent, and the average BOD concentration will need to be decreased approximately 30 percent.

Implementation strategies

Needed loading reductions from regulated urban stormwater runoff sources will be achieved through updating stormwater pollution prevention programs. Implementation of nonpoint source reduction may be achieved through nonregulatory and voluntary incentive programs. A variety of mechanisms, such as stream bank stabilization, enhancement of riparian buffers, livestock management, stormwater management, and cost share best management programs will be evaluated and used

to achieve needed loading reductions. Development of a more specific implementation plan will follow U.S. Environmental Protection Agency approval of the TMDL study.

More information

For more information on this TMDL project contact:

MPCA, St. Paul, 651-296-6300 or 800-657-3864

Matt Kocian, Rice Creek Watershed District,
763-398-3075

The draft TMDL report will be available on the Web at:
www.pca.state.mn.us/water/tmdl/tmdl-draft.html.

General information on TMDLs can be found on the Web at: www.pca.state.mn.us/water/tmdl/ and www.epa.gov/owow/tmdl/.



Appendix D

Statewide Mercury TMDL Fact Sheet



**Minnesota
Pollution
Control
Agency**

Draft Statewide Mercury TMDL Study

Impaired Waters fact sheet 4-01a, August 2006

Contents

Minnesota’s impaired waters..... 1
 Why is mercury a problem? 1
 Minnesota’s regional approach to the mercury TMDL 1
 Water quality standards for mercury 2
 Source assessment and reduction allocation ... 2
 MPCA is responding to comments and making the TMDL final..... 2

Minnesota’s impaired waters

The federal Clean Water Act requires the states to develop water-quality standards to protect the designated uses of their waters, and to monitor their waters to ensure they meet the standards.

Surface waters not meeting the standards are “impaired” for the pollutants and are listed by the states as impaired waters. For each impairment, the act requires a pollutant-loading study called a Total Maximum Daily Load, or TMDL.

The 2006 Impaired Waters list of the Minnesota Pollution Control Agency (MPCA) shows 1,312 mercury impairments, including 442 impairments on rivers and 870 impairments on lakes.

The state is responsible for the development of TMDLs, and this fact sheet describes Minnesota’s approach to TMDLs for mercury.

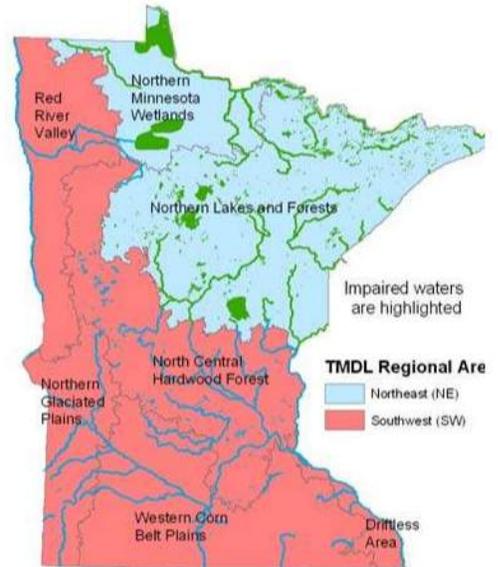
The MPCA has prepared a draft statewide TMDL study for mercury for review and approval by the U.S. Environmental Protection Agency (EPA). The document describes the impairment, its sources, and a pollution-reduction goal that will enable the impaired water bodies covered by the TMDL to meet standards.

Why is mercury a problem?

Excess mercury in fish can cause serious human health problems. According to the Minnesota Department of Health’s Fish Consumption Advisory program, “Young children, developing fetuses and breast-fed babies are at most risk, because small amounts of mercury can damage a brain that is just starting to form or grow. Too much mercury may affect a child’s

behavior and lead to learning problems later in life.”

2006 Minnesota Regional Mercury TMDLs



Minnesota’s regional approach to the mercury TMDL

The mercury in Minnesota’s fish comes almost entirely from atmospheric deposition, with approximately 90 percent originating outside the state. Sources are both anthropogenic (from human activities) and natural, with the former about double the latter.

Mercury moves from the air into fish in complex ways. Northern wetland-dominated aquatic systems tend to have fish-tissue values averaging about 50 percent higher than the rest of the state. As a result, the MPCA has divided the state into two regions, based on ecoregions. The northeast (NE) region comprises the Northern Lakes and Forests ecoregion and the Northern Minnesota Wetlands ecoregion. The rest of the state, called the southwest (SW) region for this project,

wq-iw4-01a

comprises the North Central Hardwood Forest ecoregion, the Red River Valley ecoregion, the Western Corn Belt Plains ecoregion, and the Driftless area.

Because so much of the excess mercury comes from outside the state and because atmospheric deposition is relatively uniform across the state, the MPCA has chosen a regional approach to developing the required pollution-reduction goals for mercury.

Water-quality standards for mercury

Three water-quality standards are involved:

- the statewide fish-tissue criterion of 0.2 milligrams mercury per kilogram (mg/kg),
- the Lake Superior Basin water-column standard of 1.3 nanograms per liter (ng/l), and
- the non-Lake Superior Basin water-column standard of 6.9 ng/l.

Because mercury accumulates as it moves up the biological food web, when the mercury content of top predator fish such as northern pike and walleye meets the standard, so will the rest of the food web and the water column.

Using 1990 as the baseline, the 90th percentile mercury concentration in a standard-length walleye was 0.57 mg/kg in the NE region and 0.41 mg/kg in the SW region. To achieve the numeric target, 0.2 mg/kg, mercury levels must drop 65 percent in the NE region and 51 percent in the SW region.

Source assessment and reduction allocation

About 30 percent of the mercury deposited by air in Minnesota originates from natural sources, such as volcanoes. About 60 percent comes from human activities outside the state, such as coal-fired power plants and mining. The remaining 10 percent originates in the state.

Since natural sources are not controllable, the 65 percent reduction must come from the 70 percent of mercury deposition that is from anthropogenic sources, which translates to a 93 percent reduction goal for anthropogenic sources from 1990 levels. This mercury emissions goal is driven by the greater reduction needed in the NE region because air deposition is relatively uniform across the state.

Given Minnesota sources contribute only 10 percent of the mercury deposition, the state's share of the allocated

reduction is also relatively small. Taking that a 10 percent share of the 70 percent that is controllable (10 percent divided by 70 percent of the total) means the state share is 14 percent of emissions; and the non-state share is 86 percent of emissions. Thus, the federal government and international sources will have an 86 percent share of the mercury-reduction goal.

Since 1990, Minnesota has substantially reduced mercury releases to the environment, especially from manufactured products. As of 2005, the MPCA estimates that air emissions in the state have declined by 70 percent, to about 3,341 pounds (lb.) per year. To reach the 93 percent reduction goal established in the draft TMDL, sources in the state will need to reduce annual emissions by an additional 2,552 lb. When the goal is met, Minnesota sources will have reduced annual emissions to 789 lb.

Because wastewater point sources of mercury are less than one-half of 1 percent (0.5%) of total mercury deposition in the state, there is a small reserve capacity for water dischargers, but not air sources of mercury.

MPCA is responding to comments and making the TMDL final.

The MPCA requested comments on its Draft Mercury TMDL during a formal, 90-day comment period that ended in October 2005. The MPCA responded to the 973 comments it received, and prepared a final draft TMDL. With the MPCA Citizens' Board's approval of the final draft TMDL in July 2006, the MPCA will continue the process of developing an implementation plan for meeting the reduction goal established by the TMDL.

To be covered in the Mercury TMDL, water bodies must meet water-quality standards after the mercury-reduction goals are achieved. Of the impairments on the 2006 list, 334 lake impairments and 178 river impairments meet the requirement and are included in the final draft TMDL.

For more information about the statewide mercury TMDL study, call Howard Markus at (651) 296-7295 or (800) 657-3864. The draft mercury TMDL may be seen on the MPCA's Web site at www.pca.state.mn.us/water/tmdl/index.html#drafttmdl.

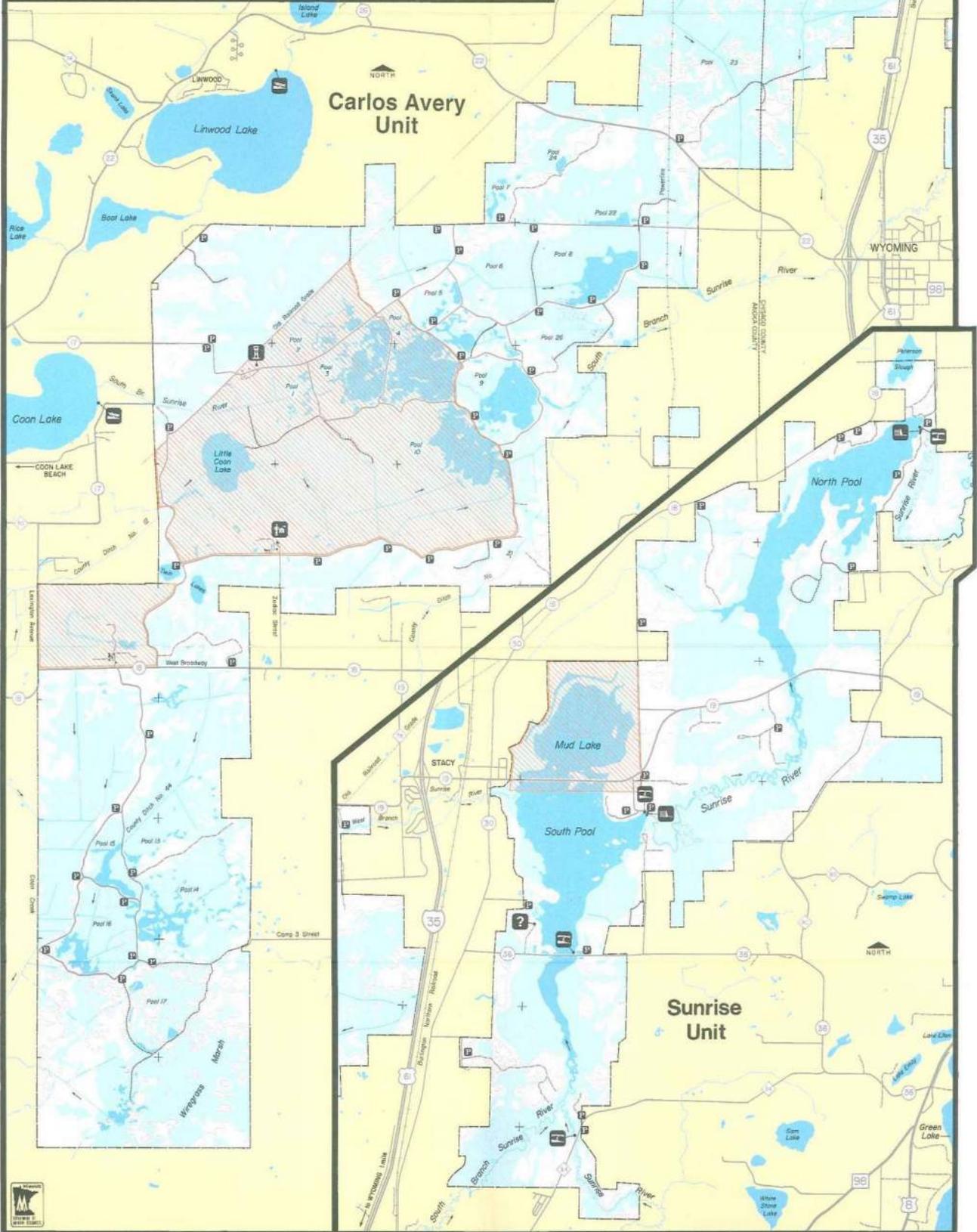


Appendix E

Carlos Avery Wildlife Management Area Map

Carlos Avery Wildlife Management Area

- WMA Headquarters
- Information (self service)
- Parking Areas
- Boat Ramp
- Carry-in Access
- Dam
- Fire Tower
- WMA Boundary
- Sanctuary
- Roads & Dike Roads
- Trails



CARLOS AVERY

Wildlife Management Area

Minnesota Department of Natural Resources

This information is available in alternative format upon request.



Printed on recycled paper with a minimum of 30% post-consumer material.



The 23,000 acre Carlos Avery Wildlife Management Area is located 30 miles north of the Twin Cities near Forest Lake. The W.M.A. headquarters is 7 miles west of Forest Lake and one mile north of Anoka County Road 18 on Zodiac Street.

GENERAL DESCRIPTION

The Carlos Avery W.M.A., with its extensive marshes, was purchased by the Minnesota Conservation Commission in 1933 after the Cox Carpet Company allowed the land to become tax forfeited.

The Carlos Avery lies on the Anoka Sand Plain, an area of poorly drained sandy soil with low fertility. Most of the area is not suited for agriculture. The area is about one-third upland and two-thirds wetland. Uplands consist of forests, grasslands and fields. Wetlands are about half shallow marsh and half open water.

Forty-six miles of roads and more than 23 miles of trails and firebreaks provide access to the unit. More than 6,000 wetland acres are impounded by 21 miles of dike.

WILDLIFE MANAGEMENT

The Carlos Avery W.M.A. was established for wildlife production, public hunting, and trapping and other uses compatible with wildlife management.

On the W.M.A. various plant communities are managed to provide an interspersion of critical habitat components and by regulating public use.

Forests are managed primarily to promote a diversity of different aged plant communities. Selective cutting is done by the public with wood cutting permits. Oak savanna, aspen and conifer stands are maintained in suitable locations. Grass nesting cover is maintained by mowing and burning under controlled conditions. At least 150 acres of food plots are planted each year to provide a reliable winter food source for resident wildlife.

Water levels in many of the wetlands are regulated via a system of dikes and control structures to produce the types of vegetation favored by many species of furbearers and waterfowl. Other techniques used to increase the value of wetlands include prescribed burning and level ditching. Cattail stands are managed by water level control and mechanical treatment.

RECREATIONAL OPPORTUNITIES

Public hunting is the primary outdoor recreational use of the Carlos Avery W.M.A. with waterfowl, deer, and squirrel the most sought after species. Trappers harvest from good populations of mink, muskrat, raccoon, and beaver. The variety of habitats attract almost 272 species of birds, so the area is very popular for bird watching.

OTHER FACILITIES

Also located at the Carlos Avery W.M.A. are:

- North Metro Area Wildlife Office for Anoka, Washington, and Ramsey County.
- Forestry, Metro Fire Base.
Phone: 651-982-9720

WILDLIFE MANAGEMENT AREA RULES

Activities permitted on the Carlos Avery Wildlife Management Area:

- Hunting in accordance with state regulations.
- Hiking both on and off designated trails.
- Picking fruit and mushrooms.
- Bird watching and nature study.

Activities requiring a permit:

- Trapping on the W.M.A.
- Cutting fuelwood for home use.
- Activities between 10:00 p.m. and 4:00 a.m.

It is unlawful while in a designated W.M.A. to:

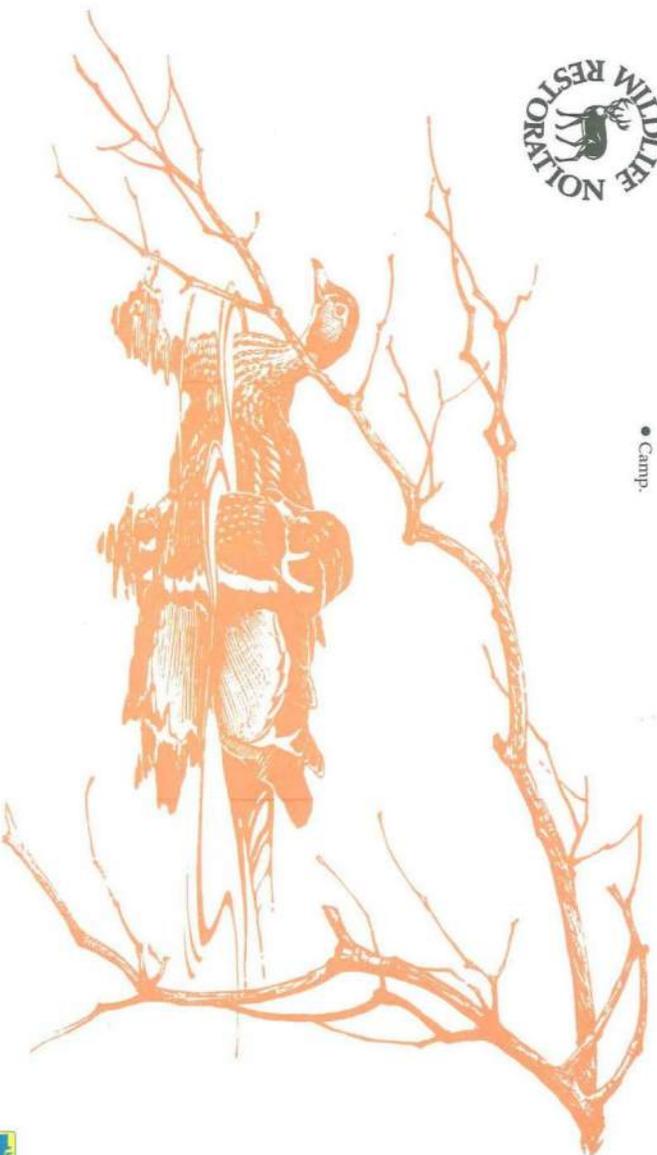
- Target shoot.
- Operate snowmobiles or all-terrain vehicles.
- Ride horses.
- Camp.

FOR MORE INFORMATION

Carlos Avery W.M.A. Office
18310 Zodiac Street
Forest Lake, MN 55025
Phone: (651) 296-5290

North Metro Area Wildlife Office
5463 West Broadway
Forest Lake, MN 55025
Phone: (651) 296-5200

Department of Natural Resources
Section of Wildlife
500 Lafayette Road
St. Paul, MN 55155-4007
Phone: (651) 296-3344



© 6/2001 by State of Minnesota,
Department of Natural Resources





Appendix F

Capital Improvement Plan (CIP)

Appendix F: Storm Water Implementation Plan

No.	Project Name	10 Year Total Cost Estimate	Possible Funding Source	Estimated Cost By Year							Comments										
				2018	2019	2020	2021	2022	2023	2024		2025	2026	2027							
Capital Improvement Projects																					
1	Hornsby Street North Realignment Stormwater/Ponding	\$390,000	LRP, Assessments		\$390,000																
2	ACD 15 / Hornsby Street Regional Ponding	\$2,000,000	Assessments, City General Fund, RCWD						\$1,000,000	\$1,000,000											
3	Pine Street Ditch & Regional Stormwater	\$20,000	Assessments			\$20,000															
4	Hornsby Street South Expansion Stormwater	\$50,000	City General Fund				\$50,000														
Additional Operations and Maintenance Activities																					
5	Street Sweeping	\$50,000	City Public Works Budget	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	
6	General Ditch & Culvert Maintenance	\$100,000	City Public Works Budget	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	
7	Ditch & Culvert Inspections	\$5,000	City Public Works Budget	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	
8	Pond Inspections	\$25,000	City Public Works Budget	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	
9	Pond Maintenance	\$50,000	City Public Works Budget	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	
10	General Maintenance Placeholder	\$100,000	City Public Works Budget	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	
11	Education and Outreach	\$5,000	City General Fund	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	
12	Construction Site Inspections	\$10,000	General Fund - Building Inspections	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	
13	Site Plan Review	\$10,000	City Public Works Budget	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	
14	BMP Maintenance Program	\$15,000	City Public Works Budget	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	
Total Estimated Annual Cost				\$37,000	\$427,000	\$57,000	\$1,087,000	\$1,037,000	\$37,000	\$37,000	\$37,000	\$37,000	\$37,000	\$37,000	\$37,000	\$37,000	\$37,000	\$37,000	\$37,000	\$37,000	
Capital Annual Subtotal				\$0	\$390,000	\$20,000	\$1,050,000	\$1,000,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Operations Annual Subtotal				\$37,000	\$37,000	\$37,000	\$37,000	\$37,000	\$37,000	\$37,000	\$37,000	\$37,000	\$37,000	\$37,000	\$37,000	\$37,000	\$37,000	\$37,000	\$37,000	\$37,000	\$37,000
Funding by Others Annual Subtotal				\$0	\$39,000	\$0	\$50,000	\$50,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

DRAFT

2016 WATER SUPPLY PLAN



COLUMBUS, MINNESOTA

**Date: February 14,
2017
Project No. 16079.000**



444 Cedar Street, Suite 1500
Saint Paul, MN 55101
651.292.4400
tkda.com

Table of contents

INTRODUCTION TO WATER SUPPLY PLANS (WSP) 5

 Who needs to complete a Water Supply Plan 5

 Groundwater Management Areas (GWMA) 5

 Benefits of completing a WSP 5

 WSP Approval Process 6

PART 1. WATER SUPPLY SYSTEM DESCRIPTION AND EVALUATION 8

 A. Analysis of Water Demand 8

 B. Treatment and Storage Capacity 10

 Treatment and storage capacity versus demand 11

 C. Water Sources 11

 Limits on Emergency Interconnections 12

 D. Future Demand Projections – *Key Metropolitan Council Benchmark* 12

 Water Use Trends 12

 E. Resource Sustainability 13

 Monitoring – *Key DNR Benchmark* 13

 Water Level Data 14

 Potential Water Supply Issues & Natural Resource Impacts – *Key DNR & Metropolitan Council Benchmark* 15

 Wellhead Protection (WHP) and Surface Water Protection (SWP) Plans 18

 F. Capital Improvement Plan (CIP) 19

 Adequacy of Water Supply System 19

 Proposed Future Water Sources 20

 Water Source Alternatives - *Key Metropolitan Council Benchmark* 20

Part 2. Emergency Preparedness Procedures 21

 A. Federal Emergency Response Plan 21

 B. Operational Contingency Plan 21

 C. Emergency Response Procedures 22

Emergency Telephone List22

Current Water Sources and Service Area22

Procedure for Augmenting Water Supplies22

Allocation and Demand Reduction Procedures23

Notification Procedures25

Enforcement26

PART 3. WATER CONSERVATION PLAN27

 Progress since 2006 28

 A. Triggers for Allocation and Demand Reduction Actions..... 29

 B. Conservation Objectives and Strategies – *Key benchmark for DNR* 29

 Objective 1: Reduce Unaccounted (Non-Revenue) Water loss to Less than 10%29

 Objective 2: Achieve Less than 75 Residential Gallons per Capita Demand (GPCD).....31

 Objective 3: Achieve at least a 1.5% per year water reduction for Institutional, Industrial, Commercial, and Agricultural GPCD over the next 10 years or a 15% reduction in ten years.....32

 Objective 4: Achieve a Decreasing Trend in Total Per Capita Demand33

 Objective 5: Reduce Peak Day Demand so that the Ratio of Average Maximum day to the Average Day is less than 2.6.....34

 Objective 6: Implement a Conservation Water Rate Structure and/or a Uniform Rate Structure with a Water Conservation Program34

 Objective 7: Additional strategies to Reduce Water Use and Support Wellhead Protection Planning.....36

 Objective 8: Tracking Success: How will you track or measure success through the next ten years?37

 A. Regulation 37

 B. Retrofitting Programs 38

 Retrofitting Programs 39

 C. Education and Information Programs..... 39

 Proposed Education Programs39

Part 4. ITEMS FOR METROPOLITAN AREA COMMUNITIES43

City of Columbus, MN – Water Supply Plan

A. Water Demand Projections through 2040..... 43

B. Potential Water Supply Issues 43

C. Proposed Alternative Approaches to Meet Extended Water Demand Projections 43

D. Value-Added Water Supply Planning Efforts (Optional) 44

 Source Water Protection Strategies 44

 Technical assistance..... 44

GLOSSARY 45

 Acronyms and Initialisms 47

 Appendix 1: Well records and maintenance summaries 49

 Appendix 2: Water level monitoring plan 53

 Appendix 3: Water level graphs for each water supply well 55

 Appendix 4: Capital Improvement Plan 59

 Appendix 5: Emergency Telephone List 60

 Appendix 6: Cooperative Agreements for Emergency Services..... 62

 Appendix 7: Municipal Critical Water Deficiency Ordinance..... 63

 Appendix 8: Graph showing annual per capita water demand for each customer category during the last ten-years..... 65

 Appendix 9: Water Rate Structure 67

 Appendix 10: Adopted or proposed regulations to reduce demand or improve water efficiency 69

 Appendix 11: Implementation Checklist..... 70

DEPARTMENT OF NATURAL RESOURCES – DIVISION OF ECOLOGICAL AND WATER RESOURCES AND METROPOLITAN COUNCIL

INTRODUCTION TO WATER SUPPLY PLANS (WSP)

Who needs to complete a Water Supply Plan

Public water suppliers serving more than 1,000 people, large private water suppliers in designated Groundwater Management Areas, and all water suppliers in the Twin Cities metropolitan area are required to prepare and submit a water supply plan.

The goal of the WSP is to help water suppliers: 1) implement long term water sustainability and conservation measures; and 2) develop critical emergency preparedness measures. Your community needs to know what measures will be implemented in case of a water crisis. A lot of emergencies can be avoided or mitigated if long term sustainability measures are implemented.

Groundwater Management Areas (GWMA)

The DNR has designated three areas of the state as Groundwater Management Areas (GWMAs) to focus groundwater management efforts in specific geographies where there is an added risk of overuse or water quality degradation. A plan directing the DNR's actions within each GWMA has been prepared. Although there are no specific additional requirements with respect to the water supply planning for communities within designated GWMAs, communities should be aware of the issues and actions planned if they are within the boundary of one of the GWMAs. The three GWMAs are the North and East Metro GWMA (Twin Cities Metro), the Bonanza Valley GWMA and the Straight River GWMA (near Park Rapids). Additional information and maps are included in the DNR webpage at <http://www.dnr.state.mn.us/gwmp/areas.html>

Benefits of completing a WSP

Completing a WSP using this template, fulfills a water supplier's statutory obligations under M.S. [M.S.103G.291](#) to complete a water supply plan. For water suppliers in the metropolitan area, the WSP will help local governmental units to fulfill their requirements under M.S. 473.859 to complete a local comprehensive plan. Additional benefits of completing WSP template:

- The standardized format allows for quicker and easier review and approval.
- Help water suppliers prepare for droughts and water emergencies.
- Create eligibility for funding requests to the Minnesota Department of Health (MDH) for the Drinking Water Revolving Fund.
- Allow water suppliers to submit requests for new wells or expanded capacity of existing wells.
- Simplify the development of county comprehensive water plans and watershed plans.
- Fulfill the contingency plan provisions required in the MDH wellhead protection and surface water protection plans.
- Fulfill the demand reduction requirements of Minnesota Statutes, section 103G.291 subd 3 and 4.

City of Columbus, MN – Water Supply Plan

- Upon implementation, contribute to maintaining aquifer levels, reducing potential well interference and water use conflicts, and reducing the need to drill new wells or expand system capacity.
- Enable DNR to compile and analyze water use and conservation data to help guide decisions.
- Conserve Minnesota’s water resources

If your community needs assistance completing the Water Supply Plan, assistance is available from your area hydrologist or groundwater specialist, the MN Rural Waters Association circuit rider program, or in the metropolitan area from Metropolitan Council staff. Many private consultants are also available.

WSP Approval Process

10 Basic Steps for completing a 10-Year Water Supply Plan

1. Download the DNR/Metropolitan Council Water Supply Plan Template www.mndnr.gov/watersupplyplans
2. Save the document with a file name with this naming convention: WSP_cityname_permitnumber_date.doc.
3. The template is a form that should be completed electronically.
4. Compile the required water use data (Part 1) and emergency procedures information (Part 2)
5. The Water Conservation section (Part 3) may need discussion with the water department, council, or planning commission, if your community does not already have an active water conservation program.
6. Communities in the seven-county Twin Cities metropolitan area should complete all the information discussed in Part 4. The Metropolitan Council has additional guidance information on their webpage <http://www.metrocouncil.org/Handbook/Plan-Elements/Water-Resources/Water-Supply.aspx>. All out-state water suppliers do *not* need to complete the content addressed in Part 4.
7. Use the Plan instructions and Checklist document to insure all data is complete and attachments are included. This will allow for a quicker approval process. www.mndnr.gov/watersupplyplans
8. Plans should be submitted electronically – no paper documents are required. <https://webapps11.dnr.state.mn.us/mpars/public/authentication/login>
9. DNR hydrologist will review plans (in cooperation with Metropolitan Council in Metro area) and approve the plan or make recommendations.
10. Once approved, communities should complete a Certification of Adoption form, and send a copy to the DNR.

City of Columbus, MN – Water Supply Plan

Complete Table 1 with information about the public water supply system covered by this WSP.

Table 1. General information regarding this WSP

Requested Information	Description
DNR Water Appropriation Permit Number(s)	2009-0641
Ownership	<input checked="" type="checkbox"/> Public or <input type="checkbox"/> Private
Metropolitan Council Area	<input checked="" type="checkbox"/> Yes or <input type="checkbox"/> No (and county name)
Street Address	16319 Kettle River Blvd.
City, State, Zip	Columbus, MN 55025
Contact Person Name	Elizabeth Mursko
Title	City Administrator
Phone Number	651-464-3120
MDH Supplier Classification	Municipal

DRAFT

PART 1. WATER SUPPLY SYSTEM DESCRIPTION AND EVALUATION

The first step in any water supply analysis is to assess the current status of demand and availability. Information summarized in Part 1 can be used to develop Emergency Preparedness Procedures (Part 2) and the Water Conservation Plan (Part 3). This data is also needed to track progress for water efficiency measures.

