



**BOLTON
& MENK**

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SURFACE WATER MANAGEMENT PLAN

CITY OF NORWOOD YOUNG AMERICA, MN

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1.0 EXECUTIVE SUMMARY

1.1 General Plan Description

The City of Norwood Young America's Surface Water Management Plan has been developed as a guide for the Norwood Young America City Council in its future decision making for related matters. The Plan thoughtfully considers Surface Water Management, identifies Water Resource management and the City's partners therein, includes an inventory of Land and Water Resources, raises major issues, goals, and policy objectives, begins to develop an assessment and implementation plan, and charts administrative procedures to enact the Plan.

The Surface Water Management Plan, as adopted by the City of Norwood Young America, is intended to provide context for the future decisions the City will face. It is not intended to be an absolute document – but rather a dynamic and flexible tool which considers the ever-changing pressures related to Surface Water Management. The Plan will address mandated requirements as defined by other Local, State, and Federal agencies. The City will consider these mandates carefully to ensure that its implementation is in the best interest of the broader community.

Many of the action items within the Plan require additional study – including an in-depth investigation into alternative strategies, methods, and processes. This additional study will be completed when it is determined to be most efficient and effective by the City.

The regulations outlined in this plan do not supersede those put forth by the Carver County Watershed Management Organization (CCWMO) or other Local, State, or Federal agencies. If a discrepancy exists between regulations contained in this plan and other agencies, the more restrictive requirement shall govern.

This plan is divided into eight sections as follows:

1. **Section 1.0. Executive Summary** provides background information and summarizes the plan contents.
2. **Section 2.0. Surface Water Management Plan Purpose** outlines the purpose of this plan.
3. **Section 3.0. Water Resources Management Responsibilities and Related Agreements** identifies resource management authority and any water resources related agreements existing between Norwood Young America and nearby cities, state, or county.
4. **Section 4.0. Land and Water Resources Inventory** presents information about the topography, geology, groundwater, soils, land use, public utilities, surface waters, hydrologic system and data, as well as the existing drainage system.
5. **Section 5.0. Major Issues, Goals, and Policies** outlines Norwood Young America's major issues, goals and policies, as well as implementation strategies, pertaining to water resources management.
6. **Section 6.0. Water Resources Assessment and Implementation Plan** presents information about existing water resources along with current and potential issues. This section provides solutions in the form of proposed restorations or stormwater treatment improvements, provides a general opinion of probable costs, discusses funding mechanisms, identifies project partners, provides prioritization and a potential schedule for surface water management capital improvement projects, and discusses educational

- 1.3.3 **Urban Stormwater Management.** Land development substantially increases the rate and volume of surface water runoff due to the increase in impervious surfaces. Unmanaged runoff increases sedimentation, pollution, erosion, and flooding downstream and decreases groundwater recharge.
- 1.3.4 **Wetlands Management.** Draining, filling, or excavating wetlands significantly impacts the water quality of downstream surface waters. The loss of existing wetlands leads to increases in sedimentation, pollution, erosion, and flooding downstream and decreases the diversity and integrity of vegetation and wildlife.
- 1.3.5 **Upland Natural Resources.** Loss of natural upland areas can lead to a decrease in the function and quality of surface water resources.
- 1.3.6 **Ground Water Management.** Groundwater quality and availability can be significantly impacted by many different land use activities.
- 1.3.7 **Education.** Most potential contamination threats, sources of pollution, and increases in stormwater runoff to water resources are related to human activities.

1.4 Goals

Section 5.0 outlines Norwood Young America's major issues, goals and policies, as well as implementation strategies, pertaining to water resources management. Following is a summary of the City's goals:

- 1.4.1 **Surface Water Management.** Maintain or improve the physical, chemical, biological, and aesthetic condition of surface water resources.
- 1.4.2 **Impaired Waters.** Develop and implement plans as necessary to reduce pollutant loads for waters that do not meet Total Maximum Daily Loads (TMDLs) approved by the EPA. Coordinate City efforts with applicable Implementation Plans as approved by the Minnesota Pollution Control Agency. See Section 5.2.1S for a list of approved TMDLs and Implementation Plans.
- 1.4.3 **Urban Stormwater Management.** Minimize and mitigate the impacts of urban stormwater runoff on water resources.
- 1.4.4 **Wetlands Management.** Manage and protect wetlands to maximize wetland functions and improve surface water resources.
- 1.4.5 **Upland Natural Resources.** Manage and protect natural upland areas adjacent to surface water resources to mitigate degradation of surface waters and increase the quantity, quality and biological diversity of natural areas.
- 1.4.6 **Ground Water Management.** Protect the quality and quantity of groundwater resources.
- 1.4.7 **Education.** Provide the public with the knowledge, skills, and motivation to protect and improve surface water and groundwater resources.

enforcement of existing regulations and the participation of willing landowners in existing preservation and restoration programs.

2. Promote the restoration of natural upland areas, to mitigate the degradation and fragmentation of natural resources and improve water quality of surface water resources.
3. Promote education regarding the benefits of proper natural upland management.

1.5.6 **Ground Water Management.**

1. Protect groundwater quality and groundwater supplies.
2. Promote groundwater recharge, if soil conditions allow.
3. Promote education regarding the benefits of proper groundwater management.

1.5.7 **Education.**

1. Increase public awareness, understanding, and involvement in water and natural resource issues and management.

3.0 WATER RESOURCE MANAGEMENT RESPONSIBILITIES AND RELATED AGREEMENTS

The City of Norwood Young America is responsible for construction, maintenance, and other projects in or along the City's storm water management systems (i.e., ponds, pipes, channels, etc.). However, the City of Norwood Young America must comply with the Carver County Watershed Management Organization Rules (County Code – Section 153), as well as the MPCA's NPDES General Stormwater Permit for Construction Activity (MN R100001). **Section 5.0** of this plan further outlines responsibilities and a summary of responsibilities is included in **Appendix E**. Following are a list of water resources related agreements between the City and other entities:

- With Carver County regarding inspection of SSTs within City limits.
- With Carver County regarding Water Resources-Related Education (in development).

The regulations outlined in this plan do not supersede those put forth by the Carver County Watershed Management Organization (CCWMO) or other Local, State, or Federal agencies. If a discrepancy exists between regulations contained in this plan and other agencies, the more restrictive requirement shall govern.

Table 4-2: Hydrologic Soil Groups

A	<p>Soils in this group have low runoff potential when thoroughly wet. Water is transmitted freely through the soil. Group A soils typically have less than 10% clay and more than 90% sand or gravel and have gravel or sand textures. Some soils having loamy sand, sandy loam, loam or silt loam textures may be placed in this group if they are well aggregated, of low bulk density, or contain greater than 35% rock fragments.</p> <p>The saturated hydraulic conductivity of all soil layers exceeds 5.67 in/hr. The depth to any water impermeable layer is greater than 20". The depth to the water table is greater than 24". Soils that are deeper than 40" to a water impermeable layer are in group A if the saturated hydraulic conductivity of all soil layers within 40" of the surface exceeds 1.42 in/hr.</p>
B	<p>Soils in this group have moderately low runoff potential when thoroughly wet. Water transmission through the soil is unimpeded. Group B soils typically have between 10- 20% clay and 50- 90% sand and have loamy sand or sandy loam textures. Some soils having loam, silt loam, silt, or sandy clay loam textures may be placed in this group if they are well aggregated, of low bulk density, or contain greater than 35% rock fragments.</p> <p>The saturated hydraulic conductivity in the least transmissive layer between the surface and 20" ranges from 1.42 to 5.67 in/hr. The depth to any water impermeable layer is greater than 20". The depth to the water table is greater than 24". Soils that are deeper than 40" to a water impermeable layer or water table are in group B if the saturated hydraulic conductivity of all soil layers within 40" of the surface exceeds 0.57 in/hr but is less than 1.42 in/hr.</p>
C	<p>Soils in this group have moderately high runoff potential when thoroughly wet. Water transmission through the soil is somewhat restricted. Group C soils typically have between 20- 40% clay and less than 50% sand and have loam, silt loam, sandy clay loam, clay loam, and silty clay loam textures. Some soils having clay, silty clay, or sandy clay textures may be placed in this group if they are well aggregated, of low bulk density, or contain greater than 35% rock fragments.</p> <p>The limits on the diagnostic physical characteristics of group C are as follows. The saturated hydraulic conductivity in the least transmissive layer between the surface and 20" is between 0.14-1.42 in/hr. The depth to any water impermeable layer is greater than 20". The depth to the water table is greater than 24". Soils that are deeper than 40" to a restriction or water table are in group C if the saturated hydraulic conductivity of all soil layers within 40" of the surface exceeds 0.06 in/hr but is less than 0.57 in/hr.</p>
D	<p>Soils in this group have high runoff potential when thoroughly wet. Water movement through the soil is restricted or very restricted. Group D soils typically have greater than 40% clay, less than 50% sand, and have clayey textures. In some areas, they also have high shrink-swell potential. All soils with a depth to a water impermeable layer less than 20" and all soils with a water table within 24" of the surface are in this group, although some may have a dual classification, as described in the next section, if they can be adequately drained.</p> <p>The limits on the physical diagnostic characteristics of group D are as follows. For soils with a water impermeable layer at a depth between 20-40", the saturated hydraulic conductivity in the least transmissive soil layer is less than or equal to 0.14 in/hr. For soils that are deeper than 40" to a restriction or water table, the saturated hydraulic conductivity of all soil layers within 40" of the surface is less than or equal to 0.06 in/hr.</p>
A/D B/D C/D	<p>Certain wet soils are placed in group D based solely on the presence of a water table within 24" of the surface even though the saturated hydraulic conductivity may be favorable for water transmission. If these soils can be adequately drained, then they are assigned to dual hydrologic soil groups (A/D, B/D, and C/D) based on their saturated hydraulic conductivity and the water table depth when drained. The first letter applies to the drained condition and the second to the undrained condition. For the purpose of hydrologic soil group, adequately drained means that the seasonal high-water table is kept at least 24" below the surface in a soil where it would be higher in a natural state.</p>

Source: Natural Resource Conservation Service

The underlying soils in and around the city are primarily Type B and Type D, with inclusions of A and C scattered throughout. Many of the Type D soils will act as Type A or B soils when containing drain tiles, such as those installed for agricultural purposes.

During the development process these tiles will be removed and the soils will revert to their less-permeable state leading to increased surface runoff. Refer to **Figure 4** for location of soil types. In general, Norwood Young America soils are mostly the Lester-Hayden-Peat association in the north, with some Lester-LeSueur-Peat to the south. Additional information regarding area soils can be found in the CWRMP.

