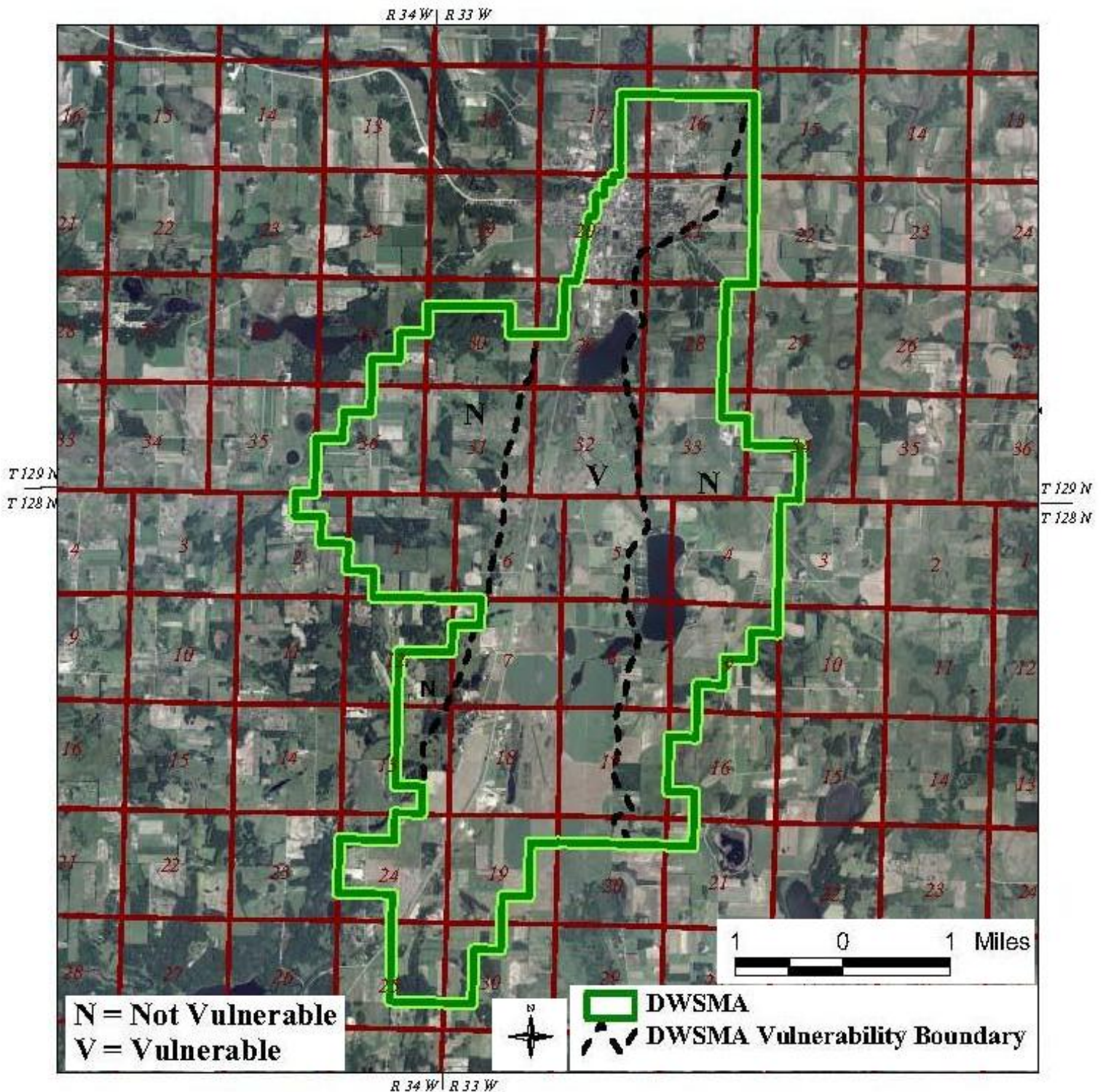


City of Long Prairie

Wellhead Protection Plan Part II



Potential Contaminant Source Management Strategy
2008 - 2017



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PUBLIC WATER SUPPLY PROFILE**PUBLIC WATER SUPPLY**

NAME	City of Long Prairie
ADDRESS	615 Lake Street South Long Prairie, MN 56347
TELEPHONE NUMBER	320-732-2167
E-MAIL	info@longprairie.govoffice.com
FAX NUMBER	320-732-2847

WELLHEAD PROTECTION MANAGER

NAME	David Venekamp, City Administrator/Clerk
ADDRESS	615 Lake Street South Long Prairie, MN 56347
TELEPHONE NUMBER	320-732-2167
E-MAIL	dvenekamp@embarqmail.com
FAX NUMBER	320-616-5505

CONSULTANT

NAME	Marilyn Bayerl Bayerl Water Resources
ADDRESS	9083 State Hwy 114 SW Alexandria, MN 56308
TELEPHONE NUMBER	320-283-6127
E-MAIL	bayerl@runestone.net
FAX NUMBER	320-283-6127

GENERAL INFORMATION

UNIQUE WELL NUMBERS	00480438 (Well Number 3B), 00195172 (6), 00542955 (7), 00550068 (8), 00699113 (9)
POPULATION SERVED:	3000
CONNECTIONS:	1008
COUNTY:	Todd

DOCUMENTATION LIST

STEP	DATE PERFORMED
Scoping Meeting 2 Held (4720.5340, subp. 1)	March 24, 2005
Scoping 2 Letter Received (4720.5340, subp. 2)	April 20, 2005
Remaining Portion of Plan Submitted to Local Units of Government (LGUs) (4720.5350)	January 15, 2008
Review Received From Local Units of Government (4720.5350, subp. 2)	March 17, 2008
Review Comments Considered (4720.5350, subp. 3)	March 17, 2008
Public Hearing Conducted (4720.5350, subp.4)	March 18, 2008
Remaining Portion WHP Plan Submitted (4720.5360, subp. 1)	April 1, 2008
Final WHP Plan Review Received (4720.5360, subp. 4)	July 1, 2008

Members of the Wellhead Protection Team

NAME	REPRESENTING	PHONE
David Venekamp	Long Prairie City Administrator/Clerk	320-732-2167
Don Klinkhammer	Long Prairie Township	320-732-2066
Al Wettstein	Long Prairie Township	320-732-3498
Scott Van Norman	Round Prairie Township	320-732-2965
Art Rowan	Long Prairie City Council	320-732-2443
Dan Spieker	Long Prairie Public Works	320-732-2744
Kitty Tepley	Todd County SWCD	320-732-2644
Gloria Stevenson	Todd County GIS	320-732-4248
Dave Neiman	Source Water Protection Specialist, MRWA	218-820-0595
Mike Howe	Principal Planner, MDH	320-223-7342
Marilyn Bayerl	Bayerl Water Resources	320-283-6127

Abbreviations

BMP	Best Management Practices	MPCA	MN Pollution Control Agency
BWSR	Board of Water and Soil Resources	MRWA	MN Rural Water Association
CRP	Conservation Reserve Program	NRCS	Natural Resources Conservation Services
DNR	MN Department of Natural Resources	NWI	National Wetlands Inventory
DWSMA	Drinking Water Supply Management Area	OBWEL	Observation Well
ELRM	Environment and Land Resource Management	OHW	Ordinary High Water Level
EPA	Environmental Protection Agency	PCSI	Potential Contaminant Source Inventory
GIS	Geographic Information Systems	PWS	Public Water Supply
HWGP	Hazardous Waste Generator Permit	RST	Registered Storage Tank
ISTS	Individual Sewage Treatment Systems	SWCD	Soil & Water Conservation District
IWMZ	Inner Wellhead Management Zone	ST	Storage Tank
LGU	Local Government Unit	STOR	Ag Chemical Storage Permit
LUST	Leaking Underground Storage Tanks	SWUDS	State Water Use Permit
LWMP	Local Water Management Plan	TMDL	Total Maximum Daily Load
MCL	Maximum Containment Level	TOT	Time-of-travel
MDA	MN Department of Agriculture	UST	Underground Storage Tank
MDH	MN Department of Health	VIC	Voluntary Closure
Mg/Y	Million Gallons per year	WHP	Wellhead Protection
MN	Minnesota	WHPA	Wellhead Protection Area
MNDOT	MN Department of Transportation	WHPP	Wellhead Protection Plan

EXECUTIVE SUMMARY

Part Two of The City of Long Prairie's Wellhead Protection Plan speaks to sections 4720.5220 through 4720.5290 of MN Rules. This portion of the plan is based on the requirements outlined in the scoping document found in the [Appendix](#) of this plan. It addresses:

- Data elements and their assessments;
- Impacts of changes on the public water supply well;
- Issues, problems and opportunities;
- Wellhead protection goals, objectives and action plans;
- Program evaluation; and
- Alternative water supply/contingency strategy.

In Part One of the Plan, the delineation of the Wellhead Protection Area (WHPA), the Drinking Water Supply Management Area (DWSMA), vulnerability of the wells, and vulnerability status of the aquifer in which the City's wells are located were completed and approved by the Minnesota Department of Health (MDH). This important information was utilized in the completion of this document.

