Local Surface Water Management Plan

2018 Update

White Bear Township, Minnesota



TKDA Project No. 16627.004

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Executive Summary

This Local Surface Water Management Plan will help to guide the protection and management of surface waters, ground water, and related natural resources in White Bear Township. The Plan was developed to meet the requirements of the State Statutes, the Metropolitan Council, and local watershed organizations. This Plan combines the Town's previous Surface Water Management Plan (2013) with more recent policy documents, plans and permits from various levels of government. The Plan incorporates the requirements of the Town's MS4 permit and Storm Water Pollution Prevention Plan, which have been approved by the Minnesota Pollution Control Agency (MPCA).

White Bear Township is in the watersheds of the Rice Creek Watershed District (RCWD) and the Vadnais Lake Area Water Management Organization (VLAWMO).

Per State Statute, White Bear Township is required to complete its LSWMP update by December 31, 2018. VLAWMO adopted its updated Watershed Management Plan in October 2017 and RCWD updated its plan in November 2016.

The Plan describes key land and water resources. Lakes, shoreland, and wetlands are significant features in the landscape. High quality natural areas are especially present in the many park and public lands within White Bear Township.

Because the Township is almost completely developed, much of the emphasis in the Local Surface Water Management Plan is on identification of existing issues and planning for redevelopment and retrofitting. The plan includes an inventory of surface waters and natural resources within the Township. Goals and policies provide guidance for decision-making by the Township. Water resource issues were identified in cooperation with the watershed organizations. The Plan concludes with implementation measures.

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Local Surface Water Management Plan

1.0 Purpose & Scope

1.1 Purpose

The purpose of this Surface Water Management Plan (Plan) is to serve as a comprehensive planning document to guide White Bear Township in conserving, protecting, and maintaining the quality of its water resources. This Plan recognizes the numerous entities involved in water resources management and environmental protection and has been created to meet the provisions of Minnesota Statutes §473.157 and §103B.235. It also conforms to the Rice Creek Watershed District Rules, watershed management plan, and Vadnais Lake Area Water Management Organization watershed management plan. The Plan avoids duplicating efforts of others by referencing or adopting the plans and rules of other organizations when applicable, including the Rice Creek Watershed District (RCWD), Vadnais Lake Area Water Management Organization (VLAWMO), the Metropolitan Council, and State of Minnesota Agencies.

1.2 Scope

To achieve its general goal of improving the quality of Township surface waters, the Plan develops specific goals in the following critical issue areas:

- ✓ Lakes
- ✓ Wetlands
- ✓ Streams, Creeks, and Drainage Systems
- ✓ Floodplains
- ✓ Erosion and Sedimentation Control
- ✓ Water Quality
- ✓ Water Quantity
- ✓ Groundwater
- ✓ Natural Resources
- ✓ Implementation

Collectively, the goals set forth the desired future condition of surface water resources in the Township. Each of the Plan goals has one or more corresponding policy. A policy is a specific means for achieving established goals. Finally, the plan identifies actions the Township will undertake to implement the plan, namely creation and revision of ordinances, and cooperative efforts with other organizations to protect water and natural resources.

1.3 Water Resources Related Agreements

White Bear Township is a participant in the Joint Powers Agreement that created and maintains the Vadnais Lake Area Water Management Organization (VLAWMO). VLAWMO was organized in 1983 by a Joint Powers Agreement. The WMO includes White Bear Township and the Cities of Lino Lakes, North Oaks, Vadnais Heights, White Bear Lake, and Gem Lake.

VLAWMO and Rice Creek Watershed District (RCWD) are the designated Local Government Units responsible for administering the Wetland Conservation Act within White Bear Township. VLAWMO and RCWD also manage the public ditch system in the area. RCWD manages permitting within its portion of the Township. The Township requests that RCWD continue to implement its rules and regulations and issue permits.

2.0 Land & Water Resource Inventory

2.1 Location, History & Growth Trends

White Bear Township is located in the northeast corner of Ramsey County, approximately 10 miles north of St. Paul, as shown in Figure 1. It shares borders with 11 neighboring communities and three other counties. The Township is traversed by significant transportation routes I35E and TH61. Approximately one third of White Bear Township is park land. Other predominant land uses are single family residential and commercial-industrial development.

Organized in 1858, the original Township consisted of 36 square miles and included the present Township and substantial portions of the cities of White Bear Lake, Vadnais Heights, Gem Lake, Maplewood, Little Canada, and North Oaks. The present Township is made up of five non-contiguous areas and by population is the largest Township in Minnesota. The Township's land and water area is approximately 7,000 acres.

White Bear Township is a developed community, having had significant growth in the 1980s. Today there are approximately 220 acres of undeveloped land in the Township suitable for development. Future growth will be accommodated by redevelopment as well as development of vacant land. The Township's population is anticipated to grow slightly through the year 2040 as shown in Table 3-1.

Year	Population	Households	
1960	6,175	1,764	
1970	5,666	1,716	
1980	5,921	1,881	
1990	9,424	3,292	
2000	11,293	4,086	
2010	10,949	4,409	
2016	11,078	4,352	
2020	10,782	4,383	
2030	10,679	4,487	
2040	10,715	4,559	
Source: U.S	ource: U.S. Census, Metropolitan Council, White Bear		
Township, I	Hoisington Koegler G	oup, Inc.	

Table 1
White Bear Township Growth Trends

2.2 Topography

White Bear Township is characterized by level to gently rolling topography interspersed with lakes and wetlands. A few areas of the Township are characterized by steep slopes (greater than 12%), which are generally located along large lake and wetland depressions. Notable steep areas include the shore areas of Bald Eagle Lake, and in the vicinity of Tamarack Lake and Fish Lake, which are within the Tamarack Nature Center, part of the Ramsey County park system. Topographic mapping of the Township has been prepared by the Ramsey County in 2011. The 2-foot contour intervals from the county, and areas with potentially steep slopes, are shown in Figure 2.

2.3 Soils

The USDA Soil Conservation Service (SCS) issued the *Soil Survey of Washington and Ramsey Counties* in 1980. The publication provides soil location maps and information on the physical properties of soils found in Washington and Ramsey Counties. The *Soil Survey* was added to the Soil Survey Geographic (SSURGO) Database in 2005, providing digital access to the information.

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

- Group A soils have low runoff potential and high infiltration rates even when thoroughly wetted. These consist of deep, well-drained sands or gravels.
- Group B soils have moderate infiltration rates and the potential for runoff. They consist of moderately-deep to deep, and moderate to well-drained soils.
- Group C soils have low infiltration rates and generally impede the downward movement of water. These soils have more moderately-fine to fine textures and provide greater amounts of runoff volumes when thoroughly wetted.
- Group D soils have very low infiltration rates and very high runoff potential. These soils are associated with clays with high swelling potential and soils with a high permanent water table.

For soils assigned to a dual hydrologic group (A/D, B/D, C/D), the first soil type is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes. In White Bear Township, the areas classified as A/D coincide with wetlands in many cases.

The soils in the majority of the Township are classified in hydrologic group A, B, or A/D, as shown on Figure 3. Land disturbing activities can change a soil's physical properties; therefore, actual conditions of a particular site may vary somewhat from the hydrologic soils.

2.4 Climate and Precipitation

White Bear Township's climate is greatly influenced by its location near the center of the continent. Polar air masses dominate during the winter season resulting in cold, dry weather. Warm and moist air masses, originating from the Gulf of Mexico, share predominance during the summer, along with air masses from the desert southwest resulting in warm days and nights. The spring and fall seasons are transition periods, characterized by alternating intrusions of air from various sources. The diverse nature of the air masses impacting Minnesota's climate leads to seasonal temperature extremes, with greatest levels of precipitation in the summer months.

The National Oceanic and Atmospheric Administration (NOAA) has published climatic summaries. The nearest monitoring location to White Bear Township is at Vadnais Lake. The summary of climatologic data is shown in Table 2.

Month	Precipitation (in)	Min Temp (° F)	Average Temp (° F)	Max Temp (° F)
January	0.77	7.1	16.5	25.8
February	0.67	11.6	21.3	31
March	1.55	23.7	33.3	42.8
April	2.88	37.6	48	58.4
Мау	3.7	50	60.5	71
June	4.2	59.4	69.7	80
July	4.4	64.1	74.4	84.6

Table 2 Average Climatological Data

Month	Precipitation (in)	Min Temp (° F)	Average Temp (° F)	Max Temp (° F)
August	4.78	61.8	71.9	82
September	3.27	52.8	62.9	72.9
October	2.91	40.8	50.1	59.3
November	1.82	27	34.7	42.3
December	1.09	12.8	20.7	28.7

Table 2 Average Climatological Data

2.5 Lakes

Lakes located wholly or partially in White Bear Township are Bald Eagle Lake, Otter Lake, Poplar Lake, Rice Lake, Tamarack Lake, White Bear Lake, Half Moon Lake, Fish Lake, and Oak Ridge Pond. Birch Lake and Goose Lake are nearby waterbodies that have shoreland management areas that fall within the Township limits. Protected waters (basins and drainage systems) are shown on Figure 4. Flows generally leave White Bear Township from the north end of Bald Eagle Lake, moving north to Clearwater Creek. Flows from the southwest area of the Township flow southwesterly to Lambert Creek. Because White Bear Township is a fully developed community, there will likely not be an increase in volume or rate of runoff entering lakes due to land development.

Table 3
Lakes

	Protected (Public) Waters
Lake Name	Inventory ID
Bald Eagle Lake	62-2 P
Otter Lake	2-3 P
Poplar Lake	62-44 P
Rice Lake	62-32 W
Tamarack Lake	62-21 W
White Bear Lake	82-167 P
Ox Lake (Half Moon Lake)	62-25 W
Sobota Slough	62-33 W
Grass	62-31 W
(Unnamed) Fish Lake	62-22 W
(Unnamed) Oak Ridge Pond	62-23 W
(Unnamed)	62-94 W
(Unnamed)	62-92 W
(Unnamed)	62-91 W
(Unnamed)	62-84 W
(Unnamed)	62-98 W
(Unnamed)	62-34 P
(Unnamed)	62-100 W
(Unnamed)	62-101 W
(Unnamed)	62-102 W
(Unnamed)	62-107 W

The White Bear Township Zoning Ordinance, Shoreland Management Overlay District contains standards for property within 1,000 feet of each lake's ordinary high water mark. The Shoreland Management Overlay District also applies to the portions of White Bear Township that are within 1,000 feet of Birch Lake and Goose Lake, which are located in the City of White Bear Lake. The Minnesota Department of Natural Resources reviews projects within the Shoreland Overlay District of classified lakes.

The following state and regional designations are applicable to lakes located in the Township.

- Bald Eagle Lake, Otter Lake, and White Bear Lake are on the Metropolitan Council's Priority Lakes List. These lakes are identified as priority lakes due to their high regional recreational value, as they each have boat access and an adjacent park. The Metropolitan Council uses the Priority Lakes List to focus regional resources and for environmental reviews (such as an EAW). If an environmental review is being completed for a proposed project, and that project may impact a priority lake, the environmental assessment would include a nutrient budget analysis.
- Bald Eagle Lake, White Bear Lake, and Otter Lake are listed as an Impaired Water by the MPCA due Mercury contamination.
- Bald Eagle Lake, White Bear Lake, and Otter Lake meet the state's criteria for designation as infested waters due to Eurasian water milfoil.
- Tamarack lake nutrients/eutrophication
- None of the lakes or other water resources within White Bear Township are listed as Outstanding Resource Value Waters, under Minnesota Rules 7050.0335.

2.6 Wetlands

The rolling to flat topography and wet soil conditions in White Bear Township result in extensive wetland areas. The predominant wetland types, in addition to Open Water (Type 5), are Shallow Marsh (Type 3) and Shrub Wetland (Type 6), as seen in Figure 5.

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

Many wetland areas are protected via inclusion in the park and open space system. Roughly 65% of the classified wetland acreage in the Township is within the boundaries of park properties, including Tamarack Nature Center, Bald Eagle-Otter Lake Regional Park, Benson Farmstead and Poplar Lake Park. Development has already encroached on some of the wetland areas, but most remain relatively undisturbed. Remaining privately owned wetlands are concentrated in the northeast segment of the Township, east of Highway 61, and the area west of I-35E. The triangle-shaped segment of the Town (bordered by the Minneapolis/St. Paul and Sault St. Marie Railroad, and County Road 96 and Centerville Road) is also dotted with many small wetland areas.

The White Bear Township Zoning Ordinance, Conservation Wetlands Overlay District requires a permit prior to any development or construction that would potentially affect the wetland area. Activities such as filling, dredging or construction that would alter or infringe on the wetland are strongly discouraged, and are only permitted where the impact would be limited.

Rice Creek Watershed District (RCWD) & Vadnais Lake Area Water Management Organization (VLAWMO) are responsible for administering the Wetland Conservation Act in White Bear Township. The Township requests that the watersheds continue to maintain WCA authority.

VLAWMO completed a Comprehensive Wetland Management Plan in 2001 and incorporated elements of that document in its Comprehensive Water Management Plan, adopted in 2017. The WMO requires that all projects affecting wetlands complete a more detailed assessment, using the most current version of the Minnesota Routine Assessment Methodology (MNRAM).

RCWD Rules require that applicants complete a Functions and Values Assessment using a WCA-accepted methodology, if there is at least one acre of wetland impact requiring replacement. RCWD Rules incorporate the provisions of WCA and in some cases are stricter than WCA requirements. WCA exemptions for qualifying activities are recognized by the District, though these activities do require a RCWD permit. District Rules require 1:1 replacement for activities that are not regulated under WCA but that change the quantity, quality, or biological diversity of a wetland.

2.7 Drainage Systems

Flows from the southwest area of the Township flow southwesterly to County Ditch 14 (Lambert Creek). Flow moves from Goose Lake and County Ditch 13 (Dillon Ditch) to Rice Lake and Grass Lake, then continuing via County Ditch 14 to Vadnais Lake. County Ditch 11 flows from White Bear Lake to Bald Eagle Lake. Judicial Ditch 1 flows from the east to Bald Eagle Lake and Otter Lake. From Bald Eagle Lake, flow exits the Township to the north and on to Clearwater Creek. Flows from the northwest area of the Township are directed to Poplar Lake. Because White Bear Township is an almost fully developed community, there is not likely to be an increase in volume or rate of runoff entering the drainage system due to land development. Flows rates and volumes leaving the Township are included in the RCWD and VLAWMO Water Management Plans. The Watersheds have authority over the ditch system in their respective areas.

There are no designated trout streams within White Bear Township.

Name	Authority
Judicial Ditch 1	RCWD
County Ditch 11	RCWD
County Ditch 14 (Lambert Creek)	VLAWMO
County Ditch 13 (Dillon Ditch)	VLAWMO

Table 4 Ditch Information

2.8 Impaired Waters

As part of the federal Clean Water Act administered by the Environmental Protection Agency (EPA), the Minnesota Pollution Control Agency (MPCA) is required to publish a list of impaired waters, known as the 303(d) list. Impaired waters are lakes, wetlands or streams that do not meet federal water quality standards or do not fully support the waterbody's designated uses.

In White Bear Township, Bald Eagle Lake, White Bear Lake, Otter Lake, Tamarac Lake, Judicial Ditch 1, and Lambert Creek are identified as impaired waters and shown in Figure 6. There are no identified impaired wetlands within White Bear Township. Clearwater Creek, Peltier Lake, Centerville Lake, Goose Lake, and Vadnais Lake are impaired waters located outside of White Bear Township's limits that receive drainage from the Township.

For each impaired waterbody, the MPCA is required to conduct a study to determine the allowable Total Maximum Daily Load (TMDL) for each pollutant that exceeds the standard. Adopted TMDL studies include implementation measures that local government and other actors will take to reduce the identified pollutant(s) from various point sources and non-point sources.

Waterbody	Watershed Organization	Pollutant	TMDL Plan Status
Bald Eagle Lake	RCWD	Excess Nutrients, Mercury (state-wide TMDL)	Mercury TMDL approved 2007, Nutrients 2012
White Bear Lake	RCWD	Mercury (state-wide TMDL)	Approved 2007
Otter Lake	RCWD	Mercury (state-wide TMDL)	Approved 2007
Lambert Creek	VLAWMO	Bacteria, Fecal Coliform	Approved 2014
Ramsey/Washington Judicial Ditch 1	RCWD	Low Dissolved Oxygen	Underway
Lake Gilfillan	VLAWMO	Nutrients	Approved 2014
Lake Wilkinson	VLAWMO	Nutrients	Approved 2014
Waterbodies located w from White Bear Town	vithin other mu ship	nicipalities, and receiving o	lrainage
Clearwater Creek (located in Hugo, Lino Lakes, and Centerville)	RCWD	Biota	
Peltier Lake (located in Lino Lakes and Centerville)	RCWD	Nutrients, Mercury	Approved 2013
Centerville Lake (located in Lino Lakes and Centerville)	RCWD	Nutrients	Approved 2013
Lino Lakes Chain of Lakes (located in Lino Lakes)	RCWD	Nutrients	Approved 2013
Upper Mississippi River Bacteria TMDL	RCWD	Bacteria	Approved 2014
Source: MPCA			

Table 5 Impaired Waters

2.9 Floodplains

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

In 1968, Congress created the National Flood Insurance Program (NFIP) to make flood insurance available to property owners at federally subsidized rates. The NFIP required communities to adopt local laws to protect lives and future development from flooding. Federal Emergency Management Agency (FEMA) first must formally notify a community that it has special flood hazard areas (SFHA) before it can join the NFIP. FEMA notifies communities by issuing a Flood Hazard Boundary Map (FHBM). This map shows the approximate boundaries of the community's 100-year floodplain. Each participating community has a Flood Insurance Study (FIS). The FIS includes a floodplain map depicting the community's flood hazard areas. The FIS and floodplain map for White Bear Township were completed in 1985.

Designated FEMA floodplain areas in White Bear Township correspond with significant wetland areas and shoreland areas. Figure 7 shows the 2010 FEMA Flood Zones and 100 year Floodplain. The Township has a Floodplain Management Ordinance to protect and manage these areas.

2.10 Groundwater

White Bear Township is characterized by a shallow groundwater table with most upland areas having a depth to groundwater of 6 to 10 feet. The water table is at or near the surface in most low areas, as evidenced by the Township's many lakes and wetlands.

Groundwater sensitivity to pollution is a concern in areas where soils and bedrock are highly permeable. Under these conditions, surface pollutants can seep quickly to the groundwater. The Minnesota Geological Survey has established a groundwater sensitivity rating system, classifying areas by the amount of time it would take for water-borne pollutants to percolate through the ground and reach the aquifer. High sensitivity areas are highly permeable and would allow for rapid contamination of the groundwater. The majority of the Township lies within areas classified as high or moderate sensitivity, as shown on Figure 8.

The Town depends on groundwater for its water supply. White Bear Township completed its Water Supply and Emergency Preparedness Plan and submitted it to the State of Minnesota in 2016. The Township is currently responding to comments from the State and expects to finalize the plan in 2018. The Water Supply and Emergency Preparedness plan includes policies and actions taken in order to provide a reliable and safe water supply. The relevant policies contained within the Water Supply Plan are incorporated into this Surface Water Management Plan.

White Bear Township completed a Wellhead Protection Plan. Part I was approved December 21, 2007 and Part II was completed in 2013. Both are included in Appendix A.

2.11 Native Plant Communities & Significant Natural Areas

The original vegetation of the Township prior to settlement by Europeans included areas of oak openings and barrens, wet prairie, and Big Woods (oak, maple, basswood, and hickory forest). Some remnants of these native plant communities remain today. Native prairie communities are found along the railroad corridor traversing the Township. Benson Farmstead, the Township green space located to the south of Benson Airport and east of Bald Eagle Lake, contains native wetland prairie and forested wetland.

The Minnesota Department of Natural Resources identified areas throughout the Metropolitan Region that are likely high quality natural areas. Tamarack Nature Center, Bald Eagle-Otter Lake Regional Park, and Poplar Lake Park contain the great majority of the areas considered to be Regionally Significant Ecological Areas. These high quality natural resources are illustrated in Figure 9.

Rare and sensitive species present, or with suitable habitat present, in the Township include Blanding's Turtle, Bullfrog, Great Egret, and Coniferous Wetlands. The Minnesota Nature Heritage Program performed a rare and sensitive species analysis, and the findings of that analysis are summarized in their 2030 Comprehensive Plan, Physical Development Framework and Plan.

2.12 Land Use

The predominant development pattern in White Bear Township is single family residential. Parks and open space are also a significant land use in the Township. Commercial and industrial land uses are focused on significant transportation corridors. The existing land cover is shown in Figure 10. The existing White Bear Township land use is shown in Figure 11. 2040 planned land use is shown in Figure 12. The current zoning map is shown in Figure 13.

Table 6 Existing & Planned Land Use

Existing Land Use		
	Acres	Percent
Within MUSA	6,743	
Vacant	160	2.3%
Single Family		
Residential	1,298	18.4%
Twinhome (Duplex)	76	1.1%
Townhome/Condo/		
Apartment	73	1.0%
Commercial	52	0.7%
Industrial	206	2.9%
Religious	41	0.6%
Airport	33	0.5%
Railroad	96	1.4%
Open Water	2,327	33.1%
Public	550	7.8%
Right-of-Way	565	8.0%
Undevelopable	12	0.2%
Environmental:		
Wetlands and		
Floodplains	1,254	17.8%
Outside MUSA	294	
Single Family		
Residential	10	0.1%
Ramsey County		
Poplar Lake Park		
Reserve	159	2.3%
Right-of-Way	8	0.1%
Open Water	31	0.4%
Environmental:	2.57	
Wetlands and		
Floodplains	85	1.2%
Total Land and		
Water Area	7,037	100.0%

	Acres	Percent
Within MUSA	6,743	
Residential - Low	10486	
Density	1,365	19.4%
Residential - Medium	100	
Density	88	1.2%
Residential - High		
Density	32	0.4%
Residential - PUD	13.5	0.2%
Residential - Low		
Density	5	0.1%
Residential - Medium		
Density	2	0.0%
Residential - High		
Density	6	0.1%
Commercial	56	0.8%
Public-Institutional	95	1.3%
Industrial	307	4.4%
Airport	33	0.5%
Railroad	96	1.4%
Open Water	2,327	33.1%
Township Green		
Space	17	0.2%
Township Park		
Property	126	1.8%
County Park Property	354	5.0%
Right-of-Way	565	8.0%
Undevelopable	12	0.2%
Environmental:		
Wetlands and		
Floodplains	1,254	17.8%
Outside MUSA	294	
Residential		0.00
Pamou Countu		0.0%
Poplar Lake Park		
Receive	170	2.40
Right-of-Way	1/0	0.19
Open Water	31	0.49
Environmental	51	0.47
Wetlands and		
Floodplains	85	1.2%
Area	7 027	100.00
	1,031	100.0

The Township's land use plan contains six major development categories: Low density residential, medium density residential, Residential PUD (high, medium and low density), commercial, industrial and public/community uses. The Township has approximately 220 acres of developable or underutilized vacant land, mostly located on the west side of the community adjacent to North Oaks lying between Centerville Road and I-35E. The remaining developable land is expected to be developed during the 2040 planning period. Land use patterns are expected to remain largely unchanged through year 2040.

3.0 Regulatory Setting

3.1 White Bear Township

The Town Engineer, Public Works Department and Planning/Community Development Department carry out the Town's policies of water resources management. The departments coordinate with Rice Creek Watershed District, Vadnais Lake Area Watershed Organization, and other outside agencies in water resource management.

The Public Works Department maintains the Township's public infrastructure and parks and green spaces. The department provides monitoring and maintenance of storm sewers and storm water ponds. The department is responsible for planning, administration, design, and inspection of infrastructure improvements. In early spring and late fall, the department does street sweeping as part of its pollution prevention activities.

The Planning/Community Development Department and Building/Inspection Department manage comprehensive planning, zoning controls, building permits, and Township Ordinances. This Local Surface Water Management Plan will be adopted as part of the Township's 2040 Comprehensive Plan.

3.1.1 Township Ordinances

White Bear Township's Ordinances provide standards and regulations to protect water resources. Ordinance 8 contains provisions regulating sites less than one acre in size. Township Ordinances related to surface water management and protection are listed below.

- Erosion and Sediment Control (Building Code: Ordinance 8, Section 5-36)
- Subdivision (Ordinance 15)
 - Parks, Playgrounds, Open Space and Storm Water Holding Areas
 - Design Standards (Section 10)
- Dumping (Ordinance 22)
- Refuse (Ordinance 31)
- Zoning (Ordinance 35)
 - "O-S" Open Space District (Section 6)
 - "C-W" Conservation Wetland District (Section 6)
 - "S-M" Shoreland Management (Section 8)
- Parks, Recreation and Open Space (Ordinance 45)
- Floodplain Management (Ordinance 57)
- Storm Water Drainage Utility (Ordinance 64)
- Illicit Discharge Detection (Ordinance 83)
- Storm Water Management (Ordinance 87)

3.1.2 Township Storm Water Facilities and Management

White Bear Township's storm water conveyance and treatment systems consist of pipes, culverts, storm water ponds, and other best management practices. The White Bear Township Storm Water System Map is shown on Figure 14. A full-size copy of the map is included in Appendix G.

The Township operates its drainage system as a storm water utility. The storm water utility funds are used for the maintenance and improvements to the drainage system. Approximately 50% of the fund is utilized for maintenance and 50% for capital improvements. Capital improvements are drainage improvements constructed within

existing neighborhoods to solve existing drainage problems. Also included are studies and reports related to drainage. The Town's Utility Commission annually prioritizes projects identified by public request, the Town Engineer, and Public Works. The improvements can generally be completed in that same year from the available budget.

Prior to construction of new Township drainage improvements, a feasibility study is prepared by the Township Engineer. Included in the feasibility study is the preliminary design of storm drainage facilities, a preliminary cost estimate, and proposed financing package for those facilities.

Tabular inventories and corresponding maps of the Town's existing storm water facility structures and storm water management ponds are included in Appendix C. Appendix B lists completed Comprehensive Storm Drainage Plan reports.

The Township's Public Works Department is responsible for maintenance of Township storm water facilities. Storm water system inspections and maintenance are conducted in accordance with the Small Municipal Separate Storm Sewer Systems (MS4) permit, pollution prevention and good housekeeping requirements, and the implementation tools described in this plan. The Town annually inspects all 9 of its structural pollution control devices, and 20% of its outfalls to receiving waters and sediment ponds.

The Township implements its Storm Water Pollution Prevention Plan (SWPPP), as discussed later in this plan under the Minnesota Pollution Control Agency. Land use and development applications to the Township, such as a subdivision request, must include drainage plans. The Township's standards for drainage plans and forms used for drainage review are included in the Township's Ordinances.

Private property owners also contribute to the ongoing maintenance of storm water management facilities. Table 7 lists the responsibilities of the Township's departments and of property owners.

Party	Existing (Acres)
Town Engineer	 Approve developer's plans or designs Town plans for drainage facilities that emphasize ease of maintenance. Recommends final acceptance of subdivision improvements and release of developer's security only after all turf is growing vigorously and there are no visible signs of erosion.
	 Develops plans and specifications for stormwater rehabilitation work
Code Enforceme nt	 Require homebuilders to erect and maintain silt fence until lawn is established to prevent sediments from filling drainage ways and ponds. Protect the access to and the integrity of drainage facilities when reviewing permits for excavation, landscaping, fences, retaining walls, and accessory buildings.
	Performs construction site silt protection inspections

 Table 7

 Responsibilities for Storm Water Facility Maintenance

Public Works	 Make an annual inspection of scheduled drainage facilities such as storm aprons, safety grates, culvert, weirs, ditches, emergency overflow paths, swales, and ponds. Check for broken or missing parts, obstructions, sediment, or woody grown that would interfere with the public's interest in good drainage.
	 Notify appropriate agency (County, Watershed District, etc.) if any deficiencies are found that are not under Township jurisdiction. Make repairs of all deficiencies under Township jurisdiction found by inspection.
	 Responds to inquiries by public about maintenance.
	 Makes the initial determination whether public maintenance or private maintenance is appropriate.
Property Owner	 Mows the drainage easement (except native wetland vegetation) for the control of weed, woody growth, and thick grasses which would interfere with drainage.
	 Prevents soil from eroding into ponding easement, drainage way, or storm sewer.
	 Promptly removes any soil, plant material, structures, and debris which interfere with drainage.

3.1.3 Surface Water Quality Management

One important element of water quality management in the Township is control of non-point source pollution. As development occurs, potential water quality impacts of non-point source pollution increase significantly. The reduction and control of these pollutants is essential to maintaining the quality of the Township's lakes and wetlands as well as downstream water bodies.

Improvements in the water quality of the Township's water resources resulting from a reduction of non-point loadings can best be realized through land management practices which effectively control surface water runoff and reduce wind and water erosion problems. The control of non-point source pollution is conducted using accepted engineering practices directed toward managing source areas and controlling pollutant movement. The control of non-point source production areas is achieved through best management practices (BMP) throughout the Township. BMPs are practices, techniques, and measures that prevent or reduce water pollution from nonpoint sources by using the most effective and practicable means. BMPs include, but are not limited to, ordinances and official controls, structural and nonstructural controls, and operation and maintenance procedures.

The Township requires that all land-disturbing activities implement BMPs using accepted engineering practices as outlined in the White Bear Township Ordinance 87 – Stormwater Management.

Non-point source control from urban areas will be accomplished chiefly through the application of wet detention ponding techniques. Such systems should follow current design criteria for wet detention basins. White Bear Township's design criteria for storm water management facilities is included in Appendix E. Performance data for wet detention pond operations have shown suspended solids removals up to 85-95% and total phosphorous reductions of between 40% and 70%.

The Town will promote infiltration/filtration, taking into consideration the unique factors of each site in cooperation with the watershed organization. Soil conditions, depth to groundwater, safety considerations, snow removal, and maintenance are all factors to be considered.

Point source pollutants are discharged to receiving surface water at a specific point from a specific identifiable source, such as a discharge of treated sewage from a waste water

treatment plant. Point source discharges of wastewater to the surface waters of the State are regulated under the Minnesota Pollution Control Agency's National Pollutant Discharge Elimination System (NPDES) permit program. The Township implements its NPDES permit, as discussed later in this plan under State Agencies, Minnesota Pollution Control Agency.

3.2 Watershed Management Organizations

The State of Minnesota adopted the Minnesota Watershed District Act in 1955, establishing watershed districts to regulate land use planning, flood control and other conservation issues. In 1982, the State approved the Metropolitan Surface Water Act, Minnesota Statutes 103B. This act requires all metropolitan area local governments to address surface water management through participation in a Water Management Organization (WMO). A WMO can be organized as a Watershed District (WD), a joint powers agreement (JPA) among municipalities, or as a function of county government.

White Bear Township is divided into multiple drainage basins that flow to two separately managed watersheds: Rice Creek Watershed District and Vadnais Lake Area Water Management Organization. Figure 15 shows the two watershed management organizations with jurisdiction in the Township.

3.2.1 Rice Creek Watershed District (RCWD)

Rice Creek Watershed District was formed in 1972. RCWD covers approximately 186 square miles and is composed of 28 communities: Arden Hills, Birchwood Village, Blaine, Centerville, Circle Pines, Columbia Heights, Columbus, Dellwood, Falcon Heights, Forest Lake, Fridley, Grant, Hugo, Lauderdale, Lexington, Lino Lakes, Mahtomedi, May Township, Mounds View, New Brighton, Scandia, Roseville, Shoreview, Spring Lake Park, Saint Anthony, White Bear Lake, White Bear Township, and Willernie.

The original RCWD Plan for water management was prepared in 1974. A "second generation" Plan was completed in 1990, in compliance with the Metropolitan Surface Water Management Act (Minnesota Statutes 103B). The Plan was updated in 1994, 1997, 2000, 2010, and 2016. RCWD is a permitting agency with its General Rules adopted December 2016.

RCWD is the permitting agency within its portion of White Bear Township. The Township requests that RCWD continue to implement its rules and regulation and issue permits within the Township.

RCWD has been authorized by the Minnesota State Legislature to act as the local government unit responsible for administering the Wetland Conservation Act. RCWD uses methods and procedures outlined in the WCA to determine replacement of wetland values in mitigation proposals.

RCWD is the ditch authority for Judicial Ditch 1 and County Ditch 11. RCWD has the authority to establish, improve or repair these drainage systems and similar activities related to drainage.

3.2.2 Vadnais Lake Area Water Management Organization (VLAWMO)

VLAWMO was formed in 1983 through a joint powers agreement. VLAWMO covers approximately 25 square miles and is composed of 7 member entities: North Oaks, Gem Lake, Lino Lakes, Vadnais Heights, White Bear Lake, and White Bear Township.

VLAWMO originally adopted its Watershed Management Plan in 1987. A second-generation Plan was approved by the Minnesota Board of Water and Soil Resources and adopted by VLAWMO in 1995. The current Plan was adopted by VLAWMO in 2017.

Like RCWD, VLAWMO also has been authorized by the Minnesota State Legislature to act as the local government unit responsible for administering the Wetland Conservation Act.

Within White Bear Township, VLAWMO has jurisdiction over County Ditch 13 and 14.

3.3 County and Regional Government

3.3.1 Ramsey County

Ramsey County updated its Groundwater Quality Protection Plan in 2010. The plan describes groundwater protection issues, identifies goals and policies for groundwater protection, and implementation measures. The plan was created in partnership with local governments, watersheds, and state agencies.

Ramsey County Department of Parks and Recreation, as an implementing agency for the Regional Park System, owns two properties located within White Bear Township: Bald Eagle-Otter Lake Regional Park and Poplar Lake Park Reserve.

3.3.2 Ramsey Conservation District/Soil & Water Conservation District (SWCD)

SWCDs are established under Chapter 103C of the Minnesota Statutes. The purpose of these Districts is to promote programs and policies which can conserve the soil and water resources within their territorial limits. Programs of the Ramsey Conservation District include erosion control inspections, rain gauge monitoring, and conservation capital improvement projects.

3.3.3 Metropolitan Council

The Metropolitan Council, created in 1963, is the regional governmental body responsible for planning within the seven-county (Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, and Washington) Minneapolis-St. Paul metropolitan area. It has important responsibilities, which include:

- Transportation and Transit
- Wastewater Collection and Treatment
- Housing, Re-development, and Urban Growth
- Regional Parks and Open Space
- Water Resources Management

Metropolitan Council activities specific to water resources include:

- Region-wide Surface and Ground water Planning and Non-point Source Pollution Abatement
- Industrial Wastewater Management
- Sewage Collection and Treatment
- Priority Lakes List: includes White Bear, Bald Eagle and Otter lakes located in the Township

Regional water resources planning guidance of the Metropolitan Council is presented in the "2040 Water Resources Policy Plan". The Plan identifies broad region-wide objectives for water management. The Metropolitan Council also has authority to review the Township's Comprehensive Plan.

3.4 State Agencies

3.4.1 State Board of Water and Soil Resources (BWSR)

BWSR was created by State Legislature in 1986. BWSR's duties include oversight programs and funding of State Soil and Water Conservation Districts, formation and guidance of watershed districts, and the direction and assistance to counties in developing their Comprehensive Water Plans. BWSR is responsible for implementation of the Wetland Conservation Act (WCA). BWSR reviews and approves water management plans and project activity of watershed districts and soil and water conservation districts.

3.4.2 Minnesota Pollution Control Agency (MPCA)

The MPCA was created by State Legislature in 1967. The MPCA has both regulatory and enforcement authority relative to potential actions which could affect the quality of the ground waters and surface waters of the State. Since future Township projects will likely involve water quality considerations, the MPCA may become an active participant in these projects. The MPCA regulates the management of wastewater, storm water, and solid waste in White Bear Township.

The MPCA is required by the federal Clean Water Act to publish a list of impaired waters. For each waterbody on the list, the MPCA is required to conduct a study to determine the allowable Total Maximum Daily Load (TMDL) for each pollutant that exceeds the standard. Section 3.10 of this Plan discusses impaired waters within White Bear Township and nearby impaired waters receiving drainage from the Town.

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

The MPCA NPDES Phase II general permit establishes conditions for discharging storm water, and specific other related discharges, to waters of the State. This permit is required for discharges that are from Small Municipal Separate Storm Sewer Systems (MS4).

White Bear Township is classified as a mandatory MS4. As required for MS4s, White Bear Township has a Storm Water Pollution Prevention Plan (SWPPP) to reduce the discharge of pollutants from its storm sewer system. The SWPPP covers the required six minimum control measures, identifies best management practices (BMPs), and identifies measurable goals associated with each minimum control measure. An annual report on the implementation of the SWPPP is provided to the MPCA. White Bear Township's MS4 permit, SWPPP, and latest MS4 permit annual report are included as Appendices D, E, and F.

3.4.3 Minnesota Department of Natural Resources (DNR)

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

3.4.4 Minnesota Department of Health (MDH)

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

3.4.5 Minnesota Environmental Quality Board (EQB)

The EQB is comprised of five citizen members and the heads of ten state agencies that play an important role in Minnesota's environment and development. The EQB develops policy, creates long-range plans and reviews proposed projects that may significantly influence Minnesota's environment. The EQB establishes the rules for the environmental review process conducted through Environmental Assessment Worksheets and Environmental Impact Statements (EAWs and EISs).

3.4.6 Minnesota Department of Transportation (MnDOT)

Within the Township, MnDOT administers several state highway systems. Since highway systems cross drainage patterns of natural and artificial waterways, there is opportunity for frequent interaction between the Township and MnDOT. Township projects that need storm water structures through MnDOT-regulated highways require coordination and approval by MnDOT.

3.5 Federal Agencies

3.5.1 US Environmental Protection Agency (USEPA)

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

3.5.2 US Army Corps of Engineers (USACE)

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

3.5.3 Federal Emergency Management Agency (FEMA)

FEMA manages federal disaster mitigation and relief programs, including the National Flood Insurance Program (NFIP). This program includes floodplain management and flood hazard mapping. FEMA published an updated Flood Insurance Rate Map (FIRM) for White Bear Township in 2010.

3.5.4 Natural Resource Conservation Service (NRCS)

The Natural Resources Conservation Service (formally called the Soil Conservation Service), is a division of the U.S. Department of Agriculture. The NRCS provides technical advice and engineering design services to local conservation districts across the nation. The *Soil Survey of Ramsey County* was issued by the NRCS in 1980. The NRCS also developed hydrologic calculation methods that are widely used in water resources design.

3.5.5 US Geological Survey (USGS)

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

3.5.6 US Fish and Wildlife Service (USFWS)

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

4.0 Goals & Policies

Overall Goal: The Township is committed to a goal of non-degradation of the water resources within the Township, and will work with local watershed management organizations, and County and State agencies to achieve this goal.

1. Lakes Goal: Protect and preserve the quality of local lakes.

Policies:

a. The Township will implement its land use plan and ordinances to protect shoreland areas and lake water quality.

- b. The Township will work with RCWD and VLAWMO to achieve the lake management goals contained in the watersheds' plans, standards and rules.
- c. The Township will use the development review process and implement its SWPPP to help protect waters on the regional Priority Lakes List.
- 2. Wetlands Goal: Protect & preserve wetlands to maintain or improve their function & value.

Policies:

- a. The Township will support RCWD and VLAWMO requirements for wetland protection and their administration of WCA, to ensure no net loss of wetland functions and values.
- b. The Township will apply the applicable RCWD and VLAWMO policies and performance standards for wetlands within each watershed. The Township will update its ordinances with the most recent watershed and township requirements for buffers, standards for pre-treatment of storm water, and other wetland protection and management standards.
- c. The Township will require that a wetland delineation be completed prior to development activities or public projects, including a field delineation and report detailing the findings of the delineation.
- d. The Township will require that developers complete a Functions and Values Assessment for any wetland that has not been assessed by RCWD and VLAWMO. This assessment may be completed at the time that development is proposed that may affect a wetland located within the Township. The assessment shall use the most recent version of MNRAM, and shall be submitted to the Township along with the wetland delineation report. Wetland buffers and management standards of the watershed organizations will be enforced based on the completed assessment.
- e. The Township will identify and implement opportunities to enhance the functions and values of degraded wetlands within the Township, as a part of park projects, infrastructure projects, or other projects.
- 3. Streams, Creeks and Ditches Goal: Maintain, or where practical, improve water quality, provide wildlife habitat and protect the resource value of streams, creeks, and ditches.

Policies:

- a. The Township will cooperate with RCWD and VLAWMO to maintain, or where practical, improve water quality and natural resources associated with streams by managing land use, local infrastructure, and enforcing the Township's erosion control and storm water management requirements.
- b. The Township will use the findings of the Lambert Creek and Judicial Ditch1 TMDL studies to guide development review and to help address the target pollutants identified in the TMDL studies.
- 4. Floodplains Goal: Manage floodplains to provide protection for public and private property. *Policies:*
 - a. The Township will enforce the floodplain and shoreland elements of its Zoning Ordinance, and update these elements as required by state or federal agencies. It will continue to use its ordinance to regulate floodplain alterations, development within floodplains, and minimum building elevations.
 - b. The Township will use FEMA FIRM maps to manage floodplains.
- 5. Erosion and Sediment Control Goal: Facilitate erosion control and reduce impacts to wetlands and water bodies from sedimentation.

Policies:

- a. The Township will enforce its ordinances related to erosion and sediment control.
- b. The Township will work with local watersheds, contractors, and developers to implement construction site erosion and sediment control best management practices.
- 6. Water Quality Goal: Maintain, or where practical improve, the water quality of surface water features within the Township.

Policies:

- a. The Township will require water quality and infiltration Best Management Practices for development and redevelopment that will result in Total Suspended Solids (TSS) reduction and Total Phosphorous (TP) reduction to the greatest extent practicable and consistent with RCWD Rules or the VLAWMO Watershed Management Plan, depending upon where the proposed project is located.
- b. The Township will require the use of water quality BMPs including infiltration, taking into consideration site limitations such as soil conditions, depth to groundwater, safety, snow removal, and maintenance issues.
- c. The Township will use its ordinances to require soil ripping, and to recommend soil amendment, after mass grading is completed for all soil types.
- d. The Township will use its ordinances to require effective water quality treatment of storm water prior to discharge into lakes and creeks.
- e. The Township will implement its SWPPP and NPDES MS4 permit, and continue to complete its annual MS4 report identifying how the Township is meeting the permit conditions.
- f. The Township will require the use of National Urban Runoff Program (NURP) for the design of new storm water ponds.
- g. The Township will cooperate with the TMDLs of the impaired waters within White Bear Township. The Township will cooperate with the TMDLs of impaired waters located downstream of Bald Eagle Lake and receiving drainage from the Town.
- h. When projects are proposed in areas where soils are known to be contaminated, BMPs other than infiltration will be required. Proposed projects in areas with suspected soil contamination, particularly when located within the Drinking Water Supply Management Area High Vulnerability Areas (Wellhead Protection Plan, Part I), must complete soil tests to confirm contamination status before infiltration is permitted.
- 7. Water Quantity Goal: Control the rate of storm water runoff from development to reduce downstream flooding and erosion.

Policies:

- a. The Township will use its ordinances to control peak runoff so that land-altering activities do not increase peak storm water flow from the site for a 2-year, 10-year, and 100-year precipitation event.
- b. The Township will update its ordinances to require that for new projects, that water quality BMPs infiltrate and/or retain the runoff volume generated by a 2-year precipitation event. BMP options will take into account factors such as soils, depth to groundwater, and contaminants.
- 8. Groundwater Goal: Protect groundwater resources and groundwater dependent resources. *Policies:*
 - a. The Township will implement its Wellhead Protection Plan.

- b. The White Bear Township Drinking Water Supply Management Areas (DWSMAs) will be displayed on maps used by the Planning Department, in order to raise awareness of the critical link between land use and the vulnerable drinking water supply.
- c. The Township will require pretreatment for infiltration practices based on their location within the Groundwater Impact Zone identified in the Wellhead Protection Plan, and discourage or prohibit use of infiltration practices where the use of these practices is likely to cause the transport of contaminants into the groundwater.
- d. The Township will promote water conservation before seeking approvals to construct new wells or increases in authorized volumes of water.
- e. The Township will use water meters on all accounts and bill for water use based upon consumption.
- f. The Township will update its policies to be in compliance with the results of the pending White Bear Lake litigation.
- 9. Natural Resources Goal: Participate in conservation or creation of key natural areas with respect to habitat, wildlife, or recreation.
 - a. The Township will participate in protecting key natural areas with multiple benefits including groundwater recharge.
 - b. The Township will integrate key natural areas into local plans for recreation or habitat improvement.
 - c. The Township will cooperate with Ramsey County, neighboring communities, watersheds, and other levels of government to protect natural resources.
- 10. Implementation Goal: Implement the Township's Local Surface Water Management Plan.

Policies:

- a. The Township will periodically update its Local Surface Water Management Plan through a process of assessing problems, prioritizing the problems, identifying solutions, and identifying corrective actions.
- b. The Township will use its annual budget setting process and Utility Commission process to identify funding for water resources related projects.
- c. The Township will enforce its ordinances to protect water resources and to implement its Local Surface Water Management Plan.
- d. The Township will provide storm water education materials and programs to the public.

5.0 Assessment of Issues

The Rice Creek Watershed District and Vadnais Lake Area Water Management Organization plans provide discussion and analysis of issues affecting each organization and the geographic areas they serve. This Plan incorporates both the broad-reaching issues that involve the Township as partner to the watershed, as well as location-specific issues relevant to White Bear Township. After discussion of each issue, the plan identifies how White Bear Township plans to approach the issue.

5.1 Rice Creek Watershed District (RCWD) Area

The RCWD Plan discusses emerging issues, issues by management category (examples include lakes and wetlands), and by sub-area planning regions. The following issues selected for discussion in this Plan are those where the Town has a specific role in addressing the issue.

1. Emerging issues as they relate to White Bear Township include:

a. Lake Pepin TMDL. The MPCA placed Lake Pepin on the impaired waters list in 2004 due to excess nutrients and turbidity. Rice Creek is a tributary to Lake Pepin. The most likely implication of the Lake Pepin TMDL is in the identification of a specific numeric load as a target for MS4s in the basin, including RCWD

Township Approach: Policies of this Plan include that the Township will use the findings of completed TMDL studies to guide development review and to help address the target pollutants of both impaired waters located in the Township and those receiving drainage from the Township, including Lake Pepin.

b. **Stormwater Non-degredation and TMDLs.** In June of 2006, the MPCA required 30 cities to complete a Stormwater Non-degredation Report, including one city in the RCWD. The MPCA is likely to require other cities and towns in the RCWD to complete non-degredation reports in the future.

Township Approach: The Town will work with RCWD to complete a non-degredation report if required by the MPCA.

c. **Managing the Mississippi River**. The Mississippi River is the primary source of potable water for Minneapolis and other surrounding suburbs. Currently the Mississippi River Source Water Protection Project has been formed to manage this water source. It is likely however that a larger, more coordinated effort will be required in the future. RCWD is also a part of the Upper Mississippi River Bacteria TMDL for bacteria.

Township Approach: The Town will work with RCWD to participate and implement any activities required as a part of managing the Mississippi River, including the Upper Mississippi River Bacteria TMDL and future Lake Pepin TMDL.

d. Alternative Volume Control Methods. The RCWD rules support low impact development methods, including infiltration of storm water. The RCWD Plan states that some areas of the District are not appropriate for infiltration, due to soil characteristics, high groundwater table, or contamination. The RCWD Rules have some flexibility to allow for alternatives in certain demonstrated circumstances, such reuse for irrigation.

Township Approach: Some portions of White Bear Township are likely inappropriate for infiltration for the reasons listed above. The Town will continue to work with the Watershed through the development review process, to identify situations where alternatives volume control methods are appropriate.

e. **Climate Change.** Observed changes in regional climatic trends impact water resources and their management. Increases in storm intensities results in increased soil erosion and increased runoff. RCWD anticipates that it may need to update flood control design events and there may be changes to the 100 year floodplain.

Township Approach: The Town will work with RCWD to respond to any changes in the management of surface water due to climate change, including updates to design storms events and floodplain management.

f. Declining Regional Groundwater and the Effect on Groundwater Dependent Natural Resources. Regionally, there is concern that aquifers are being depleted, negatively affecting water supply and groundwater dependent natural resources. The District anticipates addressing this issue through further study and revision to its rules, if applicable.

Township Approach: White Bear Township gets its water supply from groundwater. It is the goal of the Town to protect groundwater resources and groundwater dependent resources. The Town now charges a rate fee for water use based on water metering. Water metering should encourage users to conserve water. The Town is also monitoring the ongoing litigation surrounding White Bear Lake and will update its use of groundwater as may be required.

- 2. Management Category Issues
 - a. **Education, Data and Information.** RCWD supports the sharing of information and data across units of government. The Watershed seeks to collaborate with local governments in implementing their MS4 permits, to develop a toolkit of shared educational materials.

Township Approach: Sharing of education materials will help the Township to best implement its MS4. White Bear Township will participate when the Watershed convenes the collaborative.

b. Lakes. The RCWD Plan recommends that the Watershed continue development of lake-specific management plans. Management strategies for each lake will depend of unique factors such as lake depth, surrounding land use, and presence of invasive species. Management plans exist for Bald Eagle Lake and White Bear Lake.

Township Approach: The Township would be a stakeholder in the Watershed's process to develop or update a management plan prepared for any local lake.

c. **Wetlands.** RCWD and VLAWMO are the Local Government Unit (LGU) responsible for Wetland Conservation Act (WCA) enforcement within the Township.

Township Approach: The Township requests that the Watersheds continue in this role.

d. Public Drainage Systems and Waterways. The watershed organizations are responsible for inspection and maintenance of public ditches in White Bear Township. One of the issues the RCWD Plan discusses is ownership, maintenance responsibility, and operations of drainage systems while coordinating with several other regulatory agencies. It states that the Watershed will continue to address these issues through the use of Comprehensive Watershed Management Plans, RMPs, Repair Reports, and regionally specific rules.

Township Approach: The Township requests that the Watersheds continue their jurisdiction over the public ditches. The public drainage systems within White Bear Township drain a large land area covering multiple municipalities. It would be complex to transfer control from the Watershed, and the benefits of oversight by a single unit of government would be lost if jurisdiction were transferred to municipalities. The Township will continue to work with the Watersheds as needed for maintenance of the public ditches.

e. **Open Space.** The RCWD Plan indicates that opportunities exist for partnership with other units of government in implementing park and open space plans that may affect water resource management.

Township Approach: There is an extensive park and open space system within White Bear Township. The Township would be receptive to potential partnerships with the RCWD as the Town implements its park and open space plan. It is the policy of the Township to cooperate with watersheds and other levels of government to protect natural resources.

f. **Excess Runoff.** The RCWD Plan states that the Watershed needs to manage the peak rate and volume of runoff, however much of the data currently being used is outdated. RCWD is currently working to update its data, methods, and technology used in predicting and managing runoff. This action would be beneficial to White Bear Township for implementing its regulations.

Township Approach: White Bear Township regulates rate control in its Subdivision Ordinance. The Township will collaborate with the Watershed in the development of floodplain boundaries and base flood elevations.

3. Planning region: Clearwater Creek Area Issues

Most of White Bear Township is within the Clearwater Creek planning region, which reaches north and east into Anoka and Washington Counties. (Part of the Township, Poplar Lake County Park, is within the Middle Rice Creek planning area – but no issues specific to this parkland are identified.)

The RCWD Plan identifies the following general issues for the Clearwater Creek Area:

- a. Preservation of White Bear Lake water quality.
- b. Improvement of water quality of Bald Eagle Lake.
- c. Evaluation of the hydrologic connection between Otter and Bald Eagle Lakes.
- d. The potential need to provide outlets from land-locked lakes.
- e. The need to develop emergency response plans for buried pipelines.

Township Approach: White Bear Township will be involved as one of the stakeholders in the Watershed's initiatives to address these issues where applicable to the Township portion of the Clearwater Creek planning region, including the Peltier Lake TMDL and the Centerville Lake TMDL.

4. South Bald Eagle Lake Subwatershed

RCWD has detailed several proposed improvements for the Bald Eagle Lake subwatershed. The goal of these improvements is to filter stormwater runoff, thereby reducing the amount of total phosphorus and total suspended solids reaching Bald Eagle Lake. These projects are described in the South Bald Eagle Lake Subwatershed: Urban Stormwater Retrofit Analysis, Ramsey Conservation District, June 2016.

Township Approach: White Bear Township will look for opportunities to coordinate with RCWD on implementing the improvements identified in the South Bald Eagle Lake Subwatershed: Urban Stormwater Retrofit Analysis.

5.2 Vadnais Lake Area Water Management Organization (VLAWMO) area

The VLAWMO Plan was adopted in 2017. The Plan identifies goals for the organization, and prioritizes issues by sub-watershed. White Bear Township falls within the sub-watersheds Lambert Creek and Gilfillian-Tamarack-Black-Wilkinson-Amelia.

- 1. Threatened and impaired surface water and natural resources
 - a. VLAWMO Goal. VLAWMO is working to delist all 303d Impaired Water in the watershed, demonstrate stable or improving water quality trends in all water bodies by 2026, and minimize the loss of major wetland function and value within the watershed.

Township Approach: The Township will work with VLAWMO to meet the requirements of current and future TMDLs, maintain the Town's storm water features, and work with VLAWMO for administration of the WCA.

- 2. Threatened or impaired groundwater quality and quantity
 - a. **VLAWMO Goal.** VLAWMO supports projects and programs which provide shallow groundwater recharge and deep groundwater conservation, the development and implementation of water use and protection goals by by water suppliers, and the

enhancement of education and communication around groundwater use and conservation by both citizens and MS4s.

Township Approach: White Bear Township gets its water supply from groundwater. It is the goal of the Town to protect groundwater resources and groundwater dependent resources. The Town now charges a rate fee for water use based on water metering. Water metering should encourage users to conserve water. The Town is also monitoring the ongoing litigation surrounding White Bear Lake and will update its use of groundwater as may be required.

- 3. Need for education and involvement from citizens and stakeholders
 - a. **VLAWMO Goal.** Support MS4 partners in the implementation of their MS4 permits through VLAWMO's Education and Outreach Program.

Township Approach: White Bear Township will continue to work with VLAWMO for education and outreach, both for Township staff and residents.

- 4. Need for adequate data, analysis, financing, and staff capacity in order to meet goals and accomplish strategies
 - a. VLAWMO Goal. VLAWMO will have adequate resources to address priority issues.

Township Approach: White Bear Township will continue to share data with VLAWMO.

- 5. Aquatic invasive species (AIS) management
 - a. **VLAWMO Goal.** VLAWMO will look for opportunities to coordinate efforts for AIS management and water quality improvements.

Township Approach: White Bear Township will coordinate with VLAWMO on AIS management in areas of the Township within the watershed.

- 6. Localized Flooding
 - a. VLAWMO Goal. Minimize flood damage to private and public property within VLAWMO.

Township Approach: Methods used by the Township to prevent flooding include enforcement of its floodplain and shoreland ordinances, enforcement of its erosion and sediment control requirements, and certifying that the low floor elevation of new construction in flood-prone areas meets the required elevation.

5.3 Additional issues

The following issues are items where the Township is the lead, though the watersheds or other organizations may be involved. The plan describes the proposed action the Township plans to take to address the issue.

1. Surface Water Management and Erosion and Sediment Control Ordinance.

Proposed Action: The Township will continue to implement its surface water management and erosion and sediment control, and other ordinances to implement this Surface Water Management Plan.

2. MS4 Permit.

Proposed Action: The Township will continue to implement its MS4 permit.

Key sections of the permit which address issues referenced by the Rice Creek Watershed District Plan, include:

- a. Public information and education plan (Public Education and Outreach, V.G.1)
- b. The Township will adopt a local ordinance prohibiting illicit discharges or other nonstorm water discharges from entering White Bear Township's storm water system (Illicit Discharge Detection and Elimination, V.G.3)

- c. Control and management of post-construction storm water (Post Construction Storm Water Management, V.G.5)
- d. Storm water system inspection and maintenance schedule, street sweeping, snow plowing, salt and snow storage, and public land maintenance (Pollution Prevention/Good Housekeeping for Municipal Operations, V.G.6)

6.0 Implementation

6.1 Capital Improvement

White Bear Township addresses water resource-related capital improvements through its Utility Commission and through the setting of the annual budget. The Utility Commission advises the Town Board on storm water issues. The Commission annually prioritizes capital improvements identified by public request, the Town Engineer, and Public Works.

The Town collects a storm water utility fee to fund projects that correct drainage problems in existing neighborhoods. The Township's Storm Water Implementation Plan is included in Table 8 and a Detailed Project List is included in Table 9.

6.2 Township Ordinances

The Township will continue to implement the following ordinances to as part of this Plan:

- Storm Water Management (Ordinance 87)
 - <u>http://www.ci.white-bear-township.mn.us/DocumentCenter/View/691/87---</u> <u>Stormwater-Management-PDF</u>
- Illicit Discharge Detection and Elimination (Ordinance 83)
 - <u>http://www.ci.white-bear-township.mn.us/DocumentCenter/View/191/83---Illicit-Discharge-Detection-and-Elimination-PDF</u>
- Zoning Ordinance, Conservation Wetland District (Ordinance 35, Section 6)
 - <u>http://www.ci.white-bear-township.mn.us/DocumentCenter/View/145/35---Zoning-PDF</u>

Other Township ordinances related to surface water management:

- Building Code (Ordinance 8)
- Subdivision (Ordinance 15)
 Parks, Playgrounds, Open Space and Storm Water Holding Areas
 Design Standards (Section 10)
- Refuse (Ordinance 31)
- Parks, Recreation and Open Space (Ordinance 45)
- Floodplain Management (Ordinance 57)
- Storm Water Drainage Utility (Ordinance 64)

6.3 Surface Water Management Plan Review and Adoption Process

The Surface Water Management Plan is submitted to RCWD and VLAWMO, and submitted to the Metropolitan Council. Once the Plan is accepted, the Township will formally adopt the Plan within 120 days.

6.4 Plan Amendments and Updates

Substantive revisions to the goals and objectives or the adoption of new or revised standards or rules may require an amendment to this plan.

Possible future amendments to the Plan may include:

- Completed TMDLs
- Wellhead Protection Plan, Part II
- Information from RCWD and VLAWMO plan amendments, if made in the future.
- Any requirements from the ongoing White Bear Lake litigation.

The inclusion of these efforts into the Surface Water Management Plan will help facilitate the Township's comprehensive water resource planning efforts.

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

- 1. The Township will prepare the proposed amendment.
- 2. The Township will conduct a public hearing. In addition to normal hearing notice procedure, the Township will provide notice to the Metropolitan Council, VLAWMO, and RCWD.
- 3. After the hearing and any revisions to the draft amendment, the Town will submit the amendment to the Metropolitan Council, VLAWMO, and RCWD.
- 4. The watershed organizations will have 60 days to complete their review and approve or disapprove the amendment. The Metropolitan Council will have 45 days to review and comment.
- 5. After approval of the amendment by the watershed organizations, the Township will adopt the amendment.

This Plan will be incorporated into the City's 2040 Comprehensive Plan currently being updated and planned for approval in 2018 or 2019. The Plan is intended to be in effect for 10 years, at which time an updated Plan will be required. Following the review of the WMOs and MCES, WBT will follow the formal adoption process outlined in Minnesota State Statutes 103B.235. At that point this Plan will be current.

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Table 8. Storm Water Implementation Plan

		10 Year Total Cost		Estimated Cost By Year										
No.	Project Name	Estimate	Possible Funding Source	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	Comments
Capital Improvement Projects														
1	Outfall #5	\$37,500	Storm Water Utility Fund (Capital), RCWD	\$37,500										
2	Outfall #6	\$37,500	Storm Water Utility Fund (Capital), RCWD	\$37,500										
3	2082 Stillwater Street	\$5,000	Storm Water Utility Fund (Capital)			\$5,000								
4	Lake Avenue & Overlake Road	\$25,000	Storm Water Utility Fund (Capital)					\$25,000						
5	Park Avenue/Stillwater Street drainage	\$10,000	Storm Water Utility Fund (Capital)		\$10,000									
6	Outfall #11	\$5,000	Storm Water Utility Fund (Capital)						\$5,000					
7	Outfall #8	\$5,000	Storm Water Utility Fund (Capital)						\$5,000					
8	2581 4th Street	\$10,000	Storm Water Utility Fund (Capital)							\$10,000				
9	Apple Tree Park	\$5,500	Storm Water Utility Fund (Capital)							\$5,500				
10	2561/2581 4th St.	\$15,000	Storm Water Utility Fund (Capital)							\$15,000				
11	Bald Eagle Lake Subwatershed Improvements (multiple)	\$50,000	Rice Creek Watershed District						\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	
12	Southeast Area Storm Water Improvements	\$500,000	Storm Water Utility Fund (Capital)				\$500,000							
MS4 Permi	t and Additional Operations and Maintenance Activities													
13	Street Sweeping	\$200,000	Storm Water Utility Fund (Operations)	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	
14	General Ditch Maintenance	\$500,000	Storm Water Utility Fund (Capital)	\$50,000	\$50,000	\$85,000	\$80,000	\$80,000	\$90,000	\$105,000	\$120,000	\$120,000	\$120,000	
15	Ditch Inspections	\$5,000	Storm Water Utility Fund (Operations)	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	
16	Pond Inspections	\$50,000	Storm Water Utility Fund (Operations)	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	
17	Pond Maintenance	\$500,000	Storm Water Utility Fund (Capital)	\$50,000	\$50,000	\$50,000	\$80,000	\$80,000	\$90,000	\$105,000	\$120,000	\$120,000	\$120,000	
18	Raingarden Maintenance	\$5,000	Storm Water Utility Fund (Capital)	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	
19	General Maintenance Placeholder	\$100,000	Storm Water Utility Fund (Capital)	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	
20	Education and Outreach	\$5,000	Storm Water Utility Fund (Operations)	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	
21	Annual Meeting	\$2,500	Storm Water Utility Fund (Operations)	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250	
22	Storm Sewer System Map	\$5,000	Storm Water Utility Fund (Operations)	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	
23	Illicit Discharge	\$3,000	Storm Water Utility Fund (Operations)	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$300	
24	Construction Site Inspections	\$10,000	General Fund - Building Inspections	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	
25	Site Plan Review	\$10,000	General Fund - Building Inspections	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	
26	BMP Maintenance Program	\$15,000	Storm Water Utility Fund (Operations)	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	
Official Cor	Official Controls													
27	Update Ordinance(s) to Meet New permit requirements	\$5,000	Operations	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	
Total Estimated Annual Cost				\$216,550	\$151,550	\$181,550	\$701,550	\$226,550	\$241,550	\$292,050	\$291,550	\$291,550	\$291,550	
			Operations Annual Subtotal	\$30,550	\$30,550	\$30,550	\$30,550	\$30,550	\$30,550	\$30,550	\$30,550	\$30,550	\$30,550	
Capital Annual Subtotal			\$185,500	\$120,500	\$150,500	\$670,500	\$195,500	\$200,500	\$251,000	\$260,500	\$260,500	\$260,500		
			Funding by Others Annual Subtotal	\$0	\$0	\$0	\$0	\$0	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	

Table 9. Detailed Project List

Project Description	Location	Issue	Estimated Cost	Inspection Date	Staff Priority Rating	Plan sheet reference #(S)	Planned Date
		Outfall needs to have sediment cleared away from outlet end.					
Outfall #5	West Bald Eagle and St. Anthony	Outlet needs to have a flared end section with rip rap added.	\$35,000.00	12/10/2015	5 1	876 (1995),	2018
		Outfall needs a flared end section added with rip rap. The					
		existing outfall is 85% Town owned and 15% Ramsey County					
		based on surface area drainage calculations provided by RC.					
Outfall #6	East Bald Eagle and Park Avenue	treatment device, so grant funding maybe available	\$35,000,00	12/10/2016	2	650	2019
		Outfall is submarged and storm pipe inlat from the Parkway is	\$35,000.00	12/10/2013	2	030	2018
		balf full of water. Lot's of tree debris in the pond left by					
		someone performing tree removals around the pond near the					
Outfall #9 (1987)	White Bear Parkway (Cortec Pond)	outfall.	\$10,000.00	12/10/2015	5 3	542	2018
		Pond that the outfall discharges into needs to be cleaned in					
		order for the outfall pipe to drain after normal precipatation					
Outfall #3	Hobe Court south	events.	\$20,000.00	12/10/2015	5 4	1364A,1371	2018
Outfall #16	Bellaire Beach	Pond #89 needs cleaning, lots of silt built up.	\$20,000.00	12/11/2015	5 5	634, 642, See Bellaire Beach hand drawing in 600 file	2018
		Rip Rap needs be rearranged along with channel cleaning for					
Outfall #17	South Shore Boulevard	the first 30' beyond the outfall.	\$10,000.00	12/11/2015	5 6	1094	2018
		Remove sediment and restablish rip rap. Steep grade to outlet					
		Between 5537 and 5542 is the access, large stone wall at			_		
Outlet 35	East of Jenni Lane (1988)	5542.	\$30,000.00	10/0/2017	7 7	597	2018
	From Ottor Didgo Dood north to Ottor Loke Dood	Complete project areas 4 and 5 (alternates 1 and 2) from 2013	¢25,000,00	0/0/2017			2010
		Brandiwood Area Drainage Improvement Project.	\$35,000.00	0/0/2013	8 8		2019
Pond 29	Mallard Ponds Pkww (north side)	Portland Avenue is full of sediment as well	\$40,000,00	10/4/2017	7 9	No record plan found, constructed prior to 1999	2010
		Pond inlet nine is full of sediment from Polar Bear Lane and	φ+0,000.00	10/4/2017	3		2015
		ditch has over 300 cu vds of sediment. Storm pipe will need to					
Pond 19	Polar Bear Lane	be cleaned from Polar Bear Ln.	\$20.000.00	9/28/2017	7 10	746.747	2019
		Sediment over 50%, two open concrete swales drain to pond	+,				
Pond 7	Southwest corner of Schwing America	and need rehabilitation.	\$30,000.00	9/20/2017	7 11		2020
Pond 8	Southwest corner of Schwing America	Sediment over 50%. Inlet and outlet pipes need cleaning	\$30,000.00	6/8/2016	6 12		2020
		Both outlets to pond need sediment removed and rip rap					
		restablished. Access is from Red Pine Blvd is between two					
Pond 21	Norway Pine Drive and Red Pine Blvd	yards with a screen wall near the outlet structure.	\$10,000.00	10/4/2017	7 13	844	2020
		Inlet pipe needs trash grate cleaned, channel cleaned of silt					
Pond 25	Norway Pine Drive (east pond that is east of Mallard Pon	and rip rap restablished.	\$3,000.00	9/20/2017	7 14	1240	2020
		Pipes under Norway Pine Drive need sediment removal.					
Pond 26	Norway Pine Drive (west pond that is east of Mallard Po	Westerly on has sediment and brush built up in front of outlet.	\$2,000.00	9/20/2017	7 15	1240	2020
		Ditch from Portland Ave to Pond 34 needs to be reestablished	,				
Pond 33	East of Parkview Court	pond cleaned.	\$60,000.00	10/0/2017	7 16	596	2020
		Has obstructions placed in the outlet to the wetland. Pond will					
Den d 0.4	West of Deductory Occurt	need an engineering evaluation to determine it it has reduced	¢50.000.00	40/0/004	7 47	004	2024
		Capacity. The linet pipe is set lower than the duriet elevation.	\$50,000.00	10/0/2017	17	901	2021
Dond 25	West of Farway Court	Both inlets need sediment removed from the flared end section	ן. רא מיט מיט	10/0/2017	7 10	955	2021
Pond 35	West of Perlway Court	Clean inlet nine of addiment and add rin ran	\$3,000.00	10/0/2017	7 18	855	2021
		Clean milet pipe of Sediment and add np Tap	\$1,000.00	10/0/2017	19	854	2021
Bond 0	Fact side of SMC poor loading deak grea	wetland south of pond	Sand latter	6/0/2016	20		2021
		Property ewper bas dock on pend and is mowing to the pend	Send letter	0/0/2010	20		2021
Pond 94	Southeast corner of Short St. and Portland Ave	edge	Send letter	6/0/2016	21		2021
F 0110 94	South of Sandterra Court, on the west side of Portland	Outlet nine from Sandterra needs cleaning along with	Send letter	0/0/2010	21		2021
Pond 30		discharge ditch to pond	\$5,000,00	6/0/2016	22	12/3	2021
2082 Stillwater Street	Stillwater Street (south side)	Structure needs to be rebuilt	\$5,000.00	0/0/2017	7 23	1210	2021
	From dead and on north side to Bold Eagle Lake	Clean ditch to allow better flow from wetland to east	\$25,000.00	0/0/2017	23	This ditch is in the Ramsey County Open Space	2020
Lako Avonuo 8 Ovorteko Bood	From intersection west to Pold Forde Lake	Reline or replace pine and structure in opsomont	¢25,000.00	0/0/2047	24		2021
Diopoor Long Ditch Classing	Along rollroad accoment from Diller Otreat to Later in the	Ditch boo podiment and debris that poods to be removed	φ25,000.00 \$50,000.00	0/0/2016	20	shaata 06.08	2022
	From wotland aget of Allandala to reitrand tracks	Ditch has sediment and volunteer growth in it	φου,000.00 Φου,000.00	0/0/2016	20	2110012 20-20	2021
	Promi wettand east of Allendale to railroad tracks	Mater pending in verieve addresses store Desver Ci.	φ∠0,000.00				2021
	Between Baid Eagle Avenue East and Stillwater Street	Parloss outfall	\$ 25,000.00	0/0/2013	28	-	2022
Outfall #15	whitaker Pond Outfall on Whitaker Street	replace outial	\$25,000.00	12/11/2015	29		2022

Table 9. Detailed Project List

Project Description	Location	Issue	Estimated Cost	Inspection Date	Staff Priority Rating	Plan sheet reference #(S)	Planned Date
		Longstanding project that was brought to the Town's attention					
		by Dale Montgomery. The private pond doesn't have an outlet					
	Private pond on northwest corner of intersection at Park	to drain the overflow. Town Engineer suggests performing a			Need to consult with		
Park Avenue/Stillwater Street drainage	Street and Stillwater Street	survey to determine options.	\$ 10,000.00	0/0/2015	5 the Town Engineer		2019
		No flared end section or rip rap to disspate energy from high	+ -,		Need to consult with		
Outfall #11	Pond View Lane	flows.	\$5,000,00	12/10/201	5 the Town Engineer		2023
		May require a flared end and rip rap to dissapate energy during	n	,,	Need consult with the		
Outfall #8	Birch Pond	high flow events.	\$5 000 00	12/10/201	5 Town Engineer		2023
			\$0,000.00	12/10/201	Nood to have a		2023
					survey completed to		
		Ponding in driveway due to low spot in roadway and on			see if drainage can		
2581 Ath Street	Ath Street and Grand Ave	residents property			be improved		2022
		Elimonate ditch and nine water to the existing structure in the					2022
		couthwast earner of the park. Eliminate has hive and install a					
Apple Tree Derk	1300 Ookmada La	southwest conter of the park. Entrinnate bee five and install a	¢5 500 00				2024
	4399 Oakillede Lil.	Culvert is failing under 4th St. and ditch paede to be cleaned	\$5,500.00	,			2024
2501/2501 445 04	Dreine no Ditch to Courden Creat	Cuivert is failing under 4th St. and ditch needs to be cleaned	¢45.000.00				2022
2561/2581 4th St.	Drainage Ditch to Garden Creek	out going to the North to Garden Creek.	\$15,000.00)			2022
					Work to be		
					completed when		
					Ramsey County		
		Pending Ramsey County incorporating the street into their	A		initiated road project		
Stillwater Street Drainage Improvements	Stillwater Street Eagle Street to Otter Lake Road	I ransporation Improvement Plan (TIP)	\$500,000.00)	is completed.		2021
		Remove trash grate and clean flared end section, replace trash	า		PW to add to 2018		
Pond 37 (1990)	East of Franklin Avenue	grate. Engineer check of sediment basin?	Inhouse		workplan	687	2018
		Clear brush at outlet on 2, clear brush at inlet on 3, overflow			PW to add to 2018		
Pond 2,3, and 5	East side of Schwing America	inlet needs sump vac'd out on 5.	Inhouse		workplan	1047a	2018
		Inlet needs to be cleared, outlet has overflow with sump.			PW to add to 2018		
Pond 6	Otter Lake Road (behind 5900 Otter Ridge Road)	Wooden weir needs to be repaired.	Inhouse		workplan	863	2018
		Ramsey county needs to cleaned ditch that the outlet pipe					
		empties into on the west side of Centerville Road. Then clean			PW to add to 2018		
Pond 10	Southwest corner of SMC, near Centerville Road	storm pipe system to outlet.	Inhouse		workplan		2018
		The outlet flared end section needs to be replaced. A stump					
	Between property owner on east side of Brandlwood	from a tree removed years ago needs to also be removed.			PW to add to 2018		
Pond 12	Park and the the park property.	Brush pile near outlet also needs to be removed.	Inhouse		workplan	580	2018
		Adjust/add rip rap to outlet end of pipe. The rip rap has either			PW to add to 2018		
Outfall #1	County Road H-2	settled or eroded over the years.	\$2,000.00)	Stormwater Workplar	522	2018
		The outfall has been cleared of rip rap obstructing flow. The					
		inlet will need to be located and cleaned. Unable to locate			PW to add to 2018		
Outfall #4	Hobe Lane - Association's boat landing area	during inspection.	\$5,000.00)	Stormwater Workplar		2018
					PW to add to 2018		
Outfall #10	White Bear Parkway, north of Fox Meadow Park	Inlet side of pipe needs cleaning, lot's of floatables.	\$500.00)	Stormwater Workplar	541	2018
					PW to add to 2018		
Outfall #13	4249 Oakmede Lane	Sediment on outfall end that needs to be removed	\$1,500.00)	Stormwater Workplan		2018
			\$ 1,000100	,			
					PW to add to 2018		
Outfall #14	1380 Birchcrest	Restablish rip rap at outfall	\$500.00	1	Stormwater Workplan	117	2018
			4000.00	,			2010
		Some smaller diameter culverts will need replacement based			PW to add to 2018		
Miscellangous culvert replacement	various locations throughout the Town	on inspections	\$3,000,00		Stormwater Workplan		2018
		Trach grate peode cleaning	\$3,000.00	,	DW to clean in 2019	500	2018
	4312 POND VIEW DRIVE		\$500.00	,		20∠ 	2018
		The outfall is buried by sediment. I have discussed cleaning the	e				
		ditch within in the County roadway with the County					
		Maintenance Supervisor. He said he would add it to his list.					
		The Town would then clean the storm pipe discharging to the					
		alter and eventually to the pond located on the Otter Lake	A				
Outtall #2	Otter Lake Road	School property.	\$500.00)			

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Map date: April 2018






Figure 5. National Wetland Inventory

White Bear Township - Local Surface Water Management Plan









Figure 9. Natural Areas

White Bear Township - Local Surface Water Management Plan



Figure 10. Current Land Cover

White Bear Township - Local Surface Water Management Plan















Figure 15. Watershed Management Organizations

White Bear Township - Surface Water Management Plan

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Appendix A Wellhead Protection Plan – Part I

REPORT

WELLHEAD PROTECTION PLAN PART I (*Revised*)

WHITE BEAR TOWNSHIP, MINNESOTA

Date: March 31, 2009 Project No. 13707.000

> 444 Cedar Street, Suite 1500 Saint Paul, MN 55101-2140

(651) 292-4400 (651) 292-0083 Fax www.tkda.com



WELLHEAD PROTECTION PLAN PART I WHITE BEAR TOWNSHIP, MINNESOTA PROJECT NO. 13707.000

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PUBLIC WATER SUPPLY PROFILE

NAME <u>White Bear Township</u> ADDRESS 1281 Hammond Road White Bear Township MN 55110			
ADDRESS 1281 Hammond Road White Bear Township MN 55110			
ADDITESS 1201 Hammond Hoad, White bear rownship, MN 35110			
TELEPHONE NUMBER (651) 727-2750			
E-MAILwbt@ci.white-bear-township.mn.us			
FAX NUMBER(651) 426-2258			
WELLHEAD PROTECTION MANAGER			
NAME Mr. Bernie Bullert			
Toltz, King, Duvall, Anderson and Associates, Inc. (TKDA)			
ADDRESS 444 Cedar Street, Suite1500, St. Paul, MN 55101			
TELEPHONE NUMBER (651) 292-4400			
E-MAILbernie.bullert@tkda.com			
FAX NUMBER (651) 292-0083			
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GENERAL INFORMATION			
UNIQUE WELL NUMBER(S) 226570, 226571, 676446, 224679, 226572,			
151596, 596636			
SIZE OF POPULATION SERVED Approximately 11,800			
COUNTY Ramsey County			

DOCUMENTATION LIST

STEP	DATE PERFORMED		
Date MDH Notice Given (4720.5310, subp. 3)			
Mandatory Completion Date (4720.5310, subp. 3)	June 28, 2008		
Plan Manager Designated (4720.5300, subp. 2)			
Plan Notice Sent to Local Units of Government (LUG) and MDH (4720.5300, subp. 3)			
Scoping 1 Meeting Held (4720.5310, subp. 1)	June 28, 2006		
Scoping Decision Notice Received (4720.5310, subp. 2)	July 20, 2006		
Aquifer Test Plan (ATP) Submitted (4720.5320, subp. 1)	2001		
ATP Approval Review Notice Received From MDH (4720.5320, subp. 2)			
Delineation and Vulnerability Assessment (DVA) Submitted (4720.5205, 4720.5210)	July 23, 2007		
DVA Approved Review Notice Received from MDH (4720.5330, subp. 2)	December 21, 2007		
<u>Revised</u> Delineation and Vulnerability Assessment (DVA) Submitted (4720.5205, 4720.5210)	March 31, 2009		
DVA Approved Review Notice Received from MDH (4720.5330, subp. 2)			
WHPA and DWSMA Area Delineation and Vulnerability Assessment Submitted to LUGs (4720.5330, subp. 6)			
Public Information Meeting Held (4720.5330, subp. 7)			
Meeting with LUGs Held (4720.5300, subp. 3)			

WELLHEAD PROTECTION PLAN PART I WHITE BEAR TOWNSHIP, MINNESOTA PROJECT NO. 13707.000

I. <u>EXECUTIVE SUMMARY</u>

This Report documents the delineation of Wellhead Protection Areas (WHPA) for the drinking water supply wells operated by White Bear Township (Township). Wellhead protection helps to prevent man-made contaminants from entering drinking water supply wells. Areas have been delineated in accordance with Minnesota Rules, Parts 4720.5100 to 4720.5590, which are under the jurisdiction of the Minnesota Department of Health (MDH). Leggette, Brashears & Graham, Inc. (LBG) was contracted by TKDA to complete the groundwater flow model and the associated WHPA delineation for this report. The WHPAs were delineated using MODFLOW (a numerical groundwater flow model) and the particle-tracking module, MODPATH. Findings in this Report are the result of collaboration between the Township, TKDA, LBG, and the MDH.

