Wellhead Protection Plan

Part II

Wellhead Protection Area Delineation
Drinking Water Supply Management Area Delineation
Well and Aquifer Vulnerability Assessments

For
City of Mayer

December 2007

City of Mayer

WELLHEAD PROTECTION PLAN

PART 2:

- Potential Contaminant Source Management Strategy
- Impacts of Expected Changes to Land and Water Resources
- Issues, Problems & Opportunities
- Wellhead Protection Plan Goals
- Management Strategies
- Evaluation Plan
- Emergency/Conservation Plan

(9/28/2007)

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PUBLIC WATER SUPPLY PROFILE

PUBLIC WATER SUPPLY

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DOCUMENTATION LIST

STEP PERFORMED	DATE
Part I Approval Notice Received from MDH	May 1, 2006
Scoping 2 Meeting Held (4720.5349, subp. 1)	November 15, 2006
Scoping Decision Notice Received (4720.5340, subp. 2)	November 15, 2006
Remaining Portion of Plan Submitted to Local Units of Government (LGUs) (4720.5350, subp. 1 & 2)	September 28, 2007
Review Received From Local Units of Government (4720.5350, subp. 2)	September 27, 2007
Review Considered (4720.5350, subp. 3)	December 3, 2007
Public Hearing Conducted (4720.5350, subp. 4)	December 10, 2007
Remaining Portion WHP Plan Submitted (4720.5360, subp. 1)	December 19, 2007
Approved Review Notice Received	_____

PART 2 EXECUTIVE SUMMARY

This portion of the wellhead protection (WHP) plan for the City of Mayer includes:

- The results of the Potential Contaminant Source Inventory,
- The Potential Contaminant Source Management Strategy,
- The Emergency/Alternative Water Supply Contingency Plan, and
- The Wellhead Protection Program Evaluation Plan.

Part 1 of the wellhead protection plan presented the 1) delineation of the wellhead protection area (WHPA) and the drinking water supply management area (DWSMA) and 2) the vulnerability assessments for the system's wells and the aquifer within the DWSMA. Part 1 of the WHP plan was submitted to the Minnesota Department of Health (MDH) and approved on May 1, 2006. The boundaries of the WHPA/DWSMA are shown in Figure 1.

The vulnerability assessment for the aquifer within the DWSMA was performed using available information and indicates that the aquifer used by the system is not considered to be vulnerable to contamination because it is covered by fine-grained geologic materials that hydraulically separate it from surface water. Consequently, the principal potential sources of contamination to the aquifer are other wells that reach or penetrate it and Class V wells. This information was presented to the WHP team during the Second Scoping meeting held with MDH, November 15, 2006, when the necessary requirements for the content of Part 2 were outlined and discussed in detail.

The vulnerability assessment for the public water supply system's well indicates that the well is not vulnerable to contamination based on the information that documents the construction of each well.

The information and data contained in Chapters 1-4 of this part of the WHP Plan (hereafter referred to as Plan) support the approaches taken to address potential contamination sources that have been identified as potentially affecting the aquifer used by the public water supply. The reader is encouraged to concentrate attention on Chapters 1-4 in order to better understand why a particular management strategy is included in Chapter 5.

In Chapter 1, the required data elements indicated by MDH in the Scoping 2 Decision Notice are addressed, as well as the data's degree of reliability. Pertinent data elements include information about the geology, water quality and water quantity. The data elements and information supplied in Part 1 of the WHP Plan are the basis of the assessment that the aquifer providing drinking water for this system has the potential to become vulnerable due to other wells that penetrate the same aquifer.

Chapter 2 addresses the possible impacts that changes in the physical environment, land use, and water resources have on the public water supply. No significant changes are anticipated within the next ten-year period, and the City of Mayer has evaluated the support necessary to implement its wellhead protection plan.

The problems and opportunities concerning land use issues relating to the aquifer, well water and the DWSMA, and those issues identified at public meetings, are addressed in Chapter 3. The non-vulnerable status of the aquifer and wells and the good quality of water currently produced by the system's wells leaves three major concerns: 1) other wells located within the DWSMA that could become pathways for contamination to enter the aquifer; 2) any Class V wells and 3) the pumping effects of high-capacity wells that may alter the boundaries of the delineated WHPA, reduce the hydraulic head in the aquifer, or cause the movement of contamination toward public water supply wells.

The drinking water protection goals that the public water supplier (PWS) would like to achieve with this plan are listed in Chapter 4. In essence, the PWS would like to 1) maintain or improve the current drinking water quality, 2) increase public awareness of groundwater protection issues, 3) protect the aquifer, 4) collect data to support future efforts in wellhead protection planning, 5) increase public awareness of water conservation, and 6) Update the inventory of wells/Class V.

The objectives and action plans for managing the potential sources of contamination (wells that penetrate the aquifer utilized by the water system for their drinking water source and Class V wells) are contained in Chapter 5. Actions aimed toward educating the general public about groundwater issues, gathering information about other wells, and collecting data relevant to wellhead protection planning are the general focus.

Chapter 6 contains a guide to evaluate the implementation of the identified management strategies of Chapter 5. The wellhead protection program for the City of Mayer will be evaluated on a bi- annual basis prior to its budgeting process.

An emergency/contingency plan is included to address the possibility that the water supply system is interrupted due to either emergency situations or drought. Chapter 7 references the Water Conservation Plan approved by the Department of Natural Resources.

Mayer

Drinking Water Supply Management Area (DWSMA) MN-00383 10 year Time of Travel

Public Water Supply Well
- Primary
- Emergency Response Area
- Wellhead Protection Area (WHPA)
- DWSMA

Low Vulnerability

0.1 0 0.1 Miles

Approved May 1, 2006

CHAPTER ONE
DATA ELEMENTS, ASSESSMENT (4720.5200)

I. REQUIRED DATA ELEMENTS

A. Physical Environment Data Elements

1. Precipitation -- This data element does not apply because there is not a direct hydraulic connection between surface waters and the aquifer serving this water supply system.

2. Geology -- This data element is required and is presented in the first part of the WHP Plan. The water supply for the City of Mayer comes from the Jordan aquifer that exhibits confined hydraulic conditions
   - It is composed of coarse-grained sandstone. It is believed to be about 90 feet thick but only 80 feet is open to each of the city wells.
   - It is covered by 200 feet of clay-rich geologic materials consisting of glacial deposits and/or bedrock; and
   - Overlies the St. Lawrence confining bed that retards the vertical information about surface water quantity.

   For additional detail see Part 1 Wellhead Protection Area Delineation, Drinking Water supply Management Area Delineation and Well and Aquifer Vulnerability Assessments for the City of Mayer, on file at City Hall.

3. Soils -- This data element does not apply because there is not a direct hydraulic connection between surface waters and the aquifer serving this water supply system.

4. Water Resources -- This data element applies as it relates to future groundwater uses that may influence the ability of the aquifer to yield water to the public water supply. Increased water use may result in a reduction in aquifer yield or increase the likelihood that contaminants of human or natural origin may affect the quality of drinking water.

B. Land Use Data Elements

1. Land Use -- A map showing the boundaries of land parcels within the WHPA/DWSMA, and a listing of property owners and property identification numbers have been submitted to MDH for development of Part 1 of this Plan.
   City of Mayer is a developing community with large areas disturbed for future development. The City of Mayer currently has an excavation ordinance in place to control the amounts of disturbance. All land uses are closely monitored for adherence to City regulations. Due to the information contained in Part 1, which indicates that the public water supply is not vulnerable to most land-use activities, only an inventory of other wells located within the DWSMA is required.
   A listing of wells inventoried within the DWSMA and a map showing their locations

(Figure 2) are included in the Appendix A as Exhibit 3. Other information relating to land use, such as political boundary maps, comprehensive land-use maps and zoning maps for the area located within the DWSMA, (see Exhibit 4 in Appendix A)

2. Public Utility Services -- Records of well construction (see Part 1) and maintenance apply to this portion of the plan due to the information provided about the wells and the quality and quantity of the water supplying this system. The City is not aware of any unaccounted municipal wells. This information was used to support the development of Chapter 7 of this plan, which details an emergency/conservation plan for this system.
3. Increased pumping by the PWS or other groundwater users is provided during the time the wellhead protection plan is being implemented. The impacts that increased pumping may have on the availability and quality of the public water supply presents a public health concern and must be addressed by the State in terms of permitting such increases.

C. Groundwater

Groundwater Quantity The impacts of increased groundwater withdrawal from the aquifer used by the PWS needs to be evaluated relative to the availability of drinking water. Increased pumping from existing wells or caused by new wells which may decrease the hydraulic head in the aquifer within the drinking water supply management area and cause one or more of the following conditions to occur:

(a) Increased pumping may result in declining water levels in the water supply wells used by the PWS and limit the long-term use of the aquifer to meet drinking water needs. This may create a water use conflict between the city and other groundwater appropriators; and

(b) Increased pumping may alter the capture areas for the water supply wells to include new areas that exhibit different flow boundaries. This will necessitate revising the delineation of the wellhead protection area and the drinking water supply management area to account for the changes in the capture areas for these wells.

Groundwater Quality The impacts of increased groundwater withdrawal from the aquifer used by the PWS needs to be evaluated relative to the quality of drinking water. Increased pumping from existing wells or caused by new wells may cause one or more of the following conditions to occur:

(a) The movement of contaminants that are released from a potential or proven source may be increased or caused to move toward one or more of the water supply wells used by the PWS. This may result in contaminants entering these wells or increasing existing contaminant levels;

(b) Increased pumping may alter the capture areas for the water supply wells to include new areas that exhibit different aquifer vulnerability than the approved drinking water supply management area. This may necessitate revising the 1) inventory of potential contamination sources and 2) management strategies for potential sources in the wellhead protection plan.

E. Water Quantity Data Elements

1. Surface Water Quantity -- This data element does not apply because there is not a direct hydraulic connection between surface waters and the aquifer serving this water supply system.

2. Groundwater Quantity -- Groundwater levels are adequate for the amounts that the City of Mayer is currently permitted for under the groundwater appropriations program that is administered by the Minnesota Department of Natural Resources (DNR). There currently are no other high-capacity wells within the DWSMA for which wells interference complaints with the system's wells have been documented. At this time, there appears to be sufficient groundwater quantity, based upon existing pumping capacity of the wells completed in the aquifer used by the system.

F. Water Quality Data Elements

1. Surface Water Quality -- This data element does not apply because there is not a direct hydraulic connection between surface waters and the aquifer serving this water supply system.

2. Groundwater Quality -- This data element applies to this portion of the Plan for the City of Mayer's. Existing information (see Part 1) consists of isotopic and chemical analyses and indicates that the aquifer used by the public water supply is recharged very slowly by surface water. As such, there is a low probability that current land use has a direct impact on the quality of drinking water. Additional groundwater quality information should be collected over the ten-year life of the plan. Groundwater quality information was used to determine that other wells are the primary potential source(s) that need to be inventoried and managed. Changes in the general chemistry of the well water may indicate that the aquifer is receiving recharge from different pathways, such as improperly constructed or improperly sealed wells or through different geological materials.

II. ASSESSMENT OF DATA ELEMENTS

A. Use of the Wells -- General information describing this public water supply system is presented in the Source Water Assessment (SWA) found in Part 1 of this Plan.

B. Wellhead Protection Area Delineation Criteria -- See Part 1 of this Plan for documentation regarding how the following delineation criteria were applied to determine the boundaries of the WHPA:

1. Time of Travel – 10 years
2. Flow Boundaries – geologic information
3. Daily Volume – provided by the system
4. Groundwater Flow Field – delineation method
5. Aquifer Transmissivity – aquifer test plan

C. Quality and Quantity of Water Supplying the Public Water Supply Wells -- Water quality monitoring results indicate no evidence of contamination from 1) human origin, such as fuel and fuel break-down products, pesticides, or commercial fertilizer, or

2) naturally occurring contaminants such as arsenic and boron. At this time problems with water quality are not an issue, as the system has enjoyed water quality that meets or exceeds standards in the Federal Safe Drinking Water Act.

D. Groundwater Uses in the Drinking Water Supply Management Area --

The management strategies selected and documented in Chapter 5 of this Plan will focus on activities that have the most potential to impact the aquifer this system is using for its drinking water supply. For a non-vulnerable system, other wells are the mostly likely potential impact to the aquifer.

