

BCMWC 2015 Watershed Management Plan

Table of Contents

List of Acronyms	LA-1
Executive Summary.....	ES-1
1.0 Introduction	1-1
1.1 The Role of Watershed Management Organizations	1-1
1.2 BCWMC Location and History.....	1-2
1.2.1 Location and Boundaries.....	1-2
1.2.2 History.....	1-3
1.3 BCWMC Vision and Purpose.....	1-3
1.3.1 BCWMC Overall Purposes.....	1-3
1.3.2 BCWMC Goals.....	1-3
1.4 Management Structure, Power, and Duties.....	1-5
1.4.1 Regulatory Environment and Agency Responsibilities.....	1-9
2.0 Land and Water Resource Inventory.....	2-1
2.1 Land Use	2-1
2.1.1 Water and Wastewater Service Areas.....	2-1
2.2 Climate and Precipitation.....	2-2
2.3 Topography	2-5
2.4 Soils.....	2-5
2.4.1 Hydrologic Soil Groups and Infiltration.....	2-5
2.4.2 Surficial Soils.....	2-6
2.5 Geology and Groundwater Resources.....	2-7
2.5.1 Geology	2-7
2.5.2 Groundwater Resources.....	2-8
2.5.2.1 Bedrock Aquifers.....	2-8
2.5.2.2 Surficial (Quaternary) Aquifers	2-10
2.5.3 Wellhead Protection Areas	2-10
2.6 Surface Water Resources.....	2-10
2.6.1 MDNR Public Waters.....	2-11
2.6.2 Public Ditches.....	2-13
2.6.3 Wetlands	2-13
2.6.4 Lakes and Ponds	2-13
2.6.4.1 Bassett Creek Park Pond	2-13
2.6.4.2 Crane Lake.....	2-14
2.6.4.3 Grimes Pond	2-15
2.6.4.4 Lost Lake	2-15
2.6.4.5 Medicine Lake	2-15

	2.6.4.6	North Rice Pond.....	2-17
	2.6.4.7	Northwood Lake	2-17
	2.6.4.8	Parkers Lake.....	2-18
	2.6.4.9	South Rice Pond.....	2-19
	2.6.4.10	Sweeney Lake.....	2-19
	2.6.4.11	Turtle Lake.....	2-20
	2.6.4.12	Twin Lake	2-20
	2.6.4.13	Westwood Lake	2-21
	2.6.4.14	Wirth Lake.....	2-22
2.6.5		Streams and Open Channels.....	2-22
	2.6.5.1	Plymouth Creek.....	2-23
	2.6.5.2	Main Stem of Bassett Creek	2-23
	2.6.5.3	North Branch of Bassett Creek	2-23
	2.6.5.4	Sweeney Lake Branch of Bassett Creek.....	2-24
2.7		Water Quality.....	2-24
2.7.1		Water Quality Monitoring Programs	2-25
	2.7.1.1	BCWMC Lake Monitoring.....	2-26
	2.7.1.2	BCWMC Stream Monitoring.....	2-27
	2.7.1.3	Watershed Outlet Monitoring Program	2-29
	2.7.1.4	Hennepin County Environment and Energy Department – River Watch	2-29
	2.7.1.5	Three Rivers Park District/City of Plymouth.....	2-30
	2.7.1.6	Minneapolis Park and Recreation Board.....	2-30
	2.7.1.7	Metropolitan Council (CAMP).....	2-31
	2.7.1.8	Minnesota Pollution Control Agency (CLMP).....	2-31
	2.7.1.9	Member Cities.....	2-31
2.7.2		Management and Classification	2-31
	2.7.2.1	MPCA Impaired Waters.....	2-31
	2.7.2.2	BCWMC Classification Systems.....	2-34
2.7.3		Water Quality Modeling	2-37
	2.7.3.1	Watershed-wide P8 Model	2-37
2.8		Water Quantity and Flooding.....	2-38
2.8.1		BCWMC Flood Control Project.....	2-38
	2.8.1.1	Irving Avenue Dump Site.....	2-40
2.8.2		Other Watershed Flood Control Projects.....	2-41
2.8.3		Regulatory Water Levels and Flow Rates.....	2-42
2.8.4		Flood Insurance Studies.....	2-42
2.8.5		Water Quantity Monitoring.....	2-54
	2.8.5.1	Lake Levels.....	2-54
	2.8.5.2	Stream Gaging and Flow Data	2-55
2.8.6		Water Quantity Modeling	2-55
	2.8.6.1	Watershed-wide XP-SWMM Model.....	2-55

