

* Plan of Action to Manage Potential Contaminant Sources

* Alternate Water Supply & Contingency Strategy

2014

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Public Water Supply Profile

Public Water Supply

Name: City of Winton

Address: P.O. Box 197

Winton, Minnesota 55796-0197

Telephone Number: <u>218-365-5941</u> Fax Number: _____

E-Mail: terrycj45@gmail.com

Population Served: <u>189</u> PWS ID Number: <u>1690057</u>

General Information

Unique Well Numbers and Names for Primary Wells:

Well #1 – Primary (189468); Well #3 – Primary (181951)

Unique Well Number and Name for Emergency Well:

Well #4 – Emergency (558881)

Wellhead Protection Manager

Name: <u>Terry Jackson</u>

Address: P.O. Box 197

Winton, Minnesota 55796-0197

Telephone Number: <u>218-365-4467</u> Fax Number _____

E-Mail: terrycj45@gmail.com

Documentation List

| Step | Date Performed | | | | | | | |
|---|----------------|--|--|--|--|--|--|--|
| Scoping 2 Meeting 2 (4720.5340, subp. 1) | November 2013 | | | | | | | |
| Scoping 2 Decision Notice (4720.5340, subp. 2) | November 2013 | | | | | | | |
| Remaining Portion of Plan Submitted to Local Government Units (LGUs) (4720.5350) | December 2014 | | | | | | | |
| Review Received From Local Government Units (4720.5350, subp. 2) | February 2015 | | | | | | | |
| Consider Comments from Local Government Units (4720.5350, subp. 3) | February 2015 | | | | | | | |
| Public Hearing Conducted on Part I and Part II WHP Plan (4720.5350, subp.4) | March 2015 | | | | | | | |
| Part II WHP Plan Submitted to MDH (4720.5360, subp. 1) | March 2015 | | | | | | | |

Glossary of Terms

<u>Data Element</u>: A specific type of information required by the Minnesota Department of Health to prepare a wellhead protection plan.

<u>Drinking Water Supply Management Area (DWSMA)</u>: The area delineated using identifiable land marks that reflects the scientifically calculated wellhead protection area boundaries as closely as possible (Minnesota Rules, part 4720.5100, subpart 13).

<u>Drinking Water Supply Management Area Vulnerability</u>: An assessment of the likelihood that the aquifer within the DWSMA is subject to impact from land and water uses within the wellhead protection area, based upon criteria that are specified under Minnesota Rules, part 4720.5210, subpart 3.

<u>Emergency Response Area (ERA)</u>: The part of the wellhead protection area that is defined by a one-year time of travel within the aquifer that is used by the public water supply well (Minnesota Rules, part 4720.5250, subpart 3). It is used to set priorities for managing potential contamination sources within the DWSMA.

<u>Inner Wellhead Management Zone (IWMZ)</u>: The land that is within 200 feet of a public water supply well (Minnesota Rules, part 4720.5100, subpart 19). The public water supplier must manage the IWMZ to help protect it from sources of pathogens or chemical contamination that may cause an acute health effect.

<u>Wellhead Protection (WHP)</u>: A method of preventing well contamination by effectively managing potential contamination sources in all or a portion of the well's recharge area.

<u>Wellhead Protection Area (WHPA)</u>: The surface and subsurface area surrounding a well or well field that supplies a public water system, through which contaminants are likely to move toward and reach the well or well field (Minnesota Statutes, section 1031.005, subdivision 24).

<u>Well Vulnerability</u>: An assessment of the likelihood that a well is at risk to human-caused contamination due to its construction, or as indicated by criteria specified in Minnesota Rules, part 4720.5550, subpart 2.

Acronyms

- **CWI -** County Well Index
- **DNR** Minnesota Department of Natural Resources
- DWSMA Drinking Water Supply Management Area
- EPA United States Environmental Protection Agency
- ERA Emergency Response Area
- FSA Farm Security Administration
- IWMZ Inner Wellhead Management Zone
- LGU Local Government Unit
- MDA Minnesota Department of Agriculture
- MDH Minnesota Department of Health
- MGS Minnesota Geological Survey
- MnDOT Minnesota Department of Transportation
- MnGEO Minnesota Geospatial Information Office
- MPCA Minnesota Pollution Control Agency
- NRCS Natural Resource Conservation Service
- SWCD Soil and Water Conservation District
- UMN University of Minnesota
- **USDA** United States Department of Agriculture
- **USGS** United States Geological Survey
- WHP Wellhead Protection
- WHPA Wellhead Protection Area

Part II Executive Summary

This portion of the wellhead protection (WHP) plan for the City of Winton is often referred to as Part 2, and 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 delineation of the wellhead protection area (WHPA) and the drinking water supply management area (DWSMA), and 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 April 11, 2012 (Exhibit 1). The boundaries of the WHPA/DWSMA are shown in Exhibit 2.

The vulnerability assessment for the aquifer within the DWSMA was performed using available information and indicates that the aquifer used by the system is considered to be highly vulnerable to contamination due of three factors:

1) Well #1 and #3 construction does not meet current State Well Code specifications

2) Geologic conditions at the well sites lack a cover of clay-rich geologic materials over the aquifer that is sufficient to retard or prevent the vertical movement of contaminants

3) Water samples were collected from Well #1 (189468), Well #3 (181951), and Fall Lake on August 31, 2011 and August 28, 2012, and were analyzed for tritium, nitrate, chloride, and bromide. The August 2011 samples contained water that had 8.4 and 15.3 tritium units (TU) for Wells 1 and 3, respectively. Nitrate was also detected in the 2011 samples at 1.3 and 0.47 milligrams per liter (mg/L) for Wells 1 and 3, respectively; however, 2012 nitrates were at non-detectable levels for both wells. This data confirms that the two wells are being impacted by recent recharge (Alexander and Alexander, 1989). In addition, the chloride and bromide results confirm that the wells have been impacted by land-use activities, with chloride-to-bromide ratios ranging between 558 and 3,441 for the two wells. These results support the vulnerability rating of the wells, indicating that the wells have the potential to be impacted by human activities occurring at the land surface.

Consequently, the principal potential sources of contamination to the aquifer are all types of potential contaminants and land use sources. This information was presented to the WHP Team during the Second Scoping meeting held November 12, 2013, when the necessary requirements for the content of Part 2 were outlined and discussed in detail by MDH staff.

The Part 2 Plan is comprised of seven chapters and an appendix. The Scoping 2 Decision Notice identifies the data elements that are required for the Part 2 Plan, and it is included in the Appendix as Exhibit 3. The potential contaminant sources that need to be inventoried are identified in the Scoping 2 Decision Notice Attachment. The rest of the exhibits address the required data elements.

The information and data contained in Chapters 1-4 of this part of the WHP Plan support the approaches taken to address potential contamination sources that have been identified as potentially affecting the aquifer used by the City of Winton. 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. 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 based on the assessment that the aquifer providing drinking water for the City of Winton is highly vulnerable to contamination from land uses, such as other wells that penetrate the same aquifer, land uses that either store liquids in tanks or dispose of liquids below the land surface, or land uses that can contribute contaminants to surface water runoff that can directly recharge the aquifer.

Chapter 2 addresses the possible impacts that changes in the physical environment, land use, and water resources may have on the public water supply. The WHP Team identified that no potentially significant changes will occur within the life of this plan.

The problems and opportunities concerning land use issues relating to the aquifer, well water, DWSMA, and those issues identified at public meetings, are addressed in Chapter 3. The highly vulnerable status of the aquifer, identified potential contaminants, and the good quality of water currently produced by Winton's wells requires that three major concerns be addressed by this plan:

- 1) other wells located within the DWSMA that could become pathways for contamination to enter the aquifer;
- 2) the pumping effects of high-capacity wells that may alter the boundaries of the delineated WHPA, reduce the hydraulic head in the aquifer, or result in movement of contamination toward Winton's wells; and
- 3) land uses that can contribute contaminants to surface water runoff that can directly recharge the aquifer.

The drinking water protection goals that the City of Winton would like to achieve with this plan are detailed in Chapter 4, and these goals are:

- 1) Maintain the current level of water quality, which meets all state and federal standards;
- 2) Increase awareness among public officials, landowners, and the general public about the importance of WHP in protecting the drinking water supply;
- 3) Protect the aquifer from which the city draws its drinking water;
- 4) Support ongoing data collection to supplement the existing geologic and hydro-geologic knowledge of the area, and enhance future WHP activities; and
- 5) Promote public health, economic development, and community infrastructure by ensuring a potable drinking water supply at reasonable costs for all residents of the community.

The objectives and implementation actions for managing potential sources of contamination are contained in Chapter 5. The WHP Team identified the following objectives to support the goals of Winton's WHP plan:

- Create awareness and understanding about the importance of WHP.
- Properly inventory and manage potential contaminant sources.
- Gather additional information within the DWSMA in order to better understand the size and vulnerability of the DWSMA.
- Effectively track and report the WHP plan implementation efforts and progress.
- Manage the Inner Wellhead Management Zone to prevent contamination of the aquifer near the public supply wells.
- Effectively prepare the City of Winton for disruptions of the water supply caused by contamination or mechanical failures of the public water supply distribution system.

Chapter 6 outlines the activities that will be undertaken to evaluate the implementation of the identified management strategies of Chapter 5. The wellhead protection program for the City of Winton will be evaluated on an annual basis prior to the city's budgeting process, and at 2.5 year intervals throughout the plan life, with a written evaluation to be completed for the first plan amendment meeting.

An emergency/contingency plan is included to address possible disruptions of the water supply caused by contamination or mechanical failure of the system. Chapter 7 contains details about the water supply distribution system, emergency contact numbers, equipment listings as well as other information to assist the City of Winton in responding quickly and effectively in emergency situations.

Summary of Wellhead Protection Actions for the City of Winton

| Wellhead Protection Action Item Descriptions | 2 0 1 5 | 2 0 1 6 | 2 0 1 7 | 2 0 1 8 | 2 0 1 9 | 2 0 2 0 | 2 0 2 1 | 2 0 2 2 | 2 0 2 3 | 2 0 2 4 | |
|--|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|--|
| WHP Education and Awareness | | | | | | | | | | | |
| Provide public display of a large DWSMA map. | ٠ | • | ٠ | • | • | • | ٠ | ٠ | • | • | |
| Provide residents of the City of Winton with periodic articles that explain the | | | | | | | | | | | |
| importance of WHP and highlight WHP management topics. | | | • | | | | • | | | | |
| Compile the internet web locations of existing fact sheets and other source water | | | | | | | | | | | |
| protection information, and make them available on the Wellhead Protection section | | • | | | | | | | | | |
| of the City of Winton's website, and maintain/update them throughout the plan life. | | | | | | | | | | | |
| Create and maintain a wellhead protection section on the city's website that includes | • | ٠ | • | • | • | ٠ | • | • | ٠ | ٠ | |
| Information on source water protection and best management. | | | | | | | | | _ | _ | |
| Potential Contaminant Source Management | | | | | | | | | | | |
| Promote the sealing of unused wells and monitoring wells that are no longer needed, | | | | | | | | | | | |
| provide well management information materials to landowners, and serve as a point- | | | | 0 |)ng | oir | ıg | | | | |
| of-contact for well-sealing funding opportunities. | | | | | U | | U | | | | |
| The City of Winton will collaborate with the MDH Source Water Protection Unit in | | | | | | | | | | | |
| the identification of new high-capacity wells that are proposed for construction within | Ongoing | | | | | | | | | | |
| the DWSMA or within one mile of the DWSMA. | | | | | | | | | | | |
| The WHP Team will update the PCSI map and table twice in the plan life. | | | | | • | | | | ٠ | | |
| The City of Winton will provide information to landowners of tanks on their property | | • | | | | • | | | | | |
| about proper management of storage tanks, and encourage conversion from fuel oil to propane where feasible | | | | | | | | | | | |
| The City of Winton will work with landowners to identify unused tanks, and seek | | | | | | | | | | | |
| funding to remove tanks, and complete work if funded. | | | | As | Ν | eec | led | | | | |
| Provide best management education materials to owners of SSTSs and wells. | | | | 0 |)ng | oir | ng | | | | |
| The City of Winton will collaborate with MDH to identify new/unknown Class 5 | | | | | | | | | | | |
| wells. | | | | U | ng | 011 | ıg | | | | |
| The City of Winton will educate landowners about proper management and disposal | | | | 0 |)no | oir | ıσ | | | | |
| of hazardous waste. | | | | | | on | -5 | | | | |
| The City of Winton will respond to new or unknown source water protection threats. | | | | As | N | eec | led | | | | |
| The City of Winton will educate landowners about proper turf management. | | | | As | N | eec | ded | | | | |
| The City of Winton will identify and address stormwater runoff threats to the quantity | | | | 0 |)ng | oir | ۱ø | | | | |
| or quality of its water supply. | | | | | 8 | | -8 | | | | |
| Emergency Preparedness and Response | | | | | | | | | | | |
| The City of Winton will mail a DWSMA map to the St. Louis County Highway | | • | | | | | | | | | |
| Department, and applicable emergency responders, and request consideration of the | | - | | | | | | | | | |
| DWSMA when conducting their responsibilities. | | | | | | | | | | | |
| The City of Winton will update their Contingency Plan twice during the plan life. | | | | | • | | | | • | | |

| Inner Wellhead Management Zone | | | | | 2 0 1 | 2 0 2 | 2 0 2 | 2 0 2 | 2 0 2 | 2 0 2 |
|--|---|---|---|---|-------------|-------------|-------------|-------------|-------------|-------------|
| Assist MDH staff in undating the Inner Wellboad Management Zone Inventory for | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 |
| the public water supply well. | | | | | • | | | | • | |
| Implement measures that are specified in the IWMZ PCSI report. | • | • | • | • | • | • | • | • | • | • |
| Monitor and maintain the 200 ft. radius around the wells to ensure that setback | • | • | • | • | • | • | • | • | • | • |
| distances for new potential contamination sources are met. | - | Ĩ | Ĩ | | - | - | - | - | - | - |
| Pursue partnerships and funding to improve security around the wells, water tower, and well house. | | • | | | | | | | | |
| Develop wellhead protection measures in consultation with MDH to address any new potential contaminant sources. | • | • | • | • | • | • | • | • | • | • |
| Data Collection | | | | | | | | | | |
| Coursels DWC multi-in-market with MDU | | | | | | | | | | |
| Sample PWS wells in partnership with MDH. | | | | | | ٠ | | | | |
| Cooperate with MDH to identify any new proposed wells within 2 miles of the DWSMA. | | | | 0 | ng | oir | ıg | | | |
| Continue to work with the City of Winton's well contractor to conduct periodic | | | _ | | | | | | | |
| specific capacity tests of the city wells three times during plan life. | | | • | | | • | | | • | |
| Determine the status and location of old municipal well #2 (ID 181998) in partnership with MDH. | | • | • | | | | | | | |
| Aquifer test in partnership with MDH, as opportunity presents itself during plan life, tentatively in 2020. | | | | | | • | | | | |
| Contact MDH and request assistance to partner with the DNR or MGS to conduct geophysical mapping of the aquifer | | • | | | | | | | | |
| Land Use Management | | | | | | | | | | |
| The WHP Team will discuss possible changes and/or additions to the city's land use | | | | | | | | | | _ |
| policies that will provide additional wellhead protection, and make formal | | | | | | • | | | | |
| recommendations to the City Council. | | | | | | | | | | |
| Reporting and Evaluation | | | | | | | | | | |
| Prepare and present a report on the previous year's and upcoming year's WHP implementation activities to the City of Winton on an annual basis | • | • | • | • | • | • | • | • | • | • |
| Prepare an assessment of WHP plan implementation efforts every 2 ¹ / ₂ years. | | | • | | • | | | • | | |
| Summarize all WHP Plan implementation efforts in a report to MDH when the WHP Plan is amended (usually in plan year 7 or 8). | | | | | | | • | • | | |

| Winton V | Vellhead Pr | otection I | Plan Imple | mentatio | n - Annu | al Grant Fi | und Oppo | rtunities | |
|----------|-------------|------------|------------|----------|----------|-------------|----------|-----------|-------|
| 2015 | 1,000 | 100 | | | | | | | 1,100 |
| 2016 | 500 | 210 | 240 | 600 | 300 | 100 | 100 | | 2,050 |
| 2017 | 250 | 200 | 300 | 100 | 200 | | | | 1,050 |
| 2018 | 100 | | | | | | | | 100 |
| 2019 | 500 | 100 | 100 | 100 | 200 | | | | 1,000 |
| 2020 | 210 | 100 | 200 | 900 | 100 | | | | 1.510 |
| 2021 | 250 | 100 | | | | | | | 350 |
| 2021 | 250 | 100 | | | | | | - | 550 |
| 2022 | 100 | 200 | 300 | | | | | | 600 |
| 2023 | 500 | 100 | 100 | 200 | 100 | | | | 1,000 |
| 2024 | 100 | | | | | | | | 100 |

Chapter 1 Data Elements and Assessment (4720.5200)

I. REQUIRED DATA ELEMENTS

The data elements to be assessed in Part 2 of the WHP Plan were specified in the Scoping 2 Decision Notice presented to the City of Winton by MDH staff during a meeting held on November 12, 2013. The selection of data elements for inclusion in the Part 2 was based on the determination that the DWSMA of Well #1 (189468) and Well #3 (181951), is considered highly vulnerable to contamination.

A. Physical Environment Data Elements

- Precipitation This data element is required because of the potential direct hydraulic connection between the land surface and the aquifer serving the City of Winton's wells. The precipitation station map and data were obtained from the Minnesota Climatology Working Group, and are found in the Appendix as Exhibits 4.1, and 4.2, respectively.
- Geology This data element is required and is presented in detail in the first part of the WHP Plan (see Exhibit 1) and thus is only summarized here. The water supply for the City of Winton is obtained from one primary well completed in the locally unconfined Quaternary Water Table Aquifer (Well #1), and one primary well located in the Quaternary Buried Unconfined Aquifer (Well #3). Ambient groundwater flow direction is northeasterly towards Fall Lake.
- 3. Soils This data element applies due to the vulnerable nature of the geologic setting. Soils with higher permeability can allow potential contaminants to infiltrate more quickly into the subsurface resulting in higher risk to the aquifer. The USDA Natural Resources Conservation Service provides digital soils data via the World Wide Web, and the soils map and data is contained in the Appendix as Exhibit 5.
- 4. Water Resources This data element, as defined by the state wellhead rule, is required because there is a potential direct hydraulic connection between the land surface and the aquifer serving this water supply system based on the water chemistry and isotopic data. Water resources information includes the major and minor watershed units the City of Winton is located in - the headwaters of the Newton Lake Outlet (minor) Watershed (#07072061) of the Rainy River Headwaters Basin (major). A watersheds map is contained in the Appendix as Exhibit 6.

Water resources data also includes wetlands regulated under MS 103G. A wetlands map is contained in the Appendix as Exhibit 7. A map of the floodplain as delineated by local ordinance does not exist, no public drainage ditches exist within the DWSMA, and the nearest public waters (Fall Lake - #38081100) is adjacent to the DWSMA boundary.

B. Land Use Data Elements

1. Land use - These data elements include information about parcel boundaries, political boundaries, public land surveys, land use maps, zoning maps, and potential contaminant sources. Information regarding parcel boundaries was obtained from the Saint Louis County online data website and was used to refine information included in the potential contaminant source inventory including location of potential contaminant sources and correct ownership names and addresses. Maps depicting the parcel boundaries and city boundaries are included in the Appendix as Exhibit 8, and Exhibit 9, respectively. Approximately half of the DWSMA is contained within the City of Winton's jurisdictional boundaries as shown in Exhibit 2, with the other half extending into Morse Township. Land use within the DWSMA is primarily wetland (Shrub/Scrub, Emergent Herbaceous, and wooded) vegetation, evergreen forest cover, and low-intensity development. A generalized land cover map and summary table is included in the Appendix as Exhibits 10.1 and 10.2, respectively.

<u>Potential Contaminant Source Inventory (PCSI)</u> – Due to the highly vulnerable designation of the DWSMA determined during the Part I WHP planning process, a review of all land uses located within the DWSMA is required. A comprehensive potential contaminant inventory report and map are included in the Appendix as Exhibits 11.1 and 11.2. At this time, no shallow disposal wells (EPA Class 5 injection wells) have been identified.

The Inner Wellhead Management Zone (IWMZ) is a fixed two-hundred foot radius around all public water supply wells. The public water supplier is responsible to manage all potential contaminant sources identified within that area. The IWMZ for both of Winton's wells was inventoried for potential contaminant sources for this planning process and the reports and accompanying maps are included in the Appendix as Exhibit 12. Management strategies for the IWMZ are included in the IWMZ report for each well, and discussed in Chapter 5.

2. Public/private Utility Services - Records of well construction and maintenance were used to develop Chapter 7 of this plan, which details an emergency/conservation plan for Winton's drinking water distribution system. No gas or pipelines or public drainage systems were found within the DWSMA. County Road 871 (aka Winton Road) exists within a large portion of the DWSMA and bisects the ERA of Well #1 (189468). This corridor serves as a potential contaminant source from surface water runoff, and sources associated with road maintenance activities and vehicular travel through the DWSMA.

C. Water Quantity Data Elements

- Surface water quantity This data element is required because there is a potential direct hydraulic connection between surface waters and the aquifer serving this water supply system. There are no known wateruse conflicts within the DWSMA.
- 2. Groundwater quantity Groundwater levels are adequate for the water volume that the City of Winton is permitted for under the groundwater appropriations program administered by the Minnesota Department of Natural Resources (DNR). At the current time, there are no other highcapacity wells within the DWSMA for which well interference complaints with Winton's wells have been documented. There appears to be sufficient groundwater quantity, based upon the existing pumping capacity of Winton's wells. This data element applies as it relates to future groundwater uses that may influence the ability of the aguifer to yield water to Winton's public water supply. Increased water use may result in a reduction in aquifer yield and/or increase the likelihood that contaminants of human or natural origin may affect the quality of drinking water. The City of Winton is the only water user within the DWSMA required to have a Minnesota Department of Natural Resources (MNDNR) appropriation permit. As listed in the MN DNR State Water Use Data System database, Winton, groundwater appropriation permit number 1986-2100, is permitted to appropriate up to 20.0 million gallons per year (MGY). The maximum annual water use over the five-year period 2007-2011 was 8.0 million gallons. The

City of Winton is unaware of any existing well interference problems or water use conflicts.

D. Water Quality Data Elements

- Surface water quality This data element applies because there is a potential direct hydraulic connection between surface waters and the aquifer serving this water supply system. The aquifer is susceptible of receiving direct vertical recharge of surface water due to the lack of clayrich geologic materials overlying the aquifer sufficient to retard the vertical movement of contaminants.
- 2. Groundwater quality These data elements include information about the overall water quality of the aquifer the City of Winton is using for public water supply purposes as well as other groundwater quality information generated from groundwater contamination studies.

A general overview of water quality data can be found in Winton's Consumer Confidence Report, which is included in the Appendix as Exhibit 13. It is important to note that these water quality results pertain to the distribution system water <u>after treatment</u>. Other existing information consists of isotopic and chemical analyses which indicate that the aquifer contains a measurable component of post-1953 water, suggesting that the wells have the potential to be impacted by human activities occurring at the land surface. This should be investigated further by conducting follow-up sampling of the stable isotopes and chloride/bromide ratio as Winton implements its wellhead protection plan so this will be better understood when the plan is amended.

According to the Minnesota Pollution Control Agency (MPCA), there are no known sites within the DWSMA that have experienced historic releases of petroleum products, or sites with other known contamination events. A search of the Minnesota Department of Agriculture's records also found no evidence of any contamination events or sites within the DWSMA.

II. ASSESSMENT OF DATA ELEMENTS

A. Use of the Wells

General information describing Winton's public water supply system is presented in Chapter 3 of the Part 1 WHP Plan (see Appendix Exhibit 1).

The City of Winton currently uses Well #1 (189468) and Well # 3 (181951) as its primary public water supply wells. Well #1 (189468) was constructed in 1981 with a 6-inch casing to a depth of 38 feet to the 8-foot screen for a total depth of 46 feet, with a reported static water level of 20 feet. Well #3 (181951) was constructed in 1982 with a 8-inch casing to a depth of 32 feet to the 8-foot screen for a total depth of 40 feet, with a reported static water level of 20 feet. Well #4 (558881) is currently designated as an emergency well, being constructed in 1996 with a 6-inch casing to a depth of 40 feet, and a total depth of 326 feet. On average, approximately 22,000 gallons of water is pumped daily. The system currently has one elevated storage tower with 50,000 gallon capacity. Water is treated for disinfection (chlorine) during and after maintenance activities and/or contamination events, and fluoride (hydrofluosilicic acid) is added prior to distribution.

B. Wellhead Protection Area Delineation Criteria

See the Part 1 WHP Plan (Exhibit 1) regarding how the following delineation criteria were applied to determine the boundaries of the WHPA:

Time of Travel – 10 years

<u>Flow Boundaries</u> – Fall Lake, Shagawa River, the small stream to the north, and bedrock outcrops were included in the groundwater flow model used to delineate the WHPA

Daily Volume – approximately 22,000 gallons per day

Ground Water Flow Field – northeasterly

<u>Aquifer Transmissivity</u> – 640 square feet per day derived from aquifer test plan for Well ID 181998 (sealed) and Well ID 181951.

The WHPA for the City of Winton's wells was determined using a regional MLAEM groundwater model that was specifically designed for the delineation. The input files are available from the MDH upon request. The method used to delineate the WHPA is discussed in greater detail in the Part I WHP Plan (Exhibit 1). The Part I WHP Plan also includes a detailed assessment of the data elements used for the delineation, and identifies their present and future implications. Further

refinement of some of the data elements will be identified as management strategies in Chapter 5 of this plan.

A conjunctive delineation was not conducted at this time because the isotopic compositions for samples from both wells suggests that a close hydrologic connection to Fall Lake does not exist, and other surface water features are not intercepted by the WHPA within a 10-year time of travel. Additionally, it was not clear whether topographically-driven overland runoff into the WHPA is an issue.

C. The Quality and Quantity of Water Supplying the Public Drinking Water Supply Wells

Water quality monitoring results for Winton's public water supply indicates evidence of contamination from human origin, specifically chloride, which is likely due to septic waste or road salt. At this time, problems with water quality are not an issue, as the system has enjoyed water quality that meets Federal Safe Drinking Water Act standards.

Historic information about Winton's source water has been researched and compiled into a report by MDH (see Appendix Exhibit 14). This Old Municipal Well Report provides excellent details and insight into the history of Winton's well development and associated uses over time. Copies of Winton's Municipal well logs are included in the Appendix as Exhibit 15.

D. Land and Groundwater Uses in the Drinking Water Supply Management Area

Proactive management of all potential contamination sources is recommended. The management strategies identified in Chapter 5 of this plan will focus on activities that have the most potential to positively impact the aquifers the City of Winton is using for its drinking water supply.

| TYPE of WELL | QUANTITY | ID NUMBERS |
|--------------------------|----------|--|
| Public Water Supply | 3 | Well #1 (189468), Well #3 (181951) Well #4 (558881) |
| | | Well #4 (558881) |
| Ag. Irrigation | 0 | - |
| Non-Ag. Irrigation | 0 | - |
| Industrial | 0 | - |
| Commercial | 0 | - |
| Dewatering | 0 | - |
| Domestic/School | 0 | - |
| Observation | 0 | - |
| Unused/Unsealed | 0 | - |
| Sealed/Reported to MDH | 0 | - |
| Monitoring | 0 | - |
| Scientific Investigation | 0 | - |
| Environmental Bore Hole | 0 | - |

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

Table 2. Summary of Potential Contaminant Sources Inventoried in the DrinkingWater Supply Management Area

| POTENTIAL CONTAMINANT SOURCE | NUMBER |
|---------------------------------|--------|
| Underground Storage Tank | 15 |
| Aboveground Storage Tank | 0 |
| Known Leak Sites | 0 |
| MPCA Brownfield Sites | 0 |
| Scientific Investigation | 0 |
| Monitoring Wells | 0 |
| Subsurface Wastewater | 2 |
| Treatment Systems | |
| Aggregate (Gravel) Pit | 1 |

Chapter 2 Impact of Changes on Public Water Supply Wells (4720.5220)

I. IDENTIFY AND DESCRIBE EXPECTED CHANGES

A. Physical Environment

Large-scale changes in the physical environment within the DWSMA are not currently anticipated during the 10-year period that this Plan is in effect.

B. Land Use

A substantial portion of the DWSMA extends into Morse Township. Additional wells outside of city limits and within the DWSMA will likely have little impact on the aquifer unless water demand is increased to the point that 1) loss in hydraulic head occurs within the aquifer used by Winton, or 2) pumping activity results in changes to the DWSMA boundary. Constructing additional wells into the aquifer may increase the points of entry, alter the DWSMA, or draw naturally-occurring or human-caused contaminants towards the PWS wells.

Land Use inside the Inner Wellhead Management Zone: The land within the 200foot radius is owned and controlled by the City of Winton, with the exception of Well # 3 (ID 181951), which is approximately 100 feet east from the adjacent property boundary with the Ely Rod and Gun Club. A recent inventory of the IWMZs identified potential contaminant sources (see Appendix Exhibit 12). Large-scale land use changes within the IWMZs are not expected to occur during the next 10 years.

C. Surface Water

There is a potential direct hydraulic connection between the land surface and the aquifer serving this water supply system based on the water chemistry and isotopic data. The City of Winton doesn't expect any changes in surface water to impact the aquifer the city uses for its drinking water. However, the City of Winton should effectively coordinate winter road maintenance activities on County Road 871 (aka Winton Road) to address potential impacts of road salt application and ditch runoff into the WHPA and ERA.

A MPCA Watershed Restoration and Protection Strategies (WRAPS) initiative has been implemented for the Rainy River – Headwaters Watershed that includes Fall Lake which has been declared impaired for Aquatic Consumption (mercury in fish tissue) in 1998. The WRAPS assessment is now completed, and a watershed modeling effort is in progress.

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 not anticipate a large increase in water use or is not aware of any such water use expansions in the DWSMA or immediately adjacent area. Other potential groundwater impacts are discussed in Section C. – Surface Water (above).

II. IMPACT OF CHANGES - List, Describe, and Assess Impacts on Aquifer

A. Expected Changes Identified Above -

None are anticipated by the City of Winton.

B. Influence of Existing Water and Land Government Programs & Regulation -

A number of local and state programs exist that may provide assistance and benefits in managing potential contaminant sources identified in the DWSMA. Following is a brief description of the major programs that have drinking water protection interactions.

Local Programs and Regulations

Saint Louis County Environmental Services Office implements the zoning and landuse permitting programs. The City of Winton can coordinate with Saint Louis County by requesting that the County inform them of proposed activities that may occur within or near the DWSMA that could impact the aquifer used by Winton so that the city can review and comment on these proposals.

Saint Louis County SWCDs implement the Saint Louis County Water Plan, and administers cost share dollars for well sealing. The Saint Louis County Local Water Management Plan has identified the protection of groundwater-based drinking water sources as a priority.

State of Minnesota Programs and Regulations

MDH Well Management regulates well construction standards found in Minnesota Rules Chapter 4725. Code requirements include minimum isolation distances as well as construction criteria designed to protect the well and aquifer.

MDH Drinking Water Protection Program protects public health by ensuring a safe and adequate supply of drinking water for all public water systems. This program includes Source Water Protection staff that assist in developing and implementing WHP plans.

Minnesota Pollution Control Agency has a tank storage program and has developed Best Management Practices (BMPs) for tank owners to help ensure proper and safe tank operation and maintenance. In addition, the MPCA manages a petroleum remediation program that addresses leaking tanks. This program has direct interaction with MDH staff in determining potential impacts to drinking water sources.