Table 1. Types of Wells Inventoried in the Drinking Water Supply Management Area

TYPE OF WELLS	NUMBER	No. of DNR PERMIT
Other Public Water Supply	**2**	
Domestic	**10**	
Observation	**1**	
Unused/Unsealed		
Sealed/Reported to MDH	**4**	
Potential Class 5 Wells	**0**	

CHAPTER TWO

IMPACT OF CHANGES ON PUBLIC WATER SUPPLY WELLS (4720.5220)

I. CHANGES IDENTIFIED IN:

A. Physical Environment -- The City of Mayer is experiencing growth and there are large amounts of land within the DWSMA that are being graded for future development. This land is to the west, southwest and north east of the existing city wells. This growth results in land alterations such as increased impervious surface and subsequent storm water control structures. The geologic conditions that protect the water supply are such that changes in the physical environment should have little to no effect on the aquifer within the DWSMA.

B. Land Use – *Many* new changes in land use will require increased pumping within or near the drinking water supply management area *and* the impacts of future pumping are being addressed in the wellhead protection plan. Increased pumping may have substantial impacts on the 1) the quantity and quality of groundwater used for public water supply and 2) may alter the scope and costs of plan implementation. The potential impacts related to increased pumping associated with changes in land use are presented in this section

C. Surface Water – The following changes in surface water availability and/or quality may occur as a result of increased pumping within the drinking water supply management area:

A) Increased pumping of the wells used by the PWS may cause a greater hydraulic connection to occur with the surface hydraulic features such as lakes streams, or drainage ditches and necessitate that the delineation of the wellhead protection area a surface water runoff component. This may dramatically increase the size of the drinking water supply managed area and the number of potential land uses that must be addressed in the wellhead protection plan; and

b) Increased pumping by high capacity wells may increase the amount of recharge from a surface hydraulic feature and decrease its ability to 1) support flora and fauna or 2) attenuate contaminants that are introduce to surface water. This may result on the State reducing the amount of water that can be appropriated within the drinking water supply management area.

D. Groundwater -- The public water supply well has historically provided groundwater of excellent quality and quantity. As of the date of Plan approval, the PWS system does anticipate a significant increase in water use over the next five years. The City's population is expected to triple by 2010 to 3,900 and to be at 5,460 by 2015. The City has placed on its capital improvement plan an additional well in 2009 and additional storage in 2010.

A pumping increase by the PWS is projected for the first five years of plan implementation. Existing appropriations that are regulated by the Minnesota Department of Natural Resources were incorporated into the delineation of the wellhead protection area as required under 4720.5400. Future pumping increases by other groundwater users

is not known at the time the wellhead protection plan was prepared and will be addressed in Chapter Three.
The City of Mayer has completed a water emergency and conservation plan and is waiting approved by the Department of Natural Resources (DNR).

II. IMPACT OF CHANGES

A. Expected Changes in Water Use --

The impacts that increased pumping may have on managing groundwater use within the drinking water supply management area are based on the following changes over the time the wellhead protection plan is implemented. The City of Mayer is experiencing growth and will need to educate the public on water conservation.

Increased Long-Term Pumping of Wells Used by PWS will expand the size of the capture areas and result in one or more of the groundwater quantity or quality impacts that are discussed in the previous section of this chapter.

B. Influence of Existing Water and Land Government Programs and Regulations

–The MDH has entered into a memorandum of agreement with the Minnesota Department of Natural Resources, the Minnesota Department of Agriculture, and the Minnesota Pollution Control Agency regarding the support that these agencies can provide to protect drinking water in the drinking water supply management areas. Increases in groundwater pumping may impact the availability and quality in the aquifer used the PWS and can be addressed by programs that are administered by these agencies. Regulating groundwater appropriates is managed by the Minnesota Department of Natural Resources. Assessing the impacts that increased pumping may have on the movement of contamination relating to pesticides and agricultural nutrients is addressed by the Minnesota Department of Agriculture for all other human caused contaminants the Minnesota Pollution Control Agency is the responsible agency. Regulating the construction of new wells or the alteration of existing wells is administered by the MDH. All of these factors must be considered when determining the risk that increased pumping presents to water quality and quantity within the drinking water supply management areas.
Recognizing that the State Well Code has sole authority in permitting wells, there may be existing land use ordinances by local governments that could be revised in the future to address new private wells within the DWSMA. However, there is no discussion or intention at this time of requiring additional regulation related to managing wells within the system's DWSMA. The Carver County Environmental Services Department, Carver County Land and Water Services Division has identified the sealing of unused/unsealed wells in the system's DWSMA as a priority item and will assist with addressing additional unused/unsealed wells as they are identified. The City also has an ordinance prohibiting the connection of new wells to a plumbing system so that it interconnects with the public water supply distribution system. A copy of this portion of the City Ordinance is included in the Appendix A as Exhibit 5. The City has implemented a water conservation program through ordinance.

C. Administrative, Technical, and Financial Considerations

-- The system assembled a Wellhead Protection Team early in the process of developing this Plan.

Many of the activities during the planning process have been accomplished through efforts of this group, with assistance from studies provided by other units of government.

For this Plan to be effective:

1. The PWS will need to raise public awareness of the issues affecting its drinking water supply through public educational programs.
2. Administrative duties will remain with the Wellhead Protection Manager, who will report to the governing authority, coordinate implementation of wellhead protection management action plans, and conduct regular meetings.
3. Support of Wellhead Protection activities will be provided by funds from the public water supply's operating fund for miscellaneous uses, as well as a WHP budget line item to be created during the next budgeting process. Other sources of funding or in-kind services to help achieve the goals set forth in this Plan's Chapter 4 include 1) the Carver County Land and Water Services Division and their well sealing cost-share program; 2) the Minnesota Department of Health assisting with determining the correct measures for sealing unused wells, constructing new wells, and requiring the sealing of unused wells if this becomes necessary; and 3) the Minnesota Rural Water Association providing technical assistance during the wellhead protection implementation phase.
4. The costs of implementing Wellhead Protection activities will be evaluated on an biennial basis to determine whether the original cost estimates match 1) the scope of the management practices identified in this part of the Plan, 2) changes in the status of the wells(s) listed in Table 1, and 3) actual costs related to proper sealing of unused/unsealed wells. The system will discuss changes in plan implementation costs with MDH to determine the availability of state or federal funding for offsetting increased costs to plan implementation.
5. The MDH will provide technical support to Mayer Public Works for determining the extent that other State agencies should be contacted to address the potential impacts that increased pumping may have on groundwater availability and quality. Also, MDH can assist with identifying the timing and pumping of the wells operated by Mayer Public Works to minimize 1) loss of hydraulic head in the aquifer, 2) increased recharge from surface hydraulic features, and 3) movement of contaminants into the water supply.

CHAPTER THREE

ISSUES, PROBLEMS, AND OPPORTUNITIES (4720.5230)

I. LAND USE ISSUES, PROBLEMS, AND OPPORTUNITIES RELATED TO:

A. The Aquifer -- The non-vulnerable aquifer, identified as the source of the system's water supply, should be relatively unaffected by land use activities, with the exception of other wells that penetrate the same aquifer.

B. The Well Water -- The wellhead protection plan is primarily concerned with other water supply wells located within the DWSMA. The potential contaminant source inventory performed by the Wellhead Protection Team indicated the types of wells listed in Table 1. Some of these wells may extend into the aquifer that supplies the system with its water. These wells, if maintained improperly, could convey pollutants to the aquifer.

The placement of additional high-capacity well(s), increased pumping from existing wells, or significant changes in current groundwater appropriations within the DWSMA may have an impact on 1) groundwater availability to all users, or 2) increased risk that contamination may enter the part of the aquifer used by the public water supply wells(s).

C. The Drinking Water Supply Management Area -- The principal concern expressed by the system is to ensure consistent and long-term management of water wells, environmental bore holes, and observation wells within the DWSMA. The public water supply has limited legal capabilities to regulate well construction and sealing in the areas of the DWSMA beyond its legal authority. Second, changes in land use that increase pumping of the aquifer used by the system's wells need to be assessed for possible impacts on water availability and quality. Finally, the system has no regulatory authority over water appropriations and must rely on the State of Minnesota to address issues and concerns related to pumping.

The PWS and MDH will notify the other when increased pumping of the aquifer used by the water supply wells may occur. The MDH will provide an initial evaluation of the impacts that an increase in pumping may have on groundwater quantity and whether any changes in the geographic location of the wellhead protection area may result. The PWS and MDH will confer regarding whether the increase in pumping should be brought to the attention of other State Agencies who have authority under State environmental review statute or administrative rules to regulate it.

II. IDENTIFICATION OF:

A. Problems and Opportunities Disclosed at Public Meetings and in Written Comment -- At the beginning of the planning process other Local Units of Government (LUGs) were identified and informed that the system was beginning the wellhead protection planning process. (See Exhibit 1 in Appendix A for a list of LUGs.) Each unit of government was also sent a copy of the system's delineated WHPA and DWSMA and vulnerability assessment for the well(s) and DWSMA. The City did receive comments from the Metropolitan Council see appendix for letter and response. The general public was also given opportunities to participate in the planning process and to comment at the

Public Informational Meeting. No concerns from the general public have been expressed at this time.

B. Data Elements -- The state's Wellhead Protection Rule requires that existing information be utilized in developing the initial Wellhead Protection Plan. Much of the data collected and utilized to delineate the system's WHPA and DWSMA, and to determine the vulnerability of the aquifer to possible contamination comes from small-scale or regional studies. There is a limited amount of subsurface information available to define local groundwater flow conditions and the groundwater chemistry of the aquifer within the DWSMA. The direction of groundwater flow was evaluated to address concerns that the current amount of subsurface information does not permit an unquestioned determination of local groundwater flow conditions toward the system's water supply well(s). As a result, delineation of the WHPA represents a composite of capture zones generated by varying aquifer properties.

The system plans to utilize public education opportunities, both existing and proposed, to address potential contamination of the aquifer by other wells. Additionally, the system will work in cooperation with the Carver County Land and Water Services to utilize the well sealing cost-share program currently available. The City currently has an ordinance in place that prohibits the cross connection between privately owned wells and the community water supply distribution system. The City will set a high priority on well sealing for existing wells that are unused or not properly maintained.

The system will work with MDH to 1) identify proposed wells that may present these additional concerns, 2) ensure these wells are properly constructed, 3) determine whether an alternative aquifer could be used, and 4) identify water-use and conservation requirements that the DNR may specify with the groundwater appropriations permit.

The system plans to continue to focus its data collection efforts on the following activities throughout the ten-year life of this plan:

1. The public water supply will work with MDH to identify new well(s) that are constructed within the DWSMA and to verify their locations;
2. The system will inform MDH when any system well(s) is repaired so that information regarding well construction, static water level, and pumping capacity can be verified or updated;
3. The system will collect water samples on a biennial basis from each well and analyze the well water for total anions and cations. The results of this monitoring will be used to determine trends in natural water quality;
4. The MDH will collect a water sample from at least one well after the first five years of plan implementation and have the water analyzed for tritium content using an enriched analytical technique. Testing results will be used to document that the rate of recharge to the aquifer is not increasing and that it is still hydraulically isolated from surface water.
5. The system and MDH will inform each other of additional high-capacity wells that are to be constructed within the DWSMA or within a mile of its boundary. MDH will determine with the DNR whether the applicant for a water appropriations permit needs to conduct an aquifer test to evaluate the long-term pumping impacts on the system's water supply well(s);

6. Conduct a pumping test on a system well if the PWS determines that this does not present a public safety problem.
7. Inform MDH of any wells that are to be properly sealed within the DWSMA so that the Minnesota Geological Survey can be notified and determine whether it can run a borehole geophysical survey of the well(s); and
8. Inform MDH if the system is considering the construction of a new water supply well so that MDH can determine whether any potential sites for the new well present concerns over well interference or the movement of existing contamination plumes toward existing system or private water supply wells.

C. Status and Adequacy of Official Controls, Plans, and Other Local, State, and Federal Programs on Water Use and Land Use -- There are many tools available to the regulating agencies that may be used to achieve the wellhead protection planning goals identified by the wellhead planning team. State and local governmental units, such as MDH, Carver County, City of Mayer and the DNR, regulate:

- ✓ well construction – MDH.
- ✓ well sealing - MDH, Carver County
- ✓ state groundwater appropriation permits – DNR.
- ✓ public water supply quality – MDH and PWS
- ✓ setbacks for specific contaminant sources from a well - MDH and local governments through local land use controls.
- ✓ Land use controls - local government.

The wellhead protection planning team recommends that no additional regulations be imposed at this time and are confident that local issues may be adequately addressed through existing processes. Processes include public education, adoption of best management practices for well maintenance and water conservation, and good communication with other landowners within the DWSMA.

The Carver County Land and Water Services Division has been contacted to determine the availability of cost-share funds to assist with the sealing of identified unused/unsealed wells within the DWSMA.

The Minnesota Department of Natural Resources (DNR) is responsible for administrating state regulations that affect groundwater appropriations. Pumping that exceeds 10,000 gallons/day or 1,000,000 gallons/year must be permitted by DNR. The DNR can require an evaluation of the aquifer to supply additional water without negative impacts to other users and the State's water resources prior to permitting new or increased pumping.