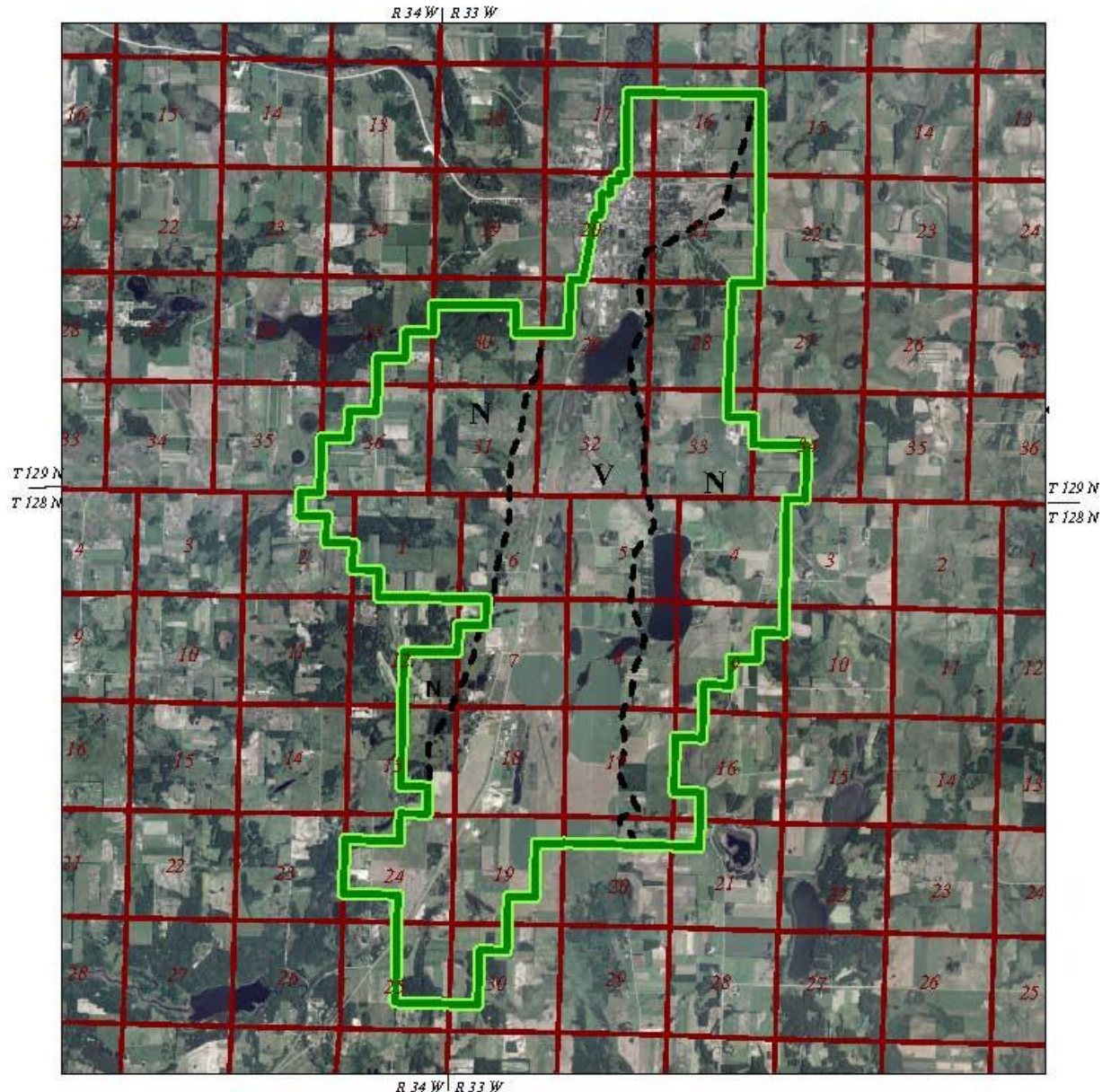
It was determined that wells located outside of the outwash channel of the Long Prairie River were very low in vulnerability to contamination due to activities at the surface. It is assumed water moving vertically from the land surface to the aquifer would take decades to reach the aquifer. Wells located within the outwash area (the area of Vulnerability in [Figure One](#)) have varying levels of sensitivity – from low to very high. The area around Charlotte Lake on the north, west and south shores exhibit a very high vulnerability rating. This information is covered extensively in Part One of the Plan.

The vulnerability of the aquifer that underlies the City of Long Prairie's well fields was assessed based on geologic logs from wells in the area, surficial geologic and soils maps, and chemical and isotope data. [Figure One](#) maps the areas of vulnerability for the City of Long Prairie's wells.

The varied vulnerability within the outwash areas has generated more questions about the geology between the surface and the aquifer. Further monitoring over the next ten years will help to gain a better understanding of the aquifer and the layers between it and the land above. Management Strategies in Chapter Five focus on actions the City of Long Prairie, along with the Wellhead Team, can focus on for the next ten years. These strategies focus on the following areas of concern: Inner Wellhead Management Zone, One-year Time of Travel, Transportation Corridors, Surface Water Discharges, Tanks, Hazardous Waste, Chemical / Nutrient Use, Wells and Class V Wells.



The Wellhead Protection Team intends to work with Todd County, the City of Long Prairie and state and local agencies to encourage less intensive land use practices within the DWSMA. It is the hope of the Wellhead Protection Team that through increased public awareness, habits will be established that will decrease the potential for future water problems and the community can continue to enjoy the current quality of water it has come to expect.

Figure One



Long Prairie

*Drinking Water Supply
Management Area
(DWSMA) MN-00408
10 year Time of Travel*

 DWSMA
 DWSMA Vulnerability Boundary

N = Not Vulnerable
V = Vulnerable

1 0 1 Miles



Approved December 22, 2006

Chapter One

Data Elements and Assessments

CHAPTER ONE

DATA ELEMENTS/ASSESSMENT

Minnesota Rules 4720.5200

I. REQUIRED DATA ELEMENTS

A. PHYSICAL ENVIRONMENT DATA ELEMENTS

1. Precipitation

Average annual precipitation during the past five years in Long Prairie is 29 inches, with variation between 18 and almost 36 inches, as shown in [Figure Two](#). Overall County average ranges 21 to 32 inches. Rain falling on the ground can filter through the layers of sediment and enter the aquifer containing the City's wells. All of the City wells are vulnerable to contamination and most of the DWSMA is also vulnerable to the uses on the land. It is important to address areas where rainfall could cause infiltration of contaminants.

Precipitation Data for Long Prairie					
Measured in inches					
	2002	2003	2004	2005	2006
January	0.09	0.41	1.04	1.10	0.39*
February	1.56	0.50	1.67	0.46	0.48*
March	2.19	0.66	1.49	0.74	0.99
April	2.85	2.82	2.92	3.26	0.61
May	3.07	3.67	2.89	4.34	1.98
June	4.15	9.50	2.62	7.21	2.07
July	9.95	2.46	4.15	2.33	2.09
August	5.15	0.88	2.09	4.12	2.74
September	1.92	2.30	7.17	5.03	4.19
October	3.75	1.32	2.27	3.16*	1.07
November	0.27	1.56	0.51	2.92*	0.62
December	0.33	0.47	0.37	1.07*	1.12
Total	35.28	26.55	29.20	35.74	18.35

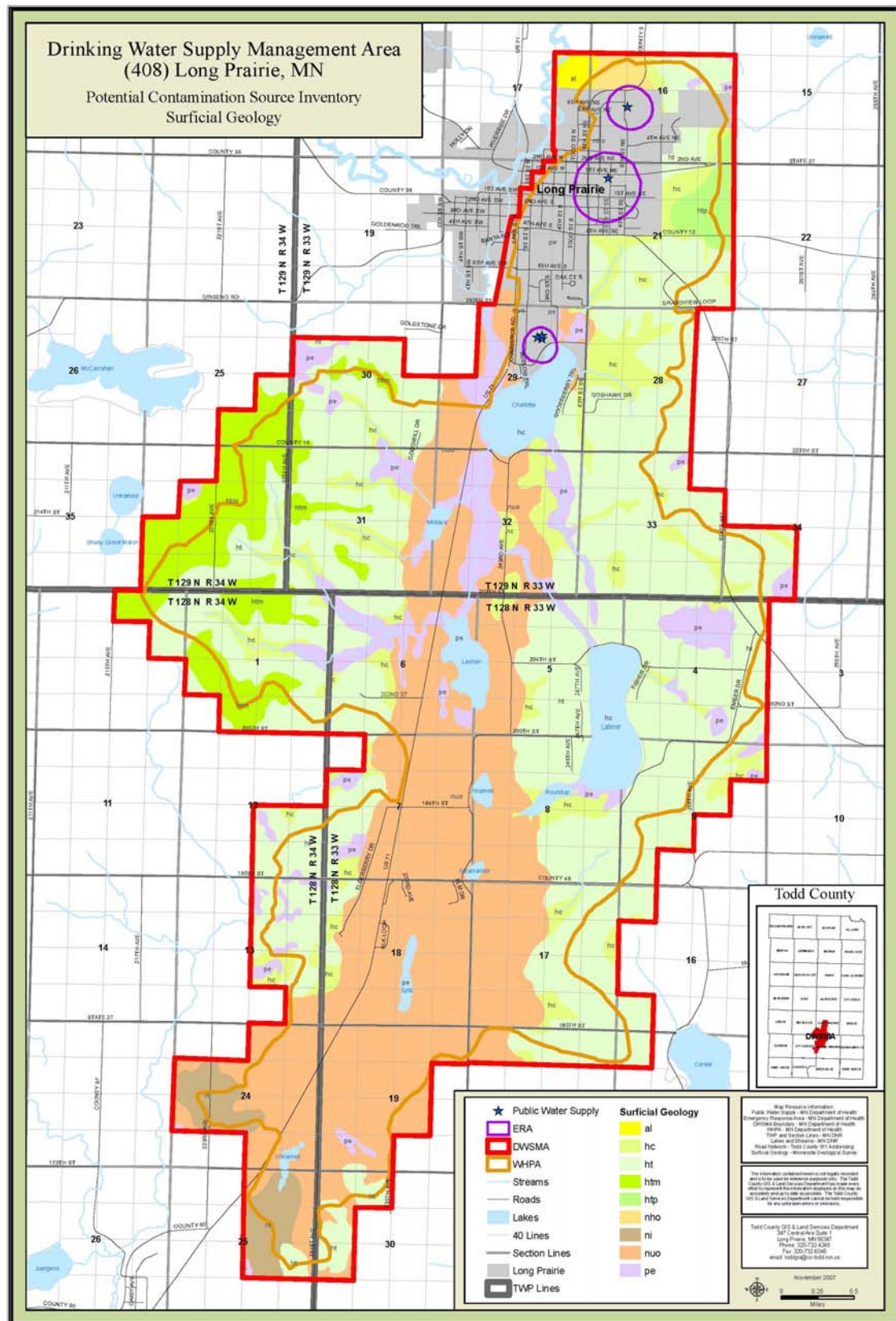
Figure Two

Based on DNR Climatology Data

*County Average

2. Geology

A thorough geologic atlas of Todd County has been completed in 2007. Geologic data elements pertinent to the Wellhead Protection Area (WHPA) delineation and vulnerability status are included in Part One of this Wellhead Protection Plan (WHPP) and are on file with the Minnesota Department of Health (MDH) and the City of Long Prairie. Surficial Geology is shown in [Figure Three](#) and described in the next section.



3. Soils

According to Part One of the Long Prairie WHPP the WHPA soils consist of sandy outwash covered with clay-rich sediment in the proximity of the Long Prairie River. Upland moraines border the area and drain toward the River. The aquifer containing the City wells has a confining layer consisting of clay between the surface and the groundwater. This layer is thought to be either leaky, discontinuous or both based on Tritium analysis of the groundwater resource. This requires the designation of moderate geologic sensitivity to the drinking water resource.

4. Water Resources

The Long Prairie DWSMA is located almost entirely within the Long Prairie River Watershed. Water flows east northeast toward the Long Prairie, and ultimately, the Mississippi River. The Long Prairie River enters the DWSMA briefly in the extreme NW corner and is not significant to the city's wells. **Figure Four** indicates the flood plain area surrounding the River, directional flow arrows of drainage within the watershed, lakes and wetlands. As shown on this map, land use activities on the far southern end of the DWSMA could enter the drainage system and ultimately end up in Charlotte Lake – which contributes to the City's drinking water in wells numbers seven, eight and nine (see section on Water Quality).

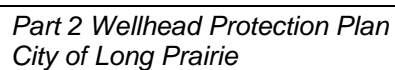
Lake Shoreland classification, as defined by the Department of Natural Resources (DNR), separates lakes into categories according to sensitivity to development. The waters located within the DWSMA are listed as either Natural Environment or Recreational Development lakes. The DNR explains the reasoning behind these lake classifications on their website at:

<http://www.dnr.state.mn.us/shorelandmgmt/guide/classification.html>.