Minnesota Department of Natural Resources administers Minnesota Rules Chapter 6115 that requires water users to obtain an appropriation permit for withdrawal of more than 10,000 gallons of water per day or 1 million gallons per year. Winton is the only permitted water user within the DWSMA.

US Environmental Protection Agency enforces U.S. EPA 40 Code of Federal Regulations 144, Subpart G. This program deals in part with Class V injection wells that are used to inject non-hazardous fluids underground. Most Class V wells can pose a threat to ground water quality if not managed properly. Class V wells that receive motor vehicle waste (fluids from repair or maintenance of motor vehicles) are now banned. Other non-motor vehicle Class V injection wells need to be registered with the US EPA. There were no Class V injection wells identified in the PCSI. If Class V wells are found within the DWSMA, the City of Winton will inform the owner of US EPA requirements.

C. Administrative, Technical, and Financial Considerations -

The City of Winton 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 the efforts of this group, with assistance from other units of government. For this Plan to be effective:

1. The PWS will need to raise public awareness of the issues affecting the quality or quantity of its drinking water supply through public educational programs.

- 2. Administrative duties will remain with the Wellhead Protection Manager who will report to the Mayor and/or Winton City Council, coordinate implementation of wellhead protection activities, and conduct regular meetings and provide information.
- 3. The City of Winton has limited funds available for new programs and implementation of wellhead protection activities will be funded from the city's general operating fund, as is feasible. The addition of new, mandated programs can create a challenging situation when funding sources such as Local Government Aid may be unstable. Other sources of funding or in-kind services to help achieve the goals set forth in this Plan's Chapter 4 include: 1) the Source Water Protection grant program available through the MDH for implementation activities; 2) the well sealing cost-share program available through the Saint Louis County Soil and Water Conservation Districts; 3) MDH technical assistance with determining the proper procedures for sealing unused wells, constructing new wells, and requiring the sealing of unused wells if this becomes necessary; and 4) assistance available through the Minnesota Rural Water Association as a benefit of membership.

The costs of implementing Wellhead Protection activities will be evaluated on an annual basis to determine whether the original cost estimates match: 1) the scope of the management practices identified in this Plan; 2) changes in the status of the features identified in the potential contaminant source inventory; and 3) actual costs related to properly addressing the identified potential contaminants. Winton will discuss any changes in plan implementation costs with MDH to identify the availability of funding sources for offsetting increased costs to plan implementation.

Chapter 3 Issues, Problems and Opportunities (4720.5230)

The WHP Team identified water use and land use issues, problems, and opportunities related to the:

- aquifer serving the public water supply well,
- well water, and
- drinking water supply management area.

The issues, problems, and opportunities were identified by assessing: problems and opportunities discussed at public meetings; data elements described in Chapter One; and the status and adequacy of official controls, plans, and other local, state, and federal programs on water use and land use.

At the beginning of the planning process other Local Government Units (LGUs) were identified and informed that the City of Winton was beginning the wellhead protection planning process. Each unit of government was also sent a copy of Winton's delineated WHPA and DWSMA and vulnerability assessment for its public water supply wells and DWSMA. No comments from the LGUs were received. The general public was also given opportunities to participate in the planning process and to comment at the Public Informational Meeting, and Public Hearing. No concerns from the general public were received.

I. The Aquifer Serving the Public Water Supply Wells

The water supply for the City of Winton is obtained from two primary wells – Well #1 (189468) completed in the Quaternary Water Table Aquifer, and Well #3 (181951) completed in the Quaternary Buried Unconfined Aquifer. Within the well field area, the aquifer is 20 to 34 feet thick, and the geometric mean of the estimated aquifer thickness is 24.6 feet. A review of the geologic logs contained in the CWI database, geological maps, and reports indicate that the city's aquifer exhibits a very high geologic sensitivity throughout much of the DWSMA and is not isolated from the direct vertical recharge of surface water. At this time the aquifer appears to have sufficient capacity to meet Winton's needs.

II. The Well Water

The wellhead protection plan addresses all landuses and potential contaminant sources located within the DWSMA. The potential contaminant source inventory performed by the Wellhead Protection Team is listed in Table 2 (page 13).

The placement of additional high-capacity wells, increased pumping from existing wells, or significant changes in current groundwater appropriations or groundwater supply within the DWSMA may have an impact on: 1) groundwater availability to all users; 2) increased risk that contamination may enter the part of the aquifer used by the public water supply wells; or 3) the delineated WHPA and the DWSMA boundaries. The City of Winton will work with the DNR and MDH to become aware of any proposed high-capacity wells within the DWSMA, and will work with the well owner to minimize or eliminate potential impacts to Winton's water supply.

III. The Drinking Water Supply Management Area

The State of Minnesota'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 Winton'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 soils, groundwater flow conditions, and the groundwater chemistry of the aquifer within the DWSMA. The Part 1 WHP Plan discusses uncertainties associated with the limited amount of geologic and soils information currently available and provides recommendations to enhance the understanding of local hydro-geologic conditions (Exhibit 1).

Concerns expressed by the WHP Team are to ensure consistent and long-term management of water wells within the DWSMA, recognizing that Winton has limited legal capabilities to regulate well construction and sealing in the DWSMA. Also, changes in land use that increase pumping of the aquifer used by Winton's wells need to be assessed for its possible impacts on water quantity and quality. Finally, Winton has no regulatory authority over water appropriations and must rely on the State of Minnesota to address any related issues and concerns.

The City of Winton's DWSMA extends beyond the city's municipal boundaries and into adjoining Morse Township. Land use in Winton is primarily under control of the City Council, and landuse control in Morse Township is under the jurisdiction of Saint Louis County, who makes landuse decisions on their behalf. If a landuse permit is requested in Morse Township, a Morse Township LandUse Committee exists to review the application and make land use permitting recommendations to Saint Louis County. There are no known wells in the DWSMA other than the city wells.

The planning process revealed that Winton does not have an ordinance in place that prohibits the cross connection between other wells and the community water supply distribution system. The WHP Team did not recognize any parcels that currently have both a private well and city water services, and the city may address this at some point in the future. Current and future residents with access to city sewer and water will be required to connect to city services. The WHP Team assessed the current and future land use changes in the DWSMA and concluded little or benign land use changes are likely.

The City of Winton plans to utilize public education opportunities to address potential contamination of the aquifer by landuse conversions and potential contamination sources. Additionally, Winton will work in cooperation with the Saint Louis County Soil & Water Conservation District to utilize the well sealing cost-share program currently available, if needed.

Further, Winton will work with MDH to: 1) identify proposed wells that may present groundwater conflict 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 a groundwater appropriations permit.

The WHP Team reported that a large number of DWSMA residences utilize fuel oil as their heating source. The city will continue to work with MPCA, MDA, and MDH to: 1) track current and future locations of tanks; 2) enforce local land use performance standards for land uses that utilize tanks; 3) promote best management practices for all tanks; and 4) provide educational material to tank owners/operators.

Shallow disposal wells (also called Class V Injection Wells) are regulated by the U.S. EPA. No Class V Injection Wells were identified during the potential contaminant source inventory. However, the WHP Team is aware of the drinking water protection issues connected with this type of disposal system and will be monitoring for these types of facilities during the life of the plan. If a Class V Injection Well is identified in the future, the city will provide the well owners with educational materials regarding the use or management of these types of wells.

The City of Winton has recognized the importance of providing security for their water supply. While each well is unfenced, the pumphouse is locked and an outside light notifies observers if there is a power failure. The city is interested in furthering protection of their drinking water supply by constructing security fencing around the pumphouse and wells, and by installing other security-related equipment as is deemed necessary.

The City of Winton prides itself on working cooperatively with local and state entities, including Morse and Fall Lake Townships, DNR, MDH, DOT, MPCA, USDA, MRWA, and Saint Louis County. The history of Winton reveals that varied partnerships with these and other entities have resulted in positive accomplishments for the city, and Winton is committed to address wellhead protection planning with the same partnership perspective.

There are many tools available to the regulating agencies that may be used to achieve the wellhead protection planning goals identified by the WHP Team. State and local governmental units, such as MDH, Saint Louis County, and the DNR, regulate:

- ✓ Well construction MDH;
- ✓ Well sealing MDH;
- ✓ State groundwater appropriation permits DNR;
- ✓ Public water supply quality MDH;
- ✓ Setbacks for specific contaminant sources from a well MDH and local governments through conditional use permitting;
- ✓ Land use controls Local governments;
- ✓ Tank control program MPCA, MDA;
- ✓ Shallow disposal wells U.S. EPA.

The WHP Team recommends that no additional regulations be imposed at this time and are confident that local issues may be adequately addressed through existing processes. These processes include public education, adoption of best management practices for different types of wells, tank maintenance, water conservation, and open communication with other landowners within the DWSMA about the importance of wellhead protection.

Chapter 4 Wellhead Protection Goals (4720.5240)

The City of Winton's 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 further protect water quality and quantity.

GOALS:

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

- Maintain the current level of water quality, which meets all state and federal standards.
- Increase awareness among public officials, landowners, and the general public about the importance of WHP in protecting the drinking water supply.
- Protect the aquifer from which the city draws its drinking water.
- Support ongoing data collection efforts to supplement the existing geologic and hydro-geologic knowledge of the area, and enhance future WHP activities.
- Promote public health, economic development, and community infrastructure by ensuring a potable drinking water supply at reasonable costs for all residents of the community.

Chapter 5 Objectives and Plan of Action (4720.5250)

The aquifer providing water to Winton's public water supply system has been identified as highly vulnerable to contamination from land use activities. Objectives provide the focus for ensuring that the WHP Plan goals are met and that priority is given to specific actions that support multiple outcomes of plan implementation.

I. OBJECTIVES

The following objectives were identified by the WHP Team to support the goals of Winton's WHP plan:

- Create awareness and general knowledge about the importance of WHP in the City of Winton and the City of Winton's DWSMA.
- Properly inventory and manage potential contaminant sources to protect the drinking water supply for the City of Winton.
- Gather additional information within the DWSMA in order to better understand the size and vulnerability of the DWSMA.
- Effectively track and report the implementation efforts and wellhead protection plan progress to applicable governing authorities.
- Manage the Inner Wellhead Management Zone to prevent contamination of the aquifer near the public supply wells.
- Effectively prepare the City of Winton for disruptions to the water distribution system.

II. MANAGEMENT EFFORTS

Based upon these factors, the City of Winton will concentrate management efforts on the following categories to provide groundwater protection and help prevent future contamination of the aquifer serving their residents:

A. WHP Education & Awareness

B. Potential Contaminant Source Management:

- 1. Private Well Management
- 2. High Capacity Wells Management
- 3. Class V Wells Management
- 4. Above Ground and Below Ground Storage Tanks Management
- 5. Updating PCSI and Management of New Sources
- 6. Unidentified Sources Detection and Management
- 7. SSTS Maintenance and Management
- 8. Hazardous Waste Disposal and Management
- 9. Storm Water Runoff Management
- 10. Turf Management
- C. Emergency Preparedness and Response
- D. Inner Wellhead Management Zone Activities
- E. Data Collection
- F. Land Use Management
- G. Reporting and Evaluation

III. ESTABLISHING PRIORITIES

A number of factors must be considered when WHP measures are selected and prioritized (part 4720.5250, subpart 3). These factors include:

- Contamination of the public water supply wells by substances that exceed federal drinking water standards
- Quantifiable levels of contamination resulting from human activity
- The location of potential contaminant sources relative to the wells
- The number of each potential contaminant source identified and the nature of the potential contaminant associated with each source
- The capability of the geologic material to absorb a contaminant
- The effectiveness of existing controls
- The time required to get cooperation from other agencies and cooperators
- Administrative, legal, technical, and financial resources needed.

NOTE: The estimated costs to complete each individual action item are based on city staff's participation in completing the activity (unless noted otherwise) at an established rate per hour plus an estimated cost of materials.

A. WHP EDUCATION & AWARENESS

Objective A. Create awareness and general knowledge about the importance of WHP in the City of Winton and the City of Winton's DWSMA. Establish a public education program through personal communication, mailings, and media outlets (newspaper, radio, internet, etc.) to educate residents and the general public about wellhead protection activities and how individual land use decisions can affect groundwater quality and Winton's public water supply wells.

| Implementation Action Items | | | | | | | | | | | | | | | | | | | | | |
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| | | | | | | Ir | mple | emer | ntatio | n Tir | ne F | rame | : | | | | | | | | |
| Action | Description | Priority | Responsible Party ® & Cooperators © | Est. Cost | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | | | | | | | |
| Action | Create and maintain a permanent wellhead protection display at a | | WHP Manager | | | | | | | | | | | | | | | | | | |
| A-1 | local public building, the centerpiece to include a large wall map of | of 5 ® | | iff tir | х | | O | n-gc | oing | (mai | inter | anc | e) | | | | | | | | |
| | residents, city staff, and the Winton City Council. | - | MDIT @ | Sta | | | | | | | | | | | | | | | | | |
| Action | Create and maintain a permanent wellhead protection section on | | WHP Manager | (| | | | | | | | | | | | | | | | | |
| A-2 | the city website that will enable the city to utilize another method the educate its residents about WHP, and to serve as a reference and | | the city website that will enable the city to utilize another method to educate its residents about WHP and to serve as a reference and MDH | ୍ର R ମୁମ୍ମ MDH © | d to 5 ® and <u> </u> | d to 등 ind 프 | od to 등 ® and 표 MDH© | | 1,00(| 1,000 | 1,00(| х | | 0 | n-go | bing | (mai | inter | nanc | e) | |
| | resource for residents, city staff, and the Winton City Council. | - | MBITE | સં | | | | | | | | | | | | | | | | | |
| Action | Provide periodic articles or public service announcements to local | | | | | | | | | | | | | | | | | | | | |
| A-3 | media outlets describing or highlighting various WHP management strategies / topics found in this plan, or informing residents of WHP activities they can participate in. This information will also be | media outlets describing or highlighting various WHP management strategies / topics found in this plan, or informing residents of WHP activities they can participate in. This information will also be | media outlets describing or highlighting various WHP management E WHP Mana strategies / topics found in this plan, or informing residents of WHP 공 ® | E WHP Manager | ⊔ E WHP Manager E ® | 00 | | | v | | | | × | | | I | | | | | |
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| Implementation Action Items | | | | | | | | | | | | | | |
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| Action | Description | Priority | Responsible Party ® & Cooperators © | Est. Cost | 2015 | 2016 | 2017 3 | 2018 2018 | 5016 5016 | 2020 u | 2021 2021 | ame 5025 | 2023 | 2024 |
| Action A-4 | Compile the internet web locations of existing fact sheets that address a variety of land use best management practices and other source water protection information, and maintain an updated listing throughout the plan life. These existing fact sheets can be obtained through MDH, MRWA, MDA, or SWCD as noted in parenthesis () below. Contact your MDH Planner for assistance in obtaining contact information on topics or to answer questions about topic options. The fact sheets and other source water protection information will be available on the Wellhead Protection section of the City of Winton's website and will include, but not be limited to, information on: • Importance of well sealing and available cost-share funding for sealing wells (MDH, MDA, MRWA, SWCD) • Current Consumer Confidence Report (City) • General Source Water Protection Information (MDH) • Most recent Annual WHP Activities Report (City) • Copies of any WHP articles or announcements (City) • SSTS Management and Maintenance (MPCA) • Hazardous Household Waste (MPCA) • Turf Management (MPCA, MDA) | | WHP Manager ® Cooperators are noted after fact sheet listings © | \$500 | | x | | | | Dn-g | oing | | | |

B. INDIVIDUAL LANDOWNER MANAGEMENT PRACTICES

B-1. PRIVATE WELL MANAGEMENT

Objective B-1: Educate residents and promote proper well management in the DWSMA. Identify new wells that may be constructed within the DWSMA or existing wells that have not been previously identified. Promote proper well management and sealing of wells no longer in use.

| Implementation Action Items | | | | | | | | | | | | | | | |
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| | | | | | | l | mple | men | tatio | n Tir | ne F | rame | ; | | |
| Action | Description | Priority | Responsible Party ® & Cooperators © | Est. Cost | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | |
| Action | The City of Winton will promote the sealing of unused wells and | | | | | | | | | | | | | | |
| B-1a | DWSMA, through the distribution of educational items in the permanent wellhead protection display at a local public building. | High | WHP Manager ® | aff time | | | | | On-(| goin | g | | | | |
| | Upon request, the City will provide a reference list of agencies that can provide well-sealing funding options (Saint Louis County SWCD, MDH). | Sta | | | | | | | | | | | | | |
| Action | Provide well management informational materials applicable to | | WHP Manager | ne | | | | | | | | | | | |
| B-1b | private well owners to promote proper maintenance and management. The materials will be available on the Wellhead | High NDH & priv | High | MDH & private | aff tin | | | | | On-(| goin | g | | | |
| | Protection section of the City of Winton's website. | | well owners © | Sta | | | | | | | | | | | |
| Action B-1c | The wellhead protection team/manager will continually attempt to locate existing wells or new wells in the DWSMA by direct contact with landowners and through visual observation as the | High | WHP Manager | f time | | | | | x | | | | х | | |
| | WHP team travels through the DWSMA. Formal updates will occur twice in the plan life as identified in Measure B-5b. | | | | | | | | | | | | | | |

B-2. HIGH CAPACITY WELL MANAGEMENT

Objective B-2: Identify any new high-capacity wells that are proposed in the City of Winton's DWSMA so their potential impact on the public water supply wells can be evaluated, and actions to address them can be considered.

| Implementation Action Items | | | | | | | | | | | | | | |
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| | | | | | | | mple | men | tatio | n Tir | ne Fi | rame | ; | |
| Action | Description | Priority | Responsible Party ® & Cooperators © | Est. Cost | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
| Action B-2a | Collaborate with the MDH Source Water Protection Unit in the identification of new high-capacity wells that are proposed for construction within the DWSMA or within one mile of the DWSMA. The WHP Manager will alert the MDH Source Water Protection Unit upon learning about the construction or use of a high-capacity well in these areas. Potential impacts will be evaluated by MDH staff, and will be presented to the WHP Team for possible action. | High | WHP Manager ® MDH | Staff time | | | | (| Dn-g | Joing |) | | | |
| Action B-2b | If a high capacity well is identified within the DWSMA, the WHP Manager will contact the well owner and provide them with a map of the DWSMA and discuss the potential impact the high capacity well could have on the City of Winton's drinking water supply. | High | WHP Manager ® MDH & private well owners © | Staff time | | | | A | s Ne | eede | ed | | | |

B-3. CLASS V WELLS (SHALLOW DISPOSAL SYSTEM):

Objective B-3: Create awareness among commercial enterprises, local automotive shops, and garages about Class V wells, and discuss Federal EPA registration, permitting, and reporting requirements for Class V Wells.

| Implementation Action Items | | | | | | | | | | | | | | | | |
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| | | | | | Implementation Time Frame | | | | | | | | | | | |
| Action | Description | Priority | Responsible Party ® & Cooperators © | Est. Cost | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | | |
| Action | Collaborate with the MDH Source Water Protection Unit in the identification of new/unknown Class V wells that are within the DWSMA or within one mile of the DWSMA. The WHP Manager will elect the MDH Source Water Protection Unit upon learning | High | WHP Manager ® | aff time | | | | 0 | n-gc | bing | | | |] | | |
| D-38 | about the construction or use of Class V wells in these areas. | _ | MDH | Sta | | | | | | | | | | | | |
| Action | In the event a Class V well is identified, the WHP Manager will work cooperatively with MDH to determine the Class V well's status and potential impacts, and what reporting steps may be | | WHP Manager | Ð | | | | | | | | | | | | |
| B-3b | needed to register the Class V well with EPA. In addition, information will be provided to the landowner on technical services | High | MDH. EPA. | aff tim | | | | As | s Ne | ede | d | | | | | |
| | available through MNTAP to assess management and / or disposal alternatives. MN Technical Assistance Program (MNTAP's web site is: <u>http://www.mntap.umn.edu/</u>). | | MNTAP © | St | | | | | | | | | | | | |

B-4. ABOVE GROUND AND BELOW GROUND STORAGE TANK MANAGEMENT

Objective B-4: Provide opportunities to tank owners to receive information about the importance of maintenance and leak detection, and the potential impact to drinking water supplies that a leak could have.

| Implementation Action Items | | | | | | | | | | | | | | |
|-----------------------------|--|----------|---|------------------------|---------------------------|-----------|------|------|------|------|------|------|------|------|
| | | | | | Implementation Time Frame | | | | | | | | | |
| Action | Description | Priority | Responsible Party ® & Cooperators © | Est. Cost | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
| Action B-4a | Provide information to landowners in the DWSMA who have tanks on their property about the importance of preventing and reporting leaks, and in properly removing tanks that are no longer used or needed. | High | WHP Manager ® MPCA, MDH © | \$300 | | х | | | | x | | | | |
| Action B-4b | If unused tanks are identified, and the landowner is willing, the City of Winton will seek funding to help cover the cost of tank and tank infrastructure removal and site restoration. | High | WHP Manager ® MPCA, MDH © | Based on bids rec'd | | As Needed | | | | | | | | |
| Action B-4c | If the City of Winton's application for tank removal funding (Action B-4b) is successful, the tank(s) and associated infrastructure will be removed, and the site restored. | High | WHP Manager ® MPCA, MDH © | Based on bids rec'd | | As Needed | | | | | | | | |
| Action B-4d | Encourage known, and to be discovered, fuel oil using residents to convert from fuel oil to propane through personal communication or via the city website. | High | WHP Manager ® | \$120 | | х | | | | x | | | | |
B-5. UPDATING PCS INVENTORY AND MANAGEMENT OF NEW SOURCES

Objective B-5: Update potential sources of contamination as they become known, and properly inventory and manage potential contaminant sources to protect the drinking water supply for the City of Winton.

| | Implementation Ac | tion | Items | | | | | | | | | | | |
|----------------|--|----------|---|------------|------|------|------|------|--------|-------|-------|------|------|------|
| | | | | | | I | mple | mer | ntatio | n Tir | ne Fr | rame | | |
| Action | Description | Priority | Responsible Party ® & Cooperators © | Est. Cost | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
| Action B-5a | The WHP Manager and City staff will be looking for new or unknown potential sources of contamination as a part of their regular duties, and will coordinate with MDH staff as the potential sources are identified. The City of Winton will informally document the information as it becomes known, and the PCSI will be formally updated as described in Action B-5b. | High | WHP Manager ® MDH © | Staff time | | | | | On-(| goin | g | | | |
| Action B-5b | The City of Winton will collaborate with MDH and formally update the PCSI twice in the plan life. Updating the PCSI in Year 9 will provide valuable information for the subsequent plan amendment. | High | WHP Manager ® MDH © | \$1,000 | | | | | x | | | | x | |

B-6. UNIDENTIFIED SOURCES DETECTION and MANAGEMENT

Objective B-6: Implement activities that will address and manage any newly-identified potential contaminant sources to help protect the City of Winton's drinking water supplies.

| | Implementation Ac | tion | Items | | | | | | | | | | | |
|----------------|---|----------|---|--|------|------|------|------|-------|-------|-------|------|------|------|
| | | | | | | Ir | mple | men | tatio | n Tin | ne Fr | ame | | |
| Action | Description | Priority | Responsible Party ® & Cooperators © | Est. Cost | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
| Action B-6a | It is always difficult to accurately foresee or plan for the future. The City of Winton will use its planning and management capabilities identified within this plan to help respond to new/unknown source water protection issues that may impact the quality or quantity of its future drinking water. | High | WHP Manager ® MDH © | Staff Time with unknown associated project costs | | | | | On-g | going | 9 | | | |

B-7. SSTS MAINTENANCE and MANAGEMENT

Objective B-7: Implement activities that will address and manage any existing or new subsurface sewage treatment systems to help protect the City of Winton's drinking water supplies.

| | Implementation Ac | tion | Items | | | | | | | | | | | |
|--------|--|----------|---|-----------|------|------|------|------|-------|-------|--------|------|------|------|
| | | | | | | lr | mple | ment | tatio | n Tin | ne Fra | ame | | |
| Action | Description | Priority | Responsible Party ® & Cooperators © | Est. Cost | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
| Action | The City of Winton will use its planning and management | | WHP Manager | ы | | | | | | | | | | |
| B-7a | capabilities identified within this plan to educate any private SSTS | igh | ® | ff tin | | | | (| Dn-g | joing | , , | | | |
| | owners about proper maintenance of their system. | Н | MDH © | Sta | | | | | | | | | | |

B-8. HAZARDOUS WASTE DISPOSAL and MANAGEMENT

Objective B-8: Implement activities that will address and manage any hazardous waste sources to help protect the City of Winton's drinking water supplies.

| | Implementation Ac | tion | Items | | | | | | | | | | | |
|----------------|---|----------|---|------------|------|------|------|------|--------|-------|-------|------|------|------|
| | | | | | | lı | mple | men | itatio | n Tin | ne Fr | ame | • | |
| Action | Description | Priority | Responsible Party ® & Cooperators © | Est. Cost | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
| Action B-8a | The City of Winton will use its planning and management capabilities identified within this plan to educate landowners about proper management and disposal of hazardous waste. | High | WHP Manager ® MDH © | Staff time | | | | | On-ç | going | g | | | |
| | | | MDH© | S | | | | | | | | | | |

B-9. STORM WATER RUNOFF MANAGEMENT

Objective B-9: Implement activities that will address and manage any existing or new sources of storm water runoff to help protect the City of Winton's drinking water supplies.

| | Implementation Ac | tion | Items | | | | | | | | | | | |
|--------|--|----------|---|-------------------------|------|------|------|------|-------|-------|-------|------|------|------|
| | | | | | | lr | mple | men | tatio | n Tin | ne Fr | ame | | |
| Action | Description | Priority | Responsible Party ® & Cooperators © | Est. Cost | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
| Action | The City of Winton will use its planning and management | | WHP Manager | with n costs | | | | | | | | | | |
| B-9a | capabilities identified within this plan to identify and address any storm water rupoff threats that may impact the quality or quantity of | ligh | ® | Time know iated o | | | | (| On-g | going | 9 | | | |
| | its future drinking water. | | MDH © | Staff ur assoc | | | | | | | | | | |

B-10. TURF MANAGEMENT

Objective B-10: Implement activities that will address turf management (including the use of fertilizers, herbicides) to help protect the TBWB's drinking water supplies.

| | Implementation Ac | tion | Items | | | | | | | | | | | |
|--------|---|----------|---|-----------|------|------|------|------|-------|-------|--------|------|------|------|
| | | | | | | I | nple | men | tatio | n Tin | ne Fra | ame |) | |
| Action | Description | Priority | Responsible Party ® & Cooperators © | Est. Cost | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
| Action | The City of Winton will use its planning and management | | WHP Manager | e | | | | | | | | | | |
| B-10 | capabilities identified within this plan to identify and address any turf management issues that may impact the quality or quantity of | edium | ® | aff Tim | | | | As | s Ne | edeo | b | | | |
| | its future drinking water. | Ň | MDH © | Sta | | | | | | | | | | _ |

C. EMERGENCY PREPAREDNESS AND RESPONSE

Objective C-1: Create awareness about the City of Winton's WHPA along transportation corridors. Protect the groundwater and public water supply wells from possible contamination from accidental spills along roads and right of ways. Inform State and local emergency responders about the location of the DWSMA and WHP efforts.

| | Implementation Ac | tion | Items | | | | | | | | | | | |
|----------------|--|----------|--|-----------|------|------|------|------|-------|-------|------|------|------|------|
| | | | | | | | mple | emer | tatio | n Tin | ne F | rame | ; | |
| Action | Description | Priority | Responsible Party ® & Cooperators © | Est. Cost | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
| Action C-1a | Mail the County Highway Department a map of the DWSMA and correspondence informing them of the need for consideration of this area when completing road construction projects and/or maintenance (i.e. stormwater management or diversions, fuel storage locations, construction equipment management and maintenance, chemical storage and/or use, etc.) | High | WHP Manager ® MN DOT, County Highway Dept. © | \$120 | | x | | | | | | | | |
| Action C-1b | Through direct communication with the Saint Louis County Emergency Response Coordinator, Local Fire Department, MPCA, and local first responders, alert them to the location of the DWSMA by providing them a map and informing them of the City of Winton's WHP efforts. Request that strong consideration for high priority actions be given to the DWSMA when responding to a spill. | High | WHP Manager ® Local Fire Dept., Co. Emergency Manager, MPCA Spill Units © | \$120 | | × | | | | | | | | |
| Action C-1c | Improve the readiness of Winton to respond to drinking water- related emergencies by reviewing and updating the City of Winton's WHP Contingency Plan. | High | WHP Manager ® WHP Team, City Council © | \$200 | | | | | x | | | | x | |

D. INNER WELLHEAD MANAGEMENT ZONE ACTIVITIES

Objective D-1: Effectively manage the IWMZ (200' radius around public water supply wells) to reduce the likelihood of contaminants from entering the City of Winton's wells at levels that result in human health impacts.

| | Implementation Ac | tion | Items | | | | | | | | | | | |
|----------------|---|----------|---|---------------|------|------|------|------|--------|-------|------|------|------|------|
| | | | | | | | mple | mer | ntatio | n Tir | ne F | rame | | |
| Action | Description | Priority | Responsible Party ® & Cooperators © | Est. Cost | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
| Action D-1a | Assist MDH staff in completing the IWMZ survey for the public water supply wells at least every five years. | High | MDH ® WHP Manager © | \$200 | | | | | x | | | | x | |
| Action D-1b | Implement the WHP Measures specified in the current or future IWMZ PCSI Inventory Reports. | High | WHP Manager ® | Staff time | | | | (| On-g | joing | 3 | | | |
| Action D-1c | The WHP Team will develop wellhead protection measures in consultation with MDH to address any new potential contaminant sources identified in future IWMZ inventories/surveys. | High | WHP Manager ® MDH © | Staff time | | | | A | s Ne | ede | d | | | |
| Action D-1d | The WHP Team will continue to monitor setbacks for all new potential sources of contamination located within the IWMZ. | High | WHP Manager ® | Staff time | | | | A | s Ne | ede | ed | | | |
| Action D-1e | Pursue partnerships and funding to update the security around the wells storage tower, and well-house that may include, but are not limited to, structural improvements, lighting, security fencing, security cameras, and lockable access gates. | High | WHP Manager ® MDH © | \$600 | | x | | | | | | | | |
| Action D-1f | If partnerships and funding is secured (Action D-1e), the city will complete the identified security improvements. | High | WHP Manager ® MDH © | \$10,000 | | | х | | | | | | | |

E. DATA COLLECTION

Objective E-1: Gather additional water quantity and quality information within the DWSMA in order to better understand the interaction of surface waters and recharge to the aquifer from which the City of Winton draws their drinking water.

| | Implementation Ac | tion | Items | | | | | | | | | | | |
|----------------|---|----------|---|------------|------|-------|------------|--------------|----------------|----------------|-----------------|------------|-------|------|
| | | | | | | | mple | emer | ntatio | n Tir | ne Fr | rame | | |
| Action | Description | Priority | Responsible Party ® & Cooperators © | Est. Cost | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
| Action E-1a | With the assistance of the MDH, the public water supply wells will be sampled. The City will contact the MDH to determine the testing parameters and methodology prior to undertaking this activity. The testing efforts are contingent upon the availability of MDH funds to pay for the testing expenses. | High | WHP Manager ® MDH © | \$100 | | | | | | x | | | | |
| Action E-1b | Working in cooperation with MDH, determine the locations of any new wells proposed to be drilled within 2 miles of the City of Winton. Identifying the location of any new wells and their boring stratigraphy will help MDH hydrogeology staff better understand the geology of the area around the WHPA, which will be very helpful when beginning the WHP plan amendment process. | Medium | WHP Manager ® MDH © | Staff time | | | | | On-ç | going | 3 | | | |
| Action E-1c | Continue to work with the city's well contractor to conduct periodic specific capacity tests of the city wells. Work will be completed three times periodically throughout the plan life. | Medium | WHP Manager ® DNR © | \$600 | | 3 tim | ies d 2 | durir 017 | ng pl , 202 | an li 20, 8 | fe, te a 202 | enta 23 | tivel | ~ |
| Action E-1d | Contact MDH and request assistance in identifying the status and location of old municipal well #2 (ID 181998), which is suspected of being sealed, but no sealing record is available. MDH staff could utilize a magnetometer to aid in the well locating. If the well is located and requires sealing, the city will submit a grant request to MDH and seal it the following year, if funded. | High | WHP Manager ® DNR © | \$600 | | x | x | | | | | | | |

| Action E-1e | Contact MDH and request assistance to partner with the DNR or MGS to conduct geophysical mapping of the aquifer to determine whether the aquifer is confined and protected within the southwestern corner of the DWSMA. Timing is dependent upon DNR or MGS availability and funding. | High | WHP Manager ® DNR/MGS © | \$100 | x | | | | |
|----------------|---|------|-------------------------------|------------|---|--|---|--|--|
| Action E-1f | Contact MDH and request assistance to perform an aquifer test as the opportunity presents itself, often in coordination with city's well contractor performing maintenance or specific capacity tests. Costs to the city associated with this activity should be minimal. | High | WHP Manager ® MDH © | Staff time | | | x | | |

F. LAND USE MANAGEMENT

Objective F-1: Promote land use management efforts that results in a better understanding of Winton's source water vulnerability and the opportunities to provide protection through local decision-making and implementation.

| | Implementation Ac | tion | Items | | | | | | | | | | | |
|----------------|--|----------|---|-----------|------|------|------|------|-------|-------|------|------|------|------|
| | | | | | | I | mple | men | tatio | n Tin | ne F | rame | | |
| Action | Description | Priority | Responsible Party ® & Cooperators © | Est. Cost | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
| Action F-1a | The WHP Team will discuss possible changes and/or additions to the city's land use policies that will provide additional wellhead protection, and make formal recommendations to the City Council. | High | WHP Manager ® | 006\$ | | | | | | x | | | | |
| | | | | | | | | | | | | | | |

G. REPORTING

Objective G-1: Provide for an evaluation program of the City of Winton's wellhead protection program.

| | Implementation Ac | tion | Items | | | | | | | | | | | |
|----------------|--|----------|---|-----------|------|------|------|------|-------|-------|------|------|------|------|
| | | | | | | | mple | emen | tatio | n Tir | ne F | rame | ; | |
| Action | Description | Priority | Responsible Party ® & Cooperators © | Est. Cost | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
| Action | Prepare an annual written summary of wellhead protection efforts | | WHP Manager | | | | | | | | | | | |
| G-1a | to present to the Winton City Council and residents. These summaries will be placed on, and be available at, the Wellhead Protection section of the City of Winton's website. | High | ® | 006\$ | x | Х | Х | x | Х | Х | x | х | x | Х |
| Action G-1b | Prepare a written evaluation of WHP plan implementation efforts every 2.5 years or less, per MN Rule 4720.5270 Subpart 4 using the results from the annual reports identified in Action G-1a. | High | WHP Manager ® | 009\$ | | | х | | x | | | x | | |
| Action G-1c | Prepare a written summary of WHP implementation efforts in a report to MDH that is presented to the MDH at the Scoping 1 meeting for the subsequent plan amendment (usually in Year 8 of plan implementation). | High | WHP Manager ® | 00£\$ | | | | | | | | x | | |

<u>NOTE</u>: The total estimated value of services, based on 2014 currency values, for Winton City staff to implement the identified action items over the 10-year Wellhead Protection Plan life, is estimated to be \$18,760.