A. Analysis of Water Demand

Complete Table 2 showing the past 10 years of water demand data.

- Some of this information may be in your Wellhead Protection Plan.
- If you do not have this information, do your best, call your engineer for assistance or if necessary leave blank.

If your customer categories are different than the ones listed in Table 2, please describe the differences below:

Water Supplier Services includes water bled to keep system potable.

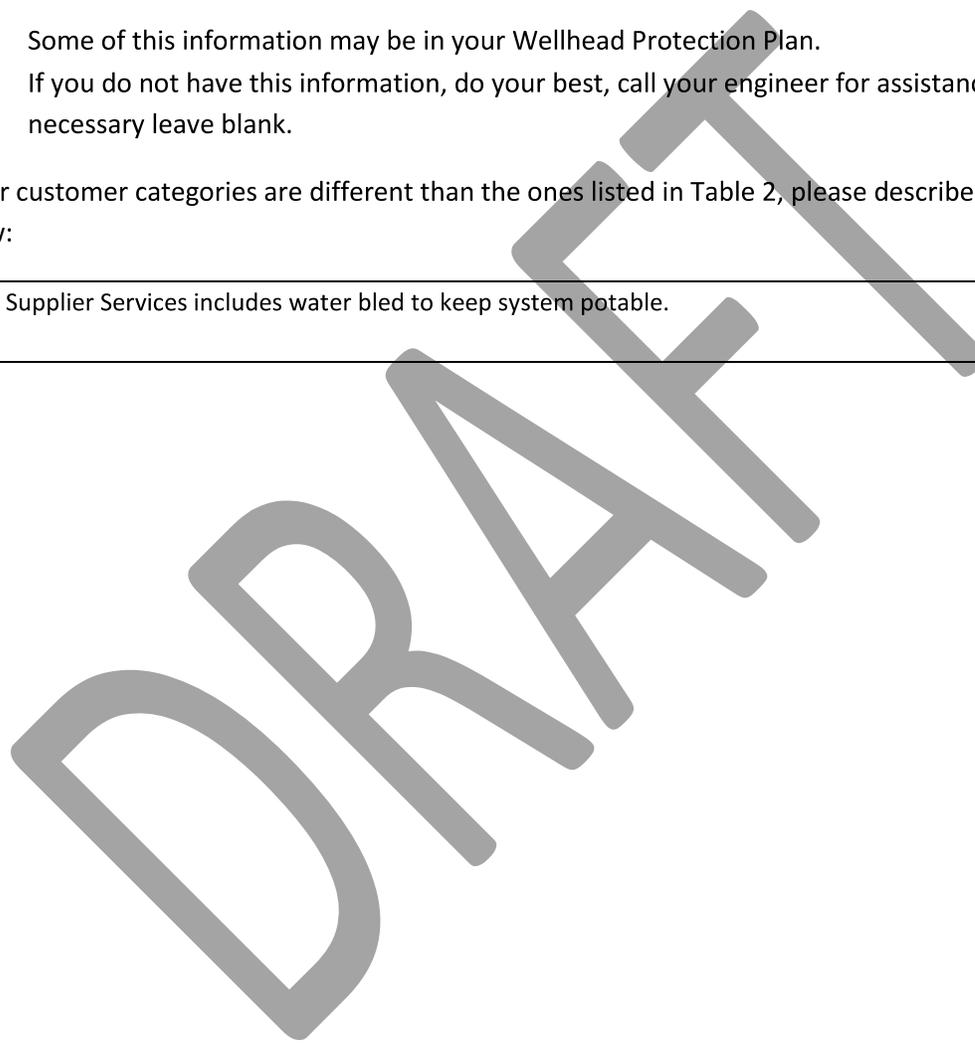


Table 2. Historic water demand (see definitions in the glossary after Part 4 of this template)

Year	Residential Pop. Served	Total Connections (Includes C/I/I)	Residential Water Delivered (MG)	C/I/I Water Delivered (MG)	Total Water Delivered (MG)	Total Water Pumped (MG)	Water Supplier Services	Percent Unmetered/Unaccounted	Average Daily Demand (MGD)	Max. Daily Demand (MGD)	Date of Max. Demand	Residential Per Capita Demand (GPCD)	C/I/I Per Capita Demand (GPCD)	Total per capita Demand (GPCD)
2007	2	2	0.010	1.135	1.145	2.8	1.627	59%	0.008	0.037	6/27	13	1,555	3,798
2008	2	4	0.085	10.868	10.954	16.0	5.051	32%	0.044	0.094	6/9	117	14,888	21,923
2009	2	4	0.100	15.155	15.255	19.4	4.145	21%	0.053	1.094		136	20,761	26,575
2010	2	5	0.080	14.356	14.436	16.2	1.812	11%	0.045	0.4315	10/11	110	19,665	22,257
2011	2	5	0.082	10.778	10.860	14.9	4.005	27%	0.041	0.5177	6/7	112	14,764	20,362
2012	2	5	0.060	14.974	15.034	16.8	1.748	10%	0.046	0.6443	5/1	82	20,512	22,988
2013	2	6	0.089	13.311	13.400	16.3	2.898	18%	0.045	0.8753	9/12	122	18,234	22,326
2014	3	8	0.109	9.599	9.708	15.7	6.011	38%	0.043	0.952	7/15	100	8,767	14,356
2015	6	12	0.158	10.334	10.492	19.5	9.036	46%	0.054	0.565	10/2	72	4,719	8,917
Avg. 2010 - 2015	3	7	0.096	12.225	12.322	16.573	4.251	25%	0.045	0.664		100	14,444	18,534

MG – Million Gallons MGD – Million Gallons per Day GPCD – Gallons per Capita per Day

See Glossary for definitions

See Appendix 11 for more information on the existing and future use of the system.



City of Columbus, MN – Water Supply Plan

Complete Table 3 by listing the top 10 water users by volume, from largest to smallest. For each user, include information about the category of use (residential, commercial, industrial, institutional, or wholesale), the amount of water used in gallons per year, the percent of total water delivered, and the status of water conservation measures.

Table 3. Large volume users

Customer	Use Category ¹ (Residential, Industrial, Commercial, Institutional, Wholesale)	Amount Used (Gallons per Year)	Percent of Total Annual Water Delivered	Implementing Water Conservation Measures? (Yes/No/Unknown)
Running Aces	Commercial	8,060,885	79.8%	Unknown
Ziegler	Commercial	1,359,450	13.5%	Unknown
Holiday	Commercial	495,180	4.9%	Unknown
M&M Endeavors	Residential	38,900	0.4%	Unknown
Brian Harrington	Residential	35,397	0.3%	Unknown
Michael Hursh	Commercial	30,250	0.3%	Unknown
Leona Preiner	Residential	25,100	0.2%	Unknown
Westmor Industries	Commercial	20,750	0.2%	Unknown
Darwin Long	Residential	17,650	0.2%	Unknown
James Wood	Residential	11,900	0.1%	Unknown

¹ See Appendix 11 for more information about current and future water use categories in Columbus

B. Treatment and Storage Capacity

Complete Table 4 with a description of where water is treated, the year treatment facilities were constructed, water treatment capacity, the treatment methods (i.e. chemical addition, reverse osmosis, coagulation, sedimentation, etc.) and treatment types used (i.e. fluoridation, softening, chlorination, Fe/MN removal, coagulation, etc.). Also describe the annual amount and method of disposal of treatment residuals. Add rows to the table as needed.

Table 4. Water treatment capacity and treatment processes

Treatment Site ID (Plant Name or Well ID)	Year Constructed	Treatment Capacity (GPD)	Treatment Method	Treatment Type	Annual Amount of Residuals	Disposal Process for Residuals	Do You Reclaim Filter Backwash Water?
731131	2006	400	Chemical addition	Polyphosphate addition, chlorination, and fluoridation	0	NA	NA
749393	2007	1,000	Chemical addition		0	NA	NA
749394	2007	1,100	Chemical addition		0	NA	NA
Total	NA	2,500	NA	NA	0	NA	NA

Complete Table 5 with information about storage structures. Describe the type (i.e. elevated, ground, etc.), the storage capacity of each type of structure, the year each structure was constructed, and the primary material for each structure. Add rows to the table as needed.

Table 5. Storage capacity, as of the end of the last calendar year

Structure Name	Type of Storage Structure	Year Constructed	Primary Material	Storage Capacity (Gallons)
1	Elevated storage			
2	Ground storage			
3	Other – Hydromatic tank			7,500
Total	NA	NA	NA	7,500

Treatment and storage capacity versus demand

It is recommended that total storage equal or exceed the average daily demand.

Discuss the difference between current storage and treatment capacity versus the water supplier’s projected average water demand over the next 10 years (see Table 7 for projected water demand):

Over the next ten years, the goal is to increase commercial, industrial, and residential use and reduce the need to flush the system to keep the system potable. Currently, the flushed water to keep the system potable is 54% of pumped water. Over the next 10 years, the goal is to reduce the flushed water, while keeping the pumped volume constant. The City is in the bidding process of adding a 150,000 gallon storage tank to the water supply system. Once complete, the storage capacity will be almost three times the current average demand and forecasted average demand.

C. Water Sources

Complete Table 6 by listing all types of water sources that supply water to the system, including groundwater, surface water, interconnections with other water suppliers, or others. Provide the name of each source (aquifer name, river or lake name, name of interconnecting water supplier) and the Minnesota unique well number or intake ID, as appropriate. Report the year the source was installed or established and the current capacity. Provide information about the depth of all wells. Describe the status of the source (active, inactive, emergency only, retail/wholesale interconnection) and if the source facilities have a dedicated emergency power source. Add rows to the table as needed for each installation.

Include copies of well records and maintenance summary for each well that has occurred since your last approved plan in **Appendix 1**.

Table 6. Water sources and status

Resource Type (Groundwater, Surface water, Interconnection)	Resource Name	MN Unique Well # or Intake ID	Year Installed	Capacity (Gallons per Minute)	Well Depth (Feet)	Status of Normal and Emergency Operations (active, inactive, emergency only, retail/wholesale interconnection))	Does this Source have a Dedicated Emergency Power Source? (Yes or No)
Groundwater	1	731131	2006	400	180	Active	No
Groundwater	2	749393	2007	1,000	168	Active	Yes
Groundwater	3	749394	2007	1,100	396	Active	Yes

Limits on Emergency Interconnections

Discuss any limitations on the use of the water sources (e.g. not to be operated simultaneously, limitations due to blending, aquifer recovery issues etc.) and the use of interconnections, including capacity limits or timing constraints (i.e. only 200 gallons per minute are available from the City of Prior Lake, and it is estimated to take 6 hours to establish the emergency connection). If there are no limitations, list none.

NA

D. Future Demand Projections – Key Metropolitan Council Benchmark

Water Use Trends

Use the data in Table 2 to describe trends in 1) population served; 2) total per capita water demand; 3) average daily demand; 4) maximum daily demand. Then explain the causes for upward or downward trends. For example, over the ten years has the average daily demand trended up or down? Why is this occurring?

- 1) Population served is growing. Though the area the watermain serves is mostly C/I/I, there are two zones that have mixed use for potential future residential customers
- 2) The total per capita water demand is decreasing as the served population increases
- 3) The average daily demand is steady since a certain amount of water (at approximately 20 GPM) needs to be bled from the system to keep it potable. The total water delivered is increasing and is expected to eliminate the need to bleed water from the system by 2025
- 4) The maximum daily demand is increasing as the population served grows and more C/I/I customers move into the watermain service area

Use the water use trend information discussed above to complete Table 7 with projected annual demand for the next ten years. Communities in the seven-county Twin Cities metropolitan area must also include projections for 2030 and 2040 as part of their local comprehensive planning.

Projected demand should be consistent with trends evident in the historical data in Table 2, as discussed above. Projected demand should also reflect state demographer population projections and/or other planning projections.

City of Columbus, MN – Water Supply Plan

Table 7. Projected annual water demand

Year	Projected Total Population	Projected Population Served	Projected Residential Per Capita Water Demand (GPCD)	Projected Average Residential Daily Demand (MGD)	Projected Average C/I/I Daily Demand (MGD)	Projected Average Total Daily Demand (MGD)	Projected Maximum Daily Demand (MGD)
2016	4,012	12	100	0.001	0.033	0.035	0.513
2017	4,064	17	100	0.002	0.034	0.036	0.534
2018	4,116	21	100	0.002	0.036	0.038	0.556
2019	4,168	26	100	0.003	0.037	0.039	0.579
2020	4,220	30	100	0.003	0.038	0.041	0.601
2021	4,293	35	100	0.003	0.039	0.042	0.625
2022	4,366	39	100	0.004	0.040	0.044	0.649
2023	4,439	44	100	0.004	0.041	0.046	0.673
2024	4,512	48	100	0.005	0.042	0.047	0.698
2025	4,585	53	100	0.005	0.044	0.049	0.723
2030	4,950	75	100	0.007	0.051	0.058	0.859
2040	5,500	120	100	0.012	0.068	0.080	1.183

GPCD – Gallons per Capita per Day

MGD – Million Gallons per Day

Projection Method

Describe the method used to project water demand, including assumptions for population and business growth and how water conservation and efficiency programs affect projected water demand:

Population growth is based on projections from Metropolitan Council in the Master Water Supply Plan. As commercial and industrial employment and population growth continues, the amount of water flushed to keep the system potable will decrease. Because of the need to flush the system, the demand will stay relatively constant.

E. Resource Sustainability

Monitoring – Key DNR Benchmark

Complete Table 8 by inserting information about source water quality and quantity monitoring efforts. List should include all production wells, observation wells, and source water intakes or reservoirs. Add rows to the table as needed. Find information on groundwater level monitoring program at:

http://www.dnr.state.mn.us/waters/groundwater_section/obwell/index.html

Table 8. Information about source water quality and quantity monitoring

MN Unique Well # or Surface Water ID	Type of monitoring point	Monitoring program	Frequency of monitoring	Monitoring Method
731131	<input checked="" type="checkbox"/> production well <input type="checkbox"/> observation well <input type="checkbox"/> source water intake <input type="checkbox"/> source water reservoir	<input checked="" type="checkbox"/> routine MDH sampling <input type="checkbox"/> routine water utility sampling <input type="checkbox"/> other	<input type="checkbox"/> continuous <input type="checkbox"/> hourly <input checked="" type="checkbox"/> daily (for quantity) <input checked="" type="checkbox"/> monthly (for quality) <input type="checkbox"/> quarterly <input type="checkbox"/> annually	<input checked="" type="checkbox"/> SCADA <input type="checkbox"/> grab sampling <input type="checkbox"/> steel tape <input type="checkbox"/> stream gauge
749393	<input checked="" type="checkbox"/> production well <input type="checkbox"/> observation well <input type="checkbox"/> source water intake <input type="checkbox"/> source water reservoir	<input checked="" type="checkbox"/> routine MDH sampling <input type="checkbox"/> routine water utility sampling <input type="checkbox"/> other	<input type="checkbox"/> continuous <input type="checkbox"/> hourly <input checked="" type="checkbox"/> daily (for quantity) <input checked="" type="checkbox"/> monthly (for quality) <input type="checkbox"/> quarterly <input type="checkbox"/> annually	<input checked="" type="checkbox"/> SCADA <input type="checkbox"/> grab sampling <input type="checkbox"/> steel tape <input type="checkbox"/> stream gauge
749394	<input checked="" type="checkbox"/> production well <input type="checkbox"/> observation well <input type="checkbox"/> source water intake <input type="checkbox"/> source water reservoir	<input checked="" type="checkbox"/> routine MDH sampling <input type="checkbox"/> routine water utility sampling <input type="checkbox"/> other	<input type="checkbox"/> continuous <input type="checkbox"/> hourly <input checked="" type="checkbox"/> daily (for quantity) <input checked="" type="checkbox"/> monthly (for quality) <input type="checkbox"/> quarterly <input type="checkbox"/> annually	<input checked="" type="checkbox"/> SCADA <input type="checkbox"/> grab sampling <input type="checkbox"/> steel tape <input type="checkbox"/> stream gauge

Water Level Data

A water level monitoring plan that includes monitoring locations and a schedule for water level readings must be submitted as **Appendix 2**. If one does not already exist, it needs to be prepared and submitted with the WSP. Ideally, all production and observation wells are monitored at least monthly.

Complete Table 9 to summarize water level data for each well being monitored. Provide the name of the aquifer and a brief description of how much water levels vary over the season (the difference between the highest and lowest water levels measured during the year) and the long-term trends for each well. If water levels are not measured and recorded on a routine basis, then provide the static water level when each well was constructed and the most recent water level measured during the same season the well was constructed. Also include all water level data taken during any well and pump maintenance. Add rows to the table as needed.

Provide water level data graphs for each well in **Appendix 3** for the life of the well, or for as many years as water levels have been measured. See DNR website for Date Time Water Level http://www.dnr.state.mn.us/waters/groundwater_section/obwell/waterleveldata.html

Table 9. Water level data

Unique Well Number or Well ID	Aquifer Name	Seasonal Variation (Feet)	Long-term Trend in water level data	Water level measured during well/pumping maintenance
731131	Drift	5	<input type="checkbox"/> Falling <input checked="" type="checkbox"/> Stable ¹ <input type="checkbox"/> Rising	MM/DD/YY: ____ MM/DD/YY: ____ MM/DD/YY: ____
749393	Drift	5	<input type="checkbox"/> Falling <input type="checkbox"/> Stable <input checked="" type="checkbox"/> Rising	MM/DD/YY: ____ MM/DD/YY: ____ MM/DD/YY: ____
749394	Ironton-Galesville	5	<input type="checkbox"/> Falling <input type="checkbox"/> Stable <input checked="" type="checkbox"/> Rising	MM/DD/YY: ____ MM/DD/YY: ____ MM/DD/YY: ____

¹ See Appendix 3 for details on the water levels

Potential Water Supply Issues & Natural Resource Impacts – Key DNR & Metropolitan Council Benchmark

Complete Table 10 by listing the types of natural resources that are or could be impacted by permitted water withdrawals. If known, provide the name of specific resources that may be impacted. Identify what the greatest risks to the resource are and how the risks are being assessed. Identify any resource protection thresholds – formal or informal – that have been established to identify when actions should be taken to mitigate impacts. Provide information about the potential mitigation actions that may be taken, if a resource protection threshold is crossed. Add additional rows to the table as needed. See glossary at the end of the template for definitions.

Some of this baseline data should have been in your earlier water supply plans or county comprehensive water plans. When filling out this table, think of what are the water supply risks, identify the resources, determine the threshold and then determine what your community will do to mitigate the impacts.

Your DNR area hydrologist is available to assist with this table.

For communities in the seven-county Twin Cities metropolitan area, the *Master Water Supply Plan Appendix 1 (Water Supply Profiles)*, provides information about potential water supply issues and natural resource impacts for your community.

Table 10. Natural resource impacts

Resource Type	Resource Name	Risk	Risk Assessed Through	Describe Resource Protection Threshold*	Mitigation Measure or Management Plan	Describe How Changes to Thresholds are Monitored
<input type="checkbox"/> River or stream		<input type="checkbox"/> Flow/water level decline <input type="checkbox"/> Degrading water quality trends and/or MCLs exceeded <input type="checkbox"/> Impacts on endangered, threatened, or special concern species habitat or other natural resource impacts <input type="checkbox"/> Other: _____	<input type="checkbox"/> GIS analysis <input type="checkbox"/> Modeling <input type="checkbox"/> Mapping <input type="checkbox"/> Monitoring <input type="checkbox"/> Aquifer testing <input type="checkbox"/> Other: _____		<input type="checkbox"/> Revise permit <input type="checkbox"/> Change groundwater pumping <input type="checkbox"/> Increase conservation <input type="checkbox"/> Other	
<input type="checkbox"/> Calcareous fen		<input type="checkbox"/> Flow/water level decline <input type="checkbox"/> Degrading water quality trends and/or MCLs exceeded <input type="checkbox"/> Impacts on endangered, threatened, or special concern species habitat or other natural resource impacts <input type="checkbox"/> Other: _____	<input type="checkbox"/> GIS analysis <input type="checkbox"/> Modeling <input type="checkbox"/> Mapping <input type="checkbox"/> Monitoring <input type="checkbox"/> Aquifer testing <input type="checkbox"/> Other: _____		<input type="checkbox"/> Revise permit <input type="checkbox"/> Change groundwater pumping <input type="checkbox"/> Increase conservation <input type="checkbox"/> Other	
<input type="checkbox"/> Lake		<input type="checkbox"/> Flow/water level decline <input type="checkbox"/> Degrading water quality trends and/or MCLs exceeded <input type="checkbox"/> Impacts on endangered, threatened, or special concern species habitat or other natural	<input type="checkbox"/> GIS analysis <input type="checkbox"/> Modeling <input type="checkbox"/> Mapping <input type="checkbox"/> Monitoring <input type="checkbox"/> Aquifer testing <input type="checkbox"/> Other: _____		<input type="checkbox"/> Revise permit <input type="checkbox"/> Change groundwater pumping <input type="checkbox"/> Increase conservation <input type="checkbox"/> Other	

City of Columbus, MN – Water Supply Plan

Resource Type	Resource Name	Risk	Risk Assessed Through	Describe Resource Protection Threshold*	Mitigation Measure or Management Plan	Describe How Changes to Thresholds are Monitored
		resource impacts <input type="checkbox"/> Other: _____				
<input checked="" type="checkbox"/> Wetland		<input type="checkbox"/> Flow/water level decline <input checked="" type="checkbox"/> Degrading water quality trends and/or MCLs exceeded <input type="checkbox"/> Impacts on endangered, threatened, or special concern species habitat or other natural resource impacts <input type="checkbox"/> Other: _____	<input type="checkbox"/> GIS analysis <input type="checkbox"/> Modeling <input type="checkbox"/> Mapping <input checked="" type="checkbox"/> Monitoring <input type="checkbox"/> Aquifer testing <input type="checkbox"/> Other: _____	Water quality outside of an accepted range.	<input type="checkbox"/> Revise permit <input checked="" type="checkbox"/> Change groundwater pumping <input type="checkbox"/> Increase conservation <input type="checkbox"/> Other	Work with MPCA staff when a wetland is suspected of having degrading water quality.
<input type="checkbox"/> Trout stream		<input type="checkbox"/> Flow/water level decline <input type="checkbox"/> Degrading water quality trends and/or MCLs exceeded <input type="checkbox"/> Impacts on endangered, threatened, or special concern species habitat or other natural resource impacts <input type="checkbox"/> Other: _____	<input type="checkbox"/> GIS analysis <input type="checkbox"/> Modeling <input type="checkbox"/> Mapping <input type="checkbox"/> Monitoring <input type="checkbox"/> Aquifer testing <input type="checkbox"/> Other: _____		<input type="checkbox"/> Revise permit <input type="checkbox"/> Change groundwater pumping <input type="checkbox"/> Increase conservation <input type="checkbox"/> Other	
<input checked="" type="checkbox"/> Aquifer	Ironton-Galesville	<input checked="" type="checkbox"/> Flow/water level decline <input type="checkbox"/> Degrading water quality trends and/or MCLs exceeded <input type="checkbox"/> Impacts on endangered, threatened, or special concern	<input type="checkbox"/> GIS analysis <input type="checkbox"/> Modeling <input type="checkbox"/> Mapping <input checked="" type="checkbox"/> Monitoring <input type="checkbox"/> Aquifer testing <input type="checkbox"/> Other: _____	Static well levels in the production wells	<input type="checkbox"/> Revise permit <input type="checkbox"/> Change groundwater pumping <input checked="" type="checkbox"/> Increase conservation <input type="checkbox"/> Other	Water Level Monitoring collected daily

Resource Type	Resource Name	Risk	Risk Assessed Through	Describe Resource Protection Threshold*	Mitigation Measure or Management Plan	Describe How Changes to Thresholds are Monitored
		species habitat or other natural resource impacts <input type="checkbox"/> Other: _____				
<input checked="" type="checkbox"/> Aquifer	Drift	<input checked="" type="checkbox"/> Flow/water level decline <input type="checkbox"/> Degrading water quality trends and/or MCLs exceeded <input type="checkbox"/> Impacts on endangered, threatened, or special concern species habitat or other natural resource impacts <input type="checkbox"/> Other: _____	<input type="checkbox"/> GIS analysis <input type="checkbox"/> Modeling <input type="checkbox"/> Mapping <input checked="" type="checkbox"/> Monitoring <input type="checkbox"/> Aquifer testing <input type="checkbox"/> Other: _____	Static well levels in the production wells	<input type="checkbox"/> Revise permit <input type="checkbox"/> Change groundwater pumping <input checked="" type="checkbox"/> Increase conservation <input type="checkbox"/> Other	Water Level Monitoring collected daily
<input checked="" type="checkbox"/> Endangered, threatened, or special concern species habitat, other natural resource impacts		<input type="checkbox"/> Flow/water level decline <input type="checkbox"/> Degrading water quality trends and/or MCLs exceeded <input checked="" type="checkbox"/> Impacts on endangered, threatened, or special concern species habitat or other natural resource impacts <input type="checkbox"/> Other: _____	<input type="checkbox"/> GIS analysis <input type="checkbox"/> Modeling <input type="checkbox"/> Mapping <input checked="" type="checkbox"/> Monitoring <input type="checkbox"/> Aquifer testing <input type="checkbox"/> Other: _____	A lower limit on acceptable changes to a protected habitat.	<input type="checkbox"/> Revise permit <input type="checkbox"/> Change groundwater pumping <input type="checkbox"/> Increase conservation <input type="checkbox"/> Other	Work with MPCA staff as needed for monitoring

* Examples of thresholds: a lower limit on acceptable flow in a river or stream; water quality outside of an accepted range; a lower limit on acceptable aquifer level decline at one or more monitoring wells; withdrawals that exceed some percent of the total amount available from a source; or a lower limit on acceptable changes to a protected habitat.

Wellhead Protection (WHP) and Surface Water Protection (SWP) Plans

Complete Table 11 to provide status information about WHP and SWP plans.

The emergency procedures in this plan are intended to comply with the contingency plan provisions required in the Minnesota Department of Health’s (MDH) Wellhead Protection (WHP) Plan and Surface Water Protection (SWP) Plan.

Table 11. Status of Wellhead Protection and Surface Water Protection Plans

Plan Type	Status	Date Adopted	Date for Update
WHP	<input type="checkbox"/> In Process <input type="checkbox"/> Completed <input checked="" type="checkbox"/> Not Applicable		Not required at this time
SWP	<input type="checkbox"/> In Process <input type="checkbox"/> Completed <input checked="" type="checkbox"/> Not Applicable		

F. Capital Improvement Plan (CIP)

Please note that any wells that received approval under a ten-year permit, but that were not built, are now expired and must submit a water appropriations permit.

Adequacy of Water Supply System

Complete Table 12 with information about the adequacy of wells and/or intakes, storage facilities, treatment facilities, and distribution systems to sustain current and projected demands. List planned capital improvements for any system components, in chronological order. Communities in the seven-county Twin Cities metropolitan area should also include information about plans through 2040.

The assessment can be the general status by category; it is not necessary to identify every single well, storage facility, treatment facility, lift station, and mile of pipe.

Please attach your latest Capital Improvement Plan as **Appendix 4**.

Table 12. Adequacy of Water Supply System

System Component	Planned action	Anticipated Construction Year	Notes
Wells/Intakes	<input checked="" type="checkbox"/> No action planned - adequate <input type="checkbox"/> Repair/replacement <input type="checkbox"/> Expansion/addition	NA	
Water Storage Facilities	<input type="checkbox"/> No action planned - adequate <input type="checkbox"/> Repair/replacement <input checked="" type="checkbox"/> Expansion/addition	2017	Ziegler water tank
Water Treatment Facilities	<input checked="" type="checkbox"/> No action planned - adequate <input type="checkbox"/> Repair/replacement <input type="checkbox"/> Expansion/addition	NA	
Distribution Systems (pipes, valves, etc.)	<input checked="" type="checkbox"/> No action planned - adequate <input type="checkbox"/> Repair/replacement <input type="checkbox"/> Expansion/addition	NA	

City of Columbus, MN – Water Supply Plan

System Component	Planned action	Anticipated Construction Year	Notes
Pressure Zones	<input checked="" type="checkbox"/> No action planned - adequate <input type="checkbox"/> Repair/replacement <input type="checkbox"/> Expansion/addition	NA	
Other:	<input checked="" type="checkbox"/> No action planned - adequate <input type="checkbox"/> Repair/replacement <input type="checkbox"/> Expansion/addition	NA	

Proposed Future Water Sources

Complete Table 13 to identify new water source installation planned over the next ten years. Add rows to the table as needed.