The following, excerpted from the website, provides a summary:

- **Natural Environmental Lakes** usually have less than 150 total acres, less than 60 acres per mile of shoreline, and less than three dwellings per mile of shoreline. They may have some winterkill of fish; may have shallow, swampy shoreline and are less than 15 feet deep.
- **Recreational Development Lakes** usually have between 60 and 225 acres of water per miles of shoreline, between 3 and 25 dwellings per mile of shoreline and are more than 15 feet deep.
- **General Development Lakes** usually have more than 225 acres of water per mile of shoreline and 25 dwellings per mile of shoreline and are more than 15 feet deep

There are three lakes located within the DWSMA, Lakes Charlotte and Latimer are designated as Type Five (shallow open water) wetlands and Lake Lashier is designated as Type Four (deep marsh).



The following table (*Figure Five*) shows the listing of lakes within the DWSMA. Area, depth, OHW elevation (Ordinary High Water elevation is established by the DNR), shoreland class designation as described above, and wetland type.

Figure Five

Lake Number	DNR Shoreland Classification	Lake Name	Wet land Type	Area - Acres	Max Depth Ft	OHW Elevation
77012000	Recreational Development	Charlotte	5	181	84.0	1295.90
77010500	Recreational Development	Latimer	5	210	32.0	1317.70
77010600	Natural Environment	Lashier	4	77	0.0	

Wetlands can provide a “nutrient sink” where the water flows into the wetland and is allowed to settle nutrients to the bottom while evaporation and movement through the soils takes some of the water out of the overland system. There are different types of wetlands, as designated by the National Wetlands Inventory and shown in *Figure Six*. The largest type of wetland within the DWSMA is Shallow Marsh.

Figure Six

NWI Circular 39 Wetland Type		Acres
1	Seasonally Flooded Basin or Flat	83.69
2	Wet Meadow	0
3	Shallow Marsh	766.97
4	Deep Marsh	152.99
5	Shallow Open Water	390.65
6	Shrub Swamp	313.86
7	Wooded Swamp	133.66
8	Bog	0
98	Uplands	11,536.30
TOTAL		13,378.30

The above Wetland Types, as designated by the Circular 39 system, was developed by the US Fish and Wildlife Service in 1956. It divides wetlands into eight types. The main differences in them are depth of water and variety of vegetation.

B. LAND USE DATA ELEMENTS

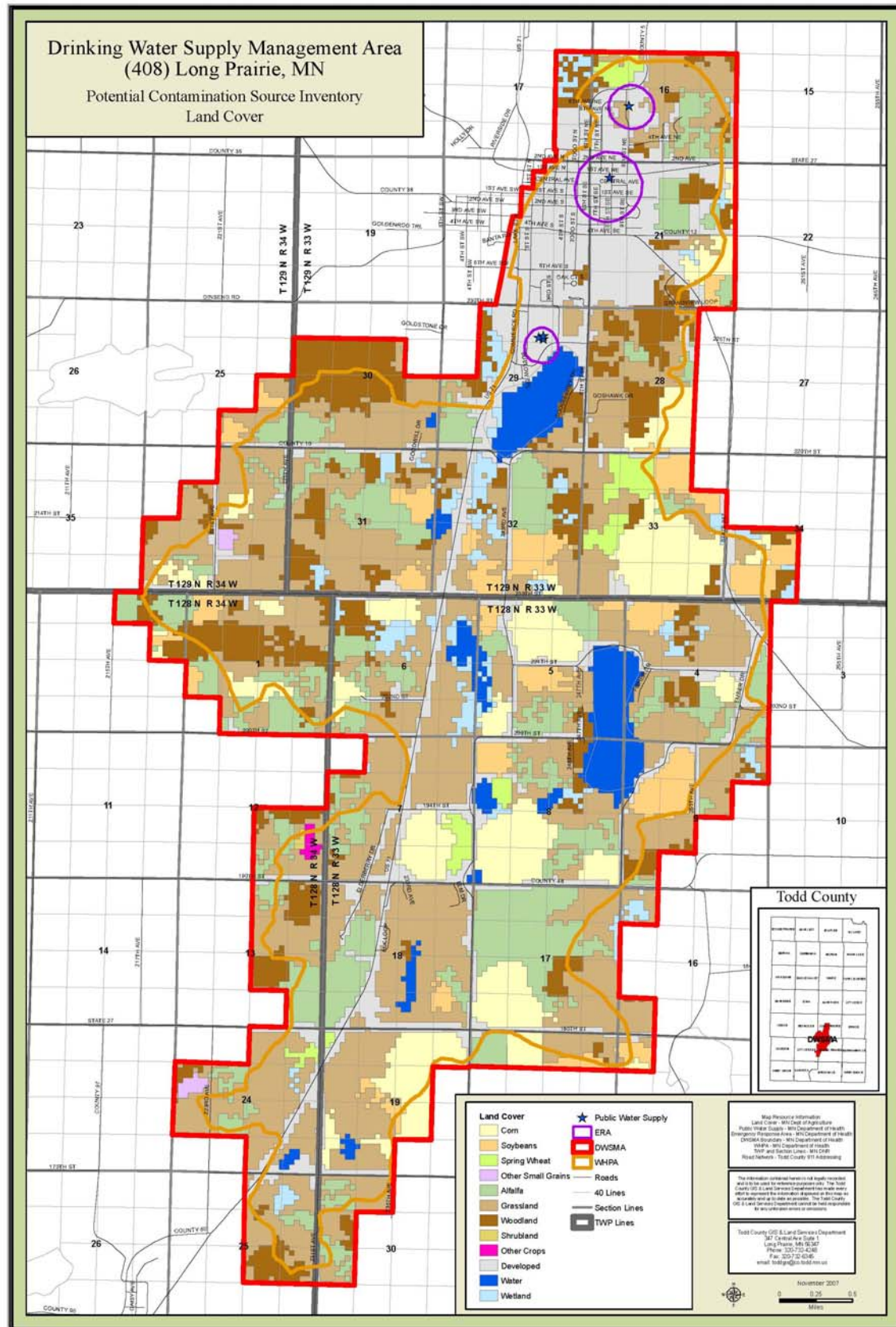
1. Land Use

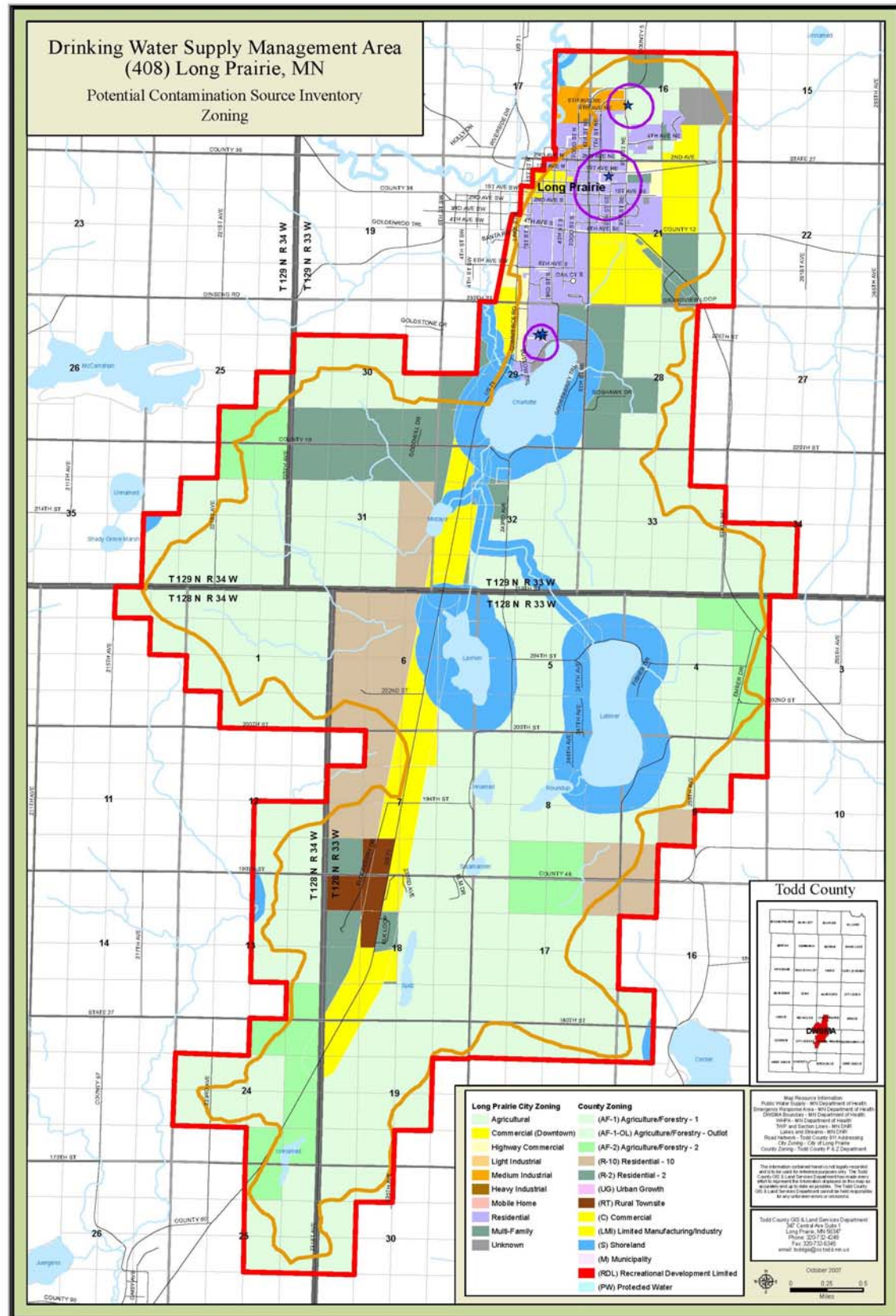
The City of Long Prairie is located in central Minnesota adjacent to the Long Prairie River in Todd County. State Highway 27 travels east / west through the city and the northern section of the DWSMA. US Highway 71 runs from the south, southwest to the north and intersects with SH 27 in the north. County Road 48 also intersects with US Highway 71 in the lower half of the DWSMA. The total area of the DWSMA (13,378.3 acres) encompasses the eastern three-fourths of the city and parts of Long Prairie, Reynolds, Little Sauk and Round Prairie townships. Based on the 1989 land use by the DNR, land use within the DWSMA of Long Prairie is predominantly cultivated – as shown in *Figures Seven and Eight*.

Figure Seven

1989 Land Use / Land Cover	Acres	% of Total
Corn	1324.12	9.90
Soybeans	680.75	5.09
Spring Wheat	184.01	1.38
Oats	24.79	0.19
Alfalfa	1792.38	13.40
Grassland	4733.53	35.40
Woodland	1425.40	10.66
Shrubland	4.65	0.03
Other Crops	13.95	0.10
Developed	2303.19	17.22
Water	496.72	3.71
Wetland	389.41	2.91
Total	13372.90	100.00

Official zoning within the DWSMA is shown in *Figure Nine*. Within the City of Long Prairie, land use controls are administered locally. Todd County Environment and Land Resource Management office is responsible for Individual Sewage Treatment Systems (ISTS) and land use permitting in the areas located outside the city limits. Todd County is the permitting authority for feedlot operations.