The MDH, DNR, the Minnesota Pollution Control Agency, and the Board of Water and Soil Resources have authority under state environmental review regulations to require that an environmental assessment be prepared for any change in land- or water- use that may impair a state resource. Increases in pumping within a drinking water supply management area may present such a threat and may be subject to environmental review.

CHAPTER FOUR

WELLHEAD PROTECTION GOALS (4720.5240)

The public water supply is located deep underground and is classified as non-vulnerable based on the geologic characteristics in the area that tend to confine the aquifer and protect it from contamination resulting from land use activities. Consequently, this WHP Plan will focus on addressing the placement and usage of other wells that may be used for domestic, public or commercial purposes. The overall goal is to a) prevent contamination of the aquifer and, b) manage the aquifer cooperatively to assure sustainable water supplies for all users.

The public water supply system has enjoyed a sufficient and safe water supply in the past, and proposes through the implementation of this WHP Plan to continue supplying safe, potable water for its customers into the future.

The WHP team identified the following goals to be achieved with the action items contained in this Plan:

A. Maintain or improve the current level of water quality, which meets or exceeds all state and federal standards.

B. Educate public officials, landowners and the general public about the importance of wellhead protection to protect the public drinking water supply.

C. Provide ongoing collection of data to support future wellhead protection efforts.

D. Implement active, community-wide, water conservation program.

E. Address priority actions regarding identification and inventory of wells within the DWSMA.

CHAPTER FIVE

OBJECTIVES AND PLANS OF ACTION (4720.5250)

ESTABLISHING PRIORITIES -- The aquifer supplying the system's drinking water supply has been identified as non-vulnerable to contamination from typical land use activities, with the exception of other wells that penetrate the confining layer to reach into the aquifer. Therefore, the Wellhead Protection Planning Team would like to concentrate management efforts on the following factors to create awareness of groundwater protection and help prevent future contamination of the aquifer:

A. Manage other wells (Well Management)
B. Inform the public about groundwater issues (Public Education)
C. Collect additional data relating to local groundwater issues (Data Collection)
D. Implement active, community-wide, water conservation program. (Public Education)

A. WELL MANAGEMENT (Municipal and Private)

Inner Wellhead Management Zone Management

Objective A1: Effectively manage the IWMZ to reduce the likelihood of contaminants from entering the wells at a level to cause human health impacts.

- **WHP Measure A1-1:** Review and update the IWMZ inventory for all wells in the system.
  Source of Action: WHP Manager/Team
  Cooperator(s): MDH, MRWA
  Time Frame: 2008, 2011, 2014, 2017
  Estimated Cost: Staff Time
  Goal Achieved: WHP team remains informed about activities within the IWMZ.

- **WHP Measure A1-2:** Monitor setbacks for all new potential sources of contamination located within the IWMZ.
  Source of Action: WHP Manager/Team
  Cooperator(s): MDH, MRWA
  Time Frame: Continuous
  Estimated Cost: Staff Time
  Goal Achieved: Any new potential contaminant sources will meet required setbacks.

- **WHP Measure A1-3:** Monitor any nonconforming potential contaminant source identified in the future within the IWMZ.
  Source of Action: WHP Manager/Team
  Cooperator(s): MDH, MRWA
  Time Frame: Annually, if needed
  Estimated Cost: Staff time
  Goal Achieved: Ensure that nonconforming potential contaminant sources do not endanger water quality of City wells.

- **WHP Measure A1-4:** Implement the WHP Measures identified in the IWMZ Inventory (see Appendix A or future updated Sanitary Survey Reports).
  Source of Action: WHP Manager/Team
  Cooperator(s): MDH, MRWA
  Time Frame: Annually
  Estimated Cost: Staff Time
  Goal Achieved: Reduce the risk of potential contaminants from impacting the wells.

Private Well Management

Objective: The City will provide information to property owners with wells about well maintenance and well sealing.

- **WHP Measure A1-5:** Contact well owners in a WHP area to educate them directly by use of a newsletter on well head maintenance.

  Source of Action: WHP Manager/Team
  Cooperator(s): MDH, MRWA
  Time Frame: Annually
  Estimated Cost: Staff Time
  Goal Achieved: Reduce the risk of potential contaminants from impacting the wells.

WHP Measure A1-6: Be involved in coordinating local efforts to properly seal unused wells and to inform residents about well sealing funds available from Carver County.

Source of Action: WHP Manager/Team
Cooperator(s): MDH, MRWA
Time Frame: Annually
Estimated Cost: Staff Time
Goal Achieved: Any well found within the DWSMA property owner will be sent information on the well sealing program.

B. GROUNDWATER ISSUES PUBLIC EDUCATION

OBJECTIVE B1 – Provide and promote activities that protect the aquifer from which the system's drinking water supply is drawn and increase public awareness of the Wellhead Protection Program and groundwater protection issues.

- **WHP Measure B1-1:** Develop a WHP brochure to send all households in the DWSMA.
  Source of Action: WHP Manager/Team
  Cooperator(s): MDH, MRWA
  Time Frame: 2009, 2012, 2015, 2018
  Estimated Cost: Staff Time
  Goal Achieved: WHP team remains informed about activities within the IWMZ.
  Goal Achieved: Public would be informed about wellhead protection.

Objective B2- Send annual reminder notices to property owners reminding them of proper wellhead protection management techniques.

- **WHP Measure B1-2:**

Source of Action: City staff will send information to all property owners with known wells within the DSWMA area.

Cooperator(s): Carver County Environmental Services, MDH Staff and MRWA
Time Frame: Continuous
Estimated Cost: Staff Time
Goal Achieved: Public Education of impact on water quality

- **WHP Measure A1-5:** Reduce the risk of potential contaminants from impacting the wells Improve knowledge of local groundwater and surface water characteristics by continuing the monitoring of water resources within or near the DWSMA.

  Source of Action: WHP Manager/Team, PWS
  Cooperator(s): MDH, MRWA
  Time Frame: Annually
  Estimated Cost: Staff Time

C. DATA COLLECTION

OBJECTIVE C1 - Improve knowledge of local groundwater and surface water characteristics by collecting any groundwater data generated in or near the DWSMA that is generated as a result of local land use requirements(EAW's, EIS's, ect..)

- **WHP Measure C1-1:**

Source of Action: City staff will monitor land use changes that may impact the local wellhead protection area.
Cooperator(s): Carver County Environmental Services, MDH Staff and MRWA
Time Frame: Continuous
Estimated Cost: Staff Time
Goal Achieved: Collection of information

Objective C2 - On an annual basis the Well Inventory and the Class V well inventory will be updated. The City will query the County Well index Online databases annually to locate any new wells constructed in the DWSMA.

- **WHP Measure C2-1:**

Source of Action: City staff will annually drive the DWSMA to note any changes in land use.
Cooperators: Carver County Environmental Services, MDH Staff and MRWA
Time Frame: Annual
Estimated Cost: Staff Time
Goal Achieved: Collection of information

D. HIGH CAPACITY WELL MANAGEMENT

OBJECTIVE D1: Identify proposed new high capacity wells or proposals for increased pumping by existing high capacity wells that is planned to monitor impacts on the public water supply can be determined.

- **WHP Measure D1-1:** MDH and PWS will notify the other when a high capacity well is proposed within the drinking water supply management area or within a mile of it. MDH will use the notification of intent to drill a well that it received from licensed water well contractors to identity proposed high capacity wells. MDH will notify the wellhead protection plan manager and the DNR when new high capacity wells are to be constructed. The public water supplier will inform the MDH area hydrologist of 1) any increases in pumping that it is planning or 2) information received that landowners are considering increasing pumping or constructing a high capacity well.

  Source of Action: PWS, MDH
  Cooperators: MNDNR, landowners
  Time Frame: Ongoing effort, as needed, by PWS and all agencies
  Estimated Cost: Staff time
  Goal Achieved: The PWS may avert future groundwater issues by working with landowners and state agencies prior to the construction of a new high capacity well or increases in pumping appropriations occur.

OBJECTIVE D2 The City will implement water conservation measures and monitor impacts on the public water supply.

WHP Measure D2-1: The PWS will enforce water conservation measures within the City. The PWS will implement an odd even policy and restricted hours of watering. This will have an annual review.
Source of Action: City of Mayer PWS
Cooperators: City of Mayer, residents
Time Frame: Ongoing effort by PWS
Estimated Cost: Staff time
Goal Achieved: The PWS may avert future groundwater issues by implementing conservation measures and working with the residents.

E. CLASS V WELL MANAGEMENT

NOTE: Based upon information provided by the City of Mayer, no properties or businesses were identified at this time that are suspected of having a Class V Well. However, the following Class V Wells strategies have been included in this plan in the event one may be discovered or suspected in the future and as part of WHP awareness efforts.

OBJECTIVE E: Create awareness among commercial enterprises, local automotive shops or garages about what a Class V wells is and Federal EPA requirements for Class V Wells. In the event that a suspected Class V wells is identified, the MDH Planner will be notified to evaluate the status of the Class V wells and help determine the next steps needed to be taken by the landowner.

WHP Measure E1: Potential locations of Class V Wells (i.e. un-sewered commercial areas, rural automotive repair shops, public facilities such as bus garages, etc.) will be inventoried in the DWSMA through direct personal contact with the operator of the business or landowner in the DWSMA. At that time, a Fact Sheet on Class V Wells and reporting requirements will be provided to the landowner describing what a Class V wells is and the impacts they can have on groundwater quality.

In the event a suspected Class V Wells is identified, the Regional MDH Planner will be notified to assist in determining the status of the shallow disposal system and what reporting steps may be needed to register the Class V wells with EPA. EPA reporting forms are available at: www.epa.gov/safewater/uic/7520s.html)

Source of Action: WHP Manager, City Administrator
Cooperator(s): MDH, MRWA Planners, landowners
Time Frame: As needed. In the event a shallow disposal system may be discovered.
Estimated Cost: Staff Time, Postage & copying costs
Goal Achieved: Landowners become informed about federal Class V Wells requirements and impacts on groundwater quality.

CHAPTER SIX

EVALUATION PROGRAM (4720.5270)

The success of the wellhead protection management program must be evaluated in order to determine whether the plan is actually accomplishing what the public water supply system set out to do. The following activities will be implemented:

- Track the implementation of the objectives identified in Chapter 5 of this Plan;
- Determine the effectiveness of specific management strategies regarding the protection of the public water supply;
- Identify possible changes to these strategies which may improve their effectiveness; and
- Determine the adequacy of financial resources and staff availability to carry out the management strategies planned for the coming year.

1) The public water supply system will continue to cooperate with the Minnesota Department of Health in the Biennial monitoring of the water supply to determine whether the management strategies are having a positive effect and to identify water quality problems that may arise that must be addressed.
2) Members of the wellhead protection team, the governing authority, and the WHP plan manager will travel through the drinking water supply management area on a regular basis to identify any changes in land use or potential contaminant source management practices which may adversely impact the public water supply.
3) The wellhead protection team will meet on an as-needed basis, with a minimum of one meeting every two years, to review the results of each strategy implemented during the previous plan year and identify and discuss whether modifications are needed for those strategies and additional strategies for the coming plan year.
4) The wellhead protection plan manager will make a biennial written report to the governing authority regarding progress in implementing the wellhead protection management objectives of this Plan. The biennial report will be compiled and used to review the overall progress in implementing source management strategies when the public water supply's wellhead protection plan is updated in 10 years. A copy of the report will be sent to the MDH Source Water Protection Unit in St. Paul and another copy will be placed in the system's Wellhead Protection file.

CHAPTER SEVEN

ALTERNATIVE WATER SUPPLY; CONTINGENCY STRATEGY (4720.5280)

The City of Mayer has a WATER SUPPLY CONSERVATION PLAN that has been submitted and is pending approval by the DNR, Division of Waters, and Appropriation Permit Program (Exhibit 7). This plan contains the required elements of the Minnesota Wellhead Protection Rule and is acceptable as an equivalent to an Alternative Water Supply/Contingency Plan as defined in 4720.5280. Implementation of the Plan has begun with the aid and assistance of local emergency management agencies. A copy of the Plan is available for review at the Community Center 413 Bluejay Avenue, Mayer, MN 55360 or by contacting the City Administrator.

DEPARTMENT OF NATURAL RESOURCES - DIVISION OF WATERS and METROPOLITAN COUNCIL
WATER EMERGENCY AND CONSERVATION PLANS

These guidelines are divided into four parts. The first three parts, Water Supply System Description and Evaluation, Emergency Response Procedures and Water Conservation Planning apply statewide. Part IV, relates to comprehensive plan requirements that apply only to communities in the Seven-County Twin Cities Metropolitan Area. If you have questions regarding water emergency and conservation plans, please call (651) 259-5703 or (651) 259-5647 or e-mail your question to wateruse@dnr.state.mn.us. Metro Communities can also direct questions to the Metropolitan Council at watersupply@metc.state.mn.us or (651) 602-1066.