Table 13. Proposed future installations/sources

Source	Installation Location (approximate)	Resource Name	Proposed Pumping Capacity (gpm)	Planned Installation Year	Planned Partnerships
Groundwater	NA				
Surface Water	NA				
Interconnection to another supplier	NA				

Water Source Alternatives - Key Metropolitan Council Benchmark

Do you anticipate the need for alternative water sources in the next 10 years? Yes No

For metro communities, will you need alternative water sources by the year 2040? Yes No

If you answered yes for either question, then complete table 14. If no, insert NA.

Complete Table 14 by checking the box next to alternative approaches that your community is considering, including approximate locations (if known), the estimated amount of future demand that could be met through the approach, the estimated timeframe to implement the approach, potential partnerships, and the major benefits and challenges of the approach. Add rows to the table as needed.

For communities in the seven-county Twin Cities metropolitan area, these alternatives should include approaches the community is considering to meet projected 2040 water demand. Table 14. Alternative water sources

Alternative Source Considered	Source and/or Installation Location (approximate)	Estimated Amount of Future Demand (%)	Timeframe to Implement (YYYY)	Potential Partners	Benefits	Challenges
<input type="checkbox"/> Groundwater						
<input type="checkbox"/> Surface Water						
<input type="checkbox"/> Reclaimed stormwater						

Alternative Source Considered	Source and/or Installation Location (approximate)	Estimated Amount of Future Demand (%)	Timeframe to Implement (YYYY)	Potential Partners	Benefits	Challenges
<input type="checkbox"/> Reclaimed wastewater						
<input type="checkbox"/> Interconnection to another supplier						

Part 2. Emergency Preparedness Procedures

The emergency preparedness procedures outlined in this plan are intended to comply with the contingency plan provisions required by MDH in the WHP and SWP. Water emergencies can occur as a result of vandalism, sabotage, accidental contamination, mechanical problems, power failings, drought, flooding, and other natural disasters. The purpose of emergency planning is to develop emergency response procedures and to identify actions needed to improve emergency preparedness. In the case of a municipality, these procedures should be in support of, and part of, an all-hazard emergency operations plan. Municipalities that already have written procedures dealing with water emergencies should review the following information and update existing procedures to address these water supply protection measures.

A. Federal Emergency Response Plan

Section 1433(b) of the Safe Drinking Water Act, (Public Law 107-188, Title IV- Drinking Water Security and Safety) requires community water suppliers serving over 3,300 people to prepare an Emergency Response Plan.

Do you have a federal emergency response plan? Yes No

If yes, what was the date it was certified? _____

Complete Table 15 by inserting the noted information regarding your completed Federal Emergency Response Plan.

Table 15. Emergency Preparedness Plan contact information

Emergency Response Plan Role	Contact Person	Contact Phone Number	Contact Email
Emergency Response Lead	Jim Windingstad	651-464-3120 ext 1015	jwsuperintendent@ci.columbus.mn.us
Alternate Emergency Response Lead	Tim Sawatzky	651-464-3120 ext 1002	publicworks2@ci.columbus.mn.us

B. Operational Contingency Plan

All utilities should have a written operational contingency plan that describes measures to be taken for water supply mainline breaks and other common system failures as well as routine maintenance.

Do you have a written operational contingency plan? Yes No

At a minimum, a water supplier should prepare and maintain an emergency contact list of contractors and suppliers.

C. Emergency Response Procedures

Water suppliers must meet the requirements of MN Rules 4720.5280. Accordingly, the Minnesota Department of Natural Resources (DNR) requires public water suppliers serving more than 1,000 people to submit Emergency and Conservation Plans. Water emergency and conservation plans that have been approved by the DNR, under provisions of Minnesota Statute 186 and Minnesota Rules, part 6115.0770, will be considered equivalent to an approved WHP contingency plan.

Emergency Telephone List

Prepare and attach a list of emergency contacts, including the MN Duty Officer (1-800-422-0798), as **Appendix 5**. A template is available at www.mndnr.gov/watersupplyplans

The list should include key utility and community personnel, contacts in adjacent water suppliers, and appropriate local, state and federal emergency contacts. Please be sure to verify and update the contacts on the emergency telephone list and date it. Thereafter, update on a regular basis (once a year is recommended). In the case of a municipality, this information should be contained in a notification and warning standard operating procedure maintained by the Emergency Manager for that community. Responsibilities and services for each contact should be defined.

Current Water Sources and Service Area

Quick access to concise and detailed information on water sources, water treatment, and the distribution system may be needed in an emergency. System operation and maintenance records should be maintained in secured central and back-up locations so that the records are accessible for emergency purposes. A detailed map of the system showing the treatment plants, water sources, storage facilities, supply lines, interconnections, and other information that would be useful in an emergency should also be readily available. It is critical that public water supplier representatives and emergency response personnel communicate about the response procedures and be able to easily obtain this kind of information both in electronic and hard copy formats (in case of a power outage).

Do records and maps exist? Yes No

Can staff access records and maps from a central secured location in the event of an emergency?

Yes No

Does the appropriate staff know where the materials are located?

Yes No

Procedure for Augmenting Water Supplies

Complete Tables 16 – 17 by listing all available sources of water that can be used to augment or replace existing sources in an emergency. Add rows to the tables as needed.

City of Columbus, MN – Water Supply Plan

In the case of a municipality, this information should be contained in a notification and warning standard operating procedure maintained by the warning point for that community. Municipalities are encouraged to execute cooperative agreements for potential emergency water services and copies should be included in **Appendix 6**. Outstate Communities may consider using nearby high capacity wells (industry, golf course) as emergency water sources.

WSP should include information on any physical or chemical problems that may limit interconnections to other sources of water. Approvals from the MDH are required for interconnections or the reuse of water.

Table 16. Interconnections with other water supply systems to supply water in an emergency

Other Water Supply System Owner	Capacity (GPM & MGD)	Note Any Limitations On Use	List of services, equipment, supplies available to respond
NA			

GPM – Gallons per minute MGD – million gallons per day

Table 17. Utilizing surface water as an alternative source

Surface Water Source Name	Capacity (GPM)	Capacity (MGD)	Treatment Needs	Note Any Limitations On Use
NA				

If not covered above, describe additional emergency measures for providing water (obtaining bottled water, or steps to obtain National Guard services, etc.)

NA

Allocation and Demand Reduction Procedures

Complete Table 18 by adding information about how decisions will be made to allocate water and reduce demand during an emergency. Provide information for each customer category, including its priority ranking, average day demand, and demand reduction potential for each customer category. Modify the customer categories as needed, and add additional lines if necessary.

Water use categories should be prioritized in a way that is consistent with Minnesota Statutes 103G.261 (#1 is highest priority) as follows:

1. Water use for human needs such as cooking, cleaning, drinking, washing and waste disposal; use for on-farm livestock watering; and use for power production that meets contingency requirements.
2. Water use involving consumption of less than 10,000 gallons per day (usually from private wells or surface water intakes)
3. Water use for agricultural irrigation and processing of agricultural products involving consumption of more than 10,000 gallons per day (usually from private high-capacity wells or surface water intakes)
4. Water use for power production above the use provided for in the contingency plan.

City of Columbus, MN – Water Supply Plan

- 5. All other water use involving consumption of more than 10,000 gallons per day.
- 6. Nonessential uses – car washes, golf courses, etc.

Water used for human needs at hospitals, nursing homes and similar types of facilities should be designated as a high priority to be maintained in an emergency. Lower priority uses will need to address water used for human needs at other types of facilities such as hotels, office buildings, and manufacturing plants. The volume of water and other types of water uses at these facilities must be carefully considered. After reviewing the data, common sense should dictate local allocation priorities to protect domestic requirements over certain types of economic needs. Water use for lawn sprinkling, vehicle washing, golf courses, and recreation are legislatively considered non-essential.

Table 18. Water use priorities

Customer Category	Allocation Priority	Average Daily Demand (GPD)	Short-Term Emergency Demand Reduction Potential (GPD)
Residential			
Institutional			
Commercial			
Industrial			
Irrigation			
Wholesale			
Non-Essential			
TOTAL	NA	NA	NA

GPD – Gallons per Day

Tip: Calculating Emergency Demand Reduction Potential

The emergency demand reduction potential for all uses will typically equal the difference between maximum use (summer demand) and base use (winter demand). In extreme emergency situations, lower priority water uses must be restricted or eliminated to protect priority domestic water requirements. Emergency demand reduction potential should be based on average day demands for customer categories within each priority class. Use the tables in Part 3 on water conservation to help you determine strategies.

Complete Table 19 by selecting the triggers and actions during water supply disruption conditions.

Table 19. Emergency demand reduction conditions, triggers and actions (Select all that may apply and describe)

Emergency Triggers	Short-term Actions	Long-term Actions
<input type="checkbox"/> Contamination <input checked="" type="checkbox"/> Loss of production <input checked="" type="checkbox"/> Infrastructure failure <input checked="" type="checkbox"/> Executive order by Governor <input type="checkbox"/> Other: _____	<input type="checkbox"/> Supply augmentation through _____ <input checked="" type="checkbox"/> Adopt (if not already) and enforce a critical water deficiency ordinance to penalize lawn watering, vehicle washing, golf course and park irrigation & other nonessential uses. <input type="checkbox"/> Water allocation through _____ <input checked="" type="checkbox"/> Meet with large water users to discuss their contingency plan.	<input type="checkbox"/> Supply augmentation through _____ <input checked="" type="checkbox"/> Adopt (if not already) and enforce a critical water deficiency ordinance to penalize lawn watering, vehicle washing, golf course and park irrigation & other nonessential uses. <input type="checkbox"/> Water allocation through _____ <input checked="" type="checkbox"/> Meet with large water users to discuss their contingency plan.

Notification Procedures

Complete Table 20 by selecting trigger for informing customers regarding conservation requests, water use restrictions, and suspensions; notification frequencies; and partners that may assist in the notification process. Add rows to the table as needed.

Table 20. Plan to inform customers regarding conservation requests, water use restrictions, and suspensions

Notification Trigger(s)	Methods (select all that apply)	Update Frequency	Partners
<input checked="" type="checkbox"/> Short-term demand reduction declared (< 1 year)	<input checked="" type="checkbox"/> Website <input type="checkbox"/> Email list serve <input type="checkbox"/> Social media (e.g. Twitter, Facebook) <input type="checkbox"/> Direct customer mailing, <input checked="" type="checkbox"/> Press release (TV, radio, newspaper), <input checked="" type="checkbox"/> Meeting with large water users (> 10% of total city use) <input type="checkbox"/> Other: _____	<input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input checked="" type="checkbox"/> Monthly <input type="checkbox"/> Annually	
<input checked="" type="checkbox"/> Long-term Ongoing demand reduction declared	<input type="checkbox"/> Website <input type="checkbox"/> Email list serve <input type="checkbox"/> Social media (e.g. Twitter, Facebook) <input checked="" type="checkbox"/> Direct customer mailing, <input checked="" type="checkbox"/> Press release (TV, radio, newspaper), <input checked="" type="checkbox"/> Meeting with large water users (> 10% of total city use) <input type="checkbox"/> Other: _____	<input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input checked="" type="checkbox"/> Monthly <input type="checkbox"/> Annually	
<input checked="" type="checkbox"/> Governor’s critical water deficiency declared	<input checked="" type="checkbox"/> Website <input type="checkbox"/> Email list serve <input type="checkbox"/> Social media (e.g. Twitter, Facebook) <input checked="" type="checkbox"/> Direct customer mailing,	<input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input checked="" type="checkbox"/> Monthly <input type="checkbox"/> Annually	

Notification Trigger(s)	Methods (select all that apply)	Update Frequency	Partners
	<input type="checkbox"/> Press release (TV, radio, newspaper), <input checked="" type="checkbox"/> Meeting with large water users (> 10% of total city use) <input type="checkbox"/> Other: _____		

Enforcement

Prior to a water emergency, municipal water suppliers must adopt regulations that restrict water use and outline the enforcement response plan. The enforcement response plan must outline how conditions will be monitored to know when enforcement actions are triggered, what enforcement tools will be used, who will be responsible for enforcement, and what timelines for corrective actions will be expected.

Affected operations, communications, and enforcement staff must then be trained to rapidly implement those provisions during emergency conditions.

Important Note:

Disregard of critical water deficiency orders, even though total appropriation remains less than permitted, is adequate grounds for immediate modification of a public water supply authority’s water use permit (2013 MN Statutes 103G.291)

Does the city have a critical water deficiency restriction/official control in place that includes provisions to restrict water use and enforce the restrictions? (This restriction may be an ordinance, rule, regulation, policy under a council directive, or other official control) Yes No

If yes, attach the official control document to this WSP as **Appendix 7**.

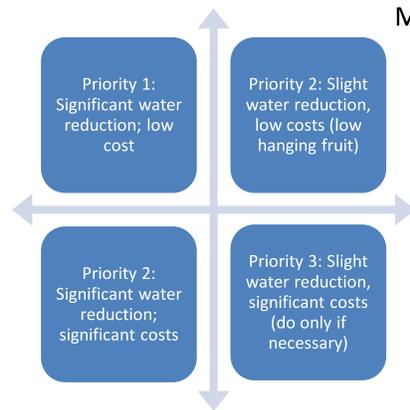
If no, the municipality must adopt such an official control within 6 months of submitting this WSP and submit it to the DNR as an amendment to this WSP.

Irrespective of whether a critical water deficiency control is in place, does the public water supply utility, city manager, mayor, or emergency manager have standing authority to implement water restrictions? Yes No

If yes, cite the regulatory authority reference: City Code, Section 14-320.

If no, who has authority to implement water use restrictions in an emergency?

PART 3. WATER CONSERVATION PLAN



Minnesotans have historically benefited from the state’s abundant water supplies, reducing the need for conservation. There are however, limits to the available supplies of water and increasing threats to the quality of our drinking water. Causes of water supply limitation may include: population increases, economic trends, uneven statewide availability of groundwater, climatic changes, and degraded water quality. Examples of threats to drinking water quality include: the presence of contaminant plumes from past land use activities, exceedances of water quality standards from natural and human sources, contaminants of emerging concern, and increasing pollutant trends from nonpoint sources.

There are many incentives for conserving water; conservation:

- reduces the potential for pumping-induced transfer of contaminants into the deeper aquifers, which can add treatment costs
- reduces the need for capital projects to expand system capacity
- reduces the likelihood of water use conflicts, like well interference, aquatic habitat loss, and declining lake levels
- conserves energy, because less energy is needed to extract, treat and distribute water (and less energy production also conserves water since water is use to produce energy)
- maintains water supplies that can then be available during times of drought

It is therefore imperative that water suppliers implement water conservation plans. The first step in water conservation is identifying opportunities for behavioral or engineering changes that could be made to reduce water use by conducting a thorough analysis of:

- Water use by customer
- Extraction, treatment, distribution and irrigation system efficiencies
- Industrial processing system efficiencies
- Regulatory and barriers to conservation
- Cultural barriers to conservation
- Water reuse opportunities

Once accurate data is compiled, water suppliers can set achievable goals for reducing water use. A successful water conservation plan follows a logical sequence of events. The plan should address both conservation on the supply side (leak detection and repairs, metering), as well as on the demand side (reductions in usage). Implementation should be conducted in phases, starting with the most obvious and lowest-cost options. In some cases one of the early steps will be reviewing regulatory constraints to water conservation, such as lawn irrigation requirements. Outside funding and grants may be available for implementation of projects. Engage water system operators and maintenance staff and customers in brainstorming opportunities to reduce water use. Ask the question: “How can I help save water?”

Progress since 2006

Is this your community’s first Water Supply Plan? Yes No

If yes, describe conservation practices that you are already implementing, such as: pricing, system improvements, education, regulation, appliance retrofitting, enforcement, etc.

NA

If no, complete Table 21 to summarize conservation actions taken since the adoption of the 2006 water supply plan.

Table 21. Implementation of previous ten-year Conservation Plan

2006 Plan Commitments	Action Taken?
Change water rates structure to provide conservation pricing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Water supply system improvements (e.g. leak repairs, valve replacements, etc.)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Educational efforts	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
New water conservation ordinances	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Rebate or retrofitting Program (e.g. for toilet, faucets, appliances, showerheads, dish washers, washing machines, irrigation systems, rain barrels, water softeners, etc.)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Enforcement	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Describe other	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

What are the results you have seen from the actions in Table 21 and how were results measured?

C/I/I per demand has decreased. Results were measured using meter readings.

A. Triggers for Allocation and Demand Reduction Actions

Complete table 22 by checking each trigger below, as appropriate, and the actions to be taken at various levels or stages of severity. Add in additional rows to the table as needed.

Table 22. Short and long-term demand reduction conditions, triggers and actions

Objective	Triggers	Actions
Protect surface water flows	<input type="checkbox"/> Low stream flow conditions <input type="checkbox"/> Reports of declining wetland and lake levels <input type="checkbox"/> Other: _____	<input type="checkbox"/> Increase promotion of conservation measures <input type="checkbox"/> Other: _____
Short-term demand reduction (less than 1 year)	<input type="checkbox"/> Extremely high seasonal water demand (more than double winter demand) <input type="checkbox"/> Loss of treatment capacity <input checked="" type="checkbox"/> Lack of water in storage <input checked="" type="checkbox"/> State drought plan <input type="checkbox"/> Well interference <input type="checkbox"/> Other: _____	<input checked="" type="checkbox"/> Adopt (if not already) and enforce the critical water deficiency ordinance to restrict or prohibit lawn watering, vehicle washing, golf course and park irrigation & other nonessential uses. <input type="checkbox"/> Supply augmentation through _____ <input type="checkbox"/> Water allocation through _____ <input type="checkbox"/> Meet with large water users to discuss user's contingency plan.
Long-term demand reduction (>1 year)	<input type="checkbox"/> Per capita demand increasing <input checked="" type="checkbox"/> Total demand increase (higher population or more industry) <input type="checkbox"/> Water level in well(s) below elevation of _____ <input type="checkbox"/> Other: _____	<input checked="" type="checkbox"/> Develop a critical water deficiency ordinance that is or can be quickly adopted to penalize lawn watering, vehicle washing, golf course and park irrigation & other nonessential uses. <input type="checkbox"/> Enact a water waste ordinance that targets overwatering (causing water to flow off the landscape into streets, parking lots, or similar), watering impervious surfaces (streets, driveways or other hardscape areas), and negligence of known leaks, breaks, or malfunctions. <input type="checkbox"/> Meet with large water users to discuss user's contingency plan. <input type="checkbox"/> Enhanced monitoring and reporting: audits, meters, billing, etc.
Governor's "Critical Water Deficiency Order" declared	<input checked="" type="checkbox"/> Describe – When the governor declares it.	<input type="checkbox"/> Describe – Follow the short term demand reduction above or as directed by the governor.

B. Conservation Objectives and Strategies – Key benchmark for DNR

This section establishes water conservation objectives and strategies for eight major areas of water use.

Objective 1: Reduce Unaccounted (Non-Revenue) Water loss to Less than 10%

The Minnesota Rural Waters Association, the Metropolitan Council and the Department of Natural Resources recommend that all water uses be metered. Metering can help identify high use locations and times, along with leaks within buildings that have multiple meters.

City of Columbus, MN – Water Supply Plan

It is difficult to quantify specific unmetered water use such as that associated with firefighting and system flushing or system leaks. Typically, water suppliers subtract metered water use from total water pumped to calculate unaccounted or non-revenue water loss.

Is your five-year average (2005-2014) unaccounted Water Use in Table 2 higher than 10%?

Yes No

What is your leak detection monitoring schedule? (e.g. monitor 1/3rd of the city lines per year)

None – new system

Water Audits - are intended to identify, quantify and verify water and revenue losses. The volume of unaccounted-for water should be evaluated each billing cycle. The American Water Works Association (AWWA) recommends that ten percent or less of pumped water is unaccounted-for water. Water audit procedures are available from the AWWA and MN Rural Water Association www.mrwa.com. Drinking Water Revolving Loan Funds are available for purchase of new meters when new plants are built.

What is the date of your most recent water audit? None to date

Frequency of water audits: yearly other (specify frequency) None to date

Leak detection and survey: every year every other year periodic as needed

Year last leak detection survey completed: _____

If Table 2 shows annual water losses over 10% or an increasing trend over time, describe what actions will be taken to reach the <10% loss objective and within what timeframe

As C/I/I customer base continues to grow, the water losses will continue to decrease. See Appendix 11 for more information.

Metering -AWWA recommends that every water supplier install meters to account for all water taken into its system, along with all water distributed from its system at each customer’s point of service. An effective metering program relies upon periodic performance testing, repair, maintenance or replacement of all meters. AWWA also recommends that water suppliers conduct regular water audits to ensure accountability. Some cities install separate meters for interior and exterior water use, but some research suggests that this may not result in water conservation.

Complete Table 23 by adding the requested information regarding the number, types, testing and maintenance of customer meters.

Table 23. Information about customer meters

Customer Category	Number of Customers	Number of Metered Connections	Number of Automated Meter Readers	Meter testing intervals (years)	Average age/meter replacement schedule (years)
Residential	6	6	0	15-20	<u>6-8 / 25</u>
Irrigation meters	1	3	0	15-20	<u>6-8 / 25</u>
Institutional	0	0	0	10	<u>6-8 / 25</u>
Commercial	5	5	0	10	<u>6-8 / 25</u>
Industrial	0	0	0	NA	NA
Public facilities	0	0	0	NA	NA
Other	0	0	0	NA	NA
TOTALS	12	14	0		

For unmetered systems, describe any plans to install meters or replace current meters with advanced technology meters. Provide an estimate of the cost to implement the plan and the projected water savings from implementing the plan.

The city is planning to install new radio read system in 2017.

Table 24. Water source meters

	Number of Meters	Meter testing schedule (years)	Number of Automated Meter Readers	Average age/meter replacement schedule (years)
Water source (wells/intakes)	3	As needed	-	<u>8 / 20</u>
Treatment plant	NA	NA	NA	NA

Objective 2: Achieve Less than 75 Residential Gallons per Capita Demand (GPCD)

The 2002 average residential per capita demand in the Twin Cities Metropolitan area was 75 gallons per capita per day.

Is your average 2010-2015 residential per capita water demand in Table 2 more than 75? Yes No

What was your 2010 – 2015 five-year average residential per capita water demand? 100 g/person/day

Describe the water use trend over that timeframe:

The water use has grown over the last five years as customers are added to the system.

Complete Table 25 by checking which strategies you will use to continue reducing residential per capita demand and project a likely timeframe for completing each checked strategy (Select all that apply and add rows for additional strategies):

Table 25. Strategies and timeframe to reduce residential per capita demand

Strategy to reduce residential per capita demand	Timeframe for completing work
<input type="checkbox"/> Revise city ordinances/codes to encourage or require water efficient landscaping.	
<input checked="" type="checkbox"/> Revise city ordinance/codes to permit water reuse options, especially for non-potable purposes like irrigation, groundwater recharge, and industrial use. Check with plumbing authority to see if internal buildings reuse is permitted	Investigate options for the water bled from the system over the next 10 years.
<input type="checkbox"/> Revise ordinances to limit irrigation. Describe the restricted irrigation plan:	
<input type="checkbox"/> Revise outdoor irrigation installations codes to require high efficiency systems (e.g. those with soil moisture sensors or programmable watering areas) in new installations or system replacements.	
<input type="checkbox"/> Make water system infrastructure improvements	
<input type="checkbox"/> Offer free or reduced cost water use audits) for residential customers.	
<input type="checkbox"/> Implement a notification system to inform customers when water availability conditions change.	
<input type="checkbox"/> Provide rebates or incentives for installing water efficient appliances and/or fixtures indoors (e.g., low flow toilets, high efficiency dish washers and washing machines, showerhead and faucet aerators, water softeners, etc.)	
<input type="checkbox"/> Provide rebates or incentives to reduce outdoor water use (e.g., turf replacement/reduction, rain gardens, rain barrels, smart irrigation, outdoor water use meters, etc.)	
<input type="checkbox"/> Identify supplemental Water Resources	
<input checked="" type="checkbox"/> Conduct audience-appropriate water conservation education and outreach.	Ongoing
<input type="checkbox"/> Describe other plans	

Objective 3: Achieve at least a 1.5% per year water reduction for Institutional, Industrial, Commercial, and Agricultural GPCD over the next 10 years or a 15% reduction in ten years.

Complete Table 26 by checking which strategies you will used to continue reducing non-residential customer use demand and project a likely timeframe for completing each checked strategy (add rows for additional strategies).

Where possible, substitute recycled water used in one process for reuse in another. (For example, spent rinse water can often be reused in a cooling tower.) Keep in mind the true cost of water is the amount on the water bill PLUS the expenses to heat, cool, treat, pump, and dispose of/discharge the water. Don't just calculate the initial investment. Many conservation retrofits that appear to be prohibitively expensive are actually very cost-effective when amortized over the life of the equipment. Often reducing water use also saves electrical and other utility costs. Note: as of 2015, water reuse, and is not allowed by the state plumbing code, M.R. 4715 (a variance is needed). However several state agencies are addressing this issue.

Table 26. Strategies and timeframe to reduce institutional, commercial industrial, and agricultural and non-revenue use demand

Strategy to reduce total business, industry, agricultural demand	Timeframe for completing work
<input type="checkbox"/> Conduct a facility water use audit for both indoor and outdoor use, including system components	
<input type="checkbox"/> Install enhanced meters capable of automated readings to detect spikes in consumption	
<input type="checkbox"/> Compare facility water use to related industry benchmarks, if available (e.g., meat processing, dairy, fruit and vegetable, beverage, textiles, paper/pulp, metals, technology, petroleum refining etc.)	
<input type="checkbox"/> Install water conservation fixtures and appliances or change processes to conserve water	
<input type="checkbox"/> Repair leaking system components (e.g., pipes, valves)	
<input checked="" type="checkbox"/> Investigate the reuse of reclaimed water (e.g., stormwater, wastewater effluent, process wastewater, etc.)	Ongoing over the next 10 years.
<input type="checkbox"/> Reduce outdoor water use (e.g., turf replacement/reduction, rain gardens, rain barrels, smart irrigation, outdoor water use meters, etc.)	
<input type="checkbox"/> Train employees how to conserve water	
<input type="checkbox"/> Implement a notification system to inform non-residential customers when water availability conditions change.	
<input type="checkbox"/> Rainwater catchment systems intended to supply uses such as water closets, urinals, trap primers for floor drains and floor sinks, industrial processes, water features, vehicle washing facilities, cooling tower makeup, and similar uses shall be approved by the commissioner. Proposed plumbing code 4714.1702.1 http://www.dli.mn.gov/PDF/docket/4714rule.pdf	
<input checked="" type="checkbox"/> Describe other plans:	Increase C/I/I customer base over next ten years to reduce need to bleed water to keep system potable.

Objective 4: Achieve a Decreasing Trend in Total Per Capita Demand

Include as **Appendix 8** one graph showing total per capita water demand for each customer category (i.e., residential, institutional, commercial, industrial) from 2005-2014 and add the calculated/estimated linear trend for the next 10 years.

Describe the trend for each customer category; explain the reason(s) for the trends, and where trends are increasing.

Residential per capita water demand has decreased; low flow fixtures are required by city code.

C/I/I per capita water demand has decreased.

2007 was a partial year when the water system was being connected to its first customers.

Table 27. Rate structures for each customer category (Select all that apply and add additional rows as needed)

Customer Category	Conservation Billing Strategies in Use *	Conservation Neutral Billing Strategies in Use **	Non-Conserving Billing Strategies in Use ***
Residential	<input type="checkbox"/> Monthly billing <input type="checkbox"/> Increasing block rates (volume tiered rates) <input type="checkbox"/> Seasonal rates <input type="checkbox"/> Time of use rates <input type="checkbox"/> Water bills reported in gallons <input type="checkbox"/> Individualized goal rates <input type="checkbox"/> Excess use rates <input type="checkbox"/> Drought surcharge <input type="checkbox"/> Use water bill to provide comparisons <input type="checkbox"/> Service charge not based on water volume <input type="checkbox"/> Other (describe)	<input checked="" type="checkbox"/> Uniform <input type="checkbox"/> Odd/even day watering	<input type="checkbox"/> Service charge based on water volume <input type="checkbox"/> Declining block <input type="checkbox"/> Flat <input type="checkbox"/> Other (describe)
Commercial/ Industrial/ Institutional	<input type="checkbox"/> Monthly billing <input type="checkbox"/> Increasing block rates (volume tiered rates) <input type="checkbox"/> Seasonal rates <input type="checkbox"/> Time of use rates <input type="checkbox"/> Water bills reported in gallons <input type="checkbox"/> Individualized goal rates <input type="checkbox"/> Excess use rates <input type="checkbox"/> Drought surcharge <input type="checkbox"/> Use water bill to provide comparisons <input type="checkbox"/> Service charge not based on water volume <input type="checkbox"/> Other (describe)	<input checked="" type="checkbox"/> Uniform	<input type="checkbox"/> Service charge based on water volume <input type="checkbox"/> Declining block <input type="checkbox"/> Flat <input type="checkbox"/> Other (describe)
<input type="checkbox"/> Other			

*** Rate Structures components that may promote water conservation:**

- **Monthly billing:** is encouraged to help people see their water usage so they can consider changing behavior.
- **Increasing block rates (also known as a tiered residential rate structure):** Typically, these have at least three tiers: should have at least three tiers.
 - The first tier is for the winter average water use.
 - The second tier is the year-round average use, which is lower than typical summer use. This rate should be set to cover the full cost of service.
 - The third tier should be above the average annual use and should be priced high enough to encourage conservation, as should any higher tiers. For this to be effective, the difference in block rates should be significant.
- **Seasonal rate:** higher rates in summer to reduce peak demands
- **Time of Use rates:** lower rates for off peak water use
- **Bill water use in gallons:** this allows customers to compare their use to average rates

City of Columbus, MN – Water Supply Plan

- **Individualized goal rates:** typically used for industry, business or other large water users to promote water conservation if they keep within agreed upon goals. **Excess Use rates:** if water use goes above an agreed upon amount this higher rate is charged
- **Drought surcharge:** an extra fee is charged for guaranteed water use during drought
- **Use water bill to provide comparisons:** simple graphics comparing individual use over time or compare individual use to others.
- **Service charge or base fee that does not include a water volume** – a base charge or fee to cover universal city expenses that are not customer dependent and/or to provide minimal water at a lower rate (e.g., an amount less than the average residential per capita demand for the water supplier for the last 5 years)
- **Emergency rates** -A community may have a separate conservation rate that only goes into effect when the community or governor declares a drought emergency. These higher rates can help to protect the city budgets during times of significantly less water usage.