4.1.5 Unique Features, Scenic Areas, & Water-based Recreation

Barnes Lake, Brand Lake, Braunworth Lake, Eagle Lake, Fredericks Lake, Tiger Lake, Young America Lake, the South Fork of the Crow River, Bevans Creek, Carver Creek and the other surrounding lakes, wetlands, and streams provide scenic views in the Norwood Young America area and water-based recreational opportunities. Several parks are scattered throughout the city. Community parks include Casper Park, Friendship Park, Kehrner Park, Legion Park (Pool Park), Prairie Dawn Park, Skate Park,

Crow River, Bevens Creek, Carver Creek, and multiple wetlands and woodlands provide habitat for a wide variety of fish, birds, and animals. Fish species include Black Bullhead, Black Crappie, Bluegill, Brown Bullhead, Golden Shiner, Hybrid Sunfish, Largemouth Bass, Northern Pike, Pumpkin Seed, Tiger Muskellunge, Walleye, and Yellow Perch. Bird species include several of both migratory and non-migratory varieties. Animal species include badger, bat, beaver, chipmunk, coyote, ermine, fox (Gray and Red), Heather vole, Least shrew, Long-tailed weasel, mink, mole, muskrat, Plains pocket mouse, porcupine, rabbit (Eastern Cottontail and White-tailed Jack), raccoon, river otter, Striped skunk, squirrel (Fox, Gray, Red, and Thirteen-lined Ground), Virginia Opossum, and white-tailed deer. Additional information regarding county fish and wildlife habitat can be found in the CWRMP.

4.3 Human Environment

4.3.1 Existing and Planned Land Use

The City of Norwood Young America has developable space in most directions and is limited only by area wetlands and lakes. Land use is an important factor in estimating surface water runoff, as the impervious surface associated with each land use greatly affects the amount of runoff generated. **Figure 2** exhibits existing land uses in Norwood Young America and **Figure 3** exhibits the projected land uses for the year 2040. It is presumed that continued development will be predominantly residential with some commercial/industrial expansion to the east. With these projections, priority areas have been identified for future water resource improvements or enhancements. Additional information regarding existing and planned land use in the area can be found in the City of Norwood Young America 2040 Comprehensive Plan and the CWRMP.

4.3.2 Metropolitan Urban Service Area (MUSA)

The MUSA is the area in which the Metropolitan Council oversees the planning, installation, and maintenance of regional facilities, such as sewers and highways. No portion of Norwood Young America is located within the Metropolitan Urban Service Area. Additional information regarding the Metropolitan Urban Service Area can be found in the CWRMP.

4.3.3 Open Space and Recreation

Eagle Lake provides opportunities for sport fishing and water recreational activities. Numerous city parks provide outdoor recreational opportunities, and local sidewalks and trails provide a location for walking, running, and biking. Also, several regional parks, trails and wildlife management areas are located within the county. Additional information regarding open space and recreation can be found in the CWRMP.

4.3.4 Potential Environmental Hazards

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

Known and Potential Sources of Soil and Groundwater Contamination: The MPCA maintains a database of sites with known or potential soil and groundwater contamination, including Superfund candidate sites, contaminated soil treatment facilities, leak sites, petroleum brownfields, state assessment sites, and voluntary investigation and cleanup sites. The database contains sites that have already been investigated and cleaned up, sites currently enrolled in MPCA cleanup programs, and sites suspected of contamination but found to be clean after investigation. Additional information regarding known or potential contamination sites can also be found in the

Lakes

Barnes Lake (Lake ID 10-0109-00): Barnes Lake is 175-acre highly eutrophic lake with a watershed comprised of approximately half developed land and half agricultural land. It is in the eastern portion of the study boundary and discharges to County Ditch No. 4. Barnes Lake is classified as a Natural Environment lake and the City of Norwood Young America requires controlled development of its shoreland. The DNR OHWL of the lake is 971.00, with the highest level ever recorded being 973.5 and the lowest level being 969.94.

Brand Lake (Lake ID 10-0110-00): Brand Lake is a 134-acre highly eutrophic lake with a watershed comprised of approximately half developed land and half agricultural land. It is in the southwestern portion of the study boundary and discharges to County Ditch No. 4. Brand Lake is classified as a Natural Environment lake and the City of Norwood Young America requires controlled development of its shoreland. The DNR OHWL of the lake is 980.60, with the highest level ever recorded being 981.10 and the lowest level being 979.60.

Braunworth Lake (Lake ID 10-0107-00): Braunworth Lake is a 93-acre highly eutrophic lake with a watershed comprised mostly of developed land. It is in the northern portion of the study boundary and discharges to Eagle Lake. Braunworth Lake is classified as a Natural Environment lake and the City of Norwood Young America requires controlled development of its shoreland. The DNR OHWL of the lake is 976.60, with the highest level ever recorded being 976.90 and the lowest level being 976.42.

Eagle Lake (Lake ID 10-0121-00): Eagle Lake is a 233-acre highly eutrophic lake with a watershed comprised primarily of agricultural land. It is located northwest of the study boundary and discharges to the South Fork of the Crow River. The lake is listed by the State as impaired for mercury in fish tissue and nutrient/ eutrophication biological indicators. Mercury in fish tissue is a widespread issue and the State has prepared a state-wide TMDL to reach mercury reduction goals. The TMDL for nutrient/eutrophication biological indicators was approved by the EPA on September 28, 2010 as part of the South Fork Crow River Lakes: Excess Nutrients (Metro) TMDL. The corresponding Implementation Plan was approved by the MPCA on November 3, 2010. The DNR ordinary high-water level (OHWL) of the lake is 965.70, with the highest level ever recorded (since 1960) being 967.53 (2001) and the lowest level being 965.06 (2000).

Fredericks Lake (Lake ID 10-0112-00): Fredericks Lake is a shallow 145-acre basin with a watershed comprised of primarily agricultural land. It is located on the southern edge of the study boundary and discharges to County Ditch No. 5.

Tiger Lake (Lake ID 10-0108-00): Tiger Lake is a 575-acre highly eutrophic lake with a watershed comprised mostly of agricultural land. It is located adjacent to the western edge of the study boundary and discharges to the South Fork of the Crow River. Tiger Lake is classified as a Natural Environment lake and the City of Norwood Young America requires controlled development of its shoreland. The DNR has not established an OHWL for the lake. The highest level ever recorded is 972.43, and the lowest level ever recorded is 969.50.

Young America Lake (Lake ID 10-0105-00): Young America Lake is a 110-acre highly eutrophic lake with a watershed comprised of approximately half developed land and half agricultural land. It is in the northeastern portion of the study boundary and discharges to Barnes Lake. Young America Lake is classified as a Natural Environment

runoff, flood water storage, shoreline stabilization, water quality, habitat, landscape and wetland characteristics, and aesthetics, with basins smaller than one acre being excluded from the assessment. Rankings of high, medium, or low were then assigned to each wetland or potential wetland restoration site. These rankings are now being used to apply buffer standards, for stormwater and natural resource planning for growth and redevelopment areas, and to prioritize restoration opportunities. The wetlands in and around Norwood Young America currently vary in rank from low all the way to high. Also, several potential restoration sites within the study boundary with rankings of low to high have been identified by the WFVA (**Figure 7**).

Floodplain

The State defines floodplain as the area covered by a flood that has a 1% chance of occurring in a given year, also known as the 100yr flood. A floodplain is divided into two parts: the floodway and flood fringe. The floodway includes the basin, river channel, and portion of the floodplain necessary to discharge the 100yr flood. The flood fringe is the portion of floodplain outside the floodway. The MnDNR oversees administration of the state Floodplain Management Program. This program promotes and ensures sound development in floodplain areas to protect public safety and health and minimize economic impacts from flood damage. Therefore, MnDNR has created minimum standards for floodplain management and requires all local floodplain regulations to be compliant with these standards. The City does not participate in the National Flood Insurance Program and does not currently have a city ordinance pertaining to floodplain management. Refer to the following link for more information regarding the FEMA 100-year floodplain areas around the City.

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

Flood Insurance Studies

- No FEMA map for Norwood Young America is currently available.
- Flood Insurance Study for Carver County, MN and Incorporated Areas (FIS # 27109CV000A-1) dated December 21, 2018

Known Flooding Issues

- Poplar Ridge Drive: Water in the area of Poplar Ridge Drive and Industrial Blvd sheet drains to the north causing flooding near two apartment buildings. Previously, a swale was constructed to assist in conveying the water to the wetland located to the east. Additional storm sewer is planned as part of a future street project to intercept some of the water upstream of the problem area on Poplar Ridge Drive.
- South Park: South Park is in a low area that frequently ponds water. The storm sewer outlet from the park discharges to the east through undersized pipes located in back yards that do not contain easements. Preliminary design has been completed that relocates the outlet piping into South Street. South Street is proposed to be reconstructed as the next street project and this work would be able to be completed at that time. The downstream portion of this outlet piping was previously constructed as part of the Faxon Road project. Additional improvements in the park to reduce volume and treat the stormwater will also be evaluated as part of that project.
- Trilane Drive: The ditch along TH 5 is extremely flat, and runoff ponds in the

been approved yet. Impaired waters in Norwood Young America, or those receiving discharge from the City, are summarized in **Table 4.3**. Mapping of impaired waters is also depicted on **Figure 8**.

Table 4-3: Impaired Waters

Waterbody/ Watercourse	DNR ID#	Listed Pollutant	Impaired Use	Year Listed	Year TMDL Approved
Eagle Lake	10-0121-00	Nutrient/ Eutrophication	- Aquatic Recreation	2002	2010
North Line to CD4A	07020012-533	- E. Coli	- Limited Resource Value	2018	na

Shoreland Ordinance

The City's Shoreland Management Overlay District ordinance (Section 1240.01) meets the standards set forth in Minnesota Rules Chapter 6120 and can be found at the following link:

<https://www.cityofnya.com/document-center/#citycode>

4.4.2 Groundwater Resources

Water quality of surface waters can have great effect on groundwater due to the interaction via groundwater recharge and discharge. Norwood Young America relies strictly on groundwater (aquifers) for drinking water, and therefore, groundwater quality is equally as important as surface water quality. Multiple aquifers exist within Carver County, but most wells are finished in the Prairie du Chien-Jordan Aquifer.

Wellhead Protection

The Safe Drinking Water Act requires states to implement protection programs to prevent contamination of public drinking water sources. Therefore, the Minnesota Department of Health requires public water suppliers to delineate and manage Wellhead Protection Areas (WHPA) surrounding public water sources. Norwood Young America has currently not completed a Wellhead Protection Study and has not designated a Drinking Water Supply Management Area. Additional information regarding groundwater resources can be found in the CWRMP.

- 5.1.4P Promote water quality improvement, runoff volume reduction, and additional storage through wetland restoration, regional ponding, infiltration, filtration, bioretention, and stream or ditch diversions.

By providing water quality improvement, runoff volume reduction, and additional storage, peak runoff rates and pollutants are reduced, and groundwater recharge is increased. These actions will help meet TMDL goals.

- 5.1.5P Evaluate outlet control structures for performance and work with landowners, CCWMO, and/or the Minnesota Department of Natural Resources (MnDNR) to replace or repair the structures if needed.

The condition of outlet control structures can have a significant impact on riparian property and wildlife habitat due to flooding or low water levels. Flooding can cause erosion, sedimentation, flooding of nesting sites and vegetation, and damage to structures. Low water levels can lower the value of recreation, impact wildlife, and reduce water supplies.

- 5.1.6P Promote education regarding the benefits of proper surface water resources management.

