

City of Saint Paul's Stormwater Permit Annual Report



Minnesota Pollution Control Agency
National Pollutant Discharge Elimination System
Permit No. MN 0061263
June 2014



Table of Contents

Background	3
I. Storm Sewer System Management	5
II. Disposal of Removed Substances	12
III. New Development and Construction	13
IV. Street Management Program	18
V. Pesticides and Fertilizers	24
VI. Prohibited Discharges to the Storm Sewer System	26
VII. Public Education Program	30
VIII. Coordination with Other Governmental Units	33
IX. Public Participation Process	36
X. Stormwater Monitoring and Modeling	37
XI. Storm Drain System and Drainage Area Inventory	40

Appendix

Budget	2
Erosion and Sediment Control Materials	3
Parks Spill Report and Water Protection Policy	7
Public Works Water Protection Policy	9
Non-Stormwater Discharge Fact Sheet and Ordinance	12
Water Quality Education Program	17
Clean Water MN Media Campaign	26
Map of Saint Paul's Watershed Organizations	41
Monitoring Activities Map and Modeling Map	42
Pollutant Load Calculations	44
Storm Sewer Outfall Inventory	53
Watershed Inventory	59
Stormwater Ponding Area Inventory	61
NPDES Permitted Facilities	65
Industrial Land Use and Pollutant Source Maps	68

Background

The National Pollutant Discharge Elimination System (NPDES) program was created in 1990 by the United States Environmental Protection Agency to safeguard public waters through the regulation of the discharge of pollutants to surface waters including lakes, streams, wetlands and rivers. The Minnesota Pollution Control Agency (MPCA) is the local authority responsible for administering this program. Under this program, specific permits are issued to regulate different types of municipal, construction and industrial activities.

The MPCA issued the first Municipal Separate Storm Sewer System (MS4) NPDES Permit to the City of Saint Paul on December 1, 2000. The City's MS4 Permit was reissued on January 21, 2011. The reissued permit required submittal of a revised Stormwater Management Program (SWMP). The Saint Paul SWMP was developed and is administered by the City departments that are responsible for permit activities. Included are the Public Works Department, Saint Paul Parks and Recreation Department and the Department of Safety and Inspection. These stakeholders are

jointly responsible for the completion of the required permit submittals. The Department of Public Works provides program coordination.

The Permit also requires public input on the development of the priorities and programs, and adoption by Council Resolution of the Annual Report. This Report provides documentation of the activities conducted in 2013. As per federal and state law, the City is operating under the existing permit until the permit is reissued and the City's SWMP is approved. The SWMP was approved by the MPCA in October of 2013.

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I. Storm Sewer System Management

Program Objective

The objective of the NPDES stormwater management program is to minimize the discharge of pollutants through the proper operation and maintenance of the City's storm sewer system. Targeted pollutants include:

- Sediment
- Nutrients
- Floatable garbage

Program Overview

The City's stormwater system includes 450 miles of storm sewers, 28 ponding areas, 4 lift stations, numerous water quality best management practices and over 26,000 catch basins. The Sewer Maintenance section allocates substantial resources to cleaning, inspecting and maintaining the City's stormwater system. All installed stormwater facilities are maintained and operated in accordance with adopted policies and ordinances. All storm sewer pipes are cleaned and inspected in advance of City street reconstruction projects. Where defects are observed, repairs are made at the time of discovery or during the reconstruction project. The City also regularly inspects, cleans and maintains stormwater ponding areas. Storm sewer tunnels are inspected every two years.

In 1995, the City completed a ten-year sewer separation program by constructing 189 miles of storm sewer and 12 miles of sanitary sewer (some combined sewer was converted to storm sewer). In 1997, the City began a 20-year rehabilitation program for its storm and sanitary sewer system. The Sewer Utility complies with MnDOT's Standard Specifications for Construction, and has its own set of Standard Plates.

2013 Activities

1. Storm Sewer and Storm Tunnels

The 3.6 mile long St. Anthony Park storm tunnel system was originally constructed in the 1960s and 1970s. The tunnel liner was severely damaged with numerous holes and cracks, which were primarily caused by large rain events that pressurize the tunnel. When the tunnel liner is fractured or holes are present, stormwater is allowed to wash away the friable St. Peter Sandstone, resulting in large voids behind the liner. A three phase tunnel rehabilitation project was started in the fall of 2009 and was completed in 2012. Phase IV of the tunnel rehabilitation project was completed in the spring of 2013. The final two phases will take an additional two years and \$7 million to complete. Tunnel projects typically include the following components: sealing cracks and holes in the tunnel liner, filling large voids behind the tunnel liner, replacing sections of tunnel liner too badly damaged to be repaired and installing stainless steel straps on the inside surface of the tunnel liner to reinforce the cracked liner.

2. Storm Drain Outfalls

A storm drain outfall is the point where the storm sewer system discharges to receiving waters. Outfalls are inspected on a 5-year schedule. Outfall inspections include an evaluation of the general condition of structure, determination of significant erosion and identification of any non-stormwater discharges. When indications of non-stormwater discharges are observed, they are reported to the appropriate City staff for follow-up investigation and resolution and reported to the Minnesota Duty Officer, as required. Any identified structural repairs or maintenance work is prioritized and scheduled within the constraints of available personnel, funding and coordination with other essential operations. The Mississippi River outfalls were inspected in 2013.

3. Catch Basins

A catch basin is an inlet to the storm drain system. A field survey of the City's catch basins using GPS equipment located all city owned catch basins. The total number of catch basins inventoried was 26,200. As part of the City's Residential Street Vitality Program (RSVP), existing catch basins within a street reconstruction project area are replaced with new catch basins. Cleaning catch basins, while ensuring proper

runoff conveyance from City streets, also removes accumulated sediments, trash and debris. Catch basins that are reported as plugged or damaged are given a priority for repair and cleaning. Sewer Maintenance has set a goal of cleaning 2,000 catch basins per year. Augmenting this effort is the street sweeping program, carried out by the Street Maintenance Division. The street sweeping program targets the pick-up of street sediment, debris and leaves prior to their reaching catch basins.

4. *Stormwater Ponds*

Saint Paul's stormwater ponding areas are constructed to collect and detain flows from storm events and in some cases to also improve water quality. These ponds are designed to reduce peak flow rates in downstream storm sewers. A map showing the stormwater ponding areas in the City of Saint Paul is found in the Appendix. The Appendix also contains the tributary area and design capacity for each of the City's ponding areas and a list of stormwater ponding areas by watershed. The City's stormwater ponding areas are inspected by Sewer Maintenance staff after major rainfall events. Minor maintenance is completed as needed based on the inspection results.

The City implemented a program to evaluate its ponding areas for major sediment removal in 2002. This program involves an initial inspection, prioritization, survey, timber removal, sediment removal and inlet/outlet reconstruction. Major sediment removal took place in a majority of the City's ponds in the winters of 2002/2003 and 2003/2004. The estimated cycle for sediment removal from ponding areas is 20 years. In 2013, six stormwater ponds were cleaned, including Sylvan/Acker, Phalen Golf Course Pond 7, Birmingham/York, Etna/Third, Hazel/Ross and Hazel/Nokomis. Approximately 8,400 Cubic yards of sediment was removed. Project included re-installation of rip rap at inlet and outlet structures and vegetation restoration by seeding and erosion control blankets. Sediment was tested and disposed of in accordance with state guidelines.

Saint Paul Parks and Recreation and Ramsey County tested sediment from three stormwater ponds on the Phalen golf course. Sediment removal was completed at one pond in the winter of 2012. The remaining two ponds were dredged in 2013.

5. ***Pump Stations***

The City has four stormwater flood control pump stations that are located along the Mississippi River. These pump stations provide interior drainage during flood events on the Mississippi River. The stormwater flood control pump stations are inspected and operated twice per year. All of the stations are connected to the City's Supervisory Control and Data Acquisition system.

6. ***Water Quality Best Management Practices***

The city constructs water quality and volume control BMPs as required by the MPCA Construction Permit and Watershed District Rules. Since 2006, the City has constructed BMPs, including infiltration trenches and rain gardens, as part of the RSVP. Sewer Maintenance inspects and cleans the pre-treatment structures upstream of the infiltration trenches the year after street reconstruction. Subsequent cleaning frequency is based on inspection results. The BMPs that were part of the City's monitoring program were inspected in June, July and September of 2013. Inspection results for these structures are found in the monitoring report on the City's Stormwater page at <http://www.stpaul.gov/index.aspx?NID=2686>.

7. ***Water Quality Initiatives Program***

The City's Water Quality Initiatives Program includes the following components:

- **Volume Reduction Inventory** - Development of a long term strategy to construct stormwater improvements on opportunity sites.
- **Stormwater Modeling** – Develop XP-SWMM and P8 models of the City's stormwater system.
- **Feasibility Studies** - Identification of feasible options to provide water quality treatment in specific locations within the City.
- **Project Construction** – Projects identified as feasible are designed and constructed.

The following is a list of projects and studies that were completed or are planned under the City's Water Quality Initiative Program:

- **Stormwater Modeling** –The East Kittsondale storm sewer system modeling project was started in 2013 and will be completed in 2014.

- **Street Reconstruction Projects** – In 2013, 17,483 cubic foot of volume control was constructed in the Madison-Benson RSVP project.
- **Dale Street Facility Sediment Control Structure** – Public Works hired WSB and Associates to complete a Facility Improvements Feasibility Report for four Public Works facilities and one Parks and Recreation facility. In 2012, a large pre-fabricated sediment control and collection structure was constructed at the Public Works' Dale Street Facility.
- **Hillcrest Knoll Park Water Quality Improvements Project** - Hillcrest Knoll Park was constructed to serve as a flood reduction project for the neighborhood. The park was identified as an ideal location to reduce stormwater runoff volumes and improve the water quality of receiving waters. The final stormwater design included the following components:
 - Bypass system from the Flandrau Street storm sewer that directs flows to the proposed Hillcrest Knoll Park system.
 - Gate structure that regulates storm flows to the to infiltration pipe gallery.
 - Pre-fabricated sediment control and collection structures.
 - Infiltration facility including perforated pipe gallery and overflow to existing storm sewer.
 - Erosion control and restoration activities associated with proposed improvements, including reconstruction of the existing rain garden.

The Hillcrest Knoll Water Quality Improvement Project was substantially constructed in 2012 at an approximate cost of \$1.1 million. Vegetation was planted in 2013. The Ramsey-Washington Metro Watershed District stormwater volume credit is approximately 85,000 cu-ft.

- **Trillium Park Stormwater Ponds** - As part of the Trillium Park Project the Sewer Utility funded the construction of three stormwater quality ponds. The ponds are designed with dead pool storage, a skimmer outlet structure to prohibit floatables from moving downstream, and an iron-enhanced (5% iron by weight) sand filter bench. Based on published research data, an iron-enhanced bench is capable of removing 80% of the total phosphorus. Total water quality credit volume granted by the Capitol Region Watershed District was approximately 108,900 cubic feet. A 70% filter volume credit has been applied to this credit volume. Sewer diversion piping and pre-treatment sediment control structures were constructed upstream of the wet ponds. The facilities described above will be owned and maintained by the Public Works Department. Construction cost for these improvements is estimated at \$900,000. The Trillium Park Project was started in 2013 and will be completed in 2014.

- **Hampden Park Water Quality Improvement Project** - Plans were developed to construct an underground stormwater infiltration system consisting of a perforated pipe gallery within Hampden Park. Pre-treatment sediment control structures were also planned to be constructed. The potential credit volume for stormwater runoff is estimated at 30,000 cubic feet. Construction cost is estimated at \$450,000. The project will be constructed in 2014.
- **College Park Water Quality Improvements Project** - Construction for College Park has been delayed indefinitely to further document ground water levels in the area.
- **Parks and Recreation Wash Stations:** Contracted with ESD Waste2Water, Incorporated to complete site visits and provide five proposals for installation of permanent or portable equipment wash stations. Parks will seek funding for future installation.
- **Swede Hollow Park Stormwater Study** - A stormwater study was initiated at Swede Hollow Park to evaluate the potential to improve water quality in the park, including opportunities to daylight stormwater into stream channels or wetlands. This study followed on the heels of pond dredging activities in the park initiated in 2011, and completed in 2012.
- **Stormwater BMP Installation and Maintenance:** Parks and Recreation received \$46,000 in in-kind labor from Conservation Corps Minnesota for installation and maintenance of stormwater best management practices in Saint Paul. Funding was made possible through the Legacy amendment.
- **Highland Ravine Stabilization Study:** Capitol Region Watershed District completed a Highland Park ravine stabilization study in 2012, with implementation to occur in 2014.
- **Crosby Farm Regional Park:** Great River Greening and Wenck Associates, Inc. completed a riparian area study at Crosby Farm Regional Park to address sediment and erosion control issues north of Upper Lake and Lake Crosby. Implementation of bioengineering recommendations and invasive species removal initiated in 2012 and was completed in 2013.
- **Lake Como Lakeshore Plantings:** Parks and Recreation extended native lakeshore plantings at Lake Como, and enhanced existing plantings.
- **Marydale Park:** Parking lot reconstruction project included a large rain garden.

- **Lake Phalen Watershed:**
 - Parks and Recreation, in partnership with the Ramsey Conservation District and the Ramey-Washington Metro Watershed District completed restoration of three ponds and one rain garden on the Phalen Golf Course.
 - Parks and Recreation initiated and completed restoration of 1,100 feet of lakeshore at Round Lake, including enhancement of five adjacent acres of woodland and prairie within the project's watershed.
 - Phalen Channel project: The intent of this project is to improve the fish habitat and to create a more aesthetic and functional shoreline treatment to help improve water quality.

- **Lilydale Regional Park:**
 - Parks and Recreation received a \$135,000 Conservation Partners Legacy Grant to enhance approximately 60 acres of floodplain forest in Lilydale Regional Park.
 - Road realignment project included numerous BMPs and extensive native plantings.

Staff Training

- Held a brown bag presentation for City staff for the Hamline Alley permeable pavement project on January of 2013.
- City staff attended the Minnesota Water Resources Conference, the LID Symposium and the Clean Water Summit.

Performance Measures

- Continued a major tunnel rehabilitation project.
- Inspected, repaired and cleaned catch basins. Cleaned 4,008 catch basins.
- Inspected, cleaned and repaired 1,619 storm sewer manholes.
- Inspected and maintained stormwater ponding areas.
- Completed stormwater pond sediment removal at 6 ponding areas.
- Inspected and maintained pump stations.
- Inspected Mississippi River Outfalls.
- Inspected storm sewers and tunnels.
- Constructed water quality BMPs.
- Completed feasibility studies.
- Completed stormwater modeling projects.

II. Disposal of Removed Substances

Program Objective

The objective of this NPDES stormwater management program is to minimize the discharge of pollutants through the proper operation and maintenance of the City's storm drain system. A key component is the collection and disposal of targeted pollutants in a manner that will prevent pollution and that will comply with applicable regulations. Targeted pollutants include:

- Sediment
- Nutrients
- Floatable Garbage

Program Overview

Material is collected from catch basin sumps, the storm sewer system, ponding areas and water quality BMPs. Removed substances are screened for visual or olfactory indications of contamination. If contamination of the material is suspected, representative samples are selected for an environmental analysis. Contaminated substances are disposed of in a landfill or another site that is approved by the Minnesota Pollution Control Agency. Uncontaminated sediments are disposed in the same manner as street sweepings, as reported in Section IV: Street Management Program. During cleaning operations, sediment control measures are applied as needed to prevent removed material from re-entering the storm drain system.

Performance Measures

- Material removed from catch basins: 688 tons
- Material removed from stormwater ponds: 8,400 cubic yards

III. New Development and Construction

Program Objective

The objective of this NPDES stormwater management program is to minimize the discharge of pollutants through the regulation of construction projects and new developments. Regulation of stormwater runoff includes erosion and sediment control requirements. Targeted pollutants include:

- Phosphorus
- Sediments

Program Overview

Saint Paul Code of Ordinances, Part II – Legislative Code, Title VI - Building and Housing, Chapter 52 Stormwater Runoff contains erosion and sediment control requirements, and stormwater management requirements for new developments and other land-disturbing construction activities. Construction activities and new development projects are reviewed through the City's Site Plan Review process. This review provides comments that are integrated into a final plan submittal that is subsequently routed to the City's Departments for approval. The Department of Safety and Inspections reviews projects for compliance with the erosion & sediment control requirements and water quality requirements. The Sewer Utility reviews projects for rate control, flood protection and capacity issues.

2013 Activities

Site Plan Review

DSI and Public Works staff provides a detailed review of site plans and a track process to identify stormwater management opportunities and to review all site plans from a sustainable water quality perspective. During 2013, the City Departments reviewed over 102 site plans of which, 72 received final approval with the appropriate permits issued. Continued attention to erosion and sediment control plan submittals, along with increased awareness in the industry, provided for better compliance during site inspections.

Erosion and Sediment Control

Requirements

The ordinance addresses development sites, utility excavations, demolition projects and all other land disturbing activities of 1 acre or more. For disturbances less than 1 acre, erosion and sedimentation control practices must be installed and inspected before land disturbing activities begin. Sites disturbing more than 10,000 square feet need to submit an erosion and sediment control plan as part of the City's Site Plan Review process. City Zoning Code Chapter 33 requires a grading permit for the placement, movement and removal of fifty cubic yards of fill and to incorporate stabilization methods on soil stockpiles greater than 10 cubic yards, if left for more than 10 days.

Inspection and Enforcement

Ongoing site inspections are performed by Public Works ROW and DSI inspectors. In 2013, DSI inspectors conducted 156 erosion control inspections. The City of Saint Paul utilizes standard forms for both public and private construction sites. A stop work order was issued on one site. The standard form utilized for documenting field inspections for street reconstruction projects is intended to be handwritten in the field and included in the project file. Staff started using the forms in 2011. The standard form utilized for documenting field inspections on private projects is found in the Appendix. The forms supplement a database which tracks multiple levels of information including inspections for erosion control.

Inspectors may issue a warning notice citation or a "Stop Work Order". Failure of the permittee to comply with the ordinance will constitute a violation and will be considered a nuisance pursuant to the laws of the State of Minnesota. If there is a demonstrated failure to comply, the City reserves the right to terminate a permit at any time. The City then has the option of proceeding with the necessary restoration of the site. This restoration would be done at the expense of the owner/permittee. Increased awareness of the ordinance, improving plan submittals and a continued compliance based inspection program resulted in a continued rise in compliance. Inspections were coordinated with the Capitol Region and Ramsey-Washington Metro Watershed Districts. During 2013, Public Works Construction inspectors continued to work with internal forces on erosion and sediment control compliance.

New public and private developments and other projects that disturb one acre or more will be inspected for erosion and sediment control. This effort will lead to a continued awareness of the problems associated with construction site sediment. This will also result in a continuing increase in the overall rate of compliance citywide. The City will continue to study options to increase compliance, and to help limit the amount of erosion and sediment loss associated with construction projects.

Ongoing Stormwater Management

Redevelopment of existing sites provides an opportunity to lessen the impacts of urbanization on the Mississippi River and other Saint Paul water resources. During 2013, Stormwater Best Management Practices (BMPs) were installed on sites reviewed through the Site Plan Review process. BMP types that were constructed include:

- Rain gardens
- Pervious pavement
- Infiltration areas
- Stormwater ponds
- Underground infiltration/filtration and detention facilities

Plan Review

Stormwater management plans are required for all construction projects, which disturb one acre or more of land. These plans are reviewed through the Site Plan review process and approved by the Department of Safety and Inspections and the Saint Paul Public Works Sewer Utility. Sites disturbing less than one acre are also required to provide runoff rate control, if the project disturbs greater the 10,000 square feet. In addition, sites under one acre are encouraged to incorporate green infrastructure stormwater BMPs into their design as a means of satisfying other city codes, such as parking requirements. The City updated its Off-Street Parking Code to include stormwater landscaping requirements in June of 2010. In July of 2010, the City began implementation of the green building policy requirements for city building projects and private projects receiving more than \$200,000 in City funding to facilitate design and construction of stormwater quality practices. A description of the site plan review process is accessible on the City's website (www.stpaul.gov/index.aspx?NID=1073). This provides subsequent links describing requirements, review process, and submittals

Goals

- Reductions of sediment and nutrient discharges to receiving waters
- Controlled rate of runoff
- Provision of on-site, off-site or regional stormwater facilities
- Maximizing infiltration by minimizing the amount of impervious surface
- Employing natural drainage and vegetation

Standard Operating Procedures and Checklists

The City has developed the following standard operating procedures (SOPs) and checklists for Erosion and Sediment Control (ESC) on public and private construction sites:

- The City of Saint Paul utilizes a standard form for both public and private construction sites.
- Public Works Right-of-Way Division uses a form when ROW inspectors inspect Utility Installation work. This form was distributed at the annual Utility review meeting. (See Appendix.)
- Continue to improve SOPs and checklists and distribute to appropriate parties.
- City staff will continue to develop performance measures and to improve data collection, tracking and analysis. The City will also pursue means of measuring and understanding water quality impacts.

Staff Training

- ESC information was distributed at the City's Annual Utility Project Review meeting in 2013.
- City of Saint Paul inspectors are trained and certified through the University of Minnesota's Erosion and Stormwater Management Certification Program. This includes Department of Public Works Street Construction inspectors, Department of Safety and Inspections Building inspectors and 3 Parks Environmental Services staff. The certification includes a recertification component within a 3-year period, which ensures training stays current with techniques and regulations.

Performance Measures

- Tracking all erosion control plans and inspections in City's AMANDA system.
- Handouts and worksheets to be distributed to all relevant applicants.

IV. Street Management Program

Program Objective

The objective of this stormwater management program is to minimize the discharge of pollutants through the proper operation and maintenance of public streets, alleys and municipal equipment yards. Targeted pollutants include:

- Sediment
- Nutrients
- BOD
- Chloride
- Floatable Garbage

Program Overview

Street Sweeping

The City of Saint Paul conducts a street and alley cleaning program to promote the health and welfare of its citizens and to reduce the amount of pollutants to receiving waters from stormwater discharges. Sweeping is a major operation for the Street Maintenance Division and is done every month of the year, day and night. Elgin Pelican mechanical sweepers handle the vast majority of the sweeping. An Elgin Crosswind regenerative air sweeper is utilized downtown every weekday.

Residential street spring sweeping was completed on June 6, 2014. The primary material swept in the spring is debris from winter months. Fall sweeping is done during the last week of October and the first half of November. The fall sweep is timed so that a majority of the leaves are down and enough time is allowed to sweep all Saint Paul streets before the first snow. Currently, the wide variety of trees with varying leaf drop times makes it impossible to wait for all of the leaves to drop. To compensate for this, touch up sweeping continues most years through November and early December. In the interest of continued improvement to our sweeping program, workers attend training and best management practices are implemented.