****Conservation Neutral****

- **Uniform rate:** rate per unit used is the same regardless of the volume used
- **Odd/even day watering** –This approach reduces peak demand on a daily basis for system operation, but it does not reduce overall water use.

***** Non-Conserving *****

- **Service charge or base fee with water volume:** an amount of water larger than the average residential per capita demand for the water supplier for the last 5 years
- **Declining block rate:** the rate per unit used decreases as water use increases.
- **Flat rate:** one fee regardless of how much water is used (usually unmetered).

Provide justification for any conservation neutral or non-conserving rate structures. If intending to adopt a conservation rate structure, include the timeframe to do so:

In 2017, the city will consider changing the water rate structure based on seasonal use.

Objective 7: Additional strategies to Reduce Water Use and Support Wellhead Protection Planning

Development and redevelopment projects can provide additional water conservation opportunities, such as the actions listed below. If a Uniform Rate Structure is in place, the water supplier must provide a Water Conservation Program that includes at least two of the actions listed below. Check those actions that you intent to implement within the next 10 years.

Table 28. Additional strategies to Reduce Water Use & Support Wellhead Protection

<input type="checkbox"/>	Participate in the GreenStep Cities Program, including implementation of at least one of the 20 “Best Practices” for water
<input type="checkbox"/>	Prepare a master plan for smart growth (compact urban growth that avoids sprawl)
<input type="checkbox"/>	Prepare a comprehensive open space plan (areas for parks, green spaces, natural areas)
<input type="checkbox"/>	Adopt a water use restriction ordinance (lawn irrigation, car washing, pools, etc.)
<input type="checkbox"/>	Adopt an outdoor lawn irrigation ordinance
<input type="checkbox"/>	Adopt a private well ordinance (private wells in a city must comply with water restrictions)
<input type="checkbox"/>	Implement a stormwater management program
<input type="checkbox"/>	Adopt non-zoning wetlands ordinance (can further protect wetlands beyond state/federal laws- for vernal pools, buffer areas, restrictions on filling or alterations)
<input type="checkbox"/>	Adopt a water offset program (primarily for new development or expansion)
<input checked="" type="checkbox"/>	Implement a water conservation outreach program
<input type="checkbox"/>	Hire a water conservation coordinator (part-time)
<input type="checkbox"/>	Implement a rebate program for water efficient appliances, fixtures, or outdoor water management
<input checked="" type="checkbox"/>	Other: In 2017, the city will consider changing the water rate structure based on seasonal use.

Objective 8: Tracking Success: How will you track or measure success through the next ten years?

NA

Tip: The process to monitor demand reduction and/or a rate structure includes:

- a) The DNR Hydrologist will call or visit the community the first 1-3 years after the water supply plan is completed.
- b) They will discuss what activities the community is doing to conserve water and if they feel their actions are successful. The Water Supply Plan, Part 3 tables and responses will guide the discussion. For example, they will discuss efforts to reduce unaccounted for water loss if that is a problem, or go through Tables 33, 34 and 35 to discuss new initiatives.
- c) The city representative and the hydrologist will discuss total per capita water use, residential per capita water use, and business/industry use. They will note trends.
- d) They will also discuss options for improvement and/or collect case studies of success stories to share with other communities. One option may be to change the rate structure, but there are many other paths to successful water conservation.
- e) If appropriate, they will cooperatively develop a simple work plan for the next few years, targeting a couple areas where the city might focus efforts.

A. Regulation

Complete Table 29 by selecting which regulations are used to reduce demand and improve water efficiencies. Add additional rows as needed.

Copies of adopted regulations or proposed restrictions or should be included in **Appendix 10** (a list with hyperlinks is acceptable).

Table 29. Regulations for short-term reductions in demand and long-term improvements in water efficiencies

Regulations Utilized	When is it applied (in effect)?
<input type="checkbox"/> Rainfall sensors required on landscape irrigation systems	<input type="checkbox"/> Ongoing <input type="checkbox"/> Seasonal <input type="checkbox"/> Only during declared Emergencies
<input checked="" type="checkbox"/> Water efficient plumbing fixtures required	<input checked="" type="checkbox"/> New development <input type="checkbox"/> Replacement <input type="checkbox"/> Rebate Programs
<input checked="" type="checkbox"/> Critical/Emergency Water Deficiency ordinance	<input checked="" type="checkbox"/> Only during declared Emergencies
<input checked="" type="checkbox"/> Watering restriction requirements (time of day, allowable days, etc.)	<input type="checkbox"/> Odd/even <input type="checkbox"/> 2 days/week <input checked="" type="checkbox"/> Only during declared Emergencies
<input checked="" type="checkbox"/> Water waste prohibited (for example, having a fine for irrigators spraying on the street)	<input type="checkbox"/> Ongoing <input type="checkbox"/> Seasonal <input checked="" type="checkbox"/> Only during declared Emergencies
<input type="checkbox"/> Limitations on turf areas (requiring lots to have 10% - 25% of the space in natural areas)	<input type="checkbox"/> New development <input type="checkbox"/> Shoreland/zoning <input type="checkbox"/> Other
<input type="checkbox"/> Soil preparation requirements (after construction, requiring topsoil to be applied to promote good root growth)	<input type="checkbox"/> New Development <input type="checkbox"/> Construction Projects <input type="checkbox"/> Other
<input type="checkbox"/> Tree ratios (requiring a certain number of trees per square foot of lawn)	<input type="checkbox"/> New development <input type="checkbox"/> Shoreland/zoning <input type="checkbox"/> Other
<input type="checkbox"/> Permit to fill swimming pool and/or requiring pools to be covered (to prevent evaporation)	<input type="checkbox"/> Ongoing <input type="checkbox"/> Seasonal <input type="checkbox"/> Only during declared Emergencies
<input type="checkbox"/> Ordinances that permit stormwater irrigation, reuse of water, or other alternative water use (Note: be sure to check current plumbing codes for updates)	<input type="checkbox"/> Describe

B. Retrofitting Programs

Education and incentive programs aimed at replacing inefficient plumbing fixtures and appliances can help reduce per capita water use, as well as energy costs. It is recommended that municipal water suppliers develop a long-term plan to retrofit public buildings with water efficient plumbing fixtures and appliances. Some water suppliers have developed partnerships with organizations having similar conservation goals, such as electric or gas suppliers, to develop cooperative rebate and retrofit programs.

A study by the AWWA Research Foundation (Residential End Uses of Water, 1999) found that the average indoor water use for a non-conserving home is 69.3 gallons per capita per day (gpcd). The average indoor water use in a conserving home is 45.2 gpcd and most of the decrease in water use is related to water efficient plumbing fixtures and appliances that can reduce water, sewer and energy costs. In Minnesota, certain electric and gas providers are required (Minnesota Statute 216B.241) to fund programs that will conserve energy resources and some utilities have distributed water efficient showerheads to customers to help reduce energy demands required to supply hot water.

Retrofitting Programs

Complete Table 30 by checking which water uses are targeted, the outreach methods used, the measures used to identify success, and any participating partners.

Table 30. Retrofitting programs (Select all that apply)

Water Use Targets	Outreach Methods	Partners
<input type="checkbox"/> Low flush toilets, <input type="checkbox"/> Toilet leak tablets, <input type="checkbox"/> Low flow showerheads, <input type="checkbox"/> Faucet aerators;	<input type="checkbox"/> Education about <input type="checkbox"/> Free distribution of <input type="checkbox"/> Rebate for <input type="checkbox"/> Other	<input type="checkbox"/> Gas company <input type="checkbox"/> Electric company <input type="checkbox"/> Watershed organization
<input type="checkbox"/> Water conserving washing machines, <input type="checkbox"/> Dish washers, <input type="checkbox"/> Water softeners;	<input type="checkbox"/> Education about <input type="checkbox"/> Free distribution of <input type="checkbox"/> Rebate for <input type="checkbox"/> Other	<input type="checkbox"/> Gas company <input type="checkbox"/> Electric company <input type="checkbox"/> Watershed organization
<input type="checkbox"/> Rain gardens, <input type="checkbox"/> Rain barrels, <input type="checkbox"/> Native/drought tolerant landscaping, etc.	<input type="checkbox"/> Education about <input type="checkbox"/> Free distribution of <input type="checkbox"/> Rebate for <input type="checkbox"/> Other	<input type="checkbox"/> Gas company <input type="checkbox"/> Electric company <input type="checkbox"/> Watershed organization

Briefly discuss measures of success from the above table (e.g. number of items distributed, dollar value of rebates, gallons of water conserved, etc.):

C. Education and Information Programs

Customer education should take place in three different circumstances. First, customers should be provided information on how to conserve water and improve water use efficiencies. Second, information should be provided at appropriate times to address peak demands. Third, emergency notices and educational materials about how to reduce water use should be available for quick distribution during an emergency.

Proposed Education Programs

Complete Table 31 by selecting which methods are used to provide water conservation and information, including the frequency of program components. Select all that apply and add additional lines as needed.

Table 31. Current and Proposed Education Programs

Education Methods	General summary of topics	#/Year	Frequency
Billing inserts or tips printed on the actual bill			<input type="checkbox"/> Ongoing <input type="checkbox"/> Seasonal <input type="checkbox"/> Only during declared emergencies
Consumer Confidence Reports			<input type="checkbox"/> Ongoing <input type="checkbox"/> Seasonal <input type="checkbox"/> Only during declared emergencies
Press releases to traditional local news outlets (e.g., newspapers, radio and TV)			<input type="checkbox"/> Ongoing <input type="checkbox"/> Seasonal <input type="checkbox"/> Only during declared emergencies
Social media distribution (e.g., emails, Facebook, Twitter)		As needed	<input checked="" type="checkbox"/> Ongoing <input type="checkbox"/> Seasonal <input type="checkbox"/> Only during declared emergencies
Paid advertisements (e.g., billboards, print media, TV, radio, web sites, etc.)			<input type="checkbox"/> Ongoing <input type="checkbox"/> Seasonal <input type="checkbox"/> Only during declared emergencies
Presentations to community groups			<input type="checkbox"/> Ongoing <input type="checkbox"/> Seasonal <input type="checkbox"/> Only during declared emergencies
Staff training		As needed	<input checked="" type="checkbox"/> Ongoing <input type="checkbox"/> Seasonal <input type="checkbox"/> Only during declared emergencies
Facility tours			<input type="checkbox"/> Ongoing <input type="checkbox"/> Seasonal <input type="checkbox"/> Only during declared emergencies
Displays and exhibits			<input type="checkbox"/> Ongoing <input type="checkbox"/> Seasonal <input type="checkbox"/> Only during declared emergencies
Marketing rebate programs (e.g., indoor fixtures & appliances and outdoor practices)			<input type="checkbox"/> Ongoing <input type="checkbox"/> Seasonal

City of Columbus, MN – Water Supply Plan

Education Methods	General summary of topics	#/Year	Frequency
			<input type="checkbox"/> Only during declared emergencies
Community news letters		As needed	<input checked="" type="checkbox"/> Ongoing <input type="checkbox"/> Seasonal <input type="checkbox"/> Only during declared emergencies
Direct mailings (water audit/retrofit kits, showerheads, brochures)			<input type="checkbox"/> Ongoing <input type="checkbox"/> Seasonal <input type="checkbox"/> Only during declared emergencies
Information kiosk at utility and public buildings			<input type="checkbox"/> Ongoing <input type="checkbox"/> Seasonal <input type="checkbox"/> Only during declared emergencies
Public service announcements			<input type="checkbox"/> Ongoing <input type="checkbox"/> Seasonal <input type="checkbox"/> Only during declared emergencies
Cable TV Programs			<input type="checkbox"/> Ongoing <input type="checkbox"/> Seasonal <input type="checkbox"/> Only during declared emergencies
Demonstration projects (landscaping or plumbing)			<input type="checkbox"/> Ongoing <input type="checkbox"/> Seasonal <input type="checkbox"/> Only during declared emergencies
K-12 education programs (Project Wet, Drinking Water Institute, presentations)			<input type="checkbox"/> Ongoing <input type="checkbox"/> Seasonal <input type="checkbox"/> Only during declared emergencies
Community events (children’s water festivals, environmental fairs)			<input type="checkbox"/> Ongoing <input type="checkbox"/> Seasonal <input type="checkbox"/> Only during declared emergencies
Community education classes			<input type="checkbox"/> Ongoing <input type="checkbox"/> Seasonal <input type="checkbox"/> Only during declared emergencies

City of Columbus, MN – Water Supply Plan

Education Methods	General summary of topics	#/Year	Frequency
Water week promotions			<input type="checkbox"/> Ongoing <input type="checkbox"/> Seasonal <input type="checkbox"/> Only during declared emergencies
Website (include address:)			<input type="checkbox"/> Ongoing <input type="checkbox"/> Seasonal <input type="checkbox"/> Only during declared emergencies
Targeted efforts (large volume users, users with large increases)			<input type="checkbox"/> Ongoing <input type="checkbox"/> Seasonal <input type="checkbox"/> Only during declared emergencies
Notices of ordinances			<input type="checkbox"/> Ongoing <input type="checkbox"/> Seasonal <input type="checkbox"/> Only during declared emergencies
Emergency conservation notices			<input type="checkbox"/> Ongoing <input type="checkbox"/> Seasonal <input type="checkbox"/> Only during declared emergencies
Other:			<input type="checkbox"/> Ongoing <input type="checkbox"/> Seasonal <input type="checkbox"/> Only during declared emergencies

Briefly discuss what future education and information activities your community is considering in the future:

NA

Part 4. ITEMS FOR METROPOLITAN AREA COMMUNITIES

Minnesota Statute 473.859 requires WSPs to be completed for all local units of government in the seven-county Metropolitan Area as part of the local comprehensive planning process.



Much of the information in Parts 1-3 addresses water demand for the next 10 years. However, additional information is needed to address water demand through 2040, which will make the WSP consistent with the Metropolitan Land Use Planning Act, upon which the local comprehensive plans are based.

This Part 4 provides guidance to complete the WSP in a way that addresses plans for water supply through 2040.

A. Water Demand Projections through 2040

Complete Table 7 in Part 1D by filling in information about long-term water demand projections through 2040. Total Community Population projections should be consistent with the community's system statement, which can be found on the Metropolitan Council's website and which was sent to the community in September 2015.

Projected Average Day, Maximum Day, and Annual Water Demands may either be calculated using the method outlined in *Appendix 2 of the 2015 Master Water Supply Plan* or by a method developed by the individual water supplier.

B. Potential Water Supply Issues

Complete Table 10 in Part 1E by providing information about the potential water supply issues in your community, including those that might occur due to 2040 projected water use.

The *Master Water Supply Plan* provides information about potential issues for your community in *Appendix 1 (Water Supply Profiles)*. This resource may be useful in completing Table 10.

You may document results of local work done to evaluate impact of planned uses by attaching a feasibility assessment or providing a citation and link to where the plan is available electronically.

C. Proposed Alternative Approaches to Meet Extended Water Demand Projections

Complete Table 12 in Part 1F with information about potential water supply infrastructure impacts (such as replacements, expansions or additions to wells/intakes, water storage and treatment capacity, distribution systems, and emergency interconnections) of extended plans for development and redevelopment, in 10-year increments through 2040. It may be useful to refer to information in the community's local Land Use Plan, if available.

Complete Table 14 in Part 1F by checking each approach your community is considering to meet future demand. For each approach your community is considering, provide information about the amount of

future water demand to be met using that approach, the timeframe to implement the approach, potential partners, and current understanding of the key benefits and challenges of the approach.

As challenges are being discussed, consider the need for: evaluation of geologic conditions (mapping, aquifer tests, modeling), identification of areas where domestic wells could be impacted, measurement and analysis of water levels & pumping rates, triggers & associated actions to protect water levels, etc.

D. Value-Added Water Supply Planning Efforts (Optional)

The following information is not required to be completed as part of the local water supply plan, but completing this can help strengthen source water protection throughout the region and help Metropolitan Council and partners in the region to better support local efforts.

Source Water Protection Strategies

Does a Drinking Water Supply Management Area for a neighboring public water supplier overlap your community? Yes No

If you answered no, skip this section. If you answered yes, please complete Table 32 with information about new water demand or land use planning-related local controls that are being considered to provide additional protection in this area.

Table 32. Local controls and schedule to protect Drinking Water Supply Management Areas

Local Control	Schedule to Implement	Potential Partners
<input type="checkbox"/> None at this time		
<input type="checkbox"/> Comprehensive planning that guides development in vulnerable drinking water supply management areas		
<input type="checkbox"/> Zoning overlay		
<input type="checkbox"/> Other:		

Technical assistance

From your community’s perspective, what are the most important topics for the Metropolitan Council to address, guided by the region’s Metropolitan Area Water Supply Advisory Committee and Technical Advisory Committee, as part of its ongoing water supply planning role?

- Coordination of state, regional and local water supply planning roles
- Regional water use goals
- Water use reporting standards
- Regional and sub-regional partnership opportunities
- Identifying and prioritizing data gaps and input for regional and sub-regional analyses
- Others: _____

GLOSSARY

Agricultural/Irrigation Water Use - Water used for crop and non-crop irrigation, livestock watering, chemigation, golf course irrigation, landscape and athletic field irrigation.

Average Daily Demand - The total water pumped during the year divided by 365 days.

Calcareous Fen - Calcareous fens are rare and distinctive wetlands dependent on a constant supply of cold groundwater. Because they are dependent on groundwater and are one of the rarest natural communities in the United States, they are a protected resource in MN. Approximately 200 have been located in Minnesota. They may not be filled, drained or otherwise degraded.

Commercial/Institutional Water Use - Water used by motels, hotels, restaurants, office buildings, commercial facilities and institutions (both civilian and military). Consider maintaining separate institutional water use records for emergency planning and allocation purposes. Water used by multi-family dwellings, apartment buildings, senior housing complexes, and mobile home parks should be reported as Residential Water Use.

Commercial/Institutional/Industrial (C/I/I) Water Sold - The sum of water delivered for commercial/institutional or industrial purposes.

Conservation Rate Structure - A rate structure that encourages conservation and may include increasing block rates, seasonal rates, time of use rates, individualized goal rates, or excess use rates. If a conservation rate is applied to multifamily dwellings, the rate structure must consider each residential unit as an individual user. A community may have a separate conservation rate that only goes into effect when the community or governor declares a drought emergency. These higher rates can help to protect the city budgets during times of significantly less water usage.

Date of Maximum Daily Demand - The date of the maximum (highest) water demand. Typically this is a day in July or August.

Declining Rate Structure - Under a declining block rate structure, a consumer pays less per additional unit of water as usage increases. This rate structure does not promote water conservation.

Distribution System - Water distribution systems consist of an interconnected series of pipes, valves, storage facilities (water tanks, water towers, reservoirs), water purification facilities, pumping stations, flushing hydrants, and components that convey drinking water and meeting fire protection needs for cities, homes, schools, hospitals, businesses, industries and other facilities.

Flat Rate Structure - Flat fee rates do not vary by customer characteristics or water usage. This rate structure does not promote water conservation.

Industrial Water Use - Water used for thermonuclear power (electric utility generation) and other industrial use such as steel, chemical and allied products, paper and allied products, mining, and petroleum refining.

Low Flow Fixtures/Appliances - Plumbing fixtures and appliances that significantly reduce the amount of water released per use are labeled “low flow”. These fixtures and appliances use just enough water to be effective, saving excess, clean drinking water that usually goes down the drain.

Maximum Daily Demand - The maximum (highest) amount of water used in one day.

Metered Residential Connections - The number of residential connections to the water system that have meters. For multifamily dwellings, report each residential unit as an individual user.

Percent Unmetered/Unaccounted For - Unaccounted for water use is the volume of water withdrawn from all sources minus the volume of water delivered. This value represents water “lost” by miscalculated water use due to inaccurate meters, water lost through leaks, or water that is used but unmetered or otherwise undocumented. Water used for public services such as hydrant flushing, ice skating rinks, and public swimming pools should be reported under the category “Water Supplier Services”.

Population Served - The number of people who are served by the community’s public water supply system. This includes the number of people in the community who are connected to the public water supply system, as well as people in neighboring communities who use water supplied by the community’s public water supply system. It should not include residents in the community who have private wells or get their water from neighboring water supply.

Residential Connections - The total number of residential connections to the water system. For multifamily dwellings, report each residential unit as an individual user.

Residential Per Capita Demand - The total residential water delivered during the year divided by the population served divided by 365 days.

Residential Water Use - Water used for normal household purposes such as drinking, food preparation, bathing, washing clothes and dishes, flushing toilets, and watering lawns and gardens. Should include all water delivered to single family private residences, multi-family dwellings, apartment buildings, senior housing complexes, mobile home parks, etc.

Smart Meter - Smart meters can be used by municipalities or by individual homeowners. Smart metering generally indicates the presence of one or more of the following:

- Smart irrigation water meters are controllers that look at factors such as weather, soil, slope, etc. and adjust watering time up or down based on data. Smart controllers in a typical summer will reduce water use by 30%-50%. Just changing the spray nozzle to new efficient models can reduce water use by 40%.
- Smart Meters on customer premises that measure consumption during specific time periods and communicate it to the utility, often on a daily basis.
- A communication channel that permits the utility, at a minimum, to obtain meter reads on demand, to ascertain whether water has recently been flowing through the meter and onto the

premises, and to issue commands to the meter to perform specific tasks such as disconnecting or restricting water flow.

Total Connections - The number of connections to the public water supply system.

Total Per Capita Demand - The total amount of water withdrawn from all water supply sources during the year divided by the population served divided by 365 days.

Total Water Pumped - The cumulative amount of water withdrawn from all water supply sources during the year.

Total Water Delivered - The sum of residential, commercial, industrial, institutional, water supplier services, wholesale and other water delivered.

Ultimate (Full Build-Out) - Time period representing the community's estimated total amount and location of potential development, or when the community is fully built out at the final planned density.

Unaccounted (Non-revenue) Loss - See definitions for "percent unmetered/unaccounted for loss".

Uniform Rate Structure - A uniform rate structure charges the same price-per-unit for water usage beyond the fixed customer charge, which covers some fixed costs. The rate sends a price signal to the customer because the water bill will vary by usage. Uniform rates by class charge the same price-per-unit for all customers within a customer class (e.g. residential or non-residential). This price structure is generally considered less effective in encouraging water conservation.

Water Supplier Services - Water used for public services such as hydrant flushing, ice skating rinks, public swimming pools, city park irrigation, back-flushing at water treatment facilities, and/or other uses.

Water Used for Nonessential Purposes - Water used for lawn irrigation, golf course and park irrigation, car washes, ornamental fountains, and other non-essential uses.

Wholesale Deliveries - The amount of water delivered in bulk to other public water suppliers.

Acronyms and Initialisms

AWWA – American Water Works Association

C/I/I – Commercial/Institutional/Industrial

CIP – Capital Improvement Plan

GIS – Geographic Information System

GPCD – Gallons per capita per day

City of Columbus, MN – Water Supply Plan

GWMA – Groundwater Management Area – North and East Metro, Straight River, Bonanza,

MDH – Minnesota Department of Health

MGD – Million gallons per day

MG – Million gallons

MGL – Maximum Contaminant Level

MnTAP – Minnesota Technical Assistance Program (University of Minnesota)

MPARS – MN/DNR Permitting and Reporting System (new electronic permitting system)

MRWA – Minnesota Rural Waters Association

SWP – Source Water Protection

WHP – Wellhead Protection

DRAFT

Appendix 1: Well records and maintenance summaries

731131

County Anoka
 Quad Centerville
 Quad ID 119A

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
 Minnesota Statutes Chapter 1031

Appendices pg # 152
 Entry Date 06/01/2006
 Update Date 03/10/2014
 Received Date 07/31/2006

Well Name COLUMBUS 1	Township 32	Range 22	Dir Section W 25	Subsection CAADCB	Well Depth 180 ft.	Depth Completed 180 ft.	Date Well Completed 06/27/2006
Elevation 900 ft.	Elev. Method 7.5 minute topographic map (+/- 5 feet)	Drill Method Cable Tool		Drill Fluid Bentonite			
Address					Use public supply/non-comm.-non-transient		
Contact 16318 KETTLE RIVER BL NE FOREST LAKE MN 55025					Status Active		
Well 14405 WEST FREEWAY DR NE FOREST LAKE MN 55025					Well Hydrofractured? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Stratigraphy Information					From To		
Geological Material					Joint Welded		
From To (ft.) Color Hardness					Drive Shoe? Yes <input type="checkbox"/> No <input type="checkbox"/>		
SAND FILL 0 3 BROWN					Above/Below 1 ft.		
CLAY/SAND 3 41 GRAY					Casing Diameter 18 in. To 150 ft. 70 lbs./ft.		
SANDY CLAY 41 104 BROWN					24 in. To 110 ft. 94 lbs./ft.		
SAND/GRAVEL 104 118 BROWN					Open Hole From ft. To ft.		
SANDY CLAY 118 150 BROWN					Screen? <input checked="" type="checkbox"/> Type stainless		
SAND/GRAVEL 150 166 BROWN					Make JOHNSON		
CLAY/GRAVEL 166 180 TAN					Diameter Slot/Gauze Length Set		
					12 in. 60 17.5 ft. 150 ft. 167 ft.		
					Static Water Level 9.2 ft. land surface Measure 06/27/2006		
					Pumping Level (below land surface) 116. ft. 24 hrs. Pumping at 400 g.p.m.		
					Wellhead Completion Pitless adapter manufacturer Model		
					<input type="checkbox"/> Casing Protection <input checked="" type="checkbox"/> 12 in. above grade		
					<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
					Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Specified		
					Material Amount From To		
					neat cement 5.71 Cubic yards ft. 107 ft.		
					Nearest Known Source of Contamination feet Direction Type		
					Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
					Pump <input checked="" type="checkbox"/> Not Installed Date Installed		
					Manufacturer's name		
					Model Number HP Volt		
					Length of drop pipe ft Capacity g.p. Typ		
					Abandoned Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Miscellaneous First Bedrock Aquifer Quat. buried		
					Last Strat pebbly sand/silt/clay- Depth to Bedrock ft		
					Located by Minnesota Department of Health		
					Locate Method GPS SA Off (averaged)		
					System UTM - Mad83, Zone 15, Meters X 497603 Y 5008602		
					Unique Number Verification Information from Inpute Date 06/01/2006		
					Angled Drill Hole		
					Well Contractor Renner E.H. Well 71015 COX, A. Licensee Business Lic. or Reg. No. Name of Driller		

749393County Anoka
Quad Centerville
Quad ID 119AMINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031Appendices pg # 153
Entry Date 02/25/2008
Update Date 03/10/2014
Received Date