The Township is located on the west side of White Bear Lake in the north eastern portion of Ramsey County. The geologic units of interest in the vicinity of the Township and surrounding area consist of Quaternary-Aged glacial deposits that are underlain by Paleozoic-Aged bedrock including the St. Peter Sandstone, Prairie du Chien Group, Jordan Sandstone, and the underlying lower confining St. Lawrence Formation. Township Well Nos. 2A and 3 through 6 are completed in the Prairie du Chien and Jordan aquifers, and Well No. 1 is completed only in the Jordan aquifer with some possible contribution from below the St. Lawrence. Well No. 2 is now designated for emergency use only.

In eastern Ramsey and western Washington Counties, ground water is encountered in the Quaternary and bedrock aquifers, with the flow direction being generally from northeast to southwest toward the Mississippi River, which serves as a local and regional hydrologic discharge point for the flow systems. A model was developed by Ramsey Soil and Water Conservation District (RSWCD) personnel in 2003 to represent the unconsolidated, St. Peter, Prairie du Chien, and Jordan aquifers. The local model domain was divided into a three-dimensional, non-uniform grid with 376 rows, 414 columns, and 4 active layers.

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The particle-tracking package, MODPATH, was used in conjunction with the calibrated flow model to create the 10-year time-of-travel pathlines necessary for partially delineating the WHPAs for the Township wells. Due to fracture flow conditions in the Prairie du Chien aquifer, a fracture analysis was also completed following MDH guidelines and composite capture zones were delineated. The composite capture zones were used to delineate the final WHPA for each well. A combined pumping rate from all wells of approximately 6,725 m3/day (1,235 gallons per minute [gpm] or 1.78 million gallons per day) was applied based on 2001 to 2005 water usage and the projected water demand, following the Minnesota Department of Health (MDH) guidelines.

In accordance with MDH guidance documents, the vulnerability of each Township well was based on the following six categories: Minnesota Department of Natural Resources (DNR) geologic sensitivity rating, casing integrity, casing depth, pumping rate, isolation distance from contaminant sources, and chemical and isotopic information. As a result of this rating system, all Township wells are considered vulnerable due to either tritium detections or total well vulnerability scores in excess of 45 points. The associated vulnerability in the vicinity of the Township wells and across the Drinking Water Supply Management Area (DWSMA) is very low to high.

A complete description of the modeling is detailed later in this Report. From the modeling results, a WHPA was delineated for all of the Township's wells. A DWSMA was established by overlaying the WHPAs over a map of the area. Property lines, roadways, and major bodies of water were used to delineate this area. Figure No. 2 shows the locations of all seven Township wells, Figure No. 12 shows the WHPA, and Figure 13 shows the final DWSMA.

13707.000

II. DATA ELEMENTS AND ASSESSMENT (4720.5200)

A. <u>REQUIRED DATA ELEMENTS</u>

1. <u>Physical Environment Data Elements</u>

Physical data includes natural and man-made features that may have an influence on areas surrounding the wellhead, and ultimately the well itself. Whether or not an aquifer is confined throughout the area determines the value to the WHP effort of using specific elements.

- a) <u>Precipitation</u>. Recharge was considered in some areas of the model. More discussion on this will be included in the modeling section of this report.
- b) <u>Geology</u>. Data gathered from well logs and regional studies were used to construct a geologic map along with descriptions of the geology including aquifers, confining layers, recharge areas, discharge areas, and any sensitive areas.
- c) <u>Soils</u>. Soil characteristics influenced the subsequent delineation of the wellhead protection areas.
- d) <u>Water Resources</u>. Water bodies, watershed areas, and their characteristics did not influence the subsequent delineation of the wellhead protection areas due to their disconnect with the bedrock aquifers.

2. Land Use Data Elements

Regardless of whether an aquifer is unconfined or not, land use is always a factor in determining and managing the DWSMA around the WHPA. Unconfined aquifers, however, are particularly vulnerable to land use factors since they can enable the downward migration of groundwater.

- <u>Land Use</u>. Parcel boundaries, political boundaries, land surveys, and land use maps were used to establish a Drinking Water Supply Management Area for the Township wells.
- b) <u>Public Utility Services</u>. Maps of transportation routes, storm and sanitary sewers, water supply systems, petroleum and gas pipelines, and construction and maintenance records of public water supply wells were used to establish a DWSMA. This data will also be used in Phase II planning activities.

Well logs and pumping records were used for modeling and the vulnerability assessments.

3. Water Quantity Data Elements

Levels in lakes and streams can have an impact on an aquifer that is unconfined if there is a geologic connection between the two. From the review of geologic cross sections and select well logs, it does not appear that surface waters are in direct connection hydraulically with the bedrock aquifer. However, surrounding high capacity wells in the same aquifer can influence each other if the withdrawal rate is large enough.

- a) <u>Surface Water Quantity</u>. Surface water bodies did not influence the subsequent delineation of the wellhead protection areas, but were still included in the model.
- b) <u>Groundwater Quantity</u>. A list of high capacity wells in the area was obtained and is shown in Tables 1 and 2. Twenty other wells, besides the seven Township wells, were identified within the model domain. See Figure 2.

4. <u>Water Quality Data Elements.</u>

Water quality is an indication of aquifer vulnerability.

- a) <u>Surface Water Quality</u>. Since surface water in the vicinity of the Township is not in direct hydraulic connection with the subject bedrock aquifers, water quality was not reviewed.
- b) <u>Groundwater Quality</u>. A summary of groundwater bacteriological tests and chemical tests, both organic and inorganic, has been

included as part of the Vulnerability Assessment of the wells. Tritium has been detected in Township Wells 1 and 6 and has not been tested for in the other wells. Tritium is an indicator of vertical migration travel time and aquifer vulnerability. The presence of tritium indicates that some portion of the water entered the aquifer(s) after 1953. Nitrate was also detected at low concentration in Well No.5 and not detected in the remaining wells.

B. ASSESSMENT OF DATA ELEMENTS

1. <u>Use of the Wells</u>

The Township wells provide all the water for the distribution system for White Bear Township and portions of the City of North Oaks. The Township currently has six active water supply wells (Well Nos. 1, 2A, 3, 4, 5, and 6), located in and around the Township (Figure 1). In the future, Well No. 2 is to be for emergency use. Well No. 2A was constructed to replace Well No. 2 and the past pumping data for Well No. 2 was applied to Well No. 2A as no change in its use is anticipated. Well construction details and well logs are in Appendix II. Past and projected pumping rates are presented in Table 1.

2. Quality and Quantity of Water Supplying the Public Water Supply Wells

Water samples are regularly obtained from the Township wells and tested for regulated contaminants. Report summaries from the past five years show no reports of contamination in a Township well. Well Nos. 1 and 6 have tested positive for tritium with the other wells not tested. Nitrate was detected at low concentration in Well No. 5 and tested for but not detected in the remaining wells.

Pumping records submitted to the Minnesota Department of Natural Resources were used to identify the extraction rates of the Township wells. Pumping data for the Township's six wells is included in the Appendix. 3. <u>The Land/Groundwater Uses in the Drinking Water Supply Management</u> <u>Area</u>

Land and groundwater uses within the DWSMA may have effects on the aquifer used by Township wells. The vulnerability assessment section of this report provides more detail on the subject of land use conclusions.

III. WELLHEAD PROTECTION AREA AND DRINKING WATER SUPPLY MANAGEMENT AREA DELINEATION (4720.5205)

A. BOUNDARIES, WELLHEAD PROTECTION AREA MAP

A Map of the WHPA is shown in Figure 12.

B. <u>DOCUMENTATION</u>

1. Physiographic and Hydrogeologic Setting

The geology in the vicinity of the Township consists of Quaternary-Aged glacial and post-glacial deposits that are underlain by Paleozoic-Aged bedrock. The glacial deposits consist of Superior Lobe sand and silt lacustrine deposits, till, and outwash. These are underlain by Pre-Late Wisconsinan Keewatin and Grantsburg Sublobe till, outwash and sandy lacustrine sediment. The Superior Lobe, due to its higher sand content, is generally not considered an effective hydraulic barrier. However, the underlying till deposits are an effective barrier as are the uppermost bedrock Glenwood or basal St. Peter shales.

Bedrock geology is presented in plan view on Figure 3 with unconsolidated and bedrock geology presented in cross section on Figure 4. Several buried bedrock valleys expose the surface of the St. Peter Sandstone and Prairie du Chien Group.

Ground-water flow in the uppermost bedrock aquifers generally to the southwest as shown by Figure 5, which is consistent with previously published data in the Ramsey County Geologic Atlas (MGS, 1992). The map of the Prairie du Chien–Jordan potentiometric surface was created from water level data obtained from the Minnesota County Well Index (CWI). Since the water level measurement dates varied by decades, a polynomial regression was used using Surfer 7 to contour the dataset.

An extensive discussion on regional and local geology and hydrogeology is also presented in Appendix I in the Draft Part I Wellhead Protection Plan Submittal (RSWCD,2003). Well Nos. 2A and 3 through 6 are completed in the Prairie du Chien and Jordan Aquifers. Well No. 1 is completed in the Jordan sandstone only. Well No. 2 is only for emergency use.

2. <u>Delineation Criteria.</u>

The following discussion represents a summary of the five criteria for delineating the WHPA, which are specified in MR 4720.

- a) <u>Time of Travel</u>. Pathline analysis, using a 10-year time of travel, were used when simulating ground-water movement in the Prairie du Chien and Jordan aquifers which supply all Township wells. In addition, the fracture flow delineation method developed by the MDH (MDH, 2005) was implemented to calculate fixed radii and upgradient extension delineations for each well.
- Aguifer Transmissivity. The transmissivity (T) of an aguifer is b) defined as the rate at which water is transmitted through a unit width of aquifer under a hydraulic gradient. It equals the hydraulic conductivity multiplied by the aquifer thickness. An aquifer pumping test was performed in 2001 using Township Well No. 3, which lies between White Bear and Bald Eagle Lakes. Township Well Nos. 4 and 6 (west and east, respectively) were used as observation wells. Several interpretations of the data were made, but the range of values recommended by MDH indicated transmissivities in the area range from 5,185 to 6,193 m2/d. This translates to a hydraulic conductivity of between 76.6 and 91.5 m/d for the combined Prairie du Chien - Jordan aquifer. The value for the Prairie du Chien and Jordan aguifers used in the Minnesota Pollution Control Agency's Metro Model is 12 m/d (Seaberg and Hansen, 2000). These two values would provide the range used for the Prairie du Chien - Jordan aquifer in the flow model.
- c) <u>Daily Volume of Water Pumped</u>. The daily volume selected for each well used in the WHPA was based on MR 4720.5510,

subpart 4 and MDH guidelines, which state that volumes used in the WHPA delineation can be determined from either 1) the projected use of each well as a percent of the total system, or 2) the greatest annual volume of water used over the previous 5 years, whichever is greater. Historical usage from 2001 to 2005 was used to determine the pumping rates for each well to delineate the WHPA. The Township's historical pumping records from 2001 to 2005 indicate that the sum of the maximum annual usage for each well was 649.1 million gallons per year (mgy) (approximately 2.46 million cubic meters per year [m3/yr]) based on the maximum rates for each well over the 5-year period, or approximately 1.78 million gallons per day (mgd) (approximately 6,725 cubic meters per day [m3 /day]). The projected pumping rates for each well used in the model are listed in Table 1.

- d) <u>Hydrologic Boundaries</u>. Hydrologic boundaries that affect the delineation criteria are:
 - (1) <u>Surface water features</u>. The Mississippi River is the local and regional discharge point of the flow systems of interest, therefore, the River affects the direction of groundwater flow and was included in the regional flow model as a constant-head boundary. Area lakes near the Township Wells were included as river boundaries and lakes near the edge of the local model were included as constant-head boundaries.
 - (2) <u>Geological boundaries</u>. Well records from the CWI, as well as information from county geologic atlases were used in the development of the conceptual hydrogeologic model and in the vulnerability assessments.
 - (3) <u>High capacity wells</u>. LBG obtained ground-water appropriation permit data from the Minnesota Department of Natural Resources (DNR) and determined there are 20 high capacity wells other than the Township's wells located

in the model domain, whose pumping could influence ground-water flow and/or create negative boundary conditions. These wells were included in the model using their historical maximum pumping rates from the previous 5 years (2001 to 2005), as obtained from the DNR Water Permit Program website Appropriations (www.dnr.state.mn.us/waters/watermgmt_section/appropri ations/wateruse.html). The high-capacity wells are illustrated on Figure 2, and summarized in Table 2.

- (4) <u>Overland Drainage.</u> Surface runoff is directed toward local streams, wetlands and lakes.
- 3. <u>Delineation Method.</u>

The ground-water flow field was determined by using MODFLOW. Simulated heads were compared to static water levels obtained from the calibration data sets used in earlier models. Static levels from 1,075 wells screened in various geologic units were used for calibrating the groundwater flow model.

Ground-Water Flow Models. The models used in this project were a) originally developed by the Ramsey Soil and Water Conservation District (RSWCD) in 2003 and these were based on even earlier models. The draft report discussing their development can be found in Appendix I. The previous modeling effort used two models; a large, regional-scale model with distant and welldefined natural boundaries and a smaller, local-scale model. The purpose for this 'telescopic mesh refinement' is to use the large model with the well-defined boundaries to establish the boundaries for the smaller, more refined, local model. For the purposes of this study, the regional-scale model was not modified and minor modifications were made to the local model to improve accuracy, achieve a better calibration, and incorporate updated information in the form of more recent pumping rates and any new wells that may have been installed since 2003. The regional and

local model domains are presented on Figure 6. The local model domain was divided into a three-dimensional, non-uniform grid with 376 rows, 414 columns, and 4 active layers. The model grid in the vicinity of the Township wells is presented on Figure 7.

- Modifications to the model's (1) Boundary Conditions. boundary conditions included minor changes to the constant-head conditions applied to the northeastern bounds to more accurately reflect ground water levels in that area. Also, the lakes in the area of the wells were changed from constant-head cells to river cells so as to better simulate the interaction between ground water and surface water in these areas. A re-analysis of the 2001 pumping test results necessitated a change in the hydraulic conductivity values for the Prairie du Chien and Jordan aguifers in the area of interest. Finally, all of the high-capacity wells were redefined using the highest pumping rate for the period 2001-2005, with any post-2003 wells added.
- (2) <u>Discretization of Aquifer Properties</u>. Discretization of aquifer properties involves assigning initial values to each cell in the model domain. Hydraulic properties input for this model included horizontal components for hydraulic conductivity (kx and ky), vertical hydraulic conductivity (kz), specific yield (Sy), specific storage (Ss), and effective porosity (ne) (required for MODPATH to calculate linear flow velocity).

The initial hydraulic conductivities for the model were those that were used in the original RSWCD model. Some of the conductivity values in the surficial drift aquifer were changed to better reflect actual conditions and improve the calibration. The values for the Prairie du Chein and Jordan aquifers were also modified to reflect the pumping test results. The porosity values for the Prairie du Chien and Jordan aquifers were reduced from a global 0.30, to 0.056 for the Prairie du Chien and 0.25 for the Jordan.

4. Delineation Results.

a) <u>Calibration and Uncertainty</u>. The goal of numerical model calibration is to obtain a reasonable correlation between the simulated model results and observed field data. The calibration process is completed by running several steady-state simulations and comparing calculated heads to the measured head data at known calibration points within the model domain. For the local model calibration, 1,075 well locations were used for comparison. These wells are private or municipal and are completed in the glacial sediments and bedrock units.

Figure 8 presents the calibration wells and simulated potentiometric contour map for steady-state conditions in the Prairie du Chien - Jordan aquifer. Flow direction is variable, but generally flows to the southwest. Using the head values from the 1,075 calibration well locations, an error analysis on the steady-state model was performed. Figure 9 presents a plot of the results of this analysis indicating that the overall root mean squared (RMS) error for the unconsolidated and bedrock aquifers is approximately 4.9 percent. Most of the wells are completed in the St. Peter Sandstone, and Prairie du Chien and Jordan aquifers (layers 3 and 4). In general, a RMS of approximately 10 percent or less is acceptable (National Ground Water Association, 1998).

The calibration data (Figure 9) shows a reasonably close correlation between measured and calculated head values. While the model is based on a large amount of data, the head measurements used in the calibration are single measurements that are listed on each well record, and were collected during different seasons over several decades.

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More extensive observation data collected within the same general time period, and more accurate, site-specific T values throughout the model domain could improve calibration and model confidence.

In areas where fracture flow is likely, the uncertainty can be unacceptably high. To address this situation, the MDH had developed a procedure to minimize the uncertainty associated with fracture flow conditions. As defined in the MDH guidance (MDH, 2005), delineation techniques were used to determine fixed radii and upgradient extensions for each of the Township wells.

A sensitivity analysis was begun as part of the modeling effort, but it became apparent that any changes in the modeled capture zones for the wells would still fall completely within the calculated capture zones from the fracture analysis.

b) <u>WHPA Delineation</u>. With the flow fields calibrated, a ground-water pathline analysis and fracture flow analysis were performed to delineate the capture zones and ultimately the WHPA.

The pathline analysis consisted of using MODPATH, a flowpath calculation program, to trace the 10-year capture zone for each of the wells by backtracing 20 flow paths from the wells for a 10-year period (Figure 10).

Township Well Nos. 2A and 3 through 6 are wells that are open to both a porous media aquifer, the Jordan, and a solution weathered or fractured aquifer, the Prairie du Chien. This requires a fracture flow analysis as described by the MDH (MDH, 2005). Township Well No. 1 is open only to the Jordan aquifer; however, the Jordan aquifer is hydraulically connected to the Prairie du Chien with a high likelihood of leakage between the two. This requires a slightly different fracture flow analysis. Both of these analyses are essentially calculations that establish a radial capture zone based on the 10-year volume of water pumped. Special considerations had to be made for Well Nos. 3 and 6, whose initial fixed radii overlapped. This radial zone is then extended upgradient in the direction of ground-water flow (also plus or minus 10 degrees) to create a conservative wellhead capture area to account for the uncertainties related to fracture flow (Table 3 and Figure 11).

After both the pathline analysis and fracture flow analysis were completed, the capture zones delineated for each method were merged with one another. This concatenation created a final composite WHPA capture zone (Figure 12) for use in delineating the DWSMA.

5. <u>Conjunctive Delineation.</u>

A conjunctive delineation involving the consideration of surface waters in making the final wellhead protection area delineation was not considered necessary for White Bear Township. The reason is that the Township's wells are completed in either the Jordan sandstone, cased at depths of about 300 to 365 feet or in the combined Prairie du Chien - Jordan aquifer, cased at depth of about 175 to 260 feet. While there are significant areas in the DWSMA that are not covered by the St. Peter sandstone, most areas offer some degree of hydraulic separation between the bedrock and the ground surface by clayey till (L-score ranging from 1 to 24), or offer hydraulic separation simply by the distance to bedrock through the unconsolidated materials. An increased depth to bedrock translates to sufficient increases in travel time through the unconsolidated materials; resulting in significant potential attenuation of pathogens and nitrates. MDH water quality support this assertion that no systemic pathogen or nitrate contamination has been reported for White Bear Township (except for a low level nitrate detection of 0.69 mg/l at Well 5 in April 2005) since 1993, when these data started to be archived in computer databases.

Accordingly, the setting offers sufficient hydraulic though either geologic confining material or thickness of unconsolidated materials to render a conjunctive delineation unnecessary (Figure 1 in Appendix IV).

C. BOUNDARIES FOR THE DWSMA.

The criteria used to delineate the DWSMA (Figure 13) are based on public land survey features such as sections, half sections, and quarter sections that encompass the maximum time of travel simulated as defined in MR 4720.5100. In the case of this delineation, the DWSMA encompasses the concatenated capture zone presented on Figure 12. The 10- year pathlines and fracture flow delineation extend across White Bear and Bald Eagle Lakes, however, the DWSMA is not inclusive of the entire lakes because a conjunctive delineation was not necessary due to the lack of hydraulic connection between the lakes and the subject bedrock aquifers. Figure 1 in Appendix IV illustrates laterally extensive clay beneath both lakes.
IV. VULNERABILITY ASSESSMENT

A. <u>WELL VULNERABILITY</u>

The well vulnerability assessment was conducted in accordance with the MDH guidance document, *Assessing Well Vulnerability for Wellhead Protection* (MDH, 1997). A well's vulnerability is scored on a Vulnerability Assessment Worksheet based on the following six categories: DNR geologic sensitivity rating, casing integrity, casing depth, pumping rate, isolation distance from contaminant sources, and chemical and isotopic information.

The DNR geologic sensitivity rating is an empirical value determined by dividing the cumulative thickness of low permeability units (e.g. clay) above the aquifer by 10 (DNR, 1991). The resulting score is termed the "L-score". A higher L-score indicates more low-permeability material above the aquifer, and therefore a lower vulnerability. A low L-score represents higher vulnerability. For example, a rating of L-1 has a higher vulnerability than L-9, because there is less low-permeability material present above the aquifer. This type of assessment is defined by the DNR as Level 3. A Level 3 assessment was conducted for the Township wells since the aquifer is overlain by varying thicknesses of clay. As mentioned above, points are also assigned to casing integrity and depth, pumping rate, isolation distance to contaminant sources, and chemical data, in addition to the geologic sensitivity.

Vulnerability assessment worksheets and the total score of the six vulnerability categories for Well Nos. 1, 2A, and 3 through 6 are presented in Appendix III. Per MDH guidance, any well that receives an assessment rating of 45 points or greater is considered a vulnerable well. Well Nos. 2A, 3, 4, and 6 had vulnerability scores or 45 or greater. Well Nos. 1 and 5 had vulnerability scores of 10 and 40, respectively, but are still considered vulnerable due to the tritium detections in groundwater. Tritium was detected in Well Nos. 1 and 6. Tritium in ground water is a result of nuclear testing and is used as an indicator of post-1953 recharge. Nitrate was detected at low concentration in Well No. 5 and tested for but not detected in the remaining wells.

B. DRINKING WATER SUPPLY MANAGEMENT AREA VULNERABILITY

In the proposed DWSMA, the ground water that supplies the Township wells is from the Prairie du Chien - Jordan aquifer that underlies glacial deposits (Ramsey and Washington County Atlas Series, Atlas C-7 and C-5, respectively). The glacial deposits are composed of Superior Lobe sand and silt lacustrine deposits, till, and outwash. Deposits also consist of Pre-Late Wisconsinan Keewatin and Grantsburg Sublobe till, outwash and sandy lacustrine sediment. The Superior Lobe, due to its higher sand content, is generally not considered an effective barrier to the downward migration of contaminants from grade. Underlain deposits, however, do act as effective barriers where till is present or where Glenwood or basal St. Peter shales are present (Figure 4, and Figure 1 in Appendix IV).

Although the Township wells are constructed in the Prairie du Chien - Jordan aquifer, they may be receiving water laterally that has been recharged from the unconsolidated aquifer in the vicinity of the Township well field, where the Prairie du Chien Group is bisected by bedrock valleys (Figure 3). These erosional features are areas where the bedrock aquifer is in direct contact with the unconsolidated aquifer, therefore, in contact with relatively younger ground water as indicated by the tritium results.

The geologic sensitivity in the vicinity of the DWSMA was previously delineated in the Ramsey and Washington County Geologic Atlases. MDH reviewed 358 CWI lithology logs, and calculated L-scores for each well within the DWSMA with approximate delineations as illustrated on Figure 14. As discussed in Section IV-A the DNR geologic sensitivity rating is an empirical value determined by dividing the cumulative thickness of low permeability units (e.g. clay) above the aquifer by 10 (DNR, 1991). LBG reviewed select logs and concurred with MDH's results, indicating the geologic sensitivity differs from that previously delineated in the local county atlases. The L-score results ranged from 1 to 24; which, indicates much of the DWSMA is underlain by low-permeable material creating hydraulic separation from grade.

Geologic sensitivity was not completed beneath the lakes. As a result, a northsouth cross-section was created to illustrate laterally extensive clay beneath both lakes (Figure 1 in Appendix IV), and cross-sections (Figure 4) from the Ramsey and Washington County Atlas Series (Atlas C-7 and C-5, respectively) were reviewed and illustrated the same.

For the DWSMA vulnerability assessment, and pursuant to MDH guidance (MDH, 1997), all geologic sensitivity ratings were automatically increased by one classification due to the presence of tritium. As a result, the vulnerability in the vicinity of the Township wells and across the DWSMA ranges from very low to high (Figure 15).

V. CONCLUSIONS AND RECOMMENDATIONS

The WHPA delineations for the Township Wells were created using maximum pumping rates and conservative assumptions in the fracture flow delineation. These factors combine to 'build in' a safety factor, which is necessary when attempting to simulate natural systems and their inherent heterogeneity.

While the delineations are considered to be conservative and are based on the best available data, there is some information that could improve the quality of any future reevaluations. Recommended future tasks include,

- Sample all of the Township Wells for tritium. This will indicate the relative age of the water each of the wells is producing and provide information as to its source.
- The Township Wells and White Bear and Bald Eagle Lakes be studied for stable isotopes of oxygen (O¹⁸) and deuterium (H²) to indicate the possible mixing of lake water with ground water.
- Lastly, studies should be conducted to assess the extent of the clay layer beneath the lakes to determine its full extent and effectiveness as a separating layer between the lakes and deeper ground water.

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TABLES

Table 1

Municipal Well Pumpage and Pumping Rates used in the WHPA Delineation Part I Wellhead Protection Plan White Bear Township, Ramsey County, Minnesota

Well	Aquifer	Casing Depth (feet)	Well Depth (feet)	2005	Pa:	Projected value used in the WHPA delineation analysis (MGY) 2006-2010	Projected value used in the WHPA delineation analysis (m3/d) 2006-2010			
1		365	445	21.2	20.4	52.2	41.0	55.0	55.0	570.2
1	CJDN	505	445	21.2	30.4	JZ.Z	41.9	55.9	55.9	579.5
2	CJDN	375	435	0.0	0.0	1.7	3.3	2.7	3.3	34.2
2A	OPDC-CJDN	299	420						0.0	0.0
3	OPDC-CJDN	200	372	36.9	13.8	38.7	6.7	26.2	38.7	401.1
4	OPDC-CJDN	263	408	12.9	1.7	6.4	0.9	6.5	12.9	133.7
5	OPDC-CJDN	230	412	280.1	296.4	231.8	238.5	231.9	296.4	3071.9
6	OPDC-CJDN	175	360	190.0	235.0	216.9	183.6	241.9	241.9	2507.1
Totals				541.1	577.3	547.7	474.9	565.1	649.1	6727.3

Notes:

*: Projected use is the maximum annual pumping volume between 2001 and 2005.

CJDN: Jordan

OPDC-CJDN: Prairie du Chien - Jordan

MGY: Million gallons per year

m³/day: cubic meters per day

Values used in the WHPA delineation analysis represent the maximum value of the previous five years.

Maximum annual pumping volume for the municipal system for the past five years.

Projected annual and daily pumping volume for the municipal system.

Table 2

Appropriation Permit Wells in Model Domain -Wellhead Protection Plan- Part I White Bear Township, Ramsey County, Minnesota

Well		Coord	linates	Pumping Rate (2001-2005 Maximum)
		Easting	Northing	MGY
DELLWOOD HILLS GOLF CLUB 2	224611	501848	4994729	6.4
DELLWOOD HILLS GOLF CLUB 1	215930	501745	4994129	9.8
GEM LAKE HILLS INC	151584	497492	4990044	31.8
H B FULLER	151562	495939	4988090	49.3
MAHTOMEDI 5, CITY OF	433255	501697	4988635	111
MAHTOMEDI 4, CITY OF	208506	501844	4988585	132.8
MAHTOMEDI 3, CITY OF	208497	503922	4990807	103.6
MANITOU RIDGE GOLF CLUB A	127293	499902	4987223	33.9
M-FOODS DAIRY LLC	233149	497841	4989995	220.9
PINE TREE APPLE ORCHARD	450669	503641	4995514	5.9
VADNAIS HEIGHTS 2, CITY OF	127265	495736	4988191	167.8
VADNAIS HEIGHTS 1, CITY OF	112222	496846	4988186	160.9
VADNAIS HEIGHTS 4, CITY OF	127271	495042	4991212	192.3
VEECO INSTRUMENTS INC-COOLING	597075	495687	4993278	33.6
WHITE BEAR LAKE AREA SCHOOLS	655934	500201	4989535	4.9
WHITE BEAR LAKE AREA SCHOOLS 2	626779	499102	4992662	4.3
WHITE BEAR LAKE 4, CITY OF	226566	499552	4987778	606.7
WHITE BEAR LAKE 1, CITY OF	14005	499955	4987878	111.2
WHITE BEAR LAKE 3, CITY OF	205733	500157	4987778	472.8
WHITE BEAR YACHT CLUB	866165*	502091	4993073	18

Notes:

- Well pumping rates were downloaded from the MN DNR Water Appropriation Permit Program website. The five-year maximum rate was calculated from 2001 to 2005 data for the above listed wells.

- Coordinates are UTM, Zone 15, NAD83, and are from the MN County Well Index (CWI) except for * which is from the appropriation database.

MGY: Million gallons per year

MN CWI: Minnesota County Well Index

*: MN CWI Unique ID not available (may be 676449). This is the Appropriation Permit Number.

Table 3

Fracture Flow Fixed Radii and Upgradient Extension Calculations Part I Wellhead Protection Plan White Bear Township, Ramsey County, Minnesota

Well No.	Pumping Rate	Duration	Effective Porosity	Aquifer T	hickness	Capture Zone Radius	Volume of Capture Zone for Revised Radius Calculations	Revised Capture Zone Radius	Upgradient Length to Radius Center (using revised Capture Zone)*	Primary Angle then +/- 10 degrees from this angle
	m3/d	days		ft	m	m	m3	m	m	degrees
1	41.1	3650	0.056	135	41.148	143.95	na	143.95	226.01	44
2A	34.2	3650	0.056	30	9.144	278.56	na	278.56	437.34	44.1
3	401.1	3650	0.056	82	24.9936	577.02	26143125	604.24	948.66	21.4
4	133.7	3650	0.056	52	15.8496	418.34	na	418.34	656.80	20.9
5	3071.9	3650	0.056	105	32.004	1411.17	na	1411.17	2215.54	31.8
6	2507.1	3650	0.056	97	29.5656	1326.39	163409196	1388.96	2180.67	31.5

Area of Well 3&6 Overlap	732293 m2
Overlap Aquifer Thickness	25 m
Volume of Well 3&6 Overlap	18307328 m3
Volume Well #3	26143125 m3
Volume Well #6	163409196 m3
Overlap volume apportioned to Well #3	2524953 m3
Overlap volume apportioned to Well #6	15782374 m3
Revised Well #3 volume	28668078 m3
Revised Well #6 volume	179191571 m3
Revised Well #3 radius	604 m
Revised Well #6 radius	1389 m

Notes:

m3/d: cubic meters per day m: meters m2: square meters m3: cubic meters ft: feet na: not applicable *: Equals Revised Capture Zone Radius multiplied by 1.57.

Reference: MDH, 2005. Guidance for Delineating Wellhead Protection Areas in Fractured and Solution-Weathered Bedrock in Minnesota, pp. 8-12.

FIGURES































APPENDIX I

RSWCD Draft Report

APPENDIX II

White Bear Township Municipal Well Logs

Unique No. 00226570 County Name Ramsey	MINNESOTA D	EPARTMENT OF HEALTH BORING RECORD Statutos Chapter 1021	Update Date 2003/03/11 Entry Date 1991/08/14
Township Name Township Dange Dia Costia	Winnesola	Well Depth Depth Comple	tod Data Wall Completed
30 22 W 25		445 ft. 445 ft.	t. 1956/09/00
Well Name WHITE BEAR TOWNSHIP 1		Drilling Method	
FASTWOOD MANOR	·······	Drilling Fluid We	
		Fr	om ft. to ft.
WHITE BEAR LAKE MN			
GEOLOGICAL MATERIAL COLOR HARDNESS	FROM TO	Casing Diameter Weight(I	bs/ft)
HARDPAN	0 32	20 in. to 39 ft	
PLATTEVILLE	32 52	12 in. to 365 ft	
SHALE	52 57	-	
ST. PETER SANDROCK	57 172	-	
SANDROCK & SHALE	172 212	Screen N Open	Hole From 365 ft. to 442 ft.
SHAKOPEE	212 347	Make	Туре
JORDAN	34 7 445	_	
	445		
		Static Water Level 72 ft. from Land s	Surface Date 1956/09/0
		PUMPING LEVEL (below land surface	e)
		165 ft. after hrs. pun	nping 627 g.p.m.
		Well Head Completion	
		Pitless adapter mfr	Model
		Casing Protection	L 12 in. above grade Borings ONLY)
		Grouting Information Well grou	uted? Ves No
		Material From To (ft.) Ar	mount(yds/bags)
		G 0 365 35	1 S
		Nearest Known Source of Contamina	tion
		ft. direction	type
		Well disinfected upon completion?	🗌 Yes 🔲 No
		Pump Not Installed	Date Installed Y
		Mfr name FAIRBANKS MORSE	
	·····	Model AV 4763	HP 50 Volts 220
REMARKS, ELEVATION, SOURCE OF DATA, etc.		Drop Pipe Length 196 ft.	Capacity 500 g.p.m
CASING: 020 TO 0039;012 TO 0365.		Any not in use and not cooled well(-)	
G.W.Q. NO. 0070			
		Was a variance granted from the MDH	for this Well? ∐ Yes ∐ No
USGS Quad: White Bear Lake East Elevation 97 Aquifer: CJDN مائر 84	4 -6120	Well CONTRACTOR CERTIFICATION	Lic. Or Reg. No. <u>62012</u>
,	· — -	License Business Name	

Unique No. 00226571		MINN	ESOTA DE	PARTMEN	T OF HEA	LTH		Update [)ate 200)2/02/13
County Name Ramsey		WEL	L AND	BORIN	G REC	ORD		Entry Da	te 199	1/08/14
	-	M	innesota S	Statutes Ch	apter 103 	1				
Township Name Township Range I	Dir Section	Subse	ction	Well Dep	th ft.	Dept 435	h Complete ft.	ed Date	Well Com 61/00/00	pleted
		AD		Drilling	lothod					
	F 2									
Contact's Name WHITE BEAF LAKEWOOD & STACKER AV WHITE BEAR LAKE MN	R #2			Drilling F	luid		Froi	Hydrofract m	ft. to	Yes [] No ft.
				Use C	ommunity	Supply (n	nunicipal)			
				Casing	Dr	ive Shoe	? 🗌 Yes	s 🗌 N	Hole Diar	neter
GEOLOGICAL MATERIAL COLOR	HARDNESS	FROM	то	Casing D	iameter	45 ft	Weight(Ib	s/ft)		
YELLOW GRAVEL		0	35	8	in to 3	45 ft				
DRIFT & SHALE		35	45		in, to 5	<u> </u>				
LIMESTONE		45	52							
SHALE		52	57							
SANDSTONE		57	211	Screen	N		Open H	lole From	375 ft.	to 435 ft.
		211	355	Make				Туре		
SANDSTONE		355	435							
				Well Head Pitless a Casing F At-gra	d Comple dapter mfr Protection ade(Enviro	tion 	Not surface) hrs. pump Vells and B Well grout	orings ONL	g.p.m. flodel 12 in. abo Y) Yes	ve grade
				Nearest M Well dis Pump Mfr nam Model	Known So ft. infected u	direc direc pon comp	contaminati tion letion?	ion] Yes Date In: HP	type No stalled 0 Vol	ts
REMARKS, ELEVATION. SOURCE OF	DATA, etc.			Drop Pip	be Length		ft.	Ca	pacity	g.p.m
CASING: 012 TO 0045;008 TO 0375.				Туре						
				Any not in	use and r	not sealed	l well(s) on	property?	Yes	□ No
USGS Quad: White Bear Lake East	Elevation 96	7		Was a va	riance gra	nted from	the MDH fo	or this Well?		L No
Aquifer: CJDN Report (Alt Id: 84	-6120		Well CON License Name o	NTRACTO Business f Driller	R CERTI Name	FICATION	Lic. Or R	eg. No.	

Unique No. 676446			MINN	ESOTA D	EPARTMENT OF HEALTH Update Date 2003/10/30
County Name Ramsey			WEL	L ANE	BORING RECORD
	_			innesota	
Township Name Township	Range	Dir Section	ו Subse	ction	420 ft. 420 ft. 2002/04/25
			7 ^		Drilling Method Cable Tool
		IF '4	2 H		
4099 BELLAIRE AV	IITE BEAI	R TOWNSHIP			Drilling Fluid Well Hydrofractured? Yes No
WHITE BEAR TOWNSHIP	/N 5511()			Water From ft. to tt.
Contact's Name WH	IITE BEAI	R TOWNSHIP			Use Community Supply (municipal)
1281 HAMMOND RD					Casing Drive Shoe? Ves N Hole Diameter
WHITE BEAR TOWNSHIP	/N 5511()			in. to 420 ft
GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	то	Casing Diameter Weight(Ibs/ft)
SAND/RUBBLE	BROW	HARD	0	25	20 in. to 33 ft 78.6
PLATTEVILLE	GRAY	HARD	25	30	- <u>14 in. to 299 ft 54.6</u>
GLENWOOD	BLU/G	MEDIUM	30	35	-
ST. PETER	TAN/W	SOFT	35	143	-
ST. PETER	GRAY	HARD	143	197	Screen N Open Hole From 299 ft. to 420 ft.
SHAKOPEE/ONEOTA	PINK	HARD	197	330	Make Type
JORDAN	TAN	MEDIUM	330	410	
ST. LAWRENCE	BLUE	HARD	410	420	_
					Static Water Level 55 ft from Date 2003/04/21
					BLIMDING LEVEL (below land surface)
					109.7 ft. after 4 hrs. pumping 1120 g.p.m.
					Well Head Completion
					Pitless adapter mfr Model
					Casing Protection 2 12 in. above grade
					At-grade(Environmental vvelis and Borings ONLY) Crouting Information No
					Material From To (ft.) Amount(yds/bags)
					G 0 14 25 S
					G 14 299 63 Y
					Nearest Known Source of Contamination
					Well disinfected upon completion? Yes No
					Mfr name
					Model HP Volts
REMARKS, ELEVATION, SO	URCE OF	DATA, etc.			Drop Pipe Length ft. Capacity g.p.m
ELEVATION: 949 FT, MSGS (QUAD: C1	18			Туре
COMPLETED WITH TKDA &	ASSOCIA	TES			Any not in use and not sealed well(s) on property?
					Was a variance granted from the MDH for this Well? Ves V No
USGS Quad: White Bear Lak	e East	Elevation	6100		Well CONTRACTOR CERTIFICATION Lic, Or Reg. No. 71015
Aquiler		AIT IO: 84	-0120		

License Business Name

Name of Driller

Report Copy

HE-01205-06 (Rev. 9/96)

SIGAFOOS, R.

Unique No. 00224679		MINNESOTA DEPARTMENT OF HEALTH Update Date 2					Date 2004/01/06			
County Name Ramsev		WELL AND			BORING RECORD			Entry Dat	te 1991/08/14	
			M	innesota S		r 1031	Danath Car			
Township Name Township	Range D	W 11	n Subse	AABC	372	ft.	372	mpiete ft.	ed Date 19	75/00/00
Well Name WHITE BEAR	TOWNSHI	P 3			Drilling Meth	od				
Contact's Name TC					Drilling Eluis			Mail	Hydrofract	
EAST ST. & PARK AVE					Drining Fluid			Fror	n	ft. to ft.
WHITE BEAR LAKE MN						unity Su	oply (munic	inal)		
					Casing	Drive	Shoo2			Hole Diameter
					Casing	Dilve	Silver (
GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	то	Casing Diam	eter	Wei	ght(lbs	s/ft)	
WET MUCK	LIGHT		0	10	30 in. to	o 151	ft			
CLAY & STONES	GRAY		10	40	24 in.to	200	ft			
GRAVEL & STONES	GRAY		40	70						
GRAVEL	BROW		70	94						
SAND	RED		94	95	Screen N)pen H	ole From	200 ft. to 372 ft.
SANDY	DK. BR		95	105	Make				Туре	
SAND	BROW		105	135						
STONE			135	150						
STONES & BROKEN SHAK) LIGHT		150	151	Static Water L	evel 1	5 ft. from L	and su	rface	Date 1975/00/0
SHAKOPEE	TAN		151	185	PUMPING LE	VEL (bei	low land su	ırface)		
SHAKOPEE DIRTY	LT. TA		185	195	64 ft. :	after	hrs.	pump	oing 2000	g.p.m.
SHAKOPEE	LIGHT	V.HARD	195	225	Well Head Co	mpletio	n		Δ.	Andal
SHAKOPEE	PINK	V.HARD	225	270	Casing Prote	ction				12 in. above grade
SHAKOPEE	TAN		270	275	At-grade(Environm	ental Wells	and B	orings ONL	Y)
SHAKOPEE	TAN		275	280	Grouting Info	rmation	We	l grout	ed?	Yes 🗌 No
SHAKOPEE	PINK		280	282						
JORDAN	WHITE	SOFT	282	305						
JORDAN FINE	PINK		305	320						
JORDAN COARSE	WHITE		320	325						
ST. LAWRENCE SHALE	WHITE		325	340	Nearest Know	vn Soure ff	ce of Conta	minati	on	type
SANDSTONE	PINK	HARD	340	350	Well disinfe	cted upor	n completion	ר? ר] Yes [No
SANDSTONE	PNK/G	HARD	350	372	Pump [Not in	stalled		Date Inc	
					Mfr name		Blanda		Date int	Standa
					Model			ł	ΗP	0 Volts
REMARKS, ELEVATION, SC	OURCE OF	DATA, etc.			Drop Pipe L	ength	ft.		Ca	pacity g.p.m
M.G.S. NO. 1143										
					Any not in use	and not	sealed well	(s) on p	property?	
USGS Quad: White Bear La	ke West	Elevation 92	23		Was a varian	ce grante	d from the l	MDH fa	or this Well?	Yes 📋 No
Aquifer: OPCJ		Alt Id: 84	1-6120		Well CONTR			TION	Lic. Or R	leg. No. <u>02015</u>
Rei	oort C	Copy			Name of Dri	ller	<u>SIC</u>	<u>SAFOC</u>) <u>S, G</u>	
					I					

Unique No. 00226572			PARTMENT OF HEALTH Update Date 2002/02/13
County Name Ramsey		L AND innesota S	Statutes Chapter 1031 Entry Date 1991/08/14
Township Name Township Range D	r Section Subse	ction	Well Depth Depth Completed Date Well Completed
30 22	W 11 CB	BBCC	408 ft. 408 ft. 1976/06/07
Well Name WHITE BEAR TOWNSHIF	°4		Drilling Method
Contact's Name TOWN OF WH	ITE BEAR		Drilling Fluid Well Hydrofractured? Yes No
			From ft. to ft.
			Use Community Supply (municipal)
			Casing Drive Shoe? Yes N Hole Diameter
GEOLOGICAL MATERIAL COLOR I	ARDNESS FROM	то	Casing Diameter Weight(Ibs/ft)
DRIFT	0	149	<u>30 in. to 166 ft</u>
SAND ROCK & GRAVEL	149	165	24 in. to 263 ft
SANDROCK	165	186	
SHAKOPEE	186	311	
JORDAN	311	400	Screen N Open Hole From 263 ft. to 408 ft.
JORDAN & SHALE	400	408	Make Type
			Static Water Level 32 ft. from Land surface Date 1976/06/07 PUMPING LEVEL (below land surface) 86 ft. after hrs. pumping 700 g.p.m. Well Head Completion 700 g.p.m. 700 g.p.m. Pitless adapter mfr Model 700 g.p.m. Casing Protection 12 in. above grade 12 in. above grade At-grade(Environmental Wells and Borings ONLY) Grouting Information Well grouted? Yes No Material From To (ft.) Amount(yds/bags) G 0 325 250 S
			Nearest Known Source of Contamination ft. direction type Well disinfected upon completion? Yes No
			Pump Not Installed Date Installed Mfr name Model HP 0 Volts
REMARKS, ELEVATION, SOURCE OF I	DATA, etc.		Drop Pipe Length ft. Capacity g.p.m
M.G.S. NO. 1101			Туре
MEAD PARK - STILLWATER AVENUE			Any not in use and not sealed well(s) on property?
USGS Quad: White Bear Lake West	Elevation 940		Was a variance granted from the MDH for this Well? Yes No
Aquifer: MTPL A	Alt Id: 84-6120		Well CONTRACTOR CERTIFICATION Lic. Or Reg. No. <u>62012</u> License Business Name
Report C	opv		Name of Driller <u>O'BRIEN, F</u>

HE-01205-06 (Rev. 9/96)

Unique No. 00151596	MINNESOTA DE	PARTMENT OF HEALTH	Update Date 2002/02/13			
County Name Ramsey	WELL AND		Entry Date 1991/08/14			
Township Name Township Pages (Winnesota S	Well Denth Denth Complete	Data Wall Completed			
30 22	W 22 DBABBB	412 ft. 412 ft.	1987/03/25			
Well Name WHITE BEAR TOWNSH	P 5	Drilling Method Cable Tool				
Well Owner's Name WHITE BEAF	TOWNSHIP 5	Drilling Fluid Well	Hydrofractured?			
WHITE BEAR LAKE MN 55110		Fro	m ft. to ft.			
Contact's Name CITY OF WH	ITE BEAR TOWNSHIP	Use Community Supply (municipal)				
1281 HAMMOND RD		Casing Drive Shoe? Ves	N Hole Diameter			
WHITE BEAR LAKE MN 55110-			in. to 154 ft			
GEOLOGICAL MATERIAL COLOR	HARDNESS FROM TO	Casing Diameter Weight(Ib:	s/ft) in. to 412 ft			
DIRT	0 4	24 in. to 199 ft				
CLAY BLUE	4 40	18 in. to 230 ft				
GRAVEL + CLAY BLUE	40 61					
GRAY	61 72					
SAND FROCKS GRAY	72 104	Make Open H				
SAND-FINE BROW	104 142		Туре			
SAND + CLAT BROW	142 147					
	147 157					
SANDSTONE GREE	107 192					
	192 199	31 ft. after 4 hrs. pump	bing 2200 g.p.m.			
SANDSTONE PINK	335 357	Well Head Completion				
SANDSTONE GRAY	357 411	Pitless adapter mfr	Model			
SHALE GREE	411 412	Casing Protection	✓ 12 in. above grade			
		Grouting InformationWell groutMaterialFrom To (ft.)AmG023030	ed? ✔ Yes No ount(yds/bags) Y			
		Nearest Known Source of Contamination 100 ft. direction Well disinfected upon completion?	on type BOW ✔ Yes □ No			
		Pump V Not Installed Mfr name Model	Date Installed N HP Volts			
REMARKS, ELEVATION, SOURCE OF	DATA, etc.	Drop Pipe Length ft.	Capacity g.p.m			
GAMMA LOGGED 3-23-87. 0-192 DRIF 320-404	T 192-200 OSTP 200-320 OPDC	Type				
M.G.S. NO. 2772.		Was a variance granted from the MDU for				
WELL LOCATED S. OF HWY 96 AND V RD.	V. OF OTTER LAKE					
USGS Quad: White Bear Lake West	Elevation 921		Lic Or Reg No. 62012			
Aquifer: MTPL	Alt Id: 84-612	License Business Name	LIC. OF INEY. NO. <u>02012</u>			
Denert	C onv					

Unique No. 00596636			MINNE		PARTMENT OF HEALTH Update Date 2004/01/06
County Name Ramsey				L AND	Statutes Chapter 1031 Entry Date 1998/06/25
Township Name Township F	Range [) Dir Secti	on Subse	ction	Well Depth Depth Completed Date Well Completed
30	22	W 12			360 ft. 360 ft. 1998/05/22
Well Name WHITE BEAR TO	OWNSH	IP 6			Drilling Method Cable Tool
Contact's Name WHITE BEAR TOWNSHIP 6 2530 BUFFALO ST MN					Drilling FluidWell Hydrofractured?YesNoWaterFromft. toft.
					Use Community Supply (municipal)
					Casing Drive Shoe? ✓ Yes N Hole Diameter 0 in. to 360 ft
GEOLOGICAL MATERIAL	COLOR	HARDNES	S FROM	то	Casing Diameter Weight(Ibs/ft)
SAND & GRAVEL	BROW	SOFT	0	19	30 in. to 145 ft
CLAY	GRAY	SOFT	19	37	24 in. to 175 ft
GRAVEL & ROCKS	BROW	MEDIUM	37	60	
SAND & GRAVEL	BROW	MEDIUM	60	141	
LIMESTONE	TAN	HARD	141	272	Screen N Open Hole From 175 ft. to 360 ft.
SANDROCK	WHITE	MEDIUM	272	355	Make Type
SHALE	GRY/B	MEDIUM	355	360	
					PUMPING LEVEL (below land surface) 26 ft. after hrs. pumping 2000 g.p.m. Well Head Completion Pitless adapter mfr Model Casing Protection 12 in. above grade At-grade(Environmental Wells and Borings ONLY) Grouting Information Well grouted? ✓ Yes Material From To (ft.) Amount(yds/bags) G 0 175 27
					Nearest Known Source of Contamination 150 ft. direction E type BOW Well disinfected upon completion? Yes No Pump ✓ Not Installed Date Installed N Mfr name HP 0 Volts Drep Dipol conth ft Openaity Conspirate
					Type
					Any not in use and not sealed well(s) on property?
USGS Quad: White Bear Lake	East	Elevation	928		Was a variance granted from the MDH for this Well? Ves No
Aquifer: OPCJ	ort (1620025S0	6	Well CONTRACTOR CERTIFICATION Lic. Or Reg. No. 62012 License Business Name Name of Driller

APPENDIX III

Township Well Vulnerability Assessments

Vulnerability Assessment Worksheet

Well Name/No.	White Bear Township Well #1

Public Water Supplier ID No. 1620025

Minnesota Unique Well No.

226570

1. DNR vulnerability rating - assign the following point values:		
Very High	Vulnerable	
High	Vulnerable	
Moderate	25 points	
Low ("L" score of 1 to 3)	20 points	
Low ("L" score of 4 to 7)	15 points	
Very Low ("L" score of 8 to 11)	10 points	
Very Low ("L" score of 12 or greater) Glenwood and basal St. Peter shales present	0 points	
TOTAL POINTS	0	

2. Casing integrity - assign the following point values:	
Each breach of the casing.	20 points
Each casing string not grouted or extending to the land surface.	10 points
Each category for which information requested is unknown.	5 points
Each string of properly installed casing.	0 points
TOTAL POINTS	0

3. Casing depth - assign the following point values:		
<50 feet		20 points
50 to 200 feet		10 points
201 to 500 feet	365 feet	5 points
>500 feet		0 points
TOTAL POINTS		5

4. Pumping rate - assign the following point values:		
>1000 gallons/minute	20 points	
501 to 1000 gallons/minute	10 points	
50 to 500 gallons/minute 500 gpm	5 points	
<50 gallons/minute	0 points	
TOTAL POINTS	5	

5. Isolation distance from contamination sources:	
For wells <50 feet deep, assign 10 points to each source located within 100 feet of the well.	
For wells >50 feet deep, assign 10 points to each source located within 50 feet of the well.	
TOTAL POINTS	0

6. Chemical and isotopic information:		
Volatile Organic Compounds Detection	Vulnerable	
Synthetic Organic Compounds Detection	Vulnerable	
Nitrate-Nitrogen Results	Vulnerable	
>10 parts/million	Vulnerable	
>3 but ≤10 parts/million	30 points	
1 to 3 parts/million	10 points	
<1 parts/million <0.4	0 points	
Tritium Results		
>1 TU 3.6 TU, 7/13/1991	Vulnerable	
<1 TU	0 points	
¹⁴ Carbon Results		
For wells in which the ¹⁴ carbon content of water indicates an age approximation of at least several centuries, subtract 20 points from the score.		
TOTAL POINTS	Vulnerable	

7. Grand total score:		
1. DNR Vulnerability Rating	0	
2. Casing Integrity	0	
3. Casing Depth	5	
4. Pumping Rate	5	
5. Isolation Distance from Contaminant Sources	0	
6. Chemical and Isotopic Information	0	
GRAND TOTAL Vulnerable due to Tritium > 1 TU	10	
Note: See MDH SWP Vulnerability rating sheet and well log for source data.		

▶ If the score is 45 or more, the well is considered vulnerable.

► If the score is between 5 and 40, priority for phasing into the state's WHP program is referenced to population served.

► If the score is 0 or less, the well is considered not vulnerable.
Vulnerability Assessment Worksheet

Well Name/No.	White Bear T	ownship Well #2A		
Public Water Sup	oplier ID No.	1620025	Minnesota Unique Well No.	676446

1. DNR vulnerability rating - assign the following point values:	
Very High	Vulnerable
High	Vulnerable
Moderate	25 points
Low ("L" score of 1 to 3) L2 Glenwood and basal St. Peter shales present	20 points
Low ("L" score of 4 to 7)	15 points
Very Low ("L" score of 8 to 11)	10 points
Very Low ("L" score of 12 or greater)	0 points
TOTAL POINTS	20

2. Casing integrity - assign the following point values:	
Each breach of the casing.	20 points
Each casing string not grouted or extending to the land surface.	
Each category for which information requested is unknown.	
Each string of properly installed casing.	0 points
TOTAL POINTS	0

3. Casing depth - assign the following point values:		
<50 feet		20 points
50 to 200 feet		10 points
201 to 500 feet	299 feet	5 points
>500 feet		0 points
TOTAL POINTS		5

4. Pumping rate - assign the following point values:		
>1000 gallons/minute 1120 gpm	20 points	
501 to 1000 gallons/minute	10 points	
50 to 500 gallons/minute	5 points	
<50 gallons/minute	0 points	
TOTAL POINTS	20	

5. Isolation distance from contamination sources:		
For wells <50 feet deep, assign 10 points to each source located within 100 feet of the well.		
For wells >50 feet deep, assign 10 points to each source located within 50 feet of the well.		
TOTAL POINTS	0	

6. Chemical and isotopic information:		
Volatile Organic Compounds Detection		
Synthetic Organic Compounds Detection	Vulnerable	
Nitrate-Nitrogen Results	Vulnerable	
>10 parts/million	Vulnerable	
>3 but ≤10 parts/million	30 points	
1 to 3 parts/million	10 points	
<1 parts/million <0.05, 8/16/2004	0 points	
Tritium Results		
>1 TU	Vulnerable	
<1 TU unknown	0 points	
¹⁴ Carbon Results		
For wells in which the ¹⁴ carbon content of water indicates an age approximation of at least several centuries, subtract 20 points from the score.		
TOTAL POINTS	0	

7. Grand total score:	
1. DNR Vulnerability Rating	20
2. Casing Integrity	0
3. Casing Depth	5
4. Pumping Rate	
5. Isolation Distance from Contaminant Sources	
6. Chemical and Isotopic Information	0
GRAND TOTAL Vulnerable	45

Note: See MDH SWP Vulnerability rating sheet and well log for source data.

► If the score is 45 or more, the well is considered vulnerable.

► If the score is between 5 and 40, priority for phasing into the state's WHP program is referenced to population served.

► If the score is 0 or less, the well is considered not vulnerable.

Vulnerability Assessment Worksheet

Well Name/No.	White Bear T	Fownship Well #3		
Public Water Sup	plier ID No.	1620025	Minnesota Unique Well No.	224679

1. DNR vulnerability rating - assign the following point values:		
Very High	Vulnerable	
High	Vulnerable	
Moderate	25 points	
Low ("L" score of 1 to 3) L3	20 points	
Low ("L" score of 4 to 7)	15 points	
Very Low ("L" score of 8 to 11)		
Very Low ("L" score of 12 or greater)	0 points	
TOTAL POINTS	20	

2. Casing integrity - assign the following point values:		
Each breach of the casing.	20 points	
Each casing string not grouted or extending to the land surface.		
Each category for which information requested is unknown. Casing cement unknown		
Each string of properly installed casing.		
TOTAL POINTS	5	

3. Casing depth - assign the following point values:		
<50 feet		20 points
50 to 200 feet	200 feet	(10 points)
201 to 500 feet		5 points
>500 feet		0 points
TOTAL POINTS		10

4. Pumping rate - assign the following point values:		
>1000 gallons/minute	1200 gpm	20 points
501 to 1000 gallons/minute		10 points
50 to 500 gallons/minute		5 points
<50 gallons/minute		0 points
TOTAL POINTS		20

5. Isolation distance from contamination sources:		
For wells <50 feet deep, assign 10 points to each source located within 100 feet of the well.		
For wells >50 feet deep, assign 10 points to each source located within 50 feet of the well.		
TOTAL POINTS		

6. Chemical and isotopic information:			
Volatile Organic Compounds Detection			
Synthetic Organic Compounds Detection	Vulnerable		
Nitrate-Nitrogen Results	Vulnerable		
>10 parts/million	Vulnerable		
>3 but ≤10 parts/million	30 points		
1 to 3 parts/million	10 points		
<1 parts/million <0.05, 9/28/1994	0 points		
Tritium Results			
>1 TU	Vulnerable		
<1 TU unknown	0 points		
¹⁴ Carbon Results			
For wells in which the ¹⁴ carbon content of water indicates an age approximation of at least several centuries, subtract 20 points from the score.			
TOTAL POINTS	0		

7. Grand total score:		
1. DNR Vulnerability Rating	20	
2. Casing Integrity	5	
3. Casing Depth	10	
4. Pumping Rate	20	
5. Isolation Distance from Contaminant Sources	0	
6. Chemical and Isotopic Information	0	
GRAND TOTAL Vulnerable	55	
Note: See MDH SW/P Vulnerability rating sheet and well log for source data		

Note: See MDH SWP Vulnerability rating sheet and well log for source data.

▶ If the score is 45 or more, the well is considered vulnerable.

► If the score is between 5 and 40, priority for phasing into the state's WHP program is referenced to population served.

▶ If the score is 0 or less, the well is considered not vulnerable.

Vulnerability Assessment Worksheet

Well Name/No.	White Bear To	ownship Well #4		
Public Water Sup	plier ID No.	1620025	Minnesota Unique Well No.	226572

1. DNR vulnerability rating - assign the following point values:		
Very High	Vulnerable	
High	Vulnerable	
Moderate	25 points	
Low ("L" score of 1 to 3) L3, based on Well #3 log	20 points	
Low ("L" score of 4 to 7)	15 points	
Very Low ("L" score of 8 to 11)	10 points	
Very Low ("L" score of 12 or greater)	0 points	
TOTAL POINTS	20	

2. Casing integrity - assign the following point values:		
Each breach of the casing.		20 points
Each casing string not grouted or extending to the land surface.	Not all casings extend to grade	10 points
Each category for which information requested is unknown.		5 points
Each string of properly installed casing.		0 points
TOTAL POINTS		10

3. Casing depth - assign the following point values:			
<50 feet		20 point	s
50 to 200 feet		10 point	s
201 to 500 feet	325 feet	5 points	\bigcup
>500 feet		0 points	5
TOTAL POINTS		5	

4. Pumping rate - assign the following point values:		
>1000 gallons/minute		20 points
501 to 1000 gallons/minute	650 gpm	10 points
50 to 500 gallons/minute		5 points
<50 gallons/minute		0 points
TOTAL POINTS		10

5. Isolation distance from contamination sources:		
For wells <50 feet deep, assign 10 points to each source located within 100 feet of the well.		
For wells >50 feet deep, assign 10 points to each source located within 50 feet of the well.		
TOTAL POINTS	0	

6. Chemical and isotopic information:			
Volatile Organic Compounds Detection			
Synthetic Organic Compounds Detection	Vulnerable		
Nitrate-Nitrogen Results	Vulnerable		
>10 parts/million	Vulnerable		
>3 but ≤10 parts/million	30 points		
1 to 3 parts/million	10 points		
<1 parts/million <0.05, 9/28/1994	0 points		
Tritium Results			
>1 TU	Vulnerable		
<1 TU unknown	0 points		
¹⁴ Carbon Results			
For wells in which the ¹⁴ carbon content of water indicates an age approximation of at least several centuries, subtract 20 points from the score.			
TOTAL POINTS	0		

7. Grand total score:		
1. DNR Vulnerability Rating	20	
2. Casing Integrity	10	
3. Casing Depth	5	
4. Pumping Rate	10	
5. Isolation Distance from Contaminant Sources	0	
6. Chemical and Isotopic Information	0	
GRAND TOTAL Vulnerable	45	
Note: See MDH SWP Vulnershility rating sheet and well log for source date		

Note: See MDH SWP Vulnerability rating sheet and well log for source data.

▶ If the score is 45 or more, the well is considered vulnerable.

► If the score is between 5 and 40, priority for phasing into the state's WHP program is referenced to population served.

► If the score is 0 or less, the well is considered not vulnerable.

Vulnerability Assessment Worksheet

Well Name/No.	White Bear T	ownship Well #5		
Public Water Sup	plier ID No.	1620025	Minnesota Unique Well No.	151596

1. DNR vulnerability rating - assign the following point values:			
Very High	Vulnerable		
High	Vulnerable		
Moderate	25 points		
Low ("L" score of 1 to 3)	20 points		
Low ("L" score of 4 to 7) L6	15 points		
Very Low ("L" score of 8 to 11)	10 points		
Very Low ("L" score of 12 or greater)	0 points		
TOTAL POINTS	15		

2. Casing integrity - assign the following point values:	
Each breach of the casing.	20 points
Each casing string not grouted or extending to the land surface.	10 points
Each category for which information requested is unknown.	5 points
Each string of properly installed casing.	0 points
TOTAL POINTS	0

3. Casing depth - assi	gn the following point values:		
<50 feet		20 points	
50 to 200 feet		10 points	
201 to 500 feet	230 feet	5 points	
>500 feet		0 points	
TOTAL POINTS		5	

4. Pumping rate - assign the following point values:			
>1000 gallons/minute	1700 gpm	20 points	
501 to 1000 gallons/minute		10 points	
50 to 500 gallons/minute		5 points	
<50 gallons/minute		0 points	
TOTAL POINTS		20	

5. Isolation distance from contamination sources:		
For wells <50 feet deep, assign 10 points to each source located within 100 feet of the well.		
For wells >50 feet deep, assign 10 points to each source located within 50 feet of the well.		
TOTAL POINTS		

6. Chemical and isotopic information:			
Volatile Organic Compounds Detection			
Synthetic Organic Compounds Detection	Vulnerable		
Nitrate-Nitrogen Results	Vulnerable		
>10 parts/million	Vulnerable		
>3 but ≤10 parts/million	30 points		
1 to 3 parts/million	10 points		
<1 parts/million 0.69, 4/5/2005	0 points		
Tritium Results			
>1 TU	Vulnerable		
<1 TU unknown	0 points		
¹⁴ Carbon Results			
For wells in which the ¹⁴ carbon content of water indicates an age approximation of at least several centuries, subtract 20 points from the score.			
TOTAL POINTS	0		

7. Grand total score:		
1. DNR Vulnerability Rating		
2. Casing Integrity		
3. Casing Depth		
4. Pumping Rate		
5. Isolation Distance from Contaminant Sources		
6. Chemical and Isotopic Information	0	
GRAND TOTAL Vulnerable, based on tritium results in nearby wells	40	

Note: See MDH SWP Vulnerability rating sheet and well log for source data.

▶ If the score is 45 or more, the well is considered vulnerable.

► If the score is between 5 and 40, priority for phasing into the state's WHP program is referenced to population served.

▶ If the score is 0 or less, the well is considered not vulnerable.

Vulnerability Assessment Worksheet

Well Name/No. White Bear Township Well #6				
Public Water Sup	plier ID No.	1620025	Minnesota Unique Well No.	596636

1. DNR vulnerability rating - assign the following point values:		
Very High	Vulnerable	
High	Vulnerable	
Moderate	25 points	
Low ("L" score of 1 to 3) L1	20 points	
Low ("L" score of 4 to 7)	15 points	
Very Low ("L" score of 8 to 11)	10 points	
Very Low ("L" score of 12 or greater)	0 points	
TOTAL POINTS	20	

2. Casing integrity - assign the following point values:	
Each breach of the casing.	20 points
Each casing string not grouted or extending to the land surface.	10 points
Each category for which information requested is unknown.	5 points
Each string of properly installed casing.	0 points
TOTAL POINTS	0

3. Casing depth - assign the following point values:			
<50 feet		20 points	
50 to 200 feet	175 feet	10 points	2
201 to 500 feet		5 points	
>500 feet		0 points	
TOTAL POINTS		10	

4. Pumping rate - assign the following point values:			
>1000 gallons/minute	2000 gpm	20 points	
501 to 1000 gallons/minute		10 points	
50 to 500 gallons/minute		5 points	
<50 gallons/minute		0 points	
TOTAL POINTS		20	

5. Isolation distance from contamination sources:	· · · · · · · · · · · · · · · · · · ·
For wells <50 feet deep, assign 10 points to each source located within 100 feet of the well.	
For wells >50 feet deep, assign 10 points to each source located within 50 feet of the well.	
TOTAL POINTS	0

6. Chemical and isotopic information:	
Volatile Organic Compounds Detection	Vulnerable
Synthetic Organic Compounds Detection	
Nitrate-Nitrogen Results	Vulnerable
>10 parts/million	Vulnerable
>3 but ≤10 parts/million	30 points
1 to 3 parts/million	10 points
<1 parts/million <0.05, 4/19/1999	0 points
Tritium Results	
>1 TU 4.8 TU, 6/15/2000	Vulnerable
<1 TU	0 points
¹⁴ Carbon Results	
For wells in which the ¹⁴ carbon content of water indicates an age approximation of at least several centuries, subtract 20 points from the score.	
TOTAL POINTS	Vulnerable

7. Grand total score:	
1. DNR Vulnerability Rating	20
2. Casing Integrity	0
3. Casing Depth	10
4. Pumping Rate	20
5. Isolation Distance from Contaminant Sources	0
6. Chemical and Isotopic Information	0
GRAND TOTAL Vulnerable	50

Note: See MDH SWP Vulnerability rating sheet and well log for source data.

► If the score is 45 or more, the well is considered vulnerable.

► If the score is between 5 and 40, priority for phasing into the state's WHP program is referenced to population served.

▶ If the score is 0 or less, the well is considered not vulnerable.

APPENDIX IV

Geologic Cross-Section D-D'





White Bear Township

Wellhead Protection Plan Part II

<u>Part 2:</u>

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

 Date:
 October 15, 2012

 Project No.
 14521.000

WELLHEAD PROTECTION PLAN PART II WHITE BEAR TOWNSHIP, MINNESOTA PROJECT NO. 14521.000

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APPENDIX

WHITE BEAR TOWNSHIP WELLHEAD PROTECTION PLAN PART II

APPENDIX

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List of Exhibits

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- Exhibit 3 Comments Received From the Review Periods

PUBLIC WATER SUPPLY PROFILE

PUBLIC WATER SUPPLY

NAME:	White Bear Township	PWSID #: 16	520025
ADDRESS:	RESS: 1281 Hammond Road, White Bear Township, MN 55110		
TELEPHONE NUMBER: (651) 747-2750			
E-MAIL:	wbt@ci.white-bear-township.mn.us	FAX #:	(651) 426-2258

WELLHEAD PROTECTION MANAGER

NAME: Dale Reed, Public Works Director

ADDRESS: 1281 Hammond Road, White Bear Township, MN 55110

TELEPHONE NUMBER: (651) 747-2777

E-MAIL: dale.reed@ci.white-bear-township.mn.us FAX #: (651) 426-2258

CONSULTANT/TECHNICAL ASSISTANCE

NAME: Matt Ellingson

ADDRESS: TKDA, 444 Cedar Street, Suite 1500, Saint Paul, Minnesota 55101

TELEPHONE NUMBER: (651) 292-4400

E-MAIL: matt.ellingson@tkda.com FAX #: (651) 292-0083

DOCUMENTATION LIST

STEP	DATE PERFORMED
Part I Approval Notice Received from MDH	<u>May 26, 2009</u>
Scoping Meeting II Held: (4720.5349, subp. 1)	<u>September 24, 2009</u>
Scoping Decision Notice Received: (4720.5340, subp. 2)	<u>November 5, 2009</u>
Draft PCSI Submitted for MDH Review	<u>December 8, 2010</u>
Draft PCSI Approved by MDH	<u>December 13, 2010</u>
Remaining Portion of Plan Submitted to Local Units of Government (LGU's): (4720.5350, subp. 1 & 2)	<u>January 31, 2012</u>
Review Received From Local Units of Government: (4720.5350, subp. 2)	<u>April 1, 2012</u>
Review Considered: (4720.5350, subp. 3)	<u>April 2, 2012</u>
Public Hearing Conducted: (4720.5350, subp.4)	<u>April 2, 2012</u>
Remaining Portion WHP Plan Submitted: (4720.5360, subp. 1)	<u>October 15, 2012</u>
Approved Review Notice Received:	

WELLHEAD PROTECTION PLAN PART II WHITE BEAR TOWNSHIP, MINNESOTA PROJECT NO. 14521.000

EXECUTIVE SUMMARY

Under the Federal Safe Drinking Water Act, all states are required to have a wellhead protection (WHP) plan. Through this Federal mandate, the Minnesota Commissioner of Health was granted authority by the Minnesota Groundwater Protection Act (Minnesota Statue 1031, Section 3, Subdivision 5) to prepare a rule specifying WHP measures for public water supply wells. The Minnesota Department of Health administers this WHP program and the program complies with both Federal and State mandates. Under this program, every public water supply well in Minnesota is required to have a Wellhead Protection Plan. All public wells in Minnesota must implement WHP measures to protect users from acute health effects relating to disease organisms or chemical contaminants that pose a serious health risk, and from chronic health effects relating to long-term ingestion of chemical contaminants in groundwater. Regulations for this requirement are found under Minnesota Rules Parts 4720.5100 to 4720.5590. In Minnesota, the wellhead protection process is broken up into two phases, Part 1 and Part 2.

White Bear Township currently uses six public water supply wells; Well No. 1 (Unique No. 226570), Well No. 2A (Unique No. 676446), Well No. 3 (Unique No. 224679), Well No. 4 (Unique No. 226572), Well No. 5 (Unique No. 151596), and Well No. 6 (Unique No. 596636). Well No. 2 (Unique No. 226571) was sealed. Part 1 of the Wellhead Protection Plan presented the 1) delineation of the wellhead protection area (WHPA) and the drinking water supply management area (DWSMA) and 2) the vulnerability assessments for the system's wells and the aquifer within the DWSMA. See Figure 1 in the appendix for a map of the DWSMA. White Bear Township had Part 1 of the WHP plan approved by the Minnesota Department of Health (MDH) on May 26, 2009. The Part 1 report was started by Ramsey County Soil and Water in 2001, and was completed by TKDA and Leggette, Brashears and Graham (LBG).

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

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

Findings in this report are the result of collaboration between the Township, TKDA, LBG and the MDH.

A vulnerability assessment for the aquifer within the DWSMA was performed using available information and indicates that the aquifer used by the Township is considered to be vulnerable to contamination due to either tritium detections or total well vulnerability scores in excess of 45 points. The levels of vulnerability in the White Bear Township DWSMA range from Very Low to High.

The DWSMA is comprised of varying levels of vulnerability. In the high vulnerability areas, the Township wells can receive water from both the surface and subsurface, contaminant sources in both areas need to be assessed. The principal sources of contamination would include wells, underground storage tanks, hazardous waste generators, and surface water sites. In the low vulnerability areas, the principal sources of contamination would be other wells that reach or penetrate the same aquifer. This report shall address all existing and possible future contaminant sources within the DWSMA and how these sources can be effectively managed to prevent groundwater contamination.

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

In Chapter 1, the required data elements indicated by the MDH in the Scoping 2 Notice are addressed as well as the data's degree of reliability. Pertinent data elements include information about the geology, water quality, and water quantity.

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

The problems and opportunities concerning land use issues relating to the aquifer, well water, and the DWSMA and those issues identified at public meetings are addressed in Chapter 3. The varying low to high vulnerability status of the aquifers and the good

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 have altered the boundaries of the delineated WHPA, reduce the hydraulic head in the aquifer, or cause the movement of contamination toward public water supply well(s); 3) leaking storage tanks that may release contaminants into ground water 4) shallow disposal type wells; 5) hazardous waste generators and 6) agricultural chemical storage sites.

The drinking water protection goals that the public water supplier (PWS) would like to achieve with this plan are listed in Chapter 4. In essence, the PWS would like to maintain or improve on the current drinking water quality, increase public awareness of groundwater protection issues, protect the aquifer, and continue to collect data to supplement the existing geologic and hydrogeologic knowledge of the area. Thereby confirming where all wells and contamination sources are located within the DWSMA, and supporting future efforts in wellhead protection planning.

The objectives and action plans for managing the potential sources of contamination are contained in Chapter 5. Actions aimed toward educating the general public about groundwater issues, gathering information about other wells and other potential contaminant sources, and collecting data relevant to wellhead protection planning are the general focus.

Chapter 6 contains a guide to evaluate the implementation of the identified management strategies of Chapter 5. The wellhead protection program for the Township will be evaluated on an annual basis.

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

3

I. DATA ELEMENTS, ASSESSMENT (4720.5200)

A. REQUIRED DATA ELEMENTS

1. <u>Physical Environment Data Elements</u>

a) <u>Precipitation</u>. Precipitation information was regarded in the development of White Bear Township's WHP. Data was gathered from the Minnesota State Climatology Office. Table 3, in the appendix, shows the precipitation data from precipitation station 218477 at Vadnais Lake for the last five years, 2006 to 2010, for the Township. Using these numbers, the average annual rainfall is 28.57 inches per year. See Figure 2 for a map showing the location of the precipitation station.

The movement of contaminants through soil to the groundwater is affected by contaminant properties, soil characteristics, existing vegetation, and climatic factors, including precipitation. Dissolved contaminants in water move through the soil, with the water acting as a carrier of the contaminants. Precipitation to an area raises the water content, which increases the mass flow of water through the soil, which also increases the contaminant flow through the soil and possibly to the groundwater. The rates of these flows and where they travel to are dependent on soil, geology types, and properties, and due to the varying vulnerability of the DWSMA it is important to consider what affect precipitation has in land use management.

b) <u>Geology</u>. This data element is required and is presented in the first part of the WHP Plan. The geology in the vicinity of White Bear Township consists of Quaternary-Aged glacial and post-glacial deposits that are underlain by Paleozoic-Aged bedrock. The glacial deposits consist of Superior Lobe sand and silt lacustrine deposits, till, and outwash. These are underlain by Pre-Late Wisconsinan Keewatin and Grantsburg Sublobe till, outwash and sandy lacustrine sediment. The Superior Lobe, due to its higher sand content, is generally not considered an effective hydraulic barrier. However, the underlying till deposits are an effective barrier as are the uppermost

bedrock Glenwood or basal St. Peter shales.