Snow and Ice Control

Minnesota weather conditions may require ice control from late September through early May. Frost forming on bridge decks is usually the first and last ice control event of the winter season. From early November through mid-April, the need for pavement treatment is determined by temperature and precipitation. Frequency of snow events through the winter season influences amounts of material used. The City's foremost objective is to maintain safe roads for all users. The consequences of icy roads are longer travel times, adverse economic impact, accidents and injuries.

Salt is the primary material used to melt snow and ice. Salt and treated salt is effective to 15°F and 0°F respectively, but factors such as darkness, continuing snow, type and quantity of precipitation, all reduce melting performance. Sand is sometimes used to enhance traction, usually when temperatures are below 0°F and snowfall amount is likely to be greater than 3 inches. Specific application rates are decided upon for each snow event and adjusted to the minimum amount necessary to achieve the desired results.

Saint Paul uses treated salt for pavement temperatures below 15°F and regular salt for temperatures from 15°F and above. Salt brine is used to pre-wet salt from the salt spreaders, making the salt more effective. The benefits of pre-wetted salt are better melting performance, less bounce, residual value and reduction in amount of salt used. All salt trucks are presently fitted with salt pre-wetting equipment. Public Works developed and adopted a formal Salt Management Plan in the fall of 2011.

Storage of De-icing Materials

Salt and mixed piles of sand and salt are covered year round to eliminate runoff. Storage facilities are located at the following locations:

873 N. Dale Street
310 South Victoria Street

2013 Activities

Street Sweeping

Streets and alleys are divided into classes, each of which receives a different level of service as defined below:

Class I-A & B Downtown or Loop streets

Downtown or loop streets are within the following boundaries: Kellogg on the south, 12th on the north, Broadway on the east and Main on the west. These streets are swept approximately two times per week during the spring, summer, fall and winter as weather allows. All routine maintenance, including patching and repairing of street surfaces, is performed on an as-needed basis.

Class II - Outlying Commercial and Arterial Streets

These streets, which have business or commercial properties fronting on them, are the City's major arteries. They have heavy volumes of both vehicular and pedestrian traffic. Typical examples are University, Snelling, West 7th, East 7th, Rice, Payne, Arcade, Summit and Grand. Class II streets are typically swept or cleaned eight to ten times annually on the following schedule: every two weeks in April, May, October and November for spring and fall cleanup and every three weeks in June through September for litter, tree debris and sediment. Occasional winter sweeping is also done. All routine maintenance, including patching and repairing of street surfaces, is done on a scheduled or as-needed basis. In 2014, Class II maintenance priorities will be shifted from sweeping to patching and paving operations. All Class II, streets will be swept in the spring and fall, but will only receive intermittent sweeping throughout the remainder of the year.

Class III - Residential Streets

In the spring, all residential streets, including oiled, paved and intermediate streets, receive a thorough sweeping. Patching and repairing is done on a scheduled or as-needed basis. All existing paved and oiled streets are on the 8 year cycle chip seal list. Approximately 70 miles of paved streets were chip sealed in 2013. Oil and sand sealing of oiled streets is no longer done. The City recycles the reclaimed chip seal rock. This material is no longer hauled to the landfill. In

the fall, streets are swept for leaf pickup. All material swept up during the fall cleanup is hauled to a commercial composting facility.

Class IV - Oiled and Paved Alleys

All oiled and paved alleys are swept during the late spring. All routine maintenance, including patching and repairing of the alley surfaces, is performed on a scheduled or as-needed basis. All existing paved and oiled alleys are now on an 8-year cycle chip seal list. Oil and sand sealing of oiled alleys is no longer done.

Class V and VI - Unimproved Streets and Alleys

Unimproved streets and alleys are right-of-ways that have not been developed. There are approximately 50 miles of unimproved streets and approximately 288 miles of unimproved assessed alleys in the City. Because they are City right-of-ways, the City has the responsibility to perform minimal repairs and maintenance work on them to make them passable and to reduce hazards. The maintenance and repair of these streets and alleys consists of patching, minor blading, and placing of crushed rock or other stabilized material.

Disposal

The materials collected from street sweeping are delivered to the City's Pleasant and View yard. The City's hauling contractor hauls the material away to have it screened and disposed of properly. The contractor composts the organic materials, which are mostly collected in the fall sweep.

Street Maintenance has a Hazardous Waste Disposal Policy in place. Any hazardous materials collected from City streets are disposed of in environmentally acceptable means. In 2001, the sweepings collected from City streets and alleys were tested and found to be within the Environmental Protection Agency's guidelines for recycling purposes, after screening out waste and debris. Approximately 7 to 10% of swept up material is disposed of in a landfill. Street Maintenance also services over 360 trash receptacles and disposes of refuse from neighborhood cleanups each year.

2013 Street Sweeping Quantities (Cubic Yards)

Class	Spring/Summer	Fall
I & II - Downtown & Arterials	9,520	3,556
III – Residential & Alleys	10,150	19,096
Totals	19,670	22,652

Snow and Ice Control

The 2013 winter season was average to above average for January through May and closer to normal in November and December. Six snow emergencies were declared early in 2013. Typically 3 or 4 snow emergencies are declared during this period. It is anticipated that ice control materials used for 2014 will be similar to 2013 quantities.

2013 Ice Control Material Quantities

	Jan to March	Nov to Dec	Total
Salt (tons)	4,477	4,604	9,081
Sand (tons)	0	500	500
Treated Salt (tons)	6,367	5,152	11,519
Brine (gallons)	57,117	0	57,117
Brine with Mg (gallons)	10,000	0	10,000

Employee Training

Saint Paul Public Works is an advocate of networking and regularly attends events such as the American Public Works Association North American Snow Conference and the Fresh Water Society Road Salt Symposium. All operators attended a Snow and Ice Control training session in November 2013. Attendees received certification from the MPCA. The main purpose of this session was to train employees to get the most out of every application, maintaining the safest roads possible in the most economical way, while protecting the environment. The session addressed the following: abrasives, salt, pre-wetting, anti-icing, equipment calibration and material storage. Staff annually attends the Road Salt Symposium. The Minnesota Snow and Ice Control Handbook and Saint Paul Public Works Salt Management Plan are available to all employees and are used as a guide in our best practices.

Parks and Recreation Employees attended the following trainings:

- Parks staff attended the Annual Road Salt Symposium.

Performance Measures

- Amount of materials recovered
- Amount of salt and sand applied
- Employee trainings

V. Pesticide and Fertilizer Management

Program Objective

The objective of this stormwater management program is to minimize the discharge of pollutants by controlling the application of pesticides and fertilizers.

Targeted pollutants include:

- Pesticides
- Nutrients

Program Overview

In November of 2001, the Saint Paul City Council passed an ordinance regulating the use of lawn fertilizer containing phosphorus in the City of Saint Paul. The ordinance bans the use of fertilizer containing phosphorus in the City with the exception of establishing a new lawn or if a soil test shows that phosphorus is needed. The ordinance also requires retailers to clearly label fertilizer containing phosphorus and post a notice advising that the use of such fertilizer is restricted within the City. In addition, the City amended an ordinance regulating commercial applicators in Saint Paul. The amendment requires commercial fertilizer applicators to be licensed by the City in addition to the pesticide applicators. The state passed legislation that sets a 0% phosphorus ban on fertilizer for the metro area effective in 2004.

The City has strict requirements that are followed for applications on all City facilities. All city programs for pesticide use shall be reviewed and approved by the city council prior to any application upon city property. Each use of pesticide or fertilizer is documented and reported to the City Clerk and to the District Council in which the application occurred. City policy was developed upon the recommendations of a report done by the City Council Investigation & Research Center in May of 1990. In addition, all City staff that applies pesticides and fertilizers must be licensed in accordance the City Ordinance, which requires commercial applicators to be licensed by the City.

- Continue to certify employees as pesticide applicators
- Continue to track applications of pesticides on city property.
- Continue to implement Integrated Pest Management on park property.

- Continue to coordinate with existing education efforts, such as Watershed Partners, to develop and distribute educational pieces.

2013 Activities

Pesticide and Fertilizer Use on City Facilities

The City continued to apply, document and report pesticide and fertilizer use in accordance with these requirements. The Department of Parks and Recreation follows an Integrated Pest Management program with the goals of decreasing pesticide use and replacing synthetic herbicides with organic alternatives when feasible.

Public Education

The City continued to participate in the Watershed Partners, Minnesota Water Media Campaign. Information on public education and outreach is found in that section of the report.

Performance Measures

- Number of staff with pesticide application licenses.
- Amount of materials applied.

VI. Prohibited Discharges to the Storm Sewer System

Program Objective

The objective of this stormwater management program is to minimize the discharge of pollutants by implementing a program to detect and mitigate prohibited discharges, and to encourage that an NPDES General Industrial Stormwater Permit or other such permit be obtained for non-stormwater discharges, if applicable. Targeted pollutants include:

- All pollutants

Program Overview

Spill Response

The Sewer Maintenance section of the Sewer Utility and the Saint Paul Fire Department personnel typically serve as the first responders to a spill event. The immediate goals of this response are safety, containment of the spill, recovery of hazardous materials and collection of data for use in assessment of site impacts. Recovery efforts can take several forms, but typically fall into two broad categories: recovery for disposal and the use of absorbents or other media to collect hazardous waste for disposal.

The life cycle of an event requires City personnel to work as a team, utilizing all available resources to protect residents, the environment and property. Each event is followed by a post-action debriefing to determine the cause of the event, to identify measures to improve the City's response, and to determine the means to limit future occurrences. Outside agencies and private emergency response contractors are incorporated as needed. Spills that fall within the minimum reporting requirements are reported to the Minnesota Pollution Control Agency (MPCA) Public Safety Duty Officer. For these spills, an Oil and Hazardous Materials Spill Data form must be completed within 24 hours, or by the next business day. The completed forms are used to document the type of spill, as well as the response to the spill.

Prohibited Discharges

Pollution prevention and control is achieved through educational efforts, inspections and coordinated community outreach. These activities may include enforcement, pursuant to applicable City codes, and coordination with other regulatory agencies at the county, state and federal levels. Enforcement yields identification of the responsible party, documentation of clean-up activities, and efforts to reduce the flow of pollutants from illegal dumping and disposal. Complaints are received from the public, City staff and other government agencies. Department of Safety and Inspections and Public Works staff respond to reports of unauthorized discharges and illicit connections. The City has developed an ordinance (see Appendix for ordinance and fact sheet) defining allowable discharges to the storm sewer system. The ordinance was adopted in February and became effective in March of 2013.

In 2013, DSI sent out 28 leaf letters to properties throughout the City. This letter states that a complaint was received by the City of leaves being raked into the street. It explains these leaves negatively impact downstream water bodies and gives info about compost sites in Ramsey County. The first letter is a warning and subsequent complaints will result in a fine to the property owner.

Non-Stormwater Discharges

The following non-stormwater discharges are not a significant source of pollutants and no additional control measures are needed for these discharges:

- NPDES permitted non-stormwater discharges
- Water line flushing and other discharges from potable water distribution system
- Landscape irrigation and lawn watering
- Irrigation water
- Diverted stream flows
- Rising ground water
- Foundation and footing drains
- Water from basement sump pumps
- Air conditioning condensation
- Springs
- Individual residential and fund raising car washings
- Flows from riparian habitats and wetlands

- Swimming pool discharges
- Flows from fire fighting

Detection and Removal Screening Program

The field screening program to detect and investigate contaminated flows in the storm drain system is part of the City's daily operations. Sewer Maintenance crews routinely inspect and clean storm drain structures throughout the City. In addition, inspections of flows that generate unusual odors, stains, and deposits are included in the annual outfall inspection program. In 2013, City staff inspected the East Kittsondale Tunnel system prior to a stormwater modeling and tunnel rehabilitation project. During the walk through, no visual or odor evidence of prohibited discharges was observed.

Any suspect flows are then reported to appropriate City staff for further investigation. These combined efforts result in an annual screening of more than 20% of City drainage areas.

The City works with the Capitol Region Watershed District to conduct a stormwater monitoring program in Saint Paul as well as conducting its own BMP monitoring program. The best avenue for a continued effective screening program in the City of Saint Paul, without duplication of services, is to continue to use current practices, and to explore the development of certain aspects of the program to improve enforcement results.

The City investigates prohibited discharges as part of its regular tunnel, outfall and pond inspection program. The City also investigates complaints and issues identified in the monitoring program. The Department of Safety and Inspections carries out enforcement on property code violations. Under Chapter 45 of City Code, the City is authorized to collect via assessment its cost of abating property-related health and safety problems when an owner has failed to perform the work following notice by the City. The City may assess property owners to recover unpaid city charges.

The City followed up on the following complaints regarding discharge to the storm sewer system:

- During the Lowertown Ballpark construction, contaminated water from an artesian well was discovered and routed to the sanitary sewer under a Special

Discharge Application from Metropolitan Council Environmental Services until the well was sealed.

- Roof drain discharge to alley off University Avenue. The City inspector determined that this was an allowable discharge of condensate from roof top HVAC units.

Continue existing programs as outlined in the program overview, and continue to develop and improve documentation of program activities. GIS mapping will be implemented as a tool to support various activities. Information that is gained through the inspection program will be used to compile data on non-stormwater discharges, storage of hazardous materials, and activities or operations that may be potential water pollution point sources. The City will continue to investigate prohibited discharges as part of its regular tunnel, outfall and pond inspection program.

Standard Operating Procedures and Checklists

- The Parks Department uses a Spill Reporting form and instructions (See Appendix). Form is completed in the event of a spill if petroleum or hydraulic spills greater than five gallons, and other materials spill of any size. The Minnesota Duty Officer is notified, as required, in the event of a reported spill.
- The Parks Department and the Department of Public Works have Clean Water Policies which are distributed, reviewed, and signed by all field staff. (See Appendix)

Staff Training

- A fact sheet was developed and distributed with the adoption of the new ordinance (See Appendix). Several staff meetings were held throughout the development of the ordinance.

Performance Measures

- Resolution of reported or discovered prohibited discharges in previous year.
- Development and implementation of SOPs.
- Staff training

VII. Public Education Program

Program Objective

The objective of this stormwater management program is to educate the public regarding stormwater pollution. Targeted pollutants include:

- All pollutants

Program Overview

The City of Saint Paul implements its Public Education Program to promote, publicize and facilitate the proper management of stormwater discharges to the storm sewer system. The program's focus is to educate residents, business owners, employees and visitors about stormwater. The program's goals include showing how everyone's actions affect the quality of our lakes, wetlands, streams and the Mississippi River, and how to control pollutants at the sources to reduce the discharge of pollutants to our receiving waters. The desired result is to change behavior in ways that will improve water quality. Many of the components of the program can be found on the City of Saint Paul Stormwater web site: <http://www.ci.stpaul.mn.us/index.aspx?NID=2686>

2013 Activities

Storm Drain Stenciling Education Program

The City of Saint Paul has been conducting a successful storm drain stenciling education program since 1993. The Friends of the Mississippi River (FMR) coordinates this program for the City. FMR is the leading citizens' organization working to protect the Mississippi River and its watershed in the Twin Cities area. In 2013, FMR coordinated the stenciling of 1,837 storm drains and distribution of 2,974 door hangers in partnership with 875 volunteers. The 2013 Stenciling Program Report and a copy of the door hanger are found in the Appendix.

The storm-drain stenciling project is designed to meet the following three objectives:

- To involve Saint Paul residents in hands-on learning experiences about urban runoff pollution and ways to prevent it.
- To facilitate school service learning initiatives that include storm drain stenciling, litter cleanups and/or habitat restoration as a key components.
- To stencil storm drains and distribute educational door hangers to residents and businesses in the stenciled neighborhoods in the City of Saint Paul.

The 2013 program objectives were implemented through the following activities:

- Coordinated the stenciling of storm drains and distribution of door hangers in partnership with volunteers from school groups, community groups, and residents of the City of Saint Paul.
- Provided a 20 to 60 minute educational orientation to each volunteer group.
- Provided educational presentations on urban runoff pollution to volunteers, classrooms and other community members.
- Coordinated 2 to 3 litter clean-ups with school and community groups.
- Coordinated community educational workshops.
- Coordinated the purchase, maintenance and storage of all stenciling and workshop supplies.

Metro WaterShed Partners

Saint Paul has been an active Metro WaterShed Partners since 1997. Metro WaterShed Partners is an innovative, dynamic coalition of over 40 public, private and non-profit organizations in the Saint Paul/St. Paul metropolitan area that, through collaborative educational outreach, teaches residents how to care for area waters. This partnership has leveraged grant dollars and staff time to develop educational literature and a nationally recognized interactive display. The WaterShed exhibit was at schools and events in and around Saint Paul in 2013. The WaterShed is also at the Minnesota State Fair in the Department of Natural Resources Building each year.

Metro Clean Water Campaign

To assist cities with educational efforts, Metro WaterShed Partners is conducting the Metro Clean Water Campaign. This type of collaboration allows for the development of a consistent message, which is distributed cost effectively. A City of Saint Paul staff person is a member of this committee. The campaign was funded in 2013 with money

raised from local units of government. Saint Paul contributed to this campaign in 2013. The 2013 report for the Metro Clean Water Campaign is found in the appendix.

Annual Spring Parks Clean-Up and Neighborhood Litter Campaign

St. Paul Parks and Recreation hosts an Annual Spring Parks Clean-Up every year during the month of April. The City provides clean-up supplies, trash removal, recycling services and a “thank you” celebration. During this event volunteers remove litter from Saint Paul's Parks and Recreation Centers. Without the help of volunteers during the cleanup, trash accumulates in these natural areas harming wildlife, polluting lakes and rivers and detracting from the beauty of our community. This event is a fun and effective way to improve the environment in our community.

Waterfest

The City of Saint Paul is a sponsor of Waterfest, which is a family festival put on each May at Lake Phalen by the Ramsey-Washington Metro Watershed District. The Watershed District estimates that 1000 people attend this free family festival. The Parks Department assists in coordinating this event. The Public Works Department provides a street sweeper to be on display for this event.

Performance Measures

- Tracking of number of participants, flyers, storm drains stenciled etc.

VIII. Coordination with Other Governmental Entities

Program Objective

The objective of this stormwater management program is to maximize stormwater management efforts through coordination and partnerships with other governmental entities. Targeted pollutants include:

- All pollutants

Program Overview

The City of Saint Paul coordinates with many entities in all aspects of managing stormwater. Each project, event or activity listed involves the contribution of numerous entities. By its nature, water does not follow political boundaries therefore cooperation is necessary to effectively manage stormwater. The limited resources that are available must be used efficiently with minimal duplication of efforts. The main area of coordination on these issues is with Saint Paul's watershed management organizations.

Coordination and partnerships on capital projects, water quality programs and studies will continue. Participation with other governmental entities in Total Maximum Daily Load (TMDL) studies and implementation plans will be a significant component. The City will develop an updated Stormwater Management Program that includes coordination with other entities in order to eliminate duplication and to leverage joint resources to protect the City's critical water resources.

Activities

Water Resource Work Group

In December of 2008, the Saint Paul City Council passed a resolution committing the City to the stewardship and protection of valuable water resources and establishing a Water Resource Work Group. This group, made up of staff members from multiple City Departments, meets monthly to discuss and work on water resources issues in the City including planning and implementation of the Stormwater Management Program for the City's Stormwater Permit. This group regularly meets with the watershed organizations and other entities to coordinate projects and programs.

Saint Paul Local Surface Water Management Plan

The City of Saint Paul's Local Surface Water Management Plan was developed to meet the requirements of Minnesota Statute 103B.235, Minnesota rules 8410.00160 and 8410.0170 and with the Watershed Management Plan's of Saint Paul's watershed management organizations. The Metropolitan Council also reviews the local water plans in the Metro Area. The plan was approved by the Capitol Region WD, Ramsey-Washington Metro WD, Lower Mississippi River WMO and Mississippi WMO. The City Council adopted the plan in December of 2006. This plan will be updated in response to the Watershed Management Plan updates of the City's watershed organizations.

Water Chapter of the City's Comprehensive Plan

In February of 2010, the City completed its Comprehensive Plan as required by the Metropolitan Council. This update includes a water resources chapter, which addresses municipal water supply, surface water management and the sanitary sewer system. The water resources chapter of the Comprehensive Plan can be found on the City's website at <http://stpaul.gov/DocumentView.aspx?DID=11886>.

Minnesota Cities Stormwater Coalition

Saint Paul is a member of the Minnesota Cities Stormwater Coalition (MCSC), which was formed in 2006. A city staff person serves on the steering committee for this organization. The mission of the MCSC is to protect Minnesota's water resources by ensuring that the policies, permits, procedures, rules, and legislation adopted by state water resource management agencies and other regulatory entities are both meaningful and manageable from the perspective of the regulated parties.

Watershed Organizations

The following briefly describes each organization and provides some of the cooperative efforts between the City and its watershed management organization. Many examples of coordination can be found throughout this report. A map of St. Paul's watershed management organizations is found in the Appendix.

Mississippi Watershed Management Organization (MWMO)

The MWMO is a joint powers organization, which lies mainly in Minneapolis. Members include the Minneapolis Park and Recreation Board, Minneapolis, St. Anthony Park, Lauderdale and St. Paul. A small area in the northwest corner of St. Paul is within the MWMO boundary.

Lower Mississippi River Watershed Management Organization (LMWMO)

The LMWMO is a joint powers organization. Members include St. Paul, West St. Paul, Mendota Heights, Inver Grove Heights, South St. Paul, Lilydale and Sunfish Lake. The West Side of St. Paul lies within the LMWMO boundary.

Ramsey-Washington Metro Watershed District (RWMWD)

The Ramsey-Washington Metro Watershed District is located in eastern Ramsey and western Washington County. The watershed district is approximately 53 square miles and includes parts of White Bear Lake, Vadnais Heights, Gem Lake, Little Canada, Maplewood, Landfall, North St. Paul, St. Paul, Oakdale and Woodbury.

Capitol Region Watershed District (CRWD)

The Capitol Region Watershed District was formed in 1998. The watershed includes parts of St. Paul, Roseville, Maplewood, Lauderdale, Falcon Heights, the State Fairgrounds and the University of Minnesota. The watershed is considered urban and the majority of the area drains to the Mississippi River through storm sewer systems. The City contracts with CRWD to conduct the stormwater permit monitoring program. The City collaborates with the CRWD on projects and programs in the City of Saint Paul.

Performance Measures

- Projects and programs completed in partnership with other entities.

IX. Public Participation Process

Program Objective

The objective of this stormwater management program is to maximize the effectiveness of the City's Stormwater Program by seeking input from the public.

Targeted pollutants include:

- All pollutants

Program Overview

The Annual Report is a coordinated effort by various City departments. The Permit includes an opportunity for public input in the development of the priorities and programs necessary for compliance. Information in the Annual Report covers the activities that will be implemented for the current year, and provides documentation and analysis of the activities conducted in the previous year.