Public understanding and involvement are essential in maintaining and improving the quality of surface water resources.

Implementation Strategies

- 5.1.1S The City will continue to administer the Shoreland Management Overlay District ordinance in accordance with state and county requirements. The ordinance will also be maintained regularly to reflect any future revisions to the state standards.
- 5.1.2S The City will continue to monitor and evaluate flooding issues on City property as necessary to protect public safety and minimize potential for property damage. Flood improvement projects identified will be prioritized based on available funds, feasibility, potential project partners, and benefits provided. Once projects are identified, this plan will be updated to list projects in **Section 6.0**.
- 5.1.3S The City will aid landowners in evaluating and correcting localized flooding issues. If potential flooding will damage nearby dwellings or cause significant erosion and sedimentation, the City will partner with the landowner to correct drainage as feasible. The City's participation shall include engineering recommendations. Private property owners shall be responsible for all private construction costs necessary to remedy the localized drainage issue.
- 5.1.4S In order to provide water quality improvement, runoff volume reduction, and additional storage, wetland restoration, ponding, infiltration, filtration, bioretention, and stream or ditch diversion sites will be identified and prioritized. Sites will be coordinated with the CWRMP and will consider available funds, feasibility, possible project partners, benefits provided, bioengineered solutions, and TMDL Implementation Plans. Once sites are identified, this plan will be updated to list the sites in **Section 6.0**.
- 5.1.5S Outlet control structures will be evaluated for responsible authority, condition, and performance and prioritized for repair or replacement. Evaluations will consider design outflows and design outlet elevations as well as available funds, feasibility, possible project partners, benefits provided, bioengineered solutions, and TMDL Implementation

Implementation Strategies

5.2.1S Adopt TMDLs and Implementation Plans into this plan by reference as they are approved and list below. Update this plan regularly to incorporate TMDLs approved in the future. The City will be directly involved with the portions of the studies and implementation plans that it is required to be responsible for. The City will provide support as necessary to the County for the remaining portions.

- South Fork Crow River Lakes: Excessive Nutrients TMDL and Implementation Plan
- Carver-Bevens-Silver Creeks: Fecal Coliform TMDL and Implementation Plan
- Bevens Creek: Turbidity TMDL

Refer to individual TMDLs for more detailed information regarding allocations and required reductions.

5.2.2S Through the City's Public Education Partnership with the CCWMO, goals, policies and implementation strategies for Impaired Waters will be incorporated into public education.

5.3 Urban Stormwater Management

Issues

5.3I Land development substantially increases the rate and volume of surface water runoff due to the increase in impervious surfaces. Unmanaged runoff increases sedimentation, pollution, erosion, and flooding downstream and decreases groundwater recharge.

Goal

5.3G Minimize and mitigate the impacts of urban stormwater runoff on water resources.

Policies

5.3.1P Continue to meet or exceed the National Pollutant Discharge Elimination System (NPDES) requirements as they apply to the City of Norwood Young America.

As authorized by the Clean Water Act and EPA, the State administers the NPDES program through the Minnesota Pollution Control Agency (MPCA). As it pertains to stormwater runoff, the NPDES program is designed to reduce pollution entering surface and ground waters through regulation of construction sites, Municipal Separate Storm Sewer Systems (MS4s), and industrial sites.

Construction: The most active portion of the NPDES program in the City is Construction Stormwater (CSW) permitting. Controlling erosion during land development/redevelopment is paramount to significantly reducing transport of sediment and pollutants. A NPDES CSW Permit is required for any construction activity that disturbs 1 or more acres, is part of a development greater than 1 acre, or is determined by the MPCA to pose a risk to water resources. The CSW also lists additional requirements for discharges to impaired or special waters that must be incorporated. The CSW must be signed by both the Owner and Contractor. Prior to obtaining the permit, a Stormwater Pollution Prevention Plan (SWPPP) must be developed that shows the BMPs to control runoff during and after construction. City, County, and MPCA inspectors are responsible for field inspections and enforcement of permit requirements.

- 5.3.5P Implement the road operation and maintenance (O&M) Plan using the practices described in this plan. Public Services would be responsible for implementing the O&M Plan.

The City's roads can be a conduit for significant pollution. Pollution is created when chemicals, debris, fertilizers, automotive oils, salt, and litter are washed off roadways during rainstorms or snowmelt. With proper planning, maintenance BMPs will help reduce pollutant loads.

- 5.3.6P Maintain City's database for stormwater related data, such as location and type.

A database of the City's stormwater infrastructure will aid in tracking maintenance, evaluating progress toward goals, and prioritizing future projects.

- 5.3.7P Promote education regarding the benefits of proper urban stormwater management.

Public understanding and involvement are essential in maintaining and improving the quality of urban stormwater runoff.

Implementation Strategies

- 5.3.1S Any project within the City boundary that requires a NPDES CSW permit must provide a copy of the permit to the City prior to any work. Any facility required to obtain an ISW permit will be required by the City to do so in accordance with MPCA requirements. Though Norwood Young America is not currently a regulated MS4 community, the City could be designated as such in the future. In addition, a maintained copy of this plan is the first step in being prepared for potential future NPDES requirements.

- 5.3.2S Rely on the Water Resource Management Standards set forth in the Carver County Ordinances and provide the necessary resources for the implementation of those standards and this Surface Water Management Plan. Employ staff or a consultant to perform the following tasks:

- A. Review Planning and Zoning Applications with regards to Water Resource Management Standards.
- B. Inspect BMP installations.
- C. Enforce BMP maintenance.

The City will continue to rely on CCWMO to maintain authority for reviewing and approving applications for compliance with CCWMO's rules and enforcing those rules as necessary. The City will also review all applications to ensure it is not adversely impacted by proposed improvements (i.e. infiltration over sanitary sewer or potential conflicts with future projects).

- 5.3.3S Potential stormwater projects that decrease local runoff rates and volumes and increase water quality will be identified and prioritized. Sites will be coordinated with the CWRMP and will consider available funds, feasibility, possible project partners, benefits provided, bioengineered solutions, and TMDL Implementation Plans. Once projects are identified, this plan will be updated annually to list the improvement sites in **Section 6.0**.

- 5.3.4S Maintain the storm drainage system including the following items:
- A. An inspection program and schedule that ensures general maintenance is performed. Erosion control and stormwater treatment devices are inspected regularly.

- I. Test soils for nutrients in order to apply the correct amount of fertilizer.
- J. Use zero phosphorus fertilizers.
- K. Keep leaves and lawn clippings out of streets and gutters.
- L. Pick up pet wastes.
- M. Limit the use of herbicides and pesticides.
- N. Wash cars on pervious surfaces to prevent soaps from running off-site.
- O. Do not dispose any household product into the storm sewer.
- P. Keep neighborhoods free from litter and debris.

5.4 Wetland Management

Issues

- 5.4I Draining, filling, or excavating wetlands significantly impacts the water quality of downstream surface waters. The loss of existing wetlands leads to increases in sedimentation, pollution, erosion, and flooding downstream and decreases the diversity and integrity of vegetation and wildlife.

Goal

- 5.4G Manage and protect wetlands to maximize wetland functions and improve surface water resources.

Policies

- 5.4.1P Achieve no net loss in the quantity, quality, and diversity of existing wetlands through enforcement of Wetland Management regulations.

Wetlands moderate nutrient and sediment flow, provide runoff storage, filter pollutants, buffer riverbanks and lake shores from erosion, and produce abundant and diverse plant and animal life. Therefore, the protection and restoration of wetlands is critical for maintaining and improving the water quality of local water resources. Refer to County Ordinances for wetland and buffer setback requirements.

- 5.4.2P Promote wetland restoration, to mitigate historical impacts to wetlands and increase the quantity and quality of wetlands locally.

Today, less than 50 percent of pre-settlement wetlands remain in Carver County. Wetland restoration projects will help improve water quality and achieve TMDL goals by filtering sediment and pollutants, attenuating stormwater runoff, and preventing erosion. In order to maximize benefits, wetland restoration projects will be prioritized by considering available funding, feasibility, project partners, number of benefits provided, bioengineered solutions, and TMDL plans.

- 5.4.3P Promote education regarding the benefits of proper wetland management.

Public understanding and involvement are essential in maintaining and improving the quality of local wetlands.

Implementation Strategies

- 5.4.1S Implement the standards listed in Carver County Ordinances and this Surface Water Management Plan. Employ staff or a consultant to perform the following tasks:

restoration projects will be prioritized by considering available funding, feasibility, project partners, number of benefits provided, bioengineered solutions, and TMDL plans.

- 5.5.3P Promote education regarding the benefits of proper natural upland management.

Public understanding and involvement are essential in maintaining and restoring natural upland areas.

Implementation Strategies

- 5.5.1S Employ staff or a consultant to implement this Surface Water Management Plan and enforce the regulations set forth in the Wetland Conservation Act, Shoreland Management Act, TMDLs, and other relevant laws and regulations.

- 5.5.2S Potential natural upland restoration projects that mitigate the degradation and fragmentation of natural resources and improve water quality of surface water resources will be identified and prioritized. Sites will be coordinated with the CWRMP and will consider available funds, feasibility, possible project partners, benefits provided, bioengineered solutions, and TMDL Implementation Plans. Once projects are identified, this plan will be updated annually to list the restoration sites in **Section 6.0**.

- 5.5.3S Through the City's Public Education Partnership with the CCWMO, goals, policies and implementation strategies for Upland Natural Resources will be incorporated into public education.

5.6 Groundwater Management

Issues

- 5.6I Groundwater quality and availability can be significantly impacted by many different land use activities.

Goal

- 5.6G Protect the quality and quantity of groundwater resources.

Policies

- 5.6.1P Protect groundwater quality and groundwater supplies.

Pollutants from land use activities within well recharge areas, areas with unused, unsealed wells, and failing storage tanks as well as unplanned or overuse of groundwater supplies due to development can impact the quality and availability of groundwater. Protection from contamination and overuse is critical in maintaining and improving the quantity and quality of groundwater resources.

- 5.6.2P Promote groundwater recharge, if soil conditions allow.

Construction of impervious surfaces due to development increases runoff and reduces groundwater recharge. By promoting Low Impact Development (LID) techniques and BMPs, groundwater recharge is increased, and the quality of local water resources is improved.

create educational opportunities to meet these needs (workshops, seminars, K-12 programs, etc.), create education tools (website, newsletter, pamphlets, fairs, etc.), and create volunteer programs.

5.7.2S The City will provide CCWMO with the following and update CCWMO as changes occur;

- Provide city staff contact information and information on media/methods of communicating with the public to Carver County WMO's Education Coordinator. This includes city newsletter times and distribution numbers, city fairs and epos, and any other outreach methods to the public.
- Provide a list of water resource related City events.
- Provide information on major issues of concern (e.g. picking up pet waste, natural shorelines, etc.).
- Provide information on topic areas where the city would like to increase citizen awareness (e.g. stormwater ponds, wetlands, water conservation).

older areas of town do not contain any treatment ponds or infiltration basins. However, the storm sewer in the areas without treatment measures does effectively convey runoff. Because of this, these areas are not a priority for the City to reconstruct, but as funding becomes available, the City will consider installing retrofit stormwater treatment measures.