DNR Water Appropriation Permit Number(s)	620705
Name of Water Supplier	City of Mayer
Address	413 Bluejay Ave.
Contact Person	Luayn Murphy
Title	City Administrator
Phone Number	952-657-1502
E-Mail Address	cityadmin@frontiernet.net

PART I. WATER SUPPLY SYSTEM DESCRIPTION AND EVALUATION

The first step in any water supply analysis is to assess the current status of demand and supplies. Information in Part I, can be used in the development of Emergency Response Procedures and Conservation Plans.

A. ANALYSIS OF WATER DEMAND.

Fill in Table 1 for the past 10 years water demand. If your customer categories are different than the ones listed in Table 1, please note the changes below.
*Column added to account for unsold, metered water for various uses (ie. construction and hydrant testing). **Column added to total unsold water and water sold.

TABLE 1 Historic Water Demand

Year	Total Population	Population Served	Total Connections	Residential Water Sold (MG)	C/I/I Water Sold (MG)	Wholesale Deliveries (MG)	Total Water Sold (MG)	Misc. Municipal Uses (MG)*	Total Water Metered (MG)**	Total Water Pumped (MG)	Percent Unmetered/ Unaccounted	Average Demand (MGD)	Maximum Demand (MGD)	Residential gallons/ capita/day	Total gallons/ capita/ day
1996		516	188	13.49	1.98		15.47		15.47	15.47	0.00%	0.042		71.62	82.11
1997		525	183	10.03	1.69		11.72		11.72	11.72	0.00%	0.032		52.32	61.14
1998		525	187	13.38	1.73		15.11		15.11	12.96	-16.54%	0.036		69.83	67.66
1999		525	188	9.93	1.72		11.65		11.65	12.49	6.73%	0.034		51.82	65.20
2000		532	189	10.82	1.51		12.33		12.33	12.50	1.35%	0.034		55.72	64.37
2001		554	198	11.43	1.63		13.06		13.06	12.67	-3.08%	0.035	0.071	56.54	62.67
2002		554	264	13.69	2.50		16.18		16.18	16.36	1.08%	0.045	0.086	67.68	80.90
2003		600	335	20.18	2.68		22.87	0.02	22.89	26.12	12.36%	0.072	0.307	92.16	119.26
2004		780	429	23.77	2.44		26.21	0.09	26.30	31.87	17.47%	0.087		83.48	111.94
2005		1,000	514	32.61	2.64		35.25	0.22	35.47	41.00	13.47%	0.112	0.299	89.34	112.32

MG – Million Gallons **MGD** – Million Gallons per Day **C/I/I**- Commercial, Industrial, Institutional

Residential. Water used for normal household purposes, such as drinking, food preparation, bathing, washing clothes and dishes, flushing toilets, and watering lawns and gardens.

Institutional. Hospitals, nursing homes, day care centers, and other facilities that use water for essential domestic requirements. This includes public facilities and public metered uses. You may want to maintain separate institutional water use records for emergency planning and allocation purposes.

Commercial. Water used by motels, hotels, restaurants, office buildings, commercial facilities, both civilian and military.

Industrial. Water used for thermoelectric power (electric utility generation) and other industrial uses such as steel, chemical and allied products, food processing, paper and allied products, mining, and petroleum refining.

Wholesale Deliveries. Bulk water sales to other public water suppliers.

Unaccounted. Unaccounted for water is the volume of water withdrawn from all sources minus the volume sold.

Residential Gallons per Capita per Day = total residential sales in gallons/population served/365 days **Total Gallons per Capita per Day** = total water withdrawals/population served/365 days

NOTE: Non-essential water uses defined by Minnesota Statutes 103G.291, include lawn sprinkling, vehicle washing, golf course and park irrigation and other non-essential uses. Some of the above categories also include non-essential uses of water.

Water Use Trends. Discuss factors that influence trends in water demand (i.e. growth, weather, industry, conservation). If appropriate, include a discussion of other factors that affect daily water use, such as use by non-resident commuter employees or large water consuming industry.
Weather influences water trends by typically increasing demand in the summer months. The majority of the new properties in Mayer lack mature trees and contain relatively new sod, which means lawns need to be watered more frequently. Therefore, water demand for the City of Mayer increases in summer months. In an effort to reduce water usage, odd/ even watering as well as limiting the time of day for watering has been implemented during the summer. This type of conservation will be used in the future as well.

TABLE 2 Large Volume Users - List the top 10 largest users.

Customer	Gallons per year	% of total annual use
Mobil Car Wash	1,197,000	2.92%
Lutheran High School	769,000	1.88%
Finn's Place	423,000	1.03%
Mayer Laundromat/Car Wash	331,000	0.81%
Vicki Vanoosbree	212,000	0.82%
Mayer Elderly Apartment	202,000	0.49%
Heltd's Bar	183,000	0.45%
Andrew Keppel	183,000	0.45%
Max Southa	173,000	0.42%
Grant Kusske	155,000	0.38%

B. TREATMENT AND STORAGE CAPACITY.

TABLE 3(A) Water Treatment

Water Treatment Plant Capacity	360,000 to be increased to 576,000 Gallons per day
Describe the treatment process used (i.e., softening, chlorination, fluoridation, Fe/Mn removal, reverse osmosis, coagulation, sedimentation, filtration, others). Also, describe the annual amount and method of disposal of treatment residuals, if any.	
Aeration, detention, filtration, high service pumping with clearwell/reservoir, and backwash water reclamation facilities.	

TABLE 3(B) Storage Capacity - List all storage structures and capacities.

Total Storage Capacity		**Average Day Demand** (average of last 5 years)	
400,000	Gallons	70,200	Gallons per day
Type of Structure	Number of Structures	Gallons	
Elevated Storage	1	400,000	
Ground Storage			
Other:			

C. **WATER SOURCES.** List all groundwater, surface water and interconnections that supply water to the system. Add or delete lines to the tables as needed.

TABLE 4(A) Total Water Source Capacity for System (excluding emergency connections)

Total Capacity of Sources	625	Gallons per minute
Firm Capacity (largest pump out of service)	400	Gallons per minute

TABLE 4(B) Groundwater Sources - Copies of water well records and well maintenance information should be included with the public water supplier's copy of the plan in an attachment. If there are more wells than space provided or multiple well fields, please use the List of Wells template (see Resources) and include as Attachment .

Well # or name	Unique Well Number	Year Installed	Well & Casing Depth (ft)	Well Diameter (in)	Capacity (GPM)	Geologic Unit	Status
1	220954	1962	280	10	125	Jordan Sandstone	Primary Use
2	655479	2001	260	10	500	Jordan Sandstone	Primary Use

Status: Active use, Emergency, Standby, Seasonal, Peak use, etc. GPM – Gallons per Minute
Geologic Unit: Name of formation(s), which supplies water to the well

TABLE 4(C) Surface Water Sources

Intake ID	Resource name	Capacity (GPM/MGD)
N/A		

GPM – Gallons per Minute MGD – Million Gallons per Day

TABLE 4(D) Wholesale or Retail Interconnections - List interconnections with neighboring suppliers that are used to supply water on a **regular basis** either wholesale or retail.

Water Supply System	Capacity (GPM/MGD)	Wholesale or retail
N/A		

GPM – Gallons per Minute MGD – Million Gallons per Day

TABLE 4(E) Emergency Interconnections - List interconnections with neighboring suppliers or private sources that can be used to supply water on an emergency or occasional basis. Suppliers that serve less than 3,300 people can leave this section blank, but must provide this information in Section II C.

Water Supply System	Capacity (GPM/MGD)	Note any limitations on use
N/A		

GPM – Gallons per Minute MGD – Million Gallons per Day

D. DEMAND PROJECTIONS.

TABLE 5 Ten Year Demand Projections

Year	Population Served	Average Day Demand (MGD)	Maximum Day Demand (MGD)	Projected Demand (MGY)
2006	1,667	0.167	0.451	60.96
2007	2,302	0.230	0.621	83.95
2008	2,936	0.294	0.794	107.31
2009	3,571	0.357	0.964	130.31
2010	4,205	0.421	1.137	153.67
2011	4,456	0.446	1.204	162.79
2012	4,707	0.471	1.272	171.92
2013	4,958	0.496	1.339	181.04
2014	5,209	0.521	1.407	190.17
2015	5,460	0.546	1.474	199.29

MGD – Million Gallons per Day MGY – Million Gallons per Year

Projection Method. Describe how projections were made, (assumptions for per capita, per household, per acre or other methods used).
Future populations were obtained from the City's comprehensive plan. An assumption of 100 gpcd and the average ratio of maximum day to average day of 2.7.

E. RESOURCE SUSTAINABILITY

Sustainable water use: use of water to provide for the needs of society, now and in the future, without unacceptable social, economic, or environmental consequences.

Monitoring. Records of water levels should be maintained for all production wells and source water reservoirs/basins. Water level readings should be taken monthly for a production well or observation well that is representative of the wells completed in each water source formation. **If water levels are not currently measured each year, a monitoring plan that includes a schedule for water level readings must be submitted as Attachment .**

TABLE 6 Monitoring Wells - List all wells being measured.

Unique well number	Type of well (production, observation)	Frequency of Measurement (daily, monthly etc.)	Method of Measurement (steel tape, SCADA etc.)
655479	Production	Monthly	Draw Down Gauge

Water Level Data. Summarize water level data including seasonal and long-term trends for each ground and/or surface water source. If water levels are not measured and recorded on a routine basis then provide the static water level (SWL) when the well was constructed and a current water level measurement for each production well. Also include all water level data taken during well and pump maintenance.
655479: 2001- SWL = 46 feet 2006- SWL = 42 feet **Attachment : Provide monitoring data (graph or table) for as many years as possible.**

Ground Water Level Monitoring – DNR Waters in conjunction with federal and local units of government maintain and measure approximately 750 observation wells around the state. Ground water level data are available online www.dnr.state.mn.us/waters. Information is also available by contacting the Ground Water Level Monitoring Manager, DNR Waters, 500 Lafayette Road, St. Paul, MN 55155-4032 or call (651) 259-5700.

Natural Resource Impacts. Indicate any natural resource features such as calcareous fens, wetlands, trout streams, rivers or surface water basins that are or could be influenced by water withdrawals from municipal production wells. Also indicate if resource protection thresholds have been established and if mitigation measures or management plans have been developed.
No trout streams or calcareous fens have been identified within the vicinity of the City of Mayer. According to the Wellhead Protection Plan completed for the city (Minnesota Department of Health- March, 2006), the Jordan Aquifer is covered by 200 feet of fine grained geologic material with limited permeability making depletion of surface waters unlikely.

Sustainability. Evaluate the adequacy of the resource to sustain current and projected demands. Describe any modeling conducted to determine impacts of projected demands on the resource.
The Minnesota Department of Health has completed a Source Water Assessment for the City of Mayer and no indication is given that the source is in danger of depletion. The City will need to increase the capacity of the source wells in the future to accommodate the expected increase in population. The static water level monitoring mentioned in this plan will eventually give the City a dataset for use in determining the sustainability of the source aquifer; however, at this time the City has no such data available.

Source Water Protection 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.	
Date WHP Plan Adopted:	June 26, 2006
Date for Next WHP Update:	N/A
SWP Plan:	☐ In Process ☐ Completed ☒ Not Applicable

F. CAPITAL IMPROVEMENT PLAN (CIP)

Adequacy of Water Supply System. Are water supply installations, treatment facilities and distribution systems adequate to sustain current and projected demands? ☐ Yes ☒ No If no, describe any potential capital improvements over the next ten years and state the reasons for the proposed changes.

2007: Increase existing well pump to 400 gpm (from 125 gpm).
2007: Watermain looping of 4th and 5th Street.
2010: 750,000 gallon elevated storage tank.
2015: New treatment plant and well field. Increase firm capacity to 1200 gpm to sustain projected growth through 2030.

Additionally, the trunk watermain system will be expanded. It is expected that these improvements will be funded through development and will be completed as development requires. The future system has been modeled and the necessary pipe sizes for the projected layout are indicated in Figure 1.

Proposed Water Sources. Does your current CIP include the addition of new wells or intakes? ☒ Yes ☐ No If yes, list the number of new installations and projected water demands from each for the next ten years. Plans for new production wells must include the geologic source formation, well location, and proposed pumping capacity.