Each year, the City holds a public meeting to provide an opportunity for public input regarding the Program and Annual Report. A notice of the availability of the Report for review and public comment is sent to all Saint Paul neighborhood organizations, to the governmental entities that have jurisdiction over activities relating to stormwater management, and to other interested parties.

Once finalized, the Annual Report is also made available on the web site for viewing or downloading. All testimony presented at the public meeting, and all written comments received, are recorded and given due consideration. The public comments, response to comments and a copy of the council resolution adopting the Stormwater Management Program and Annual Report Activities are submitted each year to the Minnesota Pollution Control Agency.

X. Stormwater Monitoring and Modeling

History

As part of the two part application for the NPDES permit, the City of Saint Paul conducted stormwater monitoring at 5 sites for one season. From 2001 through 2004, the Cities of Saint Paul and Minneapolis and the Minneapolis Park and Recreation Board participated in a joint stormwater monitoring program, as required by the stormwater permit. Minneapolis Park Board staff conducted the monitoring program. The Stormwater Monitoring Program Manual was completed by Minneapolis Park Board staff and submitted separately to the MPCA in April of 2001. The joint monitoring agreement was submitted to the MPCA in 2002.

Sampling sites were identified in the Stormwater Monitoring Program Manual. The sampling sites were selected from the sites used in the stormwater permit application monitoring program. Five sites were chosen, representative of the following land use types: two residential sites, two industrial/commercial sites and one mixed use site. Two sites were located in Minneapolis and three were in Saint Paul. The permit required two years of mercury monitoring, which was conducted in 2002 and 2003.

Beginning In 2005, the City began a partnership with the Capitol Region Watershed District, to conduct the stormwater permit monitoring program for Saint Paul as part of CRWD's overall monitoring program. CRWD established a monitoring program in 2004 to collect stormwater data from the major subwatersheds and stormwater best management practices (BMPs).

2013 Activities

Monitoring Program

In 2013, CRWD operated 17 stormwater monitoring stations of which 10 were full water quality monitoring stations. The Capitol Region Watershed District 2013 Monitoring Report is available on the district website at www.capitolregionwd.org.

In 2013, the City conducted the Stormwater Quantity and Quality Monitoring Program. Monitoring was completed at 10 stormwater volume reduction BMPs in the City of Saint Paul. Electronic water monitoring equipment was used to collect water quantity and quality data on a continuous basis from each BMP, which included:

- Water level in all of the BMPs
- Rate and volume of runoff flowing into and bypassing 4 of the BMPs
- Composite water quality sampling at 2 of the BMPs

Analysis of the collected data generated valuable information related to the performance of each BMP. This information included:

- Average infiltration rates measured in the BMPs exceeded the rates recommended in the Minnesota Stormwater Manual and watershed district rules for specific soil types.
- The BMPs are more effective at reducing stormwater volume and pollutant loads to downstream water bodies than is currently being recognized by the watershed districts.
- The Dynamic Method for sizing volume reduction BMPs was shown to be more accurate than the Simple Method. Allowing the use of the Dynamic Method in demonstrating compliance with watershed district rules would generate significant cost savings to the public.

A map summarizing the CRWD and City monitoring sites in Saint Paul can be found in the Appendix. The City's BMP monitoring program can be found on the City's Stormwater page at <http://www.stpaul.gov/index.aspx?NID=2686> .

Stormwater Runoff and Water Quality Modeling

In 2010, the City completed the first phase of a program that includes stormwater modeling, a citywide volume reduction inventory and plan to address stormwater on the 2010 Residential Street Reconstruction Program. The modeling includes the development of an XPSWMM and P8 modeling and uses the CRWD monitoring data for calibration. Three major subwatersheds, as well as the 2010 street reconstruction subwatersheds, were modeled. In 2011, the City began modeling as a component of the storm tunnel rehabilitation program. The Saint Anthony Park and Davern

subwatersheds have been modeled. In 2012, the City began modeling the Phalen Creek storm sewer interceptor. The East Kittsondale storm sewer system modeling project was completed in 2013. The citywide modeling map is found in the Appendix. These models will be used by the City in the development of future stormwater programs and projects.

Pollutant Loading Calculations

The estimation of pollutant loadings is found in the Appendix. In addition, the average concentrations and annual loading results for the subwatersheds monitored by the CRWD can be found in Capitol Region Watershed District's 2013 Monitoring Report. This includes Como, East Kittsondale, Phalen Creek, St. Anthony Park and Troutbrook subwatersheds.

XI. Storm Drain System and Drainage Areas Inventory

Storm Drain System Infrastructure

Approximately 150 years ago, Saint Paul first constructed portions of a sewer system that today comprises approximately 450 miles of storm sewers and over 26,000 catch basins. The system was designed to satisfy the City's obligation to provide reasonable drainage of stormwater and to prevent street flooding, which satisfied the City's responsibility to protect neighboring properties, allow for normal traffic flows, and prevent damage to streets, sidewalks and boulevards.

The Department of Public Works is developing a computer based asset and infrastructure management system. This system will include both the storm and sanitary sewer networks. When the asset and infrastructure management system is complete, the City will have the data and systems necessary to accurately determine the sub-watershed for each of the outfalls. The Sewer Utility is in the process of converting its hand drawn sewer maps to an electronic format. All of the converted sewer data was checked for accuracy and is now going through a QA/QC process.

Watershed and Storm Sewer Outfall Inventory

An inventory of Saint Paul's storm sewer outfalls is found in the Appendix. This inventory includes the outfall identification number, outfall name, watershed name, size of pipe and drainage area. The following information is provided in the Outfall Inventory found in the Appendix for each of the 23 watersheds in St. Paul: drainage area, land use types and distribution, population, percent impervious surface area, and the runoff coefficient. The following table shows the total number of discharge points to each water body in Saint Paul.

Discharge points to receiving waters

Receiving Water	Total Discharge Points
Bridal Veil Creek	1
Mississippi River	59
Upper Lake	1
Crosby Lake	3
Fairview North Pond	2
Lake Como	11
Loeb Lake	1
Lake Phalen	5
Beaver Lake	4
Suburban Pond	2
Little Pig's Eye Lake	1
Pig's Eye Lake	5
Battle Creek	11

Stormwater Ponds

A map showing the stormwater ponding areas in the City of Saint Paul is found in the Appendix. The Appendix also contains the tributary area and design capacity for each City ponding area and a list of ponding areas by watershed.

NPDES Permitted Facilities

Facilities in Saint Paul that area issued NPDES permits by the MPCA are found in Appendix.

Industrial Land Use

Industrial land uses may generate higher concentrations of hydrocarbons, trace metals, or toxicants than are found in typical stormwater runoff. Maps showing the areas of industrial land use in Saint Paul and pollutant source locations are included in the Appendix.

Appendix

Minnesota Pollution Control Agency
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
Permit No. MN 0061263
June 2014



Budget	2013	2014	2015	2016	2017	2018
Storm Sewer Projects						
Stormwater Quality Improvements	\$1,103,000	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000
Storm Sewer Tunnel Rehabilitation	\$2,500,000	\$2,500,000	\$3,500,000	\$3,570,000	\$3,641,400	\$3,714,228
Pond Cleaning Project	\$400,000	\$408,000	\$416,160	\$424,483	\$432,973	\$441,632
	\$4,003,000	\$4,408,000	\$5,416,160	\$5,494,483	\$5,574,373	\$5,655,860
Storm Sewer Maintenance						
Storm Sewer Cleaning, Inspection & Repair	\$101,200	\$103,224	\$105,288	\$107,394	\$109,542	\$111,733
Pond Inspection & Maintenance	\$127,300	\$129,846	\$132,443	\$135,092	\$137,794	\$140,549
Catch Basin Inspection, Cleaning & Repair	\$705,900	\$720,018	\$734,418	\$749,107	\$764,089	\$779,371
Manhole Cleaning, Inspection & Repair	\$180,300	\$183,906	\$187,584	\$191,336	\$195,163	\$199,066
	\$1,114,700	\$1,136,994	\$1,159,734	\$1,182,929	\$1,206,587	\$1,031,653
Stormwater Modeling & Monitoring						
Stormwater Modeling	\$110,000	\$112,200	\$114,444	\$116,733	\$119,068	\$121,449
Stormwater Monitoring	\$178,000	\$181,560	\$185,191	\$188,895	\$192,673	\$196,526
	\$288,000	\$293,760	\$299,635	\$305,628	\$311,740	\$317,975
Street Maintenance	\$2,657,129	\$2,710,272	\$2,764,477	\$2,819,767	\$2,876,162	\$2,933,685
Street Sweeping						
Public Education Program	\$56,350	\$57,477	\$58,627	\$59,799	\$60,995	\$62,215
Storm drain stenciling including door hangers						
Metro Clean Water Campaign						
Total Budget	\$8,119,179	\$8,606,503	\$9,698,633	\$9,862,605	\$10,029,857	\$10,001,389

2% used for annual inflation



Standard Operating Procedures for Erosion and Sediment Control Complaint

- 1) Someone sees an erosion and sediment control issue (dirt on street, etc).
 - They should call the City Complaints Office: 651-266-8989
- 2) Complaint is passed on from Complaints Office to Senior Building Inspector (651-266-9021)
- 3) Building Inspector follows up on complaint using DSI Erosion and Sediment Control Worksheet
- 4) If Building Inspector determines source is from the Public Right-of-Way (ROW) or from City Construction Projects the complaint will be forwarded to the Public Works Inspectors –
 - For Private Utility Construction in ROW: 651-487-7250 (General Number for ROW Permit Section)
 - For City Construction Projects: 651-266-6081 (Street Engineering Construction Division)Public Works Inspector will inspect and follow up accordingly
- 5) First Inspection
 - DSI Erosion and Sediment Control Worksheet completed
 - If site is non-compliant: Building Inspector issues immediate verbal order, if possible, or issues a written order if no one is on site, to address situation, sets a compliance date based on the nature of the complaint, and notes details of non-compliance in Worksheet
- 6) Second Inspection
 - Building Inspector Conducts 2nd inspection of site after compliance date
 - 2nd DSI Erosion and Sediment Control Worksheet completed
 - If continued non-compliance: Building Inspector issues written orders, sets a new compliance date based on the nature of the complaint, and notes details of non-compliance in Worksheet
- 7) Third Inspection
 - Building Inspector Conducts 3rd inspection of site after compliance date
 - 3rd DSI Erosion and Sediment Control Worksheet completed
 - If continued non-compliance, proceed with stopping construction work at the site, or submitting the violation to the City Attorney for potential prosecution, or pursue abatement if sediment crosses boundary of the site and project is greater than 1 acre.



CITY OF SAINT PAUL
Christopher B. Coleman, Mayor

375 Jackson Street, Suite 220
Saint Paul, Minnesota 55101-1806

Telephone: 651-266-9090
Facsimile: 651-266-9124
Web: www.stpaul.gov/dsi

Erosion and Sediment Control Worksheet

Property Address:

Inspector:

Permit # (if applicable):

Inspection Date:

Re-inspection Date:

Inspection Type:

Size of Site:

Inspection Results

Sewer Inlet Protection:

Comments:

Street Condition:

Comments:

Rock Entrance:

Comments:

Concrete Washout Area:

Comments:

Silt Fence/Sediment Control:

Comments:

Stock Pile Erosion Control:

Comments:

Site Erosion Control:

Comments:

Corrective Action:

Comments:



EROSION AND SEDIMENT CONTROL FOR UTILITY PROJECTS IN THE RIGHT-OF-WAY

It is essential to prevent dirt, debris, oils and other waste from entering storm drains or water resources.

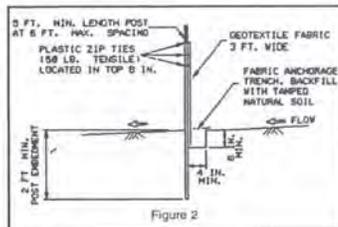


Erosion and sediment control devices are **REQUIRED** for any utility construction or grading project that will result in significant land disturbing activity in the public right-of-way.

- Sediment control practices (inlet protection and perimeter control /silt fence) must be installed **BEFORE** any land disturbance activities begin.
- Temporary land stabilization practices should be installed:
 - Daily over all temporary stockpiles on or near street (including plastic cover and temporary down drains); *and*,
 - Within 7 days after work is completed over all disturbed areas not on or near the street (including temporary seeding of spoil piles though seeding and mulching).

Refer to the Mn/DOT Pocketbook Guide (June 2009) for guidance to preventing pollutants from leaving construction sites. Note: general operations, including dewatering and concrete washout, begin on page 57.

http://www.dot.state.mn.us/environment/pdf_files/erosion-sediment-control-handbook.pdf



SILT FENCE

Silt fence is used as perimeter control to keep sediment on-site and away from areas you want to protect. For work in the right-of-way, silt fence can be installed between the top of the curb and the disturbed boulevard.



TEMPORARY SEEDING AND MULCHING OR PLASTIC COVER

Temporary seeding and mulching is to quickly provide temporary cover that will protect the soil from erosion until establishment of permanent stabilization. Applicable areas include any topsoil stockpiles and any areas disturbed by grading activities.

For areas that must be stabilized each day (located on or near the street) plastic cover should be used instead.



STORM DRAIN INLET PROTECTION

Storm drain inlet protection prevents sediment from entering a storm drain by surrounding or covering the inlet with a filtering material. This allows sediment-laden runoff to pond and settle before entering the storm drain.

The type of filter used will depend on inlet type (curb inlet or drop inlet), slope, and amount of flow. Some commercial inlet filters are placed in front of or on top of an inlet, others are placed inside the inlet and under the grate.



DAILY AND AS-NEEDED STREET SWEEPING

Street sweeping is used to clean the pavement and curb-line area on a regular basis to remove sediment, debris, and other pollutants from road and parking lot surfaces that are a potential source of pollution to waterways.



ROW Erosion and Sediment Control Worksheet

Project:

Project File No.:

Property Address:

Inspection Date:

Re-inspection Date:

Inspection Type:

Size of Site:

Inspection Results

Sewer Inlet Protection:

Comments:

Street Condition:

Comments:

Silt Fence/Sediment Control:

Comments:

Stock Pile On or Near Street:

Comments:

Stock Pile Not On or Near Street:

Comments:

Corrective Action:

Comments:



SPILL REPORTING FORM

City of Saint Paul - Department of Parks and Recreation

INSTRUCTIONS

EMPLOYEE: Form should be filled out as completely as possible, on the same day as the spill occurred, by the individual involved in the spill. Describe all the events in as much detail as possible, especially the cleanup activities. If you have any questions regarding this form, contact your supervisor, or Environmental Services staff (651-632-5111). When completed, return form to your supervisor.

SUPERVISOR: Please return form as soon as possible to Adam Robbins, Como Central Service Facility.

Date of Spill: _____ Name (PRINT): _____

Time of spill: _____ Supervisor: _____

Section: _____ Phone number to reach you: _____

What was spilled?: _____

How much was spilled?: _____

Did the spill flow into a sewer? If yes, what type of sewer (sanitary, storm or unknown)?

What type of surface did the spill occur on (soil, concrete, etc)?

Location of Spill (Be specific- address, intersection, exact location):

Describe what was happening when the spill occurred:

What caused the spill (overflow, broken line, etc)? Be specific:

Describe how the spill was cleaned up:

How were the spill cleanup materials disposed of?:

List the names of other employees involved in the spill or cleanup:

Was the MN Duty Officer called (651-649-5451)?

If yes: Who called? _____ Date _____ Time _____

Duty Officer Report #: _____ PCA Spill # _____

Employee Signature: _____

Spill Kit Instructions

Stop source of spill, if it can be safely done. If not, immediately call the Minnesota Duty Officer.

Contain spill. Wear gloves. Your first priority is to protect the spill from flowing into a storm sewer or drain. Use the 3" x 4' socks to create a barrier between the spill storm sewers/drains. Use the pillows to absorb pools of contained material (up to a half gallon per pillow). Small spills can be cleaned up with the absorbent pads.

Contact your supervisor or Environmental Services staff as soon as it is safe/practical to do so. If neither are available, contact the MN Duty Officer.

Complete a spill report form for all spills, **regardless of size**. The Minnesota Duty Officer must be notified for:

- Petroleum (gasoline, diesel, hydraulic fluid, oil) spills of unknown amounts or over 5 gallons
- Non-petroleum (antifreeze, pesticides, etc) spills of any amount

Phone Numbers

Environmental Services – (651) 632-5111

MN Duty Officer – (651) 649-5451

Disposal of used materials:

Used socks, pads and pillows should be placed in yellow hazardous waste bags found in the spill kit. Materials used to soak up petroleum spills should be disposed of in the 55 gallon barrel marked "Used Oil Sorbents" in the fuel shed at the Como Central Service Facility. For instructions on how to dispose of materials used to clean up non-petroleum substances, contact your supervisor or Environmental Services staff.

Replace used spill kit items promptly. All materials found in your spill kit are available from the Storeroom at the Como Central Service Facility.

FACILITY SPILL KIT INVENTORY	qty	type	VEHICLE SPILL KIT INVENTORY	qty	type
	30	17"x19" pads		10	17"x19" pads
<i>kit absorbs ~8 gallons</i>	3	3"x4' socks	<i>kit absorbs ~5 gallons</i>	2	3"x4' socks
	4	2"x10"x10" pillows		2	Hazardous Waste Bags
	4	Hazardous Waste Bags		1	Pair Nitrile Gloves
	2	Pair Nitrile Gloves		4	Spill Reporting Forms
	4	Spill Reporting Forms			

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SAINT PAUL PARKS AND RECREATION
POLICY
DEPARTMENT

NUMBER: DIV. 4.4.2

EFFECTIVE DATE: 03/2010

**PLACEMENT: Physical Resource
Management**

UPDATED: 03/10

SUBJECT: Water Protection Policy

PURPOSE: To protect natural water bodies through the use of best management practices by all employees working near rivers, streams, lakes, ponds, and/or near storm sewers and impervious surfaces that lead to such water.

SCOPE: All Parks and Recreation employees.

POLICY STATEMENT:

As stewards of the environment, employees will take all precautionary measures to protect local water resources. The Department is committed to maintaining compliance with applicable environmental laws and regulations and to continually improve operations to prevent pollution of waterways that can harm local ecosystems and public health. This policy applies to any intentional act or unintentional act resulting from poor or neglectful work practices.

PROCEDURES (AND/OR REQUIREMENTS, EXPECTATIONS):

1. No dirt, silt, vegetation, organic material, debris, or other foreign materials will be deposited into any river, lake, stream, pond, or into any sewer system that leads to such water.
2. Employees will not blow, broom, sweep, whip, or shovel anything including dirt, silt, sand, debris, weeds, or other organic material into such body of water.
3. While performing work near such water, all debris will be picked up and removed from the site to be properly disposed of. In the event that an employee is not sure of proper disposal, the Supervisor should be called immediately.
4. No dirt, grass, organic material, debris or other foreign materials shall be intentionally deposited onto streets or other impervious surfaces without a plan for its immediate removal. This includes anything that may enter the sewer system. Exception: Sand/salt/deicers approved for controlling snow and ice when used appropriately.
5. When sweeping boulevards or edging curbs, a plan is required to immediately remove all dirt and debris deposited into the street. This may mean coordinating the clean up with Public Works or other street sweepers prior to the start of the job. If rain is expected, work should be delayed.

SAINT PAUL PARKS AND RECREATION
POLICY
DEPARTMENT

REQUIRED ITEMS AND/OR RELATED INFORMATION:

SECTION MANAGER'S RESPONSIBILITIES	SUPERVISOR'S RESPONSIBILITIES	EMPLOYEE'S RESPONSIBILITIES
<p>Ensure all employees under his/her jurisdiction are aware of this policy and procedures.</p> <p>Ensure that supervisors in his/her section enforce this policy and procedures.</p>	<p>Advise all employees of this policy and procedures.</p> <p>Ensure that employees follow this policy and procedures.</p> <p>Issue warnings or initiate disciplinary action as needed to ensure employee compliance.</p>	<p>Adhere to the policy.</p> <p>Follow the procedures.</p> <p>Ask for additional training if needed.</p>

Owner: Karin Misiewicz, Parks Supervisor

Next Review Date: 02/11

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DEPARTMENT OF PUBLIC WORKS

Policy and Procedures

Water Protection

Number: _____ Effective Date: November 1, 2010, Revision Date:

POLICY STATEMENT:

As stewards of the environment, employees will take all precautionary measures to protect local water resources. The Department of Public Works is committed to maintaining compliance with applicable environmental laws and regulations and to continually improve operations to prevent pollution of waterways that can harm local ecosystems and public health. This policy applies to any intentional act or unintentional act resulting from poor or neglectful work practices.

PROCEDURES (AND/OR REQUIREMENTS, EXPECTATIONS):

1. No dirt, silt, vegetation, organic material, debris, or other foreign materials will be deposited into any river, lake, stream, pond, or into any sewer system that leads to such water.
2. Employees will not blow, broom, sweep, whip, or shovel anything including dirt, silt, sand, debris, weeds, or other organic material into such body of water.
3. While performing work near such water, all debris will be picked up and removed from the site to be properly disposed of. In the event that an employee is not sure of proper disposal, the Supervisor should be called immediately.
4. No dirt, grass, organic material, debris or other foreign materials shall be intentionally deposited onto streets or other impervious surfaces without a plan for its immediate removal. This includes anything that may enter the sewer system. Exception: Sand/salt/deicers approved for controlling snow and ice when used appropriately.
5. When sweeping streets or edging curbs, a plan is required to immediately remove all dirt and debris deposited into the street. This may mean coordinating the clean up with other street sweepers prior to the start of the job. If rain is expected, work should be delayed.

Policy Approval:



Rich Lallier, Public Works Director

Date: November 1, 2010

Owner: Rich Lallier

Next Review Date: November 1, 2010



Fact Sheet

Chapter 51. Allowable Discharges to the Storm Sewer System

What is the focus of the new ordinance?

This ordinance is intended to prevent pollution from entering the City's storm sewer system, which discharges directly to our lakes and the Mississippi River. The ordinance formally defines what is allowed and prohibited.

Prohibitions include, but are not limited to:

- Motor oil, paint, solvents, or other liquids poured into a catch basin;
- Grass, leaves, or landscape material intentionally disposed in the street or waters;
- Sanitary connections to the storm system; or,
- Wash water, concrete wash out to the street or other improper disposal of waste.

Why is the ordinance needed?

The Minnesota Pollution Control Agency regulates Saint Paul's stormwater under the federal Clean Water Act. This serves to protect water quality in lakes and rivers. Under this permit, the City is obligated to enact regulatory controls to prevent pollutants from entering the storm sewer system.



What is the City currently doing to address this and how will this help?

- The City educates citizens on how to prevent pollution going into the storm sewer system by working with volunteer groups to stencil "don't pollute, drains to river" graphics on city storm drains and distribute multi-lingual door hangers.
- The City addresses municipal maintenance operations by implementing policies and procedures to avoid improper behaviors leading to stormwater pollution.
- Improper discharges to the storm sewer system are currently addressed on a complaint basis.