6.2.2 Subwatershed Assessment

The following are brief descriptions of the various major subwatershed areas analyzed. The areas described correspond to the labels shown in **Figure 10**.

1. Subwatershed 1

Subwatershed 1 is located on the north side of study boundary, between County Road 33 and T.H. 5 and consists of approximately 387 acres of agricultural land, woodland, and wetlands that drains north to Eagle Lake. The soil characteristics of this area are best described as loams (type B) in upland areas and silty clay loams, peat and muck (type D) in and around wetlands and low areas. Stormwater management for this area would likely be provided by smaller, local ponds as future development occurs.

2. Subwatershed 2

Subwatershed 2 is located on the west edge of the study boundary, from the shores of Tiger Lake to the west side of town and consists of approximately 507 acres of commercial and residential development, woodland, wetland, and agricultural land. Runoff drains west to Tiger Lake, and soil characteristics of this area are best described as loams (type B) in upland areas and silty clay loams, peat and muck (type D) in and around wetlands and low areas. The undeveloped portion is relatively small and fragmented, making it more suitable for localized treatment measures upon development.

3. Subwatershed 3

Subwatershed 3 encompasses central Norwood Young America around U.S.H. 212, including approximately 148 acres. This area is comprised of commercial, residential and park areas and it drains southeast, through County Ditch 4A, and eventually into Bevens Creek. The soil characteristics of this area are best described as loams (type B) in upland areas and silty clay loams, peat and muck (type D) in and around wetlands and low areas. Retrofit pond treatment in this area is unlikely due to the lack of available land space. Localized stormwater treatment improvement projects (i.e. water quality devices, rain gardens, etc.) should be considered for this area when development/redevelopment projects occur (see **Section 6.4**).

4. Subwatershed 4

Subwatershed 4 is located on the north side of the study boundary, southeast of T.H. 5 around Braunworth Lake. It is approximately 159 acres of residential development, woodland, wetland, and agricultural land and drains directly to Braunworth Lake. The soil characteristics of this area are best described as loams (type B) in upland areas and silty clay loams, peat and muck (type D) in and around wetlands and low areas. The portion of the subwatershed southwest of the lake is already developed, and no space is available for the installation of wet retention ponds. However, localized stormwater treatment improvements may be considered for this area to treat currently untreated runoff (see **Section 6.4**). Also, smaller, local ponds would likely be installed to manage runoff when development occurs on the northeast side of the lake.

5. Subwatershed 5

Subwatershed 5 is located on the northeast side of the City and drains to Young America Lake. It consists of approximately 530 acres residential development, woodland, wetland,

Central Avenue and between 1st Street NW and 7th Street SW. The area consists of approximately 168 acres residential development and parkland and drains to a city ditch that flows southeast and connects to County Ditch No. 4. The soil characteristics of this area are best described as loams (type B) in upland areas and silty clay loams, peat and muck (type D) in low areas. Due to flooding concerns in Friendship Park, culverts were upsized from 24" to 36" on 4th Street and 4th Avenue during the 2005 Infrastructure Rehabilitation project. In order to provide stormwater management for this area, a wet retention pond or bioretention basin could be constructed along the ditch in the low, grassy area north of 7th Street SW.

12. Subwatersheds 26 - 28

Subwatersheds 26 – 28 are located on the southeast side of town, southwest of the Tacoma Avenue and Railroad Street intersection. The area consists of approximately 74 acres comprised primarily of industrial development. Runoff from the Tacoma West Industrial Park drains south to bioretention areas and two stormwater treatment ponds. The ponds discharge to a county ditch on the south side of the subwatershed that flows east to County Ditch No. 4. No additional ponding or stormwater treatment is required for this area.

13. Subwatershed 30

Subwatershed 30 is located on the southeast side of town, south of the Tacoma West Industrial Park. The area consists of approximately 29 acres agricultural land and drains to the county ditch creating the north boundary of the subwatershed. The soil characteristics of this area are best described as loams (type B) in upland areas and silty clay loams, peat and muck (type D) in low areas. Stormwater management for this area would likely be provided by smaller, local ponds as future development occurs.

14. Subwatershed 31

Subwatershed 31 is in the southeast corner of the study boundary, west of Tacoma Avenue. The area consists of 193 acres comprised of wetland, woodland, and agricultural land and drains southeast through lowlands to County Ditch No. 4. The soil characteristics of this area are best described as loams (type B) in upland areas and silty clay loams, peat and muck (type D) in and around wetlands and low areas. Stormwater management for this area would likely be provided by smaller, local ponds as future development occurs. In addition, the restoration of wetlands and preservation/creation of natural upland areas could provide ecological corridors from Brand Lake to Barnes Lake and from Brand Lake southeast towards Hoeffken Lake (see **Sections 6.5 and 6.6**).

15. Subwatersheds 32 & 33

Subwatersheds 32 & 33 are located on the south edge of the study boundary, east of County Road 33. Subwatershed 32 is approximately 133 acres and subwatershed 33 is approximately 57 acres. Both areas are comprised of primarily agricultural land, with medium quality wetlands in the low areas. Runoff from subwatershed 32 drains northeast to subwatershed 31, and subwatershed 33 drains south to County Ditch No. 5. The soil characteristics of these areas are best described as loams (type B) in upland areas and silty clay loams, peat and muck (type D) in and around wetlands and low areas. Stormwater management for this area would likely be provided by smaller, local ponds as future development occurs.

16. Subwatersheds 34 - 37

Subwatersheds 34 - 37 are in the southeastern corner of the study boundary, between Tacoma Avenue and Stewart Avenue. The area consists of approximately 213 acres comprised of wetland, woodland, and agricultural land and drains southeast to County Ditch No. 4. The soil characteristics of this area are best described as loams (type B) in

Timeframe: Ongoing

2. Street and Utility Improvement Projects

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

Prioritization: **High**

Estimated Cost: 10,000/yr

Project Partner(s): CCWMO, Private Landowners

Funding Source(s): City, CCWMO, Grant Funding

Timeframe: Ongoing

3. Stormwater Runoff Management and Treatment Measures

Correct flooding issues on City property as necessary to protect public safety and minimize potential for property damage. Also, collaborate as necessary with CCWMO and willing private landowners to install stormwater treatment measures (i.e. rain gardens, stormwater treatment devices, etc.) throughout the City to provide additional runoff storage capacity, reduce runoff rates and volumes, and/or reduce pollutant loads. Coordinate stormwater treatment improvements to treat stormwater from areas with inadequate or no treatment (**Figure 9**) and improve the quality of runoff reaching area surface waters. Estimated cost includes the installation of 10 sump manholes with SAFL Baffles on outlets with no treatment currently provided upstream on various wetlands, lakes, and drainage ways throughout the City.

Prioritization: **High**

Estimated Cost: \$100,000

Project Partner(s): CCWMO

Funding Source(s): City, CCWMO, Grant Funding

Timeframe: Unknown

4. Friendship Park Bioretention Basin

Friendship Park is located east of 4th Avenue SW between 2nd Street SW and 4th Street SW. Runoff from the park drains to a city ditch that flows southeast and connects to County Ditch No. 4. The City could collaborate with CCWMO to install a bioretention basin along the downstream side of the parking lot and upstream of the city ditch. The basin would treat the previously untreated runoff from the parking lot and reduce the runoff peak rates and volumes.

Prioritization: **Medium**

Estimated Cost: \$20,000

Project Partner(s): CCWMO

Funding Source(s): Stormwater Utility Fee, CCWMO

Timeframe: Unknown

5. SW 7th Street Pond

In order to provide stormwater management for SW 7th Street adjacent to Central Elementary School and the ballfields north of 7th Street, a wet retention pond or bioretention basin could be constructed along the ditch in the low, grassy area north of 7th Street SW. A basin in this location would provide treatment of runoff from a previously untreated area, as well as mitigate flood potential due to ditch capacity during extreme events. Along with basin construction, the potential for wetland restoration adjacent to the city ditch exists and should be considered (see **Section 6.5**). Estimated costs for improvements are based on constructing a wet retention pond with a surface area of

Funding Source(s): Stormwater Utility Fee, CCWMO
Timeframe: Unknown

2. Subwatershed 6

Collaborate with the County and Developer to restore the wetlands along Salem Avenue and 118th Street when development occurs. These wetland areas have been identified by the county to have “medium” to “high” restoration potential, and the project would help meet the goal of improving the quality and quantity of wetlands in Norwood Young America and increase flood storage, as well as improve the quality of runoff to Carver Creek.

Prioritization: **Low**

Estimated Cost: \$20,000

Project Partner(s): CCWMO, Developer

Funding Source(s): Stormwater Utility Fee, CCWMO, Developer

Timeframe: Unknown

3. Subwatershed 23

Collaborate with the County to restore wetlands along the county ditch in the low grassy area southwest of T.H. 5 and north of SW 7th Street. These wetland areas have been identified by the county to have “low” restoration potential, and the project would help meet the goal of improving the quality and quantity of wetlands in Norwood Young America and increase flood storage, as well as improve the quality of runoff to Bevens Creek.

Prioritization: **Low**

Estimated Cost: \$20,000

Project Partner(s): CCWMO

Funding Source(s): Stormwater Utility Fee, CCWMO

Timeframe: Unknown

4. Subwatershed 31

Collaborate with the County and developer to restore wetlands in the low area draining through the center of the subwatershed southeast to County Ditch No. 4. These wetland areas have been identified by the county to have “medium” to “high” restoration potential, and the project would help meet the goal of improving the quality and quantity of wetlands in Norwood Young America and increase flood storage, as well as improve the quality of runoff to Bevens Creek.

Prioritization: **Low**

Estimated Cost: \$20,000

Project Partner(s): CCWMO, Developer

Funding Source(s): Stormwater Utility Fee, CCWMO, Developer

Timeframe: Unknown

5. Subwatershed 34 - 37

Collaborate with the County and developer to restore wetlands in the low areas adjacent to the county ditches. These wetland areas have been identified by the county to have “medium” to “high” restoration potential, and the project would help meet the goal of improving the quality and quantity of wetlands in Norwood Young America and increase flood storage, as well as improve the quality of runoff to Bevens Creek.

Prioritization: **Low**

Estimated Cost: \$20,000

Project Partner(s): CCWMO, Developer

educational needs and to create educational opportunities to meet these needs (workshops, seminars, K-12 programs, etc.), create education tools (website, newsletter, pamphlets, fairs, etc.), and create volunteer programs.

Refer to the CWRMP for additional information regarding education programs and tools provided by the County.

6.8 Surface Water Management Costs and Funding Considerations

The cost and funding considerations contained in this plan are included for scoping purposes only. Prior to including projects into the City's Capital Improvement Plan (CIP), further investigation is required into conditions meriting improvement and correction/mitigation strategies to be implemented. This plan recognizes the changing regulatory environment and evolving technologies necessary to understand prior to further developing a CIP or construction schedule.