IV. At-A-Glance 10-Year Implementation Calendar

Summary of Wellhead Protection Actions for the City of Winton

| Wellhead Protection Action Item Descriptions | | 2 0 1 6 | 2 0 1 7 | 2 0 1 8 | 2 0 1 9 | 2 0 2 0 | 2 0 2 1 | 2 0 2 2 | 2 0 2 3 | 2 0 2 4 |
|--|--------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| WHP Education and Awareness | | | | | | | | | | |
| Provide public display of a large DWSMA map. | | | | • | • | • | ٠ | ٠ | • | • |
| Provide residents of the City of Winton with periodic articles that explain the | | | | | | | | | | |
| importance of WHP and highlight WHP management topics. | | | • | | | | • | | | |
| Compile the internet web locations of existing fact sheets and other source water | | | | | | | | | | |
| protection information, and make them available on the Wellhead Protection section | | • | | | | | | | | |
| of the City of Winton's website, and maintain/update them throughout the plan life. | | | | | | | | | | |
| Create and maintain a wellhead protection section on the city's website that includes | • | ٠ | ٠ | • | • | ٠ | • | • | • | ٠ |
| Information on source water protection and best management. | | | | | | | | | _ | _ |
| Potential Contaminant Source Management | | | | | | | | | | |
| Promote the sealing of unused wells and monitoring wells that are no longer needed, | | | | | | | | | | |
| provide well management information materials to landowners, and serve as a point- | Ongoing | | | | | | | | | |
| of-contact for well-sealing funding opportunities. | | | | <u> </u> | | | | | | |
| The City of Winton will collaborate with the MDH Source Water Protection Unit in | t in | | | | | | | | | |
| the identification of new high-capacity wells that are proposed for construction within | | | | О |)ng | oir | ıg | | | |
| the DWSMA or within one mile of the DWSMA. | | | | | | | | | | |
| The WHP Team will update the PCSI map and table twice in the plan life. | | | | | • | | | | ٠ | |
| The City of Winton will provide information to landowners of tanks on their property | | • | | | | • | | | | |
| about proper management of storage tanks, and encourage conversion from fuel oil to propane where feasible | | | | | | | | | | |
| The City of Winton will work with landowners to identify unused tanks, and seek | k | | | | | | | | | |
| funding to remove tanks, and complete work if funded. | As Needed | | | | | | | | | |
| Provide best management education materials to owners of SSTSs and wells. | Ongoing | | | | | | | | | |
| The City of Winton will collaborate with MDH to identify new/unknown Class 5 | | | | 0 | | | 0 | | | |
| wells. | | | | U | ng | 011 | ıg | | | |
| The City of Winton will educate landowners about proper management and disposal | | | | 0 |)no | oir | ıσ | | | |
| of hazardous waste. | Oligonig | | | | | | | | | |
| The City of Winton will respond to new or unknown source water protection threats. | s. As Needed | | | | | | | | | |
| The City of Winton will educate landowners about proper turf management. | As Needed | | | | | | | | | |
| The City of Winton will identify and address stormwater runoff threats to the quantity | | | | 0 |)ng | oir | ۱ø | | | |
| or quality of its water supply. | | | | | 8 | | -8 | | | |
| Emergency Preparedness and Response | | | | | | | | | | |
| The City of Winton will mail a DWSMA map to the St. Louis County Highway | | • | | | | | | | | |
| Department, and applicable emergency responders, and request consideration of the | | - | | | | | | | | |
| DWSMA when conducting their responsibilities. | | | | | | | | | | |
| The City of Winton will update their Contingency Plan twice during the plan life. | | | | | • | | | | • | |

| Inner Wellhead Management Zone | 2 0 1 | 2 0 1 | 2 0 1 | 2 0 1 | 2 0 1 | 2 0 2 | 2 0 2 | 2 0 2 | 2 0 2 | 2 0 2 |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Assist MDH staff in undating the Inner Wellboad Management Zone Inventory for | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 |
| the public water supply well. | | | | | • | | | | • | |
| Implement measures that are specified in the IWMZ PCSI report. | • | • | • | • | • | • | • | • | • | • |
| Monitor and maintain the 200 ft. radius around the wells to ensure that setback | • | • | • | • | • | • | • | • | • | • |
| distances for new potential contamination sources are met. | - | Ĩ | Ĩ | | - | - | - | - | - | - |
| Pursue partnerships and funding to improve security around the wells, water tower, and well house. | | • | | | | | | | | |
| Develop wellhead protection measures in consultation with MDH to address any new potential contaminant sources. | • | • | • | • | • | • | • | • | • | • |
| Data Collection | | | | | | | | | | |
| Coursels DWC multi-in-market with MDU | | | | | | | | | | |
| Sample PWS wells in partnership with MDH. | | | | | | ٠ | | | | |
| Cooperate with MDH to identify any new proposed wells within 2 miles of the DWSMA. | Ongoing | | | | | | | | | |
| Continue to work with the City of Winton's well contractor to conduct periodic | | | _ | | | | | | | |
| specific capacity tests of the city wells three times during plan life. | | | • | | | • | | | • | |
| Determine the status and location of old municipal well #2 (ID 181998) in partnership with MDH | | • | • | | | | | | | |
| Aquifer test in partnership with MDH, as opportunity presents itself during plan life, tentatively in 2020 | | | | | | • | | | | |
| Contact MDH and request assistance to partner with the DNR or MGS to conduct geophysical mapping of the aquifer | | • | | | | | | | | |
| Land Use Management | | | | | | | | | | |
| The WHP Team will discuss possible changes and/or additions to the city's land use | | | | | | | | | | _ |
| policies that will provide additional wellhead protection, and make formal | | | | | | • | | | | |
| recommendations to the City Council. | | | | | | | | | | |
| Reporting and Evaluation | | | | | | | | | | |
| Prepare and present a report on the previous year's and upcoming year's WHP implementation activities to the City of Winton on an annual basis | • | • | • | • | • | • | • | • | • | • |
| Prepare an assessment of WHP plan implementation efforts every 2 ¹ / ₂ years. | | | • | | • | | | • | | |
| Summarize all WHP Plan implementation efforts in a report to MDH when the WHP Plan is amended (usually in plan year 7 or 8). | | | | | | | • | • | | |

| Winton V | Vellhead Pr | otection I | Plan Imple | mentatio | n - Annu | al Grant Fi | und Oppo | rtunities | |
|----------|-------------|------------|------------|----------|----------|-------------|----------|-----------|-------|
| 2015 | 1,000 | 100 | | | | | | | 1,100 |
| 2016 | 500 | 210 | 240 | 600 | 300 | 100 | 100 | | 2,050 |
| 2017 | 250 | 200 | 300 | 100 | 200 | | | | 1,050 |
| 2018 | 100 | | | | | | | | 100 |
| 2019 | 500 | 100 | 100 | 100 | 200 | | | | 1,000 |
| 2020 | 210 | 100 | 200 | 900 | 100 | | | | 1.510 |
| 2021 | 250 | 100 | | | | | | | 350 |
| 2021 | 250 | 100 | | | | | | - | 550 |
| 2022 | 100 | 200 | 300 | | | | | | 600 |
| 2023 | 500 | 100 | 100 | 200 | 100 | | | | 1,000 |
| 2024 | 100 | | | | | | | | 100 |

Chapter 6 Evaluation Program (4720.5270)

I. EVALUATION APPROACH

The success of the wellhead protection management program must be evaluated in order to determine whether the plan is actually accomplishing what the City of Winton set out to do. The following activities to evaluate the progress of the plan of action as outlined in 4720.5270 will be implemented to:

- 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.

Document inventory control of potential contaminants (PCSs)

The WHP Manager and City staff will be looking for new or unknown potential sources of contamination as a part of their regular duties, and will coordinate with MDH staff as the potential sources are identified. The City will informally document the information as it becomes known. The City of Winton will review information available from MDH, MDA, MPCA, and Saint Louis County in Year 5 and Year 9 to update information on potential contaminant sources (PCSs) and add or delete PCSs to the inventory as needed.

Document the implementation of wellhead protection measures

The City of Winton will maintain a file related to implementation of wellhead protection measures.

Use monitoring data required by existing laws and rule

The City of Winton will continue to cooperate with MDH in the annual monitoring of the water supply to determine whether the management strategies are having a positive effect and to identify any water quality problems that may arise which must be addressed.

II. EVALUATION FREQUENCY AND SUBMITTAL

- The wellhead protection team will meet on an as-needed basis, with a minimum of one meeting per year, 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 identify additional strategies for the coming plan year.
- 2) The wellhead protection plan manager will make an annual written report to the Winton City Council discussing progress in implementing the wellhead protection and management objectives of this Plan. The annual reports will be compiled and used to review the overall progress in implementing the source water protection strategies when the system's wellhead protection plan is amended.
- 3) The City of Winton will prepare an internal assessment of plan implementation every two and one half years and will summarize its progress with plan implementation when the plan amendment process begins. A copy of the report will be sent to the Minnesota Department of Health Source Water Protection Unit in St. Paul and another copy will be placed in the system's Wellhead Protection file.

The evaluations therefore will be done at 2.5 years, 5 years, and 7.5 years after the plan is approved. A written, summarized evaluation will be presented to Minnesota Department of Health staff at the Scoping 1 meeting held to amend the existing plan.

Chapter 7 Alternative Water Supply; Contingency Strategy (4720.5280)

I. PUBLIC WATER SUPPLY CHARACTERISTICS

A. Purpose

The purpose of this Contingency Plan is to establish, provide, and keep updated, certain emergency response procedures and information for the City of Winton, which may become vital in the event of a partial or total loss of public water supply services resulting from natural disaster, chemical contamination, civil disorder, or human-caused disruptions.

B. Public Water Supply Characteristics

Winton has two primary wells, producing approximately 22,000 gallons per day.

| | WELL #1 | WELL #3 |
|------------------------|------------------|------------------|
| | PRIMARY | PRIMARY |
| UNIQUE WELL ID # | 189468 | 181951 |
| AQUIFER SOURCE | QWTA | QBUA |
| Well Depth (ft.) | 46 | 40 |
| Well Diameter (in.) | 6 | 8 |
| CASING DEPTH (FT.) | 38 | 32 |
| Well Production (gpm) | 77 | 42 |
| DATE CONSTRUCTED | 1981 | 1982 |
| GREATEST TOTAL ANNUAL | 4.0 MILLION GALS | 4.0 MILLION GALS |
| WELL VOLUME DISCHARGED | (2010) | (2010) |

QWTA – Quaternary Water Table Aquifer; QBUA – Quaternary Buried Unconfined Aquifer

C. Water Treatment

Water is treated for disinfection (chlorine) before and after maintenance or contamination events, and fluoride is added prior to distribution.

D. Storage and Distribution

The City of Winton has one elevated storage tower with 50,000 gallon capacity. The city uses approximately 16,000 gallons per day on average with peak use being approximately 22,000 gallons per day. Maps and plans are on file in the city offices.

II. PRIORITY WATER USERS DURING WATER SUPPLY EMERGENCY

The following table identifies the priority that water users will receive in the event of a major system disruption.

| Type of Use And Priority Ranking | Maximum Daily Use (gpd) | Minimum Daily Use (gpd) |
|--|----------------------------|----------------------------|
| Residential - #1 | 16,000 | 10,000 |
| Institutional - #2 | 0 | 0 |
| Commercial - #3 | 800 | 500 |

III. ALTERNATIVE WATER SUPPLY

The City of Winton sits in close proximity to Fall Lake, which could serve as a potential emergency water source as the Minnesota National Guard may be able to provide emergency treatment of surface water for human consumption. In the event of significant water disruption emergency, the following procedure is recommended:

- a. Contact the Saint Louis County Sheriff at (218) 262-0132 to request assistance from the Minnesota National Guard.
- b. The Saint Louis County Sheriff will contact the Minnesota National Guard; Division of Emergency Management, and State Duty Officer (800) 422-0798 to request assistance for Winton.
- c. The Minnesota National Guard can provide a portable ROWPU (Reverse Osmosis Water Purification Unit) capable of supplying 900 gph or 15 gpm.

E. Bottled Water Supplies, Delivery, and Distribution

Distributors in the Winton area that could provide large quantities of bottled water include:

- Aysta Water Inc., Virginia, MN (888) 749-4426
- Buhl Water Co., Buhl, MN (218) 258-3258
- Walmart, Hibbing, MN (218) 262-2351

Other Water Supply Alternatives

- a.) There are no water system interconnects available.
- b.) No other new wells are planned at this time.

IV. INVENTORY OF SERVICES, EQUIPMENT AND SUPPLIES

The following table contains a list of services, equipment and supplies that are available to the City of Winton in the event of a disruption in the water system. Included in this list are services, equipment and supplies that are not immediately available but can be obtained and their approximate acquisition time.

| Description | CONTACT NAME | Telephone | Location | Acquisition Time |
|-----------------|----------------------------------|--------------|---------------|------------------|
| Well Repair | Petersen Well Drilling | 800-662-5700 | Mountain Iron | ~ 1 hr |
| Pump Repair | Thein Well Rochester, Inc. | 800-314-9355 | Rochester | ~ 5 hrs |
| Electrician | Canoe Country Electric | 218-349-0470 | Ely | ~1/2 hr |
| Backhoe | E-Z Excavating | 218-365-4499 | Ely | ~1/2 hr |
| Chemical Feed | Hawkins Water Treatment Group | 715-398-5653 | Superior, WI | ~2 hrs |
| Meter Repair | Bruce Pietig | 612-924-0365 | Plymouth | ~3.5 hrs |
| Generator | City of Ely | 855-884-1374 | Ely | ~1/2 hr |
| Valves | Casper Construction | 218-326-9637 | Grand Rapids | ~2 hrs |
| Pipe & fittings | Casper Construction | 218-326-9637 | Grand Rapids | ~2 hrs |

CONTINGENCY STRATEGY PROCEDURES

A. Incident Response Procedures

| INCIDENT/ACTIVITIES | RESPONSE PROCEDURES |
|------------------------|--|
| | DERSON IDENTIFYING A DISDUDTION CONTACTS THE MELLIFAD DROTECTION MANAGER OR |
| | MAYOR WILL DETERMINE THE CONDITION AND SCORE OF THE SITUATION OF THEY |
| | DETERMINE THAT THE DISPUBLICIAN DECLIDES STATE LEVEL ASSISTANCE THE MINNESOTA STATE |
| | DITY OFFICER 1-800-422-0798 will be notified. If there is an immediate threat to life |
| | OR PROPERTY, 911 WILL BE CALLED. |
| RESPONSE PERSONNEL | THE MAYOR WILL BE THE INCIDENT RESPONSE COORDINATOR. THE CITY CLERK WILL BE THE |
| NOTIFICATION | PUBLIC RELATIONS COORDINATOR. MDH DWP COMMUNITY UNIT WILL BE NOTIFIED |
| | THROUGH THE MINNESOTA STATE DUTY OFFICE <u>1-800-422-0798</u> . MDH will coordinate |
| | WATER SAMPLING, AND DETERMINATION FOR DRINKING WATER ADVISORIES, ETC. |
| INCIDENT DIRECTION AND | The Incident Response Coordinator may consult with the City Engineer to identify |
| CONTROL | EQUIPMENT, SERVICES, AND SUPPLIES NEEDED TO CORRECT THE WATER SUPPLY DISRUPTION. |
| | THE INCIDENT RESPONSE COORDINATOR WILL DIRECT OPERATIONS TO IMPLEMENT CORRECTIVE |
| | ACTIONS, AND MAY INSTRUCT CITY STAFF TO CONTACT SERVICE PROVIDERS, EQUIPMENT, AND |
| | SUPPLIES NEEDED TO ADDRESS THE DISRUPTION. |
| INTERNAL COMMUNICATION | Incident Response Coordinator will communicate the status of response efforts to |
| | THE PUBLIC RELATIONS CONTACT WHO WILL INFORM CITY STAFF, CITY COUNCIL MEMBERS |
| | AND/OR OTHER LOCAL AND COUNTY EMERGENCY RESPONSE PERSONNEL. |
| INCIDENT RESPONSE | Incident Response Coordinator will assess the water supply disruption on a |
| ASSESSMENT | CONTINUAL BASIS SO THAT ADDITIONAL CORRECTIVE ACTIONS CAN BE TAKEN AND CITY |
| | government and the public are updated on issues and progress. The Mayor will |
| | CONVENE A SPECIAL CITY COUNCIL MEETING IF ADDITIONAL FUNDS NEED TO BE ALLOCATED FOR |
| | THE DISRUPTION OR OTHER FISCAL MATTERS NEED TO BE ADDRESSED TO CORRECT THE DISRUPTION. |
| | |

| PUBLIC INFORMATION NEEDS | THE INCIDENT RESPONSE COORDINATOR WILL COORDINATE WITH PUBLIC RELATIONS CONTACT REGARDING THE INFORMATION NEEDED TO BE CONVEYED TO THE PUBLIC, AND THEY WILL DECIDE ON THE PROPER CHANNELS FOR DISSEMINATING INFORMATION AS LAID OUT IN THE PUBLIC INFORMATION PLAN. THE PUBLIC RELATIONS CONTACT WILL CONTACT THE MEDIA WITH INFORMATION IF NEEDED. |
|--------------------------|--|
| CONTAMINATION DISRUPTION | INCIDENT RESPONSE COORDINATOR IN CONSULTATION WITH OTHER CITY STAFF AND STATE |
| Assessment | AGENCIES WILL ATTEMPT TO DEFINE THE EXTENT AND LEVEL OF DISRUPTION AND |
| | CONTAMINATION. THIS COORDINATION MAY CONTINUE AFTER INITIAL CORRECTIVE ACTIONS |
| | HAVE BEEN IMPLEMENTED. |
| MECHANICAL FAILURE | THE WELLHEAD PROTECTION MANAGER WILL COORDINATE EFFORTS TO DEFINE THE CAUSE(S) OF |
| Assessment | THE MECHANICAL FAILURE AND THE EQUIPMENT, DATA, AND EXPERTISE THAT ARE NEEDED TO |
| | CORRECT IT WITH INCIDENT RESPONSE PERSONNEL IF NEEDED. THE WELLHEAD PROTECTION |
| | MANAGER IN CONSULTATION WITH THE CITY ENGINEER IDENTIFIES MEASURES FOR REDUCING THE |
| | LIKELIHOOD THAT A SIMILAR MECHANICAL FAILURE WILL NOT OCCUR IN THE FUTURE. |
| ALTERNATE WATER SUPPLY | Incident Response Coordinator in conjunction with the wellhead protection |
| IDENTIFICATION | MANAGER AND THE ${f M}$ AYOR EVALUATES THE NEED TO OBTAIN AN ALTERNATE WATER SUPPLY, THE |
| | TIME PERIOD IT IS NEEDED BEFORE THE WATER SUPPLY DISRUPTION IS CORRECTED, THE AMOUNT |
| | OF WATER NEEDED AND THE ACTIONS THAT ARE NEEDED TO OBTAIN THE WATER. |
| IMPOSES WATER USE | CITY COUNCIL WILL INSTRUCT CITY STAFF TO CONTACT CITY RESIDENTS TO RESTRICT WATER USE |
| RESTRICTIONS | TO ESSENTIALS TO ADDRESS ANY SHORT-TERM WATER SHORTAGES. |
| | |

B. Emergency Contact List

The following table identifies contacts that may be notified in the event of an emergency. Based on the issues and available information, representatives from this list may be selected by the response coordinator to be part of the *emergency oversight committee*, which will then meet throughout the duration of the emergency to aid in decision-making and positive outcomes.

| Water System Personnel | Name | Home | Work Telephone |
|-----------------------------|----------------|----------------|----------------|
| | | Telephone | |
| Mayor/Board Chair | Kathy Brandau | 218-365-3924 | 218-365-3985 |
| City Clerk | Anne Jackson | 218-365-4467 | 218-365-5941 |
| Council Members | Neil Weisinger | 218-343-3145 | 218-365-6900 |
| Council Members | Dawn Rowe | 218-365-4421 | |
| Council Members | Lee Tessier | 218-365-3253 | N/A |
| State Incident Duty Officer | | | 1-800-422-0798 |
| Saint Louis County | Marlin | (218) 910-0546 | (218) 910-0546 |
| Emergency Management | Halvorson | | |
| Coordinator | | | |
| Fire Chief | Ted Krueger | 218-343-2994 | 218-753-2245 |
| Sheriff | Vic Williams | (218) 246-8031 | (218) 326-3477 |
| Police Chief | 911 | 911 | 911 |
| System Operator | Terry Jackson | 218-365-4467 | N/A |
| School Superintendent | Alexis Leitgeb | 218-340-5243 | 218-365-6166 |
| Ambulance | 911 | 911 | 911 |
| Hospital | 911 | 911 | 911 |
| Power Company | MN Power | (800) 228-4966 | (800) 228-4966 |
| Highway Department | Saint Louis | NA | 218-327-2853 |
| | County | | |
| Telephone Company | Frontier | NA | 1-800-921-8101 |
| MRWA Technical Services | Mike Roers | 1-800-367-6792 | 1-320-760-5886 |
| MDH Source Water | Chris Parthun | NA | 1-218-308-2109 |
| Protection | | | |
| MDH District Engineer | Mike Luhrsen | NA | 1-218-723-4651 |

Critical Response Personnel

| Title | Name | Response Assignment |
|--------------------------------------|--|---|
| Response Coordinator | Mayor Kathy Brandau | Coordinate actions to address emergency |
| Alternate Response Coordinator | Clerk Anne Jackson | Coordinate actions to address emergency |
| Water Operator | Terry Jackson | Direct or contact entities to resolve issue |
| Alternate Water Operator | Dan Maki | Direct or contact entities to resolve issue |
| Public Relations | Mayor Kathy Brandau | Contact residents to inform them of emergency |
| Alternate Public Relations | Clerk Anne Jackson | Contact residents to inform them of emergency |
| Public Health/Medical | First Responders, Fire Dept., Hospital and Ambulance Service, Local Police Dept. | Assist Winton as needed to address emergency |

D. Public Information Plan

Primary Spokesperson for the City of Winton is the Mayor.

The responsibilities of the primary spokesperson:

- 1. Give public statements that have been prepared by the city regarding the water supply emergency;
- 2. Coordinate and compile information regarding water supply emergency;
- 3. Schedule official meetings between the city and members of the media, if needed; and
- 4. Coordinate efforts to keep the public informed about the water supply emergency.

Public Information Center Location during a Water Disruption:

Location: Winton Village Hall Times Available: Open as needed

Information to be conveyed to the public and media:

- 1. Name of water system
- 2. Nature of the water supply disruption
- 3. Steps being taken to restore or replace the water supply
- 4. Source of contamination or disruption
- 5. Associated public health hazard
- 6. Steps public can take to minimize risk from hazard
- 7. Steps the water system is taking to minimize risk from hazard
- 8. Other information

Media Contacts:

Because of the small size of the city, door-to-door notifications are feasible and have been successful in the past. In many cases, this is the method of notification the city will use to advise residents of a water emergency situation.

| Media | Name | Telephone | Address |
|------------|---------------|--------------|----------------------------|
| Newspaper | Anne Swensen | 218-365-3141 | 15 E. Chapman St., Ely, MN |
| Television | Mike Jankovec | 218-349-5520 | 127 East Sheridan; Ely, MN |
| Radio | WELY | 218-365-4444 | 133 East Chapman; Ely, MN |
| Radio | | | |

MITIGATION AND CONSERVATION

The following are ways the City of Winton will reduce the vulnerability of the water supply system to disruption and improve response capabilities.

Mitigation:

Infrastructure maintenance/upgrades/maps: The water system is relatively old (constructed in the 1950's) and infrastructure upgrades are done as necessary. The system is flushed on a routine basis. Maps are available in city offices.

Regular inspection of storage tank, well, and pump house: All of these items are inspected on a regular basis. The well house and chemical storage areas have keyed entries and are locked.

Emergency training: Staff receives training annually through the Minnesota Rural Water Association.

System valving to isolate problems: The water system is adequately valved to isolate problems.

Sanitation procedures for construction/repairs: All disinfection procedures are performed per State specifications.

Emergency Response: In the event of a water supply shortage, the city will impose the identified, prioritized water use restrictions to reduce demand.

Conservation:

Water meters: Meters are installed and utilized.

Public Education: The city will incorporate water conservation education into wellhead protection management strategies.

Rate Structure: The city uses a rate structure to encourage conservation.

APPENDIX

| <u>Exhibit</u> : | <u>Title</u> : |
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Exhibit 1

Part 1 Wellhead Protection Plan

Wellhead Protection Plan

Part I

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

For

City of Winton

July 2013



Tracy J. Lund Source Water Protection Unit

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Glossary of Terms

Data Element. A specific type of information required by the Minnesota Department of Health to prepare a wellhead protection plan.

Drinking Water Supply Management Area (DWSMA). The area delineated using identifiable land marks that reflects the scientifically calculated wellhead protection area boundaries as closely as possible (Minnesota Rules, part 4720.5100, subpart 13).

Drinking Water Supply Management Area Vulnerability. An assessment of the likelihood that the aquifer within the DWSMA is subject to impact from land and water uses within the wellhead protection area. It is based upon criteria that are specified under Minnesota Rules, part 4720.5210, subpart 3.

Emergency Response Area (ERA). The part of the wellhead protection area that is defined by a oneyear time of travel within the aquifer that is used by the public water supply well (Minnesota Rules, part 4720.5250, subpart 3). It is used to set priorities for managing potential contamination sources within the DWSMA.

Inner Wellhead Management Zone (IWMZ). The land that is within 200 feet of a public water supply well (Minnesota Rules, part 4720.5100, subpart 19). The public water supplier must manage the IWMZ to help protect it from sources of pathogen or chemical contamination that may cause an acute health effect.

Wellhead Protection (WHP). A method of preventing well contamination by effectively managing potential contamination sources in all or a portion of the well's recharge area.

Wellhead Protection Area (WHPA). The surface and subsurface area surrounding a well or well field that supplies a public water system, through which contaminants are likely to move toward and reach the well or well field (Minnesota Statutes, section 103I.005, subdivision 24).

Well Vulnerability. An assessment of the likelihood that a well is at risk to human-caused contamination, either due to its construction or indicated by criteria that are specified under Minnesota Rules, part 4720.5550, subpart 2.

Acronyms

- **CWI -** County Well Index
- DNR Minnesota Department of Natural Resources
- EPA United States Environmental Protection Agency
- FSA Farm Security Administration
- MDA Minnesota Department of Agriculture
- MDH Minnesota Department of Health
- MGS Minnesota Geological Survey
- MnDOT Minnesota Department of Transportation
- MnGEO Minnesota Geospatial Information Office
- MPCA Minnesota Pollution Control Agency
- NRCS Natural Resource Conservation Service
- SWCD Soil and Water Conservation District
- UMN University of Minnesota
- USDA United States Department of Agriculture
- USGS United States Geological Survey

1. Introduction

The Minnesota Department of Health (MDH) developed Part I of the wellhead protection (WHP) plan at the request of the city of Winton (PWSID 1690057). The work was performed in accordance with the Minnesota Wellhead Protection Rule, parts 4720.5100 to 4720.5590.

This report presents delineations of the wellhead protection area (WHPA) and drinking water supply management area (DWSMA), and the vulnerability assessments for the public water supply wells and DWSMA. The boundaries for the WHPA and the DWSMA are shown in Figure 1. The WHPA is defined by a 10-year time of travel. Figure 1 also shows the emergency response area (ERA), which is defined by a one-year time of travel. An inner wellhead management zone (IWMZ), which is the area within a 200-foot radius around the well, serves as the wellhead protection area for emergency wells and is not displayed in this report. Definitions of rule-specific terms that are used are provided in the "Glossary of Terms."

This report also documents the technical information that was required to prepare this portion of the WHP plan in accordance with the Minnesota Wellhead Protection Rule. Additional technical information is available from MDH.