Several existing ordinances indirectly address pollution prohibitions, but lack specificity. The new ordinance clarifies and strengthens pollution prevention controls. It better positions the City to take enforcement steps, if necessary. Public Works and DSI jointly share enforcement responsibilities.

How does this ordinance affect citizens, businesses, or other constituents?

It is difficult to generalize due to the range of potential circumstances and impacts of prohibited discharges – from raking leaves into the street to dumping oil into a storm drain.

This ordinance will primarily be used to respond to public complaints. Awareness and education about the new ordinance, and avoiding water quality impacts, will be stressed. Enforcement in the form of abatement letters may be taken, depending on the circumstance and threat to water quality.



City of Saint Paul

City Hall and Court
House
15 West Kellogg
Boulevard
Phone: 651-266-8560

Signature Copy

Ordinance: Ord 13-6

File Number: Ord 13-6

Creating Chapter 51 of the Legislative Code controlling the introduction of non-stormwater discharges to the City's municipal separate storm sewer system.

THE COUNCIL OF THE CITY OF SAINT PAUL DOES ORDAIN

Section 1.

That Leg. Code Chapter 51 is hereby re-enacted to read as follows:

Chapter 51. Allowable Discharges to the Storm Sewer System

Sec. 51.01. Purpose.

This ordinance is adopted in accordance with the City's National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer (MS4) permit which authorizes the discharge of stormwater to surface water. Pursuant to permit regulations, the City is required to control the introduction of non-stormwater discharges to the City's municipal separate storm sewer system.

Sec. 51.02. Definitions.

For the purposes of this chapter, the terms used in this chapter have the meanings defined as follows:

City. "City" means the City of Saint Paul and its officials, employees, or duly authorized agents.

Clean Water Act. The Federal Water Pollution Control Act (33 U.S.C. § 1251 et seq.) and subsequent amendments thereto.

Groundwater. Water contained below the surface of the earth in the saturated zone including, without limitation, all waters whether under confined, unconfined, or perched conditions, in near surface unconsolidated sediment or in rock formations deeper underground.

MPCA. The Minnesota Pollution Control Agency.
MS4 (Municipal Separate Storm Sewer System). The system of conveyances including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels or storm drains that is: owned and operated by the City, or other public entity, and designed or used for collecting or conveying stormwater, and which is not used for collecting or conveying sewage.

National Pollutant Discharge Elimination System (NPDES) Stormwater Discharge Permit. A permit issued under the Clean Water Act (Section 301, 318, 402, and 405) and United States Code of Federal Regulations Title 33, Section 1317, 1328, 1342, and 1345 authorizing the discharge of pollutants to water of the United States.

Non-Stormwater Discharge. Any substance not composed entirely of stormwater.

- Prohibited Discharge. Any introduction of non-stormwater discharge to the City's municipal separate storm sewer system or to surface waters within the City, unless specifically exempted under section 51.03(b) of this chapter.

- Person. "Person" means any individual, association, organization, partnership, firm, corporation, or other entity recognized by law, acting as either the owner or as the owner's agent.

- Pollutant. Any substance which, when introduced as non-stormwater, has potential to or does any of the following:

- (1) Interferes with state designated water uses;
- (2) Obstructs or causes damage to waters of the state;
- (3) Changes water color, odor, or usability as a drinking water source through causes not attributable to natural stream processes affecting surface water or;
- (4) Adds an unnatural surface film on the water;
- (5) Adversely changes other chemical, biological, thermal, or physical condition, in any surface water or stream channel; or
- (6) Harms human life, aquatic life, or terrestrial life.

- Stormwater. Defined under Minnesota Rule 7077.0105, subpart 41(b), and means precipitation runoff, stormwater runoff, snow melt runoff, and any other surface runoff or drainage.

- Surface Water. Ponds, lakes, rivers, streams, and wetlands.

- Sec. 51.03. Non-Stormwater Discharges.

- (a) No person shall cause any non-stormwater discharges to enter the City's municipal separate storm sewer system, or to any surface waters within the City, unless specifically exempted under paragraph (b) of this section.

- (b) The following allowable discharges are exempted from this section:

- (1) Non-stormwater that is authorized by an NPDES point source permit obtained from the MPCA;
- (2) Fire fighting activities and fire suppression systems;
- (3) Dye testing for which the City has received written notification prior to the time of the test;
- (4) Water line flushing or other potable water sources;
- (5) Landscape irrigation or lawn watering;
- (6) Diverted stream flows;
- (7) Rising groundwater;
- (8) Groundwater infiltration to storm drains;
- (9) Uncontaminated pumped groundwater;
- ~~(8)~~(10) Foundation or footing drains (but not including active groundwater dewatering systems);
- ~~(9)~~(11) Air conditioning condensation;
- ~~(11)~~(12) Springs;
- ~~(12)~~(13) Non-commercial washing of vehicles;
- ~~(13)~~(14) Natural riparian habitat and wetland flows;

- ~~(14)(15) Dechlorinated swimming pool water;~~
- ~~(15)(16) Street wash water discharges;~~
- ~~(16)(17) Activities undertaken by the City, or by written authority of the City, deemed necessary to protect public health, welfare, or safety; and,~~
- ~~(17)(18) Any other water source not containing a pollutant.~~

- (c) No person shall intentionally dispose of substances including, but not limited to, grass, leaves, dirt, or landscape material into the City's municipal separate storm sewer system or to any surface waters within the City.

- Sec. 51.04. Prohibited MS4 Connections.

No person shall construct, use, or maintain any connection to intentionally convey non-stormwater to the City's municipal separate storm sewer system. This prohibition expressly includes, without limitation, connections made in the past regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection. A person is considered to be in violation of this ordinance if the person connects a line conveying non-stormwater to the storm sewer system, or allows such a connection to continue.

- Sec. 51.05. Suspension of Storm Sewer System Access, Emergencies.

The City may, without prior notice, suspend MS4 discharge access to a person where it is determined that suspension is necessary to stop an actual or threatened discharge that presents or may present imminent and substantial danger to the environment, or to the health or welfare of persons, or to the MS4 or public waters. If the violator fails to comply with a suspension order issued in an emergency, the City may take any step deemed necessary to prevent or minimize damage to the storm sewer system or public waters, or to minimize danger to persons.

- Sec. 51.06. Access, Administrative Search Warrants.

If access to any part of a premises from which stormwater is discharged has been refused and, upon a demonstration of probable cause to believe that there may be a violation of this chapter, or that there is a need to inspect and/or sample as part of a routine inspection and sampling program designed to verify compliance with this ordinance or any order issued hereunder, or to protect the overall public health, safety, and welfare of the community, the City may seek an administrative search warrant from a court of competent jurisdiction.

- Sec. 51.07. Criminal Violation, Enforcement.

Any person failing to comply with or violating any section of this chapter shall be guilty of a misdemeanor and, upon conviction thereof, may be punished by fine, by imprisonment, or both, as provided under section 1.05 of this Code. All City approvals and permits shall be suspended until the violation(s) of this Chapter are corrected. Nothing in this section shall preclude the City from concurrently seeking the enforcement of the provisions of this chapter in a court of competent jurisdiction by civil action to enjoin any continuing violation(s).

- Sec. 51.08. Each Day a Separate Offense.

A separate offense shall be deemed committed upon each day during or when a violation occurs or continues.

- Sec. 51.09. Public Nuisance

A violation of this ordinance is a public nuisance subject to abatement pursuant to City Code Chapter 45. When the City finds that a person has violated or failed to meet a requirement of this section, the person is deemed to have created a public nuisance per se subject to an injunction or any other appropriate remedy to prevent activities which would create further violations or compel a person to perform an abatement or remediation of the violation which the City may seek from a

court of competent jurisdiction. All city approvals and permits shall be suspended until abatement of the nuisance condition(s). Nothing in this section shall preclude the City from concurrently seeking the enforcement of the provisions of this Chapter by criminal prosecution.

Sec. 51.10. Administration.

The departments of safety and inspections or public works, as the case may be, shall as determined, be responsible for the administration, implementation, and enforcement of the provisions of this Chapter.

Section 2.

This Ordinance shall be in full force and effect thirty days (30 days) from and after its passage, approval, and publication.

At a meeting of the City Council on 2/13/2013, this Ordinance was Passed.

Yea: 7 Councilmember Bostrom, Councilmember Brendmoen, Councilmember Carter III, City Council President Lantry, Councilmember Stark, Councilmember Thune, and Councilmember Tolbert

Nay: 0

Vote Attested by
Council Secretary 
Trudy Moloney

Date 2/13/2013

Approved by the Mayor 
Chris Coleman

Date 2/20/2013



Working to protect the Mississippi River
and its watershed in the Twin Cities area.

St.

360 North Robert Street
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St. Paul, MN 55101

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w: www.fmr.org

PAUL WATER QUALITY EDUCATION PROJECT 2013 FINAL REPORT

Submitted by Friends of the Mississippi River
December 2013

This report summarizes Friends of the Mississippi River's activities in fulfillment of our 2013 Water Quality Education Program contract with the City of St. Paul. The Program Objectives were:

1. To involve St. Paul residents in hands-on learning experiences about urban runoff pollution and ways to prevent it
2. To facilitate school service learning initiatives that include storm drain stenciling, litter cleanups and/or habitat restoration as key components
3. To stencil storm drains and distribute educational door hangers to residents and businesses in the stenciled neighborhoods in the City of St. Paul

These objectives were met through three key program areas, which are described in greater detail in this report:

1. Storm drain stenciling and cleanups
2. Extra education
3. Community educational workshops, events and tours

What follows are descriptions of activities, outreach and promotion efforts, and specific accomplishments for each program area.

STORM DRAIN STENCILING

Description:

Storm drain stenciling is a service-learning program in which community volunteers receive a 30-40min lesson about urban runoff pollution and ways to prevent it, then spray paint the message "Please don't pollute - Drains to Mississippi River" next to storm drains on St. Paul city streets. Volunteers also distribute educational door hangers and pick up trash along their way. In addition to stenciling outings, FMR also coordinates 2-4 litter-cleanups within the City each year.

Outreach:

In 2013, storm-drain stenciling and cleanups were promoted using the following means:

- Emailing previous-years' stenciling participants

- Mailing brochures to past participants and potential new contacts (St. Paul schools, after-school programs and service-learning programs)
- Posting on FMR's website and Facebook page, as well as announcements in FMR's email newsletter, *Mississippi Messages*
- Postings on other websites including VolunteerMatch, TwinCities.com/Pioneer Press, Do It Green, TC Daily Planet, Next Step, Green Hands USA, Minnesota Parent and River Network
- Announcement at Big River Journey teacher trainings in January 2013

Accomplishments:

Stenciling: In 2013, Katie Clower (Youth & Community Engagement Coordinator) and Adam Flett (Stewardship Events Coordinator) facilitated storm drain stenciling outings with 26 different school and college groups, community groups, corporations and residents of the City of St. Paul. **In total, FMR engaged 875 volunteers to stencil 1837 storm drains and distribute 2974 educational door hangers within the City, for a total of 1686.75 hours of volunteer work.** A list of the 26 groups, with contact information, event dates and goals achieved, is attached at the end of this report.

FMR surpassed the goals set out in the contract for volunteer numbers (goal: 800), volunteer-hours (goal: 1200) and number of storm drains stenciled (goal: 1100). However, the number of door hangers distributed fell short of the goal (4200), primarily because a delay in ordering door hangers resulted in several outings at which door hangers were not available to distribute.

This year, 7 scheduled stenciling outings were canceled due to weather, and an additional 3 were canceled by group leaders for various reasons. Of these 10 events, only 1 was successfully rescheduled. Because a similar number of hours are spent on planning an outing whether or not that outing is canceled, these cancellations lead to a higher ratio of program-hours/volunteers. However, because of high demand for this program, they did not substantially affect the total number of volunteers FMR was able to engage.

Cleanups: **FMR facilitated 2 litter-cleanups this year, engaging a total of 130 volunteers contributing 157 hours.** The first cleanup was at Prosperity Heights Park and its surrounding neighborhood, and the second was at the Lake Phalen pavilion and surrounding area. A list of the 2 groups, with contact information, event dates and goals achieved, is attached at the end of this report. For both outings, FMR provided gloves and trash bags, and coordinated trash collection through the City of St. Paul Parks and Recreation Department.

Three additional cleanups were scheduled but subsequently canceled; two were canceled due to weather, and one was canceled due to an emergency closure of the planned event site. None of these events could be rescheduled, and resulted in the loss of approximately 100 potential volunteers.

Equipment:

FMR staff coordinated the purchase, storage and maintenance of storm drain stenciling supplies, including door hangers, for the 2013 season. Below is an inventory of supplies remaining at the end of the 2013 season. See previous reports for a comparison with prior years.

Stenciling and Cleanup Equipment Inventory List, Nov. 2013	
Item	# in stock
Traffic cones	23
Safety vests	87
Safety goggles	44
Buckets	27
Wire brushes	16
Whisk brooms	20
Clip boards	28
Trash bags	50
Door-hangers	2575
Spray paint (cans)	39 full, 22 partial
Stencils	
Original Design, English: "...Drains to Mississippi River"	1
Original Design, Spanish: "...Drains to Mississippi River"	0
Original Design, Somali: "...Drains to Mississippi River"	12
Original Design, Hmong: "...Drains to Mississippi River"	7
Original Design, English: "...Drains to Creek"	23
Original Design, English: "...Drains to Lake"	24
New Design: "...Drains to River"	16

Redesign of stencil and door hanger:

FMR staff also assisted the City of St. Paul with their process of redesigning the storm drain stencil and educational door hanger, neither of which has been updated for many years. Students at Minneapolis' Augsburg College and St. Paul's Hamline University created new designs for the stencil and door hanger, which were further refined by the City of St. Paul and contractor Tyler Bredow. FMR's Youth & Community Engagement Coordinator, Katie Clower, participated in meetings and feedback sessions, talked with supply vendors, and assisted with prototyping the new stencil. These activities are estimated to account for approximately 30-35 hours of FMR staff time in 2013. FMR will begin using the new stencils and door hangers in 2014.

An article about the new stencil was included in the October edition of FMR's Mississippi Messages newsletter: http://www.fmr.org/news/current/new_storm_drain_stencil-2013-10

River-Wash Project:

River-Wash at Little Mekong, created by artist Jonee Kulman Brigham, is an activity to help create a sense of place in St. Paul's Little Mekong business district. It attracts interest and invites visitors to see the people behind the storefronts while creating awareness of our

interdependence with the Mississippi River. This project was supported by an Irrigate grant from Springboard for the Arts, which sought to address issues and interests of neighborhoods affected by the lengthy construction of the Green Line light-rail along St. Paul's central corridor.

River-Wash is a three-part project. First, Jonee asked local business-owners about their experiences with light-rail construction along University Avenue, posing the questions "What do you want to flow into this place?" and "What do you want to wash away?" Participants wrote their answers on watering cans, or with water on the sidewalk. Then, in a healing ritual, they poured clean water over the words to flow into the storm drains and out to the Mississippi River. Next, Jonee created posters with images from the activity and individual stories from the business owners, and displayed these in storefronts to let the public know about the people and their stories in this district. Finally, Jonee worked with Friends of the Mississippi River to stencil the storm drains in the Little Mekong district. The new stencil message, which reads "Keep 'em clean, drains to river," was painted next to 22 drains to remind passersby of the flow of water from urban neighborhoods to the river and of the role we all play in protecting local waterways. This project likely accounted for approximately 15-20 hours of FMR staff time in 2013.

More information about this project is available on the River-Wash blog: <http://river-wash.blogspot.com/>, and in an article in the October edition of FMR's Mississippi Messages newsletter: http://www.fmr.org/news/current/river_wash_project-2013-10

EXTRA EDUCATION

Description:

Additional water-quality education programming, separate from the lessons included in storm drain stenciling outings, is provided to schools and community groups in multiple formats including classroom presentations, interpretive field trips, participation in special events (i.e. the Children's Water Festival) or through tabling at local fairs or expos. Each educational program includes information about urban runoff pollution and methods for its prevention, but additional topics may include the water cycle, watersheds, erosion, wetlands, river ecosystems, landscape change, habitat restoration and environmental justice. These presentations are designed to increase knowledge of urban non-point source pollution and related environmental issues, and may include demonstrations, PowerPoint presentations, science experiments, games and/or group discussions. Extra education was provided primarily by Katie Clower, with assistance from Adam Flett.

Outreach:

In 2013, extra educational programs were promoted using the following means:

- Emailing previous-years' stenciling participants
- Mailing brochures to past participants and potential new contacts (St. Paul schools, after-school programs and service-learning programs)
- Posting on FMR's website and Facebook page, as well as announcements in FMR's email newsletter, *Mississippi Messages*

- Postings on other websites including VolunteerMatch, TwinCities.com (Pioneer Press), Do It Green, TC Daily Planet, Next Step, Green Hands USA, 1Mississippi, Craigslist, Minnesota Parent and River Network, etc.
- Announcement at Big River Journey teacher trainings in January 2013

Accomplishments:

This year, FMR coordinated 9 classroom presentations, 2 interpretive field trips and 1 special event presentation, providing extra education to a total of 680 participants in the City of St. Paul. Lessons ranged in time from 15 minutes to 2.5 hours (average=1 hour). FMR also tabled and provided water-quality education at 2 St. Paul community events: Waterfest and the St. Paul Public Works Open House. A list of the extra education groups and/or venues, with contact information, event dates and lesson topics, is attached at the end of this report.

COMMUNITY EDUCATIONAL WORKSHOPS, EVENTS AND TOURS

Description:

FMR’s community educational workshops, events and tours in 2013 included a water-wise lawn and garden care workshop, a rain barrel workshop and a wetland ecology tour. Still to come in January 2014 is a second lawn and garden care workshop and a large-format educational presentation in partnership with the Science Museum of Minnesota.

Stewardship Events Coordinator Adam Flett coordinated all of the educational workshops, events and tours, with assistance from other FMR staff. Planning for the workshops included updating presentation information on the impact of stormwater pollutants on water quality; best practices for raingarden design and installation; benefits and techniques for composting in residential yards and gardens; rain barrel assembly, installation and use; watershed-friendly lawn care strategies; and local resources related to these topics. Staff also updated a host of printed materials on these topics that were distributed at the workshops.

Specific descriptions of each event follow.

Water-wise Lawn and Garden Care Workshop: FMR staff presented the workshop “Gardening for a Rainy Day: Native Plants, Raingardens and Lawn Care for Water Quality”. This PowerPoint presentation focuses on urban homeowner education related to conserving water and reducing runoff pollution. In addition to providing an overview of stormwater management practices and issues related to urban runoff pollution, the workshop introduces alternative lawn-care practices, landscaping with native plant species, proper use of lawn fertilizer, rain gardens, rain barrels, backyard composting, green roofs, pervious pavement, soil testing and more. Participants are provided with handouts listing local resources for additional education, cost-share programs, or purchasing supplies. The workshop was presented at the following venues:

- ***Wilder Center, April 10, 2013 (27 participants)***

A second presentation of this workshop is planned for January 2014 at the W. 7th St. location of the Mississippi Market Co-op. Approximately 30 participants are expected at that event.

Make and Take Rain Barrel Workshop: This workshop is similar to the previous one, but has a specific focus on rain barrels and provides an opportunity for participants to assemble and take home their own 55-gallon rain barrel. Coca-Cola donated the barrels, and workshop participants purchased conversion kits at a reduced price. The “Make and Take Rain Barrel Workshop” began with a condensed version of the “Gardening for a Rainy Day” workshop, with additional information on the benefits, construction, use, installation and maintenance of rain barrels. Participants were then guided through assembling their own rain barrel, which they took with them to install and use at home. The workshop was presented at the following venue:

- ***Wellstone Center/Neighborhood House, August 22, 2013 (31 participants, 25 barrels)***

Wetland Ecology Tour: Participants in this event explored the plant and animal life in and around Crosby Park’s Upper Lake and its surrounding marsh, learning about the important role that wetlands play in providing habitat and filtering pollutants from runoff. FMR ecologist Karen Schik identified wetland plant species and discussed their roles in the ecosystem. Brandon Burns led participants in collecting and examining benthic macroinvertebrates, and discussed what these creatures can reveal about urban water pollution. 26 participants attended this event, which was held on June 13, 2013.

Science Museum Event:

A large-format educational presentation is planned for February 23rd, 2014, in partnership with the Science Museum of Minnesota. Speakers at this presentation will address the potential impacts of climate change on local water quality, habitat and stormwater management. Approximately 150 participants are expected to attend the event.

Outreach:

Participants for the workshops and wetland ecology tour were recruited using the following means, which will be used for the Science Museum event as well:

- Emailing to St. Paul neighborhood group contacts, city council members and planning districts
- Email or posts to various daily and community newspapers
- Emailing to all St. Paul FMR contacts, including numerous partner and civic organizations such as the Science Museum of Minnesota, the Department of Natural Resources, Metropolitan Council, Friends of the Parks and Trails of St. Paul, and additional various foundation, student and civic groups
- Emailing to garden clubs (workshops and tour) and academic, water quality and agriculture-related contacts (SMM)
- Email to active FMR St. Paul contacts (workshops, tour and SMM)
- Posting on FMR’s website and announcements in FMR’s Mississippi Messages
- Posting Press releases via email to daily and community newspapers and radio
- Announcements on various online event calendars: Mississippi National River and Recreation Area/National Park Service, Minnesota Environmental Forum, Minnesota Environmental Partnership, MNOEA’s Next Step, TwinCities.com/PioneerPress/Zvents, BlueThumb (as needed), Do It Green, TC Daily Planet, Northern Gardener, Forum of Women in the Environmental Field, Minnesota Master Naturalist, GreenHandsUSA, Minnesota Waters, Riverfront Development Corporation, 1Mississippi (Mississippi River Network) and Good Age and MN Parent websites.