6.8.1 Capital Improvement Plan

As part of this assessment of water resources in Norwood Young America, a Surface Water Management Capital Improvement Plan (CIP) has been developed to aid with implementation of surface water management improvements and system maintenance. The CIP includes budgeting for stormwater treatment, outlet control structure improvements, wetland restoration, natural area preservation and restoration, education, stormwater treatment system mapping, and maintenance. Since improvement projects are completed on an annual basis, City priorities can change, and new surface water management issues can arise, the CIP should be reviewed yearly and updated as necessary. Refer to **Appendix D** for Norwood Young America's 5-Year Surface Water Management Plan CIP.

6.8.2 Proposed Surface Water Management Funding

The City will use a Stormwater Utility Fee to fund items identified in the CIP. However, this fee will likely be insufficient to cover all costs associated with surface water management. Since surface water management treatment improvement and restoration projects will improve the quality of downstream waters, Norwood Young America will rely on the addition of County, State, and Federal funding as available to complete such projects.

6.8.3 Stormwater Utility Fee

The existing storm drainage system in Norwood Young America is adequate for stormwater conveyance. However, the City is continuing to grow, and the maintenance of the storm drainage system and the quality of water resources are becoming more of a priority. Therefore, the City will need a funding mechanism in place to help pay for stormwater management.

The Stormwater Utility Fee should be used to partially or completely fund stormwater drainage and treatment system improvements and maintenance of system elements. These improvement and maintenance projects should include regional stormwater system improvements, outlet control structure improvements, localized stormwater treatment improvements, wetland restoration, natural area restoration and preservation, education regarding stormwater issues, pond cleaning, pond delineation, storm sewer maintenance, street sweeping, sewer camera, flood control, grant programs for drainage improvements,

7.0 ADMINISTRATION

7.1 Amendment Procedures

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

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

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

7.2 Plan Coordination

Early coordination and collaboration between the City and CCWMO are the key to maximizing shared water resource goals and community goals for private redevelopment and public capital improvements. It is the intent of the City to leverage this coordination to efficiently manage water quality, natural resource threats and opportunities that arise through land use change, our shared interest in conservation, and maximize the asset value of the City’s natural resources in the future.

Coordination Plan

The following coordination plan will be adjusted and expanded as deemed appropriate by the City and CCWMO during implementation. The City Administrator is the primary City contact and the Manager will be the CCWMO contact for the coordination plan.

1. *Annual meeting.* The City and CCWMO staff will meet during the third quarter of each year to review the following:
 - a. National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer Systems (MS4) reports and activity from the previous year
 - b. Draft Capital Improvement Plans (CIP) for each organization for the upcoming year. The City will focus coordination of the Streets, Stormwater and Park CIPs with CCWMO.
 - c. Opportunities for early or improved coordination and review of land use change applications
 - d. Regulatory coordination to identify areas of collaboration
 - e. Areas for improved coordination and process improvement.
 - f. Public Education plans, resources and opportunities.
 - g. Operation and maintenance of partnership projects.

7.3 Action Summary and Plan Evaluation

Appendix E provides a summary of actions identified in the plan, roles identified for the City and CCWMO, and activities completed. This Appendix should be reviewed and updated annually.

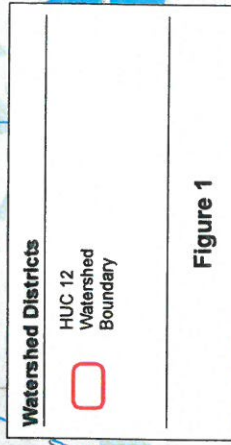
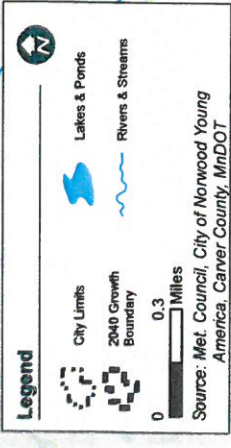
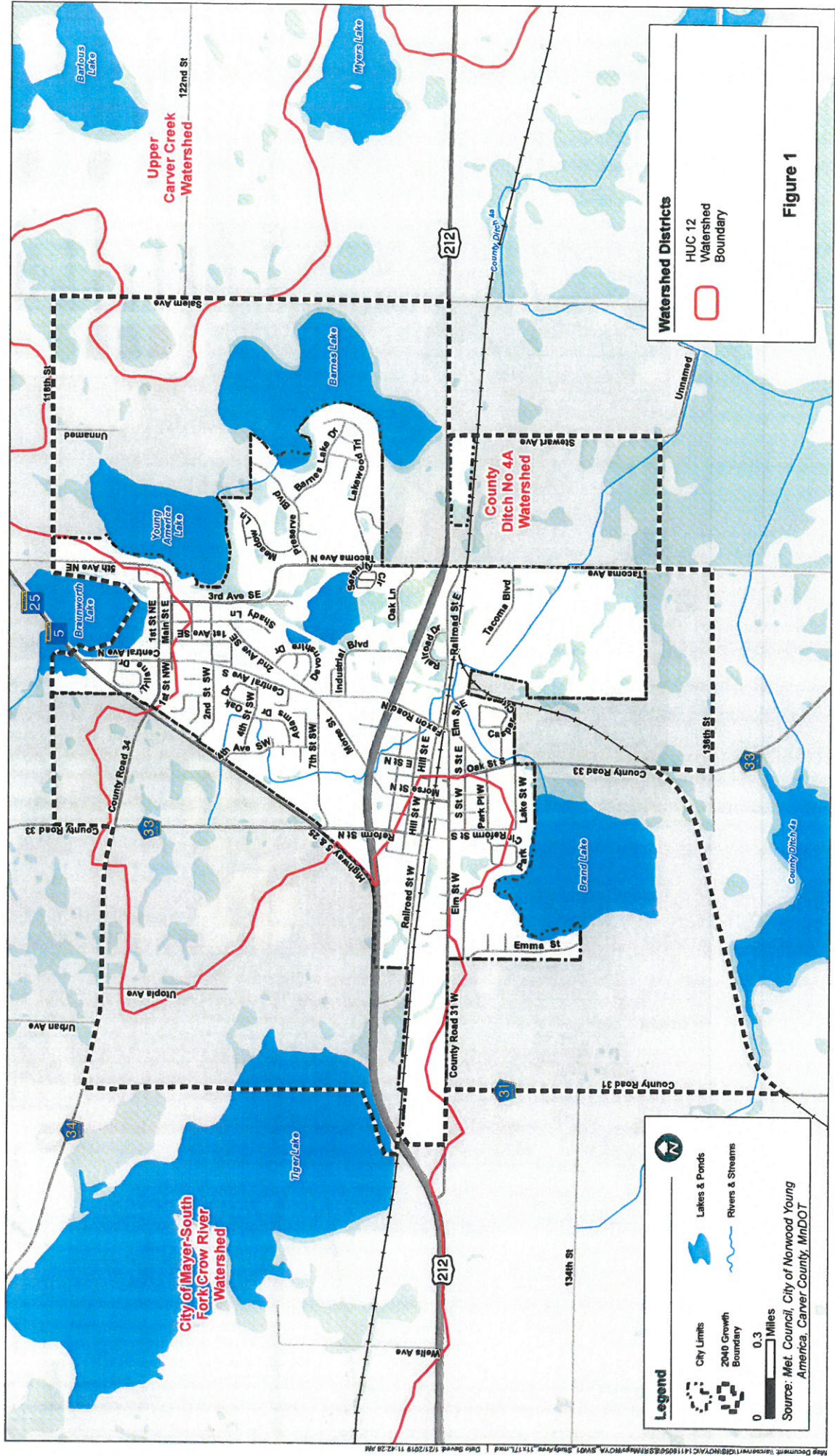