Based on the revised population projections, the City will need additional pumping capacity by the year 2015. The planning is in the initial stages and the information requested above is yet to be determined. A new wellfield with capacity of 800 gpm (bringing firm capacity to 1200 gpm) would serve the projected population through 2030.

Water Source Alternatives. If new water sources are being proposed, describe alternative sources that were considered and any possibilities of joint efforts with neighboring communities for development of supplies.

No alternative sources have been considered at this stage.

Preventative Maintenance. Long-term preventative programs and measures will help reduce the risk of emergency situations. Identify sections of the system that are prone to failure due to age, materials or other problems. This information should be used to prioritize capital improvements, preventative maintenance, and to determine the types of materials (pipes, valves, couplings, etc.) to have in stock to reduce repair time.

No known sections prone to failure.

PART II. EMERGENCY RESPONSE PROCEDURES

Water emergencies can occur as a result of vandalism, sabotage, accidental contamination, mechanical problems, power failures, 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. If your community already has written procedures dealing with water emergencies we recommend that you use these guidelines to review and update existing procedures and water supply protection measures.

Federal Emergency Response Plan

Section 1433(b) of the Safe Drinking Water Act as amended by the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (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. **Community water suppliers that have completed the Federal Emergency Response Plan and submitted the required certification to the U.S. Environmental Protection Agency have satisfied Part II, Sections A, B, and C of these guidelines and need only provide the information below regarding the emergency response plan and source water protection plan and complete Sections D (Allocation and Demand Reduction Procedures), and E (Enforcement).**

Provide the following information regarding your completed Federal Emergency Response Plan:

Emergency Response Plan	Contact Person	Contact Number
Emergency Response Lead	Chris Capaul	952-657-1502
Alternate Emergency Response Lead	Myron Taylor	952-657-1415
Emergency Response Plan Certification Date		

Operational Contingency Plan. An operational contingency plan that describes measures to be taken for water supply mainline breaks and other common system failures as well as routine maintenance is recommended for all utilities. Check here ☒ if the utility has an operational contingency plan. At a minimum a contact list for contractors and supplies should be included in a water emergency telephone list.

Communities that have completed Federal Emergency Response Plans should skip to Section D.

EMERGENCY RESPONSE PROCEDURES

A. **Emergency Telephone List.** A telephone list of emergency contacts must be included as Attachment to the plan (complete template or use your own list). The list should include key utility and community personnel, contacts in adjacent communities, and appropriate local, state and federal emergency contacts. Please be sure to verify and update the contacts on the emergency telephone list on a regular basis (once each year recommended). 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. Responsibilities and services for each contact should be defined.

B. **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, water well and maintenance records should be maintained in a central secured location so that the records are accessible for emergency purposes and preventative maintenance. 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. Check here ☐ if these records and maps exist and staff can access the documents in the event of an emergency.

C. **Procedure for Augmenting Water Supplies.** List all available sources of water that can be used to augment or replace existing sources in an emergency. 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. Copies of cooperative agreements should be maintained with your copy of the plan and include in Attachment . Be sure to include information on any physical or chemical problems that may limit interconnections to other sources of water. Approvals from the MN Department of Health are required for interconnections and reuse of water.

TABLE 7 (A) Public Water Supply Systems – List interconnections with other public water supply systems that can supply water in an emergency.

Water Supply System	Capacity (GPM/MGD)	Note any limitations on use
N/A		

GPM – Gallons per Minute MGD – Million Gallons per Day

TABLE 7 (B) - Private Water Sources – List other sources of water available in an emergency.

Name	Capacity (GPM/MGD)	Note any limitations on use
N/A		

GPM – Gallons per Minute MGD – Million Gallons per Day

D. Allocation and Demand Reduction Procedures. The plan must include procedures to address gradual decreases in water supply as well as emergencies and the sudden loss of water due to line breaks, power failures, sabotage, etc. During periods of limited water supplies public water suppliers are required to allocate water based on the priorities established in Minnesota Statutes 103G.261.

Water Use Priorities (Minnesota Statutes 103G.261)

First Priority. Domestic water supply, excluding industrial and commercial uses of municipal water supply, and use for power production that meets contingency requirements.

NOTE: Domestic use is defined (MN Rules 6115.0630, Subp. 9), as use for general household purposes for human needs such as cooking, cleaning, drinking, washing, and waste disposal, and uses for on-farm livestock watering excluding commercial livestock operations which use more than 10,000 gallons per day or one million gallons per year.

Second Priority. Water uses involving consumption of less than 10,000 gallons per day.

Third Priority. Agricultural irrigation and processing of agricultural products.

Fourth Priority. Power production in excess of the use provided for in the contingency plan under first priority.

Fifth Priority. Uses, other than agricultural irrigation, processing of agricultural products, and power production.

Sixth Priority. Non-essential uses. These uses are defined by Minnesota Statutes 103G.291 as lawn sprinkling, vehicle washing, golf course and park irrigation, and other non-essential uses.

List the statutory water use priorities along with any local priorities (hospitals, nursing homes, etc.) in Table 8. 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. Local allocation priorities 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. In Table 8, list the priority ranking, average day demand and demand reduction potential for each customer category (modify customer categories if necessary).

Table 8 Water Use Priorities

Customer Category	Allocation Priority	Average Day Demand (GPD)	Demand Reduction Potential (GPD)
Residential	1	89,339	-1,400
Institutional	2	2,534	-1,300
Commercial	3	7,243	-4,400
Industrial			
Irrigation			
Wholesale			
Non-essential			
	TOTALS	99,116	-7,100

GPD – Gallons per Day

Demand Reduction Potential. The demand reduction potential for residential use will typically be the base demand during the winter months when water use for non-essential uses such as lawn watering do not occur. The difference between summer and winter demands typically defines the demand reduction that can be achieved by eliminating non-essential uses. In extreme emergency situations lower priority water uses must be restricted or eliminated to protect first priority domestic water requirements. Short-term demand reduction potential should be based on average day demands for customer categories within each priority class.

Triggers for Allocation and Demand Reduction Actions. Triggering levels must be defined for implementing emergency responses, including supply augmentation, demand reduction, and water allocation. Examples of triggers include: water demand >100% of storage, water level in well(s) below a certain elevation, treatment capacity reduced 10% etc. Each trigger should have a quantifiable indicator and actions can have multiple stages such as mild, moderate and severe responses. Check each trigger below that is used for implementing emergency responses and for each trigger indicate the actions to be taken at various levels or stages of severity in Table 9.

- ☐ Water Demand
- ☐ Treatment Capacity
- ☐ Storage Capacity
- ☐ Groundwater Levels
- ☐ Surface Water Flows or Levels
- ☒ Pump, Booster Station or Well Out of Service
- ☐ Governor's Executive Order – Critical Water Deficiency (required by statute)
- ☒ Water Main Break
- ☐ Loss of Production
- ☐ Security Breach
- ☒ Contamination
- ☐ Other (list in Table 9)

Table 9 Demand Reduction Procedures

Condition	Trigger(s)	Actions
Stage 1 (Mild)	Watermain Break	Shut down segment until fixed.
Stage 2 (Moderate)	Pump, Booster Station or Wells Out of Service	Sprinkling restrictions and other water restrictions if repair will take several days.
Stage 3 (Severe)	Contamination	Total system shut down.
Critical Water Deficiency (M.S. 103G.291)	Executive Order by Governor & as provided in above triggers	Stage 1: Restrict lawn watering, vehicle washing, golf course and park irrigation and other nonessential uses Stage 2: Suspend lawn watering, vehicle washing, golf course and park irrigation and other nonessential uses

Note: The potential for water availability problems during the onset of a drought are almost impossible to predict. Significant increases in demand should be balanced with preventative measures to conserve supplies in the event of prolonged drought conditions.

Notification Procedures. List methods that will be used to inform customers regarding conservation requests, water use restrictions, and suspensions. Customers should be aware of emergency procedures and responses that they may need to implement.
Notification will be provided through television stations (WCCO News, KSTP News, CARE 11 News) and radio stations (AM 1500-1500 AM KSTP, 92 KQRS-92 FM KQRS).

B. Water Conservation Programs. Describe all short-term conservation measures that are available for use in an emergency and long-term measures to improve water use efficiencies for each of the six conservation program elements listed below. Short-term demand reduction measures must be included in the emergency response procedures and must be in support of, and part of, a community all-hazard emergency operation plan.

1. **Metering.** The American Water Works Association (AWWA) recommends that every water utility meter all water taken into its system and all water distributed from its system at its customer's point of service. An effective metering program relies upon periodic performance testing, repair, repair and maintenance of all meters. AWWA also recommends that utilities conduct regular water audits to ensure accountability. Complete Table 10 (A) regarding the number and maintenance of customer meters.

TABLE 10 (A) Customer Meters

	Number of Connections	Number of Metered Connections	Meter testing schedule (years)	Average age/meter replacement schedule (years)
Residential	481	481	N/A	3.5 years / As needed
Institutional	8	8	N/A	3.5 years / As needed
Commercial	33	33	N/A	3.5 years / As needed
Industrial	N/A	N/A	N/A	N/A / N/A
Public Facilities	7	0	N/A	N/A / N/A
Other				/
TOTALS	529	522		

Unmetered Systems. Provide an estimate of the cost to install meters and the projected water savings from metering water use. Also indicate any plans to install meters.
The approximate cost to install the meters is $1,000 each making the total $7,000 to install meters on all connections that currently don't have them. The City plans to install meters for the community center and the new water treatment plant within the next one to two years.

TABLE 10 (B) Water Source Meters

	Number of Meters	Meter testing schedule (years)	Average age/meter replacement schedule (years)
Water Source (wells/intakes)	2	N/A	5-6 years / As needed
Treatment Plant	1	N/A	1 year / As needed

2. **Unaccounted Water.** 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 AWWA recommends a goal of ten percent or less for unaccounted-for water. Water audit procedures are available from the AWWA and MN Rural Water Association.

Frequency of water audits: ☐ each billing cycle ☒ yearly ☐ other:

Leak detection and survey: ☐every year ☐ every years ☒ periodic as needed
Year last leak detection survey completed: N/A

Reducing Unaccounted Water. List potential sources and efforts being taken to reduce unaccounted water. If unaccounted water exceeds 10% of total withdrawals, include the timeframe for completing work to reduce unaccounted water to 10% or less.
Municipal uses are not currently being monitored. The City plans to meter all municipal uses (i.e. fire station, wastewater treatment facility, etc.).

3. **Conservation Water Rates.** Plans must include the current rate structure for all customers and provide information on any proposed rate changes. Discuss the basis for current price levels and rates, including cost of service data, and the impact current rates have on conservation.

Billing Frequency: ☒ Monthly ☐ Bimonthly ☐ Quarterly
☐ Other (describe):

Volume included in base rate or service charge: 2,000 gallons

Conservation Rate Structures
☒ Increasing block rate: rate per unit increases as water use increases
☐ Seasonal rate: higher rates in summer to reduce peak demands
☐ Service charge or base fee that does not include a water volume

Conservation Neutral Rate Structure
☐ Uniform rate: rate per unit is the same regardless of volume

Non-conserving Rate Structures
☐ Service charge or base fee that includes a large volume of water
☐ Declining block rate: rate per unit decreases as water use increases
☐ Flat rate: one fee regardless of how much water is used (unmetered)

Other (describe):

Water Rates Evaluated: ☒ every year ☐ every years ☐ no schedule
Date of last rate change: January 1, 2006

Declining block (the more water used, the cheaper the rate) and flat (one fee for an unlimited volume of water) rates should be phased out and replaced with conservation rates. Incorporating a seasonal rate structure and the benefits of a monthly billing cycle should also be considered along with the development of an emergency rate structure that could be quickly implemented to encourage conservation in an emergency.

Current Water Rates. Include a copy of the actual rate structure in Attachment or list current water rates including base/service fees and volume charges below.	
Monthly Water Use Fees	
0-2,000 gallons	$5.40
2,001-7,000 gallons	$1.85 per 1,000 gallons
7,001-15,000 gallons	$2.30 per 1,000 gallons
15,001-25,000 gallons	$2.85 per 1,000 gallons
25,001-40,000 gallons	$3.55 per 1,000 gallons

Non-conserving Rate Structures. Provide justification for the rate structure and its impact on reducing demands or indicate intentions including the timeframe for adopting a conservation rate structure.

4. **Regulation.** Plans should include regulations for short-term reductions in demand and long-term improvements in water efficiencies. Sample regulations are available from DNR Waters. Copies of adopted regulations or proposed restrictions should be included in Attachment A of the plan. Indicate any of the items below that are required by local regulations and also indicate if the requirement is applied each year or just in emergencies.