Well Name COLUMBUS 2	Township 32	Range 22	Dir Section W 25	Subsection BBDDC	Well Depth 168 ft.	Depth Completed 168 ft.	Date Well Completed 12/31/2007
Elevation 890 ft.	Elev. Method 7.5 minute topographic map (+/- 5 feet)				Drill Method Cable Tool	Drill Fluid Bentonite	
Address					Use public supply/non-comm.-non-transient	Status Active	
Well 9052 147TH AV NE FOREST LAKE MN 55025					Well Hydrofractured? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	From To	
Contact 16318 KETTLE RIVER BL FOREST LAKE MN 55025					Casing Type Step down	Joint Welded	
Stratigraphy Information					Drive Shoe? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Above/Below	
Geological Material					Casing Diameter	Weight	Hole Diameter
TOP SOIL					18 in. To	145 ft. 70.5 lbs./ft.	24 in. To 140 ft.
SAND					24 in. To	144. ft. 94.6 lbs./ft.	18 in. To 168 ft.
GRAVEL & ROCKS							
CLAY/SAND/ROCKS							
SAND/GRAVEL							
SAND							
SANDSTONE MIX							
SANDSTONE/SHALE							
					Open Hole	From	To
					Screen? <input checked="" type="checkbox"/>	Type stainless	Make JOHNSON
					Diameter	Slot/Gauze	Length
					12 in.	40	20 ft.
							147.5 ft. 168 ft.
					Static Water Level		
					2.9 ft.	land surface	Measure 12/27/2007
					Pumping Level (below land surface)		
					93.4 ft.	24 hrs.	Pumping at 1000 g.p.m.
					Wellhead Completion		
					Pitless adapter manufacturer	Model	
					<input type="checkbox"/> Casing Protection	<input checked="" type="checkbox"/> 12 in. above grade	
					<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
					Grouting Information	Well Grouted?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Specified
					Material	Amount	From To
					neat cement	51 Cubic yards	ft. 137 ft.
					Nearest Known Source of Contamination		
					80 feet	Southeas Direction	Septic tank/drain field Type
					Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
					Pump <input type="checkbox"/> Not Installed	Date Installed	
					Manufacturer's name	GOULD	
					Model Number	12CMC-4	HP 100 Volt 480
					Length of drop pipe	120 ft	Capacity 1000 g.p. Typ Turbine
					Abandoned		
					Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Variance		
					Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Miscellaneous		
					First Bedrock	St.Lawrence Formation	Aquifer Multiple
					Last Strat	St.Lawrence Formation	Depth to Bedrock 164 ft
					Located by Minnesota Department of Health		
					Locate Method GPS SA Off (averaged)		
					System	UTM - Mad83, Zone 15, Meters	X 497046 Y 5009381
					Unique Number Verification Inpute Date 06/11/2008		
					Angled Drill Hole		
					Well Contractor		
					EH Renner and Sons, Inc.	1431	LEDBETER, L.
					Licensee Business Lic. or Reg. No.		Name of Driller
Remarks							
M.G.S. NO. 4782.							
NO SAMPLES BELOW 164 FT.							
PWSID 5020566 S03							
Minnesota Well Index Report					749393		
					Printed on 09/28/2016		
					HE-01205-15		

749394

County Anoka
 Quad Centerville
 Quad ID 119A

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
 Minnesota Statutes Chapter 1031

Appendices pg # 154
 Entry Date 07/27/2007
 Update Date 08/18/2014
 Received Date

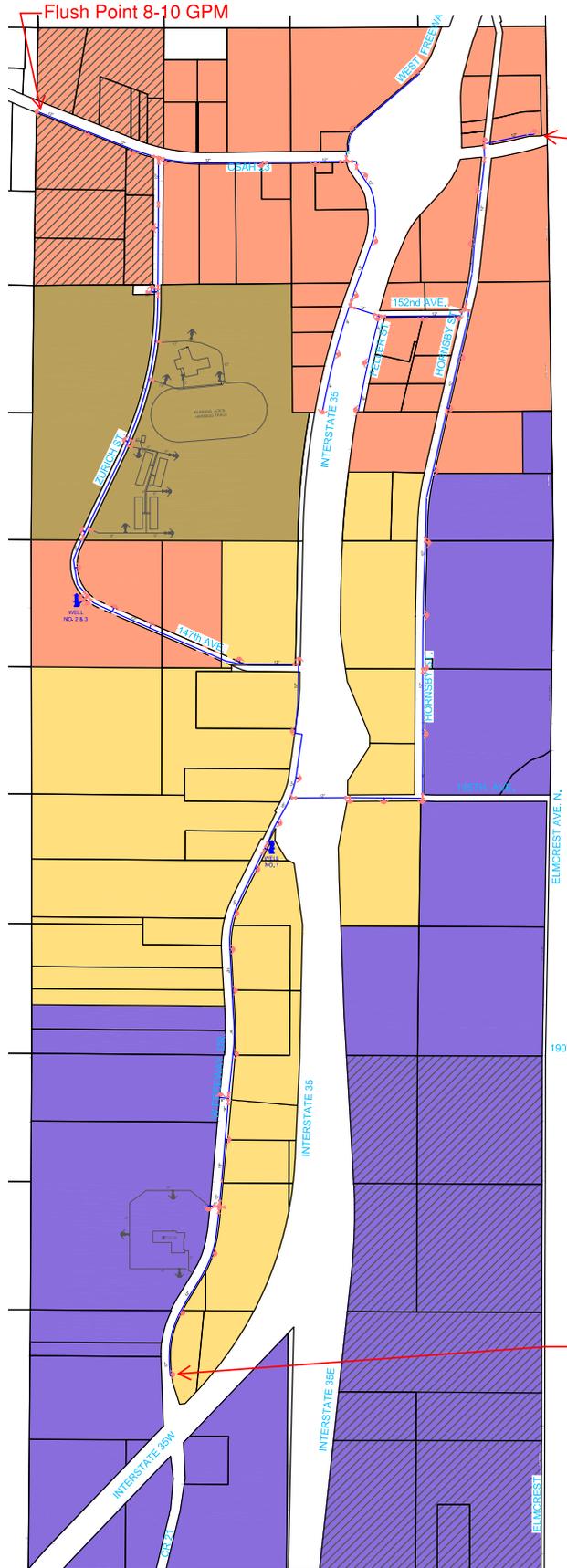
Well Name COLUMBUS 3	Township 32	Range 22	Dir Section W 25	Subsection BBDDC	Well Depth 396 ft.	Depth Completed 396 ft.	Date Well Completed 12/31/2007
Elevation 892 ft.	Elev. Method 7.5 minute topographic map (+/- 5 feet)				Drill Method Cable Tool	Drill Fluid Bentonite	
Address					Use public supply/non-comm.-non-transient	Status Active	
Well 9052 147TH AV NE MN					Well Hydrofractured? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	From To	
Contact 16318 KETTLE RIVER BL FOREST LAKE MN 55025					Casing Type Step down	Joint Welded	
Stratigraphy Information					Drive Shoe? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Above/Below	
Geological Material From To (ft.) Color Hardness					Casing Diameter	Weight	Hole Diameter
CLAY/GRAVEL 0 81 GRY/BRN MEDIUM					18 in. To 226. ft.	70.5 lbs./ft.	24 in. To 221 ft.
SAND/GRAVEL 81 128 BROWN SOFT					24 in. To 176. ft.	94.6 lbs./ft.	18 in. To 396 ft.
SAND/CLAY 128 150 BROWN MEDIUM							
SAND/GRAVEL 150 168 BROWN SOFT							
ST. LAWRENCE SHALE 168 170 VARIED M.HARD							
ST. LAWRENCE SHALE 170 177 VARIED M.HARD							
FRANCONIA 177 350 LT. GRN MEDIUM							
IRONTON/GALESVILLE 350 390 TAN M.SOFT							
EAU CLAIRE SHALE 390 396 GRN/BRN MEDIUM							
					Open Hole From 221.4 ft. To 396 ft.		
					Screen? <input type="checkbox"/>	Type Make	
					Static Water Level 15 ft. land surface	Measure 11/01/2007	
					Pumping Level (below land surface) 98.3 ft. 8 hrs. Pumping at	1100 g.p.m.	
					Wellhead Completion Pitless adapter manufacturer	Model	
					<input type="checkbox"/> Casing Protection	<input checked="" type="checkbox"/> 12 in. above grade	
					<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
					Grouting Information Material neat cement	Well Grouted? Amount 12 Cubic yards	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Specified From To ft. 221 ft.
					Nearest Known Source of Contamination 80 feet <u>Southeas</u> Direction	<u>Septic tank/drain field</u> Type	
					Well disinfected upon completion? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Pump <input type="checkbox"/> Not Installed	Date Installed	
					Manufacturer's name GOULD		
					Model Number 12CMC-5	HP 100	Volt 480
					Length of drop pipe 150 ft	Capacity 1100 g.p.	Typ Turbine
					Abandoned Does property have any not in use and not sealed well(s)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
					Variance Was a variance granted from the MDH for this well?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
					Miscellaneous First Bedrock St.Lawrence Formation	Aquifer	Tunnel City-
					Last Strat Eau Claire Formation	Depth to Bedrock 170	ft
					Located by Minnesota Department of Health		
					Locate Method GPS SA Off (averaged)		
					System UTM - Mad83, Zone 15, Meters	X 497049	Y 5009374
					Unique Number Verification	Info/GPS from data	Inpute Date 07/24/2007
					Angled Drill Hole		
					Well Contractor EH Renner and Sons, Inc. 1431 LEDBETER, L. Licensee Business Lic. or Reg. No. Name of Driller		

Remarks
 GAMMA LOGGED 8-6-2007. M..G.S. NO. 4783. LOGGED BY JIM TRAEN.
 VARIANCE TN# 4248.
 PWSID 5020566 S02

Appendix 2: Water level monitoring plan

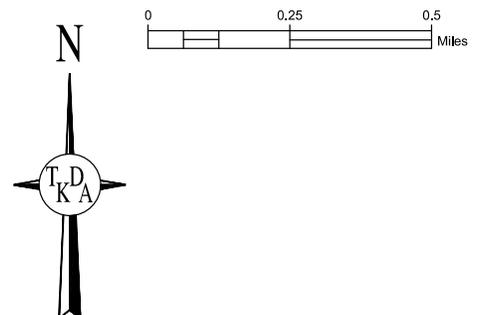
CITY OF COLUMBUS

WATERMAIN



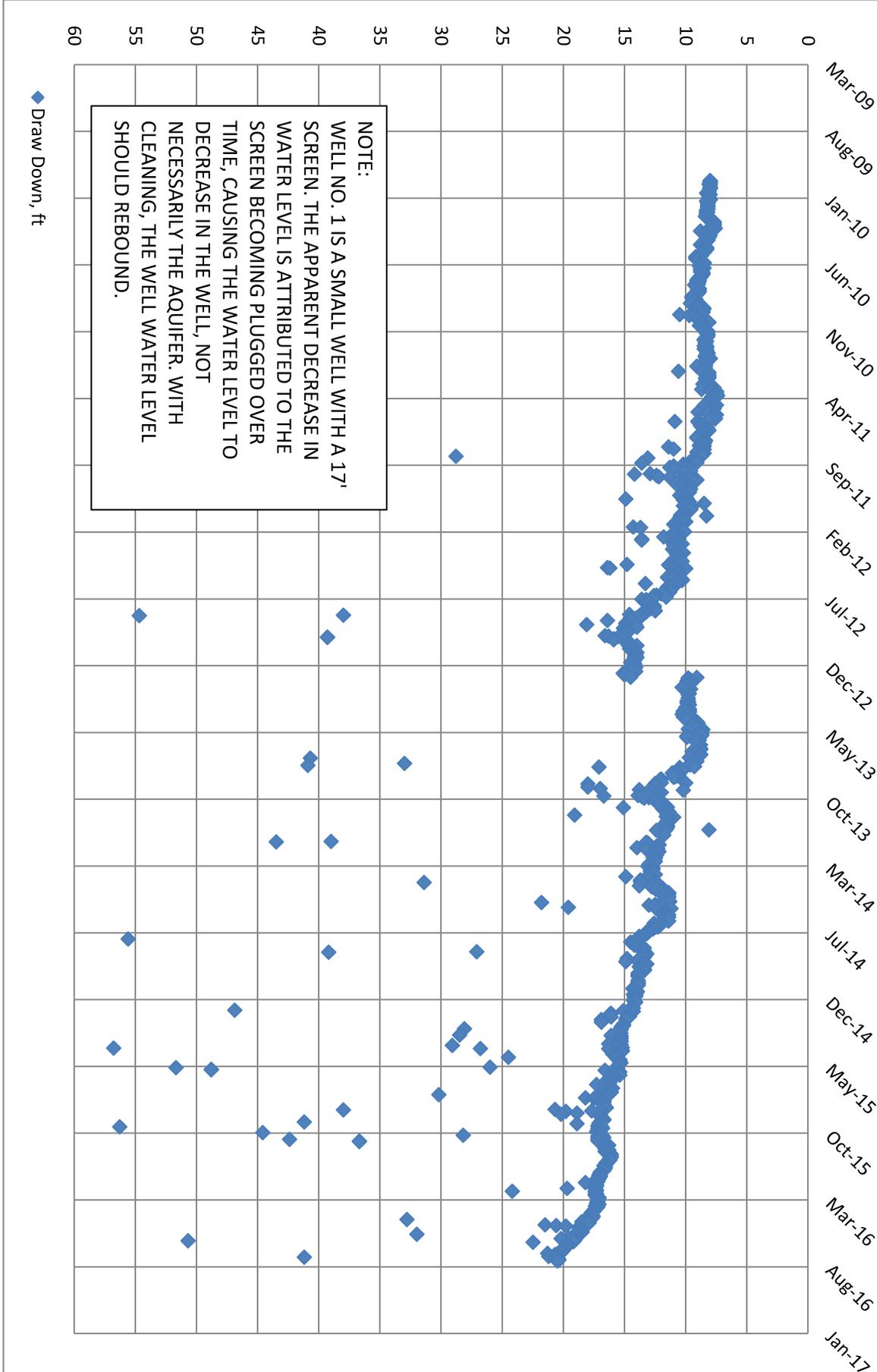
LEGEND

-  WATERMAIN
-  GATE VALVE
-  HYDRANT & VALVE
-  ACTIVE WELL (MONITORED DAILY)
-  COMMUNITY RETAIL ZONE
-  COMMERCIAL SHOWROOM ZONE
-  HORSE RACING ZONE
-  LIGHT INDUSTRIAL ZONE
-  SUBURBAN RESIDENTIAL OVERLAY



Appendix 3: Water level graphs for each water supply well

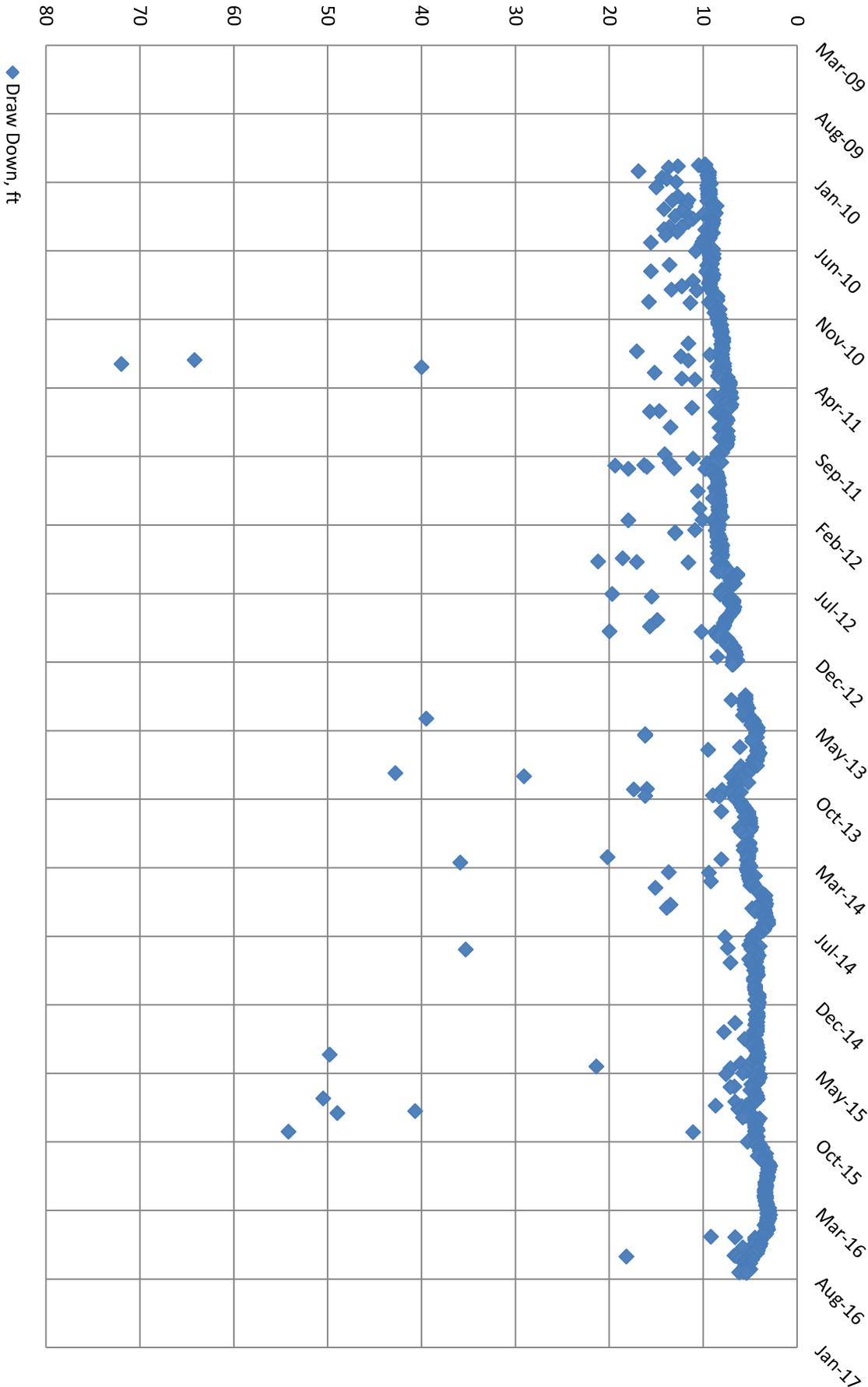
City of Columbus Well No. 1 Drawdown



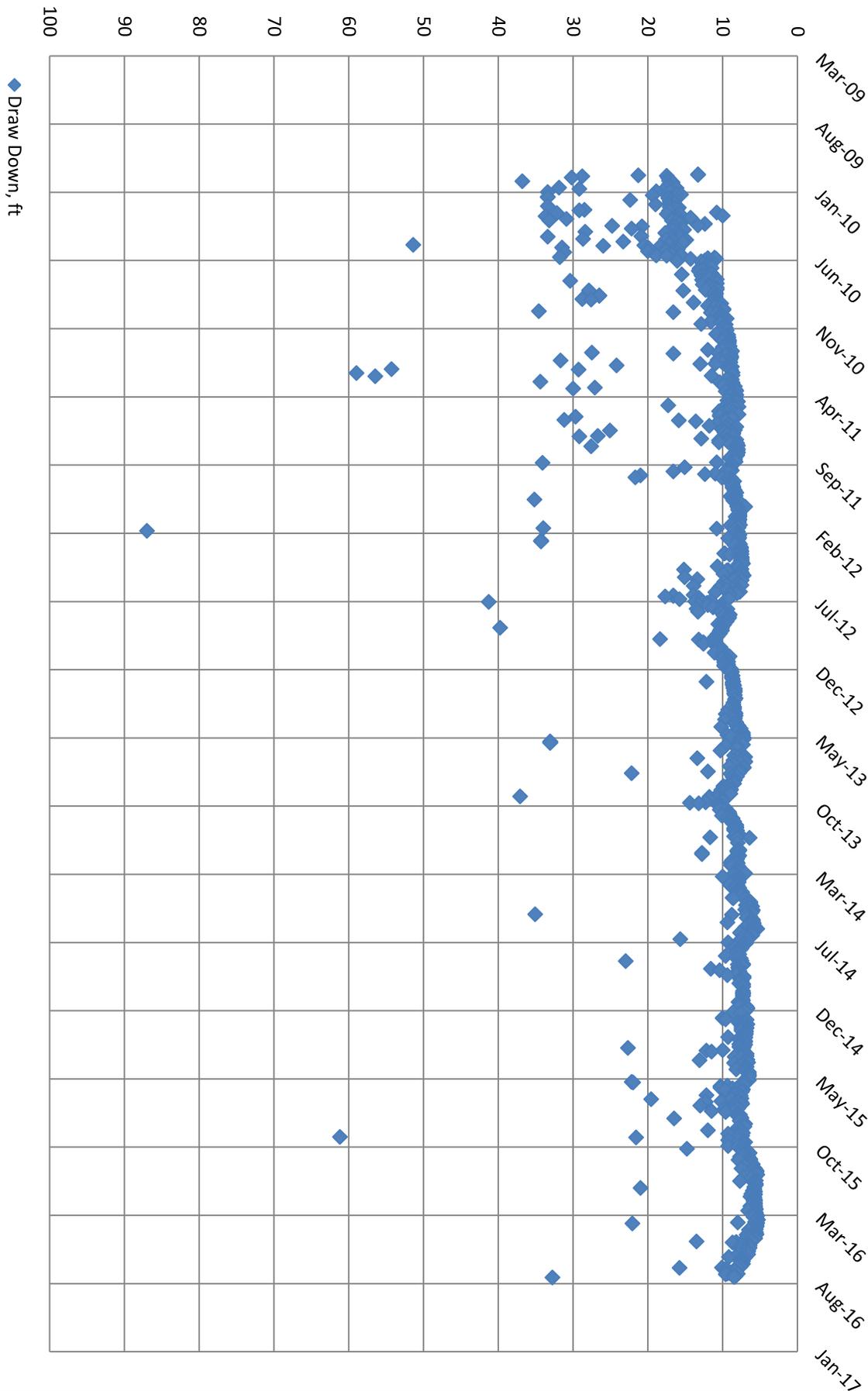
NOTE:
WELL NO. 1 IS A SMALL WELL WITH A 17' SCREEN. THE APPARENT DECREASE IN WATER LEVEL IS ATTRIBUTED TO THE SCREEN BECOMING PLUGGED OVER TIME, CAUSING THE WATER LEVEL TO DECREASE IN THE WELL, NOT NECESSARILY THE AQUIFER. WITH CLEANING, THE WELL WATER LEVEL SHOULD REBOUND.

◆ Draw Down, ft

City of Columbus Well No. 2 Drawdown



City of Columbus Well No. 3 Drawdown



Appendix 4: Capital Improvement Plan

No Capital Improvement Plan

Appendix 5: Emergency Telephone List

**City of Columbus, MN
Emergency Telephone List**

Emergency Response Team	Name	Work Telephone
Emergency Response Lead	Jim Windingstad	651-419-9015
Alternate Emergency Response Lead	Tim Sawatzky	651-419-9002
Water Operator	Tim Sawatzky	651-419-9002
Alternate Water Operator	Bill Karth	651-419-9003
Public Communications	Elizabeth Mursko	651-419-9011

State and Local Emergency Response Contacts	Name	Work Telephone
State Incident Duty Officer	Minnesota Duty Officer	651-649-5451 Metro
County Emergency Director	Terry Stoltzman	763-422-7063
National Guard	Minnesota Duty Officer	651-649-5451 Metro
Mayor	Dave Povolny	651-464-3120
Fire Chief (Forest Lake)	Alan Newman	651-209-9722
Sheriff (Anoka County)	James Stuart	763-427-1212
Police Chief (Anoka County)	Kevin Halweg	763-323-5033
Ambulance	North Memorial Ambulance	651-464-6738
Hospital	Fairview Lakes Medical Center	651-982-7000
Doctor or Medical Facility	Fairview Health Services	612-672-2736

State and Local Agencies	Name	Work Telephone
MDH District Engineer	Isaac Bradlich	651-201-3971
MDH	Drinking Water Protection	651-201-4700
State Testing Laboratory	Minnesota Duty Officer	651-649-5451 Metro
MPCA	Environmental Emergencies	800-422-0798
DNR Area Hydrologist	Kate Drewry	651-259-5753
County Water Planner		763-422-7063

Utilities	Name	Work Telephone
Electric Company	Xcel Energy Electric Outages	1-800-895-1999
Gas Company	Xcel Energy Gas Emergency	1-800-895-2999
Telephone Company	Century Link	651-631-2682
Gopher State One Call	Utility Locations	800-252-1166 / 651-454-0002

Technical/Contracted Services/Supplies	Name	Work Telephone
MRWA Technical Services	MN Rural Water Association	800-367-6792
Well Driller/Repair	EH Renner	763-4276100
Pump Repair	General Repair	651-766-0874
Electrician	Country View Electric	651-221-4053
Backhoe	Olsen Sewer	651-464-2082
Chemical Feed	Hawkins	612-331-9100
Meter Repair	Metering Technology Solutions	952-242-1960
Generator	Kodiak Power Systems	651-508-8424
Valves	General Repair	651-766-0874
Pipe & Fittings	Plant and Flanged	763-792-3870
Laboratory	Instrumental Research	763-571-3698
Engineering firm	TKDA	651-292-4400

Appendix 6: Cooperative Agreements for Emergency Services

No agreements in place

Appendix 7: Municipal Critical Water Deficiency Ordinance

City Code, Chapter 14: PUBLIC HEALTH, WELLS, SEWERS, AND UTILITIES

[Chapter 14, Article III § 14-319, added by Ord. No. 06-01, effective March 2, 2006]

SECTION 14-320. RESTRICTED HOURS FOR SPRINKLING.

A. **RESTRICTIONS ON WATER USAGE.** Whenever it is determined by either the Mayor or the City Council that a shortage of water supply may be imminent, either may act in accordance with the procedures hereinafter described to limit the uses of City water and the time and hours during which water from the City water supply may be used.

B. **CITY COUNCIL ACTION.** The City Council may act by resolution to limit water usage. The resolution shall state in detail the restrictions imposed on water usage and the charge for instances of noncompliance. The restrictions shall become effective 24 hours after passage of the resolution. The City Council shall take such action as is reasonably practicable to inform the general public of the imposition of the restrictions on water usage and of the charges and other penalties which could be imposed for violation of such restrictions and post notice of water restrictions in public places where other City notices are posted.

C. **ACTION BY THE MAYOR.** The Mayor may act by filing with the City Clerk a written certification that there is an imminent shortage of water supply. The certification shall specify in detail the restrictions on water usage and the charge for instances of noncompliance and shall become effective 24 hours after being filed. The City Clerk shall endorse on each filing the time and date of filing. The Mayor shall take such action as is reasonably practicable to inform the general public of the imposition of restrictions on water usage and of the charges and other penalties for violation of such restrictions and post notice of the water restrictions in public places where other City notices are posted. Restrictions imposed by the Mayor may be revoked by written directive from the Mayor to the City Clerk, who shall endorse on such directive the date and time of receipt, or by action of the City Council.

D. **PENALTIES.**

1. For each instance of noncompliance with water usage restrictions imposed by this section, a charge of up to \$25.00 shall be assessed against the property on which the violation occurred and added to the water bill for such premises. The amount of the charge shall be specified by the City Council in its resolution and the Mayor in his certification to the City Clerk.

2. Failure to comply with water usage restrictions after two warnings shall be cause for the discontinuance of water service.

3. Failure to comply with water usage restrictions shall be a petty misdemeanor punishable by the maximum fine allowed by law for such offenses.

[Chapter 14, Article III § 14-320, added by Ord. No. 06-01, effective March 2, 2006]

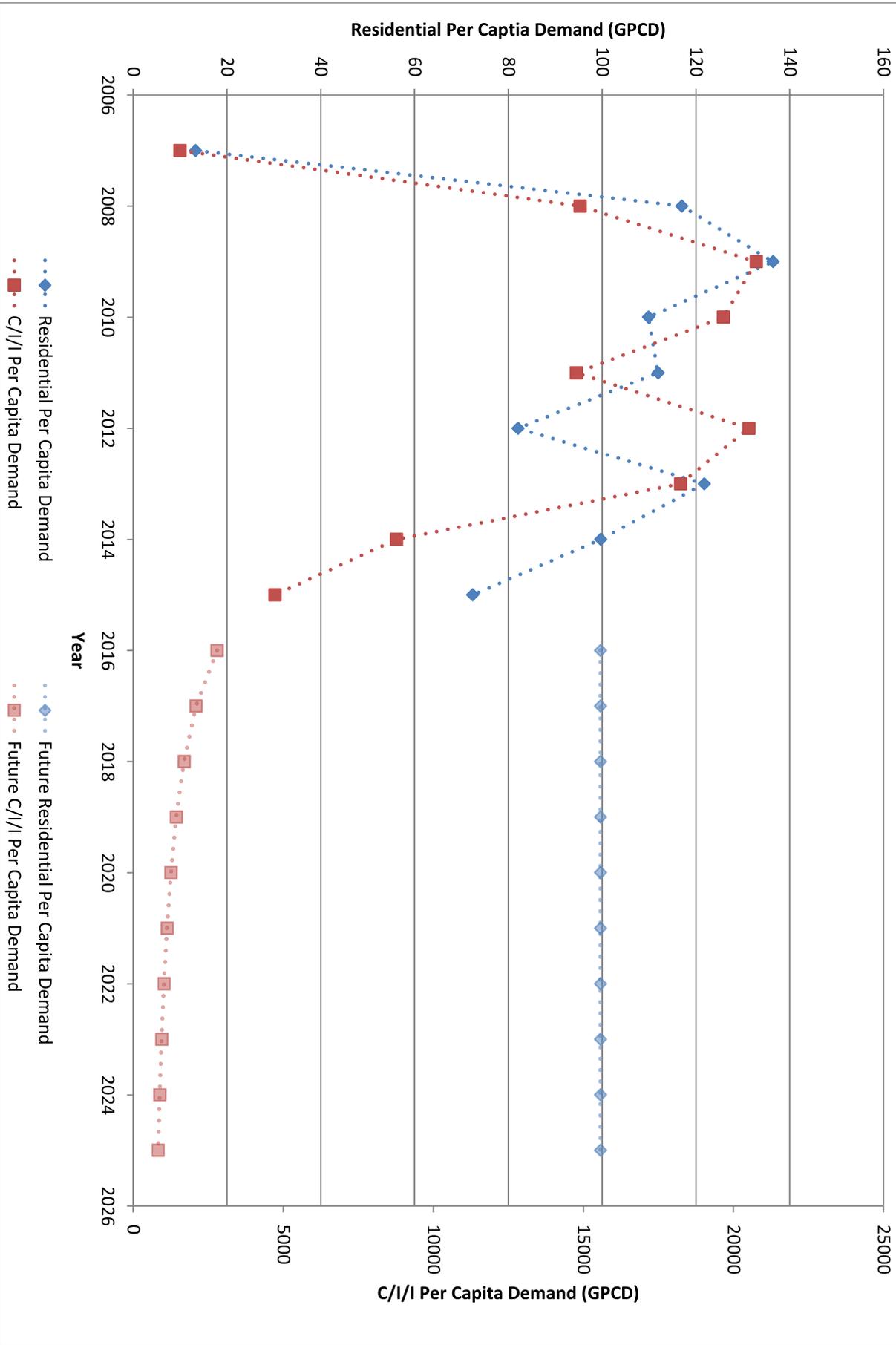
SECTION 14-321. SEPARABILITY OF SECTIONS. If any portion of this Ordinance shall be held invalid, the invalidity of such portion shall not affect the validity of the other provisions of this Ordinance which shall continue in full force and effect.