Existing land uses and potential sources of contamination located within the DWSMA were reviewed by the WHP Team. The MDH Potential Contaminant Source Inventory (PCSI) utilizing State databases combined with Todd County GIS mapping expertise and local knowledge were used to identify most of the contaminant sources. **Figures Ten and Eleven** show the location of identified Potential Contaminant Sources. A listing of parcels identified as having potential contaminant sources is shown in the **Appendix**. A list of property owners, addresses, parcel identification numbers, and current use classification is located at the Long Prairie City Hall.

Class V injection wells are typically shallow disposal systems that are used to place a variety of fluids below the land surface. Examples of Class V injection wells include: motor vehicle waste disposal wells, large capacity cesspools, storm water drainage wells, aquifer remediation wells and large capacity septic systems.

Class V wells are a concern because, in some situations, they may pose a risk to underground sources of drinking water. The risk a Class V well may present depends on factors such as: the type of fluid(s) it receives, its location in relation to water supply sources, its construction, maintenance and local geology. Identification of Class V injection wells will be addressed further in the management strategies found in Chapter Five.

Potential contaminants can be summarized as follows:

- Registered Storage Tanks (RST): **13**
 - Unknown: **13**
- Underground Storage Tanks (UST): **28**
 - Active: **8**
 - Abandoned: **6**
 - Removed: **14**
- Leaking Underground Storage Tanks (LUST): **8**
 - Active: **1**
 - Conditionally Closed: **7**
- Storage Tanks Unspecified (ST): **3**
 - Active: **3**
- Individual Sewage Treatment Systems (ISTS): **58**
- State Water Use Permits (SWUDS): **44**
- Public Water Supply Wells (PWS): **12**
- Observation Wells (OBWEL): **3**
- Individual Wells: **153**
- Potential Class V Injection Wells: **9**
- Hazardous Waste Generator Permit (HWGP): **18**
 - Unknown: **18**
- Chemical Storage Sites (STOR): **10**
 - Active: **10**

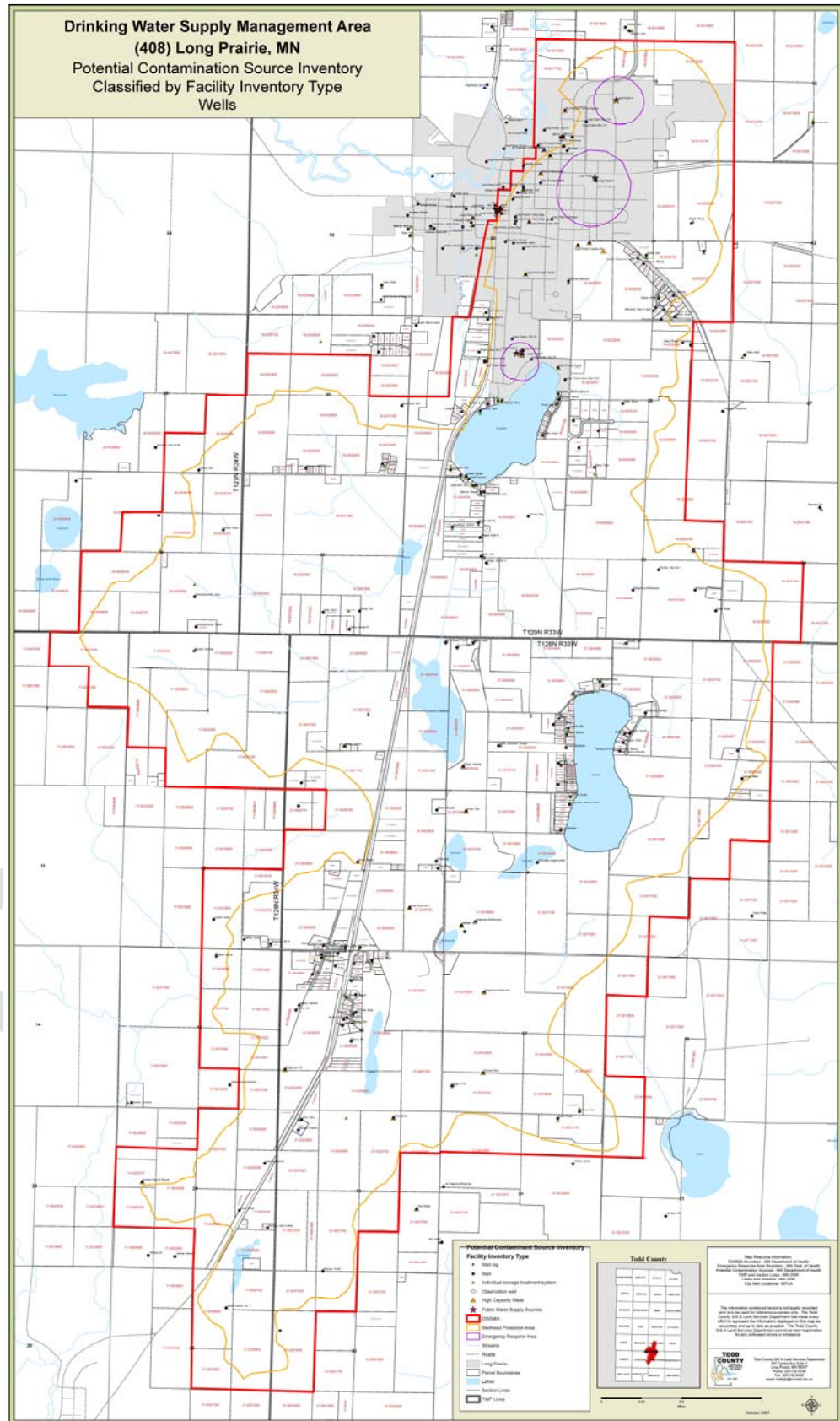
- Voluntary Investigative Clean Up (VIC): **2**
- State / Federal Superfund Sites: **1**
- Major Transportation Corridors: **2**
- Gravel and Mining Pits: **10**
 - Active: **8**
 - Inactive: **2**
- Feedlots: **26**
 - Animal Feedlot Permit: **13**

Existing land uses, management and local land use controls within the Inner Well Management Zone (IWMZ or 200' radius around the public water supply wells) and the immediate one year time of travel area was reviewed and considered by the WHP team during the development of this plan. This is done to identify land use issues and related potential contaminants which may have the most immediate impact upon the public water supply wells.

A copy of the IWMZ forms and measures that have been identified are included in the [Appendix](#) of this plan. The WHP team discussed the importance of on-going monitoring for land use changes and potential contaminants near the public water supply wells and awareness of State Well Code isolation distances and need to maintain these setback requirements.

Existing land uses, potential contaminants and future land use changes were also considered within the one year time of travel. Based on the land uses and potential contaminants identified in the IWMZ and one year time of travel area described, the city will consider the potential contaminants and land uses a high priority during the implementation of management strategies found in Chapter Five of this plan.

Figure Eleven

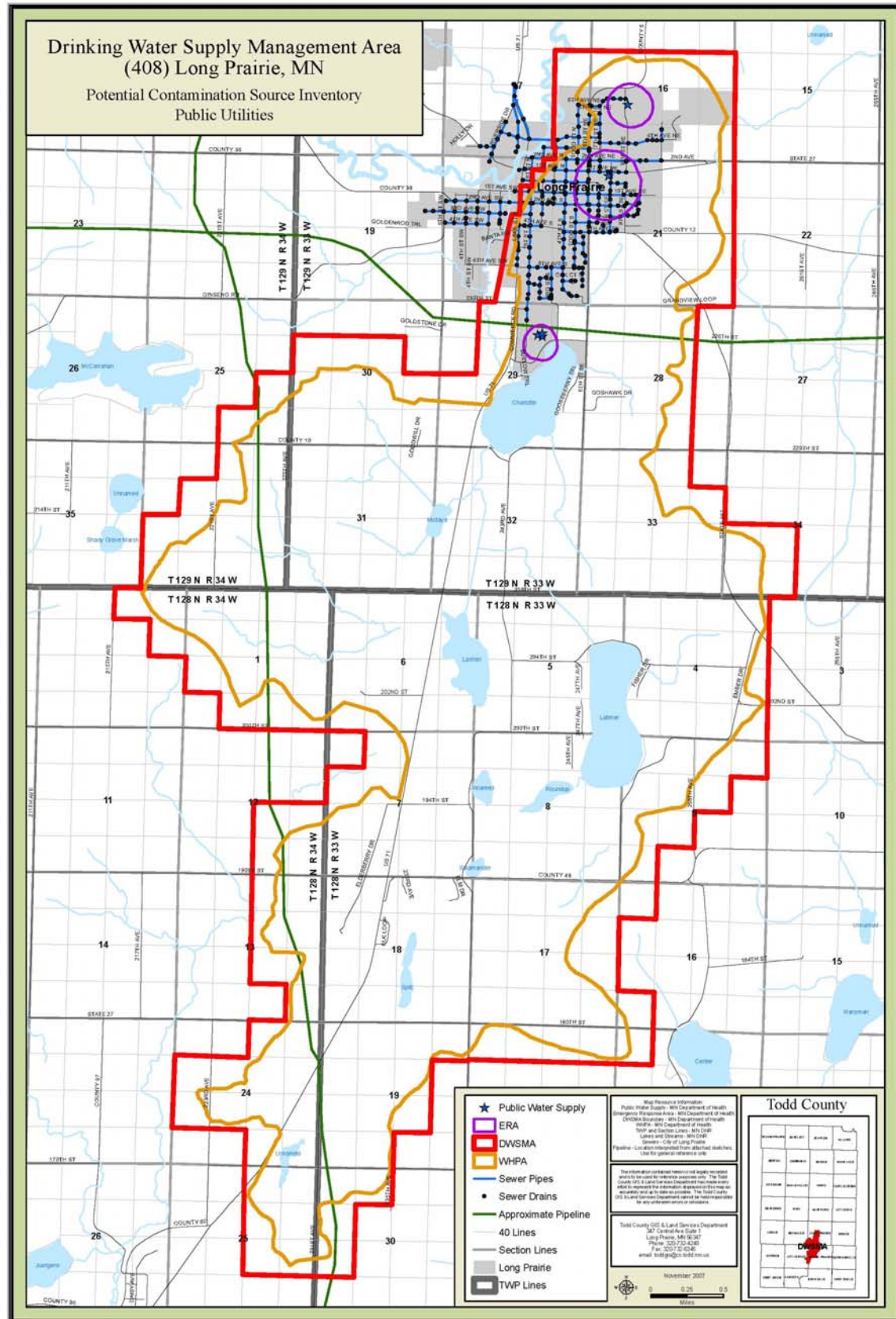


2. Public Utility Services

Ground transportation corridors provide a potential source of contamination due to accidental spills and discharges. Transportation corridors located within the DWSMA include MN State Hwy 27 and US Hwy 71 and are shown in [Figure Twelve](#). Water from the Highways flows overland and infiltrates into the soil. The Minnesota Department of Transportation (MNDOT) has developed a protocol to address spills within the right of way, including notification of a duty officer who assigns clean up. An 800 report number is on file with the City of Long Prairie. The Emergency / Contingency Plan found in Chapter Seven addresses options for back up water supplies and emergency preparedness in the event of a catastrophic event such as a hazardous release that may impact the public water supply.