- c) <u>Soils</u>. Local soil conditions, infiltration, and erosion characteristics were regarded in the development of this WHP. Since the public water supply aquifers can be vulnerable to land use activities in some areas, soil characteristics can help to determine management strategies. See Figure 3 for a Soil Map. The main soil types in the DWSMA are sandy loams. These are well drained soils with moderate to rapid permeability. These soil properties enable water to infiltrate and flow through soil and into the groundwater. Water can act as a carrier of dissolved contaminants, and these contaminants can then be delivered by the infiltrated water flow through the soil into the aquifer. For the Township, water from the surface carrying contaminants may be able to enter the water supply aquifers, contaminating the water supply.
- d) <u>Water Resources</u>. This data element applies as it relates to future groundwater uses that may influence the ability of the aquifer to yield water to the public water supply. The Township currently uses six municipal drinking water wells. The continued long-term impact from water withdrawals throughout the aquifers is not known. Increased water use may result in a reduction in aquifer yield or increase the likelihood that contaminants of human or natural origin may affect the quality of drinking water. The Township is projected to pump around 650 MGY from its groundwater wells (See Part 1 Report). See Table 4 for the previous years' Well Pumping Data. The annual pumping rate is projected to increase as population and demand grow; however, the aquifer is expected to yield sufficient water to meet the future needs of the Township.

There are seven major lakes within the DWSMA including White Bear, Goose, Birch, Gem, Bald Eagle, Fish and Pine Tree Lake. The White Bear Township WHPA is located within the Upper Mississippi River watershed basin. Proper management of all of the water resources including watersheds, public waters, shoreland, wetlands, and floodplain will require coordination with the Rice Creek Watershed District, the Vadnais Lake Area Water Management Organization, and all neighboring communities that share these water resources to ensure that any infiltration that reaches the groundwater is free of contaminants.

B. LAND USE DATA ELEMENTS

Land Use. Due to the susceptibility of all of the Township's wells to 1. contamination, the wells are affected by land use activities within the DWSMA. Information contained in Part 1 which indicates that the public water supply vulnerability ranges from very low to highly vulnerable to certain land use activities. In the high vulnerability areas, all land uses were inventoried. In the low vulnerability areas, the principal sources of contamination would be other wells that reach or penetrate the same aguifer. Corresponding to vulnerability levels, an inventory of other wells, storage tanks, waste sites, hazardous waste generators, and shallow disposal wells located within the DWSMA was required. A listing of wells and other potential contaminant sites inventoried within the DWSMA and a parcel map showing their locations are included as Table 1 and Figure 4. There is also a list of potential contaminant sites that were not able to be verified at this time in Table 2. WHP Measure B1-2 under Data Collection in Section 5 identifies how these unverified sites will be handled.

The DWSMA consists of approximately 10,240 acres. Approximately 7240 acres (70%) are located within White Bear Township, the City of White Bear Lake, and the City of Gem Lake (Ramsey County), and 3000 acres (30%) are located in the Cities of Grant, Hugo, and Dellwood (Washington County). See Figure 5 for White Bear Township boundaries. The area is mostly comprised of residential, commercial and some agricultural land. The Township has control of land uses within their municipal boundary through their zoning ordinances. See Figure 6 for the White Bear Township Land Use Map and Figure 7 for the White Bear Township Zoning Map. Land use or zoning maps for the other cities located within the DWSMA are also located in the Appendix. See Figure 8 for the White Bear Lake Zoning Map, Figure 9 for the Gem Lake Zoning Map, Figure 10 for the Grant Zoning Map, Figure 11 for the Hugo Zoning Map and Figure 12 for a Washington County Land Use Map that includes Dellwood.

Because of the aforementioned vulnerable classification of the DWSMA, contamination can come from both surface and subsurface sources. Soil and aquifer characteristics elaborated earlier in this report have shown that surface contaminants are able to infiltrate and migrate through the soils to the groundwater. That is why it is important to monitor land uses in the DWSMA and possible sources of contamination to the wells.

Possible contaminant sources were identified and evaluated within the DWSMA. It is important to realize that the WHPA does cover multiple municipalities, so cooperation between the Township and the neighboring Cities is essential. The following potential contaminant sources were found to be within the DWSMA:

- a) <u>Public and Private Wells</u>. Figure 4 shows a map of all public and private wells that were located. 434 private wells and 13 public wells are located within the DWSMA. There may be some unused/unsealed private wells and if they are found it would be beneficial to seal these wells. See Objective D-1 in the Objectives and Plans of Action Section. There are no known old municipal wells within White Bear Township. All municipal wells are either active or were sealed according to regulations.
- b) <u>ISTS.</u> Shallow groundwater is highly susceptible to pollution from septic tanks. 301 ISTS systems were found within the DWSMA. See Figure 4.
- c) <u>Registered Storage Tanks.</u> Registered storage tanks are regulated by the Minnesota Pollution Control Agency (MPCA). All storage tanks are regulated with the exception of tanks used for agriculture, septic tanks, or tanks with a capacity of 110 gallons or less. These tanks may be above or below ground. 5 aboveground storage tanks, 151 underground storage tanks, 54 registered storage tanks, and 10 storage tanks (no specification) were found. See Figure 4.
- d) <u>Leaking Underground Storage Tanks.</u> 42 leaking underground storage tanks were found within the DWSMA. Most of these sites have been closed and are no longer leaking. See Figure 4.

- e) <u>Hazardous Waste Generators.</u> Within the DWSMA, 125 sites were found that generate hazardous waste materials. See Figure 4.
- f) <u>Shallow Disposal Wells.</u> To this date, there are no known shallow disposal wells within the DWSMA. See Figure 4.
- g) Agricultural and Turf Care Chemicals. Since part of the DWSMA is comprised of agricultural land, there may be pesticides, herbicides, nitrogen fertilizers and other agricultural chemicals used on the surface agriculture. See Figure 12 for the agricultural land that is in Washington County.
- <u>Other.</u> Within the DWSMA there were also 5 toxic release sites which are each a potential source of groundwater contamination. See Figure 4.
- 2. Public Utility Services. Utility service in the DWSMA consists of water, sewer, stormwater, distribution systems for natural gas, communications and electric. See Figure 13 for a sanitary sewer system map and Figure 14 for a storm water map. There are also two county ditches in the northern part of the DWSMA; Ramsey County Ditch 11 and Ramsey-Washington Judicial Ditch 1 as shown on Figure 15. With proper management of the public utility services, they should not pose a significant risk to groundwater pollution. To mitigate stormwater infiltration problems, stormwater controls should be implemented to reduce its possible impact on the groundwater. There are a few high volume transportation routes within the DWSMA that pose a threat due to spills or accidents. Highway 61 runs north and south through the DWSMA. There are two railroad lines as shown on Figure 16; one is a Canadian Pacific (CP) line that runs east and west and the other is a Minnesota Commercial (MNNR) that runs north and south. Interstate 35E is just to the west of the DWSMA.

C. WATER QUANTITY DATA ELEMENTS

1. <u>Surface Water Quantity</u>. It has been shown that surface water may infiltrate and recharge the aquifers used by the Township wells. There are seven major lakes within the DWSMA including White Bear, Goose, Birch, Gem, Bald Eagle, Fish and Pine Tree Lake.

2. <u>Groundwater Quantity</u> Groundwater levels are adequate for the amounts that White Bear Township is currently permitted for under the groundwater appropriations program that is administered by the Minnesota Department of Natural Resources (MDNR). There are other high capacity wells within the DWSMA, but no well interference complaints with the Township wells have been documented. At this time, there appears to be sufficient groundwater quantity based upon existing pumping capacity of all wells completed in the aquifer used by the Township, and the Township does not exceed its permitted withdrawal volumes. If new high capacity wells or new appropriation permits are implemented, the potential impacts to the DWSMA should be reviewed.

D. WATER QUALITY DATA ELEMENTS

- 1. <u>Surface Water Quality.</u> There are seven surface water bodies within the DWSMA. Surface water may be able to infiltrate and recharge the groundwater. These water bodies receive runoff during rainfall events. The Rice Creek Watershed District monitors White Bear and Bald Eagle lakes for water quality annually and the information is provided in the annual State of the Lakes report available on the Watershed's website.
- 2. <u>Groundwater Quality</u>. Well water is tested annually to determine if it meets water quality parameters. Existing information consisting of isotopic and chemical analyses, both organic and inorganic, indicates that the aquifers used by the public water supply may be recharged by surface water. Tests conducted by the MDH has revealed slight traces of tritium indicating there is some component of 'young' water recharging the aquifer used by the Township. As such, there is a high probability that land use in certain areas has a direct impact on the quality of drinking water. Additional information should be collected over the ten-year life of the plan to continue to monitor groundwater quality. The Township is currently supplying its citizens with good groundwater that meets all drinking water quality standards.

ASSESSMENT OF DATA ELEMENTS

A. <u>USE OF THE WELL</u>

General information describing this public water supply system is presented in Part 1 of this Plan. The Township currently has six drinking water supply wells. The wells are projected to use approximately 650 MGY as outlined in the Part 1 report. Well use is not expected to change greatly in the future. The Inner Wellhead Management Zone (IWMZ) of each Township well was checked during the completion of this report, and the wells were found to conform to regulations. As described in the previous section, the data elements have the possibility to impact the use of the well due to the varying vulnerability of the DWSMA and that is why it is important to have proper management of these data elements so they do not negatively affect the use of the well in the future.

B. WELLHEAD PROTECTION AREA DELINEATION CRITERIA

See Part 1 of this Plan for documentation regarding how the following delineation criterion was applied to determining the boundaries of the WHPA:

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

C. <u>QUALITY AND QUANTITY OF WATER SUPPLYING THE PUBLIC WATER</u> <u>SUPPLY WELL</u>

Water quality monitoring results indicate no evidence of contamination from 1) human-origin such as fuel and fuel break-down products, pesticides, or commercial fertilizer, or 2) naturally occurring contaminants such as arsenic and boron. However, water quality monitoring results do indicate evidence of surface water migration by the presence of tritium, as discussed earlier. Further testing should be done to determine the extent that the groundwater is influenced by the surface waters. At this time, problems with water quality are not an issue as the system has enjoyed water quality that meets or exceeds standards in the Federal Safe Drinking

Water Act. However, there may be unused/unsealed wells and other potential contaminants that are currently unknown and have the possibility to impact groundwater in the future. With proper management of the data elements, the quality and quantity of the water supplying the public water wells will continue to meet the needs of the Township.

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

Proactive management of land uses including existing wells, hazardous waste sites, and storage tanks are of concern due to the vulnerable rating of the aquifer. Table Nos. 1 and 2 in the appendix have the potential contaminant sources that were inventoried and either verified or not able to be verified at this time. Chapter 3 of this plan will talk more about the land use issues that may affect the DWSMA. The management strategies selected and documented in Chapter 5 of this Plan will focus in on activities that have the most potential to impact the aquifer this public water supply system is using for its drinking water supply. Implementation of management strategies however might be difficult since the DWSMA is located in multiple municipalities including: White Bear Township, White Bear Lake, Gem Lake, Grand, Hugo, and Dellwood, and two different counties: Ramsey and Washington Counties. Land use in the other municipalities may change and is out of the range of influence of White Bear Township. However, with cooperation from the other municipalities and its residents, the drinking water quality of the aquifers will be preserved for future use.

II. IMPACT OF CHANGES ON PUBLIC WATER SUPPLY WELL

A. <u>CHANGES IDENTIFIED IN</u>

1. Physical Environment

Large-scale changes in the physical environment within the DWSMA are not anticipated during the 10-year period that this Plan is in effect. However, environmental changes within the DWSMA could affect the aquifer greatly and should be immediately addressed if they arise. For example, development of the land within the DWSMA could lead to an increase in impervious areas, which would lead to more stormwater runoff, which could carry more contaminants to the groundwater if not properly controlled.

2. Land Use

Land uses that result in additional use of the aquifer in the DWSMA will likely have little impact on the aquifer unless water demand is increased to the point that additional loss in hydraulic head occurs within the aquifer used by the public water supply. However, constructing additional wells into the aquifer will increase the points of entry or draw naturally occurring or human-caused contaminants towards the Public Water Supply (PWS) wells. Land uses that could possibly contaminate the aquifer such as underground storage tanks or hazardous waste generators within the DWSMA should be addressed in a comprehensive land use plan and associated zoning requirements.

3. Surface Water

There are seven surface water bodies in the DWSMA. There can be a direct hydraulic connection between surface water and the aquifer used by the public water supply system as a drinking source. Any surface waters would have a high probability of effecting the quality or quantity of the public water supply. Water quality of all of the surface water bodies should be monitored to mitigate possible contamination to the aquifer via surface water infiltration.

4. <u>Groundwater</u>

The public water supply system's wells have historically provided groundwater of excellent quality and quantity. As of the date of Plan approval, the community does not anticipate 1) addition of other large capacity water users to the public water system, and 2) no large expansions are being planned by businesses currently served. Greatly increased water demand from the aquifers could result in the loss of hydraulic head within the aquifer and may alter the boundaries of the WHPA and may require additional wells to be constructed.

B. <u>IMPACT OF CHANGES</u>

1. Expected Changes in Water Use

The Township does not anticipate that its water use will increase by more than five percent during the first five years that this Plan is in effect. The Township will re-evaluate its water-use patterns for the second five-year interval as part of its comprehensive planning activities and incorporate these results into future revision of this Plan.

2. <u>Influence of Existing Water and Land Government Programs and</u> <u>Regulation</u>

White Bear Township has very limited authority when dealing with agencies and bodies that regulate possible contamination sources in the DWSMA and little say in changes that may occur at these agencies.

On a municipal level, much of the White Bear Township DWSMA falls either in a separate municipality and sometimes also a separate county, and changes to programs in these governing bodies are outside the township's jurisdiction.

State government programs oversee many programs that help to control groundwater pollution including: The Minnesota Department of Health has sole authority in permitting wells; The Minnesota Department of Natural Resources appropriates water uses; The Minnesota Department of Agriculture for turf and agricultural chemical issues; The Minnesota Pollution Control Agency helps protect the groundwater by monitoring its quality and

overseeing what can go into it; the local watershed management organizations or districts have local influence on the groundwater.

White Bear Township, Ramsey County and Washington County have land use ordinances that could be revised in the future to address possible contamination sites within the DWSMA. Local land use, zoning changes and stormwater management may be the most effective way to guard against potential contamination sources in the future.

Ramsey and Washington Counties may offer financial assistance with sealing additional unused/unsealed wells as they are identified. The Township also has Ordinance No. 12, Section 4, which prohibiting the connection of a separate water source (ex. a new well) to a plumbing system so that it interconnects with the public water supply distribution system. A copy of this portion of the Township Ordinance is included in the Appendix as Exhibit 1.

3. <u>Administrative, Technical, and Financial Considerations</u>

White Bear Township assembled a Wellhead Protection Team early in the process of developing this Plan. Many of the activities during the planning process have been accomplished through efforts of this group, with assistance from studies provided by other units of government. For this Plan to be effective:

- a) The Township will need to raise public awareness of the issues affecting its drinking water supply through public educational programs.
- b) Administrative duties will remain with the Wellhead Protection Manager who will report to the Town Board, coordinate implementation of wellhead protection management action plans, and conduct regular meetings.
- c) Implementation of Wellhead Protection activities will be provided by funds from the utility's water budget, or as a WHP budget line item to be created during the next budgeting process. Other sources of possible funding or assistance may include 1) Cost share funds for

abandoned well sealing, 2) the Minnesota Department of Health Source Water Protection grants, and 3) the Minnesota Rural Water Association for technical assistance. The MPCA and the MDH are also sources of information regarding groundwater protection.

d) The costs of implementing Wellhead Protection activities will be evaluated on an annual basis. The Township will discuss changes in plan implementation costs with the MDH to determine the availability of State or Federal funding if needed.

III. ISSUES, PROBLEMS, AND OPPORTUNITIES

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

1. <u>The Aquifers</u>

Since the aquifers have varying vulnerability from very low to highly vulnerable to contamination, the system has the possibility to be affected by land use activities. Land use and Zoning regulations can discourage the types of activities that may cause contamination of the aquifers. White Bear Township, Ramsey County and Washington County have land use ordinances that could be revised in the future to address possible contamination sites within the DWSMA. Local land use, zoning changes and proper stormwater management may be the most effective way to guard against potential contamination sources in the future. Cooperation with the neighboring communities that are located within the DWSMA is essential to assure the aquifers are properly managed for all users.

If additional high capacity wells are added to the area, the DWSMA may have to be delineated again. Since little hydrogeologic information is currently available, additional research and studies would increase knowledge and help to protect the aquifers. It is uncertain how much protection is provided by the clay layer underneath the area lakes. The Township should work with MDH SWP Unit to develop a monitoring plan to gather relevant information.

2. The Well Water

A potential contaminant source inventory was performed for this report. The wellhead protection plan is primarily concerned with other water supply wells, storage tanks, septic systems, and hazardous waste generators located within the DWSMA. The aquifers that provide the Township wells with water are vulnerable to these potential contaminant sources. The wells should be continually monitored for signs of pollution or contamination, including being tested for tritium. A specific issue for this DWSMA is that there are numerous private wells that are hard to regulate under land and zoning uses, and most of these wells are out of White Bear Township jurisdiction.

The placement of additional high capacity wells, increased pumping from existing wells, or significant changes in current groundwater appropriations within the DWSMA may have an impact on 1) groundwater availability to all users, 2) increased risk that contamination may enter the part of the aquifer used by the community water supply wells, or 3) change the delineated WHP area and the DWSMA boundaries. White Bear Township will work with the DNR and the MDH to become aware of any proposed high-capacity wells within the DWSMA. The Township will also work with their well owners to minimize or eliminate potential impacts to the Township water supply. There is a possibility that the transportation corridor close to Well No. 3 could have a spill incident which could dump contaminants into the County Ditch that runs approximately 40 feet from the well as noted in the IWMZ survey. This ditch should be monitored for any possible contaminants.

3. The Underground and Above Ground Storage Tanks

The MPCA Storage Tank Program provides information and assistance to tank owners and others regarding technical standards required of all regulated aboveground storage tank systems and underground storage tanks systems. The program evaluates compliance of tank facilities with State statutes and rules through inspections and investigations and determines appropriate enforcement actions when violations are discovered.

Tank systems of more than 110 gallons are regulated unless they are for residential use, are farm tanks, or contain heating oil. All tank systems including farm, residential and heating oil tanks with a capacity of more than 1,100 gallons are regulated.

In the Township DWSMA we found 5 aboveground storage tanks, 151 underground storage tanks, 54 registered storage tanks, 7 storage tanks (unspecified) and 42 leaking underground storage tanks.

This MPCA program should be sufficient to monitor and regulate these potential sources of contamination.

4. <u>Hazardous Waste Generators</u>

In the Township DWSMA, 125 hazardous waste generators were found. White Bear Township WHP Part 2 17 14521.000 The MPCA regulates and provides assistance to commercial hazardous waste generators in greater Minnesota. Management requirements depend upon the type and amount of waste they produce. These requirements are part of the federal Resource Conservation and Recovery Act (RCRA) and Minnesota Hazardous Waste Rules. They are designed to protect people and the environment from the effects of improper management of hazardous wastes from commercial sources.

5. Shallow Disposal Wells

No shallow disposal wells were found within the Township DWSMA. All Class V wells need to be inventoried with Environmental Pollution Agency (EPA). Two kinds of Class V wells are banned nationwide; those at vehicle maintenance shops and community cesspools. New ones are prohibited, and those in wellhead protection areas should have been closed by January 2007.

6. The Drinking Water Supply Management Area

A primary concern expressed by the Township is to ensure that consistent and long-term management of water wells and the potential contaminant sources within the DWSMA. The Township has limited legal capabilities to regulate activities in the area of the DWSMA that are beyond its Township limits. White Bear Township needs to work with the other municipalities which are in the DWSMA to monitor the quality of the groundwater and land use activities within the DWSMA. Also, the Township has no regulatory authority over water appropriations and must rely on the State of Minnesota to address issues and concerns related to pumping. Changes in land use that increase pumping of the aquifer used by the Township wells can be assessed by the Township for its possible impacts on water availability and quality.

In addition, this is an older community with a history of contaminated sites in the area. Given the age of the community, the accuracy of records can be in question, so testing for contamination and monitoring are important, as well as communication with neighboring communities. The Township will work with the MDH SWP Unit to evaluate and prioritize the level of risk of the contaminant sites to determine monitoring efforts.

B. IDENTIFICATION OF:

1. <u>Problems and Opportunities Disclosed at Public Meetings and in Written</u> <u>Comment</u>

At the beginning of the planning process other Local Units of Government (LUGs) were identified and informed that the Township was beginning the wellhead protection planning process. Each unit of government was also sent a copy of the Township's delineated WHPA and DWSMA and vulnerability assessment for the wells and DWSMA. See Figure 1 in the appendix for a map of the DWSMA. There were some comments were received from the LUGs during the review periods and those comments have been incorporated into this plan. See Exhibit 3 for the comments received from the LUGs. 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 have been expressed at this time.

2. Data Elements

The state's Wellhead Protection Rule requires that existing information be utilized in developing the initial Wellhead Protection Plan. There is a limited amount of subsurface information available to define local groundwater flow conditions and the groundwater chemistry of the aquifer within the DWSMA. As a result, delineation of the WHPA represents a composite of capture zones generated by varying aquifer properties.

The Township plans to utilize public education opportunities, both existing and proposed, to address potential contamination of the aquifer. Additionally, the Township will work in cooperation with the Ramsey County, Washington County, and Rice Creek Watershed District to utilize any cost share programs currently available.

The Township plans to implement this WHP Plan to address potential contamination of the aquifer. The goals and action plans of this report are elaborated in the following chapters. This plan is scheduled to be updated after 10 years or with the construction of a new Township well or other variables that may change the system's delineation and properties.
Further, the Township will work with MDH to 1) identify proposed wells that may present ground water 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 MN DNR may specify with the groundwater appropriations permit.

Regarding storage tanks, the Township will continue to work with MPCA and MDH to 1) track current and likely 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 are regulated by the federal EPA. The Township will cooperate with the MDH SWP Unit in developing an inventory of where these types of wells may be located within the DWSMA and provide the well owners with educational materials regarding the use or management of these types of wells.

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

- The Township will work with the MDH to identify new wells that are constructed within the DWSMA and to verify their locations.
- b) The Township will inform MDH when any of the Township wells are repaired so that information regarding well construction, static water level, and pumping capacity can be verified or updated.
- c) The MDH will collect a water sample for at least one well after the first five years of plan implementation and have the water analyzed for tritium content using an enriched analytical technique. Testing results will be used to document that the rate of recharge to the aquifer is not increasing and that it is still hydraulically isolated from surface water.
- d) The Township and MDH will inform each other of additional high

capacity wells that are to be constructed within the DWSMA or within a mile of its boundary. MDH will determine with the MNDNR whether the applicant for a water appropriations permit needs to conduct an aquifer test to evaluate the long-term pumping impacts on the Township water supply wells.

- e) Inform the MDH of any wells that are to be properly sealed within the DWSMA so that the Minnesota Geological Survey can be notified and determine whether it can run a borehole geophysical survey of the well.
- f) Inform the MDH if the Township is considering the construction of a new water supply well so that the MDH can determine whether any potential sites for the new well present concerns over well interference or the movement of existing contamination plumes toward existing Township or private water supply wells.

3. <u>Status and Adequacy of Official Controls, Plans, and Other Local, State,</u> and Federal Programs on Water Use and Land Use

There are other tools available to the Township and other regulating agencies that may be used to achieve the wellhead protection planning goals identified by the wellhead planning team. State and local governmental units such as MDH, the DNR and White Bear Township oversee the following areas and may be able to aid in the implementation of this plan:

- 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
- Local land use and zoning controls Local Governments
- Tank control program MPCA

Shallow disposal wells - USEPA

The wellhead protection planning team recommends the following for this plan to be successful: public education, adoption of best management practices for different types of wells, tank maintenance, water conservation and good communication with other landowners within the DWSMA. At this time the Wellhead Protection Team does not recommend any additional regulations to be put into place as the existing processes and regulations are adequate. However, in order for this plan to be effective the Township will need cooperation from state government agencies and neighboring cities.

IV. WELLHEAD PROTECTION GOALS (4720.5240)

The White Bear Township public water supply is considered to be vulnerable to contamination. Based on geologic conditions, these contaminants could come from both surface and subsurface sources. Consequently, the principle potential sources of contamination to the aquifer are other wells that reach or penetrate it, surface waters, hazardous waste generators, septic systems, and above ground or underground storage tanks. This WHP Plan will focus on preventing contamination of the aquifer and managing the aquifer cooperatively to assure sustainable water supplies for all users through education and management strategies.

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

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

- A. Maintain the current level of water quality which meets or exceeds all state and federal standards.
- B. Increase public awareness of the Wellhead Protection Program and groundwater protection issues.
- C. Provide ongoing collection of data to support future wellhead protection efforts.

V. OBJECTIVES AND PLANS OF ACTION (4720.5250)

ESTABLISHING PRIORITIES

A number of factors must be considered when WHP measures are selected and prioritized (part 4720.5250, subpart 3). Such factors include: contamination of a public water supply well, quantities of the potential contamination sources, location of the source in relation to the well, capability of the geologic material to absorb a contaminant, existence and effectiveness of existing official controls, time required to obtain cooperation, and administrative, legal, technical, and financial resources needed.

Therefore, the Wellhead Protection Planning Team would like to concentrate management efforts on the following factors to create awareness of groundwater protection and help reduce the potential for future contamination of the aquifer:

- a) Public education
- b) Data collection
- c) Inner Wellhead Management Zone (IWMZ)
- d) Wells
- e) Storage tanks
- f) Shallow disposal wells
- g) Stormwater
- h) Septic systems
- i) Hazardous Waste
- j) Agricultural Land Use
- k) Transportation Corridors
- I) Coordination

A. **PUBLIC EDUCATION**

OBJECTIVE A1: Increase public awareness of the Wellhead Protection Program and groundwater protection issues. Educating the general public about how certain land use activities can impact local water quality.

WHP Measure A1-1:	Use a packet containing pamphlets and other information at Town Hall to inform the community about Wellhead Protection management techniques.
Source of Action:	White Bear Township
Cooperator(s):	MDH and MRWA for materials
Time Frame:	2013
Estimated Cost:	Staff time, \$100 printing costs
Goal achieved:	Town residents and property owners will become better informed about wellhead protection and groundwater principles.

WHP Measure A1-2:	Put information on the Town Website to inform the community about Wellhead Protection management techniques.
Source of Action:	White Bear Township
Cooperator(s):	MDH and MRWA for materials
Time Frame:	2014
Estimated Cost:	Staff time
Goal achieved:	The general public will become better informed about wellhead protection and groundwater principles.

WHP Measure A1-3:	Use the existing site plan review process to educate land owners about Wellhead Protection. For example, ask a registered tank owner if they need any information about proper tank management techniques.
Source of Action:	White Bear Township
Cooperator(s):	None
Time Frame:	Ongoing
Estimated Cost:	Staff time
Goal achieved:	Property owners within White Bear Township and the DWSMA become better informed about wellhead protection and best management techniques.

WHP Measure A1-4:	Coordinate with Minnesota Department of Agriculture, NRCS and FSA offices to promote the proper rates and application of fertilizers, pesticides and herbicides as a way to protect the groundwater
Source of Action:	White Bear Township, Public Works and Planning
Cooperator(s):	None
Time Frame:	2016
Estimated Cost:	Staff time
Goal achieved:	Property owners will become more aware of proper turf management and agricultural land use.

B. DATA COLLECTION

OBJECTIVE B1: Continue to collect data on the DWSMA and potential sources of contamination sites within it.

WHP Measure B1-1:	Update and maintain a current PCSI database by adding or removing sites discovered through the permit review process, the MDH, the DNR and other municipalities within the DWSMA.
Source of Action:	White Bear Township
Cooperator(s):	None
Time Frame:	Ongoing
Estimated Cost:	Staff time (\$5,000-\$6,000)
Goal achieved:	Maintain a current PCSI database that can be used by Public Works, Planning, and emergency response.

WHP Measure B1-2:	Verify the remainder of the potential contaminant sources (Table 2).
Source of Action:	White Bear Township
Cooperator(s):	None
Time Frame:	2013
Estimated Cost:	Staff time (\$1,000)
Goal achieved:	Maintain a current PCSI database that can be used by Public Works, Planning, and emergency response.

WHP Measure B1-3:	Monitor for tritium in the public water supply system wells on a 5-year basis.
Source of Action:	White Bear Township
Cooperator(s):	MDH
Time Frame:	2018, 2023
Estimated Cost:	Staff time
Goal achieved:	This will indicate the relative age of the water from each well and provide information as to its source.

WHP Measure B1-4:	The Township will contact the MDH and MGS and request assistance in developing a stable isotope Oxygen (O ¹⁸) and deuterium (H ²) monitoring plan to determine the influence that White Bear and Bald Eagle Lakes may have on the Wells.
Source of Action:	White Bear Township
Cooperator(s):	None
Time Frame:	2017
Estimated Cost:	Staff time, cost of study
Goal achieved:	This will indicate whether the groundwater is mixing with the surface waters.

WHP Measure B1-5:	The Township will contact the MDH and request assistance for studies to be conducted to assess the extent of the clay layer beneath the lakes.
Source of Action:	White Bear Township
Cooperator(s):	None
Time Frame:	2019
Estimated Cost:	Staff time, cost of study
Goal achieved:	This will determine the full extent and effectiveness of the clay layer as a separating layer between the lakes and deeper groundwater.

c. INNER WELLHEAD MANAGEMENT ZONE (IWMZ)

OBJECTIVE C1: Manage the 200-ft inner well management zone to prevent contaminants from entering the area adjacent to the wells.

WHP Measure C1-1:	Continue to monitor well setbacks for all new potential sources of contamination. Update the IWMZ survey every 5 years.
Source of Action:	White Bear Township
Cooperator(s):	MRWA
Time Frame:	Ongoing, update every 5 years
Estimated Cost:	Staff time
Goal achieved:	Help to identify additional possible contamination sources.

D. WELLS

OBJECTIVE D1: Educating the general public about proper well management techniques and how their wells can affect the drinking water supply.

WHP Measure D1-1:	Use a packet containing pamphlets and other information at Town Hall to inform the community about well management techniques and Wellhead Protection.
Source of Action:	White Bear Township
Cooperator(s):	MDH and MRWA for materials
Time Frame:	2013
Estimated Cost:	Staff time, \$100 printing costs
Goal achieved:	Town residents and property owners will become better informed about proper well management and wellhead protection principles.

WHP Measure D1-2:	Act as an information and referral resource to identify existing sources of financial assistance and cost-share programs to seal unused wells.
Source of Action:	White Bear Township
Cooperator(s):	Washington County, Ramsey County, MDH
Time Frame:	2013
Estimated Cost:	Staff time
Goal achieved:	This measure will help to abandon more unused wells and possible contamination sources.

WHP Measure D1-3:	Require that all property owners disconnect their home plumbing system from an alternate water source to prevent cross contamination.
Source of Action:	White Bear Township, Public Works and Planning
Cooperator(s):	None
Time Frame:	Current
Estimated Cost:	None
Goal achieved:	Prevention of cross contamination of the water system and wells.

OBJECTIVE D2:

Identify new wells and existing wells that are not in compliance with Minnesota State Well Code and MDH requirements.

WHP Measure D2-1:	Contact the MDH when wells are found that are a safety and health hazard, including wells that are to be sealed.
Source of Action:	White Bear Township
Cooperator(s):	None
Time Frame:	Current, Ongoing
Estimated Cost:	Staff time
Goal achieved:	Help to prevent contamination of the water supply by non- conforming wells.

WHP Measure D2-2:	Consult the County Well Index (CWI) for new wells that are installed within the DWSMA to help prevent pumping conflicts.
Source of Action:	White Bear Township
Cooperator(s):	None
Time Frame:	2014
Estimated Cost:	Staff time
Goal achieved:	Help to prevent pumping conflicts, help to identify additional possible contamination sources.

WHP Measure D2-3:	Request that the DNR informs you when any new or modified ground water appropriation permits are granted in or near the DWSMA to determine if there will be any pumping conflicts.
Source of Action:	White Bear Township
Cooperator(s):	None
Time Frame:	2013
Estimated Cost:	Staff time
Goal achieved:	Help to prevent pumping conflicts.

WHP Measure D2-4:	Search earlier developed portions of the DWSMA for unused/unsealed wells that may have been in existence at one time.
Source of Action:	White Bear Township
Cooperator(s):	None
Time Frame:	Current, Ongoing
Estimated Cost:	Staff time
Goal achieved:	Help to prevent contamination of the water supply by non- conforming wells.

WHP Measure D2-5:	The Township will inform MDH when any on the Township wells are repaired or sealed in the event that the MDH may want to collect data while the pump is pulled.
Source of Action:	White Bear Township
Cooperator(s):	None
Time Frame:	Current, Ongoing
Estimated Cost:	Staff time, Repair costs
Goal achieved:	Information regarding well construction, static water level, and pumping capacity can be verified or updated.

E. STORAGE TANKS

OBJECTIVE E1: Act as an information source to storage tank owners and educate them on management practices to prevent their tanks from contaminating drinking water sources.

WHP Measure E1-1:	Use a packet containing pamphlets and other information at Town Hall to inform the community about tank management techniques and Wellhead Protection.
Source of Action:	White Bear Township
Cooperator(s):	MPCA for materials
Time Frame:	2015
Estimated Cost:	Staff time, \$100 printing costs
Goal achieved:	Town residents and property owners will become better informed about proper tank management and wellhead protection principles.

WHP Measure E1-2:	Act as a local source of information to tank owners about meeting regulatory requirements. Show residents how to access certified tank installation and removal contractors.
Source of Action:	White Bear Township website
Cooperator(s):	MPCA website links
Time Frame:	2016
Estimated Cost:	Staff time
Goal achieved:	Town residents and property owners will become better informed about proper tank management and wellhead protection principles.

OBJECTIVE E2: Identify any current leaking underground storage tanks and work with the owner to remediate the leak to prevent groundwater contamination.

WHP Measure E2-1:	Notify the MPCA if an actively leaking underground storage tank (LUST) is found.
Source of Action:	White Bear Township
Cooperator(s):	MPCA
Time Frame:	2014
Estimated Cost:	Staff time
Goal achieved:	To prevent contamination of the groundwater by fixing any current leaking underground storage tanks.

F. SHALLOW DISPOSAL WELLS

OBJECTIVE F1: Identify any shallow disposal wells within or near the DWSMA.

WHP Measure F1-1:	Continue to monitor for locations of shallow disposal wells within the DWSMA. If found, inform the property owner of their obligation to contact the EPA Region 5 staff.
Source of Action:	White Bear Township staff
Cooperator(s):	None
Time Frame:	Ongoing
Estimated Cost:	Staff time
Goal achieved:	This measure will help to identify additional possible contamination sources.

G. STORMWATER

OBJECTIVE G1: Promote stormwater best management techniques and educate staff and property owners about how stormwater can affect the drinking water supply.

WHP Measure G1-1:	Work with Town staff responsible for stormwater management, plat approval, and building permits, to ensure that new stormwater structures are reviewed with wellhead protection principles in mind, that existing structures are properly maintained, and that existing structures have appropriate permits.
Source of Action:	White Bear Township planning
Cooperator(s):	Rice Creek Watershed District, Vadnais Lake Area Water Management Organization
Time Frame:	2014
Estimated Cost:	Staff time
Goal achieved:	Proper stormwater management and consideration of the DWSMA vulnerability when siting stormwater structures will help protect the drinking water supply.

H. SEPTIC SYSTEMS (ISTS)

OBJECTIVE H1:

Act as an information source to recommend best management practices for known on-site sewage systems in the DWSMA.

WHP Measure H1-1:	Act as an information and referral resource for best management practices for ISTS maintenance.
Source of Action:	White Bear Township
Cooperator(s):	None
Time Frame:	2015
Estimated Cost:	Staff time
Goal achieved:	Help to reduce the water quality problems caused by failing septic systems.

WHP Measure H1-2:	Refer failing septic systems within White Bear Township and the DWSMA to the Building Inspector for inspection and code enforcement.						
Source of Action:	White Bear Township staff, building inspector						
Cooperator(s):	None						
Time Frame:	Current						
Estimated Cost:	Staff time						
Goal achieved:	Help to reduce the water quality problems caused by failing septic systems.						

HAZARDOUS WASTE

OBJECTIVE I1:

I.

Act as an information source to owners with hazardous waste and educate them on proper management and disposal to prevent contaminating drinking water sources.

WHP Measure I1-1:	Encourage Township residents to properly dispose of hazardous waste during the annual Town Clean Up Day.
Source of Action:	White Bear Township
Cooperator(s):	None
Time Frame:	Current, annually
Estimated Cost:	Staff time
Goal achieved:	Reduce possible sources of contamination.

WHP Measure I1-2:	Act as a local source of information to hazardous waste owners, household and commercial, about proper management techniques.
Source of Action:	White Bear Township
Cooperator(s):	MPCA website links, Ramsey and Washington Counties website links
Time Frame:	2015
Estimated Cost:	Staff time
Goal achieved:	Town residents and property owners will become better informed about proper tank management and wellhead protection principles.

J. AGRICULTURAL LAND USE

OBJECTIVE J1: Encourage agricultural and turf practices in the DWSMA to be congruent with wellhead protection principles.

WHP Measure J1-1:	Request assistance from the MN Department of Agriculture to promote their programs within the DWSMA. Promoting best management practices for nutrient management, manure management, cover crop, no-till management, etc.							
Source of Action:	White Bear Township							
Cooperator(s):	MN Dept of Ag							
Time Frame:	2016							
Estimated Cost:	Staff time							
Goal achieved:	Increase agricultural practices that positively affect the water supply.							

к. **TRANSPORTATION CORRIDORS**

OBJECTIVE K1: Promote the importance of spill clean-up and response within the DWSMA.

WHP Measure K1-1:	Educate local fire departments, first responders, county sheriff's dept. and emergency managers, and railroad managers about WHP by sending them a letter.
Source of Action:	White Bear Township
Cooperator(s):	None
Time Frame:	2013
Estimated Cost:	Staff time
Goal achieved:	Emergency personnel will become educated about WHP and the possible effect on the groundwater in the event of a spill.

L COORDINATION

OBJECTIVE L1: To effectively implement the plan.

WHP Measure L1-1:	Hold an annual meeting of the wellhead protection team.				
Source of Action:	White Bear Township				
Cooperator(s):	WHP Team				
Time Frame:	Annually				
Estimated Cost:	Staff time				
Goal achieved:	WHP Team will review the implementation plan and discuss whether modifications are needed for the next year.				

WHP Measure L1-2:	Create a WHP budget line item.
Source of Action:	White Bear Township
Cooperator(s):	None
Time Frame:	2013
Estimated Cost:	Staff time
Goal achieved:	Creates a budget to implement WHP measures.

WHP Measure L1-3:	The Township will work with the MDH SWP Unit to evaluate the level of risk of the contaminant sites.						
Source of Action:	White Bear Township						
Cooperator(s):	None						
Time Frame:	Ongoing						
Estimated Cost:	Staff time						
Goal achieved:	Determines priority for implementation efforts.						

WHP Measure L1-4:	The Township will include WHP DWSMA land use issues in the comprehensive plan.
Source of Action:	White Bear Township
Cooperator(s):	None
Time Frame:	Existing in the comprehensive plan
Estimated Cost:	Staff time
Goal achieved:	Raises awareness for land use issues in the DWSMA.

It is estimated that the total amount of staff time costs will be 16,000 - 20,000 over the 10 year life of the plan.

VI. EVALUATION PROGRAM (4720.5270)

The success of the wellhead protection source management program must be evaluated in order to determine whether the plan is actually accomplishing what White Bear Township set out to do. The following activities 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
- Determine the adequacy of financial resources and staff availability to carry out the management strategies planned for the coming year.
 - 1. White Bear Township will continue to cooperate with the Minnesota Department of Health in the annual monitoring of the water supply to determine whether the management strategies are having a positive effect and to identify water quality problems that may arise that must be addressed.
 - 2. Members of the wellhead protection team, City Council, and the WHP plan manager drive through the drinking water supply management area on a regular basis, and will try to identify any changes in land use or potential contaminant source management practices which may adversely impact the public water supply.
 - 3. The wellhead protection team will meet on an as-needed basis, with a minimum of one annual meeting to review the results of each strategy implemented during the previous plan year and identify and discuss whether modifications are needed for those strategies and additional strategies for the coming plan year.

VII. ALTERNATIVE WATER SUPPLY; CONTINGENCY STRATEGY (4720.5280)

The White Bear Township Water Supply Conservation Plan has been submitted and approved by the MN DNR, Division of Waters Appropriation Permit Program. This plan contains the required elements of the MN Wellhead Protection Rule and is accepted as an equivalent to an Alternative Water Supply/Contingency Plan as defined in 4720.5280. Implementation of the Plan has begun with the aid and assistance of local emergency management agencies. A copy of the Plan is available for review at the Town Hall or by contacting Dale Reed at (651) 747-2777. The approval letter for this Plan is found in the appendix as Exhibit 2.

APPENDIX

						PCS Material	
						Code	Facility
	Facility Name	MDH ID	Facility Address	CITY	PCS Code	(If Required)	Designation
1	Abbott Paint and Carpet	33685	2223 N 4th St	White Bear Lake	LUST		2130
2	Abrahamson, Scott	263520	12365 Heather Av N	Saint Paul	ISTS		1000
3	Abrahamson, Scott	263520	12365 Heather Av N	Saint Paul	WEL		1000
4	Ace Hardware	54935	4796 Hwy 61	White Bear Lake	STOR	C000	2122
5	Advanced Research Corp	82452	4459 White Bear Pkwy	White Bear Lake	HWGP		3000
	Aladdin Drywall Inc. (closed-vacant						
6	lot)	73391	1370 Top Ln	White Bear Lake	HWGP		2000
7	Andersen, Christine	148529	10281 Hadley Av N	Saint Paul	WEL		1000
8	Anderson Paul D Dds	82457	4778 Banning Ave	White Bear Lake	HWGP		6000
9	Anderson, Arnold	224256	12200 Goodview Av	Saint Paul	WEL		1000
10	Anderson, Arnold	162591	12200 Goodview Av	Saint Paul	ISTS		1000
11	Anderson, Arnold	162591	12200 Goodview Av	Saint Paul	WEL		1000
12	Anderson, Luana	162794	4532 Grace St	Saint Paul	WEL		1100-01
13	Anderson, Richard	270507	2116 Stillwater St	Saint Paul	WEL		1100-01
14	Anderson, Robert	15632	18 Dellwood Ave	Dellwood	RST		1000
15	Anderson, Robert	15632	18 Dellwood Ave	Dellwood	UST	F000	1000
16	Anderson, Robert	15632	18 Dellwood Ave	Dellwood	UST	F000	1000
17	Anderson, Robert	15632	18 Dellwood Ave	Dellwood	UST	F000	1000
18	Anderson, Thomas	376595	4 Spyglass Pl	Saint Paul	ISTS		1000
19	Anderson, Thomas	376595	4 Spyglass Pl	Saint Paul	WEL		1000
20	Anderson, Tom	213842	4 Fenlea Ci	Saint Paul	ST		1000
21	Anderson, Tom	213842	4 Fenlea Ci	Saint Paul	WEL		1000
22	Anderson, Willard	243945	7 Lacosta Ci	Saint Paul	ISTS		1000
23	Anderson, Willard	243945	7 Lacosta Ci	Saint Paul	WEL		1000
24	Andy Augers Service	82473	1934 Florence St	White Bear Lake	HWGP		7000
25	Anglers Bait	241708	4610 Highway 61	Saint Paul	WEL		9000
26	Aquacide Co	53711	1627 9th St	White Bear Lake	STOR	C000	9000
27	Arcand, Dave	253060	5702 Jenni Av	Saint Paul	WEL		1000
28	Arens, John	248439	7 Apple Orchard Ct	Saint Paul	ISTS		1000
29	Arens, John	248439	7 Apple Orchard Ct	Saint Paul	WEL		1000
30	Arndt Duvall Residence	32963	2550 Manitou Island	White Bear Lake	LUST		1100-01
31	Arvig, Carol	265868	5466 Bald Eagle Bl	Saint Paul	WEL		1100-01
32	Ashby, Mark	148276	5 Lacosta Dr	Saint Paul	ISTS		1000
33	Ashby, Mark	230177	5 Lacosta Dr	Saint Paul	ISTS		1000
34	Ashby, Mark	148276	5 Lacosta Dr	Saint Paul	WEL		1000

						PCS Material	
						Code	Facility
	Facility Name	MDH ID	Facility Address	CITY	PCS Code	(If Required)	Designation
35	Ashby, Mark	230177	5 Lacosta Dr	Saint Paul	WEL		1000
36	Augers Garage	82466	4760 Bald Eagle Ave	White Bear Lake	HWGP		2110-01
37	Bacchus Well	138585	3911 McKnight Rd	Saint Paul	SWUDS		4330
38	Bacchus Well	138585	3911 McKnight Rd	Saint Paul	WEL		4330
39	Bacon, Roger	338222	5109 Long Av	Saint Paul	ISTS		1100-01
40	Bacon, Roger	338222	5109 Long Av	Saint Paul	WEL		1100-01
41	Bacon, Roger	269437	6996 117th St N	Saint Paul	ISTS		1100-01
42	Bacon, Roger	269437	6996 117th St N	Saint Paul	WEL		1100-01
43	Bald Eagle Lake	467098		Saint Paul	BTLND		5000
44	Bald Eagle Lake	107549		Saint Paul	GAGE		5000
45	Bald Eagle Lake Unit No.	265867	5264 Bald Eagle Blvd E	Saint Paul	SWUDS		5000
46	Bald Eagle Lake Unit No.	265867	5264 Bald Eagle Blvd E	Saint Paul	WEL		5000
47	Bald Eagle Sports Assoc.	264111	6557 125th St	Saint Paul	ISTS		5000
48	Bald Eagle Sports Assoc.	264111	6557 125th St	Saint Paul	WEL		5000
49	Balko, Elizabeth	219982	2451 Hwy 96	Saint Paul	ISTS		1000
50	Balko, Elizabeth	219982	2451 Hwy 96	Saint Paul	WEL		1000
51	Baron, Roger	183848	1 Spyglass Rd	Saint Paul	ISTS		1000
52	Baron, Roger	183848	1 Spyglass Rd	Saint Paul	WEL		1000
53	Barron, Roger	411296	#42 Spy Glass Pl	Saint Paul	ISTS		1000
54	Barron, Roger	411296	#42 Spy Glass Pl	Saint Paul	WEL		1000
55	Barry, Nicholas	160647	12450 Upper Heather Av	Saint Paul	ISTS		1000
56	Barry, Nicholas	160647	12450 Upper Heather Av	Saint Paul	WEL		1000
57	Barth, Chad	206877	2430 Buffalo St	Saint Paul	ISTS		1100-01
58	Barth, Chad	206877	2430 Buffalo St	Saint Paul	WEL		1100-01
59	Barth, Eric	275869	1592 Lorane Ave	Saint Paul	WEL		1100-01
60	Bauer, Jonathan	357182	4 Bayhill Rd	Saint Paul	ISTS		1000
61	Baver, Jonathan	357182	4 Bayhill Rd	Saint Paul	WEL		1000
62	Beale, Allan	265138	5 Lookout Rd	Saint Paul	WEL		1000
63	Bear Town Autobody Inc.	82468	2034 Florence	White Bear Lake	HWGP		2110-01
64	Beartown Chiropractic Clinic	82456	4756 Banning Ave Ste 218	White Bear Lake	HWGP		6000
65	Becker, Russel	357318	2 High Pt	Saint Paul	WEL		1000
66	Becker, Russell	357318	2 High Pt	Saint Paul	ISTS		1000
67	Belden, Anthony	352014	11373 Hillcrest Dr	Saint Paul	ISTS		1000
68	Belden, Anthony	352014	11373 Hillcrest Dr	Saint Paul	WEL		1000
69	Belisle, John & Michele	145168	12315 Heather Av N	Saint Paul	ISTS		1000

						PCS Material	
						Code	Facility
	Facility Name	MDH ID	Facility Address	CITY	PCS Code	(If Required)	Designation
70	Belisle, John & Michele	145168	12315 Heather Av N	Saint Paul	WEL		1000
71	Bell, Thomas	135273	7575 125th St N	Saint Paul	ISTS		1000
72	Bell, Thomas	135273	7575 125th St N	Saint Paul	WEL		1000
73	Bellaire Automotive Services	10501	2501 E Co Rd F	White Bear Lake	RST		2110-01
74	Bellaire Automotive Services	10501	2501 E Co Rd F	White Bear Lake	UST	W000	2110-01
75	Bellaire Automotive Services	10501	2501 E Co Rd F	White Bear Lake	UST	W000	2110-01
76	Bellaire Automotive Services	10501	2501 E Co Rd F	White Bear Lake	UST	F000	2110-01
77	Bellaire Automotive Services	10501	2501 E Co Rd F	White Bear Lake	UST	F000	2110-01
78	Bellaire Automotive Services	10501	2501 E Co Rd F	White Bear Lake	UST	F000	2110-01
79	Bellaire Park Mw.	145182	2515 Shore Blvd S	Saint Paul	OBWELL		4330
80	Bellaire Park Mw.	145182	2515 Shore Blvd S	Saint Paul	WEL		4330
81	Benedict, Thomas	184140	62 Apple Orchard Rd	Saint Paul	ISTS		1000
82	Benedict, Thomas	184140	62 Apple Orchard Rd	Saint Paul	WEL		1000
83	Bengtson, Jesse	181131	7175 125th St N	Saint Paul	ISTS		1000
84	Bengtson, Jesse	181131	7175 125th St N	Saint Paul	WEL		1000
85	Bennett, Richard	160125	2 Pine Valley Dr	Saint Paul	ISTS		1000
86	Bennett, Richard	160125	2 Pine Valley Dr	Saint Paul	WEL		1000
87	Benson Airport	62043	5860 Highway 61	Saint Paul	AIRP		4000
88	Benson Airport	62044	5860 Highway 61	Saint Paul	AIRP		4000
89	Benson Airport	71628	5860 Highway 61	White Bear Lake	HWGP		4000
90	Benson Airport	32849	5860 Highway 61	White Bear Lake	LUST		4000
91	Benson Airport	262150	5860 Highway 61	Saint Paul	WEL		4000
92	Benson Airport	13069	5860 Highway 61	White Bear Lake	RST		4000
93	Benson Airport	13069	5860 Highway 61	White Bear Lake	UST	F000	4000
94	Benson Airport	13069	5860 Highway 61	White Bear Lake	UST	F000	4000
95	Benson Airport	13069	5860 Highway 61	White Bear Lake	UST	F000	4000
96	Best Western White Bear	97693	4940 Hwy 61 N	White Bear Lake	HWGP		1300
	Best Western White Bear Country						
97	Inn	128855	4940 Hwy 61 N	White Bear Lake	HTL		1300
98	Biecher, Cynthia	164604	11670 Greenlefe Av N	Saint Paul	ISTS		1000
99	Biecher, Cynthia	164604	11670 Greenlefe Av N	Saint Paul	WEL		1000
100	Bierbaum, Ron	363258	11945 Great Oaks Trl N	Saint Paul	ISTS		1100-01
101	Bierbaum, Ron	363258	11945 Great Oaks Trl N	Saint Paul	WEL		1100-01
102	Big A Auto Parts	97363	4689 Banning Ave	White Bear Lake	HWGP		2110-01
103	Big Bear Car Wash	97660	2180 7th St	White Bear Lake	HWGP		2110-02

						PCS Material	
						Code	Facility
	Facility Name	MDH ID	Facility Address	CITY	PCS Code	(If Required)	Designation
104	Bilder, Vickie	256189	2511 Taylor Av	Saint Paul	ISTS		1000
105	Bilder, Vickie	256189	2511 Taylor Av	Saint Paul	WEL		1000
106	Bill Flaspeter	261306	4010 Scheuneman Rd	Saint Paul	WEL		1000
107	Birch Lake	107558		White Bear Lake	GAGE		5000
108	Birch Lake Animal Hospital	97642	4830 White Bear Pkwy	White Bear Lake	HWGP		6000
109	Birch Lake Chiropractic Clinic	97369	4635 White Bear Pkwy	White Bear Lake	HWGP		6000
110	Birch Lake Dental	97554	4641 White Bear Pkwy	White Bear Lake	HWGP		6000
111	Birch Lake Elementary School	3385	1616 Birch Lake Ave	White Bear Lake	RST		6000
112	Birch Lake Elementary School	3385	1616 Birch Lake Ave	White Bear Lake	UST	F000	6000
113	Birch Lake Elementary School	46891	1616 Birch Lake Ave	White Bear Lake	SCH		6000
114	Birch Lake Elementary School	84245	1616 Birch Lake Ave	White Bear Lake	HWGP		6000
115	Bircher, Cynthia	1031730	11670 Greenlefe Av N	Saint Paul	ISTS		1000
116	Bircher, Cynthia	1031730	11670 Greenlefe Av N	Saint Paul	WEL		1000
117	Blankenship, Tren	188445	2187 Gardenette Dr. N	Saint Paul	WEL		1100-01
118	Blossom, Brian	370405	18 Apple Orchard Ct	Saint Paul	ISTS		1000
119	Blossom, Brian	370405	18 Apple Orchard Ct	Saint Paul	WEL		1000
120	Bolfinge, Tom	173167	3930 Haven La	Saint Paul	WEL		1100-01
121	Bolz, John	1031640	6 Bayhill Rd	Dellwood	ISTS		1000
122	Bolz, John	1031640	6 Bayhill Rd	Dellwood	WEL		1000
123	Borowski, Michael	196462	9 Augusta La	Saint Paul	ISTS		1000
124	Borowski, Michael	196462	9 Augusta La	Saint Paul	WEL		1000
125	Bowes, Michael	231507	1655 Hammond Rd	Saint Paul	ISTS		1100-01
126	Bowes, Michael	231507	1655 Hammond Rd	Saint Paul	WEL		1100-01
127	Braddock, Tommie	198911	58 Apple Orchard Rd	Saint Paul	ISTS		1000
128	Braddock, Tommie	198911	58 Apple Orchard Rd	Saint Paul	WEL		1000
129	Brian, John G III	161105	10350 Hadley Ct N	Saint Paul	WEL		1000
130	Brigley, Gregory	179175	5980 Portland Av	Saint Paul	ISTS		1000
131	Brigley, Gregory	179175	5980 Portland Av	Saint Paul	WEL		1000
132	Brinker, Dan	152767	5236 Otter Lake Rd	Saint Paul	ISTS		1100-01
133	Brinker, Dan	152767	5236 Otter Lake Rd	Saint Paul	WEL		1100-01
134	Bromenshenkel, Steven	82490	5087 Bald Eagle Ave	White Bear Lake	HWGP		1100-01
135	Brooks, David	12417	2627 S Shore Blvd	White Bear Lake	RST		1100-01
136	Brooks, David	12417	2627 S Shore Blvd	White Bear Lake	UST	F000	1100-01
137	Brown, Steve	190002	7080 117th St N	Saint Paul	ISTS		1100-01
138	Brown, Steve	190002	7080 117th St N	Saint Paul	WEL		1100-01

						PCS Material	
						Code	Facility
	Facility Name	MDH ID	Facility Address	CITY	PCS Code	(If Required)	Designation
139	Buchanan, Carole	249758	2720 Silver Fox Rd	Saint Paul	ISTS		1000
140	Buchanan, Carole	249758	2720 Silver Fox Rd	Saint Paul	WEL		1000
141	Burchell, Edward	155316	12 High Point Rd	Saint Paul	ISTS		1000
142	Burchell, Edward	155316	12 High Point Rd	Saint Paul	WEL		1000
143	Burger King	109211	1215 Gun Club Rd	White Bear Lake	REST		2000
144	Burth, Albert	162996	5084 Stewart Av	Saint Paul	ISTS		1000
145	Burth, Albert	162996	5084 Stewart Av	Saint Paul	WEL		1000
146	C & S Automotive	97299	1177 Birch Lake Blvd N	White Bear Lake	HWGP		2000
147	Cahill, Mike	198973	7 Pinevaleey Rd	Saint Paul	ISTS		1000
148	Cahill, Mike	198973	7 Pinevaleey Rd	Saint Paul	WEL		1000
149	Campbell, Patrick	243770	10 Apple Orchard Ct	Saint Paul	ISTS		1000
150	Campbell, Patrick	243770	10 Apple Orchard Ct	Saint Paul	WEL		1000
151	Carciofini, Ronald	1031717	6 Troon Ct	White Bear Lake	ISTS		1000
152	Carciofini, Ronald	1031717	6 Troon Ct	White Bear Lake	WEL		1000
153	Carlson, April	211790	2659 Richard Dr	Saint Paul	ISTS		1000
154	Carlson, April	211790	2659 Richard Dr	Saint Paul	WEL		1000
155	Carlson, Craig	236763	5712 Portland Av	Saint Paul	ISTS		1000
156	Carlson, Craig	236763	5712 Portland Av	Saint Paul	WEL		1000
157	Carlson, Daniel	167599	5094 Otter Lake Rd	Saint Paul	WEL		1000
158	Central Junior High School	33388	4857 Bloom Ave	White Bear Lake	LUST		6000
159	Central Junior High School	3360	4857 Bloom Ave	White Bear Lake	RST		6000
160	Central Junior High School	46964	4857 Bloom Avenue	White Bear Lake	SCH		6000
161	Central Junior High School	3360	4857 Bloom Ave	White Bear Lake	UST	F000	6000
162	Central Junior High School	3360	4857 Bloom Ave	White Bear Lake	UST	F000	6000
163	Central Junior High School	3360	4857 Bloom Ave	White Bear Lake	UST	F000	6000
164	Central Junior High School	3360	4857 Bloom Ave	White Bear Lake	UST	F000	6000
165	Central Junior High School	82393	4857 Bloom Ave	White Bear Lake	HWGP		6000
166	Chaffin, Barbara	170249	17 Dellwood Ave	Saint Paul	ISTS		1000
167	Chaffin, Barbara	170249	17 Dellwood Ave	Saint Paul	WEL		1000
168	Chemi Nutra	82453	4463 White Bear Pkwy Ste 105	White Bear Lake	HWGP		3000
169	Cherry Court Apartments	13849	2095 Dotte Dr	White Bear Lake	RST		1100-02
170	Cherry Court Apartments	13849	2095 Dotte Dr	White Bear Lake	UST	F000	1100-02
171	Cherry Court Apts	82438	2095 Dotte Dr Apt 105	White Bear Lake	HWGP		1100-02
172	Christy, Kermit	275778	1971 9 St	Saint Paul	WEL		1100-01

						PCS Material	
						Code	Facility
	Facility Name	MDH ID	Facility Address	CITY	PCS Code	(If Required)	Designation
	Church Of Saint Mary Of The Lake						
173	Inc	11121	4741 Bald Eagle Ave	White Bear Lake	RST		6000
	Church Of Saint Mary Of The Lake						
174	Inc	11121	4741 Bald Eagle Ave	White Bear Lake	UST	F000	6000
	City of White Bear Lake (boat						
175	warehouse)	402456	4461 Lake Ave	Saint Paul	WEL		2114-01
	City of White Bear Lake (boat						
176	warehouse)	402463	4461 Lake Ave	Saint Paul	WEL		2114-01
	City of White Bear Lake (boat						
177	warehouse)	402464	4461 Lake Ave	Saint Paul	WEL		2114-01
	City of White Bear Lake (boat						
178	warehouse)	393431	4461 Lake Ave	Saint Paul	WEL		2114-01
	City of White Bear Lake (vacant						
179	land)	247764	3974 Hoffman Rd	Saint Paul	WEL		6000
180	City Of White Bear Lake- Fire Station	11321	250 Miller Ave	White Bear Lake	RST		6000
181	City Of White Bear Lake- Fire Station	11321	250 Miller Ave	White Bear Lake	UST	F000	6000
182	City Of White Bear Lake- Fire Station	11321	250 Miller Ave	White Bear Lake	UST	F000	6000
183	Classic Auto Restoration	71631	3945 Highway 61	White Bear Lake	HWGP		2110-01
184	Classic Cleaners	82471	4397 Lake Ave S	White Bear Lake	HWGP		2600-01
185	Claude, Jeffrey	185672	4 Lacosta Dr	Saint Paul	ISTS		1000
186	Claude, Jeffrey	185672	4 Lacosta Dr	Saint Paul	WEL		1000
	Clear Choice Properties LLC (multi						
187	retail)	3953	1338 E Hwy 96	White Bear Lake	RST		2100
	Clear Choice Properties LLC (multi						
188	retail)	3953	1338 E Hwy 96	White Bear Lake	UST	W000	2100
	Clear Choice Properties LLC (multi						
189	retail)	3953	1338 E Hwy 96	White Bear Lake	UST	F000	2100
	Clear Choice Properties LLC (multi			1			
190	retail)	3953	1338 E Hwy 96	White Bear Lake	UST	F000	2100
	Clear Choice Properties LLC (multi						
191	retail)	3953	1338 E Hwy 96	White Bear Lake	UST	F000	2100

						PCS Material	
						Code	Facility
	Facility Name	MDH ID	Facility Address	CITY	PCS Code	(If Required)	Designation
	Clear Choice Properties LLC (multi						
192	retail)	32920	1338 E Hwy 96	White Bear Lake	LUST		2100
	Clear Choice Properties LLC (multi						
193	retail)	282696	1338 Hwy 96	Saint Paul	ST		2100
	Clear Choice Properties LLC (multi						
194	retail)	282696	1338 Hwy 96	Saint Paul	WEL		2100
	Clear Choice Properties LLC (multi						
195	retail)	144508	1338 Hwy 96	Saint Paul	ST		2100
	Clear Choice Properties LLC (multi						
196	retail)	144508	1338 Hwy 96	Saint Paul	WEL		2100
	Clear Choice Properties LLC (multi						
197	retail)	134570	1338 Hwy 96	Saint Paul	ST		2100
	Clear Choice Properties LLC (multi						
198	retail)	134570	1338 Hwy 96	Saint Paul	WEL		2100
	Clear Choice Properties LLC (multi						
199	retail)	272820	1338 Hwy 96	Saint Paul	ST		2100
	Clear Choice Properties LLC (multi						
200	retail)	272820	1338 Hwy 96	Saint Paul	WEL		2100
201	Clowser, Kirk	369884	17 Bayhill Rd	Saint Paul	ISTS		1000
202	Clowser, Kirk	369884	17 Bayhill Rd	Saint Paul	WEL		1000
203	Cobb, Cyrus B., House	107928	2199 1st St.	White Bear Lake	HSTS		5000
204	Collier, Kenneth	371730	11 Hillcrest Dr	Saint Paul	ISTS		1000
205	Collier, Kenneth	371730	11 Hillcrest Dr	Saint Paul	WEL		1000
206	Collins, James	390388	11515 Hillcrest Ct N	Saint Paul	ISTS		1000
207	Collins, James	390388	11515 Hillcrest Ct N	Saint Paul	WEL		1000
208	Comfort, Thomas	228242	10435 Hadley Ci N	Saint Paul	ISTS		1000
209	Comfort, Thomas	228242	10435 Hadley Ci N	Saint Paul	WEL		1000
210	Commercial Color	71639	2063 E County Road F	White Bear Lake	HWGP		2417
211	Commercial Printing	13991	4026 Hoffman Rd	White Bear Lake	RST		2417
212	Commercial Printing	13991	4026 Hoffman Rd	White Bear Lake	UST	F000	2417
213	Commercial Printing Inc	82448	4026 Hoffman Rd	White Bear Lake	HWGP		2417
214	Conley, Annette	241919	9 Gardner La	Saint Paul	ISTS		1000
215	Conley, Annette	241919	9 Gardner La	Saint Paul	WEL		1000
216	Container Graphics Corporation	23128	4841 White Bear Parkway	White Bear Lake	TRS		2417
217	Continental Motors	71663	4000 N Highway 61	White Bear Lake	HWGP		2110

						PCS Material	
						Code	Facility
	Facility Name	MDH ID	Facility Address	CITY	PCS Code	(If Required)	Designation
218	Copeland, Richard	141200	25 Tamarisk Rd	Saint Paul	WEL		1000
219	Cortec Corp	82450	4119 White Bear Pkwy	White Bear Lake	HWGP		3000
220	Cortec Corp.	107346	4119 White Bear Pky.	White Bear Lake	TRS		3000
221	Cossack, Stephan	384763	5 High Point Rd	Saint Paul	ISTS		1000
222	Cossack, Stephan	384763	5 High Point Rd	Saint Paul	WEL		1000
223	Crandall David Dr Dds	97375	2300 E Highway 96	White Bear Lake	HWGP		6000
224	Cremin, Pete	149087	3920 Haven La	Saint Paul	WEL		1000
225	Cristan, Louis	139540	10320 Hadley Ct	Saint Paul	ISTS		1000
226	Cristan, Louis	139540	10320 Hadley Ct	Saint Paul	WEL		1000
227	Cristan, Richard	209828	12210 Heather Av N	Saint Paul	ISTS		1000
228	Cristan, Richard	209828	12210 Heather Av N	Saint Paul	WEL		1000
229	Cunov, James	159391	6 Pinevalley Rd	Saint Paul	ISTS		1000
230	Cunov, James	159391	6 Pinevalley Rd	Saint Paul	WEL		1000
231	Curb Appeal Total Maintenance	57185	5981 Norway Pine Ct	Saint Paul	STOR	C000	2123
232	Dahl, Garth	291731	2231 Stillwater St	Saint Paul	WEL		1100-01
233	Daniels, Katie	276466	1305 Birch Lake Bl	Saint Paul	ISTS		1000
234	Daniels, Katie	276466	1305 Birch Lake Bl	Saint Paul	WEL		1000
235	Daniels, Stewart	194737	55 Apple Orchard Rd	Saint Paul	ISTS		1000
236	Daniels, Stewart	194737	55 Apple Orchard Rd	Saint Paul	WEL		1000
237	Dellwood Country Club	269142	29 Hwy 96 E	Dellwood	PWS		5000
238	Dellwood Country Club	269142	29 Hwy 96 E	Dellwood	UNSPEC		5000
239	Dellwood Country Club	269142	29 Hwy 96 E	Dellwood	WEL		5000
240	Dellwood Golf	240027	29 East Highway 96	Saint Paul	WEL		5000
241	Dellwood Golf No. 1	237567	29 East Highway 96	Saint Paul	SWUDS		5000
242	Dellwood Golf No. 1	237567	29 Hwy 96 E	Saint Paul	WEL		5000
243	Dellwood Golf No. 3	213009	29 Hwy 96 E	Saint Paul	WEL		5000
244	Dellwood Golf No.2	222932	29 East Highway 96	Saint Paul	SWUDS		5000
245	Dellwood Golf No.2	222932	29 Hwy 96 E	Saint Paul	WEL		5000
246	Dellwood Hills Golf Club	71816	29 E Highway 96	Dellwood	HWGP		5000
247	Dellwood Hills Golf Club	32103	29 E Hwy 96	Dellwood	LUST		5000
248	Dellwood Hills Golf Club	14113	29 E Hwy 96	Dellwood	RST		5000
249	Dellwood Hills Golf Club	14113	29 E Hwy 96	Dellwood	UST	F000	5000
250	Dellwood Hills Golf Club	14113	29 E Hwy 96	Dellwood	UST	F000	5000
251	Dellwood Hills Golf Club	404648	29 Highway 96	Stillwater	ISTS		5000
252	Dellwood Hills Golf Club	404648	29 Highway 96	Stillwater	WEL		5000

						PCS Material	
						Code	Facility
	Facility Name	MDH ID	Facility Address	CITY	PCS Code	(If Required)	Designation
253	Dellwood Hills Golf Club	180664	29 Hwy 96 E	Dellwood	ISTS		5000
254	Dellwood Hills Golf Club	180664	29 Hwy 96 E	Dellwood	PWS		5000
255	Dellwood Hills Golf Club	180664	29 Hwy 96 E	Dellwood	WEL		5000
256	Devore, Kevin	1031482	11535 Hillcrest Ct N	Dellwood	ISTS		1000
257	Devore, Kevin	1031482	11535 Hillcrest Ct N	Dellwood	WEL		1000
258	Dimensions Unlimited Inc	82411	4467 White Bear Pkwy	Saint Paul	HWGP		3000
259	Dingle, Helen	283178	28 Apple Orchard Rd	Saint Paul	ISTS		1000
260	Dingle, Helen	283178	28 Apple Orchard Rd	Saint Paul	WEL		1000
261	Ditmanson, Philip	262785	43 Eldorado Ci	Saint Paul	ISTS		1000
262	Ditmanson, Philip	262785	43 Eldorado Ci	Saint Paul	WEL		1000
263	Dittberner, Joel	365171	7504 115 St N	Dellwood	ISTS		1000
264	Dittberner, Joel	365171	7504 115 St N	Dellwood	WEL		1000
265	Dittel, Steven	193840	10 Pinevalley Dr	Saint Paul	ISTS		1000
266	Dittel, Steven	193840	10 Pinevalley Dr	Saint Paul	WEL		1000
			vicinity east of Division Street				
267	Division Avenue Road Debris Site	40681	and south of the railroad tracks	White Bear Lake	DMP		4346-06
268	Donegan, Steven	268725	12260 Heather Av N	Saint Paul	ISTS		1000
269	Donegan, Steven	268725	12260 Heather Av N	Saint Paul	WEL		1000
270	Don's Little Bar	146330	4150 Hoffman Rd	Saint Paul	WEL		2500
271	Dorsey, James	237110	10475 Hadley Av N	Saint Paul	ISTS		1000
272	Dorsey, James	237110	10475 Hadley Av N	Saint Paul	WEL		1000
273	Dupre, Lenny	259078	1 Highway 96	Saint Paul	ISTS		1000
274	Dupre, Lenny	259078	1 Highway 96	Saint Paul	WEL		1000
275	Dustin, Gregory	183101	9 Spyglass Rd	Saint Paul	ISTS		1000
276	Dustin, Gregory	183101	9 Spyglass Rd	Saint Paul	WEL		1000
277	Dworak, Dean	1031545	12325 Upper Heather Av	Hugo	WEL		1000
278	Eagle Brook Church	82440	2401 E Buffalo St	White Bear Lake	HWGP		6600
279	Eckholm, David	282541	3 Lookout Rd	Saint Paul	ISTS		1000
280	Eckholm, David	282541	3 Lookout Rd	Saint Paul	WEL		1000
281	Edwards, Mark	187553	2721 Lake Av	Saint Paul	ISTS		1000
282	Edwards, Mark	187553	2721 Lake Av	Saint Paul	WEL		1000
283	Eisenhuth Jennifer L Dds Ms	82455	4756 Banning Ave Ste 206	White Bear Lake	HWGP		6000
284	Electric Cords	71653	5350 N Highway 61	White Bear Lake	HWGP		3000
285	Elements Inc	82459	4920 Otter Lake Rd	White Bear Lake	HWGP		3000

						PCS Material	
						Code	Facility
	Facility Name	MDH ID	Facility Address	CITY	PCS Code	(If Required)	Designation
286	Ellison, Wayne	134881	7275 125 St N	Saint Paul	ISTS		1000
287	Ellison, Wayne	134881	7275 125 St N	Saint Paul	WEL		1000
288	Elmer, Victoria	179965	15 Gardner La	Saint Paul	ISTS		1000
289	Elmer, Victoria	179965	15 Gardner La	Saint Paul	WEL		1000
290	Emeott, Paul	226751	3960 Scheuneman Rd	Saint Paul	WEL		1000
291	Empire Rebar Inc	71627	2320 County Road J	White Bear Lake	HWGP		6000
292	Engstrom, Daniel	208788	13 Doral Rd	Saint Paul	ISTS		1000
293	Engstrom, Daniel	208788	13 Doral Rd	Saint Paul	WEL		1000
294	Erickson Freedom Gas Station	1033	4852 Hwy 61	White Bear Lake	RST		2116
295	Erickson Freedom Gas Station	1033	4852 Hwy 61	White Bear Lake	UST	F000	2116
296	Erickson Freedom Gas Station	1033	4852 Hwy 61	White Bear Lake	UST	F000	2116
297	Erickson Freedom Gas Station	1033	4852 Hwy 61	White Bear Lake	UST	F000	2116
298	Erickson Freedom Gas Station	1033	4852 Hwy 61	White Bear Lake	UST	F000	2116
299	Erickson Freedom Gas Station	1033	4852 Hwy 61	White Bear Lake	UST	F000	2116
300	Erickson Freedom Gas Station	1033	4852 Hwy 61	White Bear Lake	UST	F000	2116
301	Erickson Freedom Gas Station	1033	4852 Hwy 61	White Bear Lake	UST	F000	2116
302	Erickson Freedom Gas Station	27138	4852 Hwy 61	White Bear Lake	LUST		2116
303	Erickson Keith Orthodontist	82495	4790 White Bear Pkwy	White Bear Lake	HWGP		6000
304	Erickson Printing	82394	4905 Long Ave	White Bear Lake	HWGP		2100
305	Erickson, Barbara	340867	2214 Stillwater St	Saint Paul	WEL		1100-01
306	Estrem, Tom	236372	1570 Goose Lake Rd	Saint Paul	WEL		1100-01
307	Ettel Roger G Dds	97596	4801 Highway 61	White Bear Lake	HWGP		6000
308	Fandler, Daniel	200368	7300 115 St N	Saint Paul	ISTS		1000
309	Fandler, Daniel	200368	7300 115 St N	Saint Paul	WEL		1000
310	Fangel, Steven	1031380	11491 Hillcrest Dr	White Bear Lake	WEL		1000
311	Farinacci, Robert	273216	10420 Hadley Ci N	Saint Paul	ISTS		1000
312	Farinacci, Robert	273216	10420 Hadley Ci N	Saint Paul	WEL		1000
313	Fashion Eyes	82383	2200 3rd St	White Bear Lake	HWGP		2100
314	Faulkner Property LLC (warehouse)	184340	2340 J Cr	Saint Paul	ISTS		2000
315	Faulkner Property LLC (warehouse)	184340	2340 J Cr	Saint Paul	WEL		2000
316	Feiner, Roberta	187269	1345 Goose Lake Rd	Saint Paul	WEL		1100-01
317	First Evangelical Lutheran Chu	82447	4000 N Linden	White Bear Lake	HWGP		6600
318	First Lutheran Church	33552	4000 Linden St	White Bear Lake	LUST		6600