- Emailing to all St. Paul FMR contacts, including numerous partner and civic organizations such as the Science Museum of Minnesota, the Department of Natural Resources, Metropolitan Council, Friends of the Parks and Trails of St. Paul, and additional various foundation, student and civic groups
- Emailing to special interest groups, such as garden clubs (workshops and tour) and academic, water quality and outdoor and biology club members and more (SMM)

Accomplishments:

The following table summarizes event participation in 2013:

Name	Date	Location	# Participants
Workshop: Gardening for a Rainy Day	4/10/13	Wilder Center	27
Wetland Ecology Tour	6/13/13	Crosby Park	26
Workshop: Make and Take Rain Barrels	8/22/13	Wellstone Center	31
Workshop: Gardening for a Rainy Day	Expected January 2014	Mississippi Market Co-op, W. 7 th St	30 (anticipated)
Water in a Changing World –Climate Change and the Urban Watershed	Expected January 2014	Science Museum of MN	250 (anticipated)

EVENT PHOTOGRAPHS:

Photos are not available for all events. Photographs of several of the events listed in this report can be viewed on FMR’s Flickr site at the following links:

- **Wetland Ecology Tour at Crosby Park; June 13, 2013:**
<http://flic.kr/s/aHsjGchPvK>
- **Make & Take Rain Barrel Workshop at Wellstone Center; Aug. 22, 2013:**
<http://flic.kr/s/aHsjN3DQK3>
- **Storm Drain Stenciling at Open Streets University Ave; Sept. 15, 2013:**
<http://flic.kr/s/aHsjJhW19E>



Drains to River

Storm
Drains

Keep em'
Clean

KEEP THESE OUT OF STORM DRAINS



PET WASTE

Desechos de
mascotas
Quav tsiaj yug



LEAVES, GRASS & TRASH

Hojas, hierba
y basura
Nplooj ntoos, Nyom
& Khib Nyiab



HAZARDOUS WASTES

Residuos
peligrosos
Khoom Phem
Siv Tas Lawm

MANTENGA FUERA DE LOS DRENAJES PARA TORMENTAS
MUAB COV NTAWM NO TSHEM TAWM NTAWM LUB QHOV
DEJ NQIS

Keep storm drains clean. These drains are part of the storm sewer system, which carries rainfall and snowmelt directly from your neighborhood to our lakes and rivers.

What You Can Do

1

Keep leaves and grass clippings out of street.
Mantenga las hojas y las hierbas o el césped podados fuera de la calle.
Muab cov nplooj ntoos thiab nyom tshem tawm ntawm txoj kev.

2

Keep fertilizer off paved surfaces and sweep up excess.
Mantenga el fertilizante fuera de las superficies pavimentadas y limpie los excesos.
Txhob muab cov tshuaj ywg nyom tso rau ntawm cov kev luam yas thiab muab cov tshuaj seem cheb mus.

3

Don't litter and pick up pet waste. **No arroje basura en la vía pública. Recoja los desechos de sus mascotas.**
Tsis txhob pov khib nyiab. Khaws tej quav tsiaj yug.

4

Wash your car on the lawn or at a carwash - not in the driveway or street.
Lave su vehículo en el jardín o en un lavadero – no lo haga en el entrada de su casa o en la calle.
Ntxuav koj lub tshab rau ntawm cov nyom ntawm koj tog tsev los yog tom lub chaw ntxuav tshab - tsis txhob ntxuav rau ntawm lub chaw nres tshab los yog tom kev.

5

Keep your vehicle tuned up and clean up any oil leaks or spills from paved surfaces.
Mantenga su vehículo en buenas condiciones y limpie cualquier pérdida de aceite o salpicaduras en las superficies pavimentadas.
Saib xyuas thiab tu koj lub tshab thiab tu tej roj uas tau txej los yog nchuav rau tej kev luam yas.

6

Properly dispose of paint and other household hazardous wastes.
Deshágase adecuadamente de restos de pinturas y de otros residuos domésticos peligrosos.
Muab cov xim tha thiab lwm cov khoom phem hauv vaj tsev pov tseg kom zoo.

7

Shovel snow first and only apply salt when it is above 15° F.
Retire la nieve con una pala primero y aplique sal cuando esté sobre los 15°F.
Thob daus ua ntej thiab tsuas siv ntsev.



Recycling & Disposal Guide
ramseyatoz.co.ramsey.mn.us
www.stpaul.gov/publicworks
www.fmr.org

Metro WaterShed Partners & Clean Water MN

2013 Annual Program Report



WATERSHED
PARTNERS



MINNESOTA WATER
LET'S KEEP IT CLEAN

INDEX PAGE

Table of Contents

Metro Watershed Partners 2013 Activities & Accomplishments.....	3
Clean Water MN Media Campaign 2013 Activities & Accomplishments.....	11
Metro WaterShed Partners 2013 Financial Report.....	15

Metro WaterShed Partners 2013 Report

Introduction

Metro WaterShed Partners is a coalition of more than seventy public, private and non-profit organizations in the Twin Cities metro area. Through collaborative educational outreach, the Metro Watershed Partners promote a public understanding that inspires people to act to protect water in their watershed. Since 1996, Watershed Partners have cooperated through educational projects, networking, and resource-sharing.



The mission of the Metro WaterShed Partners is two-fold:

- to provide and promote collaborative watershed education products with consistent messages to the general public, local government staff, and elected officials, and
- to provide WSP members a place and means for an information clearinghouse, a source of idea generation, and the coordination, collaboration, and support for watershed education programs.

In 2013, we remained a viable collective of mutually supporting watershed educators that create and implement effective educational programs. In response to our fund-raising letter, members contributed \$19,747.50 this year to support our monthly meetings, exhibit checkout, administrative support and state fair outreach.

Leadership

The work of **Metro WaterShed Partners** is guided by a steering committee that includes stormwater education professionals from cities, watersheds, non-profit organizations, and government agencies. In 2013, our steering committee members were:

Angie Hong – Washington Conservation District
Anne Weber – City of St. Paul
Erica Sniegowski – Nine Mile Creek Watershed District
Jen Dullum – City of Farmington
Lyndon Torstenson – National Park Service, Mississippi National River & Recreation Area
Peggy Knapp – Freshwater Society
Telly Mamayek – Minnehaha Creek Watershed District
Trevor Russell – Friends of the Mississippi River
Tracy J. Fredin – Hamline University, Center for Global Environmental Education

2013 Accomplishments

Networking and Sharing Resources

The WaterShed Partners hold monthly meetings that provide members with the means to gather, share information, generate ideas, and form partnerships that support watershed education in the state of Minnesota. These meetings keep our membership up to date on new developments in the field of water resources and water education by featuring presentations by experts in fields such as watershed management, education, marketing, legislation and outreach.

In 2013, WaterShed Partners' meetings were attended by a total of 251 people, with an average of twenty-five members per meeting; the sparsest meeting had 13 attendees and the largest had 51. We are pleased to see our partnership continuing to demonstrate energy for collaboration and information sharing.

2013 WaterShed Partners Meetings and Presentations

January	Randy Neprash, Stantec Consulting	Storm Water Permitting
February	Steve Woods, BWSR	The Role of Education in Meeting Clean Water Goals
March	Break out sessions	Watershed Partners issue-based work groups on MS4s, AIS and K-12 education
April	Jeff Lederman, Minnesota Department of Education	Working with K-12 audiences: roles and strategies for watershed groups
May	Jamie Millard, Fast Horse	The Power of Social Media: stories and strategies from the non-profit sector
June	Steve Klein, Barr Engineering Leslie Yetka, Minnehaha Creek Watershed District Irene Jones, Friends of the Mississippi River Lark Weller, National Park Service Trevor Russell, Friends of the Mississippi River Paul Labovitz, Mississippi National River and Recreation Area, National Park Service	Sixth annual boat trip, this year departing from Bohemian Flats and traveling down river on the Minneapolis Queen. Featured presentations: <i>Atlas 14 and Community Stormwater Response to a Changing Landscape and Climate: A Framework for Adaptation Planning and Implementation</i> and <i>Closing the Locks in Minneapolis to Stop Asian Carp</i>
July	SUMMER BREAK	
August	Brian Lieb, Public Affairs Officer, Hennepin County	Give your audience what they want: Learn how plain language can help you create clear and effective communications.
September	CLEAN WATER SUMMIT	
October	Peggy Knapp, Fresh Water Society	Clean Water Starts Here
November	Art of Hosting style conversation, facilitated by Peggy Knapp, Freshwater Society	Can you hear me now? A conversation about developing tools to know your target audience
December	End of the year potluck	

Developing Audience and Project Assessment Tools for Education and Outreach Programs

The WaterShed Partners (WSP) Steering Committee proposes to lead the development of an innovative behavior change assessment tool. The tool would evaluate which interventions cause behavior change in audiences, why these interventions are effective, and under what conditions these interventions are most effective.

There is a strong need and an explicit request from partners to develop an evaluation tool that indicates how to most effectively reach out to different audiences and influence behaviors and practices that reduce pollutant loads to public waters. Watershed districts, watershed management organizations, and permitted MS4s are all looking for new ways to meet nutrient load reductions. While it may be true that reductions that can be achieved through residential-scale BMPs are small, they play an important role in an overall non-point reduction strategy. The State of Florida has successfully piloted formulae that award reductions in pollutants for a number of behavioral BMPs. This project will build on those efforts, and result in quantifiable numbers that can help MS4s achieve their reduction targets.

The initial proof-of-concept phase of this project would focus on a single BMP that has become a high priority for a large number of metro-area watershed districts and MS4s: rain gardens. Once the process has been piloted, additional BMPs will be added to the study process.

The WSP proposes a three-pronged approach to refining education and outreach strategies to increase the number, distribution and maintenance of residential rain gardens:

1. A bi-annual metro-wide survey of environmental knowledge and practices. This approach was piloted by Dr. Tony Murphy and Hamline University in 2002, and repeated in 2004 and 2008. This project proposes to use the EE Report Card as a beginning framework to gather baseline data on what people know and do in their yard care practices, and other land use activities that affect water quality.
2. Using voluntary reporting by partners, the WSP would gather data on the various kinds of interventions implemented by watershed districts, watershed management organizations, non-profits and others. The goal would be to determine patterns of success over time in a variety of outreach efforts aimed at specific audiences designed to increase the number of residential rain gardens-
 - a. concentrated efforts that target specific water bodies
 - b. cost-share programs that serve any and everyone who walks through the door
 - c. workshops and open meetings promoting and education about rain gardens
 - d. door-knocking campaigns to promote the installation of rain gardens
 - e. other approaches to promote rain gardens
3. Related performance-based data that correlate changed behaviors with their effect on water quality. Self-reported data in surveys such as we propose above are most valuable when checked by another method. In this project, we propose to confirm with quantifiable data the extent to which people change behaviors or adopt practices that reduce pollution loads in targeted areas:
 - a. Number of Community Clean-Ups for Water Quality reported
 - b. Rain gardens and other water capture projects installed
 - c. Reductions in solid waste

These data sets will be mapped using existing GIS tools to visualize areas that have demonstrated the most significant adoption of, or changes in, behaviors and practices that reduce pollutant loads by infiltrating more water on residential and other small-scale properties.

By quantifying and comparing the impacts of various education and outreach approaches, MS4s, non-profits, watershed districts and other outreach organizations can refine their efforts, maximize their successes, and more effectively reach out to audiences that have been difficult to engage.

WaterShed Partners listserv

The Metro Watershed Partners' listserv is a forum for information sharing to an audience of watershed educators, legislators and industry professionals throughout the state.

In 2013, the Metro WaterShed Partners listserv continued to provide more than one hundred user-members with an effective tool for promoting educational programs, sharing information about professional programs, and exchanging information with other watershed educators, legislators and businesses. The email address for the listserv is watershedpartners@listserv.hamline.edu. If you would like to send and receive emails from the listserv, send a request to Jana Larson at jl Larson25@hamline.edu.

Education and Outreach at the Minnesota State Fair and Community Events

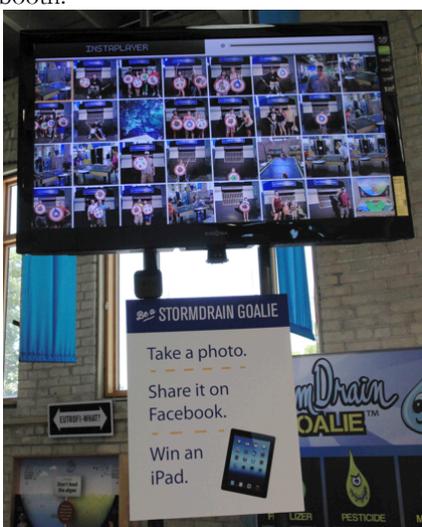
Eco-Experience: The Metro WaterShed Partners developed and hosted the Eco-action exhibit at the Minnesota State Fair's Eco-Experience building, featuring a suite of *StormDrain Goalie* outreach tools: an iPad app; multimedia kiosks; hands-on Eco-Arcade games; portable, museum-quality Exhibits-in-a-Box; and social networking resources.



A “goalie” poses in the giant storm-drain photo booth.



The storm-drain-themed air hockey table is a magnet for kids of all ages.



Photos of “storm drain goalies” pop up on a large monitor display.



“Goalies” share stewardship commitments on via Facebook.

Exhibit Elements

Storm Drain Goalie™ kiosk and iPad app



This iPad game pits players against a host of ugly pollutants that are trying to find their way into a storm drain. Players are challenged to prevent common non-point source pollutants from entering the drain by touching fast-flowing pollution icons while allowing the water droplets to pass by. The action increases during each one-minute round of the game. When the time is up, players get a final score and can visit a Rouge’s Gallery to learn about the pollutants they are battling against: fertilizers, pesticides, pet waste, sediment, oil and gas, and yard waste.

The app plays in portable iPad kiosks and in full-sized, industrial-strength computer kiosks with touch-screen displays. Additional modules provide deeper content on non-point source problems and solutions. A personal version of the *Storm Drain Goalie™* iPad app is also available for free download in Apple’s iTunes store so that users can continue the learning and fun on their own. Check it out at: <https://itunes.apple.com/us/app/storm-drain-goalie/id597957491?mt=8>

Storm Drain air hockey table

An old favorite—air hockey—has been re-imagined as a storm-water education game that irresistibly draws kids of all ages! The table surface has been transformed into a street, the two goals into storm drains, and the puck is an iconic pollutant that should be kept out of waterways. Signage, sporting a “Defend Your Storm Drain” theme, reinforces stewardship messages related to non-point source pollution reduction and the impacts of impervious surfaces.



Exhibit-in-a-Box



This Exhibit-in-a-Box is a museum-quality, hands-on exhibit that teaches users about eutrophication, and how leaves become food for algae, making our lakes and rivers “green, cloudy and sick.”



Exhibits-in-a-Box, a durable, portable exhibit that gives more information about non-point source pollution, its sources and effects.

Giant Storm Drain Photo Booth and Social Media

A giant rendition of a storm drain is a perfect backdrop for storm drain goalie photos! Fair visitors, extra-motivated by a chance to win a tablet computer, don goalie equipment (either hockey or soccer), including shields emblazoned with iconic pollution-prevention imaging. Their Storm-Drain-Goalie pictures are uploaded to Instagram and a stewardship message and photo is pushed out to their Facebook network. They are now members of a growing storm-water-stewardship community that can be reached via Facebook with timely reminders of upcoming events, NPS prevention strategies, behavior-change surveys—the sky’s the limit!



Getting ready for a “Goalie” photo session.

This year, there were 247,000 visitors to Eco-experience; a survey of visitors found that:

- 47.5% came to the Eco Experience looking for specific information or resources
- 88.6% found the information or resources they wanted
- 96% report learning a lot or a little at the Eco Experience
- 84% of visitors report that their visit to the Eco Experience will help them make environmental choices in the coming year
- 70% of visitors who attended last year report that their visit to the Eco Experience helped them make environmental choices over the past year

Minnesota Department of Natural Resources (DNR) building:

At the DNR building, Metro WaterShed Partners use museum-quality, table-top displays and interactive computer kiosks to educate Minnesotans about metro area watersheds and how everyday actions impact lakes, rivers and streams. One out of every four fairgoers visits the DNR building; there were 429,537 visitors in 2013. Of those, more than 30,000 spent time interacting at our exhibit.



Community events:

Throughout the year, the Metro WaterShed Partners make our tabletop exhibits available free of charge to organizations doing education and outreach on non-point source pollution and preservation of clean water. In 2013, Freshwater Society, Met Council Environmental Services, the West Metro Water Alliance, Scott County, Belwin Outdoor Science Center, East Metro Water Resource Education Program, Hamline Elementary and the Center for Global Environmental Education used these exhibits to implement clean water education throughout the state. If you are interested in checking out one of our kiosks or table-top exhibits for an event in your community, you can find more information and a check-out form at: <http://www.hamline.edu/education/environmental/cgee/watershed/exhibit/index.html>

WaterShed Partners website

The Watershed Partners website is hosted by Hamline University at: www.hamline.edu/cgee/watershed. It acts as the primary archive of meeting minutes, agendas and presentations for the WaterShed Partners, along with a list of our activities and achievements, descriptions of our exhibits, information for new and continuing members of the WaterShed Partners, and a directory of our partner members.

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Center for Global Environmental Education

Graduate Education

K-12 Classroom Resources

Community Outreach

- >Community Outreach Home
- >Solstice River / One River Mississippi
- >Project Green Fleet
- >WaterShed Partners

Educational Multimedia Production

School of Education
Hamline University
1536 Hewitt Avenue
Saint Paul, MN 55104-1284
Phone: 651-523-2600
Fax: 651-523-2489
education@hamline.edu

An Award-Winning Partnership for Watershed Education in the Twin Cities

The WaterShed Partners is an innovative, dynamic coalition of over 50 public, private and non-profit organizations in the Minneapolis/St. Paul, Minnesota metropolitan area that, through collaborative educational outreach, teaches residents how to care for area waters. The purpose of the WaterShed Partners is to promote a public understanding that inspires people to act to protect water quality in their watershed.

This award-winning partnership cooperates through educational projects, networking, and sharing resources. The WaterShed Partners web site is packed with information for its Partners and for concerned citizens everywhere.

The WaterShed exhibit and this website was developed by the WaterShed Partners and funded with grants from the Metropolitan Council. Enjoy!

The WaterShed Partners also direct the Clean Water Minnesota Media Campaign. The Campaign places stormwater prevention public education messages in the mass media and maintains the cleanwatermn.org website with clean water tips and resources for stormwater educators, teachers, students and residents.

What is an urban watershed?
A watershed, or drainage basin, is the area of land from which rain and snowmelt flow and eventually enter a lake, river, or wetland. Even if your home is not next to a lake, river, or wetland, you still live in a watershed.

What is urban runoff?
This is water that becomes polluted when it picks up things like grass clippings, leaves, pesticides, motor oil, and pet waste, and flushes them into storm drains and eventually into the Mississippi River.

Monthly Meetings
The WaterShed Partners meet regularly on the second Wednesday of each month.

Next Meeting: March 10, 2010 at Capitol Region Watershed District offices - 1410 Energy Park Drive, St Paul, MN 55108

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Center for Global Environmental Education

Graduate Education

K-12 Classroom Resources

Community Outreach

Educational Multimedia Production

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1536 Hewitt Avenue
Saint Paul, MN 55104-1284
Phone: 651-523-2600
Fax: 651-523-2489
education@hamline.edu

The WaterShed Partners Exhibits

Steps to Checking out Exhibits

1. Check Availability of Exhibits on the Check-out Calendar
2. Fill out and fax us a reservation form

See links at the bottom of the page.

The WaterShed exhibit is the original educational project of the WaterShed Partners. Its interactive exhibits provide learning opportunities about metropolitan watersheds, and about people's connections to rivers and other waters through everyday actions in watersheds.

The WaterShed Partners have 3 different exhibit components available for use in their communities! The components can be used alone, or together for a larger event. Each component will help the WaterShed Partners expand the reaches of watershed education in the Twin Cities area and the messages of the individual Partners. The components are:

What is Your Watershed Address?
Table 2 has a map of the Minneapolis/St. Paul Metropolitan area with puzzle pieces that you lift to reveal the name of the watershed in which you live. Graphic panels give more information and depict the larger watersheds within the entire United States.

Your Street Flows to the River
Table 3 exemplifies the problems of and solutions for our everyday activities in our own yard and driveway, and how they can impact the entire watershed. Many people are unaware that the water that flows into the storm drains in the streets goes directly to the lakes and

CleanwaterMN.org website

Educational resources for stormwater educators, and information about Clean Water Minnesota and its *Minnesota Water, Let's Keep It Clean!* media outreach can be found at <http://cleanwatermn.org>. See page 10 of this report for more information on the site.

MINNESOTA WATER LET'S KEEP IT CLEAN

Stormwater education resources for the Twin Cities Metro Area

HOME | ABOUT US | ABOUT YOU | RESOURCES

HOW can YOU make a DIFFERENCE?

- General Public
- Stormwater Educators
- Teachers
- Students

The "Minnesota Water - Let's Keep it Clean!" Metro Media Campaign, a subgroup of Metro WaterShed Partners, provides public pollution prevention tips, supplies educators with stormwater resource education materials, and places clean water messages in the Twin Cities mass media.

We encourage you to use this site as a year-round source of urban water quality protection information.

JOIN THE CAUSE & BECOME A PARTNER

NEWS & RESOURCES:

- 2007 Minnesota Water - Let's Keep it Clean Annual Report

OUR MEMBERS:

Minnesota Water - Let's Keep it Clean is supported by cities, counties, watershed organizations, nonprofits and for profit organizations and state and local agencies. Our thanks to them!

[Click here for our 2008 membership list >>](#)

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Clean Water Minnesota

2013 Media Campaign Report

Introduction

Clean Water Minnesota is a collaborative outreach project of the Metro WaterShed Partners. Working together, we develop and deliver innovative storm water education messages to the Twin Cities metro area and beyond. We place storm water pollution prevention messages on radio, television, billboards and more – a feat not possible for any one of our partners alone.



MINNESOTA WATER
LET'S KEEP IT CLEAN

Media Campaign Leadership

The work of Clean Water Minnesota is overseen by the WaterShed Partners steering committee and administered by Jana Larson, administrator of the Metro WaterShed Partnership. In addition, we hold annual meetings where stakeholders can advise us on how best to serve the needs of supporting MS4s.

2013 Accomplishments

Clean Water Minnesota put storm water pollution prevention messages on radio during Minnesota Twins' games, on print ads in the Twins ballpark, and ran PSA's on Comcast television. We also expanded our outreach activities by piloting *StormDrain Goalie* at the Minnesota State Fair, using social media to actively foster and support citizens to adopt new water friendly behaviors, and to promote water friendly behaviors via social networks. We welcome inquiries, feedback and suggestions from our partners on these activities.

Purchased Media

This year, Clean Water Minnesota created an estimated 4,883,970 media impressions on radio, TV, and at the ballpark during Minnesota Twins' games.

Twins Radio Network

Dates: June 2013

Placements: 30 in-game ads, plus 3 bonus spots during game delays.

Ballpark bathroom stall ads: 49 signs

Total Investment: \$9,300.00

Total Impressions: 2,774,600

Audience: Twin City Metro Area



Twins games were broadcast on 1500 ESPN Twin Cities during the 2013 regular season. According to the 2011 Scarborough Research release, Twins Radio reached 45% of the Twin Cities adult population (57% of adult males). 900,000 metro area residents listen to each game.

The following ad played during Minnesota Twins baseball games:

"Mowing your lawn? Grass clippings that blow onto streets and sidewalks flow into lakes and rivers, feeding algae, which turns water green. Keep clippings on your lawn. The fish thank you. Clean streets, clean water. More at clean-water-m-n-dot-org."



Print ad placed in bathroom stalls at Twins Stadium.

Television Public Service Announcements (PSAs)

Comcast Spotlight Cable Television PSAs

Dates: September 7 – October 13, 2013

Placements: 96 paid spots, plus 70 bonus spots across all markets and additional 2,736 in select zones.