Stormwater from the City of Long Prairie drains toward the Long Prairie River. A grassed seepage basin is located near Well #6, providing drainage for residential and public school property runoff. The City of Long Prairie's utility and public drainage system map is shown in [Figure Twelve](#). Water and wastewater lines should have negligible impact on groundwater quality.

Logs of Long Prairie's wells are located in the appendix of Part One of the WHP Plan. Unused municipal or other high capacity wells located within the DWSMA must be investigated to determine sealing protocol. There are three wells driven in the mid '20s to the late '30s and were removed from service in 1946. The City will investigate the location and closure method of these wells. All other wells are either in service or properly sealed.



C. WATER QUANTITY DATA ELEMENTS

1. Surface Water Quantity

According to Part One of the WHPP, Charlotte Lake is hydraulically connected to the aquifer used by the city wells and provides a significant amount of recharge to wells number seven, eight and nine. Through analysis, it was determined approximately 70% of water from Well #7 and 30% from Well #8 comes from the Charlotte Lake. Although Well #9 was not evaluated for connectivity, it exists in the same aquifer and vicinity as the other two wells and it is assumed to have similar dilutions from the lake.

There are no permitted surface water withdrawals within the DWSMA. No known water use conflicts exist.

2. Groundwater Quantity

Adequacy of volume during drought periods has been addressed in Part One of The Plan. There are no known well interference problems or water use conflicts. Historic well use by the City of Long Prairie is shown in *Figure Thirteen*.

ANNUAL WELL PUMPING AMOUNTS (IN MILLIONS OF GALLONS)						<i>Figure Thirteen</i>
YEAR	WELL 3B	WELL 6	WELL 7	WELL8	WELL 9	TOTAL
2006	33.567	36.373	104.509	114.67	62.975	352.094
2005	30.099	32.928	96.734	107.573	60.001	327.335
2004	56.187	65.075	112.896	119.546	10.655	364.359
2003	60.824	73.681	106.044	119.568	N/A	360.117
2002	54.875	93.311	100.713	98.467	N/A	347.366

There are 39 other high capacity wells located within the DWSMA. These are predominantly for agricultural irrigation, local churches, gravel pits and schools. Environmental bore holes are used to measure static water levels and can be used for monitoring other parameters as well.

D. WATER QUALITY DATA ELEMENTS

1. Surface Water Quality

The Minnesota Pollution Control Agency (MPCA) categorizes lakes by clarity. Designations range from Oligotrophic to Hyper Eutrophic. Lake Charlotte is a hard-water marl lake with 13-foot clarity. It is a Mesotrophic lake and is fully supported for aquatic recreational use. **Mesotrophic** lakes are lakes with an intermediate level of productivity. These lakes are commonly clear water lakes and ponds with beds of submerged aquatic plants and medium levels of

nutrients. Lake Latimer is borderline Eutrophic, with clarity of 3.5 feet. A **eutrophic lake** is a lake with high primary productivity, the result of high nutrient content. These lakes are subject to excessive algal blooms, resulting in murky water and poor water quality. It is designated fully supported for aquatic recreational use. No monitoring has been completed on Lake Lashier. It is a small, shallow lake.

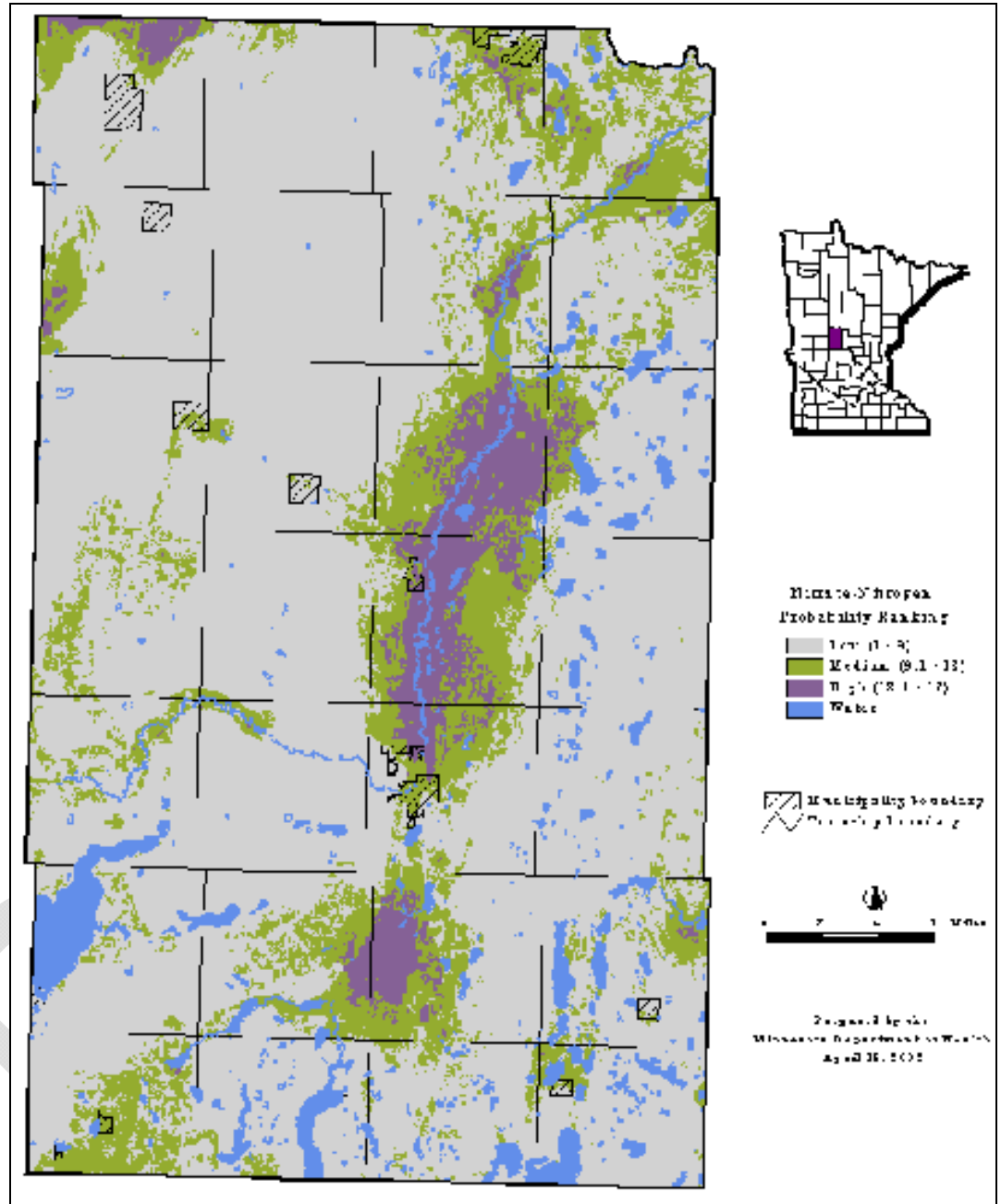
Venewitz Creek runs through the DWSMA from the southwest to the northeast, through Lake Charlotte to the Long Prairie River. This creek usually flows year-round and there is no monitoring data available at present.

2. Groundwater Quality

Tritium analysis was conducted on the PWS wells number six and seven in 2000. Tritium is a radioactive isotope of hydrogen that was released into the atmosphere during testing of hydrogen bombs. When Tritium is found in groundwater in amounts greater than one tritium unit, it is an indicator that recharge due to rainfall has occurred in the United States. Results of the Tritium testing at 10.3 and 9.4 tritium units, respectively, shows water in the aquifer is “young”, meaning it has leached from the surface since 1953. Further testing of herbicides and nitrates will need to be conducted.

Two Voluntary Investigation and Cleanup (VIC) sites are located within the DWSMA. Daybreak Foods and Long Prairie Dry Cleaners were cleaned up in 1993 and 1995, respectively. These sites are considered inactive by the MPCA. The MPCA is still in the remediation process of a Superfund Site, located within the DWSMA. A five-year review was conducted in 2007 after groundwater flow modeling was conducted to determine the hydraulic capture zone. The complete report is in file at City Hall, but the summary of pertinent data concluded the plume is moving toward the Long Prairie River – not the city wells. Remediation efforts include vegetable oil injections into the aquifer north and east of city wells #4 and 5. These wells are no longer utilized as water supply wells; the MPCA uses them for monitoring and mitigation of the contamination.

While preliminary nitrite + nitrate testing of well number eight showed levels below detection limits of 0.05 mg/l, this may be due to the assimilative capacity of Charlotte Lake, which also showed no detection when tested. Data collected by the MDH was utilized to produce **Figure Fourteen** ranking areas within Todd County for nitrate – nitrogen probability. Well number six exists in an area of high nitrogen probability and the rest are located in areas of moderate probability.



II. ASSESSMENT OF DATA ELEMENTS

A. USE OF THE WELL

The City of Long Prairie utilizes five wells ranging in depth from 72 to 201 feet. An average of 352.1 million gallons per year is pumped from these wells, as shown in [Figure Fifteen](#).

[Figure Fifteen](#)

Well Number	Unique well #	Casing Depth (ft)	Depth (ft)	Average pumped (Mg/Y)
3B	00480438	67	85	33.57
6	00195172	55	72	36.37
7	00542955	120	181	104.51
8	00550068	146	201	114.67
9	00699113	145	185	62.98

B. WELLHEAD PROTECTION AREA DELINEATION CRITERIA

The following data inputs were used in determination of the boundaries of the wellhead protection area.

1. Time of Travel - 10 year
2. Flow Boundaries
3. Daily Volume
4. Ground Water Flow Field
5. Aquifer Transmissivity

A detailed discussion of the delineation is found in Part One of the Plan. Part One of Long Prairie's plan was completed by James F. Walsh, MDH. This plan is available at the MDH and the Long Prairie City offices for review.

C. QUALITY AND QUANTITY OF WATER SUPPLYING THE PUBLIC WATER SUPPLY WELL

Long Prairie's wells pump about 352.1 million gallons per year. Results of routine sampling conducted by the MDH in 2006 discovered no violations of any parameters monitored under the Federal Safe Drinking Water Act. A copy of the 2007 Consumer Confidence Report is located in the [Appendix](#) of this plan.

D. THE LAND AND GROUNDWATER USES IN THE DRINKING WATER SUPPLY MANAGEMENT AREA

The land use within the DWSMA is predominantly agriculture. There are 457.5 acres enrolled in the Conservation Reserve Program (CRP). This practice should be promoted in sensitive areas within the DWSMA. Manure management is an important agricultural practice to protect the groundwater supply. It is also important to prevent runoff of nutrients into Lake Charlotte because there is a direct link between the water of this lake and the city's wells.