						PCS Material	
						Code	Facility
	Facility Name	MDH ID	Facility Address	CITY	PCS Code	(If Required)	Designation
319	First Lutheran Church	15341	4000 Linden St	White Bear Lake	RST		6600
320	First Lutheran Church	15341	4000 Linden St	White Bear Lake	UST	F000	6600
321	First Lutheran Church	15341	4000 Linden St	White Bear Lake	UST	F000	6600
322	First National Bank of White Bear	107930	4744 Washington Ave.	White Bear Lake	HSTS		2000
323	First Presbyterian Church	27818	4821 Bloom Avenue	White Bear Lake	LUST		6000
324	Flaherty, Catherine	155145	12135 Heather Av N	Saint Paul	ISTS		1000
325	Flaherty, Catherine	273045	12135 Heather Av N	Saint Paul	ISTS		1000
326	Flaherty, Catherine	155145	12135 Heather Av N	Saint Paul	WEL		1000
327	Flaherty, Catherine	273045	12135 Heather Av N	Saint Paul	WEL		1000
328	Flipp, Dave	157388	5284 Eastcounty Line	Saint Paul	ISTS		1000
329	Flipp, Dave	157388	5284 Eastcounty Line	Saint Paul	WEL		1000
330	Foley, Christopher	284292	14 Doral Av	Saint Paul	ISTS		1000
331	Foley, Christopher	284292	14 Doral Av	Saint Paul	WEL		1000
332	Ford, Daniel	221615	12424 Goodview Av N	Saint Paul	ISTS		1000
333	Ford, Daniel	221615	12424 Goodview Av N	Saint Paul	WEL		1000
334	Former Gun Club	71634	1323 Hwy 96	White Bear Lake	HWGP		5000
335	Frazer Automotive	3524	2140 3rd St	White Bear Lake	AST	W000	2110-01
336	Frazer Automotive	33550	2140 3rd St	White Bear Lake	LUST		2110-01
337	Frazer Automotive	3524	2140 3rd St	White Bear Lake	RST		2110-01
338	Frazer Automotive	3524	2140 3rd St	White Bear Lake	UST	F000	2110-01
339	Frazer Automotive	3524	2140 3rd St	White Bear Lake	UST	F000	2110-01
340	Frazer Automotive	3524	2140 3rd St	White Bear Lake	UST	F000	2110-01
341	Frazer Automotive Service	82467	2140 3rd St	White Bear Lake	HWGP		2110-01
342	Freds Tire Co	71664	3955 Highway 61	White Bear Lake	HWGP		2110-01
343	Freds Tires	27139	3955 Hwy 61	White Bear Lake	LUST		2110-01
344	Freedom Valu Center	4152	2490 E Co Rd F	White Bear Lake	RST		2116
345	Freedom Valu Center	4152	2490 E Co Rd F	White Bear Lake	UST	F000	2116
346	Freedom Valu Center	4152	2490 E Co Rd F	White Bear Lake	UST	F000	2116
347	Freedom Valu Center	4152	2490 E Co Rd F	White Bear Lake	UST	F000	2116
348	Freedom Valu Center	4152	2490 E Co Rd F	White Bear Lake	UST	F000	2116
349	Freedom Valu Center	4152	2490 E Co Rd F	White Bear Lake	UST	W000	2116
350	Freedom Valu Center	4152	2490 E Co Rd F	White Bear Lake	UST	F000	2116
351	Freedom Valu Center	4152	2490 E Co Rd F	White Bear Lake	UST	F000	2116
352	Freedom Valu Center	4152	2490 E Co Rd F	White Bear Lake	UST	F000	2116

						PCS Material	
						Code	Facility
	Facility Name	MDH ID	Facility Address	CITY	PCS Code	(If Required)	Designation
353	Freedom Valu Center	4152	2490 E Co Rd F	White Bear Lake	UST	F000	2116
354	Freedom Valu Center	4152	2490 E Co Rd F	White Bear Lake	UST	F000	2116
355	Freedom Valu Center	32941	2490 E Co Rd F	White Bear Lake	LUST		2116
356	Freedom Valu Center (Gas station)	196079	2490 E Co Rd F	Saint Paul	WEL		2116
357	Frick, James	151897	11610 Greenlefe Av N	Saint Paul	ISTS		1000
358	Frick, James	151897	11610 Greenlefe Av N	Saint Paul	WEL		1000
359	Fridinger, Ellen	173786	2517 Manitou Island	Saint Paul	WEL		1100-01
360	Friend, Jeffery	187472	5265 Grand Av	Saint Paul	ISTS		1100-01
361	Friend, Jeffery	187472	5265 Grand Av	Saint Paul	WEL		1100-01
362	Gadbois, Jerry	261668	6990 117th St	Saint Paul	ISTS		1000
363	Gadbois, Jerry	261668	6990 117th St	Saint Paul	WEL		1000
364	Gadbois, Marilyn	1026244	5107 Long Av	White Bear Lake	ISTS		1100-01
365	Gadbois, Marilyn	1026244	5107 Long Av	White Bear Lake	WEL		1100-01
366	Gallaway, Michael	33774	5362 Eagle St	White Bear Lake	LUST		1100-01
367	Gallwas, Douglas	258567	5 Apple Orchard Ct	Saint Paul	ISTS		1000
368	Gallwas, Douglas	258567	5 Apple Orchard Ct	Saint Paul	WEL		1000
369	Garfield, Alice	134994	4264 Cottage Park Rd	Saint Paul	WEL		1100-01
370	Garry, Robert	1031434	22 Apple Orchard Rd	Dellwood	ISTS		1000
371	Garry, Robert	1031434	22 Apple Orchard Rd	Dellwood	WEL		1000
372	Gem Lake Hills Golf	285978	4039 Scheuneman Rd	Saint Paul	SWUDS		5000
373	Gem Lake Hills Golf	285978	4039 Scheuneman Rd	Saint Paul	WEL		5000
374	Gem Lake Hills Golf	149659	4031 Scheuneman Rd	White Bear Lake	WEL		5000
375	Gem Lake Hills Golf Course	82406	4039 Scheueneman Rd	Saint Paul	HWGP		5000
376	Gem Lake Hills Golf Course	149659	4031 Scheuneman Rd	White Bear Lake	ISTS		5000
377	Gem Lake Hills Golf Course	149659	4031 Scheuneman Rd	White Bear Lake	PWS		5000
378	Gem Lake Hills Golf Course	25944	4039 Scheunemann Rd	Saint Paul	RECG		5000
379	Gem Lake Hills Golf Course	52628	4039 Scheuneman Rd	White Bear Lake	STOR	C000	5000
380	Gem Lake Lake Level Well	252670	1300 Goose Lake Rd	Saint Paul	WEL		5000
381	Gibbs, Jacob	204672	12465 Heather Av N	Saint Paul	ISTS		1000
382	Gibbs, Jacob	204672	12465 Heather Av N	Saint Paul	WEL		1000
383	Gilles Jeffery T	82437	2067 Dotte Dr	White Bear Lake	HWGP		1100-01
384	Gilsrud, James	217111	12240 Goodview Av	Saint Paul	ISTS		1000
385	Gilsrud, James	217111	12240 Goodview Av	Saint Paul	WEL		1000
386	Glamos, Paul	231138	5718 Portland Av	Saint Paul	WEL		1100-01
						PCS Material	
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						Code	Facility
	Facility Name	MDH ID	Facility Address	CITY	PCS Code	(If Required)	Designation
387	Godfrey, Peter	209624	11 Apple Orchard Ct	Saint Paul	ISTS		1000
388	Godfrey, Peter	209624	11 Apple Orchard Ct	Saint Paul	WEL		1000
389	Goettert, Ed	242115	45 Eldorado Ci	Saint Paul	ISTS		1000
390	Goettert, Ed	242115	45 Eldorado Ci	Saint Paul	WEL		1000
391	Goff, Robert	171149	11490 Greenlefe Av	Saint Paul	ISTS		1000
392	Goff, Robert	171149	11490 Greenlefe Av	Saint Paul	WEL		1000
393	Granec, Terry	180623	12020 Goodview Av	Saint Paul	ISTS		1000
394	Granec, Terry	180623	12020 Goodview Av	Saint Paul	WEL		1000
395	Granlund, Charles	225050	3907 Tessier Rd	Saint Paul	ISTS		1000
396	Granlund, Charles	225050	3907 Tessier Rd	Saint Paul	WEL		1000
397	Gray, Randy	211796	5375 Northwest Av	Saint Paul	ISTS		1100-01
398	Gray, Randy	211796	5375 Northwest Av	Saint Paul	WEL		1100-01
399	Gregs Paint	71636	1800 Highway 96	White Bear Lake	HWGP		2130-01
400	Greve,Kristie	159109	11285 Greenlefe Rd	Saint Paul	ISTS		1000
401	Greve,Kristie	159109	11285 Greenlefe Rd	Saint Paul	WEL		1000
402	Groschen, Paul	295086	2494 8th St	Saint Paul	WEL		1000
403	Gulden Kent C Dds Pa	97377	4437 S Lake Ave	White Bear Lake	HWGP		6511
404	Hall, Robert	243234	7 Fenlea Ct	Saint Paul	ISTS		1000
405	Hall, Robert	243234	7 Fenlea Ct	Saint Paul	WEL		1000
406	Hance, Ron	136219	4 Doral Rd	Saint Paul	ISTS		1000
407	Hance, Ron	136219	4 Doral Rd	Saint Paul	WEL		1000
408	Hanggi , Jr, Gerald	192048	5 Eldorado Dr	Saint Paul	ISTS		1000
409	Hanggi , Jr, Gerald	192048	5 Eldorado Dr	Saint Paul	WEL		1000
410	Hansen, Fred	357622	2483 Lake Av	Saint Paul	UNSPEC		1100-01
411	Hansen, Fred	357622	2483 Lake Av	Saint Paul	WEL		1100-01
412	Hart, Polly	219090	53 Peninsula Rd	Saint Paul	ISTS		1000
413	Hart, Polly	219090	53 Peninsula Rd	Saint Paul	WEL		1000
414	Hartwig, Gary	231487	5255 Grand Av	Saint Paul	WEL		1000
415	Hauge, Scott	280973	10 Doral Rd	Saint Paul	ISTS		1000
416	Hauge, Scott	280973	10 Doral Rd	Saint Paul	WEL		1000
417	Hauser, Steve	282480	2599 Bloom Rd	Saint Paul	ISTS		1000
418	Hauser, Steve	282480	2599 Bloom Rd	Saint Paul	WEL		1000
419	Healthpartners	276348	1430 Highway 96	Saint Paul	ISTS		6000
420	Healthpartners	276348	1430 Highway 96	Saint Paul	WEL		6000
421	Healthpartners	97387	1430 Hwy 96	White Bear Lake	HWGP		6000

						PCS Material	
						Code	Facility
	Facility Name	MDH ID	Facility Address	CITY	PCS Code	(If Required)	Designation
422	Hegg, James	187151	5409 Portland Av	Saint Paul	ISTS		1000
423	Hegg, James	187151	5409 Portland Av	Saint Paul	WEL		1000
424	Heimer, Mark	158848	2172 Gardenette Dr N	Saint Paul	WEL		1100-01
425	Heine, Richard	151246	6 Lookout Rd	Saint Paul	ISTS		1000
426	Heine, Richard	151246	6 Lookout Rd	Saint Paul	WEL		1000
427	Hellzen, Gustaf III	241230	2561 4 St	Saint Paul	ISTS		1100-01
428	Hellzen, Gustaf III	241230	2561 4 St	Saint Paul	WEL		1100-01
429	Hendrickson, Mark	1015235	4038 Scheuneman	Saint Paul	WEL		1000
430	Herlitz,john	317113	4921 Georgia Ln	Saint Paul	ISTS		1100-01
431	Herlitz,john	317113	4921 Georgia Ln	Saint Paul	WEL		1100-01
432	Hermerding, Bryan	153210	2420 Buffalo St	Saint Paul	ISTS		1100-01
433	Hermerding, Bryan	153210	2420 Buffalo St	Saint Paul	WEL		1100-01
434	Hexum, Jon	147785	5355 Northwest Av	Saint Paul	WEL		1100-01
435	Heydt, Michael	141130	1647 Hammond Rd	Saint Paul	ISTS		1000
436	Heydt, Michael	141130	1647 Hammond Rd	Saint Paul	WEL		1000
437	Hi Tempo Ski Shop	71676	3959 N Highway 61	White Bear Lake	HWGP		5300
438	Hilker, Marcus	3411	4698 Banning Ave	White Bear Lake	RST		1100-01
439	Hilker, Marcus	3411	4698 Banning Ave	White Bear Lake	UST	F000	1100-01
440	Hill, Richard	224510	12360 Heather Av	Saint Paul	ISTS		1000
441	Hill, Richard	224510	12360 Heather Av	Saint Paul	WEL		1000
442	Hirte, Robert	174236	2649 Bloom Rd	Saint Paul	ISTS		1000
443	Hirte, Robert	174236	2649 Bloom Rd	Saint Paul	WEL		1000
444	Hoefler, Peter	256948	6 Fenlea Ci	Saint Paul	ISTS		1000
445	Hoefler, Peter	256948	6 Fenlea Ci	Saint Paul	WEL		1000
446	Hoffman, Andrew	244854	4116 Jay Ln	Saint Paul	WEL		1100-01
447	Holiday Station No 215	26564	1800 E Co Rd F	White Bear Lake	LUST		2116
448	Holiday Stationstore #215	3454	1800 E Co Rd F	White Bear Lake	RST		2116
449	Holiday Stationstore #215	3454	1800 E Co Rd F	White Bear Lake	UST	F000	2116
450	Holiday Stationstore #215	3454	1800 E Co Rd F	White Bear Lake	UST	F000	2116
451	Holiday Stationstore #215	3454	1800 E Co Rd F	White Bear Lake	UST	F000	2116
452	Holiday Stationstore #215	3454	1800 E Co Rd F	White Bear Lake	UST	F000	2116
453	Holland, Matt	210682	21 Doral Rd	Saint Paul	ISTS		1000
454	Holland, Matt	210682	21 Doral Rd	Saint Paul	WEL		1000
455	Hollen, Stanley	379145	11505 Hillcrest Ct N	Grant	UNSPEC		1000
456	Hollen, Stanley	379145	11505 Hillcrest Ct N	Grant	WEL		1000

						PCS Material	
						Code	Facility
	Facility Name	MDH ID	Facility Address	CITY	PCS Code	(If Required)	Designation
457	Holt, Robert	282971	8 Augusta La	Saint Paul	ISTS		1000
458	Holt, Robert	282971	8 Augusta La	Saint Paul	WEL		1000
459	Posch, James	257875	5078 Stewart Av	Saint Paul	ISTS		1000
460	Posch, James	257875	5078 Stewart Av	Saint Paul	WEL		1000
461	Hornstien, Kathleen	255857	5043 Bald Eagle Av	Saint Paul	WEL		1100-01
462	Houston, Michelle	278352	12250 Upper Heather Av	Saint Paul	ISTS		1000
463	Houston, Michelle	278352	12250 Upper Heather Av	Saint Paul	WEL		1000
464	Huizinga,John	253416	5 Spyglass Rd	Saint Paul	ISTS		1000
465	Huizinga,John	253416	5 Spyglass Rd	Saint Paul	WEL		1000
466	Humpal,Brian	227358	6616 Indian Wells Tr	Saint Paul	ISTS		1000
467	Humpal,Brian	227358	6616 Indian Wells Tr	Saint Paul	WEL		1000
468	Irvine, Debra	198655	2286 Lilac La	Saint Paul	WEL		1100-01
469	Ivancie, Susan	359968	11780 Honeye St N	Saint Paul	ISTS		1000
470	Ivancie, Susan	359968	11780 Honeye St N	Saint Paul	WEL		1000
471	Jakes Quality Auto Repair	82390	4034 Hoffman Rd	White Bear Lake	HWGP		2110-01
472	Jakes Quality Auto Repair	97430	4034 Hoffman Rd	White Bear Lake	HWGP		2110-01
473	Jakubiak,Renee	191343	6463 117th St N	Saint Paul	ISTS		1000
474	Jakubiak,Renee	191343	6463 117th St N	Saint Paul	WEL		1000
475	Janes, Donald	263549	5 Doral Rd	Saint Paul	ISTS		1000
476	Janes, Donald	263549	5 Doral Rd	Saint Paul	WEL		1000
477	Janos, James	243880	100 Apple Orchard Rd	Saint Paul	ISTS		1000
478	Janos, James	243880	100 Apple Orchard Rd	Saint Paul	WEL		1000
479	Jeatran, William	379132	9301 Ivy Av S	Grant	ISTS		1000
480	Jeatran, William	379132	9301 Ivy Av S	Grant	WEL		1000
481	Jiffy Lube	186093	4561 Lake Ave	Saint Paul	WEL		2110-01
482	Jiffy Lube	196088	4561 Lake Ave	Saint Paul	WEL		2110-01
483	Jiffy Lube	230396	4561 Lake Ave	Saint Paul	WEL		2110-01
484	Jiffy Lube	82469	4561 Lake Ave	White Bear Lake	HWGP		2110-01
485	Jiffy Lube	33581	4561 Lake Ave	White Bear Lake	LUST		2110-01
486	Jiffy Lube	3662	4561 Lake Ave	White Bear Lake	RST		2110-01
487	Jiffy Lube	3662	4561 Lake Ave	White Bear Lake	UST	F000	2110-01
488	Jiffy Lube	3662	4561 Lake Ave	White Bear Lake	UST	F000	2110-01
489	Jiffy Lube	3662	4561 Lake Ave	White Bear Lake	UST	F000	2110-01
490	Jiffy Lube	3662	4561 Lake Ave	White Bear Lake	UST	F000	2110-01
491	Jiffy Lube	3662	4561 Lake Ave	White Bear Lake	UST	W000	2110-01

						PCS Material	
						Code	Facility
	Facility Name	MDH ID	Facility Address	CITY	PCS Code	(If Required)	Designation
492	Jiffy Lube	3662	4561 Lake Ave	White Bear Lake	UST	F000	2110-01
493	Jiffy Lube	3662	4561 Lake Ave	White Bear Lake	UST	F000	2110-01
494	Jiffy Lube	3662	4561 Lake Ave	White Bear Lake	UST	F000	2110-01
495	Jiffy Lube	82454	4561 Lake Ave	White Bear Lake	HWGP		2110-01
496	Jolly, Kathryn	136146	5140 Mead Rd	Saint Paul	WEL		1100-01
497	Jungbauer, Walter	194951	16 High Point Rd	Saint Paul	ISTS		1000
498	Jungbauer, Walter	194951	16 High Point Rd	Saint Paul	WEL		1000
499	Kaldahl, Henry Jr.	169161	5053 Morehead Av	Saint Paul	ISTS		1000
500	Kaldahl, Henry Jr.	169161	5053 Morehead Av	Saint Paul	WEL		1000
501	Kameli, Nader	249043	12165 Upper Heather Av	Saint Paul	ISTS		1000
502	Kameli, Nader	249043	12165 Upper Heather Av	Saint Paul	WEL		1000
503	Kedrowski, Leonard	225311	16 Dellwood Ave	Saint Paul	ISTS		1000
504	Kedrowski, Leonard	225311	16 Dellwood Ave	Saint Paul	WEL		1000
505	Keller, Zachary	243017	5694 Jenni La	Saint Paul	ISTS		1000
506	Keller, Zachary	243017	5694 Jenni La	Saint Paul	WEL		1000
507	Kemp, Donald	135394	5 Hillcrest Dr	Saint Paul	ISTS		1000
508	Kemp, Donald	135394	5 Hillcrest Dr	Saint Paul	WEL		1000
509	Kenyon Wright And Kron Dds	82392	4706 Banning Ave	White Bear Lake	HWGP		6000
510	Keuhn, Larry	204255	1381 Goose Lake Rd	Saint Paul	ISTS		1100-01
511	Keuhn, Larry	204255	1381 Goose Lake Rd	Saint Paul	WEL		1100-01
512	Kirchhamer, Todd	132817	4170 Otter Lake Rd	Saint Paul	WEL		1100-01
513	Kirkland, Tanya	210289	#1 Bayhill Rd	Saint Paul	ISTS		1000
514	Kirkland, Tanya	210289	#1 Bayhill Rd	Saint Paul	WEL		1000
515	Knecht, Harold C III	164298	20 Doral Rd	Saint Paul	ISTS		1000
516	Knecht, Harold C III	164298	20 Doral Rd	Saint Paul	WEL		1000
517	Knutson Auto Service	82464	2015 5th St	White Bear Lake	HWGP		2110-01
518	Konkel, Bradley	200620	5388 Portland Av	Saint Paul	ISTS		1000
519	Konkel, Bradley	200620	5388 Portland Av	Saint Paul	WEL		1000
520	Kordosky, Gordon	231394	3911 Haven La	Saint Paul	WEL		1000
521	Korkys	226920	5350 Hwy 61	Saint Paul	ISTS		2000
522	Korkys	226920	5350 Hwy 61	Saint Paul	WEL		2000
523	Kramer, Ken	240396	11810 Hamlet Av N	Saint Paul	ISTS		1000
524	Kramer, Ken	240396	11810 Hamlet Av N	Saint Paul	WEL		1000
525	Kraus, Linda	264695	5246 Beaver St	Saint Paul	ISTS		1100-01
526	Kraus, Linda	264695	5246 Beaver St	Saint Paul	WEL		1100-01

						PCS Material	
						Code	Facility
	Facility Name	MDH ID	Facility Address	CITY	PCS Code	(If Required)	Designation
527	Kreuger, Robert	162581	5200 Latta St	Saint Paul	WEL		1100-01
528	Krey, Timothy	149477	23 Doral Rd	Saint Paul	ISTS		1000
529	Krey, Timothy	149477	23 Doral Rd	Saint Paul	WEL		1000
530	Kroshus, Timothy	139148	77 Apple Orchard Rd	Saint Paul	ISTS		1000
531	Kroshus, Timothy	139148	77 Apple Orchard Rd	Saint Paul	WEL		1000
532	Kunin, Constance	202091	1270 Goose Lake Rd	Saint Paul	ISTS		1000
533	Kunin, Constance	202091	1270 Goose Lake Rd	Saint Paul	WEL		1000
534	Lafave, Francis	220015	53 Dellwood Cove	Saint Paul	ISTS		1000
535	Lafave, Francis	220015	53 Dellwood Cove	Saint Paul	WEL		1000
536	Lake Animal Hospital	147461	5900 Highway 61	Saint Paul	ISTS		6000
537	Lake Animal Hospital	147461	5900 Highway 61	Saint Paul	WEL		6000
538	Lake Animal Hospital	101458	5900 Highway 61	White Bear Lake	HWGP		6000
539	Lake Area Painting And Decorating	82472	4663 Murray Ave	White Bear Lake	HWGP		2130
540	Lakeaires Elementary School	33476	3963 Van Dyke	White Bear Lake	LUST		6100
541	Lakeaires Elementary School	97364	3963 Van Dyke Ave	White Bear Lake	HWGP		6100
542	Lakeaires Elementary School	3386	3963 Van Dyke	White Bear Lake	RST		6100
543	Lakeaires Elementary School	3386	3963 Van Dyke	White Bear Lake	UST	F000	6100
544	Lakeaires Elementary School	47384	3963 Van Dyke	White Bear Lake	SCH		6100
545	Lakeshore Players	129953	4820 Stewart	White Bear Lake	THEA		5000
546	Lakewood Clinic	71642	2678 County Road F	White Bear Lake	HWGP		6511
547	Landgraf, Steven	36131	6 Augusta Lane	Dellwood	LUST		1000
548	Lang, Bruce	277128	2504 Manitou Island	Saint Paul	WEL		1100-01
549	Larkin, Michael	1015261	10 Hillary Farm La	Saint Paul	ISTS		1000
550	Larkin, Michael	1015261	10 Hillary Farm La	Saint Paul	WEL		1000
551	Larson, Debra	267513	2295 Chicago Av	Saint Paul	ISTS		1000
552	Larson, Debra	267513	2295 Chicago Av	Saint Paul	WEL		1000
553	Larson, Earl	266073	2582 Ralph St	Saint Paul	WEL		1100-01
554	Larson, Gregg	256900	11 Fenlea Ci	Saint Paul	ISTS		1000
555	Larson, Gregg	256900	11 Fenlea Ci	Saint Paul	WEL		1000
556	Leach, Kevin	360813	6 High Point Rd	Saint Paul	ISTS		1000
557	Leach, Kevin	360813	6 High Point Rd	Saint Paul	WEL		1000
558	Ledford, Robert	236443	5645 Portland Av	Saint Paul	WEL		1000
559	Lehman, Michael	371735	21 Bayhill Rd	Saint Paul	ISTS		1000
560	Lehman, Michael	371735	21 Bayhill Rd	Saint Paul	WEL		1000

						PCS Material	
						Code	Facility
	Facility Name	MDH ID	Facility Address	CITY	PCS Code	(If Required)	Designation
561	Lein, David	26574	5255 Lakeview Ave	White Bear Lake	LUST		1100-01
562	Leonard, Roger	174694	5244 County Line Dr E	Saint Paul	ISTS		1000
563	Leonard, Roger	174694	5244 County Line Dr E	Saint Paul	WEL		1000
564	Leukumu, Mary Ann	282951	5699 Jenni La	Saint Paul	WEL		1000
565	Lieser, Thomas	294918	2178 Gardenette Dr S	Saint Paul	WEL		1100-01
566	Lincoln Elementary School	101330	1961 6th St	White Bear Lake	HWGP		6000
567	Lincoln Elementary School	3387	1961 6th St	White Bear Lake	RST		6000
568	Lincoln Elementary School	3387	1961 6th St	White Bear Lake	UST	F000	6000
569	Lincoln Elementary School	3387	1961 6th St	White Bear Lake	SCH		6000
570	Linden Apartments	36868	3900 Linden St	White Bear Lake	LUST		1100-02
571	Lindgren, Bob	371482	2 Spy Glass Pl	Saint Paul	ISTS		1000
572	Lindgren, Bob	371482	2 Spy Glass Pl	Saint Paul	WEL		1000
573	Little Bear Bait & Tackle	244728	5051 Stewart Av	Saint Paul	WEL		2100
574	Little Bear Bait & Tackle	394639	5051 Stewart Av	Saint Paul	ST		2100
575	Little Bear Bait & Tackle	394639	5051 Stewart Av	Saint Paul	WEL		2100
576	Little Bear Bait & Tackle	11119	5051 Stewart	White Bear Lake	RST		2100
577	Little Bear Bait & Tackle	11119	5051 Stewart	White Bear Lake	UST	F000	2100
578	Little Bear Bait & Tackle	11119	5051 Stewart	White Bear Lake	UST	F000	2100
579	Little Bear Bait & Tackle	33455	5051 Stewart Ave	White Bear Lake	LUST		2100
580	Little Bear Bait & Tackle	3189	5051 Stewart Ave	White Bear Lake	RST		2100
581	Little Bear Bait & Tackle	3189	5051 Stewart Ave	White Bear Lake	UST	F000	2100
582	Little Bear Bait & Tackle	3189	5051 Stewart Ave	White Bear Lake	UST	F000	2100
583	Little Bear Bait & Tackle	3189	5051 Stewart Ave	White Bear Lake	UST	F000	2100
584	Little Bear Bait & Tackle	3189	5051 Stewart Ave	White Bear Lake	UST	F000	2100
585	Little Bear Bait & Tackle	3189	5051 Stewart Ave	White Bear Lake	UST	F000	2100
586	Little, Gordon	154186	73 Apple Orchard Rd	Saint Paul	ISTS		1000
587	Little, Gordon	154186	73 Apple Orchard Rd	Saint Paul	WEL		1000
588	Lorenz, Kenneth	399069	1299 Goose Lake Rd	Saint Paul	ISTS		1100-01
589	Lorenz, Kenneth	399069	1299 Goose Lake Rd	Saint Paul	WEL		1100-01
590	Love, Mary	216790	5305 Bald Eagle Bl W	Saint Paul	WEL		1100-01
591	Lovely Nails	54938	1973 Whitaker Ave	White Bear Lake	STOR	C000	2100
592	Lowry Computer Products	82492	1607 9th St	White Bear Lake	HWGP		3000
593	Lundstrom Chiropractic	97640	4801 Highway 61	White Bear Lake	HWGP		6000
594	Lundstrom Chiropractic	82436	4801 Highway 61	White Bear Lake	HWGP		6000
595	Lutz, Shirley	216939	1581 Seneca Trl	Saint Paul	ISTS		1000

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	Facility Name	MDH ID	Facility Address	CITY	PCS Code	(If Required)	Designation
596	Lutz, Shirley	216939	1581 Seneca Trl	Saint Paul	WEL		1000
597	M Foods Dairy LLC	32839	4041 Hwy 61	White Bear Lake	LUST		3110
598	M Foods Dairy LLC	97316	4041 Hwy. 61 N	White Bear Lake	HWGP		3110
599	M Foods Dairy LLC	46009	4041 Highway 61	White Bear Lake	NPDES		3110
600	M Foods Dairy LLC	242680	4041 Hwy 61	White Bear Lake	PWS		3110
601	M Foods Dairy LLC	3380	4041 Hwy 61	White Bear Lake	RST		3110
602	M Foods Dairy LLC	242680	4041 Hwy 61	White Bear Lake	SWUDS		3110
603	M Foods Dairy LLC	23135	4041 Hwy. 61 N	White Bear Lake	TRS		3110
604	M Foods Dairy LLC	3380	4041 Hwy 61	White Bear Lake	UST	F000	3110
605	M Foods Dairy LLC	3380	4041 Hwy 61	White Bear Lake	UST	F000	3110
606	M Foods Dairy LLC	3380	4041 Hwy 61	White Bear Lake	UST	F000	3110
607	M Foods Dairy LLC	3380	4041 Hwy 61	White Bear Lake	UST	F000	3110
608	M Foods Dairy LLC	242680	4041 Hwy 61	White Bear Lake	WEL		3110
609	M Foods Dairy LLC	39274	4041 Highway 61	White Bear Lake	DMP		3110
610	Magnepan Inc	82493	1645 9th St	White Bear Lake	HWGP		3000
611	Mample, William	157558	4270 Otter Lake Rd	Saint Paul	WEL		1100-01
612	Mample, William	82474	4270 Otter Lake Rd	White Bear Lake	HWGP		1100-01
613	Manitou Dental Care	97571	2189 3rd St	White Bear Lake	HWGP		6000
614	Manitou Station Restaurant and Bar	3649	2171 4th St	White Bear Lake	RST		2000
615	Manitou Station Restaurant and Bar	3649	2171 4th St	White Bear Lake	UST	F000	2000
					1		
616	Manitou Station Restaurant and Bar	3649	2171 4th St	White Bear Lake	UST	F000	2000
617	Manitou Station Restaurant and Bar	3649	2171 4th St	White Bear Lake	UST	F000	2000
618	Manitou Station Restaurant and Bar	3649	2171 4th St	White Bear Lake	UST	W000	2000
					1		
619	Manitou Station Restaurant and Bar	3649	2171 4th St	White Bear Lake	UST	F000	2000
620	Manitou Station Restaurant and Bar	3649	2171 4th St	White Bear Lake	UST	F000	2000
621	Manitou Station Restaurant and Bar	3649	2171 4th St	White Bear Lake	UST	F000	2000

						PCS Material	
						Code	Facility
	Facility Name	MDH ID	Facility Address	CITY	PCS Code	(If Required)	Designation
622	Manitou Station Restaurant and Bar	33747	2171 4th St	White Bear Lake	LUST		2000
623	Manivel, Juan	402032	11565 Hillcrest Ct N	Saint Paul	ISTS		1000
624	Manivel, Juan	402032	11565 Hillcrest Ct N	Saint Paul	WEL		1000
625	Maragos, Charles	169594	64 Apple Orchard Rd	Saint Paul	ISTS		1000
626	Maragos, Charles	169594	64 Apple Orchard Rd	Saint Paul	WEL		1000
627	Mariano, Sara Jane	221732	2411 4th St	Saint Paul	ISTS		1100-01
628	Mariano, Sara Jane	221732	2411 4th St	Saint Paul	WEL		1100-01
629	Marier, Daniel	277762	4000 Scheuneman Rd	Saint Paul	ISTS		1000
630	Marier, Daniel	277762	4000 Scheuneman Rd	Saint Paul	WEL		1000
631	Markoe, Jill	140380	12300 Heather Av N	Saint Paul	ISTS		1000
632	Markoe, Jill	140380	12300 Heather Av N	Saint Paul	WEL		1000
633	Marshall, John	143459	9 Tamarisk Rd	Saint Paul	WEL		1000
634	Mason, Michael	189353	5705 Jenni La	Saint Paul	ISTS		1000
635	Mason, Michael	189353	5705 Jenni La	Saint Paul	WEL		1000
636	Matanowski, William	57814	4037 Dotte Ct	White Bear Lake	STOR	C010	1100-01
637	Mathisen, Michael	203818	15 Doral Rd	Saint Paul	ISTS		1000
638	Mathisen, Michael	203818	15 Doral Rd	Saint Paul	WEL		1000
639	McCarthy, Edwin	318167	94 Dellwood Av	Saint Paul	ISTS		1000
640	McCarthy, Edwin	318167	94 Dellwood Av	Saint Paul	WEL		1000
641	McDermid, James	416145	7 Hillcrest Dr	Saint Paul	ISTS		1000
642	McDermid, James	416145	7 Hillcrest Dr	Saint Paul	WEL		1000
643	McDonald's	109212	4950 Highway 61 N	White Bear Lake	REST		2000
644	Mcgee, Jim	226801	1788 Stillwater St	Saint Paul	WEL		1100-01
645	Mcgovern, James	144865	14 Lacosta Dr	Saint Paul	ISTS		1000
646	Mcgovern, James	144865	14 Lacosta Dr	Saint Paul	WEL		1000
647	Mcguigan, Timothy	208499	5206 Eastcounty Line	Saint Paul	ISTS		1000
648	Mcguigan, Timothy	208499	5206 Eastcounty Line	Saint Paul	WEL		1000
649	McGuire, Claudia	173183	1365 Goose Lake Rd	Saint Paul	ISTS		1100-01
650	McGuire, Claudia	173183	1365 Goose Lake Rd	Saint Paul	WEL		1100-01
651	McGurran, Thomas	341006	3 Bayhill Rd	Saint Paul	ISTS		1000
652	McGurran, Thomas	341006	3 Bayhill Rd	Saint Paul	WEL		1000
653	McMahon, James	357316	19 Bayhill Rd	Saint Paul	ISTS		1000
654	McMahon, James	357316	19 Bayhill Rd	Saint Paul	WEL		1000
655	McNamara, Grace	260406	51 Dellwood Cove	Saint Paul	ISTS		1000

						PCS Material	
						Code	Facility
	Facility Name	MDH ID	Facility Address	CITY	PCS Code	(If Required)	Designation
656	McNamara, Grace	260406	51 Dellwood Cove	Saint Paul	WEL		1000
657	Mcnamara, Grace	210541	51 Dellwood Cove	Saint Paul	ISTS		1000
658	Mcnamara, Grace	210541	51 Dellwood Cove	Saint Paul	WEL		1000
659	McNellis, William	412276	#39 Spy Glass Pl	Saint Paul	ISTS		1000
660	McNellis, William	412276	#39 Spy Glass Pl	Saint Paul	WEL		1000
661	Meader, Mark	254989	16 Doral Rd	Saint Paul	ISTS		1000
662	Meader, Mark	254989	16 Doral Rd	Saint Paul	WEL		1000
663	Meath, Steven	283573	1855 Goodview Av	Saint Paul	ISTS		1000
664	Meath, Steven	283573	1855 Goodview Av	Saint Paul	WEL		1000
665	Meirose, Chris	201715	2473 Buffalo St	Saint Paul	WEL		1100-01
666	Mennell, James	276557	6 Doral La	Saint Paul	ISTS		1000
667	Mennell, James	276557	6 Doral La	Saint Paul	WEL		1000
668	Merrick, David	138298	1355 Goose Lake Rd	Saint Paul	ISTS		1100-01
669	Merrick, David	138298	1355 Goose Lake Rd	Saint Paul	WEL		1100-01
670	Metro Matic Transmission	82449	4030 Hoffman Rd	White Bear Lake	HWGP		2110-01
671	Minkin, Quentin	228737	12200 Upper Heather Av N	Saint Paul	ISTS		1000
672	Minkin, Quentin	228737	12200 Upper Heather Av N	Saint Paul	WEL		1000
673	Minnhealth Pa	97558	4786 Banning Ave	White Bear Lake	HWGP		6000
674	Moore, William	132463	2574 Buffalo	Saint Paul	ISTS		1100-01
675	Moore, William	132463	2574 Buffalo	Saint Paul	WEL		1100-01
676	Moos, Gary	233171	5801 Portland Av	Saint Paul	ISTS		1000
677	Moos, Gary	233171	5801 Portland Av	Saint Paul	WEL		1000
678	Morgan, Mark	371483	9 Hill Crest Dr	Saint Paul	ISTS		1000
679	Morgan, Mark	371483	9 Hill Crest Dr	Saint Paul	WEL		1000
680	Mork, Sheldon	152635	1985 Ridgewood Av	Saint Paul	WEL		1100-01
681	Muehlstedt, Louise	139162	5185 Summit St	Saint Paul	ISTS		1100-01
682	Muehlstedt, Louise	139162	5185 Summit St	Saint Paul	WEL		1100-01
683	Mueller, John	203739	4 Pinevalley Dr	Saint Paul	ISTS		1000
684	Mueller, John	203739	4 Pinevalley Dr	Saint Paul	WEL		1000
685	Mueller, John	1031370	7076 115th St	Saint Paul	ISTS		1000
686	Mueller, John	1031370	7076 115th St	Saint Paul	WEL		1000
687	Mullarky, John	262799	71 Apple Orchard Rd	Saint Paul	ISTS		1000
688	Mullarky, John	262799	71 Apple Orchard Rd	Saint Paul	WEL		1000
689	Murphy, Jeffrey	242104	57 Apple Orchard Rd	Saint Paul	ISTS		1000
690	Murphy, Jeffrey	242104	57 Apple Orchard Rd	Saint Paul	WEL		1000

						PCS Material	
						Code	Facility
	Facility Name	MDH ID	Facility Address	CITY	PCS Code	(If Required)	Designation
691	Muth, Kenneth	238188	3 Pinevalley Dr	Saint Paul	ISTS		1000
692	Muth, Kenneth	238188	3 Pinevalley Dr	Saint Paul	WEL		1000
693	Myers, Mark	147679	25 Lacosta Ci	Saint Paul	ISTS		1000
694	Myers, Mark	147679	25 Lacosta Ci	Saint Paul	WEL		1000
695	Myers, Mark	230773	25 Lacosta Dr	Saint Paul	ISTS		1000
696	Myers, Mark	230773	25 Lacosta Dr	Saint Paul	WEL		1000
697	Myers, Michael	399070	3976 White Bear Av	White Bear Lake	ISTS		1100-01
698	Myers, Michael	399070	3976 White Bear Av	White Bear Lake	WEL		1100-01
699	NE Metro Area Learning	3382	2540 E Co Rd F	White Bear Lake	RST		6100
700	NE Metro Area Learning	3382	2540 E Co Rd F	White Bear Lake	UST	F000	6100
701	NE Metro Area Learning	46874	2540 E Co Rd F	Saint Paul	SCH		6100
702	NE Metro Area Learning	71879	2540 County Road F	White Bear Lake	HWGP		6100
703	Neely, Daryl	271802	11 Tamarisk Rd	Saint Paul	WEL		1000
704	Nelson, Joel	273071	6 Apple Orchard Ct	Saint Paul	ISTS		1000
705	Nelson, Joel	273071	6 Apple Orchard Ct	Saint Paul	WEL		1000
706	Nelson, Laine	1031466	8 High Point Rd	Dellwood	ISTS		1000
707	Nelson, Laine	1031466	8 High Point Rd	Dellwood	WEL		1000
708	Nelson, Roger	167954	1226 Birch Lake Bl	Saint Paul	ISTS		1100-01
709	Nelson, Roger	167954	1226 Birch Lake Bl	Saint Paul	WEL		1100-01
710	Nelson, Scott	187173	2565 First St	Saint Paul	WEL		1100-01
711	Nelson, Tim	1031397	12350 Upper Heather Av N	Hugo	ISTS		1000
712	Nelson, Tim	1031397	12350 Upper Heather Av N	Hugo	WEL		1000
713	Nephew, Dean	1031436	12174 Upper Heather Av	Hugo	ISTS		1000
714	Nephew, Dean	1031436	12174 Upper Heather Av	Hugo	WEL		1000
715	Nester, Craig	397051	4 High Point Rd	Saint Paul	ISTS		1000
716	Nester, Craig	397051	4 High Point Rd	Saint Paul	WEL		1000
717	Nordling, Neil	380032	7477 115th St N	Saint Paul	ISTS		1000
718	Nordling, Neil	380032	7477 115th St N	Saint Paul	WEL		1000
	Noyes, Charles P., Cottage (historical						
719	house)	108905	4735 Lake Ave.	White Bear Lake	HSTS		5000
720	Oakwood Dental Group Ltd	97560	4100 Bellaire Ave	White Bear Lake	HWGP		6511
721	Oasis Market	71635	1350 E Highway 96	White Bear Lake	HWGP		2116
722	Obrien, Patrick	97303	1382 Top Ln	White Bear Lake	HWGP		1100-01
723	Oldani, Carl	1031675	23 Bayhill	White Bear Lake	ISTS		1000
724	Oldani, Carl	1031675	23 Bayhill	White Bear Lake	WEL		1000

						PCS Material	
						Code	Facility
	Facility Name	MDH ID	Facility Address	CITY	PCS Code	(If Required)	Designation
725	Oliveira, Trish & Max	332056	12010 Heather Av N	Saint Paul	ISTS		1000
726	Oliveira, Trish & Max	332056	12010 Heather Av N	Saint Paul	WEL		1000
727	Omalley, Sherrie	162729	3910 Tessier Rd	Saint Paul	ISTS		1000
728	Omalley, Sherrie	162729	3910 Tessier Rd	Saint Paul	WEL		1000
729	O'neill, Nial	231783	56 Hwy 96	Saint Paul	ISTS		1000
730	O'neill, Nial	231783	56 Hwy 96	Saint Paul	WEL		1000
731	Oneka Ridge Golf Course	55379	5610 120th St	White Bear Lake	STOR	C000	5000
732	Oneka Ridge Golf Course	454948	5608 120th St N	White Bear Lake	PWS		5000
733	Oneka Ridge Golf Course	454948	5609 120th St N	White Bear Lake	WEL		5000
734	Oneka Ridge Golf Course	278601	5610 120th St N	Saint Paul	ISTS		5000
735	Oneka Ridge Golf Course	278601	5610 120th St N	Saint Paul	WEL		5000
736	Opperman, Dwight	199501	18 Doral Rd	Saint Paul	ISTS		1000
737	Opperman, Dwight	253417	18 Doral Rd	Saint Paul	ISTS		1000
738	Opperman, Dwight	199501	18 Doral Rd	Saint Paul	WEL		1000
739	Opperman, Dwight	253417	18 Doral Rd	Saint Paul	WEL		1000
740	Palme, Bryan	183696	1828 Whitaker St	Saint Paul	WEL		1100-01
741	Palmquist, Mark	233981	14 Apple Orchard Ct	Saint Paul	ISTS		1000
742	Palmquist, Mark	233981	14 Apple Orchard Ct	Saint Paul	WEL		1000
	Parenteau, Steven (commercial						
743	warehouse)	71629	5920 Highway 61	White Bear Lake	HWGP		3000
744	Parkway Place (office/warehouse)	97701	4225 White Bear Pkwy	White Bear Lake	HWGP		3000
745	Parr, Stephen	202177	2635 Sandterra Cir	Saint Paul	WEL		1100-01
746	Patricia Parker	202109	1723 Stillwater St	Saint Paul	ISTS		1100-01
747	Patricia Parker	202109	1723 Stillwater St	Saint Paul	WEL		1100-01
748	Payne, John	326926	5111 Long Av	Saint Paul	ISTS		1100-01
749	Payne, John	326926	5111 Long Av	Saint Paul	WEL		1100-01
750	Peltier, Jean-Paul	180030	12 Apple Orchard Ct	Saint Paul	ISTS		1000
751	Peltier, Jean-Paul	180030	12 Apple Orchard Ct	Saint Paul	WEL		1000
752	Peltier, Ronald	273391	4 Apple Orchard Ct	Saint Paul	ISTS		1000
753	Peltier, Ronald	273391	4 Apple Orchard Ct	Saint Paul	WEL		1000
754	Perron, Ted	253803	5939 East County Line	Saint Paul	ISTS		1000
755	Perron, Ted	253803	5939 East County Line	Saint Paul	WEL		1000
756	Peterson, Gerald	273517	12265 Heather Av N	Saint Paul	ISTS		1000
757	Peterson, Gerald	273517	12265 Heather Av N	Saint Paul	WEL		1000

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						Code	Facility
	Facility Name	MDH ID	Facility Address	CITY	PCS Code	(If Required)	Designation
758	Peterson, Jack	142822	5137 West Av	Saint Paul	WEL		1100-01
759	Peterson, Ronald	273104	4076 Scheuneman Rd	Saint Paul	WEL		1000
760	Petrungaro, Gina	133328	15 Fenlea Ci	Saint Paul	ISTS		1000
761	Petrungaro, Gina	133328	15 Fenlea Ci	Saint Paul	WEL		1000
762	Petrys White Bear Automotive	82446	3865 Highway 61 Ste C	White Bear Lake	HWGP		2110-01
763	Petry's White Bear Automotive	71646	3865 Highway 61 Ste C	White Bear Lake	HWGP		2110-01
764	Picture Place	82461	4971 Long Ave	White Bear Lake	HWGP		2000
765	Pientka, Richard	226494	3970 Tessier Dr	Saint Paul	ISTS		1000
766	Pientka, Richard	226494	3970 Tessier Dr	Saint Paul	WEL		1000
767	Pihl, Jacqueline	36038	41 Apple Orchard Rd	Dellwood	LUST		1000
768	Pine Tree Apple Orchard	161843	450 Apple Orchard Rd	Saint Paul	ISTS		5000
769	Pine Tree Apple Orchard	36037	450 Apple Orchard Rd	White Bear Lake	LUST		5000
770	Pine Tree Apple Orchard	452624	450 Apple Orchard Rd	Saint Paul	SURWIN		5000
771	Pine Tree Apple Orchard	452984	450 Apple Orchard Rd	Saint Paul	SURWIN		5000
772	Pine Tree Apple Orchard	161843	450 Apple Orchard Rd	Saint Paul	SWUDS		5000
773	Pine Tree Apple Orchard	452624	450 Apple Orchard Rd	Saint Paul	SWUDS		5000
774	Pine Tree Apple Orchard	452984	450 Apple Orchard Rd	Saint Paul	SWUDS		5000
775	Pine Tree Apple Orchard	161843	450 Apple Orchard Rd	Saint Paul	WEL		5000
776	Platenberg, Gary	197848	12360 Goodview Av	Saint Paul	ISTS		1000
777	Platenberg, Gary	197848	12360 Goodview Av	Saint Paul	WEL		1000
778	Poeschl, Jeff	276095	5272 Portland Av	Saint Paul	ISTS		1000
779	Poeschl, Jeff	276095	5272 Portland Av	Saint Paul	WEL		1000
780	Pohl, Rose	291522	6636 Indian Wells Tr	Saint Paul	ISTS		1000
781	Pohl, Rose	291522	6636 Indian Wells Tr	Saint Paul	WEL		1000
782	Pomeroy, Sherwood	157932	3 Meadow La	Saint Paul	ISTS		1000
783	Pomeroy, Sherwood	157932	3 Meadow La	Saint Paul	WEL		1000
784	Power, Charles	3413	5326 E Bald Eagle Blvd	White Bear Lake	RST		1100-01
785	Power, Charles	3413	5326 E Bald Eagle Blvd	White Bear Lake	UST	F000	1100-01
786	Pratt, Lowell	193780	8 Meadow La	Saint Paul	ISTS		1000
787	Pratt, Lowell	193780	8 Meadow La	Saint Paul	WEL		1000
788	Preisler Prop LLC (Mfg/processing)	314098	5928 Highway 61	Saint Paul	WEL		3000
789	Preisler Roofing	71630	5928 Highway 61	White Bear Lake	HWGP		3000
790	Quaas Chiropractic	100356	4436 Hwy 61	White Bear Lake	HWGP		6511
791	Quaas Chiropractic	71647	4436 Highway 61	White Bear Lake	HWGP		6511

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	Facility Name	MDH ID	Facility Address	CITY	PCS Code	(If Required)	Designation
792	Quality Dry Cleaners and Coin	71648	4680 Highway 61	White Bear Lake	HWGP		2600-01
793	Rabuse, W.j.	231197	10 Fenlea Ci	Saint Paul	ISTS		1000
794	Rabuse, W.j.	231197	10 Fenlea Ci	Saint Paul	WEL		1000
795	Ramaley Park	63450	1883 Park St	White Bear Lake	PRK		5500
796	Rangus, Scott	268692	9 Apple Orchard Ct	Saint Paul	ISTS		1000
797	Rangus, Scott	268692	9 Apple Orchard Ct	Saint Paul	WEL		1000
798	Rech, Kenneth	234274	8 Bayhill Rd	Saint Paul	ISTS		1000
799	Rech, Kenneth	234274	8 Bayhill Rd	Saint Paul	WEL		1000
800	Remax Realty	16324	4910 N Hwy 61	White Bear Lake	RST		2000
801	Remax Realty	16324	4910 N Hwy 61	White Bear Lake	UST	F000	2000
802	Remax Realty	16324	4910 N Hwy 61	White Bear Lake	UST	F000	2000
803	Remax Realty office	32915	4910 Hwy 61	White Bear Lake	LUST		2000
804	Renstrom, Todd	271093	3865 Bellaire Ave	Saint Paul	WEL		1100-01
805	Rhodes, Kevin	155371	12160 Upper Heather Ave	Saint Paul	ISTS		1000
806	Rhodes, Kevin	155371	12160 Upper Heather Ave	Saint Paul	WEL		1000
807	Rick, Gregory	225105	117 Wildwood Av	Saint Paul	WEL		1000
808	Riddering, Emily	179724	54 Hwy 96	Saint Paul	WEL		1000
809	Roach, Renae	337461	2220 Stillwater St	Saint Paul	ISTS		1100-01
810	Roach, Renae	337461	2220 Stillwater St	Saint Paul	WEL		1100-01
811	Roberts, Keith	406704	7194 115th St	Saint Paul	ISTS		1000
812	Roberts, Keith	406704	7194 115th St	Saint Paul	WEL		1000
813	Robins, Kathleen	147566	1370 Goose Lake Rd	Saint Paul	ISTS		1000
814	Robins, Kathleen	147566	1370 Goose Lake Rd	Saint Paul	WEL		1000
815	Rogosheske,Paul	161216	11365 Greenlefe Av N	Saint Paul	ISTS		1000
816	Rogosheske,Paul	161216	11365 Greenlefe Av N	Saint Paul	WEL		1000
817	Roosma, Garrett	135267	12175 Upper Heather Av	Saint Paul	ISTS		1000
818	Roosma, Garrett	135267	12175 Upper Heather Av	Saint Paul	WEL		1000
819	Rossler, Larry	245987	2239 Stillwater St	Saint Paul	WEL		1100-01
820	Rowe, Brian	402691	#40 Spy Glass Pl	Saint Paul	ISTS		1000
821	Rowe, Brian	402691	#40 Spy Glass Pl	Saint Paul	WEL		1000
822	Rubin, Paul	243928	11845 Great Oaks Trl	Saint Paul	ISTS		1100-01
823	Rubin, Paul	243928	11845 Great Oaks Trl	Saint Paul	WEL		1100-01
824	Rundquist Radiator	40717	5154 Bald Eagle Ave	Saint Paul	VIC		2110-01
825	Rustad, Lewis	1031556	6260 117th St	Saint Paul	WEL		1000
826	Rutford, Doug	267655	5085 Morehead Av	Saint Paul	ISTS		1000

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827	Rutford, Doug	267655	5085 Morehead Av	Saint Paul	WEL		1000
828	Saint Marys of the Lake Cemetery	25184	across from 1624 Stillwater St	Saint Paul	CMTY		6000
829	Saint Marys School	47857	4741 Bald Eagle Ave	White Bear Lake	SCH		6000
830	Saint Pius X School	47888	3878 Highland Ave	White Bear Lake	SCH		6100
831	Saint Pius X School	173890	3878 Highland Av	Saint Paul	WEL		6100
832	Saint Pius X-Holy Family School	97698	3878 Highland Ave	White Bear Lake	HWGP		6100
833	Sand, Robert	182256	2635 Sandterra Cir	Saint Paul	WEL		1000
834	Sandison, Ross	1031657	11545 Hillcrest Ct N	Saint Paul	ISTS		1000
835	Sandison, Ross	1031657	11545 Hillcrest Ct N	Saint Paul	WEL		1000
836	Sauer, Brad	1031728	7145 115th St	Saint Paul	ISTS		1000
837	Sauer, Brad	1031728	7145 115th St	Saint Paul	WEL		1000
838	Saxon, Jim	179696	13 Fenlea Ci	Saint Paul	ISTS		1000
839	Saxon, Jim	179696	13 Fenlea Ci	Saint Paul	WEL		1000
840	Schauls, Derek	33198	2196 South Shore Blvd	White Bear Lake	LUST		1100-01
841	Schepperle, Brian Sr	282487	11 Doral Rd	Saint Paul	ISTS		1000
842	Schepperle, Brian Sr	282487	11 Doral Rd	Saint Paul	WEL		1000
843	Scherer, David	32960	1942 E Co Rd F	White Bear Lake	LUST		1100-01
844	Schleich, Peggy	150194	12225 Upper Heather Av	Saint Paul	ISTS		1000
845	Schleich, Peggy	150194	12225 Upper Heather Av	Saint Paul	WEL		1000
846	Schmidt, Thomas	175927	12280 Goodview Av N	Saint Paul	ISTS		1000
847	Schmidt, Thomas	175927	12280 Goodview Av N	Saint Paul	WEL		1000
848	Schmidt, Natalie	233967	8 Pine Valley Dr	Saint Paul	ISTS		1000
849	Schmidt, Natalie	233967	8 Pine Valley Dr	Saint Paul	WEL		1000
850	Schroeder Mark	84246	39 Apple Orchard Road	Dellwood	HWGP		1000
851	Schroeder, Janet	97438	2644 Roth Pl	White Bear Lake	HWGP		1100-01
852	Schuette, Ryan	268579	5131 Long Av	Saint Paul	ISTS		1100-01
853	Schuette, Ryan	268579	5131 Long Av	Saint Paul	WEL		1100-01
854	Schwieters, John	1041567	19 High Point	Saint Paul	ISTS		1000
855	Schwieters, John	1041567	19 High Point	Saint Paul	WEL		1000
856	Scruggs, Robert	323331	4140 Scheuneman	Saint Paul	ISTS		1000
857	Scruggs, Robert	323331	4140 Scheuneman	Saint Paul	WEL		1000
858	Sela Investments LTD LLP	71659	1743 E County Road F	White Bear Lake	HWGP		3600
859	Seshadri, Srinivasan	371755	8 Troon Ct	Saint Paul	ISTS		1000
860	Seshadri, Srinivasan	371755	8 Troon Ct	Saint Paul	WEL		1000

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861	Shavlik, Mark	60075	2552 Manitou Island	White Bear Lake	LUST		1100-01
862	Shay, Bruce	259240	13 Bayhill Rd	Saint Paul	ISTS		1000
863	Shay, Bruce	259240	13 Bayhill Rd	Saint Paul	WEL		1000
864	Shogren, Julie	230010	5366 Eagle St	Saint Paul	WEL		1100-01
865	Sigecan, Thomas	232996	2 Doral Rd	Saint Paul	ISTS		1000
866	Sigecan, Thomas	232996	2 Doral Rd	Saint Paul	WEL		1000
867	Sinclair, Scott	357193	11765 Great Oak Trl	Saint Paul	ISTS		1000
868	Sinclair, Scott	359266	11765 Great Oak Trl	Saint Paul	ISTS		1000
869	Sinclair, Scott	357193	11765 Great Oak Trl	Saint Paul	WEL		1000
870	Sinclair, Scott	359266	11765 Great Oak Trl	Saint Paul	WEL		1000
871	Sisterman, Madge	251709	2557 4th St E	Saint Paul	ISTS		1100-01
872	Sisterman, Madge	251709	2557 4th St E	Saint Paul	WEL		1100-01
873	Skaar, Todd	139307	5683 Jenni La	Saint Paul	ISTS		1000
874	Skaar, Todd	139307	5683 Jenni La	Saint Paul	WEL		1000
875	Skwierczynski, Rodney	271775	5133 Long Av	Saint Paul	WEL		1100-01
876	Sloan, Curtis	3572	4675 Lake Ave	White Bear Lake	RST		1100-01
877	Sloan, Curtis	3572	4675 Lake Ave	White Bear Lake	UST	F000	1100-01
878	Slocum, Scott	187869	1426 Birch Lake Bl S	Saint Paul	ISTS		1100-01
879	Slocum, Scott	187869	1426 Birch Lake Bl S	Saint Paul	WEL		1100-01
880	Smarte Carte Inc	82496	4455 White Bear Pkwy	Saint Paul	HWGP		2000
881	Smith, Bruce	164248	4 Pinehurst Dr	Saint Paul	ISTS		1000
882	Smith, Bruce	164248	4 Pinehurst Dr	Saint Paul	WEL		1000
883	Smith, Cheryl	262988	5713 Jenni La	Saint Paul	ISTS		1000
884	Smith, Cheryl	262988	5713 Jenni La	Saint Paul	WEL		1000
885	Smith, Reid	239178	33 Apple Orchard Rd	Saint Paul	WEL		1000
886	Smith, Richard	254891	5689 Morgan Trail	Saint Paul	WEL		1000
887	Snidarich, John	137374	1601 Goose Lake Rd	Saint Paul	ISTS		1100-01
888	Snidarich, John	137374	1601 Goose Lake Rd	Saint Paul	WEL		1100-01
889	Solberg, Kevin	97399	5367 Eagle St	White Bear Lake	HWGP		1100-01
890	Soo Line Rr	171039	NW of 5306 Aydee Cir	Saint Paul	WEL		4000
891	Souder, Bill	352015	11601 Honeye Av N	Saint Paul	ISTS		1000
892	Souder, Bill	352015	11601 Honeye Av N	Saint Paul	WEL		1000
893	Southwind Holdings	316536	5960 Hwy 61	Saint Paul	SWUDS		2000
894	Southwind Holdings	316536	5960 Hwy 61	Saint Paul	WEL		2000
895	Southwind Holdings	318958	5960 Hwy 61	Saint Paul	WEL		2000

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896	Southwind Holdings	318959	5960 Hwy 61	Saint Paul	WEL		2000
897	Southwind Holdings	319005	5960 Hwy 61	Saint Paul	WEL		2000
898	Southwind Holdings LLC	32829	5960 Hwy 61	White Bear Lake	LUST		2000
899	Southwind Holdings LLC	12026	5960 Hwy 61	White Bear Lake	RST		2000
900	Southwind Holdings LLC	453669	5960 Hwy 61	Saint Paul	SWUDS		2000
901	Southwind Holdings LLC	12026	5960 Hwy 61	White Bear Lake	UST	F000	2000
902	Southwind Holdings LLC	12026	5960 Hwy 61	White Bear Lake	UST	F000	2000
903	Southwind Holdings LLC	12026	5960 Hwy 61	White Bear Lake	UST	F000	2000
904	Southwind Holdings LLC	12026	5960 Hwy 61	White Bear Lake	UST	F000	2000
905	Southwind Holdings LLC	12026	5960 Hwy 61	White Bear Lake	UST	F000	2000
906	Southwind Holdings LLC	12026	5960 Hwy 61	White Bear Lake	UST	F000	2000
907	Southwind Holdings LLC	453669	5960 Hwy 61	Saint Paul	WEL		2000
908	Southwind Holdings LLC	12026	5960 Hwy 61	White Bear Lake	AST	F000	2000
909	Spallino Chiropractic	97563	1986 Hwy 96	White Bear Lake	HWGP		6511
910	Spear, Edward	395141	11555 Hillcrest Ct N	Saint Paul	ISTS		1000
911	Spear, Edward	395141	11555 Hillcrest Ct N	Saint Paul	WEL		1000
912	Spearman, Patrick & Jean	204685	12155 Upper Heather Av N	Saint Paul	ISTS		1000
913	Spearman, Patrick & Jean	204685	12155 Upper Heather Av N	Saint Paul	WEL		1000
	St Croix Valley Hardwoods (comm						
914	warehouse)	241645	4250 Otter Lake Road	Saint Paul	WEL		2126
915	Standard Bldg Materials	177626	4141 Hoffman Rd	Saint Paul	WEL		2126
916	Stanley, Krista	280811	2545 2nd St	Saint Paul	ISTS		1100-01
917	Stanley, Krista	280811	2545 2nd St	Saint Paul	WEL		1100-01
918	Statco Transmission	97390	4733 Division Ave	White Bear Lake	HWGP		2110-01
919	State Tool (Mfg/processing)	274187	3941 White Bear Pkwy	Saint Paul	WEL		3360
920	State Tool Inc	71651	3941 White Bear Pkwy	White Bear Lake	HWGP		3360
921	Stavish, Dale	149575	5673 Jenni La	Saint Paul	ISTS		1000
922	Stavish, Dale	149575	5673 Jenni La	Saint Paul	WEL		1000
923	Stevens, Jason	192167	2282 Buffalo St	Saint Paul	WEL		1100-01
924	Stevens, Pamela	241187	12494 Goodview Av	Saint Paul	ISTS		1000
925	Stevens, Pamela	241187	12494 Goodview Av	Saint Paul	WEL		1000
926	Stoker, Robert	373765	9310 Ivy Av	Saint Paul	ISTS		1000
927	Stoker, Robert	373765	9310 Ivy Av	Saint Paul	WEL		1000
928	Stop N Shop Convenience Store	3441	4648 Hwy 61	White Bear Lake	RST		2116
929	Stop N Shop Convenience Store	3441	4648 Hwy 61	White Bear Lake	UST	F000	2116

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	Facility Name	MDH ID	Facility Address	CITY	PCS Code	(If Required)	Designation
930	Stop N Shop Convenience Store	3441	4648 Hwy 61	White Bear Lake	UST	F000	2116
931	Stop N Shop Convenience Store	3441	4648 Hwy 61	White Bear Lake	UST	F000	2116
932	Stop N Shop Convenience Store	32892	4648 Highway 61	White Bear Lake	LUST		2116
933	Stop N Shop Convenience Store	395146	4648 Hwy 61	Saint Paul	WEL		2116
934	Stop N Shop Convenience Store	395147	4648 Hwy 61	Saint Paul	WEL		2116
935	Stop N Shop Convenience Store	395608	4648 Hwy 61	Saint Paul	WEL		2116
936	Storkamp, Steven	302219	6 Eldorado Dr	Saint Paul	ISTS		1000
937	Storkamp, Steven	302219	6 Eldorado Dr	Saint Paul	WEL		1000
938	Strommer, Mike	391618	3910 Scheuneman Rd	Saint Paul	ISTS		1000
939	Strommer, Mike	391618	3910 Scheuneman Rd	Saint Paul	WEL		1000
940	Strus, Leo	260926	5301 County Line E	Saint Paul	ISTS		1000
941	Strus, Leo	260926	5301 County Line E	Saint Paul	WEL		1000
942	Sun Color One Hour Photo	101815	2187 Fourth St	White Bear Lake	HWGP		2000
943	Sunrise Park Middle School	82478	2399 Cedar Ave	White Bear Lake	HWGP		6100
944	Sunrise Park Middle School	3361	2399 Cedar Ave	White Bear Lake	RST		6100
945	Sunrise Park Middle School	3361	2399 Cedar Ave	White Bear Lake	UST	F000	6100
946	Sunrise Park Middle School	399068	2399 Cedar Av	White Bear Lake	ISTS		6100
947	Sunrise Park Middle School	399068	2399 Cedar Av	White Bear Lake	SWUDS		6100
948	Sunrise Park Middle School	399068	2399 Cedar Av	White Bear Lake	WEL		6100
949	Sunrise Park Middle School	48430	2399 Cedar Av	White Bear Lake	SCH		6100
950	Suoja, Kevin	371738	5 Bayhill Rd	Saint Paul	ISTS		1000
951	Suoja, Kevin	371738	5 Bayhill Rd	Saint Paul	WEL		1000
952	Superamerica #4357	32810	1447 Hwy 96	White Bear Lake	LUST		2116
953	Superamerica #4357	9957	1447 Hwy 96	White Bear Lake	RST		2116
954	Superamerica #4357	9957	1447 Hwy 96	White Bear Lake	UST	F000	2116
955	Superamerica #4357	9957	1447 Hwy 96	White Bear Lake	UST	F000	2116
956	Superamerica #4357	9957	1447 Hwy 96	White Bear Lake	UST	F000	2116
957	Superamerica #4357	9957	1447 Hwy 96	White Bear Lake	UST	F000	2116
958	Superamerica #4357	9957	1447 Hwy 96	White Bear Lake	UST	F000	2116
959	Superamerica #4357	9957	1447 Hwy 96	White Bear Lake	UST	F000	2116
960	Superamerica #4357	9957	1447 Hwy 96	White Bear Lake	UST	F000	2116
961	Superamerica #4357	9957	1447 Hwy 96	White Bear Lake	UST	F000	2116
962	Superamerica #4357	9957	1447 Hwy 96	White Bear Lake	UST	F000	2116
963	Superamerica #4357	9957	1447 Hwy 96	White Bear Lake	UST	F000	2116
964	Superamerica 4357	71656	1447 Highway 96	White Bear Lake	HWGP		2116

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	Facility Name	MDH ID	Facility Address	CITY	PCS Code	(If Required)	Designation
965	Svendsen, Steve	263324	5970 Portland Av	Saint Paul	ISTS		1000
966	Svendsen, Steve	263324	5970 Portland Av	Saint Paul	WEL		1000
967	Swanson, Carl	251892	7665 120th St N	Saint Paul	ISTS		1000
968	Swanson, Carl	251892	7665 120th St N	Saint Paul	WEL		1000
969	Swomley, Dale	371625	1430 Goose Lake Rd	Saint Paul	ISTS		1000
970	Swomley, Dale	371625	1430 Goose Lake Rd	Saint Paul	WEL		1000
971	T And K Auto	82499	5425 Eagle St	White Bear Lake	HWGP		2110-01
972	Tally's Dockside	14011	4440 Lake Ave S	White Bear Lake	RST		4150
973	Tally's Dockside	14011	4440 Lake Ave S	White Bear Lake	UST	F000	4150
974	Tally's Dockside	33390	4440 Lake Ave S	White Bear Lake	LUST		4150
975	Tally's Dockside	107366	4440 Lake Ave S	White Bear Lake	MAR		4150
976	Tangwall, Gray	1015262	11 Hillary Farm La	Saint Paul	WEL		1000
977	Tansom, Corey	262873	11635 Grenelefe	Saint Paul	ISTS		1000
978	Tansom, Corey	262873	11635 Grenelefe	Saint Paul	WEL		1000
979	Tarvernier, Karen	162443	2410 Buffalo St	Saint Paul	ISTS		1100-01
980	Tarvernier, Karen	162443	2410 Buffalo St	Saint Paul	WEL		1100-01
981	Taymark	71649	4875 White Bear Pkwy	White Bear Lake	HWGP		3000
982	Tefft, Thomas	406469	7 High Point Rd	Saint Paul	ISTS		1000
983	Tefft, Thomas	406469	7 High Point Rd	Saint Paul	WEL		1000
984	Ten Dellwood LLC	153508	10 Dellwood Ave	Saint Paul	WEL		1000
985	Thaemert, Donald	189079	5 Pinevalley Dr	Saint Paul	ISTS		1000
986	Thaemert, Donald	189079	5 Pinevalley Dr	Saint Paul	WEL		1000
987	Thalacker, Paul	369885	1 Hill Crest Dr	Saint Paul	ISTS		1000
988	Thalacker, Paul	369885	1 Hill Crest Dr	Saint Paul	WEL		1000
989	Thane Hawkins Polar Chev Inc	3464	1801 E Co Rd F	White Bear Lake	AST	F000	2110
990	Thane Hawkins Polar Chev Inc	3464	1801 E Co Rd F	White Bear Lake	AST	W000	2110
991	Thane Hawkins Polar Chev Inc	3464	1801 E Co Rd F	White Bear Lake	AST	F000	2110
992	Thane Hawkins Polar Chev Inc	3464	1801 E Co Rd F	White Bear Lake	RST		2110
993	Thane Hawkins Polar Chev Inc	3464	1801 E Co Rd F	White Bear Lake	UST	F000	2110
994	Thane Hawkins Polar Chev Inc	3464	1801 E Co Rd F	White Bear Lake	UST	F000	2110
995	Thane Hawkins Polar Chev Inc	3464	1801 E Co Rd F	White Bear Lake	UST	F000	2110
996	Thane Hawkins Polar Chev Inc	3464	1801 E Co Rd F	White Bear Lake	UST	W000	2110
997	Thane Hawkins Polar Chev Inc	3464	1801 E Co Rd F	White Bear Lake	UST	F000	2110
998	Thane Hawkins Polar Chevrolet	71672	1801 E County Road F	White Bear Lake	HWGP		2110
999	The Learning Edge	51690	2179 4th St Ste 3b	White Bear Lake	STOR	C000	6000

						PCS Material	
						Code	Facility
	Facility Name	MDH ID	Facility Address	CITY	PCS Code	(If Required)	Designation
1000	Thermoform Plastics	44400	4221 Otter Lake Rd	White Bear Lake	ARP		3320-01
1001	Thermoform Plastics Inc	82391	4221 Otter Lake Rd	White Bear Lake	HWGP		3320-01
1002	Theuninck, Benson	405365	3 Hillcrest Dr	Saint Paul	ISTS		1000
1003	Theuninck, Benson	405365	3 Hillcrest Dr	Saint Paul	WEL		1000
1004	Thiegs,Paul	174349	2714 Silver Fox Rd	Saint Paul	ISTS		1000
1005	Thiegs,Paul	174349	2714 Silver Fox Rd	Saint Paul	WEL		1000
1006	Thole, Jeffrey	340865	2226 Stillwater St	Saint Paul	ISTS		1100-01
1007	Thole, Jeffrey	340865	2226 Stillwater St	Saint Paul	WEL		1100-01
1008	Thomas Bartylle	251755	5368 Portland Av	Saint Paul	ISTS		1000
1009	Thomas Bartylle	251755	5368 Portland Av	Saint Paul	WEL		1000
1010	Tillges, Ben	1015870	11942 Great Oaks Tr N	White Bear Lake	ISTS		1100-01
1011	Tillges, Ben	1015870	11942 Great Oaks Tr N	White Bear Lake	WEL		1100-01
1012	Tjernlund Products Inc	101823	1601 9th St	White Bear Lake	HWGP		3000
1013	Trade Press And Lithographers	71625	1735 E County Road F	White Bear Lake	HWGP		2417
1014	Tratar, Irene	218206	1378 Top La	Saint Paul	WEL		1100-01
1015	Traxler, Matthew	148483	1571 Hwy 96	Saint Paul	WEL		1100-01
1016	Tretinyak, Alexander	404199	11 Bayhill Rd	Saint Paul	ISTS		1000
1017	Tretinyak, Alexander	404199	11 Bayhill Rd	Saint Paul	WEL		1000
1018	Trissler, Timothy	180272	21 Highpoint Rd	Saint Paul	ISTS		1000
1019	Trissler, Timothy	180272	21 Highpoint Rd	Saint Paul	WEL		1000
1020	Trissler, Timothy	242844	21 Highpoint Rd	Saint Paul	ISTS		1000
1021	Trissler, Timothy	242844	21 Highpoint Rd	Saint Paul	WEL		1000
1022	Trooien, Dennis	141035	2509 Manitou Island	Saint Paul	WEL		1100-01
1023	Twin City Nursery	51520	4941 Long Ave	White Bear Lake	STOR	C000	9000
1024	Union Cemetery	25476	Clarence St. and 2nd Ave	White Bear Lake	CMTY		6720-01
1025	Universal Drive Line Inc	71654	5250 Highway 61	White Bear Lake	HWGP		3000
1026	Universal Forest Products	53073	4141 Hoffman Rd	White Bear Lake	STOR	C010	2126
1027	Universal Forest Products	82501	4141 Hoffman Rd	White Bear Lake	HWGP		2126
1028	Universal Forest Products	3248	4141 Hoffman Rd	White Bear Lake	RST		2126
1029	Universal Forest Products	3248	4141 Hoffman Rd	White Bear Lake	UST	F000	2126
1030	Universal Forest Products	23134	4141 Hoffman Rd.	White Bear Lake	TRS		2126
	Universal Forest Products (prefab						
1031	warehouse)	250666	4141 Hoffman Rd	Saint Paul	WEL		2126
1032	Urbaniak, Steven	243086	11595 Grenelefe Av	Saint Paul	ISTS		1000
1033	Urbaniak, Steven	243086	11595 Grenelefe Av	Saint Paul	WEL		1000

						PCS Material	
						Code	Facility
	Facility Name	MDH ID	Facility Address	CITY	PCS Code	(If Required)	Designation
1034	US Post Office	15135	2223 5th St	White Bear Lake	RST		4000
1035	US Post Office	15135	2223 5th St	White Bear Lake	UST	F000	4000
1036	US Post Office	15135	2223 5th St	White Bear Lake	UST	F000	4000
1037	Vadnais Brothers/Vadnais Motors	3525	4821 Washington Ave	White Bear Lake	RST		2110-01
1038	Vadnais Brothers/Vadnais Motors	3525	4821 Washington Ave	White Bear Lake	UST	F000	2110-01
1039	Vadnais Brothers/Vadnais Motors	3525	4821 Washington Ave	White Bear Lake	UST	W000	2110-01
1040	Vadnais Motors	82463	4821 Washington Ave	White Bear Lake	HWGP		2110-01
1041	Vadnais Plumbing and Pump	33076	4771 Bald Eagle Avenue	White Bear Lake	LUST		2000
1042	Vadnais Plumbing and Pump	97629	4771 Bald Eagle Ave	White Bear Lake	HWGP		2000
1043	Vadnais Plumbing and Pump	402467	4771 Bald Eagle Av	Saint Paul	ST		2000
1044	Vadnais Plumbing and Pump	402467	4771 Bald Eagle Av	Saint Paul	WEL		2000
1045	Vadnais Plumbing and Pump	3523	4771 Bald Eagle Ave	White Bear Lake	RST		2000
1046	Vadnais Plumbing and Pump	3523	4771 Bald Eagle Ave	White Bear Lake	UST	W000	2000
1047	Vadnais Plumbing and Pump	3523	4771 Bald Eagle Ave	White Bear Lake	UST	F000	2000
1048	Vadnais Plumbing and Pump	3523	4771 Bald Eagle Ave	White Bear Lake	UST	F000	2000
1049	Vadnais Plumbing and Pump	3523	4771 Bald Eagle Ave	White Bear Lake	UST	F000	2000
1050	Vadnais Plumbing and Pump	3523	4771 Bald Eagle Ave	White Bear Lake	UST	F000	2000
1051	Vadnais Plumbing and Pump	3523	4771 Bald Eagle Ave	White Bear Lake	UST	F000	2000
1052	Vadnais Plumbing and Pump	3523	4771 Bald Eagle Ave	White Bear Lake	UST	F000	2000
1053	Vadnais Plumbing and Pump	3523	4771 Bald Eagle Ave	White Bear Lake	UST	F000	2000
1054	Van, Fanny	154388	5991 Mallard Ponds Dr	Saint Paul	ISTS		1000
1055	Van, Fanny	154388	5991 Mallard Ponds Dr	Saint Paul	WEL		1000
1056	Vista Technologies Llc	82451	4457 White Bear Pkwy	White Bear Lake	HWGP		3000
1057	Vogel, Gregg	280514	5680 Jenni La	Saint Paul	WEL		1000
1058	Vogt, David	175110	6262 117th St	Saint Paul	ISTS		1000
1059	Vogt, David	175110	6262 117th St	Saint Paul	WEL		1000
1060	Vomacka, Stanley	282274	3900 Scheuneman Rd	Saint Paul	ISTS		1000
1061	Vomacka, Stanley	282274	3900 Scheuneman Rd	Saint Paul	WEL		1000
1062	Voorhees, Eunice	146277	53 Apple Orchard Rd	Saint Paul	ISTS		1000
1063	Voorhees, Eunice	146277	53 Apple Orchard Rd	Saint Paul	WEL		1000
1064	Vukovic, Philip	139173	22 Doral Rd	Saint Paul	ISTS		1000
1065	Vukovic, Philip	139173	22 Doral Rd	Saint Paul	WEL		1000