☒ Time of Day: no watering between 9:00 am and 6:00 pm
(reduces evaporation) ☐ year around ☒ seasonal ☐ emergency only
☒ Odd/Even: (helps reduce peak demand) ☐ year around ☒ seasonal ☐ emergency only
☐ Water waste prohibited (no runoff from irrigation systems)
Describe ordinance:
☐ Limitations on turf areas for landscaping (reduces high water use turf areas)
Describe ordinance:
☒ Soil preparation (such as 4"-6" of organic soil on new turf areas with sandy soil)
Describe ordinance: Ordinance #102- all front yards, rear yards, and side yards shall be seeded or sodded over a minimum of four (4) inches of black dirt.
☐ Tree ratios (plant one tree for every square feet to reduce turf evapotranspiration)
Describe ordinance:
☐ Prohibit irrigation of medians or areas less than 8 feet wide
Describe ordinance:
☐ Permit required to fill swimming pool ☐ every year ☐ emergency only
☐ Other (describe):

State and Federal Regulations (mandated)

☒ Rainfall sensors on landscape irrigation systems. Minnesota Statute 103G.298 requires "All automatically operated landscape irrigation systems shall have furnished and installed technology that inhibits or interrupts operation of the landscape irrigation system during periods of sufficient moisture. The technology must be adjustable either by the end user or the professional practitioner of landscape irrigation services."

☒ Water Efficient Plumbing Fixtures. The 1992 Federal Energy Policy Act established manufacturing standards for water efficient plumbing fixtures, including toilets, urinals, faucets, and aerators.

Enforcement. Are ordinances enforced? ☒ Yes ☐ No If yes, indicate how ordinances are enforced along with any penalties for non-compliance.
Fine structure: 1st Violation- Warning 2nd Violation- $50 Fine 3rd Violation- $100 Fine, etc.

5. **Education and Information Programs.** Customers should be provided information on how to improve water use efficiencies a minimum of two times per year. Information should be provided at appropriate times to address peak demands. Emergency notices and educational materials on how to reduce water use should be available for quick distribution during an emergency. If any of the methods listed in the table below are used to provide water conservation tips, indicate the number of times that information is provided each year and attach a list of education efforts used for the last three years.

Current Education Programs	Times/Year
Billing inserts or tips printed on the actual bill	As needed
Consumer Confidence Reports	
Local news papers	
Community news letters	4
Direct mailings (water audit/retrofit kits, showerheads, brochures)	
Information at utility and public buildings	
Public Service Announcements	
Cable TV Programs	
Demonstration projects (landscaping or plumbing)	
K-12 Education programs (Project Wet, Drinking Water Institute)	
School presentations	
Events (children's water festivals, environmental fairs)	
Community education	
Water Week promotions	
Information provided to groups that tour the water treatment plant	
Website (include address: www.cityofmayer.com)	2
Targeted efforts (large volume users, users with large increases)	
Notices of ordinances (include tips with notices)	
Emergency conservation notices (recommended)	
Other:	

List education efforts for the last three years below. Be sure to indicate whether educational efforts are on-going and which efforts were initiated as an emergency or drought management effort.

- Community newsletters are sent out 4 times per year as an ongoing method for informing the public of any issues.
- Billing inserts are ongoing and used on an as necessary basis.
- Odd/even watering and time of day limitations have been put in place as an ongoing effort to help avoid an emergency situation.

Proposed Education Programs. Describe any additional efforts planned to provide conservation information to customers a minimum of twice per year (required if there are no current efforts).

A packet of conservation tips and information can be obtained by contacting DNR Waters or the Minnesota Rural Water Association (MRWA). The American Water Works Association (AWWA) www.awwa.org or www.waterwiser.org also has excellent materials on water conservation that are available in a number of formats. You can contact the MRWA 800/367-6792, the AWWA bookstore 800/926-7337 or DNR Waters 651/259-5703 for information regarding educational materials and formats that are available.

6. **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 communities develop a long-term plan to retrofit public buildings with water efficient plumbing fixtures and that the benefits of retrofitting be included in public education programs. You may also want to contact local electric or gas suppliers to see if they are interested in developing a showerhead distribution program for customers in your service area.

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. Describe any education or incentive programs to encourage the retrofitting of inefficient plumbing fixtures (toilets, showerheads, faucets, and aerators) or appliances (washing machines).
N/A

Plan Approval. Water Emergency and Conservation Plans must be approved by the Department of Natural Resources (DNR) every ten years. Please submit plans for approval to the following address:

DNR Waters
Water Permit Programs Supervisor
500 Lafayette Road
St. Paul, MN 55155-4032

or Submit electronically to
wateruse@dnr.state.mn.us.

Adoption of Plan. All DNR plan approvals are contingent on the formal adoption of the plan by the city council or utility board. Please submit a certificate of adoption (example available) or other action adopting the plan.

Metropolitan Area communities are also required to submit these plans to the Metropolitan Council. Please see PART IV. ITEMS FOR METROPOLITAN AREA PUBLIC SUPPLIERS.

METROPOLITAN COUNCIL

PART IV. ITEMS FOR METROPOLITAN AREA PUBLIC SUPPLIERS

Minnesota Statute 473.859 requires water supply plans 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 required information is contained in Parts I-III of these guidelines. However, the following additional information is necessary to make the water supply plans consistent with the Metropolitan Land Use Planning Act upon which local comprehensive plans are based. Communities should use the information collected in the development of their plans to evaluate whether or not their water supplies are being developed consistent with the Council's Water Resources Management Policy Plan.

Policies. Provide a statement(s) on the principles that will dictate operation of the water supply utility: for example, "It is the policy of the city to provide good quality water at an affordable rate, while assuring this use does not have a long-term negative resource impact."

It is the goal of the city to provide safe, reliable, sustainable and affordable water to all customers.

Impact on the Local Comprehensive Plan. Identify the impact that the adoption of this water supply plan has on the rest of the local comprehensive plan, including implications for future growth of the community, economic impact on the community and changes to the comprehensive plan that might result.

This plan is yet another tool for use in "smart" growth planning. For example, the implementation of a well water level monitoring plan will enable the city to draw conclusions regarding the sustainability of the source aquifer, potentially impacting the development patterns of the area.

The effects will also be seen in the area of conservation. With the relatively high peaking ratio, the city will be focusing on increased education and the subsequent reduction of wasted water.

Demand Projections

Year	Total Community Population	Population Served	Average Day Demand (MGD)	Maximum Day Demand (MGD)	Projected Demand (MGY)
2010	4,205	4,205	0.421	1.137	153.67
2020	7,020	7,020	0.702	1.895	256.23
2030	9,620	9,620	0.962	2.597	351.13
Ultimate					

Population projections should be consistent with those in the Metropolitan Council's *2030 Regional Development Framework* or the Communities 2008 Comprehensive Plan update. If population served differs from total population, explain in detail why the difference (i.e., service to other communities, not complete service within community etc.).

PLAN SUBMITTAL AND REVIEW OF THE PLAN

The plan will be reviewed by the Council according to the sequence outlined in Minnesota Statutes 473.175. **Prior to submittal to the Council, the plan must be submitted to adjacent governmental units for a 60-day review period.** Following submittal, the Council determines if the plan is complete for review within 15 days. If incomplete, the Council will notify the community and request the necessary information. When complete the Council will complete its review within 60 days or a mutually agreed upon extension. The community officially adopts the plan after the Council provides its comments.

Plans can be submitted electronically to the Council; however, the review process will not begin until the Council receives a paper copy of the materials. Electronic submissions can be via a CD, 3 ½" floppy disk or to the email address below. Metropolitan communities should submit their plans to:

Reviews Coordinator Metropolitan Council 390 Robert St, St. Paul, MN 55101	electronically to: watersupply@metc.state.mn.us

APPENDIX A

REFERENCED DATA FOR

PART 2

Exhibits:

1. Listing of LGU's
2. WHPA/DWSMA map
3. List of Wells Inventoried and Locations
4. Comprehensive Zoning Maps Data
5. City Ordinance 52.05
6. Elements listed in the MDH Scoping 2 Notice as "Submit to MDH"
7. Submittal letter to MN DNR Water Conservation Plan
8. Metropolitan Council Response to DNR Water Conservation Plan

Exhibit 1

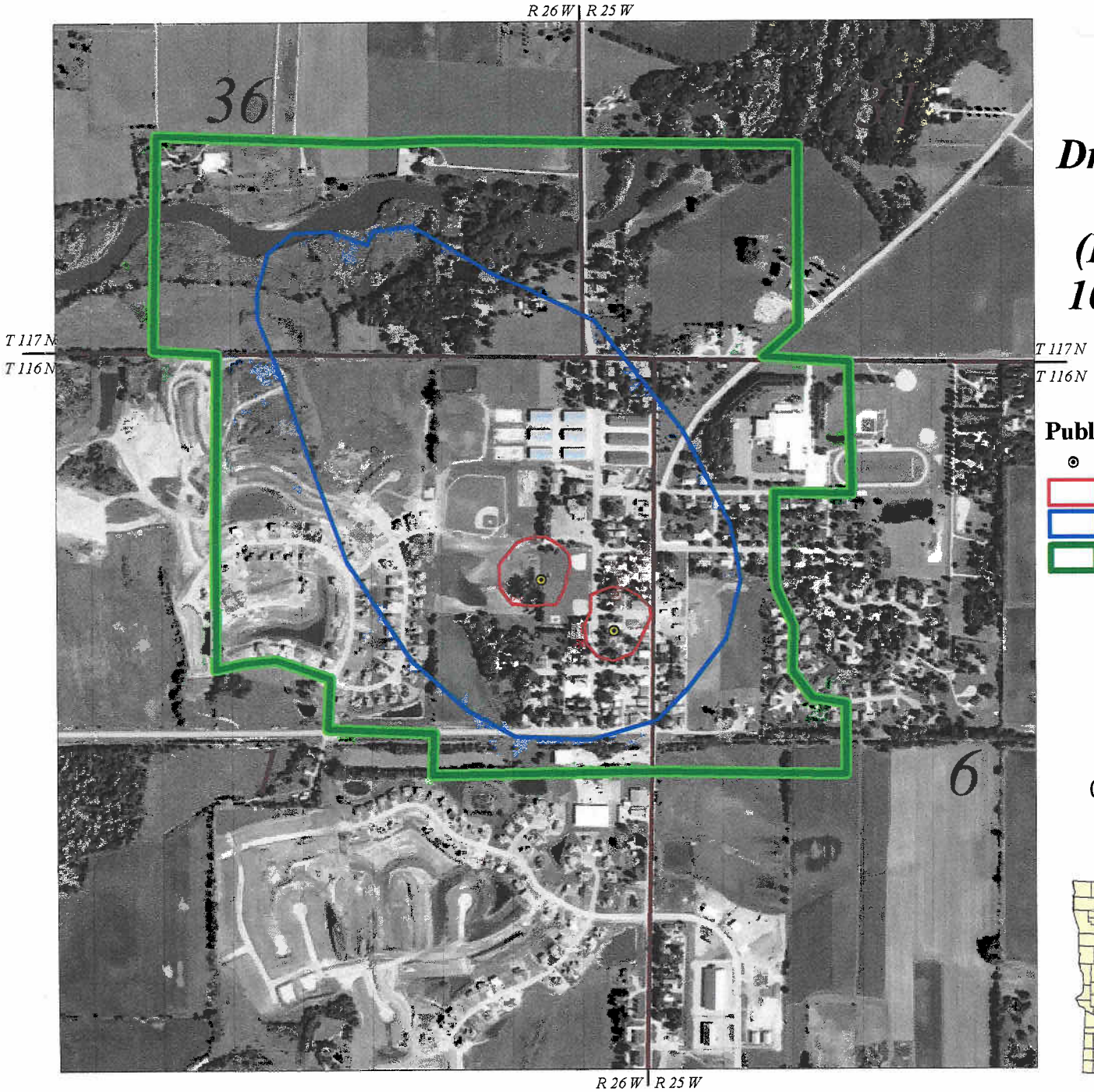
Part II Notification List of LGU's

Dave Drealan, Carver County
Mike Wanous, Carver County Soil and Water Conservation
Chris Elvrum, Metropolitan Council Member
Terry Bovee, Minnesota Department of Health
Susan Arntz, City of Waconia
David Mandt, City of Watertown
Tom Simmons, City of Norwood Young America
Roger Sauebrey, Camden Township
Sherm Steffenson, Hollywood Township
Jeff Schwendinger, Waconia Township
Ann Bruner, Watertown Township
Joan Guthmiller, City of New Germany