Figure 1

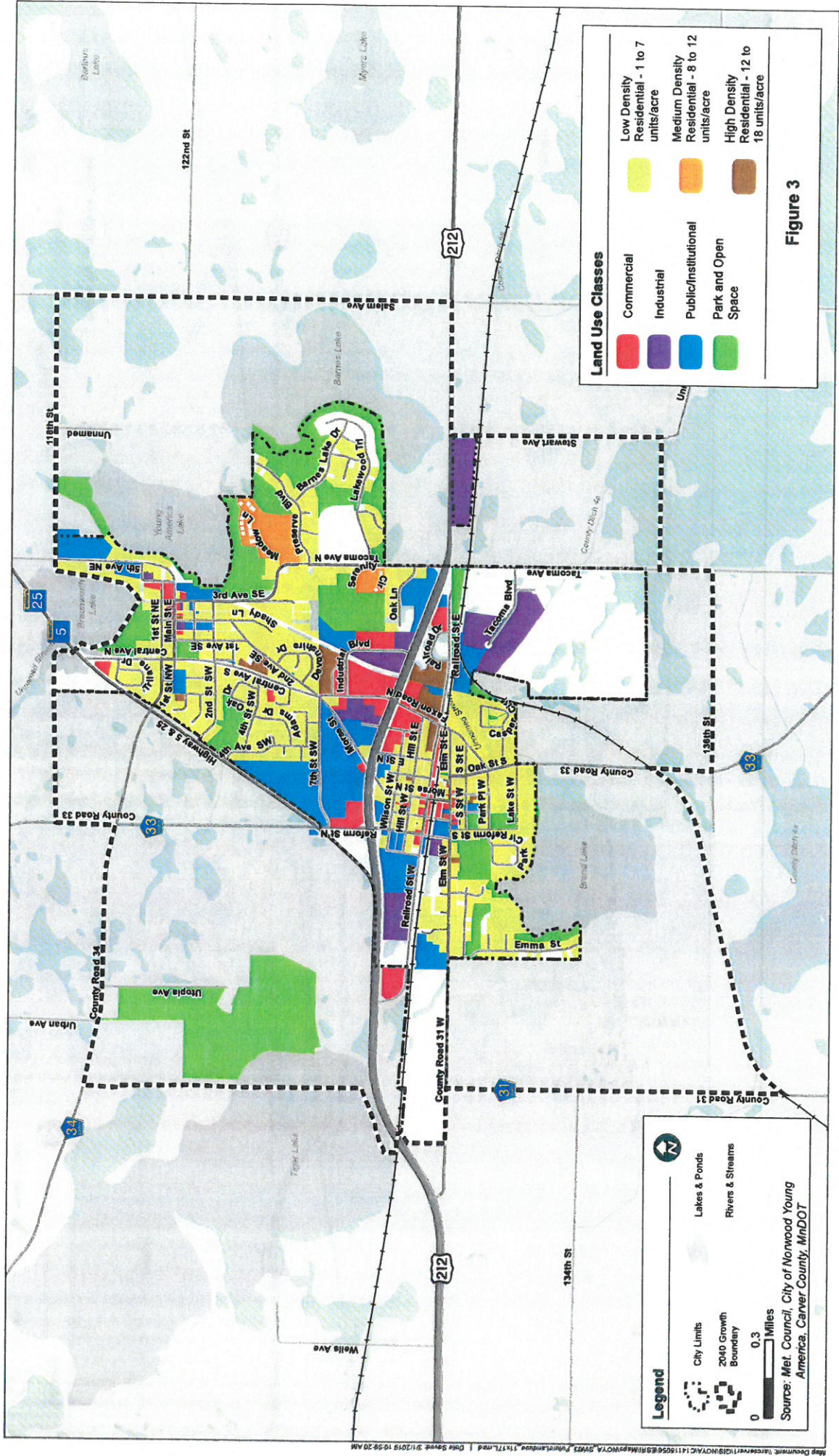


Figure 3

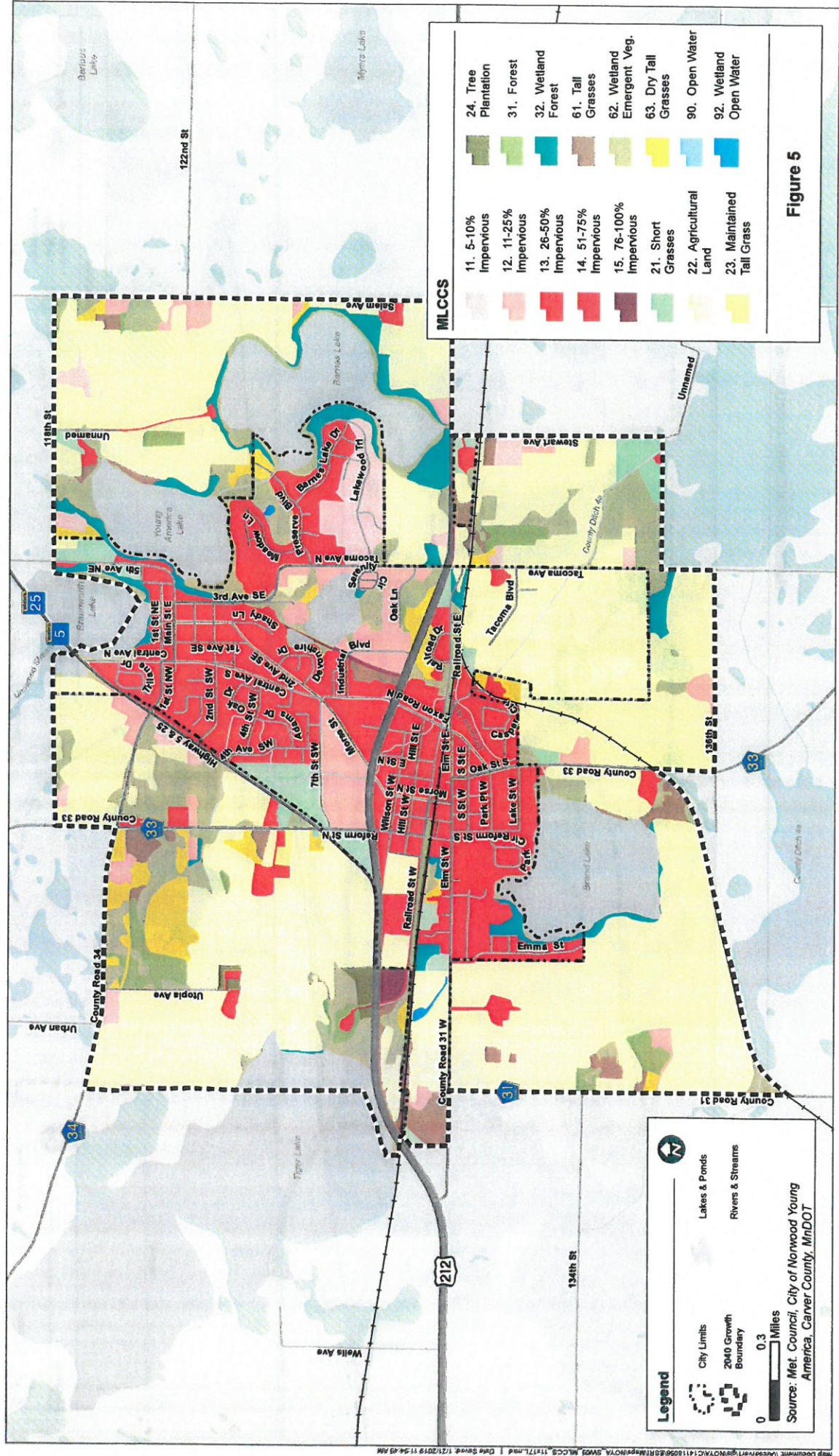


Figure 5

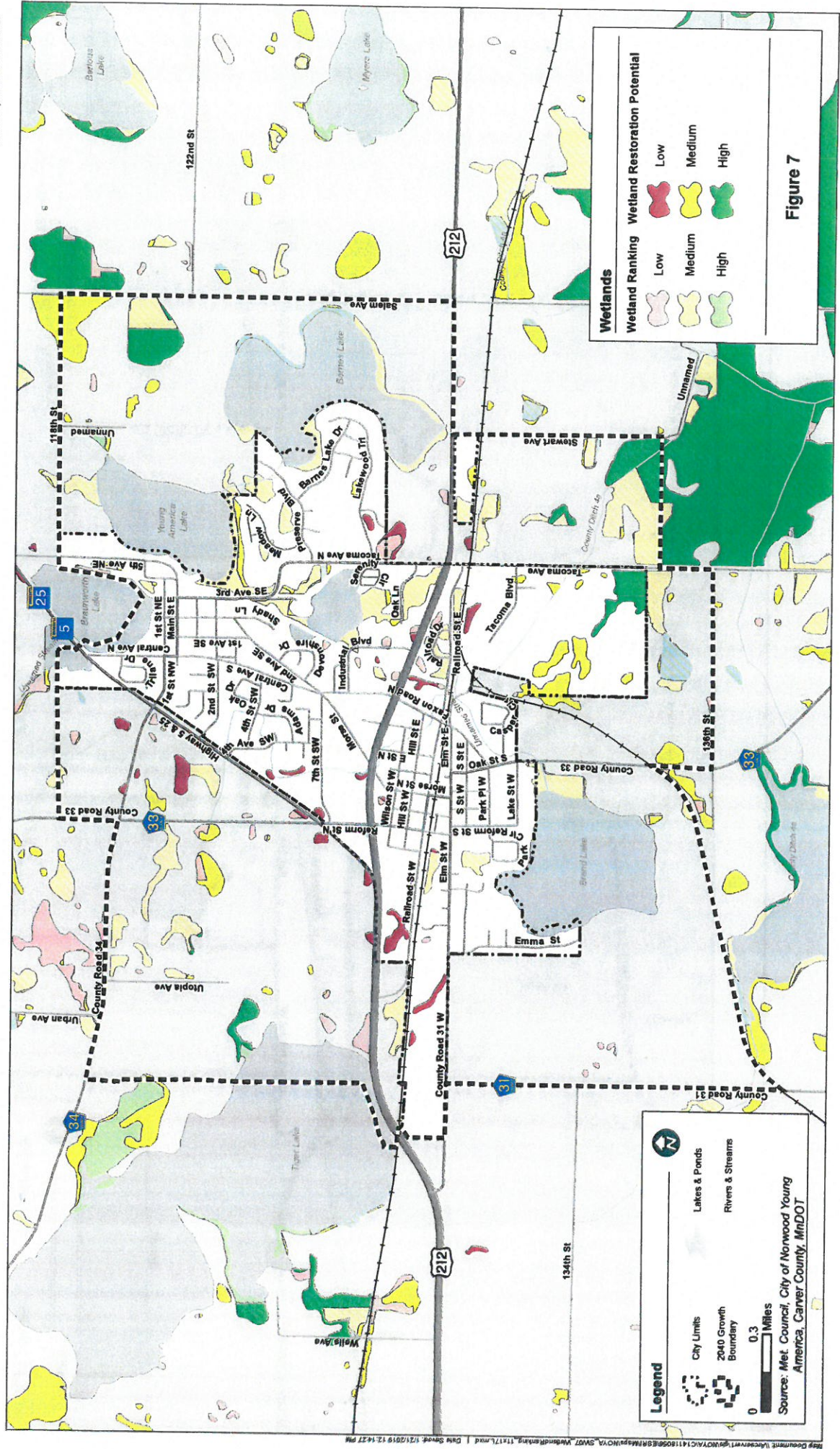
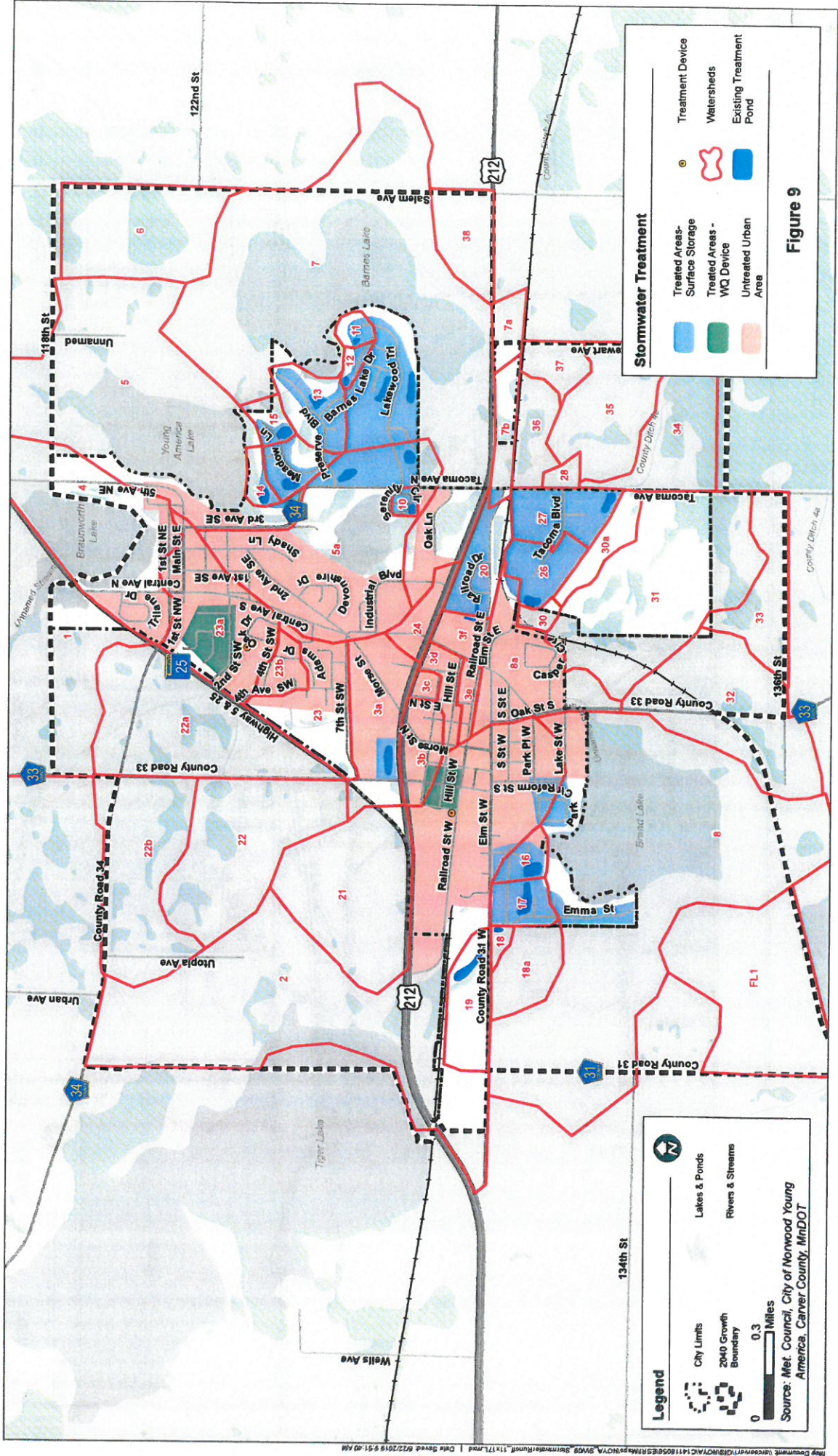
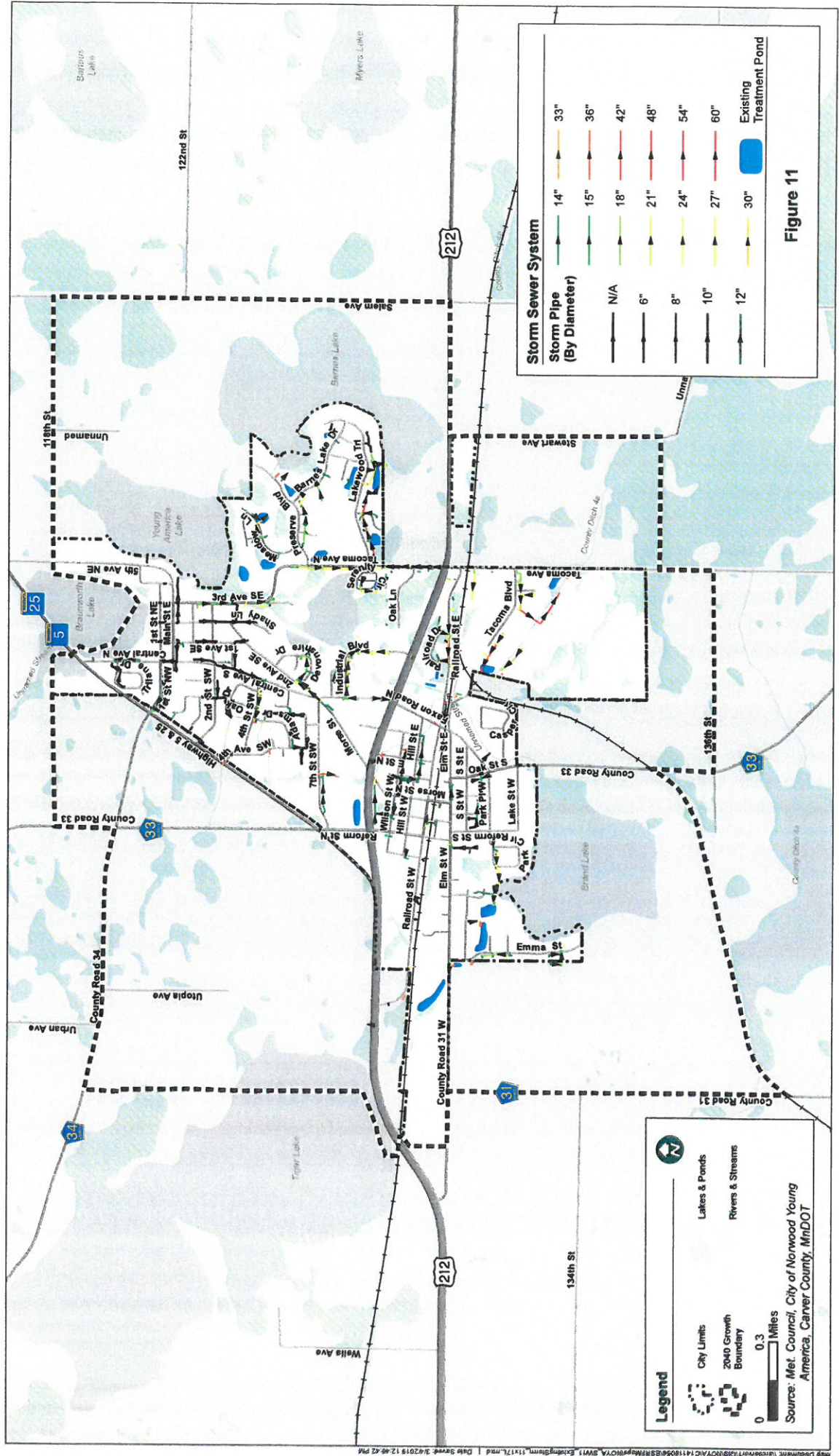