The wells included in the WHP plan are listed in Table 1.

| Local Well ID | Unique Number | Use/ Status ¹ | Casing Diameter (inches) | Casing Depth (feet) | Well Depth (feet) | Date Constructed/ Reconstructed | Aquifer ² | Well Vulnerability |
|---------------------|------------------|-----------------------------|--------------------------------|---------------------------|-------------------------|---------------------------------------|----------------------|-----------------------|
| Well 1 | 189468 | A, P | 6 | 38 | 46 | 1981 | QWTA | Vulnerable |
| Well 3 | 181951 | A, P | 8 | 32 | 40 | 1982 | QBUA | Vulnerable |
| Well 4 | 558881 | Е | 6 | 40 | 326 | 1996 | PCCR | Vulnerable |

Table 1 - Water Supply Well Information

Note: 1. Active (A), Primary (P), Emergency Backup (E)

2. QWTA: Quaternary Water Table Aquifer, i.e. surficial unconsolidated sand and gravel materials

QBUA: Quaternary Buried Unconfined Aquifer, i.e. buried unconsolidated sand and gravel materials

PCCR: Precambrian Crystalline Rocks

2. Assessment of the Data Elements

MDH staff met with representatives of the city of Winton on January 25, 2012, for a scoping meeting that identified the data elements required to prepare Part I of the WHP plan. Table 2 presents the assessment of these data elements relative to the present and future implications of planning items that are specified in Minnesota Rules, part 4720.5210.

| | Present and Future | | | | | |
|--|------------------------|-------------------------|--|--|-----------------------------|--|
| | Implications | | | | | |
| Data Element | Use of the Well (s) | Delineation Criteria | Quality and Quantity of Well Water | Land and Groundwater Use in DWSMA | Data Source | |
| Precipitation | Н | Н | Н | Н | MN Climatology Office, USGS | |
| Geology | | | | | | |
| Maps and geologic descriptions | М | Н | Н | Н | MGS | |
| Subsurface data | Μ | Η | Н | Н | MGS, MDH | |
| Borehole geophysics | Μ | Η | Н | Н | None available | |
| Surface geophysics | L | L | L | L | None available | |
| Maps and soil descriptions | L | Μ | М | L | NRCS | |
| Eroding lands | | | | | | |
| Water Resources | | | | 1 | | |
| Watershed units | L | Η | L | L | MnGEO, DNR | |
| List of public waters | L | Н | L | L | MnGEO, DNR | |
| Shoreland classifications | | | | | | |
| Wetlands map | L | Н | L | L | USFWS | |
| Floodplain map | | | | | | |
| Land Use | - | | - | - | | |
| Parcel boundaries map | L | H | L | L | St. Louis County | |
| Political boundaries map | L | H | L | L | MnGEO | |
| PLS map | L | H | L | L | MnGEO | |
| Land use map and inventory | | | | | | |
| Comprehensive land use map | | | | | | |
| Zoning map | | | | | | |
| Public Utility Services | 1 | | | | | |
| Transportation routes and corridors | L | Н | М | М | MnGEO | |
| Storm/sanitary sewers and PWS system map | L | М | L | L | City of Winton | |
| Oil and gas pipelines map | | | | | | |
| Public drainage systems map or list | L | Н | L | L | MnGEO, DNR | |
| Records of well construction, maintenance, and use | Н | Н | Н | Н | City of Winton, CWI | |
| Surface Water Quantity | | | | | | |
| Stream flow data | L | Η | Н | Н | DNR, USGS, City of Winton | |
| Ordinary high water mark data | L | Н | L | L | DNR | |
| Permitted withdrawals | | | | | | |
| Protected levels/flows | L | Η | L | L | DNR | |
| Water use conflicts | L | Н | L | L | DNR | |
| Groundwater Quantity | | | | | | |
| Permitted withdrawals | Н | Н | Н | Н | DNR | |
| Groundwater use conflicts | H | Η | Η | Η | DNR | |

Table 2 - Assessment of Data Elements

| |] | Preser Im | it and Fut plications | ture | |
|---|------------------------|-------------------------|--|--|--------------------------------|
| Data Element | Use of the Well (s) | Delineation Criteria | Quality and Quantity of Well Water | Land and Groundwater Use in DWSMA | Data Source |
| Water levels | Н | Η | Н | Н | DNR, MPCA, MDH, City of Winton |
| Surface Water Quality | - | | | | |
| Stream and lake water quality management classification | | | | | |
| Monitoring data summary | L | Н | L | L | MDH |
| Groundwater Quality | | | | | |
| Monitoring data | Н | Н | Н | Н | MDH |
| Isotopic data | Н | Н | Н | Н | MDH |
| Tracer studies | Н | Н | Н | Н | None available |
| Contamination site data | Μ | Μ | М | М | MPCA, City of Winton |
| Property audit data from contamination sites | | | | | |
| MPCA and MDA spills/release reports | | | | | |

Definitions Used for Assessing Data Elements:

| High (H) - | the data element has a direct impact |
|----------------|---|
| Moderate (M) - | the data element has an indirect or marginal impact |
| Low (L) - | the data element has little if any impact |
| Shaded - | the data element was not required by MDH for preparing the WHP plan |

Acronyms used in this report are listed on page ii, after the "Glossary of Terms."

3. General Descriptions

3.1 Description of the Water Supply System

The city of Winton obtains its drinking water supply from two primary wells. Table 1 summarizes information regarding them.

3.2 Description of the Hydrogeologic Setting

The description of the hydrogeologic setting for the aquifer used to supply drinking water is presented in Table 3.

| Attribute | Descriptor | Data Source | | |
|-----------------------------------|---|--|--|--|
| Aquifer Material | Unconsolidated sands and gravels. | CWI | | |
| Porosity Type and Value | Primary, 25% | Fetter, 2001 | | |
| Aquifer Thickness | Regionally highly variable due to the undulating—and frequently outcropping—bedrock surface. Within the well field area the aquifer is 20 to 34 feet thick. The only other well that penetrates the aquifer used by Winton shows an aquifer thickness of 7 feet (681027). The geometric mean of the estimated aquifer thickness from wells 181951, 181998 and 189468 is 24.6 feet, although model runs simulated the full estimated thickness range of 20 to 34 feet. | CWI | | |
| Stratigraphic Top Elevation | Variable. In the Winton well field the aquifer top varies from 1,320 to 1,327 feet, MSL. | CWI | | |
| Stratigraphic Bottom Elevation | Variable. In the Winton well field the aquifer top varies from 1,286 to 1,322 feet, MSL. | CWI | | |
| Hydraulic Confinement | Unconfined | CWI | | |
| Transmissivity (T) | Range of Values: 640 – 2,810 ft ² /day | A range of transmissivity values was used to reflect changes in aquifer composition and thickness, as well as uncertainties related to the quality of existing specific capacity test data. This range was derived from specific capacity data obtained from well records in CWI. See Table 4 for the reference value. | | |
| Hydraulic Conductivity (K) | Range of Values: 18.8 - 141 ft/day | The range of values was calculated from the transmissivity values discussed above. | | |
| Groundwater Flow Field | See Figure 2 - Ambient Groundwater Flow Field | Defined by using static water level elevations from well records in the CWI database and documents listed in the "Selected References" section of this report. | | |

The distribution of the aquifer and its stratigraphic relationships with adjacent geologic materials are shown in Figures 3, 4, 5 and 6. They were prepared using well record data that is contained in the CWI database. The geological maps and studies that were used to further define local hydrogeologic conditions are provided in the "Selected References" section of this report.

4. Delineation of the Wellhead Protection Area

4.1 Delineation Criteria

The boundaries of the WHPA for the city of Winton are shown in Figure 1. Table 4 describes how the delineation criteria specified under Minnesota Rules, part 4720.5510, were addressed.

| Criterion | Descriptor | How the Criterion was Addressed |
|----------------------------------|---|--|
| Flow Boundary | Fall Lake | Data obtained from MnGEO and USGS. |
| Flow Boundary | Shagawa River | Data obtained from MnGEO and USGS. |
| Flow Boundary | Stream to the north | Data obtained from MnGEO and USGS. |
| Flow Boundary | Bedrock Outcrops | Data obtained from MGS and CWI. |
| Flow Boundary | Other High-Capacity Wells | There are no other high-capacity wells within a 15 mile radius of the wells. |
| Daily Volume of Water Pumped | See Table 5 | Pumping information was obtained from the DNR, Groundwater Appropriations Permit No. 1986-2100, and was converted to a daily volume pumped by a well. |
| Groundwater Flow Field | See Figure 2 | The model calibration process addressed the relationship between the calculated versus observed groundwater flow field. |
| Aquifer Transmissivity (T) | Reference Value: 640 ft ² /day | The aquifer test plan was approved on July 3, 2013. The T value was determined from existing specific capacity tests on Wells 2 (181998; sealed) and 3 (181951). Uncertainty regarding aquifer transmissivity was addressed as described in Section 4.4. |
| Time of Travel | 10 years | The public water supplier selected a 10-year time of travel. |

Information provided by the public water supplier was used to identify the maximum volume of water pumped annually by each well over the previous five-year period, as shown in Table 5. Additionally, the estimated pumping for the next five years is shown. Previous pumping values have been reported to the DNR, as required by the public water supply's Groundwater Appropriation Permit No. 1986-2100. The maximum daily volume of discharge, used as an input parameter in the model, was calculated by dividing the greatest annual pumping volume by 365 days.

| Well Name | Unique No. | 2007 | 2008 | 2009 | 2010 | 2011 | Max Yearly Pumping (Projected 2018) | Daily Volume (gallons per day) |
|--------------|---------------|-----------|-----------|-----------|-----------|-----------|--|---|
| Well 1 | 189468 | 2,700,000 | 2,950,000 | 3,400,000 | 4,000,000 | 3,000,000 | 4,000,000 | 10,959 |
| Well 3 | 181951 | 2,700,000 | 2,950,000 | 3,400,000 | 4,000,000 | 3,000,000 | 4,000,000 | 10,959 |
| System Total | | 5,400,000 | 5,900,000 | 6,800,000 | 8,000,000 | 6,000,000 | 8,000,000 | 21,918 |

 Table 5 - Annual Volume of Water Discharged from Water Supply Wells

(Expressed as gallons. Bolding indicates greatest pumping volume used in modeling.)

4.2 Method Used to Delineate the Wellhead Protection Area

The WHPA for the city of Winton's wells was determined using a regional MLAEM groundwater model that was specifically designed for this delineation. MLAEM is an analytic element modeling code capable of simulating complex groundwater flow processes, including the influence of vertical infiltration and the pumping influences of multiple high-capacity wells (Strack, 1989).

The model simulates a single-layer aquifer system that is bounded by low permeability bedrock. The aquifer used by the city was incorporated into the model as a varel, with hydraulic conductivity and thickness derived from area well logs. Variability in aquifer transmissivity and thickness was addressed in the uncertainty analysis, which is discussed in greater detail below (Section 4.3.3). Rivers and lakes were represented in the model using varels approximating the shape and size of each feature and with water level elevations and resistance values specified as per available data or professional judgment. Vertical recharge was applied to the model using varels that supplied 26 percent of the recharge amounts published by the USGS (Delin et al., 2007), as determined by the best calibration fit.

Evaluation of model quality was conducted through a calibration and sensitivity analysis prior to assigning the pumping values discussed in Table 5 for calculation of the final one- and ten-year time of travel capture zones for the city's wells. The resulting WHPA boundaries are a composite of the capture zones calculated using variations discussed at length below in the sensitivity and uncertainty analysis sections (Figure 1). The final model input files are at MDH upon request.

4.3 Results of Model Calibration, Sensitivity Analysis, and Uncertainty

Model quality is commonly evaluated by three different metrics: calibration, sensitivity, and uncertainty analysis.

Model calibration is a procedure that compares the results of a model based on estimated input values to measured or known values. This procedure can be used to define model validity over a range of input values, or to help determine the level of confidence with which model results may be used. The result of calibration is an assessment of the general quality of the model and the confidence that may be placed on the model results. As a matter of practice, groundwater flow models are usually calibrated using ground and/or surface water elevation and flow.
A sensitivity analysis quantifies the differences in model results produced by the natural variability of a parameter or parameters used in the model. An uncertainty analysis addresses the effects of poor data quality on the model results. This diminished data quality is usually due to lack of local detailed information or deficiencies in the data.

4.3.1. Calibration

The model was calibrated to static water level data available in CWI in the area. Because there were few well data points available in the Winton area, and the aquifer is under unconfined conditions, surface water features such as small lakes, ponds, and marshlands were used to augment the calibration dataset. Calibration was performed by adjusting recharge rates and comparing modeled piezometric heads with measured heads at the observation locations until an overall satisfactory fit was obtained. Comparison of the mean root, mean square of residuals (RMSE), and maximum observed head difference across the model provided a quantitative measure of how well the model described the natural system. Generally a model is considered well-calibrated if the RMSE is equal to less than 15 percent of the total head change across the entire model (Barr Engineering Company, 2008). The RMSE for this calibration was 7.66 to 9.28 percent of the maximum observed head difference across the model (Appendix A).

4.3.2. Sensitivity Analysis

Sensitivity is the amount of change in model results caused by the variation of a particular input parameter. The direction and extent of the modeled capture zone may be very sensitive to any of the input parameters:

• The **<u>pumping rate</u>** directly affects the volume of the aquifer that contributes water to the well. An increase in pumping rate leads to an equivalent increase in the volume of aquifer within the capture zone, proportional to the porosity of the aquifer materials.

How Addressed and Results: The pumping rate is based on the results presented in Table 5 and, therefore, is not considered a variable factor that will influence the delineation of the WHPA.

• The <u>direction of groundwater flow</u> determines the orientation of the capture area. Variations in the direction of groundwater flow will not affect the size of the capture zone but are important for defining the areas that are the source of water to the well.

> **How Addressed and Results**: The ambient groundwater flow field that is defined in Figure 2 provides the basis for determining the extent to which each model run reflects the conceptual understanding of the orientation of the capture area for a well. The final model has been calibrated to surface water and groundwater elevations, and as such the sensitivity of the WHPA to the direction of groundwater flow should not be significant, given the current knowledge of the hydraulic head distribution in the aquifer.

• The <u>hydraulic gradient</u> determines the rate at which water moves through aquifer materials.

How Addressed and Results: The regional model has been calibrated to hydraulic heads. The sensitivity of the WHPA to the hydraulic gradient should not be significant given the current knowledge of the hydraulic head distribution in the aquifer.

• The <u>aquifer transmissivity</u> influences the size and shape of the capture zone. A decrease in transmissivity decreases the length of the capture zone and increases the distance to the stagnation point, making the capture zone more circular in shape and centered on the well.

How Addressed and Results: The transmissivity was determined through analysis of specific capacity tests conducted on Winton's city Wells 2 (181998, sealed 1998) and 3 (181951) immediately after each well was drilled. Both wells appear to have been drilled and at least partially screened through the same aquifer. Analysis of the specific capacity test for Well 3 yielded a transmissivity value that was deemed unusually high, which was likely due to the presence of a coarse gravel and boulder layer noted only on that well log and not observed elsewhere in Winton. Conversely, calculated transmissivity from Well 2's specific capacity test seemed a bit low for observed values for Quaternary sand aquifers in the area, as per professional judgment. To address these issues, a statistical analysis of the tests was done and the geometric mean of the transmissivity values was used to establish the high end of the range for the model. The low end of the transmissivity range came from the highest computed value for Winton Well 2. Model runs were conducted for both of these transmissivity values, with the low end value from Well 2 yielding the best calibration fit.

• The <u>aquifer porosity</u> influences the size and shape of the capture zone. A decrease in porosity causes a linear, proportional increase in areal extent of the capture zone.

How Addressed and Results: A mean literature value of 25 percent was used for the delineation and was not varied (Fetter, 2001).

• The <u>aquifer thickness</u> influences the size and shape of the capture zone. A decrease in thickness causes a linear, proportional increase in the areal extent of the capture zone.

How Addressed and Results: Aquifer thickness in this area was a highly variable and potentially highly sensitive parameter, due to the limited thickness and transmissivity data available. To address this, aquifer thickness at the primary city wells was analyzed and the highest and lowest values were used in the final model runs. The model was also run with the geometric mean of the aquifer thicknesses.

4.3.3. Model Uncertainty

Using computer models to simulate groundwater flow involves representing a complicated natural system in a simplified manner. Local geologic conditions may vary within the capture areas of the public water supply wells, but the amount of existing information that is needed to accurately define this degree of variability is often not available for portions of the WHPA. In addition, the current capabilities of groundwater flow models may not be sufficient to represent the natural flow system exactly. However, the results are valid within a range defined by the reasonable variation of input parameters for this delineation setting.

The steps employed for this delineation to address model uncertainty were:

- 1) Pumping Rate For each well, a maximum historical (five-year) pumping rate or an engineering estimate of future pumping was used, whichever is greater (Minnesota Rules, part 4720.5510, subpart 4).
- 2) Aquifer Transmissivity The model was run using two different transmissivity values, as discussed above (Section 4.3.2).

3) Aquifer Thickness – The model was run using the highest, lowest, and geometric mean values observed at Winton Wells 1 (189468), 2 (181998, now sealed) and 3 (181951).

Capture areas were developed for both one- and ten-year times of travel to address the uncertainties discussed above, and the 10-year capture areas were then composited into the final WHPA (Figure 7).

4.4 Conjunctive Delineation

The vulnerability of the DWSMA is very high, therefore, the need for a conjunctive delineation should be assessed. Fall Lake is the only surface water feature present within the WHPA. However, given the difference in chemical and isotopic composition between water from Fall Lake and the city's primary wells, it does not appear that a close hydrologic connection exists between them (Appendix B). The fact that the isotopic compositions for samples from both wells plot slightly off of the meteoric water line, but not in the direction of the Fall Lake data point, suggests that they may receive a small component of surface water from a different feature—likely either the Shagawa River to the south or the stream to the northwest. In any case, neither of these features is intercepted by the WHPA within a 10-year time of travel.

It is not clear whether topographically-driven overland runoff onto the WHPA is an issue. The southwest corner of the WHPA may receive some runoff from the higher elevation area to the southwest, but the log for the only well in that area (555010) suggests that the city's aquifer might be buried by till at that location. In addition, most northeast-trending runoff in that area would be intercepted by Cedar Lake Road and diverted north to the unnamed stream. In the absence of more definitive data, a conjunctive delineation was not included at this time.

5. Delineation of the Drinking Water Supply Management Area

The boundaries of the Drinking Water Supply Management Area (DWSMA) were defined by the city of Winton using the following features (Figure 1):

- Center-lines of highways, streets, roads, or railroad rights-of-ways;
- Public Land Survey coordinates;
- Property or fence lines;
- Center-lines of public drainage systems; and
- Political boundaries.

6. Vulnerability Assessments

The Part I wellhead protection plan includes the vulnerability assessments for the city of Winton's wells and DWSMA. These vulnerability assessments are used to help define potential contamination sources within the DWSMA and select appropriate measures for reducing the risk that they present to the public water supply.

6.1 Assessment of Well Vulnerability

The vulnerability assessments for each well used by the city of Winton are listed in Table 1 and are based upon the following conditions:

- Well construction does not meet current State Well Code specifications (Minnesota Rules, part 4725) for Well 1 (189468), as the well log does not specify whether the well was grouted for the full casing length. For Well 3 (181951), the log states that the well is grouted but does not specify how much grout was installed, and so technically the well is not up to State Well Code specifications.
- 2) The geologic conditions at the well sites lack a cover of clay-rich geologic materials over the aquifer that is sufficient to retard the vertical movement of contaminants.
- 3) Water samples were collected from Wells 1 (189468) and 3 (181951) and Fall Lake on August 31, 2011, and August 28, 2012, and were analyzed for tritium, nitrate, chloride and bromide (Appendix B). The August 2011 samples contained water that had 8.4 and 15.3 tritium units (TU) for Wells 1 and 3, respectively. Nitrate was also detected in the 2011 samples at 1.3 and 0.47 milligrams per liter (mg/L) for Wells 1 and 3, respectively. This data confirms that the two wells are being impacted by recent recharge (Alexander and Alexander, 1989). In addition, the chloride and bromide results confirm that the wells have been impacted by land-use activities, with chloride-to-bromide ratios ranging between 558 and 3,441 for the two wells. These ratios may indicate chloride contamination by septic waste or road salt.

6.2 Assessment of Drinking Water Supply Management Area Vulnerability

The vulnerability of the DWSMA is very high as shown in Figure 8 and is based upon the following information:

- 1) Isotopic and water chemistry data from wells located within the DWSMA indicate the aquifer contains water that has been recharged recently (no longer than the past several decades) and contains indicators of degradation caused by human land uses such as road salt and/or septic waste.
- Review of the geologic logs contained in the CWI database, geological maps, and reports indicate that the city's aquifer exhibits a very high geologic sensitivity throughout much of the DWSMA and is not isolated from the direct vertical recharge of surface water (Figure 8). As discussed in Section 4.4, the city's aquifer in the southwestern most portion of the DWSMA, may be overlain by as much as 50 feet of clay rich sediments, depending on which gravel-rich unit penetrated by Well 555010 the city's aquifer correlates with (Figure 6). If the city's aquifer were found to be connected to the deep gravel unit, there would be an area of lower geologic sensitivity within that portion of the DWSMA. However, because the correlation is uncertain at this time, the vulnerability of the DWSMA remains very high.

7. Selected References

Alexander, S.C., and Alexander, E.C., Jr. (1989), *Residence times of Minnesota groundwaters*, University of Minnesota, Minneapolis, Minn., 22 p.

Barr Engineering Company (2008), *Water supply availability analysis: report on development of a groundwater flow model of the Twin Cities metropolitan area* (Draft). Submitted to Metropolitan Council Environmental Services, May 2008.

Fetter, C.W. (2001), Applied hydrogeology, Prentice-Hall, Saddle River, N.J., 598 p.

Geologic Sensitivity Project Workgroup (1991), *Criteria and guidelines for assessing geologic sensitivity of ground water resources in Minnesota*, Minnesota Department of Natural Resources, Division of Waters, St. Paul, Minn., 122 p.

Strack, O.D.L. (1989), Groundwater mechanics, Prentice Hall, Englewood Cliffs, N.J., 732 p.

Figures

















Appendix A

Model Calibration

| | | | Mean Tr | ansmissivit Thio | y – Maximur ckness | m Aquifer | Mean | Transmissiv Thio | vity – Mean . ckness | Aquifer |
|----------------------------|-----------|-------------|-----------------------------------|---------------------|-----------------------|---|-----------------------------------|---------------------|-------------------------|---|
| Location Name or Type | UTME | UTMN | Model Calculated Head (m, MSL) | Head (m, MSL) | Difference (m) | Difference Squared (m ²) | Model Calculated Head (m, MSL) | Head (m, MSL) | Difference (m) | Difference Squared (m ²) |
| Wetland to south | 590303 | 5307630 | 415.12 | 419.41 | -4.29 | 18.3785 | 414.97 | 419.41 | -4.44 | 19.6708 |
| Wetland along Fall Lake | 589971 | 5309270 | 403.07 | 402.34 | 0.73 | 0.5376 | 403.17 | 402.34 | 0.84 | 0.6987 |
| Wetland along Fall Lake | 589268 | 5309410 | 403.34 | 402.34 | 1.00 | 0.9978 | 403.34 | 402.34 | 1.00 | 1.0016 |
| Browns Lake | 592234 | 5312480 | 415.98 | 416.36 | -0.38 | 0.1445 | 415.52 | 416.36 | -0.84 | 0.7066 |
| Miner's Pit Lake (Ely) | 585445 | 5306920 | 411.99 | 409.96 | 2.04 | 4.1521 | 411.31 | 409.96 | 1.35 | 1.8332 |
| Wetland | 587970 | 5308940 | 405.41 | 413.00 | -7.59 | 57.6743 | 405.39 | 413.00 | -7.62 | 58.0350 |
| Squaw Bay wetland | 591746 | 5310820 | 406.58 | 403.25 | 3.33 | 11.1167 | 406.45 | 403.25 | 3.20 | 10.2440 |
| Winton Well 2 (181998) | 589522 | 5309310 | 403.11 | 403.25 | -0.14 | 0.0186 | 403.14 | 403.25 | -0.11 | 0.0125 |
| Wetland to northeast | 590206 | 5310730 | 412.12 | 418.19 | -6.07 | 36.8228 | 412.01 | 418.19 | -6.17 | 38.1219 |
| Wetland along Shagawa Lake | 587151 | 5308960 | 406.21 | 410.26 | -4.05 | 16.3844 | 406.28 | 410.26 | -3.98 | 15.8148 |
| Wetland along Fall Lake | 588981 | 5309590 | 403.68 | 402.34 | 1.34 | 1.7948 | 403.65 | 402.34 | 1.32 | 1.7304 |
| Wetland along Fall Lake | 589790 | 5308950 | 403.23 | 402.34 | 0.90 | 0.8060 | 403.33 | 402.34 | 0.99 | 0.9815 |
| Pond | 588970 | 5309365 | 403.89 | 402.34 | 1.56 | 2.4199 | 403.85 | 402.34 | 1.52 | 2.3031 |
| | Ave | erage error | | | -0.89 | | | | -1.00 | |
| | Sum o | of Squares | | Į | | 151.2480 | | | | 151.1540 |
| | Avg er | r/head diff | | ļ | -0.0196 | | | | -0.0218 | |
| | Mea | an sq error | | | | 13.7498 | | | | 13.7412 |
|] | Root (mea | n sq error) | | | | 3.7080 | | | | 3.7069 |
| RMS | SE / Head | l Change | | | | 9.15% | | | | 9.14% |

Table A-1 – Calibration Data from Model Simulations

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| | | | Mean Ti | ransmissivit Thio | y – Minimuı ekness | n Aquifer | Minim | um Transm Aquifer | issivity – Ma Thickness | aximum |
|----------------------------|-----------|-------------|-----------------------------------|----------------------|-----------------------|--------------------------------------|-----------------------------------|----------------------|----------------------------|--------------------------------------|
| Location Name or Type | UTME | UTMN | Model Calculated Head (m, MSL) | Head (m, MSL) | Difference (m) | Difference Squared (m ²) | Model Calculated Head (m, MSL) | Head (m, MSL) | Difference (m) | Difference Squared (m ²) |
| Wetland to south | 590303 | 5307630 | 415.13 | 419.41 | -4.27 | 18.2549 | 414.53 | 419.41 | -4.88 | 23.7984 |
| Wetland along Fall Lake | 589971 | 5309270 | 403.18 | 402.34 | 0.84 | 0.7078 | 401.07 | 402.34 | -1.27 | 1.6109 |
| Wetland along Fall Lake | 589268 | 5309410 | 403.28 | 402.34 | 0.95 | 0.8983 | 403.22 | 402.34 | 0.88 | 0.7734 |
| Browns Lake | 592234 | 5312480 | 415.97 | 416.36 | -0.38 | 0.1465 | 416.00 | 416.36 | -0.36 | 0.1295 |
| Miner's Pit Lake (Ely) | 585445 | 5306920 | 411.98 | 409.96 | 2.02 | 4.0984 | 412.26 | 409.96 | 2.30 | 5.3054 |
| Wetland | 587970 | 5308940 | 405.27 | 413.00 | -7.73 | 59.7800 | 407.43 | 413.00 | -5.57 | 31.0437 |
| Squaw Bay wetland | 591746 | 5310820 | 406.58 | 403.25 | 3.33 | 11.1077 | 406.57 | 403.25 | 3.32 | 11.0304 |
| Winton Well 2 (181998) | 589522 | 5309310 | 403.09 | 403.25 | -0.16 | 0.0248 | 402.76 | 403.25 | -0.49 | 0.2425 |
| Wetland to northeast | 590206 | 5310730 | 411.96 | 418.19 | -6.22 | 38.7147 | 413.09 | 418.19 | -5.10 | 26.0022 |
| Wetland along Shagawa Lake | 587151 | 5308960 | 406.10 | 410.26 | -4.16 | 17.3452 | 409.19 | 410.26 | -1.08 | 1.1586 |
| Wetland along Fall Lake | 588981 | 5309590 | 403.58 | 402.34 | 1.25 | 1.5576 | 403.92 | 402.34 | 1.58 | 2.4994 |
| Wetland along Fall Lake | 589790 | 5308950 | 403.31 | 402.34 | 0.97 | 0.9487 | 401.02 | 402.34 | -1.31 | 1.7238 |
| Pond | 588970 | 5309365 | 403.79 | 402.34 | 1.45 | 2.1025 | 404.23 | 402.34 | 1.89 | 3.5904 |
| | Ave | erage error | | | -0.93 | | | | -0.78 | |
| | Sum o | of Squares | | | | 155.6871 | | | | 108.9087 |
| | Avg er | r/head diff | | | -0.0204 | | | | -0.0170 | |
| | Mea | an sq error | | ļ | | 14.1533 | | | | 9.9007 |
|] | Root (mea | n sq error) | | | | 3.7620 | | | | 3.1465 |
| RMS | E / Head | l Change | | | | 9.28% | | | | 7.76% |

| | | | Minimu | m Transmis Thio | sivity – Mea ckness | n Aquifer | Minimum | Transmissiv Thic | vity – Minim ekness | um Aquifer |
|----------------------------|-----------|-------------|-----------------------------------|--------------------|------------------------|--------------------------------------|-----------------------------------|---------------------|------------------------|--------------------------------------|
| Location Name or Type | UTME | UTMN | Model Calculated Head (m, MSL) | Head (m, MSL) | Difference (m) | Difference Squared (m ²) | Model Calculated Head (m, MSL) | Head (m, MSL) | Difference (m) | Difference Squared (m ²) |
| Wetland to south | 590303 | 5307630 | 414.69 | 419.41 | -4.72 | 22.2516 | 414.70 | 419.41 | -4.70 | 22.1346 |
| Wetland along Fall Lake | 589971 | 5309270 | 401.51 | 402.34 | -0.83 | 0.6849 | 401.55 | 402.34 | -0.78 | 0.6149 |
| Wetland along Fall Lake | 589268 | 5309410 | 403.10 | 402.34 | 0.76 | 0.5778 | 403.08 | 402.34 | 0.75 | 0.5598 |
| Browns Lake | 592234 | 5312480 | 416.00 | 416.36 | -0.36 | 0.1303 | 416.00 | 416.36 | -0.36 | 0.1302 |
| Miner's Pit Lake (Ely) | 585445 | 5306920 | 412.25 | 409.96 | 2.30 | 5.2779 | 412.25 | 409.96 | 2.30 | 5.2700 |
| Wetland | 587970 | 5308940 | 407.34 | 413.00 | -5.67 | 32.0982 | 407.32 | 413.00 | -5.68 | 32.2602 |
| Squaw Bay wetland | 591746 | 5310820 | 406.58 | 403.25 | 3.33 | 11.0933 | 406.58 | 403.25 | 3.33 | 11.1092 |
| Winton Well 2 (181998) | 589522 | 5309310 | 402.72 | 403.25 | -0.53 | 0.2851 | 402.70 | 403.25 | -0.55 | 0.2999 |
| Wetland to northeast | 590206 | 5310730 | 412.99 | 418.19 | -5.20 | 27.0401 | 412.98 | 418.19 | -5.21 | 27.1576 |
| Wetland along Shagawa Lake | 587151 | 5308960 | 409.13 | 410.26 | -1.14 | 1.2889 | 409.11 | 410.26 | -1.15 | 1.3328 |
| Wetland along Fall Lake | 588981 | 5309590 | 403.73 | 402.34 | 1.39 | 1.9363 | 403.72 | 402.34 | 1.38 | 1.9053 |
| Wetland along Fall Lake | 589790 | 5308950 | 401.60 | 402.34 | -0.73 | 0.5397 | 401.65 | 402.34 | -0.69 | 0.4752 |
| Pond | 588970 | 5309365 | 404.04 | 402.34 | 1.70 | 2.8974 | 404.03 | 402.34 | 1.69 | 2.8601 |
| | Ave | erage error | | | -0.75 | | | | -0.74 | |
| | Sum o | of Squares | | | | 106.1015 | | | | 106.1097 |
| | Avg er | r/head diff | | | -0.0163 | | | | -0.0163 | |
| | Mea | an sq error | | ļ | | 9.6455 | | | | 9.6463 |
|] | Root (mea | n sq error) | | | | 3.1057 | | | | 3.1058 |
| RMS | SE / Head | Change | | | | 7.66% | | | | 7.66% |

Appendix B

Vulnerability Suite Chemistry Results

| Date | Sample Point | Tritium (TU) | Deuterium (per mil) | ¹⁸ Oxygen (per mil) | Bromide (mg/L) | Chloride (mg/L) | Nitrate (mg/L) | Chloride / Bromide Ratio |
|-----------|---------------------|-----------------|------------------------|-----------------------------------|-------------------|--------------------|-------------------|--------------------------------|
| 8/31/2011 | Fall Lake (SWS 301) | - | -70.01 | -8.82 | 0.05 | 2.81 | - | 56 |
| 8/31/2011 | Well 1 (189468) | 8.4 | -81.43 | -11.18 | 0.0222 | 76.4 | 1.3 | 3441 |
| 8/31/2011 | Well 3 (181951) | 15.3 | -84.63 | -11.29 | 0.05 | 27.9 | 0.47 | 558 |
| 8/28/2012 | Well 1 (189468) | - | - | - | 0.0227 | 73.2 | - | 3225 |
| 8/28/2012 | Well 3 (181951) | - | - | - | 0.0173 | 27.8 | - | 1607 |

 Table B-1 – Vulnerability Suite Chemistry Results



18Oxygen versus Deuterium (2Hydrogen) for Wells and Fall Lake City of Winton

Exhibit 2

Winton Drinking Water Supply Management Area Map

Winton St. Louis County Minnesota

Winton Drinking Water Supply Management Area (DWSMA) MN-00690 - Very High Vulnerability

Minnesota Department of Health Environmental Health Source Water Protection Unit



Exhibit 3

Scoping 2 Decision Notice and Attachment

November 26, 2013

Mr. Terry Jackson, Water Superintendent City of Winton P.O. Box 197 Winton, Minnesota 55796-0197

Dear Mr. Jackson:

Subject: Second Scoping Decision Notice - City of Winton- PWSID 1690057

This letter provides notice of the results of a scoping meeting I held with you and Anne Jackson, City Clerk, on November 12, 2013, at the Jackson's Residence at 137 Riverview Road, Winton, regarding wellhead protection (WHP) planning. During the meeting, we discussed the data elements that must be included and used to prepare the part of the WHP plan related to the management of potential contaminants in the approved drinking water supply management area. The enclosed Scoping 2 Decision Notice lists the data elements that were discussed at the meeting.