The area of the DWSMA located within the city limits of Long Prairie consists mainly of commercial / industrial with some residential. Educating landowners about the importance of proper management of hazardous wastes, agricultural chemicals and fertilizers, proper turf management, tank management and monitoring are issues of concern and will be the focus of management strategies in this area.

The intent of this WHPP is to heighten awareness regarding the impact of land use activities on groundwater quality. Through awareness, it is hoped that citizens will voluntarily take the necessary steps, which will improve the quality of groundwater and drinking water produced by the City of Long Prairie.

Chapter Two

Impact of Changes on Public Water Supply Well

CHAPTER TWO

IMPACT OF CHANGES ON PUBLIC WATER SUPPLY WELL

Minnesota Rules 4720.5220

I. CHANGES IDENTIFIED IN:

A. PHYSICAL ENVIRONMENT

There are no expected physical changes in the environment anticipated within the Long Prairie DWSMA over the next ten years.

B. LAND USE

Land use changes are anticipated along the State Hwy 71 corridor. It has been re-zoned from agricultural to commercial use. The City of Long Prairie has no long-term annexation plan.

There are still some shallow wells and holding tanks for ISTS located within the city limits. These will be inventoried and property owners offered incentives to seal the wells and hook into city sewer.

Agricultural land use has been stable. There is a potential expansion of a feedlot located within the DWSMA. This expansion would be reviewed for potential impact to the drinking water aquifer.

C. SURFACE WATER

There is little data to indicate trends in water quality of the lakes and creek located within the DWSMA. A strategy to monitor surface water will be set.

D. GROUNDWATER

The City of Long Prairie expects a significant decrease in the use of water from the City Wells. Long Prairie Packing is expected to drill their own high capacity wells outside the DWSMA which will decrease the City's volume by 25 to 40 percent.

II. IMPACT OF CHANGES

A. EXPECTED CHANGES IN WATER USE

The City of Long Prairie expects stable growth. A 25 to 40 percent decrease in water usage is expected due to changes in industrial need.

B. INFLUENCE OF EXISTING WATER AND LAND GOVERNMENT PROGRAMS AND REGULATION

The City of Long Prairie has regulatory jurisdiction over the area located within its own limits. Todd County regulates the remaining area with the exception of wetlands, which are administered by the SWCD.

The Todd County Local Water Management Plan has identified priorities supportive of the strategies in this plan. It commits to planning and technical assistance in the creation of this plan, along with well sealing cost-sharing, educational programs and nitrate testing clinics.

The DWSMA is located within the Long Prairie River Watershed and is part of the Upper Mississippi River Basin. Basin-wide planning occurred in the early 2000s with meetings of Counties and Local Water Managers. A basin-wide plan is available for download on the MPCA website at the following address: <http://www.pca.state.mn.us/water/basins/uppermiss/index.html>. It outlines common strategies throughout the basin. An impaired reach of the Long Prairie River has a completed Total Maximum Daily Load (TMDL) study. It can be found at www.ToddSWCD.com or on the MPCA website.

C. ADMINISTRATIVE, TECHNICAL, AND FINANCIAL CONSIDERATIONS

The City of Long Prairie, Todd County SWCD and Environment and Land Resource Management Office have been supportive of Wellhead Protection efforts. A wellhead committee had been formed and has been actively involved in the planning process. A budget has been established for implementation of priority strategies identified in this Plan.

The WHP Manager will be responsible for implementation of this Plan. The committee will continue to meet at least annually to review and discuss implementation programs.

Todd County GIS Department, Local Water Management, Soil and Water Conservation District and County Environment and Land Resource Management Office have provided and will continue to provide technical assistance for this plan along with the City of Long Prairie.

Chapter Three

Issues, Problems and Opportunities

CHAPTER THREE

ISSUES, PROBLEMS, AND OPPORTUNITES

Minnesota Rules 4720.5230

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

A. THE AQUIFER

This aquifer providing Long Prairie's Public Water Supply has been determined to be influenced by land use based on the geologic setting and the existence of Tritium in two of the City wells. The City will work with the MDH and DNR to conduct further Tritium studies.

The superfund site will require monitoring to ensure the plume continues to move away from the city wells. The City will review spill contamination reports and work closely with the MPCA to monitor potential contaminants.

The dominance of agricultural land uses in the WHPA and DWSMA will require local agricultural producers to continue implementing or adopt nutrient BMPs while still maintaining suitable yields and returns. Management and implementation of other practices such as gravel mining operations BMPs, upgrading existing septic systems and assessment of potential spill areas to determine need for protective liners will also benefit groundwater resources and the aquifer. The City will work with the County feedlot officer to determine the feasibility of a zoning overlay with feedlot requirements more protective of the aquifer within the DWSMA.

Other opportunities presented include: identification of unsealed, unused wells, location of underground storage tanks, and development of a procedure for tracking new wells placed in the aquifer. Public education programs addressing potential contamination of the aquifer will be initiated.

B. THE WELL WATER

The City of Long Prairie has adequate water for the projected use in the next ten years. Adding any high capacity well by the City may affect the WHPA and DWSMA and would require a new delineation. The City will work with the MDH and DNR to assist with location and construction of any proposed new high capacity wells. Education is one of the main strategies in protection of drinking water supplies.

C. THE DRINKING WATER SUPPLY MANAGEMENT AREA

Land use within the DWSMA of this aquifer has been relatively stable for years.

II. IDENTIFICATION OF:

A. PROBLEMS AND OPPORTUNITIES DISCLOSED AT PUBLIC MEETING AND IN WRITTEN COMMENT

B. DATA ELEMENTS

The State's Wellhead Protection Rule requires that existing information be utilized in developing the initial Wellhead Protection Plan. Much of the data collected and utilized to delineate Long Prairie's WHPA and DWSMA and to determine vulnerability of the aquifer to possible contamination comes from regional sources on a large scale. While much regional information and data is being used as supplied by MDH, Long Prairie has initiated verification of many of the contaminant sites to further protect public drinking water supplies.

The City will continue to compile data collected by all entities regarding groundwater and surface water to track potential changes in the quality of water. This plan will be updated on ten-year intervals as required by the State of Minnesota. Updated data will be utilized at that time.

C. STATUS AND ADEQUACY OF OFFICIAL CONTROLS, PLANS, AND OTHER LOCAL, STATE, AND FEDERAL PROGRAMS ON WATER USE AND LAND USE

The WHP committee feels adequate protection of the DWSMA is available through existing land use ordinances in the City of Long Prairie, Todd County, Long Prairie Township, and state well and groundwater appropriation permits.

Existing education programs promoting Best Management Practices (BMPs) and working with local landowners on issues is the approach proposed by the City of Long Prairie.

The MDH and Minnesota Rural Water Association (MRWA) will continue to provide technical assistance towards the successful implementation of this Plan. Other State agencies including the DNR, MDA, MPCA, and BWSR are available to provide assistance as needed.

Chapter Four

Wellhead Protection Goals

CHAPTER FOUR

WELLHEAD PROTECTION GOALS

Minnesota Rules 4720.5240

III. GOALS

A. PRESENT AND FUTURE WATER AND LAND USE

The overall Goals of the City of Long Prairie Wellhead Protection Plan are:

- 1. Protect the public water supply from contamination due to land use activities.**
- 2. Establish and maintain a WHP continuing public education program as an ongoing process.**

The City of Long Prairie and the communities served enjoy a safe and sufficient water supply. Through the implementation of this WHP Plan, they propose to further safeguard the public water supply of the citizens of the City of Long Prairie.

The wellhead protection program will achieve these stated goals through existing and planned programs such as:

- o Public Education and Information**
- o Best Management Practices**
- o Well and Tank Identification**
- o Emergency Response Procedures**

Chapter Five

Objectives and Plans of Action

CHAPTER FIVE

OBJECTIVES AND PLANS OF ACTION

Minnesota Rules 4720.5252

I. ESTABLISHING PRIORITIES

A. THE LONG PRAIRIE WHP TEAM CONSIDERED THE FOLLOWING ISSUES IN DETERMINING THE PRIORITY OF POTENTIAL CONTAMINANT SOURCES:

- o Any substance that exceeds Maximum Contamination Level's (MCL's).
- o Any substance with quantifiable contamination levels resulting from human activity, below MCL's.
- o The frequency of each source category of the Potential Contaminant Source Inventory (PCSI).
- o The location of potential contaminant sources relative to the well(s).
- o The assimilative capacity of the aquifer to reduce the impact of Potential Contaminant Sources.
- o The effectiveness of existing controls.
- o The time required to get cooperation from other agencies and cooperators.
- o The resources needed: staff, cost, time, legal and/or technical.

B. THE WHP TEAM LISTED WELLHEAD PROTECTION MANAGEMENT ISSUES IN THE FOLLOWING ORDER OF PRIORITY, WITH **H** BEING OF THE HIGHEST CONCERN, **M** BEING MEDIUM AND **L** BEING OF LOWEST PRIORITY:

Category		Potential Contaminant Source	Status	Number of sites	Priority
Tanks	VIC	Voluntary Investigative Cleanup		2	H
	SUPERFUND	State / Federal Superfund Sites	Active	1	H
	LUST	Leaky Underground Storage Tank	Active	1	H
			Conditionally Closed	7	L
	ST	Storage Tank Unspecified	Active	3	H
	UST	Underground Storage Tank	Active	8	H
			Inactive	6	L
			Removed	14	L
	RST	Registered Storage Tank	Unknown	13	M
	Hazardous Waste	Hazardous Waste Generator Permit	Unknown	18	H
	STOR	Chemical Storage Sites	Active	10	M
	Feedlots		Permitted	13	L
			Unknown	13	L
	Gravel and Mining		Active	8	M
			Inactive	2	L
	Transportation		Major Highway	2	M
	ISTS	Individual Sewage Treatment System	Unknown	58	M
Wells	PWSW	Public Water Supply Wells		12	H
	SWUDS	State Water Use Distribution System		44	H
	OBEL	Observation Wells		3	H
	Domestic			153	H
	Class V Wells		Unknown		H

II. WHP MANAGEMENT CATEGORIES AND STRATEGIES

A. LAND USE

OBJECTIVE A-1: DEVELOP A STRATEGY FOR GUIDING FUTURE COMMERCIAL AND INDUSTRIAL DEVELOPMENT WITHIN THE DWSMA FOR THE PROTECTION OF THE AQUIFER.

MEASURE A-1: New commercial businesses within the DWSMA will be connected to municipal sewage treatment and water supply if services are reasonably available.

Source of Action: WHP Manager
Cooperators: City, Todd County ELRM
Time Frame: On-going
Estimated Cost: Dependant on water usage needs
Goal Achieved: Preservation of existing groundwater resources by preventing potential contaminant sources.

OBJECTIVE A-2: DEVELOP A STORMWATER MANAGEMENT PROGRAM TO CONTROL SEDIMENTATION AND PROTECT THE DWSMA.

MEASURE A-2: Work to avoid locating stormwater seepage basins within the one-year time-of-travel area surrounding the City's wells.

Source of Action: WHP Manager
Cooperators: City of Long Prairie
Time Frame: On-going
Estimated Cost: In-kind staff time
Goal Achieved: The most sensitive area surrounding the public water supply will have protective measures in place to ensure potential contaminants are not provided with a conduit for groundwater contamination.