Exhibit 2

Mayer

Drinking Water Supply Management Area (DWSMA) MN-00383 10 year Time of Travel

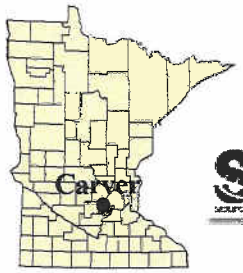


Public Water Supply Well

- Primary
- Emergency Response Area
- Wellhead Protection Area (WHPA)
- DWSMA

Low Vulnerability

0.1 0 0.1 Miles



N

SWP source water protection

MINNESOTA MDH DEPARTMENT OF HEALTH

Approved May 1, 2006

Exhibit 3

Mayer

Drinking Water Supply Management Area (DWSMA) MN-00383 10 year Time of Travel

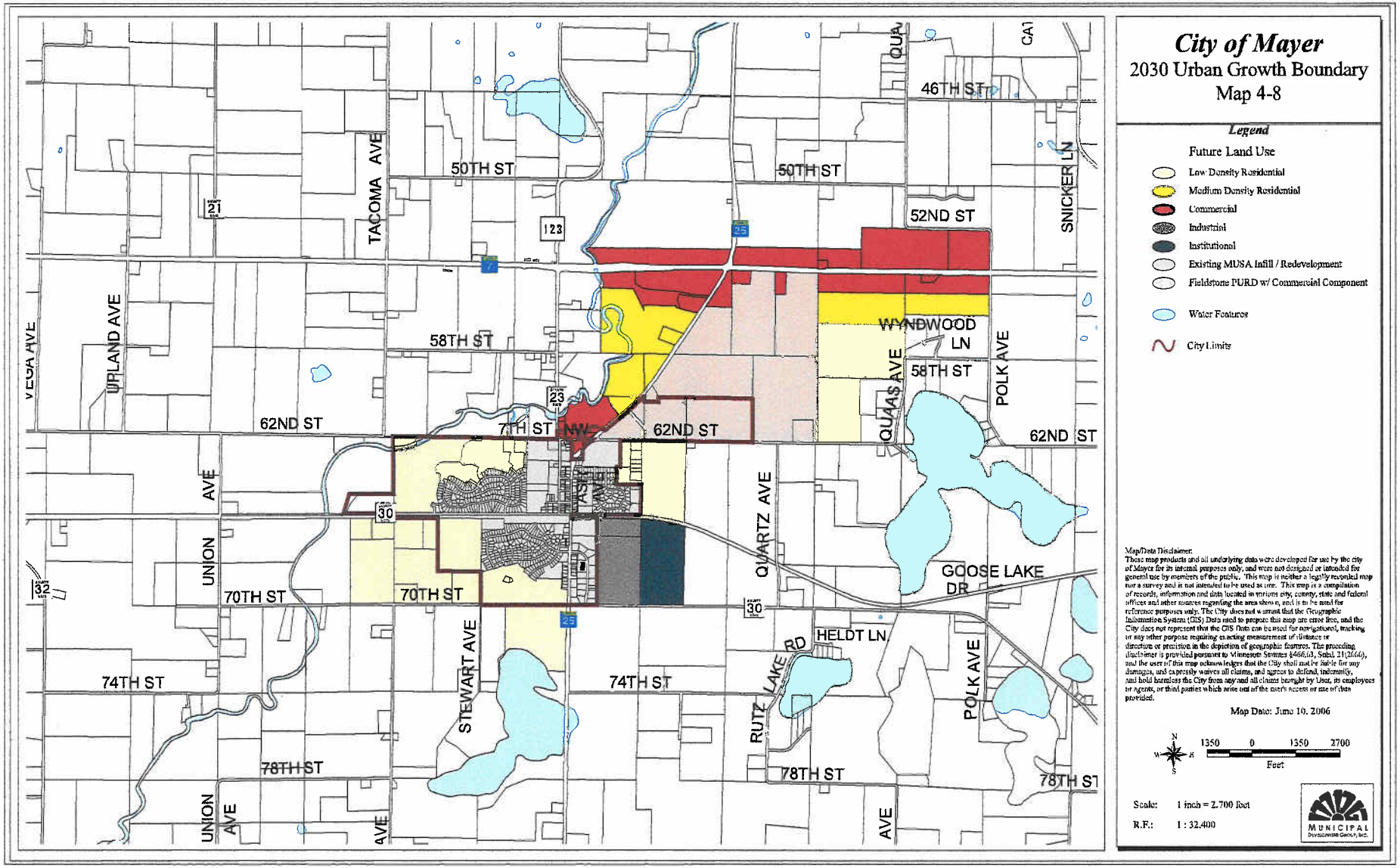
Public Water Supply Well
- **Primary**

Final PCSI
- **Well**
- **DWSMA**

0.1 0 0.1 Miles

PCSI Approved February 20, 2007

Exhibit 4


City of Mayer
2030 Urban Growth Boundary
Map 4-8
Legend
Future Land Use
Low Density Residential
Medium Density Residential
Commercial
Industrial
Institutional
Existing MUSA Infill / Redevelopment
Fieldstone PURD w/ Commercial Component
Water Features
City Limits
Map/Data Disclaimer:
These map products and all underlying data were developed for use by the city of Mayer for its internal purposes only, and were not designed or intended for general use by members of the public. This map is neither a legally recorded map nor a survey and is not intended to be used as one. This map is a compilation of records, information and data located in various city, county, state and federal offices and other sources regarding the area shown, and is to be used for reference purposes only. The City does not warrant that the Geographic Information System (GIS) Data used to prepare this map are error free, and the City does not represent that the GIS Data can be used for navigational, tracking or any other purpose requiring exacting measurement of distance or direction or precision in the depiction of geographic features. The preceding disclaimer is provided pursuant to Minnesota Statutes §466.03, Subd. 21(2)(d), and the user of this map acknowledges that the City shall not be liable for any damages, and expressly waives all claims, and agrees to defend, indemnify, and hold harmless the City from any and all claims brought by User, its employees or agents, or third parties which arise out of the user's access or use of data provided.
Map Date: June 10, 2006
N
W
E
S
1350 0 1350 2700
Feet
Scale: 1 inch = 2,700 feet
R.F.: 1 : 32,400
MUNICIPAL DEVELOPMENT GROUP, INC.
46TH ST
50TH ST
50TH ST
52ND ST
SNICKER LN
TACOMA AVE
123
21
VEGA AVE
UPLAND AVE
58TH ST
WYNDWOOD LN
58TH ST
POLK AVE
QUAAS AVE
23
62ND ST
7TH ST NW
62ND ST
62ND ST
ASH AVE
30
UNION AVE
QUARTZ AVE
32
70TH ST
70TH ST
GOOSE LAKE DR
30
25
HELDT LN
STEWART AVE
74TH ST
74TH ST
LAKE RD
RUTZ
POLK AVE
78TH ST
78TH ST
78TH ST
UNION AVE
AVE
AVE

off. When the waste of water is great or damage is likely to occur from the leak, the Superintendent may turn the water off immediately and thereafter give notice to repair as provided herein.
('82 Code, § 3.213)

§ 52.04 UNAUTHORIZED USE OF WATER.

No person, other than an authorized city employee, shall take water from a fire hydrant, from a city water tank filling station or from any other city facility without first obtaining authority to do so from the Superintendent.
('82 Code, § 3.214) Penalty, see § 10.99

§ 52.05 PRIVATE WATER SUPPLY; CONNECTIONS.

No person shall connect any water pipe of the city water supply system with any pump, well or tank that is connected to any other source of water supply. If any connection exists, the customer, owner or person in charge of the premises shall forthwith sever the connection. When any connection is found, the Superintendent may notify the customer, owner or other person in charge of the premises to sever the connection immediately. If this is not done immediately, the Superintendent may turn off the water supply. All cross connections shall be eliminated before city water service is restored to the premises.
('82 Code, § 3.215) Penalty, see § 10.99

§ 52.06 RESTRICTED USE PERIODS.

Whenever the Council determines that a shortage of water threatens the city water supply, it may, by resolution, limit the times and hours during which city water may be used for sprinkling, air conditioning, irrigation, car washing and other specified uses. After publication of the resolution, or delivery to the affected premises, or three days after mailing the resolution to the affected customer, no person shall use or permit water to be used in violation of the restrictions imposed in the resolution. Any person who does so may be charged an excess use charge, as the Council may determine by resolution. Continued violation shall be cause for discontinuance of water service in accordance with the procedures specified for discontinuance of service for a leak found upon the customer's premises.
('82 Code, § 3.216)

§ 52.07 WATER METERS; READER INSTALLATION AND INSPECTIONS.

(A) Except for extinguishment of fires and uses as may be authorized by the Council, no person other than an authorized city employee shall use water from the city water supply system or permit water to be drawn therefrom unless the water passes through a water meter supplied or approved by the city.
('82 Code, § 3.221)

Exhibit 6

December 12, 2006

Ms. Luayn Murphy
City Administrator - City of Mayer
P.O. Box 102
Mayer, Minnesota 55360

Dear Ms. Murphy:

Subject: Second Scoping Decision Notice

This letter provides notice of the results of a scoping meeting held with you on November 15, 2006, at City of Mayer's city hall regarding wellhead protection planning. During the meeting we discussed the data elements that must be included and used to prepare the part of the wellhead protection plan related to the management of potential contaminants in the approved drinking water supply management area. The enclosed Scoping Decision Notice No. 2 lists the data elements that were discussed at the meeting. Because the drinking water supply management area has been determined to be non-vulnerable for all your wells, your main focus will be on other wells within the drinking water supply management area.

You have fulfilled the requirement to distribute copies of the first part of the wellhead protection plan to local units of government and held a required wellhead protection informational meeting for the public on June 26, 2006.

Robyn Hoerr of Minnesota Rural Water Association will be working with you to develop a draft of the remainder of the wellhead protection plan. If you have any questions regarding the enclosed notice, contact me by email at terry.bovee@health.state.mn.us or by phone at 507/389-6597.

Sincerely,

Terry L. Bovee

Terry L. Bovee, Planner
Environmental Health Division
410 Jackson Street - Suite 500
Mankato, Minnesota 56001

TLB:kmc
Enclosure
cc: Isaac Bradlich, Minnesota Department of Health
Chuck Regan, Minnesota Pollution Control Agency
Brian Williams, Minnesota Department of Agriculture
Brian Rongitsch, Minnesota Department of Natural Resources
Eric Mohring, Board of Water and Soil Resources

SCOPING DECISION NOTICE NO. 2

ə Remainder of the Wellhead Protection Plan

Name of Public Water Supply:		Date:
Mayer PWSID 1100006		December 12, 2006
Name of the Wellhead Protection Manager: Luayn Murphy		
Address: 413 Bluejay Avenue PO Box 102	**City:** Mayer	**Zip:** 55360-0102
Unique Well Numbers: 220954 (Well 1), 655479 (Well 2)		**Phone:** 952-657-1502

Instructions for Completing the Scoping No. 2 Form

N	R	S	
X			**N = Not required.** If this box is checked, this data element is **NOT** necessary for your wellhead protection plan because it is not needed or it has been included in the first scoping decision notice. **Please go to the next data element.**

N	R	S	
	X		**R = Required for the remainder of the plan.** If this box is checked, this data **MUST** be used for the "**remainder of the plan.**"

N	R	S	
		X	**S = Submit to MDH.** If this box is checked, this data element **MUST** be included in your **wellhead protection plan and submitted to MDH**.
			If there is **NO** check mark in the **"S"** box but there is an Ax@ in the **"R"** box, this data element **MUST** be included in your plan, but should **NOT be submitted to MDH**. This box will only be checked if MDH does not have access to this data element. This will help to reduce the cost by reducing the amount of paper and time to reproduce the data element.

Note: Any data elements required in the first scoping decision notice must also be used to complete the remainder of the wellhead protection plan.

DATA ELEMENTS ABOUT THE PHYSICAL ENVIRONMENT

PRECIPITATION

N	R	S	
X			An existing map or list of local precipitation gauging stations.

Technical Assistance Comments:

N	R	S	
X			An existing table showing the average monthly and annual precipitation in inches for the preceding five years.

Technical Assistance Comments:

GEOLOGY

N	R	S	
	X		An existing geologic map and a description of the geology, including aquifers, confining layers, recharge areas, discharge areas, sensitive areas as defined in Minnesota Statutes, section 103H.005, subdivision 13, and groundwater flow characteristics.

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about these data elements.

N	R	S	
	X		Existing records of the geologic materials penetrated by wells, borings, exploration test holes, or excavations, including those submitted to the department.

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about these data elements.

N	R	S	
	X		Existing borehole geophysical records from wells, borings, and exploration test holes.

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about these data elements.

N	R	S	
	X		Existing surface geophysical studies.

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about these data elements.

SOILS

N	R	S	
X			Existing maps of the soils and a description of soil infiltration characteristics.

Technical Assistance Comments:

N	R	S	
X			A description or an existing map of known eroding lands that are causing sedimentation problems.