The city of Winton has met the requirements to distribute copies of the first part of the WHP plan to local units of government and hold an informational meeting for the public. The city of Winton will have until December 1, 2014, to complete its WHP plan. Winton was given additional time due to Minnesota Rules, part 4720.5130, subpart 4, item D.

If a data element is marked on the enclosed notice as a data element that must be used and it does not exist, it is helpful if your plan notes this. MDH will be working with you to develop a draft of the remainder of the WHP plan. I will be contacting you to review the progress of the development of Part II of your plan. If you have any questions regarding the enclosed notice, contact me by email at <u>chris.parthun@state.mn.us</u>, or by phone at (218) 308-2109.

Sincerely,

Chies Patthem

Chris Parthun, Planner Source Water Protection Unit Environmental Health Division 705 5th Street NW, Suite A Bemidji, MN 56601-2933

CP:ds-b
Enclosures
cc: Michael Luhrsen, MDH Engineer, Duluth District Office Anne Jackson, City Clerk, City of Winton Ron Struss, Minnesota Department of Agriculture

SCOPING 2 DECISION NOTICE Highly Vulnerable DWSMA

Remainder of the Wellhead Protection Plan

| Name of Public Water Supply | Date: | |
|---|---------------|-------------------|
| City of Winton | PWSID 1690057 | November 26, 2013 |
| Name of the Wellhead Protec | tion Manager: | |
| Mr. Terry Jacobson, Water Sup | perintendent | |
| Address: | City: | Zip: |
| P.O. Box 197 | Winton | 55796-0197 |
| Unique Well Numbers: | Phone: | |
| 189468 (Well 1), 181951 (Well 558881 (Well 4 - Emergency)* | 13), | (218) 365-4467 |

*Emergency wells only use the IWMZ Form for data collection.

Instructions for Completing the Scoping 2 Form

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

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

| N | R | S | S = Submit to MDH. If this box is checked, this data element MUST be included in your wellhead protection plan and submitted to MDH . |
|---|---|---|---|
| | | X | If there is NO check mark in the "S" box but there is an "X" 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 |
|---------------|-----------------------|-------------------|---|
| Ν | R | S | An existing map or list of local precipitation gauging stations. |
| | Х | X | |
| Techn Supp | ical As oly M | ssistan anag | ce Comments: The management of the highly vulnerable parts of the Drinking Water ement Area(s) must reflect what is known about this data element. |
| N | R V | S X | An existing table showing the average monthly and annual precipitation in inches for the preceding five years. |
| Techn Supp | ical As oly M | ssistan anag | ce Comments: The management of the highly vulnerable parts of the Drinking Water ement Area(s) must reflect what is known about this data element. |
| | | | GEOLOGY |
| N | R X | S | 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. |
| Techn must | ical As refle | ssistan ct wl | ce Comments: The management of all the Drinking Water Supply Management Area(s) nat is known about these data elements. |
| N | R X | S | Existing records of the geologic materials penetrated by wells, borings, exploration test holes, or excavations, including those submitted to the department. |
| Techn must | ical As refle | ssistan ct wl | ce Comments: The management of all the Drinking Water Supply Management Area(s) nat is known about these data elements. |
| N | R X | S | Existing borehole geophysical records from wells, borings, and exploration test holes. |
| Techn must | ical As refle | ssistan ct the | ce Comments: The management of all the Drinking Water Supply Management Area(s) e geology of the areas. |
| N | R | S | Existing surface geophysical studies. |
| Techn must | A ical As refle | ssistan ct the | ce Comments: The management of all the Drinking Water Supply Management Area(s) e geology of the areas. |
| | | | SOILS |
| N | R | S | Existing maps of the soils and a description of soil infiltration characteristics. |
| | X | Χ | |
| Techn Supp | ical As oly M | ssistan anag | ce Comments: The management of the highly vulnerable parts of the Drinking Water ement Area(s) must reflect what is known about this data element. |
| Ν | R | S | A description or an existing map of known eroding lands that are causing sedimentation problems. |
| | X | Χ | |
| Techn Supp | ical As oly M | ssistan anag | ce Comments: The management of the highly vulnerable parts of the Drinking Water ement Area(s) must reflect what is known about this data element. |

| | | | WATER RESOURCES |
|---------------|-------------------|-----------------|--|
| Ν | R | S | An existing map of the boundaries and flow directions of major watershed units and minor watershed units. |
| | Χ | | |
| Techr Supp | nical As oly M | ssistan anag | ce Comments: The management of the highly vulnerable parts of the Drinking Water ement Area(s) must reflect what is known about this data element. |
| N | R X | S | An existing map and a list of public waters as defined in Minnesota Statutes, section 103G.005, subdivision 15, and public drainage ditches. |
| Techr Supp | nical As oly M | ssistan anag | ce Comments: The management of the highly vulnerable parts of the Drinking Water ement Area(s) must reflect what is known about this data element. |
| N | R X | 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. |
| Techr Supp | nical As oly M | ssistan anag | ce Comments: The management of the highly vulnerable parts of the Drinking Water ement Area(s) must reflect what is known about this data element. |
| N | R X | S | An existing map of wetlands regulated under Chapter 8420 and Minnesota Statutes, section 103G.221 to 103G.2373. |
| Techi Supp | nical As oly M | ssistan anag | ce Comments: The management of the highly vulnerable parts of the Drinking Water ement Area(s) must reflect what is known about this data element. |
| Ν | R | S | An existing map showing those areas delineated as floodplain by existing local ordinances. |
| | Χ | | |
| Techr Supp | nical As ply M | ssistan anag | ce Comments: The management of the highly vulnerable parts of the Drinking Water ement Area(s) must reflect what is known about this data element. |

DATA ELEMENTS ABOUT THE LAND USE

| | | | LAND USE |
|---------------|------------------|-----------------|--|
| Ν | R | S | An existing map of parcel boundaries. |
| | X | X | |
| Techn must | ical As refle | sistan ct wł | ce Comments: The management of all the Drinking Water Supply Management Area(s) nat is known about this data element. |
| Ν | R | S | An existing map of political boundaries. |
| | Х | Х | |
| Techn must | ical As refle | sistan ct wł | ce Comments: The management of all the Drinking Water Supply Management Area(s) hat is known about this data element. |
| Ν | R | S | An existing map of public land surveys including township, range, and section. |
| | X | | |
| Techn must | ical As refle | sistan ct wł | ce Comments: The management of all the Drinking Water Supply Management Area(s) nat is known about this data element. |

| X X and institutional | land uses and potential contaminant sources. |
|--|---|
| | |
| Technical Assistance Comments: sources of contamination for known about these data elen | The inventory, mapping and management of land uses and potential r all the Drinking Water Supply Management Area(s) must reflect what is nents, as follows: |

<u>High Vulnerability</u> - 1) All potential contaminant sources and facility designations as listed on the attachment, 2) a land use/land cover map and table, and 3) an inventory of the Inner Wellhead Management Zone (IWMZ).

As a starting point, MDH will provide a 2006 land cover map and table from federal data bases. This data set must be used unless an alternative electronic data set that is more current and detailed is available.

Management strategies must be developed for all land uses and potential sources of contamination.

| Ν | R | S | An existing comprehensive land-use map. |
|---|---|---|---|
| | Χ | Χ | |

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

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

| Ν | R | S | An existing map of transportation routes or corridors. |
|---|---|---|--|
| | Χ | | |

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

- NRSAn existing map of storm sewers, sanitary sewers, and public water supply systems.XXTechnical Assistance Comments:It is not necessary to include a map of your public water supply system in
your plan if you feel it would pose a threat to the security of your system. An existing map of the
storm sewers and sanitary sewers in the Drinking Water Supply Management Area(s) must be included
in the wellhead protection plan and must also be submitted to the MDH as part of the approval.
- N
 R
 S

 X
 X

 An existing map of the gas and oil pipelines used by gas and oil suppliers.

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

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

 X
 X
 X

Technical Assistance Comments: The management of the highly vulnerable parts of the Drinking Water

Supply Management Area(s) must reflect what is known about this data element.

N R S

An existing record of construction, maintenance, and use of the public water supply well 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 | | | | | |
|---|--|--|---|--|--|
| Ν | R | S | An existing description of high, mean, and low flows on streams. | | |
| | Χ | | | | |
| Technical Assistance Comments: The management of the highly vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element. | | | | | |
| N | R X | S | An existing list of lakes where the state has established ordinary high water marks. | | |
| Technical Assistance Comments: The management of the highly vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element. | | | | | |
| Ν | N R S An existing list of permitted withdrawals from lakes and streams, including source, use, and amounts withdrawn. | | | | |
| | | | | | |
| Technical Assistance Comments: The management of the highly vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element. | | | | | |
| Ν | R | S | An existing list of lakes and streams for which state protected levels or flows have been established. | | |
| | Χ | | | | |
| Technical Assistance Comments: The management of the highly vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element. | | | | | |
| N B S An existing description of known water-use conflicts, including those caused by groundwater pumping. | | An existing description of known water-use conflicts, including those caused by groundwater pumping. | | | |
| | 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. | | | | | |
| GROUNDWATER QUANTITY | | | | | |
| N | R X | S | 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 this data element. | | | | | |
| N | R X | 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 this data element. | | | | | |
| N | N R S 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 | N R S X An existing map or list of the state water quality management classification for each stream and lake. | | | | |
| Technical Assistance Comments: The management of the highly vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element. | | | | | |
| N | R X | S | An existing summary of lake and stream water quality monitoring data, including: 1. bacteriological contamination indicators; 4. sedimentation; 2. inorganic chemicals; 5. dissolved oxygen; and 3. organic chemicals; 6. excessive growth or deficiency of aquatic plants | | |
| Technical Assistance Comments: The management of the highly vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element. | | | | | |
| | | | GROUNDWATER QUALITY | | |
| N | R X | S | An existing summary of water quality data, including: 1. bacteriological contamination indicators; 2. inorganic chemicals; and 3. organic chemicals. | | |
| Techn must | ical As refle | sistanc ct wha | e Comments: The management of all the Drinking Water Supply Management Area(s) at is known about this data element. | | |
| N | R X | S | 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 this data element. | | | | | |
| N | R X | S | 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 X | S | 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 X | S | 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 X | S | 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 the highly vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element. | | | | | |

Exhibit 4.1

Map of Precipitation Gauging Stations



Exhibit 4.2

Average Monthly and Annual Precipitation (2009-2014)

target location: Saint louis--Ely 63N 12W S33 (latitude: 47.89367 longitude: 91.86693)

| click to <u>s</u> elect target loc | ation | | | | |
|--|---------------------|--|--|--|--|
| | | | | | |
| years : 2009 - to | 2014 - | | | | |
| number of missing days allowed per month: | | | | | |
| retrieve monthly data | retrieve daily data | | | | |
| | | | | | |

results:

| Target: T63 R12 S33 | | |
|-------------------------------------|-----------|---------------------------|
| mon year cc tttN rrW ss nnnn oooooo | oo pre (i | inches) |
| Jan 2009 69 63N 12W 22 NWS ELY | 1.02 | |
| Feb 2009 69 63N 12W 22 NWS ELY | 1.08 | |
| Mar 2009 69 63N 12W 22 NWS ELY | 2.38 | |
| Apr 2009 69 63N 12W 22 NWS ELY | 3.17 | |
| May 2009 69 63N 12W 22 NWS ELY | 2.59 | |
| Jun 2009 69 63N 12W 22 NWS ELY | 3.33 | |
| Jul 2009 69 63N 12W 22 NWS ELY | 3.43 | |
| Aug 2009 69 63N 12W 22 NWS ELY | 4.37 | |
| Sep 2009 69 63N 12W 22 NWS ELY | .83 | |
| Oct 2009 69 63N 12W 22 NWS ELY | 3.65 | |
| Nov 2009 69 63N 12W 22 NWS ELY | 1.49 | |
| Dec 2009 69 63N 12W 22 NWS ELY | 1.17 | 2009 Total = 28.51 inches |
| Jan 2010 69 63N 12W 22 NWS ELY | 1.00 | |
| Feb 2010 69 60N 13W 1 NWS BABBI | TT .10 | |
| Mar 2010 69 63N 12W 22 NWS ELY | .29 | |
| Apr 2010 69 63N 12W 22 NWS ELY | .41 | |
| May 2010 69 63N 12W 22 NWS ELY | 1.76 | |
| Jun 2010 69 63N 12W 22 NWS ELY | 3.32 | |
| | | |

Jul 2010 69 63N 12W 22 NWS ELY 4.44 Aug 2010 69 63N 12W 22 NWS ELY 3.99 Sep 2010 69 63N 12W 22 NWS ELY 3.24 Oct 2010 69 60N 13W 1 NWS BABBITT 1.84 Nov 2010 69 63N 12W 26 NWS ELY USFS 1.64 Dec 2010 69 60N 13W 1 NWS BABBITT 1.45 Jan 2011 69 63N 12W 26 NWS ELY USFS 1.70 Feb 2011 69 63N 12W 26 NWS ELY USFS .75 Mar 2011 69 63N 12W 26 NWS ELY USFS .44 Apr 2011 69 63N 12W 26 NWS ELY USFS 1.87 May 2011 69 63N 12W 26 NWS ELY USFS 1.94 Jun 2011 69 63N 12W 26 NWS ELY USFS 3.81 Jul 2011 69 63N 12W 26 NWS ELY USFS 1.55 Aug 2011 69 63N 12W 26 NWS ELY USFS 2.81 Sep 2011 69 60N 13W 1 NWS BABBITT 1.24 Oct 2011 38 64N 9W 34 NWS ELY 25E 1.30 Nov 2011 69 63N 12W 26 NWS ELY USFS .49 Dec 2011 69 60N 13W 1 NWS BABBITT .24 Jan 2012 69 63N 12W 26 NWS ELY USFS .58 Feb 2012 69 63N 12W 26 NWS ELY USFS .44 Mar 2012 69 63N 12W 26 NWS ELY USFS 1.26 Apr 2012 69 63N 12W 26 NWS ELY USFS 2.55 May 2012 69 63N 12W 26 NWS ELY USFS 6.03 Jun 2012 69 63N 12W 26 NWS ELY USFS 3.83 Jul 2012 69 63N 12W 26 NWS ELY USFS 2.06 Aug 2012 69 63N 12W 26 NWS ELY USFS 1.58 Sep 2012 69 63N 12W 26 NWS ELY USFS 1.36 Oct 2012 69 63N 12W 26 NWS ELY USFS 2.57 Nov 2012 69 63N 12W 26 NWS ELY USFS 1.70

2010 Total = 23.48 inches

2011 Total = 18.14 inches
Dec 2012 69 63N 12W 26 NWS ELY USFS .33 2012 Total = 24.29 inches Jan 2013 69 63N 12W 26 NWS ELY USFS 1.50 Feb 2013 69 63N 12W 26 NWS ELY USFS .76 Mar 2013 69 63N 12W 26 NWS ELY USFS .62 Apr 2013 69 60N 13W 1 NWS BABBITT 5.36 May 2013 69 63N 12W 26 NWS ELY USFS 3.31 Jun 2013 69 63N 12W 26 NWS ELY USFS 4.01 Jul 2013 69 63N 12W 26 NWS ELY USFS 4.39 Aug 2013 69 60N 13W 1 NWS BABBITT 2.55 Sep 2013 69 63N 12W 26 NWS ELY USFS 2.84 Oct 2013 69 60N 13W 1 NWS BABBITT 1.91 Nov 2013 69 60N 13W 1 NWS BABBITT 1.29 Dec 2013 69 63N 12W 26 NWS ELY USFS 1.40 2013 Total = 29.94 inches Jan 2014 69 60N 13W 1 NWS BABBITT 1.06 Feb 2014 69 60N 13W 1 NWS BABBITT 1.87 Mar 2014 69 60N 13W 1 NWS BABBITT 1.13 Apr 2014 69 63N 12W 26 NWS ELY USFS 2.14 May 2014 69 62N 15W 32 DNRO 2.44 Jun 2014 69 60N 13W 1 NWS BABBITT 5.99 Jul 2014 69 62N 15W 32 DNRO 4.58 Aug 2014 69 62N 15W 32 DNRO 1.23 Sep 2014 38 64N 9W 34 NWS ELY 25E m Oct 2014 38 64N 9W 34 NWS ELY 25E 1.30 2014 Total = 21.74 inches Nov 2014 (excluding September, November, and December) m Dec 2014 m

Soils Map and Report



USDA Natural Resources Conservation Service Web Soil Survey National Cooperative Soil Survey 12/10/2014 Page 1 of 3

| <section-header><section-header><section-header> Nare result Image: product of the product of th</section-header></section-header></section-header> |
|---|
| Area of Interest (AOI) Area of Interest (AOI) Soils Soil Map Unit Polygons Soil Map Unit Points Special Point Features Image: Special Point Points Soil Borrow Pit Image: Clay Spot Image: Clayed Depression Image: Special Point Points |
| Gravelly Spot Gravelly Spot Landfill Lava Flow Marsh or swamp Mine or Quarry Miscellaneous Water Perennial Water Perennial Water Saline Spot Sandy Spot Severely Eroded Spot Sinkhole Slide or Slip Sodic Spot |

Map Unit Legend

| | St. Louis County, Minnesot | a, Crane Lake Part (MN613) | |
|-----------------------------|--|----------------------------|----------------|
| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
| B8A | Bearville loamy sand, 0 to 2 percent slopes | 8.1 | 5.3% |
| F2B | Eaglesnest-Wahlsten complex, 2 to 8 percent slopes, bouldery | 21.6 | 14.2% |
| F7B | Biwabik-Graycalm complex, 1 to 8 percent slopes | 53.2 | 34.9% |
| F8D | Biwabik-Graycalm-Friendship complex, pitted, 0 to 18 percent slopes | 0.7 | 0.5% |
| F39A | Foglake, bouldery-Aquepts, rubbly-Hassman, depressional, complex, 0 to 2 percent slopes | 10.2 | 6.7% |
| F40D | Rollins cobbly sandy loam, 8 to 18 percent slopes | 23.0 | 15.1% |
| F151A | Tacoosh mucky peat, dense substratum, 0 to 1 percent slopes | 17.8 | 11.7% |
| GP | Pits, gravel-Udipsamments complex | 5.3 | 3.5% |
| W | Water | 12.6 | 8.3% |
| Totals for Area of Interest | | 152.5 | 100.0% |

Major and Minor Watersheds Map



National Wetlands Inventory Map



User Remarks:

Winton DWSMA Parcels Maps







http://gis.stlouiscountymn.gov/planningflexviewers/County_Explorer/

12/11/2014



City of Winton Municipal Boundaries Map



Exhibit 10.1

Land Cover 2006 Map

Winton St. Louis County Minnesota

Winton Drinking Water Supply Management Area (DWSMA) MN-00690 - Land Cover 2006

Minnesota Department of Health Environmental Health Source Water Protection Unit



Exhibit 10.2

Land Cover 2006 Statistics Table

| | Space | ntensity | | | | | | | | ceous Wetlands | |
|--------------------------|-----------------|------------------|------------------|-------------------------|---------------------|-------------|-------------|-------------------------|----------------|-----------------|-------|
| LAND_COVER Open Water | Developed, Open | Developed, Low I | Deciduous Forest | Evergreen Forest | Mixed Forest | Shrub/Scrub | Pasture/Hay | Cultivated Crops | Woody Wetlands | Emergent Herbac | Total |
| -cov_ 11 | 21 | 22 | 41 | 42 | 43 | 52 | 81 | 82 | 06 | 95 | 66 |
| 069 690 | 069 | 069 | 069 | 069 | 069 | 690 | 069 | 069 | 690 | 069 | 069 |

| EAR | 2006 | 2006 | 2006 | 2006 | 2006 | 2006 | 2006 | 2006 | 2006 | 2006 | 2006 | 2006 |
|----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|-----------|-----------|-----------|-----------|------------|
| ERCENT Y | 11.14 | 7.01 | 4.40 | 3.31 | 9.77 | 4.81 | 30.40 | 3.31 | 5.36 | 12.93 | 7.56 | 100.00 |
| ACRES F | 17.79 | 11.20 | 7.03 | 5.28 | 15.60 | 7.69 | 48.56 | 5.28 | 8.57 | 20.66 | 12.08 | 159.74 |
| ADJ_SQM | 72025.272 | 45349.245 | 28454.429 | 21340.821 | 63133.263 | 31122.031 | 196513.397 | 21340.821 | 34678.835 | 83584.884 | 48906.049 | 646449.048 |
| ORIG_SQM | 72900.000 | 45900.000 | 28800.000 | 21600.000 | 63900.000 | 31500.000 | 198900.000 | 21600.000 | 35100.000 | 84600.000 | 49500.000 | 654300.000 |

Exhibit 11.1

City of Winton PCSI Map

Winton St. Louis County Minnesota

Minnesota Department of Health Winton Drinking Water Supply Management Area (DWSMA) MN-00690 - Potential Contaminant Source Inventory (PCSI)

R I 2 W R II W

Environmental Health

Source Water Protection Unit



Exhibit 11.2

City of Winton PCSI Report

PCSI Report

| FID NAME | TYPE | ADDRESS | | CITY | ZIP | PIN | COMMENTS | ACRES |
|--|---|-----------------|-------|-----------|--------------------|---------------------------|--|-------------------|
| 100 City of Winton | 4334 - Public water supplier | P.O. Box 163 | | Winton | 55796 | 190-0040- 00374 | | |
| Inv Id Pcsi | Status | Material | Value | Program | Program ID | Inv Comment | 'S | |
| 1 WEL - Well | A - Active | X100 - Water | | 46 FT CWI | 189468 | 3 Municipal We | II #1 - Primary Use | |
| 101 City of Winton | 4334 - Public water supplier | P.O. Box 163 | | Winton | 55796 | 190-0040- 00375 | | |
| Inv Id Pcsi | Status | Material | Value | Program | Program ID | Inv Comment | 'S | |
| 2 WEL - Well | A - Active | X100 - Water | | 60 FT CWI | 18195 ⁻ | 1 Municipal We | II #3 - Primary Use | |
| 3 WEL - Well | I - Inactive | X100 - Water | 3 | 26 FT CWI | 558881 | 1 Municipal We | II #4 - Emergency Use | |
| 200 Ely Winton Rod and Gun Club, Inc. | 5300 - Amusement, sports, or recreation establishment | P.O. Box 41 | | Winton | 55796 | 190-0040- 00370 | | |
| Inv Id Pcsi | Status | Material | Value | Program | Program ID | Inv Comment | Ś | |
| 4 UST - Underground storage tank | A - Active | F240 - Fuel oil | 10 | 000 G | | 1,000 gallon t | ank - located on PIN 190-0040-00370 | i |
| 5 SSTS - Subsurface sewage treat system | ment A - Active | W720 - Septage | 9 | 0 | | Located on P | IN 190-0040-00370 | |
| 201 Ely Winton Rod and Gun Club, Inc. | 5300 - Amusement, sports, or recreation establishment | P.O. Box 41 | | Winton | 55796 | 465-0020- 03620 | | |
| Inv Id Pcsi | Status | Material | Value | Program | Program ID | Inv Comment | Ś | |
| 6 SSTS - Subsurface sewage treat system | ment I - Inactive | W720 - Septage |) | 0 | | Two septic ta unused, and | nks were installed, but never used. T not connected to the active SSTS. | hey are clean and |



PCSI Report

| FID NAME | TYPE | ADDRESS | CITY | ZIP | PIN COMMENTS | ACRES |
|---------------------------------------|---|-----------------------|-----------|------------|---|-------|
| 202 Ely Winton Rod and Gun Club, Inc. | 5300 - Amusement, sports, or recreation establishment | P.O. Box 41 | Winton | 55796 | 465-0020- 03747 | |
| Inv Id Pcsi | Status | Material Value | e Program | Program ID | Inv Comments | |
| 7 UST - Underground storage tank | R - Remove | ed F200 - Gasoline | 0 | | Tanks removed from site, PIN 465-0020-03747 | |
| 300 Cathy Karasti Residence | 1100 - Private household | 142 Third Avenue West | Winton | 55796 | 190-0010- 00110 | |
| Inv Id Pcsi | Status | Material Value | e Program | Program ID | Inv Comments | |
| 8 UST - Underground storage tank | A - Active | F240 - Fuel oil | 0 | | Tank located in basement of residence | |
| 301 Susan Scufsa et al Residence | 1100 - Private household | 310 West Street North | Winton | 55796 | 190-0010- 00070 | |
| Inv Id Pcsi | Status | Material Value | e Program | Program ID | Inv Comments | |
| 9 UST - Underground storage tank | A - Active | F240 - Fuel oil | 0 | | Tank located in basement of residence | |
| 302 Daniel Peterson Residence | 1100 - Private household | 326 West Street North | Winton | 55796 | 190-0010- Also owns PIN 190-0010-00040 00050 | |
| Inv Id Pcsi | Status | Material Value | e Program | Program ID | Inv Comments | |
| 10 UST - Underground storage tank | A - Active | F240 - Fuel oil | 0 | | Tank located in basement of residence | |



PCSI Report

| FID | NAME | TYPE | ADDRESS | CITY | ZIP | PIN | COMMENTS | ACRES |
|-----|-----------------------------------|-----------------------------|------------------------|--------------|------------|--------------------|---|-------|
| 303 | James Peterson Residence | 1100 - Private household | 327 River Street | Winton | 55796 | 190-0010- 00160 | | |
| | Inv Id Pcsi | Status | Material Va | lue Program | Program ID | Inv Comments | | |
| | 11 UST - Underground storage tank | A - Active | F240 - Fuel oil | 0 | | Tank located ir | n basement of residence | |
| 304 | Charles Jessich Residence | 1100 - Private household | 345 River Street | Winton | 55796 | 190-0010- 00180 | | |
| | Inv Id Pcsi | Status | Material Va | lue Program | Program ID | Inv Comments | | |
| | 12 UST - Underground storage tank | A - Active | F240 - Fuel oil | 0 | | Tank located ir | n basement of residence | |
| 305 | Geraldine Shepherd Residence | 1100 - Private household | 446 Front Street North | Winton | 55796 | 190-0040- 00180 | Clerk states property sold to Ryan Bajam more than 2 years ago; County records show Geraldine as taxpayer | |
| | Inv Id Pcsi | Status | Material Va | llue Program | Program ID | Inv Comments | | |
| | 13 UST - Underground storage tank | A - Active | F240 - Fuel oil | 0 | | Tank located ir | n basement of residence | |
| 306 | Tonya Debeltz Residence | 1100 - Private household | 462 Front Street North | Winton | 55796 | 190-0040- 00170 | | |
| | Inv Id Pcsi | Status | Material Va | lue Program | Program ID | Inv Comments | | |
| | 14 UST - Underground storage tank | A - Active | F240 - Fuel oil | 0 | | Tank located ir | n basement of residence | |



PCSI Report

| FID | NAME | TYPE | ADDRESS | CITY | ZIP | PIN COMMENTS | ACRES |
|-----|-----------------------------------|-----------------------------|------------------------|---------|------------|---------------------------------------|-------|
| 307 | Scott Buckmaster Residence | 1100 - Private household | 504 Front Street North | Winton | 55796 | 190-0040- 00160 | |
| | Inv Id Pcsi | Status | Material Value | Program | Program ID | Inv Comments | |
| | 15 UST - Underground storage tank | A - Active | F240 - Fuel oil | 0 | | Tank located in basement of residence | |
| 308 | Gerald Okstad Residence | 1100 - Private household | 514 Front Street North | Winton | 55796 | 190-0040- 00150 | |
| | Inv Id Pcsi | Status | Material Value | Program | Program ID | Inv Comments | |
| | 16 UST - Underground storage tank | A - Active | F240 - Fuel oil | 0 | | Tank located in basement of residence | |
| 309 | Gerald Okstad Residence | 1100 - Private household | 526 Front Street North | Winton | 55796 | 190-0040- 00140 | |
| | Inv Id Pcsi | Status | Material Value | Program | Program ID | Inv Comments | |
| | 17 UST - Underground storage tank | A - Active | F240 - Fuel oil | 0 | | Tank located in basement of residence | |
| 310 | Paul Tomas Residence | 1100 - Private household | 538 Front Street North | Winton | 55796 | 190-0040- 00130 | |
| | Inv Id Pcsi | Status | Material Value | Program | Program ID | Inv Comments | |
| | 18 UST - Underground storage tank | A - Active | F240 - Fuel oil | 0 | | Tank located in basement of residence | |