						PCS Material	
						Code	Facility
	Facility Name	MDH ID	Facility Address	CITY	PCS Code	(If Required)	Designation
1066	Wachowiak, Greg	137970	5448 Portland Av	Saint Paul	ISTS		1000
1067	Wachowiak, Greg	137970	5448 Portland Av	Saint Paul	WEL		1000
1068	Walline, James	208748	46 Apple Orchard Rd	Saint Paul	ISTS		1000
1069	Walline, James	208748	46 Apple Orchard Rd	Saint Paul	WEL		1000
1070	Walters, David	243753	60 Apple Orchard Rd	Saint Paul	ISTS		1000
1071	Walters, David	243753	60 Apple Orchard Rd	Saint Paul	WEL		1000
1072	Wangensteen, Margaret	36161	6420 N 117th St	Saint Paul	LUST		1000
1073	Washington Square Bar and Grill	97559	4736 Washington Square	White Bear Lake	HWGP		2000
1074	Water Gremlin	38911	1610 Whitaker Avenue	White Bear Lake	HWIC		3000
1075	Water Gremlin	38911	1610 Whitaker Avenue	White Bear Lake	VIC		3000
1076	Water Gremlin	394543	1610 Whitaker Av	Saint Paul	WEL		3000
1077	Water Gremlin Co	44394	1610 Whitaker Av	White Bear Lake	ARP		3000
1078	Water Gremlin Co	20721	1610 Whitaker Ave	White Bear Lake	RST		3000
1079	Water Gremlin Co Inc	82381	1610 Whitaker Ave	White Bear Lake	HWGP		3000
1080	Water Gremlin Company	23136	1610 Whitaker Ave.	White Bear Lake	TRS		3000
1081	Weaver, Patricia	241465	5333 Hugo Rd	Saint Paul	WEL		1100-01
1082	Weber, Stephen	257796	2 Lookout Rd	Saint Paul	ISTS		1000
1083	Weber, Stephen	257796	2 Lookout Rd	Saint Paul	WEL		1000
1084	Wegleitner, Sandra	36162	6808 117th St N	Saint Paul	LUST		1100-01
1085	Wegleitner, Sandra	4153	6808 117th St N	White Bear Lake	RST		1100-01
1086	Wegleitner, Sandra	4153	6808 117th St N	White Bear Lake	UST	F000	1100-01
1087	Weispfening, Kyle	186808	1763 9 St	Saint Paul	WEL		1100-01
1088	Wells Fargo Bank	71655	4400 Highway 61	White Bear Lake	HWGP		2200
1089	Weyerhauser Paper Co	20790	1699 W 9th St	White Bear Lake	RST		3000
1090	Weyerhauser Paper Co	82494	1699 W 9th St	White Bear Lake	HWGP		3000
1091	Weyerhauser Paper Co	44412	1699 W 9th St	White Bear Lake	ARP		3000
1092	White Bear Auto Parts	21620	4250 Otter Lake Road	White Bear Lake	RST		2110
1093	White Bear Auto Parts	38209	4250 Otter Lake Road	White Bear Lake	SVY		2110
1094	White Bear Auto Parts	82396	4250 Otter Lake Rd	White Bear Lake	HWGP		2110
1095	White Bear Boat Works	32197	4120 Hoffman Rd	White Bear Lake	LUST		4150
1096	White Bear Boat Works	107372	4120 Hoffman Rd	White Bear Lake	MAR		4150
1097	White Bear Boat Works	3650	4120 Hoffman Rd	White Bear Lake	RST		4150
1098	White Bear Boat Works	3650	4120 Hoffman Rd	White Bear Lake	UST	F000	4150
1099	White Bear Boat Works	71645	4120 Hoffman Rd	White Bear Lake	HWGP		4150

Eacility Name MDH_ID Eacility Address CITY PCS Code (If Required)	Facility Designation
Facility Name MDH ID Facility Address CITY PCS Code (If Required)	Designation
	Besignation
1100 White Bear Boat Works 82470 4120 Hoffman Rd White Bear Lake HWGP	4150
1101 White Bear Body Shop824652218 4th StWhite Bear LakeHWGP	2110-01
White Bear High School/North	
1102 Campus 82400 5040 Bald Eagle Ave White Bear Lake HWGP	6000
White Bear High School/North	
1103 Campus 3391 5040 Bald Eagle Ave White Bear Lake RST	6000
White Bear High School/North	
1104 Campus 3391 5040 Bald Eagle Ave White Bear Lake UST F000	6000
White Bear High School/North	
1105 Campus 3391 5040 Bald Eagle Ave White Bear Lake UST F000	6000
1106 White Bear Lake Care Center 3501 1891 Florence St White Bear Lake RST	1200
1107 White Bear Lake Care Center 3501 1891 Florence St White Bear Lake UST F000	1200
1108 White Bear Lake City Dump 39329 S of 4th Ave & Whitaker Ave White Bear Lake DMP	4346-06
1109 White Bear Lake City Of 97514 4701 Hwy 61 White Bear Lake HWGP	6000
1110 White Bear Lake City Of 53370 4701 Hwy 61 White Bear Lake STOR C000	6000
1111 White Bear Lake Family Practice 97646 1430 E Hwy 96 White Bear Lake HWGP	6000
1112 White Bear Lake Lift Station L-5 21665 4256 White Bear Ave White Bear Lake RST	4340
1113 White Bear Lake Lions Club 3929 2228 4th St White Bear Lake RST	5000
1114 White Bear Lake Lions Club 3929 2228 4th St White Bear Lake UST F000	5000
1115 White Bear Lake Pontiac Gmc Trucks 71677 3900 N Highway 61 White Bear Lake HWGP	2110-01
1116 White Bear Lake Pontiac-Gmc Trucks 71632 3900 Highway 61 White Bear Lake HWGP	2110-01
1117 White Bear Lake Pontiac-Gmc Trucks 97442 3900 Hwy 61 N White Bear Lake HWGP	2110-01
1118 White Bear Lake Pontiac-Gmc Trucks 11712 3900 N Hwy 61 White Bear Lake RST	2110-01
1119 White Bear Lake Pontiac-Gmc Trucks 3868 3880 N Hwy 61 White Bear Lake RST	2110-01
1120 White Bear Lake Pontiac-Gmc Trucks 11712 3900 N Hwy 61 White Bear Lake UST F000	2110-01
1121 White Bear Lake Pontiac-Gmc Trucks 11712 3900 N Hwy 61 White Bear Lake UST W000	2110-01
1122 White Bear Lake Pontiac-Gmc Trucks 11712 3900 N Hwy 61 White Bear Lake UST F000	2110-01

						PCS Material	
						Code	Facility
	Facility Name	MDH ID	Facility Address	CITY	PCS Code	(If Required)	Designation
1123	White Bear Lake Pontiac-Gmc Trucks	3868	3880 N Hwy 61	White Bear Lake	UST	F000	2110-01
			· · ·				
1124	White Bear Lake Pontiac-Gmc Trucks	3868	3880 N Hwy 61	White Bear Lake	UST	F000	2110-01
1125	White Bear Lake Pontiac-Gmc Trucks	3868	3880 N Hwy 61	White Bear Lake	LIST	F000	2110-01
1125		5000		White Bear Eake	001	1000	2110 01
1126	White Boar Lake Pontiac Gmc Trucks	2868	2880 N Hway 61	White Boar Lake	нст	5000	2110.01
1120	White bear take rontiac-onic mucks	3000	5660 N HWY 01	White Deal Lake	031	1000	2110-01
1177	White Pear Lake Pontias Cms Trucks	2060	2880 N Hung 61	White Bear Lake	LICT	W000	2110 01
1127	White Bear Lake Politiac-Gine Hucks	5000	5880 N HWY 01	WITTLE Dear Lake	031	vv000	2110-01
1120	White Deer Lake Deptice Cree Trucks	22002	2880 N Liver C1	M/hite Deer Leke	LUCT		2110 01
1128	White Bear Lake Pontiac-Gmc Trucks	32092	3880 N HWY 61	white Bear Lake	LUSI		2110-01
			2000 1111 64				
1129	White Bear Lake Pontiac-Gmc Trucks	32091	3880 N HWY 61	White Bear Lake	LUST		2110-01
1130	White Bear Lake Post Office	331/1	2223 5th St	White Bear Lake	LUST		4000
	White Bear Lake Public Wks Lime						
1131	Sldg Dmp	39273	1884 Whitaker	White Bear Lake	DMP		4346-06
	White Bear Lake Public Works City						
1132	Of	97445	4200 Hoffman Rd	White Bear Lake	HWGP		6200
1133	White Bear Lake School Bus Garage	82462	5040 Bald Eagle Ave	White Bear Lake	HWGP		4000
1134	White Bear Lake School Bus Garage	20402	5040 Bald Eagle Ave	White Bear Lake	RST		4000
1135	White Bear Lake School Bus Garage	33471	5040 Bald Eagle Ave	White Bear Lake	LUST		4000
1136	White Bear Lake School Bus Garage	13754	5040 Bald Eagle Ave	White Bear Lake	RST		4000
1137	White Bear Lake School Bus Garage	13754	5040 Bald Eagle Ave	White Bear Lake	UST	F000	4000
		-			-		
1138	White Bear Lake School Bus Garage	13754	5040 Bald Eagle Ave	White Bear Lake	UST	F000	4000
		20707		Line Dear Lanc			
1139	White Bear Lake School Bus Garage	13754	5040 Bald Fagle Ave	White Bear Lake	UST	W000	4000
		13734		tunic bear lake	001		4000
11/0	White Bear Lake School Bus Garage	1275/	5040 Bald Fagle Ave	White Boar Lake	LIST	W000	4000
1140	white bear take school bus Galage	13734	JUHU Dalu Lagie Ave	white bear Lake	031	*****	4000

						PCS Material	
						Code	Facility
	Facility Name	MDH ID	Facility Address	CITY	PCS Code	(If Required)	Designation
1141	White Bear Lake School Bus Garage	13754	5040 Bald Eagle Ave	White Bear Lake	UST	F000	4000
1142	White Bear Lake School District	312143	5040 Bald Eagle Ave	Saint Paul	WEL		6000
1143	White Bear Lake Schools	155596	4857 Bloom Av	Saint Paul	ISTS		6000
1144	White Bear Lake Schools	155596	4857 Bloom Av	Saint Paul	SWUDS		6000
1145	White Bear Lake Schools	155596	4857 Bloom Av	Saint Paul	WEL		6000
1146	White Bear Lake Schools	312136	5040 Division Ave	Saint Paul	WEL		6000
			off Lake Ave between 10th and				
1147	White Bear Lake Seaplane Base	62509	11th Streets	White Bear Lake	AIRS		4000
1148	White Bear Locksmith	97635	4712 Hwy 61	White Bear Lake	HWGP		2000
1149	Pathway Health Services	33258	2025 4th St	White Bear Lake	LUST		6000
1150	White Bear Screen Printing	82382	2068 1st St	White Bear Lake	HWGP		2000
1151	White Bear Shell Station	71662	4061 N Highway 61	White Bear Lake	HWGP		2116
1152	White Bear Tire And Auto	71657	1350 E Highway 96	White Bear Lake	HWGP		2110-01
1153	White Bear Township	311774	4151 Hoffman Rd	Saint Paul	ISTS		6200
1154	White Bear Township	392249	4099 Bellaire Av	Saint Paul	ISTS		6200
1155	White Bear Township	311774	4151 Hoffman Rd	Saint Paul	OBWELL		6200
1156	White Bear Township	392249	4099 Bellaire Av	Saint Paul	PWS		6200
1157	White Bear Township	311774	4151 Hoffman Rd	Saint Paul	WEL		6200
1158	White Bear Township	392249	4099 Bellaire Av	Saint Paul	WEL		6200
1159	White Bear West Park	269209	2350 11th St	Saint Paul	WEL		5000
1160	White Bear Yacht Club	53371	56 Dellwood Ave	Dellwood	STOR	C000	5000
1161	White Bear Yacht Club	448024	56 Dellwood Ave	Saint Paul	SWUDS		5000
1162	White Bear Yacht Club	448024	56 Dellwood Ave	Saint Paul	WEL		5000
1163	Whitney, Deborah	142209	12 Fenlea Ci	Saint Paul	ISTS		1000
1164	Whitney, Deborah	142209	12 Fenlea Ci	Saint Paul	WEL		1000
1165	Whitney, Nicholas E III	232406	7 Pinehurst Dr	Saint Paul	WEL		1000

						PCS Material	
						Code	Facility
	Facility Name	MDH ID	Facility Address	CITY	PCS Code	(If Required)	Designation
1166	Wiener, Anita	137624	1843 Florence St	Saint Paul	WEL		1100-01
	Wild Ginger Thai and Chinese						
1167	Restaurant	32857	4440 N Hwy 61	White Bear Lake	LUST		2500
	Wild Ginger Thai and Chinese						
1168	Restaurant	9922	4440 Hwy 61	White Bear Lake	RST		2500
	Wild Ginger Thai and Chinese						
1169	Restaurant	9922	4440 Hwy 61	White Bear Lake	UST	F000	2500
	Wild Ginger Thai and Chinese						
1170	Restaurant	9922	4440 Hwy 61	White Bear Lake	UST	F000	2500
	Wild Ginger Thai and Chinese						
1171	Restaurant	9922	4440 Hwy 61	White Bear Lake	UST	F000	2500
	Wild Ginger Thai and Chinese						
1172	Restaurant	9922	4440 Hwy 61	White Bear Lake	UST	F000	2500
1173	Williams, Sally	277078	2244 Gardenette S	Saint Paul	WEL		1100-01
1174	Wilson, Kenneth	133309	19 Lacosta Dr	Saint Paul	ISTS		1000
1175	Wilson, Kenneth	133309	19 Lacosta Dr	Saint Paul	WEL		1000
1176	Wilt, Thomas	3553	3996 Hoffman Rd	White Bear Lake	RST		1100-01
1177	Wilt, Thomas	3553	3996 Hoffman Rd	White Bear Lake	UST	F000	1100-01
1178	Wilt, Thomas	251330	3996 Hoffman Rd	Saint Paul	ISTS		1100-01
1179	Wilt, Thomas	251330	3996 Hoffman Rd	Saint Paul	WEL		1100-01
1180	Winey, Mark	414030	15 High Point Rd	Saint Paul	ISTS		1000
1181	Winey, Mark	414030	15 High Point Rd	Saint Paul	WEL		1000
1182	Wippich, Derek	382803	3860 Scheuneman Rd	Saint Paul	ISTS		1000
1183	Wippich, Derek	382803	3860 Scheuneman Rd	Saint Paul	WEL		1000
1184	Wong, Roy	215403	11335 Grenelefe Av	Saint Paul	ISTS		1000
1185	Wong, Roy	215403	11335 Grenelefe Av	Saint Paul	WEL		1000
1186	Wood, Frank	82460	4947 Morehead Ave	White Bear Lake	HWGP		1100-01
1187	Wybierala Dump	39328	near Bibeau Rd & Fischer Lane	Saint Paul	DMP		4346-06
1188	Yang, Paokuu	404639	11525 Hillcrest Ct N	Saint Paul	ISTS		1000
1189	Yang, Paokuu	404639	11525 Hillcrest Ct N	Saint Paul	WEL		1000
1190	Yungers, Barbara	223000	2164 Gardenette Dr N	Saint Paul	WEL		1100-01
1191	Zadeii, Gholam	371635	4 Troon Ct	Saint Paul	ISTS		1000
1192	Zadeii, Gholam	371635	4 Troon Ct	Saint Paul	WEL		1000
1193	Zagel, Johanna	231679	2590 Arbor Dr	Saint Paul	WEL		1100-01

Wellhead Protection Plan, Part 2 White Bear Township

						PCS Material	
						Code	Facility
	Facility Name	MDH ID	Facility Address	CITY	PCS Code	(If Required)	Designation
1194	Zasada, Gary	329536	1580 Goose Lake Rd	Saint Paul	ISTS		1100-01
1195	Zasada, Gary	329536	1580 Goose Lake Rd	Saint Paul	WEL		1100-01
1196	Zauner, James	246727	2551 Buffalo St	Saint Paul	ISTS		1100-01
1197	Zauner, James	246727	2551 Buffalo St	Saint Paul	WEL		1100-01
1198	Zauner, Roy	226921	2569 Buffalo St	Saint Paul	ISTS		1100-01
1199	Zauner, Roy	226921	2569 Buffalo St	Saint Paul	WEL		1100-01
1200	Zink, Phillip	260838	8 Lookout Rd	Saint Paul	ISTS		1000
1201	Zink, Phillip	260838	8 Lookout Rd	Saint Paul	WEL		1000
1202	Zonne, Emil	232289	42 Eldorado Ci	Saint Paul	ISTS		1000
1203	Zonne, Emil	232289	42 Eldorado Ci	Saint Paul	WEL		1000

Summary of Types of Sites

	<u>, ,,</u>		
AIRP	2	PRK	1
AIRS	1	PWS	6
ARP	3	RECG	1
AST	5	REST	2
BTLND	1	RST	54
CMTY	2	SCH	8
DMP	5	ST	7
GAGE	2	STOR	12
HSTS	3	SURWIN	2
HTL	1	SVY	1
HWGP	125	SWUDS	14
HWIC	1	THEA	1
ISTS	301	TRS	5
LUST	42	UNSPEC	3
MAR	2	UST	151
NPDES	1	VIC	2
OBWELL	2	WEL	434
		Total	1203

						PCS Material Code	Facility
	Facility Name	MDH ID	Facility Address	CITY	PCS Code	(If Required)	Designation
1	Bartylla Landscaping Inc	9926	5368 Portland Ave	White Bear Lake	RST		2453
2	Bartylla Landscaping Inc	9926	5368 Portland Ave	White Bear Lake	UST	F000	2453
3	Beach School	13979	Buffalo St & Grand Ave	Saint Paul	RST		6100
4	Beach School	13979	Buffalo St & Grand Ave	Saint Paul	UST	F000	6100
5	Birch Lake Unit No. 8	158393		Saint Paul	SWUDS		5000
6	Birch Lake Unit No. 8	158393		Saint Paul	WEL		5000
7	Bulk Oil Site	32873	5th Street And Division Ave	White Bear Lake	LUST		4320
8	Cc Krein Company	295756	1350 Hwy 96	Saint Paul	WEL		2000
9	Dept Of Natural Resources	467048	Bellaire Park Sit	Saint Paul	OBWELL		5000
10	Dept Of Natural Resources	467048	Bellaire Park Sit	Saint Paul	WEL		5000
11	Dept Of Natural Resources	1037470	Bellaire Park Sit	Saint Paul	WEL		5000
12	Dick Adamson Residence	60072	7505 - 99th St Court N	White Bear Lake	LUST		1100-01
13	Forest Lake Contracting	454391		Saint Paul	SWUDS		7000
14	Forest Lake Contracting	454391		Saint Paul	WEL		7000
15	Former White Bear Oil	33036	Corner Of 2nd St & Hwy 61	White Bear Lake	LUST		2116
16	Fuel Oil Service Co	20464	4760 Division St	White Bear Lake	RST		4320
17	Fuel Oil Service Co Bulk Plant	19217	5th & Division St	White Bear Lake	RST		4320
18	Glennon Lawn & Landscape	57998	3734 Little Linden Curve	White Bear Lake	STOR	C010	2453
19	Goetz Landscape & Design	57269	P O Box 101	White Bear Lake	STOR	C010	2453
20	Goodyear Asc	3586	2207 4th St	White Bear Lake	RST		2000
21	Goodyear Asc	3586	2207 4th St	White Bear Lake	UST	W000	2000
22	Hanson	64567		White Bear Lake	PIT		
23	J And C Sports	71658	4410 N Highway 61	White Bear Lake	HWGP		2000
24	Johnson,joe E.	291251		Saint Paul	ISTS		1100-01
25	Johnson,joe E.	291251		Saint Paul	WEL		1100-01
26	Lee Tom Co	97300	2066 1st St	White Bear Lake	HWGP		2000
27	Mcnaulty Homes	1026247		Saint Paul	WEL		1100-01
	Minn State Of National Guard						
28	Armory	97403	502 Fourth Street	White Bear Lake	HWGP		6310
	Minn State Of Organizational Mnt						
29	Shop 16	97402	4969 Division St	White Bear Lake	HWGP		6200
30	Mw-1	392494		Saint Paul	ST		
31	MW-1	314696	21430 3rd St	Saint Paul	WEL		
32	Mw-1	314693	4771 Baldeagle Av	Saint Paul	WEL		
33	Mw-1	330736	4852 Highway 61	Saint Paul	WEL		
34	Mw-1	392494		Saint Paul	WEL		

						PCS Material Code	Facility
	Facility Name	MDH ID	Facility Address	CITY	PCS Code	(If Required)	Designation
35	Mw-2	392495	5051 Stewart Av	Saint Paul	ST		
36	MW-2	314695	21430 3rd St	Saint Paul	WEL		
37	Mw-2	1037548	1986 96 Hc	Saint Paul	WEL		
38	Mw-2	312142	5040 Division Av	Saint Paul	WEL		
39	Mw-2	314692	4771 Baldeagle Av	Saint Paul	WEL		
40	Mw-2	330735	4852 Highway 61	Saint Paul	WEL		
41	Mw-2	392495	5051 Stewart Av	Saint Paul	WEL		
42	Mw-3	392496	5051 Stewart Av	Saint Paul	ST		
43	MW-3	314694	21430 3rd St	Saint Paul	WEL		
44	Mw-3	1037608	1986 96 Hc	Saint Paul	WEL		
45	Mw-3	312527	5040 Division Av	Saint Paul	WEL		
46	Mw-3	314691	4771 Baldeagle Av	Saint Paul	WEL		
47	Mw-3	330734	4852 Hwy 61	Saint Paul	WEL		
48	Mw-3	392496	5051 Stewart Av	Saint Paul	WEL		
49	Mw-4	330733	4852 Highway 61	Saint Paul	WEL		
50	Mw-4	402607	1986 Hwy 96	36 Hwy 96 Saint Paul			
51	Mw-5	322162	5051 Stewart Av	Saint Paul	WEL		
52	Mw-5	330732	4852 Highway 61	Saint Paul	WEL		
53	Mw-6	322161	5051 Stewart Av	Saint Paul	WEL		
54	Mw-6	395589	4852 Hwy 61	Saint Paul	WEL		
55	Mw-6	402125	5860 Hwy 61	Saint Paul	WEL		
56	Mw-7	402124	5860 Hwy 61	Saint Paul	WEL		
57	Rice Lake Contracting	454191		Saint Paul	SWUDS		7000
58	Rice Lake Contracting	454191		Saint Paul	WEL		7000
59	Select Pets	54937	1979 Whitaker Rd	White Bear Lake	STOR	C010	2700
60	Superamerica Group Inc	452862		Saint Paul	SWUDS		2116
61	Superamerica Group Inc	452863		Saint Paul	SWUDS		2116
62	Superamerica Group Inc	452862		Saint Paul	WEL		2116
63	Superamerica Group Inc	452863		Saint Paul	WEL		2116
64	VanAvery C	64615		Dellwood	PIT		
65	Webster School	48520		White Bear Lake	SCH		6100
66	White Bear Bulk Facility	32988	Hwy 61 And 96	White Bear Lake	LUST		
67	White Bear Dump	41248	5000 Block of Division Avenue	White Bear Lake	VIC		4346-06
68	White Bear Lake	469744		Saint Paul	BTLND		5000
69	White Bear Lake n	467100		Saint Paul	BTLND		5000

						PCS Material Code	Facility
	Facility Name	MDH ID	Facility Address	CITY	PCS Code	(If Required)	Designation
70	White Bear Lake ne	467101		White Bear Lake	BTLND		5000
71	White Bear Lake North Basin	107776		White Bear Lake	GAGE		5000
72	White Bear Lake Unit 1	216443	3900 N Hwy 61	Saint Paul	SWUDS		
73	White Bear Lake Unit 1	216443	3900 N Hwy 61	Saint Paul	WEL		
74	White Bear Lake Unit 2	188287		Saint Paul	SWUDS		
75	White Bear Lake Unit 2	188287		Saint Paul	WEL		
76	White Bear Lake Unit 3	267038		Saint Paul	OBWELL		
77	White Bear Lake Unit 3	267038		Saint Paul	SWUDS		
78	White Bear Lake Unit 3	267038		Saint Paul	WEL		
79	White Bear Lake Ut. No.9	178569		Saint Paul	SWUDS		
80	White Bear Lake Ut. No.9	178569		Saint Paul	WEL		
81	White Bear Lake West Basin	107777		White Bear Lake	GAGE		5000
82	White Bear Rod & Gun Club Site	42577	I-35E & Hwy 94	White Bear Lake	NFRAP		5300
83	White Bear Rod & Gun Club Site	42577	I-35E & Hwy 95	White Bear Lake	VIC		5300
84	White Bear Town Hall	163974		Saint Paul	OBWELL		6200
85	White Bear Town Hall	163974		Saint Paul	PWS		6200
86	White Bear Town Hall	163974		Saint Paul	WEL		6200
87	White Bear Township	163988		Saint Paul	OBWELL		
88	White Bear Township	452557		Saint Paul	SURWIN		
89	White Bear Township	452557		Saint Paul	SWUDS		
90	White Bear Township	453703		Saint Paul	SWUDS		
91	White Bear Township	139036		Saint Paul	WEL		
92	White Bear Township	163988		Saint Paul	WEL		
93	White Bear Township	239780		Saint Paul	WEL		
94	White Bear Township	453703		Saint Paul	WEL		
95	White Bear Township	198027		Saint Paul	WEL		
96	White Bear Township 1	173434		White Bear Lake	PWS		
97	White Bear Township 1	173434		White Bear Lake	SWUDS		
98	White Bear Township 1	173434		White Bear Lake	WEL		
99	White Bear Township 2	232470	Lakewood & Stacker Av	White Bear Lake	PWS		
100	White Bear Township 2	232470	Lakewood & Stacker Av	White Bear Lake	SWUDS		
101	White Bear Township 2	232470	Lakewood & Stacker Av	White Bear Lake	WEL		
102	White Bear Township 3	193249	East St. & Park Ave	White Bear Lake	PWS		
103	White Bear Township 3	193249	East St. & Park Ave	White Bear Lake	SWUDS		
104	White Bear Township 3	193249	East St. & Park Ave	White Bear Lake	WEL		

						PCS Material Code	Facility
	Facility Name	MDH ID	Facility Address	CITY	PCS Code	(If Required)	Designation
105	White Bear Township 4	271864		White Bear Lake	PWS		
106	White Bear Township 4	271864		White Bear Lake	SWUDS		
107	White Bear Township 4	271864		White Bear Lake	WEL		
108	White Bear Township 5	147513		White Bear Lake	PWS		
109	White Bear Township 5	147513		White Bear Lake	SWUDS		
110	White Bear Township 5	147513		White Bear Lake	WEL		
111	White Bear Township 6	229288	2530 Buffalo St	Saint Paul	WEL		
112	White Bear Township 6	160509	2530 Buffalo St	Saint Paul	PWS		
113	White Bear Township 6	160509	2530 Buffalo St	Saint Paul	WEL		
114	White Bear Utility Site	60074	Bald Eagle Ave	White Bear Lake	LUST		
	Yocum Oil Co - White Bear Bulk						
115	Plant #1	3992	506 Division St	White Bear Lake	RST		4320
	Yocum Oil Co - White Bear Bulk						
116	Plant #1	3992	506 Division St	White Bear Lake	UST	F000	4320
	Yocum Oil Co - White Bear Bulk						
117	Plant #1	3992	506 Division St	White Bear Lake	UST	F000	4320
	Yocum Oil Co - White Bear Bulk						
118	Plant #2	3991	16 Murray Ave	White Bear Lake	AST	F000	4320
	Yocum Oil Co - White Bear Bulk						
119	Plant #2	3991	16 Murray Ave	White Bear Lake	AST	F000	4320
	Yocum Oil Co - White Bear Bulk						
120	Plant #2	3991	16 Murray Ave	White Bear Lake	AST	F000	4320
	Yocum Oil Co - White Bear Bulk						
121	Plant #2	3991	16 Murray Ave	White Bear Lake	RST		4320
	Yocum Oil Co - White Bear Bulk						
122	Plant #2	3991	16 Murray Ave	White Bear Lake	UST	F000	4320
	Yocum Oil Co - White Bear Bulk						
123	Plant #2	3991	16 Murray Ave	White Bear Lake	UST	F000	4320
124	Yocum Oil Co Inc	19457	506 Division St	White Bear Lake	RST		4320
125		357317	2 Iron Ct	Saint Paul	ISTS		1100-01
126		357317	2 Iron Ct	Saint Paul	WEL		1100-01

					PCS Material Code	Facility
Facility Name	MDH ID	Facility Address	CITY	PCS Code	(If Required)	Designation
			Summary of Types	of Sites		
			AST	3		
			BTLND	3		
			GAGE	2		
			HWGP	4		
			ISTS	2		
			LUST	5		
			NFRAP	1		
			OBWELL	4		
			PIT	2		
			PWS	7		
			RST	8		
			SCH	1		
			ST	3		
			STOR	3		
			SURWIN	1		
			SWUDS	16		
			UST	7		
			VIC	2		
			WEL	52		
			Total	126		

Table No. 3

Average Precipitation (inches)

Wellhead Protection Plan, Part 2 White Bear Township, MN

Month	2006	2007	2008	2009	2010	Average
Jan	0.99	0.39	0.18	0.84	0.58	0.60
Feb	0.42	0.74	0.38	0.99	1.29	0.76
Mar	1.83	2.76	1.22	1.17	0.20	1.44
Apr	4.06	1.50	4.34	1.34	1.77	2.60
May	3.17	2.59	3.47	0.37	2.73	2.47
Jun	4.34	1.36	2.86	2.70	5.73	3.40
Jul	1.91	1.91	2.83	2.45	3.71	2.56
Aug	7.62	7.36	2.18	6.67	4.90	5.75
Sep	3.78	5.60	1.88	0.24	5.33	3.37
Oct	0.51	5.00	1.94	6.41	1.51	3.07
Nov	0.91	0.10	1.39	0.35	1.62	0.87
Dec	1.43	1.91	1.06	1.81	2.21	1.68
Total						
(in/yr)	30.97	31.22	23.73	25.34	31.58	28.57

*From the Minnesota State Climatology Office, MnDNR Waters Precipitation Station: 218477 VADNAIS LAKE

Table No. 4

Well Pumping Data (MGY)

Wellhead Protection Plan, Part 2 White Bear Township, MN

Well No.	Unique No.	2006	2007	2008	2009	2010	Average
1	226570	23.8	21.9	19.9	22.8	20.7	21.8
2A	676446	35.9	33.1	28.6	29.1	23.6	30.1
3	224679	34.8	38.0	106.1	27.7	69.5	55.2
4	226572	6.7	138.2	38.1	2.4	43.7	45.8
5	151596	343.2	330.9	169.4	283.6	251.2	275.7
6	596636	200.0	103.1	137.1	242.2	123.1	161.1
Total (MGY)		644.4	665.2	499.2	607.8	531.8	589.7

*From Minnesota DNR Records



R 22 W R 21 W

White Bear Township

Drinking Water Supply Management Area (DWSMA) MN-00448 10 year Time of Travel



For Vulnerability Assessment Contact MDH



Approved May 26, 2009

Minnesota location selector

Click on map OR modify coordinate text and click on "update map" button.



Show: map map settings

DONE/return to application

cancel location changes

Latitude/Longitude and UTM values are NAD83. <u>MapServer</u> generates the map. State Climatology Office - MnDNR - Waters, 1999-2006, e-mail: <u>State Climatology Office</u>

Soil Map—Ramsey County, Minnesota, and Washington County, Minnesota (Table 4- Soils Map, White Bear Township)



3/10/2011 Page 1 of 5
MAP LEGEND				MAP INFORMATION		
Area of In	terest (AOI)	۵	Very Stony Spot	Map Scale: 1:59,000 if printed on A size (8.5" × 11") sheet		
	Area of Interest (AOI)	¥	Wet Spot	The soil surveys that comprise your AOI were mapped at 1		
Soils			Other	Please rely on the bar scale on each map sheet for accura		
	Soil Map Units	Special	Line Features	measurements.		
Special	Point Features	\sim	Gully	Source of Map: Natural Resources Conservation Servic		
	Biowoul	10.0	Short Steep Slope	Coordinate System: UTM Zone 15N NAD83		
	Borrow Pit	~-	Other	This product is generated from the USDA-NRCS certified of		
*	Clay Spot	Political F	eatures	the version date(s) listed below.		
•	Closed Depression	•	Cities	Soil Survey Area: Ramsey County, Minnesota		
×	Gravel Pit		PLSS Township and	Survey Area Data: Version 4, Aug 12, 2010		
	Gravelly Spot		Range PLSS Section	Soil Survey Area: Washington County, Minnesota		
۵	Landfill	Water For		Survey Area Data: Version 6, Aug 2, 2010		
۸.	Lava Flow	water rea	Oceans	Your area of interest (AOI) includes more than one soil sur		
علد	Marsh or swamp	~	Streams and Canals	a different land use in mind, at different times, or at different		
*	Mine or Quarry	Transport	ation	of detail. This may result in map unit symbols, soil propert		
0	Miscellaneous Water	+++	Rails	boundaries.		
۲	Perennial Water	~	Interstate Highways	Date(s) aerial images were photographed: 7/18/2003		
~	Rock Outcrop	\sim	US Routes	The orthophoto or other base map on which the soil lines		
+	Saline Spot		Major Roads	compiled and digitized probably differs from the backgrour		
	Sandy Spot		-	of map unit boundaries may be evident.		
=	Severely Eroded Spot					
٥	Sinkhole					
à	Slide or Slip					
r	Sodic Spot					
	Spoil Area					
~	Stony Spot					
0	Stony Spot					



Map Unit Legend

Ramsey County, Minnesota (MN123)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
75	Bluffton loam	10.2	0.1%
123	Dundas fine sandy loam	45.3	0.5%
132B	Hayden fine sandy loam, 2 to 6 percent slopes	101.0	1.0%
132C	Hayden fine sandy loam, 6 to 12 percent slopes	91.7	1.0%
132D	Hayden fine sandy loam, 12 to 25 percent slopes	7.1	0.1%
155C	Chetek sandy loam, 6 to 12 percent slopes	1.2	0.0%
155D	Chetek sandy loam, 12 to 25 percent slopes	2.7	0.0%
158B	Zimmerman loamy fine sand, 0 to 6 percent slopes	276.8	2.9%
158C	Zimmerman loamy fine sand, 6 to 12 percent slopes	24.2	0.3%
158D	Zimmerman loamy fine sand, 12 to 25 percent slopes	6.6	0.1%
159	Anoka loamy fine sand, 0 to 3 percent slopes	337.4	3.5%
159B	Anoka loamy fine sand, 3 to 9 percent slopes	210.3	2.2%
161	Isanti loamy fine sand, depressional	86.8	0.9%
162	Lino loamy fine sand	151.4	1.6%
166	Ronneby fine sandy loam	2.8	0.0%
169B	Braham loamy fine sand, 1 to 6 percent slopes	14.8	0.2%
169C	Braham loamy fine sand, 6 to 15 percent slopes	5.9	0.1%
170	Blomford loamy fine sand	7.3	0.1%
225	Nessel fine sandy loam, 1 to 4 percent slopes	81.8	0.8%
264	Freeon silt loam, 1 to 4 percent slopes	17.1	0.2%
265	Soderville loamy fine sand	173.8	1.8%
266	Freer silt loam	15.5	0.2%
325	Prebish loam	9.4	0.1%
342B	Kingsley sandy loam, 2 to 6 percent slopes	27.7	0.3%
342C	Kingsley sandy loam, 6 to 12 percent slopes	75.8	0.8%
342D	Kingsley sandy loam, 12 to 18 percent slopes	44.3	0.5%
452	Comstock silt loam	33.5	0.3%
453C	DeMontreville loamy fine sand, 6 to 12 percent slopes	3.4	0.0%
454D	Mahtomedi loamy sand, 12 to 25 percent slopes	1.1	0.0%
481	Kratka fine sandy loam	8.8	0.1%
540	Seelyeville muck	169.5	1.8%
541	Rifle muck	265.2	2.8%
543	Markey muck	112.2	1.2%
544	Cathro muck	29.7	0.3%

Ramsey County, Minnesota (MN123)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
859B	Urban land-Zimmerman complex, 1 to 8 percent slopes	1,338.0	13.9%
860C	Urban land-Hayden-Kingsley complex, 3 to 15 percent slopes	260.7	2.7%
860D	Urban land-Hayden-Kingsley complex, 15 to 25 percent slopes	35.8	0.4%
861C	Urban land-Kingsley complex, 3 to 15 percent slopes	70.5	0.7%
862	Urban land-Dundas complex, 1 to 4 percent slopes	14.6	0.2%
863	Urban land-Lino complex, 0 to 3 percent slopes	331.0	3.4%
896D	Mahtomedi-Kingsley complex, 12 to 25 percent slopes	10.6	0.1%
1027	Udorthents, wet substratum	36.6	0.4%
1029	Pits, gravel	4.4	0.0%
1033	Udifluvents	87.6	0.9%
1039	Urban land	98.2	1.0%
1055	Aquolls and histosols, ponded	33.7	0.3%
1813B	Lino variant loamy fine sand, 2 to 6 percent slopes	54.7	0.6%
W	Water	1,874.7	19.5%
Subtotals for Soil Su	rvey Area	6,703.5	69.6%
Totals for Area of Interest		9,628.6	100.0%

Washington County, Minnesota (MN163)				
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI	
49B	Antigo silt loam, 2 to 6 percent slopes	4.8	0.0%	
75	Bluffton loam	61.7	0.6%	
113	Webster loam	32.7	0.3%	
120	Brill silt loam	0.1	0.0%	
123	Dundas fine sandy loam	201.6	2.1%	
132B	Hayden fine sandy loam, 2 to 6 percent slopes	55.4	0.6%	
132C	Hayden fine sandy loam, 6 to 12 percent slopes	267.0	2.8%	
132D	Hayden fine sandy loam, 12 to 25 percent slopes	149.5	1.6%	
158B	Zimmerman loamy fine sand, 0 to 6 percent slopes	17.8	0.2%	
158C	Zimmerman loamy fine sand, 6 to 12 percent slopes	20.9	0.2%	
158D	Zimmerman loamy fine sand, 12 to 25 percent slopes	57.0	0.6%	
159B	Anoka loamy fine sand, 3 to 9 percent slopes	6.2	0.1%	
162	Lino loamy fine sand	3.5	0.0%	
166	Ronneby fine sandy loam	10.6	0.1%	
169B	Braham loamy fine sand, 1 to 6 percent slopes	58.5	0.6%	
169C	Braham loamy fine sand, 6 to 15 percent slopes	17.3	0.2%	

Washington County, Minnesota (MN163)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
170	Blomford loamy fine sand	30.4	0.3%
177B	Gotham loamy sand, 1 to 6 percent slopes	6.6	0.1%
177C	Gotham loamy sand, 6 to 12 percent slopes	47.9	0.5%
177D	Gotham loamy sand, 12 to 20 percent slopes	89.4	0.9%
189	Auburndale silt loam	0.6	0.0%
225	Nessel fine sandy loam, 1 to 4 percent slopes	322.5	3.3%
265	Soderville loamy fine sand	7.1	0.1%
302C	Rosholt sandy loam, 6 to 15 percent slopes	4.2	0.0%
325	Prebish loam	12.5	0.1%
342B	Kingsley sandy loam, 2 to 6 percent slopes	19.5	0.2%
342C	Kingsley sandy loam, 6 to 12 percent slopes	93.9	1.0%
342D	Kingsley sandy loam, 12 to 18 percent slopes	42.8	0.4%
453B	DeMontreville loamy fine sand, 2 to 6 percent slopes	35.5	0.4%
453C	DeMontreville loamy fine sand, 6 to 12 percent slopes	115.1	1.2%
453D	DeMontreville loamy fine sand, 12 to 25 percent slopes	109.4	1.1%
454D	Mahtomedi loamy sand, 12 to 25 percent slopes	16.8	0.2%
481	Kratka fine sandy loam	31.8	0.3%
504C	Duluth silt loam, 6 to 12 percent slopes	11.8	0.1%
504D	Duluth silt loam, 12 to 25 percent slopes	62.1	0.6%
541	Rifle muck	319.9	3.3%
543	Markey muck	21.2	0.2%
544	Cathro muck	108.2	1.1%
860C	Urban land-Hayden-Kingsley complex, 3 to 15 percent slopes	35.2	0.4%
861C	Urban land-Kingsley complex, 3 to 15 percent slopes	33.7	0.3%
861D	Urban land-Kingsley complex, 15 to 25 percent slopes	1.0	0.0%
1027	Udorthents, wet substratum	14.7	0.2%
1029	Pits, gravel	5.5	0.1%
1033	Udifluvents	4.4	0.0%
1055	Aquolls and Histosols, ponded	54.8	0.6%
W	Water	302.6	3.1%
Subtotals for Soil Su	rvey Area	2,925.4	30.4%
Totals for Area of Interest		9,628.6	100.0%



PCSI Legend

Source: *DWSMA vulnerability as delineated by MDH

0

ENGINEERIN The right time	KDA IG • ARCHITECTURE • PLANNING The right people. The right company:	White	Bear	Legend DWSMA Vulnerability* High Low Moderate Very Low Cery Low	Lo	Date: March 2011	SI	0 1,2502,500 5, Figu
0	HISTORICAL SITE	0	PIT		0	SURFACE WATER USE PERMIT		
0	GAGE STATION	0	OBSERVATION WELL		0	STORAGE OR PREPARATION AREA		
•	DUMP	0		ISCHARGE ELIMINATION SYSTEM PERMIT	0	STORAGE TANK (UNSPECIFIED)		WELL
0	CEMETERY	ο	NO FURTHER REMEDIAL	ACTION PLANNED	0	SCHOOL	0	VOLUNTARY INVESTIGATIVE CLEAN-UP
0	BOAT LANDING	o	MARINA		•	REGISTERED STORAGE TANK PERMIT	•	UNDERGROUND STORAGE TANK
0	ABOVEGROUND STORAGE TA	ANK	LEAKING UNDERGROUNI) STORAGE TANK	o	RESTAURANT	0	UNSPECIFIED
0	AIR RELEASE PERMIT	٠	INDIVIDUAL SEWAGE TRE	ATMENT SYSTEM	0	GOLF COURSE	0	THEATER
0	SEAPLANE LANDING AREA	o	HAZARDOUS WASTE INVI	ESTIGATIVE /CLEANUP	0	PUBLIC WATER SUPPLY		STATE WATER USE PERMIT
0	AIRPORT		HAZARDOUS WASTE GEN	IERTOR	0	PARK	0	SALVAGE YARD

Figure 2

5,000















LEGEND



Conditional Use Institutional

Conditional Use Golf Course

Gateway and Village Center Mixed Use Requires Master Planning and PUD

Proposed Zones

Estate Residential (RE)

Executive Residential (RX)

Low Density Residential (R3)

Medium Density Residential (R4)

Gateway Zone

Gateway Zone - Sub Zones

Neighborhood Edge(NE)

Neighborhood General (NG)

Neighborhood Mixed Use (NMU)

Neighborhood Center (NC)



Source: Gem Lake, Ramsey County GIS, Mn/DOT, and SEH Inc.





Zoning Districts

Parcel Boundary (LA) Long Term Agricultural (AG) Agricultural (RR) Rural Residential (R-1) Large Lot Single Family Residential (R-3) Single Family Detached Residential (CR-3) Central Residential (R-4) Low Density Multiple Family Residential (R-5) Medium Density Multiple Family Residential (NS) Neighborhood Service (RC-1) Restricted Commercial (C-1) Central Business (C-2) General Business (FCB) Future Central Business (BP) Business Park (RI-1) Restricted Industrial (I-3) General Industrial (FUS) Future Urban Service (PUD) Planned Unit Development Water (MUSA) Metropolitan Urban Service Area



Map Created by the City of Hugo Community Development Department Adopted: 1-3-2011



Generalized Land Use 2005

Land Use (area in acres) Farmstead (2,055) -Seasonal/Vacation (252) Single Family Detached (44,297) Manufactured Housing Park (303) Single Family Attached (2,369) Multifamily (724) Retail and Other Commercial (2,993) Office (347) WHITE Mixed Use Residential (42) Mixed Use Industrial (37) Mixed Use Commercial and Other (8) Industrial and Utility (2,659) Extractive (1,684) Institutional (3,597) Park, Recreational or Preserve (19,257) Golf Course (3,473) Major Highway (2,851) Railway (251) Airport (315) Agricultural (68,708) NEWPOR Undeveloped (88,691) Water (25,842) AUL 0 2 3 4 5 Miles

Figure 3-1









te: 06/01/2011 g name: K:\standards\muni\maps\wbt\Storm. pimap-WhiteBear-NoOak. pimap





TWIN CITIES AREA FREIGHT RAILROAD MAP

Office of Freight and Commercial Vehicle Operations

July, 2009



ORDINANCE NO. 12

AN ORDINANCE REGULATING RATES AND WATER SERVICE AND PROVIDING FOR THE COLLECTION OF WATER CHARGES IN THE TOWN OF WHITE BEAR

THE TOWN BOARD OF SUPERVISORS OF THE TOWN OF WHITE BEAR ORDAINS:

SECTION 1. SERVICE CONNECTION – PERMIT REQUIRED. No water service shall be provided and no person shall turn on or off any hydrant or the water connection or gate valve to any service main or the water supply at any stop box unless authorized to do so by the Deputy Water Commissioner.

SECTION 2. APPLICATION FOR SERVICE. Application for service hereunder shall be made upon forms provided for that purpose by the Deputy Water Commissioner. All accounts shall be carried in the name of the owner who personally, or by his authorized agent, shall apply for such service. Said owner shall at all times be liable for water service consumed upon the premises, whether he is occupying the same or not, and any charges not paid promptly shall be a lien upon said premises.

SECTION 3. SEPARATE CONNECTIONS. No more than one dwelling or building shall be supplied from one service connection, except by special permission of the Town Board. Whenever two or more parties are supplied from one pipe connecting with the distribution main, each building or part of building must have a separate stop box at the curb.

SECTION 4. PRIVATE WATER SUPPLIES. No water pipe of the Town Water Works System shall be connected with any pump, well or tank that is connected with any other source of water supply and when such are found, the Town Clerk shall notify the owner to disconnect the same, and if not done immediately, the water supply shall be turned off forthwith.

SECTION 5. SIZE OF CONNECTIONS. Connections with mains for ordinary domestic supply shall be not less than one inch.

SECTION 6. WATER RATES. The rates for water taken from a Town Water Supply System shall be figured on a monthly basis payable quarterly in the months of April, July, October and January for the preceding quarter and shall be as established from time to time by Town Board resolution. A discount may be allowed if the water bills are paid prior to the 16th day of the month when due. Water bills shall be mailed in ample time to reach the customer before the 5th day of the month when due and shall specify the charge in accordance with the rates established by Town Board resolution.

Minnesota Department of Natural Resources

DNR Ecological and Water Resources 1200 Warner Road, St. Paul, MN 55106 Telephone: (651) 259-5845 Fax: (651) 772-7977



April 2, 2012

White Bear Township Dale Reed, Public Works Director 1281 Hammond Road White Bear Township, MN 55110

RE: Water Supply Plan Approval, White Bear Township, Ramsey County

Dear Mr. Reed:

Our office has completed the review of your Water Supply Plan (formerly called Water Emergency and Conservation Plan) for public water supply authorized under DNR Water Appropriation Permit #1984-6120 and 1984-6121. I am pleased to advise you that in accordance with *Minnesota Statutes*, Section 103G.291, Subdivision 3, and on behalf of the Commissioner of Natural Resources, I hereby approve your Plan. This approval is effective upon the Department's receipt of a completed copy of the attached "Certification of Adoption" form. Please return the form to my office to confirm adoption of the Plan.

The Township does not track the unaccounted water for residential use, and is likely higher than the 2002 metropolitan average of 10%. We encourage the Township to track the unaccounted use as you will need this information the next time the plan is due. Per Capita demand per day of 93.1 gallons/day exceeds the 2002 metropolitan average of 75 gallons per day and is trending higher. We do encourage White Bear Township to clearly set goals that would lower the peak demands. The DNR and Metropolitan Council encourage the Township to educate its customers on how they can reduce household water use. For more information on water conservation programs please see the Council's water conservation toolbox at:

http://www.metrocouncil.org/environment/Watersupply/conservationtoolbox_programs.htm

The Township does have a good conservation rate according to Minnesota Statutes, Section 103G.291. We recommend that the Township consider billing every month since we find that is the best way to encourage conservation. We are pleased that water meter installation is nearly complete. Thank you for your efforts in planning for the future of the Township's water supply and for conserving the water resources of the State of Minnesota. If you have any questions, please contact me at 651-259-5802.

Sincerely,

holly shadeen

Molly Shodeen Area Hydrologist

Enclosures (1)

ec: Metropolitan Council, Sara Smith Rice Creek Watershed District, Nick Tomczik Ramsey Conservation District, Ryan Johnson DNR Central Office SWUDS DNR Water Appropriation Program, Julie Ekman DNR Ground Water Unit, Evan Drivas DNR Ground Water Monitoring Coord. Mike MacDonald DNR Region # Regional Manager, Terri L. Yearwood

Larry D. Bohrer

From: Sent: To: Subject: Attachments: Kyle Axtell [KAxtell@ricecreek.org] Wednesday, April 20, 2011 3:41 PM Larry D. Bohrer White Bear Township Wellhead Protection Plan Part II Ramsey CD Well Sealing Information.pdf

Larry,

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The RCWD would like to offer one comment on the Township's WHPP (Part II):

Page 14 – The plan references a possible cost-share funding source through Washington County for sealing abandoned wells. A program has recently been initiated in Ramsey County through the Ramsey Conservation District that will provide cost-share funds to landowners for sealing abandoned wells. I have attached an informational flyer that was recently distributed by the SWCD. Contact Mike Goodnature at the Ramsey CD for more information.

1

Kyle Axtell Water Resource Specialist Rice Creek Watershed District 4325 Pheasant Ridge Dr. NE #611 Blaine, MN 55449-4539 P: (763) 398-3072 F: (763) 398-3088 E: <u>kaxtell@ricecreek.org</u>

Abandoned (Unused) Well Sealing – Cost-Share Program Ramsey County

Attention Ramsey County Residents: Qualified property owners in Ramsey County may now obtain financial assistance for sealing abandoned wells.

BACKGROUND INFORMATION:

Homes currently connected to city water may still have an unsealed well located in the basement, a basement well room, or in the yard. Unsealed wells could potentially allow water just below the ground to contaminate the deeper drinking water aquifers used for city water. A well that is no longer in use can be a potential threat to health, safety, and the environment especially in sensitive areas such as drinking water supply management or wellhead protection areas. Sealing is a process of clearing an unused well of debris and filling the well with a special material called grout. Well sealing must be performed by a Minnesota licensed well contractor.

ELGIBILITY:

- Applicants eligible for funding will be reimbursed up to 50% of the well sealing costs, not to exceed \$750 per well.
- Wells eligible for cost share funding must be located within a **drinking water supply management area or a wellhead protection area.** Please see attached map to determine if the well location is within one of these areas to be qualified.
- Grant money is limited and funding may not be applied retroactively to wells that have already been sealed.

CONTACT:

For more information visit the Cost Share Funding webpage on Ramsey Conservation District's website at: <u>http://www.co.ramsey.nnn.us/cd/cost_share_funding.htm</u> If you have any questions or to determine eligibility for cost share contact:

Michael Goodnature GIS & Conservation Specialist 651-266-7274 mike.goodnature@co.ramsey.mn.us



May 4, 2011

Mr. Dale Reed, Public Works Director White Bear Township 1281 Hammond Rd White Bear Township, MN 55110

Dear Mr. Reed,

Thank you for the opportunity to review and comment on your Part 2 Wellhead Protection Plan for White Bear Township. While evaluating the White Bear Township Wellhead Protection Plan (here-to-after known as the plan) I noted important omissions of information and inconsistencies within the body of the plan. It is my opinion that the plan, as it is written, does not meet the requirements that are identified in MN Rule Chapter 4720, MN WHP Rule, that are necessary for plan approval. It is my understanding that a public hearing is scheduled for May 16, 2011, but I strongly recommend that the hearing be postponed and the deficiencies of the plan be addressed before submission for approval to the MN Department of Health.

Some of the omissions or plan issues that I noted include:

- Requested data for submittal in the Plan identified in the Scoping 2 Notice Letter dated November 30, 2009 is missing from the Plan draft. Specifically, Table 3 (Average Precipitation Data), Table 4 (Well Pumping Data), and Figures 3 – 9 (Municipal boundaries map, soils map, land use map, water system map, sanitary sewer system map, storm water and surface water map, and zoning map) are listed in the table of contents, but are not included. Also, the entire list of exhibits identified in the table of contents is missing. (Note-- it may not be necessary to include well logs (Exhibit 5) in the plan draft as it is not required information.)
- There are issues raised throughout the body of the WHP plan, especially in Section V, "Issues, Problems, and Opportunities..." that are not mentioned or addressed with action strategies in Section VII, Objectives and Plans of Action." In addition to this, there are some categories of potential contaminant sources within the DWSMA that are not addressed with action strategies.
- 3. Many of the action strategies in Section VII, "Objectives and Plans of Action" are so similar to the objective that they propose to accomplish. The individual actions

under each objective should be specific work tasks with sources of action, cooperators, time of completion, cost, and goal achieved. Currently, there are grant opportunities for WHP plan implementation through the Source Water Protection Unit of the MDH. If the action strategies in your plan are not specific, you will have a difficult time completing a successful grant application. The grant awards can be up to \$10,000 with no cost share required by the PWS, so it would be prudent to construct the WHP plan action strategies to support future grant application efforts.

I have compiled a listing of other comments related to the WHP plan draft. I realize that the amount of recommendations may seem large, but it is my attempt at remaining consistent when reviewing WHP plans so that all issues are covered. The recommendations are as follows:

I. Executive Summary

- Pg. 3, paragraph 3: There is no measure in the action strategies to address the collection of data to supplement the existing geologic and hydro-geologic knowledge of the area. I have attached to this letter page 18 of the Part 1 plan that lists recommendations for data collection that could be added to the plan.
- Pg 3, paragraph 4: There seems to be an indication that information will be gathered only about other wells and not any other potential contaminant source types.
- Pg.3, paragraph 6: If the Water Conservation Plan approved by the MN DNR is to be used to satisfy the requirement for an emergency/contingency plan, a copy of the approval letter from the MN DNR must be included in the Appendix as supporting documentation.

II. Data Elements, Assessment

- Pg. 5, A-Required Data Elements, Section d: Is there any surface or ground water quality and quantity monitoring data available that would provide insight about the connection between surface and groundwater interaction in the region? I didn't see any notation that this was looked for, but not found. I also didn't notice mention in the plan of the watershed districts or county environmental departments and any monitoring efforts they may or may not have.
- Pg. 6, B-Land Use Data Elements, Section 1, paragraph 1: I would recommend adding transportation corridors (highways, railroad lines) and unused/unsealed wells to the list of principal contamination sources.
- Pg 7, B-Land Use Data Elements, Section 1, paragraph 2: Add unused unsealed wells to this information.
- Other topics to add to Section 1 include residential land use issues such as turf management and household hazardous waste disposal, issues related to agricultural lands such as nutrient application and management.
- Pg 8, D-Water Quality Data Elements, Section 1, Paragraph 1: What is meant by "future surface water bodies should be monitored for water quality?" It is recommended in Part 1 Plan that existing surface water bodies should be

evaluated to determine their influence on ground water quality. Is this what is being referred to?

III. Assessment of Data Elements

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- *General comment*--This section should answer the question: Knowing what one does about the data elements identified in the previous section, how will these impact A) Use of the Well; B) Wellhead Protection Area Delineation Criteria; C) Quality and Quantity of Water Supplying the Public Water Supply Well; and D) The Land and Groundwater Uses in the DWSMA?
- Pg. 10, A—Use of the Well: How would drought conditions impact the use of the well, especially if there may be an interconnection between the area lakes and the groundwater aquifer?
- Pg. 10, B—Wellhead Protection Area Delineation Criteria: There is a need for additional information about the extent and degree of protection provided by the clay layer beneath the lakes as an aquifer protective barrier.
- Pg. 10, C—Quality and Quantity...: There is a need for additional monitoring to determine the level of influence that the ground water is influence by the surface waters.
- Pg. 10, C—Quality and Quantity...: There may be unused/unsealed wells and other potential contaminants of concern that are presently unknown that may impact groundwater quality in the future.
- Pg. 10, C—Quality and Quantity...: The geology of the area requires that some portions of the DWSMA are highly vulnerable to contamination from all surface land uses and all should be managed to reduce the risk of groundwater contamination.
- Pg. 11, D—The Land and Groundwater Uses...: Results of additional tritium testing of the municipal wells (a recommendation for additional data gathering from Part 1 Plan) may require alteration of the vulnerability designation of the DWSMA.
- Pg 11, D—The Land and Groundwater Uses...: Information gathered relating to the protective clay layer below the area lakes (a recommendation for additional data gathering from Part 1 Plan) may alter the vulnerability assessment of the DWSMA.

IV. Impact of Changes on Public Water Supply Well

- Pg 12, A—Changes Identified In, 3: There is mention of the need for monitoring surface water body quality to mitigate possible contamination to the aquifer via infiltration. This should also be developed as an action strategy later in the plan.
- Pg 13, A—Changes Identified In, 3: Increased water demand may also require the township to construct additional wells to meet demand.
- Pg 13, B-- *General comment*--This section should answer the question: Knowing what one does about the potential changes identified in the previous section, how will these impact 1) Expected Changes in Water Use; 2) Influence of Existing Water and Land Government Programs and Regulation; and 3) Administrative, Technical, and Financial Considerations?

- Pg 13, B, 2—The following influences to Existing Water and Land Government Programs and Regulations may be added to this section: 1) The Twp. Must work more closely with those agencies that gather surface and ground water data to determine the level of influence surface waters may have on the aquifer. 2) The Twp. Must work with entities having jurisdiction within the DWSMA to determine if changes in land use may impact drinking water quality. 3) The Twp. Should incorporate WHP principals into governmental processes to address WHP issues and concerns.
- Pg 13, B, 2, paragraph 4—Both Washington and Ramsey Counties have Groundwater Plans that may also be of help with WHP issues identified in the White Bear Township DWSMA.
- Pg 14, B, 2, paragraph 3—Ordinance No. 12, Section 4 should be added to the WHP plan appendix.
- Pg 14, B, 3, c—Creating a WHP budget line item is a good example of an action strategy and should be added to that section of the plan also.
- Pg 14, B, 3, c—The MDH Source Water Protection grants are also a financial opportunity for the Twp. To take advantage of during plan implementation.

V. Issues, Problems, and Opportunities

- Pg 16, A—Land Use Issues, 1: Add the issue of uncertainty of how much protection is provided by the clay layer underneath area lakes. More data is needed. This is an opportunity to work with MDH SWP Unit to develop a monitoring plan (or even Washington/Ramsey Counties) to gather relevant information.
- Pg 16, A—Land Use Issues, 1: Add the issues of the uncertainty of wells and DWSMA vulnerability status. The municipal wells should be tested for tritium.
- Pg 16, A—Land Use Issues, 1: There is an opportunity to work with agencies who collect groundwater and surface water data.
- Pg 16, A—Land Use Issues, 1: There is an opportunity to apply for MDH SWP grants to assist with project funding for data gathering efforts.
- Pg 16, A—Land Use Issues, 2: There is a concern that the transportation corridor close to municipal well # 3 could have a spill event which could dump contaminants into County Ditch #9 that runs about 40 feet from the well. This ditch was noted in the IWMZ survey for that well.
- Pg 19, A—Land Use Issues, 6: At the end of this section, you may also include language indicating that the Twp. Will work with the MDH SWP Unit to evaluate the level of risk of the contaminant sites to determine priority for monitoring efforts. This should also be in the action strategy section.
- Pg 20, B—Identification Of, 2, paragraph 2: Type—"Anoka" should be Ramsey.
- Pg 20, B—Identification Of, 2, paragraph 6: The Class V wells are being inventoried by EPA staff. If the Twp. should find a Class V well, the MDH SWP Unit should be notified.
- Pg 21-22, B—Identification Of, 2, a-f: All of these would be better suited for the action strategy section where they can be provided a time frame, cost, source of action, etc... Also, in reference to d) the Twp. should notify the MDH and MN DNR. They will not likely notify the Twp. when high capacity wells are

constructed if there doesn't seem to be an issue. If the Twp. hears of a potential high capacity well to be constructed, call the MDH SWP Unit contact.

• Pg 22, B—Identification Of, 3: It would be nice to have more specific information in this section about who has regulatory authority over the potential contaminant sources identified within the DWSMA. For example, what controls does any watershed district have in the area, or who has authority over the regulation of ISTS's? Washington County and Ramsey County both have Groundwater Plans, also. Who has storm water controls within the DWSMA?

VI. Wellhead Protection Goals

It would be helpful to add an additional goal that outlines the Twp's needs for data gathering and data management.

VII. Objectives and Plans of Action

- I recommend adding transportation corridors (RR line and highways) in light of the County Ditch #9 that passes close to well #3 that could carry contaminants from a spill event.
- I recommend adding a residential land use category to cover turf management and household hazardous waste management issues.
- It may be helpful to separate the leaking underground storage tank (LUST) sites from the storage tank category and give it its own section. Management strategies can be based on the level of risk associated with the LUST sites.

General Comment: All of the action measures are scheduled to be completed within the first or second year of plan implementation. Since the life of the WHP plan is 10 years, it is not necessary to front-load implementation like this. You may be more successful in your implementation efforts if you prioritize your actions and spread the efforts out.

General Comment: Many of the action measures are vague and don't clearly identify what the Twp. must do to complete the action or include specific information about cost, time frame, etc.... For example, WHP Measure B1-1 could be written:

Provide educational materials such as fact sheets, pamphlets, and manuals relating to the best management practices relating to potential contaminant sources/land uses that will be occurring on the property. Provide these types of materials during each site plan review by White Bear Township.

Source of Action: White Bear Township Planning Cooperator: None Time Frame: 2012 Estimated Cost: \$150 printing cost, staff time Goal Achieved: Increase public awareness of the Wellhead Protection Program and ground water protection issues.

Writing the action measures to be specific will enable you to not only have clear direction as to WHAT the Twp. is supposed to do (and when, and how, and how much it will cost), but it will also enable you to successfully apply for MDH SWP grants to assist with the financial costs of WHP plan implementation. Add action strategies to address the following (in addition to those already mentioned in this document):

- 1. The Part 1 Plan recommendations (see attached pg. 18 from Part 1)
- 2. The completion of the verification of potential contaminant sources within the 1st year of plan implementation. These would be those sources in Table 2 of the Appendix.
- 3. Search earlier developed portions of the DWSMA for unused/unsealed wells that may have been in existence before those homes/businesses made a connection to a municipal water supply. In other words, what happened to the private well that served the homes/businesses?
- 4. Work to inform the Railroad Company and Ramsey and Washington County Emergency management of the potential contamination of the municipal drinking water supply resulting from a spill near the wells.
- 5. Hold a meeting at least every 2 ¹/₂ years as required by MN Rule 4720 to evaluate the WHP plan implementation process.

In light of the number of comments, I would like to extend an invitation to meet so I can directly answer any question you may have. Mr. John Freitag, MDH Planner, has also indicated his willingness to attend such a meeting. If this is something that you may find helpful, please call me at (218) 821-5028 to coordinate a date and time. Both John and I will be happy to assist you with the completion of your WHP Plan in any way possible.

Sincerely,

Robyn Hoerr, Groundwater Specialist Minnesota Rural Water Association

CC: Mr. John Freitag, Principal Planner, Minnesota Department of Health



White Bear Township

Wellhead Protection Plan Part II

Part 2:

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

Date: Project No. April 4, 2012 14521.000

WELLHEAD PROTECTION PLAN PART II WHITE BEAR TOWNSHIP, MINNESOTA PROJECT NO. 14521.000

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APPENDIX



PUBLIC WATER SUPPLY PROFILE

PUBLIC WATER SUPPLY

NAME: White Bear Township

PWSID #: 1620025

ADDRESS: 1281 Hammond Road, White Bear Township, MN 55110

TELEPHONE NUMBER: (651) 747-2750

E-MAIL: wbt@ci.white-bear-township.mn.us FAX #: (651) 426-2258

WELLHEAD PROTECTION MANAGER

NAME: Dale Reed, Public Works Director

ADDRESS: 1281 Hammond Road, White Bear Township, MN 55110

TELEPHONE NUMBER: (651) 747-2777

E-MAIL: dale.reed@ci.white-bear-township.mn.us FAX #: (651) 426-2258

CONSULTANT/TECHNICAL ASSISTANCE

NAME: Matthew Ellingson

ADDRESS: TKDA, 444 Cedar Street, Suite 1500, Saint Paul, Minnesota 55101

TELEPHONE NUMBER: (651) 292-4400

E-MAIL: matt.ellingson@tkda.com FAX #: (651) 292-0083

DOCUMENTATION LIST

STEP	DATE PERFORMED
Part I Approval Notice Received from MDH	<u>May 26, 2009</u>
Scoping Meeting II Held: (4720.5349, subp. 1)	<u>September 24, 2009</u>
Scoping Decision Notice Received: (4720.5340, subp. 2)	November 5, 2009
Draft PCSI Submitted for MDH Review	December 8, 2010
Draft PCSI Approved by MDH	December 13, 2010
Remaining Portion of Plan Submitted to Local Units of Government (LGU's): (4720.5350, subp. 1 & 2)	January 31, 2012
Review Received From Local Units of Government: (4720.5350, subp. 2)	<u>April 1, 2012</u>
Review Considered: (4720.5350, subp. 3)	April 2, 2012
Public Hearing Conducted: (4720.5350, subp.4)	<u>April 2, 2012</u>
Remaining Portion WHP Plan Submitted: (4720.5360, subp. 1)	<u>April 4, 2012</u>
Approved Review Notice Received:	

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WELLHEAD PROTECTION PLAN PART II WHITE BEAR TOWNSHIP, MINNESOTA PROJECT NO. 14521.000

EXECUTIVE SUMMARY

Under the Federal Safe Drinking Water Act, all states are required to have a wellhead protection (WHP) plan. Through this Federal mandate, the Minnesota Commissioner of Health was granted authority by the Minnesota Groundwater Protection Act (Minnesota Statue 1031, Section 3, Subdivision 5) to prepare a rule specifying WHP measures for public water supply wells. The Minnesota Department of Health administers this WHP program and the program complies with both Federal and State mandates. Under this program, every public water supply well in Minnesota is required to have a Wellhead Protection Plan. All public wells in Minnesota must implement WHP measures to protect users from acute health effects relating to disease organisms or chemical contaminants that pose a serious health risk, and from chronic health effects relating to long-term ingestion of chemical contaminants in groundwater. Regulations for this requirement are found under Minnesota Rules Parts 4720.5100 to 4720.5590. In Minnesota, the wellhead protection process is broken up into two phases, Part 1 and Part 2.

White Bear Township currently uses six public water supply wells; Well No. 1 (Unique No. 226570), Well No. 2A (Unique No. 676446), Well No. 3 (Unique No. 224679), Well No. 4 (Unique No. 226572), Well No. 5 (Unique No. 151596), and Well No. 6 (Unique No. 596636). Well No. 2 (Unique No. 226571) was sealed. Part 1 of the Wellhead Protection Plan presented the 1) delineation of the wellhead protection area (WHPA) and the drinking water supply management area (DWSMA) and 2) the vulnerability assessments for the system's wells and the aquifer within the DWSMA. White Bear Township had Part 1 of the WHP plan approved by the Minnesota Department of Health (MDH) on May 26, 2009. The Part 1 report was started by Ramsey County Soil and Water in 2001, and was completed by TKDA and Leggette, Brashears and Graham (LBG).

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

1

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

White Bear Township WHP Part 2

14521.000

Findings in this report are the result of collaboration between the Township, TKDA, LBG and the MDH.

A vulnerability assessment for the aquifer within the DWSMA was performed using available information and indicates that the aquifer used by the Township is considered to be vulnerable to contamination due to either tritium detections or total well vulnerability scores in excess of 45 points. The levels of vulnerability in the White Bear Township DWSMA range from Very Low to High.

The DWSMA is comprised of varying levels of vulnerability. In the high vulnerability areas, the Township wells can receive water from both the surface and subsurface, contaminant sources in both areas need to be assessed. The principal sources of contamination would include wells, underground storage tanks, hazardous waste generators, and surface water sites. In the low vulnerability areas, the principal sources of contamination would be other wells that reach or penetrate the same aquifer. This report shall address all existing and possible future contaminant sources within the DWSMA and how these sources can be effectively managed to prevent groundwater contamination.

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

In Chapter 1, the required data elements indicated by the MDH in the Scoping 2 Notice are addressed as well as the data's degree of reliability. Pertinent data elements include information about the geology, water quality, and water quantity.

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

The problems and opportunities concerning land use issues relating to the aquifer, well water, and the DWSMA and those issues identified at public meetings are addressed in Chapter 3. The moderate to high vulnerable status of the aquifers and the good quality of water currently produced by the system's wells leaves six major concerns:

White Bear Township WHP Part 2

14521.000

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 have altered the boundaries of the delineated WHPA, reduce the hydraulic head in the aquifer, or cause the movement of contamination toward public water supply well(s); 3) leaking storage tanks that may release contaminants into ground water 4) shallow disposal type wells; 5) hazardous waste generators and 6) agricultural chemical storage sites.

The drinking water protection goals that the public water supplier (PWS) would like to achieve with this plan are listed in Chapter 4. In essence, the PWS would like to maintain or improve on the current drinking water quality, increase public awareness of groundwater protection issues, protect the aquifer, and continue to collect data to supplement the existing geologic and hydrogeologic knowledge of the area. Thereby confirming where all wells and contamination sources are located within the DWSMA, and supporting future efforts in wellhead protection planning.

The objectives and action plans for managing the potential sources of contamination are contained in Chapter 5. Actions aimed toward educating the general public about groundwater issues, gathering information about other wells and other potential contaminant sources, and collecting data relevant to wellhead protection planning are the general focus.

Chapter 6 contains a guide to evaluate the implementation of the identified management strategies of Chapter 5. The wellhead protection program for the Township will be evaluated on an annual basis.

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

14521,000
I. DATA ELEMENTS, ASSESSMENT (4720.5200)

A. REQUIRED DATA ELEMENTS

a)

Physical Environment Data Elements

Missing the map or list of the precipitation gauging stations. See Scoping Doc

So what does this mean for the management of the DWSMA? Please explain. Precipitation. Precipitation information was regarded in the development of White Bear Township's WHP. Data was gathered
→ from the Minnesota State Climatology Office. Table 3, in the appendix, shows the precipitation data for the last five years, 2006 to 2010, for the Township. Using these numbers, the average annual rainfall is 28.57 inches per year.

The movement of contaminants through soil to the groundwater is affected by contaminant properties, soil characteristics, existing vegetation, and climatic factors, including precipitation. Dissolved contaminants in water move through the soil, with the water acting as a carrier of the contaminants. Precipitation to an area raises the water content, which increases the mass flow of water through the soil, which also increases the contaminant flow through the soil and possibly to the groundwater. The rates of these flows and where they travel to are dependent on soil, geology types, and properties.

b)

<u>Geology</u>. This data element is required and is presented in the first part of the WHP Plan. The geology in the vicinity of White Bear Township consists of Quaternary-Aged glacial and post-glacial deposits that are underlain by Paleozoic-Aged bedrock. The glacial deposits consist of Superior Lobe sand and silt lacustrine deposits, till, and outwash. These are underlain by Pre-Late Wisconsinan Keewatin and Grantsburg Sublobe till, outwash and sandy lacustrine sediment. The Superior Lobe, due to its higher sand content, is generally not considered an effective hydraulic barrier. However, the underlying till deposits are an effective barrier as are the uppermost bedrock Glenwood or basal St. Peter shales. c)

d)

<u>Soils</u>. Local soil conditions, infiltration, and erosion characteristics were regarded in the development of this WHP. Since the public water supply aquifers can be vulnerable to land use activities in some areas, soil characteristics can help to determine management strategies. The main soil types in the DWSMA are sandy loams. See Figure 4. These are well drained soils with moderate to rapid permeability. These soil properties enable water to infiltrate and flow through soil and into the groundwater. Water can act as a carrier of dissolved contaminants, and these contaminants can then be delivered by the infiltrated water flow through the soil into the aquifer. For the Township, water from the surface carrying contaminants may be able to enter the water supply aquifers, contaminating the water supply.

Water Resources. This data element applies as it relates to future groundwater uses that may influence the ability of the aquifer to yield water to the public water supply. The Township currently uses six municipal drinking water wells. The continued long-term impact from water withdrawals throughout the aquifers is not known. Increased water use may result in a reduction in aquifer yield or increase the likelihood that contaminants of human or natural origin may affect the quality of drinking water. The Township is projected to pump around 650 MGY from its groundwater wells (See Part 1 Report). See Table 4, Well Pumping Data. The annual pumping rate is projected to increase as population and demand grow; however, the aquifer is expected to yield sufficient water to meet the future needs of the Township.

There are seven major lakes within the DWSMA including White Bear, Goose, Birch, Gem, Bald Eagle, Fish and Pine Tree Lake. The White Bear Township WHPA is located within the Upper Mississippi River watershed basin.

Missing discussion related to the data elements for watersheds,public waters, shoreland, wetlands and flooplain per Scoping Notice

Table 2 needs to be referenced here as well and listed as an issue so that it makes sense to have a measure in the plan like you do.

B. <u>LAND USE DATA ELEMENTS</u>

1.

Plan is missing map of parcel boundaries.

Plan is missing comprehensive land use map zoning maps for area outside White Bear Township boundaries. Land Use. Due to the susceptibility of all of the Township's wells to contamination, the wells are affected by land use activities within the DWSMA. Information contained in Part 1 which indicates that the public water supply vulnerability ranges from very low, to highly vulnerable to certain land use activities. In the high vulnerability areas, all land uses were inventoried. In the low vulnerability areas, the principal sources of contamination would be other wells that reach or penetrate the same aquifer. Corresponding to vulnerability levels, an inventory of other wells, storage tanks, waste sites, hazardous waste generators, and shallow disposal wells located within the DWSMA was required. A listing of wells and other potential contaminant sites inventoried within the DWSMA and a map showing their locations are included as Table 1 and Figure 2.

Land use maps and zoning maps for the area located within the DWSMA are located within the Appendix. The DWSMA consists of approximately 10,240 acres. Approximately 7240 acres (70%) are located within White Bear Township, the City of White Bear Lake, and the City of Gem Lake (Ramsey County), and 3000 acres (30%) are located in the Cities of Dellwood, Grant, and Hugo (Washington County). See Figure 3 for White Bear Township boundaries. The area is mostly comprised of residential, commercial and agricultural, land. See Figure 5. The Township has control of land uses within their municipal boundary through their zoning ordinances.

Because of the aforementioned vulnerable classification of the DWSMA, contamination can come from both surface and subsurface sources. Soil and aquifer characteristics elaborated earlier in this report have shown that surface contaminants are able to infiltrate and migrate through the soils to the groundwater. That is why it is important to monitor land uses in the DWSMA and possible sources of contamination to the wells.

Possible contaminant sources were identified and evaluated within the DWSMA. It is important to realize that the WHPA does cover multiple municipalities, so cooperation between the Township and the neighboring Cities is essential. The following potential contaminant sources were found

to be within the DWSMA:

a) <u>Public and Private Wells</u>. Figure 2 shows a map of all public and private wells that were located. 434 private wells and 13 public wells are located within the DWSMA. There may be some unused/unsealed private wells and if they are found it would be beneficial to seal these wells. See Objective D-1 in the Objectives and Plans of Action Section. There are no known old municipal wells within White Bear Township. All municipal wells are either active or were sealed according to regulations.

<u>ISTS.</u> Shallow groundwater is highly susceptible to pollution from septic tanks. 301 ISTS systems were found within the DWSMA.

<u>Registered Storage Tanks.</u> Registered storage tanks are regulated by the Minnesota Pollution Control Agency (MPCA). All storage tanks are regulated with the exception of tanks used for agriculture, septic tanks, or tanks with a capacity of 110 gallons or less. These tanks may be above or below ground. 5 aboveground storage tanks, 151 underground storage tanks, 54 registered storage tanks, and 10 storage tanks (no specification) were found.

<u>Leaking Underground Storage Tanks.</u> 42 leaking underground storage tanks were found within the DWSMA.

<u>Hazardous Waste Generators.</u> Within the DWSMA, 125 sites were found that generate hazardous waste materials. See Figure 2.

<u>Shallow Disposal Wells.</u> To this date, there are no known shallow disposal wells within the DWSMA.

Agricultural and Turf Care Chemicals. Since part of the DWSMA is comprised of agricultural land, there may be pesticides, herbicides, nitrogen fedtilizers and other agricultural chemicals used on the surface agriculture. Proper usage and stormwater regulations can help to mitigate the effects of chemical contamination of the groundwater.



7

Add "Figure 2" Gas line and Rail Road not clearly shown on a map. Include map in figures and make references here.

Indicate if there are any public drainage systems and show on map in figures and reference here. One that does exist is County ditch #9.

Figure 8 isn't about

surface water

quantity. This

<u>Other.</u> Within the DWSMA there were also 5 toxic release sites which are each a potential source of groundwater contamination.

<u>Public Utility Services</u>. Utility service in the DWSMA consists of water, sewer, stormwater, and a gas pipeline. Most utilities should not pose a significant risk to groundwater pollution. To mitigate stormwater infiltration problems, stormwater controls should be implemented to reduce its possible impact on the groundwater. There are a few high volume transportation routes within the DWSMA that pose a threat due to spills or accidents. Highway 61 runs north and south through the DWSMA and a railroad line runs east and west in the DWSMA. Interstate 35E is just to the west of the DWSMA.