2.9	Natural Communities and Rare Species.....	2-56
2.10	Fish and Wildlife Habitat.....	2-57
2.10.1	MDNR Fisheries Surveys and Stocking.....	2-57
2.10.1.1	Medicine Lake.....	2-57
2.10.1.2	Parkers Lake.....	2-57
2.10.1.3	Sweeney Lake and Twin Lake.....	2-57
2.10.1.4	Wirth Lake.....	2-58
2.10.2	Aquatic Plant (Macrophyte) Monitoring.....	2-59
2.10.3	Wetland Health Evaluation Program.....	2-60
2.11	Pollutant Sources.....	2-60
3.0	Assessment of Issues and Opportunities.....	3-1
3.1	Water Quality.....	3-1
3.2	Water Quantity and Flooding.....	3-3
3.2.1	Floodplain Management.....	3-5
3.3	Erosion and Sedimentation.....	3-6
3.4	Streams.....	3-8
3.5	Wetlands, Habitat, and Shoreland Areas.....	3-11
3.5.1	Wetland and Shoreland Buffers.....	3-13
3.5.2	Aquatic Invasive Species (AIS).....	3-14
3.5.3	Member City Wetland Management and Wetland Classification.....	3-15
3.6	Groundwater.....	3-16
3.7	Education and Outreach.....	3-18
3.8	Implementation and Responsibilities.....	3-19
3.8.1	Maintenance of Stormwater Systems and Projects.....	3-20
3.8.2	Public Ditches.....	3-21
3.8.3	Funding and Financing.....	3-21
4.0	Goals and Policies.....	4-1
4.1	BCWMC Goals.....	4-1
4.2	BCWMC Policies.....	4-2
4.2.1	Water Quality Policies.....	4-2
4.2.2	Flooding and Rate Control Policies.....	4-5
4.2.3	Groundwater Management Policies.....	4-8
4.2.4	Erosion and Sediment Control Policies.....	4-9
4.2.5	Stream Restoration and Protection Policies.....	4-10
4.2.6	Wetland Management Policies.....	4-11
4.2.7	Public Ditch Policies.....	4-13
4.2.8	Recreation, Habitat, and Shoreland Management Policies.....	4-13
4.2.9	Education and Outreach Policies.....	4-14
4.2.10	Administration Policies.....	4-15
5.0	Implementation.....	5-1
5.1	Responsibilities.....	5-1
5.1.1	BCWMC Responsibilities.....	5-1

5.1.1.1	Review of Improvements and Developments	5-2
5.1.1.2	Implementation of the BCWMC Capital Improvement Program	5-3
5.1.1.3	Management of the BCWMC Trunk System and Flood Control Project	5-3
5.1.1.4	Intercommunity Planning and Design.....	5-4
5.1.1.5	Dispute Resolution.....	5-4
5.1.1.6	Reporting and Evaluation.....	5-5
5.1.1.7	Monitoring	5-6
5.1.1.8	Total Maximum Daily Load (TMDL) Implementation	5-7
5.1.2	Member City Responsibilities	5-7
5.1.3	Agency Responsibilities	5-8
5.1.3.1	Minnesota Department of Natural Resources (MDNR).....	5-9
5.1.3.2	Minnesota Board of Water and Soil Resources (BWSR).....	5-10
5.1.3.3	Minnesota Pollution Control Agency (MPCA).....	5-10
5.1.3.4	Minnesota Department of Health (MDH)	5-13
5.1.3.5	Minnesota Environmental Quality Board (EQB).....	5-14
5.1.3.6	Minnesota State Historic Preservation Offices (SHPO).....	5-14
5.1.3.7	Minnesota Department of Transportation (MnDOT)	5-14
5.1.3.8	U.S. Army Corps of Engineers (USACE)	5-15
5.1.3.9	The Metropolitan Council	5-15
5.2	Implementation Program.....	5-16
5.2.1	Implementation Program Components	5-16
5.2.1.1	Capital Improvement Program and Project Implementation.....	5-16
5.2.1.2	Programs.....	5-18
5.2.1.3	Annual Reporting	5-18
5.2.2	Financial Considerations	5-18
5.2.2.1	Funding Mechanisms Available to the BCWMC.....	5-18
5.2.2.2	Past and Proposed Funding Mechanisms.....	5-20
5.2.2.3	Member City Funding	5-21
5.2.2.4	State Funding Sources.....	5-21
5.2.2.5	Federal Funding Sources	5-22
5.2.2.6	Private Funding Sources	5-22
5.3	Impacts on Local Government	5-23
5.3.1	Local Water Management Plans and Official Controls.....	5-23
5.3.1.1	Requirements for Local Water Management Plans and Official Controls	5-24
5.3.1.2	BCWMC Review of Local Water Management Plans.....	5-24
5.4	Plan Approval and Adoption	5-25
5.4.1	Stakeholder and Public Involvement.....	5-25
5.5	Plan Revision and Amendment.....	5-27
5.5.1	General Amendment Procedure.....	5-27
5.5.2	Minor Plan Amendments	5-28