Figure 7





MODELING METHODOLOGY AND MAPPING

1. The general procedure used in the runoff modeling aspects of this analysis has been performed using the XP-SWMM (Version 10.6) modeling software. The typical analysis is based on Soil Conservation Service, Technical Release No. 20 (SCS TR-20). The SCS procedure is based on a standard synthetic rainfall hydrograph, which is modified by local parameters (i.e., rainfall, soil type, time to peak flow, etc.) and is widely accepted among drainage engineers across the United States.
2. For purposes of this report, typical 24-hour rainfall events of 2.8", 4.2" and 6.0" were used to analyze runoff/development interaction. These events are best described as those having probabilities of occurring once every 2, 10 and 100 years, respectively, according to Technical Paper 40. In addition, the 10-day, 100-year snowmelt was analyzed, which can be approximated by the 10-day, 7.2" rainfall event.
3. The probabilities of occurrence do not imply that a 2.8", 4.2" or a 6.0" rainfall cannot occur multiple times within the same year; they simply say that a 2.8" rainfall will occur *on the average* once every 2 years, a 4.2" rainfall will occur *on the average* once every 10 years and a 6.0" rainfall will occur *on the average* once every 100 years. It is often better to think of the 2-year rainfall as having a 50 percent chance of occurring in any given year. Similarly, the 10-year rainfall has a 10 percent chance of occurring in any given year and the 100-year rainfall has a 1 percent chance of occurring in any given year.
4. The City's stormwater model is intended to provide only a general overview of the system to identify potential stormwater issues. Since the City has a policy of requiring developers/private owners to design and maintain on their own any stormwater management facilities necessary for their proposed improvements, the future improvements to stormwater management in the City will largely be driven by private development or re-development. With this approach, most changes due to future stormwater improvement designs will be at the discretion of the private property owner, with only input from the City regarding desired outcomes. As private developments and public street and utility improvements are planned, the City will require review of stormwater runoff modeling for potential stormwater issues in the proposed project area, potential TMDL reduction opportunities, and volume reduction opportunities. Future review for both private and public improvements will require using the most current precipitation depth data available (Atlas 14), using survey quality information to adequately evaluate existing conditions, creating site specific models for proposed conditions to evaluate potential solutions and constructability, and updating the SWMP as necessary if stormwater treatment improvements are warranted at that time.

Appendix D

Stormwater Utility Fee Analysis and Capital Improvement Plan

Surface Water Management Capital Improvement Plan

Surface Water Management Plan

Norwood Young America, MN

Timeframe	Estimated Project Cost	Funding Source	Additional Funding Req'd	Funding Req'd From CCWMO	Funding From Other Sources	City's 5-year Budgeted Cost	2020	2021	2022	2023	2024	Long Range Annual Cost (2)	Long Range Periodic Cost (3)	Long Range One-Time Cost (4)
Stormwater Runoff Management and Treatment Measures														
Friendship Park Bioretention Basin	\$ 100,000.00	SUF/CCWMO	Yes	\$ 50,000.00	\$ -	\$ 50,000.00	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00			
SW 7th Street Pond	\$ 20,000.00	SUF/CCWMO	Yes	\$ 10,000.00	\$ -	\$ 10,000.00								
South Park Bioretention Basin	\$ -	SUF/CCWMO	Yes	\$ -	\$ -	\$ -								\$ 259,100.00
Devonshire Drive Sump Manhole	\$ 20,000.00	SUF/CCWMO	Yes	\$ 10,000.00	\$ -	\$ 10,000.00								
Welland Restoration (CR 34)	\$ 20,000.00	SUF/CCWMO	Yes	\$ 10,000.00	\$ -	\$ 10,000.00								
Welland Restoration (Salem Avenue)	\$ -	SUF/CCWMO	Yes	\$ -	\$ -	\$ -								
Welland Restoration (SW 7th Street)	\$ -	SUF/CCWMO	Yes	\$ -	\$ -	\$ -								\$ 20,000.00
Welland Restoration (Subwatershed 31)	\$ -	SUF/CCWMO	Yes	\$ -	\$ -	\$ -								\$ 20,000.00
Welland Restoration (Subwatershed 34-37)	\$ -	SUF/CCWMO	Yes	\$ -	\$ -	\$ -								\$ 20,000.00
Upland Preservation (Subwatershed 31)	\$ -	SUF/CCWMO	Yes	\$ -	\$ -	\$ -								\$ 20,001.00
Upland Preservation (Subwatershed 34-37)	\$ -	SUF/CCWMO	Yes	\$ -	\$ -	\$ -								\$ 20,002.00
Street and Utility Improvement Projects	\$ 50,000.00	SUF/CCWMO	Yes	\$ -	\$ -	\$ -	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00			
Education	\$ 2,500.00	SUF/CCWMO	Yes	\$ -	\$ -	\$ -	\$ 500.00	\$ 500.00	\$ 500.00	\$ 500.00	\$ 500.00			
Sealing of Abandoned Wells	\$ -	Stormwater Utility Fee	No	\$ -	\$ -	\$ -								
Extension of Sanitary Sewer to eliminate existing STSs	\$ -	Stormwater Utility Fee	No	\$ -	\$ -	\$ -								\$ 100,000.00
Maintenance:														
Neighborhood Pond Delineation	\$ 15,000.00	Stormwater Utility Fee	No	\$ -	\$ -	\$ 15,000.00	\$ 3,000.00	\$ 3,000.00	\$ 3,000.00	\$ 3,000.00	\$ 3,000.00			
Neighborhood Pond Cleaning	\$ 100,000.00	Stormwater Utility Fee	No	\$ -	\$ -	\$ 100,000.00	\$ 20,000.00	\$ 20,000.00	\$ 20,000.00	\$ 20,000.00	\$ 20,000.00			
Street Sweeper	\$ 125,000.00	Stormwater Utility Fee	No	\$ -	\$ -	\$ 125,000.00	\$ 25,000.00	\$ 25,000.00	\$ 25,000.00	\$ 25,000.00	\$ 25,000.00			
Sewer Camera	\$ 50,000.00	Stormwater Utility Fee	No	\$ -	\$ -	\$ 50,000.00	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00			
Street Sweeping Labor (3 times/year)	\$ 25,000.00	Stormwater Utility Fee	No	\$ -	\$ -	\$ 25,000.00	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00			
Neighborhood Pond/Outlet Control Inspection	\$ 2,500.00	Stormwater Utility Fee	No	\$ -	\$ -	\$ 2,500.00	\$ 500.00	\$ 500.00	\$ 500.00	\$ 500.00	\$ 500.00			
General Storm System Maintenance	\$ 10,000.00	Stormwater Utility Fee	No	\$ -	\$ -	\$ 10,000.00	\$ 2,000.00	\$ 2,000.00	\$ 2,000.00	\$ 2,000.00	\$ 2,000.00			
System Mapping/GIS Update and Maintenance	\$ 5,000.00	Stormwater Utility Fee	No	\$ -	\$ -	\$ 5,000.00	\$ 1,000.00	\$ 1,000.00	\$ 1,000.00	\$ 1,000.00	\$ 1,000.00			
Surface Water Management Plan Updates	\$ 4,000.00	Stormwater Utility Fee	No	\$ -	\$ -	\$ 4,000.00	\$ 1,000.00	\$ 1,000.00	\$ 1,000.00	\$ 1,000.00	\$ 1,000.00			
Total		Storm Fund		\$ 90,000.00		\$ 479,000.00	\$ 87,000.00	\$ 88,000.00	\$ 88,000.00	\$ 88,000.00	\$ 120,000.00	\$ 68,000.00	\$ -	\$ 479,103.00

Notes:

- (1) CCWMO to provide assistance with inspecting and evaluating streams banks and channels.
- (2) Cost liability incurred every year
- (3) Costs incurred in coordination with development for multiple project areas or as projects become priority.
- (4) Costs incurred one time for a specific project when it becomes a priority.