Total Investment: \$13,000.75

Total Impressions: 2,109,370

Audience: Statewide



In 2013, Clean Water Minnesota ran 30-second PSAs on the following networks: AEN, CNN, DISC, HGTV, HIST, TLC, and TNT

Comcast Cable featured the following public service announcement:

“Plop” Fish Bowl PSA – 30 seconds

Adapted from a PSA produced by the City of Austin, Texas, “Plop” features a fish bowl that becomes increasingly contaminated as common stormwater pollutants ‘plop’ into the fish bowl.

“Your street connects directly to lakes and rivers. If your car drips oil or antifreeze on the ground (pause) it washes into storm drains, and into our lakes and rivers. If you spread lawn fertilizer into the street (pause) or you’re not careful with leaves and yard waste (pause) they wash into storm drains too. If your car drips oil or antifreeze on the ground (pause) it washes into storm drains. And when you don’t pick up after your pet – well, you get the picture. On October thirteenth, Girl Scouts take action. To learn how you can help, go to Girl Scouts R-V-dot-org.”



Distribution of “Fowl Water” and “Plop” DVDs

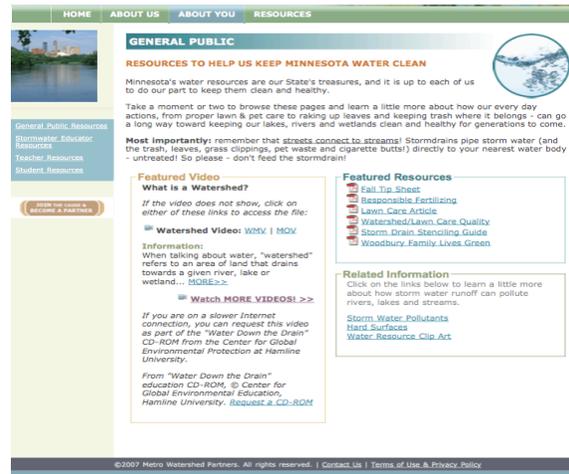
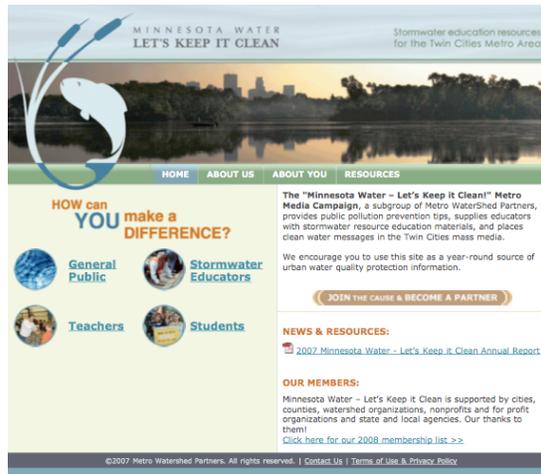
Copies of the “Plop” and “Fowl Water” DVDs were distributed to 2 municipalities. The DVDs were made available to be played on community cable television stations, on television monitors in public buildings, and at educational events.



Online Stormwater Pollution Prevention Education at www.cleanwatermn.org

Website address: www.cleanwatermn.org

In 2013, the Clean Water Minnesota Media Campaign continued to maintain www.cleanwatermn.org.



Resources on the site include:

- Minnesota MS4 Toolkit: the Minnesota MS4 Toolkit was developed in partnership with the Minnesota Pollution Control Agency and the Washington Conservation District. Launched in spring 2009, the toolkit serves as a one-stop-shop for municipal stormwater pollution prevention education materials.
- Document Upload Tool: launched in fall 2009, the document upload tool allows MS4 educations and other stormwater pollution prevention experts to upload documents, brochures, posters, images and other resources directly into the MS4 Toolkit for others to use. This allows all of Minnesota's stormwater pollution prevention education community to share successful education materials with their peers.
- Image Gallery: For our new image gallery, we have created high quality, seasonally appropriate images of water friendly behaviors for use in water education materials. We have also begun to populate the gallery with images donated by partners and friends. Our hope is to create a stellar resource of free downloadable images for use in print and web resources that focus on water education. If you own the copyright to an image you would like to share, please contact us and/or use the document upload tool.

2013 Financial Report

In response to our fund-raising letters, members contributed \$19,747.50 to the WaterShed Partners to support our meetings, state fair outreach, administration, exhibit maintenance, development and checkout. Supporting members of the Clean Water Minnesota Media Campaign gave \$54,592.50 to support media outreach in the metro area.

Supporting Members of the Metro Watershed Partners and the Clean Water Minnesota Media Campaign

City of Andover
Bassett Creek Watershed Management Commission
City of Bloomington
Capitol Region Watershed District
Carver County
City of Columbia Heights
City of Crystal
City of Eden Prairie
City of Edina
City of Elk Creek
Elm Creek Watershed Management Commission
City of Excelsior
City of Hilltop
City of Lauderdale
Lower Mississippi River Watershed Management Organization
City of Minneapolis
Minnehaha Creek Watershed District
City of Minnetonka
City of New Brighton
Prior Lake Spring Lake Watershed District
City of Plymouth
Ramsey Washington Metro Watershed District
Rice Creek Watershed District
City of Rochester
Scott County Clean Water Education Program
Shingle Creek Watershed Management Commission
City of Shoreview
South Washington Watershed District
City of St. Louis Park
City of St. Paul
West Mississippi Watershed Management Commission
City of Woodbury

2013 WaterShed Partners Financial Report

REVENUE	Inkind	Cash	Total
Purchased Media Funds Rollover		\$3,001.62	\$3,001.62
1. WaterShed Partners coordination	\$61,538.59	\$19,747.50	\$81,286.09
2. Watershed Partner Exhibit	\$18,010.00		\$18,010.00
3. Media Campaign	\$79,600.00	\$54,592.50	\$134,192.50
Total Revenue	\$159,148.59	\$77,341.62	\$236,490.21

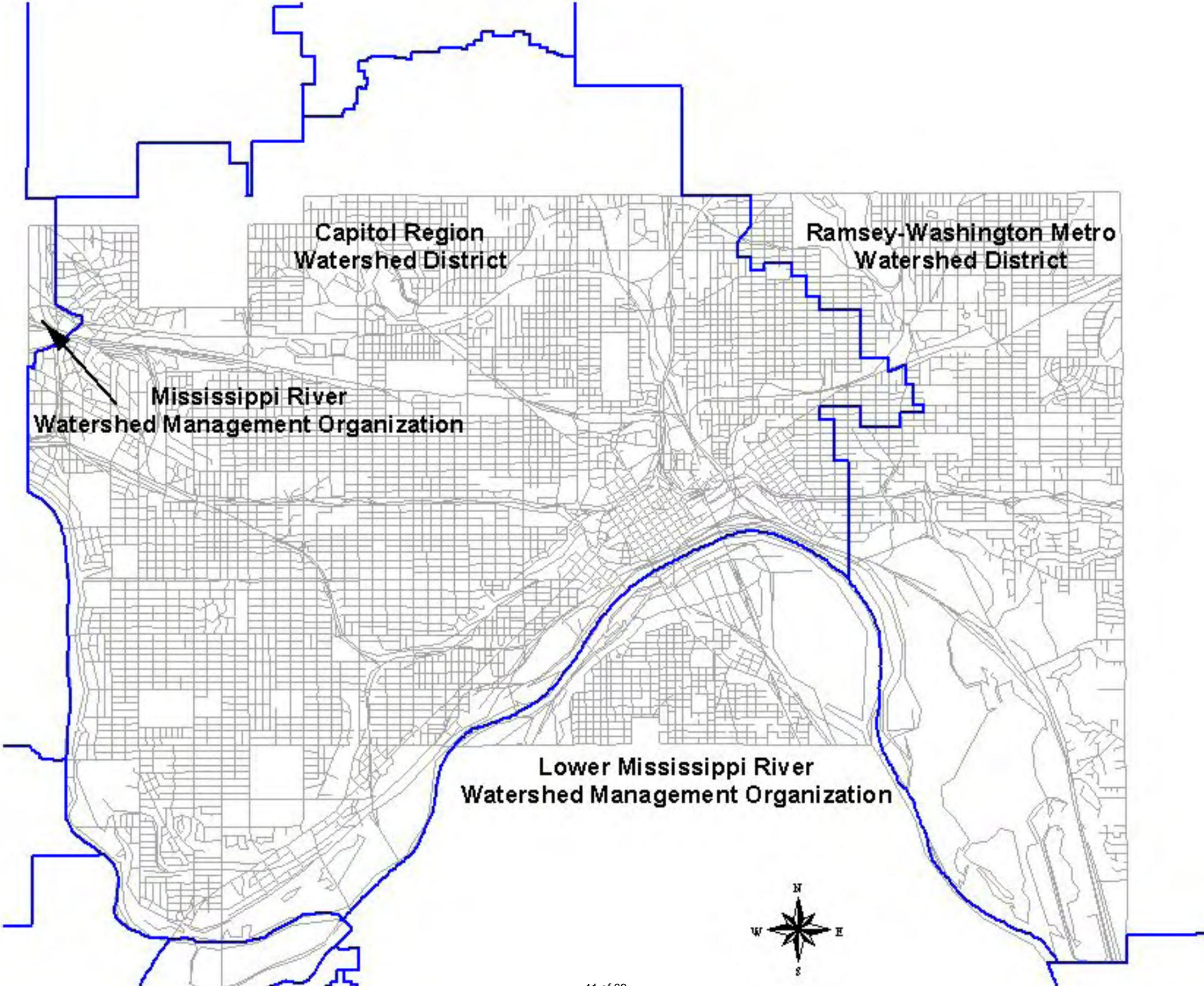
EXPENSE			
1. WaterShed Partner Coordination/Administration	Partner Cash/ In-kind	Cash /Expenditure	Total
Principle Investigator	\$2,500.00	\$2,500.00	\$5,000.00
Program Coordinator	\$7,600.00	\$14,000.00	\$21,600.00
Steering Committee	\$32,400.00		\$32,400.00
Watershed meeting hosting	\$2,500.00		\$2,500.00
Web site maintenance/list serve	\$2,400.00		\$2,400.00
Boat Trip and Roundtable Expenses		\$2,741.31	\$2,741.31
Materials/supplies/operating expenses	\$2,138.59	\$261.41	\$2,400.00
Accounting/indirect fees	\$12,000.00		\$12,000.00
Subtotal	\$61,538.59	\$19,502.72	\$81,041.31

2. WaterShed Exhibit Implementation			
WaterShed Exhibit Coordination	\$8,000.00	\$1,000.00	\$9,000.00
WaterShed Exhibit Development/Implementation	\$6,000.00	\$1,609.46	\$7,609.46
WaterShed Exhibit Transportation	\$910.00		\$910.00
Exhibit Maintenance	\$500.00	\$134.35	\$634.35
Storage/checkout	\$2,600.00	\$1,000.00	\$3,600.00
Subtotal	\$18,010.00	\$3,743.81	\$21,753.81

3. Clean Water MN Media Campaign			
Purchased Media	\$20,900.00	\$22,300.75	\$43,200.75
Printing & Postage		\$299.16	\$299.16
Meeting Expenses		\$108.06	\$108.06
Eco-experience social marketing/community engagement exhibit design, development and materials	\$15,000.00	\$3,285.50	\$18,285.50
Eco-experience social marketing/community engagement research, development and coordination	\$29,200.00	\$9,800.00	\$39,000.00
Campaign Coordination web site management	\$10,500.00	\$10,500.00	\$21,000.00
Web Hosting Fee		\$781.20	\$781.20
Fiscal Agency Fee, Hamline University	\$4,000.00	\$4,000.00	\$8,000.00
Subtotal	\$79,600.00	\$51,074.67	\$130,674.67

TOTAL 2013 Expenditures	\$159,148.59	\$74,321.20	\$233,469.79
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Watershed Organizations in Saint Paul



MONITORING ACTIVITIES IN THE CITY OF SAINT PAUL

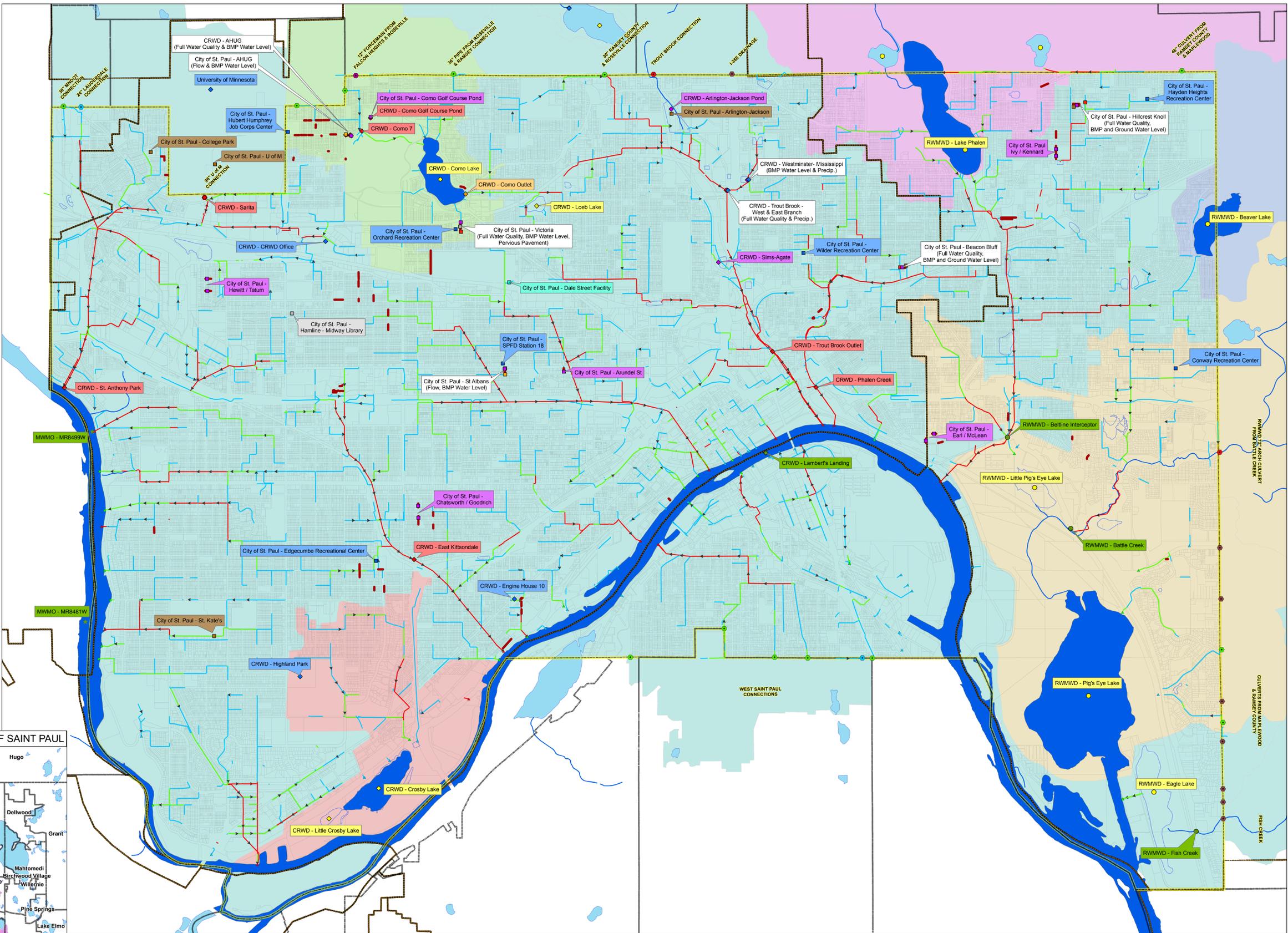
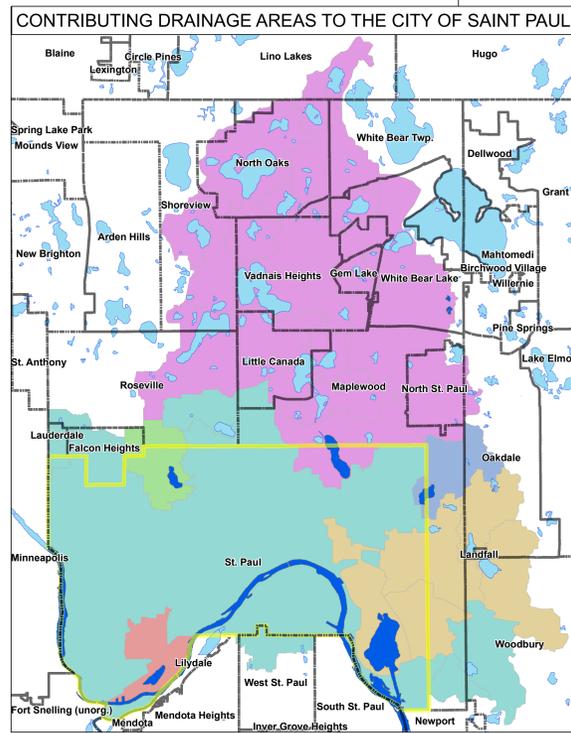
2011-2013



Ramsey-Washington Metro Watershed District



0 0.125 0.25 0.5 0.75 1 Miles



Notes: Labels are color coded to match the type of monitoring occurring at that location. Sites with multiple monitoring parameters are white with monitoring parameters annotated.

Information Sources:
 2011 Monitoring Reports for:
 -CRWD
 -MWMO
 -LMRWMO

2013 Water Quality and Quantity Monitoring Proposal
 -City of Saint Paul

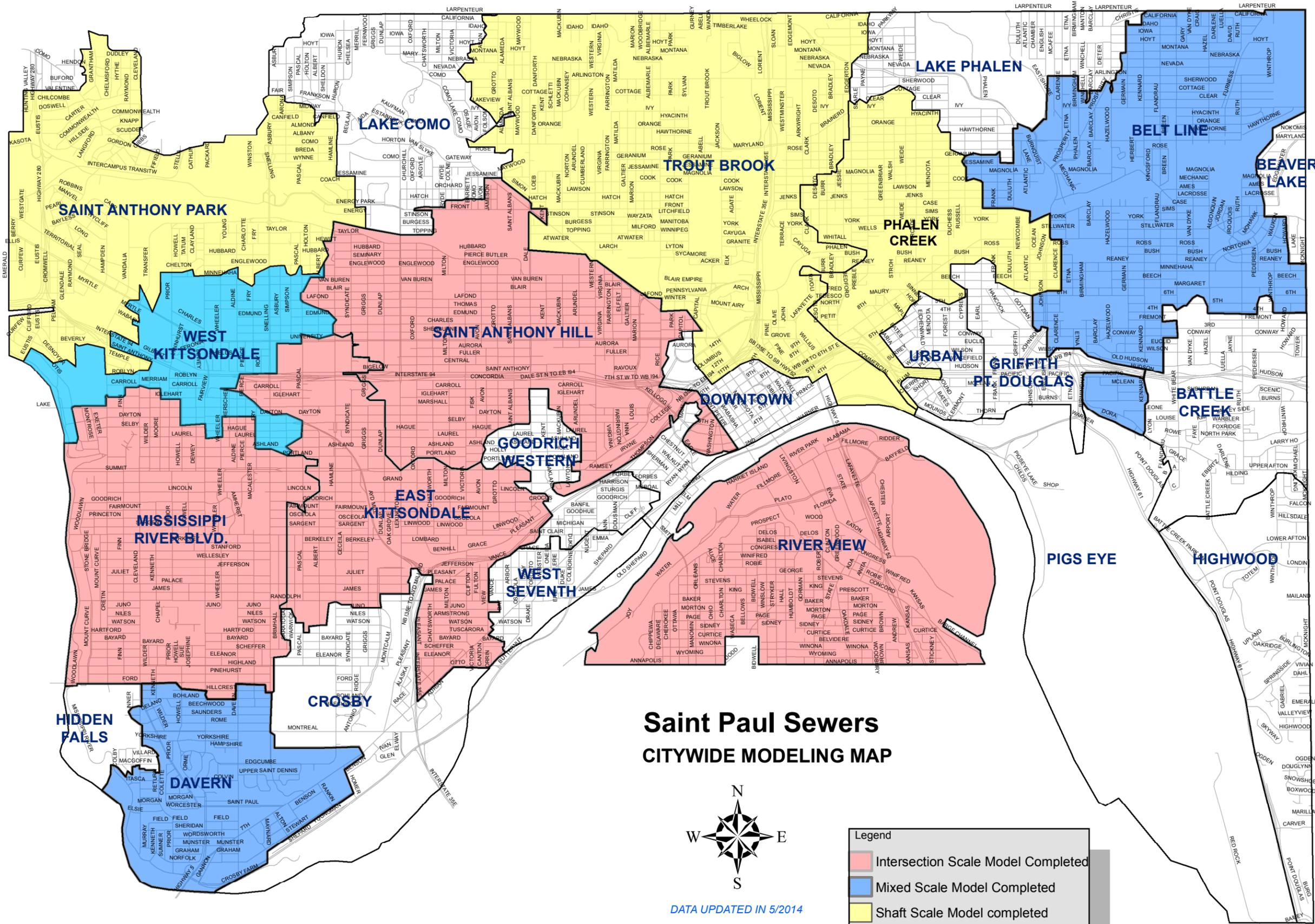
Website:
 -RWMWD

LEGEND

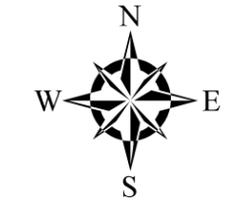
Monitoring Locations Organization Conducting Monitoring □ City of Saint Paul ◇ CRWD ○ RWMWD ☆ MWMO ⊙ LMRWMO	Monitoring Site Type (Monitoring Location Symbol Fill Color) ■ Flow ■ Full Water Quality Station* ■ Lake Monitoring ■ BMP Water Level ■ River/Stream Monitoring ■ Precipitation ■ Ground Water Level ■ Water Quality ■ Pervious Pavement	Inter-City Connections ● Culverts, Roadways, and Others ● Force Main ● 24" Storm Sewer ● 30 - 48" Storm Sewer ● > 72" Storm Sewer and Channels Outfalls Diameter (inches) ▲ 30 - 48 ▲ 50 - 72 ▲ > 72	Storm Sewer Diameter (inches) — 30 - 48 — 50 - 72 — > 72 InfiltrationBMPs — City Boundary — Other Cities — St. Paul	Watershed Districts Boundary □ Watershed Districts Boundary Streams — Major Water Bodies in Saint Paul — Water Bodies in Contributing Drainage Areas	Parcel Lines — Major Subwatersheds ■ Beaver Lake ■ Como Lake ■ Crosby Lake ■ Lake Phalen ■ Mississippi River ■ Pigs Eye
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* Full Water Quality Station Monitoring Includes Flow & Water Quality





Saint Paul Sewers CITYWIDE MODELING MAP



DATA UPDATED IN 5/2014

- Legend**
- Intersection Scale Model Completed
 - Mixed Scale Model Completed
 - Shaft Scale Model completed
 - Hydrological Model Completed

Memorandum

To: Anne Weber, City of St. Paul
From: Jesse Carlson
Date: June 30, 2014
Re: Estimates of Annual and Seasonal Pollutant Loads
WSB Project No. 01610-130

The City of St. Paul is a Phase I MS4 permittee and is required to evaluate their annual and seasonal pollutant loads.