[Chapter 14, Article III § 14-321, added by Ord. No. 06-01, effective March 2, 2006]

SECTION 14-322. PENALTY PROVISION. Any person, firm or corporation who shall do or commit any act that is forbidden by the provisions of this Ordinance shall be guilty of a misdemeanor and upon conviction thereof shall be punished by a fine not to exceed \$1,000.00 or to be imprisoned in the County Jail for a period not to exceed ninety days.

Appendix 8: Graph showing annual per capita water demand for each customer category during the last ten-years

Per Capita Water Demand by Customer Category



Appendix 9: Water Rate Structure

**2016 FEE SCHEDULE
CITY OF COLUMBUS**

PLANNING AND ZONING (Continued)			
	Fee	\$100.00	plus associated costs
Lot Line Adjustment	Escrow	\$500.00	
	Commerical	\$762.50	per lot
Parkland Dedication Fee	Residential	\$1525.00	per lot
Pumping Permit for Private Sewer System		\$10.00	per permit, plus postage
Rezoning		\$150.00	plus associated costs
Sign Permit	Application Fee	\$200.00	
Site Plan Review		\$50.00	plus associated costs
	Deposit	\$2,000.00	plus associated costs
	Application Fee	\$100.00	
Subdivision	Public Hearing	\$200.00	
Vacation of streets, easements, etc.		\$150.00	plus associated costs
Variance & Public Hearing		\$150.00	plus associated costs
Watershed Permit (Sunrise)		\$100.00	
Watershed Permit (Sunrise) & Public Hearing		\$200.00	
Zoning Code Amendment		\$150.00	plus associated costs
* Associated costs include: Attorney, Engineer, and Planner service charges			
PUBLIC UTILITIES			
Sewer - Local	Availability Charge (LSAC)	\$412.00	per SAC unit as determined by MCES , minimum 1 unit
Sewer - Metropolitan Council	Availability Charge (SAC)	\$2,485.00	per SAC unit , minimum 1 unit
Sewer	Permit- Commercial	\$75.00	
Sewer	Permit- Residential	\$50.00	
Sewer - Usage Fee	Quarterly	\$7.70	per 1000 gallons
	Quarterly	\$83.16	Residential Minimum
	Quarterly	\$166.32	Commercial Minimum
Water Availability Charge	(WAC)	\$1,472.00	per equivalent Residential Unit (ERU)
Water - Commercial (pipes)	Permit	\$75.00	
Water - Residential (pipes)	Permit	\$50.00	
Water - Usage Fee	Billed Quarterly	\$5.70	per 1000 gallons
	Quarterly	\$61.56	Residential Minimum
	Quarterly	\$123.12	Commercial Minimum
Water Meter Rental	\$1,000 deposit plus \$25 flat fee plus water usage fee as indicated above		
SERVICES AND RESALE - All prices include MN sales tax			
CD or Disk Copy of Ordinances		\$20.00	
Data Practices Compliance Official Services		\$15.00	per hour and/or material costs
Filing Fee for Elections		\$5.00	
Maps - Color		\$1.00	
Maps - Aerial (photo quality) (8-1/2" x 11")		\$2.00	
Maps - large city		\$2.00	
Mailbox stand/support		\$80.00	
Paper Copy of Subdivision Regulations	Chapter 8	\$10.00	
Paper Copy of Zoning Code Regulations	Chapter 7 & 8	\$20.00	
Paper Copy of Code Ordinances Book		Reimbursement of costs	
Photo Copies (8-1/2" x 11")		\$0.25	per side
N.S. F. - Checks Returned		\$30.00	

**Appendix 10: Adopted or proposed regulations to reduce demand or improve
water efficiency**

No regulations proposed at this time

Appendix 11: Implementation Checklist

The City of Columbus built the watermain system to accommodate future growth along the I-35 corridor. The majority of the watermain was constructed for water supply and fire protection services in the industrial and commercial zones of the City. The capacity will increase further, when the City will purchase a 150,000 gallon storage tank from Ziegler per an agreement from 2006. Because of the low domestic use and large volume of the watermain system, the water can remain in the system up to 35 days from the time it was produced to the time it reaches the customers if the system is not continuously bled.

Currently, there are only a few residential customers connected to the watermain system, with proposals being considered by the City to add several detached residential units and apartment buildings in the near future. Past that, the residential demand is not anticipated to grow substantially since the area is transitioning from residential and business mixed uses to mainly commercial and industrial use. No new single family detached dwellings are allowed in the business zones, however in the areas with the “Suburban Residential Overlay,” the City has identified areas for flexible development of residential, business, or mixed use developments.

Until more commercial and industrial customers choose Columbus as their place of business, the City of Columbus anticipates the need to continually flush the system up to 45% of pumped water to keep chlorine residuals above the drinking water standards.

TOWN OF COLUMBUS
CITY OF FOREST LAKE

PHASE I PUBLIC IMPROVEMENT PROJECT AGREEMENT

THIS AGREEMENT is made on or as of the 10th day of JANUARY, 2000^{1 Bm} by and between the Township of Columbus, a public body corporate and politic ("Columbus") and the City of Forest Lake, a public body corporate and politic ("Forest Lake").

WITNESSETH:

WHEREAS, Columbus and Forest Lake entered into that certain *Joint Powers Agreement Wastewater Treatment* dated JANUARY 10, 2000^{1 Bm} (the "Joint Powers Agreement"), the purpose of which is to establish and maintain a cooperative wastewater treatment system serving both communities (the "Project"); and

WHEREAS, the Joint Powers Agreement contemplates construction of the Project in one or more phases referred to as "public improvement projects"; and

WHEREAS, the first phase of the Project involves the construction of an oversized gravity sewer line to be connected to the Metropolitan Council trunk interceptor system within Forest Lake, which oversized is intended to accommodate anticipated flowage from both the Fenway Avenue Area Trunk Utility Project in Forest Lake and the Freeway Corridor Development District in Columbus (the "Phase I Improvements"); and

WHEREAS, Columbus approved a feasibility study for the Project and ordered such Phase I Improvements to be undertaken in coordination with Forest Lake pursuant to a separate written agreement between the parties; and

WHEREAS, this Agreement sets forth the terms and conditions related to the construction of the Phase I Improvements.

NOW, THEREFORE, in consideration of the mutual covenants and agreements contained herein, the sufficiency of which is hereby acknowledged, Columbus and Forest Lake agree as follows:

1. **Description of Phase I Improvements.** A detailed description of the Phase I Improvements is set forth in the *Engineering and Feasibility Report* attached hereto as Exhibit A (the "Engineering Report").
2. **Construction.** The Phase I Improvements have been constructed in accordance with the Engineering Report in compliance with all federal, state, and local laws, regulations, and ordinances applicable to the Phase I Improvements, including any specific requirements associated with the connection of the Phase I Improvements to the Metropolitan Council's trunk interceptor system.

3. **Cost Participation.** The Phase I Improvements have been constructed at a cost of \$100,586.00 including a cost of \$26,140.00 to oversize the gravity sewer line from 15 inches to 21 inches for the specific benefit of Columbus.

The parties agree that the total cost of the Phase I Improvements shall be shared on a proportional flow basis as follows:

COLUMBUS:	65.4% or \$65,783.00
FOREST LAKE:	34.6% or \$34,803.00

Of the Columbus share, \$26,140.00 shall be paid to Forest Lake upon execution of this Agreement and \$39,643.00 shall be paid to Forest Lake upon completion of the Forcemain Connection.

4. **Maintenance.** Forest Lake shall keep or cause to be kept the Phase I Improvements in good repair and condition, such that the improvements continue to provide the necessary capacity to both Forest Lake and Columbus as provided herein. The cost of such repair and maintenance shall be allocated to Columbus and Forest Lake in the same proportion as the cost of the initial construction set forth in Paragraph 3 above. Forest Lake shall pay the entire cost of such repair and maintenance initially and submit an invoice to Columbus for its proportionate share of such costs.
5. **Minimum Capacity.** Forest Lake shall cause the Phase I Improvements to be maintained such that a minimum capacity of 1.13 million gallons per day of flowage shall at all times be available to serve Columbus' Freeway Corridor Development District (the "Minimum Capacity").
6. **Forcemain Connection.** Columbus shall have the right to connect to the Phase I Improvements in the event Columbus determines, in its sole and absolute discretion, that a sufficient level of development potential exists within its Freeway Corridor Development District to justify the construction of a sewer system serving the district. In the event Columbus determines to connect to the Phase I Improvements, such connection shall be made via a forcemain sewer line to be constructed generally along 202nd Street within Forest Lake, as depicted in Exhibit B attached hereto (the "Forcemain Connection"). Columbus shall be solely responsible for the costs of constructing such Forcemain Connection, including the costs of acquiring necessary construction and utility easements along the proposed route of the Forcemain Connection (the "Easements"). To the extent feasible, Forest Lake shall cooperate in locating the Forcemain Connection within existing public right-of-way in order to reduce such acquisition costs to Columbus.

Construction shall include a metering manhole prior to discharge into the Phase I Improvements to accurately measure flows from Columbus for all required purposes.
7. **Eminent Domain.** In the event Columbus is unable to negotiate the acquisition of any Easements, Forest Lake agrees to utilize its powers of eminent domain to acquire the same. Forest Lake shall initiate such eminent domain proceedings within twenty (20) days after receiving a written request from Columbus identifying such hold-out Easements. Columbus shall pay the entire cost of such proceeding, including court costs, reasonable attorneys fees, and the commissioners award. Forest Lake shall not

enter into any settlement or stipulated award in connection with any eminent domain proceeding initiated pursuant to this Paragraph 6 without Columbus' express written consent. Forest Lake shall dismiss any such eminent domain proceeding immediately upon written notice to do so from Columbus. Upon acquiring title to such Easements through eminent domain, Forest Lake shall convey the same to Columbus for a purchase price of \$1.00.

8. **Representations.** Each party has the requisite power and authority to enter into this Agreement and perform its obligations hereunder. Each party's performance hereunder does not conflict with any contracts, enabling legislation, or governing documents applicable to such party.

9. **Indemnification.** Columbus, its officers, agents, servants, and employees shall not be liable for, and Forest Lake agrees to indemnify, defend, and hold harmless Columbus for any loss or damage to property or any damages, injury to, or death of any person(s) due to any negligent act on the part of Forest Lake, its officers, agents, servants, and employees in connection with the construction, operation, and maintenance of the Phase I Improvements. Forest Lake, its officers, agents, servants, and employees shall not be liable for, and Columbus agrees to indemnify, defend, and hold harmless Forest Lake for any loss or damage to property or any damages, injury to, or death of any person(s) due to any negligent act on the part of Columbus, its officers, agents, servants, and employees in connection with the construction, operation, and maintenance of the Forcemain Connection. The indemnification described herein shall not constitute a waiver of either municipality's limitation on liability provided by Minnesota Statutes, Chapter 466.

10. **Notices.** Any notice required to be given by Forest Lake to Columbus shall be deemed to have been given on the day of delivery if personally delivered, or if by mail, three (3) days after the date that it is deposited in the United States Mail, postage prepaid, sent by certified mail and addressed as follows:

Columbus Township
16319 Kettle River Boulevard
Forest Lake, MN 55025
Attention: Town Manager

Any notice required to be given by Columbus to Forest Lake shall be deemed to have been given on the day of delivery if personally delivered, or, if by mail, three (3) days after the date it is deposited in the United States Mail, postage prepaid, sent by certified mail, and addressed as follows:

City of Forest Lake
220 North Lake Street
Forest Lake, MN 55025-2505
Attention: Charles P. Robinson

11. **Applicable Law.** This Agreement shall be governed by and construed in accordance with the laws of the State of Minnesota.

**TOWN OF COLUMBUS
CITY OF FOREST LAKE**

**JOINT POWERS AGREEMENT
FOR WASTEWATER TREATMENT**

THE PARTIES TO THIS AGREEMENT are units of government responsible for the provision of municipal utilities in their respective jurisdictions. This Agreement is made pursuant to the authority conferred upon the parties by Minnesota Statutes § 471.59.

RECITALS

The Town of Columbus began the investigation for regional wastewater treatment service in 1996, during the initial stages of the updating of the *Town of Columbus Comprehensive Plan*.

Columbus Township officials met with representatives of the Metropolitan Council to discuss regional sewer service potential in 1997 and 1998.

Representatives of the Town of Columbus and the Town of Forest Lake began informal discussions on a joint regional sewer service system in 1997.

The Town of Columbus and the Town of Forest Lake individually incorporated provisions for a joint regional sewer service system in their respective draft comprehensive plans in 1998.

The Metropolitan Council authorized establishment of a joint regional sewer service system via the approval of the *Town of Columbus Comprehensive Plan* on June 23, 1999 and the approval of the *Town of Forest Lake Comprehensive Plan* on June 23, 1999.

The Board of Supervisors of the Town of Columbus and the Town of Forest Lake have met jointly in 1999 and 2000 to discuss joint regional sewer service and the terms and conditions of a joint powers agreement.

The Town of Forest Lake was annexed to the City of Forest Lake effective September 26, 2000.

NOW, THEREFORE, the undersigned governmental units, in the joint and mutual exercise of their powers agree as follows:

1. General Purpose. The purpose of this Joint Powers Agreement is to establish and maintain a cooperative wastewater treatment and/or water system(s) (the "Project") for the Township of Columbus and the City of Forest Lake. (The term "Project" as used in this Agreement may include the construction of one or more public improvement projects to provide wastewater and/or water within the jurisdiction of either municipality.) It is the intent of the parties and purpose of this Agreement to work together toward the following outcomes:

(a) Seeking and obtaining all necessary approvals for the concept of a wastewater treatment extension and/or water extension to serve the Southwest portion of the City of Forest Lake and the Eastern portion of Columbus Township.

(b) Selecting a route for the wastewater treatment and/or water pipe(s) in a location which maximizes potential long-term benefits to both parties and their respective residents.

(c) Designing the wastewater treatment system connection.

(d) Financing the Project.

(e) Authorizing, overseeing, and ensuring completion of the Project.

2. Members. The members of this Agreement shall consist of the following units of government:

(a) Town of Columbus, Anoka County, Minnesota.

(b) City of Forest Lake, Washington County, Minnesota.

3. State and Local Assistance for Wastewater Treatment Program. Either Municipality acting on behalf of the Joint Powers Agreement members, may apply for funding from the State of Minnesota and Metropolitan Council ("grant funds"). Either the Town Manager or City Administrator may serve as the "authorized official" as defined in the general policies and procedures for the program.

4. Finances.

(a) Each municipality shall generally be responsible for the costs, charges and expenses related to that portion of the Project that is initiated by the respective municipality unless a more specific allocation of financial responsibility is adopted in writing by the parties.

(b) The cost of extending facilities or services to serve the City of Forest Lake shall be borne by the City of Forest Lake, unless agreed to by the members. The cost of extending facilities or services to serve Columbus Township shall be borne by the Town of Columbus, unless otherwise agreed to in writing by the parties.

(c) The Project funds shall be expended in accord with municipal contracting law and other laws applicable to municipal expenditures.

(d) In determining the feasibility of the construction of public improvements contemplated by this Agreement, neither municipality shall unreasonably withhold consent to a project deemed "feasible" by the Project Engineer.

5. Project Engineer.

(a) A Project Engineer shall be appointed by the municipalities and serve at their pleasure. The Project Engineer must be an engineer licensed by the State of Minnesota. The Project Engineer may be the engineer of either member.

(b) The Project Engineer shall be in charge of the day-to-day management of the Project, including supervising assigned personnel, subject to direction received from the municipalities. The Project Engineer is responsible for staffing, scheduling, record keeping, fund management, and information management. The Project Engineer will be responsible to keep the municipalities updated as to Project activity. The Project Engineer will provide the municipalities with a monthly accounting of all funds disbursed and a written summary of activity with the Project.

6. Indemnification. Each member shall fully indemnify and hold harmless the other members against all claims, losses, damage, liability, suits, judgments, costs and expenses by reason of the action or inaction of its employees assigned to the Project. This Agreement to indemnify and hold harmless does not constitute a waiver by any member of limitations on liability provided by Minnesota Statutes, Chapter 466.

7. Duration.

(a) This Agreement shall take full force and effect when approved by the City Council of the City of Forest Lake and the Town Board of Columbus. The signed Agreement shall be filed with the clerk of each municipality. Each member shall be notified in writing of its effective date.

(b) This Agreement may be terminated at any time by the unanimous written agreement of both municipalities.

(c) Upon termination of this Agreement, all Project property that is separately owned or controlled by one member shall be retained by that member. All Project property that is jointly owned shall be sold or distributed to the members in proportion to the contributions of each member of this Agreement.

IN WITNESS WHEREOF, the undersigned governmental units, by action of their governing bodies, have caused this Agreement to be executed in accordance with the authority of Minnesota Statutes § 471.59.

CITY OF FOREST LAKE

BY [Signature]
Its _____
Date: 2-27-2001

Attest [Signature]

Date of signature: 2-27-2001

TOWN OF COLUMBUS

BY [Signature]
Its CHAIRMAN OF THE BOARD
Date: 1-31-01

Attest [Signature]

Date of signature: 1-31-01

EXHIBIT A

"Engineering Report"

ENGINEERING AND FEASIBILITY REPORT

Sanitary Sewer, I-35 Freeway District

Town of Columbus

July 7, 2000

Revised December 18, 2000

INTRODUCTION

The Comprehensive Plan for the Town of Columbus identifies an approximate three square mile area adjacent to Interstate 35 as the Freeway Corridor Development District. The sanitary sewer element of the Comprehensive Plan proposes phased sewer service to the district with a discharge along 202nd Street in Forest Lake to the Metropolitan Council owned trunk interceptor system. The Sanitary Sewer Study and Report completed by the consulting engineering firm of Hakanson Anderson Associates, Inc. identified details of the necessary sewer service facilities, provided estimated costs of those facilities, and identified a phased implementation plan by which sanitary sewer can be constructed as needed to serve new or existing development within the Town of Columbus. Among the sewer system components identified and evaluated in the Freeway District Sanitary Sewer Study were facilities necessary within Forest Lake, consisting of one or more force mains. The study evaluated an alternative for the easterly one quarter mile of the outlet system where construction could be in conjunction with a Town of Forest Lake project. Data in the sewer study, along with discussions with the Town of Forest Lake, have led to a determination that the best and most cost effective method of ultimate construction of the sanitary sewer discharge system from the Town of Columbus would be by oversizing a section of the Forest Lake sewer with cost participation by the Town of Columbus in that segment. That cost participation, along with other incurred or programmed sanitary sewer system costs, is the subject of this Feasibility Report.

DESCRIPTION OF THE PROJECT AND ESTIMATE OF COST

The project consists of construction of approximately 1300 lineal feet of gravity sanitary sewer line in Forest Lake, as shown on an attached exhibit, which work will be performed by Forest Lake under a public improvement contract. The project is in conformance with the Town of Columbus' July 12, 2000 Sewer Cost Feasibility Study for the I-35 Freeway District Corridor, and specifically in conformance with the determination that has been made by the Town of Columbus for cost participation in the segment of the Forest Lake sewer line that is being oversized for joint community flow. The total cost to be authorized under the currently proposed project is \$125,370.00. The physical construction proposed will be performed by Forest Lake as the Fenway Avenue Area Trunk Utility Project, which project work has been designed, advertised and bid with a contract for construction awarded. In addition to the costs of the current

construction, the project includes past and current planning, legal, engineering and administrative costs.

1.	Town Planner 1998	\$ 6,218.60
2.	Town Planner 1999	\$ 1,651.22
3.	Town Attorney 1999	\$ 148.75
4.	Town Engineer 1999	\$ 527.95
5.	Engineering Feasibility	\$ 21,221.15
6.	Town Planner 2000	\$ 2,900.73
7.	Town Attorney 2000	\$ 5,167.58
8.	Forest Lake Sewer Oversizing	\$ 65,783.00
9.	Town Administrative, 25% of items 5 and 8	<u>\$ 21,751.02</u>
	Total Proposed Improvement Costs	\$125,370.00

The current construction project consists of oversizing a Forest Lake line for future trunk sewer service to the I-35 Freeway District Corridor. In accordance with Minnesota Statutes and upon advise of the Town Attorney, a hearing for a public improvement and the ordering of that improvement via Town Board resolution is proposed in order to assure that past project expenses and the proposed project costs for construction are eligible for recovery as part of a sanitary sewer project. The specific recommended action of the Town Board is to authorize and order construction of the Forest Lake Township pipe oversizing with payment to be made by the Town of Columbus to Forest Lake. The total cost of the project is \$125,370.00 as identified.

The current construction portion of this is \$26,140.00, which pays for the physical oversizing of the Forest Lake line. In addition, a future payment from the Town of Columbus to Forest Lake in the amount of \$39,643.00 will be made at the time when the Town of Columbus connects to the Forest Lake system. This added payment is for the Town of Columbus' share of the Forest Lake facility based on proportionate flow. These current and future payments total \$65,783.00 and comprise the total Town of Columbus' participation in the Forest Lake facility construction.

BENEFITTED AREA AND ASSESSMENT OF COST

The benefited area of this public improvement is the entire I-35 Freeway District Corridor consisting of lands within the Township Freeway District A (FD-A) and Freeway District B (FD-B) zoning district.

The FD-A and FD-B legal district descriptions include all properties as follows:

FD-A District – Section 24 and the North Half (N ½) of Section 25, except the south two hundred seventy-five (275) feet of the North Half (N ½) of Section 25 lying east of a line drawn parallel with and one thousand ninety feet (1090) west of the North-South centerline and lying westerly of the westerly right-of-way line of County State Aid Highway No. 21.

Appendix C: Capital Improvement Plan

City of Columbus Capital Improvement Plan (CIP)

Year	Capital Fund	Yearly Expenditure	Annual Cost	Funding
2018	Public Works Equipment	\$ 180,000.00	\$ 93,153.00	Levy
2018	Blacktop & Gravel Capital	\$ 40,600.00	\$ 411,156.00	Levy
2018	Park Capital Fund	\$ 2,500.00	\$ 2,222.00	Levy
2018	Fire Hall Capital	\$ -	\$ 7,500.00	Levy
2018	Fire Department Equipment	\$ 22,500.00	\$ 46,080.00	Levy
	Total (2018)		\$ 560,111.00	
2019	Public Works Equipment	\$ 210,000.00	\$ 94,250.00	Levy
2019	Blacktop & Gravel Capital	\$ 750,000.00	\$ 415,323.00	Levy
2019	Park Capital Fund	\$ 15,000.00	\$ 2,222.00	Levy
2019	Fire Hall Capital	\$ -	\$ 7,500.00	Levy
2019	Fire Department Equipment	\$ 46,080.00	\$ 50,000.00	Levy
	Total (2019)		\$ 569,295.00	
2020	Public Works Equipment	\$ 120,000.00	\$ 95,364.00	Levy
2020	Blacktop & Gravel Capital	\$ 504,000.00	\$ 419,753.00	Levy
2020	Park Capital Fund	\$ -	\$ 2,123.00	Levy
2020	Fire Hall Capital	\$ -	\$ 7,500.00	Levy
2020	Fire Department Equipment	\$ -	\$ 50,000.00	Levy
	Total (2020)		\$ 574,740.00	
2021	Public Works Equipment	\$ 75,000.00	\$ 96,495.00	Levy
2021	Blacktop & Gravel Capital	\$ 412,000.00	\$ 424,549.00	Levy
2021	Park Capital Fund	\$ -	\$ 2,123.00	Levy
2021	Fire Hall Capital	\$ 40,000.00	\$ 7,500.00	Levy
2021	Fire Department Equipment	\$ -	\$ 50,000.00	Levy
	Total (2021)		\$ 580,667.00	
2022	Public Works Equipment	\$ -	\$ 97,642.00	Levy
2022	Blacktop & Gravel Capital	\$ 40,000.00	\$ 429,418.00	Levy
2022	Park Capital Fund	\$ -	\$ 2,123.00	Levy
2022	Fire Hall Capital	\$ -	\$ 7,500.00	Levy
2022	Fire Department Equipment	\$ -	\$ 50,000.00	Levy
	Total (2022)		\$ 586,683.00	
2023	Public Works Equipment	\$ -	\$ 98,707.00	Levy
2023	Blacktop & Gravel Capital	\$ 932,500.00	\$ 434,059.00	Levy
2023	Park Capital Fund	\$ -	\$ 2,123.00	Levy
2023	Fire Hall Capital	\$ -	\$ 7,500.00	Levy
2023	Fire Department Equipment	\$ -	\$ 50,000.00	Levy
	Total (2023)		\$ 592,389.00	

12/31/2017 adopted with 2018 Budget

Appendix D: Adjacent Community Comments and Responses

City of Columbus Comprehensive Plan Comment Tracker

Comments received from the Interjurisdictional review

The draft plan was reviewed at a public hearing in May 2018, and subsequently approved by City Council by resolution later that month, contingent on the completion of the interjurisdictional review. After the six-month interjurisdictional review (June-November 2018), the City reviewed comments received and made necessary updates, noted in the following tables. The plan was submitted to the Metropolitan Council for formal review in December 2018.