C. WATER QUANTITY DATA ELEMENTS

h)

2.

 Surface Water Quantity. It has been shown that surface water may infiltrate and recharge the aquifers used by the Township wells. There are seven major lakes within the DWSMA including White Bear, Goose, Birch, Gem, Bald Eagle, Fish and Pine Tree Lake. See Figure 8.

<u>Groundwater Quantity</u> Groundwater levels are adequate for the amounts that White Bear Township is currently permitted for under the groundwater appropriations program that is administered by the Minnesota Department of Natural Resources (MDNR). There are other high capacity wells within the DWSMA, but no well interference complaints with the Township wells have been documented. At this time, there appears to be sufficient groundwater quantity based upon existing pumping capacity of all wells completed in the aquifer used by the Township, and the Township does not exceed its permitted withdrawal volumes. If new high capacity wells or new appropriation permits are implemented, the potential impacts to the DWSMA should be reviewed.

D. WATER QUALITY DATA ELEMENTS

 Surface Water Quality. There are seven surface water bodies within the DWSMA. Surface water may be able to infiltrate and recharge the groundwater. These water bodies receive runoff during rainfall events. The Rice Creek Watershed District monitors White Bear and Bald Eagle lakes

language is unclear and needs to be improved. The existing figure 8 is stormwater should be referenced in the part on public utilities and explained how this fits with the management of the Drinking Water Supply Management Area. for water quality annually and the information is provided in the annual State of the Lakes report available on the Watershed's website.

2. <u>Groundwater Quality</u>. Well water is tested annually to determine if it meets water quality parameters. Existing information consisting of isotopic and chemical analyses indicates that the aquifers used by the public water supply may be recharged by surface water. Tests conducted by the MDH has revealed slight traces of tritium indicating there is some component of 'young' water recharging the aquifer used by the Township. As such, there is a high probability that land use in certain areas has a direct impact on the quality of drinking water. Additional information should be collected over the ten-year life of the plan to continue to monitor groundwater quality. The Township is currently supplying its citizens with good groundwater that meets all drinking water quality standards. See the Consumer Confidence Report in the Appendix.

ASSESSMENT OF DATA ELEMENTS

A. USE OF THE WELL

Explain how each data element does or does not impact the use of the well

General information describing this public water supply system is presented in Part 1 of this Plan. The Township currently has six drinking water supply wells. The wells are projected to use approximately 650 MGY as outlined in the Part 1 report. Well use is not expected to change greatly in the future. The Inner Wellhead Management Zone (IWMZ) of each Township well was checked during the completion of this report, and the wells were found to conform to regulations. IWMZ forms are found in the Appendix.

B. WELLHEAD PROTECTION AREA DELINEATION CRITERIA

See Part 1 of this Plan for documentation regarding how the following delineation criterion was applied to determining the boundaries of the WHPA:

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

QUALITY AND QUANTITY OF WATER SUPPLYING THE PUBLIC WATER SUPPLY WELL

Explain how each data element does or does not impact the quality and quantity of the water supplying the well

→ C.

Water quality monitoring results indicate no evidence of contamination from 1) human-origin such as fuel and fuel break-down products, pesticides, or commercial fertilizer, or 2) naturally occurring contaminants such as arsenic and boron. However, water quality monitoring results do indicate evidence of surface water migration by the presence of tritium, as discussed earlier. Further testing should be done to determine the extent that the groundwater is influenced by the surface waters. At this time, problems with water quality are not an issue as the system has enjoyed water quality that meets or exceeds standards in the Federal Safe Drinking Water Act. There may be unused/unsealed wells and other potential contaminants that are currently unknown and have the possibility to impact groundwater in the future.

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

Explain how each data element does or does not impact the land and groundwater uses in the drinking water supply management area

Proactive management of land uses including existing wells, hazardous waste sites, and storage tanks are of immediate concern due to the vulnerable rating of the aquifer. The management strategies selected and documented in Chapter 5 of this Plan will focus in on activities that have the most potential to impact the aquifer this public water supply system is using for its drinking water supply. Implementation of management strategies however might be difficult since the DWSMA is located in multiple municipalities: White Bear Township, White Bear Lake, Gem Lake, Dellwood, Grant, and Hugo, and two different counties: Ramsey

and Washington Counties. Land use in the other municipalities may change and is out of the range of influence of White Bear Township. Through cooperation with the other municipalities and its residents, it is the intent that Township land use controls and other additional steps will be taken to protect the drinking water quality of the aquifers within the DWSMA.

This needs to be identified in the issues chapter and objective and measures added to address including WHP in the Township comp plan and zoning ordinances.

II. IMPACT OF CHANGES ON PUBLIC WATER SUPPLY WELL

A. CHANGES IDENTIFIED IN

1. Physical Environment

Large-scale changes in the physical environment within the DWSMA are not anticipated during the 10-year period that this Plan is in effect. However, environmental changes within the DWSMA could affect the aquifer greatly and should be immediately addressed if they arise. For example, development of the land within the DWSMA could lead to an increase in impervious areas, which would lead to more stormwater runoff, which could carry more contaminants to the groundwater if not properly controlled.

2. Land Use

Land uses that result in additional use of the aquifer in the DWSMA will likely have little impact on the aquifer unless water demand is increased to the point that additional loss in hydraulic head occurs within the aquifer used by the public water supply. However, constructing additional wells into the aquifer will increase the points of entry or draw naturally occurring or human-caused contaminants towards the Public Water Supply (PWS) wells. Land uses that could possibly contaminate the aquifer such as underground storage tanks or hazardous waste generators within the DWSMA should be addressed in a comprehensive land use plan and associated zoning requirements.

3. Surface Water

There are seven surface water bodies in the DWSMA. There can be a direct hydraulic connection between surface water and the aquifer used by the public water supply system as a drinking source. Any surface waters would have a high probability of effecting the quality or quantity of the public water supply. Water quality of all of the surface water bodies should be monitored to mitigate possible contamination to the aquifer via surface water infiltration.

4. Groundwater

The public water supply system's wells have historically provided groundwater of excellent quality and quantity. As of the date of Plan approval, the community does not anticipate 1) addition of other large capacity water users to the public water system, and 2) no large expansions are being planned by businesses currently served. Greatly increased water demand from the aquifers could result in the loss of hydraulic head within the aquifer and may alter the boundaries of the WHPA and may require additional wells to be constructed.

B. IMPACT OF CHANGES

1. Expected Changes in Water Use

The Township does not anticipate that its water use will increase by more than five percent during the first five years that this Plan is in effect. The Township will re-evaluate its water-use patterns for the second five-year interval as part of its comprehensive planning activities and incorporate these results into future revision of this Plan.

2. Influence of Existing Water and Land Government Programs and Regulation

White Bear Township has very limited authority when dealing with agencies and bodies that regulate possible contamination sources in the DWSMA, and little say in changes that may occur at these agencies.

On a municipal level, much of the White Bear Township DWSMA falls either in a separate municipality and sometimes also a separate county, and changes to programs in these governing bodies are outside the township's jurisdiction.

State government programs oversee many programs that help to control groundwater pollution including: The Minnesota Department of Health has sole authority in permitting wells; The Minnesota Department of Natural Resources appropriates water uses; The Minnesota Department of Agriculture for turf and agricultural chemical issues; The Minnesota Pollution Control Agency helps protect the groundwater by monitoring its quality and

overseeing what can go into it; the local watershed management organizations or districts have local influence on the groundwater.

White Bear Township, Ramsey County and Washington County have land use ordinances that could be revised in the future to address possible contamination sites within the DWSMA. Local land use, zoning changes and stormwater management may be the most effective way to guard against potential contamination sources in the future.

Ramsey and Washington Counties may offer financial assistance with sealing additional unused/unsealed wells as they are identified. The Township also has Ordinance No. 12, Section 4, which prohibiting the connection of a separate water source (ex. a new well) to a plumbing system so that it interconnects with the public water supply distribution system. A copy of this portion of the Township Ordinance is included in the Appendix as Exhibit 4.

3. Administrative, Technical, and Financial Considerations

White Bear Township assembled a Wellhead Protection Team early in the process of developing this Plan. Many of the activities during the planning process have been accomplished through efforts of this group, with assistance from studies provided by other units of government. For this Plan to be effective:

- The Township will need to raise public awareness of the issues affecting its drinking water supply through public educational programs.
- b) Administrative duties will remain with the Wellhead Protection Manager who will report to the Town Board, coordinate implementation of wellhead protection management action plans, and conduct regular meetings.
- c) Implementation of Wellhead Protection activities will be provided by funds from the utility's water budget, or as a WHP budget line item to be created during the next budgeting process. Other sources of possible funding or assistance may include 1) Cost share funds for

abandoned well sealing, 2) the Minnesota Department of Health Source Water Protection grants, and 3) the Minnesota Rural Water Association for technical assistance. The MPCA and the MDH are also sources of information regarding groundwater protection.

d) The costs of implementing Wellhead Protection activities will be evaluated on an annual basis. The Township will discuss changes in plan implementation costs with the MDH to determine the availability of State or Federal funding if needed.

III. ISSUES, PROBLEMS, AND OPPORTUNITIES

Α.

1.

LAND USE ISSUES, PROBLEMS, AND OPPORTUNITIES RELATED TO:

According the figure -15 of Part 1 the range of vulnerability ranges from low to high. This statement needs to be consistent with that. Improve the description of the issues, problems and opportunities for 1 and 2.

The Aquifers

Since the aquifers are moderately to highly vulnerable to contamination, the system can be greatly affected by land use activities. Land use and Zoning regulations can discourage the types of activities that may cause contamination of the aquifers. White Bear Township, Ramsey County and Washington County have land use ordinances that could be revised in the future to address possible contamination sites within the DWSMA. Local land use, zoning changes and stormwater management may be the most effective way to guard against potential contamination sources in the future.

If additional high capacity wells are added to the area, the DWSMA may have to be delineated again. Since little hydrogeologic information is currently available, additional research and studies would increase knowledge and help to protect the aquifers. It is uncertain how much protection is provided by the clay layer underneath the area lakes. The Township should work with MDH SWP Unit to develop a monitoring plan to gather relevant information.

2. The Well Water

A potential contaminant source inventory was performed for this report. The wellhead protection plan is primarily concerned with other water supply wells, storage tanks, septic systems, and hazardous waste generators located within the DWSMA. The aquifers that provide the Township wells with water are vulnerable to these potential contaminant sources. The wells should be continually monitored for signs of pollution or contamination, including being tested for tritium. A specific issue for this DWSMA is that there are numerous private wells that are hard to regulate under land and zoning uses, and most of these wells are out of White Bear Township jurisdiction.

The placement of additional high capacity wells, increased pumping from existing wells, or significant changes in current groundwater appropriations

within the DWSMA may have an impact on 1) groundwater availability to all users, 2) increased risk that contamination may enter the part of the aquifer used by the community water supply wells, or 3) change the delineated WHP area and the DWSMA boundaries. White Bear Township will work with the DNR and the MDH to become aware of any proposed high-capacity wells within the DWSMA. The Township will also work with their well owners to minimize or eliminate potential impacts to the Township water supply. There is a possibility that the transportation corridor close to Well No. 3 could have a spill incident which could dump contaminants into the ditch that runs approximately 40 feet from the well as noted in the IWMZ survey. This ditch should be monitored for any possible contaminants.

The Underground and Above Ground Storage Tanks

The MPCA Storage Tank Program provides information and assistance to tank owners and others regarding technical standards required of all regulated aboveground storage tank systems and underground storage tanks systems. The program evaluates compliance of tank facilities with State statutes and rules through inspections and investigations and determines appropriate enforcement actions when violations are discovered.

Tank systems of more than 110 gallons are regulated unless they are for residential use, are farm tanks, or contain heating oil. All tank systems including farm, residential and heating oil tanks with a capacity of more than 1,100 gallons are regulated.

In the Township DWSMA we found 5 aboveground storage tanks, 151 underground storage tanks, 54 registered storage tanks, 7 storage tanks (unspecified) and 42 leaking underground storage tanks.

This MPCA program should be sufficient to monitor and regulate these potential sources of contamination.

Hazardous Waste Generators

In the Township DWSMA, 125 hazardous waste generators were found. The MPCA regulates and provides assistance to commercial hazardous waste generators in greater Minnesota. Management requirements depend White Bear Township WHP Part 2 17 14521.000 upon the type and amount of waste they produce. These requirements are part of the federal Resource Conservation and Recovery Act (RCRA) and Minnesota Hazardous Waste Rules. They are designed to protect people and the environment from the effects of improper management of hazardous wastes from commercial sources.

5. Shallow Disposal Wells

No shallow disposal wells were found within the Township DWSMA. All Class V wells need to be inventoried with Environmental Pollution Agency (EPA). Two kinds of Class V wells are banned nationwide; those at vehicle maintenance shops and community cesspools. New ones are prohibited, and those in wellhead protection areas should have been closed by January 2007.

6. The Drinking Water Supply Management Area

A primary concern expressed by the Township is to ensure that consistent and long-term management of water wells and the potential contaminant. sources within the DWSMA. The Township has limited legal capabilities to regulate activities in the area of the DWSMA that are beyond its Township limits. White Bear Township needs to work with the other municipalities which are in the DWSMA to monitor the quality of the groundwater and land use activities within the DWSMA. Also, the Township has no regulatory authority over water appropriations and must rely on the State of Minnesota to address issues and concerns related to pumping. Changes in land use that increase pumping of the aquifer used by the Township wells can be assessed by the Township for its possible impacts on water availability and quality.

In addition, this is an older community with a history of contaminated sites in the area. Given the age of the community, the accuracy of records can be in question, so testing for contamination and monitoring are important, as well as communication with neighboring communities. The Township will work with the MDH SWP Unit to evaluate and prioritize the level of risk of the contaminant sites to determine monitoring efforts.

18

B. IDENTIFICATION OF:

1.

Exhibit 1 isn't a list of LUG that commented. Need to modify the exhibit or remove.

Add the comments to the plan or add to the exhibit. Problems and Opportunities Disclosed at Public Meetings and in Written Comment

At the beginning of the planning process other Local Units of Government (LUGs) were identified and informed that the Township was beginning the wellhead protection planning process. (See Exhibit 1 in the Appendix for a list of LUGs.) Each unit of government was also sent a copy of the Township's delineated WHPA and DWSMA and vulnerability assessment for the wells and DWSMA. A few comments were received from the LUGs during the review periods and have been considered for this plan. 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 have been expressed at this time.

2. Data Elements

The state's Wellhead Protection Rule requires that existing information be utilized in developing the initial Wellhead Protection Plan. There is a limited amount of subsurface information available to define local groundwater flow conditions and the groundwater chemistry of the aquifer within the DWSMA. As a result, delineation of the WHPA represents a composite of capture zones generated by varying aquifer properties.

The Township plans to utilize public education opportunities, both existing and proposed, to address potential contamination of the aquifer. Additionally, the Township will work in cooperation with the Ramsey County, Washington County, and Rice Creek Watershed District to utilize any cost share programs currently available.

The Township plans to implement this WHP Plan to address potential contamination of the aquifer. The goals and action plans of this report are elaborated in the following chapters. This plan is scheduled to be updated after 10 years or with the construction of a new Township well or other variables that may change the system's delineation and properties.

Further, the Township will work with MDH to 1) identify proposed wells that may present ground water 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 MN DNR may specify with the groundwater appropriations permit.

Regarding storage tanks, the Township will continue to work with MPCA and MDH to 1) track current and likely 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 are regulated by the federal EPA. The Township will cooperate with the MDH SWP Unit in developing an inventory of where these types of wells may be located within the DWSMA and provide the well owners with educational materials regarding the use or management of these types of wells.

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

- a) The Township will work with the MDH to identify new wells that are constructed within the DWSMA and to verify their locations.
- b) The Township will inform MDH when any of the Township wells are repaired so that information regarding well construction, static water level, and pumping capacity can be verified or updated.
- c) The MDH will collect a water sample for at least one well after the first five years of plan implementation and have the water analyzed for tritium content using an enriched analytical technique. Testing results will be used to document that the rate of recharge to the aquifer is not increasing and that it is still hydraulically isolated from surface water.

d) The Township and MDH will inform each other of additional high capacity wells that are to be constructed within the DWSMA or within a mile of its boundary. MDH will determine with the MNDNR whether the applicant for a water appropriations permit needs to conduct an aquifer test to evaluate the long-term pumping impacts on the Township water supply wells.

- e) Inform the MDH of any wells that are to be properly sealed within the DWSMA so that the Minnesota Geological Survey can be notified and determine whether it can run a borehole geophysical survey of the well.
- f) Inform the MDH if the Township is considering the construction of a new water supply well so that the MDH can determine whether any potential sites for the new well present concerns over well interference or the movement of existing contamination plumes toward existing Township or private water supply wells.

Status and Adequacy of Official Controls, Plans, and Other Local, State, and Federal Programs on Water Use and Land Use

There are other tools available to the Township and other regulating agencies that may be used to achieve the wellhead protection planning goals identified by the wellhead planning team. State and local governmental units such as MDH, the DNR and White Bear Township oversee the following areas and may be able to aid in the implementation of this plan:

- 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
- Local land use and zoning controls Local Governments
- Tank control program MPCA
- Shallow disposal wells USEPA

The wellhead protection planning team recommends the following for this

Add language to assess the adequacy of the controls, plans and programs listed. 3.

14521.000

plan to be successful: public education, adoption of best management practices for different types of wells, tank maintenance, water conservation and good communication with other landowners within the DWSMA.

IV. WELLHEAD PROTECTION GOALS (4720.5240)

The White Bear Township public water supply is considered to be vulnerable to contamination. Based on geologic conditions, these contaminants could come from both surface and subsurface sources. Consequently, the principle potential sources of contamination to the aquifer are other wells that reach or penetrate it, surface waters, hazardous waste generators, septic systems, and above ground or underground storage tanks. This WHP Plan will focus on preventing contamination of the aquifer and managing the aquifer cooperatively to assure sustainable water supplies for all users through education and management strategies.

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

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

- A. Maintain the current level of water quality which meets or exceeds all state and federal standards.
- B. Increase public awareness of the Wellhead Protection Program and groundwater protection issues.
- C. Provide ongoing collection of data to support future wellhead protection efforts.

14521.000

V. OBJECTIVES AND PLANS OF ACTION (4720.5250)

ESTABLISHING PRIORITIES

The aquifer supplying the system's drinking water supply has been identified as being vulnerable to contamination. Based on geologic conditions, these contaminants could come from both surface and subsurface sources. A number of factors must be considered when WHP measures are selected and prioritized (part 4720.5250, subpart 3). Such factors include: contamination of a public water supply well, quantities of the potential contamination sources, location of the source in relation to the well, capability of the geologic material to absorb a contaminant, existence and effectiveness of existing official controls, time required to obtain cooperation, and administrative, legal, technical, and financial resources needed.

Therefore, the Wellhead Protection Planning Team would like to concentrate management efforts on the following factors to create awareness of groundwater protection and help reduce the potential for future contamination of the aquifer:

- a) Public education
- b) Data collection
- c) Inner Wellhead Management Zone (IWMZ)
- d) Wells
- e) Storage tanks
- f) Shallow disposal wells
- g) Stormwater
- h) Septic systems
- i) Hazardous Waste
- j) Agricultural Land Use

- k) Transportation Corridors
- I) Coordination

A. PUBLIC EDUCATION

Include letter of cooperation		Increase public awareness of the Wellhead Protection Program and groundwater protection issues. Educating the general public about how certain land use activities can impact local water quality.
	WHP Measure A1-1:	Use a packet containing pamphlets and other information at Town Hall to inform the community about Wellhead Protection management techniques.
	Source of Action:	White Bear Township
	Cooperator(s):	MDH, MRWA for materials
Include letter of	Time Frame:	2013
cooperation	Estimated Cost:	Staff time, \$100 printing costs
cooperation	Goal achieved:	Town residents and property owners will become better informed about wellhead protection and groundwater principles.
	WHP Measure A1-2:	Put information on the Town Website to inform the community about Wellhead Protection management techniques.
	Source of Action:	White Bear Township
	Cooperator(s):	MDH, MRWA for materials
	Time Frame:	2014
	Estimated Cost:	Staff time
	Goal achieved:	The general public will become better informed about wellhead protection and groundwater principles.
	WHP Measure A1-3:	Use the existing site plan review process to educate land owners about Wellhead Protection. For example, ask a registered tank owner if they need any information about proper tank management techniques.
	Source of Action:	White Bear Township
	Cooperator(s):	None
	Time Frame:	2012
	Estimated Cost:	Staff time
	Goal achieved:	Property owners within White Bear Township and the DWSMA become better informed about wellhead protection and best management techniques.

WHP Measure A1-4:	Coordinate with Minnesota Department of Agriculture, NRCS and FSA offices to promote the proper rates and application of fertilizers, pesticides and herbicides as a way to protect the groundwater	
Source of Action:	White Bear Township, Public Works and Planning	
Cooperator(s):	None	
Time Frame:	2016	
Estimated Cost:	Staff time	
Goal achieved:	Property owners will become more aware of proper turf management and agricultural land use.	

B. DATA COLLECTION

OBJECTIVE B1: C

Continue to collect data on the DWSMA and potential sources of contamination sites within it.

WHP Measure B1-1:	Update and maintain a current PCSI database by adding or removing sites discovered through the permit review process, the MDH, the DNR and other municipalities within the DWSMA.
Source of Action:	White Bear Township
Cooperator(s):	None
Time Frame:	2013
Estimated Cost:	Staff time (\$5,000-\$6,000)
Goal achieved:	Maintain a current PCSI database that can be used by Public Works, Planning, and emergency response.

Verify the remainder of the potential contaminant sources (Table 2).	
White Bear Township	
None	
2013	
Staff time (\$1,000)	
Maintain a current PCSI database that can be used by Public Works, Planning, and emergency response.	

Include letter of cooperation

WHP Measure B1-3:	Monitor for tritium in the public water supply system wells on a 5-year basis.
Source of Action:	White Bear Township
Cooperator(s):	MDH
Time Frame:	2018
Estimated Cost:	Staff time
Goal achieved:	This will indicate the relative age of the water from each well and provide information as to its source.
WHP Measure B1-4:	The Township will contact the MDH and MGS and request assistance in developing a stable isotope Oxygen (O ¹⁸) and deuterium (H ²) monitoring plan to determine the influence that White Bear and Bald Eagle Lakes may have

WHP Measure B1-4:	and deuterium (H ²) monitoring plan to determine the influence that White Bear and Bald Eagle Lakes may have on the Wells.	
Source of Action:	White Bear Township	
Cooperator(s):	None	
Time Frame:	2017	
Estimated Cost:	Staff time, cost of study	
Goal achieved:	This will indicate whether the groundwater is mixing with the surface waters.	

WHP Measure B1-5:	The Township will contact the MDH and request assistance for studies to be conducted to assess the extent of the clay layer beneath the lakes.	
Source of Action:	White Bear Township	
Cooperator(s):	None	
Time Frame:	2019	
Estimated Cost:	Staff time, cost of study	
Goal achieved:	This will determine the full extent and effectiveness of the clay layer as a separating layer between the lakes and deeper groundwater.	

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c. INNER WELLHEAD MANAGEMENT ZONE (IWMZ)

OBJECTIVE C1: Manage the 200-ft inner well management zone to prevent contaminants from entering the area adjacent to the wells.

Include letter of cooperation	WHP Measure C1-1:	Continue to monitor well setbacks for all new potential sources of contamination. Update the IWMZ survey every 5 years.
	Source of Action:	White Bear Township
	Cooperator(s):	MRWA
	Time Frame:	Ongoing, update every 5 years
	Estimated Cost:	Staff time
	Goal achieved:	Help to identify additional possible contamination sources.

D. WELLS

Include letter of	OBJECTIVE D1:	Educating the general public about proper well management techniques and how their wells can affect the drinking water supply.
cooperation		Use a packet containing pamphlets and other information
	WHP Measure D1-1:	at Town Hall to inform the community about well management techniques and Wellhead Protection.
	Source of Action:	White Bear Township
	Cooperator(s):	MDH, MRWA for materials
	Time Frame:	2013
	Estimated Cost:	Staff time, \$100 printing costs
Include letter of cooperation	Goal achieved:	Town residents and property owners will become better informed about proper well management and wellhead protection principles.
	WHP Measure Q1-2:	Act as an information and referral resource to identify existing sources of financial assistance and cost-share programs to seal unused wells.
	Source of Action:	White Bear Township
	Cooperator(s):	Washington County, Ramsey County, MDH
	Time Frame:	2012
	Estimated Cost:	Staff time
	Goal achieved:	This measure will help to abandon more unused wells and possible contamination sources.
	WHP Measure D1-3:	Require that all property owners disconnect their home plumbing system from an alternate water source to prevent cross contamination.
	Source of Action:	White Bear Township, Public Works and Planning
	Cooperator(s):	None
	Time Frame:	Current
	Estimated Cost:	None
	Goal achieved:	Prevention of cross contamination of the water system and wells.

OBJECTIVE D2:

WHP Measure D2.4.

Identify new wells and existing wells that are not in compliance with Minnesota State Well Code and MDH requirements.

Contact the MDH when wells are found that are a safety

May be difficult to have the Cities to do this. It would be better to consult the County Well Index (CWI) Should have a follow-up measure to explain what you are going to do the requested information.

Should have a follow-up measure to explain what you are going to do the requested information.

and health hazard, including wells that are to be sealed.	
White Bear Township	
None	
Current, Ongoing	
Staff time	
Help to prevent contamination of the water supply by non- conforming wells.	
Request that neighboring municipalities (White Bear Lake, Vadnais Heights, Grant, Hugo) inform the White Bear Township when any new wells are installed within the DWSMA.	
White Bear Township	
White Bear Township	
None	
None 2012	
White Bear Township None 2012 Staff time	

WHP Measure D2-3:	Request that the DNR informs you when any new or modified ground water appropriation permits are granted in or near the DWSMA.	
Source of Action:	White Bear Township	
Cooperator(s):	None	
Time Frame:	2012	
Estimated Cost:	Staff time	
Goal achieved:	Help to prevent pumping conflicts.	

WHP Measure D2-4:	Search earlier developed portions of the DWSMA for unused/unsealed wells that may have been in existence at one time.
Source of Action:	White Bear Township
Cooperator(s):	None
Time Frame:	Current, Ongoing
Estimated Cost:	Staff time
Goal achieved:	Help to prevent contamination of the water supply by non- conforming wells.

WHP Measure D2-5:	he Township will inform MDH when any on the Township vells are repaired or sealed in the event that the MDH may want to collect data while the pump is pulled.	
Source of Action:	White Bear Township	
Cooperator(s):	None	
Time Frame:	Current, Ongoing	
Estimated Cost:	Staff time, Repair costs	
Goal achieved: Information regarding well construction, station and pumping capacity can be verified or update		

STORAGE TANKS

≻E.

OBJECTIVE E1:	Act as an information source to storage tank owners and educate them on management practices to prevent their tanks from contaminating drinking water sources.
WHP Measure E1-1:	Use a packet containing pamphlets and other information at Town Hall to inform the community about tank management techniques and Wellhead Protection.
Source of Action:	White Bear Township
Cooperator(s):	MPCA for materials
Time Frame:	2015
Estimated Cost:	Staff time, \$100 printing costs
Goal achieved:	Town residents and property owners will become better informed about proper tank management and wellhead protection principles.
	Act as a local source of information to tank owners about
	OBJECTIVE E1: WHP Measure E1-1: Source of Action: Cooperator(s): Time Frame: Estimated Cost: Goal achieved:

WHP Measure E1-2:	Act as a local source of information to tank owners about meeting regulatory requirements. Show residents how to access certified tank installation and removal contractors.		
Source of Action:	White Bear Township website		
Cooperator(s):	MPCA website links		
Time Frame:	2016		
Estimated Cost:	Staff time		
Goal achieved:	Town residents and property owners will become better informed about proper tank management and wellhead protection principles.		

F. SHALLOW DISPOSAL WELLS

Include letter of cooperation	OBJECTIVE F1:	Identify any shallow disposal wells within or near the DWSMA.
	WHP Measure F1-1:	Continue to monitor for locations of shallow disposal wells within the DWSMA. If found, inform the property owner of their obligation to contact the EPA Region 5 staff.
	Source of Action:	White Bear Township staff
	Cooperator(s):	EPA
	Time Frame:	Ongoing
	Estimated Cost:	Staff time
	Goal achieved:	This measure will help to identify additional possible contamination sources.

G. STORMWATER

Include letter of cooperation	OBJECTIVE G1: Promote stormwater best management techniques and educate staff and property owners about how stormwater can affect the drinking water supply.		
	WHP Measure G1-1:	Work with Town staff responsible for stormwater management, plat approval, and building permits, to ensure that new stormwater structures are reviewed with wellhead protection principles in mind, that existing structures are properly maintained, and that existing structures have appropriate permits.	
	Source of Action:	White Bear Township planning	
	Cooperator(s):	Rice Creek Watershed District, Vadnais Lake Area Water Management Organization	
	Time Frame:	2014	
	Estimated Cost:	Staff time	
	Goal achieved:	Proper stormwater management and consideration of the DWSMA vulnerability when siting stormwater structures will help protect the drinking water supply.	

H. SEPTIC SYSTEMS (ISTS)

Include letter of	OBJECTIVE H1:	Act as an information source to recommend best management practices for known on-site sewage systems in the DWSMA.
	WHP Measure H1-1:	Continue to identify and record new ISTS locations in the DWSMA
	Source of Action:	White Bear Township
	Cooperator(s):	Washington and Ramsey Counties
Include letter of	Time Frame:	Ongoing
cooperation	Estimated Cost:	Staff time
The second second	Goal achieved:	Help to identify additional possible contamination sources.
	WHP Measure HT-2:	Act as an information and referral resource for best management practices for ISTS maintenance.
	Source of Action:	White Bear Township
	Cooperator(s):	Washington and Ramsey Counties
	Time Frame:	2015
	Estimated Cost:	Staff time
	Goal achieved:	Help to reduce the water quality problems caused by failing septic systems.
		Refer failing septic systems within White Bear Township
	WHP Measure H1-3:	and the DWSMA to the Building Inspector for inspection and code enforcement.
	Source of Action:	White Bear Township staff, building inspector
	Cooperator(s):	None
	Time Frame:	Current
	Estimated Cost:	Staff time
	Goal achieved:	Help to reduce the water quality problems caused by failing septic systems.

HAZARDOUS WASTE

OBJECTIVE I1:

Act as an information source to owners with hazardous waste and educate them on proper management and disposal to prevent contaminating drinking water sources.

WHP Measure I1-1:	Encourage Township residents to properly dispose of hazardous waste during the annual Town Clean Up Day.	
Source of Action:	White Bear Township	
Cooperator(s):	None	
Time Frame:	Current, annually	
Estimated Cost:	Staff time	
Goal achieved:	Reduce possible sources of contamination.	

WHP Measure 11-2:	Act as a local source of information to hazardous waste owners, household and commercial, about proper management techniques.		
Source of Action:	White Bear Township		
Cooperator(s):	MPCA website links, Ramsey and Washington Counties		
Time Frame:	2015		
Estimated Cost:	Staff time		
Goal achieved:	Town residents and property owners will become better informed about proper tank management and wellhead protection principles.		

Include letter of cooperation I.

AGRICULTURAL LAND USE

J.

Good idea but need some follow- up measures to this one. Is once in 10 year enough?	OBJECTIVE J1:	Encourage agricultural and turf practices in the DWSMA to be congruent with wellhead protection principles.
	WHP Measure J1-1:	Request assistance from the Ramsey and Washington County SWCD to promote their programs within the DWSMA. Promoting best management practices for nutrient management, manure management, cover crop, no-till management, etc.
SWCD's should be	Source of Action:	White Bear Township
listed here and include a letter of cooperation. The Minnesota Department of Ag has information on this as well.	Cooperator(s):	None
	Time Frame:	2016
	Estimated Cost:	Staff time
	Goal achieved:	Increase agricultural practices that positively affect the water supply.
TRANSPORTATION CORRIDORS

Should have measures related to the owners transportation corridors. Please keep in mind Rail Roads as well as roads.

K.

OBJECTIVE K1:	Promote the importance of spill clean-up and response within the DWSMA.
WHP Measure K1-1:	Educate local fire departments, first responders, county sheriff's dept. and emergency managers, and railroad managers about WHP by sending them a letter.
Source of Action:	White Bear Township
Cooperator(s):	None
Time Frame:	2013
Estimated Cost:	Staff time
Goal achieved:	Emergency personnel will become educated about WHP and the possible effect on the groundwater in the event of a spill.

Include objectives and measures for the pipeline.

L. COORDINATION

OBJECTIVE L1: To effectively implement the plan.

WHP Measure L1-1:	Hold an annual meeting of the wellhead protection team.			
Source of Action:	White Bear Township			
Cooperator(s):	WHP Team			
Time Frame:	Annually			
Estimated Cost:	Staff time			
Goal achieved:	WHP Team will review the implementation plan and discuss whether modifications are needed for the next year.			

WHP Measure L1-2: Create a WHP budget line item.				
Source of Action:	White Bear Township			
Cooperator(s):	None			
Time Frame:	2013			
Estimated Cost:	Staff time			
Goal achieved:	Creates a budget to implement WHP measures.			

WHP Measure L1-3:	The Township will work with the MDH SWP Unit to evaluate the level of risk of the contaminant sites.
Source of Action:	White Bear Township
Cooperator(s):	None
Time Frame:	Ongoing
Estimated Cost:	Staff time
Goal achieved:	Determines priority for implementation efforts.

It is estimated that the total amount of staff time costs will be \$16,000 - \$20,000 over the 10 year life of the plan.

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VI. EVALUATION PROGRAM (4720.5270)

The success of the wellhead protection source management program must be evaluated in order to determine whether the plan is actually accomplishing what White Bear Township set out to do. The following activities 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
- Determine the adequacy of financial resources and staff availability to carry out the management strategies planned for the coming year.
 - White Bear Township will continue to cooperate with the Minnesota Department of Health in the annual monitoring of the water supply to determine whether the management strategies are having a positive effect and to identify water quality problems that may arise that must be addressed.
 - 2. Members of the wellhead protection team, City Council, and the WHP plan manager drive through the drinking water supply management area on a regular basis, and will try to identify any changes in land use or potential contaminant source management practices which may adversely impact the public water supply.
 - 3. The wellhead protection team will meet on an as-needed basis, with a minimum of one annual meeting to review the results of each strategy implemented during the previous plan year and identify and discuss whether modifications are needed for those strategies and additional strategies for the coming plan year.

VII. ALTERNATIVE WATER SUPPLY; CONTINGENCY STRATEGY (4720.5280)

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The White Bear Township Water Supply Conservation Plan has been submitted and approved by the MN DNR, Division of Waters Appropriation Permit Program. This plan contains the required elements of the MN Wellhead Protection Rule and is accepted as an equivalent to an Alternative Water Supply/Contingency Plan as defined in 4720.5280. Implementation of the Plan has begun with the aid and assistance of local emergency management agencies. A copy of the Plan is available for review at the Town Hall or by contacting Dale Reed at (651) 747-2777. The approval letter for this Plan is found in the appendix as Exhibit 6.

APPENDIX

White Bear Township WHP Part 2

14521.000

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Appendix B

List of Completed Comprehensive Storm Drainage Plan Reports

List of Completed Comprehensive Storm Drainage Plan Reports

- A. "Proposed Drainage Facilities in the Vicinity of Bellaire Avenue and County Road F, Prepared for the Town of White Bear and The City of White Bear Lake" - February, 1979
- B. "Comprehensive Storm Drainage Plan for the Southwest Area of the Town of White Bear, Minnesota" April, 1979

Information and modeling efforts presented in this report were updated as part of the "Storm Water Management Study for Ramsey County Ditch No. 14," prepared for the Ramsey Soil and Water Conservation District, in September, 1987, by TKDA.

- C. "Comprehensive Storm Drainage Plan for the Centerville Road/Hammond Road Watershed of White Bear Township, Minnesota" - September, 1979
- D. "Comprehensive Storm Drainage Plan for the Northwest Area of White Bear Township, Minnesota" - October, 1979
- E. 'Comprehensive Storm Drainage Plan for the County Road H2 Stillwater Street Area, Township of White Bear, Minnesota'' - November, 1979
- F. "Final Report Comprehensive Stormwater Management Plan, East Bald Eagle Lake Watersheds, Including Areas Within the Communities of Dellwood, Grant Township (Washington County), Hugo, White Bear Lake, White Bear Township (Ramsey County)" - December, 1980
- G. "Stormwater Management Plan Highway 96 Centerville Road Area, White Bear Township, Minnesota" - November, 1987
- H. "Comprehensive Storm Drainage Plan for the Centerville Road Watershed North of Hammond Road in White Bear Township, Minnesota" - October 1989

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Appendix C

Inventory of Stormwater Structure & Basins

STRUCTURE INVENTORY

		Upstream	Downstream	
		Invert	Invert	
ID No.	Description	Elevation	Elevation	Comments
NE-S1	27" RCP			
NE-S2	12" CMP	929.82	929.66	
NE-S3	15" CMP	NA	NA	
NE-S4	24" RCP	NA	NA	
NE-S5	12" CMP	927.67	926.95	
NE-S6	38"X52" RCPA	912.25	911.73	From Construction Plans
NE-S8	48" CMP	911.10	911.35	
NE-S9	40"X65" CMPA	911.25	910.70	From Construction Plans
NE-S10	20' Span, 12' Wide,	NA	NA	
	Timber Bridge			
NE-S11	66" CMP	NA	NA	
NE-S12	48"X72"CMPA	910.87	909.74	
NE-S13	48" CMP	909.70	909.37	
	48" CMP	910.57	909.17	
NE-S14	48" CMP	908.93	909.07	
NE-S15	4'X6' RC Box	907.97	908.35	40"x60" CMPA Ends
NE-S16	113"X96" ACP	910.19	909.43	
NE-S17	3'X8' RC Box	910.01	909.74	
NE-S18	18" CMP	912.07	911.65	
NE-S19	18" CMP	912.93	912.85	
NE-S20	18" RCP	911.86	911.61	
NE-S21	12" CMP	926.59	925.99	
NE-S22	12" CMP	927.15	927.00	
NE-S23	12" CMP	925.04	924.19	
NE-S24	15" CMP	NA	NA	
NE-S25	15" CMP	NA	NA	
NE-S26	15" CMP	NA	NA	
NE-S27	12" VCP	NA	NA	
NE-S28	12" CMP	NA	NA	
NE-S29	12" CMP	NA	NA	
NE-S30	18" CMP	NA	NA	
NE-S31	15" CMP	NA	NA	
NE-S32	18" CMP	NA	NA	
NE-S33	24" CMP	928.58	929.08	
NE-S34	15" CMP	928.15	925.53	
NE-S35	24" CMP	925.58	924.35	
NE-S36	36" CMP	922.52	922.02	
NE-S37	24" RCP	921.06	920.41	

STRUCTURE INVENTORY - NORTHEAST AREA

NE-S39 12" CMP 929.82 929.34 NE-S48 48"X52" RC Oval 917.10 916.40 NE-S49 18" CMP 922.08 920.62 NE-S50 42" CMP 918.00 NA NE-S51 24" CMP 918.00 NA NE-S52 30" RCP 915.85 916.05 NE-S53 42" CMP 914.76 913.89 NE-S54 72" RCP 909.72 NA NE-S55 18" CMP 917.10 916.40 NE-S55 18" CMP 917.10 916.40 NE-S55 12" CMP NA NA NE-S55 12" CMP NA NA NE-S56 12" CMP NA NA NE-S61 12" X18" CMPA NA NA NE-S62 24" RCP 924.05 923.86 NE-S63 24" RCP 924.56 923.85 NE-S64 18" CMP NA NA NE-S65 15" CMP NA NA NE-S66 12" CMP NA NA	NE-S38	18" CMP	NA	NA	
NE-S48 48"X52" RC Oval 917.10 916.40 NE-S49 18" CMP 922.08 920.62 NE-S51 24" CMP 918.00 NA NE-S51 24" CMP 918.00 NA NE-S52 30" RCP 915.85 916.05 NE-S53 42" CMP 914.76 913.89 NE-S54 72" RCP 909.72 NA NE-S55 18" CMP 917.10 916.40 NE-S55 18" CMP 917.10 916.40 NE-S55 18" CMP 909.72 NA NE-S56 NA NA NA NE-S57 NA NA NA NE-S58 12" CMP NA NA NE-S60 12" CMP NA NA NE-S61 12"X18" CMPA NA NA NE-S62 24" RCP 924.05 923.86 NE-S63 14" RCP NA NA NE-S66 12" CMP NA NA NE-S66 12" CMP NA NA NE-S66 12" CMP NA NA NE-S66 24" CMP NA NA NE-S70 18" CMP NA NA NE-S71 <t< td=""><td>NE-S39</td><td>12" CMP</td><td>929.82</td><td>929.34</td><td></td></t<>	NE-S39	12" CMP	929.82	929.34	
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NE-S50 42" CMP 917.17 917.12 NE-S51 24" CMP 918.00 NA NE-S52 30" RCP 915.85 916.05 NE-S53 42" CMP 914.76 913.89 NE-S55 18" CMP 917.10 916.40 NE-S55 18" CMP 917.10 916.40 NE-S55 18" CMP NA NA NE-S55 12" CMP NA NA NE-S55 12" CMP NA NA NE-S55 12" CMP NA NA NE-S50 12" CMP NA NA NE-S61 12" CMP NA NA NE-S62 24" RCP 924.05 923.85 NE-S63 14" RCP NA NA NE-S64 18" CMP NA NA NE-S66 12" CMP NA NA NE-S66 12" CMP NA NA NE-S66 14" CMP NA NA NE-S70 18" CMP NA NA NE-S71 18" CMP NA	NE-S49	18" CMP	922.08	920.62	
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NE-S60 12" CMP NA NA NE-S61 12"X18" CMPA NA NA NE-S61 12"X18" CMPA NA NA NE-S62 24" RCP 924.05 923.86 NE-S63 24" RCP 924.56 923.85 NE-S64 18" CMP NA NA NE-S65 15" CMP NA NA NE-S66 12" CMP NA NA NE-S66 12" CMP NA NA NE-S66 12" CMP NA NA NE-S66 24" CMP NA NA NE-S69 24" CMP NA NA NE-S69 24" CMP NA NA NE-S66 12" CMP NA NA NE-S70 18" CMP NA NA NE-S71 18" CMP NA NA NE-S72 12" CMP NA NA NE-S73 36" CMP 911.71 911.71 NE-S74 24" RCP NA NA NE-S75 24" RCP 923.50 NA </td <td>NE-S59</td> <td>12" CMP</td> <td>NA</td> <td>918.90</td> <td></td>	NE-S59	12" CMP	NA	918.90	
NE-S61 12"X18" CMPA NA NA NE-S62 24" RCP 924.05 923.86 NE-S63 24" RCP 924.56 923.85 NE-S64 18" CMP NA NA NE-S65 15" CMP NA NA NE-S66 12" CMP NA NA NE-S66 12" CMP NA NA NE-S66 12" CMP NA NA NE-S66 24" CMP NA NA NE-S67 12" CMP NA NA NE-S68 24" CMP NA NA NE-S70 18" CMP NA NA NE-S71 18" CMP NA NA NE-S72 12" CMP 912.00 910.71 NE-S73 36" CMP 911.71 911.71 NE-S74 24" RCP NA NA NE-S75 24" RCP NA NA NE-S76 12" RCP 920.80 919.00 NE-S78 15" RCP 916.50 916.30 NE-S79 15" CMPA NA <t< td=""><td>NE-S60</td><td>12" CMP</td><td>NA</td><td>NA</td><td></td></t<>	NE-S60	12" CMP	NA	NA	
NE-S62 24" RCP 924.05 923.86 NE-S63 24" RCP 924.56 923.85 NE-S64 18" CMP NA NA NE-S65 15" CMP NA NA NE-S66 12" CMP NA NA NE-S66 12" CMP NA NA NE-S67 12" CMP NA NA NE-S68 24" CMP NA NA NE-S70 18" CMP NA NA NE-S71 18" CMP NA NA NE-S72 12" CMP 912.00 910.71 NE-S73 36" CMP 911.71 911.71 NE-S74 24" RCP NA NA NE-S75 24" RCP NA NA NE-S76 12" RCP 920.80 919.00 NE-S77 10" RCP 920.80 919.00 NE-S78 15" RCP 916.50 916.30 NE-S79 15" CMPA NA NA NE-S88 24" CMP NA NA NE-S88 12" RCP 939.00	NE-S61	12"X18" CMPA	NA	NA	
NE-S63 24" RCP 924.56 923.85 NE-S64 18" CMP NA NA NE-S65 15" CMP NA NA NE-S66 12" CMP NA NA NE-S66 12" CMP 928.87 928.00 NE-S68 24" CMP NA NA NE-S69 24" CMP NA NA NE-S70 18" CMP NA NA NE-S71 18" CMP NA NA NE-S73 36" CMP 911.71 911.71 NE-S74 24" RCP NA NA NE-S75 24" RCP NA NA NE-S76 12" RCP 923.50 NA Connects to NW-S77 NE-S76 12" RCP 920.80 919.00 NE-S77 NE-S77 30" RCP 920.80 919.00 NE-S75 NE-S78 15" RCP 916.50 916.30 NE-S85 NE-S85 24" NA NA NA NE-S86 24" RCP 912.71 NA NE-S88 12" RCP 938.09	NE-S62	24" RCP	924.05	923.86	
NE-S6418" CMPNANANE-S6515" CMPNANANE-S6612" CMPNANANE-S6612" CMP928.87928.00NE-S6824" CMPNANANE-S6924" CMPNANANE-S7018" CMPNANANE-S7118" CMPNANANE-S7336" CMP910.71NE-S7424" RCPNANE-S7524" RCPNANE-S7612" RCP923.50NE-S7612" RCP916.30NE-S7815" RCP916.30NE-S7915" CMPANANE-S8524"NANE-S8624" RCP912.71NE-S8736" Iron Culv.NANANANE-S8912" RCP939.00NASee S92NE-S8912" RCP934.00NASee S92NE-S9012" RCP937.95NASee S92NE-S9115" RCPNANANE-S9236" RCPNANANANANE-S94NA <td>NE-S63</td> <td>24" RCP</td> <td>924.56</td> <td>923.85</td> <td></td>	NE-S63	24" RCP	924.56	923.85	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	NE-S64	18" CMP	NA	NA	
NE-S66 12" CMP NA NA NE-S67 12" CMP 928.87 928.00 NE-S68 24" CMP NA NA NE-S69 24" CMP NA NA NE-S70 18" CMP NA NA NE-S71 18" CMP NA NA NE-S72 12" CMP 912.00 910.71 NE-S73 36" CMP 911.71 911.71 NE-S74 24" RCP NA NA NE-S75 24" RCP NA NA NE-S76 12" RCP 923.50 NA Connects to NW-S77 NE-S76 12" RCP 916.50 916.30 NE-S73 NE-S78 15" RCP 916.50 916.30 NE-S85 24" NA NE-S85 24" NA NA NA NE-S85 24" NA NA NE-S86 24" RCP 912.71 NA NA NE-S88 12" RCP 939.00 NA See S92 NE-S89 12" RCP 938.09 NA See S92 NE-S91 15" R	NE-S65	15" CMP	NA	NA	
NE-S67 12" CMP 928.87 928.00 NE-S68 24" CMP NA NA NE-S69 24" CMP NA NA NE-S70 18" CMP NA NA NE-S71 18" CMP NA NA NE-S72 12" CMP 912.00 910.71 NE-S73 36" CMP 911.71 911.71 NE-S74 24" RCP NA NA NE-S75 24" RCP NA NA NE-S76 12" RCP 923.50 NA Connects to NW-S77 NE-S76 12" RCP 920.80 919.00 NE-S77 NE-S77 30" RCP 920.80 919.00 NE-S77 NE-S78 15" RCP 916.50 916.30 NE-S79 NE-S80 24" CMP NA NA NA NE-S85 24" NA NA NA NE-S86 24" RCP 912.71 NA NA NE-S88 12" RCP 939.00 NA See S92 NE-S89 12" RCP 938.09 NA <	NE-S66	12" CMP	NA	NA	
NE-S68 24" CMP NA NA NE-S69 24" CMP NA NA NE-S70 18" CMP NA NA NE-S71 18" CMP NA NA NE-S72 12" CMP 912.00 910.71 NE-S73 36" CMP 911.71 911.71 NE-S74 24" RCP NA NA NE-S75 24" RCP NA NA NE-S76 12" RCP 923.50 NA Connects to NW-S77 NE-S76 12" RCP 920.80 919.00 NE-S77 NE-S77 30" RCP 920.80 919.00 NE-S77 NE-S78 15" RCP 916.50 916.30 NE-S79 NE-S79 15" CMPA NA NA NA NE-S80 24" CMP NA NA NA NE-S85 24" NA NA NA NE-S86 24" RCP 912.71 NA NA NE-S88 12" RCP 938.09 NA See S92 NE-S89 12" RCP 938.09 NA </td <td>NE-S67</td> <td>12" CMP</td> <td>928.87</td> <td>928.00</td> <td></td>	NE-S67	12" CMP	928.87	928.00	
NE-S69 24" CMP NA NA NE-S70 18" CMP NA NA NE-S71 18" CMP NA NA NE-S71 18" CMP NA NA NE-S71 18" CMP NA NA NE-S72 12" CMP 912.00 910.71 NE-S73 36" CMP 911.71 911.71 NE-S74 24" RCP NA NA NE-S75 24" RCP NA NA NE-S76 12" RCP 920.80 919.00 NE-S77 30" RCP 920.80 919.00 NE-S78 15" RCP 916.50 916.30 NE-S79 15" CMPA NA NA NE-S80 24" CMP NA NA NE-S85 24" NA NA NE-S86 24" RCP 912.71 NA NE-S88 12" RCP 938.09 NA See S92 NE-S89 12" RCP 938.09 NA See S92	NE-S68	24" CMP	NA	NA	
NE-S70 18" CMP NA NA NE-S71 18" CMP NA NA NE-S72 12" CMP 912.00 910.71 NE-S73 36" CMP 911.71 911.71 NE-S74 24" RCP NA NA NE-S75 24" RCP NA NA NE-S76 12" RCP 923.50 NA Connects to NW-S77 NE-S76 12" RCP 920.80 919.00 NE-S78 15" RCP 916.50 916.30 NE-S79 15" CMPA NA NA NE-S80 24" CMP NA NA NE-S85 24" NA NA NE-S86 24" RCP 912.71 NA NE-S86 24" RCP 939.00 NA See S92 NE-S88 12" RCP 938.09 NA See S92 NE-S89 12" RCP 934.00 NA See S92 NE-S91 15" RCP 937.95 NA See S92 NE-S92 36" RCP NA 928.54 Provides outlet for S88, S89, S90, S91 <td>NE-S69</td> <td>24" CMP</td> <td>NA</td> <td>NA</td> <td></td>	NE-S69	24" CMP	NA	NA	
NE-S71 18" CMP NA NA NE-S72 12" CMP 912.00 910.71 NE-S73 36" CMP 911.71 911.71 NE-S74 24" RCP NA NA NE-S75 24" RCP NA NA NE-S76 12" RCP 923.50 NA Connects to NW-S77 NE-S76 12" RCP 920.80 919.00 NE-S78 15" RCP 916.50 916.30 NE-S79 15" CMPA NA NA NE-S80 24" CMP NA NA NE-S85 24" NA NA NE-S86 24" RCP 912.71 NA NE-S86 24" RCP 939.00 NA See S92 NE-S88 12" RCP 939.00 NA See S92 NE-S89 12" RCP 934.00 NA See S92 NE-S90 12" RCP 937.95 NA See S92 NE-S91 15" RCP NA 928.54 Provides outlet for S88, S89, S90, S91 NE-S93 15" RCP NA NA <	NE-S70	18" CMP	NA	NA	
NE-S72 12" CMP 912.00 910.71 NE-S73 36" CMP 911.71 911.71 NE-S74 24" RCP NA NA NE-S75 24" RCP NA NA NE-S76 12" RCP 923.50 NA Connects to NW-S77 NE-S76 12" RCP 920.80 919.00 NE-S77 30" RCP 920.80 916.30 NE-S78 15" RCP 916.50 916.30 NE-S79 15" CMPA NA NA NE-S80 24" CMP NA NA NE-S85 24" NA NA NE-S86 24" RCP 912.71 NA NE-S86 24" RCP 912.71 NA NE-S86 24" RCP 939.00 NA See S92 NE-S88 12" RCP 938.09 NA See S92 NE-S89 12" RCP 934.00 NA See S92 NE-S91 15" RCP 937.95 NA See S92 NE-S92 36" RCP NA 928.54 Provides outlet for S88, S89, S90, S91<	NE-S71	18" CMP	NA	NA	
NE-S73 36" CMP 911.71 911.71 NE-S74 24" RCP NA NA NE-S75 24" RCP NA NA NE-S76 12" RCP 923.50 NA Connects to NW-S77 NE-S76 12" RCP 920.80 919.00 NE-S78 15" RCP 916.50 916.30 NE-S79 15" CMPA NA NA NE-S80 24" CMP NA NA NE-S85 24" NA NA NE-S86 24" RCP 912.71 NA NE-S86 24" RCP 939.00 NA See S92 NE-S88 12" RCP 938.09 NA See S92 NE-S89 12" RCP 934.00 NA See S92 NE-S91 15" RCP 937.95 NA See S92 NE-S92 36" RCP NA 928.54 Provides outlet for S88, S89, S90, S91 NE-S93 15" RCP NA NA NA NE-S94 NA NA NA	NE-S72	12" CMP	912.00	910.71	
NE-S74 24" RCP NA NA NE-S75 24" RCP NA NA NE-S75 24" RCP NA NA NE-S76 12" RCP 923.50 NA Connects to NW-S77 NE-S77 30" RCP 920.80 919.00 NE-S78 15" RCP 916.50 916.30 NE-S79 15" CMPA NA NA NE-S80 24" CMP NA NA NE-S85 24" NA NA NE-S86 24" RCP 912.71 NA NE-S87 36" Iron Culv. NA NA NE-S88 12" RCP 939.00 NA See S92 NE-S89 12" RCP 938.09 NA See S92 NE-S89 12" RCP 934.00 NA See S92 NE-S91 15" RCP 937.95 NA See S92 NE-S92 36" RCP NA 928.54 Provides outlet for S88, S89, S90, S91 NE-S93 15" RCP NA NA NA NE-S94 NA NA NA	NE-S73	36" CMP	911.71	911.71	
NE-S75 24" RCP NA NA NE-S76 12" RCP 923.50 NA Connects to NW-S77 NE-S77 30" RCP 920.80 919.00 NE-S78 15" RCP 916.50 916.30 NE-S79 15" CMPA NA NA NE-S80 24" CMP NA NA NE-S85 24" NA NA NE-S86 24" RCP 912.71 NA NE-S87 36" Iron Culv. NA NA NE-S88 12" RCP 939.00 NA See S92 NE-S89 12" RCP 938.09 NA See S92 NE-S89 12" RCP 934.00 NA See S92 NE-S91 15" RCP 937.95 NA See S92 NE-S92 36" RCP NA 928.54 Provides outlet for S88, S89, S90, S91 NE-S93 15" RCP NA NA NA NE-S94 NA NA NA	NE-S74	24" RCP	NA	NA	
NE-S76 12" RCP 923.50 NA Connects to NW-S77 NE-S77 30" RCP 920.80 919.00 NE-S78 15" RCP 916.50 916.30 NE-S79 15" CMPA NA NA NE-S80 24" CMP NA NA NE-S85 24" NA NA NE-S86 24" RCP 912.71 NA NE-S87 36" Iron Culv. NA NA NE-S88 12" RCP 939.00 NA See S92 NE-S89 12" RCP 938.09 NA See S92 NE-S90 12" RCP 934.00 NA See S92 NE-S91 15" RCP 937.95 NA See S92 NE-S92 36" RCP NA 928.54 Provides outlet for S88, S89, S90, S91 NE-S93 15" RCP NA NA NA NE-S94 NA NA NA	NE-S75	24" RCP	NA	NA	
NE-S77 30" RCP 920.80 919.00 NE-S78 15" RCP 916.50 916.30 NE-S79 15" CMPA NA NA NE-S80 24" CMP NA NA NE-S85 24" NA NA NE-S86 24" RCP 912.71 NA NE-S86 24" RCP 919.00 NA NE-S86 24" RCP 912.71 NA NE-S87 36" Iron Culv. NA NA NE-S88 12" RCP 939.00 NA See S92 NE-S89 12" RCP 938.09 NA See S92 NE-S90 12" RCP 934.00 NA See S92 NE-S91 15" RCP 937.95 NA See S92 NE-S92 36" RCP NA 928.54 Provides outlet for S88, S89, S90, S91 NE-S93 15" RCP NA NA NA NE-S94 NA NA NA	NE-S76	12" RCP	923.50	NA	Connects to NW-S77
NE-S78 15" RCP 916.50 916.30 NE-S79 15" CMPA NA NA NE-S80 24" CMP NA NA NE-S85 24" NA NA NE-S85 24" NA NA NE-S86 24" RCP 912.71 NA NE-S86 24" RCP 912.71 NA NE-S87 36" Iron Culv. NA NA NE-S88 12" RCP 939.00 NA See S92 NE-S88 12" RCP 938.09 NA See S92 NE-S90 12" RCP 934.00 NA See S92 NE-S91 15" RCP 937.95 NA See S92 NE-S92 36" RCP NA 928.54 Provides outlet for S88, S89, S90, S91 NE-S93 15" RCP NA NA NA NE-S94 NA NA NA	NE-S77	30" RCP	920.80	919.00	
NE-S79 15" CMPA NA NA NE-S80 24" CMP NA NA NE-S85 24" NA NA NE-S85 24" NA NA NE-S85 24" NA NA NE-S85 24" RCP 912.71 NA NE-S86 24" RCP 912.71 NA NE-S87 36" Iron Culv. NA NA NE-S88 12" RCP 939.00 NA See S92 NE-S89 12" RCP 938.09 NA See S92 NE-S90 12" RCP 934.00 NA See S92 NE-S91 15" RCP 937.95 NA See S92 NE-S92 36" RCP NA 928.54 Provides outlet for S88, S89, S90, S91 NE-S93 15" RCP NA NA NA NE-S94 NA NA NA	NE-S78	15" RCP	916.50	916.30	
NE-S80 24" CMP NA NA NE-S85 24" NA NA NE-S86 24" RCP 912.71 NA NE-S87 36" Iron Culv. NA NA NE-S87 36" Iron Culv. NA NA NE-S88 12" RCP 939.00 NA See S92 NE-S89 12" RCP 938.09 NA See S92 NE-S90 12" RCP 934.00 NA See S92 NE-S91 15" RCP 937.95 NA See S92 NE-S92 36" RCP NA 928.54 Provides outlet for S88, S89, S90, S91 NE-S93 15" RCP NA NA NA NE-S94 NA NA NA	NE-S79	15" CMPA	NA	NA	
NE-S85 24" NA NA NE-S86 24" RCP 912.71 NA NE-S87 36" Iron Culv. NA NA NE-S88 12" RCP 939.00 NA See S92 NE-S89 12" RCP 938.09 NA See S92 NE-S90 12" RCP 934.00 NA See S92 NE-S91 15" RCP 937.95 NA See S92 NE-S92 36" RCP NA 928.54 Provides outlet for S88, S89, S90, S91 NE-S93 15" RCP NA NA NA NE-S94 NA NA NA	NE-S80	24" CMP	NA	NA	
NE-S86 24" RCP 912.71 NA NE-S87 36" Iron Culv. NA NA NE-S88 12" RCP 939.00 NA See S92 NE-S89 12" RCP 938.09 NA See S92 NE-S90 12" RCP 934.00 NA See S92 NE-S91 15" RCP 937.95 NA See S92 NE-S92 36" RCP NA 928.54 Provides outlet for S88, S89, S90, S91 NE-S93 15" RCP NA NA NA NE-S94 NA NA NA	NE-S85	24"	NA	NA	
NE-S87 36" Iron Culv. NA NA NE-S88 12" RCP 939.00 NA See S92 NE-S89 12" RCP 938.09 NA See S92 NE-S90 12" RCP 934.00 NA See S92 NE-S91 15" RCP 937.95 NA See S92 NE-S92 36" RCP NA 928.54 Provides outlet for S88, S89, S90, S91 NE-S93 15" RCP NA NA NA NE-S94 NA NA NA	NE-S86	24" RCP	912.71	NA	
NE-S88 12" RCP 939.00 NA See S92 NE-S89 12" RCP 938.09 NA See S92 NE-S90 12" RCP 934.00 NA See S92 NE-S91 15" RCP 937.95 NA See S92 NE-S92 36" RCP NA 928.54 Provides outlet for S88, S89, S90, S91 NE-S93 15" RCP NA NA NA NE-S94 NA NA NA	NE-S87	36" Iron Culv.	NA	NA	
NE-S89 12" RCP 938.09 NA See S92 NE-S90 12" RCP 934.00 NA See S92 NE-S91 15" RCP 937.95 NA See S92 NE-S92 36" RCP NA 928.54 Provides outlet for S88, S89, S90, S91 NE-S93 15" RCP NA NA NA NE-S94 NA NA NA	NE-S88	12" RCP	939.00	NA	See S92
NE-S90 12" RCP 934.00 NA See S92 NE-S91 15" RCP 937.95 NA See S92 NE-S92 36" RCP NA 928.54 Provides outlet for S88, S89, S90, S91 NE-S93 15" RCP NA NA NA NE-S94 NA NA NA	NE-S89	12" RCP	938.09	NA	See S92
NE-S91 15" RCP 937.95 NA See S92 NE-S92 36" RCP NA 928.54 Provides outlet for S88, S89, S90, S91 NE-S93 15" RCP NA NA NE-S94 NA NA NA	NE-S90	12" RCP	934.00	NA	See S92
NE-S92 36" RCP NA 928.54 Provides outlet for S88, S89, S90, S91 NE-S93 15" RCP NA NA NE-S94 NA NA NA	NE-S91	15" RCP	937.95	NA	See S92
NE-S93 15" RCP NA NA NE-S94 NA NA NA	NE-S92	36" RCP	NA	928.54	Provides outlet for S88, S89, S90, S91
NE-S94 NA NA NA	NE-S93	15" RCP	NA	NA	, ,
	NE-S94	NA	NA	NA	

NE-S95	NA	NA	NA
NE-S96	NA	NA	NA
NE-S97	NA	NA	NA
NE-S98	NA	NA	NA
NE-S99	NA	NA	NA
NE-S100	36" RCP	919.13	919.78
NE-S101	21" RCP	916.40	916.00

NA = Information not available.

STRUCTURE INVENTORY - NORTHWEST AREA

		Upstream	Downstream	
		Invert	Invert	
ID No.	Description	Elevation	Elevation	Comments
NW-S1	15" RCP	945.00	941.00	
NW-S2	15" into a 21" RCP	956.00	947.50	
NW-S3	15" into an 18" RCP	949.00	948.00	
NW-S4	15" into a 30" RCP	934.00	930.00	
NW-S5	24" CMP	NA	NA	
NW-S6	24" CIP	911.10	NA	8" Valve Outlet (Normally Closed)
NW-S7	24" RCP	NA	NA	,
NW-S8	24" RCP	938.20	NA	
NW-S9	18" RCP	922.74(W)	922.5(E)	
NW-S10	24" RCP	938.20	NA	
NW-S11	24" RCP	NA	NA	
NW-S12	24" RCP	NA	NA	
NW-S13	24" RCP	929.90	NA	
NW-S13A	30" RCP	915.79	914.85	
NW-S14	18" RCP	NA	NA	
NW-S15	36" RCP	911.60	NA	
NW-S16	30" RCP	914.70	NA	
NW-S17	12" VCP & CMP	905.70	906.20	
NW-S18	14"CMP	NA	NA	
NW-S19	18" CMP	NA	NA	
NW-S20	12" RCP	NA		
NW-S21	22"X36" CMPA	902.90	NA	
NW-S22	24" RCP	NA	NA	
NW-S23	24" RCP	NA	NA	
NW-S24	18" ACP	NA	NA	
NW-S25	15" CMP	NA	NA	
NW-S26	12" CMP	NA	NA	
NW-S27	15" CMP	NA	NA	
NW-S28	12" CMP	NA	NA	

NW-S29	18" CMP	NA	NA	
NW-S30	18" CMP	NA	NA	
NW-S31	15" CMP	NA	NA	
NW-S32	15" CMP	NA	NA	
NW-S33	24" CMP	NA	NA	
NW-S34	36" RCP	NA	NA	
NW-S35	18" into a 21" RCP	NA	NA	
NW-S36	15" RCP	NA	NA	
NW-S37	15" RCP	NA	NA	
NW-S38	18" RCP	NA	NA	
NW-S39	15" CMP	NA	NA	
NW-S40	15" CMP	NA	NA	
NW-S41	18" CMP	NA	NA	
NW-S42	15" CMP	NA	NA	
NW-S43	48" RCP	904.50	904.30	
NW-S44	44"X27" ACP	901.50	900.60	Proposed for Centerville Road Upgrade
NW-S45	44"X27" ACP	902.00	900.60	Proposed for Centerville Road Upgrade
	44"X27" ACP	902.00	900.60	Proposed for Centerville Road Upgrade
NW-S46	24" RCP	NA	NA	Proposed for Centerville Road Upgrade
NW-S47	30" RCP	918.00	917.80	
NW-S48	15" CMP	927.40	927.20	
NW-S49	24" RCP	NA	NA	
NW-S50	18" RCP	NA	NA	
NW-S51	24" RCP	NA	NA	
NW-S52	18" RCP	NA	NA	
NW-S53	15" CMP	NA	NA	
NW-S54	15" CMP	NA	NA	
NW-S55	15" CMP	NA	NA	
NW-S56	22"X13.5" ACP	NA	NA	
NW-S57	22"X13.5" ACP	NA	NA	
NW-S58	22"X13.5" ACP	NA	NA	
NW-S59	24" CMP	NA	NA	
NW-S60	15" CMP	NA	NA	
NW-S61	36"X22" ACP	925.50	924.90	Proposed for Centerville Road Upgrade
NW-S62	36"X22" ACP	925.50	924.90	Proposed for Centerville Road Upgrade
NW-S63	15" CMP	935.70	933.63	
NW-S64	15" RCP	933.20	932.50	
NW-S65	24" CMP	929.01	928.59	
NW-S66	15" RCP	NA	NA	
NW-S67	24" CMP	928.53	928.45	

NW-S68	24" CMP	928.20	928.12	
NW-S69	24" CMP	920.40	NA	
NW-S70	10" CMP	NA	NA	
NW-S71	10" CMP	NA	NA	
NW-S72	15" RCP	906.00	905.00	
NW-S73	24" RCP	905.40	904.60	Proposed for Centerville Road Upgrade
NW-S74	24" CMP	NA	NA	
NW-S75	24" RCP	923.00	923.00	
NW-S76	18" RCP	NA	NA	
NW-S77	NA	NA	NA	
NW-S78	24" RCP	925.00	924.50	
NW-S79	18" RCP	NA	NA	
NW-S80	24" RCP	926.90	922.30	
NW-S81	36"X22" ACP	910.80	909.80	Proposed for Centerville Road Upgrade
NW-S82	18" CMP	907.10	906.60	10
NW-S83	24" RCP	905.40	904.60	Proposed for Centerville Road Upgrade
NW-S84	15" CMP	926.70	926.50	
NW-S85	22"X13.5" ACP	NA	NA	
NW-S86	15" RCP	NA	NA	
NW-S87	18" RCP	425.70	918.66	
NW-S88	15" RCP	930.00	929.20	
NW-S89	NA	NA	NA	
NW-S90	NA	NA	NA	
NW-S91	12" CMP	NA	NA	
NW-S92	18" CMP	NA	NA	
NW-S93	12" CMP	NA	NA	
NW-S94	NA	NA	NA	
NW-S95	18" CMP	NA	NA	
NW-S96	30" RCP	925.30	924.90	
NW-S97	24" RCP	NA	NA	
NW-S98	18" RCP	NA	NA	
NW-S99	24" CMP	NA	NA	
NW-S100	24" RCP	928.10	927.40	Proposed for Centerville Road Upgrade
NW-S101	24" RCP	923.80	922.90	Proposed for Centerville Road Upgrade
NW-S102	24" RCP	942.00	941.00	
NW-S103	18" RCP	NA		NA
NW-S104	18" RCP	NA		NA

NA = Information not available.

		Upstream Invert	Downstream Invert	
ID No.	Description	Elevation	Elevation	Comments
SE-S1	15" RCP	926.25	924.47	Connects to existing storm sewer pipe outlet
SE-S2	18" CMP	927.72	927.53	1 1
SE-S3	24" RCP	943.99	927.39	
SE-S4	30" ACP	949.60	944.63	

STRUCTURE INVENTORY - SOUTHEAST AREA

NA = Information not available.

STRUCTURE INVENTORY - SOUTHWEST AREA

		Upstream	Downstream	
	5	Invert	Invert	
ID No.	Description	Elevation	Elevation	Comments
SW-S1	40"X65" ACP	904.00	903.90	
SW-S2	40"X65" ACP	904.00	903.90	
SW-S3	48"X72" ACP	908.36	908.21	
SW-S4	36" RCP	909.17	908.54	Weir regulated by
				VLAWMO
SW-S5	36" RCP	909.18	908.50	Weir regulated by
				VLAWMO
SW-S6	48" RCP	908.68	908.83	
SW-S7	60"X84" CMPA	911.68	911.07	
SW-S8	60"X84" CMPA	911.33	911.07	
SW-S9	15" RCP	909.00	906.00	
SW-S10	15" RCP	907.60	906.20	
SW-S11	24" to 18" RCP	912.70	911.00	Pond runout elevation
				912.7. Pond HWL
				elevation 915.2.

NOTE: Invert elevations have not been field checked. NA = Information not available.

INVENTORY OF STORM WATER MANAGEMENT BASINS

928.6

NE-P19

G

NE-S62

Pond ID No.	Previous Study	Outlet Structure ID No.	100-Year Flood Elev. (Ft.)	100-Year Flood Discharge (CFS)	Comments
NE-P1	G	NE-S67	933.5	2.0	Development has significantly modified this basin, compared to its size and shape in the referenced study.
NE-P2	G		923.5	51.0	The majority of this basin is located outside of Township boundaries.
NE-P3	G	NE-S15	915.7	128.0	Discharge and elevation values are for existing conditions along Judicial Ditch No. 1.
NE-P4	G		920.8		Same basin as NE-P10.
NE-P5	None	NE-S101	912.5	NA	100-year elevation from developer's storm water management plan (White Bear Beach Estates).
NE-P6	G	NE-S14	918.2	127.0	Discharge and elevation values are for existing conditions long Judicial Ditch No. 1.
NE-P7	G		920.8		Same basin as NE-P10.
NE-P8	G	NE-S10	918.2	126.0	Discharge and elevation values are for existing conditions long Judicial Ditch No. 1.
NE-P9	None	NE-S78	916.3	NA	100-year elevation from developer's storm water management plan (Rice's Creek).
NE-P10	G	NE-S6	921.6	125.0	Discharge and elevation values are for existing conditions long Judicial Ditch No. 1.
NE-P11	G	NE-S9	919.2	126.0	Discharge and elevation values are for existing conditions long Judicial Ditch No. 1.
NE-P12	G	NE-S8	919.4	125.0	Discharge and elevation values are for existing conditions long Judicial Ditch No. 1.
NE-P13	G	NE-S40	928.9	22.0	
NE-P14	G	Landlocked	928.1	9.0	Basin overflows to basin NE-P18.
NE-P15	G	NE-S3	932.3	2.0	
NE-P16	G	NE-S1	921.5	10.0	
NE-P17	None	NE-S80	NA	NA	
NE-P18	G	NE-S100	922.5	31.0	

2.0

INVENTORY OF STORM WATER MANAGEMENT BASINS NORTHEAST MANAGEMENT AREA

NA = Information not available. Previous Study: See Appendix D, Previous Study: Comprehensive Drainage Plan Reports, for report citation.

Pond ID	Previous	Outlet Structure	100-Year Flood	100-Year Flood	
No.	Study	ID No.	Elev. (Ft.)	Discharge (CFS)	Comments
NW-P1	Ι	S99	NA	7.2	Existing basin to be modified to provide future storage needs of
					3.8 ac-ft.
NW-P2	Ι	S98	NA	3.0	Existing basin to be modified to provide future storage needs of
					0.23 ac-ft.
NW-P3	Ι	S 96	NA	4.8	Existing basin to be modified to provide future storage needs of
					5.3 ac-ft.
NW-P4	Ι	S100	NA	83.	Proposed basin to provide future storage needs of 2.8 ac-ft.
NW-P5	Ι	S61 & S62	NA	78.0	Size of proposed basin not determined as subwatershed is fully
	_				developed.
NW-P6	l	S101	NA	10.0	Proposed basin to provide future storage needs of 2.3 ac-ft.
NW-P7	I				See NW-P10.
NW-P8	Ι				See NW-P10.
NW-P9	Е	S104	927.3	8.0	
NW-P10	Ι	S 84	NA	11.9	Existing basin to be modified to provide future storage needs of
	-				8.0 ac-ft.
NW-P11	1	Not existing	NA	12.3	Existing basin to be modified to provide future storage needs of 3.1 ac-ft.
NW-P12	Е	S 87	927.2	10.7	
NW-P13	Ι	Not existing	NA	30.6	Existing basin to be modified to provide future storage needs of
					8.6 ac-ft.
NW-P14	Ι				
NW-P15	Ι				
NW-P16	Ι				See NW-P13.
NW-P17	E				See NW-P12.
NW-P18	Ι	S78	NA	5.0	Existing basin to be modified to provide future storage needs of
					11.5 ac-ft.
NW-P19	Ι	\$75	NA	21.5	Existing basin to be modified to provide future storage needs of 3.2 ac-ft.

INVENTORY OF STORM WATER MANAGEMENT BASINS NORTHWEST MANAGEMENT AREA

NW-P20	Ι	None	NA	Landlocked	Future storage needs are 3.0 ac-ft.
NW-P21	E	NW-S69	926.9	34.7	
NW-P22	Ι	NW-S59			Basin not included in referenced study.
NW-P23	E	NW-S64	954.3	11.0	
NW-P24	F	None	932.2	5.3	Basin presently landlocked, elevation and discharge information are for future conditions with project proposed in Previous Study F.
NW-P25	Ι	NW-S46	NA	4.5	Existing basin to be modified to provide future storage needs of 5.3 ac-ft.
NW-P26	Ι	NW-S47	NA	7.2	Existing basin to be modified to provide future storage needs of 1.7 ac-ft.
NW-P27	F	SW-S35	927.0	7.0	Basin was originally landlocked; NW-S35 was installed as an emergency overflow.
NW-P28	Ι	NW-S45 & -S44	904.1	85.3	Existing basin to be modified to provide future storage needs of 32.9 ac-ft.
NW-P29	D	NW-S21	906.1	19.5	Elevation and discharge information assume that the subwatershed develops as proposed in Previous Study D.
NW-P30	None	NW-S24	NA	NA	
NW-P31	D	NW-S18	908.2	23.5	Elevation and discharge information assume that the subwatershed develops as proposed in Previous Study D.
NW-P32	D	Not existing	912.7	37.5	Elevation and discharge information assume that the subwatershed develops as proposed in Previous Study D.
NW-P33	J	NW-S5	933.0	22.7	Elevation and discharge information from TR-20 model of The Meadowlands developed by TKDA.
NW-P34	J	NW-S4	940.7	17.9	Elevation and discharge information from TR-20 model of The Meadowlands developed by TKDA.
NW-P35	J	NW-S3	950.8	4.9	Elevation and discharge information from TR-20 model of The Meadowlands developed by TKDA.
NW-P36	J	NW-S1	948.2	9.3	Elevation and discharge information from TR-20 model of The Meadowlands developed by TKDA
NW-P37	J	NW-S102	945.8	28.7	Elevation and discharge information from TR-20 model of The Meadowlands developed by TKDA
NW-P38	J	NW-S2	957.6	4.1	Elevation and discharge information from TR-20 model of The Meadowlands developed by TKDA.

Previous Study: See Appendix D, Previous Study: Comprehensive Drainage Plan Reports, for report citation. NA: Information not available.