PCSI Report

| FID . | NAME | TYPE | ADDRESS | CITY | ZIP | PIN COMMENTS | ACRES |
|-------|-----------------------------------|-----------------------------|------------------------|---------|------------|---------------------------------------|-------|
| 311 | Rocklyn Gaither Residence | 1100 - Private household | 548 Front Street North | Winton | 55796 | 190-0040- 00120 | |
| | Inv Id Pcsi | Status | Material Value | Program | Program ID | Inv Comments | |
| | 19 UST - Underground storage tank | A - Active | F240 - Fuel oil | 0 | | Tank located in basement of residence | |
| 312 | Sharon Lassila Residence | 1100 - Private household | 607 Main Street North | Winton | 55796 | 190-0040- 00070 | |
| | Inv Id Pcsi | Status | Material Value | Program | Program ID | Inv Comments | |
| | 20 UST - Underground storage tank | A - Active | F240 - Fuel oil | 0 | | Tank located in basement of residence | |



Inner Well Management Zone PCSI Reports

| M | I | N | N | E | s | 0 | T | A |
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Environmental Health Division Drinking Water Protection Section P.O. Box 64975 St. Paul, Minnesota 55164-0975

INNER WELLHEAD MANAGEMENT ZONE (IWMZ) -POTENTIAL CONTAMINANT SOURCE INVENTORY (PCSI) REPORT

PUBLIC WATER SYSTEM INFORMATION

- PWS ID 1690057 NAME Winton

Winton Water Superintendent, P.O. Box 163, Winton, MN 55796

COMMUNITY

FACILITY (WELL) INFORMATION

ADDRESS

| | NA-11 #0 | |
|-----------------|-----------|-----------------------------------|
| NAME | Well #3 | |
| | | ADDITIONAL CONSTRUCTION |
| FACILITY ID | S03 | INFORMATION AVAILABLE? |
| UNIQUE WELL NO. | 181951 | \Box YES (Please attach a copy) |
| COUNTY | St. Louis | |

| PWS I | D / FACILITY ID 1690057 S03 | UNIQ | UE WELL NO. | 181951 | | | | |
|------------|--|------|----------------|-------------------|-------------------|----------------------|--------------|-------------|
| | | | ISOI | LATION DISTA | NCES (FEET) | | LOCAT | ION |
| PCSI | ACTUAL OR POTENTIAL | l l | Minimum | Distances | tances | | Dist. | E-4 |
| CODE | CONTAMINATION SOURCE | | Community | Non- community | Well ¹ | 200 Ft. Y / N / U | from Well | est. (?) |
| Agricu | Itural Related | | | | | | | |
| *AC1 | Agricultural chemical buried piping | | 50 | 50 | | N | | |
| *AC2 | Agricultural chemical multiple tanks or containers for residential retail sale of | or | 50 | 50 | | N | | |
| | use, no single tank or container exceeding, but aggregate volume exceedin | g | | | | | | |
| ACP | Agricultural chemical tank or container with 25 gal. or more or 100 lbs. or | | 150 | 150 | | N | | |
| | more dry weight, or equipment filling or cleaning area without safeguards | | | | | | | |
| ACS | Agricultural chemical storage or equipment filling or cleaning area with safeguards | | 100 | 100 | | N | | |
| ACR | Agricultural chemical storage or equipment filling or cleaning area with safeguards and roofed | | 50 | 50 | | N | | |
| ADW | Agricultural drainage well ² (Class V well - illegal ³) | | 50 | 50 | | Ν | | |
| AAT | Anhydrous ammonia tank (stationary tank) | | 50 | 50 | | Ν | | |
| AB1 | Animal building, feedlot, confinement area, or kennel, 0.1 to 1.0 animal unit (stockyard) | | 50 | 20 | 100/40 | N | | |
| AB2 | Animal building or poultry building, including a horse riding area, more than 1.0 animal unit | | 50 | 50 | 100 | N | | |
| ABS | Animal burial area, more than 1.0 animal unit | | 50 | 50 | | N | | |
| FWP | Animal feeding or watering area within a pasture, more than 1.0 animal unit | | 50 | 50 | 100 | N | | |
| AF1 | Animal feedlot, unroofed, 300 or more animal units (stockyard) | | 100 | 100 | 200 | N | | |
| AF2 | Animal feedlot, more than 1.0, but less than 300 animal units (stockyard) | | 50 | 50 | 100 | Ν | | |
| AMA | Animal manure application | | use discretion | use discretion | | Ν | | |
| REN | Animal rendering plant | | 50 | 50 | | N | | |
| MS1 | Manure (liquid) storage basin or lagoon, unpermitted or noncertified | | 300 | 300 | 600 | N | | |
| MS2 | Manure (liquid) storage basin or lagoon, approved earthen liner | | 150 | 150 | 300 | N | | |
| MS3 | Manure (liquid) storage basin or lagoon, approved concrete or composite liner | | 100 | 100 | 200 | N | | |
| MS4 | Manure (solid) storage area, not covered with a roof | | 100 | 100 | 200 | Ν | | |
| OSC | Open storage for crops | | use discretion | use discretion | | N | | |
| SSTS F | Related | | | | | | | |
| AA1 | Absorption area of a soil dispersal system, average flow greater than 10,00 gal./day | 0 | 300 | 300 | 600 | N | | |
| AA2 | Absorption area of a soil dispersal system serving a facility handling infectious or pathological wastes, average flow 10,000 gal./day or less | | 150 | 150 | 300 | N | | |
| AA3 | Absorption area of a soil dispersal system, average flow 10,000 gal./day or less | | 50 | 50 | 100 | N | | |
| AA4 | Absorption area of a soil dispersal system serving multiple family residences or a non-residential facility and has the capacity to serve 20 or more persons per day (Class V well) ² | | 50/300/1504 | 50/300/1504 | 100/600/3004 | N | | |
| CSP | Cesspool | | 75 | 75 | 150 | N | | |
| AGG | Dry well, leaching pit, seepage pit | | 75 | 75 | 150 | N | | |
| *FD1 | Floor drain, grate, or trough connected to a buried sewer | | 50 | 50 | | Ν | | |
| *FD2 | Floor drain, grate, or trough if buried sewer is air-tested, approved materials serving one building, or two or less single-family residences | 6, | 50 | 20 | | N | | |
| *GW1 | Gray-water dispersal area | | 50 | 50 | 100 | N | | |
| LC1 | Large capacity cesspools (Class V well - illegal) ² | | 75 | 75 | 150 | Ν | | |
| MVW | Motor vehicle waste disposal (Class V well - illegal) ² | | illegal | illegal | | N | | |
| 12/18/2014 | | 1 | | | | | | |

| PWS I | D / FACILITY ID | 1690057 | S03 | UNIC | QUE WELL NO. | | 181951 | | | | |
|---------|--|---------------------------------|---|------|----------------------|----------|------------|-------------------|----------|----------|----------|
| | | | | | ISO | LAT | ON DISTA | NCES (FEET) | | LOCATION | |
| PCSI | | ACTUAL | | | Minimum | Diet | | | Within | Diet | |
| CODE | | CONTAMINATION SOURCE | | | Minimum | Dista | Non- | Sensitive | 200 Ft | from | Est. |
| | | | | | | co | mmunity | Well ¹ | Y/N/U | Well | (?) |
| PR1 | Privy, nonportable | | | | 50 | | 50 | 100 | N | | |
| PR2 | Portable (privy) or toile | ət | | | 50 | | 20 | | N | | |
| *SF1 | Watertight sand filter; | peat filter; or constr | ucted wetland | | 50 | | 50 | | N | | |
| SET | Septic tank | | | | 50 | | 50 | | N | | |
| НТК | Sewage holding tank, | watertight | | | 50 | | 50 | | N | | |
| SS1 | Sewage sump capacit | y 100 gal. or more | | | 50 | | 50 | | N | | |
| SS2 | Sewage sump capacit | y less than 100 gal. | , tested, conforming to rule | | 50 | | 20 | | N | <u> </u> | |
| *ST1 | Sewage treatment dev | /ice, watertight | La construcción de Malteria conteses en | | 50 | | 50 | | N | | |
| 281 | less single-family resid | dences | a, serving one building, or two or | | 50 | | 20 | | IN | ĺ | |
| SB2 | Sewer, buried, collected | or, municipal, servir | ng a facility handling infectious or | | 50 | | 50 | | N | | |
| | pathological wastes, o | pen-jointed or unap | proved materials | | | | | | | | |
| *WB1 | Water treatment back | wash holding basin, | reclaim basin, or surge tank with | 1 | 50 | | 50 | | N | ĺ | |
| *WB2 | Water treatment back | wash holding basin | reclaim basin or surge tank with | 1 | 20 | | 20 | | N | | <u> </u> |
| 1102 | a backflow protected s | sewer connection | roolain baoin, or oargo taint ma | | 20 | | 20 | | | ĺ | |
| Land A | oplication | | | | | | | | | | |
| SPT | Land spreading area f | for sewage, septage | e, or sludge | | 50 | | 50 | 100 | N | | |
| Solid V | Vasto Rolatod | | - | | | · · · · | | | | | <u>.</u> |
| COS | Commercial compost | site | | | 50 | <u> </u> | 50 | | N | | |
| CD1 | Construction or demo | lition debris disposa | larea | | 50 | | 50 | 100 | N | | |
| *HW1 | Household solid waste | e disposal area, sing | gle residence | | 50 | | 50 | 100 | N | | |
| LF1 | Landfill, permitted den | nolition debris, dum | p, or mixed municipal solid waste | • | 300 | | 300 | 600 | N | | |
| | from multiple persons | | | | | | | | | | |
| SVY | Scrap yard | | | | 50 | | 50 | | N | <u> </u> | |
| SWT | Solid waste transfer st | ation | | | 50 | | 50 | | N | <u> </u> | |
| Storm | Water Related | | | | | | | | - | | |
| SD1 | Storm water drain pipe | e, 8 inches or greate | er in diameter | | 50 | | 20 | | N | | |
| SWI | Storm water drainage | well ² (Class V well | - illegal ³) | | 50 | | 50 | | N | | <u> </u> |
| SM1 | Storm water pond grea | ater than 5000 gal. | | | 50 | | 35 | | N | L | |
| Wells a | and Borings | | | | T | - | | | | | _ |
| *EB1 | Elevator boring, not co | onforming to rule | | | 50 | | 50 | | N | | |
| *EB2 | Elevator boring, confo | rming to rule | | | 20 | | 20 | | N | | |
| | Monitoring well | | | | record dist. | ree | cord dist. | | N | 162 | |
| | Uperating well | ll or boring | | | 50 | le | 50 | | T N | 102 | |
| 0 | | | | | | <u> </u> | 00 | | <u> </u> | | |
| | Ciatorn or reconvoir, b | uried peppressuriz | ad water eupply | | 20 | | 20 | | N | | - |
| | Contaminant nlume | uneu, nonpressunze | eu water suppry | | 50 | | 20 50 | | N | | - |
| *CW1 | Cooling water nond in | Industrial | | | 50 | - | 50 | 100 | N | | |
| DC1 | Deicing chemicals, bu | lk road | | | 50 | | 50 | 100 | N | | |
| *ET1 | Electrical transformer | storage area, oil-fill | ed | | 50 | | 50 | | N | | <u> </u> |
| GRV | Grave or mausoleum | | | | 50 | | 50 | | N | | |
| GP1 | Gravel pocket or Fren | ch drain for clear wa | ater drainage only | | 20 | | 20 | | N | | |
| *HS1 | Hazardous substance | buried piping | | | 50 | | 50 | | N | | |
| HS2 | Hazardous substance gal. or more, or 100 lb | tank or container, a | above ground or underground, 56 ht. without safeguards | | 150 | | 150 | | N | | |
| HS3 | Hazardous substance | tank or container, a | above ground or underground, 56 ht with safeguards | | 100 | | 100 | | N | | |
| HS4 | Hazardous substance | multiple storage tar | nks or containers for residential | | 50 | | 50 | | N | | 1 |
| | retail sale or use, no s | ingle tank or contain | ner exceeding 56 gal. or 100 lbs. | , | | | | | | l | |
| | but aggregate volume | exceeding | | | 50 | - | NI/A | | NI | ─── | ── |
| *HG1 | Horizontal ground sou | irce closed loop bes | t exchanger buried piping | | 50 | - | 50 | | N | | ├ |
| *HG2 | Horizontal ground sou | irce closed loop hes | t exchanger buried piping | | 50 | - | 10 | | N | ┝──── | |
| | horizontal piping, appr | roved materials and | heat transfer fluid | | | L | | | | | L |
| IWD | Industrial waste dispo | sal well (Class V we | ell) ² | | illegal ³ | | illegal³ | | N | | |
| IWS | Interceptor, including a | a flammable waste | or sediment | | 50 | | 50 | | N | | |
| OH1 | Ordinary high water le | vel of a stream, rive | er, pond, lake, reservoir, or more) | | 50 | | 35 | | N | | |
| *PP1 | Petroleum buried pipir | ng | | | 50 | - | 50 | | N | | <u> </u> |
| *PP2 | Petroleum or crude oil | | 100 | | 100 | | N | | | | |

| PWS I | PWS ID / FACILITY ID 1690057 S03 UNIQ | | | | . 181951 | | | | |
|----------|---|--|-------------------|----------------------------|----------------------|--------------|-------------|----------|----------|
| | | | | ISOLATION DISTANCES (FEET) | | | | | |
| PCSI | | Minimum | Distances | tances | | Dist. | F et | | |
| CODE | | Community | Non- community | Well ¹ | 200 Ft. Y / N / U | from Well | est. (?) | | |
| PT1 | Petroleum tank or con | tainer, 1100 gal. or more, without safeguards | | 150 | 150 | | N | | |
| PT2 | Petroleum tank or con | tainer, 1100 gal. or more, with safeguards | | 100 | 100 | | Ν | | |
| PT3 | Petroleum tank or con | tainer, buried, between 56 and 1100 gal. | | 50 | 50 | | Ν | | |
| PT4 | Petroleum tank or con | tainer, not buried, between 56 and 1100 gal. | | 50⁵ | 20 | | Ν | | |
| PU1 | Pit or unfilled space m | ore than four feet in depth | | 20 | 20 | | Ν | | |
| PC1 | Pollutant or contamina | ant that may drain into the soil | | 50 | 50 | 100 | Ν | | |
| SP1 | Swimming pool, in-gro | bund | | 20 | 20 | | Ν | | |
| *VH1 | Vertical heat exchange | er, horizontal piping conforming to rule | | 50 | 10 | | N | | |
| *VH2 | Vertical heat exchange | er (vertical) piping, conforming to rule | | 50 | 35 | | Ν | | |
| *WR1 | Wastewater rapid infilt | tration basin, municipal or industrial | | 300 | 300 | 600 | Ν | | |
| *WA1 | Wastewater spray irrig | gation area, municipal or industrial | | 150 | 150 | 300 | N | | |
| *WS1 | Wastewater stabilizati | on pond, industrial | | 150 | 150 | 300 | N | | |
| *WS2 | Wastewater stabilizati | on pond, municipal, 500 or more gal./acre/day of | | 300 | 300 | 600 | N | | |
| *WS3 | Wastewater stabilizati | | 150 | 150 | 300 | N | | | |
| *WT1 | Wastewater treatment | t unit tanks, vessels and components (Package plan | t) | 100 | 100 | | N | | |
| *WT2 | Water treatment back | wash disposal area | | 50 | 50 | 100 | N | | |
| Additio | nal Sources (If t | here is more than one source listed | above r | nlease indic | ate here) | | | | <u> </u> |
| Additio | | here is more than one source listed | | | | | | | T |
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| _ | | | | | | | L | l | |
| Potent | al Contaminatio | n Sources and Codes Based on Pre | vious Ve | ersions of th | is Form | | | | |
| | none found within 200 | ' of this well. | | | | | | L | |

* New potential contaminant source.

¹ A sensitive well has less than 50 feet of watertight casing, and which is not cased below a confining layer or confining materials of at least 10' in thickness.

² These sources, known as Class V underground injection wells, are regulated by the federal U.S. Environmental Protection Agency.

 $^{\scriptscriptstyle 3}$ These sources are classified as illegal by Minnesota Rules, Chapter 4725.

⁴ Isolation distance is determined by average flow per day or if a facility handles infectious or pathological wastes.

⁵ A community public water-supply well must be a minimum of 50 feet from a petroleum tank or container, unless the tank or container is used for emergency pumping and is located in a room or building separate from the community well; and is of double-wall construction with leak detection between walls; or is protected with secondary containment.

This form is based on the new isolation distances in Minnesota Rules, Chapter 4725, related to wells and borings adopted August 4, 2008, and Minnesota Rules, Chapter 4720, related to wellhead protection.



| PWS ID / FACILITY ID | 1690057 | S03 | UNIQUE WELL NO. | 181951 | | | |
|----------------------|---------------------------------------|------------------|-----------------|--------|--|--|--|
| RECOMMEN | WHP MEASURE IMPLEMENTED? Y or N | DATE VERIFIED | | | | | |
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| COMMENTS | | | | | | | |
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For further information, please contact:

Minnesota Department of Health Drinking Water Protection Section Source Water Protection Unit P.O. Box 64975 St. Paul, Minnesota 55164-0975

Section Receptionist: 651-201-4700 Division TDD: 651-201-5797 or MN Relay Service @ 1-800-627-3529 and ask for 651-201-5000

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Environmental Health Division Drinking Water Protection Section P.O. Box 64975 St. Paul, Minnesota 55164-0975

INNER WELLHEAD MANAGEMENT ZONE (IWMZ) -POTENTIAL CONTAMINANT SOURCE INVENTORY (PCSI) REPORT

PUBLIC WATER SYSTEM INFORMATION

- PWS ID 1690057 NAME
- Winton ADDRESS

Winton Water Superintendent, P.O. Box 163, Winton, MN 55796

COMMUNITY

FACILITY (WELL) INFORMATION

| NAME | Well #1 | IS THERE A WELL LOG OR ADDITIONAL CONSTRUCTION |
|---------------------------|---------------------|--|
| FACILITY ID | S01 | INFORMATION AVAILABLE? |
| UNIQUE WELL NO. COUNTY | 189468 St. Louis | YES (Please attach a copy) NO UNDETERMINED |

| PWS ID / FACILITY ID 1690057 S01 UNIO | | | QUE WELL NO. 189468 | | | | | | | |
|---|--|-----------|---------------------|--------------------------------|----------------------|--------------|-------------|--|--|--|
| | | ISO | | LOCAT | ION | | | | | |
| PCSI | ACTUAL OR POTENTIAL | Minimum | Distances | tances | | Dist. | | | | |
| CODE | CONTAMINATION SOURCE | Community | Non- community | Sensitive Well ¹ | 200 Ft. Y / N / U | from Well | Est. (?) | | | |
| Agricu | Itural Related | | | | | | | | | |
| *AC1 | Agricultural chemical buried piping | 50 | 50 | | N | | | | | |
| *AC2 | Agricultural chemical multiple tanks or containers for residential retail sale | or | 50 | 50 | | N | | | | |
| | use, no single tank or container exceeding, but aggregate volume exceed 56 gal. or 100 lbs. dry weight | ing | | | | | | | | |
| ACP | Agricultural chemical tank or container with 25 gal. or more or 100 lbs. or | | 150 | 150 | | N | | | | |
| | more dry weight, or equipment filling or cleaning area without safeguards | | | | | | | | | |
| ACS | Agricultural chemical storage or equipment filling or cleaning area with safeguards | | 100 | 100 | | N | | | | |
| ACR | Agricultural chemical storage or equipment filling or cleaning area with safeguards and roofed | | 50 | 50 | | N | | | | |
| ADW | Agricultural drainage well ² (Class V well - illegal ³) | | 50 | 50 | | Ν | | | | |
| AAT | Anhydrous ammonia tank (stationary tank) | | 50 | 50 | | N | | | | |
| AB1 | Animal building, feedlot, confinement area, or kennel, 0.1 to 1.0 animal ur (stockyard) | it | 50 | 20 | 100/40 | N | | | | |
| AB2 | Animal building or poultry building, including a horse riding area, more tha 1.0 animal unit | n | 50 | 50 | 100 | N | | | | |
| ABS | Animal burial area, more than 1.0 animal unit | | 50 | 50 | | N | | | | |
| FWP | Animal feeding or watering area within a pasture, more than 1.0 animal ur | nit | 50 | 50 | 100 | N | | | | |
| AF1 | Animal feedlot, unroofed, 300 or more animal units (stockyard) | | 100 | 100 | 200 | N | | | | |
| AF2 | Animal feedlot, more than 1.0, but less than 300 animal units (stockyard) | | 50 | 50 | 100 | N | | | | |
| AMA | Animal manure application | | use discretion | use discretion | | N | | | | |
| REN | Animal rendering plant | | 50 | 50 | | N | | | | |
| MS1 | Manure (liquid) storage basin or lagoon, unpermitted or noncertified | | 300 | 300 | 600 | N | | | | |
| MS2 | Manure (liquid) storage basin or lagoon, approved earthen liner | | 150 | 150 | 300 | N | | | | |
| MS3 | Manure (liquid) storage basin or lagoon, approved concrete or composite liner | | 100 | 100 | 200 | N | | | | |
| MS4 | Manure (solid) storage area, not covered with a roof | | 100 | 100 | 200 | N | | | | |
| OSC | Open storage for crops | | use discretion | use discretion | | N | | | | |
| SSTS F | Related | | | | | | | | | |
| AA1 | Absorption area of a soil dispersal system, average flow greater than 10,0 gal./dav | 00 | 300 | 300 | 600 | Ν | | | | |
| AA2 | Absorption area of a soil dispersal system serving a facility handling infectious or pathological wastes, average flow 10,000 gal./day or less | | 150 | 150 | 300 | N | | | | |
| AA3 | Absorption area of a soil dispersal system, average flow 10,000 gal./day of less | or | 50 | 50 | 100 | N | | | | |
| AA4 | Absorption area of a soil dispersal system serving multiple family residences or a non-residential facility and has the capacity to serve 20 or more persons per day (Class V well) ² | | 50/300/1504 | 50/300/1504 | 100/600/3004 | N | | | | |
| CSP | Cesspool | | 75 | 75 | 150 | N | | | | |
| AGG | Dry well, leaching pit, seepage pit | | 75 | 75 | 150 | N | | | | |
| *FD1 | Floor drain, grate, or trough connected to a buried sewer | | 50 | 50 | | N | | | | |
| *FD2 | Floor drain, grate, or trough if buried sewer is air-tested, approved materia serving one building, or two or less single-family residences | als, | 50 | 20 | | N | | | | |
| *GW1 | Gray-water dispersal area | | 50 | 50 | 100 | N | | | | |
| LC1 | Large capacity cesspools (Class V well - illegal) ² | | 75 | 75 | 150 | N | | | | |
| MVW | Motor vehicle waste disposal (Class V well - illegal) ² | | illegal | illegal | | N | | | | |
| 1/6/2015 | | 1 | | | | | | | | |

| PWS I | PWS ID / FACILITY ID 1690057 S01 | | | UNIC | NIQUE WELL NO. 189468 | | | | | | | | |
|----------------|---|--|---|------|-----------------------|----------|----------------------|-------------------|----------|------|----------|--|--|
| | | | | | ISO | ΙΔΤΙ | | | LOCATION | | | | |
| PCSI | ACTUAL OR POTENTIAL CONTAMINATION SOURCE | | | | Minimum Distances | | | | 14/ithin | Diet | | | |
| CODE | | | | | Minimum | Dist | Non- | Sensitive | 200 Ft. | from | Est. | | |
| | | | | | Community | co | mmunity | Well ¹ | Y/N/U | Well | (?) | | |
| PR1 | Privy, nonportable | | | | 50 | | 50 | 100 | Ν | | | | |
| PR2 | Portable (privy) or toile | ət | | | 50 | | 20 | | N | | | | |
| *SF1 | Watertight sand filter; | peat filter; or constru | cted wetland | | 50 | | 50 | | N | | | | |
| SET | Septic tank | | | | 50 | | 50 | | N | | | | |
| HTK | Sewage holding tank, | watertight | | | 50 | | 50 | | N | | <u> </u> | | |
| 551 | Sewage sump capacit | y 100 gai. or more | tested conforming to rule | | 50 | <u> </u> | 50 20 | | N N | | | | |
| *ST1 | Sewage sump capacit | vice watertight | tested, comorning to rule | | 50 | - | 20 50 | | N | | | | |
| SB1 | Sewer, buried, approv | ed materials, tested, | serving one building, or two or | | 50 | | 20 | | N | | | | |
| | less single-family resid | lences | | | | | | | | | | | |
| SB2 | Sewer, buried, collecto | or, municipal, serving | a facility handling infectious or | | 50 | | 50 | | N | | | | |
| *WB1 | Water treatment back | wash holding basin, r | reclaim basin, or surge tank with | | 50 | | 50 | | N | | | | |
| | a direct sewer connec | tion | | | | | | | | | | | |
| *WB2 | Water treatment back | wash holding basin, r | reclaim basin, or surge tank with | | 20 | | 20 | | N | | | | |
| | a backflow protected s | sewer connection | | | | | | | | | L | | |
| Land A | pplication | | | | | _ | | 100 | | 1 | _ | | |
| SPT | Land spreading area f | or sewage, septage, | or sludge | | 50 | | 50 | 100 | N | | | | |
| Solid V | Vaste Related | | | | • | - | | | • | | | | |
| COS | Commercial compost | site | | | 50 | | 50 | | N | | | | |
| CD1 | Construction or demol | ition debris disposal | area | | 50 | | 50 | 100 | N | | <u> </u> | | |
| ^HVV1 | Household solid waste | e disposal area, singl | e residence | | 50 | | 50 | 100 | N | | <u> </u> | | |
| | from multiple persons | ionuon debris, dump | , or mixed municipal solid waste | | 300 | | 300 | 600 | IN | | | | |
| SVY | Scrap yard | | | | 50 | | 50 | | N | | | | |
| SWT | Solid waste transfer st | ation | | | 50 | | 50 | | N | | | | |
| Storm | Water Related | | | | | | | | | | | | |
| SD1 | Storm water drain pipe | e, 8 inches or greater | r in diameter | | 50 | | 20 | | N | | | | |
| SWI | Storm water drainage | well ² (Class V well - | illegal ³) | | 50 | | 50 | | N | | | | |
| SM1 | Storm water pond great | ater than 5000 gal. | | | 50 | | 35 | | N | | | | |
| Wells a | and Borings | | | | | | | | | | | | |
| *EB1 | Elevator boring, not co | onforming to rule | | | 50 | | 50 | | N | | | | |
| *EB2 | Elevator boring, confo | rming to rule | | | 20 | | 20 | | N | | | | |
| MON | Monitoring well | | | | record dist. | re | cord dist. | | N | | | | |
| WEL | Operating well | U | | | record dist. | re | cord dist. | | N | | <u> </u> | | |
| 000 | Unused, unsealed we | l or boring | | | 50 | | 50 | | N | | | | |
| Genera | | | | | | _ | | | | 1 | _ | | |
| *CR1 | Cistern or reservoir, bi | uried, nonpressurized | d water supply | | 20 | | 20 | | N | | <u> </u> | | |
| PLIVI *CW/1 | Contaminant plume | ductrial | | | 50 | | 50 | 100 | N N | | | | |
| | Deicing chemicals bu | lk road | | | 50 | - | 50 | 100 | N | | ── | | |
| *ET1 | Electrical transformer | storage area, oil-fille | d | | 50 | | 50 | 100 | N | | | | |
| GRV | Grave or mausoleum | | | | 50 | - | 50 | | N | | <u> </u> | | |
| GP1 | Gravel pocket or Fren | ch drain for clear waf | ter drainage only | | 20 | | 20 | | N | | | | |
| *HS1 | Hazardous substance | buried piping | | | 50 | | 50 | | N | | | | |
| HS2 | Hazardous substance gal. or more, or 100 lb | tank or container, ab | oove ground or underground, 56 t, without safeguards | | 150 | | 150 | | N | | | | |
| HS3 | Hazardous substance gal. or more, or 100 lb | tank or container, ab s. or more dry weigh | oove ground or underground, 56 t with safeguards | | 100 | | 100 | | Y | 55 | Y | | |
| HS4 | Hazardous substance | multiple storage tank | ks or containers for residential | | 50 | | 50 | | N | | | | |
| | retail sale or use, no s | ingle tank or containe | er exceeding 56 gal. or 100 lbs., | | | | | | | | | | |
| HWF | Highest water or flood | level | | | 50 | - | N/A | | N | | <u> </u> | | |
| *HG1 | Horizontal ground sou | rce closed loop heat | exchanger buried piping | | 50 | | 50 | | N | | <u> </u> | | |
| *HG2 | Horizontal ground sou | rce closed loop heat | exchanger buried piping and | | 50 | | 10 | | N | | 1 | | |
| | horizontal piping, appr | oved materials and h | neat transfer fluid | | | | | | | | <u> </u> | | |
| IWD | Industrial waste dispos | sai well (Class V well | l) ^z | | illegal ³ | <u> </u> | illegal ³ | | N | | — | | |
| | Ordinor: bick water la | a nammable waste of | | | 50 | <u> </u> | 50 | | N | | ── | | |
| UH1 | drainage ditch (holds) | ver or a stream, river water six months or r | , pona, lake, reservoir, or nore) | | 50 | | 35 | | N | | | | |
| *PP1 | Petroleum buried pipir | ng | 1 | | 50 | | 50 | | N | | 1 | | |
| *PP2 | Petroleum or crude oil | Petroleum or crude oil pipeline to a refinery or distribution center | | | | | 100 | | N | | | | |

| PWS ID / FACILITY ID 1690057 S01 UNIQ | | | | | QUE WELL NO. 189468 | | | | | | |
|---------------------------------------|---|-------------------------|--------------------------------|----------|---------------------|-------------------|-------------------|--------------------------------|--------------|-------------|--|
| | | | | | ISO | LOCAT | TION | | | | |
| PCSI | ACTUAL OR POTENTIAL CONTAMINATION SOURCE | | | | Minimum | Distances | O a maiting | Within 200 Ft. Y / N / U | Dist. | - | |
| CODE | | | | | Community | Non- community | Well ¹ | | from Well | Est. (?) | |
| PT1 | Petroleum tank or cont | tainer, 1100 gal. or | more, without safeguards | | 150 | 150 | | N | | | |
| PT2 | Petroleum tank or cont | tainer, 1100 gal. or | more, with safeguards | | 100 | 100 | | N | | | |
| PT3 | Petroleum tank or cont | tainer, buried, betwo | een 56 and 1100 gal. | | 50 | 50 | | N | | | |
| PT4 | Petroleum tank or cont | tainer, not buried, b | etween 56 and 1100 gal. | | 50⁵ | 20 | | Y | 150 | Y | |
| PT4 | Petroleum tank or cont | tainer, not buried, b | etween 56 and 1100 gal. | | 50⁵ | 20 | | Y | 150 | Y | |
| PU1 | Pit or unfilled space me | ore than four feet in | depth | | 20 | 20 | | Ν | | | |
| PC1 | Pollutant or contamina | ant that may drain in | to the soil | | 50 | 50 | 100 | Ν | | | |
| SP1 | Swimming pool, in-gro | und | | | 20 | 20 | | Ν | | | |
| *VH1 | Vertical heat exchange | er, horizontal piping | conforming to rule | | 50 | 10 | | Ν | | | |
| *VH2 | Vertical heat exchange | er (vertical) piping, o | conforming to rule | | 50 | 35 | | Ν | | | |
| *WR1 | Wastewater rapid infilt | ration basin, munici | pal or industrial | | 300 | 300 | 600 | N | | | |
| *WA1 | Wastewater spray irrig | ation area, municip | al or industrial | | 150 | 150 | 300 | Ν | | | |
| *WS1 | Wastewater stabilization | on pond, industrial | | | 150 | 150 | 300 | Ν | | | |
| *WS2 | Wastewater stabilization leakage | on pond, municipal, | 500 or more gal./acre/day of | | 300 | 300 | 600 | N | | | |
| *WS3 | Wastewater stabilization leakage | on pond, municipal, | less than 500 gal./acre/day of | | 150 | 150 | 300 | N | | Γ | |
| *WT1 | Wastewater treatment | unit tanks, vessels | and components (Package plant | i) | 100 | 100 | | N | | | |
| *WT2 | Water treatment backw | wash disposal area | | | 50 | 50 | 100 | N | | | |
| Additio | onal Sources (If t | here is more t | than one source listed | above, p | olease indic | ate here). | | | | | |
| | | | | | | | | | | | |
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| Potent | ial Contamination | n Sources and | d Codes Based on Prev | /ious Ve | rsions of th | is Form | | | | | |
| | none found within 200' | of this well. | | | | | | | | | |
| | | | | | - | - | | | | | |

* New potential contaminant source.