Technical Assistance Comments:

WATER RESOURCES			
N	R	S	An existing map of the boundaries and flow directions of major watershed units and minor watershed units.
X			
Technical Assistance Comments:			
N	R	S	An existing map and a list of public waters as defined in Minnesota Statutes, section 103G.005, subdivision 15, and public drainage ditches.
X			
Technical Assistance Comments:			
N	R	S	The shoreland classifications of the public waters listed under subitem (2), pursuant to part 6120.3000 and Minnesota Statutes, sections 103F.201 to 103F.221.
X			
Technical Assistance Comments:			
N	R	S	An existing map of wetlands regulated under Chapter 8420 and Minnesota Statutes, section 103G.221 to 103G.2373.
X			
Technical Assistance Comments:			
N	R	S	An existing map showing those areas delineated as floodplain by existing local ordinances.
X			
Technical Assistance Comments:			

DATA ELEMENTS ABOUT THE LAND USE

LAND USE			
N	R	S	An existing map of parcel boundaries.
	X	X	
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	R	S	An existing map of political boundaries.
	X	X	
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	R	S	An existing map of public land surveys including township, range, and section.
	X		
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			

N	R	S	
	X	X	A map and an inventory of the current and historical agricultural, residential, commercial, industrial, recreational, and institutional land uses and potential contaminant sources.

Technical Assistance Comments: The inventory, mapping, and management of land uses and potential sources of contamination for all the Drinking Water Supply Management Area(s) must reflect what is known about these data elements, as follows:

Low Vulnerability - Wells, automotive disposal systems, large sewer systems serving more than 20 people, cesspools.

N	R	S	
	X	X	An existing comprehensive land-use map.

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element. Include any urban fringe planning areas.

N	R	S	
	X	X	Existing zoning map.

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

PUBLIC UTILITY SERVICES

N	R	S	
X			An existing map of transportation routes or corridors.

Technical Assistance Comments:

N	R	S	
X			An existing map of storm sewers, sanitary sewers, and public water supply systems.

Technical Assistance Comments:

N	R	S	
X			An existing map of the gas and oil pipelines used by gas and oil suppliers.

Technical Assistance Comments:

N	R	S	
X			An existing map or list of public drainage systems.

Technical Assistance Comments:

N	R	S	
	X		An existing record of construction, maintenance, and use of the public water supply well(s) and other wells within the drinking water supply management area.

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about these data elements.

DATA ELEMENTS ABOUT WATER QUANTITY

SURFACE WATER QUANTITY

N	R	S	
X			An existing description of high, mean, and low flows on streams.

Technical Assistance Comments:

N	R	S	
X			An existing list of lakes where the state has established ordinary high water marks.

Technical Assistance Comments:

N	R	S	
X			An existing list of permitted withdrawals from lakes and streams, including source, use, and amounts withdrawn.

Technical Assistance Comments:

N	R	S	
X			An existing list of lakes and streams for which state protected levels or flows have been established.

Technical Assistance Comments:

N	R	S	
X			An existing description of known water-use conflicts, including those caused by groundwater pumping.

Technical Assistance Comments:

GROUNDWATER QUANTITY

N	R	S	
	X		An existing list of wells covered by state appropriation permits, including amounts of water appropriated, type of use, and aquifer source.

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about these data elements.

N	R	S	
	X		An existing description of known well interference problems and water use conflicts.

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about these data elements.

N	R	S	
	X		An existing list of state environmental bore holes, including unique well number, aquifer measured, years of record, and average monthly levels.

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

DATA ELEMENTS ABOUT WATER QUALITY

SURFACE WATER QUALITY

N	R	S	
X			An existing map or list of the state water quality management classification for each stream and lake.

Technical Assistance Comments:

N	R	S	
X			An existing summary of lake and stream water quality monitoring data, including: 1. bacteriological contamination indicators; 2. inorganic chemicals; 3. organic chemicals; 4. sedimentation; 5. dissolved oxygen; and 6. excessive growth or deficiency of aquatic plants.

Technical Assistance Comments:

GROUNDWATER QUALITY

N	R	S	
	X		An existing summary of water quality data, including: 1. bacteriological contamination indicators; 2. inorganic chemicals; and 3. organic chemicals.

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about these data elements.

N	R	S	
	X		An existing list of water chemistry and isotopic data from wells, springs, or other groundwater sampling points.

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about these data elements.

N	R	S	
	X		An existing report of groundwater tracer studies.

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

N	R	S	
	X		An existing site study and well water analysis of known areas of groundwater contamination.

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about these data elements.

N	R	S	
	X		An existing property audit identifying contamination.

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

N	R	S	
	X		An existing report to the Minnesota Department of Agriculture and the Minnesota Pollution Control Agency of contaminant spills and releases.

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

Exhibit 7

BOLTON & MENK, INC.
Consulting Engineers & Surveyors

2638 Shadow Lane, Suite 200, Chaska, MN 55318
*Telephone: 952-448-8838 * Facsimile: 952-448-8805*

Letter of Transmittal

Date: 10/13/06
BMI Project No.: C12.37632

TO: DNR Waters
Water Permit Programs Supervisor
500 Lafayette Road
St. Paul, MN 55155-4032

- ☐ Select FEDEX Option
- ☐ Select UPS Option
- ☒ Regular Mail
- ☐ Client Pick-up
- ☐ Hand Carry
- ☐ Fax
- ☐ Fax/Send

RE: Water Emergency and Conservation Plan

WE ARE ENCLOSING: 1 completed water emergency and conservation plan for the City of Mayer

FOR YOUR: ☐ Review ☐ Records ☒ Approval ☐ Distribution ☐ Information

REMARKS:

Cc:

By: Veronica M. Dill

BOLTON & MENK, INC.
Consulting Engineers & Surveyors

2638 Shadow Lane, Suite 200, Chaska, MN 55318
*Telephone: 952-448-8838 * Facsimile: 952-448-8805*

Letter of Transmittal

Date: 10/13/06
BMI Project No.: C12.37632

TO: Reviews Coordinator
Metropolitan Council
390 Robert St.
St. Paul, MN 55101

- ☐ Select FEDEX Option
- ☐ Select UPS Option
- ☒ Regular Mail
- ☐ Client Pick-up
- ☐ Hand Carry
- ☐ Fax
- ☐ Fax/Send

RE: Water Emergency and Conservation Plan

WE ARE ENCLOSING: 1 completed water emergency and conservation plan for the City of Mayer

FOR YOUR: ☐ Review ☐ Records ☒ Approval ☐ Distribution ☐ Information

REMARKS:

Cc:

By: Veronica M. Dell

Exhibit 8

Metropolitan Council

December 29, 2006

Environmental Services

Julie Ekman
Minnesota Department of Natural Resources
1200 Warner Rd.
St. Paul, MN 55106

Re: Water Supply Plan – City of Mayer
Metropolitan Council File Referral No. 19875-1
Metropolitan Council District 4

Dear Ms. Ekman:

The Metropolitan Council (Council) has completed its review of Mayer's water supply plan as required under Minnesota Statutes, Section 473.859, subd.3. As agreed upon, please include the following comments with the Department of Natural Resources' comments on the water supply plan.

The city calculated the average residential per capita demand over the past 5 years to be 77.84 gallons/day, which is slightly higher than the 2002 metropolitan average of 75 gpcd. The conservation section of the plan describes programs designed to lower this demand. The Council encourages the city to continue implementing its programs and potentially develop others targeted at lowering residential demand.

The plan indicates that the average percent of unaccounted for water use for the last five years was 11.1%. The American Water Works Association recommends that no more than 10% of the water appropriated be unaccounted for within the system. The Council commends the city for initiating a leak detection effort and for planning to install water meters on municipal uses in order to have a more accurate accounting of water use.

The city's average maximum day to average day ratio for the last five years was 2.7. While this is close to the metropolitan average of 2.6, the Council encourages the city to consider implementing time of day and odd/even watering restrictions during the entire summer rather than only during emergencies in an effort reduce its maximum day to average day ratio. Education programs targeted at reducing water use during peak times will also reduce the city's maximum to average day demand ratio as well as residential use.

The plan mentions that the city does not have water source alternatives. If feasible in the future, the Council recommends that the city look into water source alternatives including interconnections with neighboring communities to backup supplies in the event of a water supply emergency.

The population projections included within the plan are inconsistent with the Council's forecasts. This discrepancy will need to be rectified when the city submits its 2008 comprehensive plan update by providing updated forecasts as an amendment to the water supply plan. If there are

any other changes in water use or other areas of the water supply plan the city will need to provide the Council with the updated information when it submits its 2008 comprehensive plan.

This letter completes the Council's review process. Should any questions arise on the Council's review comments or on the process it followed, please feel free to contact Sara Bertelsen at (651) 602-1035.

Sincerely,

Keith Buttleman
Assistant General Manager, Environmental Quality Assurance

Cc: Luayn Murphy, City of Mayer
Julius C. Smith, Metropolitan Council Member, District 4
Jim Uttley, Metropolitan Council Sector Representative

October 31, 2007

Ms. Luayn Murphy
Wellhead Protection Manager
City of Mayer
413 Bluejay Avenue
P.O. Box 102
Mayer, Minnesota 55360

RE: City of Mayer Wellhead Protection Plan
Metropolitan Council District 4
Referral File No. 20101-1, 2

Dear Ms. Murphy:

The Metropolitan Council (Council) received Part 2 of the City of Mayer Wellhead Protection (WHP) Plan on October 8, 2007. Council staff have 60 days to review this plan, along with Part 1 of the plan, as an amendment to the public facilities section of the local comprehensive plan, under the provisions of Minnesota Statute §473.859, Subd. 3 (4) (vii). This WHP Plan provides a good overview of the supply source and measures to protect it. The following are some brief comments.

The projected water demand used to delineate wellhead protection areas in Part 1 of the WHP Plan is less than the Metropolitan Council projection of future water demand. This is a reflection of the inconsistency between the City of Mayer's population projections, included in the 2006 Water Supply Plan, and the Council's population forecasts. This discrepancy will need to be rectified when the city submits its 2008 comprehensive plan update by providing updated forecasts as an amendment to the water supply plan.

The remaining comments concern Part 2 of the WHP Plan.

Chapter 3.II.C (Status and Adequacy of Official Controls...), page 19, provides a list of state and local governmental units with regulatory authority that can be applied to wellhead protection. The list specifies that local government is able to apply land use controls, but it is unclear if local government refers only to the City of Mayer or if other local governments have jurisdiction as well. The WHP Plan will benefit from the identification of specific local governmental units and a detailed description of existing local land use controls. Because the WHP Plan predicts large land use changes due to population growth, the city has a unique opportunity to guide future land use in a way that protects the quality and quantity of future water supplies.

Chapter 5 (Objectives and Plan of Action) presents several good objectives and measures to support the goals identified in chapter 4 (Wellhead Protection Goals). However, chapter 5 does not discuss a water conservation plan – one of the stated goals of the WHP Plan. Chapter 5 should also include the municipal well water quality monitoring plans mentioned in chapter 3 (Issues, Problems and Opportunities), page 17.

Finally, the city should also consider adding a 'success criterion' to each action item presented in Chapter 5. This may aid the city in the implementation plan evaluation and could be included in the wellhead protection progress report. Examples could include recording the number of well maintenance newsletters and wellhead protection brochures sent, tracking the number of unused wells identified and sealed, etc.

This letter completes the Council's review process. On behalf of the Council, I thank you for your effort in preparing this plan. Please send us a copy of the finalized WHP Plan, if any revisions are made. Should any questions arise on the Council's review comments or on the process it followed, please feel free to contact Lanya Ross of the Council's Environmental Services Division at (651) 602-1803 or lanya.ross@metc.state.mn.us.

Sincerely,

Keith Buttleman
Assistant General Manager, Environmental Quality Assurance

Cc: Pat Curtiss, for Metropolitan Council District Member, District 4
Terry Bovee, Minnesota Department of Health
Jim Uttley, Metropolitan Council Sector Representative

MAYER

December 5, 2007

Keith Buttleman
Metropolitan Council Environmental Services
390 Robert Street North
St. Paul, MN 55101-1805

Dear Mr. Buttleman,

Thank you for your comments on the Wellhead Protection Plan Part II. The City has made your suggestions on the Chapter 3. II .C have been made and also the changes to Chapter 5 on a water conservation plan and included an objective on the monitoring plans.
The City will be meeting on an annual basis to review the goals and objectives and at that time information will be presented on the success of each of the goals. The City will be creating a separate document on the success of each action item.

If you have any further questions do not hesitate to call me at 952-657-1502.

Sincerely,

Luayn Murphy
City Administrator
City of Mayer

CITY OF MAYER
413 Bluejay Avenue • P.O. Box 102 • Mayer, MN 55360-0102 • Phone 952-657-1502 • Fax 952-657-1203 • cityofmayer.com