5.5.3	Amendment Format and Distribution	5-28
6.0	References	6-1

List of Tables

Table 1-1	BCWMC Commissioner Terms	1-5
Table 1-2	Historical Listing of BCWMC Commissioner and Terms (not including Alternate Commissioners)	1-6
Table 2-1	Historical Precipitation Summary for Minneapolis-St. Paul Area.....	2-3
Table 2-2	Selected Rainfall and Snowmelt Runoff Events.....	2-4
Table 2-3	Characteristics of Major BCWMC Waterbodies	2-12
Table 2-4	Pollutants Commonly Found in Stormwater Runoff	2-25
Table 2-5	Summary of Impaired Waters within the BCWMC (including 2014 proposed listings and Wirth Lake delisting)	2-33
Table 2-6	BCWMC Management Classifications for Priority Waterbodies.....	2-35
Table 2-7	BCWMC Water Quality Standards for Waterbody Classifications	2-36
Table 2-8	Summary of BCWMC Flood Control Project Features	2-43
Table 2-9	BCWMC Flood Profiles (elevations in NGVD1929 datum)	2-44
Table 2-10	BCWMC Priority Waterbody Lake Levels	2-54
Table 3-1	Impacts of Urbanization on Streams.....	3-10
Table 5-1	Project Costs Eligible for BCWMC Reimbursement.....	5-17
Table 5-2	Permit Authority of Agencies with Jurisdiction within the BCWMC	5-29
Table 5-3	BCWMC 2015-2025 CIP	5-31
Table 5-4	BCWMC Annual Implementation Program (non-CIP)	5-32
Table 5-5	Past BCWMC Accomplishments (since approval of 2004 Plan)	5-34

List of Figures

(Figures are included in at the end each applicable section)

Figure 1-1	Location Map
Figure 2-1	2010 Land Use
Figure 2-2	2030 Land Use
Figure 2-3	Average Monthly High & Low Temperatures and Precipitation for Minneapolis-St. Paul International Airport (1981-2010)
Figure 2-4	Topography
Figure 2-5	Hydrologic Soil Groups
Figure 2-6	Generalized Geologic Section
Figure 2-7	Wellhead Protection Areas
Figure 2-8	BCWMC Major Subwatersheds and Drainage Patterns
Figure 2-9	Public Waters Inventory and Public Ditches

Figure 2-10	National Wetlands Inventory and Biological Survey
Figure 2-11	Water Quality and Stream Biotic Monitoring Locations
Figure 2-12	Impaired Waters (per MPCA 303d List)
Figure 2-13	Watersheds Used in BCWMC P8 Model
Figure 2-14	Flood Control Project Features
Figure 2-15	BCWMC Trunk System
Figure 2-16	FEMA 100-Year Floodplain
Figure 2-17	Medicine Lake Water Level and Precipitation
Figure 2-18	Watersheds Used in BCWMC XP-SWMM Model
Figure 2-19	Recreation Areas and Public Boat Access
Figure 2-20	Pollutant Sources

List of Appendices

(Appendices D through J are included in digital format only)

Appendix A	BCWMC Monitoring Plan
Appendix B	BCWMC Education and Outreach Plan
Appendix C	Characteristics and Classification of Major BCWMC Waterbodies
Appendix D	Gaps Analysis
Appendix E	Results of Public Involvement during Plan Development
Appendix F	Water Quality Summary
Appendix G	Joint Powers Agreement
Appendix H	Requirements for Improvements and Development Proposals
Appendix I	Boundary Change and Related Legal Documentation
Appendix J	BCWMC Legal Description