INVENTORY OF STORM WATER MANAGEMENT BASINS SOUTHEAST MANAGEMENT AREA

Pond ID	Previous	Outlet Structure	100-Year Flood	100-Year Flood	
No.	Study	ID No.	Elev. (Ft.)	Discharge (CFS)	Comments
SE-P1	None	SE-S1	929.2	26.7	Basin is a sedimentation basin sized to contain the 5-year runoff.
SE-P2	А	Landlocked	945.3	2.2	Basin is the Bellaire East Sump.
SE-P3	А	Landlocked	NA	NA	Basin is the Bellaire West Sump, which is landlocked. Overflow is
					west, out of Township.
SE-P4	А	Storm sewer	931.7	65.0	Basin is the Portland Sump. Proposed discharge and elevation values
					from Alternative 3 in Previous Study A.
SE-P5	А	Storm sewer	959.6	116.0	Basin is the Martin Way Sump. Proposed discharge and elevation
					values from Alternative 3 in Previous Study A.

Previous Study: See Appendix D, Previous Study: Comprehensive Drainage Plan Reports, for report citation. NA: Information not available.

			SOUTH	IWEST MANAGI	EMENTAREA
Pond ID	Previous	Outlet Structure	100-Year Flood	100-Year Flood	
No.	Study	ID No.	Elev. (Ft.)	Discharge (CFS)	Comments
SW-P1	С	SW-S6	917.3	124.0	
SW-P2	С	SW-S4 & S5	913.0	85.0	Runout Elevation is 911.0.
SW-P3	None	SW-S9	NA	NA	Birch Lake Ponds.
SW-P4	None	SW-S10	NA	NA	Birch Lake Ponds.
SW-P5	С		908.0	78.0	Runout Elevation is 905.0.
SW-P6	None	SW-S11	915.2	NA	100-yera flood elevation from developer's drainage plan (Parkway
					Ponds).
SW-P7	None	None	NA	Landlocked	Basin is landlocked to elevation 915.0. Developer's drainage plan
					indicates 100-year elevation of 910.2 (Parkway Ponds).
SW-P8	С	SW-S1 & -S2	910.1	143.0	
SW-P9	С	SW-S3	910.2	143.0	Discharge and elevation information estimated based on Previous
					Study C.

INVENTORY OF STORM WATER MANAGEMENT BASINS SOUTHWEST MANAGEMENT AREA

Previous Study: See Appendix D, Previous Study: Comprehensive Drainage Plan Reports, for report citation. NA: Information not available.

SUBWATERSHED INVENTORY NORTHEAST MANAGEMENT AREA

Sub-			Required Dead	Peak Discharge	Live Storage Needs	
watershed	Previous	Area	Storage Volume	100-Year	100-Year	
ID No.	Study	(Ac)	(Ac-Ft)	(CFS)	(Ac-Ft)	Comments
NE1	G	709.6				Majority of subwatershed is outside Township boundaries.
NE2	G	160.8	9.9	*2.0	*67.7	
NE3	G	285.6				Majority of subwatershed is outside Township boundaries.
NE4	G	706.6		*116.0	*819.6	Majority of subwatershed is outside Township boundaries.
NE5	G	124.0	11.0	*117.0	*18.2	
NE6	G	304.3	16.2	*119.0	*63.2	
NE7	G	16.6	1.4	*2.0	*1.9	
NE8	G	361.8	31.0	NA	NA	
NE9	None					Subwatershed is not included in previous study.
NE10	None					Subwatershed is not included in previous study.
NE11	None					Subwatershed is not included in previous study.

*Discharge and storage values assume the drainage improvements recommended in referenced study are in place.

Previous Study: See Appendix D, Previous Study: Comprehensive Drainage Plan Reports, for report citation.

NA: Information not available.

Note: Dead storage volumes were determined assuming that wetland areas would remain and upland areas would develop as zoned.

SUBWATERSHED INVENTORY NORTHWEST MANAGEMENT AREA

Sub-	Previous	Area	Required Dead	Peak Discharge	Live Storage Needs	
watershed	Study	(Ac)	Storage Volume	100-Year	100-Year	Comments

ID No.			(Ac-Ft)	(CFS)	(Ac-Ft)	
NW1	Ι	2.4	0.4	3.0	0.23	
NW2	Ι	15.2	2.3	7.2	3.8	
NW3	Ι	21.2	3.4	4.8	5.3	
NW4	Ι	11.4	1.9	8.3	2.8	
NW5	Ι	21.6	3.7	78.0		Subwatershed is fully developed with no storage areas
						provided.
NW6	Ι	10.0	1.7	10.0	2.3	-
NW7	Ι	32.8	5.1	11.9	8.0	
NW8	Ι	23.0	1.4	12.3	3.1	
NW9	Ι	9.2	0.8	15.2		No storage areas are provided for this subwatershed.
NW10	Ι	29.0	3.9	21.5	3.2	
NW11	Ι	55.8	4.4	30.6	8.6	
NW12	Ι	4.7	0.4	12.2		Storage assumed provided in NW14.
NW13	Ι	15.6	1.4	28.2		Storage assumed provided in NW14.
NW14	Ι	43.6	2.7	5.0	11.5	
NW15	Ι	12.3	1.1			Landlocked
NW16	Ι	13.1	1.2	29.4		Storage assumed provided in NW17.
NW17	Ι	22.7	1.3	4.5	5.3	
NW18	Ι	13.9	1.2	7.2	1.7	
NW19	Ι	53.5	4.8	111.3		Storage assumed provided in NW26.
NW20	Е	10.6	0.8	11.0	0.3	
NW21	Ι	45.7	0.72	21.4		Storage assumed provided in NW26.
NW22	F	45.0	1.1	13.0	5.2	
NW23	None	38.0				
NW24	Ι	104.1	6.3			Majority of subwatershed is outside of Township
						boundaries.
NW25	Ι	200.6	Parkland	160.0		Storage assumed provided in NW26.
NW26	Ι	105.7	Parkland	92.9	59.0	
NW27	Ι	75.1	4.6	85.3	32.9	
NW28	Е	25.4	2.1	12.1	0.6	
NW29	Е	22.6	1.6	8.0	1.4	
NW30	Е	9.6	0.9		1.2	Landlocked.
NW31	Е	11.9	1.1	10.1	0.3	
NW32	Е	9.2	0.8	8.6	0.13	
NW33	Ē	101.3	9.7	10.7	32.4	
NW34	Ē	8.7	0.8	11.3		No storage is provided in this subwatershed.
NW35	Е	15.6	1.3	37.0		No storage is provided in this subwatershed.

NW37	Е	6.2	0.6	32.5		No storage is provided in this subwatershed.
NW37	Е	33.2	3.0	34.7	3.4	
NW38	F	2.9	0.3	3.6		Live storage assumed provided in NW39.
NW39	F	7.8	0.7	5.3	1.6	
NW40	F	17.7	1.4	19.		Storage assumed provided in NW44.
NW41	F	10.2	0.9	8.1		Storage assumed provided in NW44.
NW42	F	2.4	0.2	6.1		Storage assumed provided in NW44.
NW43	F	2.6	0.2	7.7		Storage assumed provided in NW44.
NW44	F	41.1	2.0	7.0	20.8	
NW45	F	12.1	1.0	6.5		
NW46	F	18.2	1.2	14.2	NA	
NW47	Е	8.1	1.4	31.7		Storage assumed provided in NW50.
NW48	D	7.6	1.4	3.1	2.7	
NW49	D	23.0	3.3	NA	9.6	
NW50	D	50.2	8.9	25.0	15.6	
NW51	D	27.7	4.7	NA	NA	
NW52	D	12.2	1.9	16.1	4.2	
NW53	D	8.3	1.4	24.0	1.8	
NW54	D	41.1	5.2	19.5	21.0	
NW55	D	24.8		1.1	3.2	Subwatershed located outside of Township boundaries.
NW56	J	3.7	0.82	11.7		Storage is provided in NW57.
NW57	J	5.0	0.48	22.7	5.6	
NW58	J	2.8	0.22	9.0	0.2	
NW59	J	2.9	0.44	4.9	0.5	
NW60	J	5.1	0.79	20.0		Storage is provided in NW57.
NW61	J	23.6	Wetland 9-28	18.0	8.5	
NW62	Н	39.6	4.0	Landlocked	7.8	
NW63	Н	11.7	1.6	5.0	2.5	
NW64	Н	23.2	2.4	7.0	2.5	
NW65	Н	NA	NA	NA	NA	Subwatershed located outside of Township boundaries.
NW66	Н	15.1	1.7	13.0	1.9	
NW67	Н	24.7	3.3	17.0	3.3	
NW68	None					Subwatershed not included in previous studies.
NW69	None					Subwatershed not included in previous studies.
NW70	None					Subwatershed not included in previous studies.
NW71	None					Subwatershed not included in previous studies.
NW72	None					Subwatershed not included in previous studies.
NW73	None					Subwatershed not included in previous studies.

NW74	None					Subwatershed not included in previous studies.
NW75	None					Subwatershed not included in previous studies.
NW76	None					Subwatershed not included in previous studies.
NW77	J	4.0	0.44	11.0		Storage is provided in NW61.
NW78	J	2.6	0.42	8.7		Storage is provided in NW61.
NW79	J	5.4	0.55	28.7	1.1	
NW80	J	7.1	0.89	9.3	4.8	
NW81	J	5.5	1.0	9.6	0.8	
NW82	J	7.0	1.4	28.7		Live storage is provided in NW61 and NW79.
NW83	J	6.4	1.1	4.0	1.3	

Previous Study: See Appendix D, Previous Study: Comprehensive Drainage Plan Reports, for report citation. NA: Information not available.

Note: Dead storage volumes were determined assuming that wetland areas would remain and upland areas would develop as zoned.

Sub- watershed	Previous	Area	Required Dead Storage Volume	Peak Discharge 100-Year	Live Storage Needs 100-Year	
ID No.	Study	(Ac)	(Ac-Ft)	(CFS)	(Ac-Ft)	Comments
SE1	А	18.7	*	NA	NA	Majority of subwatershed is located outside of Township boundaries.
SE2	А	10.9	*	NA	NA	
SE3	А	5.1	*	NA	NA	Majority of subwatershed is located outside of Township boundaries.
SE4	А	3.1	*	NA	NA	
SE5	А	7.8	**	NA	NA	Subwatershed is located outside of Township boundaries.
SE6	А	6.4	**	NA	NA	Subwatershed is located outside of Township boundaries.
SE7	А	1.2	**	NA	NA	-
SE8	А	3.3	**	NA	NA	
SE9	А	5.2	**	NA	NA	
SE10	А	18.6	**	NA	NA	Majority of subwatershed is located outside of Township boundaries.
SE11	А	30.0	*	NA	NA	A portion of this subwatershed is located outside of Township boundaries.

SUBWATERSHED INVENTORY SOUTHEAST MANAGEMENT AREA

SE12	А	12.9	*	NA	NA
SE13	А	8.0	*	NA	NA
SE14	А	7.2	*	NA	NA
SE15	А	11.3	*	NA	NA
SE16	А	3.5	*	NA	NA
SE17	А	4.1	*	NA	NA
SE18	А	12.0	*	NA	NA
SE19	А	11.7	*	NA	NA
SE20	А	15.5	*	NA	NA
SE21	None	7.3	**	29.0	

Storage is provided in White Bear Lake.

*The total dead storage requirement for these subwatersheds is 13.9 ac-ft.

**The total dead storage requirement for these subwatersheds is 6.8 ac-ft.

Previous Study: See Appendix D, Previous Study: Comprehensive Drainage Plan Reports, for report citation.

NA: Information not available.

Note: Dead storage volumes were determined assuming that wetland areas would remain and upland areas would develop as zoned.

Sub- watershed ID No.	Previous Study	Area (Ac)	Required Dead Storage Volume (Ac-Ft)	Peak Discharge 100-Year (CFS)	Live Storage Needs 100-Year (Ac-Ft)	Comments
SW1	С	47.6	2.6	NA	NA	
SW2*	С	147.0	5.6	124.0	NA	
SW3	С	24.5	3.8	NA	NA	
SW4*	С	28.4	2.5	NA	NA	
SW5	С	17.2	1.3	NA	NA	
SW6	С	21.6	1.9	NA	NA	
SW7*	С	213.2	Rice Lake	85.0	200.5	
SW8*	С	23.3	NA	NA	NA	
SW9	С	84.7	3.5	100.0	NA	
SW10*	С	155.3	6.1	78.0	111.3	

SUBWATERSHED INVENTORY SOUTHWEST MANAGEMENT AREA

*Portion of subwatershed is located outside Township boundaries.

Previous Study: See Appendix D, Previous Study: Comprehensive Drainage Plan Reports, for report citation. NA: Information not available.

Note: Dead storage volumes were determined assuming that wetland areas would remain and upland areas would develop as zoned.



Appendix D MS4 Permit



Minnesota Pollution Control Agency

GENERAL PERMIT AUTHORIZATION TO DISCHARGE STORMWATER ASSOCIATED WITH SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM/STATE DISPOSAL SYSTEM (NPDES/SDS) PERMIT PROGRAM

EFFECTIVE DATE: August 1, 2013

EXPIRATION DATE: July 31, 2018

In compliance with the provisions of the federal Clean Water Act (CWA), as amended, (33 U.S.C. 1251 et seq); 40 CFR Parts 122, 123, and 124, as amended; Minnesota Statutes Chapters 115 and 116, as amended; and Minnesota Rules Chapter 7001 and 7090.

This permit establishes conditions for discharging **stormwater** and specific other related discharges to waters of the state. This permit is required for discharges that are from small Municipal Separate Storm Sewer Systems (small MS4), as defined in this permit.

Applicants who submit a complete application in accordance with the requirements of Part II of this permit, and that receive written notification of permit coverage from the **Commissioner**, are authorized to discharge **stormwater** from **small MS4**s under the terms and conditions of this permit.

This permit shall become effective on the date identified above, and supersedes the previous general permit MNR040000, with an expiration date of May 31, 2011.

Date May 22, 2013 Signature: g Commissioner

Minnesota Pollution Control Agency

If you have questions on this permit, including the specific permit requirements, permit reporting or permit compliance status, please contact the appropriate Minnesota Pollution Control Agency offices.

> **Municipal Stormwater Program Municipal Division** Minnesota Pollution Control Agency 520 Lafayette Road North St. Paul, MN 55155-4194 Telephone: 651-296-6300 or toll free in Minnesota: 800-657-3864

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PART I. AUTHORIZATION UNDER THIS PERMIT

A. Eligibility

To be eligible for authorization to discharge **stormwater** under this permit, the applicant must be an **owner** and/or **operator** (**owner/operator**) of a **small MS4** and meet one or more of the criteria requiring permit issuance as specified in Minn. R. 7090.1010.

1. Authorized Stormwater Discharges

This permit authorizes **stormwater** discharges from **small MS4s** as defined in 40 CFR § 122.26(b)(16).

2. Authorized Non-Stormwater Discharges

The following categories of **non-stormwater discharges** or flows are authorized under this permit to enter the **permittee**'s **small MS4** only if the **permittee** does not identify them as significant contributors of pollutants (i.e., **illicit discharges**), in which case the discharges or flows shall be addressed in the **permittee**'s **SWPPP**: water line flushing, landscape irrigation, diverted stream flows, rising groundwaters, uncontaminated groundwater infiltration (as defined at 40 CFR § 35.2005(b)(20)), uncontaminated pumped groundwater, discharges from potable water sources, foundation drains, air conditioning condensation, irrigation water, springs, water from crawl space pumps, footing drains, lawn watering, individual residential car washing, flows from riparian habitats and **wetlands**, dechlorinated swimming pool discharges, street wash water, and discharges or flows from firefighting activities.

B. Limitations on Authorization

The following discharges or activities are not authorized by this permit:

- 1. Non-stormwater discharges, except those authorized in Part I.A.2.
- 2. Discharges of **stormwater** to the **small MS4** from activities requiring a separate NPDES/SDS permit. This permit does not replace or satisfy any other permitting requirements.
- 3. Discharges of **stormwater** to the **small MS4** from any other entity located in the drainage area or outside the drainage area. Only the **permittee**'s **small MS4** and the portions of the storm sewer system that are under the **permittee**'s operational control are authorized by this permit.
- 4. This permit does not replace or satisfy any environmental review requirements, including those under the Minnesota Environmental Policy Act (Minn. Stat. § 116D), or the National Environmental Policy Act (42 U.S.C. §§ 4321 4370 f).
- 5. This permit does not replace or satisfy any review requirements for endangered or threatened species, from new or expanded discharges that adversely impact or contribute to adverse impacts on a listed endangered or threatened species, or adversely modify a designated critical habitat.

- 6. This permit does not replace or satisfy any review requirements for historic places or archeological sites, from new or expanded discharges which adversely affect properties listed or eligible for listing in the National Register of Historic Places or affecting known or discovered archeological sites.
- 7. Prohibited discharges pursuant to Minn. R. 7050.0180, subp. 3, 4, and 5.
- C. Permit Authorization

In order for an applicant to be authorized to discharge **stormwater** from a **small MS4** under this permit:

- 1. The applicant shall submit a complete application to discharge **stormwater** under this permit in accordance with Part II.
- 2. The **Commissioner** shall review the permit application for completeness and compliance with this permit.
 - a. If an application is determined to be incomplete, the **Commissioner** will notify the applicant in writing, indicate why the application is incomplete, and request that the applicant resubmit the application.
 - b. If an application is determined to be complete, the **Commissioner** shall make a preliminary determination as to whether the permit should be issued or denied in accordance with Minn. R. 7001.
- 3. The **Commissioner** shall provide public notice with the opportunity for a hearing on the preliminary determination.
- Upon receipt of written notification of final approval of the application from the Commissioner, the applicant is authorized to discharge stormwater from the small MS4 under the terms and conditions of this permit.
- D. Transfer of Ownership or Control

Where the ownership or significant operational control of the **small MS4** changes after the submittal of an application under Part II, the new **owner/operator** must submit a new application in accordance with Part II.

- E. Issuance of Individual Permits
 - The permit applicant may request an individual permit in accordance with Minn. R. 7001.0210, subp.6, for authorization to discharge stormwater associated with a small MS4.
 - 2. The **Commissioner** may require an individual permit for the permit applicant or **permittee** covered by a **general permit**, in accordance with Minn. R. 7001.0210, subp. 6.
- F. Rights and Responsibilities
 - The Commissioner may modify this permit or issue other permits, in accordance with Minn.
 R. 7001, to include more stringent effluent limitations or permit requirements that modify

or are in addition to the MCMs in Part III.D of this permit, or both. These modifications may be based on the **Commissioner**'s determination that such modifications are needed to protect water quality.

2. The **Commissioner** may designate additional **small MS4s** for coverage under this permit in accordance with Minn. R. 7090. The **owner/operator** of a **small MS4** that is designated for coverage must comply with the permit requirements by the dates specified in the **Commissioner**'s determination.

PART II. APPLICATION REQUIREMENTS

A. Application for Reauthorization

If a permit has been issued by the **Agency** and the **permittee** holding the permit desires to continue the permitted activity beyond the expiration date of the permit, the **permittee** shall submit a written application for permit reissuance at least 180 days before the expiration date of the existing permit. (Minn. R. 7001.0040, subp.3).

B. New Permittee Applicants

To become a **new permittee** authorized to discharge **stormwater** under this permit, the **owner/operator** of a **small MS4** shall submit an application, on a form provided by the **Commissioner**, in accordance with the schedule in Appendix A, Table 3, and the following requirements:

- 1. Submit Part 1 of the permit application (includes the permit application fee).
- 2. Submit Part 2 of the permit application, with the **Stormwater Pollution Prevention Program** (**SWPPP**) document completed in accordance with Part II.D.

C. Existing Permittee Applicants

All **existing permittees** seeking to continue discharging **stormwater** associated with a **small MS4** after the **effective date** of this permit shall submit Part 2 of the permit application, on a form provided by the **Commissioner**, in accordance with the schedule in Appendix A, Table 1, with the **SWPPP** document completed in accordance with Part II.D. <u>NOTE</u>: **Existing permittees** were required to submit Part 1 of the permit application prior to the expiration date (May 31, 2011) of the **Agency's** *small MS4 general permit No.MNR040000*, effective June 1, 2006, (see Part II.A above).

D. Stormwater Pollution Prevention Program (SWPPP) Document

All applicants shall submit a **SWPPP** document with Part 2 of the application form when seeking coverage under this permit. The **SWPPP** document shall become an enforceable part of this permit upon approval by the **Commissioner**. Modifications to the **SWPPP** document that are required or allowed by this permit (see Part III.G) shall also become enforceable provisions. The **SWPPP** document shall be submitted on a form provided by the **Commissioner** and shall include the following:

- 1. A description of partnerships with another regulated **small MS4**(s), into which the applicant has entered, in order to satisfy one or more requirements of this permit.
- 2. A description of all Regulatory Mechanism(s) (e.g., contract language, an ordinance, permits, standards, etc.) the applicant has developed, implemented, and enforced that satisfies the requirements of each program specified under Part III.D.3, 4, and 5. The description shall include the type(s) of Regulatory Mechanism(s) the applicant has in place at the time of application that will be used to satisfy the requirements. If the Regulatory Mechanism(s) have not been developed at the time of application (e.g., **new permittee** applicants), or revised to meet new requirements of this permit (e.g., **existing permittee** applicants); the

applicant shall describe tasks and corresponding schedules necessary to satisfy the permit requirements in accordance with the schedule in Appendix A, Table 2 (existing permittee applicants), or Table 3 (new permittee applicants).

- 3. A description of existing Enforcement Response Procedures (ERPs) the applicant has developed and implemented that satisfy the requirements of Part III.B.1. If the applicant has not yet developed ERPs (e.g., **new permittee** applicants), or existing ERPs must be updated to satisfy new requirements, the description must include tasks and corresponding schedules necessary to satisfy the permit requirements in accordance with the schedule in Appendix A, Table 2 (**existing permittee** applicants), or Table 3 (**new permittee** applicants).
- 4. A description of the status of the applicant's storm sewer system map and inventory as required by Part III.C. The description must indicate whether each requirement of Part III.C.1, is satisfied, and for Part III.C.2, is complete, at the time of application. For each requirement of Part III.C that is not satisfied at the time of application, the applicant shall include tasks and corresponding schedules necessary to satisfy the mapping and inventory requirements in accordance with the schedule in Appendix A, Table 2 (existing permittee applicants), or Table 3 (new permittee applicants).
- 5. For each Minimum Control Measure (MCM) outlined in Part III.D:
 - a. The **Best Management Practices (BMP**s) the applicant will implement, or has implemented, for each MCM.
 - b. The measurable goals for each of the **BMP**s identified in Part II.D.5.a, including as appropriate, the months and years in which the applicant will undertake required actions, including interim milestones and the frequency of the action, in narrative or numeric form, as appropriate.
 - c. Name(s) of individual(s) or position titles responsible for implementing and/or coordinating each component of the MCM.
- 6. For each **applicable Waste Load Allocation (WLA)** approved prior to the **effective date** of this permit, the applicant shall submit the following information as part of the **SWPPP** document:
 - a. **TMDL** project name(s)
 - b. Numeric WLA(s), including units
 - c. Type of WLA (i.e., categorical or individual)
 - d. Pollutant(s) of concern
 - e. Applicable flow data specific to each applicable WLA
 - f. For each **applicable WLA** not met at the time of application, a compliance schedule is required. Compliance schedules can be developed to include multiple **WLA**s associated with a **TMDL** project and shall include:
 - (1) Interim milestones, expressed as **BMP**s or progress toward implementation of **BMP**s to be achieved during the term of this permit
 - (2) Dates for implementation of interim milestones
 - (3) Strategies for continued BMP implementation beyond the term of this permit
 - (4) Target dates the **applicable WLA**(s) will be achieved

- g. For each **applicable WLA** the **permittee** is reasonably confident is being met at the time of application, the **permittee** must provide the following documentation:
 - (1) Implemented BMPs used to meet each applicable WLA
 - (2) A narrative describing the **permittee'**s strategy for long-term continuation of meeting each **applicable WLA**.
- 7. For the requirements of Part III.F, **Alum or Ferric Chloride Phosphorus Treatment System**s, if applicable, the applicant shall submit the following:
 - a. Geographic coordinates of the system
 - b. Name(s) of individual(s) or position titles responsible for the operation of the system
 - c. Information listed in Part III.F.3.a(1)-(6), if the system is constructed at the time the application is submitted to the **Agency**
 - d. Indicate if the system complies with the requirements of Part III.F
 - e. If applicable, for each Part III.F requirement that the applicant's system does not comply with at the time of application, describe tasks and corresponding schedules necessary to bring the system into compliance in accordance with the schedule in Appendix A, Table 2 (existing permittee applicants), or Table 3 (new permittee applicants).

PART III. STORMWATER POLLUTION PREVENTION PROGRAM (SWPPP)

The **permittee** shall develop, implement, and enforce a **SWPPP** designed to **reduce** the discharge of pollutants from the **small MS4** to the **Maximum Extent Practicable** (**MEP**), to protect water quality, and to satisfy the appropriate water quality requirements of the Clean Water Act.

If the **permittee** enters into a partnership for purposes of meeting **SWPPP** requirements, the **permittee** maintains legal responsibility for compliance with this permit.

Existing permittees shall revise their **SWPPP** developed under the **Agency**'s *small MS4 general permit No.MNR040000* that was effective June, 1, 2006, to meet the requirements of this permit in accordance with the schedule in Appendix A, Table 2. **New permittee**s shall develop, implement, and enforce their **SWPPP** in accordance with the schedule in Appendix A, Table 3. The **permittee**'s **SWPPP** shall consist of the following:

A. Regulatory Mechanism(s)

To the extent allowable under state, tribal or local law, the **permittee** shall develop, implement, and enforce a Regulatory Mechanism(s) to meet the terms and conditions of Part III.D.3, 4, and 5. A Regulatory Mechanism(s) for the purposes of this permit may consist of contract language, an ordinance, permits, standards, or any other mechanism, that will be enforced by the **permittee**.

- B. Enforcement Response Procedures (ERPs)
 - 1. The **permittee** shall develop and implement written ERPs to enforce and compel compliance with the Regulatory Mechanism(s) developed and implemented by the **permittee** in accordance with Part III.A.
 - 2. Enforcement conducted by the **permittee** pursuant to the ERPs shall be documented. Documentation shall include, at a minimum, the following:
 - a. Name of the **person** responsible for violating the terms and conditions of the **permittee**'s Regulatory Mechanism(s)
 - b. Date(s) and location(s) of the observed violation(s)
 - c. Description of the violation(s), including reference(s) to relevant Regulatory Mechanism(s)
 - d. Corrective action(s) (including completion schedule) issued by the permittee
 - e. Date(s) and type(s) of enforcement used to compel compliance (e.g., written notice, citation, stop work order, withholding of local authorizations, etc.)
 - f. Referrals to other regulatory organizations (if any)
 - g. Date(s) violation(s) resolved
- C. Mapping and Inventory
 - 1. Mapping

New permittees shall develop, and **existing permittees** shall update, a storm sewer system map that depicts the following:

- a. The **permittee's** entire **small MS4** as a goal, but at a minimum, all **pipe**s 12 inches or greater in diameter, including **stormwater flow direction** in those **pipe**s
- b. **Outfalls**, including a unique identification (ID) number assigned by the **permittee**, and an associated **geographic coordinate**
- c. Structural stormwater BMPs that are part of the permittee's small MS4
- d. All receiving waters
- 2. Inventory (2009 Minnesota Session Law, Ch. 172. Sec. 28).
 - a. The **permittee** shall complete an inventory of:
 - All ponds within the permittee's jurisdiction that are constructed and operated for purposes of water quality treatment, stormwater detention, and flood control, and that are used for the collection of stormwater via constructed conveyances.
 Stormwater ponds do not include areas of temporary ponding, such as ponds that exist only during a construction project or short-term accumulations of water in road ditches.
 - (2) All **wetlands** and lakes, within the **permittee**'s jurisdiction, that collect **stormwater** via constructed conveyances.
 - b. **The permittee** shall complete and submit the inventory to the **Agency** on a form provided by the **Commissioner**. Each feature inventoried shall include the following information:
 - (1) A unique identification (ID) number assigned by the permittee
 - (2) A geographic coordinate
 - (3) Type of feature (e.g., pond, **wetland**, or lake). This may be determined by using best professional judgment.
- D. Minimum Control Measures (MCMs)

The **permittee** shall incorporate the following six MCMs into the **SWPPP**. The **permittee** shall document as part of the **SWPPP**, a description of **BMP**s used for each MCM, the responsible **person**(s) and department(s) in charge, an implementation schedule, and measureable goals that will be used to determine the success of each **BMP**.

1. Public Education and Outreach

New permittees shall develop and implement, and **existing permittees** shall revise their current program, as necessary, and continue to implement, a public education program to distribute educational materials or equivalent outreach that informs the public of the impact **stormwater** discharges have on water bodies and that includes actions citizens, businesses, and other local organizations can take to **reduce** the discharge of pollutants to **stormwater**. The program shall also include:

- a. Distribution of educational materials or equivalent outreach focused on:
 - (1) Specifically selected **stormwater**-related issue(s) of high priority to the **permittee** to be emphasized during this permit term (e.g., specific **TMDL** reduction targets, changing local business practices, promoting adoption of residential **BMP**s, lake

improvements through lake associations, responsible management of pet waste, household chemicals, yard waste, deicing materials, etc.)

- (2) Illicit discharge recognition and reporting illicit discharges to the permittee
- b. An implementation plan that consists of the following:
 - (1) Target audience(s), including measurable goals for each audience
 - (2) Responsible Person(s) in charge of overall plan implementation
 - (3) Specific activities and schedules to reach measurable goals for each target audience
 - (4) A description of any coordination with and/or use of other **stormwater** education and outreach programs being conducted by other entities, if applicable
 - (5) Annual evaluation to measure the extent to which measurable goals for each target audience are attained
- c. Documentation of the following information:
 - (1) A description of any specific **stormwater**-related issues identified by the **permittee** under Part III.D.1.a(1)
 - (2) All information required under Part III.D.1.b
 - (3) Any modifications made to the program as a result of the annual evaluation under Part III.D.1.b(5)
 - (4) Activities held, including dates, to reach measurable goals
 - (5) Quantities and descriptions of educational materials distributed, including dates distributed
- 2. Public Participation/Involvement
 - a. **New permittees** shall develop and implement, and **existing permittees** shall revise their current program, as necessary, and continue to implement, a Public Participation/Involvement program to solicit public input on the **SWPPP**. The **permittee** shall:
 - (1) Provide a minimum of one (1) opportunity annually for the public to provide input on the adequacy of the **SWPPP**. Public meetings can be conducted to satisfy this requirement provided appropriate local public notice requirements are followed and opportunity to review and comment on the **SWPPP** is provided.
 - (2) Provide access to the **SWPPP** document, Annual Reports, and other documentation that supports or describes the **SWPPP** (e.g., Regulatory Mechanism(s), etc.) for public review, upon request. All public data requests are subject to the Minnesota Government Data Practices Act, Minn. Stat. § 13.
 - (3) Consider public input, oral and written, submitted by the public to the **permittee**, regarding the **SWPPP**.
 - b. Document the following information:
 - (1) All relevant written input submitted by persons regarding the SWPPP
 - (2) All responses from the **permittee** to written input received regarding the **SWPPP**, including any modifications made to the **SWPPP** as a result of the written input received
- (3) Date(s) and location(s) of events held for purposes of compliance with this requirement
- (4) Notices provided to the public of any events scheduled to meet this requirement, including any electronic correspondence (e.g., website, e-mail distribution lists, notices, etc.)
- 3. Illicit Discharge Detection and Elimination (IDDE)

New permittees shall develop, implement, and enforce, and **existing permittees** shall revise their current program as necessary, and continue to implement and enforce, a program to detect and eliminate **illicit discharges** into the **small MS4**. The IDDE program shall consist of the following:

- a. Map of the small MS4 as required by Part III.C.1.
- b. Regulatory Mechanism(s) that effectively prohibits **non-stormwater discharge**s into the **small MS4**, except those **non-stormwater discharge**s authorized under Part I.B.1.
- c. Incorporation of **illicit discharge** detection into all inspection and maintenance activities conducted under Part III.D.6.e and f. Where feasible, **illicit discharge** inspections shall be conducted during dry-weather conditions (e.g., periods of 72 or more hours of no precipitation).
- d. Detecting and tracking the source of **illicit discharge**s using visual inspections. The **permittee** may also include the use of mobile cameras, collecting and analyzing water samples, and/or other detailed inspection procedures that may be effective investigative tools.
- e. Training of all field staff, in accordance with the requirements of Part III.D.6.g(2), in **illicit discharge** recognition (including conditions which could cause **illicit discharge**s), and reporting **illicit discharge**s for further investigation.
- f. Identification of priority areas likely to have illicit discharges, including at a minimum, evaluating land uses associated with business/industrial activities, areas where illicit discharges have been identified in the past, and areas with storage of large quantities of significant materials that could result in an illicit discharge. Based on this evaluation, the permittee shall conduct additional illicit discharge inspections in those areas identified as having a higher likelihood for illicit discharges.
- g. For timely response to known, suspected, and reported illicit discharges:
 - (1) Procedures for investigating, locating, and eliminating the source of **illicit discharge**s.
 - (2) Procedures for responding to spills, including emergency response procedures to prevent spills from entering the **small MS4**. The procedures shall also include the immediate notification of the Minnesota Department of Public Safety Duty Officer at 1-800-422-0798 (toll free) or 651-649-5451 (Metro area), if the source of the **illicit discharge** is a spill or leak as defined in Minn. Stat. § 115.061.
 - (3) When the source of the **illicit discharge** is found, ERPs required by Part III.B (if necessary) to eliminate the **illicit discharge** and require any needed corrective action(s).

- h. Documentation of the following information:
 - (1) Date(s) and location(s) of IDDE inspections conducted in accordance with Part III.D.3.c and f
 - (2) Reports of alleged **illicit discharges** received, including date(s) of the report(s), and any follow-up action(s) taken by the **permittee**
 - (3) Date(s) of discovery of all illicit discharges
 - (4) Identification of **outfalls**, or other areas, where **illicit discharges** have been discovered
 - (5) Sources (including a description and the responsible party) of **illicit discharges** (if known)
 - (6) Action(s) taken by the **permittee**, including date(s), to address discovered **illicit discharges**
- 4. Construction Site Stormwater Runoff Control

New permittees shall develop, implement, and enforce, and existing permittees shall revise their current program, as necessary, and continue to implement and enforce, a Construction Site Stormwater Runoff Control program that reduces pollutants in stormwater runoff to the small MS4 from construction activity with a land disturbance of greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, that occurs within the permittee's jurisdiction. The program shall incorporate the following components:

a. Regulatory Mechanism(s)

A Regulatory Mechanism(s) that establishes requirements for erosion and sediment controls and waste controls that is at least as stringent as the **Agency's general permit** *to Discharge Stormwater Associated with Construction Activity No.MN R100001* (as of the **effective date** of this permit). The **permittee**'s Regulatory Mechanism(s) shall require that owners and operators of **construction activity** develop site plans that must be submitted to the **permittee** for review and approval, prior to the start of **construction activity**. Site plans must be kept up-to-date by the owners and operators of **construction activity** with regard to **stormwater** runoff controls. The Regulatory Mechanism(s) must require that site plans incorporate the following erosion and sediment controls and waste controls as described in the above referenced permit:

- (1) **BMPs** to minimize erosion
- (2) BMPs to minimize the discharge of sediment and other pollutants
- (3) BMPs for dewatering activities
- (4) Site inspections and records of rainfall events
- (5) **BMP** maintenance
- (6) Management of solid and hazardous wastes on each project site
- (7) Final stabilization upon the completion of **construction activity**, including the use of perennial vegetative cover on all exposed soils or other equivalent means
- (8) Criteria for the use of temporary sediment basins

b. Site plan review

The program shall include written procedures for site plan reviews conducted by the **permittee** prior to the start of **construction activity**, to ensure compliance with requirements of the Regulatory Mechanism(s). The site plan review procedure shall include notification to owners and operators proposing **construction activity** of the need to apply for and obtain coverage under the **Agency**'s **general permit** to Discharge Stormwater Associated with Construction Activity No.MN R100001.

c. Public input

The program shall include written procedures for receipt and consideration of reports of noncompliance or other **stormwater** related information on **construction activity** submitted by the public to the **permittee**.

d. Site inspections

The program shall include written procedures for conducting site inspections, to determine compliance with the **permittee**'s Regulatory Mechanism(s). The written procedures shall:

- Include procedures for identifying priority sites for inspection. Prioritization can be based on such parameters as topography, soil characteristics, type of receiving water(s), stage of construction, compliance history, weather conditions, or other local characteristics and issues.
- (2) Identify frequency at which site inspections will be conducted
- (3) Identify name(s) of individual(s) or position titles responsible for conducting site inspections
- (4) Include a checklist or other written means to document site inspections when determining compliance.
- e. ERPs required by Part III.B of this permit
- f. Documentation of the following information:
 - (1) For each site plan review The project name, location, total acreage to be disturbed, owner and operator of the proposed construction activity, and any stormwater related comments and supporting documentation used by the permittee to determine project approval or denial.
 - (2) For each site inspection Inspection checklists or other written means used to document site inspections

5. Post-Construction Stormwater Management

New permittees shall develop, implement, and enforce, and **existing permittees** shall revise their current program, as necessary, and continue to implement and enforce, a Post-Construction **Stormwater** Management program that prevents or **reduces water pollution** after **construction activity** is completed, related to **new development** and **redevelopment** projects with land disturbance of greater than or equal to one acre, including projects less than one acre that are part of a larger **common plan of development or sale**, within the **permittee**'s jurisdiction and that discharge to the **permittee**'s **small MS4**. The program shall consist, at a minimum, of the following:

- a. A Regulatory Mechanism(s) that incorporates:
 - (1) A requirement that owners and/or operators of **construction activity** submit site plans with post-construction **stormwater** management **BMP**s to the **permittee** for review and approval, prior to start of **construction activity**
 - (2) Conditions for Post-Construction Stormwater Management:

The **permittee** shall develop and implement a Post-Construction **Stormwater** Management program that requires the use of any combination of **BMP**s, with highest preference given to **Green Infrastructure** techniques and practices (e.g., infiltration, evapotranspiration, reuse/harvesting, conservation design, urban forestry, green roofs, etc.), necessary to meet the following conditions on the site of a **construction activity** to the **MEP**:

- (a) For **new development** projects no net increase from pre-project conditions (on an annual average basis) of:
 - 1) **Stormwater** discharge Volume, unless precluded by the **stormwater** management limitations in Part III.D.5.a(3)(a)
 - 2) Stormwater discharges of Total Suspended Solids (TSS)
 - 3) Stormwater discharges of Total Phosphorus (TP)
- (b) For **redevelopment** projects a net reduction from pre-project conditions (on an annual average basis) of:
 - 1) **Stormwater** discharge Volume, unless precluded by the **stormwater** management limitations in Part III.D.5.a(3)(a)
 - 2) Stormwater discharges of TSS
 - 3) Stormwater discharges of TP
- (3) Stormwater management limitations and exceptions
 - (a) Limitations
 - The permittee's Regulatory Mechanism(s) shall prohibit the use of infiltration techniques to achieve the conditions for post-construction stormwater management in Part III.D.5.a(2) when the infiltration structural stormwater BMP will receive discharges from, or be constructed in areas:

- a) Where industrial facilities are not authorized to infiltrate industrial stormwater under an NPDES/SDS Industrial Stormwater Permit issued by the Agency
- b) Where vehicle fueling and maintenance occur
- c) With less than three (3) feet of separation distance from the bottom of the infiltration system to the elevation of the seasonally **saturated soils** or the top of bedrock
- d) Where high levels of contaminants in soil or groundwater will be mobilized by the infiltrating **stormwater**
- 2) The permittee's Regulatory Mechanism(s) shall restrict the use of infiltration techniques to achieve the conditions for post-construction stormwater management, without higher engineering review, sufficient to provide a functioning treatment system and prevent adverse impacts to groundwater, when the infiltration device will be constructed in areas:
 - a) With predominately Hydrologic Soil Group D (clay) soils
 - b) Within 1,000 feet up-gradient, or 100 feet down-gradient of **active karst** features
 - c) Within a Drinking Water Supply Management Area (DWSMA) as defined in Minn. R. 4720.5100, subp. 13
 - d) Where soil infiltration rates are more than 8.3 inches per hour
- 3) For linear projects where the lack of right-of-way precludes the installation of volume control practices that meet the conditions for post-construction stormwater management in Part.III.D.5.a(2), the permittee's Regulatory Mechanism(s) may allow exceptions as described in Part III.D.5.a(3)(b). The permittee's Regulatory Mechanism(s) shall ensure that a reasonable attempt be made to obtain right-of-way during the project planning process.
- (b) Exceptions for **stormwater** discharge volume

The **permittee**'s Regulatory Mechanism(s) may allow for lesser volume control on the site of the original **construction activity** than that in Part III.D.5.a(2) only under the following circumstances:

- 1) The owner and/or operator of a **construction activity** is precluded from infiltrating **stormwater** through a designed system due to any of the infiltration related limitations described above, and
- 2) The owner and/or operator of the construction activity implements, to the MEP, volume reduction techniques, other than infiltration, (e.g., evapotranspiration, reuse/harvesting, conservation design, green roofs, etc.) on the site of the original construction activity that reduces stormwater discharge volume, but may not meet the conditions for post-construction stormwater management in Part III.D.5.a(2).

(4) Mitigation provisions

There may be circumstances where the **permittee** or other owners and operators of a **construction activity** cannot cost effectively meet the conditions for postconstruction **stormwater** management for TSS and/or TP in Part III.D.5.a(2) on the site of the original **construction activity**. For this purpose, the **permittee** shall identify, or may require owners or operators of a **construction activity** to identify, locations where mitigation projects can be completed. The **permittee**'s Regulatory Mechanism(s) shall ensure that any **stormwater** discharges of TSS and/or TP not addressed on the site of the original **construction activity** are addressed through mitigation and, at a minimum, shall ensure the following requirements are met:

- (a) Mitigation project areas are selected in the following order of preference:
 - 1) Locations that yield benefits to the same **receiving water** that receives runoff from the original **construction activity**
 - 2) Locations within the same Department of Natural Resource (DNR) catchment area as the original construction activity
 - 3) Locations in the next adjacent **DNR catchment area** up-stream
 - 4) Locations anywhere within the **permittee**'s jurisdiction
- (b) Mitigation projects must involve the creation of new structural stormwater BMPs or the retrofit of existing structural stormwater BMPs, or the use of a properly designed regional structural stormwater BMP.
- (c) Routine maintenance of **structural stormwater BMP**s already required by this permit cannot be used to meet mitigation requirements of this Part.
- (d) Mitigation projects shall be completed within 24 months after the start of the original **construction activity**.
- (e) The **permittee** shall determine, and document, who is responsible for long-term maintenance on all mitigation projects of this Part.
- (f) If the permittee receives payment from the owner and/or operator of a construction activity for mitigation purposes in lieu of the owner or operator of that construction activity meeting the conditions for post-construction stormwater management in Part III.D.5.a(2), the permittee shall apply any such payment received to a public stormwater project, and all projects must be in compliance with Part III.D.5.a(4)(a)-(e).
- (5) Long-term maintenance of structural stormwater BMPs

The **permittee**'s Regulatory Mechanism(s) shall provide for the establishment of legal mechanism(s) between the **permittee** and owners or operators responsible for the long-term maintenance of **structural stormwater BMPs** not owned or operated by the **permittee**, that have been implemented to meet the conditions for post-construction **stormwater** management in Part III.D.5.a(2). This only includes **structural stormwater BMPs** constructed after the **effective date** of this permit, that are directly connected to the **permittee**'s **MS4**, and that are in the **permittee**'s jurisdiction. The legal mechanism shall include provisions that, at a minimum:

(a) Allow the **permittee** to conduct inspections of **structural stormwater BMP**s not owned or operated by the **permittee**, perform necessary maintenance, and assess costs for those **structural stormwater BMP**s when the **permittee** determines that the owner and/or operator of that **structural stormwater BMP** has not conducted maintenance.

- (b) Include conditions that are designed to preserve the **permittee**'s right to ensure maintenance responsibility, for **structural stormwater BMP**s not owned or operated by the **permittee**, when those responsibilities are legally transferred to another party.
- (c) Include conditions that are designed to protect/preserve structural stormwater BMPs and site features that are implemented to comply with Part III.D.5.a(2). If site configurations or structural stormwater BMPs change, causing decreased structural stormwater BMP effectiveness, new or improved structural stormwater BMPs must be implemented to ensure the conditions for postconstruction stormwater management in Part III.D.5.a(2) continue to be met.
- b. Site plan review

The program shall include written procedures for site plan reviews conducted by the **permittee** prior to the start of **construction activity**, to ensure compliance with requirements of the Regulatory Mechanism(s).

- c. Documentation of the following information:
 - (1) Any supporting documentation used by the **permittee** to determine compliance with Part III.D.5.a, including the project name, location, owner and operator of the **construction activity**, any checklists used for conducting site plan reviews, and any calculations used to determine compliance
 - (2) All supporting documentation associated with mitigation projects authorized by the **permittee**
 - (3) Payments received and used in accordance with Part III.D.5.a(4)(f)
 - (4) All legal mechanisms drafted in accordance with Part III.D.5.a(5), including date(s) of the agreement(s) and name(s) of all responsible parties involved
- 6. Pollution Prevention/Good Housekeeping For Municipal Operations

New permittees shall develop and implement, and **existing permittees** shall revise their current program, as necessary, and continue to implement, an operations and maintenance program that prevents or **reduces** the discharge of pollutants from **permittee** owned/operated facilities and operations to the **small MS4**. The operations and maintenance program shall include, at a minimum, the following:

a. Facilities Inventory

The **permittee** shall develop and maintain an inventory of **permittee** owned/operated facilities that contribute pollutants to **stormwater** discharges. Facilities to be inventoried may include, but is not limited to: composting, equipment storage and maintenance, hazardous waste disposal, hazardous waste handling and transfer; landfills, solid waste handling and transfer, parks, pesticide storage, public parking lots, public golf courses; public swimming pools, public works yards, recycling, salt storage, vehicle storage and maintenance (e.g., fueling and washing) yards, and materials storage yards.

b. Development and Implementation of **BMP**s for inventoried facilities and municipal operations

Considering the source of pollutants and sensitivity of **receiving waters** (e.g., Outstanding Resource Value Waters (ORVWs), **impaired water**s, trout streams, etc.), the **permittee** shall develop and implement **BMP**s that prevent or **reduce** pollutants in **stormwater** discharges from the **small MS4** and from:

- (1) All inventoried facilities that discharge to the MS4, and
- (2) The following municipal operations that may contribute pollutants to **stormwater** discharges, where applicable:
 - (a) Waste disposal and storage, including dumpsters
 - (b) Management of temporary and permanent stockpiles of materials such as street sweepings, snow, deicing materials (e.g., salt), sand and sediment removal piles
 - (c) Vehicle fueling, washing and maintenance
 - (d) Routine street and parking lot sweeping
 - (e) Emergency response, including spill prevention plans
 - (f) Cleaning of maintenance equipment, building exteriors, dumpsters, and the disposal of associated waste and wastewater
 - (g) Use, storage, and disposal of significant materials
 - (h) Landscaping, park, and lawn maintenance
 - (i) Road maintenance, including pothole repair, road shoulder maintenance, pavement marking, sealing, and repaving
 - (j) Right-of-way maintenance, including mowing
 - (k) Application of herbicides, pesticides, and fertilizers
 - (I) Cold-weather operations, including plowing or other snow removal practices, sand use, and application of deicing compounds
- c. Development and implementation of **BMP**s for **MS4** discharges that may affect Source Water Protection Areas (Minn. R. 4720.5100-4720.5590)

The **permittee** shall incorporate **BMP**s into the **SWPPP** to protect any of the following drinking water sources that the **MS4** discharge may affect, and the **permittee** shall include the map of these sources with the **SWPPP** if they have been mapped:

- (1) Wells and source waters for DWSMAs identified as vulnerable under Minn. R. 4720.5205, 4720.5210, and 4720.5330
- (2) Source water protection areas for surface intakes identified in the source water assessments conducted by or for the Minnesota Department of Health (MDH) under the federal Safe Drinking Water Act, U.S.C. §§ 300j – 13
- d. Pond Assessment Procedures and Schedule

The **permittee** shall develop procedures and a schedule for the purpose of determining the TSS and TP treatment effectiveness of all **permittee** owned/operated ponds constructed and used for the collection and treatment of **stormwater**. The schedule (which may exceed this permit term) shall be based on measureable goals and priorities established by the **permittee**.

e. Inspections

(1) Unless inspection frequency is adjusted as described below, the **permittee** shall conduct annual inspections of **structural stormwater BMPs** (excluding **stormwater** ponds which are under a separate schedule below) to determine structural integrity, proper function and maintenance needs.

Inspections of **structural stormwater BMPs** shall be conducted annually unless the **permittee** determines if either of the following conditions apply: 1) Complaints received or patterns of maintenance indicate a greater frequency is necessary, or 2) Maintenance or sediment removal is not required after completion of the first two annual inspections; in which case the **permittee** may reduce the frequency of inspections to once every two (2) years. However, **existing permittee**s are authorized under this permit to continue using inspection frequency adjustments, previously determined under the *general stormwater permit for small MS4s No.MNR040000*, effective June 1, 2006, provided that documentation requirements in Part III.D.6.h(2) are satisfied.

- (2) Prior to the expiration date of this permit, the permittee shall conduct at least one inspection of all ponds and outfalls (excluding underground outfalls) in order to determine structural integrity, proper function, and maintenance needs.
- (3) The **permittee** shall conduct quarterly inspections of stockpiles, and storage and material handling areas as inventoried in Part III.D.6.a, to determine maintenance needs and proper function of **BMP**s.
- f. Maintenance

Based on inspection findings, the **permittee** shall determine if repair, replacement, or maintenance measures are necessary in order to ensure the structural integrity, proper function, and treatment effectiveness of **structural stormwater BMP**s. Necessary maintenance shall be completed as soon as possible to prevent or **reduce** the discharge of pollutants to **stormwater**.

g. Employee Training

The **permittee** shall develop and implement a **stormwater** management training program commensurate with employee's job-duties as they relate to the **permittee**'s **SWPPP**, including reporting and assessment activities. The **permittee** may use training materials from the United States Environmental Protection Agency (USEPA), state and regional agencies, or other organizations as appropriate to meet this requirement. The employee training program shall:

- (1) Address the importance of protecting water quality
- (2) Cover the requirements of the permit relevant to the job duties of the employee
- (3) Include a schedule that establishes initial training for new and/or seasonal employees, and recurring training intervals for existing employees to address changes in procedures, practices, techniques, or requirements

- h. Documentation of the following information:
 - (1) Date(s) and description of findings of all inspections conducted in accordance with Part III.D.6.e
 - (2) Any adjustments to inspection frequency as authorized under Part III.D.6.e(1)
 - (3) A description of maintenance conducted, including dates, as a result of inspection findings
 - (4) Pond sediment excavation and removal activities, including:
 - (a) The unique ID number (consistent with that required in Part III.C.2.a) of each **stormwater** pond from which sediment is removed
 - (b) The volume (e.g., cubic yards) of sediment removed from each **stormwater** pond
 - (c) Results from any testing of sediment from each removal activity
 - (d) Location(s) of final disposal of sediment from each stormwater pond
 - (5) Employee **stormwater** management training events, including a list of topics covered, names of employees in attendance, and date of each event
- E. Discharges to Impaired Waters with a USEPA-Approved TMDL that Includes an Applicable WLA

For each **applicable WLA** approved prior to the **effective date** of this permit, the **BMPs** included in the compliance schedule at application constitute a discharge requirement for the **permittee**. The **permittee** shall demonstrate continuing progress toward meeting each discharge requirement, on a form provided by the **Commissioner**, by submitting the following:

- An assessment of progress toward meeting each discharge requirement, including a list of all BMPs being applied to achieve each applicable WLA. For each structural stormwater BMP, the permittee shall provide a unique identification (ID) number and geographic coordinate. If the listed structural stormwater BMP is also inventoried as required by Part III.C.2, the same ID number shall be used.
- A list of all BMPs the permittee submitted at the time of application in the SWPPP document compliance schedule(s) and the stage of implementation for each BMP, including any BMPs specifically identified for the small MS4 in the TMDL report that the permittee plans to implement
- 3. An up-dated estimate of the cumulative reductions in loading achieved for each **pollutant of concern** associated with each **applicable WLA**
- 4. An up-dated narrative describing any adaptive management strategies used (including projected dates) for making progress toward achieving each **applicable WLA**

F. Alum or Ferric Chloride Phosphorus Treatment Systems

If the **permittee** uses an **alum or ferric chloride phosphorus treatment system**, the **permittee** shall comply with the following:

- 1. Minimum Requirements of an Alum or Ferric Chloride Phosphorus Treatment System
 - a. Limitations
 - (1) The **permittee** shall use the treatment system for the treatment of phosphorus in **stormwater. Non-stormwater discharges** shall not be treated by this system.
 - (2) The treatment system must be contained within the conveyances and **structural stormwater BMPs** of a **small MS4**. The utilized conveyances and **structural stormwater BMPs** shall not include any **receiving water**s.
 - (3) Phosphorus treatment systems utilizing chemicals other than alum or ferric chloride must receive written approval from the **Agency**.
 - (4) In-lake phosphorus treatment activities are not authorized under this permit.
 - b. Treatment System Design
 - (1) The treatment system shall be constructed in a manner that diverts the **stormwater** flow to be treated from the main conveyance system.
 - (2) A High Flow Bypass shall be part of the inlet design.
 - (3) A flocculent storage/settling area shall be incorporated into the design, and adequate maintenance access must be provided (minimum of 8 feet wide) for the removal of accumulated sediment.
- 2. Monitoring During Operation
 - a. A designated **person** shall perform visual monitoring of the treatment system for proper performance at least once every seven (7) days, and within 24 hours after a rainfall event greater than 2.5 inches in 24 hours. Following visual monitoring which occurs within 24 hours after a rainfall event, the next visual monitoring must be conducted within seven (7) days after that rainfall event.
 - b. Three benchmark monitoring stations shall be established. Table B-1 shall be used for the parameters, units of measure, and frequency of measurement for each station.
 - c. Samples shall be collected as grab samples or flow-weighted 24-hour composite samples.
 - d. Each sample, excluding pH samples, must be analyzed by a laboratory certified by the MDH and/or the MPCA, and:
 - (1) Sample preservation and test procedures for the analysis of pollutants shall conform to 40 CFR Part 136 and Minn. R. 7041.3200.
 - (2) Detection limits for dissolved phosphorus, dissolved aluminum, and dissolved iron shall be a minimum of 6 micrograms per liter (μg/L), 10 μg/L, and 20 μg/L, respectively.
 - (3) pH must be measured within 15 minutes of sample collection using calibrated and maintained equipment.

Station	Alum Parameters	Ferric Parameters	Units	Frequency
Upstream-	Total Phosphorus	Total Phosphorus	mg/L	1 x week
Background	Dissolved Phosphorus	Dissolved Phosphorus	mg/L	1 x week
	Total Aluminum	Total Iron	mg/L	1 x month
	Dissolved Aluminum	Dissolved Iron	mg/L	1 x week
	рН	рН	SU	1 x week
	Flow	Flow	Mgd	Daily
Alum or Ferric	Alum	Ferric	Gallons	Daily Total Dosed
Chloride Feed				In Gallons
Discharge	Total Phosphorus	Total Phosphorus	mg/L	1 x week
From	Dissolved Phosphorus	Dissolved Phosphorus	mg/L	1 x week
Treatment	Total Aluminum	Total Iron	mg/L	1 x month
	Dissolved Aluminum	Dissolved Iron	mg/L	1 x week
	рН	рН	SU	1 x week
	Flow	Flow	Mgd	Daily

Table B-1: Monitoring Parameters During Operation

- e. In the following situations, the **permittee** shall perform corrective action(s) and immediately notify the Minnesota Department of Public Safety Duty Officer at 1-800-422-0798 (toll free) or 651-649-5451 (Metro area):
 - (1) The pH of the discharged water is not within the range of 6.0 and 9.0
 - (2) Any indications of toxicity or measurements exceeding water quality standards
 - (3) A spill, as defined in Minn. Stat. § 115.01, subd. 13, of alum or ferric chloride
- 3. Reporting and Recordkeeping
 - a. Annual Reporting

The **permittee** shall submit the following information with the Annual Report in Part IV.B. The Annual Report must include a month-by-month summary of:

- (1) Date(s) of operation
- (2) Chemical(s) used for treatment
- (3) Gallons of water treated
- (4) Gallons of alum or ferric chloride treatment used
- (5) Calculated pounds of phosphorus removed
- (6) Any performance issues and the corrective action(s), including the date(s) when corrective action(s) were taken
- b. On-Site Recordkeeping

A record of the following design parameters shall be kept on-site:

- (1) Site-specific jar testing conducted using typical and representative water samples in accordance with ASTM D2035-08 (2003)
- (2) Baseline concentrations of the following parameters in the influent and **receiving** waters:

- (a) Aluminum or Iron
- (b) Phosphorus
- (3) The following system parameters and how each was determined:
 - (a) Flocculent settling velocity
 - (b) Minimum required retention time
 - (c) Rate of diversion of **stormwater** into the system
 - (d) The flow rate from the discharge of the outlet structure
 - (e) Range of expected dosing rates
- 4. Treatment System Management

The following site-specific procedures shall be developed and a copy kept on-site:

- a. Procedures for the installation, operation and maintenance of all pumps, generators, control systems, and other equipment
- b. Specific parameters for determining when the solids must be removed from the system and how the solids will be handled and disposed of
- c. Procedures for cleaning up and/or containing a spill of each chemical stored on-site
- G. Stormwater Pollution Prevention Program (SWPPP) Modification
 - 1. The **Commissioner** may require the **permittee** to modify the **SWPPP** as needed, in accordance with the procedures of Minn. R. 7001, and may consider the following factors:
 - a. Discharges from the **small MS4** are impacting the quality of **receiving waters.**
 - b. More stringent requirements are necessary to comply with state or federal regulations.
 - c. Additional conditions are deemed necessary to comply with the goals and applicable requirements of the Clean Water Act and protect water quality.
 - 2. Modifications that the **permittee** chooses to make to the **SWPPP** document developed under Part II.D, other than modifications authorized in Part III.G.3 below, must be approved by the **Commissioner** in accordance with the procedures of Minn. R. 7001. All requests must be in writing, setting forth schedules for compliance. The request must discuss alternative program modifications, assure compliance with requirements of the permit, and meet other applicable laws.
 - 3. The **SWPPP** document may only be modified by the **permittee** without prior approval of the **Commissioner** provided it is in accordance with a. or b. below, and the **Commissioner** is notified of the modification in the Annual Report for the year the modification is made.
 - a. A **BMP** is added, and none subtracted, from the **SWPPP** document.
 - b. A less effective **BMP** identified in the **SWPPP** document is replaced with a more effective **BMP**. The alternate **BMP** shall address the same, or similar, concerns as the ineffective or failed **BMP**.

PART IV. ANNUAL SWPPP ASSESSMENT, ANNUAL REPORTING, AND RECORD KEEPING

A. Annual SWPPP Assessment

The **permittee** shall conduct an Annual Assessment of their **SWPPP** to determine program compliance, the appropriateness of **BMP**s, and progress towards achieving the measurable goals identified in their **SWPPP** document. The Annual **SWPPP** Assessment shall be performed prior to completion of each Annual Report.

B. Annual Reporting

The **permittee** shall submit an Annual Report to the **Agency** by June 30th of each calendar year. The Annual Report shall cover the portion of the previous calendar year during which the **permittee** was authorized to discharge **stormwater** under this permit. The Annual Report shall be submitted to the **Agency**, on a form provided by the **Commissioner**, that will at a minimum, consist of the following:

- The status of compliance with permit terms and conditions, including an assessment of the appropriateness of **BMPs** identified by the **permittee** and progress towards achieving the identified measurable goals for each of the MCMs in Part III.D.1-6. The assessment must be based on results of information collected and analyzed, including monitoring (if any), inspection findings, and public input received during the reporting period.
- 2. The **stormwater** activities the **permittee** plans to undertake during the next reporting cycle
- 3. A change in any identified **BMP**s or measurable goals for any of the MCMs in Part III.D.1-6
- 4. Information required in Part III.E, to demonstrate progress in meeting **applicable WLA**s
- 5. Information required to be recorded or documented in Part III
- A statement that the permittee is relying on a partnership(s) with another regulated Small MS4(s) to satisfy one or more permit requirements (if applicable), and what agreements the permittee has entered into in support of this effort
- C. Record Keeping
 - 1. The **permittee** shall keep records required by the **NPDES** permit for at least three (3) years beyond the term of this permit. The **permittee** shall submit records to the **Commissioner** only if specifically asked to do so.
 - 2. The **permittee** shall make records, including components of the **SWPPP**, available to the public at reasonable times during regular business hours (see 40 CFR § 122.7 for confidentiality provision).
 - 3. The **permittee** shall retain copies of the permit application, all documentation necessary to comply with **SWPPP** requirements, all data and information used by the **permittee** to complete the application process, and any information developed as a requirement of this permit or as requested by the **Commissioner**, for a period of at least three (3) years beyond the date of permit expiration. This period is automatically extended during the course of an

unresolved enforcement action regarding the **small MS4** or as requested by the **Commissioner**.

D. Where to Submit

The **permittee** shall use an electronic submittal process, when provided by the **Agency**, when submitting information required by this permit. When submitting information electronically is not possible, the **permittee** may use the following mailing address:

Minnesota Pollution Control Agency (MPCA) Attn: WQ Submittals Center 520 Lafayette Road North St. Paul, MN 55155-4194

PART V. GENERAL CONDITIONS

- A. The **Agency**'s issuance of a permit does not release the **permittee** from any liability, penalty, or duty imposed by Minnesota or federal statutes or rules or local ordinances, except the obligation to obtain the permit. (Minn. R. 7001.0150, subp.3, item A)
- B. The Agency's issuance of a permit does not prevent the future adoption by the Agency of pollution control rules, standards, or orders more stringent than those now in existence and does not prevent the enforcement of these rules, standards, or orders against the permittee. (Minn. R. 7001.0150, subp.3, item B)
- C. The permit does not convey a property right or an exclusive privilege. (Minn. R. 7001.0150, subp. 3, item C)
- D. The **Agency**'s issuance of a permit does not obligate the **Agency** to enforce local laws, rules, or plans beyond that authorized by Minnesota statutes. (Minn. R. 7001.0150, subp.3, item D)
- E. The **permittee** shall perform the actions or conduct the activity authorized by the permit in accordance with the plans and specifications approved by the **Agency** and in compliance with the conditions of the permit. (Minn. R. 7001.0150, subp. 3, item E)
- F. The permittee shall at all times properly operate and maintain the facilities and systems of treatment and control and the appurtenances related to them which are installed or used by the permittee to achieve compliance with the conditions of the permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. The permittee shall install and maintain appropriate backup or auxiliary facilities if they are necessary to achieve compliance with the conditions of the permit and, for all permits other than hazardous waste facility permits, if these backup or auxiliary facilities are technically and economically feasible. (Minn. R. 7001.0150. subp. 3, item F.)
- G. The permittee may not knowingly make a false or misleading statement, representation, or certification in a record, report, plan, or other document required to be submitted to the Agency or to the Commissioner by the permit. The permittee shall immediately upon discovery report to the Commissioner an error or omission in these records, reports, plans, or other documents. (Minn. Stat. § 609.671; Minn.R. 7001.0150, subp.3, item G.; and Minn. R. 7001.1090, subp. 1, items G and H)
- H. The **permittee** shall, when requested by the **Commissioner**, submit within a reasonable time the information and reports that are relevant to the control of pollution regarding the construction, modification, or operation of the facility covered by the permit or regarding the conduct of the activity covered by the permit. (Minn. R. 7001.0150, subp. 3, item H)
- I. When authorized by Minn. Stat. §§ 115.04; 115B.17, subd. 4; and 116.091, and upon presentation of proper credentials, the Agency, or an authorized employee or agent of the Agency, shall be allowed by the permittee to enter at reasonable times upon the property of the permittee to examine and copy books, papers, records, or memoranda pertaining to the construction, modification, or operation of the facility covered by the permit or pertaining to the activity covered by the permit; and to conduct surveys and investigations, including sampling or monitoring, pertaining to the construction, modification, or operation, or operation of the facility covered by the facility covered by the permit.

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- J. If the **permittee** discovers, through any means, including notification by the **Agency**, that noncompliance with a condition of the permit has occurred, the **permittee** shall take all reasonable steps to minimize the adverse impacts on human health, public drinking water supplies, or the environment resulting from the noncompliance. (Minn. R. 7001.0150, subp.3, item J)
- K. If the **permittee** discovers that noncompliance with a condition of the permit has occurred which could endanger human health, public drinking water supplies, or the environment, the **permittee** shall, within 24 hours of the discovery of the noncompliance, orally notify the **Commissioner**. Within five days of the discovery of the noncompliance, the **permittee** shall submit to the **Commissioner** a written description of the noncompliance; the cause of the noncompliance, the exact dates of the period of the noncompliance, if the noncompliance has not been corrected; the anticipated time it is expected to continue, and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. (Minn. R. 7001.0150, subp.3, item K)
- L. The **permittee** shall report noncompliance with the permit not reported under item K as a part of the next report, which the **permittee** is required to submit under this permit. If no reports are required within 30 days of the discovery of the noncompliance, the **permittee** shall submit the information listed in item K within 30 days of the discovery of the noncompliance. (Minn. R. 7001.0150, subp.3, item L)
- M. The **permittee** shall give advance notice to the **Commissioner** as soon as possible of planned physical alterations or additions to the permitted facility (**MS4**) or activity that may result in noncompliance with a Minnesota or federal pollution control statute or rule or a condition of the permit. (Minn. R. 7001.0150, subp. 3, item M)
- N. The permit is not transferable to any **person** without the express written approval of the **Agency** after compliance with the requirements of Minn. R. 7001.0190. A **person** to whom the permit has been transferred shall comply with the conditions of the permit. (Minn. R. 7001.0150, subp.3, item N)
- O. The permit authorizes the **permittee** to perform the activities described in the permit under the conditions of the permit. In issuing the permit, the state and **Agency** assume no responsibility for damage to **person**s, property, or the environment caused by the activities of the **permittee** in the conduct of its actions, including those activities authorized, directed, or undertaken under the permit. To the extent the state and **Agency** may be liable for the activities of its employees, that liability is explicitly limited to that provided in the Tort Claims Act, Minn. Stat. § 3.736. (Minn. R. 7001.0150, subp. 3, item O)
- P. This permit incorporates by reference the applicable portions of 40 CFR §§ 122.41 and 122.42 parts (c) and (d), and Minn. R. 7001.1090, which are enforceable parts of this permit.

APPENDIX A

SCHEDULES

Table 1Application Submittal Schedule for Existing permittees

Group 1 Within 90 days after permit effective date			
Alexandria, City	Glencoe, City	Oak Grove, City	
Andover, City	Grand Rapids, City	Orono, City	
Anoka Technical College	Greenwood, City	Ramsey, City	
Arden Hills, City	Hibbing, City	Sartell, City	
Birchwood Village, City	Hilltop, City	South St Paul, City	
Cambridge, City	Inver Hills Community College	St Bonifacius, City	
Centerville, City	Little Falls, City	St Cloud Technical College	
Chaska, City	Long Lake, City	St Louis County	
Dakota County Technical College	Maple Plain, City	St Paul Park, City	
Detroit Lakes, City	Minnetonka Beach, City	Waite Park, City	
Excelsior, City	Monticello, City	Woodland, City	
	Northland Comm & Technical College		
	Group 2 Within 120 days after permit offective date		
Anaka City	Hutchinson City	Nowthen City	
Anoka, City	La Crassont City	Proctor City	
Paytor City	Lake Superior College - Duluth	Proceeding City	
Brainord City		Shakonoo City	
Buffelo, City		South Washington WD	
Champlin City	Litchfield City	Spring Park City	
	Mendota City	St loseph City	
	Midway Township	St Michael City	
	MN State Comm and Tech College-Moorhead	Stearns County	
Dilyorth City	Moorbead City	Tonka Bay, City	
East Grand Forks City	Mounds View, City	Wort St Paul City	
	North Oaks City	Willerpio City	
Elko Now Markot City	North Oaks, City	Winona City	
Eridlov City		winona, City	
	Group 3		
	Within 150 days after permit effective date		
Albert Lea, City	Hennepin Technical College Eden Prairie	Owatonna, City	
Anoka County	Hermantown, City	Pine Springs, City	
Apple Valley, City	Hopkins, City	Plymouth, City	
Austin, City	Houston County	Prior Lake, City	
Bemidji, City	Hugo, City	Prior Lake-Spring Lake WSD	
Benton County	Independence, City	Ramsey County Public Works	
Big Lake, City	Inver Grove Heights, City	Ramsey-Washington Metro WD	
Big Lake Township	Jackson Township	Redwood Falls, City	
Blaine, City	La Crescent Township	Rice Creek WD	
Bloomington, City	Laketown Township	Rice Lake Township	
Brockway Township	Lakeville. Citv	Richfield. City	

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Brooklyn Center, City Brooklyn Park, City Burnsville, City Capitol Region WD Carver, City **Carver County** Cascade Township Century College Chanhassen, City Circle Pines, City Cloquet, City Columbia Heights, City Coon Rapids, City Corcoran, City Cottage Grove, City **Credit River Township** Crystal, City Dakota County Deephaven, City Dellwood, City Duluth, City Duluth Township Eagan, City East Bethel, City Eden Prairie, City Edina, City **Empire Township** Fairmont, City Falcon Heights, City Faribault, City Farmington, City Federal Medical Center Fergus Falls, City Forest Lake, City Gem Lake, City Golden Valley, City Grant, City Ham Lake, City Hastings, City Haven Township Haverhill Township Hennepin County Hennepin Technical College Brooklyn Pk

Lake Elmo, City Le Sauk Township Lexington, City Lilydale, City Lino Lakes, City Little Canada, City Loretto, City Louisville Township Mahtomedi, City Mankato, City Maplewood, City Maple Grove, City Marion Township Marshall, City Medicine Lake, City Medina, City Mendota Heights, City Metropolitan State University Minden Township Minnehaha Creek WD Minnesota Correctional-Lino Lakes Minnesota Correctional-St Cloud Minnetonka, City Minnetrista, City **MNDOT** Metro District **MNDOT Outstate District** MN State University-Moorhead Montevideo, City Mound, City Mpls Community/Technical College New Brighton, City New Hope, City New Ulm, City Newport City Normandale Community College North Branch, City North Hennepin Community College North Mankato, City North St Paul, City Northfield, City Oakdale, City **Olmsted County**

Robbinsdale, City Rochester, City Rochester Community & Tech College **Rochester Township** Rosemount, City Roseville, City Sauk Rapids, City Sauk Rapids Township Savage, City Osseo, City Otsego, City Scott County Sherburne County Shoreview, City Shorewood, City Spring Lake Park, City Spring Lake, Township Saint Paul College St Anthony Village, City St Cloud, City St Cloud State University St Joseph Township St Louis Park, City St Peter, City Stillwater, City Sunfish Lake, City U of M-Duluth U of M-Twin Cities Campus Vadnais Heights, City Valley Branch WD Victoria, City Waconia, City Waseca, City Washington County Watab Township Wayzata, City West Lakeland Township White Bear Lake, City White Bear Township Willmar, City Woodbury, City Worthington, City

 Table 2

 Existing Permittees – Schedule of Permit Requirements

5	
Permit Requirement	Schedule
PART II. APPLICATION REQUIREMENTS	
• Submit Part 2 of the permit application with the SWPPP	• See Table 1 above.
document completed in accordance with Part II.D.	
PART III. STORMWATER POLLUTION PREVENTION	
PROGRAM (SWPPP)	
• Complete revisions to incorporate requirements of Part	 Within 12 months of the date permit coverage is
III.A-F into current SWPPP .	extended, unless other timelines have been
	specifically established in this permit and identified
Part III.C Mapping and Inventory	below.
Part III.C.2 Inventory	
 Complete and submit inventory in accordance with Part 	• Within 12 months of the date permit coverage is
III.C.2.	extended.
Part III.D.6 Pollution Prevention/Good Housekeeping For	
Municipal Operations	
Part III.D.6.e Inspections	
• Conduct inspections.	 Annually (Part III.D.6.e(1) and (2)), Quarterly (Part
	III.D.6.e(3)).
Part III.E Impaired Waters and TMDLs (if applicable)	
 Submit all information required by Part III.E. 	• With each Annual Report required in Part IV.B.
Dant III C. Aluma an Fannia Chlanida Dhaamhanna Tuastusant	
Part III.F. Alum of Ferric Chloride Phosphorus Treatment	
<u>Systems (ii applicable)</u>	
• Meet requirements for treatment systems under Part	Within 12 months of the date permit coverage is autended
III.F.	extended.
PART IV. ANNUAL SWPPP ASSESSIVENT, ANNUAL	
Dart IV & Annual SWODD Assassment	
• Conduct assessment of the SM/DDD	Annually and prior to completion of each Annual
- conduct desessment of the SWFFF .	Report
Part IV B Annual Reporting	heport.
Submit an Annual Report	• By June 30 th of each calendar year
	- by suite so of each calendar year.

<u>Table 3</u>	
New Permittee s – Schedule of Permit Requirements	

Dormit Boquiromont	Sabadula
	Schedule
PART II. APPLICATION REQUIREMENTS	
• Submit Part 1, and Part 2 of the permit application with	Within 18 months of written notification from the
the proposed SWPPP document as required by Part II.D.	Commissioner that the MS4 meets the criteria in
	Minn, R. 7090.1010, Subpart 1.A. or B. and permit
	coverage is required.
PART III. STORMWATER POLLUTION PREVENTION	
PROGRAM (SWPPP)	
• Complete all requirements of Part III.A-F.	 Within 36 months of the date permit coverage is extended, unless other timelines have been specifically established in this permit and identified below; or Within timelines established by the Commissioner
Part III.A Regulatory Mechanism(s)	under Part I.F.2.
Illicit Discharge Detection and Elimination	
(see Part III.D.3)	

• Develop, implement, and enforce Regulatory Mechanism.	 Within 12 months of the date permit coverage is extended.
Construction Site Stormwater Runoff Control (see Part III.D.4)	
• Develop, implement, and enforce Regulatory Mechanism.	• Within six (6) months of the date permit coverage is extended.
Post-Construction Stormwater Management (see Part III.D.5)	
• Develop, implement, and enforce Regulatory Mechanism.	 Within 24 months of the date permit coverage is extended.
Part III.B Enforcement Response Procedures (ERPs)	
• Develop and implement written ERPs for the Regulatory Mechanism(s) required under Part III.A.	 Within 24 months of the date permit coverage is extended.
Part III.C Mapping and Inventory Part III.C.1 Mapping	
• Develop a storm sewer system map.	 Within 24 months of the date permit coverage is extended.
Part III.C.2 Inventory	
• Complete and submit inventory in accordance with Part III.C.2.	 Within 24 months of the date permit coverage is extended.
Part III.D Minimum Control Measures	
Part III.D.4 Construction Site Stormwater Runoff Control	
• Develop, implement, and enforce a Construction Site	• Within six (6) months of the date permit coverage is
Stormwater Runoff Control program.	extended. See Part III.A Regulatory Mechanism(s).
Part III.D.5 Post-Construction Stormwater Management	
 Develop, implement, and enforce a Post-Construction 	 Within 24 months of the date permit coverage is
Stormwater Management program.	extended. See Part III.A Regulatory Mechanism(s).
Part III.D.6 Pollution Prevention/Good Housekeeping for	
Municipal Operations	
Part III.D.6.e Inspections	
Conduct inspections.	 Annually (Part III.D.6.e(1) and (2)), Quarterly (Part III.D.6.e(3)).
Part III.E Impaired Waters and TMDLs (if applicable)	
• Submit all information required by Part III.E.	• With each Annual Report required in Part IV.B.
Part III.F. Alum or Ferric Chloride Phosphorus Treatment	
Systems (if applicable)	
• Meet requirements for treatment systems under Part	• Within 12 months of the date permit coverage is
III.F.	extended.
PART IV. ANNUAL SWPPP ASSESSMENT, ANNUAL	
REPORTING AND RECORD KEEPING	
Part IV.A Annual SWPPP Assessment	
• Conduct assessment of the SWPPP .	 Annually and prior to completion of each Annual Report.
Part IV.B Annual Reporting	• Dy lung 20 th of each cale adams
 Submit an Annual Report. 	I ● BV Julie 30 Of each calendar Vear.

APPENDIX B

DEFINITIONS AND ABBREVIATIONS

The definitions in this Part are for purposes of this permit only.