¹ A sensitive well has less than 50 feet of watertight casing, and which is not cased below a confining layer or confining materials of at least 10' in thickness.

² These sources, known as Class V underground injection wells, are regulated by the federal U.S. Environmental Protection Agency.

³ These sources are classified as illegal by Minnesota Rules, Chapter 4725.

⁴ Isolation distance is determined by average flow per day or if a facility handles infectious or pathological wastes.

⁵ A community public water-supply well must be a minimum of 50 feet from a petroleum tank or container, unless the tank or container is used for emergency pumping and is located in a room or building separate from the community well; and is of double-wall construction with leak detection between walls; or is protected with secondary containment.

This form is based on the new isolation distances in Minnesota Rules, Chapter 4725, related to wells and borings adopted August 4, 2008, and Minnesota Rules, Chapter 4720, related to wellhead protection.


| PWS ID / FACILITY ID | 1690057 | 189 | 189468 | | | | | | |
|----------------------|------------|-----|---------------------------------------|------------------|--|--|--|--|--|
| RECOMME | NDED WELLH | | WHP MEASURE IMPLEMENTED? Y or N | DATE VERIFIED | | | | | |
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For further information, please contact:

Minnesota Department of Health Drinking Water Protection Section Source Water Protection Unit P.O. Box 64975 St. Paul, Minnesota 55164-0975

Section Receptionist: 651-201-4700 Division TDD: 651-201-5797 or MN Relay Service @ 1-800-627-3529 and ask for 651-201-5000

Exhibit 13

Consumer Confidence Report - 2013

CONSUMER CONFIDENCE REPORT

PWSID: 1690057

City of Winton 2013 Drinking Water Report

The City of Winton is issuing the results of monitoring done on its drinking water for the period from January 1 to December 31, 2013. The purpose of this report is to advance consumers' understanding of drinking water and heighten awareness of the need to protect precious water resources.

Source of Water

The City of Winton provides drinking water to its residents from a groundwater source: two wells ranging from 40 to 46 feet deep, that draw water from the Quaternary Water Table aquifer.

The water provided to customers may meet drinking water standards, but the Minnesota Department of Health has also made a determination as to how vulnerable the source of water may be to future contamination incidents. If you wish to obtain the entire source water assessment regarding your drinking water, please call 651-201-4700 or 1-800-818-9318 (and press 5) during normal business hours. Also, you can view it on line at www.health.state.mn.us/divs/eh/water/swp/swa.

Call if you have questions about the City of Winton drinking water or would like information about opportunities for public participation in decisions that may affect the quality of the water.

Results of Monitoring

No contaminants were detected at levels that violated federal drinking water standards. However, some contaminants were detected in trace amounts that were below legal limits. The table that follows shows the contaminants that were detected in trace amounts last year. (Some contaminants are sampled less frequently than once a year; as a result, not all contaminants were sampled for in 2013. If any of these contaminants were detected the last time they were sampled for, they are included in the table along with the date that the detection occurred.)

Key to abbreviations:

MCLG-Maximum Contaminant Level Goal: The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

MCL—Maximum Contaminant Level: The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

AL-Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirement which a water system must follow.

90th Percentile Level—This is the value obtained after disregarding 10 percent of the samples taken that had the highest levels. (For example, in a situation in which 10 samples were taken, the 90th percentile level is determined by disregarding the highest result, which represents 10 percent of the samples.) Note: In situations in which only 5 samples are taken, the average of the two with the highest levels is taken to determine the 90th percentile level.

ppm-Parts per million, which can also be expressed as milligrams per liter (mg/l).

ppb—Parts per billion, which can also be expressed as micrograms per liter ($\mu q/l$).

CONSUMER CONFIDENCE REPORT

PWSID: 1690057

N/A-Not Applicable (does not apply).

| | | | Level | Found | |
|--------------------------------|-------------------------|------|---------|---------|---|
| Contaminant | MCLG | MCL | Range | Average | Typical Source of Contaminant |
| (units) | | | (2013) | /Result | |
| Fluoride (ppm) | 4 | 4 | .87-1.3 | 1.15 | State of Minnesota requires all municipal water systems to add fluoride to the drinking water to promote strong teeth; Erosion of natural deposits; Discharge from fertilizer and aluminum factories. |
| Nitrate (as Nitrogen) (ppm) | 10.4 | 10.4 | N/A | .86 | Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits. |
| Total Coliform Bacteria | 0 >1 present present | | N/A | 1♥ | Naturally present in the environment. |

*This is the value used to determine compliance with federal standards. It sometimes is the highest value detected and sometimes is an average of all the detected values. If it is an average, it may contain sampling results from the previous year.

♥Follow-up sampling showed no contamination present.

| Contaminant (units) | MCLG | AL | 90% Level | # sites over AL | Typical Source of Contaminant |
|------------------------------|------|-----|--------------|--------------------|--|
| Copper (ppm) (07/06/2011) | 1.3 | 1.3 | .16 | 0 out of 5 | Corrosion of household plumbing systems; Erosion of natural deposits. |
| Lead (ppb) (07/06/2011) | 0 | 15 | 2.65 | 0 out of 5 | Corrosion of household plumbing systems; Erosion of natural deposits. |

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. City of Winton is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

Monitoring may have been done for additional contaminants that do not have MCLs established for them and are not required to be monitored under the Safe Drinking Water Act. Results may be available by calling 651-201-4700 or 1-800-818-9318 during normal business hours.

Compliance with National Primary Drinking Water Regulations

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water include:

CONSUMER CONFIDENCE REPORT

PWSID: 1690057

Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

Inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.

Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.

Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.

Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, the U. S. Environmental Protection Agency (EPA) prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at 1-800-426-4791.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline at 1-800-426-4791.

Exhibit 14

Old Municipal Well Report

City of Winton (PWSID 1690057, St. Louis County)

| Reference | Well Name | Unique # | Drilled Well Depth (feet) | Completed Well Depth (feet) | Depth Cased: Deepest (feet) | Casing Diameter: Narrowest (inches) | | Initial Year Constructed | Construction Method | | Year Out of Service | Sealing Record Available | Location | Remarks | Remarks |
|--|--|---|--|-----------------------------------|---|---|-----------------------|--|--|------------------------|--|---|---|---|--|
| А | Well No. 2 | 181951 | 60 | 40 | 32 | 8 | | 1982 | drilled | | | 1998 | yes | Front Street, 250 ft. SW of pumphouse | Sealed under 181951 |
| С | | 248015 | | | | | | | | | | | | | MNDWIS showns Removed From Flow. No CWI record. |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| Data Bases S MDH District MDH DPW M MDH DWP M Lakesnwoods. and Food Con MNBrew(eries This list does n Compiled by: | Searched: scanned files licrofiche (1967-81) INDWIS, WELLS, & com & <i>Biennial Reponmissioner</i> , Volume 1).com not include those wells G. Nash | . 1Suite rt of the MN S 1, 1907 s currently, Pe Date: | State Dairy ermanent, Activ 5/3/2012 | /e | WINTON, a 1906, and s station, also | city in section 24 eparated from the shown as Winpo | of N e tow n. V | Morse Township (mship on April 23 Vell "C" (248015) | T. 63N, R. 12W), 3, 1906; the post o 9 has no CWI reco | inco ffice ord b | prporated as began in 18 out appears o | a village on . 95; it had a I n the OMW v | luly 23, 1901, Duluth, Missat webpage as "i | reincorporatec be and Iron Ra not located". | l on April 6, nge Railroad |

PWSID = 1690057 PWS Name = Winton PWS Status = Active

Public Water Supply Sources: Information from MNDWIS and CWI (sorted by Sample Point ID) **Source Type Codes: GW** = Ground water; **SW** = Surface water; **GUI** = Ground water under influence **Source Availability Codes: PRIM** = Primary; **SEAS** = Seasonal; **EMER** = Emergency; **OTHE** = Other; **GIND** = Pending; Source Availability Codes: **DNQL** = Does Not Qualify; **NIUW** = Not in Use; **NTDW** = Not Drinking Water; **OBSV** = Observation; **XXXX** = Sealed

Source Status Codes: A = Active; I = Inactive; O-LT = Out Long-Term; O-ST = Out Short-Term Location Source: MGS = digitized by the MN Geological Survey; * indicates imcomplete records emptiness

Values in Red, if present, indicate discrepancies between MNDWIS and CWI (0 or null values excepted).

| | | | | | SOUR | CES IN I | FLO | W | | | | | | | |
|-----------------------|---------------------|--------|----------------|----------|---|--|---------------|-----------------------|-------------------------------|---------------------------------|--------------------|---------------------------------|-------------------------------|---------------------------------|--|
| | | | Source Inf | 'o | | | N | INDV | VIS D | ata | | CWI | Data | | |
| Sample Point ID | _Name_ | _Type_ | _Availability_ | _Status_ | Well No. (link to Well Log (s)) | Location Info (link to Map) | Drill Year | Depth (in feet) | Case Depth (in feet) | Case Diam. (in inches) | Drill Date | Depth Completed (in feet) | Case Depth (in feet) | Case Diam. (in inches) | |
| S01 | Well #1 | GW | PRIM | А | 189468 | <u>12/08/1999</u> (B. Kluthe) | 1981 | 46 | 38 | 6 | 04- 30- 1981 | 46.00 | | | |
| S03 | Well #3 | GW | PRIM | A | <u>181998</u> | not located | 1982 | 46 | 27 | 8 | 00- 00- 1982 | 46.00 | 27.00 | 8.00 | |
| S05 | Well #4 | GW | EMER | A | <u>558881</u> | 09/01/2011 <u>(T.</u> Alvarez) | 1996 | 326 | 40 | | 01- 02- 1996 | 326.00 | 40.00 | 6.00 | |
| | | | S | OURC | ES RE | MOVED | FRO | DM F | LOW | , | | | | | |
| | | | Source Inf | o | | | N | 1NDV | VIS D | ata | CWI Data | | | | |
| Sample Point ID | _Name_ | _Type_ | _Availability_ | _Status_ | Well No. (link to Well Log (s)) | Location Info (link to Map) | Drill Year | Depth (in feet) | Case Depth (in feet) | Case Diam. (in inches) | Drill Date | Depth Completed (in feet) | Case Depth (in feet) | Case Diam. (in inches) | |
| S02 | Well #2 - 181951 | GW | XXXX | Ι | 181951 | <u>09/01/2011</u> <u>(T.</u> <u>Alvarez)</u> | 1982 | 40 | 32 | 8 | 00- 00- 1982 | 40.00 | 32.00 | 8.00 | |
| S04 | Well | GW | NIUW | I | 248015 | not located | 0 | 0 | 0 | 0 | | | | | |

Source: MN Dep't. of Health - 5/2/2012

 \vee



CITY OF WINTON:

Below are descriptions of your municipal wells according to our records. On the opposite side of this sheet is a map of your municipality, and the location of your municipal wells, located as accurately as possible using our present records. Please confirm or correct the location and numbering of your wells and include any wells that are not shown.

| | Well No. | Well Depth | Casing Dia. Depth | Drop Pipe Length | Year Installed | Status |
|---|-------------|---------------|---|---|----------------------|--|
| • | | 46' | 6 38' | · | 1981 | Active |
| | 2 | 40' | 8" 32' | ······ | 1982 | Active |
| | 3 | 46' | 8" 27' | 4 - 14 - 19 - 19 - 19 - 19 - 19 - 19 - 1 | 1982 | Active |
| | | | | | | |
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Thank you for your cooperation!



| St Ionfo | | | | Minat | ene 1 servites 1 | Joe Water Sample |
|--|------------------------|------------------------|---------------|---------------|--|--|
| Township Name | waship Numbe | r Runge Number | E Section No. | . Fraction % | * * | J. PROPERTY OWNER'S NAME |
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| this exact hiertion of well in section grid with " | ¥." | | | Steich map of | well location. | 4. WELL DEPTH (completed) Date of Completion |
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| | | | | | | (i. aftes hrs. pumping \$.p.m. |
| | | | | | | |
| | | ····· | | | | 12. Well groutest |
| ······································ | | | | | | Cu, Yds, |
| | | | | | | I Ness Coment 2 Bentonite 3 |
| | | | | | | Depik: framfi.tofi. |
| | | | | | | fromft. 10ft. |
| | | ······ | | | | . 10. rearest sources of positive containing of the second |
| · | | | | | | Well disinfected upon completion? Yes Na |
| | | | | | | 34. PUMP |
| ······································ | | | | | | |
| | | LOCAT | ED BY | | | |
| | 1. rh | Address | Verificat | ión | 1 | Model Number HP Volis |
| | | Name or | Mailbo | x | | Langth of drop pipe fi. capacity |
| |]3.m | Lot-Block | (| | | Material of drop pipe |
| | ┟╅┯╫ | Plat Boo | ĸ- | | | Type: ILJSuhmersibly JLLS, Turbine iLlSeferications |
| | 15 H | Into. Fro | m Owne | er | | |
| | 6 - 1 | Info. Fro | mNeig | nbo | 11 | This well was drilled under my jurisdiction and this report is true to |
| | 7.市 | Other | | | 41 | the best of my knowledge and belief. |
| ······ | | Can't Lo | cate Sta | ate Why | | PETERSEN WELL DRILLING, INS. 69183 |
| RECEIVEN | Vie a second she | tes, if needed. | | | | |
| NEWARES, LLEVATION, SOURCE OF HAT | A, 410. | | | | | Addin - Parkville, Minnesota - 55773 |
| JUN 3 n 101 | 21 | | | | | and Q. 4 |
| | <i>?</i>) | | | | | Auchorized Representative |
| | | | | | | |
| Minn, Dept. of Heat | ð | | | | | Denny / Dale4-30-81 |

| L LOCATION DE WELL E |] | | WATE | RWELL | RECORD Jor Wester Sample 181951 |
|--|-----------------------|---|---------------|------------------|---|
| St Louis Inwaship Name | Numher Rungs Number | Secsion No. 1 r | Hinnes | oie Sietuite 1: | SAA.UI.UA 3. PROPERTY OWNER'S NAME |
| Winton 6 | 3 5 12 X | h | ¥ | × × | City of Winton |
| | | | | | Well A |
| $W = \frac{1}{1} + $ | Addition Name | WE1 3-12- | 1 N/2 - 24 |) - K | 4. WELL DEPTH (completed) Date of Completion 40 n. 5. 1 2 |
| | Lot Number | ACA | | | 3 W Kritery 6.] Jetted 9.] Parver Auger 4. USE 1.□ Trumertic 4.□Prublic Supply #2. 1.□ industry 2.□ Industry |
| 2. FORMATION LOU | COLOR | HARDNESSON | FROM | 70 | ZL⊐Prrigation SQL Municipal J□Test Well 6□Air Cunditioning 9□ |
| Top Soil | brown | med | 0 | 2 | 7. CASING HEIGHT: Above/Below HOLE DIAM ID Black 4D Threaded 2D Gutz. 5D Welded Burlace (t. |
| Top Soil | brown | hard | . 2 | 16 | 3 Plastic 0 Drive Shoet Yes No 8_ in. 10321, WeightIbs./ftin. toft. |
| Sandy clay | brown | hard | 16_ | 20 | in, toft. WeightIbi,//fiin, toft. |
| Sand & gravel | brown | hard | 20 | 40 | |
| Shale | green | hard | 40 | 60 | Type Stalliess steel Die 05/0- |
| 4 . | | | | | Bet between 32 fl. and 40 fl. 31 |
| Anufer | MUTA | | | | ft. and ft. |
| /_// | | | | | 19111 M (1. below Dabove Drite Messured Jan. 20 |
| | | | | <u> </u> | 10. PUMPING LEVEL (below land surface) 23. 74* n. sher hri. pumping150 |
| · · · · · · · · · · · · · · · · · · · | | | | | 231 945# n. s/(er 18 hr. pumping 118 |
| | | | | | 1 Philess adapter 3 Basement offset 3 At lease 12" above grade |
| | | | | | 12. Well grouting? |
| | | | | | I Nest Coment 2 2 Beninnite 3□ |
| | LOCATED BY | | | | fram |
| | Address Verifica | tion | | | I.3. Nestass dources of possible contamination |
| 3. | Lot-Block | × | | | Well dwinfected upon completion1 Yes No |
| 4. | Plat Book | | | | Deie instatied |
| | Info. From Own | er | | | |
| 7. | Other | | | | Nodel Number HP Velts |
| | Can't Locate St | ate Why | | | Length of drop pipe fi, capacity \$.0 M, |
| | | | | | Type: ISubmytikle JEL & Turbine & Reciproceting |
| | | ns. tr | -ENTER | | 20 Jet 40 Centrifugin 60 |
| | | <u>, , , , , , , , , , , , , , , , , , , </u> | ب | 988 | This well was deilled under my jurisdiction and this report is true to the beat of my knowledge and belief. |
| | | Minh | 15 wet 4 | 'sell't | Ingleside Engineering & Const., Ing. 27355 |
| Use a sec. | ono sheel, 15 nerded. | L | | | Rt. # |
| | | | , | er 1 - 1 - 1 - 1 | Signed Britan Authoritised Representative |
| | | | | | Mike & Vietor Prought Date 5/74 30M |
| MINN, GEOLOGICAL | SURVET COPY |] | ΓQΤ | 30T | 7/78 30M 7/78 30M |

| County Name | 1 | | эт га і і, г <i>Міннезо</i> | TELL TA Statuirs 13 | AA.DI-08 |
|---|------------------------|-------------------------------|---|------------------------|--|
| Township Name | N E | ection Nn. Fra | stinn H | K K | J. PROPERTY OWNERS NAME 181998 |
| Witten 03 Ubstanse and Direction from Read Intersections of Street Adde | s 12 W | l | , | <u></u> | Address City of Winton |
| | | | | 4 | Well B |
| how exact likestion of well in section stid with "K." | lion Name | Ske | ich map of we | d location. | 4. WELL DEPTH (completed) Dete of Completion |
| | | A 11 | N. | 2 | |
| W E Bloc | k Nomher | 7 17 | 01 | <u>ر</u> | 2 Hollow rold STAIR ST Bored II |
| - + | 6 | 5-12 | -24 | | Reliefs 6Dieted BDenver Auger |
| | | ACB | ,) | | 1. USE 4. Fullik Supply 2 3 7 Industry |
| | ('0) (0) | THANDNESS OF | FROM | 70 | z⊡trigation s∰Municipal a⊟Commercial |
| 1. FORMATION LOG | | FORMATION | | | JL Test Well 6. All Conditioning 7. CASING HEIGHT HEIGHT Above/Briow HOLE DIAM |
| Clay top soil | brown | ned | 0 | 2 | 1 Biser a Infrance 2 July |
| | Tt human | sticky | | 15 | J Plastic o Drive Shoe1 Yes No |
| Clay | LU DFOWD | ABTU | <u> </u> | | - 8 in to 21 ft. Weight |
| Sandy clay | brown | soft | 15 | 20 | in, toft. Weighttbs./fttbs./ftft. |
| Cemented sand | brown | soft | 20 | 24 | b. SCREEN Or open hole |
| | | | | | Type Stainless steel Die 6 5/8# |
| Good sand & gravel | brown | soft | 24 | 31 | Sint/Gaute 50 Langth 201 FITTINGS: |
| Rocky gravel w/lines | brown | hard | 31 | 36 | Set between fi. and fi |
| | | | 36 | 1.6 | tuntt. Kpacker & leader |
| Rocky broken rocks | green | nera | 20 | 40 | 195 3/4 The level |
| | | | | | 10. PUMPING LEVEL (below land surface) |
| | | | | | 35'9W (t. sfler 20 br. pumping 75 6.pm. |
| | | | · · · | | TI, WELL HEAD COMPLETION |
| · | | ļ | | | I Pfillets adapter 2 Basement offset 3 At lessi 13" abrive grade |
| | | | | | 12. Well grouted 1 |
| | LOCATED | БΥ | T. | | I Nest Cement 2 Benionite J |
| | Actress Ver | tication | | | Depihi from fl. 10 fl. |
| | Name on Ma | ilbox | | | from fl. to fl. |
| .3 . | Lot2Block | | | | directioniype |
| <u> </u> | Plat JSook | | | | Well dkinfected upon camplesion? Yes Nu |
| (<u>†</u> 15 · []] ₩ c . m | Kild, From C | eighbor | | | Date installed |
| | Other | | <u>.</u> | | Not Installed |
| | Can't Locate | State w | hy 1 | | Manufacturef's Name |
| | | | | | Leagth of drop pipe ft, capacity \$.p.m. |
| | | · . | | | Naterial of drop pipe |
| | | REC | EIVEN | | 20) fer 400 Çentrifuget 600 |
| | | DEC | 16-) | | 14. WATER WELL CONTRACTOR'S CERTIFICATION |
| | | | Dept. of | | the best of my knowledge and bellef. |
| | | | ANGC I | | Ingleside Engineering & Const., Ing. 27355 |
| UH & SECOND S. REMARKS. ELEVATION. SOURCE OF DATA. etc. | t sheet, if needed. | <u> </u> | | l | De dide Box 175 Bookford Minn 55272 |
| | | العادية من معاملة مرود. ال | ***** | | AV. # "T" BOX +17, AOCALOFU, ALLING 77317 |
| | | | | | Signed Authorized Representative Date |
| | | | | | Mike & Victor Presidet |
| | CUBVEV ACA | , . | 1 Q 1 | 995 | Name of Driller 5/74 30M |
| MINN, GEOLOGICAL | SURVET COPT | · . | ΤΟΤ | | 7/78 30M |

| ILLOTY NAME | | 1 | | n es e su Minnetoti | e Sietules 136 | A.0208 | for Water Sample | · L | .⊊ V Q | <u> </u> |
|--|-------------------|---------------------------|----------------|------------------------|-------------------|-----------------------------------|----------------------|--|----------------------------|---------------------------|
| SE. LOUIS | nwhihip Number | N Kunge Numher See | tion No. Frast | lion V | <u>u</u> <u>v</u> | J. PROPERTY OWNER | SNAME | | 1894 | 167 |
| | 63 | <u>\$ 12</u> | 13 | | | k ddana | rown of | Winto | n | 2 |
| stance and thracation form Rised Intersections o | at Street Address | and Lity of Well Lucation | | | | Ason | Winton, | Minne | sota 55 | 796 D |
| d in conting still with " | ·· K . '' | | Skeit | h map of wel | l location, | 4. WELL DEPTH (com | picied) | | Date of Completion | A CONTRACTOR OF THE OWNER |
| Now exact literation of whit is instruction pro- | Addilfe | n Neme | | | | 60 | • | ît | 4-22-81 | |
| | | ľ | | | | ⁸ . ∎□Cuble tool | 4 Kerene | יווים 🗔 ד | in 100104 | |
| E | Mack | Number | | | | a⊡ Hollow rud | 5 🗆 Air | s 🗖 Bars | ۱۱ | |
| | | | | | | 3 Kotsty | 6 | •CD Forw | er Auger | |
| | LOI N | umber | | | | ø, use | | | | |
| | | | | | | 1 Diomestic | | 4 PUNK SUD | lly | 7 Industry |
| | L | COLOR | HARDNESS OF | FROM | то | 2 lerigation | | 6 Air Cunditi | nine | •0 |
| FORMATION COO | | | | | | 7. CASINO | 67 | HEIGHTI A | bove/Below | HOLE DIAM |
| lev | | | | <u></u> | 4' | a Martin di | Churchen . | Surfece | fi. | |
| | | | | | | Pinetin A | | Drive Shoe? | Yes X No | |
| and | | | | 4' | 31' | 6 is to | 40 | ft, Weight " | Ibs./ft. | 6_in. to 60_ft |
| | | | | | | in, to | | ft. Weight | | fi 10fi |
| and & Gravel | | | | 31. | 40 ' | in. 10 . | | ft. Weight | lbs./R. | fifi |
| adaa Bask | | | Soft | 401 | 60' | S. SCREEN | | | rom fi. to | ft |
| eage Kock | | | | | | Type | | ••• | Dis | |
| | | | | | | Slot/Gaura | | | Length | FITTINGS; |
| | | | · · | | | Set between | | <u> </u> | , fi. | |
| | | | | | | | ft. and | | . ft. | |
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| | | | | | | 9. STATIC WATER C | £¥E5 €.⊡beinw | Dahove | Date Measured | |
| | | | | | | IO. PUMPING LEVEL | land surface | •) | 1 | |
| | | | | <u> </u> | | · | fi. əfist | hrs. p | umping | \$ p.m. |
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| | | | | | | from. | <u></u> | ft: 10 | fi. | |
| | | | <u> </u> | ļ | | 13. Nearest sources of | possible contamina | nion | | |
| | | | | <u> </u> | | | _feel | •••••••••••••••••••••••••••••••••••••• | undirection | |
| | | LOCATED | BY | | | Well disinfected | upon completion? | | X 1000 | |
| | | Address Ver | fication | | | | | | Date Installed | |
| | | Name on M | ailbox | + | | 1 | | | Not initialied | |
| | 13.H | Lot-Block | | | L | Manufacturet's N | | | ····· | |
| | 4.1 | Plat Book | | | 1 | Model Number | | | | /olis |
| | 45-7 | Info, From | ¢wner | | | Length of drop pl | ipe | | fi. capatily | \$.P.#1 |
| | 16.7 | Info. From | Neighbor | | 1 | Material of drop p Type: I Sub | apa | J□1.\$.Tu | bins s Kacipro | caling |
| Lannangenerative internet | $\frac{1}{7}$ | Other | | | ╂──── | | | 4 Centrifu | ــــــ 🗔 ه اهر | |
| | F T | Can't Locat | e State V | //hy | | 16. WATER WELL C | ONTRACTORSCI | ERTIFICATION | | |
| | | | 1 | 1 | 1 | This w | ell was drilled ande | r my jurisdictio | and this report is true to | |
| | | | | | | she be | it of my knowledge | and belief. | | |
| | | | 1 | | | P | etersen, | Kenter Buller | DRILLING, I | NG v 5918 |
| Dra | Use a second | sheet, if needed. | | 1 | <u> </u> | - | 13 ¹ | 411 | Minnaeote | 55773 |
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| Him - | | | | | | Siened | $-Q_{c}$ | and for | D | 6-10- |
| JUN 3 0 1981 | | | | | | DIRNER | C. I | whorized Arp | rese Alalive | |
| | | | | | | <u>¤</u> | enny / | Dale_ | Da | <u>4-22-8</u> |
| Die at a | <u> </u> | | T | 400 | 100 | , | - 1 | Name of Dräler | | 5/74 30M 7/76 30M |
| MIRK- CLO | GICAL S | URVEY COPY | <u> </u> | <u>192</u> | 401 | | | | | 7/78 30M |

MINNESOTA DEPARTMENT OF HEALTH DRINKING WATER PROTECTION SECTION

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PUBLIC WATER SUPPLY INVENTORY REPORT The second se County: Saint Louis **PWSID:** 1690057 Name: Winton Regulatory Authority: DWP District: NE-Fype: Community А ferrence C. Jackson VOLUME TYPE 50,000 gallons Elevated FACILITIES AND FLOW INFORMATION Distribution System COMBINED DISCHARGE 1 Well #1 Well #2 Well #3 SOURCE INFORMATION ID : S01 : Well #1 AVAILABILITY: Primary : Source OURCE TYPE : Groundwater STATUS : Active STATUS DATE : / / INKED TO FACILITY: COMBINED DISCHARGE 1 UNIQUE WELL NO : 00189468 YEAR CONSTRUCTED : 1981 AQUIFER : QWTA WELL DEPTH (ft) : 46 STATIC LEVEL (ft) : DRAWDOWN (ft) : CASING DEPTH (ft): 38 CASING DIAMETER (in): SCREEN LENGTH (ft): PUMP CAPACITY (gpm) : PUMP TYPE : ID : S02 : Well #2 AVAILABILITY: Primary : Source STATUS : Active OURCE TYPE : Groundwater STATUS DATE : / / INKED TO FACILITY: COMBINED DISCHARGE 1 : QWTA UNIQUE WELL NO : 00181951 YEAR CONSTRUCTED : 1982 AQUIFER DRAWDOWN (ft) WELL DEPTH (ft) : 40 STATIC LEVEL (ft) : : 32 CASING DIAMETER (in): SCREEN LENGTH (ft): CASING DEPTH (ft): PUMP CAPACITY (gpm) : PUMP TYPE : ID : S03 : Well #3 AVAILABILITY: Primary : Source STATUS : Active OURCE TYPE : Groundwater STATUS DATE : / / INKED TO FACILITY: COMBINED DISCHARGE 1 DRAWDOWN (ft) : UNIQUE WELL NO : 00181998 YEAR CONSTRUCTED 1982 AQUIFER WELL DEPTH (ft) : 46 STATIC LEVEL (ft) SCREEN LENGTH (ft): CASING DIAMETER (in) 27 CASING DEPTH (ft): PUMP CAPACITY (gpm) PUMP TYPE :

Page 2 03/11/2003

WINTOR 6/29/67 12/1/81

12-20-68

MINNESOTA DEPARTMENT OF HEAL/TH 709 Christie Building Duluth, Minnesota

Report on Investigation of Municipal Water Supply Winton, Minnesota January 31, and October 2, 1968

The water supply for the village of Winton is obtained from the southeast side of Fall Lake. The water is subjected to purification treatment consisting of sedimentation with coagulation produced by chemicals, rapid sand filtration and chlorination - detention before it is discharged to the distribution system for consumption. Storage is provided by an elevated tank which floats on the system.

Location of Source and Intake

Water flows by gravity through a 6-inch intake pipe extending from Fall Lake to a receiving wet well at the water treatment plant. The wet well is of poured concrete construction and about 16 feet in depth. A shut-off gate valve is provided on the raw water intake line at the wet well. The raw water intake is located about 350 feet from shore in approximately 14 feet of water. The intake pipe extends three feet off the bottom; the opening is directed upward and is equipped with an intake screen.

The water treatment plant facilities are located on the lake shore in an occupied area of the village. Sewage from the village is collected and discharged to a waste treatment plant with final disposal to a drainage course which does not connects to Fall Lake.