2014 Pollutant Loading Calculations

Event mean concentrations for snowmelt, grab, and storm composites were gathered from the Capitol Region Watershed District's (CRWD) 2012 Annual Monitoring Report. 2013 monitoring data was not used because the previous year's loading assessment was based in 2011 monitoring data. Base flow grabs were excluded because this information could not be extrapolated for all watersheds. For four of the watersheds, monitoring data existed and the respective loadings were summarized using this data. For the remaining sites, annual and seasonal means were calculated for each of the pollutants based on CRWD's data (see Table 1). The watersheds are represented in Figure 1. The following formula was used to calculate the annual/seasonal flow weighted mean concentration for each pollutant:

$$C = \frac{\sum(F_i \times C_i)}{\sum(F_i)} \quad (1)$$

C = annual/seasonal flow weighted mean concentration [mg/L]

F_i = the flow for an individual event [cf]

C_i = the mean concentration for an individual event [mg/L]

Based on these calculated flow weighted means, the Simple Method was used to calculate each watershed's pollutant loading:

$$L = 2.72 \left(\frac{PP_j R_v}{12} \right) (CA) \quad (2)$$

L = pollutant loading for the year/season [lb]

P = rainfall depth for the year/season [in]

P_j = correction factor for storms that produce no runoff [.]

R_v = runoff coefficient [.]

A = area of the watershed [acre]

Values used in loading calculations:

C = Table 1

P = Table 2

P_j = 0.85

R_v and A = Table 3

Table 1. Average Event Mean Concentrations for Year/Season

Parameters	Units	Annual	Winter	Spring	Summer	Fall
Ortho-P	[mg/L]	0.05	0.13	0.03	0.04	0.19
Cl	[mg/L]	41.90	341.67	29.38	30.20	71.65
NH3	[mg/L]	0.24	0.55	0.23	0.23	0.24
TKN	[mg/L]	1.73	1.72	2.38	1.21	2.42
Total P	[mg/L]	0.31	0.25	0.33	0.30	0.41
NO2	[mg/L]	0.10	0.10	0.10	0.10	0.10
NO2+NO3	[mg/L]	0.44	0.68	0.38	0.47	0.42
TDS	[mg/L]	156.72	792.61	123.68	130.99	303.16
TSS	[mg/L]	118.42	89.50	148.09	99.46	107.53

The annual/seasonal precipitation values from 2012 for 8 different St. Paul sites are provided in the Table 2. Each watershed was assigned precipitation data from the nearest precipitation site (see Table 3). December was not included in the calculations because its precipitation fell in the form of snowfall and did not result in runoff. Tables 4-8 contain the annual and seasonal pollutant loadings for each of the City's watersheds.

Table 2. Precipitation Sites' Data [in]

Season/Date	Conway	Edgecumbe	Engine House 18	Hayden Heights	Orchard	US Job Corps	Wilder	HD
Annual	25.90	25.76	26.08	26.07	26.89	26.57	26.15	26.75
Winter (Jan-Mar)	3.34	3.34	3.34	3.34	3.38	3.34	3.39	3.34
Spring (Apr-May)	10.85	10.53	10.92	10.06	11.36	11.34	10.75	11.00
Summer (Jun-Aug)	9.44	9.59	9.68	10.27	9.68	9.38	9.72	9.68
Fall (Sep-Nov)	2.27	2.30	2.14	2.40	2.47	2.51	2.29	2.73

Table 3. Watershed Inventory

Watershed	Area [acre]	Runoff Coefficient [.]	Precipitation Site [.]
Battle Creek	1,089	0.54	Conway
Beaver Lake	278	0.33	Conway
Belt Line	2,882	0.55	Hayden
Crosby	1,446	0.45	Edgecumbe
Davern	1,277	0.55	Edgecumbe
Downtown	669	0.75	Engine House 18
East Kittsondale	1,870	0.62	Edgecumbe
Fish Creek	46	0.70	US Job Corp
Goodrich/Western	424	0.63	Engine House 18
Griffith/Pt. Douglas	458	0.61	Conway
Hidden Falls	237	0.55	Edgecumbe
Highwood	1,139	0.50	Conway
Lake Como	1,240	0.47	Orchard
Lake Phalen	995	0.42	Wilder
Mississippi River Blvd.	2,373	0.58	Edgecumbe
MRWMO	135	0.52	Conway
Phalen Creek	1,406	0.62	Wilder
Pigs Eye	2,995	0.40	Conway
Riverview	2,658	0.57	Conway
St. Anthony Hill	2,542	0.64	Engine House 18
St. Anthony Park	2,467	0.68	US Job Corp
Trout Brook	3,959	0.62	Orchard
Urban	339	0.57	Wilder
West Kittsondale	847	0.67	Orchard
West Seventh	450	0.60	Edgecumbe

Table 4. Annual Pollutant Loadings [lbs]

	Ortho-P	Cl	NH3	TKN	Total P	NO2	NO2+NO3	TDS	TSS
Battle Creek	139	124,874	729	5,141	933	301	1,303	467,070	352,937
Beaver Lake	15	13,248	77	545	99	32	138	49,550	37,442
Belt Line	387	348,874	2,037	14,364	2,607	841	3,642	1,304,908	986,042
Crosby	174	157,120	918	6,469	1,174	379	1,640	587,681	444,076
Davern	165	148,916	870	6,131	1,113	359	1,554	556,996	420,889
Downtown	96	86,847	507	3,576	649	209	907	324,836	245,460
East Kittsondale	268	241,360	1,409	9,937	1,803	582	2,519	902,768	682,169
Fish Creek	6	5,131	30	211	38	12	54	19,190	14,501
Goodrich/Western	62	56,239	328	2,316	420	136	587	210,352	158,951
Griffith/Pt. Douglas	65	58,669	343	2,416	438	141	612	219,442	165,820
Hidden Falls	40	35,799	209	1,474	267	86	374	133,902	101,182
Highwood	130	117,401	686	4,834	877	283	1,225	439,119	331,816
Lake Como	147	132,022	771	5,436	986	318	1,378	493,805	373,140
Lake Phalen	100	89,816	525	3,698	671	216	938	335,941	253,851
Mississippi River Blvd.	320	288,387	1,684	11,874	2,155	695	3,010	1,078,664	815,083
MRWMO	22	19,758	115	814	148	48	206	73,903	55,844
Phalen Creek1	226	269,581	1,411	8,976	1,594	441	2,008	858,093	702,623
Pigs Eye	279	250,985	1,466	10,334	1,875	605	2,620	938,769	709,372
Riverview	135	121,204	708	4,990	906	292	1,265	453,345	342,566
St. Anthony Hill	397	357,206	2,086	14,707	2,669	861	3,729	1,336,073	1,009,592
St. Anthony Park1	300	411,385	2,712	9,260	1,340	864	3,520	1,703,659	624,078
Trout Brook1	605	533,286	2,571	20,911	4,085	1,290	5,783	2,017,073	1,442,917
Urban	44	39,347	230	1,620	294	95	411	147,173	111,210
West Kittsondale	168	151,550	885	6,240	1,132	365	1,582	566,847	428,333
West Seventh	62	56,272	329	2,317	420	136	587	210,478	159,046

¹Values based solely on individual site's CRWD data

Table 5. Seasonal Pollutant Loadings [lbs] Winter/Snowmelt (January - March)

	Ortho-P	CI	NH3	TKN	Total P	NO2	NO2+NO3	TDS	TSS
Battle Creek	51	131,312	213	660	96	39	263	304,623	34,396
Beaver Lake	5	13,931	23	70	10	4	28	32,317	3,649
Belt Line	141	364,470	591	1,832	268	109	730	845,512	95,470
Crosby	64	166,119	269	835	122	49	333	385,369	43,513
Davern	61	157,445	255	791	116	47	315	365,248	41,241
Downtown	35	90,694	147	456	67	27	182	210,396	23,757
East Kittsondale	99	255,184	414	1,282	187	76	511	591,986	66,843
Fish Creek	2	5,259	9	26	4	2	11	12,200	1,378
Goodrich/Western	23	58,730	95	295	43	17	118	136,245	15,384
Griffith/Pt. Douglas	24	61,694	100	310	45	18	124	143,120	16,160
Hidden Falls	15	37,850	61	190	28	11	76	87,805	9,914
Highwood	48	123,454	200	620	91	37	247	286,394	32,338
Lake Como	52	135,319	219	680	99	40	271	313,918	35,446
Lake Phalen	37	94,944	154	477	70	28	190	220,255	24,870
Mississippi River Blvd.	118	304,904	494	1,532	224	91	611	707,329	79,867
MRWMO	8	20,777	34	104	15	6	42	48,200	5,442
Phalen Creek¹	168	416,489	505	1,558	253	63	383	726,886	46,317
Pigs Eye	102	263,926	428	1,326	194	79	529	612,266	69,133
Riverview	49	127,454	207	641	94	38	255	295,672	33,385
St. Anthony Hill	144	373,032	605	1,875	274	111	747	865,374	97,712
St. Anthony Park¹	52	278,851	393	1,086	131	109	930	878,883	166,751
Trout Brook¹	204	421,477	887	2,866	419	160	946	1,002,458	89,617
Urban	16	41,594	67	209	31	12	83	96,492	10,895
West Kittsondale	60	155,335	252	781	114	46	311	360,352	40,689
West Seventh	23	59,495	96	299	44	18	119	138,020	15,584

¹Values based solely on individual site's CRWD data

Table 6. Seasonal Pollutant Loadings [lbs]

Spring (April-May)

	Ortho-P	CI	NH3	TKN	Total P	NO2	NO2+NO3	TDS	TSS
Battle Creek	42	36,680	291	2,967	408	125	473	154,407	184,883
Beaver Lake	4	3,891	31	315	43	13	50	16,381	19,614
Belt Line	109	94,397	750	7,637	1,049	321	1,218	397,368	475,798
Crosby	52	45,035	358	3,643	500	153	581	189,575	226,992
Davern	49	42,683	339	3,453	474	145	551	179,676	215,140
Downtown	29	25,498	203	2,063	283	87	329	107,333	128,518
East Kittsondale¹	33	26,602	787	6,261	738	235	873	174,683	422,118
Fish Creek	2	1,535	12	124	17	5	20	6,463	7,739
Goodrich/Western	19	16,511	131	1,336	183	56	213	69,505	83,224
Griffith/Pt. Douglas	20	17,233	137	1,394	191	59	222	72,545	86,863
Hidden Falls	12	10,261	82	830	114	35	132	43,194	51,719
Highwood	40	34,485	274	2,790	383	117	445	145,167	173,819
Lake Como	45	39,108	311	3,164	435	133	505	164,626	197,119
Lake Phalen	30	25,889	206	2,094	288	88	334	108,982	130,493
Mississippi River Blvd.	95	82,659	657	6,687	918	281	1,066	347,956	416,634
MRWMO	7	5,804	46	470	64	20	75	24,432	29,254
Phalen Creek¹	52	23,204	500	4,967	701	180	679	154,337	371,622
Pigs Eye	85	73,724	586	5,964	819	251	951	310,345	371,599
Riverview	41	35,602	283	2,880	396	121	459	149,870	179,450
St. Anthony Hill	121	104,874	833	8,484	1,165	357	1,353	441,470	528,604
St. Anthony Park¹	81	57,870	1,180	3,686	516	369	885	250,648	208,628
Trout Brook¹	201	198,360	887	12,392	1,761	538	2,078	783,673	761,008
Urban	13	11,342	90	918	126	39	146	47,744	57,168
West Kittsondale	52	44,893	357	3,632	499	153	579	188,977	226,276
West Seventh	19	16,129	128	1,305	179	55	208	67,896	81,297

¹Values based solely on individual site's CRWD data

Table 7. Seasonal Pollutant Loadings [lbs]

Summer (June - August)

	Ortho-P	CI	NH3	TKN	Total P	NO2	NO2+NO3	TDS	TSS
Battle Creek	42	32,804	254	1,310	327	110	505	142,289	108,033
Beaver Lake	4	3,480	27	139	35	12	54	15,095	11,461
Belt Line	125	99,056	766	3,957	987	334	1,526	429,662	326,221
Crosby	53	42,159	326	1,684	420	142	649	182,866	138,841
Davern	51	39,957	309	1,596	398	135	615	173,318	131,591
Downtown	29	23,233	180	928	231	78	358	100,774	76,513
East Kittsondale¹	41	17,919	753	2,548	513	214	1,026	143,740	248,452
Fish Creek	2	1,305	10	52	13	4	20	5,663	4,299
Goodrich/Western	19	15,045	116	601	150	51	232	65,258	49,547
Griffith/Pt. Douglas	20	15,412	119	616	154	52	237	66,851	50,757
Hidden Falls	12	9,606	74	384	96	32	148	41,666	31,635
Highwood	39	30,841	239	1,232	307	104	475	133,774	101,568
Lake Como	43	34,254	265	1,368	341	115	528	148,579	112,809
Lake Phalen	30	24,062	186	961	240	81	371	104,370	79,243
Mississippi River Blvd.	98	77,381	598	3,091	771	261	1,192	335,643	254,836
MRWMO	7	5,191	40	207	52	17	80	22,514	17,094
Phalen Creek¹	42	17,082	457	1,984	603	163	710	122,925	241,525
Pigs Eye	83	65,933	510	2,634	657	222	1,015	285,989	217,137
Riverview	40	31,840	246	1,272	317	107	490	138,108	104,858
St. Anthony Hill	121	95,559	739	3,817	952	322	1,472	414,492	314,703
St. Anthony Park¹	188	30,029	1,157	3,158	687	305	1,244	301,548	280,804
Trout Brook¹	185	159,585	955	5,419	1,405	468	2,236	655,330	447,700
Urban	13	10,541	82	421	105	35	162	45,724	34,716
West Kittsondale	50	39,321	304	1,571	392	132	606	170,557	129,495
West Seventh	19	15,099	117	603	150	51	233	65,493	49,726

¹Values based solely on individual site's CRWD data

Table 8. Seasonal Pollutant Loadings [lbs]**Fall (September - November)**

	Ortho-P	Cl	NH3	TKN	Total P	NO2	NO2+NO3	TDS	TSS
Battle Creek	50	18,716	64	631	107	26	111	79,186	28,089
Beaver Lake	5	1,986	7	67	11	3	12	8,401	2,980
Belt Line	147	54,923	187	1,853	313	77	325	232,377	82,427
Crosby	64	23,990	82	809	137	33	142	101,500	36,004
Davern	61	22,737	77	767	130	32	134	96,200	34,124
Downtown	33	12,186	42	411	69	17	72	51,560	18,289
East Kittsondale	99	36,852	126	1,243	210	51	218	155,920	55,307
Fish Creek	2	829	3	28	5	1	5	3,507	1,244
Goodrich/Western	21	7,891	27	266	45	11	47	33,388	11,843
Griffith/Pt. Douglas	24	8,793	30	297	50	12	52	37,204	13,197
Hidden Falls	15	5,466	19	184	31	8	32	23,127	8,203
Highwood	47	17,596	60	594	100	25	104	74,448	26,408
Lake Como	56	20,738	71	700	118	29	123	87,741	31,123
Lake Phalen	36	13,450	46	454	77	19	80	56,907	20,186
Mississippi River Blvd.	118	44,033	150	1,486	251	61	260	186,299	66,083
MRWMO	8	2,961	10	100	17	4	18	12,529	4,444
Phalen Creek¹	31	40,586	142	653	62	38	315	203,312	13,345
Pigs Eye	101	37,618	128	1,269	214	52	222	159,157	56,455
Riverview	49	18,166	62	613	104	25	107	76,859	27,263
St. Anthony Hill	135	50,124	171	1,691	286	70	296	212,070	75,224
St. Anthony Park	157	58,458	199	1,972	333	82	346	247,334	87,733
Trout Brook¹	267	61,770	240	3,584	640	117	546	256,718	172,530
Urban	16	5,892	20	199	34	8	35	24,931	8,843
West Kittsondale	64	23,806	81	803	136	33	141	100,720	35,727
West Seventh	23	8,592	29	290	49	12	51	36,352	12,895

¹Values based solely on individual site's CRWD data

City of St. Paul Loading Assessment



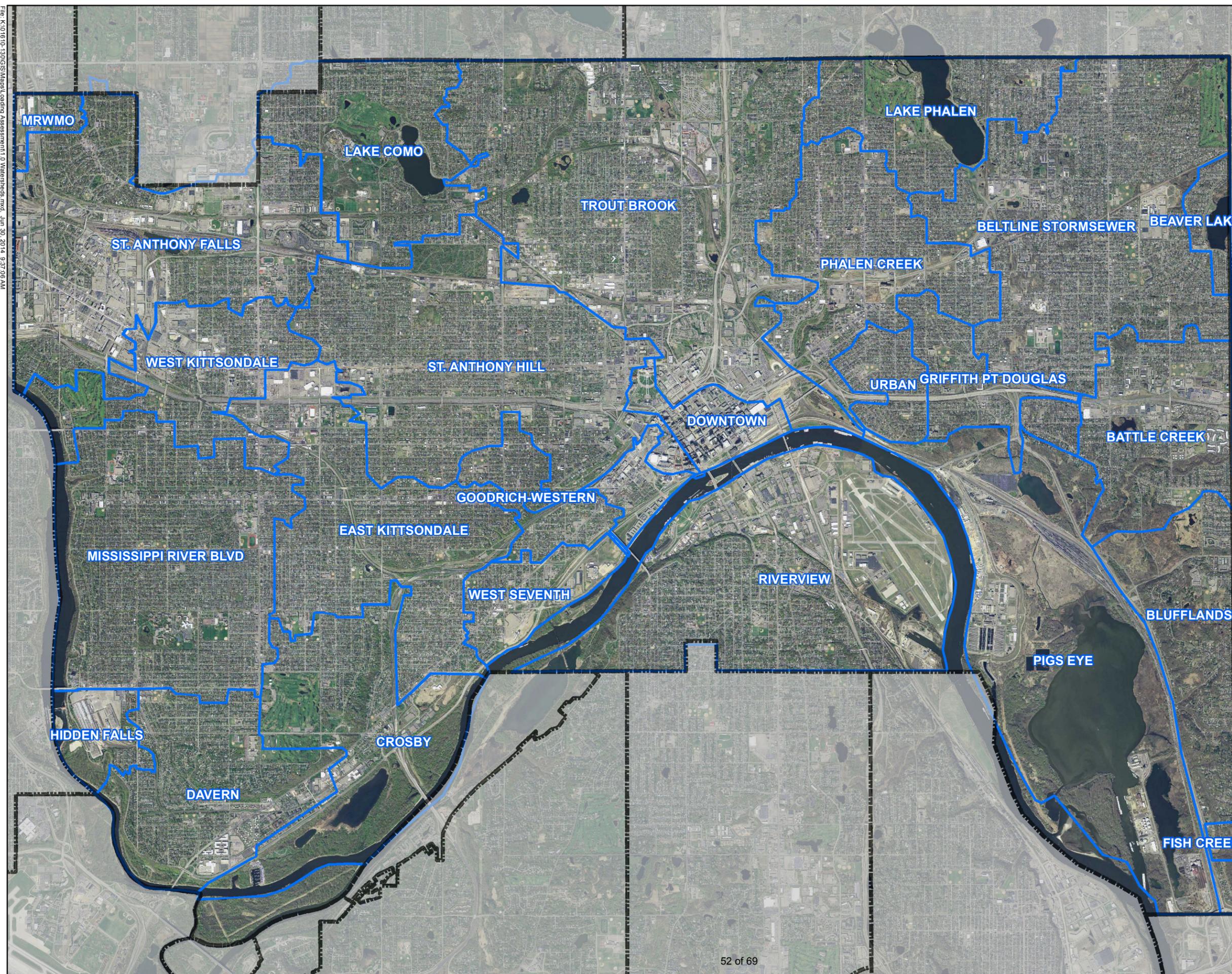
Figure 1. Watersheds



0 2,000 4,000 8,000
Feet

Legend

 Major Subwatersheds



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Outfall Inventory

Outfall	Location	Watershed	Pipe Size	Acres
	Bridal Veil Creek			
005	South of Buford	Bridal Veil	42"	
	Mississippi River			
010	Eustis	St. Anthony Park	tunnel	2467
020	Lotus	Miss. River Blvd.	tunnel	31
030	Marshall	Miss. River Blvd.	tunnel	121
040	West Kittsondale	West Kittsondale	tunnel	977
050	Otis	Miss. River Blvd.	tunnel	14
060	Portland Ave	Miss. River Blvd.	tunnel	508
070	Summit	Miss. River Blvd.	16" cast iron	30
080	Goodrich	Miss. River Blvd.	tunnel	456
090	Princeton	Miss. River Blvd.	tunnel	150
095	Berkeley	Miss. River Blvd.	24"	
100	Jefferson	Miss. River Blvd.	tunnel	139
110	Randolph	Miss. River Blvd.	tunnel	39
115	Hartford	Miss. River Blvd.	tunnel	580
120	Scheffer	Miss. River Blvd.	tunnel	8
130	Highland Parkway	Miss. River Blvd.	tunnel	165
135	Hidden Falls	Hidden Falls	48"	269
140	Sheridan	Davern	tunnel	145
145	West 7th	Davern	30"	30
150	Davern	Davern	tunnel	963
151	Watergate Marina	Crosby	21"	

Outfall Inventory

Outfall	Location	Watershed	Pipe Size	Acres
156	Elway	Crosby	60"	
158	Elway	Crosby	90"	820
160	Otto	E. Kittsondale	tunnel	177
170	Bay	E. Kittsondale	tunnel	1699
180	Sumac	West 7th	tunnel	8
190	Drake	West 7th	tunnel	158
195	Fountain Cave	West 7th	42"	39
200	Richmond	West 7th	20"	142
201	Richmond	West 7th	42"	
206	Western	West 7th	30"	98
210	Smith -1992	Good/West	tunnel	424
220	Sherman	Downtown	48"	41
230	Chestnut	Downtown	27"	82
240	Eagle	Downtown	3'x5' brick	77
250	Ontario - abandoned	Downtown	24"	
260	Market	Downtown	24"	
270	St. Peter	St. Anthony Hill	tunnel	2653
280	Cedar	Downtown	tunnel	
290	Minnesota	Downtown	tunnel	115
295	Robert	Downtown	tunnel	5
300	Jackson	Downtown	36"	27
310	Sibley	Downtown	48"	10
315	Wacouta	Downtown	42"	40