Land Use			
Incomplete Comments			
Number	Comment	From	Response
1.	Page 33 in the “Woodlands Protection” paragraph. The City no longer has a Tree Advisory Board or a consultant Forester.	City of Columbus	Remove reference
2.	Commercial/Industrial: First paragraph bottom of page 16: Residential is misspelled and should be corrected	Rice Creek Watershed	Make correction
3.	Water Resources, third paragraph, page 31: Recommend removing the “s” from “basins.” Also, please revise “LGU for permitting” to: “LGU for the Wetland Conservation Act (WCA) in Columbus within the Rice Creek Watershed District boundary.”	Rice Creek Watershed	Make correction
4.	Wyoming Township is now the City of Wyoming	Chisago County	Make correction
5.	Revise Coon Lake County Park boundary to accurately reflect the park boundary. There are no plans to change any portion of the park to residential in the future.	Anoka County Parks	Update parks, future land use, and existing land use maps; revise future growth calculations as appropriate
6.	The future boundary of the Rice Creek Chain of Lakes Park Reserve should accurately reflect the expanded boundary for the park on the north end at CSAH 23/Lake Drive and the parcels adjacent to the wellhouse off Zurich St. that are currently part of the park.	Anoka County Parks	Update natural resource, future land use, and existing land use maps; revise future growth calculations as appropriate
7.	Future Land Use Map: Cedar Creek Conservation Area’s boundary should be accurately depicted and categorized as “Other Protected”. This is not a	Anoka County Parks	Update parks, future land use, and existing land use maps to make this distinction

	regional park facility. <i>(This likely refers to Columbus Lake Conservation Area, since Cedar Creek is not in Columbus.)</i>		
8.	Water Resources Figure, page 32: RCWD & SRWMO's boundaries are incorrect and should be corrected. The boundaries were changed in 2015.	Rice Creek Watershed	Update boundaries on natural resources map
9.	Chapter 2: Land Use p. 36. The facilities are now the home of the north metro wildlife Forest Lake Area office of the Department of Natural Resources (DNR), the headquarters for the DNR's Carlos Avery Wildlife Management Area, and the Wildlife Science Center, a nonprofit group that conducts research on wolves.	MIN DNR	Make correction
10.	Chapter 4: Parks and Trails p. 49. See DNR's Recreation Compass for a Current boundary of Carlos Avery.	MIN DNR	Update boundary
11.	Chapter 4: Parks and Trails p. 50. Some information in the descriptions of the WMAs needs to be updated: <ul style="list-style-type: none"> • Please remove the mention of the game farm as it is a historic relic of wildlife management at Carlos Avery, but no longer exists. • Please use the following Lamprey Pass WMA information: Howard and Mud Lakes within Lamprey Pass WMA are two of the largest bodies of water in the metro area to offer non-motorized boating opportunities where motorized boats are not allowed. Breeding eagles can be observed. (Link to more information on the WMA) • Consider changing the wording in the following sentence: "The City will continue to coordinate use and expansion opportunities of the WMAs with the DNR through long range planning and mutual understanding of the City's concerns over potential impacts to adjacent residential land uses and loss of taxable property payments in lieu of taxes." 	MIN DNR	Make corrections
Advisory Comments			
Number	Comment	From	Response
1.	Abutting land uses are generally consistent.	City of Lino Lakes	Acknowledge comment
2.	Regionally Significant Resources, pg 33 Recommend revising first sentence to: "Natural resources areas within Columbus have been identified as significant on a regional level."	Rice Creek Watershed	Incorporate suggested language

3.	Regionally Significant Resources, pg 33 Second paragraph: MLCCS is referenced, however it appears this should be Minnesota Biological Survey (MBS).	Rice Creek Watershed	Make correction
4.	Anoka County provides “law enforcement” services, not police	Chisago County	Make correction
5.	Don’t know the Joint Powers Agreement status	Chisago County	Clarify reference in text
6.	<p>Development / Transportation Policies to protect wildlife. As you’ve noted in your plan, the city has abundant natural habitat and wildlife—with the Carlos Avery area identified as a highly important core area in the DNR’s Wildlife Action Plan.</p> <p>Consider adding policies that take wildlife into consideration as transportation and redevelopment projects occur. To enhance the health and diversity of wildlife populations, encourage private and public developments to retain or restore natural areas planted with native species. One larger area is better than several small “islands” or patches; and connectivity of habitat is important. Animals such as frogs and turtles need to travel between wetlands and uplands throughout their life cycle. Consult DNR’s Best Practices for protection of species and Roadways and Turtles Flyer for self-mitigating measures to incorporate into design and construction plans.</p> <p>Examples of more specific measures include:</p> <ul style="list-style-type: none"> o Preventing entrapment and death of small animals especially reptiles and amphibians, by specifying biodegradable erosion control netting (‘bio-netting’ or ‘natural netting’ types (category 3N or 4N)), and specifically not allow plastic mesh netting. (p. 25) o Providing wider culverts or other passageways under paths, driveways and roads while still considering impacts to the floodplain. o Including a passage bench under bridge water crossings. (p. 17) because typical bridge riprap can be a barrier to animal movement along streambanks. o Curb and stormwater inlet designs that don’t inadvertently direct small mammals and reptiles into the storm sewer. (p. 24). Installing “surmountable curbs” (Type D or S curbs) allows animals (e.g., turtles) to climb over and exit roadways. Traditional curbs/gutters tend to trap animals on the roadway. Another option is to install/create curb breaks every, say, 100 feet (especially important near wetlands). 	MN DNR	Wildlife habitat is referenced in natural resource goals

	<p>o Using smart salting practices to reduce impacts to downstream mussel beds, as well as other species.</p> <p>o Fencing could be installed near wetlands to help keep turtles off the road (fences that have a j-hook at each end are more effective than those that don't).</p>		
7.	<p>Native Species. Encourage private and public developments to be planted with native flowers, grasses, shrubs and tree species. Species such as monarchs rely on these plants, and it does not take many plants to attract butterflies, other beneficial pollinators as well as migrating and resident birds. Plant lists and suggestions for native plants can be incorporated into:</p> <ul style="list-style-type: none"> o landscape guidelines to improve the aesthetics in for commercial and industrial areas o Street tree planting plans o City gateway feature o Along ponds and waterways and wetlands. <p>Adding more native plants into landscaping, not only enhances the health and diversity of pollinators and wildlife populations, these plants can also help filter and store stormwater – other goals in your plan. For more information consult DNR's pollinator page</p>	MN DNR	Native vegetation is referenced in natural resource goals
8.	<p>Rare Species. The DNR supports including data from the Natural Heritage Information System (NHIS) in the Comprehensive Plan. We recommend that the plan include goals and strategies to address how rare species and plant communities will be protected.</p> <p>Two data layers useful for land use and conservation planning include the MBS Native Plant Communities and the MBS Sites of Biodiversity Significance. GIS shapfiles of these data layers can be downloaded from the Minnesota Geospatial Commons. The DNR recommends avoidance of these ecologically significant areas, especially MBS Sites of Outstanding or High Biodiversity Significance and DNR Native Plant Communities with a conservation status rank of S1 (critically imperiled), S2 (imperiled), or S3 (vulnerable to extirpation). We recommend that Comprehensive plans include a map of both of these layers and a list of the types of native plant communities documented within the plan's boundaries.</p>	MN DNR	Wildlife habitat is referenced in natural resource goals

	<p>For further conservation planning and to ensure compliance with the Minnesota endangered species laws, the DNR encourages communities to check the NHIS Rare Features Data for known occurrences of state-listed species. The NHIS Rare Features Data contains nonpublic data and can only be accessed by submitting a License Agreement Application Form for a GIS shapefile or by submitting a NHIS Data Request Form for a database printout. Both of these forms are available at the NHIS webpage. The plan should include a list of state-listed species found in the area and the habitats they use.</p> <p>For example, the Blanding’s Turtle, has been reported in your community and the Blanding’s Turtle Fact Sheet provides information on the habitat use, life history and recommendations for avoiding and minimizing impacts. For more information on the biology, habitat use, and conservation measures of these rare species, please visit the DNR Rare Species Guide. NHIS training includes rules for using/displaying nonpublic data in public documents.</p> <p>Links: MBS Sites of Biodiversity Significance http://www.dnr.state.mn.us/eco/mchs/biodiversity_guidelines.html MBS Native Plant Communities http://www.dnr.state.mn.us/npc/index.html</p>		
9.	<p>Recreation. Consider indicating snowmobile trails on park systems plans. State-supported grant-in-aid trails connect your community to an extensive network of trails throughout the state. Including the trails on inventories would raise awareness of this recreational activity. The snowmobile GIA Program webpage below also has more information on the program and funding. https://www.dnr.state.mn.us/grants/recreation/gia_snowmobile.html</p>	MN DNR	Added reference to snowmobile trails

Housing

Incomplete Comments

Number	Comment	From	Response
1.	Expand on list of housing tools and uses for implementation plan	Staff discussion	Expand list of potential tools
2.	Expand on explanation in affordable housing allocation section	Staff discussion	Clarify language in plan to reflect specifics in land use chapter

Parks and Trails

Incomplete Comments

Number	Comment	From	Response
1.	Pg. 51 - East Anoka County Regional Trail through Columbus is no longer a search corridor. Metropolitan Council approved master plan in Oct 2015.	Anoka County Parks	Make correction
2.	See Land Use section for revisions to park boundaries	Anoka County Parks	See Land Use section
3.	Parks & Trails Map: The City should label Columbus Lake Conservation Area separately from the Rice Chain of Lakes Park Reserve. While it is adjacent to the Rice Creek Chain of Lakes, it is not part of the Park Reserve and is not considered a park. It is a separate land unit that Anoka County refers to as a Conservation Area that is open & available for public hunting & fishing. It is not a regional park facility.	Anoka County Parks	Add labels and clarifying text

Advisory Comments

Number	Comment	From	Response
1.	The City should be aware that some of the existing trails outside the City of Columbus include snowmobile trails.	Anoka County Parks	Add reference to snowmobile trails

Transportation

Incomplete Comments

Number	Comment	From	Response
1.	Right now, MnDOT is doing major construction on Hwy 95, bridge replacement of Hwy 97 bridge; need to include this project somewhere in the plan	Chisago County	Add reference to Hwy 97 bridge project. Hwy 95 is not located in Anoka County or the City of Columbus
Advisory Comments			
Number	Comment	From	Response
1.	Lino Lakes, Hugo and Washington County have identified Elmcrest Ave N as a future "minor" arterial. The planned roadway would serve as a reliever to I-35E, connecting TH 97 and CSAH 14.	City of Lino Lakes	Show as future minor collector in Columbus Future Functional Class Map, update relevant text
2.	Pg 68 proposes construction of a new I-35E interchange at 180 th Street or 170 th Street. Lino Lakes, Hugo, and Anoka and Washington Counties completed an analysis that recommended a future interchange at 80 th Street/CR 140, which is included in the respective comprehensive plans.	City of Lino Lakes	Update language to reflect current status of project
3.	The City of Hugo has identified the new I-35E interchange at Washington County CSAH 8 (170th Street) in its 2040 Comprehensive Plan. As you may know, there was effort with the I-35W/E coalition to collaborate on improvements along I-35 in several communities and counties. The discussions included this connection and interchanges at I-35E and I-35W. The City of Columbus participated in the coalition meetings. The City is interested in cooperating on creating a corridor management plan that would include representatives of the I-35 W /E coalition to further this planning effort.	City of Hugo	Update language to reflect current status of project
4.	Anoka County Traveler Transit Link fares changed in 2017. https://metrocouncil.org/Transportation/Services/Transit-Link/Paying-For-Rides.aspx	Anoka County Transit Unit	Remove fare reference, since fares are subject to change. List 3 tiers of fares.
5.	Anoka County Traveler Transit Link service is an existing service for figure 5.9.	Anoka County Transit Unit	Made note that figure is "fixed route"
6.	Nice detail for City's served.	Anoka County Transit Unit	Acknowledge comment
7.	Anoka County Medlink, formerly Anoka County Volunteer Transportation, operates Monday-Friday from 8:00 a.m. to 4:30 p.m.	Anoka County Transit Unit	Include text reference

Surface Water

Incomplete Comments

Number **Comment**

From

Response

Advisory Comments

Number **Comment**

From

Response

1.	RCWD received a draft of the City's Local Surface Water Management Plan (LSWMP) on July 18, 2018. RCWD submitted comments on this LSWMP on September 10, 2018. Please ensure the City addresses RCWD's comments from September 10, 2018 and submits the revisions to RCWD for formal review. The final version of the City's 2040 Comp Plan Chapter 7 or Appendix B must include the LSWMP that is approved by the watershed district/management organizations.	Rice Creek Watershed	Comments have been reviewed and addressed
2.	Sunrise River WMO reviewed only the Surface Water Management Plan and provided comments on this section to Dennis Postler by email.	Sunrise River WMO	Comments have been reviewed and addressed

Implementation

Incomplete Comments

Number **Comment**

From

Response

1.	Chapter 8 Implementation, Official Controls, page 82, third bullet: Floodplain is misspelled.	Rice Creek Watershed	Make correction
----	---	----------------------	-----------------

Appendix E: Reports and Resolutions

RESOLUTION NO. 18-14

**CITY OF COLUMBUS
COUNTY OF ANOKA
STATE OF MINNESOTA**

**A RESOLUTION APPROVING THE DRAFT
COLUMBUS 2040 COMPREHENSIVE PLAN UPDATE
FOR AFFECTED JURISDICTIONS AND METROPOLITAN COUNCIL REVIEW**

WHEREAS, the City of Columbus has completed a draft 2040 Comprehensive Plan Update; and

WHEREAS, the draft 2040 Comprehensive Plan Update will be forwarded to adjacent communities, area school districts, watershed districts, Anoka County, Washington County, MN Department of Transportation and MN Department of Natural Resources (“affected jurisdictions”) for review; and

WHEREAS, the mandatory 6-month review by affected jurisdictions may not be completed until November 2018; and

WHEREAS, the 2040 Comprehensive Plan Update must be forwarded to the Metropolitan Council by December 31, 2018; and

WHEREAS, it is unlikely that comments from any affected jurisdictions will require any substantive changes in the draft 2040 Comprehensive Plan Update but may require housekeeping amendments or minor clarifications to the plans.

NOW, THEREFORE, BE IT RESOLVED that the City Council of the City of Columbus approves the draft 2040 Comprehensive Plan Update for affected jurisdictions and Metropolitan Council review and authorizes housekeeping amendments and minor clarifications or revisions to the plans.

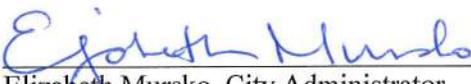
BE IT FURTHER RESOLVED, the City Council reserves the right to review any substantive revisions to the draft 2040 Comprehensive Plan Update before submission to the Metropolitan Council.

Approved and adopted by the City Council of the City of Columbus this 23rd day of May, 2018.



David J. Povolny, Mayor

ATTEST:



Elizabeth Mursko, City Administrator



**PLANNING COMMISSION
MEETING AGENDA
May 16, 2018 7:00 p.m.**

MAY						
S	M	T	W	TH	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

1. Planning Commission Meeting – **Call to order 7:00 p.m.**
2. Pledge of Allegiance
3. Approval of the Agenda
4. Approval of Public Hearing Minutes - 6502 W. Broadway Ave. NE Variance request on 05.02.18
5. Approval of Public Hearing Minutes - Ordinance Housekeeping Amendment (Chapters 7A, 9 & 14) request on 05.02.18
6. Approval of Planning Commission Meeting Minutes on 5.02.18
7. Continued Discussion – 6502 W. Broadway Ave. NE- Variance request **(Pages 1 -32)**
8. Public Hearing & Discussion – 2040 Comprehensive Plan **(Page 33) & Enclosure**
9. Public Open Forum
10. City Administrator’s Report
11. Planning Commissioner’s Report
12. Attendance of City Council Meeting 05.23.18 – Pam Wolowski
13. Motion to Adjourn

City of Columbus
Regular Planning Commission Meeting
May 16, 2018

The May 16, 2018 regular meeting of the Planning Commission for the City of Columbus was called to order at 7:03 p.m. by Chair Garth Sternberg at the City Hall. Present were Commission members: James Watson, Jesse Preiner, and Jody Krebs; City Administrator Elizabeth Mursko; Planner Dean Johnson; and Recording Secretary Rochelle Busch.

Also in attendance were Mayor Dave Povolny, City Council members Denny Peterson, Jeff Duraine; Haila Maze of Bolton & Menk; Ryan McMonigal, Fannie Pen, and Elwin Berg

AGENDA APPROVAL

Motion by Krebs to approve the Agenda as presented. Second by Watson. Motion carried.

APPROVAL – 6502 WEST BROADWAY AVE. NE VARIANCE REQUEST ON 05.02.18

Motion by Preiner to approve the minutes from the 6502 W. Broadway Ave. NE Variance Request on May 02, 2018 as written. Second by Krebs. Motion carried.

APPROVAL – ORDINANCE HOUSEKEEPING AMENDMENT (CHAPTERS 7A, 9 & 14) REQUEST ON 05.02.18

Motion by Krebs to approve the minutes from the Ordinance Housekeeping Amendment (Chapters 7A, 9 & 14) Request as written. Second by Watson. Motion carried

APPROVAL – PLANNING COMMISSION MEETING MINUTES OF 05.02.18

Motion by Krebs to approve the minutes of the May 2, 2018 regular Planning Commission meeting as written. Second by Watson. Motion carried.

CONTINUED DISCUSSION - 6502 W. BROADWAY AVE. NE- VARIANCE REQUEST (PC 18-110) DISCUSSION

Ryan McMonigal and Fannie Pen stated the plan for the property is to tear down existing structures and rebuild. Mursko stated Building Official Leon Ohman has withdrew his previous memo and submitted a new one further stating he is recommending denial of the requested SSTS Variance as it was found by the ACSWCD to be in a wetland. The applicants are only allowed to resubmit for a variance after denial after a 12 months' time. After suggestion of moving the septic location and further soil boring to ensure they are not in a wetland and are within guidelines of soil separation, the applicants withdrew the variance request and plan to resubmit after changes are made.

Motion by Sternberg to accept decision by applicant, Ryan McMonigal, to withdrawal application for variance of septic system at 6502 W. Broadway Ave NE, dated 04.09.18. Seconded by Krebs. Motion carried unanimously.

PUBLIC HEARING – 2040 COMPREHENSIVE PLAN (PC18-112)

At this time a public hearing was held to present and consider a recommending approval of the City of Columbus 2040 Comprehensive Plan for release and formal review by affected jurisdictions and the Metropolitan Council. Separate minutes are prepared.

2040 COMPREHENSIVE PLAN DISCUSSION (PC18-112)

Planner Dean Johnson further discussed the revisions made to the 2040 Comprehensive Plan. Request from the Planning Commission to remove the term “township” from the cities overall description. The Planning Commission and City Council members would also like to add that they would have preference of 180th over 170th for a potential interchange in the freeway corridor. Approving the plan at this point, will be able to move forward with the timeline.

Motion by Krebs to recommend to the City Council for an approval of the City of Columbus 2040 Comprehensive Plan for release and formal review by affected jurisdictions and the Metropolitan Council. Seconded by Sternberg. Motion carried unanimously.

PUBLIC OPEN FORUM

No topic was raised at Public Open Forum.

CITY ADMINISTRATOR'S REPORT

Nothing to report

PLANNING COMMISSION MEMBERS' REPORT

Nothing to report

ATTENDANCE - NEXT CC MEETING

Sternberg is scheduled to attend the City Council meeting on May 23, 2018.

Motion by Sternberg to adjourn. Second by Krebs. Motion carried.
Meeting adjourned at 8:02 p.m.

Respectfully Submitted:

Rochelle Busch, Recording Secretary

City of Columbus
Public Hearing – 2040 Comprehensive Plan (PC 18-112)
May 16, 2018

The May 16, 2018 Public Hearing to receive testimony to consider a recommending approval of the City of Columbus 2040 Comprehensive Plan for release and formal review by affected jurisdictions and the Metropolitan Council, was called to order at 7:25 p.m. by Chair Garth Sternberg at the City Hall. Present were Commission members: James Watson, Jesse Preiner, and Jody Krebs; City Administrator Elizabeth Mursko; Planner Dean Johnson; and Recording Secretary Rochelle Busch.

Also in attendance were Mayor Dave Povolny, City Council members Denny Peterson, Jeff Duraine; Haila Maze of Bolton & Menk; Ryan McMonigal, Fannie Pen, and Elwin Berg

Sternberg: So we are going to, have a public hearing and discussion for the 2040 comprehensive plan pages 33 and enclosure. And at this time I would like to ask the recording secretary to read the notice as published.

Notice was read at this time by the recording secretary.

Sternberg: Thank you.

Maze: I don't know if you want to hear a presentation first or do you want to hear from the public?

Sternberg: I think the presentation should probably come first, and then if the public has questions they can, during the open, public open, they can speak.

Maze: Well I have a series of boards here. Which are kind of old school. But you have copies of all this in the plan. I think we distributed a copy of the plan last time we met with you to the planning commission. So if you are trying to play spot the difference, not much has changed since last time. I am going to go through the highlights of the plan, especially for those who have not been involved in the process as much. And then I guess if there's questions, or other opportunities to talk through and then we'll answer them.

So, as you know the reason we are doing a comp plan update right this moment is because of the Met Councils timeline. Every 10 years they require all cities in the twin cities area, actually it's under state statute to follow the instructions of the Met Council and update the plan process. Of course we want to do the plan for the City of Columbus and not just for Met Councils check the box. But you read through the plan, look through it and think there's a lot of stuff in here, why is this in here? It's probably required. That's probably why it's in there. We really need to focus on the main points the most important points pretty quickly and go from there in terms of any discussions about that. And of course all this represents the good work that's been done by the folks in this room and others, just to spotlight what's important and how you want to grow as a community. As mentioned, this is from the discussion I understand has been very long in the comings, since you've had councilmen involved, is the community designations. Currently and

in the discussion that has been for some time is too classified as diversified rural which reflects larger than the character that's going on here now. We had a lot of discussion, I think a better part of a year, to say is that the right decision. Are we wanting to be designated, is this the right thing? This is the closest map between what the city wants to see and what Met Council wants. After a long path, were back where we started in terms of that. Met Council has acknowledged the flexibility of this district and the needs, it's not a once size fits all, they understand, to a certain degree, making the best case what the city is, what it wants to be, is for most part consistent. We're staying with, as we've had a long discussion around, 5 acre minimum, with the understanding that some time with the way lot averaging works could be a little bit less often a little bit more large and consistent with what the city has done to date. And that's come directly from the conversation from the public. Majority of the folks seems to prefer that as to allowing these small small lots city wide. The designation hasn't changed, though there is more language if you read about how that this surplus (unintelligible). Of course one of the major things as I'm understanding is on ground right now, it doesn't shock anyone who knows the city that we have a great deal of wetlands. We did a lot of analysis that talked through what are the different areas that are most suitable to build it the strengths there are, what special provisions we need to protect those areas, while still allowing for maximum possibility of real properties. Of course most of our time is spent in the freeway district, because that is where most opportunity for development can occur. The development and strengths that we look at, of course extensively as we just heard, are the wetlands, wet areas. Those will be mapped out carefully just because were not planning on top of areas, at least at the plan level that are showing as wet, or showing as undevelopable. Of course as we just heard, this doesn't include going back and having these detailed discussions and detailed lobby for, this will not replace the wetland (unintelligible) but hopefully it will just flag on the front end, areas that need detailed consideration, or aren't currently suitable for development.

However a big part of the plan is the need Economy growth development for the City. Looking at the amount of development that is planned through 2040, escalation in total household, that is a modest amount, considering the size of the city but in terms of course develop ability, it's not out of scale for what's to be expected. Like a lot of cities for 2030, were scaled back and again, that wasn't picking on Columbus that is the reason why a lot of the plans that were on the plate 10 years ago are less. So now as were getting to this part of the process, there's less development planned, less dense in certain areas, more concentration in the freeway district, and also, very specifically less space, with more concentration around the interchange. That is really probably the biggest distinctive feature. Again take this and compare it to your 2030 map, it's going to look not much different, overall there's not a huge amount of change, in terms of the lay of the land overall. We spent time talking to property owners in the freeway district, looking at where, what areas, are the most suitable for your complexing pieces, contracting commercial area, because the idea was the bigger market setting, that we want to make sure that proposing best space for merchants to be, and really thrive around the interchange, there's more visible sight to accommodate for that, and having light industrial and other (unintelligible) uses a bit farther away.

The other big add for this freeway district and if you look at your map you can see, we do have a space that is specifically for Suburban Residential. Right now under the current plan, Suburban Edge Residential was only allowed as an overlay. This doesn't have its own designation strip. In the case of this map, there's now a small area in the northwest corner, smallish about 40 acres

total, so not tiny, but not a huge part of the city. That can be directly designed and valued as residential specifically the idea of that is to create a new neighborhood. It's really more (unintelligible) part of the freeway district. And can also accommodate more density than the rest of the city. One of our recommendations of the plan is to discuss last time I think is to also up the density of that district to 15/16 units per acre. That would allow town homes, maybe even some low-rise mix use development. Again, not so much to say that that has to be a development, but to give more options for the housing in this area, to give more options for people to get value out of their land if they sell it, more options for people that want to live in the city, that can't otherwise afford here. Like seniors, or new home owners, maybe kids that have lived here, or the people who need assistant living, different household types, different options. And again, that's why flexibility and more intensity more capped space in these strips. We of course still are allowing some suburban residential overlay in your other districts as well. So you have that option throughout the freeway district but that area isn't really called out. One of the plans that isn't on the board, just to let you know is housing is a modest fair small number of affordable units is expected of the community, I say expected because there's no mandate recommended from the Met Council. I will add that this area, small scale apartments could easily meet that requirement, without (unintelligible) it's less about subsidized and more just being priced in a way that is affordable. Again, the one change in your map if you look really closely, we had a request at the last meeting, again the City Council affirmed this request, was to change a portion of the industrial property, Mr. Stenke was the name of the, who specifically requests the change to light industrial as oppose to commercial we had made that change, it doesn't change your numbers as much but it's your, it was a specific request at the last meeting. We also did a little bit of clean up, that is just reflecting a few errors in here, we are not bringing any other changes, if there are other changes we would appreciate attention to that. This is where it is now, and for those of you that are familiar with it if something new, or inconsistent with this, or another proposal, we would have to amend the Comprehensive Plan to reflect that.

There's also a staging element, which if you on the Planning Commission are scratching your head why do you have staging in the freeway district, that's a met council requirement. It's largely a paper exercise, and doesn't really reflect beyond that. But again it's checking the boxes to say, that we acknowledge the way this is running out and of course very obvious the freeway district we have how to efficiently and effectively install and extend out sewer and water. We don't want development that's leap frogging or that's far out, when its noncontiguous, because that's just expensive and to have to run more lines out in the end, add more lines, dead end lines, more complicating issues and have things that don't work. So again the idea is, at least in the areas that sewer, is directly compact and contiguous. You're not just sending, extending lines way out for service. Of course with that the land use component is a part that you'll probably as a city keep going back to again and again because it's the part that we've all had a lot of dedication to, over the course (unintelligible).

The parks and fields element is very straight forward. A lot of cities they spent a lot of time on this. We didn't spend a lot of time on this one because we understood we're not showing any new park land, you folks have open space in abundance. We also don't show any new plans for trails, because again the rural character, doesn't necessarily need separate facilities we have general language to say, development comes in they want to build sidewalks, that's great, you can work with the property owner, you can work with the developer and make that happen, but there's not a specific ending around, developing a networks anywhere. The one thing you will

see on the map, is the long corridor for the county regional trail work study, corridor study along the western edge. All that plan is basically said that this plan exists, the county wants to work on it, were here, we will cooperate. That's the level of commitment, it doesn't say, we will build it or officiate it just that were available. And again that's the regional park and individual trail system that isn't an important part of the plan as far as compliance. They just want to make sure you understand who they are.

Ok, the transportation component, again one of those things thanks to your rural character, we don't have to dig into in great detail. But I will talk through where we are with that, and the recommendations in the freeway corridor. The projected traffic lines, of course you can't read it here, but you don't need to because you can see the color. Anoka County like most of the counties in the area, took that model and fixed it up, and made it work better at a local level, they did forecast county wide. And when I talk with the county engineer he said, nothing going on in Columbus. There's no congestion and the green means no congestion forecasted for the next 2040. With one exception, you'll see a little yellow that shows up on the 35w, actually this is 35, the 35 corridor. It just talks about it being borderline capacity. Again note that's the interstate system, it's not really your issue to solve, the region will look at that. This doesn't mean they are going to widen the interstate at this location, but it means they are planning to watch that segment, if they think they need to add capacity or need to make some improvements to that interchange, at some point in the future. That's really, as far as the transportation recommendations, pretty straight forward. Transit, check the box, that you have a park and ride, I don't expect any changes. And of course freight, just acknowledging that there's truck routes and freight moving through the community and that the priority should be to do that as efficiently as possible and minimizing a negative impact. So pretty straight forward. There's only one road that they are calling out as an incomplete road and this does not mean that it's the only road that's going to be built, it's the only one that's going to beyond this local access. This plan of course doesn't address if there's a little lane to serve a property, you don't need all that on here, that's too fine detailed. What we talked about was an improvement, a parallel route along Lyons and another connecting route along the western side of the freeway corridor, I'm sorry eastern side of the freeway corridor, just to provide access to those properties better. As everything develops, I think that there will be a demand or pressure for those of you that travel that area, to improve the road from two lanes, showing the business developed area. That is along the route, you listen to the plan before (unintelligible). The county again said no major improvements will be happening in this area. The one thing that we do know that's kind of on the horizon, and we don't have it mapped, because it seems, my understanding was there's not a decision about where it should land. The future freeway interchange located at 170th 180th somewhere else, Forest Lake, Hugo, Lino Lakes, Columbus that's been part of their discussion recently and my understanding of the discussion it's still forthcoming. The way the plan is worded now, again we want to make sure we are getting it just right, says the city would be comfortable with either 170th or 180th as the location for the interchange. Again, we don't even map it because it's not really in the city except for the maybe in the southern corner. Just know that your open for discussion, you want to be at the table, you want to be part of the discussion, you want an influence in that but you're not, picking a favorite right now. Forest Lakes plan does pick 180th they have actually even a drawing that they have complete of interchange intersection, that's located right there, that's in their plan. We could include that but it sounds like, what I've heard, no were not going to do that.

That really is the extent of the content of the plan. Again, we have cut through that for a while. We're just making tweaks at this point, again were still open for discussion. I should mention the one piece of the plan that I didn't present because we didn't really offer it, the water resources, the service water main, and the water supply plan. We're going to incorporate them as appendixes into this plan, as with the completed and that will be part of the documentation as well. Most of those are being managed, indirectly handled through the DNR, and some other agencies so there a lot of being compliance of the systems. You'll probably get a presentation at some point of those.

In terms of the timing of where we are now, were right at the point this is a formal hearing, if anyone wants to make a comment, that's a great time to do so. This plan is going, I understand, assuming everything's ok, goes to the next group to your City Council. That would be the, at that point will be, the continued action will be approval of, to reals ease the plan for 6 months, jurisdictional review, starting the clock, that would end us, if they started right away, that's about November, the 6 months is over. Again, the cities, all your jurisdictions could finish before then, but we can't force them to, so we have to plan on the 6 months. It could end sooner, we don't know that. As according to them, bring it back to the city, see if there are any changes that came up in that time, we give them and the other jurisdictions or in this case itself, we may need to do some housekeep, as its brought to your attention when your reading it over and over again for the next 6 months, which I really hope nobody does that, it will be out there for everybody to read, everybody to review, and you can come back and are there are any little changes you need to make before we finalize it, and send it to Met Council. They need it by December 31, aka 60 days or up to 120 days, there call to review and give responses back. That's the process to move, to move along the track. I've talked long enough, Are there specific questions about this?