Treatment Plant

Water is drawn from the raw water wet well by means of a vertical turbine pump having a capacity of 50 gallons per minute. A duplicate raw water pumping unit also is installed. The raw water is discharged to the mixing zone of the Permutit-type package coagulation unit for addition of coagulent chemicals. The raw water flow to the treatment unit is metered and is regulated by means of a balanced float valve

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| Name of Water S | Supply | , | | | | •••• | | | | | | | | • | | | T | PWS I | D Number | | | |
| Wint | on l | lun: | ici | pal | Wa | ter | . Sເ | ıppl | ·y | | | | | | | | | 10 | 40019 | | | |
| Street | | | | | | | | | | | | | | | | | | Teleph | ione Numbers: | | | |
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| nty Wint | on | | | | | | | | | | | | | MM | 55 | 796 | | Op | erator:218/ | /365- | 4467 | |
| County | 011 | | | - | | | | | | | Dis | trict | | 1.114 | | | | En | gineer: | | | |
| st. | Lou: | is | | | | | | | | | ŀ | Not | rth | east | | | | Ot | her: | | | |
| Nater Superinte | ndent | | | | | | | | | CI | assifi | catio | n | Plant Class | ificatio | 'n | | | Owner Type | | | |
| Terry J | acks | son | | | | • | | | | | В | | | Γ |) | | | | Municipa | 1 | | |
| Other Operators | | | | | | | | | | CI | assifi | catio | n | Plant Type | | | | | Plumbing Permi | ts and | | ß |
| | | | | | | | | | | | | | | Com | uni | ty | | | mapeetions neg | lanca | Yes | N |
| | | | | | | | | | | | | | | Date of Pre | evious | Survey | | | Date of Survey | | | |
| | | | | | | | | | | | | | 1 | 6/10 |)/81 | | | | 9/29/82 | 2 | | |
| ity Engineer | | | | | | | | | | | | | | | | | | | | | | |
| ERVICE ARE/ | A CHA | RAC | TER | ISTI | CS: | | | | | | | | | | | | | | | | | |
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| 🗌 Mobile H | ome P | ark | | | | | | |] Hot | el/Mo | otel | | | | | C | Car | npgro | und | | | |
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| Population Serve | vd. | | | | | | | Se | rvice | Con | necti | ons | | | | | Sto | race C | Capacity: | | | |
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| Design Capacity | (gal/d | ay) | | | • • • | | | A | /erage | e Dai | ly Pr | oduct | ion | (gal/day) | | |] c | lear | well - 12, | ,000 | gall | on |
| Emergency Capa | city (| gal/d | ay) | | | | | ні | ghest | Dail | y Pro | ducti | ion (| gal/day) | | | | reva | itea - 50,0 | g | aric | 113 |
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MINNESOTA DEPARTMENT OF HEALTH DIVISION OF ENVIRONMENTAL HEALTH

ANALYTICAL DATA

Samples Collected By _____Michael Luhrsen

Report To _

| Field Town, Cour | nty, Etc. | | Sam | npling Poin | t and Source of Sa | ample | | | | | | | |
|-----------------------------------|-----------------|------------|---|-------------|--------------------|-------------|--|--|--|--|--|--|--|
| 19593 Winton, St. Lor | uis | Well #1, | Grab Sampl | Le | | | | | | | | | |
| 20581 " " | | Distribu | tion System | n, Oper | ator's Resi | dence, S.T. | | | | | | | |
| 20588 " " | | Distribu | Distribution System, Operator's Residence, S.T. | | | | | | | | | | |
| d | | | | | | | | | | | | | |
| e | | | | | ······ | ······· | | | | | | | |
| <u></u> | | | | | | | | | | | | | |
| This line for Lab. use only. | a | | b | c | d | e | | | | | | | |
| Sample Number | 19593 | 20581 | 20588 | | | | | | | | | | |
| Date Collected | 5/27/82 | 9/29/82 | 9/20/02 | | | | | | | | | | |
| Time Collected | | 1 21 63/02 | 2/ 29/ 82 | | | | | | | | | | |
| Temperature °F | | | | | | | | | | | | | |
| Date Received by Lab | 6/1/00 | 10/1/00 | | | | · | | | | | | | |
| Coliform (M.P. N. per 100 ml | 0/1/82 | 10/4/82 | 10/4/82 | | | | | | | | | | |
| | | | | _ | | | | | | | | | |
| | | | | | | | _ | | | | | | |
| organisms (M. P. C. per 100 mi, | -, | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| Total Solids | | | | | | | <u></u> | | | | | | |
| Turbidity | | | | | | | | | | | | | |
| Color | | | | | | | ····· | | | | | | |
| Total hardness as CaCO3 | 267. | 1 | | | | | | | | | | | |
| Alkalinity as CaCO3 | 250 | | | | | | | | | | | | |
| pH value | 7 5 | | - | | | | | | | | | | |
| Iron | 1 0 050 | 1 | | | | | ······································ | | | | | | |
| Mancanese | 0.030 | | | | | | | | | | | | |
| Chlorida | 12.00 | | | | | | | | | | | | |
| Besidual Chlorina | 13.00 | <u> </u> | | | | | | | | | | | |
| Sulphate | 16.00 | | | | | | | | | | | | |
| Eluorida | 16.00 | | | | | | | | | | | | |
| Total Shorehow | 0.22 | | 0.14 | | | | ······ | | | | | | |
| Niteita Niteora | | | | | | | | | | | | | |
| Nitrato Nitrogen | | | | | | | | | | | | | |
| Milate Milogen + Nitrite | <u> (0.400</u> | | 0.84 | | | | | | | | | | |
| Methylene Blue Active Sub. as ABS | | ļ | | | | | | | | | | | |
| | 170. | ļ | | | | | | | | | | | |
| Sodium | 9.03 | | 9.81 | | | | | | | | | | |
| Potassium | 1.51 | | | | | | | | | | | | |
| Spec. Cond. µmhos/cm @ 25°C. | 520. | | | | | | | | | | | | |
| pHs @ 50 °C. | | | | | | | | | | | | | |
| Magnesium as CaCO3 | 97. | | | | | | | | | | | | |
| Arsenic ug/l | 2 5.000 | | 5.000 | | | | | | | | | | |
| Barium ug/1 | K200.000 | | (200,000 | | | | | | | | | | |
| Chromium ug/1 | < 5.000 | | \$ 5,000 | | | | | | | | | | |
| Cadmium ug/1 | 5 1.000 | | 1.000 | | | | | | | | | | |
| Lead ug/l | × 10.000 | | 1410,000 | 1 | | | | | | | | | |
| Mercury ug/1 | (0.100 | | (0.100 | | | | | | | | | | |
| Selenium ug/1 | 6 5,000 | | 6 5 000 | | | | | | | | | | |
| Silver ug/l | 1/ 5 000 | | <u>12 5.000</u> | | | | | | | | | | |
| Gross Alpha pCi/l | | 16410 | <u> </u> | + | | | | | | | | | |
| | | | 1 | 1 | 1 | 1 | | | | | | | |

* Results are in milligrams per liter except as noted.

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| | | | | | | RE | POF | IT O | N IN | IVES | STIG | ATI | ON | of Publ | .IC W | NTER | SUPPI | LY | | | | |
| Name of Water Winton | Suppl Mun | ici | pal | Wa | iter | - Si | Inn | | | | | | | <u> </u> | | | | PWS I | D Number | | | |
| Street | | | <u>p</u> | | | | (PP | · | | | | | | | | | | Telopi | hone Numbers: | | | |
| City | | | | | | | | | | | | | | | | | | | 218/ | 365- | ADOR | : |
| Utinton | | | | | | | | | | | | | | State | Zip | Code | - | | $\frac{210}{100}$ | /365- | 4467 | ŗ |
| County | | | | | | | | | ••• | | Di | strict | | <u>1 MN</u> | _ | 55/96 |) | En | gineer: | | | |
| St. Lou | is | | | | | | | | | | | Nort | he | ast | | | | 01 | her: | | | |
| Water Superinte | ndent | ł | | | | | - | | | C | lassi | ficatio | on . | Plant Cla | ssificat | ion | | A | Owner Type | | | |
| Terry J | acks | son | | | | | | | | | | B | | | D | | | | Municipa | J | | |
| Other Operators | : | | | | | | | | | C | lassi | ficatio | n | Plant Ty | 0e | | | | Plumbing Perm | nits and | | |
| | | | | | | | | | | | | | | Comm | unit | y | | | mspections ne | | Yes | |
| | | | | | | | | | | | | | | Date of F | reviou | s Survey | 4 | i | Date of Survey | , | | |
| | in Engineer | | | | | | | | | | | 9/29, | /82 | | | | 11/15/83 | } | | | | |
| ity Engineer | | | | | | | | | | | | | | | | | | | | | | |
| SERVICE AREA | A CHA | ARA | CTEF | RIST | ICS: | | | | | | | | | · | | | | | | | | - |
| 🗶 Municipa | I | | | | | | | E | Sch | nool a | or Co | llege | | | | | Re | creatio | n Area | | | |
| Mobile H | ome P | 'ark | | | | | | Ľ | ⊒н₀ | tel/M | otei | | | | | | 🗆 Car | mpgrou | Ind | | | |
| | Town | n | | | | | | | | | | | | | | | Пно | using [| Development | | | |
| 🗀 Institutio | n . | | Restaurant | | | | | | | | | | | | | | 🗆 0tł | her | v | | | |
| Population Served Service Connections | | | | | | | | | | • | | Sto | orage C | apacity: | | | - | | | | | |
| Design Canacity | (gal/d | jav) | | | 29 | 0 | | | Veran | le Dai | IV D- | oduct | 99 | (nai/daw) | | | | st Sepa | natery) | | | |
| | (90), 4 | ,, | | | | | | | weitag | | 20, | ,000 | | (gan/uay) | | | E | leva | ted - 50, | 000 | gall | 0 |
| Emergency Caps | city (| gal/d | lay) | | | | | н | ighes | t Dail | ly Pro | oduct | ion (| gal/day) | | | - | _ | | | | |
| 50,000 e | elev | ate | <u>≱d</u> | | | | | | | | 50, | ,000 | | · · · · · | | | Tot | tal: 5 | 0,000 gal | lons | | _ |
| | | | | | | , <u> </u> | TR | EAT | MEN | T | | . | | | | . | ····· | WELL | DATA | | | |
| | Ъ. | × | ç | | c | tion | | log e | | Ŀ. | , UQ | 5 | | Pe | heter | ę | gth | | | _ | | |
| | Š | bilit | sctio | ч | latio | enta | o | ion - | ing | 800 | niat | Jatic | | Istal | Dian | Dep | Len | epth | tion | eve | uwc | |
| | urce | /aila | sinfe | ratic | Inger | dim | trat | bili | ften | ste é | omu | Joric | her | arl | ing l | sing | een | ă = | aring | tic I | pwe | |
| Source Name | ŝ | ¥ | ä | -Ae | 8 | Å | ū | ပိန် | 8 | 1a | <u>۲</u> | 1 | ទ័ | ¥ | Ğ | ð | - SS | We | N B L | Sta | ð | _ |
| Well #1 | G | Р | Dh | | | | | ļ | | | | Va | | 1981 | 6" | 38 ' | 8' | 46' | | | . • • | |
| Well #2 | G | P | Dh | | | | - | | 1 | | | Va | | 1982 | 8" | 32' | 8' | 40' | | | | |
| U-11 #0 | | | | | | 1 | | | 1 | | | L. | | 1000 | 0" | 071 | | 1 | | | | |
| _Well #3 | 6 | P | | | | | | | ├ | | | Va | | 1982 | 8" | 27 | 20. | 46 | | | | _ |
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| Jamacke' | | | | | | | | | | | | | | | | | | | | | | |
| normal Ks. | | | | | | | | | | | | | | | | s | urveyed | ∃ьγ∭ | <u>icnael Lur</u> | irsen | <u>, Р.</u> | |
| 16/10/63. | | | | | | | | | | | | | | | | 1 | | | | | | |
| 11611161 K3, | | | | | | | | | | | | | | | | | nnrova | d hvi E | Eugene Jou | ırdan | | |

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Winton MWS

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Well#2

During 1982 and 1983 the Winton Municipal Water System underwent several changes. The source of supply was changed from surface water to ground water. Three new wells were drilled and connected to a new pumphouse. The old water treatment plant was torn down. In addition, several thousand feet of watermain were installed and the existing elevated storage tank was repaired and repainted.

Source Location and Construction

Well #1 is located approximately 50 feet southeast of the pumphouse. Well #2 is located approximately 250 feet southwest of the pumphouse and Well #3 is approximately 100 feet southwest of this well. The construction details for these wells can be found on the data sheet included in this report. All three wells are equipped with submersible pumps and discharge by means of pitless adapters through 2-inch plastic lines to the pumphouse.

Pumphouse and Water Treatment

The new pumphouse was constructed to house the chemical feed equipment, process piping and related appurtenances. The building is provided with a floor drain that discharges to a gravel pocket located 35 feet from the center of the building.

The three 2-inch lines from the wells enter the pumphouse in parallel and join a single 4-inch line which discharges to the distribution system. Each well line is provided with a check valve, gate valve, hose bibb, flow switch and flow a r with a wall mounted flow chart. The 4inch line is proded with a gate valve, flow meter, sample tap, hose bibb, chemical injectors for chlorine and fluoride and a pressure sensor which connects to a pressure guage on the control panel.

Chemical treatment consists of sodium hypochlorite and hydrofluosilicic acid. The chlorine is fed with a single chemical feed pump and the fluoride is added through a double pumped, breakbox system. Test equipment is provided for the necessary chemical parameters.

The wells and chemical feed pumps are controlled by a Dynamic Systems control panel. The pumphouse also contains a counter with a sink and cabinets for the laboratory equipment. The building is heated electrically and is also provided with a dehumidifier.

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MINNESOTA DEPARTMENT OF HEALTH DIVISION OF ENVIRONMENTAL HEALTH

ANALYTICAL DATA

| Samples Collected By Michael Lu | hrsen | | Report To | | | |
|--|---------------------|--------------|--------------------|---------------------------------------|--|----------|
| Field Town, Count | ty, Etc. | | Samp | ling Point and Source c | of Sample | |
| 19593 Winton, St. Lou | is County | Well #1, | Grab Sample | | | |
| <u>67976 " " "</u> | 11 | Well #2, | S.T. | | | |
| 67977 ¹ ¹ ¹ | 18 | 1017 #2 | ст | | | |
| 23824 " " " | It | Distribut | ion System | Liquon Ston- | | |
| e | | DISTING | Jun Jys celli | Liquor Store, | S.I. | |
| <u> </u> | | A | • | · · · · · · · · · · · · · · · · · · · | | |
| This line for Lab. use only. | | 1819511 | b | c d | e | |
| Date Collected | 19593 | 67976 | 67977 | 23824 | | |
| Time Collected | 5/2//82 | 6/30/83 | 6/30/83 | 11/16/83 | | |
| Temperature OF | | | | | | |
| Date Received by Lab. | 6/1/82 | 7/ 6/83 | 7/6/02 | 11/01/00 | | |
| Coliform (M. P. N. per 100 ml. | | 17 07 03 | //0/03 | | | |
| group Con. D Comp. D | | | | | ······································ | |
| organisms (M. F. C. per 100 ml. | | | | | | |
| | | | | | | <u> </u> |
| <u>.</u> | | | | | | |
| Total Solids | | | | | | |
| Turbidity | | | | | | |
| Color Total bardness as CaCOo | | - 200 | | | | |
| Alkalinity as CaCOo | 250 | 260. | 225. | | | |
| pH value | 7 5 | 7.6 | 220. | | | |
| Iron | < <u>05</u> | 1.5 | - 1.5 | + | | |
| Manganese | | <u> </u> | .00 | <u> </u> | | |
| Chloride | 13 | 7 3 | | | · | |
| Residual Chlorine | | 1.5 | O.1 | · | | |
| Sulphate | 16. | 16. | 12 | | | |
| Fluoride | .22 | .18 | .18 | 21 | | |
| Total Phosphorus | | | | | | |
| Nitrite Nitrogen | 4 | | | | | |
| Nitrate Nitrogen + NICCICE | <u> </u> | <.4 | 5.4 | | | |
| Methylene Blue Active Sub. as ABS | | | | | | |
| Calcium as CaCO3 | 1/0. | 160. | 140. | | | |
| Sodium | 9.03 | 7.3 | 6.6 | | | |
| Potassium | 1.51 | 1.8 | 1.1 | | | |
| nHs @ 50 °C | 520. | 510. | 440 | | | |
| Magnesium as CaCO2 | | 100 | | | | ······ |
| Arsenic ug/l | | | 1 <u>85</u> . | <u> </u> | | |
| Barium ug/1 | 12200 | 200 | 5200 | | | |
| Chromium ug/1 | 12 5 | < 5 | 125 | | | |
| Cadmium ug/l | $ \langle 1\rangle$ | <u>रे 1.</u> | $\langle 1.$ | <u>├</u> ──── | | |
| Lead ug/1 | $ $ \leq 10. | < 10. | < 10. [−] | <u> </u> | | |
| Mercury ug/1 | 5.1 | < .1 | 15.1 | | | |
| Selenium ug/l | < 5. | < 5. | < 5. | | | |
| silver ug/1 | 5. | 5. | < 5. − | | † | |
| | 1 | 1 | 1 | | | |

* Results are in milligrains per liter except as noted,

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| | | | | | | R | EPO | RTO | ON II | NVE | STI | GAT | ION | OF PUBI | .1C W | ATEF | I SUPF | ۲LY | | | | |
| Name of Water Wint Street | n Supp ON | ^{ply} Mun | ici | pa] | Wa | ter | <u> </u> | ıppl | у | | | | | · | | | | pws 10 | ID Number 140019 | | | |
| City | | · | | | | | | | | | | | | . | | | | Telep | hone Numbers: | | | |
| Wint | on | | <u> </u> | | | | | | | | ~ | | | State MN | Zip | Code 55796 | 5 | | ty: <u>218</u> perator: <u>218</u> | /365 /365 | -409 -446 | 5 7 |
| St. Lou | is | | | | | | | | | | | istria Na | t orth | least | | | | Er Ot | ngineer: ther: | | | |
| Terry J | ender acks | nt SÖN | | | | | | | | 1 | Class | ficat | lon | Plant Cla | ssificat | 1107 | | .I | Owner Type | | | |
| Other Operator | rs | | | | | | | | | (| Class | A ificat | ion | Plant Typ | 10 <u>1</u> De | | · | | Munici Plumbing Perm | pal pits and | 1 | |
| | | | | | | | | | | | | | | Comm | unit | y | | | Inspections Re | quired | Yes | No |
| | | | | | | | | | | | | | | 11/1 | 5/83 | s Surve R | şγ | | Date of Survey | / E | | |
| City Engineer | | | | | | · · · - | | | | | | | | | | | | | 4/29/8 | 5 | | |
| SERVICE ARE | A CH | ARA | ACTE | RIST | TICS: | | | | | | | | | | | | | | . | | | |
| | at | | , | | | | | t |] Sc | hool | or Co | ollege | , | | | | | creatio | on Area | | | |
| | iome | Park | | | | | | [| ⊐на | tel/N | lotel | | | | | | 🗆 Ca | mpgrou | und | | | |
| | γiow on∷. | vn | | | | | | Ĺ | ⊥Re]Re | sort staur: | ant | | | | | | Пно | ousing (| Development | | | |
| Population Serv | ed | | | | | | | s | ervic | е Сог | nect | ions | | | · | | Ist | ner | apacity | | | |
| 25 Design Capacity | 50 / (gal/ | day) | | | | | | _ | | 9 | 9 | | | | | | (L) | ist Sepa | arately) | | | |
| Emanuel | | | | | | | | | ver at | 20 | <u>,00</u> | 0 | ction | (gal/day) | | | | 50,00 | 00-gallon | elev | ated | t |
| 50,000 e | acity lev | (gal/d ate | day) d | | | | | Н | lighes | t Dai 50 | iy Pr . በበ | oduc N | tion (| (gal/day) | | | | tal: r | | | | |
| | Τ | | | | | | TF | EAT | MEN | <u></u> Т | ,00 | <u> </u> | | T | | | | | DATA | lons | | |
| | de | > | c. | [_ | c | tion | Γ | u u | | 5 | ę | c | | 8 | eter | - | £ | Γ | | <u> </u> | <u> </u> | T |
| | Ce Co | labilit | fectio | tion | ulatio | renta | ation | izatio | ning | 8 O | oniat | idatio | | Install | Dian | Dep1 | n Lenç | lepth | g tion | Level | uwo | Type |
| Source Name | Sour | Avai | Disir | Aera | Coag | Sedir | Filtre | Corre | Softe | Taste | Amm | Fluor | Other | Year | Sasîng | Casing | Screer | Veli C | Vater Searin Forma | tatic | rawd | dwn |
| Wel:#1 | G | P | Dh | | | | | | | | | Va | | 1981 | 6" | 38 | 1 81 | 46' | > | s s | | <u> </u> |
| - Well #2 | G | P | Dh | | | • | | | | | | Va | | 1982 | 8" | 32 | <u>ק</u> | 10 | | <u> </u> | <u> </u> | SUD |
| We]] #3 | G | Р | Dh | | | | | | | | | Va | | 1982 | <u>8</u> " | 271 | 201 | 10 | | | | JUD |
| | | | | | | | | | | | | | | | | - 6/ | _ <u>_</u> cU_ | 40 | | | | SUD |
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| Flomarks: | ۱۱ | ل ــــــــــــــــــــــــــــــــــــ | ,l , | l | l | J | | l. | | l | | l | | l, |] | | | | | l | | |
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| HE-00842-02 | | | | | | | | | | | | | | | | | | | | | · | |

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| | Wintor | r Supp h Mu | nic nic | ipa | I W | ate | n S | มอา | nlv | | | | | | | | *** | | PWS | ID Number | | 1 m 1 | |
| · . 2 | Street | | | | | | | | | | | | | · · · · · · · · · · · · · · · · · · · | | | | | Telep | 1040019 hone Numbers: | | | |
| - | City | <u> </u> | | | | | | | | | | | | | Terre | | | | | Inv: 21 | 8736 | 5-40 | 05 |
| | Winton | | | | | - | | | | | | | | | MN | | 5579e | 5 | 0 | perator: 21 | 8/36 | 5-44 | 67 |
| | County St Lo | uic | | | | | | | | | | Di | strict | | | | | | Er | ngineer: | | | ag fi djenga V konservanog |
| ŀ | Water Superint | enden | | • | | | | | | | | Classi | NC licati | orth | least | eelficat | | | | Courses Turns | | | |
| | Terry | Jac | kso | n | | | | | | | | | A | | (|) | | | | Municip | al | | |
| | Other Operator | '9 | | | | | | | | | C | Classi | icati | on | Plant Ty | pe | | | | Plumbing Perm | Its and | r n | K1 |
| | | | | | | | | | | | | | | | Comr Date of 1 | n <mark>un i t</mark> Previou | ty s Survo | v | | Data of Surviv | | Yos | No |
| ŀ | | | | | | | | | | | | | | | 4, | /29/8 | 35 | • | | 6/11/86 | | | |
| ŀ | City Engineer | | | | | | | | | | | | | | | | | | | 1 | | | |
| - | SERVICE ARE | ACH | ARA | CTE | BICT | 100 | | | | | | | | | | | | | | and a subscription of a standard strategy and standard strategy. | | • | |
| ľ | Munic'p | al al | 1717 | | 1131 | 169; | | , | |] Scl | nool | or Co | lleae | | | | | | crontin | 20 Aret | | | |
| | Mobile H | lome | Park | | | | | | C |]н₀ | tol/M | lotel | - 34 | | | | | | mpgrou | and and | | | |
| | Compan | y Tow | 'n | | | | | | C | Re | sort | | | | | | | Пно | ousing (| Development | | | |
| | | on | | | | | | | C | Re | stauri | ant | | | | | | | her | | ••••• | ***** | |
| F | Population Serv 250 | red | | | | | | | S | ervice |) Con | inecti | ons | | | | | Ste | orage C | Capacity: | | | |
| T | Design Capacity | (gal/ | day) | _ | | | | | A | verag | e Dai | 99 ily Pr | oduc | tion | (gə1/day) | | | | 0,000 | 0-gallon e | eleva | ted | |
| E | Emergency Cap 50 - 000 | scity | (gal/c | iay) od | | | | | н | 20 ighes | , 00 t Dail | 0 ly Pro | duct | ion (| gal/day) | | · | | nalı - | #A AA- | | | |
| - | | Ţ | | Ť | | | | TR | EAT | JU JU | , 000 T | <u> </u> | | | I | | | | .a.) [| 50,000 gal | lons | | |
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| | | Code | ility | ction | c | ution | ntatic | uc | on Cc ation | նս | Odo | n .tio | ation | | stallex | lame | Yepth | 16ua- | th. | , us | 121 | Ę | 2 |
| | | urce | delio | sinfec | Partio. | elupa | diner | tratic | rosic | Itenir | ste & | nonit | rer ide | ler. | rr Ins | D gri | ing D | Cen L | Det | ter ròng nutik | ۲ بر | -upw | 40 |
| S | ource Name | 8 | 14 | ö | Ă | Ű | Se | u L | 0 3 | ઝ | Ţ. | ۲. | j. | ö | Ye | Cas | Š | ÿ, | Wel | For For | 21.5 | 8 | 15 |
| | Well #1 | G | IP | Dh | | | | | | | | | Va | | 1981 | 6" | 38' | 8' | 46' | 1 | | | sub |
| | Well #2 | G | P | Dh | | | | | + | | | | Va | | 1982 | 8" | 32' | 8' | 40' | | | | sub |
| 1 | Well 03 | G | P | Dh | | | | | - | | | | Va | | 1982 | 8" | 271 | 20' | 46' | 1 | { | | sub |
| - | | | | | | | | | | | | | | | | | ļ | | | } | | | |
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Exhibit 15

Municipal Well Logs

| L LOCATION OF WELL | STATE OF MINNESOTA | DEFARTMEN WATERWEL | ATOF HEALTH L RECORD HISAAULAN Jor Water Sample |
|---|--------------------------------|-----------------------|---|
| Township Name To | Kange Number Section No. Fra | ction K K | Adres Winton, Minnesota 55796 |
| $ \begin{array}{c c} & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & $ | Name Well umber P/4 64-0 | Mo.1 1354 | 4. WELL DEPTH (completed) Date of Completion 4. WELL DEPTH (completed) 0 5. I C Completion 4 5. I C Completion 4 2. Hindlaw rod 0 2. Hindlaw rod 0 3. Ruitary 0 9. Dower Auger 6. USE |
| | COLOR HARINESS OF FORMATION | FROM TO | 1 Domestic 4 Public Supply 7 Industry 2 Irrigation Municipal 8 Commercial 3 Test Well 6 Air Conditioning 9 1. CASING HEEGHT: Above/Below HOLE DIAM |
| Clay | | 0' 12 | ID Black 402 Threaded 2 [] Galv. 5 [] Welded Surface ft. |
| Sandm | | 12' 46 | Image: International State Image: International State <th< td=""></th<> |
| | | | in. to ft. Weight Ubs./ft. in. to ft. 6. SCREEN Mate Johnson Tele. Or open hole ft. |
| | | | Stot/Gauce <u>41 - 35¹/4¹ - 40 slot</u> th <u>8¹</u> Set between <u>38</u> r. and <u>46</u> rt. |
| | | | ft. and ft. |
| | | | 10. PUMPING LEVEL (below land surface) ft. afterhrs. pumping |
| | | | 11. WELL HEAD COMPLETION 1 Pitters adapter 2 Basement offset 3 At least 12" above grade 12. Well grouted? |
| | | | □ Yes □ No Cu. Yds. 1 □ Neat Cement 2 □ Bentonite 3 □ □ Daula, form 0 to 0 |
| | | | |
| | | | Well disinfected upon completion? Yes No |
| | LOCATED BY | | Date Installed Date Installed Mosufacturef's Name |
| 1-U 2-0 3-0 | Name on Mailbox Lot-Block | | Model Number HP Volts Length of drop pipe ft. capacity |
| 4-0 5-0 | Plat Book Info. From Owner | | Type: IL_Submersible JL_LS.Turbine SL Reciprocating |
| 7-0 | OtherCan't Locate State | Why | This well was drilled under my furisdiction and this report is true to the best of my knowledge and belief. PETERSEN WEIL DETLY INC. 69183 PETERSEN WEIL DETLY INC. Flows No. |
| REMARKS, ELEVATION, SOURCE OF WATA, etc. | If needed. | | Address <u>Parkville, Minnesota</u> 55773 |
| 3 0 1981 | | | Signed Authorited Representative Date 6-10-8/ Authorited Representative Date 4-30-81 |
| A of Entry, Heatth NN. GEOLOGICAL SU | RVEY COPY 1 | 89468 | Name of Driller 5/74 30M 7/76 30M 7/78 30M |

| St Louis | ip Number Range Number S | Section No. Fra | Minnes | ota Statutes 1 | In Hater Sample |
|--|------------------------------|--------------------------|----------------|----------------|---|
| Winton (| 3 ST 12 X | | 54 | 54 54 | City of Winton |
| 6 | 3 12 | 24 | | | Well A |
| how exact location of well in section grid with "X." | Addition Name FROM | 14 STiket | ch map of w | ell location. | 4. WELL DEPTH (completed) Date of Completion |
| | (| Wel | 1 No | s. 2) | AU ft. 5. 1 Cable tool 4 Reverse 7 Driven 10 Dug |
| | Block Number | 0250 | 1 | -7 | 2 Hollow rod S Air & Bored 11 |
| | Lot Number | | | 0 | 312 Rviaty 6∐Jetted 9∐Power Auger 6. USE |
| | 64 | | | | 1□Domestic 4□Public Supply 7□ Industry 2□Irrigation S™ Manicipal 8□Commercial |
| 2. FORMATION LOG | COLOR | HARDNESS OF FORMATION | FROM | то | 3□Test Well 6□Air Conditioning 9□ 7. CASING HEIGHT: Above/Below HOLE DIAM |
| Top Soil | brown | med | 0 | 2 | 1 Black 4 Threaded |
| Top Soil | brown | hard | 2 | 16 | 3□ Plastic 6□ Drivs Shoe? Yes No |
| 0 | harris | hand | 16 | 00 | in. toft. Weightlbs./ftin. toft. |
| CHINIY CIRY | Drown | nerd | 10 | 20 | in. toft. WeightIbs.//tin. toft. |
| Sand & gravel | brown | hard | 20 | 40 | Make Jonnson from fr. to r. |
| Shale | green | hard | 40 | 60 | Slot/GauzeLengthEITTINGS: |
| | | | | | Set between fr. and fr 3* |
| | | | | | ft. andft. |
| | | | | | 19111 # filbelow Dabove Date Measured Jan. 20/ |
| | | | | | 10. PUMPING LEVEL (below land surface) 231 750 n. siter hrs. pumping150s.p.m. |
| | | | | | 23 ¹ 9 ¹ / ₂ ¹¹ n. sfter <u>18</u> hrs. pumping <u>148</u> g.p.m. |
| | | | | | 1 Pitless adapter 2 Basement offset 3 At least 12" abuve grade |
| | | | | | 12. Well grouted? |
| | | | | | 1 Neat Cement 2 Bentonite 3 |
| | LOCATED BY | | | | Depth: fromft. toft. |
| 1.0 | Address Verifica | lion | | | 13. Nearest sources of possible contaminationfeetdirectiontype |
| 2. | Name on Mailbo | X | | | Well disinfected upon completion? Yes No |
| 4 - 🗋 | Plat Book | | | | 14. PUMP Date installed |
| 5.0 | Info. From Own | abor | | | ManufacturePa Name |
| 7. | Other | | - | | Model Number Volts |
| | Can't Locate St | te Why | | | Length of drop pipe Fr. capacity |
| 11 0 | 111 | | 1 | | Type: 1 Submersible 3 L.S. Turbine 5 Reciprucating |
| Well Se | enled 5- | 15 - 9 RE | EVE |) | 16. WATER WELL CONTRACTOR'S CERTIFICATION |
| H-1 | 26444 | DEC | 16 | 962 | the best of my knowledge and belief. |
| Peterse | Contract Ineded | Energhinn p | ept. of | loalth | Ingleside Engineering & Const., Inc. 2735 |
| S. REMARKS, ELEVATION, SOURCE OF DATA, en | | Ł | WGG | | Rt. #~1, Box 175, Rockford, Mn. 55373 |
| | | مهنع ملم ور | to the second | and a street | Sines Bruan V Kerrolan R |
| | | | | | Authorized Representative |
| | | Τ. | | | Mike & Victor Praught Date |