OBJECTIVE A-3: IDENTIFY EXISTING FEEDLOTS AND DEVELOP A STRATEGY TO ADDRESS EXPANSIONS AND/OR NEW PROPOSED FEEDLOTS WITHIN THE DWSMA FOR THE PROTECTION OF THE AQUIFER.

MEASURE A-3-1: Encourage manure management plans within the DWSMA to prevent groundwater contamination.

Source of Action: WHP Manager
Cooperators: Todd County ELRM, SWCD, City of Long Prairie
Time Frame: On-going
Estimated Cost: In-kind staff time

Goal Achieved: Manure management plans will be utilized to ensure proper application, thus preventing contamination of the aquifer.

MEASURE A-3-2: Request notification of proposed new or expansions of existing feedlots within the DWSMA.

Source of Action: WHP Manager
Cooperators: Todd County ELRM, SWCD, City of Long Prairie
Time Frame: On-going
Estimate Cost: In-kind staff time
Goal Achieved: The City of Long Prairie will have the opportunity to provide input during the application process, allowing for protective provisions during the planning stage.

OBJECTIVE A-4: THE LONG PRAIRIE DWSMA WILL BE CONSIDERED DURING LAND USE PLANNING AND IMPLEMENTATION EFFORTS FOR FUTURE PROTECTION OF THE AQUIFER.

MEASURE A-4-1: Request that the Upper Mississippi River Basin, Todd County ELRM, the City of Long Prairie and Todd County LWMP formally identify the WHPA and DWSMA when revising the County Water Plan, Watershed Plan, County or City Comprehensive Land Use Plans.

Source of Action: WHP Manager
Cooperators: MPCA, Todd County Board of Commissioners, SWCD, City of Long Prairie
Time Frame: On-going during plan updates
Estimate Cost: In-kind staff time
Goal Achieved: DWSMA formally identified in area plans for consideration in future land use decisions.

MEASURE A-4-2: The City of Long Prairie will participate in the priority setting local work group meetings conducted by the SWCD and NRCS, supporting programs within the DWSMA.

Source of Action: WHP Manager
Cooperators: NRCS, SWCD
Timeline: 2008, and annually
Estimated Cost: In-kind time
Goal Achieved: The DWSMA will be considered a priority area when assigning projects and dollars available from the SWCD and NRCS in Todd County.

B. CLASS V WELLS

OBJECTIVE B: IDENTIFY ALL POTENTIAL CLASS V WELLS LOCATED WITHIN THE DWSMA FOR THE PROTECTION OF THE AQUIFER. INFORMATION IS AVAILABLE ON EPA WEBSITE AT: <http://www.epa.gov/safewater/uic/classv/index.html>

MEASURE B-1: Continue to investigate potential Class V wells located within the DWSMA. Present educational information to property owners on impacts, mitigation and EPA reporting requirements. Distribute forms from the EPA website at: www.epa.gov/safewater/uic/7520s.html Notify MDH of location of potential Class V wells.

Source of Action: WHP Manager
Cooperators: City of Long Prairie, MDH, MRWA, EPA
Timeline: 2008 – 2009
Estimated Cost: \$200 plus In-kind staff time
Goal Achieved: Education of land owners and prevention of contamination to the aquifer from improper use of Class V wells.

C. HOUSEHOLD / INDUSTRIAL HAZARDOUS WASTE MANAGEMENT

OBJECTIVE C: PROVIDE MEASURES FOR DISPOSAL AND / OR CONTAINMENT OF POTENTIAL HAZARDOUS WASTE AND AGRICULTURE CHEMICALS FOR THE PRESERVATION OF THE DRINKING WATER AQUIFER.

MEASURE C-1: Support pesticide waste and waste container collection dates and locations. Notify land owners within the DWSMA of these dates and locations.

Source of Action: WHP Manager
Cooperators: MRWA, Solid Waste, SWCD, County Landfill, City of Long Prairie
Timeline: Annually
Estimated Cost: In-kind staff time.
Goal Achieved: Education of land owners and prevention of contamination of aquifer from land use in areas of known sensitivity.

MEASURE C-2: Investigate new and existing permitted Ag Chemical and Industrial Hazardous Waste sites to determine the status of use. Survey sites for potential contamination of the soil and / or groundwater.

Source of Action: WHP Manager
Cooperators: City of Long Prairie, MPCA, MDH, MDA
Timeline: 2009 – 2011
Estimated Cost: In-kind time
Goal Achieved: Develop an awareness of any existing contamination issues for planning purposes.

D. INDIVIDUAL SEWAGE TREATMENT SYSTEMS (ISTS)

OBJECTIVE D: ALL ISTS LOCATED WITHIN THE DWSMA OF THE CITY OF LONG PRAIRIE WILL BE EITHER IN COMPLIANCE WITH STATE RULES OR WILL BE INTEGRATED INTO THE CITY WASTEWATER SYSTEM.

MEASURE D-1: All residents within the DWSMA that utilize an ISTS will receive the “Septic System Owner’s Guide” produced by the University of Minnesota Extension Service.

Source of Action: WHP Manager
Cooperators: Todd County ELRM, SWCD, City of Long Prairie
Timeline: 2009
Estimated Cost: \$500 in mailing costs plus In-kind staff time
Goal Achieved: Owners of ISTS will better understand how their system functions and the required maintenance that must be done to keep the ISTS functioning properly.

MEASURE D-2: Conduct preliminary inspection of ISTS within the DWSMA by examining records at Todd County ELRM.

Source of Action: WHP Manager
Cooperators: Todd County ELRM
Timeline: 2009 – 2010 (subject to grant funding)
Estimated Cost: In-kind staff time
Goal Achieved: Known compliant and non-compliant systems will be documented to assist in future planning efforts.

MEASURE D-3: Submit request to Todd County ELRM for completion of compliance inspections of all ISTS within the DWSMA that do not have a current inspection.

Source of Action: WHP Manager
Cooperators: Todd County ELRM
Timeline: 2008 – 2011 (subject to grant funding)
Estimated Cost: In-kind staff time – Cost to homeowners - \$300-\$500
Goal Achieved: Facilitate systematic upgrade of non-conforming ISTS.

E. TANKS

OBJECTIVE E: MANAGE ABOVE AND BELOW GROUND TANKS WITHIN THE DWSMA FOR THE PROTECTION OF THE AQUIFER.

MEASURE E-1: Look for new above ground tanks within the DWSMA and develop an education program to show need for protective barriers to prevent ground water contamination in the event of a leak or spill.

Source of Action: WHP Manager
Cooperators: City of Long Prairie
Timeline: Annually
Estimated Cost: In-kind staff time
Goal Achieved: Knowledge of areas of potential contamination.

MEASURE E-2: Inventory existing above and below ground tanks for potential contamination issues.

Source of Action: WHP Manager
Cooperators: City of Long Prairie, MPCA
Timeline: 2010 – 2011
Estimated Cost: In-kind staff time
Goal Achieved: Knowledge of tanks will allow for education of owners and prevention of contamination before any leaks occur.

MEASURE E-3: Investigate past cleanup efforts for existing contaminants in the soil. Work with MPCA on site closure for known contaminants.

Source of Action: WHP Manager
Cooperators: City of Long Prairie, MPCA, MDH, Industries
Timeline: 2012
Estimated Cost: In-kind time
Goal Achieved: Develop an awareness of any existing contamination issues for planning purposes

MEASURE E-4: Include VOC analysis for raw water samples from Wells Nos. 3B and 6 as part of future compliance monitoring efforts.

Source of Action: WHP Manager
Cooperators: City of Long Prairie, MDH
Timeline: Annually
Estimated Cost: In-kind time, Analysis will be paid by MDH
Goal Achieved: Determine if city wells 3B and 6 are affected by the superfund site plume.

F. WELLS

OBJECTIVE F-1: SEAL UNUSED OR ABANDONED WELLS WITHIN THE DWSMA.

MEASURE F-1-1: Work with Todd County SWCD to offer cost sharing incentives of up to 75% to seal unused, unsealed wells within the DWSMA.

Source of Action: WHP Manager
Cooperators: Todd SWCD
Time Frame: On-going
Estimated Cost: In-kind staff time
Goal Achieved: Private well owners will become more likely to properly seal their unused wells and the City of Long Prairie becomes aware of changes in well status.

MEASURE F-1-2: The City of Long Prairie and members of the WHP Team will obtain and distribute educational brochures describing proper well maintenance and operation to private landowners within the DWSMA.

Source of Action: WHP Manager
Cooperators: MDH, MRWA, Todd County ELRM, SWCD, NRCS
Time Frame: 2008 and On-going as needed
Estimated Cost: \$500 printing and mailing plus in-kind staff time
Goal Achieved: Private well owners will learn proper operation and maintenance of private wells, thereby reducing potential for contamination of City water supply.

MEASURE F-1-3: The City of Long Prairie will work cooperatively with MDH and other partners to determine the status and location of unused unsealed municipal wells and wells that may have been sealed but where no MDH Well Sealing record is available. Cost estimates from a licensed well driller will be obtained to determine costs of sealing identified wells.

Source of Action: WHP Manager
Cooperators: MDH – well management team, MRWA
Time Frame: 2008 - 2009
Estimated Cost: In-kind staff time
Goal Achieved: Prevent contamination of the drinking water supply aquifer through old municipal wells.

MEASURE F-1-4: The City will budget funds to seal unused unsealed municipal wells following recommendations of the MDH well management team.

Source of Action: WHP Manager
Cooperators: MDH, MRWA, SWCD, Todd ELRM
Time Frame: 2008 - 2010
Estimated Cost: In-kind staff time
Goal Achieved: Funding source will be established for sealing wells.

OBJECTIVE F-2: DEVELOP A LOCAL ADMINISTRATIVE PROCESS TO EVALUATE IMPACTS NEW HIGH-CAPACITY WELLS MAY HAVE ON AN APPROVED DWSMA.

MEASURE F-2: The public water supplier will:

- a.) Request copies of any new or revised groundwater appropriation permits that are submitted to the DNR for any high-capacity wells in or near the DWSMA,
- b.) Notify MDH SWP Unit of any known new high-capacity wells that are proposed and/or installed in the DWSMA, and
- c.) Develop an administrative process to assess requests for proposed wells or increased pump rates from existing high-capacity wells in an approved DWSMA.

Source of Action: WHP Manager
Cooperators: MDH, DNR, SWCD
Time Frame: On-going
Estimated Cost: In-kind staff time

Goal Achieved: Identification of new wells that are proposed for construction or increased pumping of existing high-capacity wells within the DWSMA and determine if those wells have any contamination potential to the drinking water aquifer.

G. TRANSPORTATION CORRIDOR (SPILL RESPONSE)

OBJECTIVE G: WORK TO ESTABLISH A COORDINATED SPILL RESPONSE PLAN WITH AREA AND STATE EMERGENCY MANAGEMENT ENTITIES THROUGH JOINT TRAINING AND SPILL NOTIFICATION.