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2/11/2013

ACTION SUMMARY AND PLAN EVALUATION

Evaluation date: November 18, 2019

ACTION ITEM	CITY ROLE	CCWMO ROLE	PG #	ACTIVITIES COMPLETED
SURFACE WATER MANAGEMENT				
Continue to administer and maintain the Shoreland Management Overlay District ordinance in accordance with State regulations and the County's CWRMP	The City will continue to administer the Shoreland Management Overlay District ordinance in accordance with state and county requirements. The ordinance will also be maintained regularly to reflect any future revisions to the state standards.	NA	18, 19	Ordinance administered as necessary per development requests received.
Evaluate and correct flooding issues on City property as necessary to protect public safety and minimize potential for property damage	The City will continue to monitor and evaluate flooding issues on City property as necessary to protect public safety and minimize potential for property damage. Flood improvement projects identified will be prioritized based on available funds, feasibility, potential project partners, and benefits provided.	NA	18, 19	Known flooding issues have been identified on Page 15 and 16 of the Plan. Drainage issues on Emma Street were corrected in 2018 as part of the 2018 Street and Utility Improvements project.
Provide support to landowners in evaluating and correcting localized flooding issues	The City will aid landowners in evaluating and correcting localized flooding issues. If potential flooding will damage nearby dwellings or cause significant erosion and sedimentation, the City will partner with the landowner to correct drainage as feasible. The City's participation shall include engineering recommendations. Private property owners shall be responsible for all private construction costs necessary to remedy the localized drainage issue.	NA	18, 19	No localized flooding issues on private property were identified in 2018/2019.
Promote water quality improvement, runoff volume reduction, and additional storage through wetland restoration, regional ponding, infiltration, filtration, bioretention, and stream or ditch diversions	In order to provide water quality improvement, runoff volume reduction, and additional storage, wetland restoration, ponding, infiltration, filtration, bioretention, and stream or ditch diversion sites will be identified and prioritized. Sites will be coordinated with the CWRMP and will consider available funds, feasibility, possible project partners, benefits provided, bioengineered solutions, and TMDL Implementation Plans.	Coordinate potential City sites for water quality improvement, wetland restoration, ponding, infiltration, filtration, bioretention, and stream or ditch diversion with the CWRMP and provide funding as feasible and available.	19	Refer to Projects section for activities completed.
Evaluate outlet control structures for performance and work with landowners, CCWMO, and/or the Minnesota Department of Natural Resources (MnDNR) to replace or repair the structures if needed	Outlet control structures will be evaluated for responsible authority, condition, and performance and prioritized for repair or replacement. Evaluations will consider design outflows and design outlet elevations as well as available funds, feasibility, possible project partners, benefits provided, bioengineered solutions, and TMDL Implementation Plans.	Coordinate potential outlet control structures identified by the City for repair or replacement with the CWRMP and provide funding as feasible and available.	19	Refer to Projects section for activities completed.
IMPAIRED WATERS				
Reduce pollutant loading to Impaired Waters in order to restore water quality to State standards	Adopt TMDLs and Implementation Plans into this plan by reference as they are approved and list below. Update this plan regularly to incorporate TMDLs approved in the future. The City will be directly involved with the portions of the studies and implementation plans that it is required to be responsible for. The City will provide support as necessary to the County for the remaining portions.	Coordinate with the City to implement load reductions as necessary for Impaired Waters within the study area and under the County's authority.	20	Refer to Projects section for activities completed.
URBAN STORMWATER MANAGEMENT				
Continue to meet or exceed the National Pollutant Discharge Elimination System (NPDES) requirements as they apply to the City of Norwood Young America	Any project within the City boundary that requires a NPDES CSW permit must provide a copy of the permit to the City prior to any work. Any facility required to obtain an ISW permit will be required by the City to do so in accordance with MPCA requirements.	Any project within the CCWMO boundary that requires a NPDES CSW permit must provide a copy of the permit to the CCWMO prior to any work. Any facility required to obtain an ISW permit will be required by the CCWMO to do so in accordance with MPCA requirements.	21, 23	NPDES permits provided to City for all developments requiring permit.
Apply regulatory standards that help the City meet its goal for Urban Stormwater Management	Rely on the Water Resource Management Standards set forth in the Carver County Ordinances. Employ staff or a consultant to review P&Z Application with regards to water resources management, inspect BMP installations, and enforce BMP maintenance.	Employ the Water Resource Management Standards set forth in the Carver County Ordinances within the City boundary. Provide inspection of development sites as necessary to confirm compliance with standards. Provide enforcement for non-compliant sites.	21, 23	CCWMO permits provided to City for all developments requiring permit.
Prioritize potential stormwater management projects that will decrease local runoff rates and volumes and improve water quality	Potential stormwater projects that decrease local runoff rates and volumes and increase water quality will be identified and prioritized. Sites will be coordinated with the CWRMP and will consider available funds, feasibility, possible project partners, benefits provided, bioengineered solutions, and TMDL Implementation Plans.	Coordinate potential City sites for water quality improvement, ponding, infiltration, filtration, and bioretention with the CWRMP and provide funding as feasible and available.	21, 23	Refer to Projects section for activities completed.

Protect groundwater quality and groundwater supplies	The City will provide support or assistance to the following activities: A. Work with the CCWMO to identify and seal potential contaminate sources, such as unused, unsealed wells and failing storage tanks. B. Support the Metropolitan Council, MNDNR, and MDH in their efforts to monitor and protect regional groundwater supplies. C. Support the MPCA in regulating storage tanks. D. Implement water conservation efforts, as necessary. The City will distribute LID materials to developers during the planning phase via comment and review letters and promote incorporation of LID techniques and BMPs into site designs.	Employ the standards set forth in the Carver County Ordinances within the City boundary. Identify and seal potential contaminate sources with the County and monitor groundwater supplies.	27, 28	No contaminated sources were identified by the City in 2018/2019.
Promote groundwater recharge		Employ the standards set forth in the Carver County Ordinances within the City boundary. Identify and seal potential contaminate sources with the County and monitor groundwater supplies.	27, 28	All City reviews include comments regarding best site design.
EDUCATION				
Increase public awareness, understanding, and involvement in water and natural resource issues and management.	Through the City's Public Education Partnership with the CCWMO, goals, policies and implementation strategies regarding protection and improvement of local water resources will be incorporated into public education. The City will meet annually with CCWMO's Education Coordinator to discuss goals and strategies and create short, specific annual education plans. Also, the City will provide support and assistance to CCWMO with the County's educational programs in the form of financial support, information sharing, and help with promotion materials as feasible. The City will collaborate with CCWMO to identify target audiences and educational needs and to create educational opportunities to meet these needs (workshops, seminars, K-12 programs, etc.), create education tools (website, newsletter, pamphlets, fairs, etc.), and create volunteer programs.	Coordinate with the City to incorporate their goals, policies, and implementation strategies into a public education program. CCWMO Education coordinator will meet annually with the City to create short, specific annual education plans.	19 - 29	Public Education Partnership is under development. Three newsletters, including stormwater related articles, were distributed in 2019. The City intends to distribute the newsletter quarterly in 2020.
Urban Stormwater Management Education	Through the City's Public Education Partnership with the CCWMO, goals, policies and implementation strategies for Urban Stormwater Management will be incorporated into public education. Following are potential practices for the partnership to promote to the public to help reduce impacts to local water resources: A. Maintain a healthy lawn. B. Plant native plants or plants with deep roots to capture more runoff. C. Preserve and maintain native vegetation areas, especially adjacent to lakes and wetlands. D. Redirect downspouts to drain on pervious surfaces (grass) instead of impervious surfaces (driveways). E. Install rain gardens to capture localized runoff. F. Restore and/or stabilize shorelines. G. Capture rainwater from rooftops with a rain barrel or cistern and use for irrigation. H. Use a compost bin for leaves, lawn clippings, and other organic waste. I. Test soils for nutrients in order to apply the correct amount of fertilizer. J. Use zero phosphorus fertilizers. K. Keep leaves and lawn clippings out of streets and gutters. L. Pick up pet wastes. M. Limit the use of herbicides and pesticides. N. Wash cars on pervious surfaces to prevent soaps from running off-site. O. Do not dispose any household product into the storm sewer. P. Keep neighborhoods free from litter and debris.	Coordinate with the City to incorporate their goals, policies, and implementation strategies into a public education program. CCWMO Education coordinator will meet annually with the City to create short, specific annual education plans.	24, 25	Public Education Partnership is under development.
Communication	The City will provide CCWMO with the following and update CCWMO as changes occur; - Provide city staff contact information and information on media/methods of communicating with the public to Carver County WMO's Education Coordinator. This includes city newsletter times and distribution numbers, city fairs and expos, and any other outreach methods to the public. - Provide a list of water resource related City events. - Provide information on major issues of concern (e.g. picking up pet waste, natural shorelines, etc.). - Provide information on topic areas where the city would like to increase citizen awareness (e.g. stormwater ponds, wetlands, water conservation).	Coordinate with the City to incorporate their goals, policies, and implementation strategies into a public education program. CCWMO Education coordinator will meet annually with the City to create short, specific annual education plans.	19 - 29	Public Education Partnership is under development.
Capital Improvement Projects				
Capital Improvement Plan	Update CCWMO on status of projects at annual meeting.	Coordinate potential stormwater improvements with projected annual City projects at the annual meeting.	42	Annual meeting held 10/31/2019
Capital Improvements	Complete capital improvements that will provide water quality improvement, runoff volume reduction, and flood mitigation.	Coordinate with the City to partner on capital improvements that will provide water quality improvement, runoff volume reduction, and flood mitigation.		Due to lack of funding and staff available, no capital improvements were completed in 2018/2019.