Krebs: On the appendixes are they included in this hearing tonight? We just don't have all the details? I mean because they all have to be before hearing, right?

Johnson: The distribution of the plan for adjacent community review, does not technically require the storm water management plan, water supply plan. It must include the land use component, which we have. We also would be attaching, a resolution that authorizes this distribution that doesn't have to go out for this review. A question that Elizabeth and I haven't even talked about, whether there is a desire to have public hearing on the 3 storm water plans that are being done by TKDA that is not a requirement by law that I've ever determined. Nor is there a requirement on the water supply, which is mainly a DNR data update on your system that can certainly be done. When we submit the plan to the Metropolitan Council, at the end of the local review, it must include all of those exhibits. So, I skirted around your question, my position is, it isn't necessary to have those appendixes for our purposes on the land use plan at the public hearing.

Krebs: Okay.

Maze: They have also have their own set of parallel review structure that happens to coincide and sink with this process, there sort of independent. Even if comp plans weren't required, they kind of are required to the use of those. They are not required in the state of the plan.

Sternberg: Any other questions?

Krebs: I do, on the proposed, where the, you were talking about 170th or 180th, is there a reason why we wouldn't write that in for strength, as long as Forest Lake has a strong plan, and even design kind of you said, that we wouldn't kind of go with that as well?

Johnson: It was my understanding, that at the last council meeting, and I stand to be corrected, because there was not a unanimous position between the four communities, City Council thought it was better to support either location, rather than picking one over the other. And if I'm wrong, in that, that's the information I portrayed to Haila for this plan. We didn't include the Forest Lake plan, we simply said, we support either location. We can change that, but that's what I understood happened at the last meeting.

Mursko: That was the motion for the Washington County Plan.

Povolny: I believe, what I understood of it was we have a preference of 180th but we will put that first and OR 170th. Not 170th or 180th, we want 180th preferred over 170th. I believe that was it. We have a preference, but not just that. We would take 170th at the end of the day.

Maze: Ok so I hear to include them both but indicate some priority for that, that 180th would be preferable, but you're not ruling out the other one if that's where were ending.

Povolny: Right.

Maze: we could make that correction.

Sternberg: Any other questions? Well hearing none I'm going to open the hearing to the public. Anyone from the public want to come up and speak? Or ask a question? Any one from the public? Ok I'm going to close the hearing with the right to reopen.

Motion by Krebs to recommend to the City Council for an approval of the City of Columbus 2040 Comprehensive Plan for release and formal review by affected jurisdictions and the Metropolitan Council. Seconded by Sternberg. Motion carried unanimously.

At this time Chair Sternberg closed the Public Hearing. Hearing closed at 7:53 p.m.

Respectfully submitted:

Rochelle Busch, Recording Secretary



CITY COUNCIL MTG AGENDA
05.23.18 7:00 p.m.

MAY						
S	M	T	W	TH	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

A. CITY COUNCIL REGULAR MEETING

1. Call To Order - Regular Meeting - 7:00 P.M.
2. Pledge of Allegiance

B. CONSENT AGENDA

1. Motion - Approval of the City Council Meeting 03.28.18 minutes
2. Motion - Approval of the City Council Meeting 04.11.18 minutes
3. Motion - Approval of the City Council Closed Meeting 04.11.18 minutes
4. Motion - Approval of the LBAE Meeting 04.23.18 minutes
5. Motion - Agenda Approval with Additions
6. Motion - Pay Bills as Posted
7. Motion - Housekeeping Ord. 18-01 Amend. Summary Publication Notice **(Page 1)**

C. PRESENTATION

8. Planning Commission Report
 - Motion - 6502 W. Broadway Ave. NE Accept Variance Application Withdrawal **(Pages 2-7)**
 - Motion - 2040 Comprehensive Plan Resolution **(Enclosure & Page 8)**
9. Public Open Forum

D. STAFF & CONSULTANT REPORTS

10. Engineer Report
 - Update - I35/TH97/Hornsby Street Project
11. Attorney Report
12. Mayor & City Council Member's Report
13. Public Works Report
14. Public Information Coordinator Report
15. City Administrator's Report
 - Update - 2018 Elections (A1)
 - Treasurer Report (June 2018)

E. ANNOUNCEMENTS & REMINDERS

- ▶ Planning Commission Meeting 06.06.18
- ▶ Calendar of Meetings **(Page 9)**

F. ADJOURNMENT

***Note: Items listed under the Consent Agenda will be enacted by one motion with no separate discussion. If discussion on an item is desired, the item will be removed from the Consent Agenda for separate consideration.**

**City of Columbus
Regular City Council Meeting
05.23.18**

The 05.23.18 meeting of the City of Columbus City Council was called to order at 7:07 P.M. by Mayor Dave Povolny at the City Hall. Present were Council Members Bill Krebs, Jeff Duraine, Mark Daly, and Denny Peterson; City Administrator Elizabeth Mursko, City Attorney Bill Griffith, City Engineer Dennis Postler, and Public Communications Coordinator Jessica Hughes.

Also in attendance were: John Young, Kris King, Paul Peskar, Janet Haglund, and Julia Parent (Forest Lake Times).

A. CITY COUNCIL REGULAR MEETING

- 1. Call to Order - Regular Meeting – 7:07 P.M.**
- 2. Pledge of Allegiance**

B. CONSENT AGENDA

- 3. Motion – Approval of the 03.28.18 City Council Meeting Minutes**
- 4. Motion – Approval of the 04.11.18 City Council Meeting Minutes**
- 5. Motion – Approval of the 04.11.18 Closed City Council Meeting Minutes**
- 6. Motion – Approval of the 04.23.18 LBAE Meeting Minutes**
- 7. Motion – Agenda Approval with Additions**
- 8. Motion – Pay Bills as Posted**
- 9. Motion – Housekeeping Ordinance 18-01 Amendment Summary Publication Notice**

Motion by Daly to approve the Consent Agenda. Seconded by Krebs. Motion carried unanimously.

Duraine reported that at the 05.09.18 City Council meeting he voted yes to approve the Bituminous Roadways Developer's Agreement, and he would like the record to show that was a mistake and he does not support the Developer's Agreement.

C. PRESENTATIONS

10. Planning Commission Report

Garth Sternberg was unable to attend the City Council meeting, so City Administrator Elizabeth Mursko presented in his absence.

6502 W Broadway Avenue NE Variance Request

The first topic was a variance request for 6502 W. Broadway Avenue. The Planning Commission considered the topic at their 05.02.18 meeting, and asked the Council for direction at their 05.09.18 meeting. Since that time, a wetland specialist determined that the proposed area for the septic system includes wetland, and therefore cannot be built there. Soil borings indicated that it is possible to place the system in a location which would not require a variance, and therefore the applicant has withdrawn their variance application. The Planning Commission recommended accepting the withdrawal.

Motion by Duraine to accept the withdrawal of a variance application for a type three septic system at 6502 W. Broadway Avenue. Seconded by Peterson. Motion carried unanimously.

The Council continued discussed about the property. The buyer, Fannie Pen, attended the previous week's Planning Commission meeting. She indicated that she understood the house is in disrepair, and plans to fix it. She was informed that the driveway is in compliance with City Code and the accessory buildings must be cleaned up. Mayor Povolny attended the meeting and reported that it was unclear whether she would be living there or renting the house out.

Columbus' 2040 Comprehensive Plan Update

The Planning Commission also held a Public Hearing for the City's 2040 Comprehensive Plan Update. No one spoke during the Public Hearing, and City Planner Haila Maze gave an update on the plan. The Planning Commission is recommending approval of a resolution approving the draft Columbus 2040 Comprehensive Plan Update.

Duraine asked if changes can be made after the resolution is approved? Mursko replied that changes can be made based on comments which are received during the review period. Mayor Povolny asked if the revisions can be unrelated to comments received? Mursko said that they cannot, because the Public Hearing was based on the draft plan, so major revisions would require an additional Public Hearing.

Duraine said that he thought the residents in the northwest section of the Freeway District preferred not to be included in the Suburban Residential Overlay? Daly said that he had not heard this, and the residents Duraine was referring to did not attend any neighborhood meetings or the Public Hearing to convey that opinion. Duraine said that he will reach out to them personally to see what they think.

Motion by Peterson to approve Resolution 18-14, a resolution approving the draft Columbus 2040 Comprehensive Plan update for affected jurisdictions and Metropolitan Council review. Seconded by Krebs. Motion carried unanimously.

Mayor Povolny asked about a portion of the plan which includes a mention of solar power, and whether it would be possible for a person to purchase property in Columbus and only use it for solar panels? Mursko replied that City code does not allow that, because a principal use is required on all properties in Columbus.

11. Public Open Forum

No report.

D. STAFF AND CONSULTANT REPORTS

12. Engineer Report

Update – I-35/TH 97/Hornsby Street Projects

2 OF 5

City Engineer Dennis Postler gave an update on transportation projects going on in Columbus. He reported that next Tuesday 05.29.18 MnDOT will be closing the I-35 northbound ramp to Hwy 8 east for two (2) weeks while they pave the freeway. He added that traffic will be detoured onto Hwy 61 for the interim.

Mayor Povolny asked if Hornsby Street has been closed? Postler replied that it had.

Next, Postler showed a map of the layout of the new Hornsby Street intersection. Improvements being made on Hwy 97 east of the bridge are part of the Hornsby Street project. That project will also include an additional turn lane going from Hwy 97 to Hornsby Street north. Postler added that the pavement for additional through and turn lanes will all be new, while pavement in the middle of the road will be preserved.

In terms of financing the Hornsby Street project, Postler said cooperative agreement grant and LRIP funds will be used, however there may be remaining costs that the City will have to cover.

Mursko asked about the west side of the freeway, more specifically, at what will become Evers Street to the north of Hwy 97. She reported that they raised the road there a noticeable amount, and is wondering if it will be left that way in the long term? Postler replied that they raised the street because it will be serving as a temporary off ramp during construction. He said he is not sure how long it will be raised, but will look into it.

13. Attorney Report

Bonding Bill

City Attorney Bill Griffith reported on the bonding bill that contains funding for the bridge project. At this point, Governor Dayton still has to sign it, however, Griffith is confident that it will be passed because it contains funding for a large number of projects across the state.

Sanctuary at Howard Lake

Griffith continued to report on a meeting that he had with the DNR and the developer for the Sanctuary at Howard Lake. He feels confident that the project could be approved based on the flexibility that the DNR was willing to exercise at the meeting. He is expecting a formal concept plan to be presented in July, and the developer is also hopeful that he will not lose any units due to compromise. Griffith added that the developer will be asking for some flexibility in the PUD process.

14. Mayor and Council Members Report

Council Member Krebs

No report.

Council Member Peterson

No report.

Council Member Daly

Council Member Daly said that he attended the most recent Fall Fest meeting, which did not contain any significant developments. However, Daly did report that he heard the Forest Lake Fire Department is looking to hire firefighters, and they could be advertising for those openings during Fall Fest. He added that the openings should be advertised on the City's website and social media.

Mayor Povolny

Mayor Povolny asked what will happen to the assets from the Howard Lake Drive Park? Mursko replied that it's likely the picnic table is moving to the main park, and that the swing set will be dismantled and used for parts.

Secondly, Mayor Povolny reported on a letter he received from the Met Council stating the population of Columbus is 3,873, and asked if the City needs to change their sign since the number has changed? Mursko replied that the number he received in the letter is simply an estimate, and the signs are only changed on census years.

Council Member Duraine

No report.

15. Public Works Report

No report.

16. Public Communications Coordinator Report

No report.

17. City Administrator's Report

Election 2018 – New Equipment (Poll Books)

Mursko handed out a press release and played a short video regarding training for election poll books this year. She reported that Columbus will no longer be using paper rosters in order to simplify the process. In its place will be electronic poll books, which are very similar to iPads. Columbus will be using five (5) of these on election day, and will require election judges to be trained on them beforehand.

E. ANNOUNCEMENTS & REMINDERS

18. Calendar of Meetings.

The next Planning Commission meeting is 06.06.18.

F. ADJOURNMENT

Motion by Duraine to adjourn. Seconded by Daly. Motion carried unanimously.

Meeting adjourned at 7:34 P.M.

Respectfully Submitted:

Jessica Hughes, Public Communications Coordinator

Appendix F: Intercommunity Service Agreements

TOWN OF COLUMBUS
CITY OF FOREST LAKE

PHASE I PUBLIC IMPROVEMENT PROJECT AGREEMENT

THIS AGREEMENT is made on or as of the 10th day of JANUARY, 2000^{1 Bm} by and between the Township of Columbus, a public body corporate and politic ("Columbus") and the City of Forest Lake, a public body corporate and politic ("Forest Lake").

WITNESSETH:

WHEREAS, Columbus and Forest Lake entered into that certain *Joint Powers Agreement Wastewater Treatment* dated JANUARY 10, 2000^{1 Bm} (the "Joint Powers Agreement"), the purpose of which is to establish and maintain a cooperative wastewater treatment system serving both communities (the "Project"); and

WHEREAS, the Joint Powers Agreement contemplates construction of the Project in one or more phases referred to as "public improvement projects"; and

WHEREAS, the first phase of the Project involves the construction of an oversized gravity sewer line to be connected to the Metropolitan Council trunk interceptor system within Forest Lake, which oversizing is intended to accommodate anticipated flowage from both the Fenway Avenue Area Trunk Utility Project in Forest Lake and the Freeway Corridor Development District in Columbus (the "Phase I Improvements"); and

WHEREAS, Columbus approved a feasibility study for the Project and ordered such Phase I Improvements to be undertaken in coordination with Forest Lake pursuant to a separate written agreement between the parties; and

WHEREAS, this Agreement sets forth the terms and conditions related to the construction of the Phase I Improvements.

NOW, THEREFORE, in consideration of the mutual covenants and agreements contained herein, the sufficiency of which is hereby acknowledged, Columbus and Forest Lake agree as follows:

1. **Description of Phase I Improvements.** A detailed description of the Phase I Improvements is set forth in the *Engineering and Feasibility Report* attached hereto as Exhibit A (the "Engineering Report").
2. **Construction.** The Phase I Improvements have been constructed in accordance with the Engineering Report in compliance with all federal, state, and local laws, regulations, and ordinances applicable to the Phase I Improvements, including any specific requirements associated with the connection of the Phase I Improvements to the Metropolitan Council's trunk interceptor system.

3. **Cost Participation.** The Phase I Improvements have been constructed at a cost of \$100,586.00 including a cost of \$26,140.00 to oversize the gravity sewer line from 15 inches to 21 inches for the specific benefit of Columbus.

The parties agree that the total cost of the Phase I Improvements shall be shared on a proportional flow basis as follows:

COLUMBUS:	65.4% or \$65,783.00
FOREST LAKE:	34.6% or \$34,803.00

Of the Columbus share, \$26,140.00 shall be paid to Forest Lake upon execution of this Agreement and \$39,643.00 shall be paid to Forest Lake upon completion of the Forcemain Connection.

4. **Maintenance.** Forest Lake shall keep or cause to be kept the Phase I Improvements in good repair and condition, such that the improvements continue to provide the necessary capacity to both Forest Lake and Columbus as provided herein. The cost of such repair and maintenance shall be allocated to Columbus and Forest Lake in the same proportion as the cost of the initial construction set forth in Paragraph 3 above. Forest Lake shall pay the entire cost of such repair and maintenance initially and submit an invoice to Columbus for its proportionate share of such costs.
5. **Minimum Capacity.** Forest Lake shall cause the Phase I Improvements to be maintained such that a minimum capacity of 1.13 million gallons per day of flowage shall at all times be available to serve Columbus' Freeway Corridor Development District (the "Minimum Capacity").
6. **Forcemain Connection.** Columbus shall have the right to connect to the Phase I Improvements in the event Columbus determines, in its sole and absolute discretion, that a sufficient level of development potential exists within its Freeway Corridor Development District to justify the construction of a sewer system serving the district. In the event Columbus determines to connect to the Phase I Improvements, such connection shall be made via a forcemain sewer line to be constructed generally along 202nd Street within Forest Lake, as depicted in Exhibit B attached hereto (the "Forcemain Connection"). Columbus shall be solely responsible for the costs of constructing such Forcemain Connection, including the costs of acquiring necessary construction and utility easements along the proposed route of the Forcemain Connection (the "Easements"). To the extent feasible, Forest Lake shall cooperate in locating the Forcemain Connection within existing public right-of-way in order to reduce such acquisition costs to Columbus.

Construction shall include a metering manhole prior to discharge into the Phase I Improvements to accurately measure flows from Columbus for all required purposes.
7. **Eminent Domain.** In the event Columbus is unable to negotiate the acquisition of any Easements, Forest Lake agrees to utilize its powers of eminent domain to acquire the same. Forest Lake shall initiate such eminent domain proceedings within twenty (20) days after receiving a written request from Columbus identifying such hold-out Easements. Columbus shall pay the entire cost of such proceeding, including court costs, reasonable attorneys fees, and the commissioners award. Forest Lake shall not

enter into any settlement or stipulated award in connection with any eminent domain proceeding initiated pursuant to this Paragraph 6 without Columbus' express written consent. Forest Lake shall dismiss any such eminent domain proceeding immediately upon written notice to do so from Columbus. Upon acquiring title to such Easements through eminent domain, Forest Lake shall convey the same to Columbus for a purchase price of \$1.00.

8. **Representations.** Each party has the requisite power and authority to enter into this Agreement and perform its obligations hereunder. Each party's performance hereunder does not conflict with any contracts, enabling legislation, or governing documents applicable to such party.

9. **Indemnification.** Columbus, its officers, agents, servants, and employees shall not be liable for, and Forest Lake agrees to indemnify, defend, and hold harmless Columbus for any loss or damage to property or any damages, injury to, or death of any person(s) due to any negligent act on the part of Forest Lake, its officers, agents, servants, and employees in connection with the construction, operation, and maintenance of the Phase I Improvements. Forest Lake, its officers, agents, servants, and employees shall not be liable for, and Columbus agrees to indemnify, defend, and hold harmless Forest Lake for any loss or damage to property or any damages, injury to, or death of any person(s) due to any negligent act on the part of Columbus, its officers, agents, servants, and employees in connection with the construction, operation, and maintenance of the Forcemain Connection. The indemnification described herein shall not constitute a waiver of either municipality's limitation on liability provided by Minnesota Statutes, Chapter 466.

10. **Notices.** Any notice required to be given by Forest Lake to Columbus shall be deemed to have been given on the day of delivery if personally delivered, or if by mail, three (3) days after the date that it is deposited in the United States Mail, postage prepaid, sent by certified mail and addressed as follows:

Columbus Township
 16319 Kettle River Boulevard
 Forest Lake, MN 55025
 Attention: Town Manager

Any notice required to be given by Columbus to Forest Lake shall be deemed to have been given on the day of delivery if personally delivered, or, if by mail, three (3) days after the date it is deposited in the United States Mail, postage prepaid, sent by certified mail, and addressed as follows:

City of Forest Lake
 220 North Lake Street
 Forest Lake, MN 55025-2505
 Attention: Charles P. Robinson

11. **Applicable Law.** This Agreement shall be governed by and construed in accordance with the laws of the State of Minnesota.

**TOWN OF COLUMBUS
CITY OF FOREST LAKE**

**JOINT POWERS AGREEMENT
FOR WASTEWATER TREATMENT**

THE PARTIES TO THIS AGREEMENT are units of government responsible for the provision of municipal utilities in their respective jurisdictions. This Agreement is made pursuant to the authority conferred upon the parties by Minnesota Statutes § 471.59.

RECITALS

The Town of Columbus began the investigation for regional wastewater treatment service in 1996, during the initial stages of the updating of the *Town of Columbus Comprehensive Plan*.

Columbus Township officials met with representatives of the Metropolitan Council to discuss regional sewer service potential in 1997 and 1998.

Representatives of the Town of Columbus and the Town of Forest Lake began informal discussions on a joint regional sewer service system in 1997.

The Town of Columbus and the Town of Forest Lake individually incorporated provisions for a joint regional sewer service system in their respective draft comprehensive plans in 1998.

The Metropolitan Council authorized establishment of a joint regional sewer service system via the approval of the *Town of Columbus Comprehensive Plan* on June 23, 1999 and the approval of the *Town of Forest Lake Comprehensive Plan* on June 23, 1999.

The Board of Supervisors of the Town of Columbus and the Town of Forest Lake have met jointly in 1999 and 2000 to discuss joint regional sewer service and the terms and conditions of a joint powers agreement.

The Town of Forest Lake was annexed to the City of Forest Lake effective September 26, 2000.

NOW, THEREFORE, the undersigned governmental units, in the joint and mutual exercise of their powers agree as follows:

1. General Purpose. The purpose of this Joint Powers Agreement is to establish and maintain a cooperative wastewater treatment and/or water system(s) (the "Project") for the Township of Columbus and the City of Forest Lake. (The term "Project" as used in this Agreement may include the construction of one or more public improvement projects to provide wastewater and/or water within the jurisdiction of either municipality.) It is the intent of the parties and purpose of this Agreement to work together toward the following outcomes:

(a) Seeking and obtaining all necessary approvals for the concept of a wastewater treatment extension and/or water extension to serve the Southwest portion of the City of Forest Lake and the Eastern portion of Columbus Township.

(b) Selecting a route for the wastewater treatment and/or water pipe(s) in a location which maximizes potential long-term benefits to both parties and their respective residents.

(c) Designing the wastewater treatment system connection.

(d) Financing the Project.

(e) Authorizing, overseeing, and ensuring completion of the Project.

2. Members. The members of this Agreement shall consist of the following units of government:

(a) Town of Columbus, Anoka County, Minnesota.

(b) City of Forest Lake, Washington County, Minnesota.

3. State and Local Assistance for Wastewater Treatment Program. Either Municipality acting on behalf of the Joint Powers Agreement members, may apply for funding from the State of Minnesota and Metropolitan Council ("grant funds"). Either the Town Manager or City Administrator may serve as the "authorized official" as defined in the general policies and procedures for the program.

4. Finances.

(a) Each municipality shall generally be responsible for the costs, charges and expenses related to that portion of the Project that is initiated by the respective municipality unless a more specific allocation of financial responsibility is adopted in writing by the parties.

(b) The cost of extending facilities or services to serve the City of Forest Lake shall be borne by the City of Forest Lake, unless agreed to by the members. The cost of extending facilities or services to serve Columbus Township shall be borne by the Town of Columbus, unless otherwise agreed to in writing by the parties.

(c) The Project funds shall be expended in accord with municipal contracting law and other laws applicable to municipal expenditures.

(d) In determining the feasibility of the construction of public improvements contemplated by this Agreement, neither municipality shall unreasonably withhold consent to a project deemed "feasible" by the Project Engineer.

5. Project Engineer.

(a) A Project Engineer shall be appointed by the municipalities and serve at their pleasure. The Project Engineer must be an engineer licensed by the State of Minnesota. The Project Engineer may be the engineer of either member.

(b) The Project Engineer shall be in charge of the day-to-day management of the Project, including supervising assigned personnel, subject to direction received from the municipalities. The Project Engineer is responsible for staffing, scheduling, record keeping, fund management, and information management. The Project Engineer will be responsible to keep the municipalities updated as to Project activity. The Project Engineer will provide the municipalities with a monthly accounting of all funds disbursed and a written summary of activity with the Project.

6. Indemnification. Each member shall fully indemnify and hold harmless the other members against all claims, losses, damage, liability, suits, judgments, costs and expenses by reason of the action or inaction of its employees assigned to the Project. This Agreement to indemnify and hold harmless does not constitute a waiver by any member of limitations on liability provided by Minnesota Statutes, Chapter 466.

7. Duration.

(a) This Agreement shall take full force and effect when approved by the City Council of the City of Forest Lake and the Town Board of Columbus. The signed Agreement shall be filed with the clerk of each municipality. Each member shall be notified in writing of its effective date.

(b) This Agreement may be terminated at any time by the unanimous written agreement of both municipalities.

(c) Upon termination of this Agreement, all Project property that is separately owned or controlled by one member shall be retained by that member. All Project property that is jointly owned shall be sold or distributed to the members in proportion to the contributions of each member of this Agreement.

IN WITNESS WHEREOF, the undersigned governmental units, by action of their governing bodies, have caused this Agreement to be executed in accordance with the authority of Minnesota Statutes § 471.59.

CITY OF FOREST LAKE

BY [Signature]
Its _____
Date: 2-27-2001

Attest [Signature]

Date of signature: 2-27-2001

TOWN OF COLUMBUS

BY Mal Matter
Its CHAIRMAN OF THE BOARD
Date: 1-31-01

Attest [Signature]

Date of signature: 1-31-01

EXHIBIT A

"Engineering Report"

ENGINEERING AND FEASIBILITY REPORT

Sanitary Sewer, I-35 Freeway District

Town of Columbus

July 7, 2000

Revised December 18, 2000

INTRODUCTION

The Comprehensive Plan for the Town of Columbus identifies an approximate three square mile area adjacent to Interstate 35 as the Freeway Corridor Development District. The sanitary sewer element of the Comprehensive Plan proposes phased sewer service to the district with a discharge along 202nd Street in Forest Lake to the Metropolitan Council owned trunk interceptor system. The Sanitary Sewer Study and Report completed by the consulting engineering firm of Hakanson Anderson Associates, Inc. identified details of the necessary sewer service facilities, provided estimated costs of those facilities, and identified a phased implementation plan by which sanitary sewer can be constructed as needed to serve new or existing development within the Town of Columbus. Among the sewer system components identified and evaluated in the Freeway District Sanitary Sewer Study were facilities necessary within Forest Lake, consisting of one or more force mains. The study evaluated an alternative for the easterly one quarter mile of the outlet system where construction could be in conjunction with a Town of Forest Lake project. Data in the sewer study, along with discussions with the Town of Forest Lake, have led to a determination that the best and most cost effective method of ultimate construction of the sanitary sewer discharge system from the Town of Columbus would be by oversizing a section of the Forest Lake sewer with cost participation by the Town of Columbus in that segment. That cost participation, along with other incurred or programmed sanitary sewer system costs, is the subject of this Feasibility Report.

DESCRIPTION OF THE PROJECT AND ESTIMATE OF COST

The project consists of construction of approximately 1300 lineal feet of gravity sanitary sewer line in Forest Lake, as shown on an attached exhibit, which work will be performed by Forest Lake under a public improvement contract. The project is in conformance with the Town of Columbus' July 12, 2000 Sewer Cost Feasibility Study for the I-35 Freeway District Corridor, and specifically in conformance with the determination that has been made by the Town of Columbus for cost participation in the segment of the Forest Lake sewer line that is being oversized for joint community flow. The total cost to be authorized under the currently proposed project is \$125,370.00. The physical construction proposed will be performed by Forest Lake as the Fenway Avenue Area Trunk Utility Project, which project work has been designed, advertised and bid with a contract for construction awarded. In addition to the costs of the current

construction, the project includes past and current planning, legal, engineering and administrative costs.

1.	Town Planner 1998	\$ 6,218.60
2.	Town Planner 1999	\$ 1,651.22
3.	Town Attorney 1999	\$ 148.75
4.	Town Engineer 1999	\$ 527.95
5.	Engineering Feasibility	\$ 21,221.15
6.	Town Planner 2000	\$ 2,900.73
7.	Town Attorney 2000	\$ 5,167.58
8.	Forest Lake Sewer Oversizing	\$ 65,783.00
9.	Town Administrative, 25% of items 5 and 8	\$ <u>21,751.02</u>
	Total Proposed Improvement Costs	\$125,370.00

The current construction project consists of oversizing a Forest Lake line for future trunk sewer service to the I-35 Freeway District Corridor. In accordance with Minnesota Statutes and upon advise of the Town Attorney, a hearing for a public improvement and the ordering of that improvement via Town Board resolution is proposed in order to assure that past project expenses and the proposed project costs for construction are eligible for recovery as part of a sanitary sewer project. The specific recommended action of the Town Board is to authorize and order construction of the Forest Lake Township pipe oversizing with payment to be made by the Town of Columbus to Forest Lake. The total cost of the project is \$125,370.00 as identified.

The current construction portion of this is \$26,140.00, which pays for the physical oversizing of the Forest Lake line. In addition, a future payment from the Town of Columbus to Forest Lake in the amount of \$39,643.00 will be made at the time when the Town of Columbus connects to the Forest Lake system. This added payment is for the Town of Columbus' share of the Forest Lake facility based on proportionate flow. These current and future payments total \$65,783.00 and comprise the total Town of Columbus' participation in the Forest Lake facility construction.

BENEFITTED AREA AND ASSESSMENT OF COST

The benefited area of this public improvement is the entire I-35 Freeway District Corridor consisting of lands within the Township Freeway District A (FD-A) and Freeway District B (FD-B) zoning district.

The FD-A and FD-B legal district descriptions include all properties as follows:

FD-A District – Section 24 and the North Half (N ½) of Section 25, except the south two hundred seventy-five (275) feet of the North Half (N ½) of Section 25 lying east of a line drawn parallel with and one thousand ninety feet (1090) west of the North-South centerline and lying westerly of the westerly right-of-way line of County State Aid Highway No. 21.