- 1. "Active Karst" means geographic areas underlain by carbonate bedrock (or other forms of bedrock that can erode or dissolve) with less than 50 feet of sediment cover.
- 2. "Agency" means the Minnesota Pollution Control Agency or MPCA. (Minn. Stat. § 116.36, subd. 2.)
- 3. "Alum or Ferric Chloride Phosphorus Treatment System" means the diversion of flowing stormwater from a MS4, removal of phosphorus through the use a continuous feed of alum or ferric chloride additive, flocculation, and the return of the treated stormwater back into a MS4 or receiving water.
- 4. "Applicable WLA" means a Waste Load Allocation assigned to the permittee and approved by the USEPA.
- 5. "Best Management Practices" or "BMPs" means practices to prevent or reduce the pollution of the waters of the state, including schedules of activities, prohibitions of practices, and other management practices, and also includes treatment requirements, operating procedures and practices to control plant site runoff, spillage or leaks, sludge, or waste disposal or drainage from raw material storage. (Minn. R. 7001.1020, subp.5.)
- 6. **"Commissioner"** means the **Commissioner** of the Minnesota Pollution Control **Agency** or the **Commissioner**'s designee. (Minn. Stat. § 116.36, subd. 3.)
- 7. **"Common Plan of Development or Sale**" means a contiguous area where multiple separate and distinct land disturbing activities may be taking place at different times, on different schedules, but under one proposed plan. One plan is broadly defined to include design, permit application, advertisement or physical demarcation indicating that land-disturbing activities may occur.
- 8. "Construction Activity" includes construction activity as defined in 40 CFR § 122.26(b)(14)(x) and small construction activity as defined in 40 CFR § 122.26(b)(15). This includes a disturbance to the land that results in a change in the topography, existing soil cover (both vegetative and non-vegetative), or the existing soil topography that may result in accelerated stormwater runoff, leading to soil erosion and movement of sediment into surface waters or drainage systems. Examples of construction activity may include clearing, grading, filling, and excavating. Construction activity includes the disturbance of less than one acre of total land area that is a part of a larger common plan of development or sale if the larger common plan will ultimately disturb one (1) acre or more.
- "DNR Catchment Area" means the Hydrologic Unit 08 areas delineated and digitized by the Minnesota DNR. The catchment areas are available for download at the Minnesota DNR Data Deli website. DNR catchment areas may be locally corrected, in which case the local corrections may be used.
- 10. **"Effective Date"** means the date, located on the front cover of this permit, on which this permit shall become effective.

- 11. "Existing Permittee" means an Owner/Operator of a small MS4 that has been authorized to discharge stormwater under a previously issued general permit for small MS4s in the state of Minnesota.
- 12. **"General permit"** means a permit issued under Minn. R. 7001.0210 to a category of **permittees** whose operations, emissions, activities, discharges, or facilities are the same or substantially similar. (Minn. R. 7001.0010, subp.4.)
- 13. "Geographic Coordinate" means the point location of a stormwater feature expressed by X, Y coordinates of a standard Cartesian coordinate system (i.e. latitude/longitude) that can be readily converted to Universal Transverse Mercator (UTM), Zone 15N in the NAD83 datum. For polygon features, the geographic coordinate will typically define the approximate center of a stormwater feature.
- 14. **"Green Infrastructure"** means a wide array of practices at multiple scales that manage wet weather and that maintains or restores natural hydrology by infiltrating, evapotranspiring, or harvesting and using stormwater. On a regional scale, green infrastructure is the preservation or restoration of natural landscape features, such as forests, floodplains and wetlands, coupled with policies such as infill and redevelopment that reduce overall imperviousness in a watershed. On the local scale, green infrastructure consists of site and neighborhood-specific practices, such as bioretention, trees, green roofs, permeable pavements and cisterns.
- 15. **"High Flow Bypass"** means a function of an inlet device that allows a certain flow of water through, but diverts any higher flows away. **High flow bypass**es are generally used for **BMPs** that can only treat a designed amount of flow and that would be negatively affected by higher flows.
- 16. **"Illicit Discharge"** means any discharge to a **municipal separate storm sewer** that is not composed entirely of stormwater except discharges pursuant to a NPDES permit (other than the **NPDES** permit for discharges from the **municipal separate storm sewer**) and discharges resulting from firefighting activities. (40 CFR § 122.26(b)(2))
- 17. **"Impaired Water"** means waters identified as impaired by the **Agency**, and approved by the USEPA, pursuant to section 303(d) of the Clean Water Act (33 U.S.C. § 303(d)).
- 18. "Maximum Extent Practicable" or "MEP" means the statutory standard (33 U.S.C. § 1342(p)(3)(B)(iii)) that establishes the level of pollutant reductions that an Owner or Operator of Regulated MS4s must achieve. The USEPA has intentionally not provided a precise definition of MEP to allow maximum flexibility in MS4 permitting. The pollutant reductions that represent MEP may be different for each small MS4, given the unique local hydrologic and geologic concerns that may exist and the differing possible pollutant control strategies. Therefore, each permittee will determine appropriate BMPs to satisfy each of the six Minimum Control Measures (MCMs) through an evaluative process. The USEPA envisions application of the MEP standard as an iterative process.
- 19. **"Municipal separate storm sewer system"** or **"MS4"** means a conveyance or system of conveyances including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains:
 - a. owned or operated by a state, city, town, county, district, association, or other public body, created by or pursuant to state law, having jurisdiction over disposal of sewage, industrial

wastes, stormwater, or other wastes, including special districts under state law such as a sewer district, flood control district, or drainage district or similar entity, or an Indian tribe or an authorized Indian tribe organization, or a designated and approved management **Agency** under section 208 of the federal Clean Water Act, United States Code, title 33, section 1288, that discharges into **waters of the state**

- b. designed or used for collecting or conveying stormwater
- c. that is not a combined sewer; and
- d. that is not part of a publicly owned treatment works as defined in 40 CFR § 122.2

Municipal separate storm sewer systems do not include separate storm sewers in very discrete areas, such as individual buildings. (Minn. R. 7090.0080, subp. 8).

- 20. "New development" means all construction activity that is not defined as redevelopment.
- 21. "New Permittee" means an Owner/Operator of a small MS4 that has not been authorized to discharge stormwater under a previously issued General Stormwater Permit for small MS4s in the state of Minnesota and that applies for, and obtains coverage under this permit.
- 22. "Non-Stormwater Discharge" means any discharge not composed entirely of stormwater.
- 23. **"Operator"** means the **person** with primary operational control and legal responsibility for the **municipal separate storm sewer system**. (Minn. R. 7090.0080, subp.10.)
- 24. "Outfall" means the point source where a municipal separate storm sewer system discharges to a receiving water, or the stormwater discharge permanently leaves the permittee's MS4. It does not include diffuse runoff or conveyances that connect segments of the same stream or water systems (e.g., when a conveyance temporarily leaves an MS4 at a road crossing).
- 25. **"Owner"** means the **person** that owns the **municipal separate storm sewer system**. (Minn. R. 7090.0080, subp.11.)
- 26. **"Permittee"** means a **person** or **person**s, that signs the permit application submitted to the **Agency** and is responsible for compliance with the terms and conditions of this permit.
- 27. **"Person"** means the state or any Agency or institution thereof, any municipality, governmental subdivision, public or private corporation, individual, partnership, or other entity, including, but not limited to, association, commission or any interstate body, and includes any officer or governing or managing body of any municipality, governmental subdivision, or public or private corporation, or other entity.(Minn. Stat. § 115.01, subd. 10.)
- 28. **"Pipe"** means a closed manmade conveyance device used to transport **stormwater** from location to location. The definition of **pipe** does not include foundation drain **pipes**, irrigation **pipes**, land drain tile **pipes**, culverts, and road sub-grade drain **pipe**s.
- 29. **"Pollutant of Concern"** means a pollutant specifically identified in a USEPA-approved **TMDL** report as causing a water quality impairment.

- 30. **"Receiving Water"** means any lake, river, stream or **wetland** that receives **stormwater** discharges from an **MS4.**
- 31. **"Redevelopment"** means any **construction activity** where, prior to the start of construction, the areas to be disturbed have 15 percent or more of impervious surface(s).
- 32. "Reduce" means reduce to the Maximum Extent Practicable (MEP) unless otherwise defined in the context in which it is used.
- 33. **"Saturated Soil"** means the highest seasonal elevation in the soil that is in a reduced chemical state because of soil voids being filled with water. **Saturated soil** is evidenced by the presence of redoximorphic features or other information.
- 34. **"Significant Materials"** includes, but is not limited to: raw materials, fuels, materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under Section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); any chemical the facility is required to report pursuant to Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA); fertilizers, pesticides, and waste products such as ashes, slag, and sludge that have the potential to be released with **stormwater** discharges. When determining whether a material is significant, the physical and chemical characteristics of the material should be considered (e.g. the material's solubility, transportability, and toxicity characteristics) to determine the material's pollution potential. (40 CFR § 122.26(b)(12).
- 35. **"Small Municipal Separate Storm Sewer System"** or **"small MS4"**, means all separate storm sewers that are:
 - 1. Owned or operated by the United States, a state, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to state law) having jurisdiction over disposal of sewage, industrial wastes, **stormwater**, or other wastes, including special districts under state law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management Agency under section 208 of the CWA that discharges to waters of the United States.
 - 2. Not defined as "large" or "medium" **Municipal Separate Storm Sewer Systems** pursuant to 40 CFR § 122.26 paragraphs (b)(4) and (b)(7) or designated under paragraph (a)(1)(v).
 - 3. This term includes systems similar to separate storm sewer systems in municipalities, such as systems at military bases, large hospital or prison complexes, and highways and other thoroughfares. The term does not include separate storm sewers in very discrete areas, such as individual buildings.
- 36. **"Stormwater"** means **stormwater** runoff, snow melt runoff, and surface runoff and drainage. (Minn. R. 7090.0080, subp.12.)
- 37. **"Stormwater flow direction"** means the direction of predominant flow within a **pipe**. Flow direction can be discerned if **pipe** elevations can be displayed on the storm sewer system map.

- 38. **"Stormwater Pollution Prevention Program"** or **"SWPPP"** means a comprehensive program developed by the **permittee** to manage and **reduce** the discharge of pollutants in **stormwater** to and from the **small MS4**.
- 39. **"Structural Stormwater BMP"** means a stationary and permanent **BMP** that is designed, constructed and operated to prevent or **reduce** the discharge of pollutants in **stormwater**.
- 40. "Total Maximum Daily Load" or "TMDL" means the sum of the individual Waste Load Allocations for point sources and load allocations for nonpoint sources and natural background, as more fully defined in 40 CFR § 130.2, paragraph (i). A TMDL sets and allocates the maximum amount of a pollutant that may be introduced into a water of the state and still assure attainment and maintenance of water quality standards. (Minn.
 R. 7052.0010 subp. 42)
- 41. **"Waste Load Allocation"** or **"WLA"** means the portion of a receiving water's loading capacity that is allocated to one of its existing or future point sources of pollution, as more fully defined in Code of Federal Regulations, title 40, section 130.2, paragraph (h). In the absence of a **TMDL** approved by USEPA under 40 CFR § 130.7, or an assessment and remediation plan developed and approved according to Minn. R. <u>7052.0200</u>, subp. 1.C, a **WLA** is the allocation for an individual point source that ensures that the level of water quality to be achieved by the point source is derived from and complies with all applicable **water quality standards** and criteria. (Minn. R. 7052.0010 subp. 45)
- 42. **"Water pollution"** means (a) the discharge of any pollutant into any waters of the state or the contamination of any waters of the state so as to create a nuisance or render such waters unclean, or noxious, or impure so as to be actually or potentially harmful or detrimental or injurious to public health, safety or welfare, to domestic, agricultural, commercial, industrial, recreational or other legitimate uses, or to livestock, animals, birds, fish or other aquatic life; or (b) the alteration made or induced by human activity of the chemical, physical, biological, or radiological integrity of waters of the state. (Minn. Stat. § 115.01, subd. 13)
- 43. "Water Quality Standards" means those provisions contained in Minn. R. 7050 and 7052.
- 44. **"Waters of the State"** means all streams, lakes, ponds, marshes, watercourses, waterways, wells, springs, reservoirs, aquifers, irrigation systems, drainage systems and all other bodies or accumulations of water, surface or underground, natural or artificial, public or private, which are contained within, flow through, or border upon the state or any portion thereof. (Minn. Stat. § 115.01, subd. 22.)
- 45. **"Wetlands"** are those areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. **Wetlands** generally include swamps, marshes, bogs, and similar areas. Constructed **wetlands** designed for wastewater treatment are not **waters of the state**. **Wetlands** must have the following attributes:
 - 1. A predominance of hydric soils
 - Inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support a prevalence of hydrophytic vegetation typically adapted for life in a saturated soil condition and

3. Under normal circumstances support a prevalence of such vegetation. (Minn. R. 7050.0186, subp. 1a.B.)

ABBREVIATIONS AND ACRONYMS

- BMP Best Management Practice
- CFR Code of Federal Regulations
- CWA Clean Water Act or the Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq)
- DNR Department of Natural Resources
- DWSMA Drinking Water Supply Management Area
- ERPs- Enforcement Response Procedures
- IDDE Illicit Discharge Detection and Elimination
- MCM Minimum Control Measure
- MDH Minnesota Department of Health
- MEP Maximum Extent Practicable
- MS4 Municipal Separate Storm Sewer System
- NPDES National Pollutant Discharge Elimination System
- ORVW Outstanding Resource Value Water
- SDS State Disposal System
- TMDL Total Maximum Daily Load
- TP Total Phosphorus
- TSS Total Suspended Solids
- USEPA United States Environmental Protection Agency
- WLA Waste Load Allocation



Appendix E SWPPP



MS4 SWPPP Application for Reauthorization

for the NPDES/SDS General Small Municipal Separate Storm Sewer System (MS4) Permit MNR040000 reissued with an effective date of August 1, 2013 Stormwater Pollution Prevention Program (SWPPP) Document

Doc Type: Permit Application

Instructions: This application is for authorization to discharge stormwater associated with Municipal Separate Storm Sewer Systems (MS4s) under the National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS) Permit Program. **No fee** is required with the submittal of this application. Please refer to "Example" for detailed instructions found on the Minnesota Pollution Control Agency (MPCA) MS4 website at http://www.pca.state.mn.us/ms4.

Submittal: This *MS4* SWPPP Application for Reauthorization form must be submitted electronically via e-mail to the MPCA at <u>ms4permitprogram.pca@state.mn.us</u> from the person that is duly authorized to certify this form. All questions with an asterisk (*) are required fields. All applications will be returned if required fields are not completed.

Questions: Contact Claudia Hochstein at 651-757-2881 or <u>claudia.hochstein@state.mn.us</u>, Dan Miller at 651-757-2246 or <u>daniel.miller@state.mn.us</u>, or call toll-free at 800-657-3864.

General Contact Information (*Required fields)

*MC4 normittee normet White Beer Tournehin			, *Country Domoor
(city, county, municipality,	aovernment agency	or other entit	// County: Ramsey
Mailing address: <u>1281 Hammond Road</u>	gerennin ageney		
*City: White Bear Township	*State:	MN	*Zip code: <u>55110</u>
Phone (including area code): 651-747-2750		*E-mail:	bill.short@ci.white-bear-township.mn.us
MS4 General contact (with Stormwater Poll	ution Prevention	Program [SWPPP] implementation responsibility)
*Last name: Short		*First	name: William (Bill)
(department head, MS4 coordinator, c	onsultant, etc.)		
*Title: Clerk/Treasurer			
Mailing address: <u>1281 Hammond road</u>			
City: _White Bear Township	*State:	MN	*Zip code: <u>55110</u>
*Phone (including area code):651-747-2750		*E-mail:	bill.short@ci.white-bear-township.mn.us
Preparer information (complete if SWPPP a	application is pre	pared by a	party other than MS4 General contact)
Last name: Studenski		First	name: Jim
(department head, MS4 coordinator, c	onsultant, etc.)		
Title: Township Engineer			
Mailing address: 444 Cedar Street, Suite #150	00		
Mailing address: <u>444 Cedar Street, Suite #150</u> City: <u>St. Paul</u>	00 State:	MN	Zip code: _ 55101

Verification

- 1. I seek to continue discharging stormwater associated with a small MS4 after the effective date of this Permit, and shall submit this *MS4 SWPPP Application for Reauthorization* form, in accordance with the schedule in Appendix A, Table 1, with the SWPPP document completed in accordance with the Permit (Part II.D.). Xes
- 2. I have read and understand the NPDES/SDS MS4 General Permit and certify that we intend to comply with all requirements of the Permit. 🛛 Yes

Certification (All fields are required)

Yes - I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted.

I certify that based on my inquiry of the person, or persons, who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I am aware that there are significant penalties for submitting false information, including the possibility of civil and criminal penalties.

This certification is required by Minn. Stat. §§ 7001.0070 and 7001.0540. The authorized person with overall, MS4 legal responsibility must certify the application (principal executive officer or a ranking elected official).

By typing my name in the following box, I certify the above statements to be true and correct, to the best of my knowledge, and that this information can be used for the purpose of processing my application.

Name:	Bill Short		
	(This document has been electronically signed)		
Title:	Clerk/treasurer	Date (mm/dd/yyyy):	2/21/14
Mailing	address: 1281 Hammond Road		
City:	White Bear Township	State: MN	Zip code: 55110
Phone	(including area code): <u>651-747-2750</u>	E-mail: bill.short@ci.wh	ite-bear-township.mn.us
	Note: The appli processed with	cation will not be out certification.	

Ι. Partnerships: (Part II.D.1)

A. List the regulated small MS4(s) with which you have established a partnership in order to satisfy one or more requirements of this Permit. Indicate which Minimum Control Measure (MCM) requirements or other program components that each partnership helps to accomplish (List all that apply). Check the box below if you currently have no established partnerships with other regulated MS4s. If you have more than five partnerships, hit the tab key after the last line to generate a new row.

□ No partnerships with regulated small MS4s

Name and description of partnership	MCM/Other permit requirements involved
Rice Creek Watershed District (RCWD)	
Provides educational materials. RCWD rules provide additional requirements for water quality treatment, rate control, and erosion and sediment control plans.	Construction site stormwater runoff control, MCM 1, 2
Vadnais Lake Area Water Management Organization (VLAWMO)	
Provides educational materials. VLAWMO rules provide additional requirements for water quality treatment, rate control, and erosion and sediment control plans.	

B. If you have additional information that you would like to communicate about your partnerships with other regulated small MS4(s), provide it in the space below, or include an attachment to the SWPPP Document, with the following file naming convention: MS4NameHere_Partnerships.

Description of Regulatory Mechanisms: (Part II.D.2) П.

Illicit discharges

Do you have a regulatory mechanism(s) that effectively prohibits non-stormwater discharges into your small MS4, Α. except those non-stormwater discharges authorized under the Permit (Part III.D.3.b.)? Xes No

1. If yes:

a. Check which type of regulatory mechanism(s) your organization has (check all that apply):

🛛 Ordinance	🗌 Co
Policy/Standards	🗌 Pe
Rules	

ontract language ermits

Other, explain: b. Provide either a direct link to the mechanism selected above or attach it as an electronic document to this

form; or if your regulatory mechanism is either an Ordinance or a Rule, you may provide a citation:

Citation:

Ordinance No. 83, Section 6. Discharge Prohibitions

Direct link:

http://www.ci.white-bear-township.mn.us/vertical/sites/%7B801D228F-081F-4123-B371-0DC5894FC6D6%7D/uploads/Ord 83.pdf

Check here if attaching an electronic copy of your regulatory mechanism, with the following file naming convention: MS4NameHere IDDEreg.

2. If no:

Describe the tasks and corresponding schedules that will be taken to assure that, within 12 months of the date permit coverage is extended, this permit requirement is met:

Construction site stormwater runoff control

- Α. Do you have a regulatory mechanism(s) that establishes requirements for erosion and sediment controls and waste controls? X Yes No
 - 1. If **yes:**
 - a. Check which type of regulatory mechanism(s) your organization has (check all that apply):
 - Ordinance Policy/Standards
- Contract language Permits
- ☐ Rules
- \boxtimes Other, explain:

Our ordinance will be updated to reference the most recent version of the Minnesota Department of Transportation Erosion and Sediment Control Handbook. Established RCWD and VLAWMO rules also offer regulatory mechanism.

b. Provide either a direct link to the mechanism selected above or attach it as an electronic document to this form; or if your regulatory mechanism is either an Ordinance or a Rule, you may provide a citation:

Citation:

Building Code: Ordinance 8, Section 5-36

Direct link:

http://www.ci.white-bear-township.mn.us/vertical/sites/%7B801D228F-081F-4123-B371-0DC5894FC6D6%7D/uploads/Ord 8 - BUILDING CODEI.pdf

- Check here if attaching an electronic copy of your regulatory mechanism, with the following file naming convention: MS4NameHere CSWreg.
- B Is your regulatory mechanism at least as stringent as the MPCA general permit to Discharge Stormwater Associated with Construction Activity (as of the effective date of the MS4 Permit)? Xes No

If you answered yes to the above question, proceed to C.

If you answered **no** to either of the above permit requirements listed in A. or B., describe the tasks and corresponding schedules that will be taken to assure that, within 12 months of the date permit coverage is extended, these permit requirements are met:

C. Answer yes or no to indicate whether your regulatory mechanism(s) requires owners and operators of construction activity to develop site plans that incorporate the following erosion and sediment controls and waste controls as described in the Permit (Part III.D.4.a.(1)-(8)), and as listed below:

1.	Best Management Practices (BMPs) to minimize erosion.	🛛 Yes	🗌 No
2.	BMPs to minimize the discharge of sediment and other pollutants.	🛛 Yes	🗌 No
3.	BMPs for dewatering activities.	🛛 Yes	🗌 No
4.	Site inspections and records of rainfall events	🛛 Yes	🗌 No
5.	BMP maintenance	🛛 Yes	🗌 No
6.	Management of solid and hazardous wastes on each project site.	🛛 Yes	🗌 No
7.	Final stabilization upon the completion of construction activity, including the use of perennial vegetative cover on all exposed soils or other equivalent means.	🛛 Yes	🗌 No
8.	Criteria for the use of temporary sediment basins.	🛛 Yes	🗌 No

If you answered **no** to any of the above permit requirements, describe the tasks and corresponding schedules that will be taken to assure that, within 12 months of the date permit coverage is extended, these permit requirements are met:

Our ordinance reference the Ramsey County Erosion and Sediment Control Handbook, but this is an out of date reference, the ordinance will be updated to reference the most recent version of the Minnesota Department of Transportation Erosion and Sediment Control Handbook.

Post-construction stormwater management

- A. Do you have a regulatory mechanism(s) to address post-construction stormwater management activities?
 ☐ Yes ☐ No
 - 1. If yes:
 - a. Check which type of regulatory mechanism(s) your organization has (check all that apply):

Ordinance	Contract language
Policy/Standards	Permits
Rules	
🛛 Other, explain:	Established RCWD and VLAWMO rules offer regulatory mechanism.

Provide either a direct link to the mechanism selected above or attach it as an electronic document to this form; or if your regulatory mechanism is either an Ordinance or a Rule, you may provide a citation:
 Citation:

Direct link:

http://www.vlawmo.org/PDF/Chapter%204.pdf

http://www.ricecreek.org/vertical/Sites/%7BF68A5205-A996-4208-96B5-2C7263C03AA9%7D/uploads/FINAL_ADOPTED_RULE_06-26-2013.pdf

Check here if attaching an electronic copy of your regulatory mechanism, with the following file naming convention: *MS4NameHere_PostCSWreg.*

B. Answer **yes** or **no** below to indicate whether you have a regulatory mechanism(s) in place that meets the following requirements as described in the Permit (Part III.D.5.a.):

r	Conditions for post construction stormwater management: Poguires the use of any		
1.	Site plan review: Requirements that owners and/or operators of construction activity submit site plans with post-construction stormwater management BMPs to the permittee for review and approval, prior to start of construction activity.	🛛 Yes	∐ No
			_

2.	Conditions for post construction stormwater management: Requires the use of any
	combination of BMPs, with highest preference given to Green Infrastructure techniques and
	practices (e.g., infiltration, evapotranspiration, reuse/harvesting, conservation design, urban
	forestry, green roofs, etc.), necessary to meet the following conditions on the site of a
	construction activity to the Maximum Extent Practicable (MEP):

a.	For new development projects – no net increase from pre-project conditions (on an annual	□ Yes	🖾 No
	average basis) of:		

- 1) Stormwater discharge volume, unless precluded by the stormwater management limitations in the Permit (Part III.D.5.a(3)(a)).
- 2) Stormwater discharges of Total Suspended Solids (TSS).
- 3) Stormwater discharges of Total Phosphorus (TP).
- b. For redevelopment projects a net reduction from pre-project conditions (on an annual Yes X No average basis) of:
 - 1) Stormwater discharge volume, unless precluded by the stormwater management limitations in the Permit (Part III.D.5.a(3)(a)).
 - 2) Stormwater discharges of TSS.
 - 3) Stormwater discharges of TP.

3. Stormwater management limitations and exceptions:

- a. Limitations
 - - a) Where industrial facilities are not authorized to infiltrate industrial stormwater under an NPDES/SDS Industrial Stormwater Permit issued by the MPCA.
 - b) Where vehicle fueling and maintenance occur.

			c) d)	With less than three (3) feet of separation distance from the bottom of the infiltration system to the elevation of the seasonally saturated soils or the top of bedrock. Where high levels of contaminants in soil or groundwater will be mobilized by the infiltrating stormwater.		
		2)	Res stor revi	trict the use of infiltration techniques to achieve the conditions for post-construction mwater management in the Permit (Part III.D.5.a(2)), without higher engineering ew, sufficient to provide a functioning treatment system and prevent adverse acts to groundwater, when the infiltration device will be constructed in areas:	☐ Yes	🛛 No
			a) b) c) d)	With predominately Hydrologic Soil Group D (clay) soils. Within 1,000 feet up-gradient, or 100 feet down-gradient of active karst features. Within a Drinking Water Supply Management Area (DWSMA) as defined in Minn. R. 4720.5100, subp. 13. Where soil infiltration rates are more than 8.3 inches per hour.		
		3)	For com in th exco med duri	linear projects where the lack of right-of-way precludes the installation of volume trol practices that meet the conditions for post-construction stormwater management the Permit (Part III.D.5.a(2)), the permittee's regulatory mechanism(s) may allow eptions as described in the Permit (Part III.D.5.a(3)(b)). The permittee's regulatory chanism(s) shall ensure that a reasonable attempt be made to obtain right-of-way ng the project planning process.	☐ Yes	🖾 No
4.	Miti stor acti requ	i gati mwa vity a uiren	on p iter d are a nents	rovisions: The permittee's regulatory mechanism(s) shall ensure that any ischarges of TSS and/or TP not addressed on the site of the original construction ddressed through mitigation and, at a minimum, shall ensure the following are met:		
	a.	Miti 1)	gatio Loc orig	n project areas are selected in the following order of preference: ations that yield benefits to the same receiving water that receives runoff from the inal construction activity	🗌 Yes	🛛 No
		2)	Loc cato	ations within the same Minnesota Department of Natural Resource (DNR) chment area as the original construction activity.		
		3)	Loc	ations in the next adjacent DNR catchment area up-stream		
		4)	Loc	ations anywhere within the permittee's jurisdiction.		
	b.	Mitig retro stru	gatio ofit o ctura	n projects must involve the creation of new structural stormwater BMPs or the f existing structural stormwater BMPs, or the use of a properly designed regional al stormwater BMP.	☐ Yes	🛛 No
	c.	Rou be	itine used	maintenance of structural stormwater BMPs already required by this permit cannot to meet mitigation requirements of this part.	🗌 Yes	🛛 No
	d.	Miti con	gatio struc	n projects shall be completed within 24 months after the start of the original tion activity.	☐ Yes	⊠ No
	e.	The mai	perr nten	nittee shall determine, and document, who will be responsible for long-term ance on all mitigation projects of this part.	☐ Yes	🛛 No
	f.	If th for i the peri proj	e pe nitig conc nitte ects	rmittee receives payment from the owner and/or operator of a construction activity ation purposes in lieu of the owner or operator of that construction activity meeting litions for post-construction stormwater management in Part III.D.5.a(2), the e shall apply any such payment received to a public stormwater project, and all must be in compliance with Part III.D.5.a(4)(a)-(e).	∐ Yes	⊠ No
5. Long-term maintenance of structural stormwater BMPs: The permittee's regulatory mechanism(s) shall provide for the establishment of legal mechanisms between the permittee and owners or operators responsible for the long-term maintenance of structural stormwater BMPs not owned or operated by the permittee, that have been implemented to meet the conditions for post-construction stormwater management in the Permit (Part III.D.5.a(2)). This only includes structural stormwater BMPs constructed after the effective date of this permit and that are directly connected to the permittee's MS4, and that are in the permittee's jurisdiction. The legal mechanism shall include provisions that, at a minimum:						
	a.	Allo ope stru of th	w the rated ctura	e permittee to conduct inspections of structural stormwater BMPs not owned or d by the permittee, perform necessary maintenance, and assess costs for those al stormwater BMPs when the permittee determines that the owner and/or operator tructural stormwater BMP has not conducted maintenance.	☐ Yes	□ No
	b.	Incl resp those	ude o bonsi se re	conditions that are designed to preserve the permittee's right to ensure maintenance bility, for structural stormwater BMPs not owned or operated by the permittee, when sponsibilities are legally transferred to another party.	☐ Yes	🛛 No
	C.	Incl	ude (feat	conditions that are designed to protect/preserve structural stormwater BMPs and ures that are implemented to comply with the Permit (Part III.D.5.a(2)). If site	🗌 Yes	🛛 No

configurations or structural stormwater BMPs change, causing decreased structural stormwater BMP effectiveness, new or improved structural stormwater BMPs must be implemented to ensure the conditions for post-construction stormwater management in the Permit (Part III.D.5.a(2)) continue to be met.

If you answered **no** to any of the above permit requirements, describe the tasks and corresponding schedules that will be taken to assure that, within twelve (12) months of the date permit coverage is extended, these permit requirements are met:

B.2.a Invesitgate ammendments to stormwater requirements, which do not reference stormwater discharges of TSS or TP. We will update our ordinances to incorporate RCWD and VLAWMO rules to ensure all requirements are met. This will include volume control to meet MS4 requirements.

B.2.b Invesitgate ammendments to stormwater requirements, which do not reference stormwater discharges of TSS or TP. We will update our ordinances to incorporate RCWD and VLAWMO rules to ensure all requirements are met. This will include volume control to meet MS4 requirements.

B.3.a Infiltration is not restricted. We will invesitgate ammendments to stormwate regulations to comply with this requirement.

B.4.a Investigate adding mitigation provisions to stormwater requirements.

B.5.a, B.5.b, & B.5.c Investigate legal mechanisms for long term BMP operation of BMPs not owned or operated by the Township.

III. Enforcement Response Procedures (ERPs): (Part II.D.3)

A. Do you have existing ERPs that satisfy the requirements of the Permit (Part III.B.)?

□ Yes ⊠ No

🛛 Yes 🗌 No

⊠ Yes □ No

- 1. If **yes**, attach them to this form as an electronic document, with the following file naming convention: *MS4NameHere_ERPs*.
- 2. If **no**, describe the tasks and corresponding schedules that will be taken to assure that, with twelve (12) months of the date permit coverage is extended, these permit requirements are met:

There is no formal Enforcement Response Procedure. We will coordination with the public works department to formalize a written procedure that will satisfy these requirments

B. Describe your ERPs:

IV. Storm Sewer System Map and Inventory: (Part II.D.4.)

A. Describe how you manage your storm sewer system map and inventory:

We have electronic maps that are amended as needed by Public Works and consultant stafff.

- B. Answer **yes** or **no** to indicate whether your storm sewer system map addresses the following requirements from the Permit (Part III.C.1.a-d), as listed below:
 - 1. The permittee's entire small MS4 as a goal, but at a minimum, all pipes 12 inches or greater in Xes No diameter, including stormwater flow direction in those pipes.
 - 2. Outfalls, including a unique identification (ID) number assigned by the permittee, and an Xes No associated geographic coordinate.
 - 3. Structural stormwater BMPs that are part of the permittee's small MS4.
 - 4. All receiving waters.

If you answered **no** to any of the above permit requirements, describe the tasks and corresponding schedules that will be taken to assure that, within 12 months of the date permit coverage is extended, these permit requirements are met:

- C. Answer **yes** or **no** to indicate whether you have completed the requirements of 2009 Minnesota Session Law, Ch. 172. Sec. 28: with the following inventories, according to the specifications of the Permit (Part III.C.2.a.-b.), including:
 - 1. All ponds within the permittee's jurisdiction that are constructed and operated for purposes of water quality treatment, stormwater detention, and flood control, and that are used for the collection of stormwater via constructed conveyances.

2.	All wetlands and lakes, within the permittee's jurisdiction, that collect stormwater via constructed	🖾 Yes 🗌 No
	conveyances.	

D. Answer yes or no to indicate whether you have completed the following information for each feature inventoried.

1.	A unique identification (ID) number assigned by the permittee.	🛛 Yes	🗌 No
2.	A geographic coordinate.	□ Yes	🖾 No

2.	A geographi	c coordinate.
	3 3 - 1	

3. Type of feature (e.g., pond, wetland, or lake). This may be determined by using best professional \Box Yes \boxtimes No judgment.

If you have answered yes to all above requirements, and you have already submitted the Pond Inventory Form to the MPCA, then you do not need to resubmit the inventory form below.

If you answered **no** to any of the above permit requirements, describe the tasks and corresponding schedules that will be taken to assure that, within 12 months of the date permit coverage is extended, these permit requirements are met:

Our map currently displays all pipes 12 inches or greater. We will continue to update the map as needed. We will complete the inventory by adding geopgraphic coordinates and feature types.

E. Answer yes or no to indicate if you are attaching your pond, wetland and lake inventory to the MPCA \Box Yes \boxtimes No on the form provided on the MPCA website at: http://www.pca.state.mn.us/ms4, according to the specifications of Permit (Part III.C.2.b.(1)-(3)). Attach with the following file naming convention: MS4NameHere inventory.

If you answered no, the inventory form must be submitted to the MPCA MS4 Permit Program within 12 months of the date permit coverage is extended.

V. Minimum Control Measures (MCMs) (Part II.D.5)

A. MCM1: Public education and outreach

The Permit requires that, within 12 months of the date permit coverage is extended, existing permittees revise their 1. education and outreach program that focuses on illicit discharge recognition and reporting, as well as other specifically selected stormwater-related issue(s) of high priority to the permittee during this permit term. Describe your current educational program, including any high-priority topics included:

The township does not have any high-priority topics. We partner with Rice Creek Watershed District and Vadnais Lake Area Management Organization for educational outreach. We also braodcast the annual MS4 presenation on the local cable channel as well as provide educational links on our website.

2 List the categories of BMPs that address your public education and outreach program, including the distribution of educational materials and a program implementation plan. Use the first table for categories of BMPs that you have established and the second table for categories of BMPs that you plan to implement over the course of the permit term.

Include the measurable goals with appropriate timeframes that each BMP category will be implemented and completed. In addition, provide interim milestones and the frequency of action in which the permittee will implement and/or maintain the BMPs. Refer to the U.S. Environmental Protection Agency's (EPA) Measurable Goals Guidance for Phase II Small MS4s (http://www.epa.gov/npdes/pubs/measurablegoals.pdf).

If you have more than five categories, hit the tab key after the last line to generate a new row.

Established BMP categories	Measurable goals and timeframes
Presentation of Annual MS4 Presentation	The presentation is broadcast on local cable, with a reach of approx. 11,730 residents. We will continue to monitor feedback from this presentation for future implementation.
Website	We have applicable links on our website. We will continue to add links as appropriate.
Distribute Educational Materials	Printed materials from RCWD are available at the Township Hall
Education Program: Illicit Discharge Detection and Elimination	Staff attends training session provided by Ramsey County.
Education Program: Construction Site Run-off Control	Staff (in conjunction with WMO's share information with contractors and perform site inspections.
Education Program: Post Construction Stormwater management in New Development and Redevelopment	Planner provides this information during plan review of proposed developments.
Education Program: Pollution Prevention/Good Housekeeping	Staff regularly attends training sessions, e.g. Chloride reduction in snow and ice removal.
BMP categories to be implemented	Measurable goals and timeframes
----------------------------------	--
TMDL Emphasis	Begin working with RCWD and VLAWMO to develop and distribute materials that have an emphasis on the Bald Eagle Lake TMDL
Illicit Discharge Emphasis	Begin working with RCWD and VLAWMO to develop and distribute materials that have an emphasis on illicit discharge recognition and rules.
Documentation	Develop a documentation system for BMPs and other SWPPP activities.

3. Provide the name or the position title of the individual(s) who is responsible for implementing and/or coordinating this MCM:

Bill Short, Township Clerk/Treasurer

B. MCM2: Public participation and involvement

1. The Permit (Part III.D.2.a.) requires that, within 12 months of the date permit coverage is extended, existing permittees shall revise their current program, as necessary, and continue to implement a public participation/involvement program to solicit public input on the SWPPP. Describe your current program:

Every year we present and hear comments on our SWPPP at a regular Town Board Meeting. We post notice of meeting as required before the meeting.

List the categories of BMPs that address your public participation/involvement program, including solicitation and documentation
of public input on the SWPPP. Use the first table for categories of BMPs that you have established and the second table for
categories of BMPs that you plan to implement over the course of the permit term.

Include the measurable goals with appropriate timeframes that each BMP category will be implemented and completed. In addition, provide interim milestones and the frequency of action in which the permittee will implement and/or maintain the BMPs. Refer to the EPA's *Measurable Goals Guidance for Phase II Small MS4s* (http://www.epa.gov/npdes/pubs/measurablegoals.pdf). If you have more than five categories, hit the tab key after the last line to generate a new row.

Established BMP categories	Measurable goals and timeframes
Annual Meeting	Hold annual meeting, typically in May.
Appropriate Public Notice	Make public notice for the meeting at least a month in advance on township website and in local newspaper.
Availability of SWPPP	Make a copy of SWPPP available to residents upon request at all times
BMP categories to be implemented	Measurable goals and timeframes
BMP categories to be implemented Documentation	Measurable goals and timeframes Develop a documentation system for public input, notices, responses, and meetings.
BMP categories to be implemented Documentation	Measurable goals and timeframes Develop a documentation system for public input, notices, responses, and meetings.
BMP categories to be implemented Documentation	Measurable goals and timeframes Develop a documentation system for public input, notices, responses, and meetings.
BMP categories to be implemented Documentation	Measurable goals and timeframes Develop a documentation system for public input, notices, responses, and meetings.
BMP categories to be implemented Documentation	Measurable goals and timeframes Develop a documentation system for public input, notices, responses, and meetings.

3. Do you have a process for receiving and documenting citizen input?

If you answered **no** to the above permit requirement, describe the tasks and corresponding schedules that will be taken to assure that, within 12 months of the date permit coverage is extended, this permit requirement is met:

We will develop a documentation system within 12 months.

4. Provide the name or the position title of the individual(s) who is responsible for implementing and/or coordinating this MCM:

Bill Short, Township Clerk/Treasurer

C. MCM 3: Illicit discharge detection and elimination

1. The Permit (Part III.D.3.) requires that, within 12 months of the date permit coverage is extended, existing permittees revise their current program as necessary, and continue to implement and enforce a program to detect and eliminate illicit discharges into the small MS4. Describe your current program:

We have an ordinance that prohibits illicit discharges and connections. Our public works staff is trained to identify any illiciti discharges.

2. Does your Illicit Discharge Detection and Elimination Program meet the following requirements, as found in the Permit (Part III.D.3.c.-g.)?

a.	Incorporation of illicit discharge detection into all inspection and maintenance activities conducted under the Permit (Part III.D.6.ef.)Where feasible, illicit discharge inspections shall be conducted during dry-weather conditions (e.g., periods of 72 or more hours of no precipitation).	🛛 Yes	🗌 No
b.	Detecting and tracking the source of illicit discharges using visual inspections. The permittee may also include use of mobile cameras, collecting and analyzing water samples, and/or other detailed procedures that may be effective investigative tools.	🛛 Yes	🗌 No

c.	Training of all field staff, in accordance with the requirements of the Permit (Part III.D.6.g.(2)), in	🛛 Yes	🗌 No
	illicit discharge recognition (including conditions which could cause illicit discharges), and		
	reporting illicit discharges for further investigation.		

- d. Identification of priority areas likely to have illicit discharges, including at a minimum, evaluating land use associated with business/industrial activities, areas where illicit discharges have been identified in the past, and areas with storage of large quantities of significant materials that could result in an illicit discharge.
- e. Procedures for the timely response to known, suspected, and reported illicit discharges.
- f. Procedures for investigating, locating, and eliminating the source of illicit discharges.
- g. Procedures for responding to spills, including emergency response procedures to prevent spills from ☐ Yes ⊠ No entering the small MS4. The procedures shall also include the immediate notification of the Minnesota Department of Public Safety Duty Officer, if the source of the illicit discharge is a spill or leak as defined in Minn. Stat. § 115.061.
- h. When the source of the illicit discharge is found, the permittee shall use the ERPs required by the Permit (Part III.B.) to eliminate the illicit discharge and require any needed corrective action(s).

🛛 Yes 🗌 No

🛛 Yes 🗌 No

If you answered **no** to any of the above permit requirements, describe the tasks and corresponding schedules that will be taken to assure that, within 12 months of the date permit coverage is extended, these permit requirements are met:

Our spill reporting procedure does not include immediate notification of the Minnesota Department of Public Safety Duty Officer. As part of our investigation into establishing ERPs, immediate notification will be added.

3. List the categories of BMPs that address your illicit discharge, detection and elimination program. Use the first table for categories of BMPs that you have established and the second table for categories of BMPs that you plan to implement over the course of the permit term.

Include the measurable goals with appropriate timeframes that each BMP category will be implemented and completed. In addition, provide interim milestones and the frequency of action in which the permittee will implement and/or maintain the BMPs. Refer to the EPA's *Measurable Goals Guidance for Phase II Small MS4s* (http://www.epa.gov/npdes/pubs/measurablegoals.pdf).

If you have more than five categories, hit the tab key after the last line to generate a new row.

Established BMP categories	Measurable goals and timeframes
Ordinance	Review the ordinance yearly and revise as needed to ensure it is meeting the needs of the Township and legal requirements.
Inspections	Public Works staff are trained to identify and illicit discharges. If any illicit discharges are suspected, additional inspections are performed. Document all illicit discharges.
Training	Public Works employees are trained to identify illicit discharges.
Storm Sewer System Map	A map of the storm sewer system is available and regularly updated.
BMP categories to be implemented	Measurable goals and timeframes
Enforcement Response Procedures	Develop and implement written ERPs
Pond Inventory	We are currently in the process of creating and inventory of all ponds, wetlands, and lakes.

Illicit Discharge Procedure	Develop a procedure for illicit discharge inspection, reporting, and documenting.
Spill Response Procedure	Develop a spill response procedure.
Documentation	Develop a documentation system for illicit discharge inspection, reporting, and corrections.

4. Do you have procedures for record-keeping within your Illicit Discharge Detection and Elimination (IDDE) program as specified within the Permit (Part III.D.3.h.)? □ Yes ⊠ No

1

If you answered **no**, indicate how you will develop procedures for record-keeping of your Illicit Discharge, Detection and Elimination Program, within 12 months of the date permit coverage is extended:

We will investigate an appropriate mechanism for documenting date, time, and location of illicit disharge, along with correction actions required, and completion date.

5. Provide the name or the position title of the individual(s) who is responsible for implementing and/or coordinating this MCM:

Dale Reed, Public Works Supervisor

D. MCM 4: Construction site stormwater runoff control

1. The Permit (Part III.D.4) requires that, within 12 months of the date permit coverage is extended, existing permittees shall revise their current program, as necessary, and continue to implement and enforce a construction site stormwater runoff control program. Describe your current program:

Every land siturbing activity in the township must apply for approval of the erosion control plan. No land shall be disturbed or developed until the plan is approved. We work with contractors to ensure appropriate and correct use of erosion control devices onsite.

2. Does your program address the following BMPs for construction stormwater erosion and sediment control as required in the Permit (Part III.D.4.b.):

construction activity?	
b. Does the site plan review procedure include notification to owners and operators proposing construction activity that they need to apply for and obtain coverage under the MPCA's general permit to <i>Discharge Stormwater Associated with Construction Activity No. MN R100001</i> ?	🗌 No
c. Does your program include written procedures for receipt and consideration of reports of noncompliance or other stormwater related information on construction activity submitted by the public to the permittee?	🗌 No
 Have you included written procedures for the following aspects of site inspections to determine compliance with your regulatory mechanism(s): 	
1) Does your program include procedures for identifying priority sites for inspection?	🗌 No
 Does your program identify a frequency at which you will conduct construction site inspections? 	🗌 No
 Does your program identify the names of individual(s) or position titles of those responsible for Xes [conducting construction site inspections? 	🗌 No
 Does your program include a checklist or other written means to document construction site Yes [inspections when determining compliance? 	🗌 No
e. Does your program document and retain construction project name, location, total acreage to be disturbed, and owner/operator information?	🗌 No
f. Does your program document stormwater-related comments and/or supporting information used to determine project approval or denial?	🗌 No
g. Does your program retain construction site inspection checklists or other written materials used to document site inspections?	🗌 No
If you answered no to any of the above permit requirements, describe the tasks and corresponding schedules that w taken to assure that within 12 months of the date permit coverage is extended, these permit requirements are met	will be

3. List the categories of BMPs that address your construction site stormwater runoff control program. Use the first table for categories of BMPs that you have established and the second table for categories of BMPs that you plan to implement over the course of the permit term.

Include the measurable goals with appropriate timeframes that each BMP category will be implemented and completed. In addition, provide interim milestones and the frequency of action in which the permittee will implement and/or maintain the BMPs. Refer to the EPA's *Measurable Goals Guidance for Phase II Small MS4s* (<u>http://www.epa.gov/npdes/pubs/measurablegoals.pdf</u>)</u>. **If you have more than five categories**, hit the tab key after the last line to generate a new row.

Established BMP categories	Measurable goals and timeframes
Permit Application	Review and Process all permits in a timely manner.
Inspections	Inspect all active sites weekly or within 24 hours of ½" of rain or greater.
Ordinance	Erosion and Sediment control is part of Ordinance 8.
Long Term operation and maintenance of BMPs	Staff regularly inspections for operating performance of BMPs and provides maintenance if needed.
BMP categories to be implemented	Measurable goals and timeframes
Enforcement Response Procedure	Develop and implement ERPs
Site Review procedure	Begin working with RCWD and VLAWMO to develop and implement a written procedure for receipt of public input, site plan reviews, and site inspections
Documentation	Develop a documentation system for erosion and sediment control review and inspection

4. Provide the name or the position title of the individual(s) who is responsible for implementing and/or coordinating this MCM:

Bill Short. Clerk/Treasurer

E. MCM 5: Post-construction stormwater management

1. The Permit (Part III.D.5.) requires that, within 12 months of the date permit coverage is extended, existing permittees shall revise their current program, as necessary, and continue to implement and enforce a post-construction stormwater management program. Describe your current program:

Our post-construction stormwater management requirements are from RCWD and VLAWMO Rules.

2.	Ha ^r cor	ve you established written procedures for site plan reviews that you will conduct prior to the start of struction activity?	∐ Yes	🛛 No
3.	Ans pos	swer yes or no to indicate whether you have the following listed procedures for documentation of t-construction stormwater management according to the specifications of Permit (Part III.D.5.c.):		
	a.	Any supporting documentation that you use to determine compliance with the Permit (Part III.D.5.a), including the project name, location, owner and operator of the construction activity, any checklists used for conducting site plan reviews, and any calculations used to determine compliance?	☐ Yes	🛛 No
	b.	All supporting documentation associated with mitigation projects that you authorize?	🗌 Yes	🛛 No
	c.	Payments received and used in accordance with Permit (Part III.D.5.a.(4)(f))?	🗌 Yes	🛛 No

- c. Payments received and used in accordance with Permit (Part III.D.5.a.(4)(f))?
- d. All legal mechanisms drafted in accordance with the Permit (Part III.D.5.a.(5)), including date(s) of ☐ Yes ⊠ No the agreement(s) and names of all responsible parties involved?

If you answered **no** to any of the above permit requirements, describe the steps that will be taken to assure that, within 12 months of the date permit coverage is extended, these permit requirements are met.

We will work with RCWD and VLAWMO to ensure all requirements are met.

List the categories of BMPs that address your post-construction stormwater management program. Use the first table 4. for categories of BMPs that you have established and the second table for categories of BMPs that you plan to implement over the course of the permit term.

Include the measurable goals with appropriate timeframes that each BMP category will be implemented and completed. In addition, provide interim milestones and the frequency of action in which the permittee will implement and/or maintain the BMPs. Refer to the EPA's Measurable Goals Guidance for Phase II Small MS4s (http://www.epa.gov/npdes/pubs/measurablegoals.pdf). If you have more than five categories, hit the tab key after the last line to generate a new row.

Established BMP categories	Measurable goals and timeframes
Inspection	Annual Inspection of at least 20% of Township owned stormwater BMPs, and all structural pollution control devices.

Stormwater Mapping	Update existing stormwater map with newly created bmps.

BMP categories to be implemented	Measurable goals and timeframes
Enforcement Response Procedure	Develop and implement ERPs
Post Construction Stormwater Management Program	Investigate updates to current ordinances to incorporate post construction stormwater management.
Site Plan Reviews	Begin working with RCWD and VLAWMO to develop a written procedure for site plan review.
Documentation	Develop a documentation system for post construction stormwater management.

5. Provide the name or the position title of the individual(s) who is responsible for implementing and/or coordinating this MCM:

Bill Short, Clerk/Treasurer

F. MCM 6: Pollution prevention/good housekeeping for municipal operations

 The Permit (Part III.D.6.) requires that, within 12 months of the date permit coverage is extended, existing permittees shall revise their current program, as necessary, and continue to implement an operations and maintenance program that prevents or reduces the discharge of pollutants from the permittee owned/operated facilities and operations to the small MS4. Describe your current program:

The Township currently has yearly inspections of the storm sewer system, all structural BMPs, and 20% of all MS4 outfalls and makes repairs as needed. Stockpiles are inspected as needed

- 2. Do you have a facilities inventory as outlined in the Permit (Part III.D.6.a.)?
- 3. If you answered **no** to the above permit requirement in question 2, describe the tasks and corresponding schedules that will be taken to assure that, within 12 months of the date permit coverage is extended, this permit requirement is met:
- 4. List the categories of BMPs that address your pollution prevention/good housekeeping for municipal operations program. Use the first table for categories of BMPs that you have established and the second table for categories of BMPs that you plan to implement over the course of the permit term.

Include the measurable goals with appropriate timeframes that each BMP category will be implemented and completed. In addition, provide interim milestones and the frequency of action in which the permittee will implement and/or maintain the BMPs. For an explanation of measurable goals, refer to the EPA's *Measurable Goals Guidance for Phase II Small MS4s* (http://www.epa.gov/npdes/pubs/measurablegoals.pdf).

If you have more than five categories, hit the tab key after the last line to generate a new row.

Established BMP categories	Measurable goals and timeframes
Storm Drain System Maintenance Program	Yearly cleaning and inspection of storm grates, catch basins and other appurtenances for trash, sediment, etc.
Structural BMP inspection	Yearly inspection of all structural BMPs
MS4 outfall inspections	Inspection of 20% of all MS4 outfalls per year.
Stockpile Inspections	Inspect Stockpiles, formally every quarter, informally every working day.
Record Keeping	Keep record of every inspection at public works department.
BMP categories to be implemented	Measurable goals and timeframes
Facility Inventory of Pollutant contributors	Investigate inventory methods
Pond Assessment procedures	Work with RCWD and VLAWMO to investigate development of determining TSS and TP treatment effectiveness.

	Docu	men	tation	Development a documentation system for and good housekeeping methods.	pollution	prevention
•	Doe	əs di	ischarge from your MS4 affect a Source Water F	Protection Area (Permit Part III.D.6.c.)?	⊠ Yes	□ No
	а.	lf n	o, continue to 6.			
	b.	lf y foll <u>htt</u> foll	res, the Minnesota Department of Health (MDH) owing items. Maps are available at <u>p://www.health.state.mn.us/divs/eh/water/swp/m</u> owing items available for your MS4:	is in the process of mapping the <u>naps/index.htm</u> . Is a map including the		
		1)	Wells and source waters for drinking water suvulnerable under Minn. R. 4720.5205, 4720.52	pply management areas identified as 210, and 4720.5330?	🛛 Yes	🗌 No
		2)	Source water protection areas for surface inta assessments conducted by or for the Minnesc Safe Drinking Water Act, U.S.C. §§ 300j – 133	kes identified in the source water ota Department of Health under the federal ?	🛛 Yes	🗌 No
	C.	Ha sou	ve you developed and implemented BMPs to pr urces?	rotect any of the above drinking water	🗌 Yes	🛛 No
	Ha TF CO	ave y P trea	you developed procedures and a schedule for th atment effectiveness of all permittee owned/ope ion and treatment of stormwater, according to th	ne purpose of determining the TSS and erated ponds constructed and used for the he Permit (Part III.D.6.d.)?	☐ Yes	🛛 No
Do you have inspection procedures that meet the requirements of the Permit (Part III.D.6.e.(1)- (3)) for structural stormwater BMPs, ponds and outfalls, and stockpile, storage and material handling areas?						
	Ha en	ave y nploy	you developed and implemented a stormwater n yee's job duties that:	nanagement training program commensura	te with ea	ch
	a.	Ad	ddresses the importance of protecting water qua	ality?	🗌 Yes	🛛 No
	b.	С	overs the requirements of the permit relevant to	the duties of the employee?	🗌 Yes	🛛 No
	C.	In re pr	cludes a schedule that establishes initial training curring training intervals for existing employees actices, techniques, or requirements?	g for new and/or seasonal employees and to address changes in procedures,	☐ Yes	🛛 No
	Do (Pa	you art III	keep documentation of inspections, maintenand .D.6.h.(1)-(5))?	ce, and training as required by the Permit	🗌 Yes	🛛 No
	lf y cor the	ou a resp se p	nswered no to any of the above permit requiren onding schedules that will be taken to assure th ermit requirements are met:	nents listed in Questions 5 – 9 , then descri nat, within 12 months of the date permit cove	be the tas erage is e	sks and xtended,
	We pro will	e will ocedi upa	investigate BMPS to protect drinking water sou ures and a schedule for determining the effectiv late our inspection, training, and documentation	rrces. We will work with RCWD and VLAWN reness of TSS and TP removal in Township procedures	10 to devi owned po	elop onds. We
•	Pro MC	ovide M:	the name or the position title of the individual(s)	who is responsible for implementing and/or o	coordinatii	ng this
	Bill	Shc	ort, Clerk/Treasurer			

VI. Compliance Schedule for an Approved Total Maximum Daily Load (TMDL) with an Applicable Waste Load Allocation (WLA) (Part II.D.6.)

- A. Do you have an approved TMDL with a Waste Load Allocation (WLA) prior to the effective date Yes No of the Permit?
 - 1. If no, continue to section VII.
 - 2. If **yes**, fill out and attach the MS4 Permit TMDL Attachment Spreadsheet with the following naming convention: *MS4NameHere_TMDL*.

This form is found on the MPCA MS4 website: <u>http://www.pca.state.mn.us/ms4</u>.

VII. Alum or Ferric Chloride Phosphorus Treatment Systems (Part II.D.7.)

- A. Do you own and/or operate any Alum or Ferric Chloride Phosphorus Treatment Systems which ☐ Yes ⊠ No are regulated by this Permit (Part III.F.)?
 - 1. If **no**, this section requires no further information.
 - If yes, you own and/or operate an Alum or Ferric Chloride Phosphorus Treatment System within your small MS4, then you must submit the Alum or Ferric Chloride Phosphorus Treatment Systems Form supplement to this document, with the following naming convention: MS4NameHere_TreatmentSystem.

This form is found on the MPCA MS4 website: http://www.pca.state.mn.us/ms4.

VIII. Add any Additional Comments to Describe Your Program

TMDL Wasteload Allocation Excel Spreadsheet PART II.D.6.a.-e.

Copy and paste from the Master List MS4 TMDL Spreadsheet for your MS4 to the space below.

Attach this completed form with your SWPPP Document at the time of submittal. At a **minimum**, provide all of the information "*" items (TMDL Project Name, Type of WLA, Numeric WLA, Unit, Flow Condition, and Pollutant of Concern).

							Percent				
Permittee name	Preferred ID	TMDL project name*	Waterbody ID	Type of WLA*	Numeric WLA*	Unit*	reduction	Flow condition*	Waterbody name	Pollutant of concern*	Date approved
White Bear Township	MS400163	Bald Eagle Lake: Excess Nutrients TMDL	62-0002	Categorical	719	lbs/year	38%	N/A	Bald Eagle Lake	Phosphorus	6/11/2012

Compliance Schedule PART II.D.6.f.-g.

by pure URA conserver evention is WLA or an expression ETBLAST. The event of the server are Table 2 being the server are server as the server are s



Text = 1
Tex

MPCA recommends the implementation Dates align with the submittal of MS4 Annual Reports. Dates selected may not reflect the a ctual date a BMP is implemented, but shall indicate a BMP will be implemented on that date or before for that reporting year.

			Eald Eagle Lak	# Doess	TMDL Project Name &	TMDL Project Name &	TMDL Project Name &	TMOL Project Name &	TMDL Project Name &	TMOL Project Name &	TMDL Project Name &	TMOL Project Name &	TMDL Project Name &													
Interim Milestone (Best Management Practice)	DMP ID	Implementation Date	Nutrients TMDL		Pollutant2	Polutant3	Pollutanté	Pollutant5	Pollutant6	Pollutant7	Pollutant8	Pollutant2	Pollutant10	Pollutant11	Pollutant12	Pollutant13	Pollutant14	Pollutant15	Pollutant16	Pollutant17	Polutant18	Pollutant19	Pollutant20	Pollutant21	Pollutant22	Pollutant23
Review new construction and redevelopment standards for optiential implimentation of MDS		6/20/201	4	×																						
Review CIP for potential projects that could incorporate Phosphorus removal		6/20/201	4	х																						
Enforce Rice Creek Watershed District rules for Water Quality Treatment Standards		6/20/201	4	х																						
Adopt appropriate standards for new construction and redevelopment standards based on MDS		6/20/201	5	х																						
Review opportunities for retroliting current BMPs		6/20/201	6																							

Residence to reduce 4000 involvement of the same AND result AND result. AND result AND r

Table 2 Target dates the applicable WLA(s) will be achieved. PART ILD.6.1/4)

TMDL Project	Target Date to Achieve WLA
Baid Eagle Lake: Excess Nutrients TMDL	2033

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Appendix F MS4 Permit Annual Report

MS4 Annual Report for 2017

Reporting period: January 1, 2017 to December 31, 2017

Due: June 30, 2018

Instructions: Complete this annual report to provide a summary of your activities under the 2013 MS4 Permit (Permit) between January 1, 2017 and December 31, 2017. MPCA staff may also contact you for additional information.

Questions: Contact Cole Landgraf (cole.landgraf@state.mn.us, 651-757-2880) or Megan Handt (megan.handt@state.mn.us, 651-757-2843)

MS4 General Contact Information

Full Name:	William Short
Title:	Town Clerk
Mailing Address:	1281 Hammond Road
City:	White Bear Township
State:	MN
Zip Code:	55110
Phone:	651-747-2750
Fmail:	bill.short@whitebeartownship.org

Preparer Contact Information (if different from the MS4 General Contact)

Full Name:	Jim Studenski
Title:	Town Engineer
Organization:	TKDA
Mailing Address:	444 Cedar Street, Suite 1500
City:	Saint Paul
State:	MN
Zip Code:	55101
Phone:	651-292-4503
Email:	jim.studenski@tkda.com



MCM 1: Public Education and Outreach

The following questions refer to Part III.D.1. of the Permit.

22	Did you se No	lect a storm	water-related issue of high priority to be emphasized during this Permit term? [Part III.D.1.a.(1)]
	Q3	If 'Yes' in C	Q2, what is your stormwater-related issue(s)? Check all that apply.
			Total Maximum Daily Loads (TMDLs)
			Local businesses
			Residential best management practices (BMPs)
			Pet waste
			Yard waste
			Deicing materials
			Household chemicals
			Construction activities
			Post-construction activities
			Other
		If 'Other ,'	
		describe:	

Q4 Have you distributed educational materials or equivalent outreach to the public focused on illicit discharge recognition and reporting? [Part III.D.1.a.(2)]

QS Do you have an implementation plan as required by the Permit? [Part III.D.1.b.] Yes

- Q6 How did you distribute educational materials or equivalent outreach? [Part III.D.1.a.] Check all that apply in the table below.
- Q7 For the items checked in Q6 below, who is the intended audience? Check all that apply in the table below.
- Q8 For the items checked in Q6 below, enter the total circulation/audience in the table below (if unknown, use best estimate).

	Q6		Q7 In:	Q8				
How did yo	u distribute educational							Total
materials o	r equivalent outreach?		Local					circulation/audience: (if
Check all th	nat apply:	Residents	businesses	Developers	Students	Employees	Other	unknown, best est.)
Х	Brochure	х						4800
	Newsletter							
	Utility bill insert							
	Newspaper ad							
	Radio ad							
	Television ad							
Х	Cable access channel	х						4800
	Stormwater-related event							
	School project or presentation							
Х	Website	Х						4800
	Other (1)							
	Describe:							
	Other (2)							
	Describe:							
	Other (3)							
	Describe:							

For Q9 and Q10 below, provide a brief description of each activity related to public education and outreach (e.g. rain garden workshop, school presentation, public works open house) held and the date each activity was held from January 1, 2017 to December 31, 2017. [Part III.D.1.c.(4)]

19	Date of Activity	Q10	Description of Activity
	10/16/2017		Annual Stormwater Presentation at Town Board meeting
		•	
		t i i i i i i i i i i i i i i i i i i i	

Q11 Between January 1, 2017 and December 31, 2017, did you modify your BMPs, measurable goals, or future plans for your public education and outreach program? [Part IV.B.] If 'Yes,' describe those modifications:

MINNESOTA POLLUTION CONTROL AGENCY

MCM 2: Public Participation/Involvement

The following questions refer to Part III.D.2.a. of the Permit.

Q12 You must provide a minimum of one opportunity each year for the public to provide input on the adequacy of your Stormwater Pollution Prevention Program (SWPPP). Did you provide this opportunity between January 1, 2017 and December 31, 2017? [Part III.D.2.a.(1)]

	Q13	If 'Yes' in (212, what was the opportunity that you provided? Check all that apply.
		X	Public meeting Public event
			Other
		Q14	If 'Public meeting ' in Q13 , did you hold a stand-alone meeting or combine it with another event? Combined Enter the date of the public meeting: 10/16/2017 Enter the number of citizens that attended and 0
		Q15	If 'Public Event' in Q13, Describe:
		Q15	Enter the date of the public event: Enter the number of citizens that attended and were informed about your SWPPP: 0
		Q16	If 'Other' in Q13, Describe:
			Enter the date of the lether' quest
			Enter the date of the other event:
			were informed about your SWPPP: 0
Q17	Between Ja No	anuary 1, 20] If ' <i>Yes</i> ,' en organizatio SWPPP:	17 and December 31, 2017, did you receive any input regarding your SWPPP? ter the total number of individuals or ons that provided comments on your
	Q18	If 'Yes' in (Q17, did you modify your SWPPP as a result of written input received? [Part III.D.2.b.(2)]
			If 'Yes ,' describe those modifications:
Q19	Between Ja	anuary 1, 20	17 and December 31, 2017, did you modify your BMPs, measurable goals, or future plans for your public education and outreach program? [Part IV.B.]
	No]	If 'Yes ,' describe those modifications:

MCM 3: Illicit Discharge Detection and Elimination

The following questions refer to Part III.D.3. of the Permit.

Q20 Do you have a regulatory mechanism which prohibits non-stormwater discharges to your MS4?

Q21 Did you identify any illicit discharges between January 1, 2017 and December 31, 2017? [Part III.D.3.h.(4)]

- Q22 If 'Yes' in Q21, enter the number of illicit discharges detected:
- Q23 If 'Yes' in Q21, how did you discover these illicit discharges? Check all that apply.

 X
 Public complaint

 X
 Staff
 - Q24 If 'Public complaint' in Q23, enter the number discovered by the public:
 - Q25 If 'Staff' in Q23, enter the number discovered by staff:

	Q26	If 'Yes' in C Yes	21, did any of the discovered illicit discharges result in an enforcement action (this includes verbal warnings)?
		Q27	If 'Yes' in Q26, what type of enforcement action(s) was taken and how many of each action were issued between January 1, 2017 and December 31, 2017? Check all that apply. Number issued: X Verbal warning Notice of violation
			Fine
		Q28	describe:
			Yes
			Q29 If 'No' in Q28, why was the enforcement not sufficient to address the illicit discharge(s)?
Q30	Do you ha Yes	ve written E	nforcement Response Procedures (ERPs) to compel compliance with your illicit discharge regulatory mechanism(s)? [Part III.B.]
Q31	Between J and report	anuary 1, 20 ting illicit dis	17 and December 31, 2017, did you train all field staff in illicit discharge recognition (including conditions which could cause illicit discharges) charges for further investigations? [Part III.D.3.e.]
	Q32	If 'Yes' in C	31, how did you train your field staff? Check all that apply. Email Powerpoint Presentation Video Field Training
		If ' <i>Other</i> ,' describe:	Other
The follow	ving questio	ns refer to P	art III.C.1. of the Permit.
Q33	Did you up Yes	odate your s	torm sewer system map between January 1, 2017 and December 31, 2017? [Part III.C.1.]
Q34	Does your Yes	storm sewe	r map include all pipes 12 inches or greater in diameter and the direction of stormwater flow in those pipes? [Part III.C.1.a.]
Q35	Does your Yes	storm sewe	r map include outfalls, including a unique identification (ID) number and an associated geographic coordinate? [Part III.C.1.b.]
Q36	Does your Yes	storm sewe	r map include all structural stormwater BMPs that are part of your MS4? [Part III.C.1.c.]
Q37	Does your Yes	storm sewe	r map include all receiving waters? [Part III.C.1.d.]
Q38	In what fo	rmat is your	storm sewer map available?
	If ' <i>Other</i> ,' describe:		
Q39	Between J [Part IV.B.	anuary 1, 20]	17 and December 31, 2017, did you modify your BMPs, measurable goals, or future plans for your illicit discharge detection and elimination (IDDE) program?
	No]	

MCM 4: Construction Site Stormwater Runoff Control

The following questions refer to Part III.D.4. of the Permit.

Q40 Do you have a regulatory mechanism that is at least as stringent as the Agency's general permit to Discharge Stormwater Associated with Construction Activity (CSW Permit) No. MN R100001 (http://www.pca.state.mn.us/index.php/view-document.html?gid=18984) for erosion and sediment controls and waste controls? [Part III.D.4.a.]

Q41	Have you developed written procedures for s	ite plan reviews as required by the Permit? [Part III.D.4.b.]	
Q42	Have you documented each site plan review Yes	as required by the Permit? [Part III.D.4.f.]	
Q43	Enter the number of site plan reviews conduction 6	ted for sites an acre or greater between January 1, 2017 and December 31, 2017:	
Q44	What types of enforcement actions do you h each used from January 1, 2017 to December X Verbal warning	ave available to compel compliance with your regulatory mechanism? Check all that apply and enter the number '31, 2017. Number issued: 6	of
	X Notice of violation Administrative order		
	Stop-work order		
	Forfeit of security bond money		
	X Withholding of certificate of occu Criminal action	pancy 1 0	
	Civil penalty Other		
	If ' <i>Other</i> ,' describe:		
Q45	Do you have written Enforcement Response [Part III.B.] Yes	Procedures (ERPs) to compel compliance with your construction site stormwater runoff control regulatory mecha	anism(s)?
Q46	Enter the number of active construction sites	an acre or greater that were in your jurisdiction between January 1, 2017 and December 31, 2017:	
Q47	Do you have written procedures for identifyin Yes	ng priority sites for inspections? [Part III.D.4.d.(1)]	
	Q48 If 'Yes' in Q47, how are sites prior X Site topography X Soil characteristics Types of receiving wal X Stage of construction X Compliance history X Weather conditions Citizen complaints X Project size Other	ritized for inspections? Check all that apply. ter(s)	
	describe:		
Q49	Do you have a checklist or other written mea Yes	ns to document site inspections when determining compliance? [Part III.D.4.d.(4)]	
Q50	Enter the number of site inspections conduct 85	ed for sites an acre or greater between January 1, 2017 and December 31, 2017:	
Q51	Enter the frequency at which site inspections	are conducted (e.g. daily, weekly, monthly): [Part III.D.4.d.(2)]	
		Weekly	
Q52	Enter the number of trained inspectors that v	were available for construction site inspections between January 1, 2017 and December 31, 2017:	
Q53	Provide the contact information for the inspector construction stormwater contact first if you h	cctor(s) and/or organization that conducts construction stormwater inspections for your MS4. List your primary have multiple inspectors.	
	1 Inspector Name	Mike Johnson White Rear Townshin	
	Phone (Office)	651-747-2750	
	Phone (Work Cell) Email	mike.johnson@whitebeartownship.org	
	Preferred contact method	Phone	
	2 Inspector Name		
	Organization Phone (Office)		
	Phone (Work Cell)		
	Preferred contact method		
	3 Inspector Name		
	Organization		
	Phone (Office)		
	Email		
	Preferred contact method		

Х	University of Minnesota Erosion and Stormwater Management Certification Program
	Qualified Compliance Inspector of Stormwater (QCIS)
	Minnesota Laborers Training Center Stormwater Pollution Prevention Plan Installer or Superviso
	Minnesota Utility Contractors Assocation Erosion Control Training
	Certified Professional in Erosion and Sediment Control (CPESC)
	Certified Professional in Stormwater Quality (CPSWQ)
	Certified Erosion Sediment and Storm Water Inspector (CESSWI)
	Other
f 'Other ,'	
describe.	

Q55 Between January 1, 2017 and December 31, 2017, did you modify your BMPs, measurable goals, or future plans for your construction site stormwater runoff control program? [Part IV.B.]

No

Q54

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MCM 5: Post-Construction Stormwater Management

If 'Yes ,' describe those modifications:

The following questions refer to Part III.D.5. of the Permit.

Q56	Do you have a regulatory mechanism which meets all requirements as specified in Part III.D.5.a of the Permit?			
	Yes			

Q57 What approach are you using to meet the performance standard for Volume, Total Suspended Solids (TSS), and Total Phosphorus (TP) as required by the Permit? [Part III.D.5.a.(2)] Check all that apply.

Refer to the link http://www.pca.state.mn.us/index.php/view-document.html?gid=17815 for guidance on stormwater management approaches.

Х	Retain a runoff volume equal to one inch times the area of the proposed increase of impervious surface on-site
	Retain the post-construction runoff volume on site for the 95th percentile storm
Х	Match the predevelopment runoff conditions
	Adopt the Minimal Impact Design Standards (MIDS)
	An approach has not been selected
	Other method (Must be technically defensible - e.g., based on modeling, research and acceptable engineering practices)
If 'Other ,'	
describe:	

- Q58 Do you have written Enforcement Response Procedures (ERPs) to compel compliance with your post-construction stormwater management regulatory mechanism(s)? [Part III.B.]
- Q59 Between January 1, 2017 and December 31, 2017, did you modify your BMPs, measurable goals, or future plans for your post-construction site stormwater management program? [Part IV.B.]

No

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MCM 6: Pollution Prevention/Good Housekeeping for Municipal Operations

The following questions refer to Part III.D.6. of the Permit.

Enter the total number of structura	a stormwater BMPs, outrails (excluding underground outrails), and ponds within your MS4 (exclude privately owned).
Structural stormwater BMPs	5
Outfalls	17
Ponds	93
Enter the number of structural stor	rmwater BMPs, outfalls (excluding underground outfalls), and ponds that were inspected from January 1, 2017
to December 31, 2017 within your	MS4 (exclude privately owned). [Part III.D.6.e.]
Structural stormwater BMPs	5
Outfalls	0
Ponds	12
Have you developed an alternative	inspection frequency for any structural stormwater BMPs, as allowed in Part III.D.6.e.(1) of the Permit?
No	
	Enter the total number of structure Structural stormwater BMPs Outfalls Ponds Enter the number of structural stor to December 31, 2017 within your Structural stormwater BMPs Outfalls Ponds Have you developed an alternative No

Q63	Based on Yes	inspection findings, did you conduct any maintenance on any structural stormwater BMPs? [Part III.D.6.e.(1)]
	Q64	If 'Yes ,' briefly describe the maintenance that was conducted:
		Vacuumed out sumps in structures
Q65	Do you ov Yes	wn or operate any stockpiles, and/or storage and material handling areas? [Part III.D.6.e.(3)]
	Q66	If 'Yes' in Q65, did you inspect all stockpiles and storage and material handling areas quarterly? [Part III.D.6.e.(3)] Yes
	Q67	If 'Yes' in Q66, based on inspection findings, did you conduct maintenance at any of the stockpiles and/or storage and material handling areas? Yes
		Q68 If 'Yes' in Q67, briefly describe the maintenance that was conducted:
		Repositioned silt sock
Q69	Between J housekee No	January 1, 2017 and December 31, 2017, did you modify your BMPs, measurable goals, or future plans for your pollution prevention/good eping for municipal operations program? [Part IV.B.] If 'Yes,' describe those modifications:

Discharges to Impaired Waters with a USEPA-Approved TMDL that Includes an applicable WLA

If required, you must complete the **TMDL Annual Report Form**, available at: http://stormwater.pca.state.mn.us/index.php/Upload_page_with_TMDL_forms. Attach your completed TMDL Annual Report Form to this Annual Report as instructed below. [Part III.E]

Q71	Successfully uploaded file:	File successfully attached.

MINNESOTA POLLUTION CONTROL AGENCY

Alum or Ferric Chloride Phosphorus Treatment Systems

The following questions refer to Part III.F.3.a. of the Permit. Provide the information below as it pertains to your alum or ferric chloride phosphorus treatment system.

'Alum or Ferric Chloride Phosphorus Treatment Systems' section not required for White Bear Township MS4.

Q72 Date(s) of operation (mm/dd/yyyy - mm/dd/yyyy)

January February March April May June July August September October November December				
	Q73	Q74 Gallons of alum or ferric chloride	Q75	Q76 Calculated pounds of phosphorus
January		dedition.	Guilding of Watch treated.	Temoved.
February				
March				
April				
May				
June				
July				
August				
September				
October				
November				

Q77	Any performance issues and corrective action(s), including the date(s) when corrective action(s) were taken, between January 1, 2017 and December 31, 2017:
m	MINNESOTA POLLUTION CONTROL AGENCY
Partn	erships
Q78	Did you rely on any other regulated MS4s to satisfy one or more Permit requirements?
	Q79 If 'Yes' in Q78, describe the agreements you have with other regulated MS4s and which Permit requirements the other regulated MS4s help satisfy: [Part IV.B.6.]



Additional Information

If you would like to provide any additional files to accompany your annual report, use the space below to upload those files. For each space, you may attach one file. You may provide additional explanation and/or information in an email with the subject YourMS4NameHere_2017AR to ms4permitprogram.pca@state.mn.us.

Q80	Successfully uploaded file:	No file attached.
Q81	Successfully uploaded file:	No file attached.
Q82	Successfully uploaded file:	No file attached.
Q83	Optional, describe the file(s) uplo	aded:

MINNESOTA POLLUTION CONTROL AGENCY

Optional Question

The MPCA is attempting to identify potential sources of water quality data. Answering this question will help the MPCA and interested stakeholders obtain a more comprehensive understanding of sources of data that may be shared and ultimately aid in understanding the extent to which stormwater management practices result in water quality improvements.

Q84 Are you collecting water quality data (e.g., from surface waters, outfalls, best management practices, etc.) that is not associated with a waste water treatment plant?



Owner of Operator Certification

The person with overall administrative responsibility for SWPPP implementation and Permit compliance must certify this MS4 Annual Report. This person must be duly authorized and should be either a principal executive (i.e., Director of Public Works, City Administrator) or ranking elected official (i.e., Mayor, Township Supervisor).

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete (Minn. R. 7001.0070). I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment (Minn. R. 7001.0540).

By typing my name in the following box, I certify the above statements to be true and correct, to the best of my knowledge, and that information can be used for the purpose of processing my MS4 Annual Report.

Name:	William Short
Title:	Clerk-Treasurer
Date:	6/12/2018

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Appendix G MS4 Stormwater System Map [Full-Size]