Outfall Inventory

Outfall	Location	Watershed	Pipe Size	Acres
320	Broadway	Downtown	7'x8' concrete	115
325	Troutbrook	Troutbrook	dual 10'	4025
330	Plum	Phalen Creek	tunnel	1406
340	Urban	Urban	48" brick	328
343	Warner and Childs	Pig's Eye	24"	
346	Warner and Childs	Pig's Eye	18"	
350	Beltline (RWMWD's)	Beltline	9'	3524
352	off Child's Road	Pig's Eye	12"	
354	off Child's Road	Pig's Eye	12"	
356	off Child's Road	Pig's Eye	12"	
360	Battle Creek	Pig's Eye	36"	
365	Wyoming	Riverview	30" culvert	8
380	Page and Barge Ch Rd	Riverview	42"	69
385	Robie and Witham	Riverview	54"	
390	Robie and Kansas	Riverview	42"	264
400	Airport	Riverview	12"	
405	Chester St	Riverview	tunnel	326
407	Eva St	Riverview	36"	
410	Custer St	Riverview	tunnel	188
420	Moses St	Riverview	5'6"	95
430	Belle	Riverview	2-36"x40"	37
440	Riverview	Riverview	2-77"x121"	801
460	Chippewa and Baker	Riverview	16"	71

Outfall Inventory

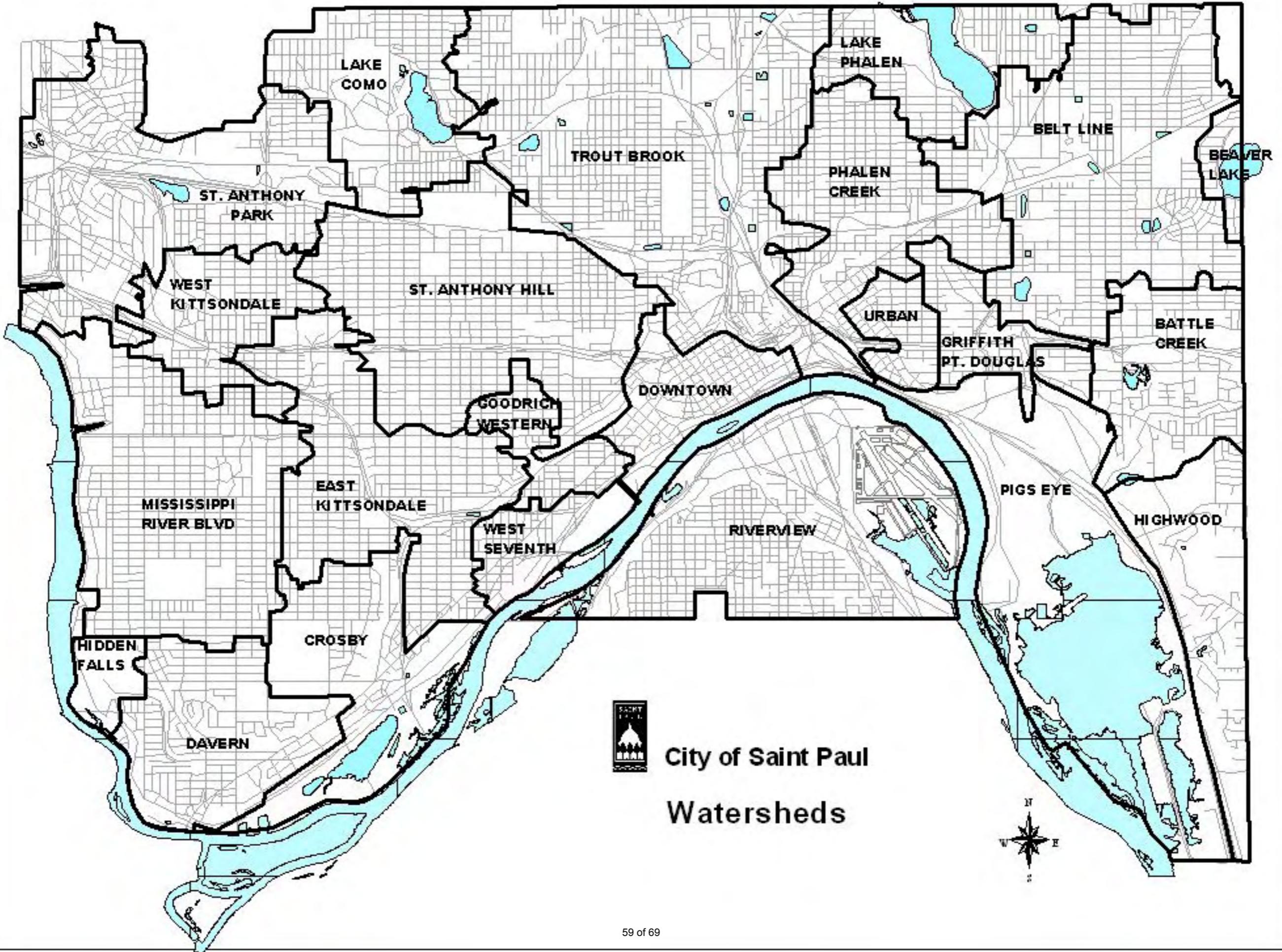
Outfall	Location	Watershed	Pipe Size	Acres
	Upper Lake			
152	Springfield	Crosby	15"	
	Crosby Lake			
153	Rankin	Crosby	27"	
154	Homer	Crosby	30"	
155	Leland	Crosby	30"	
	Fairview North Pond			
500	Tatum & Pierce Butler	St. Anthony Park	6'	
510	Pierce Butler & Aldine	St. Anthony Park	54"	
	Lake Como			
520	Arlington & Chelsea	Como	60"	310
530	Chatsworth North	Como	36"	201
540	Milton North	Como	36"	79
550	Parkview East	Como	18"	17
560	Ivy East	Como	18"	24
570	Wheelock Pkwy East	Como	24"	23
580	Rose East	Como	36"	30
590	Victoria South	Como	30"	49
600	Chatsworth South	Como	24"	75
610	Horton West	Como	15"	311
620	Park West	Como	36"	50

Outfall Inventory

Outfall	Location	Watershed	Pipe Size	Acres
	Loeb Lake			
630	Jessamine	Troutbrook	36"	
	Lake Phalen			
680	Arlington West	Phalen	72"	380
690	Blomquist South	Phalen	36"	71
700	Arlington East	Phalen	42"	209
710	between Hoyt & Neb.	Phalen	42"	69
720	Larpenteur East	Phalen	84"	17
	Beaver Lake			
<u>726</u>	<u>Lacrosse</u>	<u>Beaver</u>	<u>15"</u>	
<u>728</u>	<u>Ames</u>	<u>Beaver</u>	<u>15"</u>	
730	Rose North	Beaver	42"	67
740	McKnight North	Beaver	21"	22
	Suburban Pond			
---	Suburban & VanDyke (RWMWD's)	Battle Creek	102"	
750	Suburban & WB Ave	Battle Creek	27"	
760	Suburban & Hazel	Battle Creek	54"	
	Little Pig's Eye Lake			
770	near fish hatchery	Griffith/Pt. Douglas	72"	
	Pig's Eye Lake			
780	Burlington	Highwood	66"	
<u>784</u>	<u>Winthrop @ Lower Afton</u>	<u>Highwood</u>	<u>30"</u>	

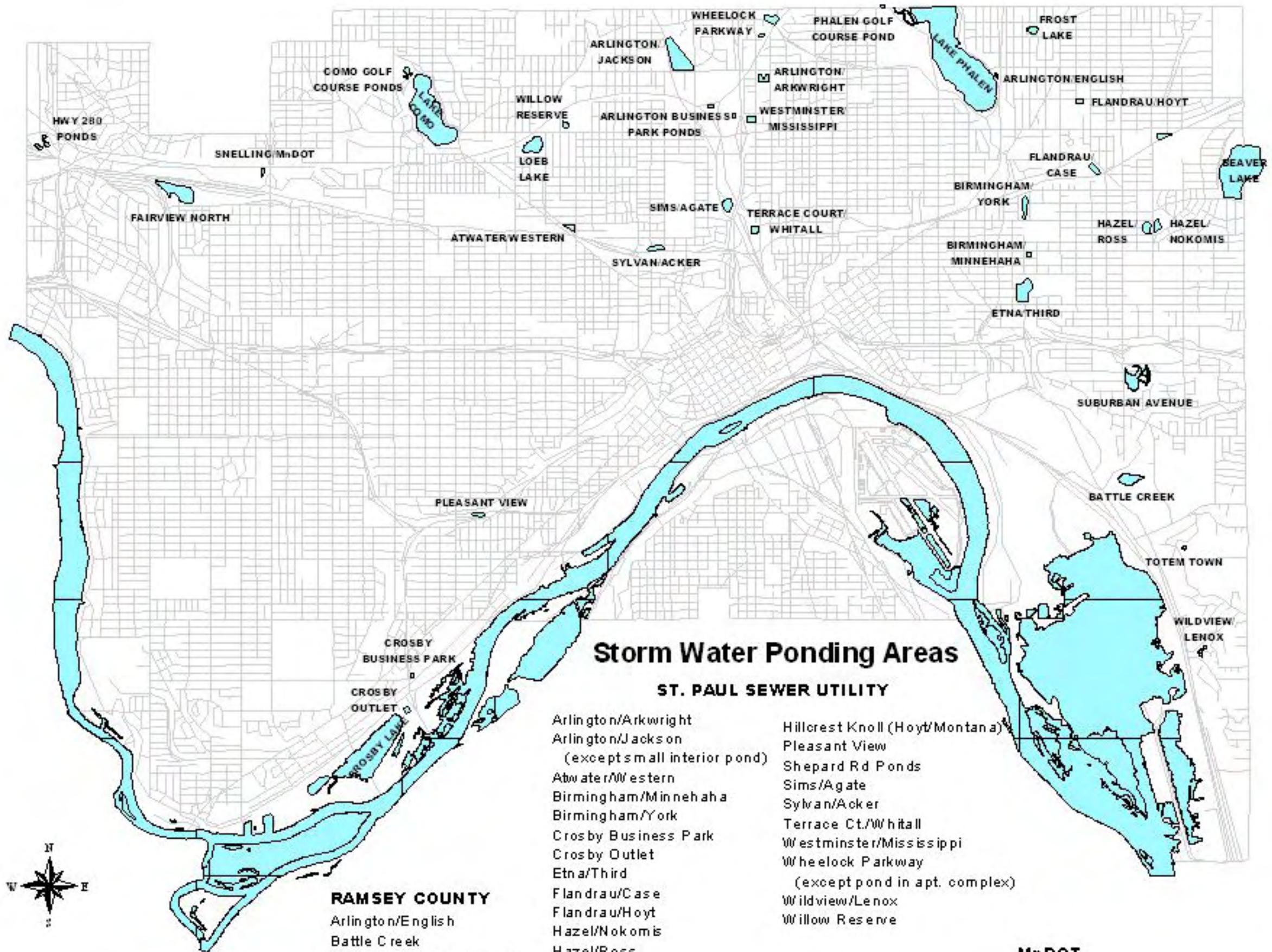
Outfall Inventory

Outfall	Location	Watershed	Pipe Size	Acres
<u>786</u>	<u>Morningside @ Lower Afton</u>	<u>Highwood</u>	<u>18"</u>	
790	Springside Drive	Highwood	33"	
<u>791</u>	<u>Highwood</u>	<u>Highwood</u>	<u>48"</u>	
	Battle Creek			
800	N. Park Drive & Faye	Battle Creek	33"	
<u>808</u>	<u>Sandrilee</u>	<u>Battle Creek</u>	<u>24"</u>	
810	Ruth	Battle Creek	42"&73-1/2" arch	
<u>812</u>	<u>Warren</u>	<u>Battle Creek</u>	<u>18"</u>	
<u>814</u>	<u>Cutler</u>	<u>Battle Creek</u>	<u>24"</u>	
<u>816</u>	<u>Nelson</u>	<u>Battle Creek</u>	<u>24"</u>	
<u>818</u>	<u>Winthrop & Larry Ho</u>	<u>Battle Creek</u>	<u>30"</u>	
820	Winthrop & N. Park Dr	Battle Creek	36"	
<u>825</u>	<u>Michael N</u>	<u>Battle Creek</u>	<u>33"</u>	
<u>826</u>	<u>Michael S</u>	<u>Battle Creek</u>	<u>30"</u>	
830	McKnight & N. Park Dr	Battle Creek	36"	
836	<u>A Street</u>	<u>Battle Creek</u>	<u>18"</u>	



Watershed Inventory

Watershed	WS#	Area (acres)	Population (2000 Census)	Percent Impervious	Runoff Coefficient
Beaver Lake	1	278	2,070	31	0.33
Belt Line	2	2,882	30,994	56	0.55
Lake Phalen	3	995	7,626	41	0.42
Trout Brook	4	3,959	37,665	63	0.62
Lake Como	5	1,240	9,753	47	0.47
St. Anthony Park	6	2,467	13,140	70	0.68
Phalen Creek	7	1,406	18,418	64	0.62
St. Anthony Hill	8	2,542	36,410	66	0.64
Griffith/Pt. Douglas	9	458	5,264	63	0.61
W. Kittsondale	10	847	7,732	69	0.67
Urban	11	339	4,491	58	0.57
Battle Creek	12	1,089	8,201	54	0.54
Downtown	13	669	6,097	78	0.75
E. Kittsondale	14	1,870	18,353	64	0.62
Mississippi River Blvd.	15	2,373	27,251	59	0.58
Goodrich/Western	16	424	5,010	64	0.63
Pigs Eye	17	2,995	913	39	0.40
Riverview	18	2,658	14,860	58	0.57
Highwood	19	1,139	5,216	50	0.50
W. Seventh	20	450	2,543	61	0.60
Crosby	21	1,446	8,804	45	0.45
Davern	22	1,277	6,628	56	0.55
Hidden Falls	23	237	1,263	56	0.55
Total		34,040	278,706		



Storm Water Ponding Areas

ST. PAUL SEWER UTILITY

- Arlington/Arkwright
- Arlington/Jackson
(except small interior pond)
- Atwater/Western
- Birmingham/Minnehaha
- Birmingham/York
- Crosby Business Park
- Crosby Outlet
- Etna/Third
- Flandrau/Case
- Flandrau/Hoyt
- Hazel/Nokomis
- Hazel/Ross
- Hillcrest Knoll (Hoyt/Montana)
- Pleasant View
- Shepard Rd Ponds
- Sims/Agate
- Sylvan/Acker
- Terrace Ct./Whitall
- Westminster/Mississippi
- Wheelock Parkway
(except pond in apt. complex)
- Wildview/Lenox
- Willow Reserve

RAMSEY COUNTY

- Arlington/English
- Battle Creek
- Como Golf Course Ponds
- Suburban Avenue
- Totem Town

ST. PAUL PARKS

- Phalen Golf Course Pond

RAILROAD

- Fairview/North

MnDOT

- Hwy. 280
- Snelling/MnDOT



City of Saint Paul
Storm Water Ponding Area Inventory

Ponding Area	Drainage Area (acres)	Population 2000 Census	Pond Area (acres)	Storage Capacity (Acre-feet)
Arlington/Arkwright	302.3	4001	5	20.4
Arlington/Jackson	699.4	6562	14.5	75.6
Atwater/Western	127.3	1230	2.7	13.3
Birmingham/Minnehaha	41.0	457	0.9	2.5
Birmingham/York	146.5	2050	2.2	9.5
Crosby Business Park	39.6	198	1	5.52
Crosby Outlet	866.0	6295	5.5	40.6
Etna/Third	244.0	2457	4.7	25.1
Flandrau/Case	95.2	1331	0.7	3
Flandrau/Hoyt	479.5	4582	1.9	20.8
Hazel/Nokomis	73.0	511	2.3	6.3
Hazel/Ross	67.8	949	4	3.8
Pleasant View	164.5	2053	2.3	14.5
Sims/Agate	174.6	1357	5.3	12.8
Sylvan/Acker	376.9	3617	2.1	11.7
Terrace Ct./Whitall	4.7	28	0.5	0.5
Westminister/Mississippi	123.4	1912	2.2	10.1
Wheelock Parkway	19.0	265	1.3	1.7
Wildview/Lenox	19.3	111	0.73	2.2
Willow Reserve	372.1	3669	20.3	42.6
Total	4436.2	43633.6		

Drainage area only includes area in St. Paul.

Storage capacity is for a 100 year storm in acre-feet.

Storm Water Ponding Areas by Watershed Area

Beaver Lake	None
Belt Line	Birmingham/Minnehaha Birmingham/York Etna/Third Flandrau/Hoyt Flandrau/Case Hazel/Nokomis Hazel/Ross Hillcrest Knoll (Hoyt/Montana)
Lake Phalen	Arlington/English Phalen Golf Course Pond
Trout Brook	Arlington/Jackson Arlington/Arkwright Atwater/Western Sims/Agate Sylvan/Acker Terrace Ct./Whitall Westminster/Mississippi Wheelock Parkway Willow Reserve
Lake Como	Como Golf Course Ponds
St. Anthony Park	Fairview/North Highway 280 Snelling/MnDOT
Phalen Creek	None
St. Anthony Hill	None
Griffith/ Pt. Douglas	None
W. Kittsondale	None
Urban	None
Battle Creek	Battle Creek Suburban Avenue
Downtown	None

E. Kittsondale	Pleasant View
Mississippi River Blvd.	None
Goodrich/Western	None
Pigs Eye	None
Riverview	None
Highwood	Totem Town Wildview/Lenox
W. Seventh	None
Crosby	Crosby Business Park Crosby Outlet
Davern	None
Hidden Falls	None

NPDES/SDS PERMITTED FACILITIES IN ST PAUL (Non-storm water discharges)

Permit #	Permittee	Facility Address	Waterbody	Use	Type of Discharge
MN0062669	Archdiocese of St. Paul/Minneapolis	226 Summit Ave. St. Paul, MN 55102	Miss R	Religious Organization	Industrial
MN0053988	Ashland Chemical Inc.	395 James Ave. St. Paul, MN 55102	Miss R	Mixed, Manufac. Liq. Gas Prod.	Industrial
MN0058246	Buckbee Mears	245 E. 6th St. St. Paul, MN 55101	Miss R	Plating and Polishing	Industrial
MN0059765	Captain Ken's Foods Inc.	344 S. Robert St. St. Paul, MN 55107	Miss R	Canned specialties	Industrial
MNG790065	Conoco Philips Petroleum Co	1817 Randolph Ave. St. Paul, MN 55105	Miss. R.	Gasoline Service Stations	Groundwater pumpout
MN0000612	Diamond Products Co.	310 E. 5th St. St. Paul, MN 55101	Miss R	Perfumes, cosmetics, toilet prep	Industrial
MN0064696	Flint Hill Resources	P.O. Box 64596 St. Paul, MN 55164	Miss. R		Industrial
MN0002178	Ford Motor Co.	966 S. Miss. River Blvd. St. Paul, MN 55116	Miss. R	Motor vehicles & car bodies	Industrial
MNG255013	Gross-Given Mfg. Co.	75 W. Plato Blvd. St. Paul, MN 55107	Miss R	Automatic merchandising machine	Noncontact cooling water
MNG250041	Mann Theatres Grandview	1830 Grand Ave. St. Paul, MN 55105	Miss R	Motion picture theater	Noncontact cooling water
MNG250040	Mann Theatres Highland	760 S. Cleveland St. Paul, MN 55116	Miss R	Motion picture theater	Noncontact cooling water

NPDES/SDS PERMITTED FACILITIES IN ST PAUL (Non-storm water discharges)

Permit #	Permittee	Facility Address	Waterbody	Use	Type of Discharge
MN0025470	Metro Council	230 E. 5th St. St. Paul, MN 55102	Miss R	H2O, sew, pipe & com. & powr	Domestic
MNG790115	Metro Council Metro Transit	400 Snelling Ave. N. St. Paul, MN 55114	Miss R		Groundwater pumpout
MN0054640	Minnesota Brewing Co./ Gopher State	882 W. 7th St. St. Paul, MN 55102	Miss. R	Malt beverages	Industrial
MN0053571	NSP High Bridge	501 Shepard Rd. St. Paul, MN 55102	Miss. R	Heavy construction, nec.	Dredging
MN000084	NSP High Bridge Plant	501 Shepard Rd St. Paul, MN 55102	Miss. R	Electrical services	Industrial
MNG255066	Pearson Candy Co.	2140 W. 7th St. St. Paul, MN 55116	Miss R	Salted & roasted nuts & seeds	Noncontact cooling water
MNG990031	Peavey Red Rock Term.	1061 Red Rock Rd. St. Paul, MN 55119	Miss. R.		Dredging
MNG250100	St. Paul Pioneer Press	345 Cedar St. St. Paul, MN 55101	Miss R	Newspaper: publishing & print	Noncontact cooling water
MN0054577	St. Paul Pioneer Press	#1 Ridder Circle St. Paul, MN 55107	Miss R	Newspaper: publishing & print	Industrial
MN0054739	St. Paul Port Authority	1500 Energy Pk. Dr. St. Paul, MN 55108	Miss R	Steam & air conditioning sup	Industrial
MNG250072	St. Paul River Centre	143 W. 4th St. St. Paul, MN 55102	Miss R	Prof. Sports clubs and promoters	Noncontact cooling water

NPDES/SDS PERMITTED FACILITIES IN ST PAUL (Non-storm water discharges)

Permit #	Permittee	Facility Address	Waterbody	Use	Type of Discharge
MN0045829	St. Paul Water Utility	1900 N. Rice St. Roseville, MN 55113	Troutbrook	Water supply	Water Treatment
MN0002968	United Hospitals Inc.	333 N. Smith Ave. St. Paul, MN 55102	Miss R	Gen. medical/ surgical hospital	Industrial
MN0050580	USCOE River dredging Construction & Ops.	190 5th St. E. St. Paul, MN 55101	Miss. R	Heavy construction, nec.	River dredging
MN0066303	US Bank National Assoc.	60 Livingston St. S. St. Paul, MN 55107	Miss R		Industrial
MN0059277	Versa Companies	867 Forest St. St. Paul, MN 55106	Miss R	Gray iron foundries	Industrial
MN0048984	Waldorf Corp.	2250 Wabash Ave. St. Paul, MN 55114	Miss R	Corrugated/solid fiber boxes	Industrial
MN0062031	St. Paul Commercial- Galtier	175 E. 5th St. St. Paul, MN 55101	Miss R	Operators of apartment buildings	Industrial
MN0057606	Zeller-World Trade	30 E. 7th St. St. Paul, MN 55101	Miss R	Operators of nonresidential buildings	Industrial
MN0049816	3M St. Paul	Building 21-2W-05	Miss R	Surgical & medical instruments	Industrial
MNG255045	528 Partnership LLP	345 E. Plato Blvd. St. Paul, MN 55107	Miss. R	Commercial print, Lithographic	Noncontact cooling water