MEASURE G-1: Establish working relationship with and coordinate spill response efforts with other agencies such as MNDOT, Todd County and local fire department.

Source of Action: WHP Manager
Cooperators: City of Long Prairie, Todd County, MNDOT, industries
Timeline: 2008 and On-going
Estimated Cost: In-kind staff time
Goal Achieved: Spills will be abated before contamination of the aquifer occurs.

H. INNER WELLHEAD MANAGEMENT ZONE (IWMZ)

OBJECTIVE H: MANAGE THE 1-YEAR TOT AND THE 200' RADIUS OF THE IWMZ TO PREVENT CONTAMINANTS FROM ENTERING THE AREA IMMEDIATELY ADJACENT TO THE WELLS.

MEASURE H-1: The Wellhead Protection Team will review and update the current 1-yr TOT and IWMZ survey for all wells in system.

Source of Action: WHP Manager
Cooperator(s): MDH, MRWA
Time Frame: Immediately, repeat every 5 years
Estimated Cost: In-kind staff time
Goal Achieved: Staff and WHP Team remain informed and up-to-date on activities within the IWMZ.

MEASURE H-2: The WHP Team will continue to monitor setbacks for all new potential sources of contamination located within the 1-yr TOT and the IWMZ.

Source of Action: WHP Manager
Cooperators: City staff, MRWA, MDH
Time Frame: Annually, begin immediately

Estimated Cost: In-kind staff time
Goal Achieved: Any new regulated activities will meet required well setbacks.

MEASURE H-3: The WHP Team will monitor any **NON-CONFORMING** potential contaminant sources currently documented within the 1-yr TOT and the IWMZ.

Source of Action: City staff, WHP Manager/Team
Cooperator(s): MDH, MRWA
Time Frame: Annually
Estimated Cost: Staff time
Goal Achieved: Ensure that existing non-conforming potential contaminant sources do not endanger the wells.

MEASURE H-4: The WHP Team will work to abate or otherwise minimize the impact of **NON-COMPLYING** potential contaminant sources currently documented within the IWMZ or 1-yr TOT.

Source of Action: WHP Team/Manager
Cooperator(s): Adjacent land owners, MDH, MRWA
Time Frame: On-going
Estimated Cost: In-kind staff time, costs to be determined at later date
Goal Achieved: Ensure that existing non-complying potential contaminant sources are removed, abated or minimized.

I. PUBLIC EDUCATION AND INFORMATION

OBJECTIVE I: DEVELOP PUBLIC EDUCATION PROGRAMS AIMED AT AWARENESS AND PROTECTION OF PUBLIC WATER SUPPLY.

MEASURE I-1: Community Youth Water Festival: Groundwater Flow Model will be utilized to demonstrate the connection between land use and groundwater to area students. Discussion of Wellhead Protection needs will be included in the demonstration.

Source of Action: WHP Manager
Cooperator: SWCD, City of Long Prairie, MRWA, MDH
Time Frame: Annually
Estimated Costs: In-kind staff time
Goal Achieved: Students and parents become more aware of the WHPP and the reasons for aquifer preservation needs.

MEASURE I-2: General information on WHP plan will be published on a local website with links to MRWA and MDH.

Source of Action: WHP Manager
Cooperators: City of Long Prairie, Todd County, MRWA, MDH
Time Frame: 2008
Estimated Cost: In-kind staff time
Goal Achieved: Increased public awareness of the WHP for web-users.

MEASURE I-3: Best Management Practices regarding turf management will be presented annually through the City of Long Prairie website, county newsletters, local cable television, and the local newspaper.

Source of Action: WHP Manager
Cooperator: MRWA, City of Long Prairie
Time Frame: 2008 and annually
Estimated Costs: \$50 printing per year plus In-kind staff time
Goal Achieved: Community understanding of land use link to drinking water quality.

MEASURE I-4: A nitrate clinic will be sponsored and mailings will be sent to all landowners within the DWSMA, notifying them of the clinic and the importance of protecting the aquifer. The City will offer to collect samples annually for testing.

Source of Action: WHP Managers
Cooperator: MDA, MDH, SWCD, Todd County, City of Long Prairie
Time Frame: Mailing in 2008, radio spots starting in 2009
Estimated Costs: \$500 plus In-kind staff time
Goal Achieved: Maintain public awareness of the connection between groundwater and land use while establishing trends in the DWSMA wells.

MEASURE I-5: Local media articles and information spots will be published in the local paper after adoption of Long Prairie's WHPP. Informative radio spots available from the MDH will be played locally in summer.

Source of Action: WHP Manager
Cooperator: MDH, MRWA, City of Long Prairie, local TV. Radio and Newspaper
Time Frame: 2008 and on-going
Estimated Costs: In-kind staff time
Goal Achieved: Educate and maintain public awareness of the Wellhead Protection Plan.

MEASURE I-6: Wellhead protection presentations will be made to local service organizations.

Source of Action: WHP Manager
Cooperator: City of Long Prairie
Time Frame: 2008 and as requested
Estimated Costs: \$50 plus In-kind staff time
Goal Achieved: Community understanding and support of WHP priorities and regulatory needs.

MEASURE I-7: Maps of DWSMA, educational posters, and brochures will be displayed at community events, county fair and available at City Hall.

Source of Action: WHP Manager
Cooperator: SWCD, MDH, MRWA, City of Long Prairie, Todd County
Time Frame: Annually
Estimated Costs: In-kind staff time
Goal Achieved: Public awareness of DWSMA and WHPP.

MEASURE I-8: Invite LGUs to annual meeting, outlining priorities for the upcoming year and discuss accomplishments of past year.

Source of Action: WHP Manager
Cooperator: City of Long Prairie, LGUs
Time Frame: 2008 and annually
Estimated Costs: In-kind staff time
Goal Achieved: Local support of WHP priorities and implementation.

J. MONITORING AND DATA COLLECTION

OBJECTIVE J: COLLECT ADDITIONAL DATA REGARDING THE AQUIFER FROM LOCAL WELL DRILLERS AND THROUGH ADDITIONAL CHEMICAL TESTING.

MEASURE J-1: The City of Long Prairie will measure static water levels and collect quarterly samples of water from Charlotte Lake and the City Wells nos. 7, 8, and 9 plus at least one more well up gradient from Charlotte Lake for stable isotopes of oxygen and hydrogen.

Source of Action: WHP Manager
Cooperator: MDH, MRWA, City of Long Prairie
Time Frame: 2008 - 2009
Estimated Costs: In-kind staff time, analyses paid by MDH

Goal Achieved: To better define the compositional range of Charlotte Lake water and the proportion of that water captured by the wells.

MEASURE J-2: **Work with the MDH Hydrologist, DNR Hydrologist and USGS to establish sampling parameters to include at least nitrite + nitrate nitrogen, herbicides atrazine and alachlor and water temperature on the quarterly sample sites from Measure J-1. Equip wells nos. 7, 8 and 9 with temperature probes for one year.**

Source of Action: WHP Manager

Cooperator: Todd Peterson, DNR Hydrologist; James Walsh, MDH Hydrologist; City of Long Prairie

Time Frame: 2008 - 2009

Estimated Costs: In-kind staff time, analysis paid by MDH

Goal Achieved: Identification of potential assimilative capacity barrier and the bed of Charlotte Lake.

MEASURE J-3: **Work with MDH to identify locations of new wells constructed within three miles of the City Wells and review logs to verify accurate elevations.**

Source of Action: WHP Manager

Cooperator: SWCD, MDH, MRWA, City of Long Prairie

Time Frame: 2012 and 2017

Estimated Costs: In-kind staff time

Goal Achieved: Address uncertainty related to 1) the areal extent, thickness and compositional variability of the Long Prairie aquifer, and 2) the distribution of hydraulic load in this aquifer.

MEASURE J-4: **Work with the MDH Hydrologist to design and complete a proper aquifer test that provides drawdown data for at least 72 hrs and recovery to 95% of static level from both the pumping well and observation wells (utilizing wells nos. 7, 8 and 9).**

Source of Action: WHP Manager

Cooperator: James Walsh, MDH Hydrologist; City of Long Prairie

Time Frame: 2015 or tie in with well maintenance if needed

Estimated Costs: In-kind by City, pumping costs paid by MDH.

Goal Achieved: Determination of a transmissivity value that is most representative of the area around the city wells, the hydraulic properties of the overlying confining unit and the degree of hydraulic

connection between the city wells and Charlotte Lake.

MEASURE J-5: Sample Well No. 3B and one of the wells located in the low vulnerability area for Tritium. MDH will assist in determination of wells to be sampled.

Source of Action: WHP Manager
Cooperators: City of Long Prairie, MDH
Timeline: 2010
Estimated Cost: In-kind time, analysis to be paid by MDH
Goal Achieved: Substantiate the assessment of aquifer vulnerability.

MEASURE J-6: Assess data obtained in the nitrate clinics for any areas of concern within the DWSMA.

Source of Action: WHP Manager
Cooperator: SWCD, MDH, MRWA, City
Time Frame: Annually
Estimated Costs: In-kind staff time
Goal Achieved: Identification of trends in groundwater, utilizing nitrates as an indicator to pinpoint areas needing further assessment.

Chapter Six

Evaluation Program

CHAPTER SIX

EVALUATION PROGRAM

Minnesota Rules 4720.5270

The success of the Potential Contaminant Source Management Strategy must be measured regularly to ensure The Plan is meeting the community needs on Wellhead understanding and compliance.

Long Prairie's WHPA has been designated as having high to low vulnerability to contamination. The designation of high vulnerability requires monitoring of all potential contaminant sources within the DWSMA. A program to ensure this is completed has been documented in Chapters One through Five. In addition to this, to ensure compliance, the City of Long Prairie will:

- Track the implementation efforts completed;
- determine the effectiveness of these efforts; and
- identify any implementation changes needed to accomplish the goal of the plan.

To accomplish the above, the following activities will be completed:

1. Changes in land use and other development within the DWSMA will be monitored.
2. The wellhead team will meet as needed but at least annually to review completed objectives and their effectiveness. Necessary modifications to the Plan will be discussed with strategies added as needed.
3. An annual written report will be presented to the City of Long Prairie Commission and Todd County Commissioners stating progress in implementation of objectives. This report will be sent to the Minnesota Department of Health, Source Water Protection Planner; Minnesota Rural Water Association, Wellhead Liaison; The County Local Water Manager; and be placed on file at the Long Prairie Public Library, City Hall and on the City and County web site.

Chapter Seven

Alternative Water Supply; Contingency Strategy

CHAPTER SEVEN

ALTERNATIVE WATER SUPPLY / CONTINGENCY STRATEGY Minnesota Rules 4720.5280

The City of Long Prairie's Emergency and Conservation Plan has been completed under Minnesota Statute 186 and Minnesota Rules, part 6115.0770 and was approved by the Minnesota DNR on June 27, 2001. An updated plan will be written and adopted prior to December 30, 2009.

This plan meets the requirements of a contingency strategy as documented in Minnesota Rule 4720.5280, subpart 2.

A copy of the DNR approval letter is included in the [Appendix](#) of this Plan and the complete document is on file at Long Prairie City Hall